

LBEE6ZZ2AJ User Manual for FCC

FCC ID:VPYLB2AJ

Since this module is not sold to general end users directly, there is no user manual of module.

For the details about this module, please refer to the specification sheet of module.

This module should be installed in the host device according to the interface specification (installation procedure).

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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 device complies with below part 15 of FCC Rules.

Part 15 Subpart C

Part 15 Subpart E

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and 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.

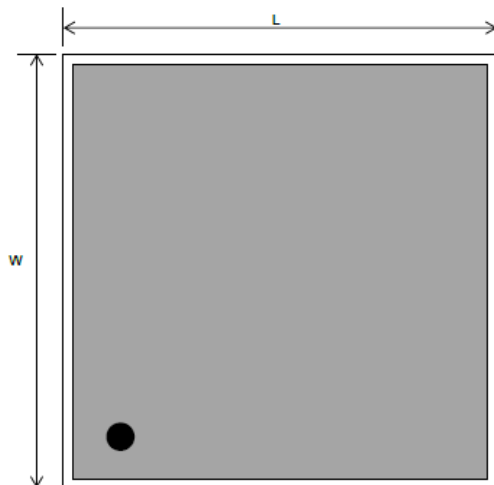
This module designed for mounting inside of the end product by us professionally.
Therefore, it complies with the antenna and transmission system requirements of §15.203.

Since there is no space which indicates FCC ID on this module, FCC ID is indicated in a manual.
If the FCC ID is not visible when the module is installed inside another device,
then the module is installed must also display a label referring to the enclosed module.

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Dimensions. Marking and Terminal Configuration

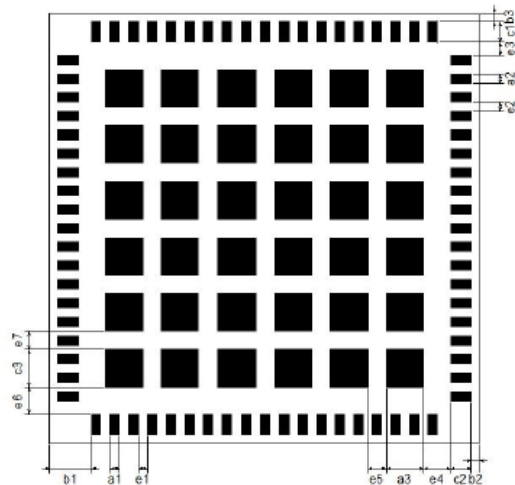
<Top View>



<Side View>



<Bottom View>

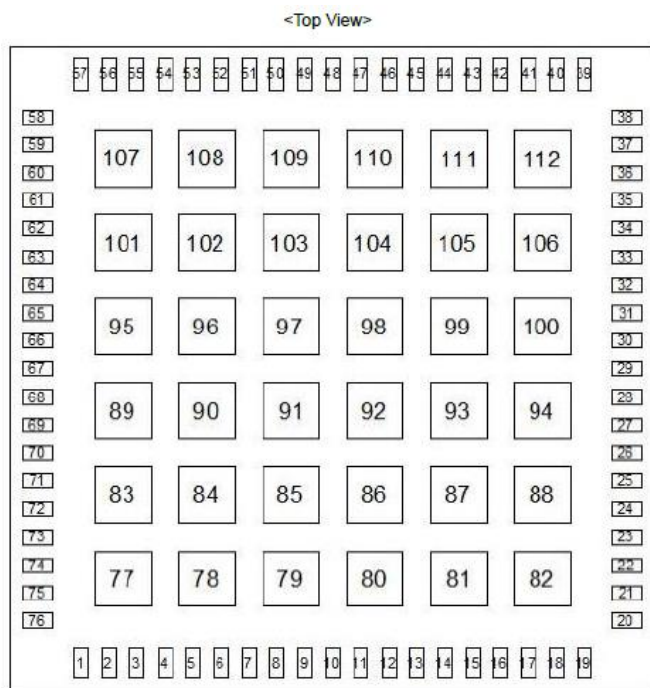


(Unit: mm)

Mark	Dimensions	Mark	Dimensions	Mark	Dimensions
L	22.6±0.3	W	22.6±0.3	T	2.6 max.
a1	0.5	a2	0.5	a3	2.0
b1	2.05	b2	0.3	b3	0.3
c1	1.1	c2	1.1	c3	2.0
e1	0.5	e2	0.5	e3	0.65
e4	1.4	e5	1.0	e6	1.4
e7	1.0				

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Pin Layout



No.	PIN Name	No.	PIN Name	No.	PIN Name	No.	PIN Name
1	LTE_UART_RXD	30	JTAG_TDO	59	GPIO_13	88	GND
2	PCM_IN/I2S_SD_IN	31	JTAG_TDI	60	GPIO_12	89	VDD_CORE_VM
3	PCM_OUT/I2S_SD_OUT	32	JTAG_TCK	61	GPIO_9	90	GND
4	PCM_CLK/I2S_SCK	33	JTAG_TRST	62	NC	91	GND
5	PCM_SYNC/I2S_WS	34	JTAG_TMS	63	NC	92	GND
6	GND	35	NC	64	NC	93	GND
7	WL_PCIE_RST_L	36	GND	65	NC	94	GND
8	WL_PCIE_WAKE_L	37	BT_RF	66	NC	95	GND
9	WL_PCIE_CLKREQ_L	38	GND	67	GND	96	GND
10	HST_SW_CTRL	39	NC	68	WL_EN	97	GND
11	GND	40	NC	69	BT_EN	98	GND
12	WL_PCIE_RX_P	41	DNC	70	GND	99	GND
13	WL_PCIE_RX_N	42	DNC	71	VDD18_IO	100	GND
14	GND	43	GND	72	BT_UART_RTS	101	VDD_FEM_5G
15	WL_PCIE_TX_P	44	GND	73	BT_UART_CTS	102	VDD_FEM_5G
16	WL_PCIE_TX_N	45	WL_RF0	74	BT_UART_TXD	103	GND
17	GND	46	GND	75	BT_UART_RXD	104	GND
18	WL_PCIE_CLK_N	47	GND	76	LTE_UART_TXD	105	VDD_FEM_2G
19	WL_PCIE_CLK_P	48	NC	77	VDD_CORE_VH	106	VDD_FEM_2G
20	WL_DB_UART_RXD	49	NC	78	GND	107	GND
21	WL_DB_UART_TXD	50	NC	79	VDD_CORE_VL	108	GND
22	SLEEP_CLK	51	NC	80	GND	109	GND
23	GND	52	GND	81	GND	110	GND
24	NC	53	GND	82	GND	111	GND
25	NC	54	WL_RF1	83	VDD_CORE_VH	112	GND
26	GND	55	GND	84	GND	---	---
27	HST_CLK_REQ_OUT	56	GND	85	VDD_CORE_VL	---	---
28	NC	57	NC	86	VDD_CORE_VL	---	---
29	GND	58	GPIO_8	87	GND	---	---

Operating Temperature

	Min.	Typ.	Max.	Unit
Operating Temperature	-40	+25	+85	deg. C

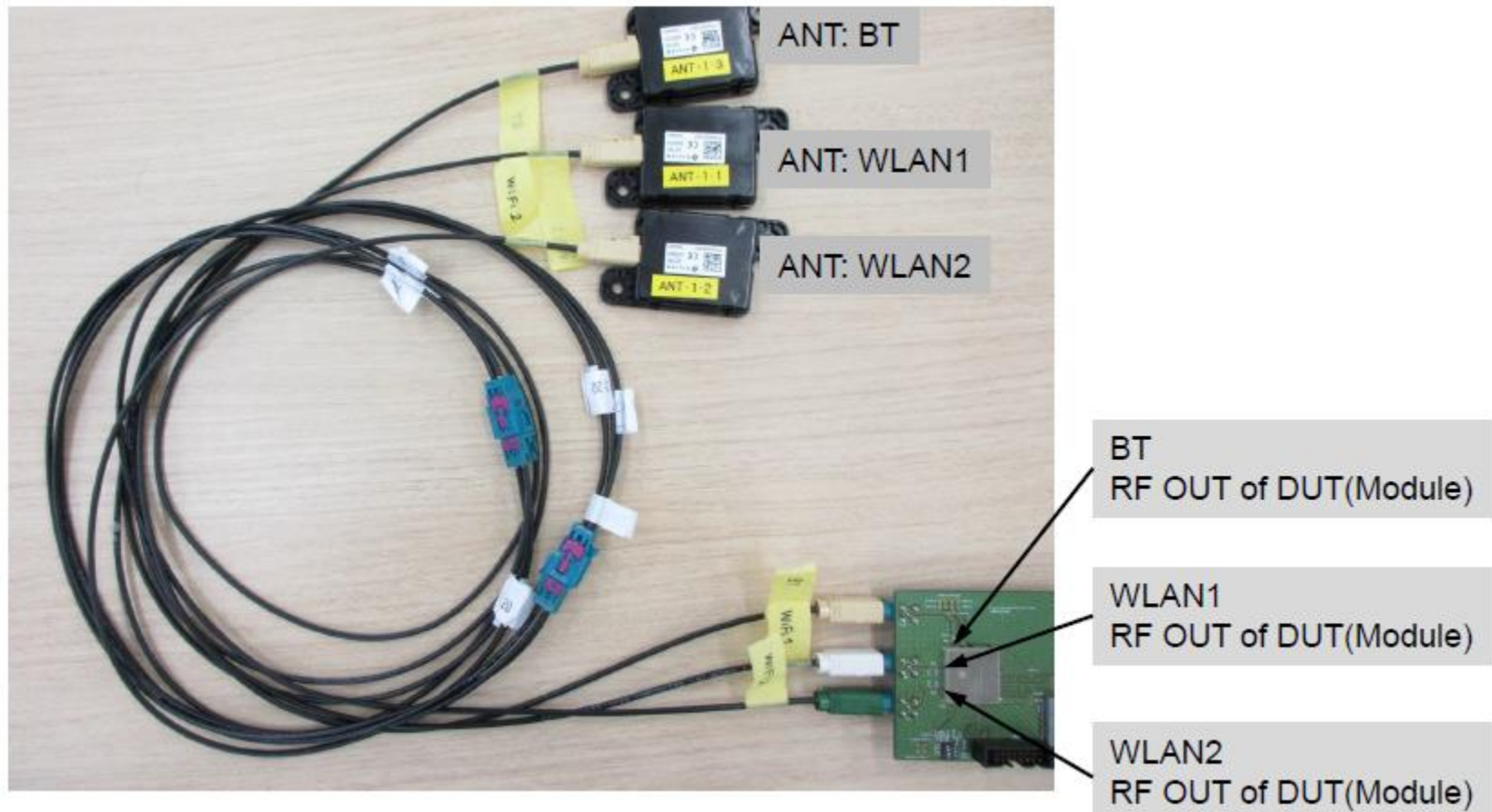
Supply Voltage

DUT_PIN_Name	Min.	Typ.	Max.	unit
VDD_CORE_VH	1.85	1.95	2.05	V
VDD_CORE_VM	1.28	1.35	1.42	V
VDD_CORE_VL	0.90	0.95	1.00	V
VDD18_IO	1.70	1.80	1.90	V
VDD_FEM_2G VDD_FEM_5G	3.50	3.85	4.20	V

Power to VDD_FEM_2G and VDD_FEM_5G must be supplied via an external regulator.

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Antenna Outline



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Antenna

No.	Maker	Supported Antenna				
		P/N	Form factor	Type	Gain [dBi]	
					2.4GHz	5GHz
1	TE	955-011-901	FAKRA	Pattern Antenna	Max. 2.8dBi	Max. 5dBi
2	TE	955-011-901	FAKRA	Pattern Antenna	Max. 2.8dBi	Max. 5dBi
3	TE	955-011-901	FAKRA	Pattern Antenna	Max. 2.8dBi	Max. 5dBi

Top view



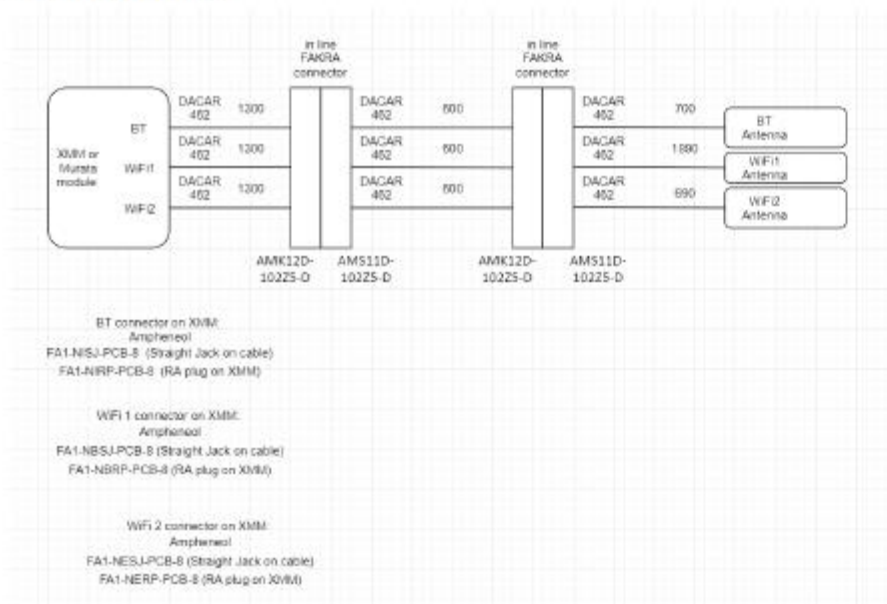
Bottom view



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Antenna

Cable information

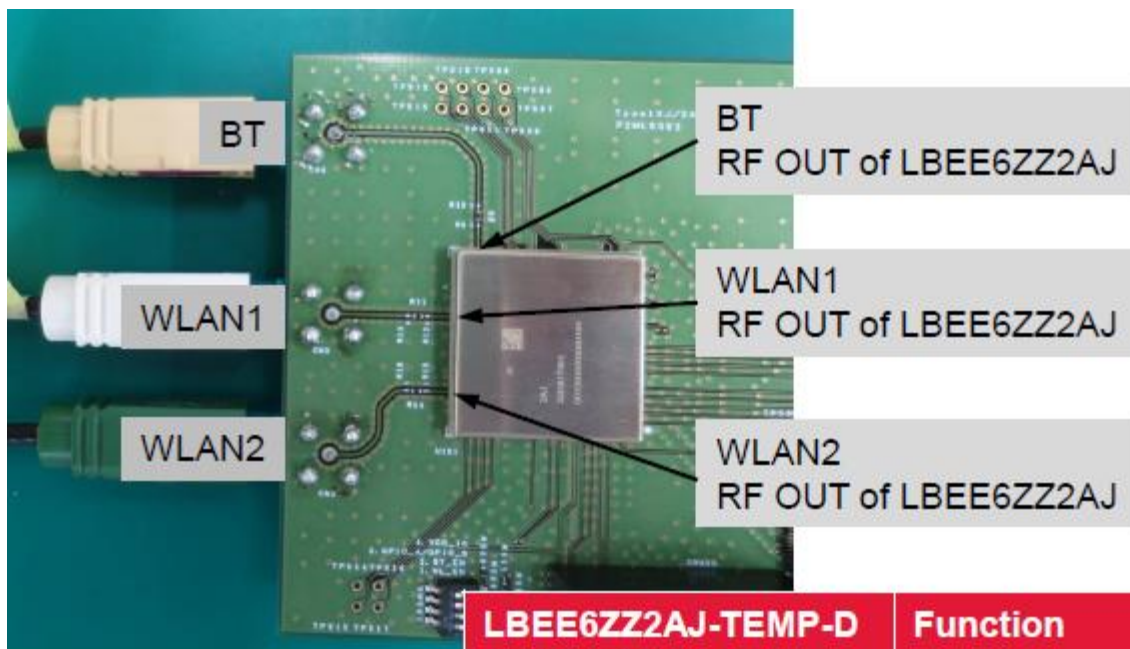


Cable Loss

	2G Loss [dB]		5G Loss [dB]	
	Max	Min	Max	Min
WiFi1	6.7	6.1	11.5	10.0
WiFi2/BT	5.4	4.7	8.8	7.3

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Antenna



LBEE6ZZ2AJ-TEMP-D ANT port name	Function
WLAN2	WLAN
WLAN1	WLAN
BT	Bluetooth and BLE

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Antenna

Maximum antenna gain including RF cable is below:

Antenna Port	Max. Gain [dBi]	
	2.4GHz	5GHz
WLAN1	-3.3	-5.0
WLAN2/BT	-1.9	-2.3

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- The following statements must be described on the user manual of the host device of this module;

Contains Transmitter Module FCC ID:VPYLB2AJ

or

Contains FCC ID: VPYLB2AJ

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.

*If it is difficult to describe this statement on the host product due to the size, please describe in the User's manual.

FCC CAUTION

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

Compliance with FCC requirement 15.407(c)

Data transmission is always initiated by software, which is then passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.

Frequency Tolerance: ± 20 ppm

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

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- When installing it in a mobile equipment. Please describe the following warning to the manual.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

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- When installing it in a portable equipment. Please describe the following warning to the manual.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. Type1VY has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines.

It is necessary to take a SAR test with your set mounting this module (except to use only Bluetooth).
Class II permissive change application is necessary using the SAR report. Please contact Murata.

Note)

Portable equipment : Equipment for which the spaces between human body and antenna are used within 20cm.

Mobile equipment : Equipment used at position in which the spaces between human body and antenna exceeded 20cm.