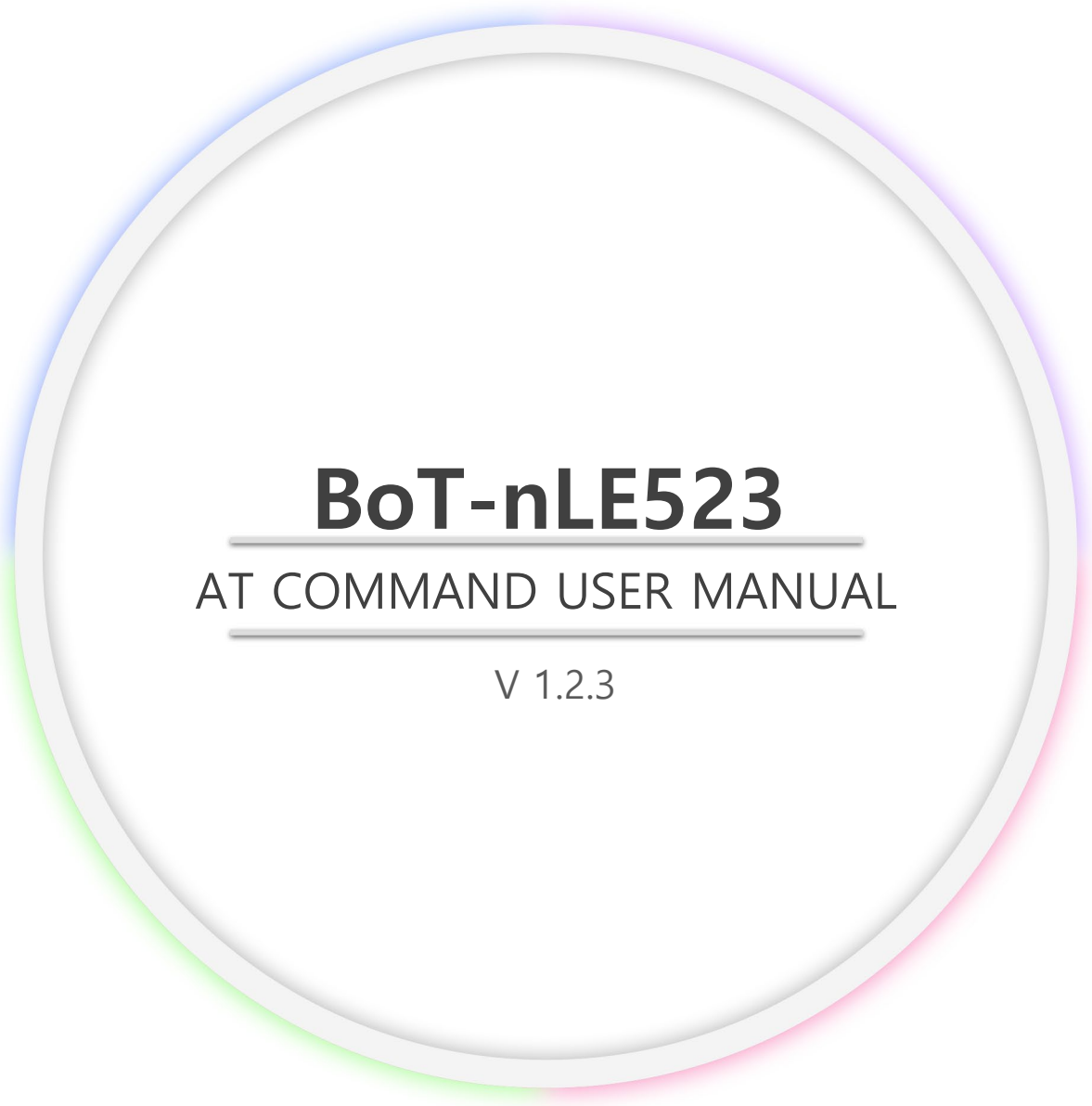




# **BoT-nLE523**

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## AT COMMAND USER MANUAL

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V 1.2.3

## BoT-nLE523 AT COMMAND USER MANUAL

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|--------------------------------------------------|------------------------|
| <b>BOT-nLE523 AT COMMAND USER MANUAL .....</b>   | <b>.....</b>           |
| <b>1. DOCUMENT OVERVIEW .....</b>                | <b>6</b>               |
| <b>2. TARGET PRODUCT OVERVIEW .....</b>          | <b>6</b>               |
| <b>3. PROTOCOL BASICS RULE .....</b>             | <b>7</b>               |
| 3.1. PROTOCOL BASICS ACTION .....                | 8                      |
| 3.2. UART OPERATION MODE DESCRIPTION .....       | 8                      |
| 3.2.1. <i>AT-COMMAND Mode</i> .....              | 8                      |
| 3.2.2. <i>BYPASS Mode</i> .....                  | 9                      |
| 3.2.3. <i>MULTIDROP and NODEDROP modes</i> ..... | 9                      |
| 3.2.4. <i>PACKET Mode</i> .....                  | 10                     |
| 3.3. BOT STATE DESCRIPTION .....                 | 10                     |
| 3.3.1. <i>ADVERTISING</i> .....                  | 11                     |
| 3.3.2. <i>SCANNING</i> .....                     | 11                     |
| 3.3.3. <i>STOPPED</i> .....                      | 11                     |
| 3.3.4. <i>CONNECTED</i> .....                    | 11                     |
| 3.3.5. <i>DISCONNECTED</i> .....                 | 12                     |
| <b>4. BOT CONTROL GPIO DESCRIPTION .....</b>     | <b>13</b>              |
| 4.1. BoT-nLE523 GPIO DEFINE .....                | 13                     |
| 4.2. FUNCTION DESCRIPTION .....                  | 13                     |
| 4.2.1. <i>AT command / BYPASS</i> .....          | 13                     |
| 4.2.2. <i>Connection Status</i> .....            | 14                     |
| 4.2.3. <i>Enter Sleep/Wakeup</i> .....           | 14                     |
| 4.2.4. <i>Disconnect/Factory Reset</i> .....     | 14                     |
| 4.2.5. <i>UART On/Off</i> .....                  | 14                     |
| <b>5. BOT OPERATION ROLE DESCRIPTION .....</b>   | <b>16</b>              |
| 5.1. MASTER OPERATION .....                      | 16                     |
| 5.1.1. <i>Client-role</i> .....                  | 오류! 책갈피가 정의되어 있지 않습니다. |
| 5.1.2. <i>Multicon-role</i> .....                | 오류! 책갈피가 정의되어 있지 않습니다. |
| 5.2. SLAVE OPERATION.....                        | 16                     |
| 5.2.1. <i>Server-role – Normal mode</i> .....    | 17                     |

|           |                                                |           |
|-----------|------------------------------------------------|-----------|
| 5.2.2.    | <i>Server-role - iBeacon mode</i>              | 17        |
| 5.2.3.    | <i>Server-role – Beacon mode</i>               | 17        |
| <b>6.</b> | <b>PROTOCOL SUMMARY</b>                        | <b>18</b> |
| 6.1.      | REQUEST (HOST → BOT) PROTOCOL SUMMARY          | 19        |
| 6.2.      | NOTIFY (BOT → HOST) PROTOCOL SUMMARY           | 27        |
| 6.3.      | GENERAL RESPONSE (BOT → HOST) PROTOCOL SUMMARY | 29        |
| <b>7.</b> | <b>REQUEST PROTOCOL DETAIL</b>                 | <b>30</b> |
| 7.1.      | AT                                             | 30        |
| 7.2.      | ATZ                                            | 30        |
| 7.3.      | AT&F                                           | 31        |
| 7.4.      | AT+VER?                                        | 33        |
| 7.5.      | AT+INFO?                                       | 33        |
| 7.6.      | AT+UART=<BAUDRATE>                             | 34        |
| 7.7.      | AT+FLOWCONTROL=<ENABLE>                        | 35        |
| 7.8.      | AT+FLOWCONTROL?                                | 35        |
| 7.9.      | AT+INTPULLDOWN=ON                              | 36        |
| 7.10.     | AT+INTPULLDOWN=OFF                             | 36        |
| 7.11.     | AT+INTPULLDOWN?                                | 37        |
| 7.12.     | AT+AUTOSAVE=<ENABLE>                           | 38        |
| 7.13.     | AT+AUTOSAVE?                                   | 38        |
| 7.14.     | AT+SAVE                                        | 39        |
| 7.15.     | AT+PACKETMODE=<ENABLE>                         | 40        |
| 7.16.     | AT+PACKETUNIT=<UNIT>                           | 41        |
| 7.17.     | AT+PACKETINFO?                                 | 41        |
| 7.18.     | AT+ROLE=<ROLE>                                 | 42        |
| 7.19.     | AT+SECLV=<LEVEL>                               | 43        |
| 7.20.     | AT+SECLV?                                      | 44        |
| 7.21.     | AT+ACCEPT                                      | 45        |
| 7.22.     | AT+REJECT                                      | 46        |
| 7.23.     | AT+AUTOBOND=<ENABLE>                           | 46        |
| 7.24.     | AT+AUTOBOND?                                   | 47        |
| 7.25.     | AT+BONDINFO?                                   | 47        |
| 7.26.     | AT+DELBOND                                     | 48        |
| 7.27.     | AT+MAJOR=<VALUE>                               | 48        |
| 7.28.     | AT+MAJOR?                                      | 49        |
| 7.29.     | AT+MINOR=<VALUE>                               | 49        |

|       |                                                 |    |
|-------|-------------------------------------------------|----|
| 7.30. | AT+MINOR? .....                                 | 50 |
| 7.31. | AT+IRSSI=<VALUE> .....                          | 51 |
| 7.32. | AT+IRSSI? .....                                 | 51 |
| 7.33. | AT+ADVTYPE=<TYPE> .....                         | 52 |
| 7.34. | AT+MANUF=<NAME> .....                           | 53 |
| 7.35. | AT+MANUF? .....                                 | 54 |
| 7.36. | AT+TXPWR=<STEP> .....                           | 54 |
| 7.37. | AT+TXPWR? .....                                 | 55 |
| 7.38. | AT+ADVDATA=<DATA> .....                         | 56 |
| 7.39. | AT+ADVDATA? .....                               | 57 |
| 7.40. | AT+ADVDATA2=<DATA> .....                        | 57 |
| 7.41. | AT+ADVDATA2? .....                              | 58 |
| 7.42. | AT+BEACON=<DATA> .....                          | 59 |
| 7.43. | AT+BEACON? .....                                | 60 |
| 7.44. | AT+ADVINTERVAL=<INTERVAL> .....                 | 60 |
| 7.45. | AT+ADVINTERVAL? .....                           | 61 |
| 7.46. | AT+CONNINTERVAL=<MAX> .....                     | 62 |
| 7.47. | AT+CONNINTERVAL=<MIN>,<MAX> .....               | 62 |
| 7.48. | AT+CONNINTERVAL? .....                          | 63 |
| 7.49. | AT+STL=<ENABLE> .....                           | 64 |
| 7.50. | AT+STL? .....                                   | 65 |
| 7.51. | AT+ADVOFF .....                                 | 65 |
| 7.52. | AT+ADVON .....                                  | 66 |
| 7.53. | AT+DISCONNECT .....                             | 66 |
| 7.54. | AT+NEGOCONN? .....                              | 67 |
| 7.55. | AT+STARTSCAN .....                              | 67 |
| 7.56. | AT+STARTSCANM .....                             | 68 |
| 7.57. | AT+STARTSCAN=<FILTER_ITEM>,<FILTER_DATA> .....  | 69 |
| 7.58. | AT+STARTSCANM=<FILTER_ITEM>,<FILTER_DATA> ..... | 71 |
| 7.59. | AT+STOPSCAN .....                               | 73 |
| 7.60. | AT+SF=ON,<FILTER_NAME> .....                    | 74 |
| 7.61. | AT+SF=OFF .....                                 | 75 |
| 7.62. | AT+SF? .....                                    | 75 |
| 7.63. | AT+CONMAC=<MAC> .....                           | 76 |
| 7.64. | AT+AUTOCON=<ENABLE> .....                       | 77 |
| 7.65. | AT+AUTOCON? .....                               | 79 |
| 7.66. | AT+CONNECT .....                                | 81 |

|            |                                                                 |            |
|------------|-----------------------------------------------------------------|------------|
| 7.67.      | AT+MLINK=<MAX_LINK> .....                                       | 81         |
| 7.68.      | AT+MLINK? .....                                                 | 82         |
| 7.69.      | AT+MCONNLINK? .....                                             | 83         |
| 7.70.      | AT+MCONNINFO=<IDX> .....                                        | 84         |
| 7.71.      | AT+MCONNECT .....                                               | 85         |
| 7.72.      | AT+MGROUP=<MAX_LINK>,<FILTER_NAME> .....                        | 87         |
| 7.73.      | AT+SETSLOT=<SLOT_NO>,<ADDRESS>,<TAG> .....                      | 88         |
| 7.74.      | AT+GETSLOT=<SLOT_NO> .....                                      | 89         |
| 7.75.      | AT+DELGSLOT=<SLOT_NO> .....                                     | 90         |
| 7.76.      | AT+UGROUP .....                                                 | 91         |
| 7.77.      | AT+MDISC=<IDX> .....                                            | 93         |
| 7.78.      | AT+MDATA=<CONNECTION_IDX>,<DATA> .....                          | 94         |
| 7.79.      | AT+MDATA2=<CONNECTION_IDX>,<DATA> .....                         | 96         |
| 7.80.      | AT+MBYPASS=<ENABLE> .....                                       | 97         |
| 7.81.      | AT+MBYPASS? .....                                               | 98         |
| <b>8.</b>  | <b>DATA RECEIVE PROTOCOL DETAIL .....</b>                       | <b>100</b> |
| 8.1.       | +DATANN[<DATA>] .....                                           | 100        |
| <b>9.</b>  | <b>ADVERTISING (DISCOVERABLE) DATA FORMAT .....</b>             | <b>101</b> |
| 9.1.       | FORMAT .....                                                    | 101        |
| 9.1.1.     | Normal Format Advertising .....                                 | 101        |
| 9.1.2.     | iBeacon Format Advertising .....                                | 102        |
| 9.1.3.     | Chipsen Beacon Format Advertising .....                         | 102        |
| <b>10.</b> | <b>GENERAL DATA TRANSMISSION .....</b>                          | <b>104</b> |
| 10.1.      | SERVER / CLIENT-ROLE .....                                      | 104        |
| 10.2.      | MULTICON-ROLE .....오류! 책갈피가 정의되어 있지 않습니다.                       |            |
| 10.2.1.    | AT+MDATA=idx,<data> .....                                       | 104        |
| 10.2.2.    | AT+MDATA2=idx,<data> .....                                      | 105        |
| 10.2.3.    | Bypass data in Multicon-role Transmission .....                 | 105        |
| <b>11.</b> | <b>SERVICE UUID INFORMATION .....</b>                           | <b>107</b> |
| <b>12.</b> | <b>APPENDIX – USEFUL FQA .....</b>                              | <b>108</b> |
|            | <b>APPENDIX 1. RESPONSIBILITY MARGIN AND LEGAL NOTICE .....</b> | <b>113</b> |

## 1. Document Overview

This document defines the communication protocol and setting method via UART (serial port) between the "Standard operation" equipped on the CHIPSEN Bluetooth BoT-nLE523 module (hereinafter referred to as "BOT") and the customer's MCU (hereinafter referred to as "HOST") connected via UART interface.

## 2. Target Product Overview

- Operable mode (role)
  - **Client-role:** This is the role of the Master. This is a mode that enables connection and communication by searching for a remote device operating as a Server-role that satisfies the support service of BOT. It supports 1:1 connection communication functions.
  - **Server-role:** This is Slave's role. It is possible to search and connect from a remote device that satisfies BOT's support service and it operates as a client role. It is a mode that communication is possible after the connection is completed, and supports 1:1 connection communication functions. Some functions such as Beacon that cannot be connected are possible through operation mode setting.
  - **Multicon-role:** It is the role of the master. It is a mode that enables simultaneous connection with a remote device operating as several server roles satisfying the BOT's support services. Connection is possible up to 1:8 maximum. With MULTIDROP or NODEDROP operation using the designated AT command, data can be delivered to HOST in the designated structure during transmission and reception. It supports a method of communication in the form of a Bypass.
- Certification
  - **KC (with EMC) :**  
(BoT-nLE523) *RR- cs i-BoT-nLE523*
  - **CE RED & DOC (with RoHS)**
  - **FCC**
  - **TELEC**
  - **SIG**

### 3. Protocol Basic Rules

- Data transmission/reception between HOST and BOT is based on the UART (serial port) interface.
- UART (serial port) default settings
  - Baud rate: 96 00bps
  - Data bit: 8
  - Parity bit: none
  - Stop bit: 1
  - Flow Control: off
  - The above are the default settings, and to change them, use the AT command ([AT+UART=<baudrate>](#)).

If you want to change the default UART settings, you will need to modify the BOT firmware and change the process, so please contact to [s1@chipsen.com](mailto:s1@chipsen.com). Or, prior consultation must be made by contacting CHIPSEN INC. ( +82 2-1599-6005 )
- Communication direction
  - REQUEST (HOST → BOT): Transmit from HOST to BOT
  - NOTIFY (BOT → HOST): A message generated from the BOT and transmitted to the HOST, notifying the basic status of the BOT.
  - RESPONSE (BOT → HOST): A message generated from the BOT and transmitted to the HOST and is a response to REQUEST.
- Communication rules
 

All protocols consist of a combination of ascii values and indicate the end of a command through a **CR (Carriage Return, 0x0D)**.

Ex) REQUEST – Current F/W version: AT+VER?

| Command     | AT+VER? |      |      |      |      |      |      |      |
|-------------|---------|------|------|------|------|------|------|------|
| Command set | A       | T    | +    | V    | E    | R    | ?    | CR   |
| Ascii set   | 0x41    | 0x54 | 0x2B | 0x56 | 0x45 | 0x52 | 0x3F | 0x0D |

Ex) NOTIFY – When ready after power-up: +READY

| Command     | +READY |      |      |      |      |      |      |
|-------------|--------|------|------|------|------|------|------|
| Command set | +      | R    | E    | A    | D    | Y    | CR   |
| Ascii set   | 0x2B   | 0x52 | 0x45 | 0x41 | 0x44 | 0x59 | 0x0D |

Ex) RESPONSE – Operation failure for REQUEST: +ERROR

| Command     | +ERROR |      |      |      |      |      |      |
|-------------|--------|------|------|------|------|------|------|
| Command set | +      | E    | R    | R    | O    | R    | CR   |
| Ascii set   | 0x2B   | 0x45 | 0x52 | 0x52 | 0x4F | 0x52 | 0x0D |

### 3.1. Protocol Basic Operation

- After receiving a REQUEST from the HOST, the BOT sends a corresponding RESPONSE. The HOST can basically expect a RESPONSE of +OK or +ERROR, and can receive a specific RESPONSE corresponding to the REQUEST.

### 3.2. UART Operation Mode Description

- BOT supports AT-COMMAND when not connected to the counterpart device, BYPASS mode when connected to the counterpart device, and MULTIDROP and NODEDROPP mode through AT command format in Multicon role for HOST's DATA delivered to UART.
- BOT is in operation, errors including data loss may occur depending on the Bluetooth wireless quality, performance, and usage environment.

In such cases, provide information on the usage environment and test environment to CHIPSEN INC. You should request technical support to review solutions to resolve the issue by optimizing the settings of BOT.

(Technical support inquiries : [s1@chipsen.com](mailto:s1@chipsen.com) or [tech@chipsen.com](mailto:tech@chipsen.com) )

#### 3.2.1. AT-COMMAND mode

- In the HOST, you can change the device setting of the BOT or command the BOT to perform a specific operation. This state is called the AT-COMMAND mode.
- BOT always stays in AT-COMMAND mode when connection with Remote device is not made.
- When connected to a Remote device, to read the device's settings or perform a specific operation, keep the AT command/BYPASS switching GPI HIGH to operate in AT-COMMAND mode.
- Most of this document describes the commands available in AT-COMMAND

mode.

- When the Multicon-role is in operation, data communication via AT-COMMAND mode is always the default .

\* \* If you want to send and receive data in a bypass format for all devices connected in the Multicon-role, there may be limitations in performance, etc.

In such cases, provide information on the usage environment and test environment to CHIPSEN INC. You should request technical support to review solutions to resolve the issue by optimizing the settings of BOT.

(Technical support inquiries : [s1@chipsen.com](mailto:s1@chipsen.com) or [tech@chipsen.com](mailto:tech@chipsen.com) )

### 3.2.2. BYPASS mode

- The BOT is connected to the remote device, so that the data generated in the HOST may be transmitted as quickly as possible without processing or changing the data received by the remote device. This state is called BYPASS mode.
- In BYPASS mode, it is impossible to change the device settings of the BOT or perform specific operations, but it is possible to read some setting values or terminate the connection by keeping the AT command/BYPASS port HIGH, switching to AT command mode .
- In BYPASS mode, data generated from the HOST may be split or delayed depending on the Bluetooth wireless quality of the usage environment or the speed which data is transmitted via UART(Baudrate) .
- BYPASS mode is the basic data transfer mode of the Client-role or Server-role.

\* \* In Multicon role, the data transmission mode is basically based on communication with individual counterpart devices through transmission and reception using AT-command. If transmission and reception are to be performed in a bypass form, limitations in performance may occur.

In such cases, provide information on the usage environment and test environment to CHIPSEN INC. You should request technical support to review solutions to resolve the issue by optimizing the settings of BOT.

(Technical support inquiries : [s1@chipsen.com](mailto:s1@chipsen.com) or [tech@chipsen.com](mailto:tech@chipsen.com) )

### 3.2.3. MULTIDROP and NODEDROP mode

- It is a transfer mode that BOT is connected to multiple devices simultaneously as Multicon-role.

- When BOT performs AT command mode data communication as Multicon role, data can be transmitted through a set AT command (AT+MDATA, AT+MDATA2), and communication is possible by designating the index (+CON<index>=<Remote address 12 digits>) given at the time the connection is made.
- MULTIDROP as Multicon-role, corresponding to AT command mode data communication and when the Index is 00.  
At this time, when data is transmitted from the BOT to the specified AT command, the same data is delivered to all connected devices.
- MULTIDROP as Multicon-role and in the case of Bypass mode data communication, the same data is immediately transmitted to all connected devices for data received through UART.
- NODEDROP as Multicon-role, and in AT command mode data communication, when the index is not 00, the data is only transmitted to the same counterpart device as the index (+CON<index>=<Remote address 12 digits>) given at the time of connection when the BOT transmits data to a set AT command.

**\*\* MULTIDROP and NODEDROP modes may require separate intervals for data transmission depending on the user's usage pattern.**

#### 3.2.4. PACKET mode

- When BOT delivers DATA from HOST to the Remote device, it designates data of a certain size and supports a mode that can transmit data, it is called PACKET mode.
- In PACKET mode, it is impossible to change the device setting of BOT or perform a specific operation, and it is possible to read some setting values or terminate the connection through the AT command GPIO setting.
- In the PACKET mode, the transmission size of the DATA generated in the HOST may be changed, and this range may be set in the range of 1 to 128 (bytes), and when the received data size is equal to the set transmission size, transmission is possible. However, it should be possible to receive data of the size set in the Remote device.
- 

### 3.3. BOT state description

- The BOT state is largely divided into ADVERTISING, SCANNING, STOPPED,

CONNECTED and DISCONNECTED depending on the connection status of the Remote device and the UART operation mode ( "Refer to [3.2 . UART operation mode](#) ),

#### 3.3.1. ADVERTISING

- After powering on the BOT, it operates as a Server-role and can be connected. It is possible to search and connect to a Remote device that either as a Client-role or as a Multicon-role is performing an operation.
- ADVERTISING state, UART operation mode always operates in AT-COMMAND mode.

#### 3.3.2. SCANNING

- the BOT is powered on and operates as a Client or Multicon-role, it searches for the Remote Server device using a specific command ( Refer to " [AT+START S CAN](#) " command) . If the searched peripheral device is output, it corresponds to SCANNING.
- SCANNING state, UART operation mode always operates in AT-COMMAND mode.

#### 3.3.3. STOPPED

- BOT is powered on as Client or Multicon-role. If no SCANNING operation is performed, it corresponds to STOPPED.
- STOPPED state, UART operation mode always operates in AT-COMMAND mode.

#### 3.3.4. CONNECTED

- When a connection has already been connected to the Remote device.
- BOT is in the Client and Server-role status, if AT command/BYPASS port is kept Low, data generated in HOST is transmitted to the Remote device, and if the port is kept HIGH, some of BOT's setting values can be read or specific operations can be performed through AT command.
- BOT is connected to a counterpart device in the Multicon-role state in the default setting state, BOT can basically transmit data to a specific counterpart device and receive it in a set structure using the AT command ( " [AT+MDATA=idx,<data>](#) " ) .  
Bypass data transmission and reception is possible by changing the settings.

**3.3.5. DISCONNECTED**

- When the connection with the Remote device is lost. At this time, BOT is waiting to receive the user's REQUEST, if it is in the Client-role or Multicon-role and is in the same state as the STOPPED state.

## 4. BOT Control GPIO explanation

To make it easier for HOST to control the state or control of the BOT, assign five GPIOs separately.

### 4.1. BoT-nLE52 3 GPIO define

| Pin PAD# | Direction | Pin Name | Function                   |
|----------|-----------|----------|----------------------------|
| #24      | Input     | P 14     | AT command / BYPASS        |
| #25      | Output    | P 15     | Connection Status          |
| #19      | Input     | P 10     | Enter Sleep / Wakeup       |
| #18      | Input     | P 09     | Disconnect / Factory reset |
| # 23     | Input     | P 13     | UART On/Off                |

### 4.2. Function Description

#### 4.2.1. AT command / BYPASS

This applies when BOT is in Server-role and Client-role. While the BOT is connected to counterpart device, if it's maintained at HIGH (Rising Edge), it operates in AT COMMAND mode, and if it's maintained at Low (Falling Edge), it operates in BYPASS mode. However, in the CONNECTED state, some of the operation commands and inquire commands below can be performed using AT COMMAND. For detailed information on each command, refer to the corresponding command protocol.

[ATZ.](#)

[AT & F](#)

[AT+DISCONNECT](#)

[AT+VER?](#)

[AT+INFO?](#)

[AT+FLOWCONTROL?](#)

[AT+MAJOR ?](#)

[A T+MINOR?](#)

[A T+IRSSI?](#)

[A T+MANUF?](#)

[A T+TXPWR?](#)

[A T+ADVDATA?](#)

[A T+CONNINTERVAL?](#)

[AT+NEGOCONN?](#)

[A T+AUTOSAVE?](#)

[A T+CONNLINK?](#)

[A T+SF?](#)

[A T+MLINK?](#)

[A T+PACKETINFO?](#)

[A T+INTPULLDOWN?](#)

#### 4.2.2. Connection Status

Keeps HIGH when Connected state to the counterpart device.

Keeps Low when Disconnected state to the counterpart device.

#### 4.2.3. Enter Sleep / Wakeup

HIGH Level (Rising Edge) is detected, it enters low-power mode, and when Low Level (Falling Edge) is detected in low-power mode, it Wakes up and the module automatically reboots.

*\*\* During low power operation, leakage current occurs due to the internal pull-down resistor of the BOT, and leakage current consumed can be changed by applying an appropriate pull-down resistance to the outside and [AT+INTPULLDOWN](#) command ( When **AT+INTPULLDOWN=OFF** is set, an external pull-down resistor must be applied. BOT may not operate properly if an external pull-down resistor is not applied.) If set to Sleep mode, all other input ports including UART On/Off must be kept Low, to enable use in optimal low-power mode.*

#### 4.2.4. Disconnect /Factory Reset

When HIGH Level (Rising Edge) is detected, if it's connected to the counterpart device, the connection is terminated.

The HIGH Level is maintained for more than 4 seconds, BOT will reset all settings to the factory default settings.

#### 4.2.5. UART On/Off

When HIGH Level (Rising Edge) is detected, UART is turned off to reduce standby current.

When Low level (Falling Edge) is detected, turn on the UART to enable normal

UART communication .

\*\* Even if the UART is turned off at HIGH Level, if data generated from the Remote device is detected while connected to the Remote device, the data is automatically transmitted to the HOST . At this time, if no data is generated from the Remote device for more than 1 second, the UART is automatically turned off again to reduce standby current.

\* \* *During low power operation, leakage current occurs due to the internal pull-down resistor of the BOT, and leakage current consumed can be changed by applying an appropriate pull-down resistance to the outside and [AT+INTPULLDOWN](#) command ( *When AT+INTPULLDOWN=OFF is set, an external pull-down resistor must be applied. BOT may not operate properly if an external pull-down resistor is not applied.*)*

## 5. BOT Action ROLE Description

BOT can be broadly divided into MASTER and SLAVE operation functions, and the representative operation method of each operation function is as follows and can be changed through the AT+ROLE command.

### 5.1. MASTER operation

MASTER operation is basically a mode in which SLAVE operation devices can be searched and connected.

When performing a scan command (AT+STARTSCAN), you can check the MAC address, RSSI, and device name of the counterpart device.

In particular, RSSI can only be checked during SCAN, and the received value is a relative value that varies depending on the operating environment, so deviations may occur during SCAN .

#### 5.1.1. Client-role

This operation starts after receiving the AT+ROLE=C command.

The Client-role only allows 1:1 device connection, and after connected to the counterpart device, BYPASS mode data communication is possible unless there is an additional setting.

#### 5.1.2. Multicon-role

This operation starts after receiving the AT+ROLE=M command.

Multicon-role allows 1:N device connection that can connect multiple SLAVES simultaneously, and data communication is possible in the form of AT commands or BYPASS depending on the BYPASS mode data communication settings.

### 5.2. SLAVE operation

SLAVE operation is basically a state what Advertising is performed so that SCAN can be performed on MASTER.

SLAVE cannot attempt to connect to the counterpart device, Depending on the role, it is divided into cases the connection to MASTER is allowed or not allowed.

During SCAN on MASTER devices, RSSI sensitivity can be increased or decreased depending on TX power setting of SLAVE.

#### 5.2.1. Server-role – Normal mode

This is an operation that starts after commands AT+ROLE=S and AT+ADVTYPE=N are set.

Advertising is performed in a [Normal format packet](#) structure, and when connection request is made from the MASTER, only 1:1 device connection is possible, and after a connection is made with the counterpart device, BYPASS mode data communication is possible unless there is an additional setting.

#### 5.2.2. Server-role - iBeacon mode

This is an operation that starts after AT+ROLE=S and AT+ADVTYPE=I commands are set.

Advertising is performed in a [iBeacon format packet](#) structure and when connection is requested from the MASTER, only 1:1 device connection is possible, and after a connection is made with the counterpart device, BYPASS mode data communication is possible unless there is an additional setting.

#### 5.2.3. Server-role –Beacon mode

This is an operation that starts after AT+ROLE=S and AT+ADVTYPE=B commands are set.

Advertising is performed in a [Chipsen Beacon format packet](#) structure that does not allow connection with MASTER. It is possible to change up to 26 bytes of user data.

## 6. Protocol Summary

For commands stored in memory, a protocol-defined response must be confirmed, and the power must be reset.

If the power is reset before the defined response is confirmed, some or all of the settings may be reset. There is no guarantee regarding the configuration operation after execution of a command that automatically reboots (resets).

### <Initial setting that can be changed via protocol Setting value>

| common             |        | Server-role               |                                                              |
|--------------------|--------|---------------------------|--------------------------------------------------------------|
| Setting item       | value  | Setting item              | value                                                        |
| Role               | Server | Advertising interval      | 500                                                          |
| Secure level       | 1      | Connection interval (MAX) | 15                                                           |
| Secure auto accept | OFF    | Connection interval (MIN) | 15                                                           |
| Auto save          | OFF    | TX power step             | 5 (version v1.5.0 and below)<br>8 (Version v1.5.0 or later ) |
| Packet mode        | OFF    | Advertising type          | Normal                                                       |
| Packet unit        | 20     | Manufacturer data(name)   | CHIPSEN                                                      |
| Role               | Server | MAJOR                     | 1111                                                         |
| Bonded information | X      | MINOR                     | 2222                                                         |
| Internal pull down | ON     | RSSI                      | C8                                                           |

| UART         |       | Client / Multicon-role |       |
|--------------|-------|------------------------|-------|
| Setting item | value | Setting item           | value |
| baudrate     | 9600  | Auto connection        | OFF   |
| flow control | OFF   | Scan filter name       | OFF   |
|              |       | Max Multi-link count   | 8     |

## 6.1. REQUEST (HOST → BOT) Protocol Summary

| Protocol                | Explanation                                                                                                                                                                                                                                                                                 | Setting value<br>Whether to save<br>memory |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| AT                      | +OK request                                                                                                                                                                                                                                                                                 | X                                          |
| ATZ                     | Request reset of BOT                                                                                                                                                                                                                                                                        | X                                          |
| AT&F                    | Resets the BOT's settings and changeable values to factory defaults.<br>Automatically resets after initialization.                                                                                                                                                                          | X                                          |
| AT+VER?                 | Request the version of firmware applied to the BOT                                                                                                                                                                                                                                          | X                                          |
| AT+INFO?                | BOT's Bluetooth address, Device Name, Role information and current<br>operation Request status<br>ex) 5C:F 2 :86:00:00:01,CHIPSEN, CLIENT [ CENTR AL ],STOPPED                                                                                                                              | X                                          |
| AT+UART=<baudrate>      | Used when changing UART Baudrate<br><baudrate>: <b>1200, 2400, 4800, 38400, 14400, 19200, 28800, 38400, 57600, 115200, 230400, 460800</b>                                                                                                                                                   | O                                          |
| AT+FLOWCONTROL=<enable> | Use when changing whether UART Flow Control is enabled or not.<br><enable>: <b>ON</b> or <b>OFF</b>                                                                                                                                                                                         | O                                          |
| AT+FLOWCONTROL?         | Request whether to use UART Flow Control                                                                                                                                                                                                                                                    | X                                          |
| AT+INTPULLDOWN=ON       | GPI signal setting Or, when using the Enter Sleep function, the module is<br>turned on for low power operation. Setting to enable internal pull-down<br>resistors                                                                                                                           | O                                          |
| AT+INTPULLDOWN=OFF      | Set to use an external pull-down resistor for low power operation. When this<br>command is set, the internal pull-down resistor of the module is disabled.<br><b>** To use this command, you must connect an external pull-down resistor.<br/>Otherwise, BoT may not function properly.</b> | O                                          |
| AT+INTPULLDOWN?         | GPI signal setting Or Enter Sleep function Use when you want to check the<br>activation status of the internal pull-down resistor during use.                                                                                                                                               | X                                          |
| AT+AUTOSAVE=<enable>    | Used when you want to set whether to automatically save the settings<br>command that is stored in memory immediately upon receiving it.<br>to 0 (disable), the changed value is saved when the AT+SAVE command is<br>received.<br><enable>: <b>0</b> (disable) or <b>1</b> (enable)         | O                                          |
| AT+AUTOSAVE?            | Use this when you want to check whether the auto-save function is set.                                                                                                                                                                                                                      | O                                          |
| AT+SAVE                 | Used when the user wants to save while the auto-save function is set to 0                                                                                                                                                                                                                   | X                                          |

|                        |                                                                                                                                                                                                                                                                                           |   |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                        | (disabled).                                                                                                                                                                                                                                                                               |   |
| AT+PACKETMODE=<enable> | When connected to a counterpart device, use PACKET MODE data transmission to transmit data received from the HOST via UART in packet units of a certain size.<br><enable>: <b>ON</b> or <b>OFF</b><br><b>** Packet mode transmission function does not work in case of Multicon-role.</b> | O |
| AT+PACKET UINTE=<unit> | Set the packet size to be transmitted when transmitting PACKET MODE data.<br><unit>: <b>1~128</b> (byte)                                                                                                                                                                                  | O |
| AT+PACKETINFO?         | Use this when you want to check the settings for the currently set PACKET mode data transmission method.                                                                                                                                                                                  | X |
| AT+ROLE=<role>         | the BOT 's pupil mode<br><role>: <b>C</b> (Client) or <b>S</b> (Server) Or <b>M</b> (Multicon)                                                                                                                                                                                            | O |
| AT+SECLV=<level>       | Set the security mode level that operates when connecting to a counterpart device in server mode.<br><level>: <b>1</b> or <b>2</b> or <b>4</b>                                                                                                                                            | O |
| AT+SECLV?              | Used to check the security mode settings when connecting to a counterpart device in server mode.                                                                                                                                                                                          | X |
| AT+ACCEPT              | Security mode set to AT+SECLV=4 When connecting to the counterpart device in a use state, if the user allows the request to allow the connection, use it.                                                                                                                                 | X |
| AT+REJECT              | Security mode set to AT+SECLV=4 When the user rejects the connection request to allow the connection when connecting to the counterpart device in the use state                                                                                                                           | X |
| AT+AUTOBOND=<enable>   | Security mode set to AT+SECLV=4 Setting whether to automatically allow a request to allow a connection when connecting to the counterpart device in the use state<br><enable>: <b>ON</b> or <b>OFF</b>                                                                                    | O |
| AT+AUTOBOND?           | Security mode set to AT+SECLV=4 Used when checking the automatic acceptance setting for a request to allow connection when connecting to a counterpart device in the use state                                                                                                            | X |
| AT+DELBOND             | Since the connected device information is stored in BOT in the state of AT+SECLV=2, AT+SECLV=4, Use when deleting stored device information                                                                                                                                               | X |
| AT+BONDINFO?           | Since the connected device information is stored in BOT in the state of AT+SECLV=2, AT+SECLV=4, Use this if you want to check the saved device information.                                                                                                                               | X |
| AT+MAJOR=<value>       | When operating in the Server-role and the advertising type is in iBeacon                                                                                                                                                                                                                  | O |

|                    |                                                                                                                                                                                                                                                                                                                        |   |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                    | mode, if the Major setting value of BOT is changed in HOST,<br><value>: 4 digits in hexadecimal string format (ex. 1111, F1BC, etc.)                                                                                                                                                                                   |   |
| AT+MAJOR?          | When operating in the Server-role, the advertising structure Use this when you want to know the Major value set when operating in iBeacon mode.                                                                                                                                                                        | X |
| AT+MINOR=<value>   | When operating in the Server-role and the advertising type is in iBeacon mode, if the Minor setting value of BOT is changed on HOST,<br><value>: 4 digits in hexadecimal string format (ex. 2222, 10FE, etc.)                                                                                                          | O |
| AT+MINOR?          | When acting as a Server-role, advertising type is Use this when you want to know the Minor value set when operating in iBeacon mode.                                                                                                                                                                                   | X |
| AT+IRSSI=<value>   | When acting as a Server-role, advertising type is When changing the RSSI setting value of BOT from HOST in iBeacon mode<br><value> 2 digits in hexadecimal string format (e.g. C3)                                                                                                                                     | O |
| AT+IRSSI?          | When acting as a Server-role, advertising type is Use this when you want to know the RSSI value set when operating in iBeacon mode .                                                                                                                                                                                   |   |
| AT+ADVTYPE=<type>  | the advertising type while operating as a Server-role.<br><type>: <b>N</b> (CHIPSEN format advertising ) or <b>I</b> (iBeacon format advertising) or <b>B</b> (non-connectable Beacon format)                                                                                                                          | O |
| AT+MANUF=<name>    | Used when changing the Manufacturer (Device) Name included in the advertising type in normal mode when operating in the Server-role .<br>If you change the Manufacturer using this command in the Advertising state, it will be immediately reflected in the Advertising Data . )<br><name>: <b>Up to 8 characters</b> | O |
| AT+MANUF?          | When acting as a Server-role, request the Manufacturer ( Device) Name included when the advertising type is in normal mode.                                                                                                                                                                                            | X |
| AT+TXPWR=<step>    | Used when adjusting the TX power level of BOT, and the power level is automatically applied after using this command.<br><step>: <b>0~ 8</b> ( -40 ~ +8 dBm)                                                                                                                                                           | O |
| AT+TXPWR?          | Request the set TX power level value of BOT                                                                                                                                                                                                                                                                            | X |
| AT+ADVDATA=<data>  | Advertising user data value included when the advertising type is in normal mode while operating as a Server-role.<br>The changed value can be confirmed when searching for BOT on the counterpart device. This value is reset when power is re-applied after setting.<br><data>: <b>Up to 13 characters</b>           | X |
| AT+ADVDATA?        | When acting as a Server-role, request to know the data set as Advertising user data included when the advertising type is in normal mode                                                                                                                                                                               | X |
| AT+ADVDATA2=<data> | Advertising user data value included when the advertising type is in normal                                                                                                                                                                                                                                            | X |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                             | <p>mode while operating as a Server-role.</p> <p>The changed value can be confirmed when searching for BOT on the counterpart device. This value is reset when power is re-applied after setting.</p> <p>&lt;data&gt;: A hexadecimal string of up to 13 bytes</p>                                                                                                                                                                                                                                             |   |
| AT+ADVDATA2:                | <p>When operating as a Server-role and the advertising type is in normal mode, use this function to check the included advertising user data in hexadecimal string format.</p>                                                                                                                                                                                                                                                                                                                                | X |
| AT+BEACON=<data>            | <p>BOT operates in Beacon server mode with Server-role as the advertising type, it performs advertising including &lt;data&gt;.</p> <p>&lt;data&gt;: A hexadecimal string corresponding to up to 26- byte data.</p>                                                                                                                                                                                                                                                                                           | O |
| AT+BEACON?                  | <p>BOT checks the user settings data included when the advertising type operates in Beacon server mode with a Server-role. Responds in hexadecimal string format for the set value.</p>                                                                                                                                                                                                                                                                                                                       | X |
| AT+ADVINTERVAL=<interval>   | <p>Used when you want to change the Advertising Interval when operating in a Server-role.</p> <p>&lt;interval&gt;: <b>20~ 2560</b> (ms)</p>                                                                                                                                                                                                                                                                                                                                                                   | O |
| AT+ADVINTERVAL?             | <p>Request when you want to know the Advertising Interval value when operating as a Server-role</p>                                                                                                                                                                                                                                                                                                                                                                                                           | X |
| AT+CONNINTERVAL=<max>       | <p>Used when you want to change the Connection Interval value when connecting to a counterpart device while operating in a Server-role.</p> <p>When a maximum value is entered, the minimum value is set to half of the maximum value or at least 8 (ms).</p> <p>When connecting to a counterpart device, the actual operating value is determined based on the setting value.</p> <p>&lt;max&gt;: <b>8 ~ 2000</b> (ms)</p>                                                                                   | O |
| AT+CONNINTERVAL=<min>,<max> | <p>Used when you want to change the Connection Interval value when connecting to a counterpart device while operating in a Server-role.</p> <p>You can set the minimum and maximum values separately.</p> <p>When connecting to a counterpart device, the actual operating value is determined based on the setting value.</p> <p>&lt;min&gt;: <b>8 ~ 2000</b> (ms)</p> <p>&lt;max&gt;: <b>8 ~ 2000</b> (ms)</p> <p>* * The &lt;max&gt; setting must be greater than or equal to the &lt;min&gt; setting.</p> | O |
| AT+CONNINTERVAL?            | <p>the set Connection Interval ( range) value.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | X |
| AT+STL=<enable>             | <p>If you want to artificially delay the time it takes to recognize an abnormal connection termination with the counterpart device as a Server-role</p>                                                                                                                                                                                                                                                                                                                                                       | X |

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                                          | <p>&lt;enable&gt; : <b>ON</b> or <b>OFF</b></p> <p><b>** The time to recognize an abnormal connection termination is automatically optimized, so it is not recommended to set this command arbitrarily.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
| AT+STL?                                  | A command to check whether the user has set an artificial delay setting for the time to recognize an abnormal connection termination with the counterpart device as a Server-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | X |
| AT+ADVOFF                                | Use this when you want to stop advertising while performing advertising with a Server-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X |
| AT+ADVON                                 | Use this when you want to restart advertising while not connected to a Remote device and not advertising with the Server-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | X |
| AT+DISCONNECT                            | <p>If you want to terminate the connection while BOT is connected to the counterpart device,</p> <p>However, this command can be operated in both Client-role and Server-role, and only operates in AT command mode with AT command/Bypass G PI kept HIGH .</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     | X |
| AT+NEGOCONN?                             | <p>the connected device and the actual Connection Interval value determined.</p> <p>It only works when AT command/Bypass GPIO is set to AT command while connected to the counterpart device.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | X |
| AT+STARTSCAN                             | Used when searching for peripheral devices when the device operates as Client role and Multicon role                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X |
| AT+STARTSCANM                            | Use this when you want to include Advertising User data of the counterpart device in the search results when searching for peripheral devices with the Client-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | X |
| AT+STARTSCAN=<filter_item>,<filter_data> | <p>When the device operates in the Client-role and Multicon-role, use the Flexible Scan Filter to search for peripheral devices that meet the conditions .</p> <p>&lt;filter_item&gt;</p> <p>A: Output after filtering based on the counterpart device MAC address ( <b>A</b> dress)</p> <p>N : Output after filtering based on the relative device name ( <b>N</b> ame)</p> <p>R : Output after filtering based on the relative device receiving sensitivity ( <b>R</b>ssi)</p> <p>&lt;filter_data&gt;</p> <p>filter_item A : 6- c character</p> <p>filter_item N : Up to 8 characters</p> <p>filter_item R: 3-character including '-'</p> <p>Operates only if AT+SF command is not set to OFF</p> | X |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                                           | ** Function works only on firmware version V1.5.3 or higher                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
| AT+STARTSCANM=<filter_item>,<filter_data> | <p>When the device operates in the Client-role and Multicon-role, use the Flexible Scan Filter to search for peripheral devices that meet the conditions .</p> <p>&lt;filter_item&gt;</p> <p>A: Output after filtering based on the counterpart device MAC address ( <b>A</b> dress)</p> <p>N : Output after filtering based on the relative device name ( <b>N</b>ame)</p> <p>R : Output after filtering based on the relative device receiving sensitivity ( <b>R</b>ssi)</p> <p>M : Output after filtering based on the user data of the commercial device ( <b>M</b>anufacturer data)</p> <p>&lt;filter_data&gt;</p> <p>filter_item A : 6- c character</p> <p>filter_item N : Up to 8 characters</p> <p>filter_item R: 3-character including '-'</p> <p>filter_item M : max 8--character</p> <p>Operates only if AT+SF command is not set to OFF</p> <p>** Function works only on firmware version V1.5.3 or higher</p> | X |
| AT+STOPSCAN                               | Used when you want to end the search while searching for peripheral devices with Client-role and Multicon-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | X |
| AT+SF= ON, <filter_name>                  | <p>to search for peripheral devices with the Client-role and Multicon-role, but only for peripheral devices that contain the name specified in the advertising data .</p> <p>The set name value and the name of the searched peripheral device If the length specified from the first letter is the same, it is considered the desired device.</p> <p>&lt;filter_name&gt;: Up to <b>8 - character device names</b> to search .</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | O |
| AT+SF=OFF                                 | When searching for peripheral devices with the Client-role and Multicon-role, use this function to turn off the function of searching only for specific device names and search for all Server devices .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
| AT+SF?                                    | Use this when you want to check the device name set to search only for specific device names when searching for peripheral devices with Client-role and Multicon-role.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | X |
| AT+CONMAC=<mac>                           | <p>Use when you want to connect to a specific device with the Client-role and Multicon-role.</p> <p>&lt;m ac&gt;: 12- digit address of the device you want to connect to</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X |
| AT+AUTOCON=<enable>                       | when you want to automatically connect to a recently connected device in the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                                       | Client-role when power is applied, or to a preset device in the Multicon-role.<br><enable> : <b>ON</b> or <b>OFF</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |
| AT+AUTOCON?                           | to connect to the recently connected device in the Client-role or to automatically connect to a preset device in the Multicon-role when power is applied.                                                                                                                                                                                                                                                                                                                                                                                                              | X |
| AT+CONNECT                            | Used when a user wants to connect a recently connected device while not connected to the counterpart device in the Client-role.                                                                                                                                                                                                                                                                                                                                                                                                                                        | X |
| AT+MLINK=<max_link>                   | Use this when you want to change the maximum number of multi-connections of the counterpart device when operating in the Multicon-role.<br><max_link>: Set within the range of <b>2 to 8</b> . The number of devices that can be connected is equal to the set value.                                                                                                                                                                                                                                                                                                  | O |
| AT+MLINK?                             | Use this when you want to check the maximum number of connections to the counterpart device set when operating in the Multicon-role.                                                                                                                                                                                                                                                                                                                                                                                                                                   | X |
| AT+MCONNLINK?                         | Check the number of currently connected counterpart devices when operating in the Multicon-role                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | X |
| AT+MCONNINFO=<idx>                    | Check the device M AC corresponding to the connected <idx> when operating in the Multicon-role .                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | X |
| AT+MCONNECT                           | When operating in the Multicon-role, the device name is set to AT+SF=<name> Finds identical peripherals and automatically connects up to the number of devices set by the AT+MLINK=<value> command.<br>When a single command is received, an automatic connection attempt is made, and after 60 seconds, the automatic connection operation stops, and the user must attempt a separate connection.                                                                                                                                                                    | X |
| AT+MGROUP=<value>,<filter_name>       | Multicon-role automatically finds and connects the same peripheral devices specified by <name> to the number of devices specified by <value> .<br>users to connect desired devices to a group and communicate data. If the number of counterpart devices corresponding to <value> is not connected, If the connection is lost, <value> Specified Continue searching for connections until the number of devices is reached.<br><value>: <value>: Set within the range of <b>2~8</b><br><name>: Up to <b>8-character characters</b> . The name of the device to search. | X |
| AT+SETSLOT=<slot_no>,<address> ,<tag> | BOT operates in a Multicon-role, it is used to store information on the counterpart device in the internal storage slot of BoT in order to specify only the specific device that the user wants to connect.<br><slot_no> : <b>1~8</b> , the index of the slot that the user wants to save<br><address> : <b>12-digit address</b> . The relative device address to be stored in the slot index that the user wants to store.                                                                                                                                            | O |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                        | <b>&lt;tag&gt;: Up to 8 characters</b> . For the convenience of the user, the tag to be saved along with the information on the counterpart device at the slot index that the user wants to save . Can be omitted .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |
| AT+GETSLOT=<slot_no>   | BOT operates in the Multicon-role, if the user specifies and saves a specific device to be connected, use this function to check the saved information of the slot saved by the user.<br><br><slot_no>: <b>0~8</b> , the slot number that the user wants to check . If it is 0, the information stored in all slots is printed. Otherwise, only the storage information of the specified slot is output.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | X |
| AT+DELSLOT=<slot_no>   | BOT operates in a Multicon-role, use this function to delete the saved information of a slot saved by the user.<br><br><slot_no>: <b>0~8</b> , the slot number that the user wants to delete . If it is 0, all information stored in slot is deleted. Otherwise, only the storage information of the specified slot is deleted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | X |
| AT+UGROUP              | BOT operates in a Multicon-role, use this when you want to allow it to attempt to connect only to multiple devices that the user has specified and stored in the slot ( AT+SETGROUP command).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | X |
| AT+MDISC=<idx>         | Used when you want to disconnect from a specific connected counterpart device while operating in the Multicon-role .<br><br><idx>: <b>00 ~ 08</b> , <b>00</b> is reached, disconnect all connected devices. If not <b>00</b> , <b>only devices with the specified index</b> are disconnected.<br><br>* *Group configuration In case of multiple connection commands ( AT+MGROUP, AT+UGROUP), even if the connection is disconnected through this command, it is automatically reconnected.                                                                                                                                                                                                                                                                                                                                                                    | X |
| AT+MDATA=<idx>,<data>  | Used when you want to transmit data to the counterpart device connected with the Multicon-role.<br><br><idx>: <b>00 ~ 08</b> . If <b>00</b> , send <data> in MULTIDROP mode to all connected devices. Send N ODEDROP <data> to the specified device only if not <b>00</b><br><data>: up to <b>100- c character</b><br><br>* * Data transmission in the Multicon-role is done using the AT command structure, so the end of the command is recognized through carriage return (0x0D), and the input data is recognized and transmitted as is. If the data to be transmitted includes data related to the end of a string (0x00, 0x0A, 0x0D), data loss may occur . In order to transmit without missing data, the user should consider a workaround such as changing data or use the AT+MDATA2 command to transmit the data as a hexadecimal string structure. | X |
| AT+MDATA2=<idx>,<data> | Used when you want to transmit data to the counterpart device connected with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | X |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                     | <p>the Multicon-role.</p> <p>&lt;idx&gt;: <b>00 ~ 08</b>. If <b>00</b>, send &lt;data&gt; in MULTIDROP mode to all connected devices. Send N ODEDROP &lt;data&gt; to the specified device only if not <b>00</b></p> <p>&lt;data&gt;: A hexadecimal string of up to 100 <b>bytes</b>.</p> <p><b>** When using this command, data can be transmitted regardless of the data related to the string ( 0x00, 0x0A, 0x0D), and the hexadecimal string generated by the HOST is automatically converted by the BOT to hexadecimal up to 100 bytes and transmitted to the counterpart device.</b></p> |   |
| AT+MBYPASS=<enable> | <p>this when you want to set up bypass type data to be transmitted to all connected devices as MULTIDROP .</p> <p>&lt;enable&gt; : <b>ON</b> or <b>OFF</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                | O |
| AT+MBYPASS?         | Use this when you want to check whether data transmission and reception with the counterpart device connected to the Multicon-role is set to bypass .                                                                                                                                                                                                                                                                                                                                                                                                                                         | X |

## 6.2. NOTIFY (BOT → HOST) Protocol Summary

| Protocol                       | Explanation                                                                          | note                                        |
|--------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------|
| +READY                         | Powered and operational                                                              | Normally within 100ms after power-on        |
| +A DVERTISING                  | the Server-role can search and connect to the counterpart device.                    |                                             |
| +CLIENT                        | After powering on as a Client-role, waiting for REQUEST                              |                                             |
| +MULTI                         | After powering on with Multicon-role, waiting for REQUEST                            |                                             |
| +SCANNING                      | Client or start searching for the counterpart device with Multicon-role              |                                             |
| +STOPPED                       | Client or the search for the counterpart device with Multicon-role is stopped.       |                                             |
| +CONNECTED [xx:xx:xx:xx:xx:xx] | Connected to the counterpart device as a Server or Client-role                       | [xx:xx:xx:xx:xx:xx]<br>: Remote MAC Address |
| +DISCONNECTED                  | When the connection with the counterpart device is lost as a Server or Client-role . |                                             |

|                            |                                                                                                                                                                                                                                                             |                                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| +FAIL                      | Attempted to connect to the counterpart device as a client, but connection failed                                                                                                                                                                           |                                                                                                                       |
| +MCONNECT                  | Use this when trying to find and connect to a specific device with a predefined name for 60 seconds only with the Multicon-role.                                                                                                                            | Specific device : Set via AT+SF command                                                                               |
| +M GROUP                   | If you want to communicate by connecting and maintaining connections with any number of devices including any device name you want, using the Multicon-role.                                                                                                | Related commands :<br>AT+MGROUP=<max_link>,<name>                                                                     |
| +UGROUP                    | the user wants to communicate with multiple devices that have been previously saved using the AT+SETGROUP command and maintain the connection, as a multi -function role,                                                                                   | Related commands:<br>AT+UGROUP                                                                                        |
| +PASSKEY[xxxxxx]           | When connecting to a counterpart device as a Server or Client-role, a security key verification request is made when connecting at security connection level 4.                                                                                             | xxxxx<br>:6-digit security key                                                                                        |
| +CONNnn[xx:xx:xx:xx:xx:xx] | Connected to the counterpart device with Multicon-role .<br>Since it supports multiple connections, you can find out the index of the counterpart device through nn.                                                                                        | nn: Index determined when BOT and the counterpart device are connected<br>[xx:xx:xx:xx:xx:xx]<br>: Remote MAC Address |
| +DISCnn                    | If the connection with the counterpart device is lost with Multicon-role<br>Since it supports multiple connections, you can know the index of the counterpart device through nn, and if nn is 00, it notifies that all connections are disconnected.        | nn: Index determined when BOT and the counterpart device are connected                                                |
| +DATAAnn[<data>]           | Notifies the receiving of data from the counterpart device with the Multicon-role .<br>When a connection is established with the counterpart device, the connection information (+CONN<index>=<Remote address>) is included in <index> and nn are the same. | nn: index of the counterpart device                                                                                   |

### 6.3. General RESPONSE (BOT → HOST) Protocol Summary

| Protocol | Explanation                                                                                                                                 | note |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------|------|
| +OK      | If REQUEST is performed normally                                                                                                            |      |
| +ERROR   | If REQUEST is not performed normally<br>* REQUEST format, parameter error or REQUEST to<br>Occurs when the status of the BOT is not correct |      |

## 7. REQUEST Protocol Detail

### 7.1. AT

|                    |                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------|
| Operation          | Request +OK from HOST to BOT                                                                |
| Commandable state  | Not connected to Remote device                                                              |
| Response           | +OK or +ERROR                                                                               |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                          |
| Explanation        | If the REQUEST is received normally and the command is performed, the response is " +OK " . |
| Examples of Use    | (HOST → BOT) : <b>AT</b><br>(BOT → HOST) : +OK                                              |

### 7.2. ATZ

|                    |                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Request reset from HOST to BOT                                                                                                                                                                                                                                                                                                                                        |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>: Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: : Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                         |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                    |
| Explanation        | If the REQUEST is received normally and the command is performed, it will automatically reset after 1 second after the " +OK " response.<br>* It is automatically reset, additional settings that occur after performing the command may not be saved.                                                                                                                |
| Examples of        | (HOST → BOT) : <b>ATZ</b>                                                                                                                                                                                                                                                                                                                                             |

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use | (BOT → HOST) : +OK<br>----after 1sec----<br>(BOT → HOST) : +READY<br>➔Performing a reset, you can confirm that it has been reset with a +READY response. |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.3. AT&F

|                    |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When factory resetting the changeable values of BOT on HOST                                                                                                                                                                                                                                                                                                       |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | +OK                                                                                                                                                                                                                                                                                                                                                               |
| Response completed | 30ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                |
| Explanation        | If the REQUEST is received normally and the command is performed, " +OK " is responded and the setting values are initialized and reset after 1 second.<br>* It is automatically reset, additional settings that occur after performing the command may not be saved.                                                                                             |

|                          | <table><tr><th colspan="2">common</th></tr><tr><th>Setting item</th><th>value</th></tr><tr><td>Role</td><td>Server</td></tr><tr><td>Secure level</td><td>1</td></tr><tr><td>Secure auto accept</td><td>OFF</td></tr><tr><td>Auto save</td><td>OFF</td></tr><tr><td>Packet mode</td><td>OFF</td></tr><tr><td>Packet unit</td><td>20</td></tr><tr><td>Role</td><td>Server</td></tr><tr><td>Bonded information</td><td></td></tr><tr><td>Internal pull down</td><td>ON</td></tr></table> <table><tr><th colspan="2">Server-role</th></tr><tr><th>Setting item</th><th>value</th></tr><tr><td>Advertising interval</td><td>500</td></tr><tr><td>Connection interval(MAX)</td><td>15</td></tr><tr><td>Connection interval(MIN)</td><td>15</td></tr><tr><td>TX power step</td><td>5 ( version v1.5.0 and below)<br/>8 ( Version v1.5.0 or later)</td></tr><tr><td>Advertising type</td><td>Normal</td></tr><tr><td>Manufacturer data(name)</td><td>CHIPSEN</td></tr><tr><td>MAJOR</td><td>1111</td></tr><tr><td>MINOR</td><td>2222</td></tr><tr><td>RSSI</td><td>C8</td></tr></table> <table><tr><th colspan="2">UART</th></tr><tr><th>Setting item</th><th>value</th></tr><tr><td>baudrate</td><td>9600</td></tr><tr><td>flow control</td><td>OFF</td></tr></table> <table><tr><th colspan="2">Client / Multicon-role</th></tr><tr><th>Setting item</th><th>value</th></tr><tr><td>Auto connection</td><td>OFF</td></tr><tr><td>Scan filter name</td><td>OFF</td></tr><tr><td>Max Multi-link count</td><td>8</td></tr></table> | common |  | Setting item | value | Role | Server | Secure level | 1 | Secure auto accept | OFF | Auto save | OFF | Packet mode | OFF | Packet unit | 20 | Role | Server | Bonded information |  | Internal pull down | ON | Server-role |  | Setting item | value | Advertising interval | 500 | Connection interval(MAX) | 15 | Connection interval(MIN) | 15 | TX power step | 5 ( version v1.5.0 and below)<br>8 ( Version v1.5.0 or later) | Advertising type | Normal | Manufacturer data(name) | CHIPSEN | MAJOR | 1111 | MINOR | 2222 | RSSI | C8 | UART |  | Setting item | value | baudrate | 9600 | flow control | OFF | Client / Multicon-role |  | Setting item | value | Auto connection | OFF | Scan filter name | OFF | Max Multi-link count | 8 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--|--------------|-------|------|--------|--------------|---|--------------------|-----|-----------|-----|-------------|-----|-------------|----|------|--------|--------------------|--|--------------------|----|-------------|--|--------------|-------|----------------------|-----|--------------------------|----|--------------------------|----|---------------|---------------------------------------------------------------|------------------|--------|-------------------------|---------|-------|------|-------|------|------|----|------|--|--------------|-------|----------|------|--------------|-----|------------------------|--|--------------|-------|-----------------|-----|------------------|-----|----------------------|---|
| common                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Setting item             | value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Role                     | Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Secure level             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Secure auto accept       | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Auto save                | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Packet mode              | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Packet unit              | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Role                     | Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Bonded information       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Internal pull down       | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Server-role              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Setting item             | value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Advertising interval     | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Connection interval(MAX) | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Connection interval(MIN) | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| TX power step            | 5 ( version v1.5.0 and below)<br>8 ( Version v1.5.0 or later)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Advertising type         | Normal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Manufacturer data(name)  | CHIPSEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| MAJOR                    | 1111                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| MINOR                    | 2222                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| RSSI                     | C8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| UART                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Setting item             | value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| baudrate                 | 9600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| flow control             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Client / Multicon-role   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Setting item             | value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Auto connection          | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Scan filter name         | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Max Multi-link count     | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |
| Examples of Use          | <p>(HOST → BOT) : <b>AT&amp;F</b></p> <p>(BOT → HOST) : +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST) : +READY</p> <p>(BOT → HOST) : +ADVERTISING</p> <p>➔Perform a reset after initializing the changeable setting values stored in memory to the factory default state.</p> <p>You can confirm that it has been reset by the +READY and +ADVERTISING messages.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |  |              |       |      |        |              |   |                    |     |           |     |             |     |             |    |      |        |                    |  |                    |    |             |  |              |       |                      |     |                          |    |                          |    |               |                                                               |                  |        |                         |         |       |      |       |      |      |    |      |  |              |       |          |      |              |     |                        |  |              |       |                 |     |                  |     |                      |   |

#### 7.4. AT+VER?

|                    |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to know the firmware version of BOT                                                                                                                                                                                                                                                                                                                   |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | Version information ( v[major].[minor].[release])                                                                                                                                                                                                                                                                                                                 |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                |
| Explanation        | If REQUEST is received normally and the command is performed, the firmware version is displayed.                                                                                                                                                                                                                                                                  |
| Examples of Use    | (HOST → BOT) : <b>AT+VER?</b><br>(BOT → HOST) : v1.0.0<br>➔ You can get the information that the BOT firmware version is v1.0.0 from the HOST device.                                                                                                                                                                                                             |

#### 7.5. AT+INFO?

|                   |                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT's Address and Device Name, Role Status I know I want to case                                                                                                                                                                                                                                                                                                  |
| Commandable state | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response          | BOT Address, Device Name, Mode[Role] ,State                                                                                                                                                                                                                                                                                                                       |

|                    |                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response completed | 60 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                   |
| Explanation        | Normally REQUEST Accept Command If it was done Address, Respond with DeviceName and status, etc.                                                                                                                                                       |
| Examples of Use    | (HOST → BOT) : <b>AT+INFO?</b><br>(BOT → HOST) : 5C:F2:86:40:00:01,CHIPSEN,CLIENT[CENTRAL],STOPPED<br>➔ Search for the address of the BOT on the HOST device, the device name is 'CHIPSEN', and the Central Role. You can find out status information. |

## 7.6. AT+UART=<baudrate>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT's When changing the UART communication speed                                                                                                                                                                                                                                                                                                                                                                             |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                               |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                           |
| Explanation        | If the REQUEST is received normally and the command is performed, it responds with " +OK " and automatically resets after 1 second of changing the communication speed. Otherwise, it responds with " +ERROR " .<br><baudrate>: 2400, 4800, 38400, 14400, 28800, 19200, 38400, 57600, 115200, 230400, 460800 .<br>* It is automatically reset, additional settings that occur after performing the command may not be saved. |
| Examples of Use    | (HOST → BOT): AT+UART=38400<br>(BOT → HOST) : +OK<br>----after 1sec----<br>(BOT → HOST) : +READY<br>➔READY is received normally and the UART settings of the HOST device must be set identically for subsequent communication.                                                                                                                                                                                               |

### 7.7. AT+FLOWCONTROL=<enable>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When changing whether the flow control in BOT's UART communication                                                                                                                                                                                                                                                                                                                                                   |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                       |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                   |
| Explanation        | <p>Reply "+OK" when BOT successfully received a request and performed AT command and Reset 1 seconds after changing the flow control status.</p> <p>If not, answer "+ERROR".</p> <p>&lt;enable&gt; : <b>ON</b> or <b>OFF</b></p> <p>* It is automatically reset, additional settings made after performing the command may not be saved.</p> <p>&lt;warning&gt; When set to ON, hardware design must be applied.</p> |
| Examples of Use    | <p>(HOST → BOT): <b>AT+FLOWCONTROL=ON</b></p> <p>(BOT → HOST) : +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST) : +READY</p> <p>➔READY is received normally and the UART settings of the HOST device must be set identically for subsequent communication.</p>                                                                                                                                                     |

### 7.8. AT+FLOWCONTROL?

|                   |                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | When you want to know whether the flow control is used in BOT's UART communication                                                                                                                                                                                                                                                                                                               |
| Commandable state | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>: Connected to a Remote device without Bypass mode set</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response          | Check whether flow control is used ( ON or OFF)                                                                                                                                                                                                                                                                                                                                                  |

|                    |                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------|
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, reply whether to use the flow control in ON/OFF format. |
| Examples of Use    | (HOST → BOT): <b>AT+FLOWCONTROL?</b><br>(BOT → HOST) : ON                                                                 |

### 7.9. AT+INTPULLDOWN=ON

|                    |                                                                                                                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | To use the low energy mode of BOT, set the internal pull-down resistor of the module to active when using UART On/Off, Enter Sleep / Wakeup GPIO.                                                                                                                        |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                           |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                            |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                       |
| Explanation        | If the REQUEST is received normally and the command is performed, an internal pull-down resistor is used, and when the UART On/Off and Enter Sleep/Wakeup input signals occur, a leakage current occurs according to the internal resistance ( 300~400uA based on 3.3V ) |
| Examples of Use    | (HOST→BOT) : <b>AT+INTPULLDOWN=ON</b><br>(BOT→HOST) : +OK<br>----after 1sec----<br>(BOT→HOST) : +READY<br>➔ It's Default ON status. After receiving the command, the system reboots after 1sec and the settings are applied.                                             |

### 7.10. AT+INTPULLDOWN=OFF

|                   |                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | To use BOT 's low energy mode, disable the internal pull-down resistor of the module when using UART On/Off, Enter Sleep / Wakeup GPIO. |
| Commandable state | Not connected to Remote device                                                                                                          |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                             |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, the internal pull-down resistor is set to not used, and when the UART On/Off and Enter Sleep/Wakeup input signals occur, leakage current occurs depending on the external pull-down resistor value.                                                                                                                                                     |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+INTPULLDOWN=OFF</b></p> <p>(BOT → HOST) : +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST) : +READY</p> <p>➔ After receiving the command, the system reboots after 1sec and the settings are applied.</p> <p>&lt;warning&gt; When set to OFF, an external pull-down resistor must be applied to the UART ON/OFF GPIO and Enter Sleep/Wake-up GPIO. Otherwise, BOT may not function properly.</p> |

### 7.11.AT+INTPULLDOWN?

|                    |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | To use BOT 's low energy mode, check the setting status of the internal pull-down resistor inside the module when using UART On/Off, Enter Sleep / Wakeup GPIO.                                                                                                                                                                                                                                  |
| Commandable state  | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>: Connected to a Remote device without Bypass mode set</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                    |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                               |
| Explanation        | If the REQUEST is received normally and the command is performed, respond as to whether internal pull-down resistor is used.                                                                                                                                                                                                                                                                     |

|                 |                                                                                                                  |
|-----------------|------------------------------------------------------------------------------------------------------------------|
| Examples of Use | (HOST → BOT): <b>AT+INTPULLDOWN?</b><br>(BOT → HOST) : ON<br>➔ Internal pull-down resistor is currently enabled. |
|-----------------|------------------------------------------------------------------------------------------------------------------|

### 7.12.AT+AUTOSAVE=<enable>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Use this to set whether to store individual commands in memory immediately after receiving them for the setting values stored in memory among the REQUEST received by BOT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, " +OK " is responded.</p> <p>Otherwise, it responds with " +ERROR " . Automatically resets after 1 second.</p> <p>&lt;enable&gt; : <b>0</b> (disable) or <b>1</b> (enable)</p> <p>* It is automatically reset, additional settings that occur after performing the command may not be saved.</p> <p>* If the auto save function is set to 0 (disable), subsequent setup commands will not be automatically saved to memory. Except for ATZ, AT&amp;F, and AT+AUTOSAVE, all other commands will be automatically reset when the user performs AT+SAVE and the changed values will be applied.</p> |
| Examples of Use    | (HOST → BOT) : <b>AT+AUTOSAVE=1</b><br>(BOT → HOST) : +OK<br>----after 1sec----<br>(BOT → HOST) : +READY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 7.13.AT+AUTOSAVE?

|           |                                                                              |
|-----------|------------------------------------------------------------------------------|
| Operation | Used when BOT checks whether the current auto-save function is in operation. |
|-----------|------------------------------------------------------------------------------|

|                    |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | 1 or 0                                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                |
| Explanation        | If the REQUEST is received normally and the command is performed, response whether to auto-save operation in 1(enabled) or 0(disabled) format.                                                                                                                                                                                                                    |
| Examples of Use    | (HOST → BOT) : <b>AT+AUTOSAVE?</b><br>(BOT → HOST) : 1<br>➔ Notification that auto-save function is on                                                                                                                                                                                                                                                            |

## 7.14. AT+SAVE

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If the BOT is not currently using the Auto save function, use this if the user wants to save all changed values while the BOT is powered on.                                                                                                                                                                                                                                                                                   |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                 |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Response completed | 50ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                             |
| Explanation        | If the REQUEST is received normally and the command is performed, +OK is responded, otherwise +ERROR is responded. Automatically resets after 1 second.<br><br>* It is automatically reset, additional settings that occur after performing the command may not be saved.<br>* If the auto save function is set to 0 (disable), subsequent setup commands will not be automatically saved to memory. Except for ATZ, AT&F, and |

|                 |                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | AT+AUTOSAVE, all other commands will be automatically reset, and the changed values will be applied when the user performs AT+SAVE .                                                                                         |
| Examples of Use | <p>(HOST→BOT) : <b>AT+SAVE</b></p> <p>(BOT→HOST) : +OK</p> <p>----after 1sec----</p> <p>(BOT→HOST) : +READY</p> <p>➔All setting values that received the REQUEST command previously stored in memory are stored in bulk.</p> |

### 7.15.AT+PACKETMODE=<enable>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When BOT wants to transmit data in fixed units while connected to the counterpart device, it is used and data transmission proceeds in PACKET mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, it is possible to set or de-set the AT+PACKETUNIT command to collect and transmit data up to the set size .</p> <p>PACKET mode, the data transmission cycle must be maintained at 15 ms or longer.</p> <p>&lt;enable&gt; <b>ON</b> or <b>OFF</b></p>                                                                                                                                                                                                                                                                              |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+PACKETMODE=ON</b></p> <p>(BOT → HOST) : +OK</p> <p>➔When set to ON, BOT operates in PACKET mode when transmitting data to the counterpart device, and data is transmitted only when the data size set through the AT+PACKETUNIT command is received. If a value smaller than the data set via the AT+PACKETUNIT command is entered, the data is not transmitted. Therefore, data must be transmitted in multiples of the PACKET UNIT .</p> <p>(TIP: If there is not enough data, it can be transmitted to fit the size of the PACKET UNIT, including NULL data.)</p> <p>or</p> |

|  |                                                                                                                                                                                                                                                                                                                                                                                      |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>(HOST → BOT) : <b>AT+PACKETMODE=OFF</b></p> <p>(BOT → HOST) : +OK</p> <p>➔ When set to OFF, data is transmitted in BYPASS mode, and the size or delay of data may be different depending on the wireless environment in which it is transmitted .</p> <p>&lt;warning&gt; Even if packet mode is set to ON, packet mode transmission function does not work in Multicon-role .</p> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.16.AT+PACKETUNIT=<unit>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | It sets the data size to be transmitted when BOT operates in PACKET mode while connected to the counterpart device.                                                                                                                                                                                                                                                                                                                                         |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                   |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, and after that, when data is transmitted in PACKET mode, the data is transmitted when the set size is received.</p> <p>&lt;unit&gt; : <b>1 ~ 240</b></p> <p>*default size(bytes). : 20</p>                                                                                                                                                                                             |
| Examples of Use    | <p>(HOST→BOT) : <b>AT+PACKETUNIT=64</b></p> <p>(BOT → HOST) : +OK</p> <p>➔ 64 bytes of data are received from HOST, BOT transmits the data to the counterpart device. If a value smaller than the set data is entered, the data will not be transmitted. Therefore, data must be transmitted in multiples of the PACKET UNIT.</p> <p>(TIP: If there is not enough data, it can be transmitted to fit the size of the PACKET UNIT, including NULL data.)</p> |

### 7.17.AT+PACKETINFO?

|             |                                                       |
|-------------|-------------------------------------------------------|
| Operation   | When you want to know BOT's PACKET mode setting value |
| Commandable | <b>Client, Server-role</b>                            |

|                    |                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| state              | <p>Not connected to Remote device<br/>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device<br/>: Connected to a Remote device without Bypass mode set<br/>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response           | PACKETMODE status, PACKET size                                                                                                                                                                                                                                                                                                                        |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                    |
| Explanation        | If the REQUEST is received normally and the command is performed, the PACKET mode status and size are responded.                                                                                                                                                                                                                                      |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+PACKETINFO ?</b></p> <p>(BOT → HOST) : ON,64</p> <p>➔ PACKET mode operation is ON, Data transfer size is set to 64 (bytes) .</p>                                                                                                                                                                                              |

### 7.18. AT+ROLE=<role>

|                    |                                                                                                                                                                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Used when changing the BOT's role                                                                                                                                                                                                                                                                 |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                    |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                     |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, respond with "+OK" and reset after 1 second after changing the Role. Otherwise, respond with "+ERROR."</p> <p>* It is automatically reset, additional settings that occur after performing the command may not be saved.</p> |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+ROLE=S</b></p> <p>(BOT → HOST) : +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST) : +READY</p> <p>(BOT → HOST) : +ADVERTISING</p>                                                                                                                                        |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>➔BOT starts operating as a Server device</p> <p>or</p> <p>(HOST → BOT) : <b>AT+ROLE=C</b><br/>         (BOT → HOST) : +OK<br/>         ----after 1sec----<br/>         ( BOT → HOST ) : +READY<br/>         (BOT → HOST) : +CLIENT<br/>         ➔BOT waits for Client device to operate</p> <p>or</p> <p>(HOST → BOT) : <b>AT+ROLE= M</b><br/>         (BOT → HOST) : +OK<br/>         ----after 1sec----<br/>         (BOT → HOST) : +READY<br/>         (BOT → HOST) : +MULTI<br/>         ➔BOT is ready to operate as a Multicon device</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.19. AT+SELCV= <level>

|                    |                                                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When BOT operates as a Server-role, use this to change the Secure Connection Level when connecting with the counterpart device.                                                                                                                                                                            |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                             |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                              |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                         |
| Explanation        | <p>If the REQUEST is received normally and the command is received, "+OK" is responded.</p> <p>Reset after 1 second, otherwise respond with "+ERROR " .</p> <p>&lt;level&gt;: <b>1</b> or <b>2</b> or <b>4</b></p> <p>* It is automatically reset, additional settings that occur after performing the</p> |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | command may not be saved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Examples of Use | <p>(HOST → BOT) : <b>AT+SECLV=1</b><br/>         (BOT → HOST) : +OK<br/>         ----after 1sec----<br/>         (BOT → HOST) : +READY<br/>         → Connected with Secure Connection Level 1, Connection is made without requiring any separate user action during the connection process.</p> <p>or</p> <p>(HOST → BOT) : <b>AT+SECLV=2</b><br/>         (BOT → HOST) : +OK<br/>         ----after 1sec----<br/>         (BOT → HOST) : +READY<br/>         → Connected with Secure Connection Level 2, During the connection process, the counterpart device may require user confirmation.<br/>         Connected device information is stored</p> <p>(HOST → BOT) : <b>AT+SECLV=4</b><br/>         (BOT → HOST) : +OK<br/>         ----after 1sec----<br/>         (BOT → HOST) : +READY<br/>         → Connected with Secure Connection Level 4, During the connection process, the counterpart device may require the user to confirm and accept the connection. Connected device information is stored</p> <p>&lt;warning&gt; When connecting to level 2 or 4, If the device information stored does not match, reconnection may be refused. At this time, connection information must be deleted using the AT+DELBOND command. The connection information of the BOT stored in the counterpart device is also deleted through the counterpart device settings.</p> |

## 7.20.AT+SELCV?

|                    |                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to check the security connection level, when BOT operates as a Server-role                                      |
| Commandable state  | Not connected to Remote device                                                                                              |
| Response           | 1 or 2 or 4                                                                                                                 |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                          |
| Explanation        | If the REQUEST is received normally and the command is performed, the currently set security connection level is responded. |
| Examples of Use    | (HOST → BOT) : <b>AT+SECLV?</b><br>(BOT → HOST) : 1<br>➔ Verify that BOT 's security connection level is set to 1 .         |

## 7.21.AT+ACCEPT

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT accepts a connection to the counterpart device with a security connection level of 4.                                                                                                                                                                                                                                                                                                                                                                          |
| Commandable state  | Remote device and the Bonding process are in progress                                                                                                                                                                                                                                                                                                                                                                                                              |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Explanation        | If the REQUEST is received normally and the command is performed, respond with +OK. Otherwise, it responds with +ERROR                                                                                                                                                                                                                                                                                                                                             |
| Examples of Use    | (BOT → HOST) : +PASSKEY[354895]<br>(HOST → BOT) : <b>AT+ACCEPT</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +CONNECTED[5C:F2:86:40:00:01]<br>➔ The counterpart device's security mode is set to 4, so it requests user confirmation. It's connected normally by accepting.<br><warning> The Auto bond function is set to work by default in the Multicon-role, the user's confirmation is not requested even if the counterpart device's security mode is set to 4. |

## 7.22.AT+REJECT

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT refuses to connect to the counterpart device with a security connection level of 4.                                                                                                                                                                                                                                                                                                                                                                |
| Commandable state  | Remote device and the Bonding process are in progress                                                                                                                                                                                                                                                                                                                                                                                                  |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                     |
| Explanation        | If the REQUEST is received normally and the command is performed, respond with +OK. Otherwise, it responds with +ERROR                                                                                                                                                                                                                                                                                                                                 |
| Examples of Use    | (BOT → HOST) : +PASSKEY[354895]<br>(HOST → BOT) : <b>AT+REJECT</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +DISCONNECTED<br>➔ The counterpart device's security mode is set to 4, so it requests user confirmation. Terminate the connection by rejecting it.<br><warning> The Auto bond function is set to work by default in the Multicon-role, the user's confirmation is not requested even if the counterpart device's security mode is set to 4. |

## 7.23.AT+AUTOBOND=<enable>

|                    |                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want the BOT unconditionally accepts connection to the counterpart device with security connection level 4                                           |
| Commandable state  | Not connected to Remote device                                                                                                                              |
| Response           | +OK or +ERROR                                                                                                                                               |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                          |
| Explanation        | If the REQUEST is received normally and the command is performed, respond with +OK. Otherwise, it responds with +ERROR.<br><enable> <b>ON</b> or <b>OFF</b> |
| Examples of Use    | (HOST → BOT) : <b>AT+AUTOBOND=ON</b><br>(BOT → HOST) : +OK                                                                                                  |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>... If you want to connect at security connection level 4<br/>         (BOT → HOST) : +PASSKEY[354895]<br/>         (BOT → HOST) : +ACCEPT<br/>         (BOT → HOST) : +CONNECTED[5C:F2:86:40:00:01]<br/>         ➔ When set to ON, it automatically operates as allowing about the procedures that require the user's action of allowing or denying a connection, such as secure connection level 4. And notifies to the user that is automatically connected through the +ACCEPT output.</p> <p>&lt;warning&gt; No notification occurs in the Multicon-role . Connected by automatically performing the accept</p> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.24.AT+AUTOBOND?

|                    |                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT checks if it accepts connections to the counterpart device on the security connection level 4.                                |
| Commandable state  | Not connected to Remote device                                                                                                    |
| Response           | ON or OFF                                                                                                                         |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                |
| Explanation        | If the REQUEST is received normally and the command is performed, the currently set value is responded.                           |
| Examples of Use    | (HOST → BOT) : <b>AT+AUTO BOND?</b><br>(BOT → HOST) : OFF<br>➔ Make sure the auto- connection acceptance function is turned OFF . |

## 7.25.AT+BONDINFO?

|                   |                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT checks the counterpart device information stored after connecting to the counterpart device with a security connection level of 2 or 4. |
| Commandable state | Not connected to Remote device                                                                                                              |
| Response          | Device Information or +NOINFO                                                                                                               |
| Response          | 300ms after receiving a command (based on 9600 bps)                                                                                         |

|                 |                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| completed       |                                                                                                                                                                              |
| Explanation     | Normally, if the REQUEST is received and a command is performed and there is device information stored, the device information is responded. Otherwise, respond with +NOINFO |
| Examples of Use | (HOST → BOT) : <b>AT+BONDINFO?</b><br>(BOT → HOST) : ID: 0 ADDR: 5C:F2:86:40:00:00<br>➔ You can confirm that the device with address 5C:F2:86:40:00:00 is bonded .           |

## 7.26.AT+DELBOND

|                    |                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Used when BOT deletes stored the counterpart device information after connecting to the counterpart device with security connection level 2 or 4.                                           |
| Commandable state  | Not connected to Remote device                                                                                                                                                              |
| Response           | +ON or +E RROR                                                                                                                                                                              |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                          |
| Explanation        | If the REQUEST is received normally and the command is performed, respond with +OK. Otherwise, it responds with +ERROR                                                                      |
| Examples of Use    | (HOST → BOT) : <b>AT+DELBOND</b><br>(BOT → HOST) : +OK<br>(HOST → BOT) : AT+BONDINFO?<br>(BOT → HOST) : +NOINFO<br>➔ You can confirm that the device information has been deleted normally. |

## 7.27.AT+MAJOR= <value>

|                   |                                                                                                                                              |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT operates as a Server-role, the advertising type is in iBeacon mode, if the Major setting value included in the iBeacon packet is changed |
| Commandable state | Not connected to Remote device                                                                                                               |
| Response          | +OK or +ERROR                                                                                                                                |
| Response          | 20ms after receiving a command (based on 9600 bps)                                                                                           |

|                 |                                                                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| completed       |                                                                                                                                                                                                                                                                                |
| Explanation     | <p>If the REQUEST is received normally and the command is performed, "+OK " is responded. Otherwise, "+ERROR " is responded.</p> <p>&lt;value&gt;: Must be a 4-digit hexadecimal string ( 0~9, A ~F) to be set as the Major value .</p> <p>(ex) 0xFF50=&gt; AT+MAJOR=FF50)</p> |
| Examples of Use | <p>When BOT is operating in iBeacon mode,</p> <p>(HOST → BOT) : <b>AT+MAJOR=FF50</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : +ADVERTISING</p>                                                                                                                          |

## 7.28.AT+MAJOR?

|                    |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role wants to know the set Major value included in the iBeacon packet when the advertising type is iBeacon mode.                                                                                                                                                                                                                                                                 |
| Commandable state  | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>: Connected to a Remote device without Bypass mode set</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response           | Major value or +ERROR                                                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                               |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, the Major value is responded in the form of a hexadecimal string.</p> <p>Otherwise, respond with "+ERROR " .</p>                                                                                                                                                                                                            |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+MAJOR?</b></p> <p>(BOT → HOST) : F902</p>                                                                                                                                                                                                                                                                                                                                |

## 7.29.AT+MINOR=<value>

|                    |                                                                                                                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role changes the Minor setting value included in the iBeacon packet when the advertising type is iBeacon mode.                                                                                                                                |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                 |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                            |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK " is responded. Otherwise, "+ERROR " is responded.<br><value>: Must be 4-digits in hexadecimal string format ( 0~9, A ~F) to be set as the Minor value<br>(ex) 0xFF50=> AT+MINOR=FF50) |
| Examples of Use    | When BOT is operating in iBeacon mode,<br>(HOST → BOT) : <b>AT+MINOR=FF50</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING                                                                                                                            |

### 7.30.AT+MINOR?

|                    |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role wants to know the set Minor value included in the iBeacon packet when the advertising type is iBeacon mode.                                                                                                                                                                                                                                  |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | Minor value or +ERROR                                                                                                                                                                                                                                                                                                                                             |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                |
| Explanation        | If the REQUEST is received normally and the command is performed, the response is in the form of a Minor hexadecimal string.<br>Otherwise, respond with "+ERROR " .                                                                                                                                                                                               |

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Examples of Use | (HOST → BOT) : <b>AT+MINOR?</b><br>(BOT → HOST) : 55FB |
|-----------------|--------------------------------------------------------|

### 7.31.AT+IRSSI=<value>

|                    |                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role changes the RSSI setting value included in the iBeacon packet when the advertising type is iBeacon mode.                                                                                                                          |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                         |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                          |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                     |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK " is responded. Otherwise, "+ERROR " is responded.<br><value>: Must be 2-digits in hexadecimal string format ( 0~9, A ~F) to be set as iRssi value<br>(ex) 0xF8 => AT+IRSSI=F8) |
| Examples of Use    | When BOT is operating in iBeacon mode,<br>(HOST → BOT) : <b>AT+IRSSI=F8</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING                                                                                                                       |

### 7.32.AT+IRSSI?

|                   |                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BoT wants to know the RSSI setting value included in the iBeacon packet when the advertising type is iBeacon mode as a Server-role.                                                                                                                                                                                                                               |
| Commandable state | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |

|                    |                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response           | Rssi value or +ERROR                                                                                                                                                      |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, the Rssi value is responded in the form of a hexadecimal string.<br>Otherwise, respond with "+ERROR " . |
| Examples of Use    | (HOST → BOT) : <b>AT+MINOR?</b><br>(BOT → HOST) : C5                                                                                                                      |

### 7.33.AT+ADVTYPE=<type>

|                    |                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role changes the usage mode by changing the Advertising Type.<br>Connection and communication possible mode : Normal mode or iBeacon mode<br>Unable to connect (only searching) Mode : Beacon mode                                                                                                                                                          |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                              |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                               |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                          |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK" is responded. Otherwise, "+ERROR" is responded.<br><type>: <b>N</b> or <b>I</b> or <b>B</b>                                                                                                                                                                                                         |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVTYPE=N</b><br>(BOT → HOST) : +READY<br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>➔BOT will automatically reset and start operating in Normal Server mode including CHIPSEN 's advertising format. Connection and data communication are possible with the counterpart Client device.<br><br>or<br><br>(HOST → BOT) : <b>AT+ADVTYPE=I</b> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>(BOT → HOST) : +READY<br/>         (BOT → HOST) : +OK<br/>         (BOT → HOST) : +ADVERTISING<br/>         ➔BOT will automatically reset, iBeacon Starts operating in iBeacon server mode including data from the iBeacon format, Connection and data communication are possible with the counterpart Client device.</p> <p>or</p> <p>(HOST → BOT) : <b>AT+ADVTYPE=B</b><br/>         (BOT → HOST) : +OK<br/>         (BOT → HOST) : +READY<br/>         (BOT → HOST) : +ADVERTISING</p> <p>➔BOT will automatically reset, Beacon which is able to be searched but not connected operates in server mode and contains up to 2.6 bytes of user data .</p> <p>User data can be changed in real time or fixed data depending on the setup (AT+SOLIDBEACON) command.</p> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.34. AT+MANUF= <name>

|                    |                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | if you want to change the Manufacture data(Device Name) applied when BOT operates in Server-role and advertising type operates Normal server mode. |
| Commandable state  | Not connected to Remote device                                                                                                                     |
| Response           | +OK or +ERROR                                                                                                                                      |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                 |
| Explanation        | If the REQUEST is received normally and the command is performed, the response is "+OK", otherwise, " +ERROR " .<br><name>: Up to 8 characters.    |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+MANUF=CHIPSEN</b><br/>         (BOT → HOST) : +OK</p>                                                                      |

|  |                                                                                                                                                                                                                                                                                                                      |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>(BOT → HOST) : +ADVERTISING</p> <p>➔ Set BOT's MANUFACTURE to CHIPSEN on the HOST device. When searching on the Client, you can obtain the information called <b>CHIPSEN in Advertising Data</b>.</p> <p>If you perform this command during Advertising, Advertising will be restarted with the name applied.</p> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.35.AT+MANUF?

|                    |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to know the Manufacture data ( Device Name) that is applied when BOT operates in the Server-role and the advertising type is Normal server mode                                                                                                                                                                                                                                      |
| Commandable state  | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>: Connected to a Remote device without Bypass mode set</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response           | CHIPSEN or User-defined Device Name                                                                                                                                                                                                                                                                                                                                                              |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                               |
| Explanation        | If the REQUEST is received normally and the command is performed, the Manufacture (Device Name) name is responded.                                                                                                                                                                                                                                                                               |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+MANUF?</b></p> <p>(BOT → HOST) : CHIPSEN</p> <p>➔ You can get that the BOT's Manufacture (Device Name) name on the HOST device is set to CHIPSEN.</p>                                                                                                                                                                                                                    |

### 7.36.AT+TXPWR= <step>

|                   |                                   |
|-------------------|-----------------------------------|
| Operation         | When changing the TX power of BOT |
| Commandable state | Not connected to Remote device    |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, " +OK " is responded, otherwise " +ERROR " is responded.</p> <p><b>BoT-nLE523</b></p> <p>&lt;step&gt;: <b>can be changed from 0 to 8</b></p> <p><b>0</b> : - 40 dBm, <b>1</b> : - 20 dBm, <b>2</b> : -16 dBm, <b>3</b> : - 12 dBm, <b>4</b> : - 8 dBm, <b>5</b> : -4 dBm, <b>6</b> : 0 dBm, <b>7</b> : 4dBm, <b>8</b> :8dBm</p> <p>** Initial value</p> <p>Firmware version less than V1.5.0: step 5: -4 dBm</p> <p>Firmware version more than V1.5.0 : step 8: +8dBm</p> |
| Examples of Use    | <p>(HOST → BOT): <b>AT+TXPWR=6</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : +ADVERTISING</p> <p>→TX power to step6,apply, and restart Advertising .</p>                                                                                                                                                                                                                                                                                                                                                                                 |

### 7.37.AT+TXPWR?

|                    |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to know the TX power of BOT                                                                                                                                                                                                                                                                                                                                                          |
| Commandable state  | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>: Connected to a Remote device without Bypass mode set</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> |
| Response           | TX Power step                                                                                                                                                                                                                                                                                                                                                                                    |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                               |
| Explanation        | If the REQUEST is received normally and the command is performed, the TX Power value is displayed.                                                                                                                                                                                                                                                                                               |

|                 |                                                                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <b>BoT-nLE523: Changeable from 0 to 8 (default 5: -4dBm)</b><br>(0: -40 dBm, 1: -20 dBm, 2: -16 dBm, 3: -12 Bm, 4: -8 dBm, 5: -4 dBm, 6: 0 dBm, 7 :4 dBm, 8 :8 dBm) |
| Examples of Use | (HOST → BOT): <b>AT+TXPWR?</b><br>(BOT → HOST) : 6<br>➔ You can get information from HOST equipment that the TX Power of BOT is the output corresponding to step6.  |

### 7.38.AT+ADVDATA=<data>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When changing the Advertising User Data applied when BOT operates in Server-role and advertising type is Normal server mode                                                                                                                                                                                                                                                                                                                                                                                                        |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK" is responded, otherwise " +ERROR " is responded. Up to 13 characters can be customized, and the default value is none (NULL). No memory storage function (deleted when power is cycled).<br><data>: up to 13-characters                                                                                                                                                                                                                                    |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVDATA=Test</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>➔ When searching for BOT on a Remote device, you can get information called <b>Test</b> in the Advertising User Data entry.<br>If you perform this command during advertising, restart Advertising after a new User Data applied.<br><warning> Advertising User Data is not stored in memory, if it necessary, you will need to reset it, the set value will be retained until it is set to a different value while the power is on. |

### 7.39.AT+ADVDATA?

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to know Advertising User Data applied BOT operates in the Server-role and the advertising type is Normal server mode                                                                                                                                                                                                                                                                                          |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.                                                         |
| Response           | Advertising User Data                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response completed | 20 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                                                                                                                                                                                      |
| Explanation        | If the REQUEST is received normally and the command is performed, Advertising User Data is responded in response.                                                                                                                                                                                                                                                                                                         |
| Examples of Use    | (HOST → BOT) : AT+ADVDATA=Test<br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>(HOST → BOT): <b>AT+ADVDATA?</b><br>(BOT → HOST) : Test<br>(HOST → BOT): AT+ADVDATA2=4142434445<br>(BOT → HOST) : +OK<br>( BOT → HOST) : +ADVERTISING<br>(HOST → BOT): <b>AT+ADVDATA?</b><br>(BOT → HOST) : ABCDE<br>➔ You can get information called <b>ABCDE</b> and <b>Test</b> are BOT's Advertising User Data on HOST device. |

### 7.40.AT+ADVDATA2= <data>

|             |                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| Operation   | If changing the Advertising User Data applied, when BOT operates in Server-role and advertising type operates Normal server mode |
| Commandable | Not connected to Remote device                                                                                                   |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| state              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, "+OK " is responded, otherwise " +ERROR " is responded. Up to 13 characters can be customized, and the default value is none (NULL). No memory storage function (deleted when power is cycled).</p> <p>&lt;data&gt;: A hexadecimal string of up to 13 bytes</p> <p>Example 1) If you want to apply <b>0x00 0 x 01 0x31 0x33</b><br/> AT+ADVDATA2=00013133</p> <p>Example 2) If you want to apply the ASCII string " <b>ABCD</b>"<br/> AT+ADVDATA2=4142434445</p>                                                             |
| Examples of Use    | <p>(HOST → BOT): <b>AT+ADVDATA2=4142434445</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : +ADVERTISING</p> <p>➔When searching for BOT on a Remote device, you can check the data corresponding to <b>ABCDE</b> (0x4142434445) in the Advertising User Data entry.</p> <p>If you perform this command during advertising, restart Advertising after a new User Data applied.</p> <p>&lt;warning&gt; Advertising User Data is not stored in memory, if it necessary, you will need to reset it, the set value will be retained until it is set to a different value while the power is on.</p> |

#### 7.41.AT+ADVDATA2?

|                   |                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | If you want to know the Advertising User Data applied when BOT operates in the Server-role and the advertising type is Normal server mode, in the form of a hexadecimal string                                          |
| Commandable state | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | : Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.                                                                                                                                                                                                                                                                                                                             |
| Response           | Advertising User Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response completed | 20 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Explanation        | If the REQUEST is received normally and the command is performed, Advertising User Data is responded in response.                                                                                                                                                                                                                                                                                                                                                                         |
| Examples of Use    | (HOST → BOT) : AT+ADVDATA=Test<br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>(HOST → BOT) : <b>AT+ADVDATA2?</b><br>(BOT → HOST) : 54657374<br>(HOST → BOT): AT+ADVDATA2=4142434445<br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>(HOST → BOT) : <b>AT+ADVDATA2?</b><br>(BOT → HOST) : 4142434445<br>➔ It can be seen in the HOST device in the format of a hexadecimal string for <b>Test</b> and <b>ABCDE</b> , the advertising user data set by the user of the BOT |

#### 7.42. AT+BEACON= <data>

|                    |                                                                                                                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When BOT operates in Server-role and advertising type operates Beacon server mode, sets the data to be included in Advertising                                                                                                                                |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                 |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                            |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK" is responded, otherwise "+ERROR" is responded.<br><data>: A hexadecimal string of up to 26 bytes<br>Example 1 ) If you want to apply <b>0x00 0x01 0x31 0x33</b><br>AT+BEACON=00013133 |

|                 |                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Example 2 ) If you want to apply the ASCII string " <b>ABCD</b> "<br>AT+BEACON=4142434445                                                                                                                                                                            |
| Examples of Use | (HOST → BOT): <b>AT+BEACON=4142434445464748494A</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>➔ When searching for a BOT on a Remote device, you can check the data corresponding to <b>ABCDEFGHIJ</b> (0x4142434445464748494A) in the User Data area. |

### 7.43.AT+BEACON?

|                    |                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | It is used for that BOT wants to check the user data applied when the advertising type operates in Beacon server mode and BOT operates in Server-role, it responds in the format of a hexadecimal string identical to what the user set .                                                                                                                |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                           |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                       |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK " is responded, otherwise " +ERROR " is responded.<br><enable> : ON or OFF                                                                                                                                                                                                        |
| Examples of Use    | (HOST → BOT): AT+BEACON=4142434445464748494A<br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>(HOST → BOT) : <b>AT+BEACON?</b><br>(BOT → HOST): 4142434445464748494A<br>➔ Beacon Data of BOT on the HOST device can get the information in the form of a hexadecimal string called 4142434445464748494A, which corresponds to <b>ABCDEFGHIJ</b> . |

### 7.44.AT+ADVINTERVAL=<interval>

|                    |                                                                                                                                                                                                                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT wants to change the Advertising Interval as a Server-role                                                                                                                                                                                                                                |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                               |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                           |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK" is responded, otherwise " +ERROR " is responded.<br><interval>: <b>20 ~ 2560</b> (ms)                                                                                                                                |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVINTERVAL=800</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>➔ Set the Advertising Interval of BOT on the Remote device to 800ms<br>If you perform this command during advertising, a new Advertising Interval is applied, and Advertising is restarted. |

#### 7.45.AT+ADVINTERVAL?

|                    |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT wants to know Advertising Interval as a Server-role                                                                                                                                                                                                                                                                                                           |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | Advertising Interval display (20~2560)                                                                                                                                                                                                                                                                                                                            |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                |
| Explanation        | If the REQUEST is received normally and the command is performed, the Advertising Interval is responded.                                                                                                                                                                                                                                                          |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVINTERVAL?</b><br>(BOT → HOST) : 800<br>➔ You can get information that BOT's Advertising Interval is 800ms from                                                                                                                                                                                                                            |

|  |              |
|--|--------------|
|  | HOST device. |
|--|--------------|

#### 7.46. AT+CONNINTERVAL= <max>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT wants to change the Connection Interval as a Server-role                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, "+OK " is responded. Otherwise, respond with "+ERROR."</p> <p>You set the maximum value, the minimum value will be set to half of the maximum value you entered, or 10ms, which is the limit of the minimum value.</p> <p>&lt;m ax&gt; : <b>8 ~ 2000</b> (ms)</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+CONNINTERVAL=30</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : +ADVERTISING</p> <p>➔ Set Maximum Connection Interval to 30ms and automatically restart advertising.</p> <p>If you perform this command during advertising, a new Connection Interval is applied, and Advertising is restarted.</p> <p>&lt;TIP&gt; When operating with the other iOS device, the maximum connection interval is recommended to be the default value (15ms ) or 30ms . Applying other values may result in errors during operation.</p> <p>&lt;warning&gt; Be careful when changing this value, as the connection may be terminated on the counterpart device, if the set connection interval is not supported by the counterpart device.</p> |

#### 7.47. AT+CONNINTERVAL= <min>, <max>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT wants to change the Connection Interval as a Server-role                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, "+OK" is responded. Otherwise, respond with "+ERROR."</p> <p>Minimum and maximum values can be set separately.</p> <p>&lt;max&gt; setting must be greater than or equal to &lt;min&gt;.</p> <p>&lt;min&gt; : 8 ~ 2000 (ms)</p> <p>&lt;max&gt;: 8 ~ 2000 (ms)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+CONNINTERVAL=15, 30</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : +ADVERTISING</p> <p>➔ Set Minimum Connection interval to 15ms and Maximum Connection Interval to 30ms, then automatically restart advertising .</p> <p>If you perform this command during advertising, a new Connection Interval is applied, and Advertising is restarted.</p> <p>&lt;TIP&gt; When operating with the other iOS device, the maximum connection interval is recommended to be the default value both of Min/Max (15ms) or 30ms. Applying other values may result in errors during operation.</p> <p>&lt;warning&gt; Be careful when changing this value, as the connection may be terminated on the counterpart device, if the set connection interval is not supported by the counterpart device.</p> |

#### 7.48.AT+CONNINTERVAL?

|                   |                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT as a Server-role if you want to know the setting value of Connection Interval.                                                                                                                                      |
| Commandable state | <p><b>Client, Server-role</b></p> <p>Not connected to Remote device</p> <p>: In connected status, when AT command/BYPASS port is maintained High.</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> |

|                    |                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | : Connected to a Remote device without Bypass mode set<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.                             |
| Response           | Connection Interval                                                                                                                                                                       |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, the auto saved Connection Interval is displayed according to the user settings.                                         |
| Examples of Use    | (HOST → BOT) : <b>AT+CONNINTERVAL?</b><br>(BOT → HOST) : 10,20<br>➔ You can check that the Connection Interval currently set by BOT on the HOST device is set to the range of 10 to 20ms. |

#### 7.49. AT+STL= <enable>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as a Server-role wants to artificially delay the time it takes for the server to recognize an abnormal termination of connection with the counterpart device.                                                                                                                                                                                                                               |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                  |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                   |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                              |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK" is responded. Otherwise, respond with "+ERROR."<br>If data communication is not possible due to unexpected reasons such as a distance from the counterpart device, the connection is recognized as terminated and the BOT status is set. If you want to delay this artificially, use <enable> : <b>ON</b> or <b>OFF</b> |
| Examples of Use    | (HOST → BOT) : <b>AT+STL=ON</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +ADVERTISING<br>➔ Enables the function to artificially delay the termination of the connection with the counterpart device and automatically restart Advertising.<br><b>** The time to recognize an abnormal connection termination is automatically</b>                                                                |

|  |                                                                      |
|--|----------------------------------------------------------------------|
|  | optimized, so it is not recommended to set this command arbitrarily. |
|--|----------------------------------------------------------------------|

### 7.50.AT+STL?

|                    |                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Verify that the BOT as a Server-role is set to artificially delay the time when it recognizes the termination of an abnormal connection with the counterpart device. |
| Commandable state  | Not connected to Remote device                                                                                                                                       |
| Response           | ON or OFF                                                                                                                                                            |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                   |
| Explanation        | If is set to artificially delay abnormal disconnection time with the counterpart device, respond with ON; otherwise, respond with OFF .                              |
| Examples of Use    | (HOST → BOT) : <b>AT+STL?</b><br>(BOT → HOST) : OFF<br>➔ Ensure that you do not use the artificial disconnection delay function.                                     |

### 7.51.AT+ADVOFF

|                    |                                                                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to stop advertising when BOT as a Server-role is not connected to a Remote device and is already operating advertising.                                                                                                     |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                          |
| Response           | +OK or +ERROR                                                                                                                                                                                                                           |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                      |
| Explanation        | If the REQUEST is received normally and the command is performed, the status is responded, otherwise +ERROR is responded.<br>Use this when you want to temporarily stop advertising operation while not connected to the Remote device. |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVOFF</b><br>(BOT → HOST) : +STANDBY<br>➔ No advertising operation. The condition for advertising again is to reboot                                                                                              |

|  |                                          |
|--|------------------------------------------|
|  | the BOT or perform the AT+ADVON command. |
|--|------------------------------------------|

### 7.52.AT+ADVON

|                    |                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to restart advertising when BOT as a Server-role is not connected to a Remote device and is not operating advertising. |
| Commandable state  | Not connected to Remote device                                                                                                     |
| Response           | +OK or +ERROR                                                                                                                      |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                 |
| Explanation        | Use this if you want to restart advertising operation while not connected to a Remote device.                                      |
| Examples of Use    | (HOST → BOT) : <b>AT+ADVON</b><br>(BOT → HOST) : +ADVERTISING<br>→ Restart advertising from a state no advertising.                |

### 7.53.AT+DISCONNECT

|                    |                                                                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | If you want to disconnect BOT through AT COMMAND while it is connected to the counterpart device,                                            |
| Commandable state  | <b>Client, Server-role</b><br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>: No command |
| Response           | +OK then +DISCONNECTED or +ERROR                                                                                                             |
| Response completed | 100 ms after receiving a command (9600 bps) standard)                                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, +OK is responded.<br>"+DISCONNECTED" response                              |
| Examples of Use    | (HOST → BOT) : <b>AT+DISCONNECT</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +DISCONNECTED                                                    |

|  |                                                                                                                                                                                          |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | (BOT → HOST) : +ADVERTISING<br>➔ Requests disconnection between the currently connected BOT and the counterpart device from the HOST device and the connection is normally disconnected. |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 7.54. AT+NEGOCONN?

|                    |                                                                                                                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When BOT operates as a Server-role, If you want to know the Connection Interval setting value with the counterpart device being Negotiation                                                               |
| Commandable state  | <b>Client, Server-role</b><br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>: No command                                                              |
| Response           | Displays the Negotiation value(ms) with the currently connected Remote device.                                                                                                                            |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                        |
| Explanation        | If the REQUEST is received normally and the command is performed, the Negotiation Connection Interval is displayed up to 2 decimal places.                                                                |
| Examples of Use    | (HOST → BOT) : <b>AT+NEGOCONN?</b><br>(BOT → HOST) : 30.00<br>➔ From the HOST device, BOT can obtain information that the current Connection Interval Negotiation with the counterpart device is 30.00ms. |

#### 7.55. AT+STARTSCAN

|                   |                                                                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT is in the Client or Multicon-role, it searches for surrounding Server remote devices, but the search results are operated so that only three basic pieces of information can be received: "counterpart device address, RSSI, name of the counterpart device name. " |
| Commandable state | <b>Client-role</b><br>Not connected to Remote device<br><b>Multicon-role</b><br>Not connected to Remote device                                                                                                                                                          |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <p>: When a connection is made with less than the maximum number of devices allowed to be connected without Bypass mode being set</p> <p>: : When Bypass mode is set, connections are made with less than the maximum allowed devices, and the AT command/BYPASS port is maintained High. .</p> <p><b>Server-role</b></p> <p>: No command</p>                                                                                                   |
| Response           | +SCANNING or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                       |
| Explanation        | <p>When the REQUEST is received normally, +SCANNING occurs and search for peripheral devices begins.</p> <p>(TIP) If there is an error in the search result output through UART due to many peripheral devices, increase the UART baudrate to ensure stable output of the search result. Additionally, it is possible to set it to search only for specific device names by first performing the AT+SF=&lt;enable&gt;,&lt;name&gt; command.</p> |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+STARTSCAN</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST): +5CF286400002,-44,CHIPSEN</p> <p>(BOT → HOST) : +5CF286400005,-47,CHIPSEN</p> <p>➔The information of the discovered device is as follows:</p> <p>+&lt;Server remote MAC&gt;,&lt;rssi&gt;,&lt;remote_name&gt;</p> <p><b>* * The range of received rssi is -100 to 0,and the closer it is to 0, the received radio wave strength is stronger.</b></p>  |

## 7.56.AT+STARTSCANM

|             |                                                                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation   | When BOT is in Client-role, it searches for surrounding Server remote devices, but the search results are received by including 'user data (advertising data' in addition to the three basic information of ' address of the counterpart device, RSSI, name of the counterpart device'. |
| Commandable | <b>Client-role</b>                                                                                                                                                                                                                                                                      |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| state              | : Not connected to Remote device.<br><b>Server, Multicon-role</b><br>: Not available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Response           | +SCANNING or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Explanation        | When REQUEST is received normally, +SCANNING occurs, and peripheral device search begins.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Examples of Use    | (HOST → BOT): <b>AT+STARTSCANM</b><br>(BOT → HOST): +SCANNING<br>(BOT → HOST): +5CF286400002,-44,CHIPSEN,12345<br>(BOT → HOST): +5CF286400005,-47,CHIPSEN,advdata<br>➔The information of the discovered device is as follows:<br>+<Server remote MAC>, <rss>, <remote_name>, <remote advertising data><br>➔If the advertising data of the counterpart device does not have a value corresponding to ASCII data, raw data in hexa-decimal format is output.<br>(TIP) If there is an error in the search result output through UART due to many peripheral devices, increase the UART baudrate to ensure stable output of the search result. Additionally, it is possible to set it to search only for specific device names by first performing the AT+SF=<enable>, <name> command.<br><warning> This feature is not supported in Multicon-role. |

### 7.57. AT+STARTSCAN=<filter\_item>,<filter\_data>

|                   |                                                                                                                                                                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | Search nearby server remote devices with BOT in Client or Multicon-role, but only receive three basic information: "Relative Device Address, RSSI, Relative Device Name" for devices that meet flexible filter conditions.                        |
| Commandable state | <b>Client-role</b><br>Not connected to Remote device<br><b>Multicon-role</b><br>Not connected to Remote device<br>When the connection is made with less than the maximum number of devices allowed to be connected without Bypass mode being set. |

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|                                                                                | <p>: : When Bypass mode is set, connections are made with less than the maximum number of devices allowed to be connected, and the AT command/BYPASS port is maintained High.</p> <p><b>Server-role</b></p> <p>: No command</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response                                                                       | +SCANNING or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Response completed                                                             | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Explanation                                                                    | <p>When REQUEST is received normally, +SCANNING occurs and search for peripheral devices that meet the filter conditions begins.</p> <p>&lt;filter_item&gt;</p> <p>A: Output after filtering based on the counterpart device MAC address ( <b>A</b>dress)</p> <p>N : Output after filtering based on the counterpart device name ( <b>N</b>ame)</p> <p>R : Output after filtering based on the counterpart device receiving sensitivity (Rssi)</p> <p>&lt;filter_data&gt;</p> <p>filter_item A: 6- c character</p> <p>filter_item N: Up to 8 characters</p> <p>filter_item R: 3-character including '-'</p> <p>&lt;warning&gt;</p> <p>This function only works when the AT+SF command is OFF.</p> <p>This feature only works with firmware version V1.5.3 or higher.</p> |
| <p>&lt;filter_item&gt;</p> <p>In case of <b>A</b></p> <p>Examples of usage</p> | <p>(HOST → BOT): <b>AT+STARTSCAN=A,5CF286</b></p> <p>(BOT → HOST): +SCANNING</p> <p>(BOT → HOST): +5CF286400002,-44,CHIPSEN</p> <p>(BOT → HOST) : +5CF286400005,-60,CHIPSEN</p> <p>➔ The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for devices, only devices a MAC address starting with 0x5CF286 are searched.</p> <p>** &lt;filter_data&gt; must have all 6 characters applied</p>                                                                                                                                                                                                                                                                                                              |
| <p>&lt;filter_item&gt;</p> <p>If <b>N</b></p> <p>Examples of usage</p>         | <p>(HOST → BOT): <b>AT+STARTSCAN=N,CHIPSEN</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST): +5CF286400002,-44,CHIPSEN</p> <p>(BOT → HOST) : +123456789ABC,-60,CHIPSEN</p> <p>➔ The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for a device, only</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                        | <p>devices that its name is included in the basic advertising data and it's started with CHIPSEN are searched separately.</p> <p>* * &lt;filter_data&gt; can be applied up to 8 characters</p>                                                                                                                                                                                                                                                                                                                |
| <p>&lt;filter_item&gt;</p> <p>If <b>R</b></p> <p>Examples of usage</p> | <p>(HOST → BOT) : <b>AT+STARTSCAN=R,-50</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST) : +5CF286400002,-50,CHIPSEN</p> <p>(BOT → HOST) : +123456789ABC,-47,CHIPSEN</p> <p>➔ The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for a device, only devices with a reception sensitivity greater than -50 are searched.</p> <p>* * &lt;filter_data&gt; must start with '-' and must be a 3-character value between -99 and -10 .</p> |

### 7.58. AT+STARTSCANM= <filter\_item> , <filter\_data>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Search nearby server remote devices with BOT in Client-role but operate to receive devices that meet flexible filter conditions, including 'advertising data' in addition to the three basic information: 'relative device address, RSSI, and relative device name.'                                                                                                                                                                                                   |
| Commandable state  | <p><b>Client-role</b></p> <p>: Not connected to Remote device</p> <p><b>Server, Multicon-role</b></p> <p>: Not available</p>                                                                                                                                                                                                                                                                                                                                           |
| Response           | +SCANNING or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                              |
| Explanation        | <p>When REQUEST is received normally, +SCANNING occurs and search for peripheral devices that meet the filter conditions begins.</p> <p>&lt;filter_item&gt;</p> <p>&lt;filter_item&gt;</p> <p>A: Output after filtering based on the counterpart device MAC address ( <b>A</b>dress)</p> <p>N : Output after filtering based on the counterpart device name ( <b>N</b>ame)</p> <p>R : Output after filtering based on the counterpart device receiving sensitivity</p> |

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|                                                                                | <p>(Rssi)</p> <p>M : Output after filtering based on the user data of the commercial device<br/>( Manufacturer data)</p> <p>&lt;filter_data&gt;</p> <p>filter_item A : 6- c character</p> <p>filter_item N : Up to 8 characters</p> <p>filter_item R: 3-character including '.'</p> <p>filter_item M : max 8--character</p> <p>&lt;warning&gt; It works only when AT+SF command is OFF.</p> <p>* * This feature only works with firmware version V1.5.3 or higher.</p>                                                                     |
| <p>&lt;filter_item&gt;</p> <p>In case of <b>A</b></p> <p>Examples of usage</p> | <p>(HOST → BOT): <b>AT+STARTSCANM=A,5CF286</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST) : +5CF286400002,-44,CHIPSEN,12345</p> <p>(BOT → HOST) : +5CF286400005,-60,CHIPSEN,ADVDATA</p> <p>➔The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for devices, only devices a MAC address starting with 0x5CF286 are searched.</p> <p>* * &lt;filter_data&gt; must have all 6 characters applied</p>                                                               |
| <p>&lt;filter_item&gt;</p> <p>If <b>N</b></p> <p>Examples of usage</p>         | <p>(HOST → BOT) : <b>AT+STARTSCANM=N,CHIPSEN</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST) : +5CF286400002,-44,CHIPSEN,12345</p> <p>(BOT → HOST) : +123456789ABC,-60,CHIPSEN,ADVDATA</p> <p>➔The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for a device, only devices that its name is included in the basic advertising data and it's started with CHIPSEN are searched separately.</p> <p>* * &lt;filter_data&gt; can be applied up to 8 characters</p> |
| <p>&lt;filter_item&gt;</p> <p>If <b>R</b></p> <p>Examples of usage</p>         | <p>(HOST → BOT) : <b>AT+STARTSCANM=R,-50</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST) : +5CF286400002,-50,CHIPSEN,12345</p> <p>(BOT → HOST) : +123456789ABC,-47,CHIPSEN,ADVDATA</p> <p>➔ The information output method of the discovered device is the same as the basic AT+STARTSCAN command. When searching for a device, only devices with a reception sensitivity greater than -50 are searched.</p>                                                                                                                        |

|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           | * * <filter_data> must start with '-' and must be a 3-character value between -99 and -10 .                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <filter_item><br>In case of <b>M</b><br>Examples of usage | <p>(HOST → BOT) : <b>AT+STARTSCAN=M,31323334</b></p> <p>(BOT → HOST) : +SCANNING</p> <p>(BOT → HOST) : +5CF286400002,-50,CHIPSEN,12345</p> <p>(BOT → HOST) : +123456789ABC,-47,CHIPSEN,1234F</p> <p>➔ The information output method of the searched device is the same as the basic AT+STARTSCANM command, and when searching for the device, only devices starting with ASCII character 1234 corresponding to 0x31323334 are searched in the basic advertising data.</p> <p>* * &lt;filter_data&gt; is an even-length hexadecimal string, up to 8 characters</p> |

## 7.59.AT+STOPSCAN

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | While BOT is searching for Server Remote nearby as a Client or Multicon-role, use this to end searching devices.                                                                                                                                                                                                                                                                                                                                                                                   |
| Commandable state  | <p><b>Client-role \</b><br/>Not connected to Remote device</p> <p><b>Multicon-role</b><br/>Not connected to Remote device</p> <p>: When a connection is made with less than the maximum number of devices allowed to be connected without Bypass mode being set</p> <p>: : When Bypass mode is set, connections are made with less than the maximum number of devices allowed to be connected, and the AT command/BYPASS port is maintained High. .</p> <p><b>Server-role</b><br/>: No command</p> |
| Response           | +STOPPED or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Response completed | Within 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Explanation        | If REQUEST is received normally, +STOPPED is generated, peripheral device search is terminated, and waiting                                                                                                                                                                                                                                                                                                                                                                                        |
| Examples of Use    | <p>(BOT → HOST): +5CF286400002,-44,CHIPSEN</p> <p>(BOT → HOST) : +5CF286400005,-47,CHIPSEN</p>                                                                                                                                                                                                                                                                                                                                                                                                     |

|  |                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------|
|  | (HOST → BOT) : <b>AT+STOPSCAN</b><br>(BOT → HOST) : +STOPPED<br>➔ Search operation stopped after receiving command during searching |
|--|-------------------------------------------------------------------------------------------------------------------------------------|

#### 7.60. AT+SF=ON, <filter\_name>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | When BOT is in Client or Multicon-role, use this to output only the search results of peripheral devices with device names starting with <filter_name> when searching for devices.                                                                                                                                                                                                                                                                                                                                                 |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Explanation        | <p>If the REQUEST is received normally and the command is performed, "+OK " is responded, otherwise " +ERROR " is responded.</p> <p>&lt;name&gt; : Up to 8 - character, when searching for peripheral devices, search for devices with the same name set from the beginning of the name.</p> <p><b>&lt;warning&gt; When the AT+SF command is ON, the AT+STARTSCAN=&lt;filter_item&gt;,&lt;filter_name&gt; command and Dynamic filter commands such as AT+STARTSCAN=&lt;filter_item&gt;,&lt;filter_name&gt; cannot be used.</b></p> |
| Examples of Use    | (HOST → BOT): <b>AT+SF=ON,CHIPSEN</b><br>(BOT → HOST) : +OK<br>(HOST → BOT) : AT+STARTSCAN<br>(BOT → HOST) : +SCANNING<br>(BOT → HOST): +5CF286400002,-44,CHIPSEN 1<br>(BOT → HOST): +5CF286400005,-47,CHIPSEN 2<br><br>➔ When searching for BOT on a Remote device, only peripheral devices with the device name CHIPSEN are reported to HOST .                                                                                                                                                                                   |

**7.61.AT+SF=OFF**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT is in Client or Multicon-role, use this to search all surrounding devices without considering the counterpart device name and report the results.                                                                                                                                                                                                                                                           |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                  |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                   |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                              |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK " is responded, otherwise " +ERROR " is responded.                                                                                                                                                                                                                                                                                       |
| Examples of Use    | (HOST → BOT) : <b>AT+SF=OFF</b><br>( BOT → HOST ) : +OK<br>(HOST → BOT) : AT+STARTSCAN<br>(BOT → HOST) : +SCANNING<br>(BOT → HOST): +5CF286400002,-44,CHIPSEN<br>(BOT → HOST) : +123456789abc,-50,TEST<br>(BOT → HOST) : +abcdef012345,-66,Unnamed<br>(BOT → HOST) : +5CF286400005,-47,CHIPSEN<br>➔When searching for BOT on a Remote device, it finds all surrounding devices and reports the results to HOST. |

**7.62.AT+SF?**

|                    |                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | the BOT is set to find only specific devices when searching for devices when the BOT is in a Client or Multicon-role.                                                    |
| Commandable state  | <b>Client-role</b> : Keep the AT command /BYPASS port high when not connected to the Remote device or when connected.<br><b>Multicon-role</b> : No separate restrictions |
| Response           | <b>ON</b> or <b>OFF</b>                                                                                                                                                  |
| Response completed | 10 ms after receiving a command (9600 bps) standard)                                                                                                                     |
| Explanation        | the response is ON if it is set to find only specific devices during the current search, otherwise OFF.                                                                  |
| Examples of Use    | (HOST → BOT) : <b>AT+SF?</b><br>(BOT → HOST) : OFF                                                                                                                       |

→ You can verify that the BOT is not set to look for only specific devices.

### 7.63. AT+CONMAC= <mac>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT attempts to connect to a peripheral device as a Client or Multicon-role .                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Commandable state  | <p><b>Client-role</b></p> <p>Not connected to Remote device</p> <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p>When a connection is made with less than the maximum number of devices allowed to be connected without Bypass mode being set.</p> <p>: When Bypass mode is set, connection is made with less than the maximum number of devices allowed to be connected, and the AT command/BYPASS port is maintained High. .</p> <p><b>Server-role</b></p> <p>: No command</p> |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Explanation        | <p>If REQUEST is received normally, +OK</p> <p>in the Client-role, +CONNECTED[connected MAC] is output.</p> <p>In case of Multicon-role, +CONNnn[connected MAC] is output when connection is successful.</p> <p>If not connected properly, +FAIL is output.</p> <p>&lt;mac&gt;: 12-digit BT MAC of the other party</p>                                                                                                                                                                               |
| Examples of Use    | <p><b>&lt;Client-role&gt;</b></p> <p>(HOST → BOT): <b>AT+CONMAC=5CF286400001</b></p> <p>(BOT → HOST) : +OK</p> <p>(BOT → HOST) : <b>+CONNECTED[5C:F2:86:40:00:01]</b></p> <p>→ If a normal connection is made in the Client-role, the connected Remote device information ( <b>+CONNECTED[5C:F2:86:40:00:01]</b>) is output.</p> <p>or</p> <p><b>&lt;Multicon-role&gt;</b></p>                                                                                                                       |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>(HOST → BOT): <b>AT+CONMAC=5CF286400001</b><br/>         (BOT → HOST) : +OK<br/>         (BOT → HOST) : +<b>CONN01[5C:F2:86:40:00:01]</b><br/>         (HOST → BOT): <b>AT+CONMAC=5CF286400002</b><br/>         (BOT → HOST) : +OK<br/>         (BOT → HOST) : +<b>CONN02[5C:F2:86:40:00:02]</b><br/>         (HOST → BOT): <b>AT+CONMAC=5CF28640000F</b><br/>         (BOT → HOST) : +OK<br/>         (BOT → HOST) : +<b>CONN03[5C:F2:86:40:00:0F]</b><br/>         ➔ If connected normally in Multicon-role, connected Remote device information ( +<b>CONN01[5C:F2:86:40:00:01]</b>,+<b>CONN02[5C:F2:86:40:00:02]</b>,+<b>CONN03[ Outputs 5C:F2:86:40:00:0 F ]</b> )</p> <p>or</p> <p>(HOST → BOT): <b>AT+CONMAC=5CF286400001</b><br/>         ( BOT → HOST ) : +OK<br/>         (BOT → HOST) : +<b>FAIL</b><br/>         ➔+<b>FAIL</b> ) notification if connection is not established</p> <p>&lt;warning&gt; The counterpart device connected in BOT 's CLIENT mode is limited to the BoT-nLE series . Connection and communication are not guaranteed for counterpart devices.</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 7.64.AT+AUTOCON=<enable>

|                    |                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Use the automatic connection function as a Client-role when the BOT is powered on, or if you want to set the automatic connection function as a device that is Slot-set as a Multicon-role. |
| Commandable state  | <enable>: ON - Not connected to a Remote device<br><enable>: OFF – Not connected to a Remote device or AT command is in operation                                                           |
| Response           | +OK or +ERROR                                                                                                                                                                               |
| Response completed | 20 m s after receiving a command (9600 bps) standard)                                                                                                                                       |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explanation     | <p>+OK if REQUEST is received normally After that it will reboot automatically, Otherwise, respond with +ERROR.</p> <p>When set to ON, the following actions are performed depending on the Client-role and Multicon-role .</p> <p>1. Client-role</p> <p>Used when attempting to automatically connect to a recently connected Remote device after power is applied or rebooted via a command.</p> <p>When set to ON, it will attempt to connect to the most recent device for 10 seconds after power is supplied, and after 10 seconds, it will no longer attempt to connect and wait for the next command in the Client-role.</p> <p>2. Multicon-role</p> <p>a reboot is performed through power supply or command, and the information of the counterpart device is stored in the Slot, a repeated connection attempt is automatically made to the device stored in the Slot .</p> <p>When set to OFF, waits for the next command as Client or Multicon-role when power is turned on.</p> <p>&lt;enable&gt;: <b>ON</b> or <b>OFF</b></p> |
| Examples of Use | <p><b>&lt;Client-role&gt;</b></p> <p>(HOST → BOT): <b>AT+AUTOCON=ON</b></p> <p>(BOT → HOST): +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST): +READY</p> <p>(BOT → HOST): +CLIENT</p> <p>(BOT → HOST): +AUTOCON</p> <p>(BOT → HOST):+<b>CONNECTED[5C:F2:86:40:00:01]</b></p> <p>➔Automatically connects to the most recently connected device when power is re-applied.</p> <p>or</p> <p>HOST → BOT): <b>AT+AUTOCON=OFF</b></p> <p>(BOT → HOST): +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST): +READY</p> <p>(BOT → HOST): +CLIENT</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|  | <p><b>&lt;Multicon-role&gt;</b></p> <p>(HOST → BOT): <b>AT+AUTOCON=ON</b></p> <p>(BOT → HOST): +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST): +READY</p> <p>(BOT → HOST): +MULTI</p> <p>(BOT → HOST): +AUTOCON</p> <p>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]</p> <p>(BOT → HOST): +CONN02[5C:F2:86:40:00:02]</p> <p>(BOT → HOST): +OK</p> <p>➔ Automatically connects to devices stored in SLOT when power is re-applied.</p> <p>or</p> <p>HOST → BOT): <b>AT+AUTOCON=OFF</b></p> <p>(BOT → HOST): +OK</p> <p>----after 1sec----</p> <p>(BOT → HOST): +READY</p> <p>(BOT → HOST ) : +MULTI</p> <p>➔ Even if power is re-applied, it does not automatically connect to the device stored in SLOT and waits for the user's Multicon command.</p> <p><b>&lt;warning&gt; The connected counterpart device is limited to the BoT series of CHIPSEN. Connection and communication are not guaranteed for counterpart devices.</b></p> <p><b>This feature only works when power is re-applied. it may not work if the existing connection is disconnected normally or abnormally.</b></p> <p><b>In Multicon (Bypass) mode, connection information(+CONN01[xx:xx:xx:xx:xx:xx]) notifications are not generated.</b></p> |
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## 7.65.AT+AUTOCON?

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| Operation          | When operating as a BOT Client-role, use the auto-connect function and check the information of recently connected devices.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Commandable state  | <b>Client, Multicon-role</b><br>Not connected to Remote device<br><b>Server-role</b><br>: No command                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response           | <b>&lt;Client-role&gt;</b><br><b>ON</b> , [ address] or <b>OFF</b> ,[address]<br><b>&lt;Multicon-role&gt;</b><br><b>ON Or OFF</b>                                                                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 10 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Explanation        | When a REQUEST is received normally, it responds with the setting status and recent device information (MAC). Otherwise, respond with +ERROR.<br>BoT is in the Client-role; the setting status of the automatic connection function and the address of the recent device can be checked when power is supplied, or a command is used to reboot.                                                                                                                                                                              |
| Examples of Use    | <b>&lt;Client-role&gt;</b><br>(HOST → BOT): <b>AT+AUTOCON?</b><br>(BOT → HOST): ON,[5C:F2:86:40:01:23]<br><br>or<br><br>(HOST → BOT): <b>AT+AUTOCON?</b><br>(BOT → HOST): OFF,[5C:F2:86:40:01:23]<br><br><b>&lt;Multicon-role&gt;</b><br>(HOST → BOT): <b>AT+AUTOCON?</b><br>(BOT → HOST): ON<br><br>or<br><br>(HOST → BOT): <b>AT+AUTOCON?</b><br>(BOT → HOST): OFF<br><br>➔ You can check the current auto-connection function setting status and recent connection address in the Client-role, or you can check the auto- |

|  |                                                                                                                                                                                |
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|  | connection function setting status in the Multicon-role. Devices that are automatically connected in the Multicon-role can be checked separately using the AT+GETSLOT command. |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.66.AT+CONNECT

|                    |                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT operates in the Client-role, use this to connect to a recently connected device.                                                                                                                                                                                                                    |
| Commandable state  | <b>Client-role</b><br>Not connected to Remote device<br><b>Server, Multicon-role</b><br>: No command                                                                                                                                                                                                    |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                           |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                      |
| Explanation        | If the REQUEST is performed normally, +OK is responded, Otherwise, it responds with +ERROR.<br>BOT attempts to connect to a recently connected device through a user command while the Client-role is in operation.<br><enable>: <b>ON</b> or <b>OFF</b>                                                |
| Examples of Use    | (BOT → HOST): +READY<br>(BOT → HOST): +CLIENT<br>(HOST → BOT): <b>AT+CONNECT</b><br>(BOT → HOST): +OK<br>(BOT → HOST): <b>+CONNECTED[5C:F2:86:40:00:01]</b><br>➔ Attempts to connect to recently connected devices at the user's command.<br><br><warning> This feature does not work in Multicon-role. |

## 7.67.AT+MLINK=<max\_link>

|           |                                                                             |
|-----------|-----------------------------------------------------------------------------|
| Operation | BOT operates in Multicon-role, when a user connects to a counterpart device |
|-----------|-----------------------------------------------------------------------------|

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                    | through an individual connection command, use this to set the number of connectable counterpart devices.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Explanation        | <p>If the REQUEST is performed normally, +OK is responded, Otherwise, it responds with +ERROR.</p> <p>BOT sets the maximum number of concurrently connected peer devices in Multicon-role state.</p> <p>&lt;max_link&gt;: <b>2 ~ 8</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Examples of Use    | <p>(HOST → BOT): <b>AT+MLINK=3</b></p> <p>(BOT → HOST): +OK</p> <p>(HOST → BOT): AT+CONMAC=5CF286400001</p> <p>(BOT → HOST): +OK</p> <p>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]</p> <p>(HOST → BOT): AT+CONMAC=5CF286400002</p> <p>(BOT → HOST): +OK</p> <p>(BOT → HOST): +CONN02[5C:F2:86:40:00:02]</p> <p>(HOST → BOT): AT+CONMAC=5CF28640000F</p> <p>(BOT → HOST): +OK</p> <p>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]</p> <p>(HOST → BOT): AT+CONMAC=5CF286400011</p> <p>(BOT → HOST): +ERROR</p> <p>➔Set the number of simultaneous connected devices to 3, After connecting to 3 counterpart devices, +ERROR is output for additional connection commands.</p> <p>&lt;warning&gt; As the number of simultaneous BOT devices increases, the wireless quality deteriorates and the stability of the connection may decrease, so users should use it considering their usage environment.</p> |

## 7.68.AT+MLINK?

|                    |                                                                                                                                                                                                                                                                                                                                                                    |
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| Operation          | BOT operates in Multicon-role, when a user connects to a counterpart device through an individual connection command, use this to check the current simultaneous multi-connection setting.                                                                                                                                                                         |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set.<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | Number of simultaneous multi-connection counterpart devices set                                                                                                                                                                                                                                                                                                    |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                 |
| Explanation        | REQUEST is performed normally, the number of simultaneous multiple connection capable devices set by the user can be checked.                                                                                                                                                                                                                                      |
| Examples of Use    | (HOST → BOT): <b>AT+MLINK?</b><br>(BOT → HOST): 3<br>→the number of concurrently connected devices is set to 3.                                                                                                                                                                                                                                                    |

## 7.69.AT+MCONNLINK?

|                    |                                                                                                                                                                                                                                         |
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| Operation          | Use to check the number of devices currently connected when BOT operates as Multicon-role.                                                                                                                                              |
| Commandable state  | <b>Multicon-role</b><br>: Connected to a Remote device without Bypass mode set.<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.<br><b>Client, Server-role</b><br>: Not available |
| Response           | Number of currently connected peer devices                                                                                                                                                                                              |
| Response completed | 10ms after receiving a command (based on 9600 bps)                                                                                                                                                                                      |
| Explanation        | If REQUEST is performed normally, BOT responds with the number of simultaneously connected counterpart devices in the Multicon-role state.                                                                                              |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Examples of Use | (HOST → BOT): AT+CONMAC=5CF286400001<br>(BOT → HOST): +OK<br>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]<br>(HOST → BOT): AT+CONMAC=5CF286400002<br>(BOT → HOST): +OK<br>(BOT → HOST): +CONN02[5C:F2:86:40:00:02]<br>(HOST → BOT): AT+CONMAC=5CF28640000F<br>(BOT → HOST): +OK<br>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br>(HOST → BOT): <b>AT+MCONNLINK?</b><br>(BOT → HOST): 3<br>→ the number of concurrently connected devices is set to 3. |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.70.AT+MCONNINFO=<idx>

|                    |                                                                                                                                                                                                                                                                                                                                                |
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| Operation          | BOT operates in the Multicon-role, use this function to check the counterpart device information (MAC) corresponding to <idx> among the currently connected devices.                                                                                                                                                                           |
| Commandable state  | <b>Multicon-role</b><br>: Connected to a Remote device without Bypass mode set.<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.<br><b>Client, Server-role</b><br>: Not available                                                                                                        |
| Response           | Information about the device corresponding to the specified <idx>                                                                                                                                                                                                                                                                              |
| Response completed | 300 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                                                                                                          |
| Explanation        | BoT has device information of a specific index among the connected devices in the Multicon-role state, the information of that device is<br>Otherwise, respond with +ERROR.<br><idx> 00 ~ (maximum) 08,<br>00, it responds with information from all connected devices. Otherwise,<br>respond with information about the corresponding device. |
| Examples of Use    | (HOST → BOT): AT+CONMAC=5CF286400001<br>(BOT → HOST): +OK<br>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]                                                                                                                                                                                                                                          |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|  | <p>(HOST → BOT): AT+CONMAC=5CF286400002<br/>(BOT → HOST): +OK<br/>(BOT → HOST): +CONN02[5C:F2:86:40:00:02]<br/>(HOST → BOT): AT+CONMAC=5CF28640000F<br/>(BOT → HOST): +OK<br/>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br/>(HOST → BOT): <b>AT+MCONNINFO=00</b><br/>(BOT → HOST): CONN01[5C:F2:86:40:00:01]<br/>(BOT → HOST): CONN02[5C:F2:86:40:00:02]<br/>(BOT → HOST): CONN03[5C:F2:86:40:00:0F]<br/>→ You can check the index and MAC of all connected devices.</p> <p>or</p> <p>(HOST → BOT): AT+CONMAC=5CF286400001<br/>(BOT → HOST): +OK<br/>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]<br/>(HOST → BOT): AT+CONMAC=5CF286400002<br/>(BOT → HOST): +OK<br/>(BOT → HOST): +CONN02[5C:F2:86:40:00:02]<br/>(HOST → BOT): AT+CONMAC=5CF28640000F<br/>(BOT → HOST): +OK<br/>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br/>(HOST → BOT): <b>AT+MCONNINFO=03</b><br/>(BOT → HOST): CONN03[5C:F2:86:40:00:0F]<br/>→ You can check the index and MAC of the device corresponding to index 3 among all connected devices.</p> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

7.71.AT+MCONNECT

|                   |                                                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT operates in Multicon-role, use this when the user wants to automatically perform simultaneous connections by individually searching for counterpart devices with specific device names saved through the AT+SF command in advance. |
| Commandable state | <b>Multicon-role</b><br>Not connected to Remote device                                                                                                                                                                                 |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <b>Client, Server-role</b><br>: Not available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response           | +MCONNECT<br>or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Explanation        | <p>BoT normally perform a command in the Multicon-role state, it outputs +OK followed by +MCONNECT. Otherwise, output +ERROR.</p> <p>At this time, the device to be searched and connected must be specified and stored in memory, so the AT+SF=ON, &lt;name&gt; command must be executed before performing this command, and for the maximum number of devices to be connected, refer to the description of the AT+MLINK=&lt;max_link&gt; command.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Examples of Use    | <p>(HOST → BOT): AT+SF=ON,CHIPSEN<br/> (BOT → HOST): +OK<br/> (HOST → BOT): <b>AT+MCONNECT</b><br/> (BOT → HOST): +MCONNECT<br/> (BOT → HOST): +CONN01[5C:F2:86:40:00:01]<br/> (BOT → HOST): +CONN02[5C:F2:86:40:00:02]<br/> (BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br/> (BOT → HOST): +CONN04[5C:F2:86:40:00:1A]<br/> (BOT → HOST): +CONN05[5C:F2:86:40:00:20]</p> <p>----- 60 seconds after connection start<br/> or Maximum concurrent connection success of the peer device -----</p> <p>(BOT-&gt;HOST): +OK</p> <p>➔ It searches for the counterpart device with a specific device name for 60 seconds and automatically connects to the number of simultaneous counterpart devices set.</p> <p>If it is not automatically connected within 60 seconds or after reaching the set simultaneous connection counterpart device, the counterpart device may no longer be automatically connected and may only be connected by a user's command.</p> |

**7.72.AT+MGROUP=<max\_link>,<filter\_name>**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT as Multicon-role is used when it wants to maintain continuous connection and communication in the form of a group rather than a temporary connection to multiple counterpart devices. Use this when you want to find the counterpart device with a device name starting with <filter_name> included in the command and automatically connect up to a maximum of <max_link> devices.                                                                                                                                                        |
| Commandable state  | <b>Multicon-role</b><br>Not connected to Remote device<br><b>Client, Server-role</b><br>: Not available                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response           | +MGROUP or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Explanation        | BoT normally performs a command in the Multicon-role state, it outputs +MROUP after +OK . Otherwise, output +ERROR.<br>At this time, search and connection are repeatedly attempted until a normal connection is established for the number of devices specified by <max_link>.<br><max_link>: Set within the range of <b>2 to 8</b> .<br><filter_name>: Up to <b>8 - character characters</b> . Filter the name of the target device to be compared from the first character of the device name to be searched and connected.                 |
| Examples of Use    | (HOST → BOT): <b>AT+MGROUP=3,CHIPSEN</b><br>(BOT → HOST): +MG ROUP<br>(BOT → HOST): +CONN01[5C:F2:86:40:00:01]<br>(BOT → HOST): +CONN02[5C:F2:86:40:00:0 2]<br>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br>- -- If the connection is disconnected after the specified number of connections are completed - ----<br>(BOT → HOST): +DISC03<br>(BOT → HOST): +CONN03[5C:F2:86:40:00:0F]<br>(BOT->HOST): +OK<br>----- After the connection is started, the number of times the counterpart device is connected as specified by <max_link> - ----- |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>*</p> <p>➔ Regardless of the AT+SF=ON, &lt;filter_name&gt; and AT+MLINK=&lt;max_link&gt; setting states, the connection is automatically connected to the counterpart device with the specified device name as many as the set maximum number of connections, and when the connection is disconnected, the device with the set name is found and connected again. +OK occurs when the specified number of devices are connected, but this message does not occur in BYPASS mode.</p> <p>&lt;TIP&gt; In the case of AT+MCONNECT, connection is attempted only for 60 seconds, and connection information must be specified in advance using the AT+SF command, etc. This command does not require any separate presetting. So, in Master Group communication is possible by finding devices with the same name as specified when necessary.</p> <p>&lt;warning&gt; The settings for this command are not stored in memory, so the command must be performed again if power is re-applied, or the BOT is reset. Also, even if the connected device disconnects and BOT tries to reconnect until it reaches &lt;max_link&gt;, it will try to connect based on the set &lt;name&gt;. There is no guarantee that previously connected devices will reconnect.</p> <p>Also, this command for the purpose of group composition and communication, even if a specific device is arbitrarily disconnected via the AT+MDISC command, it automatically attempts to reconnect, so only Group bulk connection termination via reboot such as ATZ is possible.</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.73. AT+SETSLOT= <slot\_no>, <address>, <tag>

|                   |                                                                                                                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | the BOT operates in a Multicon-role, and the user wants to save the information of the counterpart device in the internal storage slot of the BoT to appointment only the specific device that the user wants to connect. |
| Commandable state | Not connected to Remote device                                                                                                                                                                                            |
| Response          | +OK or +ERROR                                                                                                                                                                                                             |
| Response          | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                        |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| completed       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Explanation     | <p>BoT wants to save the device to be connected separately for a user - specified multi-connection ( User Group) in the Multicon-role state . If the command is performed normally, +OK is output. Otherwise, output +ERROR.</p> <p>When the user specifies a device using this command, a connection is attempted only to the device stored in the slot via the AT+UGROUP command.</p> <p>&lt;slot_no&gt;1 ~ 8: Storage slot number to store the device.</p> <p>&lt;address&gt; 12- digit address of the target device to be saved.</p> <p><u>&lt;tag&gt;</u> You can enter tag for the device to save as an optional feature, Applicable up to 8 characters .</p> |
| Examples of Use | <p>(HOST → BOT) : <b>AT+SETSLOT=1,5CF286400001,CHIPSEN</b></p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : <b>AT+SETSLOT=2,5CF286400002</b></p> <p>(BOT → HOST) : +OK</p> <p>➔ In storage slot 1, save the address 5CF286400001 and attach a tag called CHIPSEN, and in storage slot 2, save only the address 5CF286400002 without a separate tag.</p> <p>When performing the AT+UGROUP command, it attempts to connect only to devices stored in SLOT.</p>                                                                                                                                                                                                         |

#### 7.74.AT+GETSLOT=<slot\_no>

|                    |                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT operates in the Multicon-role, if the user appointments and saves a specific device to be connected, use this function to check the saved information of the slot saved by the user. |
| Commandable state  | Not connected to Remote device                                                                                                                                                           |
| Response           | Stored device information                                                                                                                                                                |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                       |
| Explanation        | BoT has information stored in the slot for a user - specified multi-connection ( User Group) in the Multicon-role state, it outputs the information.                                     |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p>Otherwise +ERROR</p> <p>&lt;slot_no&gt; 0 ~ 8 : If 0, print the storage information of all stored slots, Otherwise, only the storage information of the specified slot is output.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Examples of Use | <p>(HOST → BOT) : AT+SETSLOT=1,5CF286400001,CHIPSEN</p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : AT+SETSLOT=2,5CF286400002</p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : <b>AT+GETSLOT=0</b></p> <p>(BOT → HOST) : +SLOT,1,5CF286400001,CHIPSEN</p> <p>(BOT → HOST): +SLOT,2,5CF286400002</p> <p>or</p> <p>(HOST → BOT) : <b>AT+GETSLOT=1</b></p> <p>(BOT → HOST) : +SLOT,1,5CF286400001,CHIPSEN</p> <p>(HOST → BOT) : <b>AT+GETSLOT=2</b></p> <p>(BOT → HOST): +SLOT,2,5CF286400002</p> <p>➔ Number 1 It can be confirmed that only the address 5CF286400001, the address CHIPSEN and the tag storage information, and the address 5CF286400002 are stored in the second storage slot.</p> <p>The response is output in the form of +SLOT,&lt;slot_no&gt;,&lt;address&gt;,&lt;tag&gt;, and if tag is not set by the user, it is omitted and output.</p> |

### 7.75.AT+DELGSLOT=<slot\_no>

|                    |                                                                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Used when deleting the information of the device stored in SLOT as a connection target when BOT operates in the Multicon-role .                                                                                                                      |
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                       |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                        |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                   |
| Explanation        | <p>BoT deletes the information stored in slot for user-specified multi-connection ( User Group) in Multicon-role status normally, +OK, otherwise +ERROR.</p> <p>&lt;slot_no&gt; 0 ~ 8: If 0, delete the storage information of all saved slots .</p> |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Otherwise, only the storage information of the specified slot is deleted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Examples of Use | <p>(HOST → BOT) : AT+SETSLOT=1,5CF286400001,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+SETSLOT=2,5CF286400002<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : <b>AT+DELSLOT=0</b><br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+GETSLOT<br/>         (BOT → HOST) : +ERROR</p> <p>or</p> <p>(HOST → BOT) : AT+SETSLOT=1,5CF286400001,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+SETSLOT=2,5CF286400002<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : <b>AT+DELSLOT=1</b><br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+GETSLOT<br/>         (BOT → HOST): SLOT2 [5CF286400002]</p> <p>➔ All slots save information is erased, or only the specified slot save information is erased.</p> |

## 7.76. AT+UG ROUP

|                   |                                                                                                                                                                                                                                                                                                                                         |
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| Operation         | BOT operates in a Multicon-role, it is used to maintain continuous connection and communication through group designation rather than temporary connection to multiple counterpart devices. Use this when you want to connect and communicate only with devices that the user has specified and saved in the slot (AT+SETSLOT command). |
| Commandable state | <p><b>Multicon-role</b></p> <p>Not connected to Remote device</p> <p><b>Client, Server-role</b></p> <p>: Not available</p>                                                                                                                                                                                                              |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Response           | +U GROUP or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Explanation        | <p>The command allows BoT to attempt to connect only to devices corresponding to the information stored in the slot in the Multicon-role state, and outputs +UGROUP after +OK if the command is executed normally, or +ERROR if not.</p> <p>At this time, the connection is attempted only with devices previously specified and stored via the AT+SETSLOT command. If the specified device connection is not completed, or the connection is lost, continue trying to reconnect.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Examples of Use    | <p>(HOST → BOT) : AT+SETSLOT=1,5CF286400001,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+SETSLOT=2,5CF286400002<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : <b>AT+UGROUP</b><br/>         (BOT → HOST) : +UGROUP<br/>         (BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br/>         (BOT → HOST) : +CONN02[5C:F2:86:40:00:02]<br/>         (BOT → HOST) : +OK<br/>         ----- After connection start, all devices saved by the user are successfully connected- -----</p> <p>- - If the connection is disconnected after all specified counterpart devices have completed their connection -----<br/>         (BOT → HOST) : +DISC02<br/>         (BOT → HOST) : +CONN02[5C:F2:86:40:00:02]</p> <p>➔ Connect only to storage devices specified by the AT+SETSLOT command, automatic reconnection if connection is lost.<br/>         When the connection is completed for all devices saved by the user, +OK occurs. This message does not occur in BYPASS mode.</p> <p>&lt;TIP&gt; This command repeats automatic connection only for devices that the user has specified through the AT+SETSLOT command.</p> <p>&lt;warning&gt; This command for the purpose of group composition and</p> |

|  |                                                                                                                                                                                                                       |
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|  | communication, even if a specific device is arbitrarily disconnected via the AT +MDISC command, it automatically attempts to reconnect, so only group bulk connection termination via reboot such as ATZ is possible. |
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### 7.77. AT+MDISC=<idx>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT operates in the Multicon-role, use this when you want to terminate the connection of the counterpart device with a specific index among the connected devices.                                                                                                                                                                                                                                                                                                                                     |
| Commandable state  | <b>Multicon-role</b><br>: Connected to a Remote device without Bypass mode set.<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.<br><b>Client, Server-role</b><br>: Not available                                                                                                                                                                                                                                                                |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response completed | 100ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Explanation        | If BoT performs the command normally in the Multicon-role state, terminate the connection with the device corresponding to the index after +OK, otherwise output +ERROR.                                                                                                                                                                                                                                                                                                                               |
| Examples of Use    | (HOST → BOT) : AT+SF=ON,CHIPSEN<br>(BOT → HOST) : +OK<br>(HOST → BOT) : AT+MCONNECT<br>(BOT → HOST) : +MCONNECT<br>(BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br>(BOT → HOST) : +CONN02[5C:F2:86:40:00:0 2]<br>(BOT → HOST) : +CONN03[5C:F2:86:40:00:0 F]<br>(BOT → HOST) : +CONN04[5C:F2:86:40:00: 1A]<br>(BOT → HOST) : +CONN05[5C:F2:86:40:00: 20]<br>(HOST → BOT) : <b>AT+MDISC=04</b><br>(BOT → HOST) : +OK<br>(BOT → HOST) : +DISC04<br>➔Connection with a specified target device has been lost. |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>or</p> <p>(HOST → BOT) : AT+SF=ON,CHIPSEN<br/>(BOT → HOST) : +OK<br/>(HOST → BOT) : AT+MCONNECT<br/>(BOT → HOST) : +MCONNECT<br/>(BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br/>(BOT → HOST) : +CONN02[5C:F2:86:40:00:0 2]<br/>(BOT → HOST) : +CONN03[5C:F2:86:40:00:0 F]<br/>(BOT → HOST) : +CONN04[5C:F2:86:40:00: 1A]<br/>(BOT → HOST) : +CONN05[5C:F2:86:40:00: 20]<br/>(HOST → BOT) : <b>AT+MDISC=00</b><br/>(BOT → HOST) : +OK<br/>(BOT → HOST) : +DISC03<br/>(BOT → HOST) : +DISC04<br/>(BOT → HOST) : +DISC01<br/>(BOT → HOST) : +DISC02<br/>(BOT → HOST) : +DISC05<br/>(BOT → HOST) : +DISC00<br/>➔ Notify via +DISC00 that all devices are disconnected, and all connected devices are sequentially disconnected,</p> <p>&lt;warning&gt; If connected to a counterpart device through the AT+MGROUP or AT+UGROUP command corresponding to the Group configuration, automatic reconnection may occur repeatedly.</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

7.78.AT+MDATA=<connection\_idx>,<data>

|                   |                                                                                                                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation         | BOT is connected to multiple devices as a Multicon-role, it is used to transmit data by specifying the counterpart device in the form of an AT command structure.                                                                       |
| Commandable state | <p><b>Multicon-role</b></p> <p>: Connected to a Remote device without Bypass mode set.</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> <p><b>Client, Server-role</b></p> |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | : Not available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response           | doesn't exist.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Response completed | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Explanation        | <p>When BOT is connected to multiple devices simultaneously as Multicon-role and data is to be transmitted to the counterpart device, use it.</p> <p>&lt;connection_idx&gt;: <b>00</b> or <b>01</b> ~ (maximum) <b>08</b>.</p> <p>If <b>00</b>, send &lt;data&gt; to all connected devices. If not <b>00</b>, send &lt;data&gt; only to the device corresponding to the specified idx.</p> <p>&lt;data&gt;: Up to 100 characters</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Examples of Use    | <p>(HOST → BOT) : AT+SF=ON,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+MCONNECT<br/>         (BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br/>         (BOT → HOST) : +CONN02[5C:F2:86:40:00:0 2]<br/>         (BOT → HOST) : +CONN03[5C:F2:86:40:00:0 F]<br/>         (BOT → HOST) : +CONN04[5C:F2:86:40:00: 1A]<br/>         (BOT → HOST) : +CONN05[5C:F2:86:40:00: 20]<br/>         (HOST → BOT): <b>AT+MDATA=00,12345</b><br/>         ➔ Data 12345 is transmitted to all devices connected to the MULTIDROP data transmission. There is a difference in data reception time between each devices.</p> <p>or</p> <p>(HOST → BOT) : AT+SF=ON,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+MCONNECT<br/>         (BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br/>         (BOT → HOST) : +CONN02[5C:F2:86:40:00:0 2]<br/>         (BOT → HOST) : +CONN03[5C:F2:86:40:00:0 F]<br/>         (BOT → HOST) : +CONN04[5C:F2:86:40:00: 1A]<br/>         (BOT → HOST) : +CONN05[5C:F2:86:40:00: 20]<br/>         (HOST → BOT): <b>AT+MDATA=03,12345</b><br/>         ➔ Data 12345 is transmitted only to the device with connection index 03 ( +CONN03[5C:F2:86:40:00:0 F] ) among the devices connected to NODEDROP data transmission .</p> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>&lt;warning&gt; Since this command transmits data in the AT command structure, it is recognized as the end of the command through Carriage-return (0x0D), and the input data is recognized and transmitted.</p> <p>Therefore, if data (0x00, 0x0A, 0x0D) related to the end of the string is included in the data to be transmitted, data may be missing. For transmission without missing, the user must consider an avoidance plan through data change or transmit the data to be transmitted in the form of a hexadecimal string structure.</p> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.79.AT+MDATA2=<connection\_idx>,<data>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | BOT is connected to multiple devices with a Multicon-role, it is used to transmit data by specifying the counterpart device in the form of an AT command structure.                                                                                                                                                                                                                                                                    |
| Commandable state  | <p><b>Multicon-role</b></p> <p>: Connected to a Remote device without Bypass mode set.</p> <p>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High.</p> <p><b>Client, Server-role</b></p> <p>: Not available</p>                                                                                                                                                                         |
| Response           | doesn't exist.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Response completed | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Explanation        | <p>When BOT is connected to multiple devices simultaneously as Multicon-role and data is to be transmitted to the counterpart device, use it.</p> <p>&lt;connection_idx&gt;: <b>00</b> Or <b>01 ~ 08</b>.</p> <p>If <b>00</b>, send &lt;data&gt; to all connected devices. If not <b>00</b>, send &lt;data&gt; only to the device corresponding to the specified idx.</p> <p>&lt;data&gt;: A hexadecimal string of up to 100 bytes</p> |
| Examples of Use    | <p>(HOST → BOT) : AT+SF=ON,CHIPSEN</p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : AT+MCONNECT</p> <p>(BOT → HOST) : +CONN01[5C:F2:86:40:00:01]</p> <p>(BOT → HOST) : +CONN02[5C:F2:86:40:00:02]</p> <p>(BOT → HOST) : +CONN03[5C:F2:86:40:00:0F]</p>                                                                                                                                                                                  |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>(BOT → HOST) : +CONN04[5C:F2:86:40:00:1A]<br/>         (BOT → HOST) : +CONN05[5C:F2:86:40:00:20]<br/>         (HOST → BOT): <b>AT+MDATA=00,3132333435</b><br/>         ➔ Data corresponding to hexadecimal 0x3132333435 (12345) is transmitted to all devices connected via MULTIDROP data transmission. There is a difference in data reception time between each devices.</p> <p>or</p> <p>(HOST → BOT) : AT+SF=ON,CHIPSEN<br/>         (BOT → HOST) : +OK<br/>         (HOST → BOT) : AT+MCONNECT<br/>         (BOT → HOST) : +CONN01[5C:F2:86:40:00:01]<br/>         (BOT → HOST) : +CONN02[5C:F2:86:40:00:02]<br/>         (BOT → HOST) : +CONN03[5C:F2:86:40:00:0F]<br/>         (BOT → HOST) : +CONN04[5C:F2:86:40:00:1A]<br/>         (BOT → HOST) : +CONN05[5C:F2:86:40:00:20]<br/>         (HOST → BOT): <b>AT+MDATA2=03,3132333435</b><br/>         ➔ Among the devices connected to NODEDROP data transmission, data (12345) corresponding to hexadecimal 0x3132333435 is transmitted only to the device with connection index 03 (+CONN03[5C:F2:86:40:00:0F]) .</p> <p>&lt;warning&gt; Since this command transmits data in the AT command structure, it is recognized as the end of the command through Carriage-return (0x0D), and the input data is recognized and transmitted. Therefore, if data (0x00, 0x0A, 0x0D) related to the end of the string is included in the data to be transmitted, data may be missing. For transmission without missing, the user must consider an avoidance plan through data change or transmit the data to be transmitted in the form of a hexadecimal string structure.</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.80.AT +MBYPASS=<enable>

|           |                                                                                                                                       |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| Operation | BOT as Multicon-role is connected to multiple devices, and you want to send and receive data with all devices in Bypass mode, use it. |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------|

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commandable state  | Not connected to Remote device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Response           | +OK or +ERROR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Response completed | 20ms after receiving a command (based on 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Explanation        | If the REQUEST is received normally and the command is performed, "+OK " is responded. Otherwise, respond with "+ERROR" .<br><enable> : <b>ON</b> or <b>OFF</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Examples of Use    | <p>(HOST → BOT) : <b>AT+MBYPASS=ON</b></p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : AT+UGROUP</p> <p>(BOT → HOST) : +U GROUP</p> <p>- ----- Connection to the counterpart device completed (connection information not confirmed)- -----</p> <p>(HOST → BOT): send test message.</p> <p>- ----- All connected devices receive test message send - -----</p> <p>(BOT → HOST): Remote device data</p> <p>- ----- The received data was printed, but Unable to determine what device it is- ----</p> <p>➔AT+MBYPASS=ON is set, data is transmitted to all connected counterparts in bypass mode. If data is generated from the counterpart device, it is output as is.</p> <p>&lt;warning&gt; When this function is turned ON, information such as which device is connected cannot be checked. It is impossible to distinguish which device the data was received from, this requires caution.</p> <p>Therefore, in order to use this function, you must provide information about the usage environment, test environment to Chipsen.Inc in advance and you need to request technical support. In this regard, the application of the bypass data transmission and reception function should be reviewed through individual technical support for the BOT setup method.</p> <p>(For technical support inquiries : s1@chipsen.com or tech@chipsen.com )</p> |

## 7.81.AT+MBYPASS?

|                    |                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation          | Use to verify that the BOT is set to operate in Bypass mode with the counterpart after connecting to multiple devices in Multicon-role                                                                                                                                                                                                                             |
| Commandable state  | <b>Client, Server-role</b><br>Not connected to Remote device<br>: In connected status, when AT command/BYPASS port is maintained High.<br><b>Multicon-role</b><br>Not connected to Remote device<br>: Connected to a Remote device without Bypass mode set.<br>: Connected to a Remote device with Bypass mode set, but AT command/BYPASS port is maintained High. |
| Response           | <b>ON</b> or <b>OFF</b>                                                                                                                                                                                                                                                                                                                                            |
| Response completed | 20 ms after receiving a command (9600 bps) standard)                                                                                                                                                                                                                                                                                                               |
| Explanation        | If it is normally set to receive REQUEST and send/receive data when connecting to the Multicon-role bypass, answer ON, otherwise OFF.                                                                                                                                                                                                                              |
| Examples of Use    | (HOST → BOT) : <b>AT+MBYPASS?</b><br>(BOT → HOST) : OFF<br>➔ It can be confirmed that BOT as Multicon-role is set to send/receive data in the form of AT command structure when connecting to the counterpart device                                                                                                                                               |

## 8. Data receive Protocol Detail

### 8.1. +DATAnn[<data>]

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation       | BOT is connected to multiple devices with a Multicon-role, if data occurs in the counterpart device, it outputs it to the HOST.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Explanation     | <p>BoT is connected to multiple devices simultaneously with Multicon-role, if data is generated from the counterpart device, the counterpart device information and data are output to the HOST.</p> <p>nn: <b>01</b> ~ (maximum) <b>08</b>, <b>connection</b> index of the counterpart device where the data was generated.</p> <p>&lt;data&gt;: Data generated from the counterpart device</p>                                                                                                                                                                                                                                                                                      |
| Examples of Use | <p>(HOST → BOT) : AT+SF=ON,CHIPSEN</p> <p>(BOT → HOST) : +OK</p> <p>(HOST → BOT) : AT+MCONNECT</p> <p>(BOT → HOST) : +CONN01[5C:F2:86:40:00:01]</p> <p>(BOT → HOST) : +CONN02[5C:F2:86:40:00:0 2]</p> <p>(BOT → HOST) : +CONN03[5C:F2:86:40:00:0 F]</p> <p>(BOT → HOST) : +CONN04[5C:F2:86:40:00: 1A]</p> <p>(BOT → HOST) : +CONN05[5C:F2:86:40:00: 20]</p> <p>(BOT → HOST) : <b>+DATA02 [ABCDE]</b></p> <p>➔ Notify that data called ABCDE has been generated from connected counterpart device 02 (+CONN02[5C:F2:86:40:00:0 2] ) .</p> <p>&lt;warning&gt; This data reception method only works when the Bypass data communication function is turned off in the Multicon-role.</p> |

## 9. Advertising (Discoverable) Data format

Advertising Data refers to data that can be confirmed during a search even if there is no connection from the other client device when BT operates in a Server-role .

### 9.1. Format

#### 9.1.1. Normal Format Advertising

It contains 22 bytes of data area that can be changed by the user out of a total of 31 bytes of normal format a digitalizing data.

The data included in the advertising data consists of a Reserved data area (Length and Flag) that cannot be changed by the user and a data area that can be changed by the user via UART. The FIELD in the yellow block in the structure below is an area that the user can change with an AT command.

##### ■ Structure

The packet configuration format is as follows, and the index position of the packet can vary depending on the data length.

TX level, Device Name, and User Data settings correspond to the AT commands "AT+TXPWR", "AT+MANUF", and "AT+ADVDATA" respectively.

| index | 31              | 30 | 29 | 28                   | 27 | 26                                             | 25                         | 24 | 23                                    | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
|-------|-----------------|----|----|----------------------|----|------------------------------------------------|----------------------------|----|---------------------------------------|----|----|----|----|----|----|----|
| Data  | GAP<br>Reserved |    |    | TX power<br>reserved |    | <a href="#">TX<br/>level<br/>User<br/>Data</a> | Device<br>name<br>Reserved |    | <a href="#">Device Name User Data</a> |    |    |    |    |    |    |    |

| index | 15                       | 14 | 13                                  | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|-------|--------------------------|----|-------------------------------------|----|----|----|---|---|---|---|---|---|---|---|---|
| Data  | User<br>data<br>reserved |    | <a href="#">Undefined User Data</a> |    |    |    |   |   |   |   |   |   |   |   |   |

### 9.1.2. iBeacon Format Advertising

A total of 31 bytes iBeacon format advertising data includes a 5-byte data area that can be changed by the user.

Data areas that can be changed by the user via UART are the Major/Minor and RSSI (TX power value) items, which can be changed by AT command.

#### ■ Structure

The packet configuration format is as follows, and changing Major/Minor and RSSI (TX power value) correspond to the AT commands "AT+MAJOR ", "AT+MINOR ", and "AT+IRSSI ", respectively.

| index | 31              | 30 | 29 | 28                  | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19               | 18 | 17 | 16 |
|-------|-----------------|----|----|---------------------|----|----|----|----|----|----|----|----|------------------|----|----|----|
| Data  | GAP<br>Reserved |    |    | iBeacon<br>Reserved |    |    |    |    |    |    |    |    | UUID<br>Reserved |    |    |    |

| index | 15               | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6     | 5     | 4 | 3     | 2 | 1 |
|-------|------------------|----|----|----|----|----|---|---|---|-------|-------|---|-------|---|---|
| Data  | UUID<br>Reserved |    |    |    |    |    |   |   |   | MAJOR | MINOR |   | IRSSI |   | x |

\* <warning> iBeacon Format Advertising uses only the configuration of the advertising packet before connecting to the counterpart device, and the service configuration, connection method with the counterpart device, and data communication with the counterpart device, except for advertising, are irrelevant to iBeacon operation.

### 9.1.3. Chipsen Beacon Format Advertising

It contains 26 bytes of data area that can be changed by the user out of the total 31 bytes of Beacon mode advertising data.

The data included in the advertising data consists of a Reserved data area (Length and Flag) that cannot be changed by the user and an Undefined/User Data area that can be changed by the user via UART. The FIELD in the yellow block in the structure below is an area that the user can change with an AT command.

#### ■ structure

The packet configuration format is as follows, and the index position of the packet can vary depending on the data length.

The data area that the user can change via UART corresponds to the Undefined / User Data item and is set via the AT+BEACON command.

| index | 31  | 30 | 29 | 28        | 27 | 26         | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
|-------|-----|----|----|-----------|----|------------|----|----|----|----|----|----|----|----|----|----|
| Data  | GAP |    |    | User data |    | Undefined/ |    |    |    |    |    |    |    |    |    |    |

|       |                         |          |           |    |    |    |   |   |   |   |   |   |   |   |   |
|-------|-------------------------|----------|-----------|----|----|----|---|---|---|---|---|---|---|---|---|
|       | Reserved                | reserved | User Data |    |    |    |   |   |   |   |   |   |   |   |   |
| index | 15                      | 14       | 13        | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Data  | Undefined/<br>User Data |          |           |    |    |    |   |   |   |   |   |   |   |   |   |

\* \*<warning> User Data set by the user through a command is stored in the internal memory of BoT. It is transmitted repeatedly while power is on, and advertising operation is in progress unless the user updates the User Data.

## 10. General Data transmission

### 10.1. Server / Client-role

After the BOT is connected to the counterpart device, data transmitted to the counterpart device or received from the counterpart device is automatically transmitted without conversion of form.

|                      |                                                                                       |
|----------------------|---------------------------------------------------------------------------------------|
| Status               | BoT and the counterpart device are connected                                          |
| Transmission example | (HOST → BOT) : <b>ABCD&lt;CR&gt;</b><br>(Counterpart device): <b>ABCD&lt;CR&gt;</b>   |
| Receiving example    | (Counterpart Device): <b>EFGH &lt;CR&gt;</b><br>(HOST → BOT) : <b>EFGH &lt;CR&gt;</b> |

However, the maximum data transmitted at one time through BLE link may be divided or delayed according to the counterpart device and the UART transmission rate. (Baudrate) .

### 10.2. Multicon-role

After the BOT is connected to the counterpart device, data transmitted from the HOST in the structure of the data transmission protocol (AT+MDATA=idx, <data> or AT+MDATA2=idx, <data>) is transmitted to the designated counterpart device. In addition, the data received from the counterpart device is transmitted to the HOST in the form of a predetermined receiving protocol (+DATAn[<data>] format.

#### 10.2.1. AT+MDATA=idx,<data>

The AT+MDATA=idx,<data> command processes the <data> to be transmitted as string data as it is entered. (There may be omissions due to string processing-related data such as 0x00, 0x0D, 0x0A, etc.)

|                                       |                                                                                                                                                                                                                                        |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status                                | BoT and many the counterpart device are connected                                                                                                                                                                                      |
| Transmission Example 1<br>(MULTIDROP) | (HOST → BOT) : <b>AT+MDATA=00, ABCD&lt;CR&gt;</b><br>(Connected counterpart device -01): <b>ABCD</b><br>(Connected counterpart device -02): <b>ABCD</b><br>(Connected counterpart device -03): <b>ABCD</b>                             |
| Transmission Example 2<br>(NODEDROP)  | (HOST → BOT) : <b>AT+MDATA=02, ABCD&lt;CR&gt;</b><br>(Connected counterpart device -01): <b>(No data received)</b><br>(Connected counterpart device -02): <b>ABCD</b><br>(Connected counterpart device -03): <b>(No data received)</b> |
| Receiving example                     | (Connected counterpart device -01): <b>ABCD&lt;CR&gt;</b><br>(Connected counterpart device -02): <b>EFGH&lt;CR&gt;</b>                                                                                                                 |

|  |                                                                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | (Connected counterpart device -03): <b>1234&lt;CR&gt;</b><br>(HOST → BOT) : <b>+D ATA01[ ABCD&lt;CR&gt;]</b><br>(HOST → BOT) : <b>+D ATA02[ EFGH&lt;CR&gt;]</b><br>(HOST → BOT) : <b>+D ATA03[ 1234 &lt;CR&gt;]</b> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<warning> In the case of transmission using the AT+MDATA=idx,<data> command, data is received from the HOST in the AT command structure, and <data> is processed as a string data as it is entered and transmitted to the counterpart device, so the end of the command is recognized through Carriage-return(0x0D) .

Therefore, when <data> includes data for processing strings such as 0x00, 0x0D, 0x0A, etc., omission of transmission data may occur. When the data includes 0x00, 0x0D, 0x0A, etc., the user must apply a separate avoidance measure or use the AT+MDATA2=idx, <data> command.

### 10.2.2. AT+MDATA2=idx,<data>

The AT+MDATA=idx,<data> command recognizes the <data> to be transmitted as a hexadecimal string, and BOT converts the input data and transmits it. (There are no restrictions on string processing-related data such as 0x00, 0x0D, 0x0A, etc.)

|                                                 |                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status                                          | BoT and many the counterpart device are connected                                                                                                                                                                                                                                                                                       |
| Transmission<br>Example 1<br><b>(MULTIDROP)</b> | (HOST → BOT): <b>AT+MDATA2= 00,414243440D&lt;CR&gt;</b><br>(Connected counterpart device -01): <b>ABCD&lt;CR&gt;</b><br>(Connected counterpart device -02): <b>ABCD&lt;CR&gt;</b><br>(Connected counterpart device -03): <b>ABCD&lt;CR&gt;</b>                                                                                          |
| Transmission<br>Example 2<br><b>(NODEDROP)</b>  | (HOST → BOT): <b>AT+MDATA=02, 414243440D&lt;CR&gt;</b><br>(Connected counterpart device -01): <b>(No data received)</b><br>(Connected counterpart device -02): <b>ABCD&lt;CR&gt;</b><br>(Connected counterpart device -03): <b>(No data received)</b>                                                                                   |
| Receiving<br>example                            | (Connected counterpart device -01): <b>ABCD&lt;CR&gt;</b><br>(Connected counterpart device -02): <b>EFGH&lt;CR&gt;</b><br>(Connected counterpart device -03): <b>1234&lt;CR&gt;</b><br>(HOST → BOT): <b>+DATA01[ ABCD&lt;CR&gt;]</b><br>(HOST → BOT): <b>+DATA02[ EFGH&lt;CR&gt;]</b><br>(HOST → BOT): <b>+DATA03[ 1234 &lt;CR&gt;]</b> |

### 10.2.3. Bypass data transfer in Multicon-role

BOT is basically configured to send and receive data in AT command format to check

the multi-connection status of the device and to clearly transmit and receive data for each individual device. However, if you want to send and receive data in the form of bypass to all devices connected in the Multicon-role, provide information on the usage environment and test environment to CHIPSEN INC. and you need to request technical support. In this regard, it is possible to apply the operation of the bypass data transmission and reception function through individual technical support for the setting method of BOT.

(Technical support inquiries: [s1@chipsen.com](mailto:s1@chipsen.com) or [tech@chipsen.com](mailto:tech@chipsen.com) )

## 11.Service UUID Information

BOT can operate the Custom Data transmission and reception service through the following service UUID to connect to the counterpart device. Therefore, the counterpart device must use the following UUID and attributes.

| division                         | UUID    | attribute                |
|----------------------------------|---------|--------------------------|
| Custom Data service<br>(Primary) | 0xFFFF0 | N/A                      |
| Data Out service                 | 0xFFFF1 | Notification             |
| Data In service                  | 0xFFFF2 | Write, Write No Response |

\*16bit UUID 0xFFFF0 to 128 bit UUID: 0000FFF0-0000-1000-8000-00805F9B34FB

\*16bit UUID 0xFFFF1 to 128 bit UUID: 0000FFF1-0000-1000-8000-00805F9B34FB

\*16bit UUID 0xFFFF2 to 128 bit UUID: 0000FFF2-0000-1000-8000-00805F9B34FB

## 12.APPENDIX – Useful FQA

**<Q 1> UART communication does not work.**

**<A>** Please check the power and UART TX/RX connections.

**<Q 2> I'm searching on my phone, but the device isn't found.**

**<A>** Check SMD status : Check if Ground and antenna pad are connected with 'short'.

**<A>** Please check and set the Role.

Related commands: AT+ROLE?, AT+ROLE=<role>

Example: AT+ROLE?

AT+ROLE=S

**<A>** When searching on your phone, check if you searched through the app.

Related references: Chipsen homepage – Download – module-related documents

[https://en.chipsen.com/board/product/list.html?board\\_no=1002](https://en.chipsen.com/board/product/list.html?board_no=1002)

**<Q 3> When I search on my mobile phone, the search is slower than on counterpart devices. Or it doesn't search well.**

**<A>** Please check the advertising related settings.

Related commands: AT+ADVINTERVAL=<interval>, AT+TXPWR=<step>

Example: AT+ADVINTERVAL=100

AT+TXPWR=8

**<Q4> I am communicating with two BOT modules. Can I increase the communication distance?**

**<A>** Test the wireless output by changing the settings.

Related commands: AT+TXPWR=<step>

Example: AT+TXPWR=8

**<Q 5> I want to send user data when BOT is not connected.**

<A> Use the user data area within the Advertising packet

Related commands: AT+A DVDDATA=<data>

Example: AT+ADVDDATA=123456789abcd

AT+ADVDDATA=31323334353637383961616364

<A> If no connection action is required, try using Advertising type in BEACON mode.

Related commands: AT+ADVTYPE=B, AT+BEACON=<data>

Example: AT+BEACON=31323334353637383961616364

**<Q6> I want to change the device name when searching.**

<A> Change the device name in advertising packet.

Related commands: AT+MANUF=<name>

Example: AT+MANUF=TEST

**<Q7> Device name 8 characters, can't we do more than that?**

<A> The commercial version is designed to divide data for various functions from the total available data size of the Advertising packet and apply fixed values. Therefore, in order to make the device name longer than 8 characters, a separate software change is required. Such separate software change must be sent to [s1@chipsen.com](mailto:s1@chipsen.com) or [tech@chipsen.com](mailto:tech@chipsen.com). Please contact us at.

**<Q8> I want to reduce the standby power of the module when not using wireless communication.**

<A> Please check the circuit diagram in the data sheet, and set the low energy mode related commands

Related command: AT+INTPULLDOWN=<enable>

Example: AT+INTPULLDOWN=OFF

\*\* When applying the above command, the circuit related to external pull-down must be included.

Check UART ON/OFF GPIO and ENTER\_SLEEP/WAKE\_UP GPIO control methods

**<Q9> When power is turned on in the Client (Master operation) role, is it not possible to**

**connect to the most recent device? Do I have to search and connect every time?**

<A> Please check the recent device connection related commands.

Related commands: AT+AUTOCON=<enable>, AT+CONNECT

example: AT+AUTOCON=ON

or

AT+CONNECT

**<Q10> When scanning in the Client (Master Behavior) role, the results of the device output found at some points are strangely output.**

<A> This is when there are too many BLE devices being searched in the vicinity compared to the search output speed. Increase UART speed, or make sure only specific devices you want to search for are found.

Related commands: AT+UART=<baud>, AT+SF=ON,<filter\_name>

Example: AT+UART=115200

AT+SF=ON,CHIPSEN

**<Q11> Is 1: N communication not working?**

<A> If the data to be sent and received is small and does not occur frequently, try using the Multicon-role. Communication up to 1:8 is possible through a set AT command.

Related commands: AT+ROLE=<role>, AT+CONMAC=<mac>,  
AT+MDATA=<idx>,<data>, AT+SF=ON,<filter\_name>,AT+MLINK=<max\_link>,  
AT+MCONNECT, AT+MGROUP=<max\_link>,<name>, etc.

Example: AT+CONMAC command Individual connection through  
AT+MDATA command

or

AT+MCONNECT description

AT+MDATA command

or

the AT+MGROUP command description

the AT+MDATA command

or

the AT+UGROUP command description

the AT+MDATA command

**<Q12> In BOT data communication, Data loss occurs.**

<A> Try connecting and communicating by increasing the BOT wireless output and baudrate and please check if there are too many other Bluetooth devices or Wi-Fi devices in your environment that are interfering with BOT communication.

Related commands: AT+UART=<baudrate> AT+TXPWR=<step> ,

AT+CONNINTERVAL=<min>,<max> , AT+STL, etc.

Example : AT+TXPWR=8

<A> BOT is a wireless communication device, so there is a possibility that data may be lost for various reasons. Aren't you transmitting a large amount of data continuously? If data loss occurs repeatedly, please contact [s1@chipen.com](mailto:s1@chipen.com) or [tech@chipen.com](mailto:tech@chipen.com) . Please provide information about your usage environment and communication scenarios to determine the optimal settings, let me tell you how.

**<Q13> What is the difference between the connection commands in the Multicon-role?**

<A> There are four ways to connect to an counterpart device in the Multicon-role.

**AT+CONMAC=<address>**: Individual connection is possible if the user knows the <address> of the counterpart device. The number of devices that can be connected using this command can be connected as many times as set through the AT+MLINK command.

**AT+MCONNECT**: Automatically attempts to connect to a peripheral device with the same name specified by the user via the AT+SF command. The number of devices that can be connected using this command can be set using the AT+MLINK command. It is possible to do as many as the set number, but the automatic connection operation will only take place for 60 seconds after the command is received. Afterwards, the user must connect using the AT+CONMAC command.

**AT+MGROUP**: Automatically connects to the name you set with the command and the number of relative devices. This command is used to maintain communication, such as Group configuration, and when the connection with the device is terminated, the device with the same name is automatically found and connected, ensuring that the maximum number of relative devices that can be connected is always maintained.

This is useful if there are many devices with the same name, and devices within the

communication range change frequently, such as repeated movements of the counterpart device.

**AT+UGROUP** : The user automatically connects to a preconfigured counterpart device via the AT+SETSLOT command. This command maintains communication, such as configuring a group, and is used if the user only wants to connect to the device specified in the SLOT and allows the user to maintain a custom group by repeatedly attempting to connect if the set counterpart device is not connected. This is useful if you need to maintain a connection with certain devices, and there is usually no movement of the counterpart device and a device within the communication range needs to be specified.

**<Q14> The connection security level is set to connect, but security connection requests may be made again when reconnecting later.**

<A> BOT is configured to perform the secure connection process again when a connection failure occurs for any reason when reconnecting to a device with which a secure connection has been established, to prevent additional security issues from occurring. So, in this case, you need to go through the secure connection procedure again.

## Appendix 1. Limitation of Liability and Legal Notices

★ This product may cause radio confusion during use and may receive harmful interference from counterpart devices. Therefore, there may be data transfer delays or losses, and users are advised to take this into consideration and use it after sufficient testing. Due to the nature of the radio, there is no guarantee of accuracy, reliability or completeness, nor is there any responsibility. In no event shall CHIPSEN INC. or Seller's liability limit exceed the paid selling price of the product.

★ This product is not a "customized" product, but operates on the form, behavior, and software specified by CHIPSEN INC. In other words, be aware that the product is not designed for your specific environment and use it. We recommend that you refer to the functions and commands provided in the manual. It is recommended that you use it after sufficient testing if you use it in a specific environment, and the use and application of this product is entirely with the user (customer) and CHIPSEN INC. has no warranty and no liability.

★ The technical information provided in this document describes the representative characteristics of the product and examples of the application circuit. This does not mean allowing industrial property rights, intellectual property rights, or other rights.

★ This product and related everything are subject to change without prior notice to improve performance.

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