

Approval Sheet

Product Specification

Part Description: **BLUETOOTH MODULE**

Customer Part No:

BIGSOLON Part No: BT-TYPE-A

Acknowledgement of reception

We have received the attached specification

Date 2022. 03. 30

Company

EVERINT

Dept.

BIXOLON R&D LAB

Representative

Dong-gil.Lee

Received by

Revision Record

No	Date	Item	Modifications	Approved
1	2022. 03. 30		First Issued	

1. Module Features

- Complies with Bluetooth Core Specification version 5.0
- Up to 96MHz integrated ARM M3 micro-controller
- Built-in Reference Clock: 24MHz
- RoHS Compliant

2. Applications

- Home automation gateways
- Heart rate monitors
- Wearables
- Thermometers
- Blood pressure monitors
- Mobile

3. Features

- Size (14mm X 13mm X 3mm)
- Surface Mountable

4. Electrical Characteristics

Parameter	Min	Nor	Max	Unit
Supply Voltage (VBAT, VDD_IO)	3.0	3.3	3.6	V
Operation Temperature	-30	25	85	°C

5. External Reset

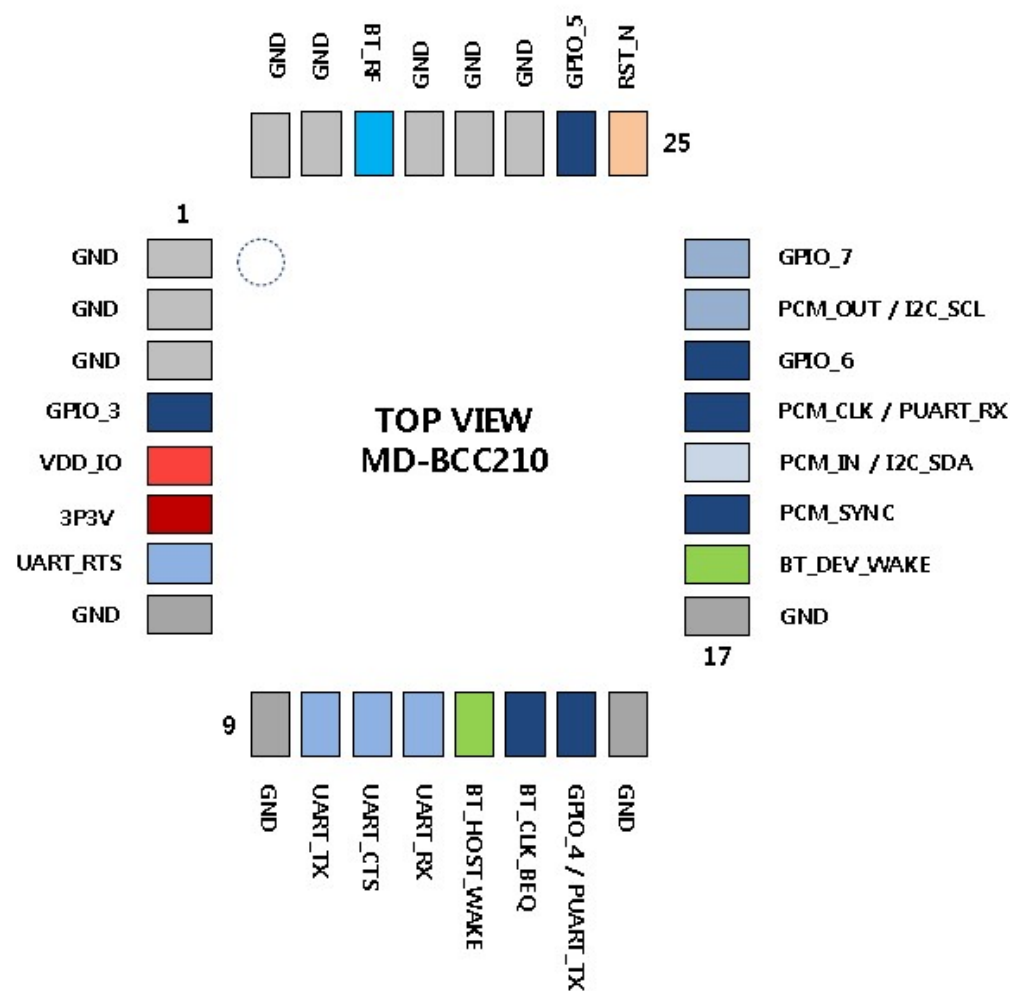
An External active-low reset signal, RST_N(RESET), can be used to put the BT-TYPE-A in the reset state. An external voltage detector reset IC with 50ms delay is needed on the RST_N(RESET). The RST_N should be released only after the VDD_IO supply voltage level has been stabilized for 50ms.

6. Pin Description

Pin No.	Pin Name	Description	Pad Type
1	GND	Ground connection	
2	GND	Ground connection	
3	GND	Ground connection	
4	GPIO_3	General_purpose I/O	
5	VDD_IO	VDDIO	
6	3P3V	MAIN POWER	
7	UART_RTS	UART request to send output	
8	GND	Ground connection	
9	GND	Ground connection	
10	UART_TX	UART transmit data	
11	UART_CTS	UART clear to send input	
12	UART_RX	UART receive data	
13	BT_HOST_WAKE	General_purpose I/O	
14	BT_CLK_REQ	General_purpose I/O	
15	GPIO_4 PUART_TX	General_purpose I/O, PUART_TX	
16	GND	Ground connection	
17	GND	Ground connection	
18	BT_DEV_WAKE	General_purpose I/O	
19	PCM_SYNC	General_purpose I/O	
20	I2C_SDA PCM_IN	General_purpose I/O	
21	PCM_CLK PUART_RX	General_purpose I/O, PUART_RX	
22	GPIO_6	General_purpose I/O	
23	I2C_SCL PCM_OUT	General_purpose I/O	

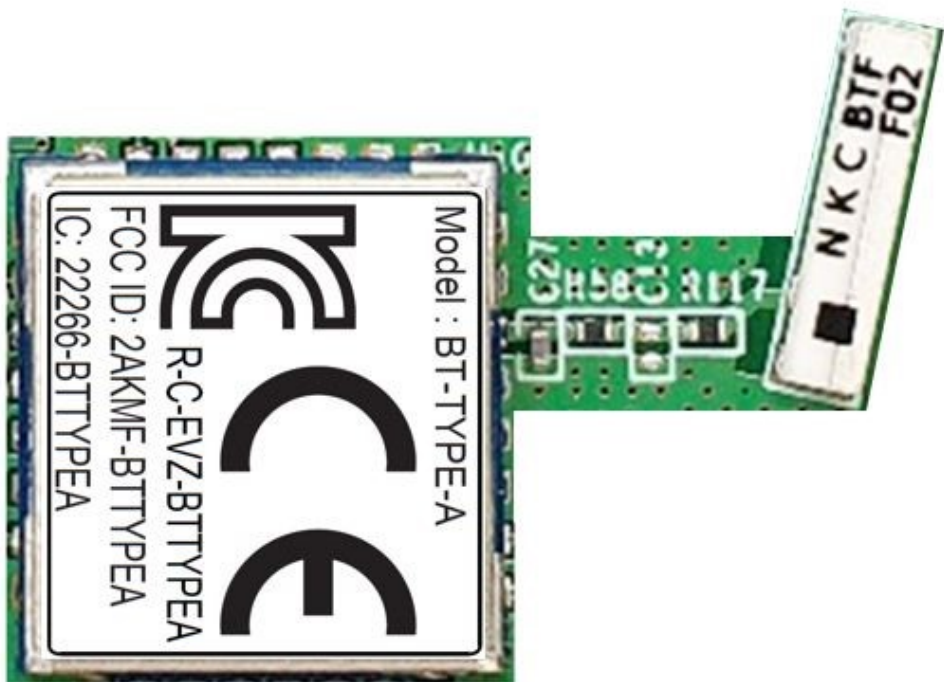
24	GPIO_7	General_purpose I/O	
25	RST_N	Active-low reset input	
26	GPIO_5	General_purpose I/O	
27	GND	Ground connection	
28	GND	Ground connection	
29	GND	Ground connection	
30	BT_RF	RF I/O antenna port	
31	GND	Ground connection	
32	GND	Ground connection	

7. PIN MAP



<Top View>

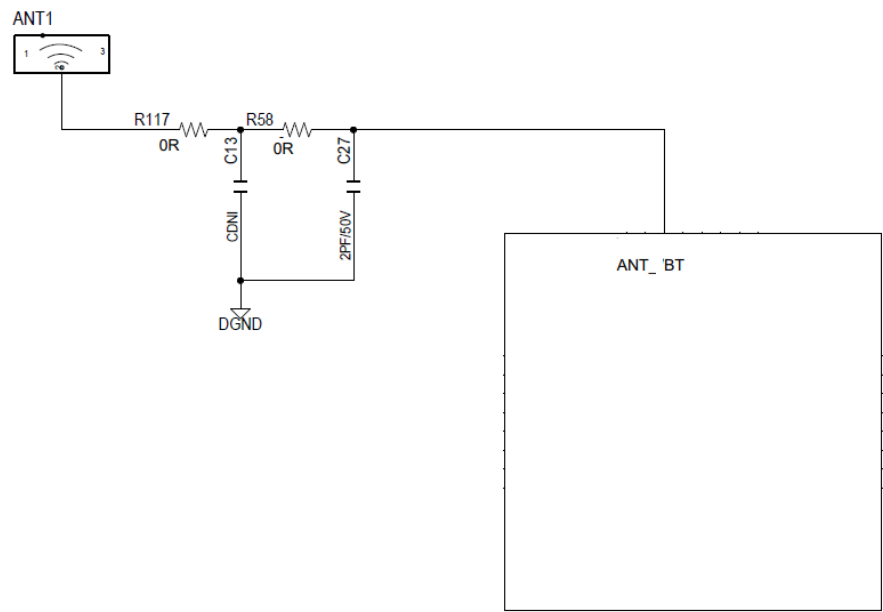
8. Layout and partlist



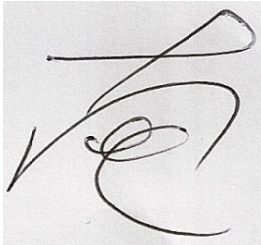
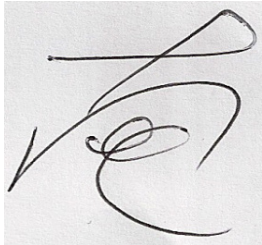
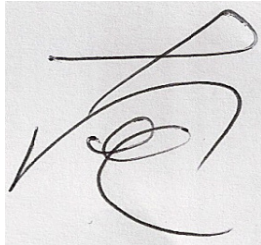
Product Name	Spec	Quantity	Manufacturing company	Manufacturer part number	Location
MODULE	BLUETOOTH V5.0,CYW20706,UART+I2C+SPI	1	MOVON	MD-BCC210	U10
R-CHIP	0ohm,5%,0402,SMD	2	WALSIN	WR04X000PTL	R58, R117
C-CHIP	2pF,50V,±0.25p,0402,SMD	1	SAMSUNG	CL05C020CB5ANNC	C27
ANTENNA	F-TYPE ,2.4GHz,3P,10*2	1	NKC	NKCBTF-F02	ANT1

9. Antenna Reference Design

Antenna reference design is shown in the following figure:



[APPROVAL SHEET]

Product	NKCBTF-F02	
Model	BT-TYPE-A	
Designed by	Checked by	Approved by
		

2022. 03. 30

Nice Korea Components Co., Ltd

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2. Features & Applications
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1. Revision History

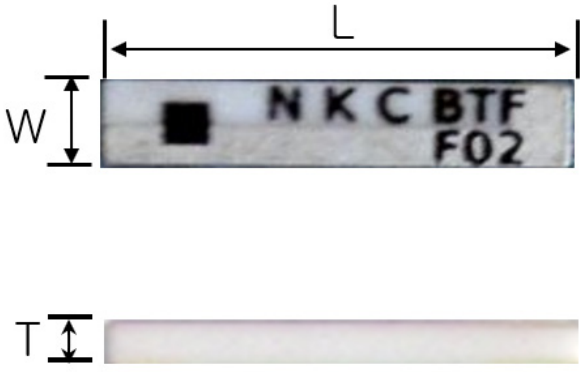
product	NKCBTF-F02	Model	BT-TYPE-A
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[illegible]

2. Features & Applications

2.1 Features

This ceramic chip antenna is applied to 2.4 GHz ISM band applications,
i.e. Bluetooth. Zigbee, Wireless LAN, etc...

Shape	Bulk Ceramic	
Texture	Dielectric	Al ₂ O ₃ (Alumina)
	Electrode	Ag
Size(mm)	L = 10±0.1	
	W = 2±0.1	
	T = 1.2±0.1	
Weight	97~100mg	

3. Electrical Specifications

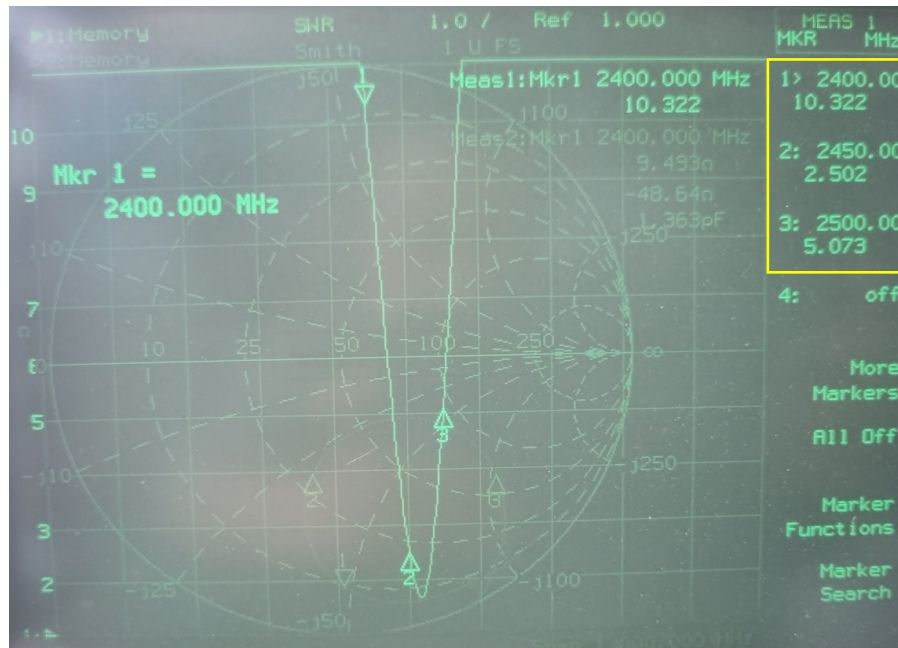
3-1.

* All item are measured in room temperature (24~26 'C).

* All item are measured at customer set condition.

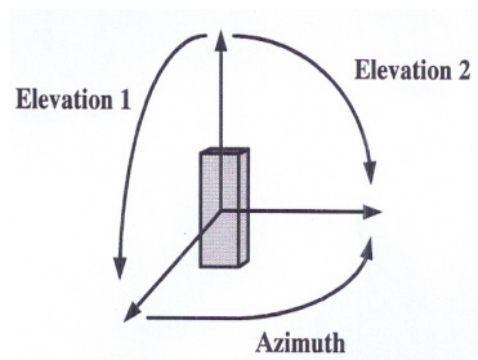
No.	Items	Typical Data
1	Frequency (MHz)	2400 ~2500
2	VSWR	9 : 1
3	Total Gain (Peak/AVG.) [dBi]	0.85 / -0.34
4	Impedance	50 ohm
5	Polarization	Linear

3-2. VSWR of USER SET condition



Antenna Characteristics	Measurement result
Antenna dielectric constant(Er)	9.5(±0.5)
2.4GHz	Zo = -48Ω(±10)
2.45GHz	Zo = -29Ω(±10)
2.5GHz	Zo = -104Ω(±10)

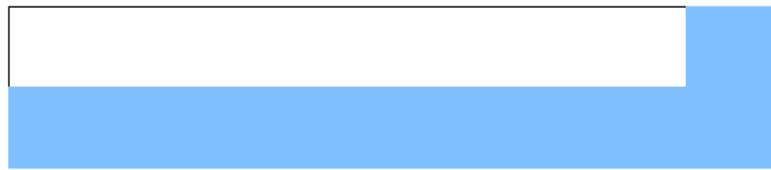
3-3. Radiation Patterns



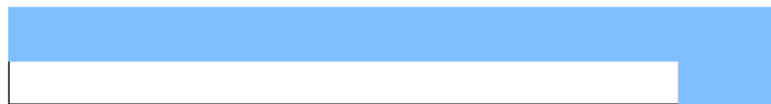
Theta	Vertical Field of measured plane
Phi	Horizontal Field of measured plane

Gain(dBi)	Total Gain (Peak/Avg) [dBi]		0.85 / -0.34	
	Azimuth	H-pole	Peak	0.85
			Avg	-0.34
	Elevation	V-pole	Peak	0.34
			Avg	-3.92

4. Ag pattern



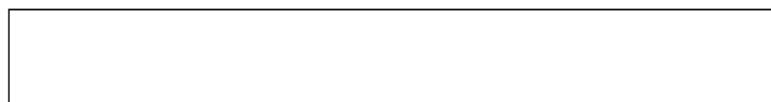
TOP



Side1

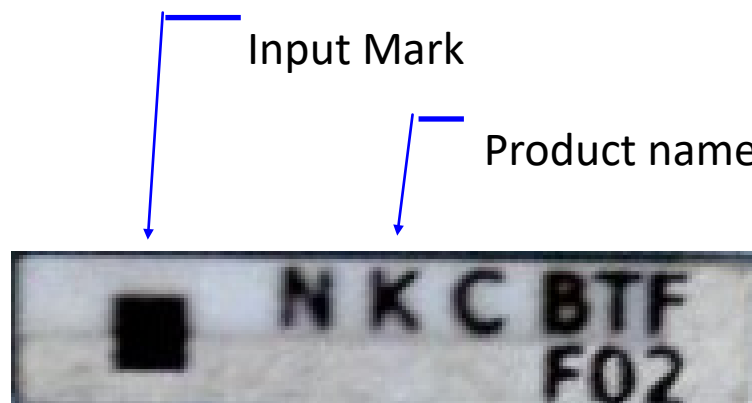


Bottom



Side2

5. Marking View



Only TOP part

5-1. Marking Type

* Using black Ink for RF

EVERINT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. 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.

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

This device complies with Industry Canada license-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.

RF Radiation Exposure Statement:

This equipment complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF) Exposure rules as this equipment has very low levels of RF energy.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

IMPORTANT NOTE

This device complies with FCC & ICED radiation exposure limits set forth for an uncontrolled environment. This device should be installed and must not be co-located or operating in conjunction with any other antenna or transmitter.

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

- 1) This module may not be co-located with any other transmitters or antennas.
- 2) The antenna must be installed such that 20cm is maintained between the antenna and users.

As long as 2 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 with this module installed.

In the event that these conditions cannot be met, then the FCC & IC authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product including this module and obtaining separate FCC & IC authorizations.

- End Product Labeling

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.

Contains Transmitter module FCC ID: 2AKMF-BTTYPEA

IC: 22266-BTTYPEA

- Manual Information to the End User

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

The end user manual shall include all required regulatory information/warning as show in this manual.

Important Notice to OEM integrators

1. This module is limited to OEM installation ONLY.
2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).
3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations
4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s). The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

Important Note

notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify to EVERINT Co., Ltd. that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the EVERINT Co., Ltd., or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

Antenna Installation

- (1) The antenna must be installed such that 20 cm is maintained between the antenna and users,
 - (2) The transmitter module may not be co-located with any other transmitter or antenna.
 - (3) Only antennas of the same type and with equal or less gains as shown below may be used with this module. Other types of antennas and/or higher gain antennas may require additional authorization for operation.
-

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID/IC ID 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/IC authorization.

List of applicable FCC rules

This module has been tested and found to comply with part 15.247 requirements for Modular Approval.

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.
