

Delivery Specifications

Supplier Specification Submission

納入仕様書

■ Date of application 2023/4/20	提出年月日	Ref. No. <u>NA</u>
■ Specification number TBD	仕様書番号	● New application <input type="checkbox"/> New Parts(s) is added to accepted specification <input type="checkbox"/> Revision of accepted specification (Requested by Sony) <input type="checkbox"/> Revision of accepted specification (Requested by Supplier)
■ Part number TBD	部品番号	● One <input type="checkbox"/> Two or more
■ Tentative Part number NA	試作番号	
■ Part name WLAN/BT MODULE (WiFi 6E)	部品名称	
■ Supplier code & Supplier's name NA	納入者名 及び 取引先コード Nanning Fulian FuGui Precision Industrial Co.,Ltd.	
■ Manufacturer's name ■ Person responsible ■ Person in charge of engineering ■ Person in charge of sales ■ Contact	製造社名 責任者名 技術担当者名 営業担当者名 連絡先	Nanning Fulian FuGui Precision Industrial Co.,Ltd. Ruyan Li Robin Xu Ted Wu +81-80-4340-1713 Ted.fj.wu@foxconn.com
■ Supplier's product name ■ Supplier's product number ■ Drawing number	納入者製品名 製品番号 図面番号	<u>WLAN/BT Module(WiFi 6E)</u> <u>J20H105</u> <u>NA</u>
● The specification attached to this sheet does not deviate from Sony specification. <input type="checkbox"/> Revision(s) within the limits of Sony specification is proposed. Revision proposal(s) is listed below. <input type="checkbox"/> Revision(s) beyond the limits of Sony specification is proposed. Revision proposal(s) is listed below. However, all other items contained within the specification are identical to Sony specification.		
■ Revision 仕様変更欄		
Sony specification ソニー仕様	Proposed revision 変更希望仕様	Reason for revision 変更理由

Product Description	WLAN/BT Module(WiFi 6E)
SONY Part Number	TBD
FOXCONN Part Number	J20H105.00
FOXCONN Model Name	J20H105.00
Issue Version:	00
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Production Country	People's Republic of China

Revision History

Version	PCB version	Change Description	Date
00	V015	Initial release (ES2)	2023/2/24

Certification ID / Test Report No.

Country	Certification	Certification No.	Remark
USA	FCC	TBD	
Japan	TELEC	TBD	*1
Canada	ISED	TBD	*2

***1 Remark for TELEC:**

5GHz帯 (W52, W53) 及び 6GHz帯 (LPI) : 屋内利用限定(5.2GHz帯高出力データ通信システムの基地局や中継局との通信を除く)

5GHz band (W52, W53) and 6GHz band (LPI): Indoor use only (except communicate to W52 high power radio)

***2 Remark for ISED:**

- a. Operation shall be limited to indoor use only; and
- b. Operation on oil platforms, cars, trains, boats and aircraft shall be prohibited except for on large aircraft flying above 10,000 ft.

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1 Product Introduction

J20H105.00 is an USB2.0 WLAN/Bluetooth combo module based on Mediatek MT7921AUN chipset. MT7921AUN is a highly integrated single chip which features a low power 2x2 11a/b/g/n/ac/ax dual band Wi-Fi subsystem and a Bluetooth v5.2 subsystem.

Features

- IEEE 802.11 a/b/g/n/ac/ax compliant
- Support 20MHz, 40MHz, 80Mhz bandwidth in 2.4GHz, 5GHz, 6GHz band
- Dual-band 2T2R mode
- Bluetooth v5.2 with BLE (BT low energy)
- Supports BT/BLE dual mode
- Supports BT/Wi-Fi coexistence
- OTP memory in MT7921AUN chipset for RF calibration data storage
- Support wake on WLAN/BT
- Single-side SMT process
- Four layers HDI PCB, ENIG
- Module dimension: 20.00 mm x 18.00 mm x 2.55 mm (Typical)
- Weight :2g(Typical)

Interfaces and Power supply

- 71 LGA pads
- Four RF pad (Two for WiFi, Two for BT)
- 3.3 V / 1A power supply required
- USB 2.0 interface
- WOWL (wake on WLAN)/WOBT(wake on BT), active low
- RST_WL/RST_BT, active low
- RST (reset), active low

5 Electrical Specification

5.1 Electrical Characteristics

5.1.1 Absolute maximum rating

Symbol	Condition	Description	Min	Typ.	Max.	Unit
3.3 V	--	3.3V power supply	-0.3	3.3	3.63	V
RST	--	Reset	-0.3	3.3	3.63	V
Operating	--	Operating temperature	-10	25	60	°C
Tstorage	--	Storage temperature	-40	25	85	°C
Hstorage	--	Storage humidity	10	--	85	%RH

5.1.2 Recommended operating rating

Symbol	Condition	Description	Min	Typ.	Max.	Unit
VDD33	--	3.3V power supply required	2.97	3.3	3.63	V
VRipple	--	3.3V ripple voltage (pp) required	--	--	160	mV
Tstorage	--	Storage temperature	-40	--	85	°C
Hstorage	--	Storage humidity	10	--	85	%RH
WOWL WOBT	VOH	Wake on WLAN, high logic voltage	2.45	--	3.6	V
	VOL	Wake on WLAN, low logic voltage	-0.3	--	0.4	V
	RPU	Input pull-up resistance	10	50	100	K ohm
	RPD	Input pull-down resistance	10	50	100	K ohm
RST_WL RST_BT RST	VIH	Reset, high logic voltage	2	--	3.6	V
	VIL	Reset, low logic voltage	-0.3	--	0.8	V
	RPU	Input pull-up resistance	10	50	100	K ohm
	RPD	Input pull-down resistance	10	50	100	K ohm
Tambient	--	Ambient temperature	-10	--	60	°C
Hambient	--	Ambient humidity	10	--	90	%RH

5.1.3 HBM ESD level

Symbol	Level	Test standard
All pad except RF	± 2KV	JEITA ED-4701/304
WiFi0, WiFi1,BT0,BT1 RF pad	± 1KV	

5.2 Power sequence

Power on sequence

If DVDDIO voltage is 3.3V, these pins can be wired.

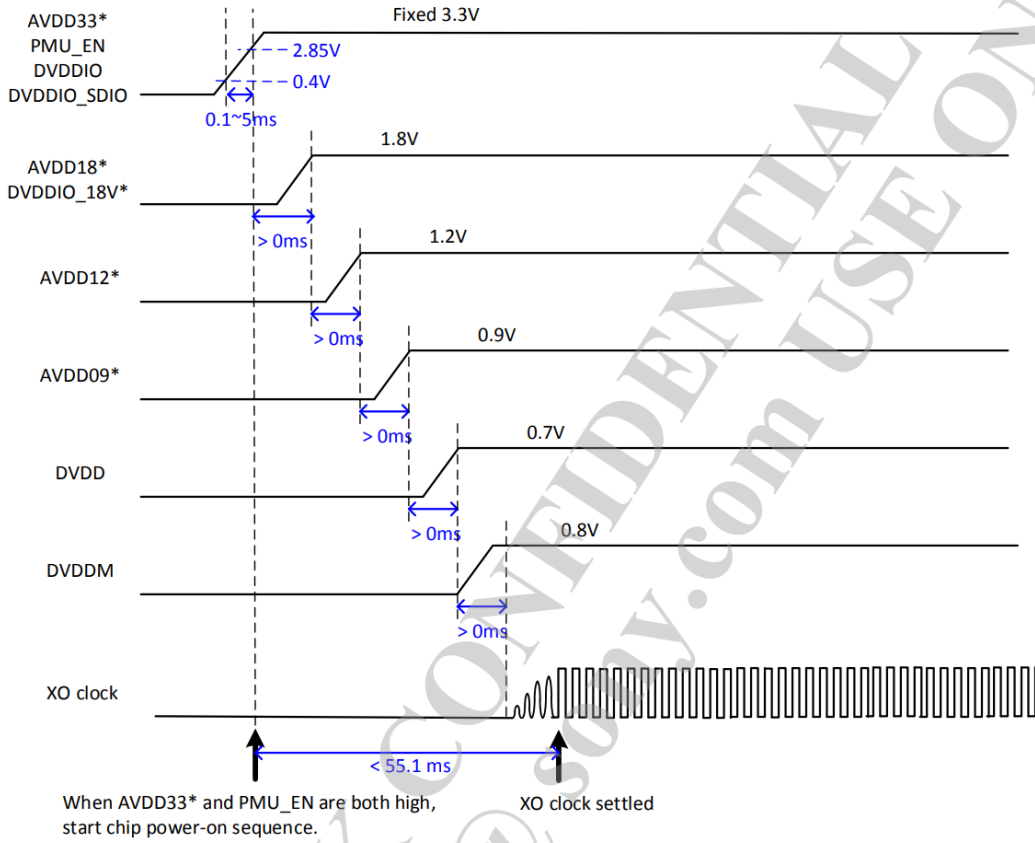
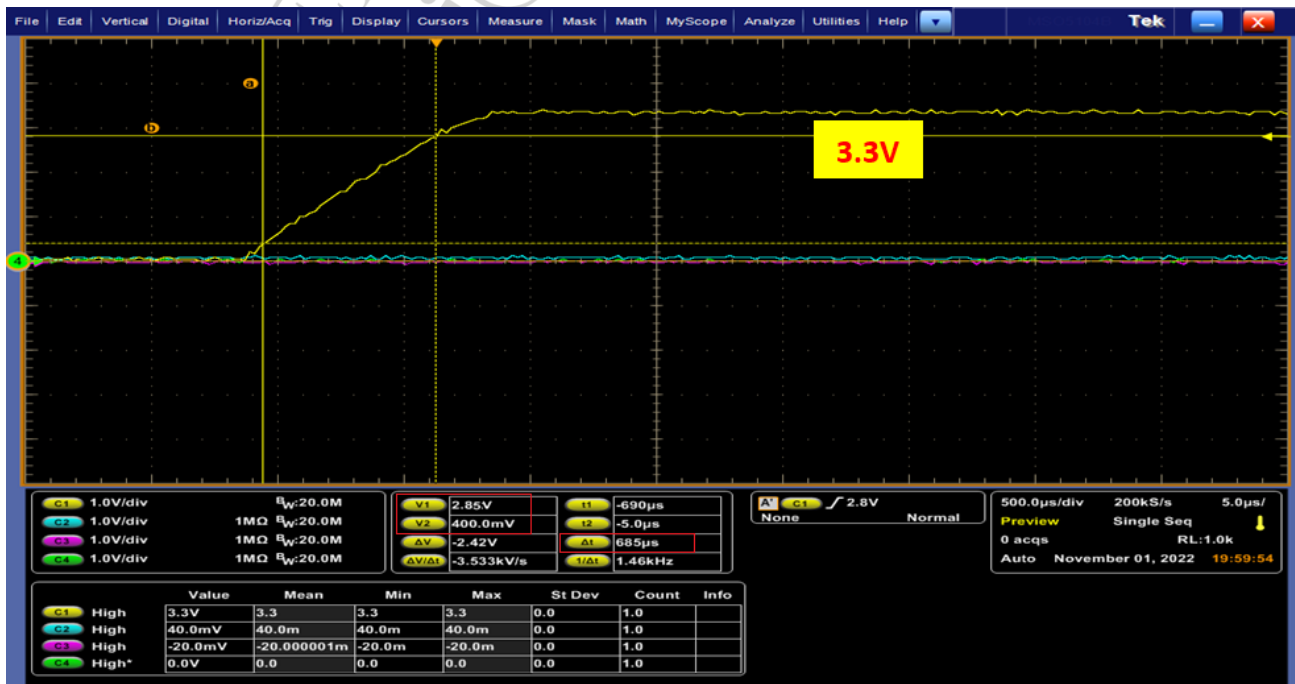
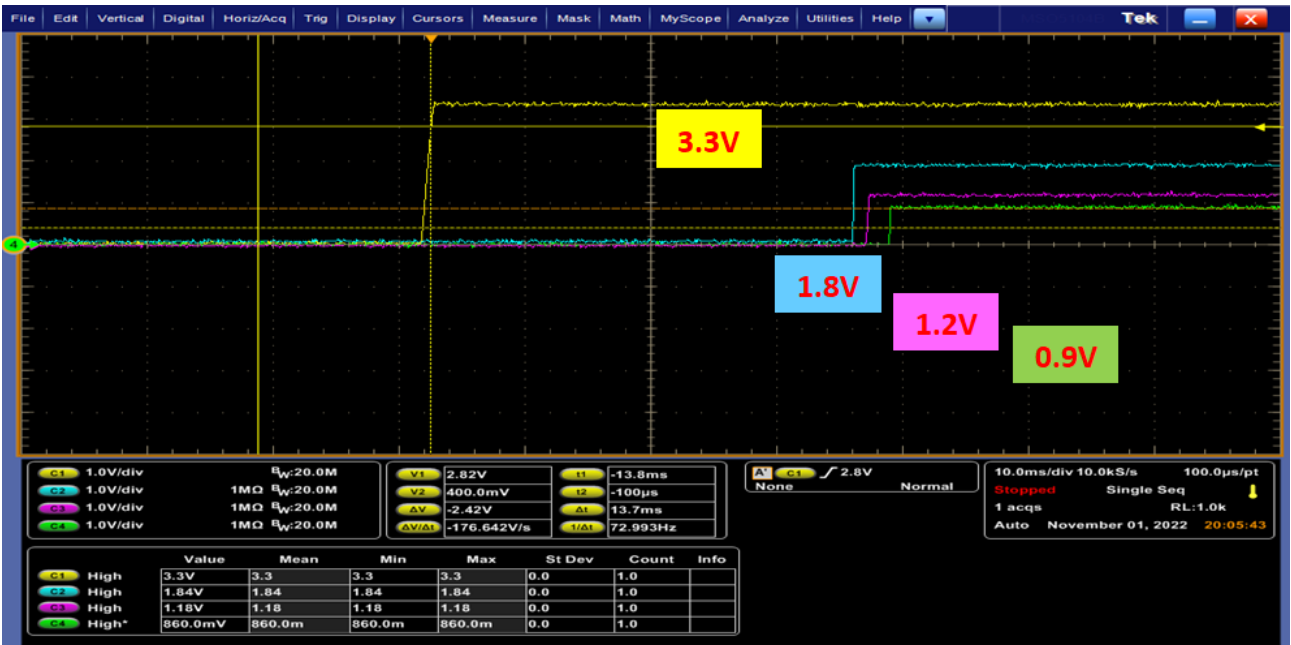


Figure 4 Chip power on sequence if DVDDIO is 3.3V



DVDDIO from 0.4V to 2.85V, the rising time is 0.68ms can meet datasheet requirement 0.1~5ms.



From DVDDIO 2.85V to AVDD18 1.8V on, the time is more than 0ms, can meet datasheet requirement >0ms.



From DVDDIO 2.85V to XO clock settled, the time is 46.9ms, can meet spec <55.1ms

Power off sequence



5.3 Current consumption

WiFi/BT Tx current consumption@ Target Power at 25 °C

Mode		Target Power (dBm)	Max current (mA)	High Level (mA)	RMS (mA)
WiFi 2.4G +BT	CCK-1M	16	500	476	454
	CCK-11M	16	524	500	405
	OFDM-6M	15	540	504	443
	OFDM-54M	14	508	500	282
	HT20-MCS0	15	532	508	434
	HT20-MCS7	14	516	496	270
	HE20-MCS0	15	540	516	358
	HE20-MCS11	13	500	472	227
WiFi 5G +BT	OFDM-6M	13	684	652	523
	OFDM-54M	12	676	640	364
	HT20-MCS0	13	700	660	578
	HT20-MCS7	12	676	656	353
	HT40-MCS0	13	716	668	514
	HT40-MCS7	12	684	672	298
	VHT20-MCS0	13	692	640	510
	VHT20-MCS8	11	660	632	299
	VHT40-MCS0	13	724	680	481
	VHT40-MCS9	11	668	652	257
	VHT80-MCS0	13	740	708	407
	VHT80-MCS9	11	684	660	243
	HE20-MCS0	13	692	660	468
	HE20-MCS11	11	732	704	328
	HE40-MCS0	13	724	684	459
	HE40-MCS11	11	740	716	338
HE80-MCS0	13	732	708	407	
HE80-MCS11	11	748	732	325	
WiFi 6G +BT	HE20-MCS0	13	808	716	565
	HE20-MCS11	11	752	720	345
	HE40-MCS0	13	792	748	529
	HE40-MCS11	11	768	724	339
	HE80-MCS0	13	800	752	438
	HE80-MCS11	11	760	720	315

1. WiFi TX Target power ANT1&ANT2
2. BT TX Power(1dBm)
3. Measure the 3.3V power consumption
4. Packet TX
5. The chip variation is +/- 25%.

WiFi /BT Tx current consumption@ Max Power at 25 °C

Mode		MAX Power (dBm)	Max current (mA)	High Level (mA)	RMS (mA)
WiFi 2.4G +BT	CCK-1M	18	608	548	526
	CCK-11M	18	584	544	441
	OFDM-6M	17	592	548	477
	OFDM-54M	16	560	524	299
	HT20-MCS0	17	576	536	465
	HT20-MCS7	16	560	536	285
	HE20-MCS0	17	568	536	377
	HE20-MCS11	15	512	484	235
WiFi 5G +BT	OFDM-6M	15	752	676	594
	OFDM-54M	14	704	660	384
	HT20-MCS0	15	736	680	589
	HT20-MCS7	14	704	660	361
	HT40-MCS0	15	760	700	534
	HT40-MCS7	14	720	700	310
	VHT20-MCS0	15	736	680	538
	VHT20-MCS8	13	680	652	312
	VHT40-MCS0	15	752	704	493
	VHT40-MCS9	13	688	668	270
	VHT80-MCS0	15	768	728	431
	VHT80-MCS9	13	704	684	251
	HE20-MCS0	15	736	692	490
	HE20-MCS11	13	760	720	346
	HE40-MCS0	15	760	720	496
	HE40-MCS11	13	768	732	351
	HE80-MCS0	15	760	716	417
	HE80-MCS11	13	720	696	289
WiFi 6G +BT	HE20-MCS0	15	840	768	592
	HE20-MCS11	13	784	744	353
	HE40-MCS0	15	840	788	484
	HE40-MCS11	13	768	760	338
	HE80-MCS0	15	832	788	465
	HE80-MCS11	13	784	748	324

1. WiFi TX Max power ANT1&ANT2(Target Power+2dBm)
2. BT TX Power(3dBm)
3. Measure the 3.3V power consumption
4. Packet TX
5. The chip variation is +/- 25%.

Power consumption test base on below test tool:

1. MFG Driver: package_MT7921_20210617_Ulv2.39_DLLv6.42_AP_2020.11.06.1329
2. WCN Combo Tool(W2036)

5.4 WLAN/Bluetooth RF Characteristics

ITEM	Specification					
Chipset Solution	Mediatek MT7921AUN					
TX/RX	WLAN 2 Tx/Rx + Bluetooth 2 Tx/Rx					
Frequency Range	2400 ~ 2483.5 MHz 5150 ~ 5850 MHz 5925 ~ 7125MHz					
Modulation & Maximum data rate	802.11b					
	Modulation		Data rate (Mbps)			
	DBPSK		1 Mbps			
	DQPSK		2 Mbps			
	CCK		5.5 Mbps			
	CCK		11 Mbps			
	802.11a/g					
	Modulation		FEC rate	Data rate (Mbps)		
	BPSK		1/2	6		
	BPSK		3/4	9		
	QPSK		1/2	12		
	QPSK		3/4	18		
	16QAM		1/2	24		
	16QAM		3/4	36		
	64QAM		2/3	48		
64QAM		3/4	54			
802.11n (20MHz)						
Modulation		MCS index	FEC rate	Spatial Stream	Data rate (Mbps) 800ns GI / 400ns GI	
BPSK		0	1/2	1	6.5	7.2
QPSK		1	1/2	1	13	14.4
QPSK		2	3/4	1	19.5	21.7
16-QAM		3	1/2	1	26	28.9
16-QAM		4	3/4	1	39	43.3
64-QAM		5	2/3	1	52	57.8
64-QAM		6	3/4	1	58.5	65
64-QAM		7	5/6	1	65	72.2
BPSK		8	1/2	2	13	14.4
QPSK		9	1/2	2	26	28.9
QPSK		10	3/4	2	39	43.3
16-QAM		11	1/2	2	52	57.8
16-QAM		12	3/4	2	78	86.7
64-QAM		13	2/3	2	104	115.6
64-QAM		14	3/4	2	117	130
64-QAM		15	5/6	2	130	144.4

802.11n (40MHz)

Modulation	MCS index	FEC rate	Spatial Stream	Data rate (Mbps)	
				800ns GI / 400ns GI	
BPSK	0	1/2	1	13.5	15
QPSK	1	1/2	1	27	30
QPSK	2	3/4	1	40.5	45
16-QAM	3	1/2	1	54	60
16-QAM	4	3/4	1	81	90
64-QAM	5	2/3	1	108	120
64-QAM	6	3/4	1	121.5	135
64-QAM	7	5/6	1	135	150
BPSK	8	1/2	2	27	30
QPSK	9	1/2	2	54	60
QPSK	10	3/4	2	81	90
16-QAM	11	1/2	2	108	120
16-QAM	12	3/4	2	162	180
64-QAM	13	2/3	2	216	210
64-QAM	14	3/4	2	243	270
64-QAM	15	5/6	2	270	300

802.11ac (20MHz)

Modulation	MCS index	FEC rate	Spatial Stream	Data rate (Mbps)	
				800ns GI / 400ns GI	
BPSK	0	3/4	1	6.5	7.2
QPSK	1	1/2	1	13	14.4
QPSK	2	3/4	1	19.5	21.7
16-QAM	3	1/2	1	26	28.9
16-QAM	4	3/4	1	39	43.3
64-QAM	5	2/3	1	52	57.8
64-QAM	6	3/4	1	58.5	65
64-QAM	7	5/6	1	65	72.2
256-QAM	8	3/4	1	78	86.7
256-QAM	9	5/6	1	N/A	N/A
BPSK	0	3/4	2	13	14.4
QPSK	1	1/2	2	26	28.9
QPSK	2	3/4	2	39	43.3
16-QAM	3	1/2	2	52	57.8
16-QAM	4	3/4	2	78	86.7
64-QAM	5	2/3	2	104	115.6
64-QAM	6	3/4	2	117	130
64-QAM	7	5/6	2	130	144.4
256-QAM	8	3/4	2	156	173.3
256-QAM	9	5/6	2	N/A	N/A

802.11ac (40MHz)

Modulation	MCS index	FEC rate	Spatial Stream	Data rate (Mbps)	
				800ns GI / 400ns GI	
BPSK	0	3/4	1	13.5	15
QPSK	1	1/2	1	27	30
QPSK	2	3/4	1	40.5	45
16-QAM	3	1/2	1	54	60
16-QAM	4	3/4	1	81	90
64-QAM	5	2/3	1	108	120
64-QAM	6	3/4	1	121.5	135
64-QAM	7	5/6	1	135	150
256-QAM	8	3/4	1	162	180
256-QAM	9	5/6	1	180	200
BPSK	0	3/4	2	27	30
QPSK	1	1/2	2	54	60
QPSK	2	3/4	2	81	90
16-QAM	3	1/2	2	108	120
16-QAM	4	3/4	2	162	180
64-QAM	5	2/3	2	216	210
64-QAM	6	3/4	2	243	270
64-QAM	7	5/6	2	270	300
256-QAM	8	3/4	1	324	360
256-QAM	9	5/6	1	360	400

802.11ac (80MHz)

Modulation	MCS index	FEC rate	Spatial Stream	Data rate (Mbps)	
				800ns GI / 400ns GI	
BPSK	0	3/4	1	29.3	32.5
QPSK	1	1/2	1	58.5	65
QPSK	2	3/4	1	87.8	97.5
16-QAM	3	1/2	1	117	130
16-QAM	4	3/4	1	175.5	195
64-QAM	5	2/3	1	234	260
64-QAM	6	3/4	1	263.3	292.5
64-QAM	7	5/6	1	292.5	325
256-QAM	8	3/4	1	351	390
256-QAM	9	5/6	1	390	433.3
BPSK	0	3/4	2	58.5	65
QPSK	1	1/2	2	117	130
QPSK	2	3/4	2	175.5	195
16-QAM	3	1/2	2	234	260
16-QAM	4	3/4	2	351	390
64-QAM	5	2/3	2	468	520
64-QAM	6	3/4	2	526.5	585
64-QAM	7	5/6	2	585	650
256-QAM	8	3/4	1	702	780
256-QAM	9	5/6	1	780	866.7

802.11ax (20MHz)

HE-MCSs for 242-tone RU and non-OFDMA 20MHZ									
HE-MCS Index	DCM	Modulation	R	Nss=1			Nss=2		
				0.8 μ s GI	1.6 μ s GI	3.2 μ s GI	0.8 μ s GI	1.6 μ s GI	3.2 μ s GI
0	1	BPSK	1/2	4.3	4.0	3.6	8.6	8.1	7.3
	0		1/2	8.6	8.1	7.3	17.2	16.3	14.6
1	1	QPSK	1/2	8.6	8.1	7.3	17.2	16.3	14.6
	0		1/2	17.2	16.3	14.6	34.4	32.5	29.3
2	NA	QPSK	3/4	25.8	24.4	21.9	51.6	48.8	43.9
3	1	16-QAM	1/2	17.2	16.3	14.6	34.4	32.5	29.3
	0		1/2	34.4	32.5	29.3	68.8	65	58.5
4	1		3/4	25.8	24.4	21.9	51.6	48.8	43.9
	0		3/4	51.6	48.8	43.9	103.2	97.5	87.8
5	NA	64-QAM	2/3	68.8	65.0	58.5	137.6	130	117
6		64-QAM	3/4	77.4	73.1	65.8	154.9	146.3	131.6
7		64-QAM	5/6	86.0	81.3	73.1	172.1	162.5	146.3
8		256-QAM	3/4	103.2	97.5	87.8	206.5	195	175.5
9		256-QAM	5/6	114.7	108.3	97.5	229.4	216.7	195
10		1024-QAM	3/4	129.0	121.9	109.7	258.1	243.8	219.4
11		1024-QAM	5/6	143.4	135.4	121.9	286.8	270.8	243.8

802.11ax (40MHz)

HE-MCSs for 484-tone RU and non-OFDMA 40MHZ									
HE-MCS Index	DCM	Modulation	R	Nss=1			Nss=2		
				0.8 μ s GI	1.6 μ s GI	3.2 μ s GI	0.8 μ s GI	1.6 μ s GI	3.2 μ s GI
0	1	BPSK	1/2	8.6	8.1	7.3	17.2	16.3	14.6
	0		1/2	17.2	16.3	14.6	34.4	32.5	29.3
1	1	QPSK	1/2	17.2	16.3	14.6	34.4	32.5	29.3
	0		1/2	34.4	32.5	29.3	68.8	65	58.5
2	NA	QPSK	3/4	51.6	48.8	43.9	103.2	97.5	87.8
3	1	16-QAM	1/2	34.4	32.5	29.3	68.8	65	58.5
	0		1/2	68.8	65	58.5	137.6	130	117
4	1		3/4	51.6	48.8	43.9	103.2	97.5	87.8
	0		3/4	103.2	97.5	87.8	206.5	195	175.5
5	NA	64-QAM	2/3	137.6	130	117	275.3	260	234
6		64-QAM	3/4	154.9	146.3	131.6	309.7	292.5	263.3
7		64-QAM	5/6	172.1	162.5	146.3	344.1	325	292.5
8		256-QAM	3/4	206.5	195	175.5	412.9	390	351
9		256-QAM	5/6	229.4	216.7	195	458.8	433.3	390
10		1024-QAM	3/4	258.1	243.8	219.4	516.2	487.5	438.8
11		1024-QAM	5/6	286.8	270.8	243.8	573.5	541.7	487.5

802.11ax (80MHz)

HE-MCSs for 996-tone RU and non-OFDMA 80MHZ									
HE-MCS Index	DCM	Modulation	R	Nss=1			Nss=2		
				0.8 μ s GI	1.6 μ s GI	3.2 μ s GI	0.8 μ s GI	1.6 μ s GI	3.2 μ s GI
0	1	BPSK	1/2	18.0	17.0	15.3	36.0	34.0	30.6
	0		1/2	36.0	34.0	30.6	72.1	68.1	61.3
1	1	QPSK	1/2	36.0	34.0	30.6	72.1	68.1	61.3
	0		1/2	72.1	68.1	61.3	144	136	123
2	NA	QPSK	3/4	108.1	102.1	91.9	216	204	184
3	1	16-QAM	1/2	72.1	68.1	61.3	144	136	123
	0		1/2	144.1	136.1	122.5	288	272	245
4	1		3/4	108.1	102.1	91.9	216	204	184
	0		3/4	216.2	204.2	183.8	432	408	368
5	NA	64-QAM	2/3	288.2	272.2	245.0	577	544	490
6		64-QAM	3/4	324.3	306.3	275.6	649	613	551
7		64-QAM	5/6	360.3	340.3	306.3	721	681	613
8		256-QAM	3/4	432.4	408.3	367.5	865	817	735
9		256-QAM	5/6	480.4	453.7	408.3	961	907	817
10		1024-QAM	3/4	540.4	510.4	459.4	1081	1021	919
11		1024-QAM	5/6	600.4	567.1	510.4	1201	1134	1021

Don't support 40MHz bandwidth at 2.4 GHz frequency band.

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.

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

FCC regulations restrict the operation of this device to indoor use only.

The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

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 module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

2.2 List of applicable FCC rules

This module has been tested for compliance with FCC Part 15.247 & 15.407.

2.3 Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use conditions. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

This module is authorized for Indoor Client Device applications under the control of a low-power indoor access point or subordinate. The final host product:

Must be limited to indoor locations only; Cannot have a direct connection to the internet; and Is prohibited from the control of or communications with unmanned aircraft systems

2.4 Limited module procedures

Not applicable.

2.5 Trace antenna designs

Any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify the module grantee 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 grantee, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

2.6 RF exposure considerations

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users.

Antenna NO.	Brand	Model	Antenna gain(dBi)	Frequency range	Antenna Type
WiFi 0	N/A	N/A	0.19	2.4~2.4835GHz	Monopole
			1.74	5.15~5.25GHz	
			1.41	5.25~5.35GHz	
			2.97	5.47~5.725GHz	
			2.2	5.725~5.85GHz	
			2.5	5.925~6.425GHz	
			2.76	6.425~6.525GHz	
			2.9	6.525~6.875GHz	
			2.74	6.875~7.125GHz	

WiFi 1	N/A	N/A	3.5	2.4~2.4835GHz	Monopole
			1.84	5.15~5.25GHz	
			1.9	5.25~5.35GHz	
			2.3	5.47~5.725GHz	
			2.1	5.725~5.85GHz	
			2.3	5.925~6.425GHz	
			1.11	6.425~6.525GHz	
			1.83	6.525~6.875GHz	
			3.66	6.875~7.125GHz	
BT 0	N/A	N/A	1.5	2.4~2.4835GHz	PIFA
BT 1	N/A	N/A	0.2	2.4~2.4835GHz	PIFA

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: "Contains FCC ID: **AK8J20H105**".

The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance with this portion of rule requirements if applicable.

As long as all conditions above are met, further transmitter tests 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.

e.g. Note: Host Guidance is provided in KDB 996369 D04 Module Integration Guide.

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.

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

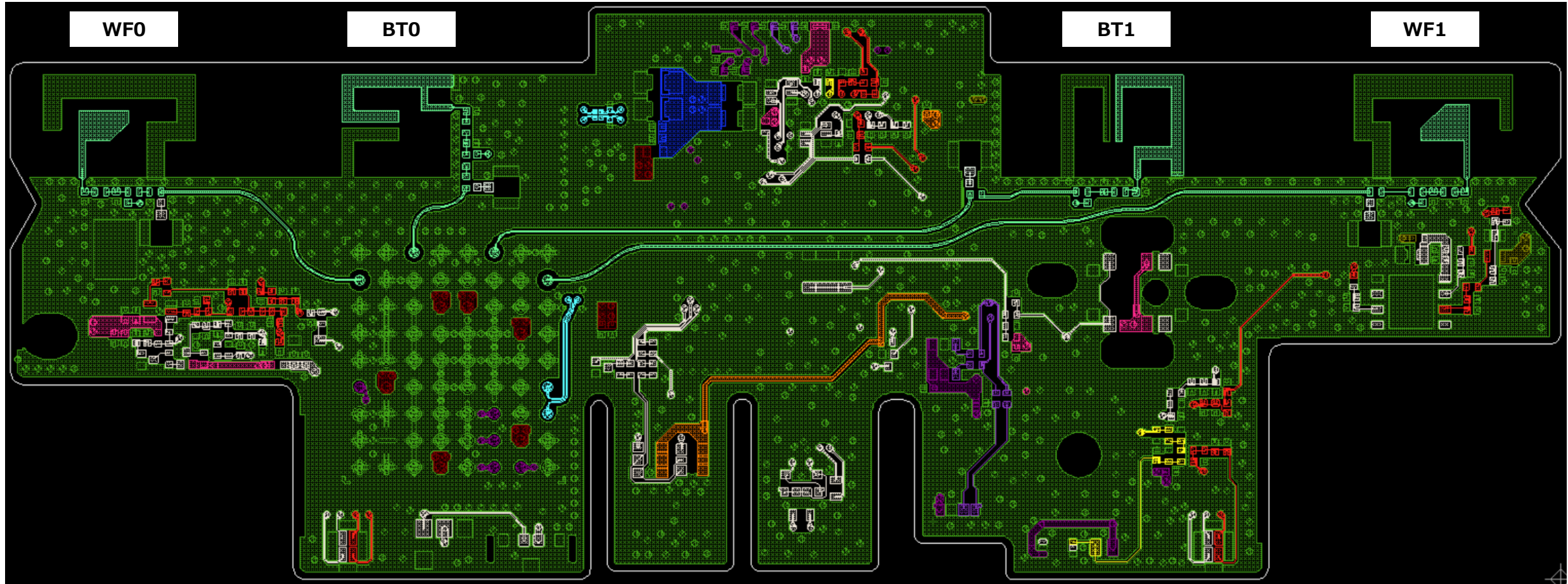
remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warnings as shown in this manual.

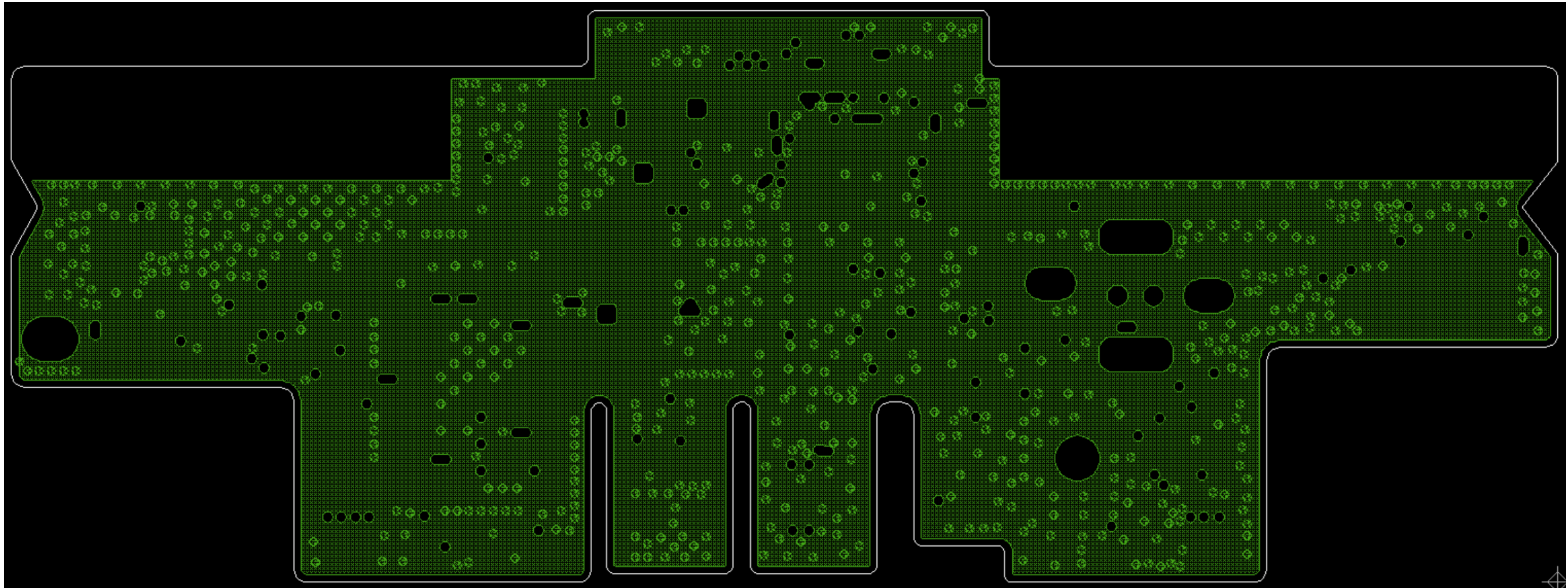
OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment

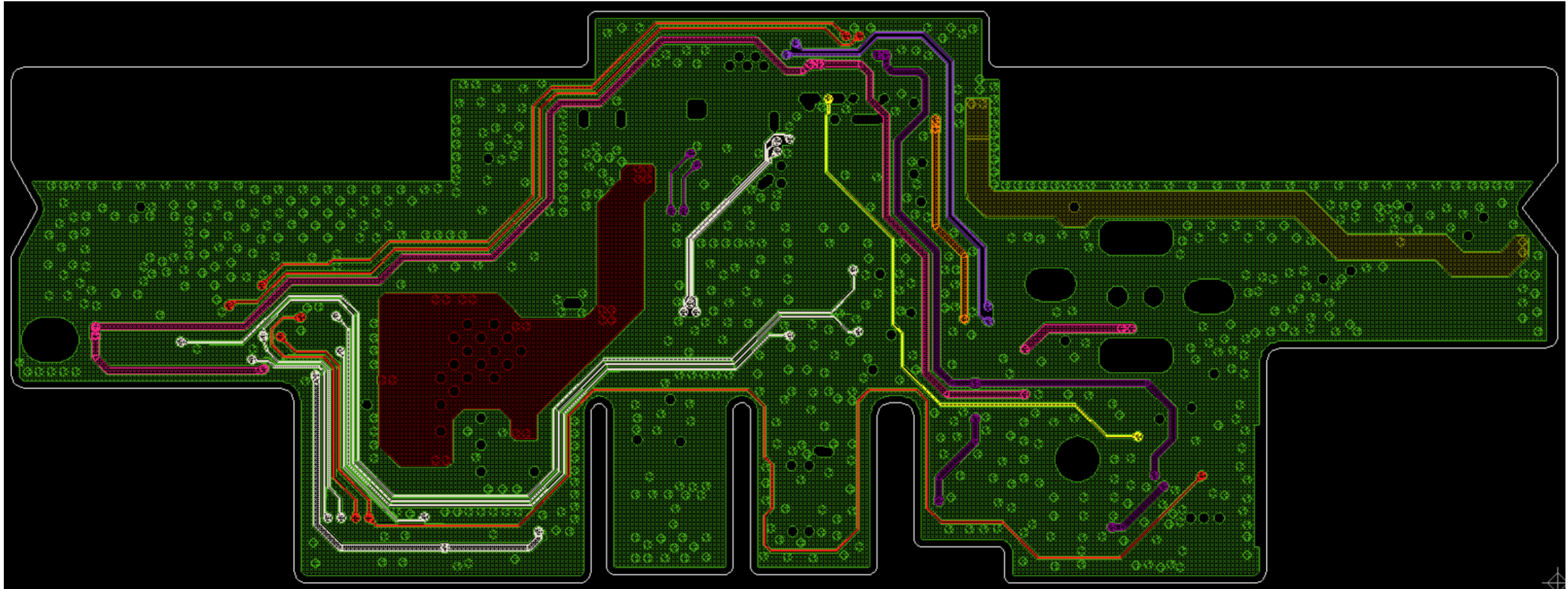
Main board Layout – layer 4(Bottom)



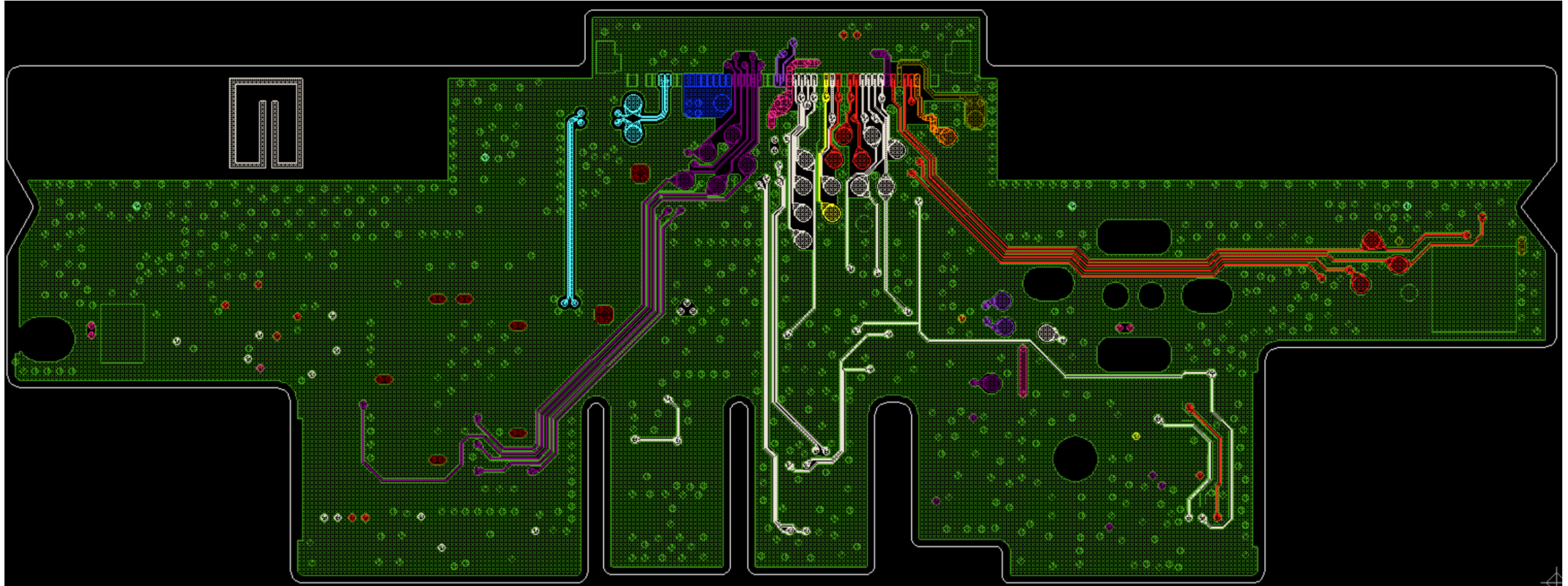
Main board Layout – layer 3



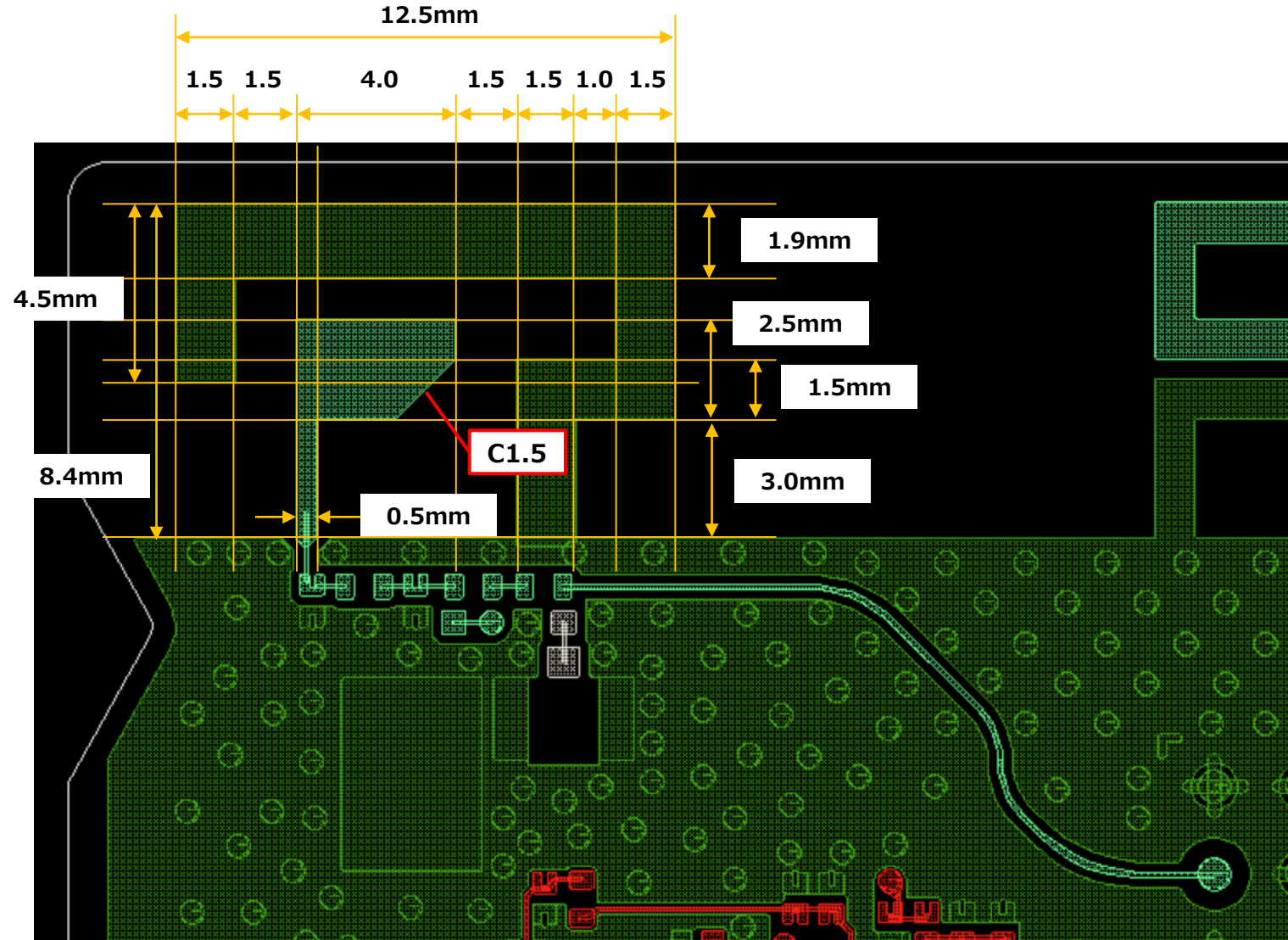
Main board Layout – layer 2



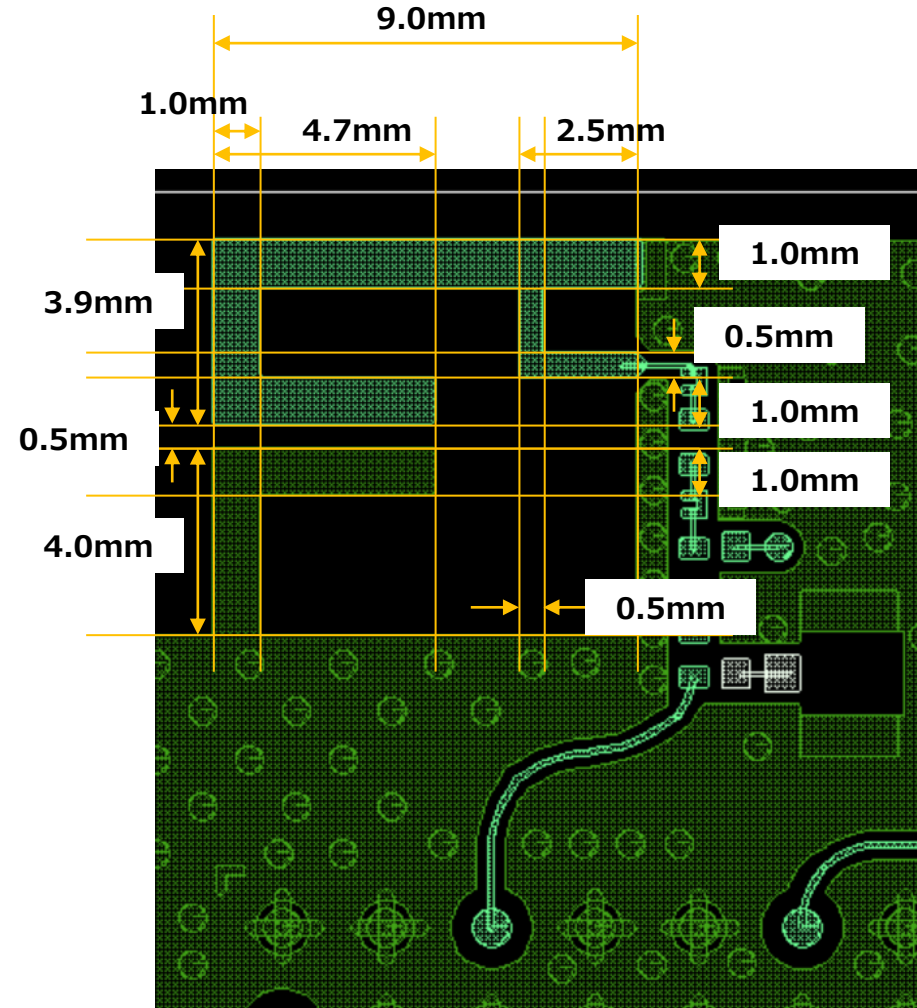
Main board Layout – layer 1(Top)



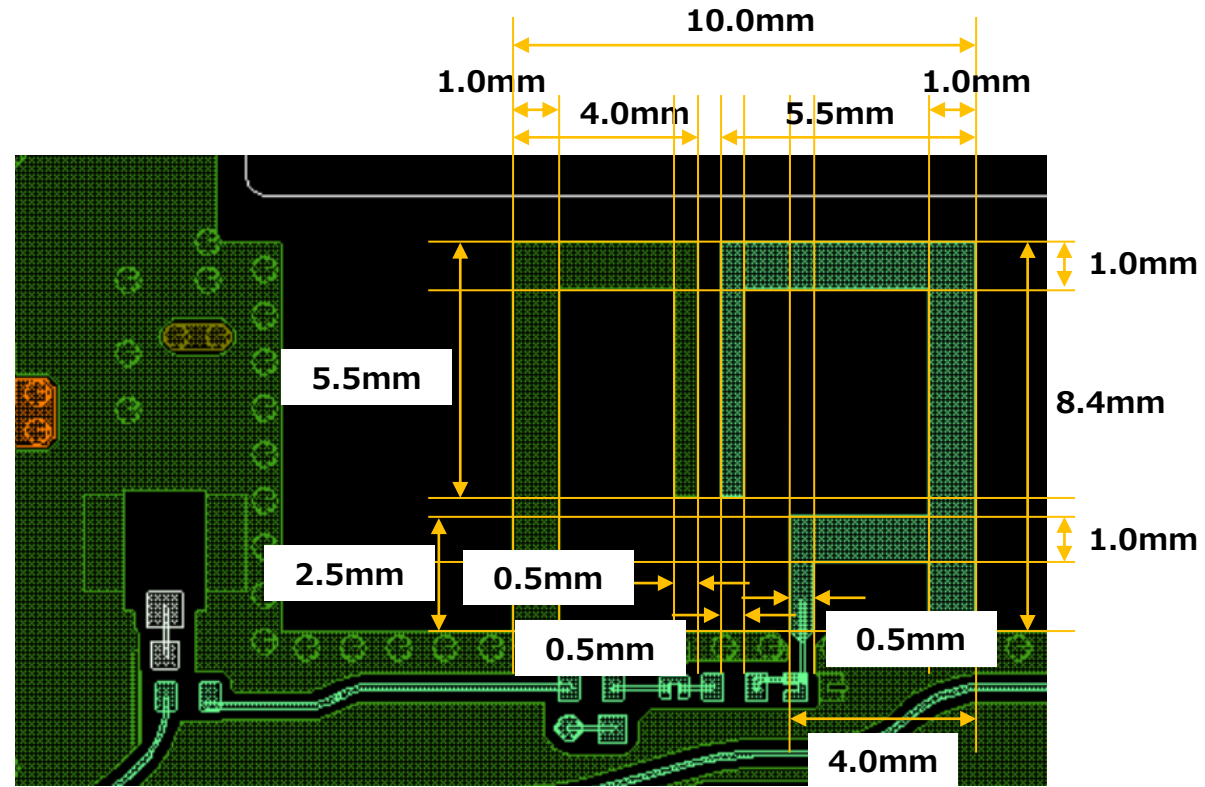
Main board Antenna dimension – WF0



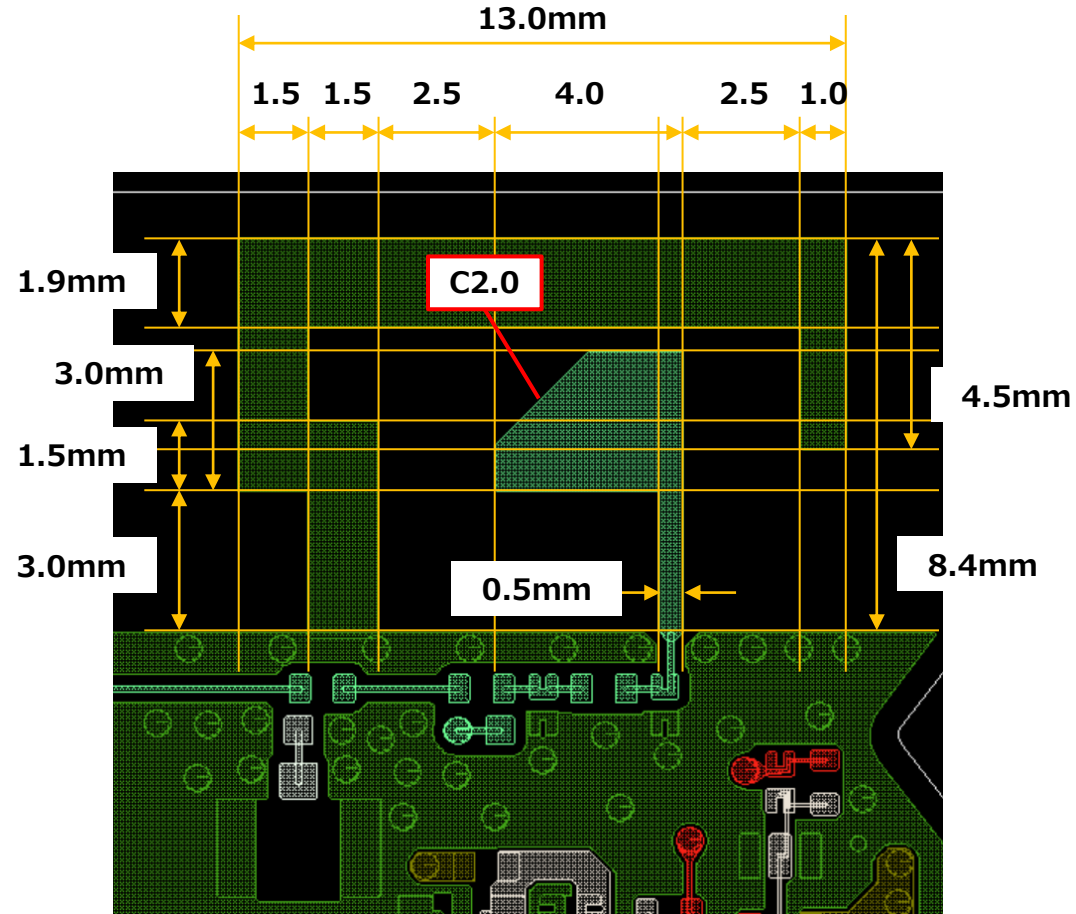
Main board Antenna dimension – BT0



Main board Antenna dimension – BT1



Main board Antenna dimension – WF1



RF trace length

Length Single 50ohm MSL, Length unit is [mm]

