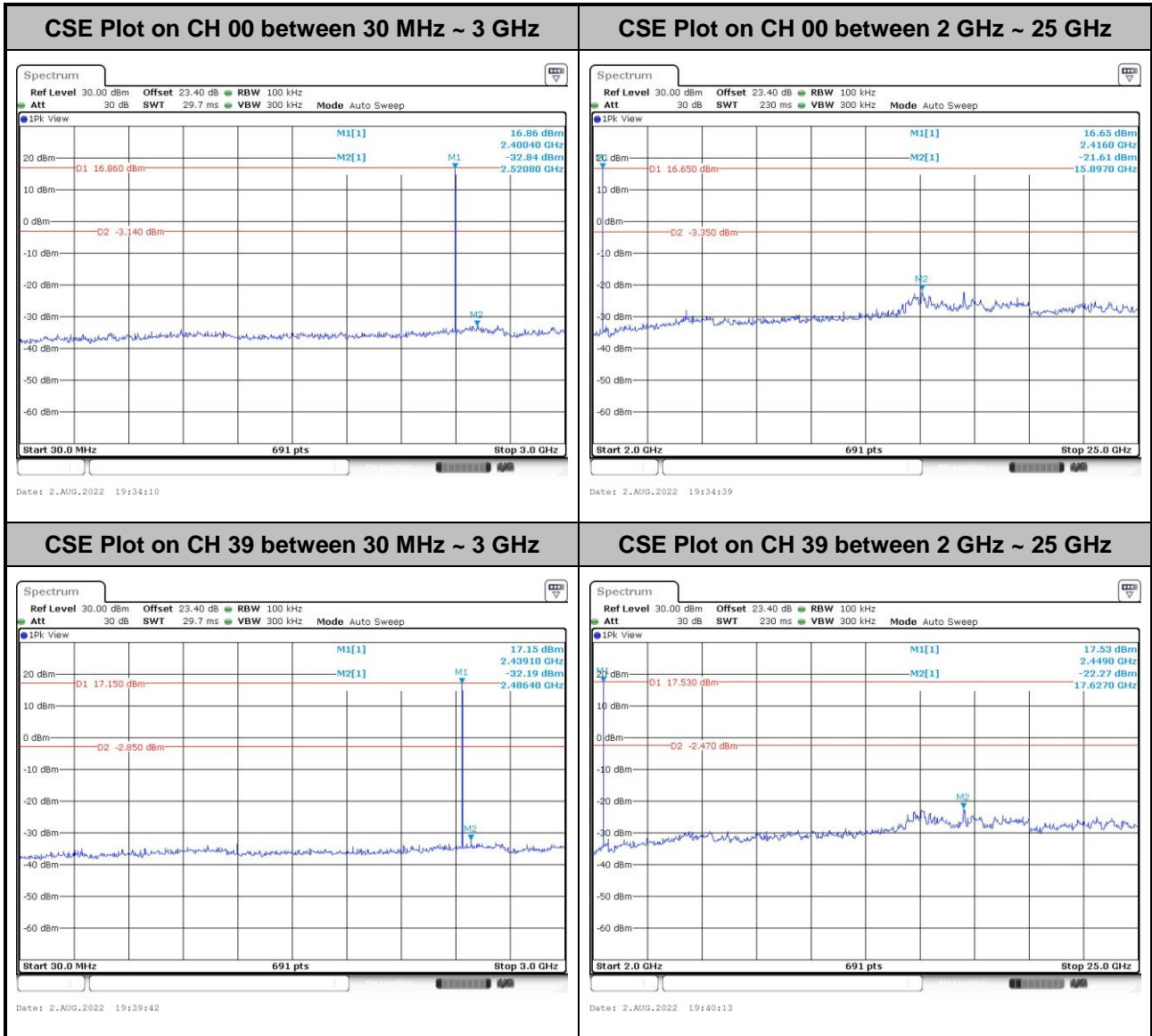
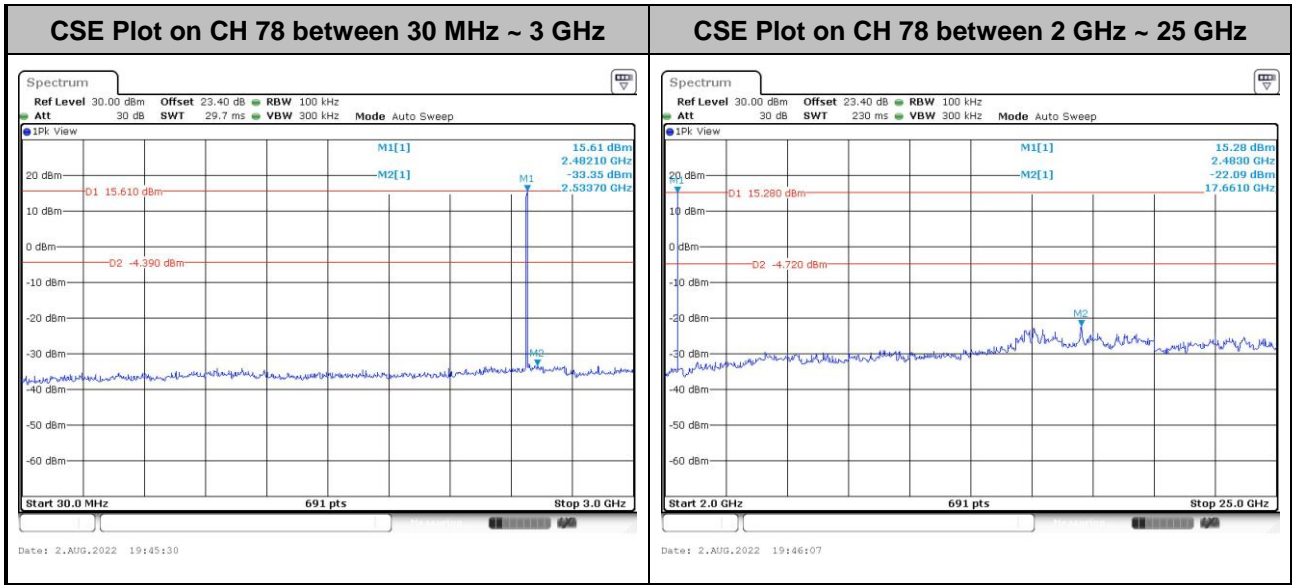




<for Ant.5>

<2Mbps>

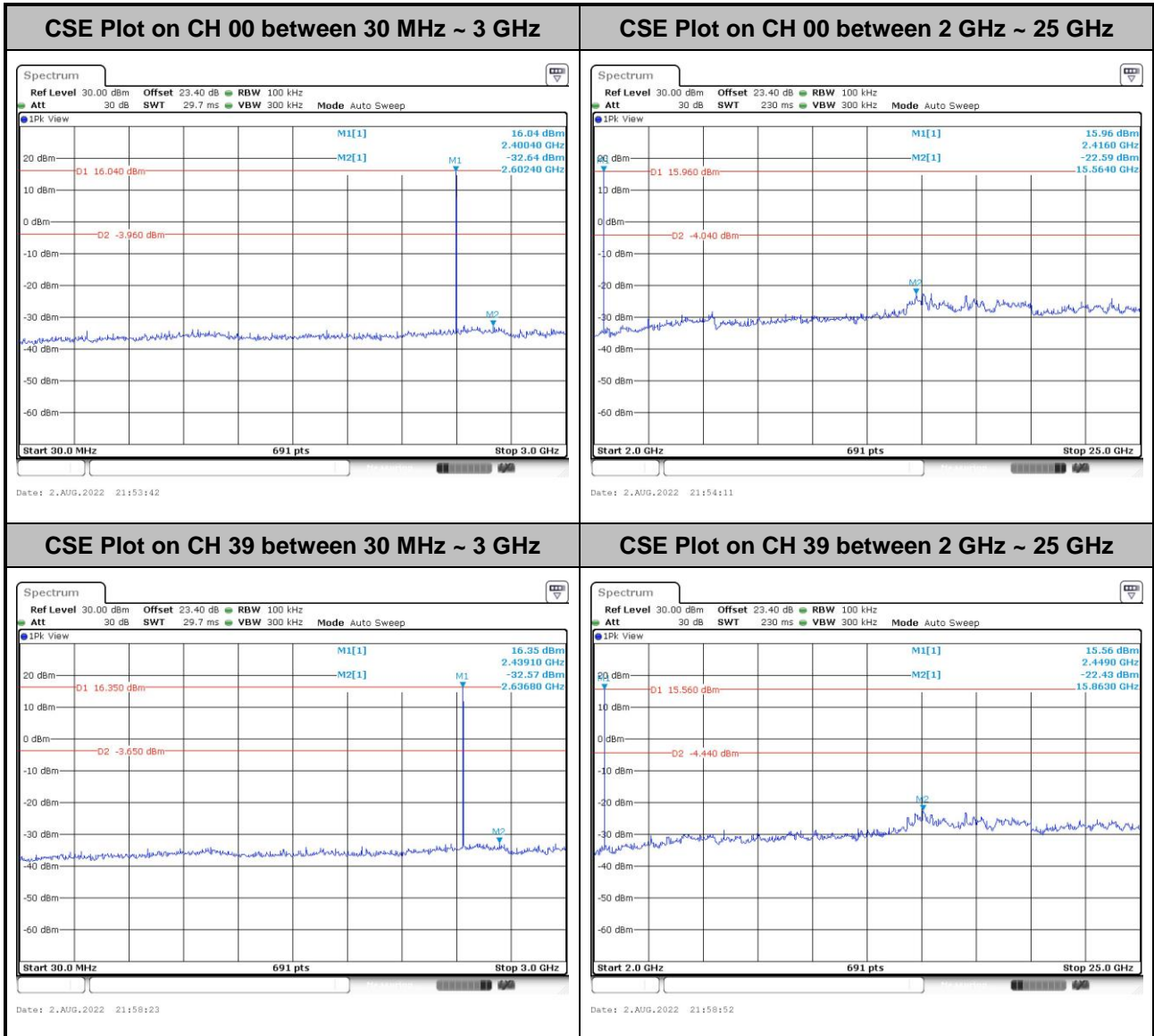


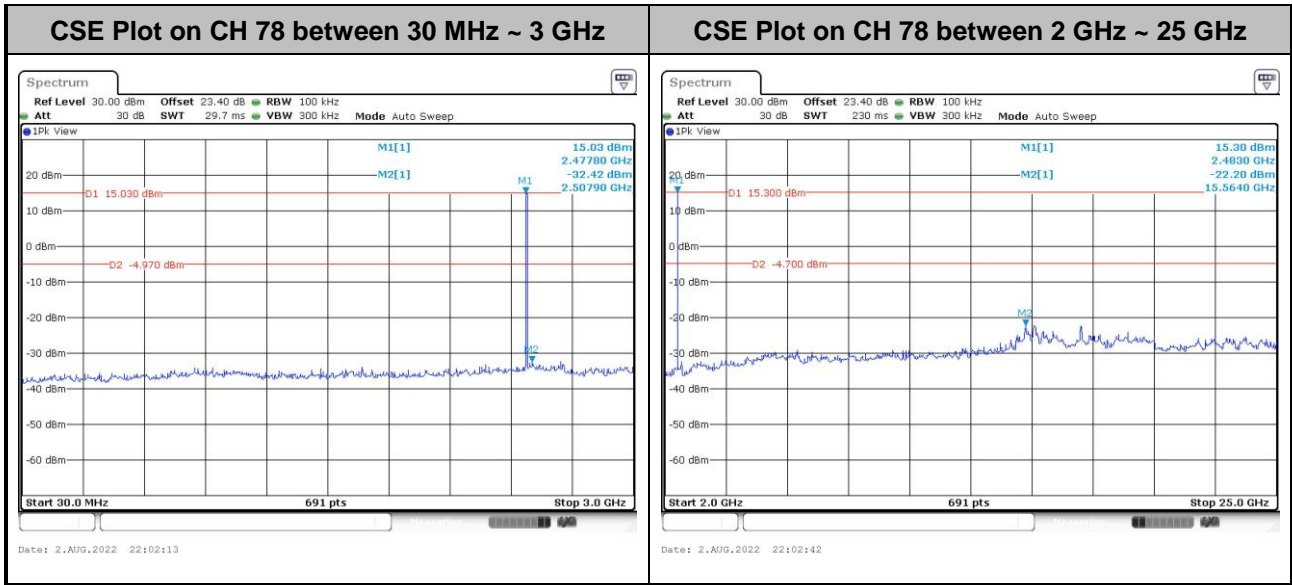




<for Ant.4>

<3Mbps>

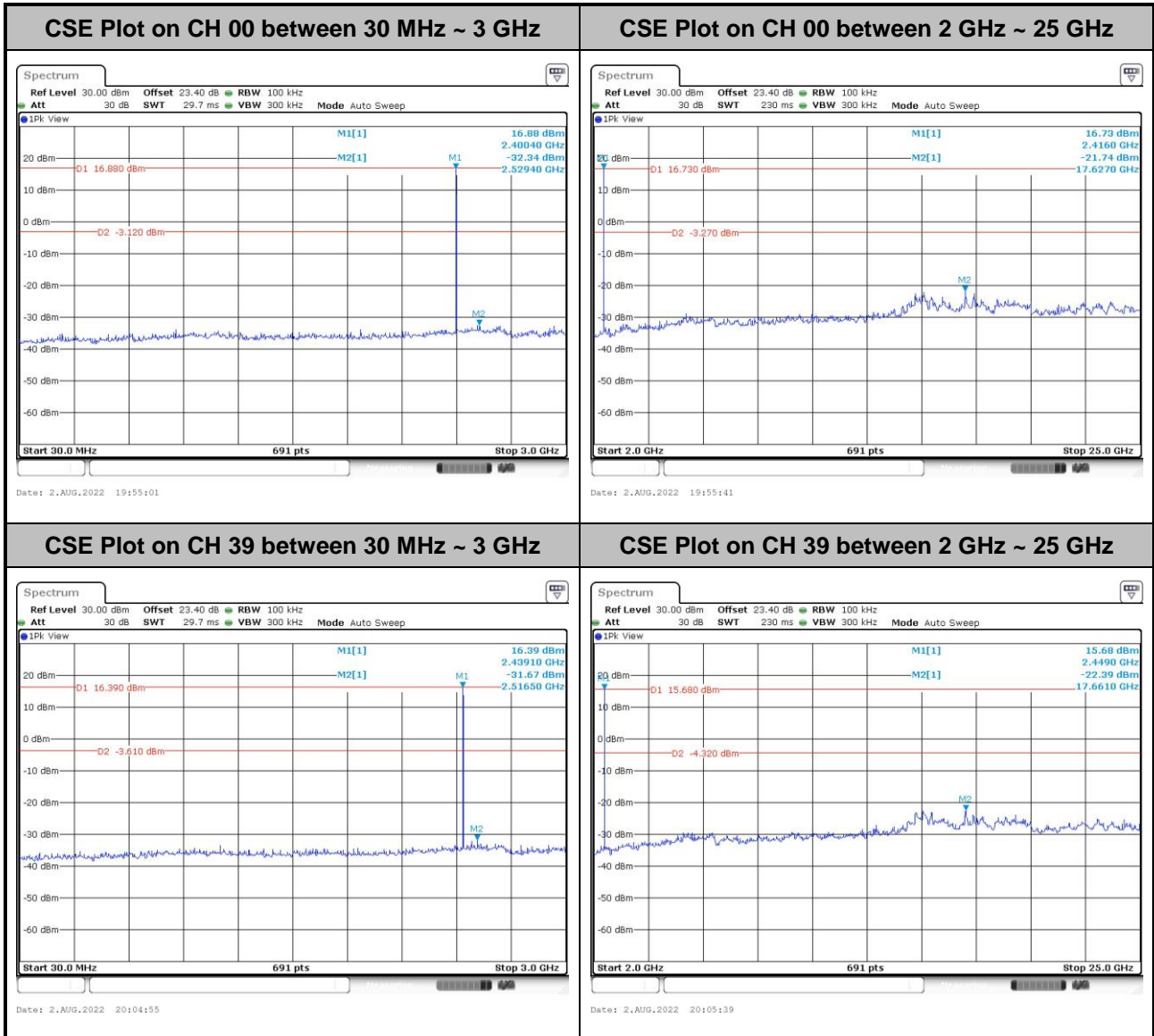


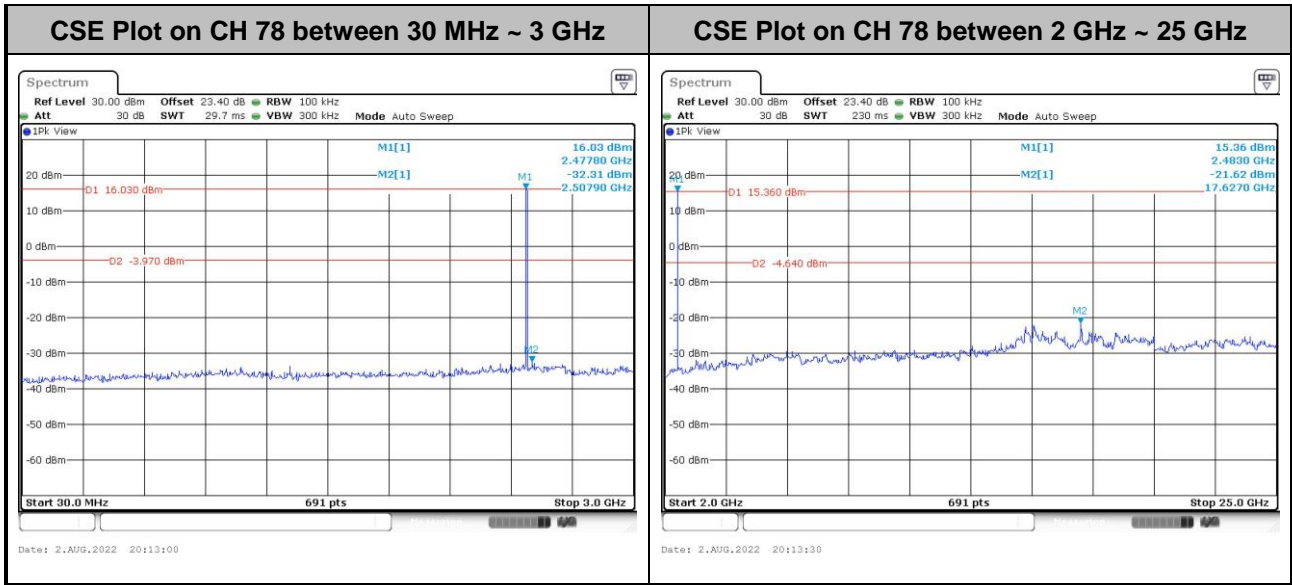




<for Ant.5>

<3Mbps>







### 3.8 Radiated Band Edges and Spurious Emission Measurement

#### 3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics / spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

#### 3.8.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.



3.8.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.12.2 Antenna-port conducted measurements.
2. Measure the conducted output power (in dBm) using the peak detector.
3. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP.
4. Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies ≤ 30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies > 1000 MHz).
5. Convert the resultant EIRP to an equivalent electric field strength using the following relationship:  

$$E = \text{EIRP} - 20 \log d + 104.8,$$
 where  
 E is the electric field strength in dBμV/m  
 EIRP is the equivalent isotropically radiated power in dBm  
 d is the specified measurement distance in 3m
6. Compare the resultant electric field strength level with the applicable regulatory limit.
7. Corrected Reading for conducted spurious emission: Antenna Gain + Path Loss + MIMO Factor + Read Level = Level
8. Perform the cabinet radiated spurious emission test.
9. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
10. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
11. For each suspected emission, the EUT is arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
12. Set the maximum power setting and enable the EUT to transmit continuously.
13. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW = 100 kHz for f < 1 GHz, RBW = 1 MHz for f > 1 GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
  - (3) For average measurement: use duty cycle correction factor method per 15.35(c).  
 Duty cycle = On time/100 milliseconds  

$$\text{On time} = N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$$
 Where N<sub>1</sub> is number of type 1 pulses, L<sub>1</sub> is length of type 1 pulses, etc.  
 Average Emission Level = Peak Emission Level + 20\*log (Duty cycle)

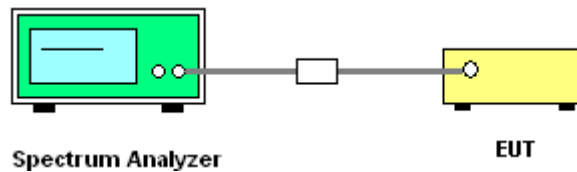


14. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
15. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.
16. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-“.

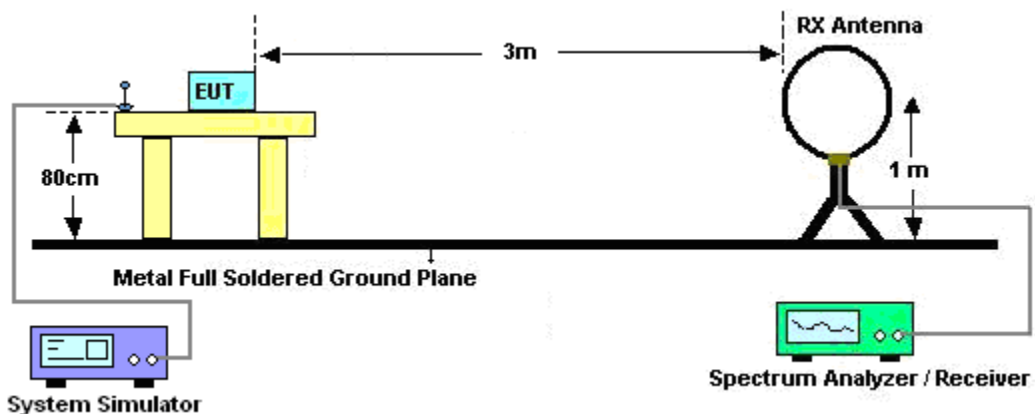
Note: The average levels are calculated from the peak level corrected with duty cycle correction factor (-24.76dB) derived from  $20\log(\text{dwell time}/100\text{ms})$ . This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

### 3.8.4 Test Setup

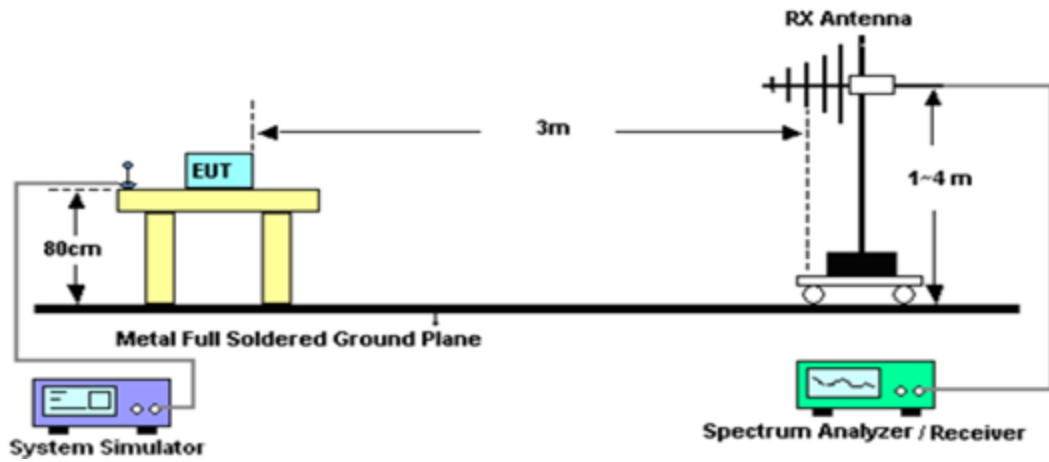
**For Conducted Measurement Setup:**



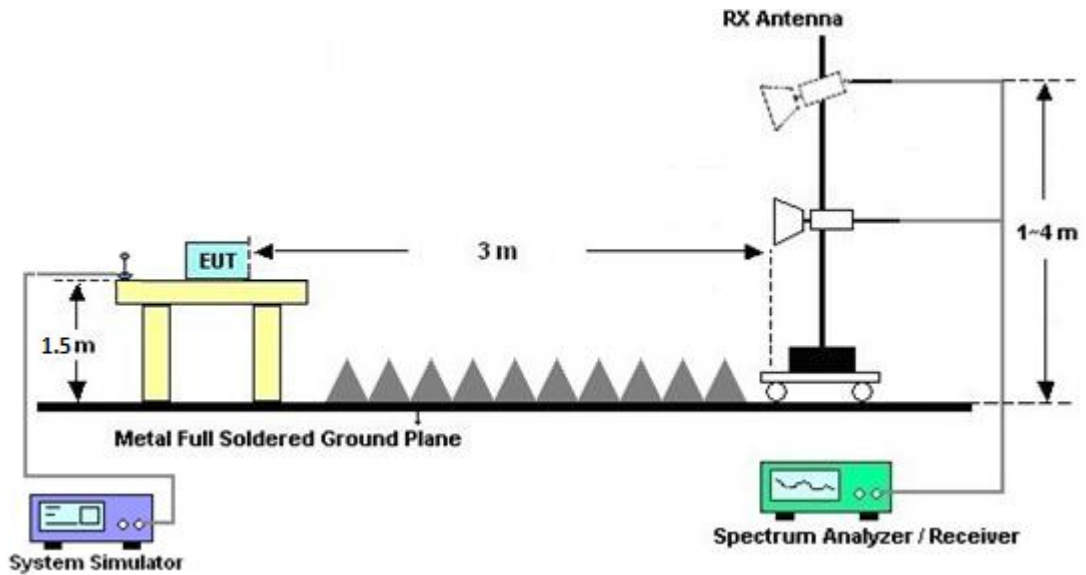
**For radiated test below 30MHz**



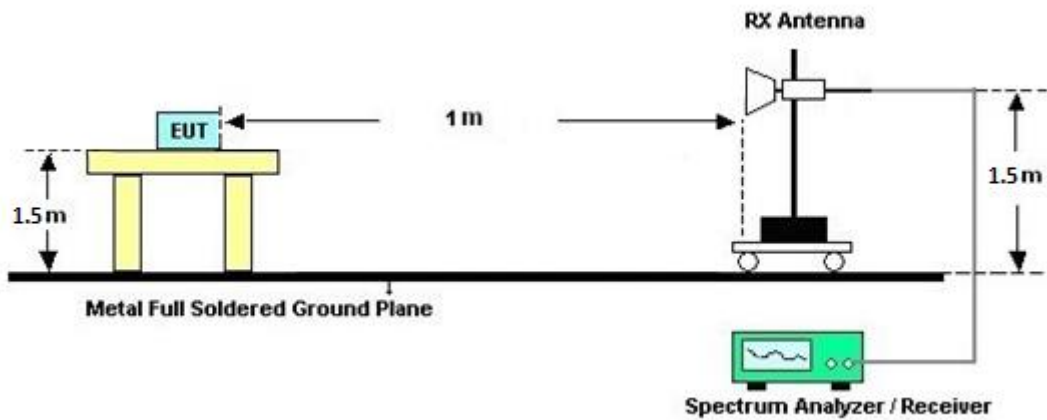
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



### 3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

### 3.8.6 Test Result of Conduced Spurious at Band Edges in the Restricted Band

Please refer to Appendix B and C.

### 3.8.7 Test Result of Conduced Spurious Emission in the Restricted Band

Please refer to Appendix B and C.

### 3.8.8 Test Result of Cabinet Radiated Spurious at Band Edges

Please refer to Appendix D and E.

### 3.8.9 Test Result of Cabinet Radiated Spurious Emission (30 MHz ~ 10th Harmonic)

Please refer to Appendix D and E.

### 3.8.10 Duty Cycle

Please refer to Appendix F.



## **3.9 Antenna Requirements**

### **3.9.1 Standard Applicable**

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

### **3.9.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.9.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	ROHDE & SCHWARZ	FSV40	101565	10Hz~40GHz	Dec. 29, 2021	Jun. 03, 2022~ Aug. 11, 2022	Dec. 28, 2022	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Jun. 03, 2022~ Aug. 11, 2022	Mar. 09, 2023	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	Jun. 03, 2022~ Aug. 11, 2022	Dec. 09, 2022	CSE (TH05-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Jun. 03, 2022~ Aug. 11, 2022	Feb. 20, 2023	CSE (TH05-HY)
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 15, 2022	Jun. 03, 2022~ Aug. 11, 2022	Mar. 14, 2023	CSE (TH05-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OST	SN2	3GHz High Pass Filter	Jul. 12, 2021	Jun. 03, 2022~ Jul. 10, 2022	Jul. 11, 2022	CSE (TH05-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OST	SN2	3GHz High Pass Filter	Jul. 11, 2022	Jul. 11, 2022~ Aug. 11, 2022	Jul. 10, 2023	CSE (TH05-HY)
Hygrometer	TECEPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Jun. 03, 2022~ Aug. 02, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 30, 2021	Jun. 03, 2022~ Aug. 02, 2022	Sep. 29, 2022	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 30, 2021	Jun. 03, 2022~ Aug. 02, 2022	Sep. 29, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Jun. 03, 2022~ Aug. 02, 2022	Aug. 29, 2022	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 09, 2021	Feb. 25, 2022~ Feb. 26, 2022	Sep. 08, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 06, 2022	Feb. 25, 2022~ Feb. 26, 2022	Feb. 05, 2023	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2021	Feb. 25, 2022~ Feb. 26, 2022	Dec. 26, 2022	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02038	1GHz~18GHz	Aug. 04, 2021	Feb. 25, 2022~ Feb. 26, 2022	Aug. 03, 2022	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 30, 2021	Feb. 25, 2022~ Feb. 26, 2022	Nov. 29, 2022	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	17100018000 55006	1GHz~18GHz	May 06, 2021	Feb. 25, 2022~ Feb. 26, 2022	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060803	1GHz-18GHz	Dec. 16, 2021	Feb. 25, 2022~ Feb. 26, 2022	Dec. 15, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 22, 2021	Feb. 25, 2022~ Feb. 26, 2022	Jun. 21, 2022	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 21, 2021	Feb. 25, 2022~ Feb. 26, 2022	Oct. 20, 2022	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 07, 2021	Feb. 25, 2022~ Feb. 26, 2022	May 06, 2022	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Feb. 25, 2022~ Feb. 26, 2022	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Feb. 25, 2022~ Feb. 26, 2022	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5 )	RK-000451	N/A	N/A	Feb. 25, 2022~ Feb. 26, 2022	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 15, 2021	Feb.25, 2022~ Feb. 26, 2022	Nov. 14, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	30MHz~40GHz	Jan. 04, 2022	Feb. 25, 2022~ Feb. 26, 2022	Jan. 03, 2023	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Feb. 25, 2022~ Feb. 26, 2022	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-15 30-6000-40ST	SN4	1.53GHz Low Pass Filter	Jul. 02, 2021	Feb. 25, 2022~ Feb. 26, 2022	Jul. 01, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0ST	SN4	3GHz High Pass Filter	Sep. 15, 2021	Feb. 25, 2022~ Feb. 26, 2022	Sep. 14, 2022	Radiation (03CH15-HY)



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.8 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.3 dB
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.6 dB
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**Appendix A. Test Result of Conducted Test Items**

Test Engineer:	Jacob Yu and Derek Hsu	Temperature:	21~25	°C
Test Date:	2022/06/03~2022/08/02	Relative Humidity:	51~54	%

&lt;for Ant.4&gt;

**TEST RESULTS DATA****20dB and 99% Occupied Bandwidth and Hopping Channel Separation**

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
DH	1Mbps	1	0	2402	0.967	0.897	0.990	0.6445	Pass
DH	1Mbps	1	39	2441	0.981	0.903	1.007	0.6541	Pass
DH	1Mbps	1	78	2480	0.996	0.946	0.994	0.6638	Pass
2DH	2Mbps	1	0	2402	1.263	1.169	1.003	0.8423	Pass
2DH	2Mbps	1	39	2441	1.263	1.169	1.003	0.8423	Pass
2DH	2Mbps	1	78	2480	1.263	1.172	0.994	0.8423	Pass
3DH	3Mbps	1	0	2402	1.259	1.155	1.003	0.8393	Pass
3DH	3Mbps	1	39	2441	1.259	1.158	1.003	0.8393	Pass
3DH	3Mbps	1	78	2480	1.259	1.161	1.007	0.8393	Pass

**TEST RESULTS DATA****Dwell Time**

Mod.	Hopping Channel Number Rate	Hops Over Occupancy Time (hops)	Package Transfer Time (msec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	79	106.670	2.90	0.31	0.4	Pass
3DH5 (AFH)	20	53.330	2.90	0.15	0.4	Pass

**TEST RESULTS DATA****Peak Power Table**

DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	19.23	30.00	Pass
	39	1	19.45	30.00	Pass
	78	1	18.24	30.00	Pass
2DH1	0	1	18.33	20.97	Pass
	39	1	18.51	20.97	Pass
	78	1	17.35	20.97	Pass
3DH1	0	1	18.72	20.97	Pass
	39	1	18.92	20.97	Pass
	78	1	17.70	20.97	Pass

**TEST RESULTS DATA****Average Power Table  
(Reporting Only)**

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	18.94	5.18
	39	1	19.14	5.18
	78	1	17.96	5.18
2DH1	0	1	15.81	5.12
	39	1	16.02	5.12
	78	1	14.97	5.12
3DH1	0	1	15.88	5.12
	39	1	16.08	5.12
	78	1	15.02	5.12

**TEST RESULTS DATA****Number of Hopping Frequency**

Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail
79	20	> 15	Pass



<for Ant.5>

<b>TEST RESULTS DATA</b>									
<b>20dB and 99% Occupied Bandwidth and Hopping Channel Separation</b>									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
DH	1Mbps	1	0	2402	0.874	0.805	1.016	0.5827	Pass
DH	1Mbps	1	39	2441	0.874	0.802	1.003	0.5827	Pass
DH	1Mbps	1	78	2480	0.874	0.810	1.155	0.5827	Pass
2DH	2Mbps	1	0	2402	1.263	1.169	1.012	0.8423	Pass
2DH	2Mbps	1	39	2441	1.263	1.169	1.003	0.8423	Pass
2DH	2Mbps	1	78	2480	1.263	1.166	0.999	0.8423	Pass
3DH	3Mbps	1	0	2402	1.259	1.152	0.999	0.8393	Pass
3DH	3Mbps	1	39	2441	1.259	1.152	1.012	0.8393	Pass
3DH	3Mbps	1	78	2480	1.255	1.152	0.994	0.8365	Pass

<b>TEST RESULTS DATA</b>						
<b>Dwell Time</b>						
Mod.	Hopping Channel Number Rate	Hops Over Occupancy Time (hops)	Package Transfer Time (msec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	79	106.670	2.90	0.31	0.4	Pass
3DH5 (AFH)	20	53.330	2.90	0.15	0.4	Pass

<b>TEST RESULTS DATA</b>					
<b>Peak Power Table</b>					
DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	20.13	30.00	Pass
	39	1	20.49	30.00	Pass
	78	1	19.19	30.00	Pass
2DH1	0	1	19.29	20.97	Pass
	39	1	19.55	20.97	Pass
	78	1	18.34	20.97	Pass
3DH1	0	1	19.66	20.97	Pass
	39	1	19.93	20.97	Pass
	78	1	18.65	20.97	Pass

<b>TEST RESULTS DATA</b>				
<b>Average Power Table (Reporting Only)</b>				
DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	19.84	5.18
	39	1	20.16	5.18
	78	1	18.93	5.18
2DH1	0	1	16.68	5.08
	39	1	16.98	5.08
	78	1	15.84	5.08
3DH1	0	1	16.73	5.08
	39	1	17.03	5.08
	78	1	15.91	5.08

<b>TEST RESULTS DATA</b>			
<b>Number of Hopping Frequency</b>			
Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail
79	20	> 15	Pass



### Appendix B. Conducted Spurious Emission

Test Engineer :	Richard Qiu 、 Jacob Yu 、 Eric Chang and Kai Liao	Temperature :	22.7~24.8°C
		Relative Humidity :	52~59%

<for Ant.4>

#### 2.4GHz 2400~2483.5MHz

#### BT (Band Edge)

BT Ant.	Note	Frequency ( MHz )	Level ( dBm )	Over Limit ( dB )	Limit Line ( dBm )	Read Level (dBm)	Antenna Gain ( dBi )	Path Loss ( dB )	MIMO Factor ( dB )	Grounding Factor ( dB )	Peak Avg. (P/A)
BT CH 00 2402MHz		2382.24	-38.94	-17.74	-21.2	-43.37	3.53	0.9	0	0	P
		2382.24	-63.7	-22.5	-41.2	-	-	-	-	-	A
	*	2402	22.72	-	-	18.29	3.53	0.9	0	0	P
	*	2402	-2.04	-	-	-	-	-	-	-	A
BT CH 39 2441MHz		2382.94	-33.99	-12.79	-21.2	-38.42	3.53	0.9	0	0	P
		2382.94	-58.75	-17.55	-41.2	-	-	-	-	-	A
	*	2441	22.81	-	-	18.42	3.53	0.86	0	0	P
	*	2441	-1.95	-	-	-	-	-	-	-	A
		2497.69	-44.2	-23	-21.2	-48.53	3.53	0.8	0	0	P
		2497.69	-68.96	-27.76	-41.2	-	-	-	-	-	A
BT CH 78 2480MHz	*	2480	21.5	-	-	17.16	3.53	0.81	0	0	P
	*	2480	-3.26	-	-	-	-	-	-	-	A
		2483.6	-33.24	-12.04	-21.2	-37.58	3.53	0.81	0	0	P
		2483.6	-58	-16.8	-41.2	-	-	-	-	-	A
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



2.4GHz 2400~2483.5MHz

BT (Harmonic)

BT Ant. 4	Note	Frequency ( MHz )	Level ( dBm )	Over Limit ( dB )	Limit Line ( dBm )	Read Level (dBm)	Antenna Gain ( dBi )	Path Loss ( dB )	MIMO Factor ( dB )	Groun ding Factor ( dB )	Peak Avg. (P/A)
BT CH 00 2402MHz		4805.6	-62.88	-41.68	-21.2	-67.76	3.53	1.35	0	0	P
		7202.9	-65.3	-44.1	-21.2	-70.42	3.53	1.59	0	0	P
											P
BT CH 39 2441MHz		4878.8	-61.3	-40.1	-21.2	-66.17	3.53	1.34	0	0	P
		7324.9	-59.52	-38.32	-21.2	-64.68	3.53	1.63	0	0	P
											P
BT CH 78 2480MHz		4958.1	-62.98	-41.78	-21.2	-67.85	3.53	1.34	0	0	P
		5214.3	-66.79	-45.59	-21.2	-71.67	3.53	1.35	0	0	P
		7440.8	-59.53	-38.33	-21.2	-64.73	3.53	1.67	0	0	P
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
Ant.				Limit	Line	Level	Gain	Loss	Factor	Factor	Avg.
4		( MHz )	( dBm )	( dB )	( dBm )	(dBm)	( dBi )	( dB )	( dB )	( dB )	(P/A)
2.4GHz BT LF		60.78	-81.42	-26.22	-55.2	-89.87	3.53	0.22	0	4.7	P
		197.13	-81.46	-29.76	-51.7	-90.12	3.53	0.43	0	4.7	P
		236.28	-81.23	-32.03	-49.2	-89.93	3.53	0.47	0	4.7	P
		897.8	-73.92	-24.72	-49.2	-83.16	3.53	1.01	0	4.7	P
		898.5	-71.98	-22.78	-49.2	-81.22	3.53	1.01	0	4.7	P
		904.1	-74.21	-25.01	-49.2	-83.46	3.53	1.02	0	4.7	P
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



<for Ant.5>

2.4GHz 2400~2483.5MHz

BT (Band Edge)

BT Ant.	Note	Frequency ( MHz )	Level ( dBm )	Over Limit ( dB )	Limit Line ( dBm )	Read Level (dBm)	Antenna Gain ( dBi )	Path Loss ( dB )	MIMO Factor ( dB )	Grounding Factor ( dB )	Peak Avg. (P/A)
BT CH 00 2402MHz		2385.6	-43.57	-22.37	-21.2	-48	3.53	0.9	0	0	P
		2385.6	-68.33	-27.13	-41.2	-	-	-	-	-	A
	*	2402	23.52	-	-	19.09	3.53	0.9	0	0	P
	*	2402	-1.24	-	-	-	-	-	-	-	A
BT CH 39 2441MHz		2366.14	-44.38	-23.18	-21.2	-48.79	3.53	0.88	0	0	P
		2366.14	-69.14	-27.94	-41.2	-	-	-	-	-	A
	*	2441	23.86	-	-	19.47	3.53	0.86	0	0	P
	*	2441	-0.9	-	-	-	-	-	-	-	A
		2489.64	-44.25	-23.05	-21.2	-48.58	3.53	0.8	0	0	P
		2489.64	-69.01	-27.81	-41.2	-	-	-	-	-	A
BT CH 78 2480MHz	*	2480	22.32	-	-	17.98	3.53	0.81	0	0	P
	*	2480	-2.44	-	-	-	-	-	-	-	A
		2483.52	-32.43	-11.23	-21.2	-36.77	3.53	0.81	0	0	P
		2483.52	-57.19	-15.99	-41.2	-	-	-	-	-	A
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



2.4GHz 2400~2483.5MHz

BT (Harmonic)

BT Ant. 5	Note	Frequency ( MHz )	Level ( dBm )	Over Limit ( dB )	Limit Line ( dBm )	Read Level (dBm)	Antenna Gain ( dBi )	Path Loss ( dB )	MIMO Factor ( dB )	Groun ding Factor ( dB )	Peak Avg. (P/A)
BT CH 00 2402MHz		4805.6	-62.18	-40.98	-21.2	-67.06	3.53	1.35	0	0	P
		5220.4	-68.2	-47	-21.2	-73.08	3.53	1.35	0	0	P
		7202.9	-50.03	-28.83	-21.2	-55.15	3.53	1.59	0	0	P
BT CH 39 2441MHz		4823.9	-68.73	-47.53	-21.2	-73.61	3.53	1.35	0	0	P
		4884.9	-59.83	-38.63	-21.2	-64.69	3.53	1.33	0	0	P
		7324.9	-45.66	-24.46	-21.2	-50.82	3.53	1.63	0	0	P
		7324.9	-70.42	-29.22	-41.2	-	-	-	-	-	A
BT CH 78 2480MHz		4960	-55.96	-34.76	-21.2	-60.83	3.53	1.34	0	0	P
		6904	-57.12	-35.92	-21.2	-62.15	3.53	1.5	0	0	P
		7440.8	-47.69	-26.49	-21.2	-52.89	3.53	1.67	0	0	P
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



Emission below 1GHz

2.4GHz BT (LF)

BT Ant.	Note	Frequency ( MHz )	Level ( dBm )	Over Limit ( dB )	Limit Line ( dBm )	Read Level (dBm)	Antenna Gain ( dBi )	Path Loss ( dB )	MIMO Factor ( dB )	Grounding Factor ( dB )	Peak Avg. (P/A)
2.4GHz BT LF		85.89	-82.2	-27	-55.2	-90.68	3.53	0.25	0	4.7	P
		175.26	-81.76	-30.06	-51.7	-90.35	3.53	0.36	0	4.7	P
		257.34	-80.54	-31.34	-49.2	-89.26	3.53	0.49	0	4.7	P
		850.2	-80.71	-31.51	-49.2	-89.95	3.53	1.01	0	4.7	P
		904.1	-76.28	-27.08	-49.2	-85.53	3.53	1.02	0	4.7	P
		930	-79.44	-30.24	-49.2	-88.77	3.53	1.1	0	4.7	P
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>





A calculation example for radiated spurious emission is shown as below:

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	MIMO	Grounding	Peak
Ant.				Limit	Line	Level	Gain	Loss	Factor	Factor	Avg.
4		( MHz )	( dBm )	( dB )	( dBm )	( dBm )	( dBi )	( dB )	( dB )	( dB )	( P/A )
BT		2382.24	-38.94	-17.74	-21.2	-43.37	3.53	0.9	0	0	P
CH 00											
2402MHz	*	2402	22.72	-	-	18.29	3.53	0.9	0	0	P

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. MIMO Factor(dB) = 10 log (NANT) , where NANT is the number of outputs
3. Grounding Factor(dB) = Ground reflection factor (i.e., 6 dB for f ≤ 30 MHz and 4.7 dB for 30 MHz < f ≤ 960 MHz)
4. Level(dBm) = Antenna Gain(dBi) + Path Loss(dB) + Read Level(dBm) + MIMO Factor(dB) + Grounding Factor(dB)
5. Over Limit(dB) = Level(dBm) – Limit Line(dBm)

**For Peak Limit @ 2382.24MHz:**

1. Level(dBm)
  - = Antenna Gain(dBi) + Path Loss(dB) + MIMO Factor(dB) + Grounding Factor(dB) + Read Level(dBm)
  - = 3.53(dB) + 0.9(dB) – 43.37(dBm)
  - = -38.94(dBm)
2. Over Limit(dB)
  - = Level(dBm) – Limit Line(dBm)
  - = -38.94(dBm) + 21.2(dBm)
  - = -17.74(dB)

**Peak measured complies with the limit line, so test result is “PASS”.**



## Appendix C. Conducted Spurious Emission Plots

Test Engineer :	Richard Qiu 、 Jacob Yu 、 Eric Chang and Kai Liao	Temperature :	22.7~24.8°C
		Relative Humidity :	52~59%

<for Ant.4>

### 2.4GHz 2400~2483.5MHz

#### BT (Band Edge)

BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH00 2402MHz	
4	CSE	Fundamental
Peak	<p>Site : TH05-HV            Condition : FCC CLASS-B PK BE ANT GAIN+3.53 HORIZONTAL            RBW: 1000.000kHz VBW: 3000.000kHz            Detector : Peak</p>	<p>Site : TH05-HV            Condition : FCC CLASS-B CON ANT GAIN+3.53 HORIZONTAL            RBW: 1000.000kHz VBW: 3000.000kHz            Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH39 2441MHz	
4	CSE	Fundamental
Peak	<p>Date: 2022-07-31</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, PK, BE ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>	<p>Date: 2022-07-31</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, CON ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>
Peak	<p>Date: 2022-07-31</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, PK, BE ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH78 2480MHz	
4	CSE	Fundamental
Peak	<p>Date: 2022.07.31</p> <p>Site : TH05-HY Condition : FCC CLASS-B_PK_BE ANT GAIN+3.53 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz Detector : Peak</p>	<p>Date: 2022.07.31</p> <p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz Detector : Peak</p>



2.4GHz 2400~2483.5MHz

BT (Harmonic)

BT	2.4GHz 2400~2483.5MHz Harmonic	
ANT	BR	
4	BT CH00 2402MHz	BT CH39 2441MHz
Peak Avg.	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>	<p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>



<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic</b>	
<b>ANT</b>	<b>BR</b>	
<b>4</b>	<b>BT CH78 2480MHz</b>	<b>-</b>
<b>Peak Avg.</b>	<p>The spectrum plot shows a blue trace representing the signal level in dBm across a frequency range from 1000 to 25000 MHz. The y-axis ranges from -130 to 30 dBm. Two red horizontal lines indicate the FCC Class B limit at -75 dBm and the FCC Class B/A/B/G limit at -45 dBm. The signal level is significantly below these limits, with a peak around 2480 MHz. The plot is dated 2022-08-10.</p> <p>Site : TM05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>	<b>Left blank</b>



Emission below 1GHz

BT (LF)

<b>BT</b>	<b>2.4GHz 2400~2483.5MHz</b>	
<b>ANT</b>	<b>BR</b>	
<b>4</b>	<b>BT LF</b>	<b>-</b>
<b>QP / Peak</b>	<p>Left blank</p>	



<for Ant.5>

2.4GHz 2400~2483.5MHz

BT (Band Edge)

BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH00 2402MHz	
5	CSE	Fundamental
<p>Peak</p>	<p>Date: 2022-07-13</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, PK, BE ANT GAIN+3.53 HORIZONTAL            RBW: 1000.0000Hz VBW: 3000.0000Hz            Detector : Peak</p>	<p>Date: 2022-07-13</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, CON ANT GAIN+3.53 HORIZONTAL            RBW: 1000.0000Hz VBW: 3000.0000Hz            Detector : Peak</p>





BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH39 2441MHz	
5	CSE	Fundamental
Peak	<p>Date: 2022-07-13</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, PK, BE ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>	<p>Date: 2022-07-13</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, CON ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>
Peak	<p>Date: 2022-07-13</p> <p>Site : TH05-HY            Condition : FCC CLASS-B, PK, BE ANT GAIN+3.53 HORIZONTAL            : RBW:1000.000kHz VBW:3000.000kHz            Detector : Peak</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge	
ANT	BT CH78 2480MHz	
5	CSE	Fundamental
Peak	<p>Date: 2022-07-13</p> <p>Site : TH05-HY          Condition : FCC CLASS-B_PK_BE ANT GAIN+3.53 HORIZONTAL          RBW:1000.000kHz VBW:3000.000kHz          Detector : Peak</p>	<p>Date: 2022-07-13</p> <p>Site : TH05-HY          Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL          RBW:1000.000kHz VBW:3000.000kHz          Detector : Peak</p>



2.4GHz 2400~2483.5MHz

BT (Harmonic)

BT	2.4GHz 2400~2483.5MHz Harmonic	
ANT	BR	
5	BT CH00 2402MHz	BT CH39 2441MHz
<p>Peak Avg.</p>	<p>Date: 2022-08-10</p> <p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>	<p>Date: 2022-08-10</p> <p>Site : TH05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>

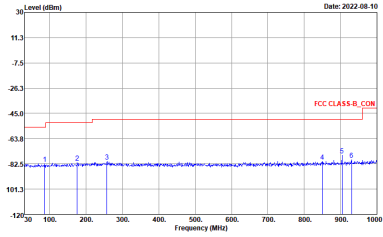


<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic</b>	
<b>ANT</b>	<b>BR</b>	
<b>5</b>	<b>BT CH78 2480MHz</b>	<b>-</b>
<b>Peak Avg.</b>	<p>The spectrum plot displays the harmonic levels of a 2.4GHz signal. The y-axis represents Level (dBm) from -130 to 30, and the x-axis represents Frequency (MHz) from 1000 to 25000. Two red horizontal lines indicate the limits for FCC Class B (at -75 dBm) and FCC Class B/AWG (at -45 dBm). The measured signal levels are significantly below these limits, with the highest peak at approximately -55 dBm. The plot also shows a noise floor around -85 dBm.</p> <p>Site : TM05-HY Condition : FCC CLASS-B_CON ANT GAIN+3.53 HORIZONTAL Detector : RBW:1000.0000Hz VBW:3000.0000Hz Detector : Peak</p>	<b>Left blank</b>



Emission below 1GHz

BT (LF)

<b>BT</b>	<b>2.4GHz 2400~2483.5MHz</b>	
<b>ANT</b>	<b>BR</b>	
<b>5</b>	<b>BT LF</b>	<b>-</b>
<b>QP / Peak</b>	 <p>Site : TH05 HY Condition : FCC CLASS B_CON ANT GAIN+3.53 HORIZONTAL Detector : Peak</p>	<b>Left blank</b>



## Appendix D. Cabinet Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.1°C
		Relative Humidity :	55~60%

<for Ant.4>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
4		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH00 2402MHz		2386.86	50.8	-23.2	74	43.72	27.35	16.56	36.83	173	318	P	H	
		2386.86	26.04	-27.96	54	-	-	-	-	-	-	A	H	
	*	2402	82.95	-	-	75.8	27.4	16.58	36.83	173	318	P	H	
	*	2402	58.19	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2349.375	50.79	-23.21	74	43.94	27.2	16.5	36.85	305	203	P	V
			2349.375	26.03	-27.97	54	-	-	-	-	-	-	A	V
	*		2402	79.21	-	-	72.06	27.4	16.58	36.83	305	203	P	V
	*		2402	54.45	-	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		2372.3	51.14	-22.86	74	44.16	27.29	16.53	36.84	139	314	P	H	
		2372.3	26.38	-27.62	54	-	-	-	-	-	-	A	H	
	*	2441	84.01	-	-	76.7	27.48	16.64	36.81	139	314	P	H	
	*	2441	59.25	-	-	-	-	-	-	-	-	A	H	
			2494.33	51.41	-22.59	74	43.78	27.68	16.73	36.78	139	314	P	H
			2494.33	26.65	-27.35	54	-	-	-	-	-	-	A	H
			2321.76	50.85	-23.15	74	44.17	27.09	16.45	36.86	292	205	P	V
			2321.76	26.09	-27.91	54	-	-	-	-	-	-	A	V
	*		2441	79.79	-	-	72.48	27.48	16.64	36.81	292	205	P	V
	*		2441	55.03	-	-	-	-	-	-	-	-	A	V
			2499.44	51.09	-22.91	74	43.44	27.7	16.73	36.78	292	205	P	V
			2499.44	26.33	-27.67	54	-	-	-	-	-	-	A	V



<b>BT CH 78 2480MHz</b>	*	2480	83.19	-	-	75.66	27.62	16.7	36.79	160	314	P	H
	*	2480	58.43	-	-	-	-	-	-	-	-	A	H
		2486.2	52.21	-21.79	74	44.65	27.64	16.71	36.79	160	314	P	H
		2486.2	27.45	-26.55	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	78.99	-	-	71.46	27.62	16.7	36.79	281	204	P	V
	*	2480	54.23	-	-	-	-	-	-	-	-	A	V
		2485.2	52.05	-21.95	74	44.49	27.64	16.71	36.79	281	204	P	V
		2485.2	27.29	-26.71	54	-	-	-	-	-	-	A	V
													V
													V
<b>Remark</b>	<ol style="list-style-type: none"> <li>1. No other spurious found.</li> <li>2. All results are PASS against Peak and Average limit line.</li> </ol>												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT Ant. 4	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)	
BT CH 00 2402MHz		4804	38.84	-35.16	74	55.25	32.31	10.13	58.85	-	-	P	H	
		4804	14.08	-39.92	54	-	-	-	-	-	-	A	H	
		12030	48.15	-25.85	74	55.65	38.69	15.27	61.46	-	-	P	H	
		12030	23.39	-30.61	54	-	-	-	-	-	-	A	H	
		14475	47.59	-26.41	74	53.39	40.53	16.85	63.18	-	-	P	H	
		14475	22.83	-31.17	54	-	-	-	-	-	-	A	H	
		17970	52.17	-21.83	74	47.72	42.83	18.93	57.31	-	-	P	H	
		17970	27.41	-26.59	54	-	-	-	-	-	-	A	H	
													H	
													H	
													H	
													H	
			4804	38.46	-35.54	74	54.87	32.31	10.13	58.85	-	-	P	V
			4804	14.08	-39.92	54	-	-	-	-	-	-	A	V
			10710	48.24	-25.76	74	55.71	38.82	14.61	60.9	-	-	P	V
			10710	23.48	-30.52	54	-	-	-	-	-	-	A	V
			14475	48.89	-25.11	74	54.69	40.53	16.85	63.18	-	-	P	V
			14475	24.13	-29.87	54	-	-	-	-	-	-	A	V
		18000	51.37	-22.63	74	46.56	43.1	18.95	57.24	-	-	P	V	
		18000	26.61	-27.39	54	-	-	-	-	-	-	A	V	
													V	
													V	
													V	
													V	





BT Ant. 4	Note	Frequency ( MHz )	Level ( dBµV/m )	Margin ( dB )	Limit Line ( dBµV/m )	Read Level ( dBµV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
		4882	39.54	-34.46	74	55.71	32.53	10.21	58.91	-	-	P	H
		4882	14.78	-39.22	54	-	-	-	-	-	-	A	H
		7323	43.22	-30.78	74	52.69	36.51	12.43	58.41	-	-	P	H
		7323	18.46	-35.54	54	-	-	-	-	-	-	A	H
		10800	48.08	-25.92	74	55.32	39	14.65	60.89	-	-	P	H
		10800	23.32	-30.68	54	-	-	-	-	-	-	A	H
		14490	48.56	-25.44	74	54.36	40.51	16.86	63.17	-	-	P	H
		14490	23.8	-30.2	54	-	-	-	-	-	-	A	H
		17910	51.57	-22.43	74	47.84	42.29	18.89	57.45	-	-	P	H
		17910	26.81	-27.19	54	-	-	-	-	-	-	A	H
													H
													H
<b>BT CH 39 2441MHz</b>		4882	39.73	-34.27	74	55.9	32.53	10.21	58.91	-	-	P	V
		4882	14.97	-39.03	54	-	-	-	-	-	-	A	V
		7323	43.03	-30.97	74	52.5	36.51	12.43	58.41	-	-	P	V
		7323	18.27	-35.73	54	-	-	-	-	-	-	A	V
		11340	48.31	-25.69	74	55.27	38.98	14.93	60.87	-	-	P	V
		11340	23.55	-30.45	54	-	-	-	-	-	-	A	V
		14490	47.82	-26.18	74	53.62	40.51	16.86	63.17	-	-	P	V
		14490	23.06	-30.94	54	-	-	-	-	-	-	A	V
		17940	51.14	-22.86	74	47.05	42.56	18.91	57.38	-	-	P	V
		17940	26.38	-27.62	54	-	-	-	-	-	-	A	V
													V
													V



BT Ant. 4	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
		4960	38.81	-35.19	74	54.67	32.84	10.28	58.98	-	-	P	H
		4960	14.05	-39.95	54	-	-	-	-	-	-	A	H
		7440	43.9	-30.1	74	53.6	36.02	12.48	58.2	-	-	P	H
		7440	19.14	-34.86	54	-	-	-	-	-	-	A	H
		10800	48.32	-25.68	74	55.56	39	14.65	60.89	-	-	P	H
		10800	23.56	-30.44	54	-	-	-	-	-	-	A	H
		14475	48.05	-25.95	74	53.85	40.53	16.85	63.18	-	-	P	H
		14475	23.29	-30.71	54	-	-	-	-	-	-	A	H
		18000	51.84	-22.16	74	47.03	43.1	18.95	57.24	-	-	P	H
		18000	27.08	-26.92	54	-	-	-	-	-	-	A	H
													H
													H
BT CH 78 2480MHz		4960	38.67	-35.33	74	54.53	32.84	10.28	58.98	-	-	P	V
		4960	13.91	-40.09	54	-	-	-	-	-	-	A	V
		7440	43.44	-30.56	74	53.14	36.02	12.48	58.2	-	-	P	V
		7440	18.68	-35.32	54	-	-	-	-	-	-	A	V
		11760	48.55	-25.45	74	56.13	38.44	15.13	61.15	-	-	P	V
		11760	23.79	-30.21	54	-	-	-	-	-	-	A	V
		14490	48.73	-25.27	74	54.53	40.51	16.86	63.17	-	-	P	V
		14490	23.97	-30.03	54	-	-	-	-	-	-	A	V
		17985	51.42	-22.58	74	46.78	42.97	18.94	57.27	-	-	P	V
		17985	26.66	-27.34	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> </ol>												



Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
2.4GHz BT SHF		21352	41.43	-32.57	74	61.04	37.8	-2.71	54.7	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			23568	41.67	-32.33	74	59.14	38.8	-2.31	53.96	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
4		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
2.4GHz BT LF		30.97	23.12	-16.88	40	30.97	24.01	0.62	32.48	-	-	P	H	
		98.87	23.69	-19.81	43.5	39.16	15.69	1.31	32.47	-	-	P	H	
		143.49	22.49	-21.01	43.5	35.96	17.28	1.74	32.49	-	-	P	H	
		315.18	22.02	-23.98	46	32.76	19.26	2.41	32.41	-	-	P	H	
		560.59	26.85	-19.15	46	30.1	26.03	3.22	32.5	-	-	P	H	
		892.33	32.01	-13.99	46	30.76	28.75	4.08	31.58	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30.97	31.19	-8.81	40	39.04	24.01	0.62	32.48	-	-	P	V
			55.22	31.28	-8.72	40	50.51	12.36	0.97	32.56	-	-	P	V
			82.38	31.24	-8.76	40	49.01	13.5	1.21	32.48	-	-	P	V
			98.87	24.05	-19.45	43.5	39.52	15.69	1.31	32.47	-	-	P	V
			198.78	24.9	-18.6	43.5	40.68	14.79	1.93	32.5	-	-	P	V
			924.34	31.65	-14.35	46	29.55	29.29	4.18	31.37	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	

**Remark**

- No other spurious found.
- All results are PASS against limit line.
- The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.



<for Ant.5>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
5		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH00 2402MHz		2359.56	50.76	-23.24	74	43.85	27.24	16.51	36.84	174	316	P	H	
		2359.56	26	-28	54	-	-	-	-	-	-	A	H	
	*	2402	83.07	-	-	75.92	27.4	16.58	36.83	174	316	P	H	
	*	2402	58.31	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2380.98	51.02	-22.98	74	43.98	27.32	16.55	36.83	305	204	P	V
			2380.98	26.26	-27.74	54	-	-	-	-	-	-	A	V
	*		2402	79.29	-	-	72.14	27.4	16.58	36.83	305	204	P	V
	*		2402	54.53	-	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		2347.8	51.19	-22.81	74	44.36	27.19	16.49	36.85	100	319	P	H	
		2347.8	26.43	-27.57	54	-	-	-	-	-	-	A	H	
	*	2441	82.34	-	-	75.03	27.48	16.64	36.81	100	319	P	H	
	*	2441	57.58	-	-	-	-	-	-	-	-	A	H	
			2493.42	52.34	-21.66	74	44.73	27.67	16.72	36.78	100	319	P	H
			2493.42	27.58	-26.42	54	-	-	-	-	-	-	A	H
			2355.78	51.4	-22.6	74	44.52	27.22	16.51	36.85	293	205	P	V
			2355.78	26.64	-27.36	54	-	-	-	-	-	-	A	V
	*		2441	79.86	-	-	72.55	27.48	16.64	36.81	293	205	P	V
	*		2441	55.1	-	-	-	-	-	-	-	-	A	V
			2487.96	51.16	-22.84	74	43.58	27.65	16.72	36.79	293	205	P	V
			2487.96	26.4	-27.6	54	-	-	-	-	-	-	A	V



<b>BT CH 78 2480MHz</b>	*	2480	82.85	-	-	75.32	27.62	16.7	36.79	135	314	P	H
	*	2480	58.09	-	-	-	-	-	-	-	-	A	H
		2494.64	50.54	-23.46	74	42.91	27.68	16.73	36.78	135	314	P	H
		2494.64	25.78	-28.22	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	78.86	-	-	71.33	27.62	16.7	36.79	282	204	P	V
	*	2480	54.1	-	-	-	-	-	-	-	-	A	V
		2496.28	51.13	-22.87	74	43.49	27.69	16.73	36.78	282	204	P	V
		2496.28	26.37	-27.63	54	-	-	-	-	-	-	A	V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT Ant. 5	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
		4804	39.79	-34.21	74	56.2	32.31	10.13	58.85	-	-	P	H
		4804	15.03	-38.97	54	-	-	-	-	-	-	A	H
		11865	48.78	-25.22	74	56.33	38.53	15.18	61.26	-	-	P	H
		11865	24.02	-29.98	54	-	-	-	-	-	-	A	H
		14490	47.61	-26.39	74	53.41	40.51	16.86	63.17	-	-	P	H
		14490	22.85	-31.15	54	-	-	-	-	-	-	A	H
		18000	51.98	-22.02	74	47.17	43.1	18.95	57.24	-	-	P	H
		18000	27.22	-26.78	54	-	-	-	-	-	-	A	H
													H
													H
													H
													H
BT CH 00 2402MHz		4804	38.56	-35.44	74	54.97	32.31	10.13	58.85	-	-	P	V
		4804	13.8	-40.2	54	-	-	-	-	-	-	A	V
		11085	48.32	-25.68	74	55.78	38.6	14.8	60.86	-	-	P	V
		11085	23.56	-30.44	54	-	-	-	-	-	-	A	V
		14475	48.39	-25.61	74	54.19	40.53	16.85	63.18	-	-	P	V
		14475	23.63	-30.37	54	-	-	-	-	-	-	A	V
		18000	51.47	-22.53	74	46.66	43.1	18.95	57.24	-	-	P	V
		18000	26.71	-27.29	54	-	-	-	-	-	-	A	V
													V
													V
													V
													V



BT Ant. 5	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
		4882	38.82	-35.18	74	54.99	32.53	10.21	58.91	-	-	P	H
		4882	14.06	-39.94	54	-	-	-	-	-	-	A	H
		7323	42.66	-31.34	74	52.13	36.51	12.43	58.41	-	-	P	H
		7323	17.9	-36.1	54	-	-	-	-	-	-	A	H
		10605	48.7	-25.3	74	56.26	38.8	14.56	60.92	-	-	P	H
		10605	23.94	-30.06	54	-	-	-	-	-	-	A	H
		14475	47.94	-26.06	74	53.74	40.53	16.85	63.18	-	-	P	H
		14475	23.18	-30.82	54	-	-	-	-	-	-	A	H
		18000	52.02	-21.98	74	47.21	43.1	18.95	57.24	-	-	P	H
		18000	27.26	-26.74	54	-	-	-	-	-	-	A	H
													H
													H
<b>BT</b>													
<b>CH 39</b>													
<b>2441MHz</b>		4882	38.54	-35.46	74	54.71	32.53	10.21	58.91	-	-	P	V
		4882	13.78	-40.22	54	-	-	-	-	-	-	A	V
		7323	43.1	-30.9	74	52.57	36.51	12.43	58.41	-	-	P	V
		7323	18.34	-35.66	54	-	-	-	-	-	-	A	V
		12600	48.57	-25.43	74	56.27	38.8	15.66	62.16	-	-	P	V
		12600	23.81	-30.19	54	-	-	-	-	-	-	A	V
		14475	47.96	-26.04	74	53.76	40.53	16.85	63.18	-	-	P	V
		14475	23.2	-30.8	54	-	-	-	-	-	-	A	V
		18000	51.68	-22.32	74	46.87	43.1	18.95	57.24	-	-	P	V
		18000	26.92	-27.08	54	-	-	-	-	-	-	A	V
													V
													V





BT Ant. 5	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
		4960	38.17	-35.83	74	54.03	32.84	10.28	58.98	-	-	P	H
		4960	13.41	-40.59	54	-	-	-	-	-	-	A	H
		7440	43.63	-30.37	74	53.33	36.02	12.48	58.2	-	-	P	H
		7440	18.87	-35.13	54	-	-	-	-	-	-	A	H
		10740	48.12	-25.88	74	55.52	38.88	14.62	60.9	-	-	P	H
		10740	23.36	-30.64	54	-	-	-	-	-	-	A	H
		14490	47.95	-26.05	74	53.75	40.51	16.86	63.17	-	-	P	H
		14490	23.19	-30.81	54	-	-	-	-	-	-	A	H
		18000	51.45	-22.55	74	46.64	43.1	18.95	57.24	-	-	P	H
													H
													H
													H
BT CH 78 2480MHz		4960	38.49	-35.51	74	54.35	32.84	10.28	58.98	-	-	P	V
		4960	13.73	-40.27	54	-	-	-	-	-	-	A	V
		7440	43.13	-30.87	74	52.83	36.02	12.48	58.2	-	-	P	V
		7440	18.37	-35.63	54	-	-	-	-	-	-	A	V
		10875	48.32	-25.68	74	55.73	38.78	14.69	60.88	-	-	P	V
		10875	23.56	-30.44	54	-	-	-	-	-	-	A	V
		14475	48.1	-25.9	74	53.9	40.53	16.85	63.18	-	-	P	V
		14475	23.34	-30.66	54	-	-	-	-	-	-	A	V
		17985	51.56	-22.44	74	46.92	42.97	18.94	57.27	-	-	P	V
		17985	26.8	-27.2	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> <li>The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.</li> </ol>												



Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
5		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
2.4GHz BT SHF		24104	41.3	-32.7	74	58.23	38.84	7.39	53.62	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			24904	41.35	-32.65	74	57.38	39.12	7.37	52.98	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
5		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz BT LF		30.97	22.95	-17.05	40	30.8	24.01	0.62	32.48	-	-	P	H	
		82.38	22.43	-17.57	40	40.2	13.5	1.21	32.48	-	-	P	H	
		98.87	24.47	-19.03	43.5	39.94	15.69	1.31	32.47	-	-	P	H	
		315.18	24.85	-21.15	46	35.59	19.26	2.41	32.41	-	-	P	H	
		837.04	31.35	-14.65	46	30.96	28.47	3.95	32.03	-	-	P	H	
		949.56	33.54	-12.46	46	29.9	30.59	4.27	31.22	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30.97	31.55	-8.45	40	39.4	24.01	0.62	32.48	-	-	P	V
			57.16	32.14	-7.86	40	51.76	11.95	0.99	32.56	-	-	P	V
			82.38	29.71	-10.29	40	47.48	13.5	1.21	32.48	-	-	P	V
			97.9	23.69	-19.81	43.5	39.27	15.59	1.3	32.47	-	-	P	V
			202.66	24.47	-19.03	43.5	40.11	14.91	1.95	32.5	-	-	P	V
			861.29	31.32	-14.68	46	30.22	28.94	4.02	31.86	-	-	P	V
													V	
													V	
													V	
													V	
													V	

**Remark**

- No other spurious found.
- All results are PASS against limit line.
- The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



A calculation example for radiated spurious emission is shown as below:

BT Ant. 4	Note	Frequency ( MHz )	Level ( dBμV/m )	Margin ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
BT CH00 2402MHz		2386.86	50.8	-23.2	74	43.72	27.35	16.56	36.83	173	318	P	H
	*	2402	82.95	-	-	75.8	27.4	16.58	36.83	173	318	P	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2386.86MHz:**

1. Level(dBμV/m)
  - = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
  - = 27.35dB/m) + 16.56(dB) + 43.72(dBμV) – 36.83 (dB)
  - = 50.8 (dBμV/m)
2. Over Limit(dB)
  - = Level(dBμV/m) – Limit Line(dBμV/m)
  - = 50.8(dBμV/m) – 74(dBμV/m)
  - = -23.2(dB)

**Peak measured complies with the limit line, so test result is “PASS”.**



## Appendix E. Cabinet Radiated Spurious Emission Plots

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.1°C
		Relative Humidity :	55~60%

<for Ant.4>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 9D120_02038_20210804 HORIZONTAL Detector : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL Detector : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>



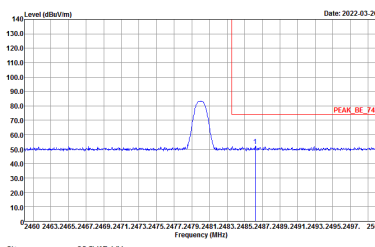
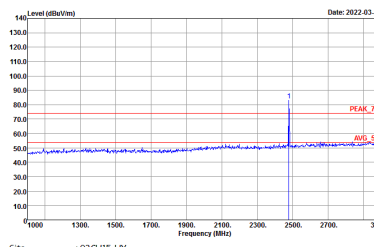
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY          Condition : PEAK_BE_74 3m 90120_02038_20210804 HORIZONTAL          Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto          Detector : Peak</p>	<p>Site : 03CH15-HY          Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL          Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto          Detector : Peak</p>
Peak	<p>Site : 03CH15-HY          Condition : PEAK_BE_74 3m 90120_02038_20210804 HORIZONTAL          Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto          Detector : Peak</p>	Left blank





BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 90120_02038_20210804 VERTICAL            RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH15-HY            Condition : PEAK_74 3m 90120_02038_20210804 VERTICAL            RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>
Peak	<p>Site : 03CH15-HY            Condition : PEAK_BE_74 3m 90120_02038_20210804 VERTICAL            RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	Left blank



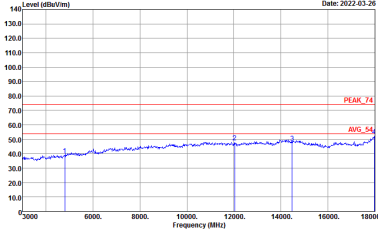
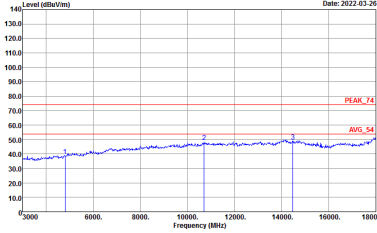
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Horizontal	Fundamental
Peak	 <p data-bbox="430 705 805 750">Site : 03CH15-HY Condition : PEAK_BC_74 3m 90120_02038_20210804 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p data-bbox="901 705 1276 750">Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Vertical	Fundamental
Peak	<p>Site : 03CH15-11Y Condition : PEAK_BE_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>	<p>Site : 03CH15-11Y Condition : PEAK_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz  
BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
4	Horizontal	Vertical
<p>Peak Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>



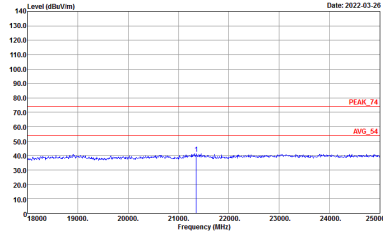
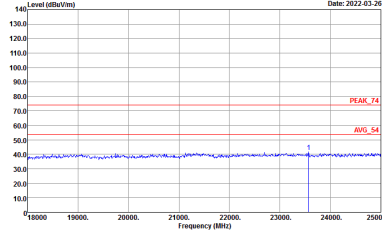
<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>BT CH39 2441MHz</b>	
<b>4</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>



<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>BT CH78 2480MHz</b>	
<b>4</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>

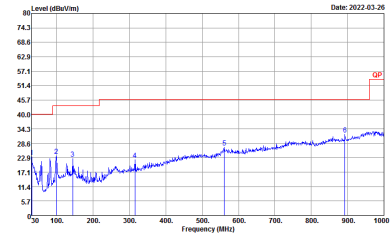
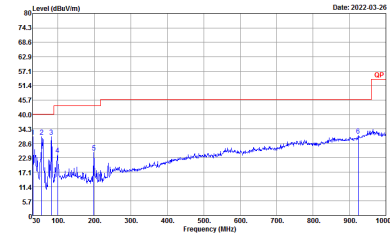


Emission above 18GHz  
2.4GHz BT (SHF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
4	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : PEAK_74 1m SHF ANT_9170_00993 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 1m SHF ANT_9170_00993 VERTICAL Detector : Peak</p>



Emission below 1GHz  
2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
4	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20220206 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20220206 VERTICAL Detector : Peak</p>

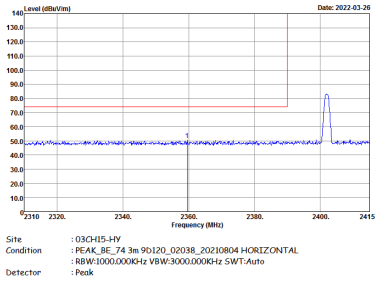
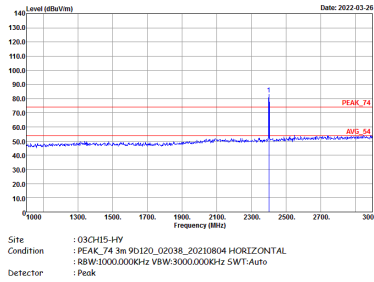




<for Ant.5>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
5	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-1RV Condition : PEAK_RE_74 3m 9D120_02038_20210804 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	 <p>Site : 03CH15-1RV Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>

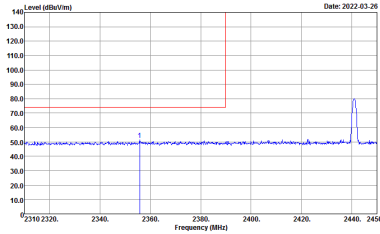
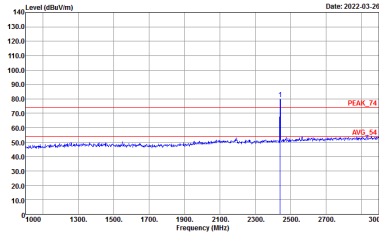
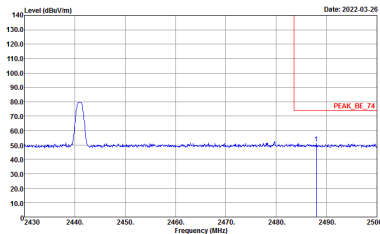


<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Band Edge @ 3m</b>	
<b>ANT</b>	<b>BT CH00 2402MHz</b>	
<b>5</b>	<b>Vertical</b>	<b>Fundamental</b>
<b>Peak</b>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>

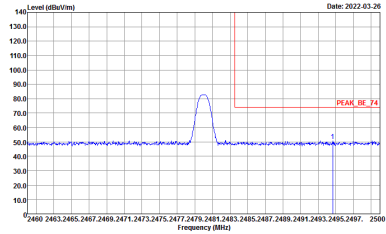
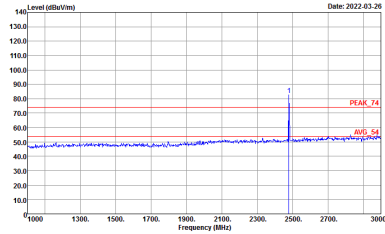


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
5	Horizontal	Fundamental
Peak	<p>Site : 03CH15-FY            Condition : PEAK_BE_74 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	<p>Site : 03CH15-FY            Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>
Peak	<p>Site : 03CH15-FY            Condition : PEAK_BE_74 3m 90120_02038_20210804 HORIZONTAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
5	Vertical	Fundamental
Peak	 <p>Site : 03CH15-FY            Condition : PEAK_BE_74 3m 9d120_02038_20210804 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	 <p>Site : 03CH15-FY            Condition : PEAK_74 3m 9d120_02038_20210804 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>
Peak	 <p>Site : 03CH15-FY            Condition : PEAK_BE_74 3m 9d120_02038_20210804 VERTICAL            : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto            Detector : Peak</p>	Left blank



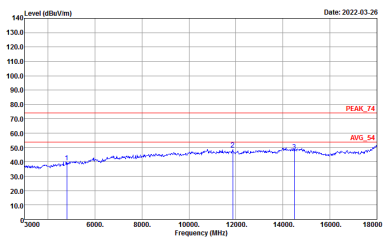
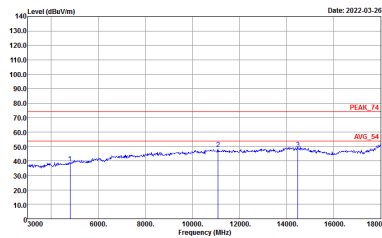
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
5	Horizontal	Fundamental
Peak	 <p>Site : 03CH15-11Y          Condition : PEAK_BE_74 3m 90120_02038_20210804 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto          Detector : Peak</p>	 <p>Site : 03CH15-11Y          Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL          : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto          Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
5	Vertical	Fundamental
Peak	<p>Site : 03CHES-11Y Condition : PEAK_BE_74 3m 9d120_02038_20210804 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>	<p>Site : 03CHES-11Y Condition : PEAK_74 3m 9d120_02038_20210804 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak</p>



2.4GHz 2400~2483.5MHz  
BT (Harmonic @ 3m)

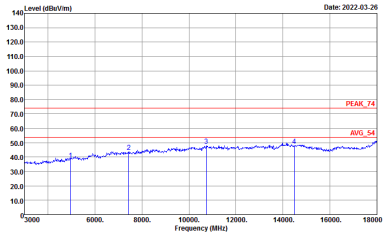
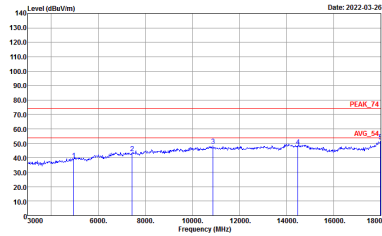
BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
5	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9D120_02038_20210804 VERTICAL Detector : Peak</p>



<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>BT CH39 2441MHz</b>	
<b>5</b>	<b>Horizontal</b>	<b>Vertical</b>
<b>Peak</b> <b>Avg.</b>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>

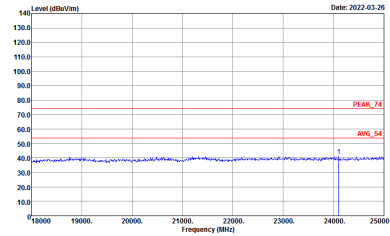
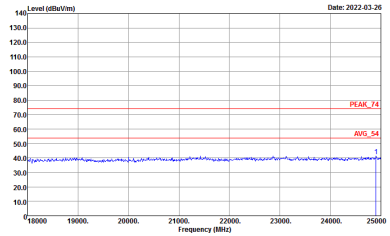




<b>BT</b>	<b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>	
<b>ANT</b>	<b>BT CH78 2480MHz</b>	
<b>5</b>	<b>Horizontal</b>	<b>Vertical</b>
<p><b>Peak</b></p> <p><b>Avg.</b></p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 90120_02038_20210804 VERTICAL Detector : Peak</p>



Emission above 18GHz  
2.4GHz BT (SHF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
5	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : PEAK_74 1m SHF ANT_9170_00993 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 1m SHF ANT_9170_00993 VERTICAL Detector : Peak</p>



Emission below 1GHz  
2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
5	Horizontal	Vertical
QP / Peak	<p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20220206 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20220206 VERTICAL Detector : Peak</p>



# Appendix F. Duty Cycle Plots



**Note:**

<For Ant.4 and Ant.5>

1. Worst case Duty cycle = on time/100 milliseconds = 2 \* 2.89 / 100 = 5.78 %
2. Worst case Duty cycle correction factor = 20\*log(Duty cycle) = -24.76 dB
3. DH5 has the highest duty cycle worst case and is reported.



**Duty Cycle Correction Factor Consideration for AFH mode:**

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the on time period to have DH5 packet completing one hopping sequence is

$$2.89 \text{ ms} \times 20 \text{ channels} = 57.8 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period.  $[100 \text{ ms} / 57.8 \text{ ms}] = 2 \text{ hops}$

Thus, the maximum possible ON time:

$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.78 \text{ ms}/100 \text{ ms}) = -24.76 \text{ dB}$$