

BnCOM Module Protocol

**AT communication protocol
For SPP module(BCM-DC100-AS)**

BnCOM Co.,Ltd

Client Company	Date of Creation	Document Name	Document Version
	2021.05.06	BnCOM Module UART Protocol	0.0.4

■ HISTORY

Version	Distribution Date	Content
0.0.1	2021.03.12	Created the document draft
0.0.2	2021.03.15	BT GPIO description modification
0.0.3	2021.03.26	Modified the description of the entire operation function, added OTA Guide
0.0.4	2021.05.06	Modify and add full action feature settings

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1. Introduction

This document defines the communication protocol through UART (Seral port) between the "BnCOM Module" (hereinafter "BT") and the client's MCU (hereinafter "HOST") connected by UART interface.

1.1. Protocol Basic Rule

- Data transmission/reception between HOST and BT is made based on UART (serial port) interface.
 - Baud rate : 230400 bps
 - Data bit : 8
 - Parity bit : none
 - Stop bit : 1
 - Flow control : RTS/CTS Enable

The above are default setting values. In case you want to change them, please make a request for modification when writing BT firmware or modify them using the corresponding AT command (AT+BTUART=B,P,S).
- Communication Direction
 - REQUEST (HOST→BT) : Generated from HOST and transmitted to BT.
 - NOTIFY(BT → HOST) : A message that occurs in BT and is delivered to HOST. It informs the basic status of BT.
 - RESPONSE(BT → HOST) : A message that occurs in BT and is delivered to HOST. It informs the basic status of BT.
- Communication Rule

All protocols consist of a combination of ASCII values, the protocol command informs the end of the instructions over a Carriage Return (0x0D).

Ex) REQUEST – Recent Device Connections : AT+CONNECT↵

Command	AT+CONNECT										
Command set	A	T	+	C	O	N	N	E	C	T	↵
Ascii set	0x41	0x54	0x2B	0x43	0x4F	0x4E	0x4E	0x45	0x43	0x54	0x0D

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Ex) NOTIFY – First message to HOST when power is applied: READY↵

Command	READY					
command set	R	E	A	D	Y	↵r
ascii set	0x52	0x45	0x41	0x44	0x59	0x0D

Ex) RESPONSE – Request failed (BAD_HOST_COMMAND) : ERROR↵

Command	ERROR					
Command set	E	R	R	O	R	↵r
ascii set	0x45	0x52	0x52	0x4F	0x52	0x0D

1.2. Basic protocol operation

BT transmits the corresponding RESPONSE after receiving a request from HOST. HOST may basically expect a RESPONSE of “OK↵” or “ERROR↵”, and may receive a specific RESPONSE corresponding to the request.

1.3. Description of BT GPIO

- Separate GPIO is allocated to notify BT status information or control specific BT functions in HOST.

GPIO	Name	Direction	I/O	Description
GPIO 15	Power State LED	Output	Low	BT Power Off
			High	BT Power On
GPIO 36	Connected State LED	Output	Low	BT Device Disconnected
			High	BT Device Connected
GPIO 24	BT Command Port	Input	Low	AT Command Mode
			High	Bypass Mode
GPIO 34	BT Command State LED	Output	Low	Bypass Mode State
			High	AT Command Mode State

- BT switches to Bypass Mode when it is connected (AT Command mode can be switched to GPIO24)
- BT switches to AT Command Mode when disconnected (Bypass mode cannot be switched to GPIO24)
- To change from Bypass to AT Command in connected state, change GPIO24 from HIGH to LOW.
- To change from AT Command to Bypass in connected state, change GPIO24 from LOW to HIGH.

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2. Service UUID Classification

BT provides Data Service for data communication. Each UUID is shown in the table below. Smartphones or other devices can access each service through the following UUID.

Class	UUID	Property
Data Service (Primary)	0xA2980000DA8D4B0FA94D74F07D000000	N/A
Notification (Characteristic)	0xA2980001DA8D4B0FA94D74F07D000000	Notification
Write No Response (Characteristic)	0xA2980002DA8D4B0FA94D74F07D000000	Write without Response

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3. BLE ADVERTISING DATA

ADVERTISING DATA transmitted through BLE is as follows.

Total 31Byte	AD Structure 1	Length	0x02	Length of this data
		Type	0x01	Advertising type flag
		AD Data	0x06	LE Flag
	AD Structure 2	Length	0x18	Length of this data
		Type	0x09	Complete Local Name
		AD Data Name	0x42	B
			0x6E	n
			0x43	C
			0x4F	O
			0x4D	M
			0x20	' '
			0x44	D
			0x75	u
			0x61	a
			0x6C	l
			0x20	' '
			0x4D	M
			0x6F	o
			0x64	d
			0x75	u
			0x6C	l
			0x65	e
	AD Structure 3	Length	0x18	Length of this data
		Type	0xFF	Manufacturer Specific Data
		AD Data	0x74	BT MAC Address(6Bytes)
			0xF0	
			0x7D	
			0x00	
			0x00	
			0x00	
			NULL	

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4. REQUEST (HOST→BT) Protocol Summary

Command	Function	Factory Default (Initialization) Setting Value
SYSTEM Command		
AT	BT의 UART Tx/Rx Path Test	
ATZ	BT Soft Reset	
AT&F	BT Factory Reset	
AT+BTUART=B,P,S	UART Setting	230400,N,1
AT+BTUART?	UART information	
AT+BTNAME=xxx	BT Local Name Setting	BnCOM Dual Module
AT+BTNAME?	BT Local Name information	
AT+BTADDR?	BT Mac Address information	
AT+VERSION?	F/W Version information	
AT+DISCONNECT	Disconnect device (In case of AT Command mode)	
AT+REOTEMAC?	Connected device Mac Address information	
AT+SCANMODE=n	BT Searchable Setting	1
AT+SCANMODE?	BT Searchable information	
Classic Command(SPP)		
AT+PAIRCLEAR	Initialize Paring Device Storage	
AT+BTAUTOCON=e,n,s	Settings related to repeated connection attempts in BT	0,10,20
AT+BTAUTOCON?	Check the settings related to repeated connection attempts in BT	
AT+CONNECT	BT SPP connection, last connected device	
AT+CONNECTMAC=n,xxxx	Connect with BT-designated Mac Address device	
AT+CONNECTMAC?	All Mac Address information registered in BT	
AT+BTINQUIRY=E,T,N	SSP device discovery	
AT+BTPINCODE=xxxx	PIN Code Setting	0000
AT+BTPINCODE?	PIN Code information	
AT+BTSSP=n	Simple Secure Pairing mode setting	1(SSP Mode)

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AT+BTSSP?	Simple Secure Pairing mode information	
AT+BTSSPMODE=n	SSP Security Authentication setting	0(Just_Work)
AT+BTSSPMODE?	SSP Security Authentication information	
AT+BTNUMACC	Numeric Comparison Mode certification	
AT+BTPASSKEY	Passkey Entry Mode certification	
iAP Command		
AT+IAPMODEL=xxxx	IAP Model Name setting	BCM-DC100-AS
AT+IAPMODE?	IAP Model Name information	
AT+IAPACCESSORY=xxxx	IAP Accessory Name setting	BCM-DC100-AS
AT+IAPACCESSORY?	IAP Accessory Name information	
AT+IAPPROSTR=xxxx	IAP protocol String setting	com.bncom.protocol
AT+IAPPROSTR?	IAP protocol String information	
AT+IAPSERIAL=xxxx	IAP Serial Number setting	123456789
AT+IAPSERIAL?	IAP Serial Number information	
AT+IAPMANUF=xxxx	IAP Manufacture setting	BnCOM Co., Ltd.
AT+IAPMANUF?	IAP Manufacture information	
BLE Command		
AT+LEADVINTERVAL=x	Advertising Interval setting	256(160ms)
AT+LEADVINTERVAL?	Advertising Interval information	
AT+LECONINTERVAL=Min,Max	Connection Interval setting	8,24(10ms,30ms)
AT+LECONINTERVAL?	Connection Interval information	

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5. NOTIFY (BT→HOST) Protocol Summary

Command	Description	Remark
READY	Initialization completed with power applied.	
OK	Bypass mode -> AT Command mode	
CONNFAIL	Device connection failed	
CONNECTED:1	Classic SPP Device connection	
CONNECTED:2	IAP SSP Device connection	
CONNECTED:3	BLE Device connection	
DISCONNECTED	Disconnect Device	

6. General RESPONSE (BT→HOST) Protocol Summary

Command	Description	Remark
OK	Response to command reception	
ERROR	Response to the case that it does not work normally	

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7. REQUEST Protocol Detail

7.1. AT

Description	BT UART Tx/Rx Path Test
Examples	(HOST→BT) : AT (BT→HOST) : OK

7.2. ATZ

Description	BT Soft Reset
Examples	(HOST→BT) : ATZ (BT→HOST) : OK --- Reboot --- (BT→HOST) : READY

7.3. AT&F

Description	BT Factory Reset (Reset Required) - Page 8, REQUEST Protocol Summary, Note the factory default value
Examples	(HOST→BT) : AT&F (BT→HOST) : OK (HOST→BT) : ATZ (BT→HOST) : OK --- Reboot --- (BT→HOST) : READY

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7.4. AT+BTUART=B,P,S

Description	BT UART Setting	
Info	B = BaudRate	'9600' ~ '921600' Other value: Error
	P = Parity bit	'N' or 'E' or 'O' Other value: Error
	S = Stop bit	'0' or '1' Other value: Error
Examples	(HOST→BT) : AT+BTUART=230400,N,1 [↓] (BT→HOST) : OK	

7.5. AT+BTUART?

Description	BT UART information
Examples	(HOST→BT) : AT+BTUART? (BT→HOST) : +BTUART:230400,N,1 (BT→HOST) : OK

7.6. AT+BTNAME=String

Description	BT Local Name Setting	
Info	String	English and numbers 1~30 character For BLE Name, up to 17 digits
Examples	(HOST→BT) : AT+BTNAME=BnCOM Dual Module (BT→HOST) : OK	

7.1. AT+BTNAME?

Description	BT Local Name information
Examples	(HOST→BT) : AT+BTNAME? (BT→HOST) : +BTNAME:BnCOM Dual Module (BT→HOST) : OK

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7.2. AT+BTADDR?

Description	BT MAC Address information
Examples	(HOST→BT) : AT+BTADDR? (BT→HOST) : +BTADDR:74f07d000000 (BT→HOST) : OK

7.3. AT+VERSION?

Description	F/W Version information
Examples	(HOST→BT) : AT+VERSION? (BT→HOST) : +VERSION:0.2.0 (BT→HOST) : OK

7.4. AT+SCANMODE=mode

Description	BT Searchable Setting	
Info	Mode	'0' = BT Search Disable '1' = BT Search Enable
Examples	(HOST→BT) : AT+SCANMODE=1 (BT→HOST) : OK	

7.5. AT+SCANMODE?

Description	BT Searchable information
Examples	(HOST→BT) : AT+SCANMODE? (BT→HOST) : +SCANMODE:1 (BT→HOST) : OK

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7.6. AT+REMOTEMAC?

Description	Connected device Mac Address information - Use after switching AT Command mode while connected	
Info	Response Type	Mac Address, OS OS : 1(SPP), 2(IAP), 3(BLE)
Examples	(HOST→BT) : AT+REMOTEMAC? (BT→HOST) : +REMOTEMAC:5883257d4c70,3 (BT→HOST) : OK	

7.7. AT+PAIRCLEAR

Description	Initialize Paring Device Storage
Examples	(HOST→BT) : AT+PAIRCLEAR (BT→HOST) : OK

7.8. AT+DISCONNECT

Description	Disconnect device (In case of AT Command mode)
Examples	(HOST→BT) : AT+DISCONNECT (BT→HOST) : OK

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7.9. AT+BTAUTOCON=E,N,T

Description	Related settings for attempting to connect to a device that was connected using "AT+CONNECT" Command 1) BT Device Link Loss Disconnected 2) Repeat connection setting when "AT+CONNECT" fails	
Info	E = Enable	'0' or '1' Other Value = Error
	N = Retry Number	'1' ~ '50' Other Value = Error
	T = Retry Time	'1' ~ '180' (Unit per 1sec) Other Value = Error
Examples	(HOST→BT) : AT+BTAUTOCON=0,10,20 (BT→HOST) : OK	

7.10. AT+BTAUTOCON?

Description	BT Auto Connection Setting values information
Examples	(HOST→BT) : AT+BTAUTOCON? (BT→HOST) : +BTAUTOCON:0,10,20 (BT→HOST) : OK

7.11. AT+CONNECT

Description	BT attempts to connect with the last connected device (SPP Only) - When BTAUTOCON is enabled, retry as much as set
Examples	(HOST→BT) : AT+CONNECT (BT→HOST) : OK (BT→HOST) : CONNECTED:1

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7.12. AT+CONNECTMAC=OS,ADDRESS

Description	BT attempts to connect to the designated Mac Address device (SPP Only)	
Info	OS	'0' (SPP) '1' (IAP) Other Value = Error
	ADDRESS	Mac Address
Examples	(HOST→BT) : AT+CONNECTMAC=0,74F07D000000 (BT→HOST) : OK (BT→HOST) : CONNECTED:1 ----- (HOST→BT) : AT+CONNECTMAC=1,C0E8622F6151 (BT→HOST) : OK (BT→HOST) : CONNECTED:2	

7.13. AT+BTCONNECTMAC?

Description	All Mac Address information registered in BT (SPP Only)
Examples	(HOST→BT) : AT+BTCONNECTMAC? (BT→HOST) : +BTCONNECTMAC:a82bb9e0cb61 (BT→HOST) : OK

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7.14. AT+BTINQUIRY=E,T,N

Description	BT attempts to discover SPP devices (SPP Only)	
Info	E = Enable	0 = Inquiry Disable 1 = Inquiry Enable Other Value = Error
	T = Inquiry Time	'1' ~ '25' (Unit per 1.28s) = (1.28s ~ 32s) Other Value = Error
	N = Inquiry Number	'1' ~ '10' Other Value = Error
	Inquiry Response Type	Device Name,Mac Address,COD,RSSI
Examples	(HOST→BT) : AT+INQUIRY=1,10,5 (BT→HOST) : OK --- If you have a scanning device --- (BT→HOST) : G5,5c70a3da6d14,0x5a020c,-34 (BT→HOST) : Galaxy Note9,A82BB97F6BD5,0x00020C,-31 (Scan N(5) device in T(10*1.28) second)	

7.15. AT+BTPINCODE=xxxx

Description	BT Security PIN Code Setting (Set Pincode value for BTSSP=0 Operation)	
Info	xxxx	PIN code (4~16 byte)
Examples	(HOST→BT) : AT+BTPINCODE=1234 (BT→HOST) : OK	

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7.16. AT+BTPINCODE?

Description	BT Security PIN Code information
Examples	(HOST→BT) : AT+BTPINCODE? (BT→HOST) : +BTPINCODE:1234 (BT→HOST) : OK

7.17. AT+BTSSP=N

Description	Secure Simple Pairing(SSP) mode Setting. (Reset Required)	
Info	N	0 – Pincode Mode 1 – SSP Mode Other Value - Error
Examples	(HOST→BT) : AT+BTSSP=1 (BT→HOST) : OK	

7.18. AT+BTSSP?

Description	BTSSP Setting information
Examples	(HOST→BT) : AT+BTSSP? (BT→HOST) : +BTSSP:1 (BT→HOST) : OK

7.19. AT+BTSSPMODE=N

Description	SSP Security Authentication Setting (Required for "AT+BTSSP=1" operation)	
Info	N	0 Just Works Mode
		1 Numeric Comparison Mode
		2 Passkey Entry Mode
Examples	(HOST→BT) : AT+SSPMODE=1 (BT→HOST) : OK	

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7.20. AT+BTSSPMODE?

Description	SSPMODE information
Examples	(HOST→BT) : AT+BTSSPMODE? (BT→HOST) : +BTSSPMODE=1 (BT→HOST) : OK

7.21. AT+BTNUMACC=N

Description	Numeric Comparison Mode certification When AT+BTSSP=1 and AT+SSPMODE=1, it is used when connecting	
Info	N	0 (Reject, "No") 1 (Accept, "Yes")
Examples	(BT→HOST) : [NUMACC] 874134 (HOST→BT) : AT+BTNUMACC=1 (BT→HOST) : OK	

7.22. AT+BTPASSKEY=String

Description	Passkey Entry Mode certification (When AT+BTSSP=1 and AT+SSPMODE=2, use when connecting)	
Info	String	6 digit number
Examples	(HOST→BT) : AT+BTPASSKEY=123456 (BT→HOST) : [PASSKEY] 123456 (BT→HOST) : OK	

7.23. AT+IAPMODEL=String

Description	IAP Model Name Setting	
Info	String	Value corresponding to Model Name (1~30character)
Examples	(HOST→BT) : AT+IAPMODEL=BCM-DC100-AS (BT→HOST) : OK	

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7.24. AT+IAPMODEL?

Description	IAP Model Name information
Examples	(HOST→BT) : AT+BTSSPMODE? (BT→HOST) : +IAPMODEL:BCM-DC100-AS (BT→HOST) : OK

7.25. AT+IAPACCESSORY=String

Description	IAP Accessory Name Setting	
Info	String	Value corresponding to Accessory Name (1~30character)
Examples	(HOST→BT) : AT+IAPACCESSORY=BCM-DC100-AS (BT→HOST) : OK	

7.26. AT+IAPACCESSORY?

Description	IAP Accessory Name information	
Examples	(HOST→BT) : AT+IAPACCESSORY? (BT→HOST) : +IAPACCESSORY:BCM-DC100-AS (BT→HOST) : OK	

7.27. AT+IAPPROSTR=String

Description	IAP Protocol String Setting	
Info	String	Value corresponding to Protocol String (1~30character)
Examples	(HOST→BT) : AT+IAPPROSTR=com.bncom.protocol (BT→HOST) : OK	

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7.28. AT+IAPPROSTR?

Description	IAP Protocol String information
Examples	(HOST→BT) : AT+IAPPROSTR? (BT→HOST) : +IAPPROSTR:com.bncom.protocol (BT→HOST) : OK

7.29. AT+IAPSERIAL=xxxx

Description	IAP Serial Number Setting	
Info	xxxx	Value corresponding to Serial Numer (1~30character)
Examples	(HOST→BT) : AT+IAPSERIAL=123456789 (BT→HOST) : OK	

7.30. AT+IAPSERIAL?

Description	IAP Serial Number information	
Examples	(HOST→BT) : AT+IAPSERIAL? (BT→HOST) : +IAPSERIAL:123456789 (BT→HOST) : OK	

7.31. AT+IAPMANUF=String

Description	IAP Manufacturer Setting	
Info	String	Value corresponding to Manufacturer (1~30character)
Examples	(HOST→BT) : AT+IAPMANUF=BnCOM Co., Ltd. (BT→HOST) : OK	

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7.32. AT+IAPMANUF?

Description	IAP Manufacturer information
Examples	(HOST→BT) : AT+IAPMANUF? (BT→HOST) : +IAPMANUF:BnCOM Co., Ltd. (BT→HOST) : OK

7.33. AT+LEADVINTERVAL=X

Description	BLE Advertising Interval Setting value	
Info	X	32 ~ 16384 (Unit per 0.625ms) = (20ms ~ 10240ms) Other Value = Error
	Value Example	X = 256 -> 256 * 0.625 = 160ms X = 16384 -> 16384 * 0.625 = 10240ms
Examples	(HOST→BT) : AT+LEADVINTERVAL=256 (BT→HOST) : OK	

7.34. AT+LEADVINTERVAL?

Description	BLE Advertising Interval information
Examples	(HOST→BT) : AT+LEADVINTERVAL? (BT→HOST) : +LEADVINTERVAL:256 (BT→HOST) : OK

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7.35. AT+LECONINTERVAL=MIN,MAX

Description	BLE Connection Interval Setting value	
Info	MIN	6 ~ 3200 (Unit per 1.25ms) = (7.5ms ~ 4000ms) Other Value = Error
	MAX	6 ~ 3200 (Unit per 1.25ms) = (7.5ms ~ 4000ms) Other Value = Error
	Value Example	MIN,MAX = 16,32 -> 16 * 1.25 = 20ms, -> 32 * 1.25 = 40ms
Examples	(HOST→BT) : AT+LECONINTERVAL=16,32 (BT→HOST) : OK	

7.36. AT+ LECONINTERVAL?

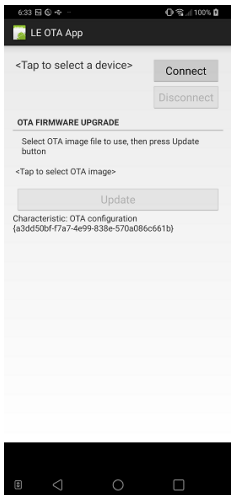
Description	BLE Connection Interval information
Examples	(HOST→BT) : AT+LECONINTERVAL? (BT→HOST) : +LECONINTERVAL:8,24 (BT→HOST) : OK

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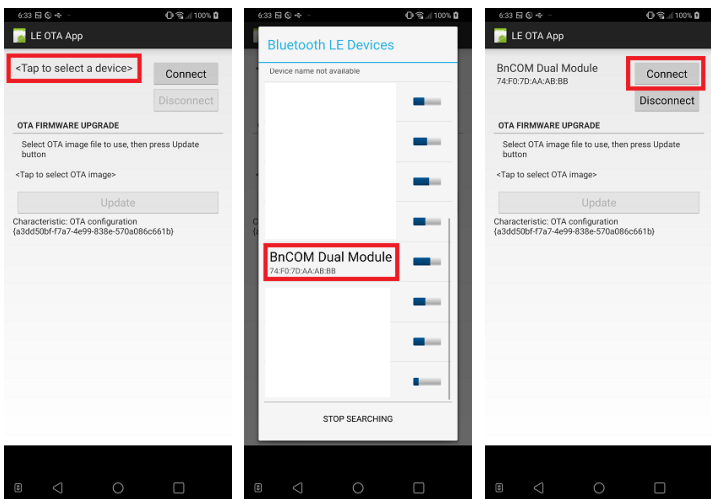
8. Over The Air Firmware Upgrade Guide

Cypress Application “LE OTA App” User Guide

8.1. Run LE OTA App

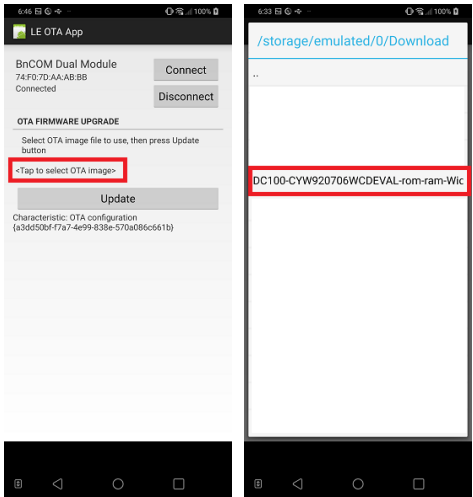


8.2. Device Select & Connect

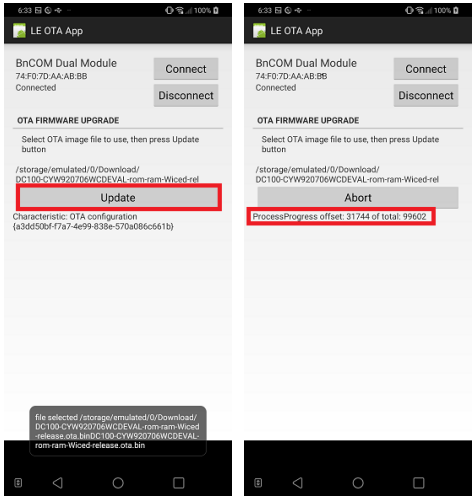


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8.3. Upgrade File Select

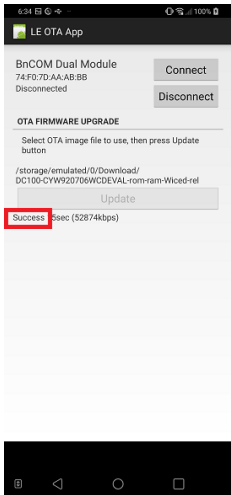


8.4. Firmware Updating



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8.5. Upgrade Complete



Client Company	Date of Creation	Document Name	Document Version
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OEM/integrators Installation Manual

the modules limited to OEM installation only

the OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Instructions to the OEM/integrator

The OEM integrator must include the instructions or statements required by part 15.19 and 15.21 in the user manual.

the OEM integrator must include a separate section in the host user's manual concerning the operating conditions to satisfy RF exposure compliance.

there is requirement that the grantee provide

FCC MODULAR APPROVAL INFORMATION

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE:

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

OEM INTEGRATION INSTRUCTIONS:

This device is intended only for OEM integrators under the following conditions:

The module must be installed in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal on-board antenna that has been originally tested and certified with this module. External antennas are not supported. As long as these 3 conditions above are met, further transmitter test will not be required.

However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.). The end-product may need Verification testing, Declaration of Conformity testing, a Permissive Class II Change or new Certification. Please involve a FCC certification specialist in order to determine what will be exactly applicable for the end-product.

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization. In such cases, please involve a FCC certification specialist in order to determine if a Permissive Class II Change or new Certification is required.

Upgrade Firmware:

The software provided for firmware upgrade will not be capable to affect any RF parameters as certified for the FCC for this module, in order to prevent compliance issues.

End product labeling:

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: 2APDI-BCM-DC100-XS".

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

RSS-GEN Section

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RSS-102 RF Exposure

L'antenne (ou les antennes) doit être installée de façon à maintenir à tout instant une distance minimum de au moins 20 cm entre la source de radiation (l'antenne) et toute personne physique. Cet appareil ne doit pas être installé ou utilisé en conjonction avec une autre antenne ou émetteur.