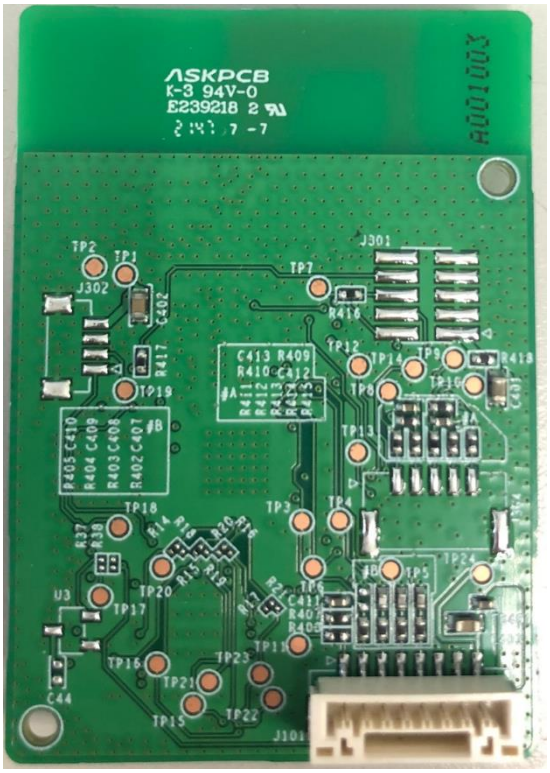
DHSK-DS5 0GA (MP) User Manual



Project Name: DHSK-DS5

Author: Wistron NeWeb Corporation

Revision: 0.4

Revision Date: 2022/05/03

Revision History

REV	Author	Summary Changes	Date
0.1	Alex Chang	SGA(ES1) Draft User Manual	2021/11/08
0.2	Alex Chang	Add more SGA(ES1) RF Spec & Package	2021/11/29
0.3	Jeffrey Tsai	Update to 0GA(MP) User Manual	2022/04/07
0.4	Jeffrey Tsai	Add FCC/IC/NCC Statement	2022/05/03

LIMITATION OF LIABILITY

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Federal Communication Commission Interference Statement

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contents

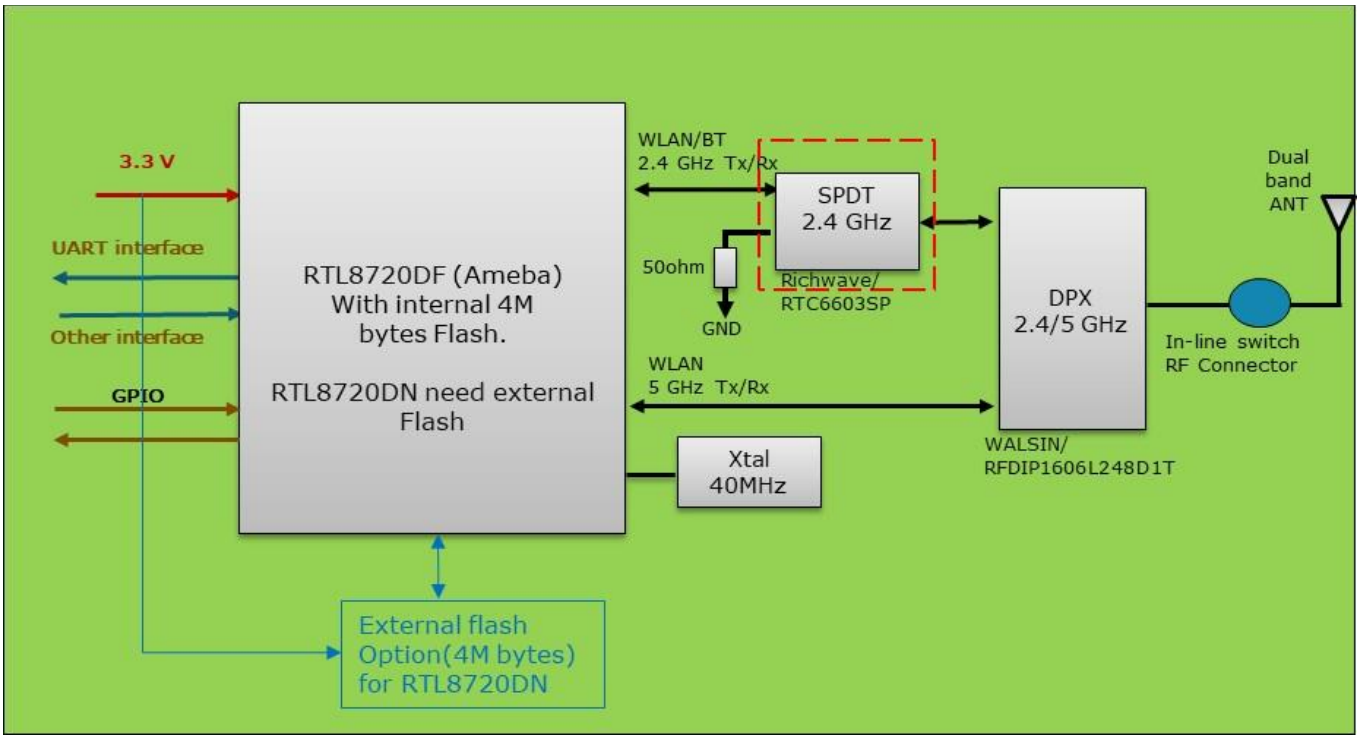
1. Introduction

DHSK-DS5 is a wireless local area network (WLAN), Bluetooth (BT) Low Energy combo module to support 2.4G/5G IEEE 802.11a/ b/g/n WLAN standards, BLE 5.0 and below. It enables seamless integration of WLAN/BT Low Energy technology with powerful embedded CPU.

1.1. Features

- 2 embedded Processors, ARM Cortex-M33 + ARM Cortex-M23
- Wi-Fi Support IEEE 802.11a/b/g/n 2.4G/5G Band 1T1R
- Bluetooth Low Energy (BLE) compliant to the SIG v5 specification
- Single 3.3V supply
- Internal 1 on-board antennas for WIFI and BLE and 1 optional external antenna connector
- GPIO to support the peripherals interfaces:
  - 10-pins(J301) SWD connector
  - 8-pins(J101) system controller connector
  - 4-pins(J302) debug UART connector
  - 5-pins(J304) connector

1.2. Block Diagram

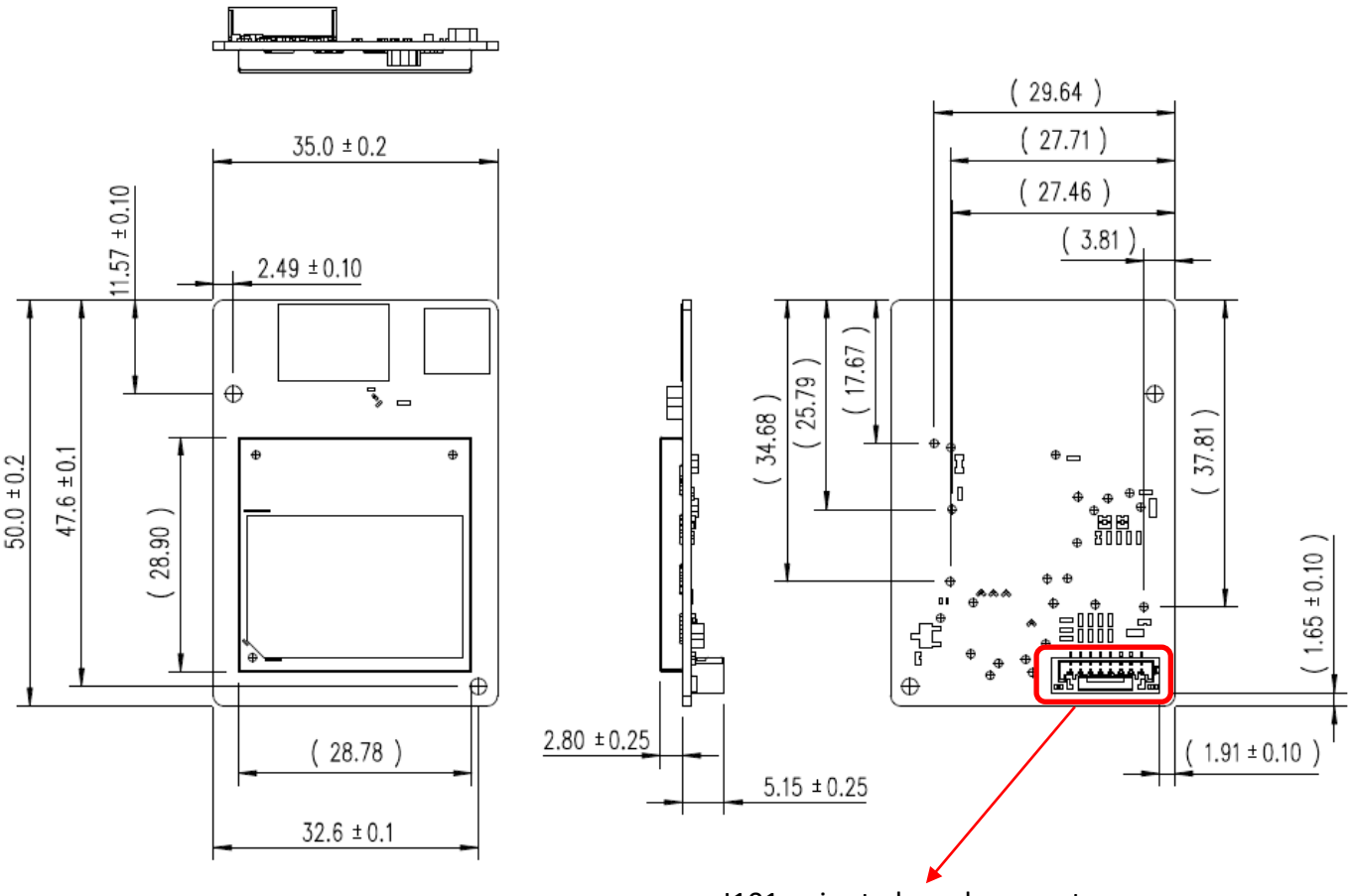


2. Electrical Specifications

2.1. Interface pin assignments

2.1.1. Connectors Diagram for module

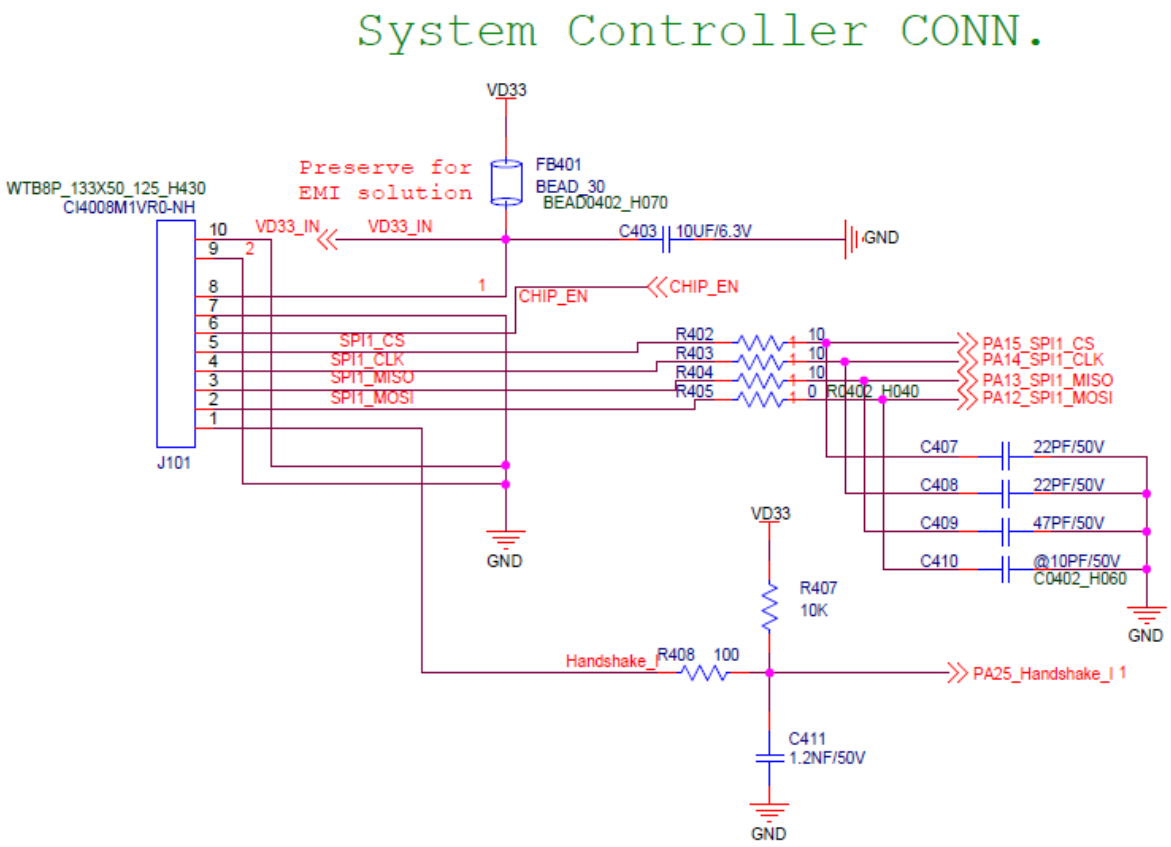
There is a system control connector (J101) for power supply and SPI interface.

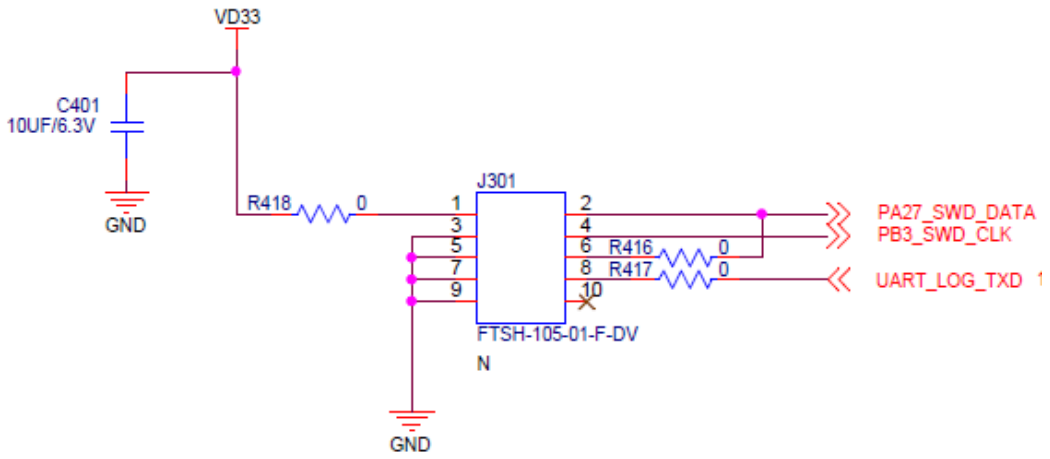


Connector Location

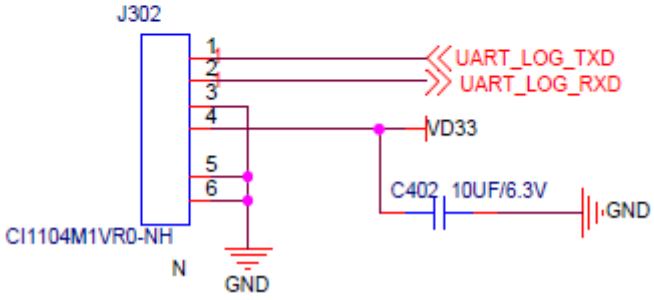
2.1.2. Pin Assignments & Circuit of connectors for module

Table 1. connectors Interface Family

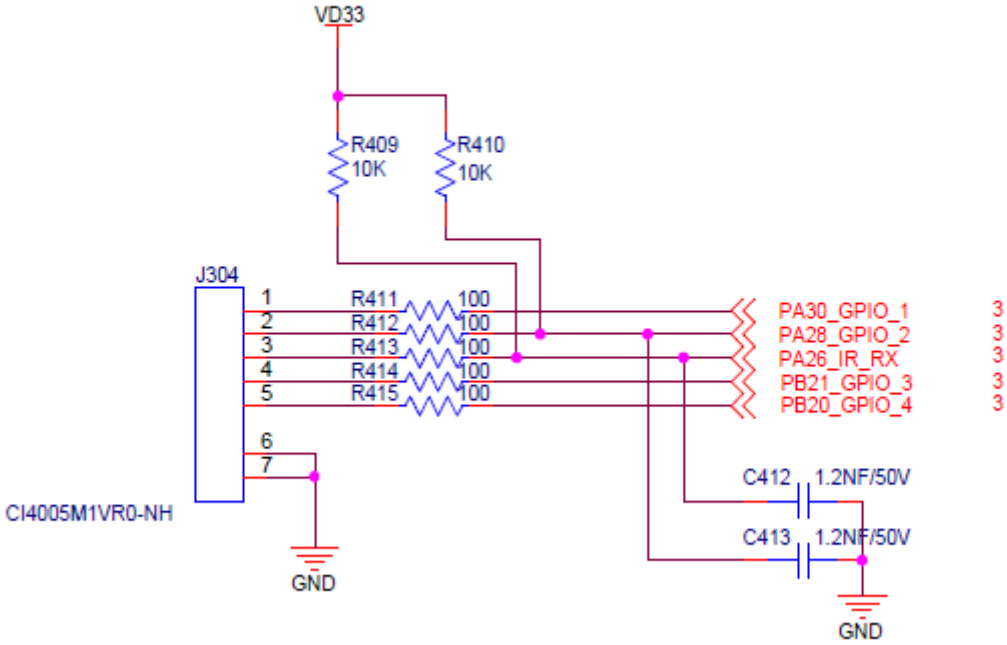




DEBUG UART



5-way connector



2.2. Absolute Maximum Ratings

Signal	Description	Min.	Typ.	Max.	Unit
3.3V_IN	3.3V Power Supply Input	3.135 (-5%)	3.3	3.465 (+5%)	V
Min V_{IH}	GPIO_ mapped to RTL 8720DN pins	3	3.3	-	V
Max V_{IH}		-	3.3	3.6	V

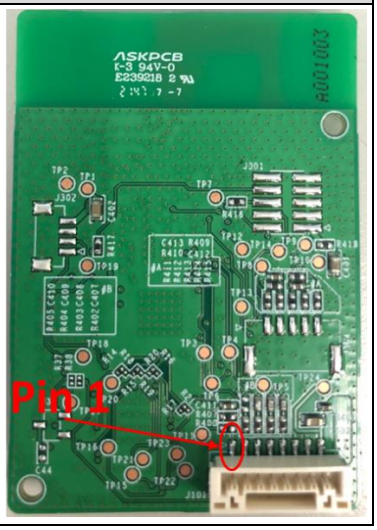
2.3. Recommend Operating Conditions

Signal	Description	Min.	Typ.	Max.	Unit
3.3V_IN	3.3V Power Supply Input	3.135 (-5%)	3.3	3.465 (+5%)	V
800mA	Rated Supply (Receive from the system controller board)		800		mA
Min V_{IH}	GPIO_ mapped to RTL 8720DN pins	3	3.3	-	V
Max V_{IH}		-	3.3	3.6	V
T_A	Operating Temperature	-5	25	60	°C

2.4. Connectivity

The connectivity support by module include:

- J101 – System Controller Connector (CVILUX CI4008M1VR0-NH)

Pin	Signal Name	IC Pin #	
1	Handshake_I	PA[25] (Pin#30)	
2	SC_SPI_MOSI	PA[12] (Pin#20)	
3	SC_SPI_MISO	PA[13] (Pin#21)	
4	SC_SPI_CLK	PA[14] (Pin#22)	
5	SC_SPI_CS	PA[15] (Pin#23)	
6	CHIP_EN	CHIP_EN (Pin #1)	
7	GND		
8	VDD_IN_3V3		

■ J301 –SWD Program/Debug Connector (SAMTEC FTSH-105-01-F-DV - **Not Mounted in Production unit**)

Pin	Signal Name	IC Pin #
1	VDD_IN_3V3	
2	SWD_DATA	PA[27] (Pin#26)
3	GND	
4	SWD_CLK	PB[3] (Pin#34)
5	GND	
6	SWD_DATA	PA[27] (Pin#26) (SPS_SEL)
7	GND	
8	UART_LOG_TXD	PA_7(Pin#3) (Pull down to enter D/L image from UART)
9	GND	
10	NC	

■ J304 – GPIO Debug Connector (CVILUX CI4005M1VR0-NH - **Not Mounted in Production unit**)

Pin	Signal Name	IC Pin #
1	GPIO_1	PA[30] (Pin#27)
2	GPIO_2	PA[28] (Pin#28)
3	IR_RX	PA[26] (Pin#29)
4	GPIO_3	PB[21] (Pin#46(DN))(Pin#42(DF))
5	GPIO_4	PB[20] (Pin#45(DN))(Pin#41(DF))

■ J302 – UART Debug Connector (CVILUX CI1104M1VR0-NH - **Not Mounted in Production unit**)

Pin	Signal Name	IC Pin #
1	UART_LOG_TXD	PA[7] (Pin#3)
2	UART_LOG_RXD	PA[8] (Pin#2)
3	GND	
4	VDD_IN_3V3	

2.5. Digital logic characteristics (3.3V I/O operation)

Signal	Description	Min.	Typ.	Max.	Unit
V_{IH}	Input-High Voltage	2.0	-	-	V
V_{IL}	Input-Low Voltage	-	-	0.8	V
V_{OH}	Output-High Voltage	2.4	-	-	V
V_{OL}	Output-Low Voltage	-	-	0.4	V
IT+	Schmitt-trigger High Level	1.78	1.87	1.97	V
IT-	Schmitt-trigger Low Level	1.36	1.45	1.56	V
IIL	Input-Leakage Current	-10	±1	10	μA

2.6. Current Consumption

2.4GHz

Standard	Modulation	Index	Min	Typ	Max	Unit
802.11b	BPSK	1Mbps	-	282	-	mA
802.11g	BPSK	6Mbps	-	267	-	mA
802.11n	BPSK	HT20_MCS0	-	263	-	mA

5GHz

Standard	Modulation	Index	Min	Typ	Max	Unit
802.11g	BPSK	6Mbps	-	264	-	mA
802.11n	BPSK	HT20_MCS0	-	262	-	mA

Note : Test Setup: Using target power (section 3.1.1) and transmitting continually by MP tool

3. RF Specifications

3.1. RF connections

3.1.1. WIFI Typical RF performance at Antenna Connector at 25°C

2.4GHz

Standard	Modulation	Index	TX Compliant Power	RX Sensitivity	Unit
802.11b	BPSK	1Mbps	18 +/-2	-96+/-3	dBm
	CCK	11Mbps	18 +/-2	-88 +/-3	dBm
802.11g	BPSK	6Mbps	18 +/-2	-91+/-3	dBm
	64 QAM	54Mbps	16 +/-2	-75 +/-3	dBm
802.11n (HT20)	BPSK	MCS0	18 +/-2	-91+/-3	dBm
	64 QAM	MCS7	16 +/-2	-73 +/-3	dBm

5GHz

Standard	Modulation	Index	TX Compliant Power	RX Sensitivity	Unit
802.11a	BPSK	6Mbps	16+/-2.5	-93 +/-3	dBm
	64 QAM	54Mbps	14 +/-2.5	-75 +/-3	dBm
802.11n (HT20)	BPSK	MCS0	16 +/-2.5	-92 +/-3	dBm
	64 QAM	MCS7	13 +/-2.5	-72 +/-3	dBm

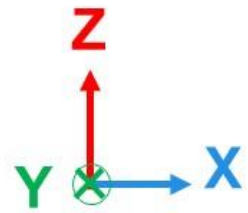
3.1.2. BT-Low Energy RF performance at Antenna Connector at 25°C

Test Item	Description	Typical	Unit
Maximum TX power	1Mbps	2 +/-2	dBm
TX Power under low TX	1Mbps	-26 +/-4	dBm
RX Sensitivity	1Mbps	-94 +/-4	dBm

The data shown in the table is a preliminary pre-test data at 25°C at RF In-line connector, subject to change after the measurement.

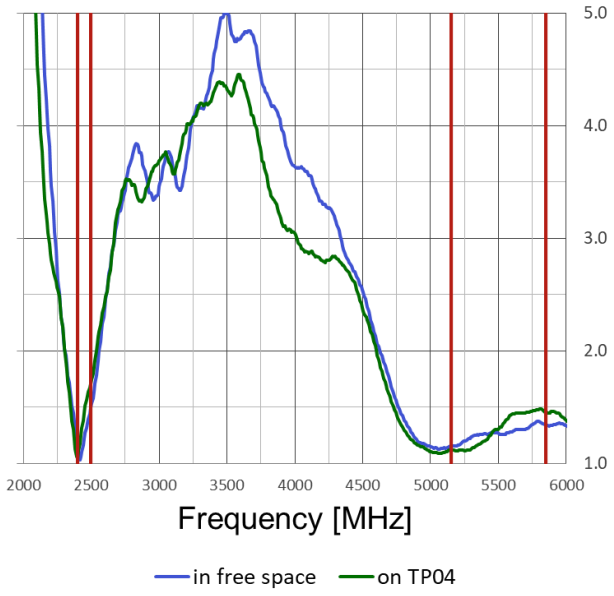
4. Antenna Performance

4.1. Module antenna Efficiency/Peak gain/S Parameters



	Frequency	2400	2450	2500	Avg.	5150	5350	5550	5750	5850	Avg.
DHSK_DS5 in free space	Efficiency	66%	66%	63%	65%	72%	70%	69%	71%	73%	71%
	Average Gain	-1.83	-1.82	-1.98		-1.43	-1.53	-1.58	-1.50	-1.37	
	Peak Gain	1.78	1.91	2.12		2.59	2.62	2.79	3.42	3.44	

	Frequency	2400	2450	2500	Avg.	5150	5350	5550	5750	5850	Avg.
DHSK_DS5 on TP04	Efficiency	67%	65%	61%	64%	76%	75%	69%	66%	69%	71%
	Average Gain	-1.77	-1.87	-2.15		-1.17	-1.26	-1.60	-1.80	-1.59	
	Peak Gain	4.74	4.51	4.36		5.35	5.68	5.21	5.74	5.88	



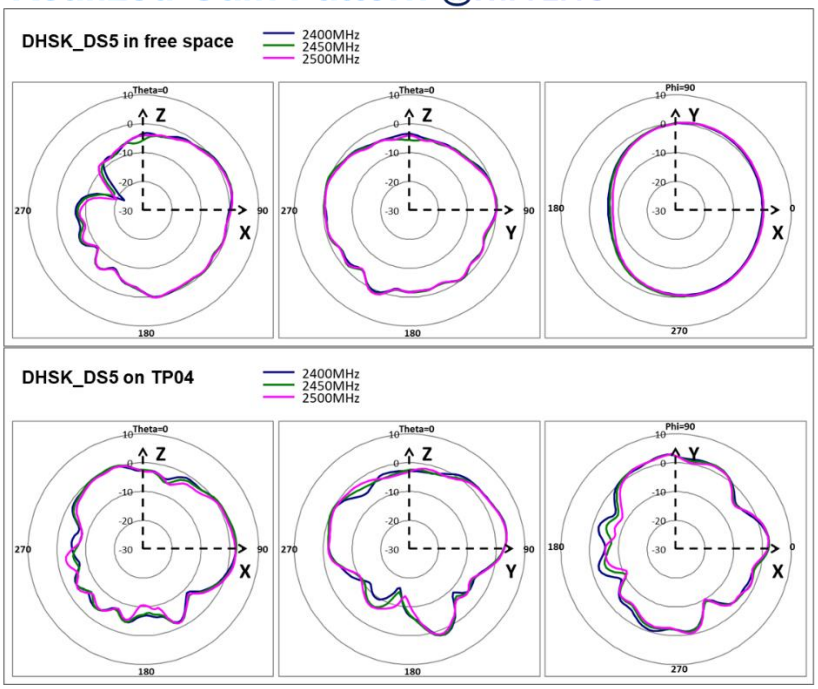
VSWR

2.4GHz	Max	Mean	Min
in free space	1.5	1.2	1.0
on TP04	1.7	1.4	1.0

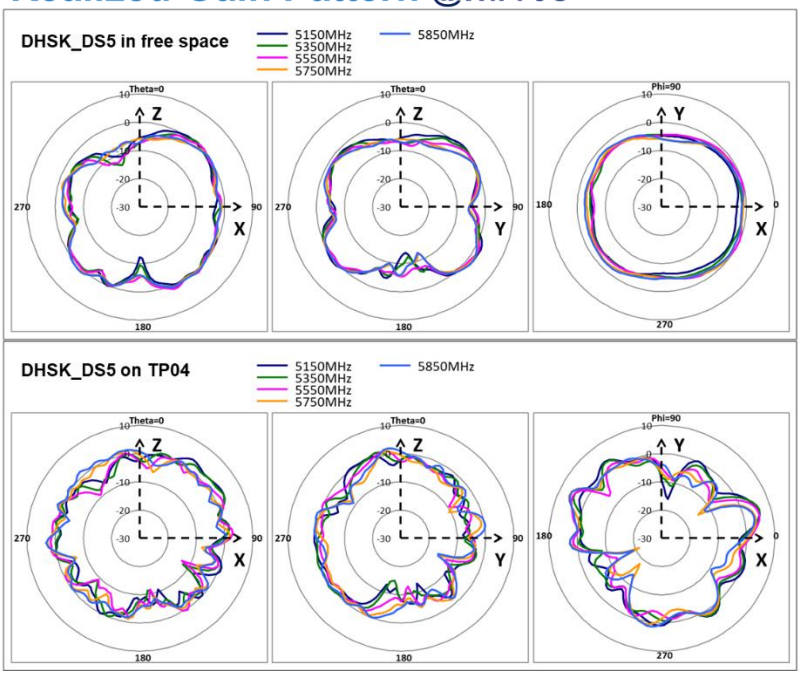
5GHz	Max	Mean	Min
in free space	1.4	1.3	1.2
on TP04	1.5	1.3	1.1

4.2. Module antenna 2D radiation pattern

Realized Gain Pattern @WiFi 2.4G

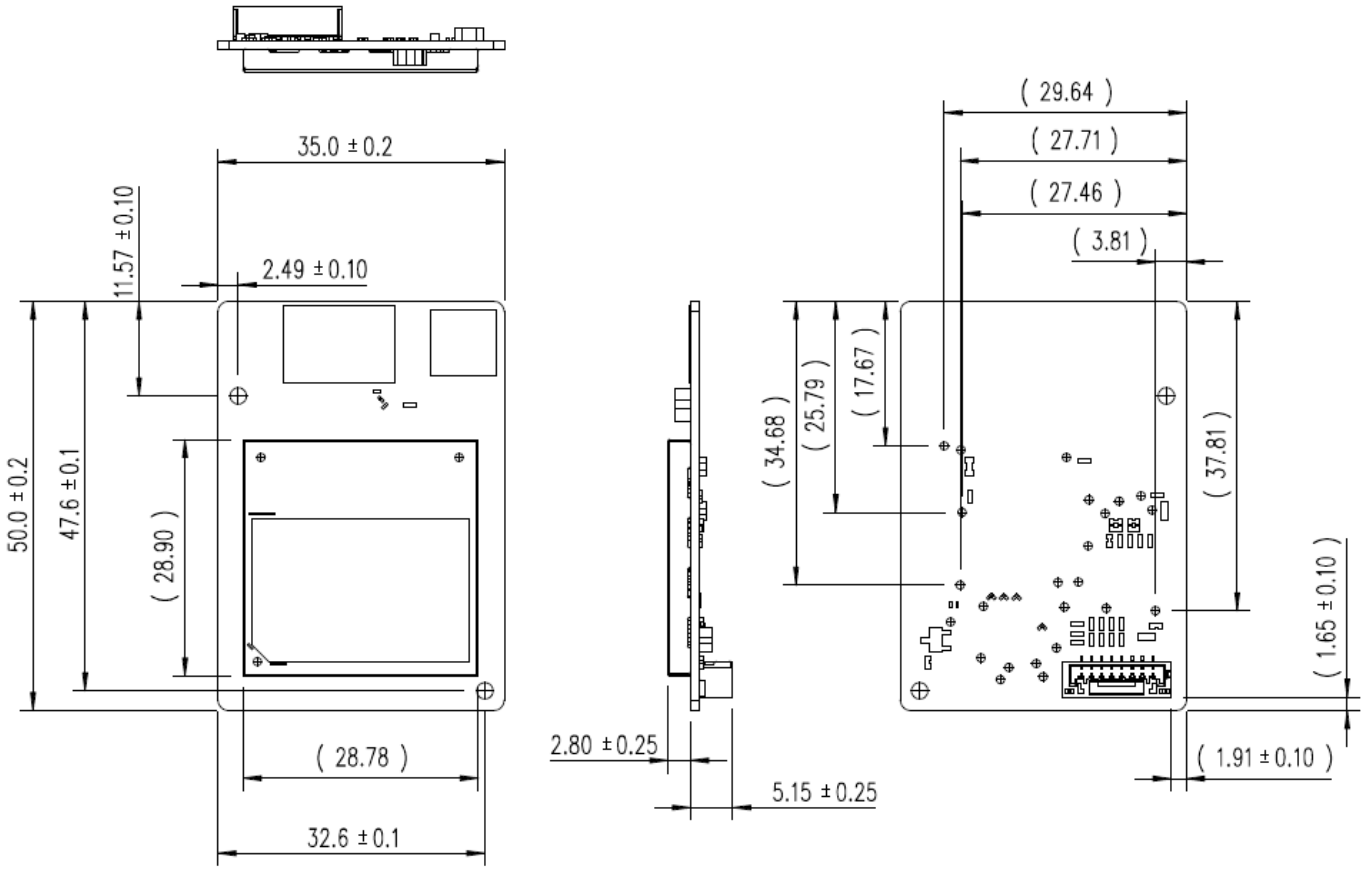


Realized Gain Pattern @WiFi 5G



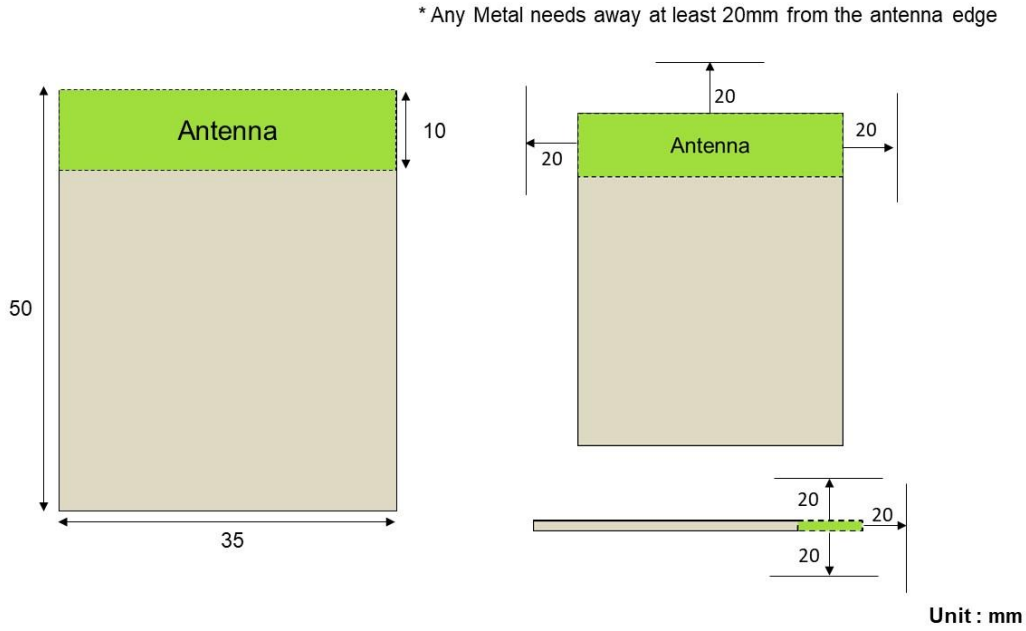
5. Mechanical and Environmental Specifications

5.1. PCBA form factor



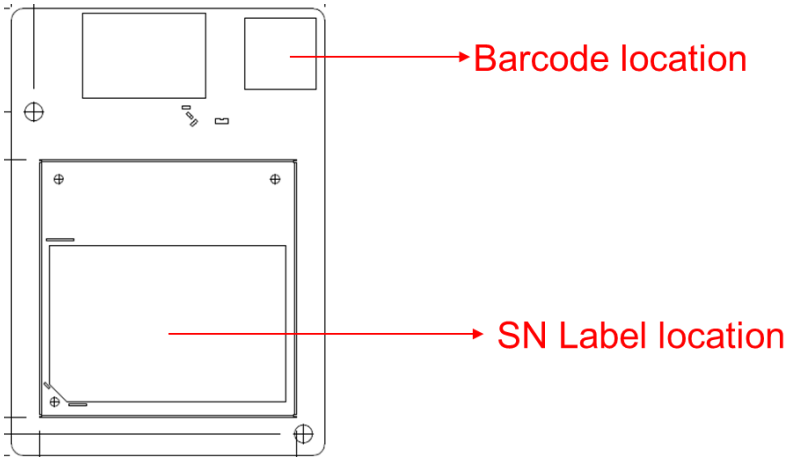
5.2. Module Antenna Clearance and keep-out area

Antenna Placement and Clearance area requirement



Unit : mm

5.3. Labeling



5.3.1 Barcode content

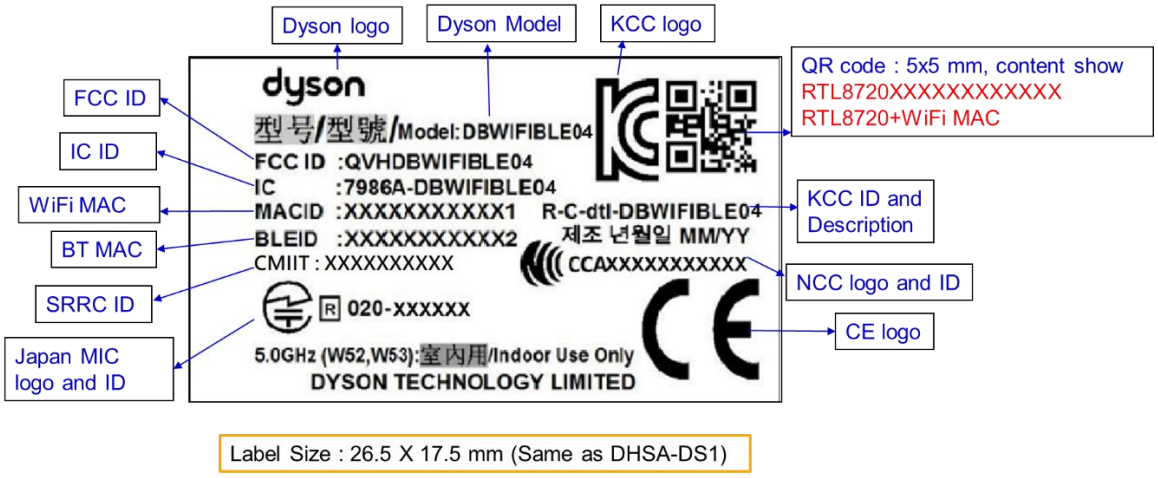
605205010 2YYB00000XCX438-KDD00YYWWXX-

AAAAAABBCCDDGHHHHHHJKKKKKKLLMMNNNNPPQ

37 alphanumeric character/ No space/ 2D Data Matrix

(1) AAAAAA: 605205 EA part number.
(2) BB: 01 Variance
(3) CC: 02 Revision
(4) DD: YY Manufacturing Year
(5) G: B Manufacturing Month January = A February = B March = C…
(6) HHHHHH: 00000X Running Numbers in decimal (range from 000001 ~ 999999). Reset to 000001 every month.
(7) J: C PCBA Supplier Indication
(8) KKKKKK: X438-K Model or product number. This refers development model. In case model number is less than 6 characters, please add "-"
(9) LL: DD Day of manufacturer. (1st to 30th or 31st)
(10) MM: 00 PCBA Configuration number
(11) NNNN: YYWW Bare Board date code
(12) PP: XX Bare Board lot / batch number from PCB batch number
(13) Q: - Bare Board Manufacturer

5.3.2 SN Label



Label Size : 26.5 X 17.5 mm (Same as DHSA-DS1)

5.3.3 Carton label

1. Label Size : 60 x 40 mm (Same as DHSA-DS1)
2. Label content :
(1) CUS model : DBWIFIBLE04
(2) VPN : 605205-01/02
(3) Q'ty : 660pcs
(4) WNC PN : 81DHSK13.G10
(5) Carton ID : Follow WNC STD Rule

5.4. Moisture Sensitivity Level

- This module compliance with MSL=3

5.5. BOM

Item	Description	Per Qty	Location
20.44008.001	INTERNAL CONNECTOR,WTB,SMT,180DEG.,MALE,1X8P,1.25MM(P),NATURAL,CI4008M1VR0-NH	1	J101
38.02358.001	SOLDER PASTE,POWERFUL WETTING LEAD FREE SOLDER PASTE S3X58-M500C-5,S3X58-M500C-5	0.000159	
38.02MA3.031	SOLDER PASTE,S3X58-M406,MA3	0.000009	
3S.003J0.111	SHIELDING,CAN,DHSK-DS5	1	SH1
4Y.DHSKD.001	TRAY,30 IN 1,PCBA,DHSK-DS5	0.033334	
60DHSK01.F01	DHSK-DS5 FW ASSY FOR U7	1	U7
53DHSK06.002	FIRMWARE,DHSK-DS5,002,CHECKSUM:268D7697 (PT100)	0	
72.22532.D0X	NOR FLASH,,SPI,32MBIT,,,WSON,,8PIN,2.7~,3.6V,W25Q32JVZPIQ,-40C~,85C,CLASS 1 250V~2000V 2000HBM(V)	1	U7
63.10134.L04	!CHIP RES 100 J 1/16W 0402(YAGEO)	6	R408,R411,R412,R413,R414,R415
63.10234.002	CHIP RES,10KOHM,+-5PCT(J),0402,1/16W,-55°C~,155°C,WR04X103 JTL	6	R12,R3,R407,R409,R410,R6
63.50034.L01	CHIP RES,50OHM,J,0402INCH,1/16W,RC0402JR-0750RL,-55C~155C	1	R406
63.R0004.L01	CHIP RES,0R,J,0402 1/16W,WR04X000 PTL,-55~+155	1	R405
63.R0008.3F1	CHIP RESISTOR,SMT,0,P,0201,WR02X000 PAL	11	R10,R14,R15,R16,R17,R24,R25,R30,R31,R33,R39
63.R0034.L05	CHIP RES,0R,P,0402 1/16W,WR04X000PTL,-55~+155	4	R22,R416,R417,R418
68.1N06N.1R1	FIXED COILS,SMT,1NH,0402,LQG15HS1N0S02D	1	L2
68.2300Y.001	CHIP BEAD,30OHM,+/-25,100MHZ,120OHM,100ARMS,-55C~,125C,0402,UPZ1005D300-2R2TF	1	FB401
68.2N76N.L05	FIXED INDUCTORS,SMT,2.7NH,0402,CLH1005T-2N7S-S	1	L5
68.2R210.M10	POWER IND,2.2UH,2MHZ,2.0X1.6X1.0MM,MHCD201610B-2R2M-A8L,-40~+125	1	L1
69.61606.002	DIPLEXER,2400~2500MHZ/5150~5850MHZ,0.6/1.5DB(IL),WIFI 2.4G_5G,1.6X0.8MM,6PIN,-40 °C ~ 85°C REDIP1606L248D1T	1	FT1
71.58720.004	FOR DYSON,RF TRANSCEIVER,WIFI,DUAL BAND,11N,1X1,2.4G_5G,SINGLE MODE(BLE),5.0,NON DOLBY QFN 48PIN -20°C~ 85°C CLASS 2 >=2000V~4000V 2000HBM(V) 1000CDM(V) RTL8720DN-VA1-	1	U6
74.06603.090	LINEAR IC,ANALOG SWITCH,SC70,6PIN,RTC6603SP,-30~+85,CLASS 1 250V~2000V 1000HBM(V) 50MM(V) 1000CDM(V)	1	U8
78.10032.L05	MLCC,NPO,10PF,+-5PCT(J),25V,0201,HIQ-N,GRM0335C1E100JA01D	4	C40,C41,C42,C43
78.10421.L06	CERAMIC CAPACITORS X7R,SMT,100N,K,0402,CL05B104KO5NNNC	13	C1,C10,C12,C13,C15,C2,C20,C35,C5,C6,C7,C8,C9
78.10610.L08	CERAMIC CAPACITORS X5R,6.3V,SMT,10UF,M,0603,CL10A106MQ8NNNC	4	C16,C401,C402,C403
78.12224.L01	CHIP CAP 1.2NF K0402 50V C1005X7R122KGT	4	C3,C411,C412,C413
78.1R0B4.L07	CHIP CAP,NPO,50V,1.0PF,B,0402,RF15N1R0B500CT	1	C38
78.1R2B4.L05	CHIP CAP,NPO,50V,1.2PF,B,0402,RF15N1R2B500CT	1	C39
78.22510.L11	CHIP CAP,X5R,6.3V,2.2UF,M,0402,CL05A225MQ5NSNC	3	C11,C18,C19
78.47510.L11	CHIP CAP,X5R,6.3V,4.7UF,M,0402,CL05A475MQ5NRNC	1	C14
78.R20B4.L01	CHIP CAP,NPO,50V,0.2PF,B,0402,GJM1555C1HR20BB01D	2	C36,C37
82.13040.001	CRYSTAL,SMT,40MHZ,12PF,10PPM(FREQ),10PPM(TEMP),25OHM,3.2X2.5,X3S040000BC1HA-HZ,-30C~85C	1	Y1
63.10034.L09	GENERAL FIXED RESISTOR,SMT,10 OHM,J,0402,1/16W,WR04X100 JTL	3	R402,R403,R404
78.22034.1F1	*!R06 CHIP CAP C 22P 50V J0402 NPO	2	C407,C408
78.47034.101	MLCC,NPO,47PF,+-5PCT(J),50V,0402,HIQ-N,CC0402JRNPO9BN470	1	C409
48DHSK05.0GAASK	DHSK-DS5,PCB,4L,50X35MM,FR4,OSP	1	

6. Regulatory and Industry Approvals

6.1. Certification Country

Country	ID
FCC	QVHDBWIFIBLE04
IC	7986A-DBWIFIBLE04
NCC	
CE Notify Body	
Japan	
KCC	R-C-dtl-DBWIFIBLE04
SRRC	

7. Safety Recommendation

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and must be avoided in the following areas:

- Where it can interfere with other electronic devices in environments such as hospitals, airports, and aircraft
- Where there is a risk of explosion such as gasoline stations and oil refineries

It is the responsibility of the user to comply with the his or her country's regulations and the specific environmental regulations.

Do not disassemble the product; any mark of tampering will compromise the warranty's validity.

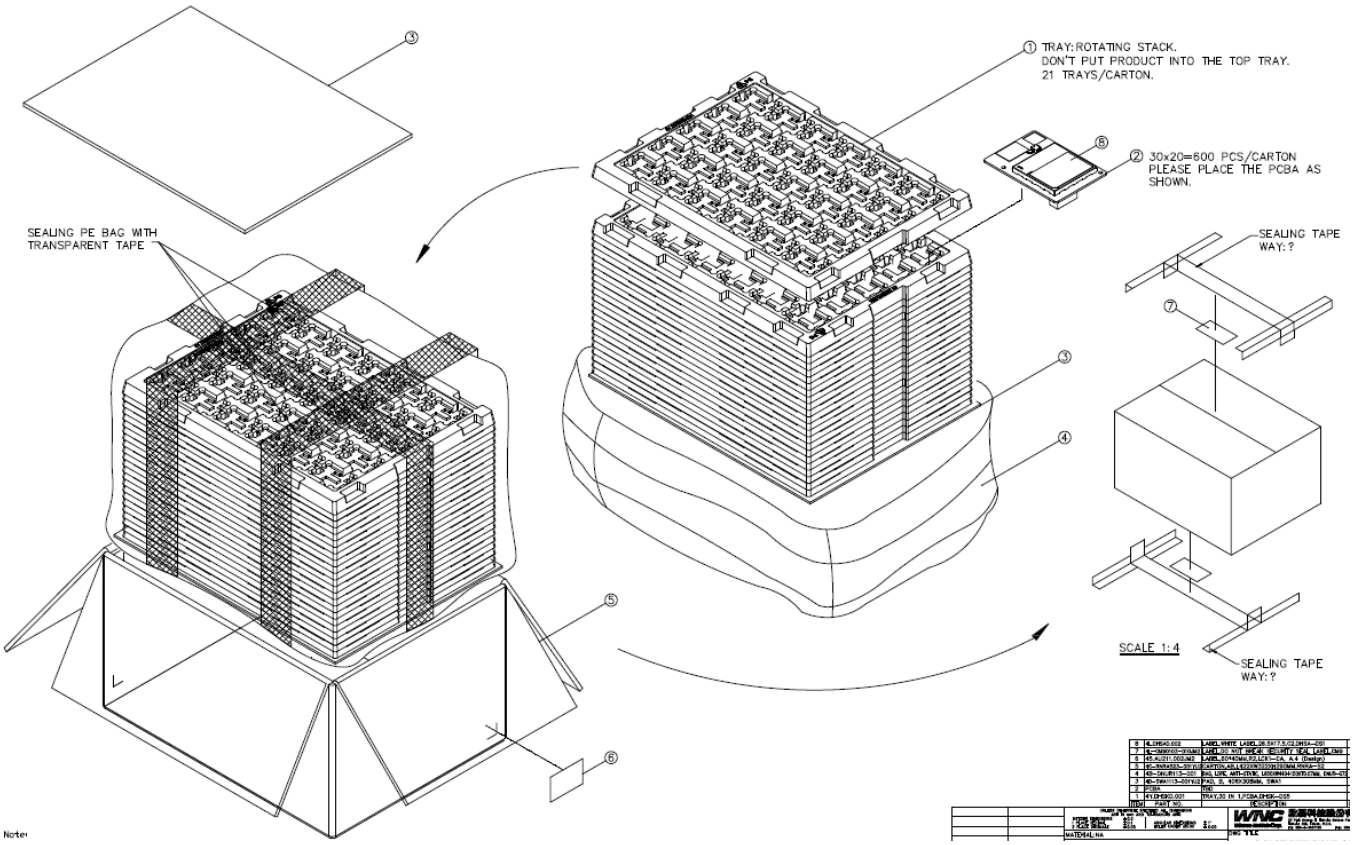
We recommend following the instructions of the hardware user guides for a correct wiring of the product. The product must be supplied with a stabilized voltage source, and the wiring must conform to the security and fire-prevention regulations.

This product must be handled with care; avoid any contact with the pins because electrostatic discharge may damage the product. Same caution must be taken regarding the SIM card; carefully check the instructions for its use. Do not insert or remove the SIM when the product is in power-saving mode.

The system integrator is responsible of the functioning of the final product; therefore, care must be taken for the external components of the module as well as for project or installation issues—there may be a risk of disturbing the GSM network or external devices or of having an impact on device security. If you have any doubts, please refer to the technical documentation and the relevant regulations in force.

Every module must be equipped with a proper antenna with specific characteristics. The antenna must be installed with care in order to avoid any interference with other electronic devices.

8. Packaging


① TRAY: ROTATING STACK.
DON'T PUT PRODUCT INTO THE TOP TRAY.
21 TRAYS/CARTON.
② 30x20=600 PCS/CARTON
PLEASE PLACE THE PCBA AS SHOWN.
SEALING PE BAG WITH TRANSPARENT TAPE
SEALING TAPE WAY: ?
SCALE 1:4
SEALING TAPE WAY: ?

9. Statement

Federal Communication Commission Interference Statement

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 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 Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
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 20cm between the radiator & your body.

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

Country Code selection feature to be disabled for products marketed to the US/CANADA

Integration instructions for host product manufacturers

Applicable FCC rules to module

FCC Part 15.247

Summarize the specific operational use conditions

The module is must be installed in mobile device.

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

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2) The transmitter module may not be co-located with any other transmitter or antenna

3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 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.

IMPORTANT NOTE: In the event that these conditions can not 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 can not 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.

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.

Limited module procedures

Not applicable

Trace antenna designs

Not applicable

RF exposure considerations

20 cm separation distance and co-located issue shall be met as mentioned in "Summarize the specific operational use conditions".

Product manufacturer shall provide below text in end-product manual

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

Antennas

Brand name	Model name	Antenna type	Antenna gain	Antenna connector
Dyson	ANT2_1370X950	PIFA	2.21dBi for 2400~2483.5MHz 2.59 dBi for 5150~5250MHz 2.62 dBi for 5250~5350MHz 2.79 dBi for 5470~5725MHz 3.44 dBi for 5725~5850MHz	No

Label and Compliance Information

Product manufacturers need to provide a physical or e-label stating "Contains FCC ID: QVHDBWIFIBLE04" with finished product

Information on Test Modes and Additional Testing Requirements

Test tool: AmebaD_mptool, Version:2V2 for Wi Fi；Realtek Bluetooth MP Kit Setup Pakage, Version:32601 shall be used to set the module to transmit continuously.

Additional Testing, Part 15 Subpart B Disclaimer

The module is only FCC authorized for the specific rule parts 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. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed

Industry Canada statement:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference
(2) This device must accept any interference, including interference that may cause undesired operation of the device

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution:

(i) the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and

Operations in the 5.25-5.35GHz band are restricted to indoor usage only.

Avertissement:

(i) les dispositifs fonctionnant dans la bande de 5 150 à 5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e;

(iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée, selon le cas;

Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

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

Déclaration d'exposition aux radiations:
Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

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

1) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 1 condition 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.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:

1) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

IMPORTANT NOTE:

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

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

The final end product must be labeled in a visible area with the following: “Contains IC: 7986A-DBWIFIBLE04”.

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 7986A-DBWIFIBLE04".

Manual Information To the End User

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.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.
Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

Taiwan 警語：

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

無線資訊傳輸設備避免影響附近雷達系統之操作。

系統廠商應於平台上標示「本產品內含射頻模組: CCAFXXLPXXXXTX)」字樣