

LBEE6XX1UR Installation Manual

FCC ID of this product is as follows.

FCC ID: VPYLBEE6XX1UR2

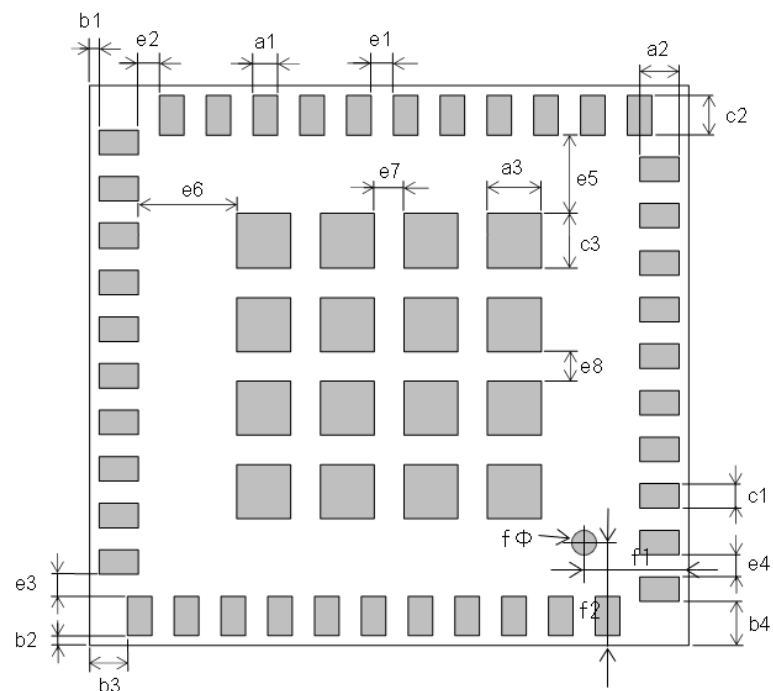
IC No. of this product is as follows.

IC: CYW88373

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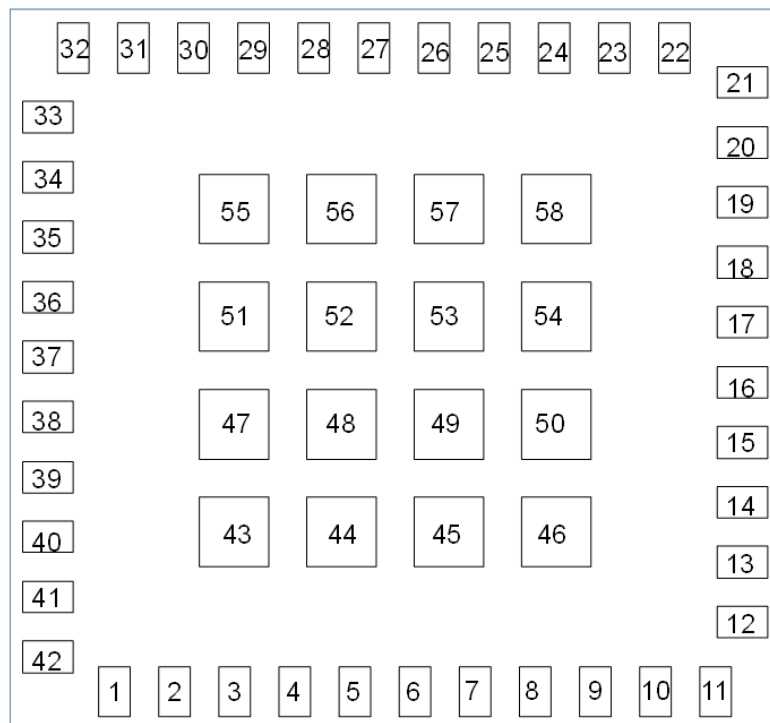
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1.Land Pattern (Recommended)



Mark	Dimensions	Mark	Dimensions	Mark	Dimensions	Mark	Dimensions
L	12.2±0.3	W	11.4±0.3	T	2.5 max.		
a1	0.5 ± 0.1	a2	0.8 ± 0.1	a3	1.0 ± 0.1	b1	0.2 ± 0.1
b2	0.2 ± 0.1	b3	0.75 ± 0.1	b4	0.9 ± 0.1	c1	0.5 ± 0.1
c2	0.8 ± 0.1	c3	1.0 ± 0.1	e1	0.45 ± 0.1	e2	0.45 ± 0.1
e3	0.45 ± 0.1	e4	0.45 ± 0.1	e5	1.65 ± 0.1	e6	2.05 ± 0.1
e7	0.7 ± 0.1	e8	0.7 ± 0.1	fΦ	0.5±0.1	f1	2.05±0.1
f2	2.05±0.1						

2. PIN Layout



Pin No	Description	Pin No	Description	Pin No	Description
1	GND	24	GPIO_6	47	GND
2	STRAP_0	25	WL_HOST_WAKE	48	GND
3	JTAG_SEL	26	LPO_IN	49	GND
4	WL_REG_ON	27	BT_DEV_WAKE	50	GND
5	GND	28	BT_PCM_IN	51	GND
6	SDIO_DATA_0	29	BT_PCM_CLK	52	GND
7	SDIO_DATA_1	30	BT_PCM_SYNC	53	GND
8	SDIO_DATA_2	31	BT_PCM_OUT	54	GND
9	SDIO_DATA_3	32	GND	55	GND
10	SDIO_CMD	33	BT_ANT	56	GND
11	GND	34	GND	57	GND
12	SDIO_CLK	35	BT_UART_TXD	58	GND
13	GND	36	BT_UART_RXD		
14	VIO	37	BT_UART_CTS		
15	GND	38	BT_UART_RTS		
16	VDD	39	BT_HOST_WAKE		
17	GND	40	GND		
18	BT_REG_ON	41	WL_ANT		
19	GPIO_3	42	GND		
20	GPIO_4	43	GND		
21	GND	44	GND		
22	GPIO_2	45	GND		
23	GPIO_5	46	GND		

3. Supply Voltage

Type1UR_PIN_Name	Min.	Typ.	Max.	unit
VDD	3.14	3.3	3.46	V
VIO	1.71	1.8	1.89	V

4. Power Levels

(Antenna port)

Mode	Rate/MCS	Band	Channel	MAXIMUM TUNE UP TOLERANCE [dBm]
IEEE 802.11b	All Rate	2.4GHz	All Channel	17
IEEE 802.11g	All Rate	2.4GHz	All Channel	13
IEEE 802.11n (HT20)	MCS0~MCS6	2.4GHz	All Channel	13
	MCS7	2.4GHz	All Channel	12

Mode	MAXIMUM TUNE UP TOLERANCE [dBm]
Bluetooth(BR/EDR)	3.5

4. Power Levels

(Antenna port)

*The module is dose not use 167,169 channels

Mode	Spreading	Rate/MCS	Band	Channel	MAXIMUM TUNE UP TOLERANCE [dBm]
IEEE 802.11a	OFDM	All Rate	W52/W53 W56/W58	All Channel	13
IEEE 802.11n (HT20)		MCS0~MCS6	W52/W53 W56/W58	All Channel	13
		MCS7	W52/W53 W56/W58	All Channel	12
IEEE 802.11n (HT40)		MCS0~MCS6	W52	38	12.5
			W52/W53 W56/W58	46,54,62,102, 110,118,126, 134,142,151, 159	13
		MCS7	W52/W53 W56/W58	All Channel	12

4. Power Levels

(Antenna port)

*The module is dose not use 167,169 channels

Mode	Spreading	Rate/MCS	Band	Channel	MAXIMUM TUNE UP TOLERANCE [dBm]
IEEE 802.11ac (VHT20)	OFDM	MCS0~MCS6	W52/W53 W56/W58	All Channel	13
		MCS7~MCS8	W52/W53 W56/W58	All Channel	12
IEEE 802.11ac (VHT40)		MCS0~MCS6	W52	38	12.5
			W52/W53 W56/W58	46,54,62,102, 110,118,126, 134,142,151, 159	13
		MCS7	W52/W53 W56/W58	All Channel	12
		MCS8~MCS9	W52/W53 W56/W58	All Channel	11

4. Power Levels

(Antenna port)

*The module is dose not use 167,169 channels

Mode	Spreading	Rate/MCS	Band	Channel	MAXIMUM TUNE UP TOLERANCE [dBm]
IEEE 802.11ac (VHT80)	OFDM	MCS0~MCS6	W52/W53 W56/W58	42,122,138, 155	13
			W53	58	12
			W56	106	11.5
		MCS7	W52/W53 W56/W58	42,58,122, 138,155	12
			W56	106	11.5
		MCS8~MCS9	W52/W53 W56/W58	All Channel	11

5. Modulation type/Coding rate

IEEE 802.11b

Rate	Modulation
1Mbps	DSSS DBPSK / G1D
2Mbps	DSSS DQPSK / G1D
5.5Mbps	DSSS CCK / G1D
11Mbps	DSSS CCK / G1D

IEEE 802.11a/g

Rate	Modulation
6Mbps	OFDM BPSK / G1D
9Mbps	OFDM BPSK / G1D
12Mbps	OFDM QPSK / G1D
18Mbps	OFDM QPSK / G1D
24Mbps	OFDM 16-QAM / D1D
36Mbps	OFDM 16-QAM / D1D
48Mbps	OFDM 64-QAM / D1D
54Mbps	OFDM 64-QAM / D1D

5. Modulation type/Coding rate

IEEE 802.11n

Rate	Modulation
MCS0	OFDM BPSK / G1D
MCS1	OFDM QPSK / G1D
MCS2	OFDM QPSK / G1D
MCS3	OFDM 16-QAM / D1D
MCS4	OFDM 16-QAM / D1D
MCS5	OFDM 64-QAM / D1D
MCS6	OFDM 64-QAM / D1D
MCS7	OFDM 64-QAM / D1D

IEEE 802.11ac

Rate	Modulation
VHT_SS1_MCS0	OFDM BPSK / G1D
VHT_SS1_MCS1	OFDM QPSK / G1D
VHT_SS1_MCS2	OFDM QPSK / G1D
VHT_SS1_MCS3	OFDM 16-QAM / D1D
VHT_SS1_MCS4	OFDM 16-QAM / D1D
VHT_SS1_MCS5	OFDM 64-QAM / D1D
VHT_SS1_MCS6	OFDM 64-QAM / D1D
VHT_SS1_MCS7	OFDM 64-QAM / D1D
VHT_SS1_MCS8	OFDM 256-QAM / D1D
VHT_SS1_MCS9	OFDM 256-QAM / D1D

6. Theory of Operation

Frequency of operation			Scan	Ad-hoc mode
2.4GHz	11b/g/n(HT20)	2412-2462MHz	Active	Yes
W52	11a/n/ac ((V)HT20)	5180-5240MHz	Active	Yes
	11n/ac ((V)HT40)	5190-5230MHz	Active	Yes
	11ac (VHT80)	5210MHz	Active	Yes
W53	11a/n/ac ((V)HT20)	5260-5320MHz	Passive	No
	11n/ac ((V)HT40)	5270-5310MHz	Passive	No
	11ac (VHT80)	5290MHz	Passive	No
W56	11a/n/ac ((V)HT20)	5500-5720MHz (*ISED:5600-5650MHz disable)	Passive	No
	11n/ac ((V)HT40)	5510-5710MHz (*ISED:5600-5650MHz disable)	Passive	No
	11ac (VHT80)	5530-5690MHz (*ISED:5600-5650MHz disable)	Passive	No
W58	11a/n/ac ((V)HT20)	5745-5825MHz	Active	Yes
	11n/ac ((V)HT40)	5755-5795MHz	Active	Yes
	11ac (VHT80)	5775MHz	Active	Yes

End users can not modify the software because F/W & driver are installed in device.

7. Antenna



- Please perform the antenna design that followed the specifications of the antenna.

- About the signal line between an antenna and a module

It is a 50-ohm line design.

Fine tuning of return loss etc. can be performed using a matching network.

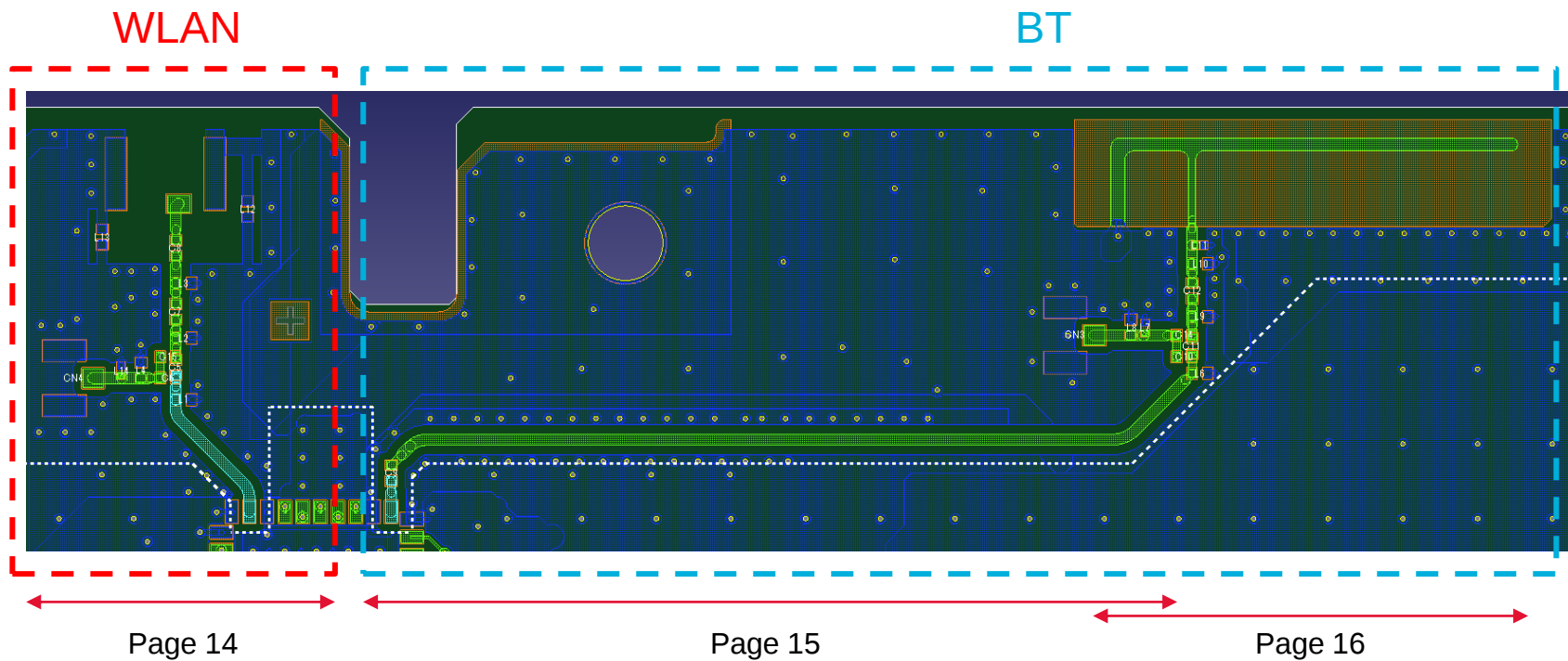
However, it is required to check "Class1 change" and "Class2 change" which the authorities define then.

The concrete contents of a check are the following three points.

- 1) It is the same type as the antenna type of antenna specifications.
- 2) An antenna gain is lower than a gain given in antenna specifications.
- 3) The emission level is not getting worse.

7. Antenna

- Use the antenna below.

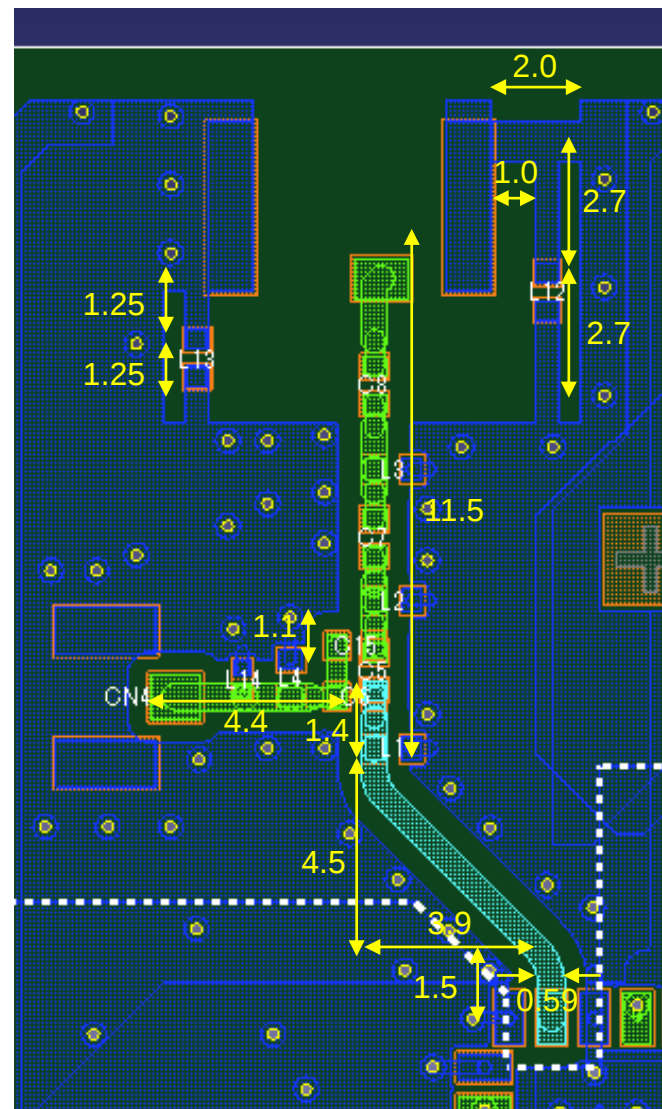


7. Antenna

■ Use the antenna below.

(WLAN Antenna)

- Chip Antenna
- Part number: **VGAP-CLB-AS-A1**
- Use the following design on your board to build your antenna.

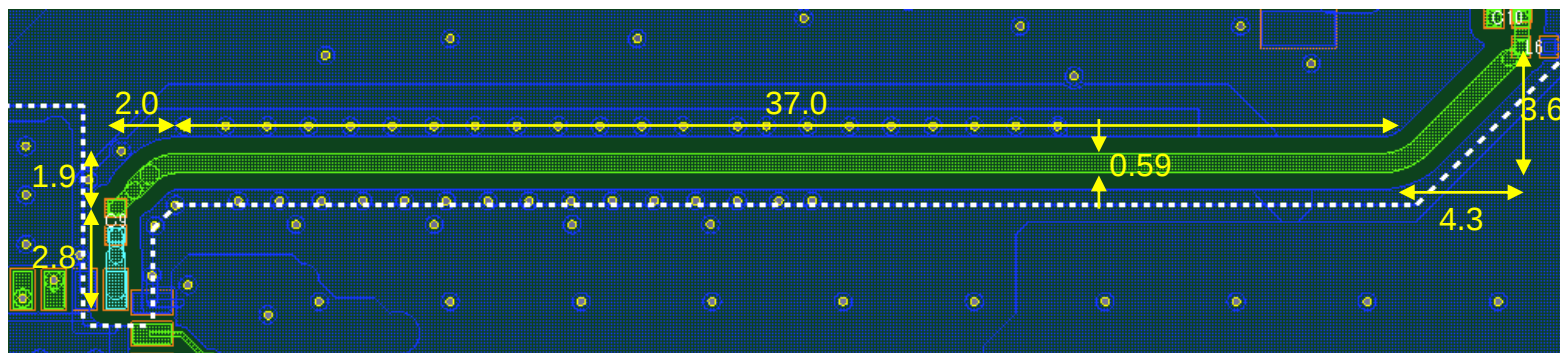


7. Antenna

■ Use the antenna below.

(BT Antenna)

- Pattern on the board
- Part number: **BT_IFA**
- Use the following design on your board to build your antenna.



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- (BT Antenna)**

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