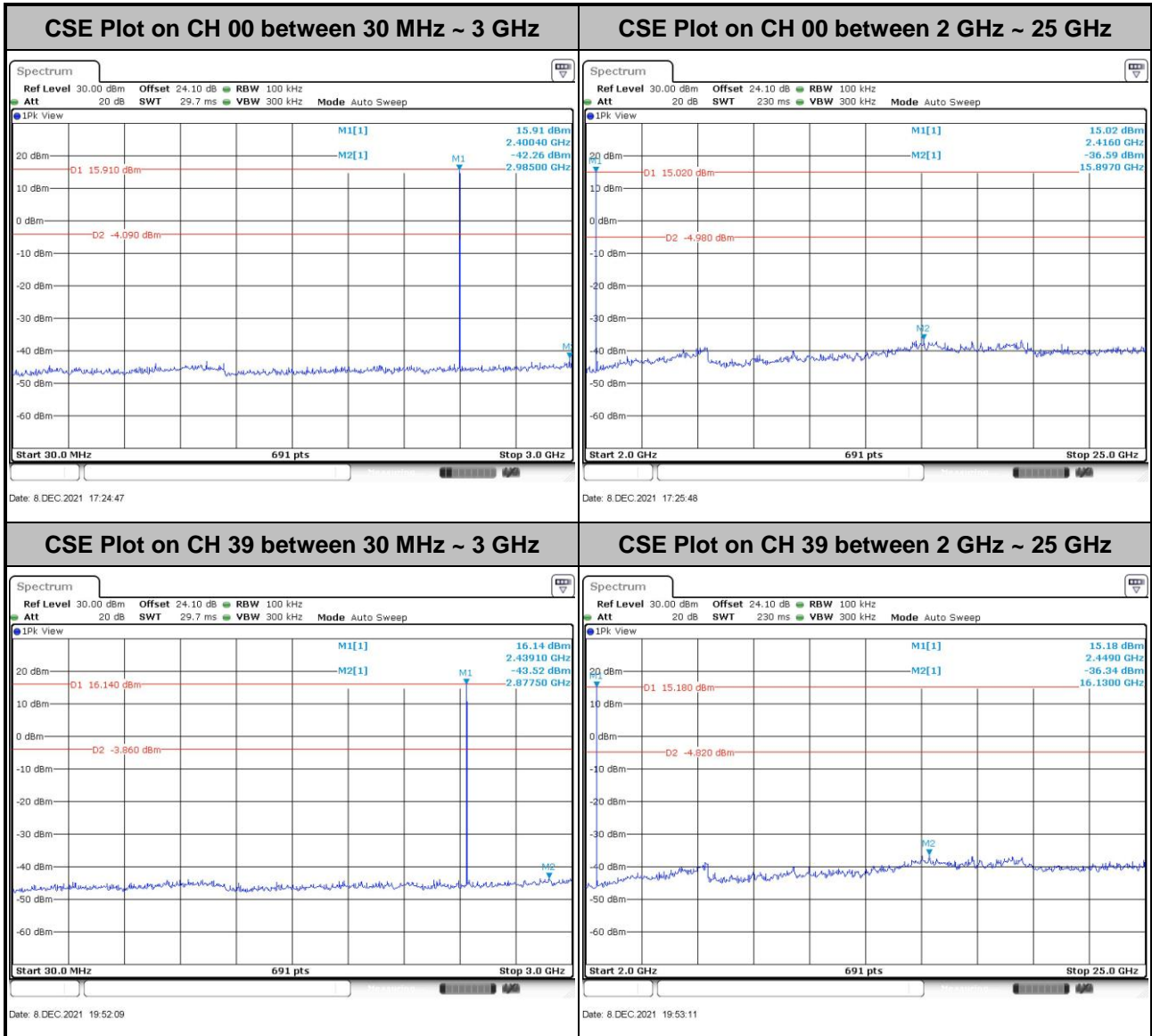
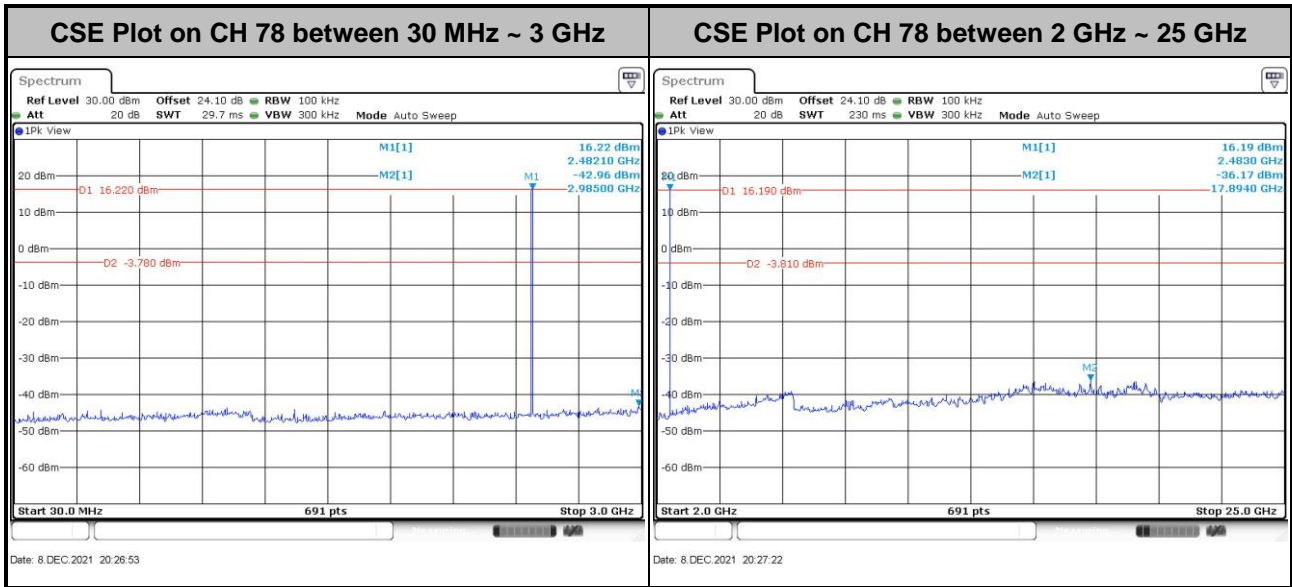




MIMO <Ant. 4>

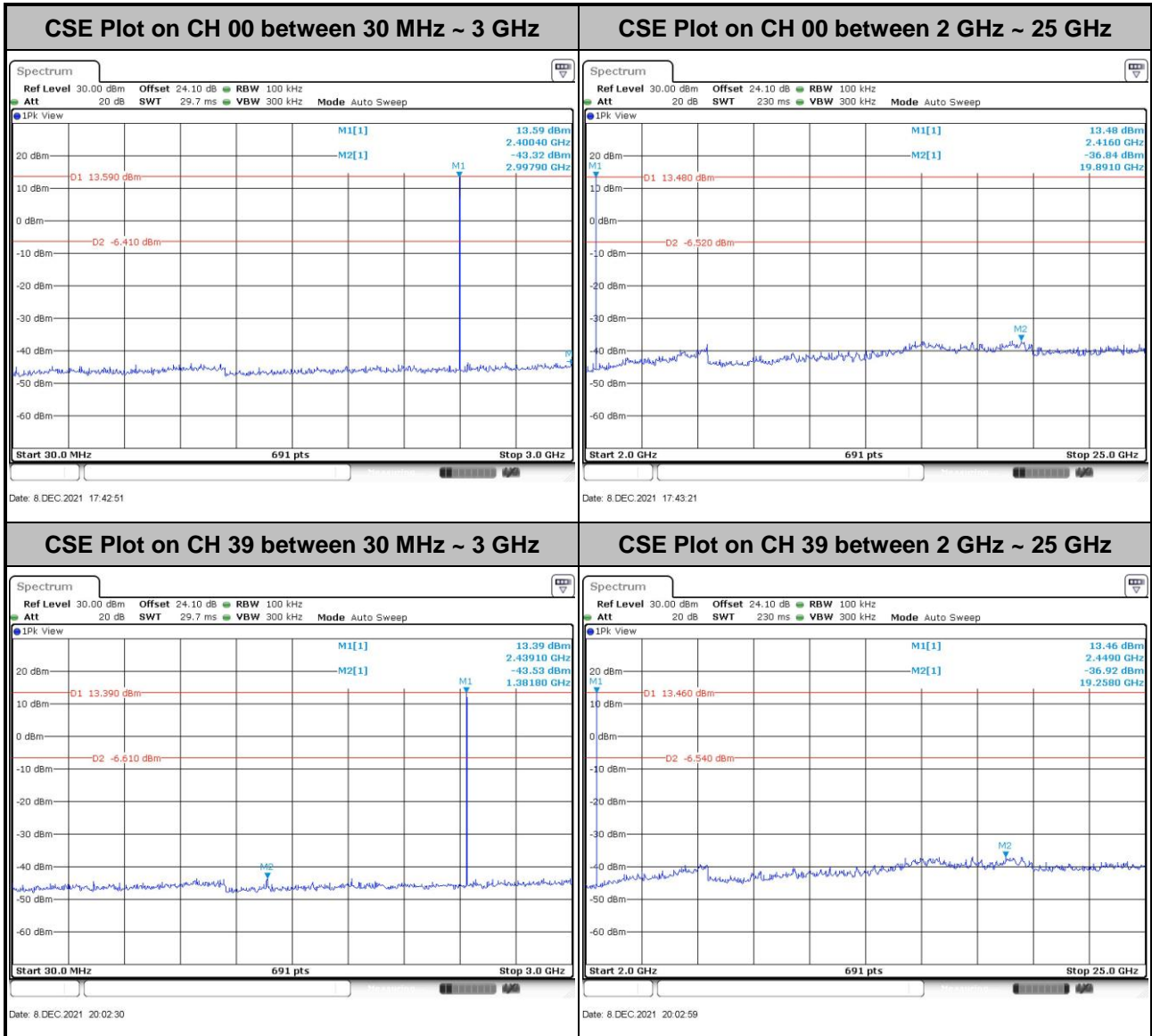
<1Mbps>

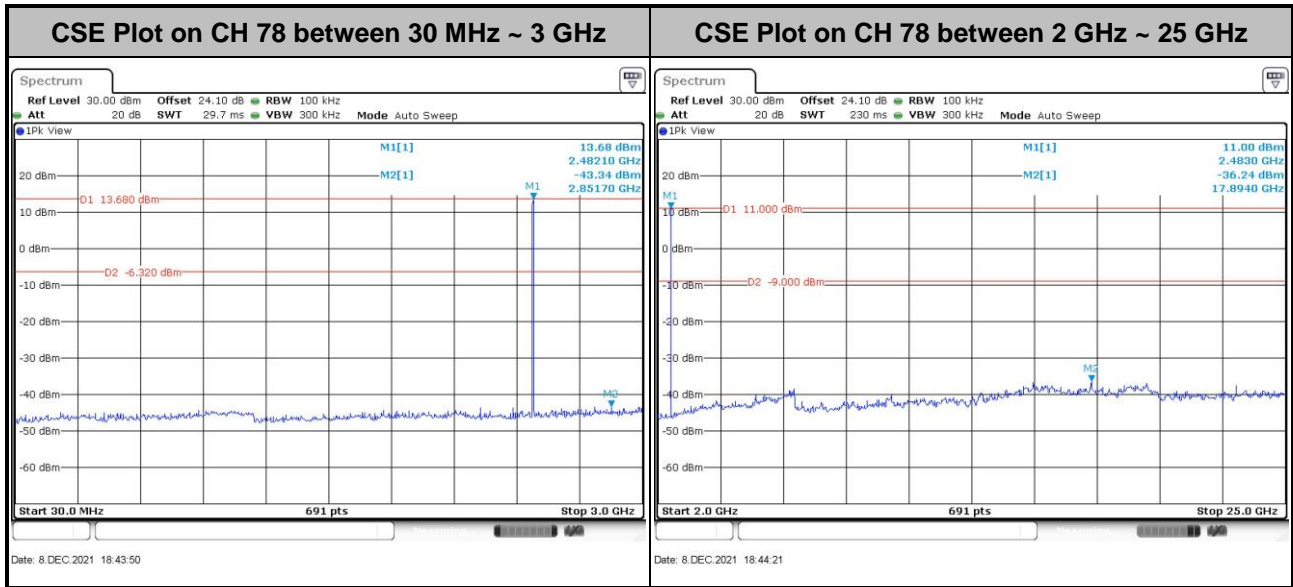






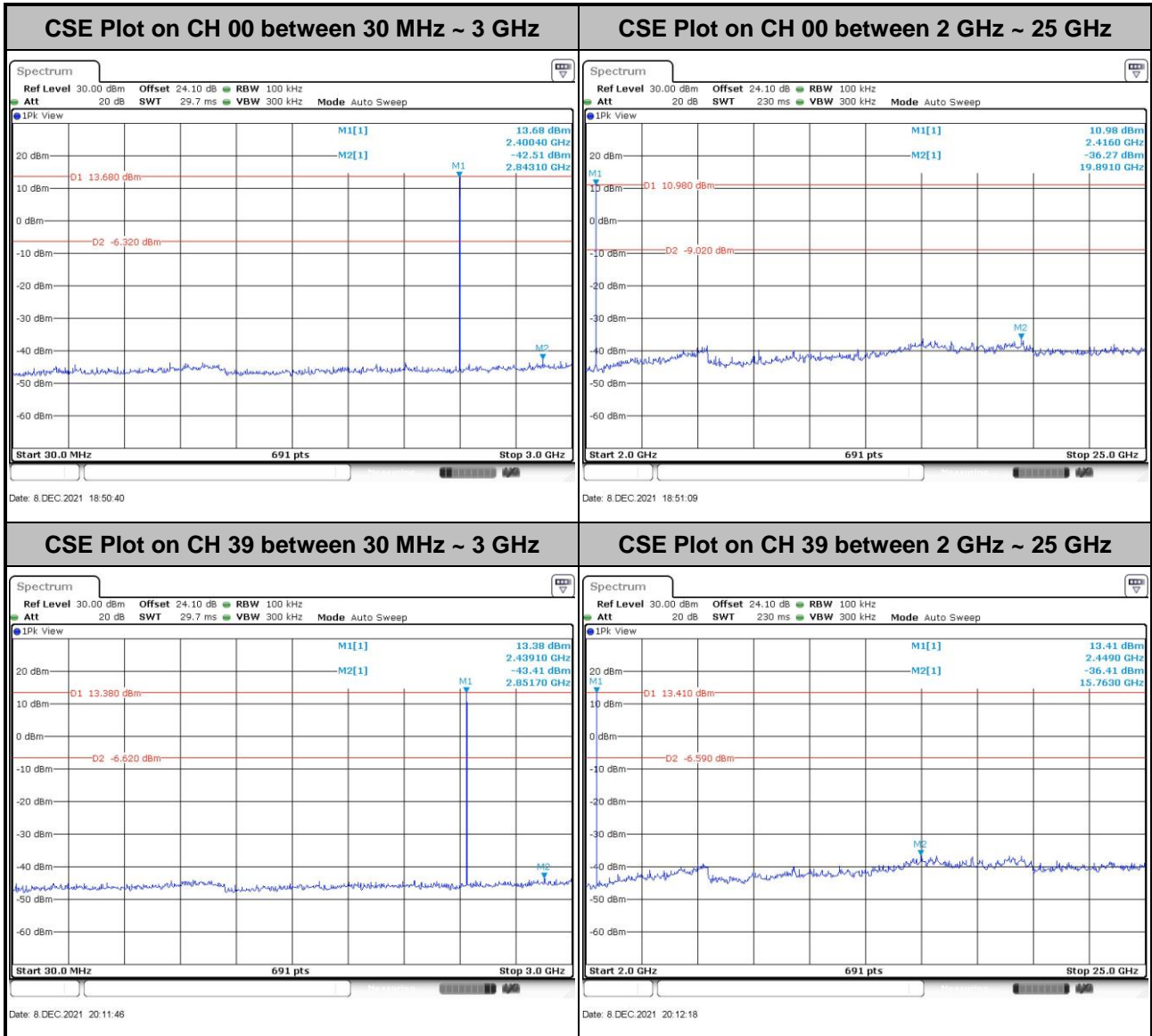
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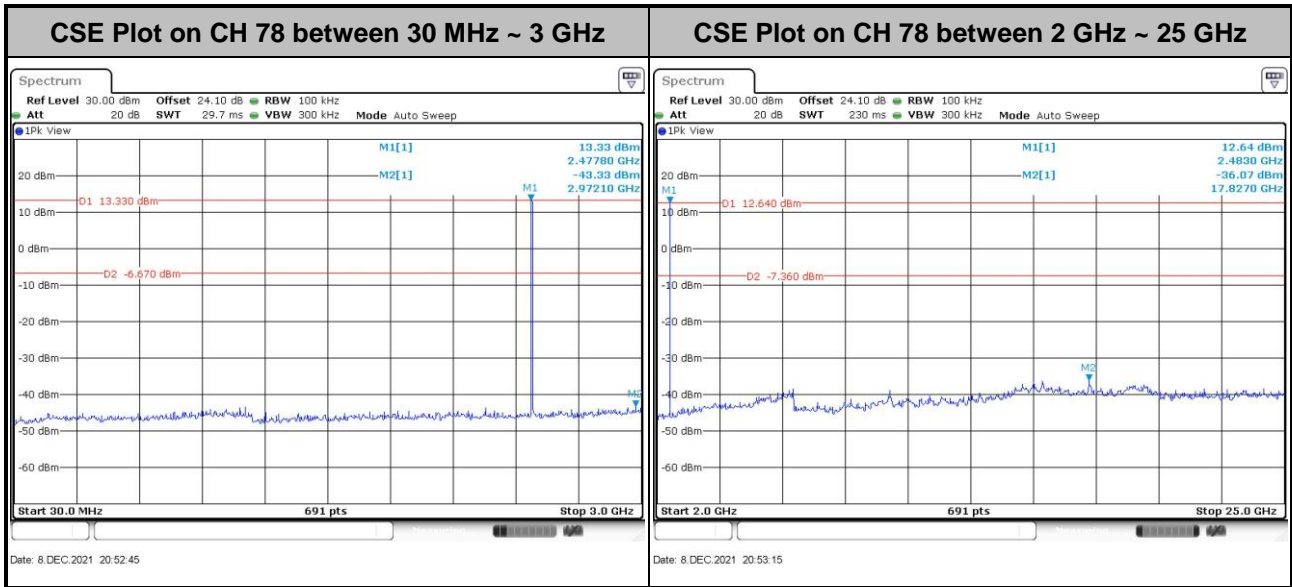






<3Mbps>

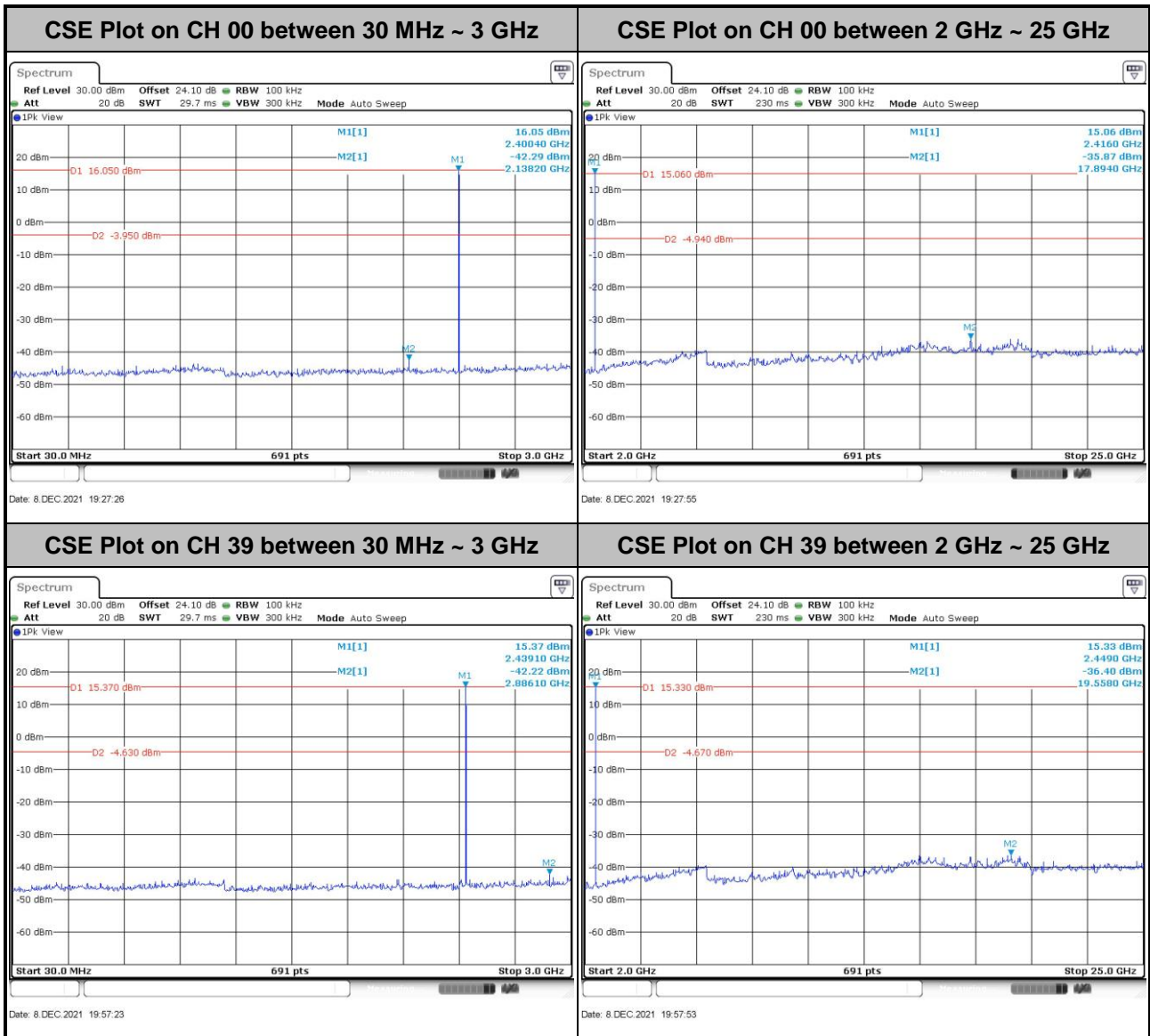


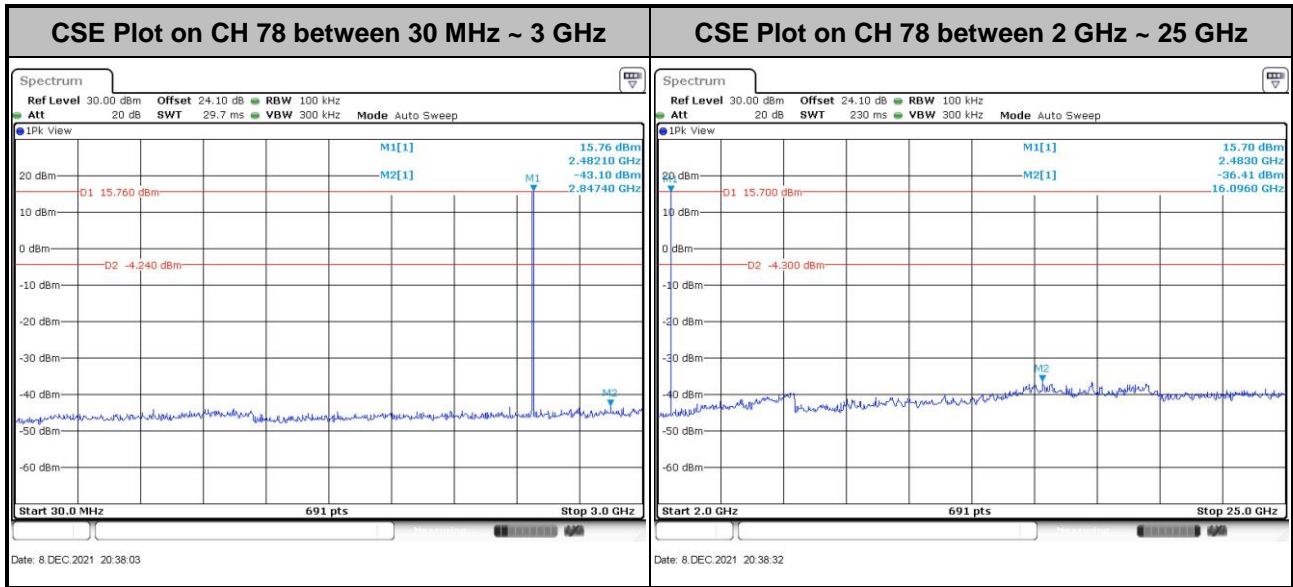




MIMO <Ant. 3>

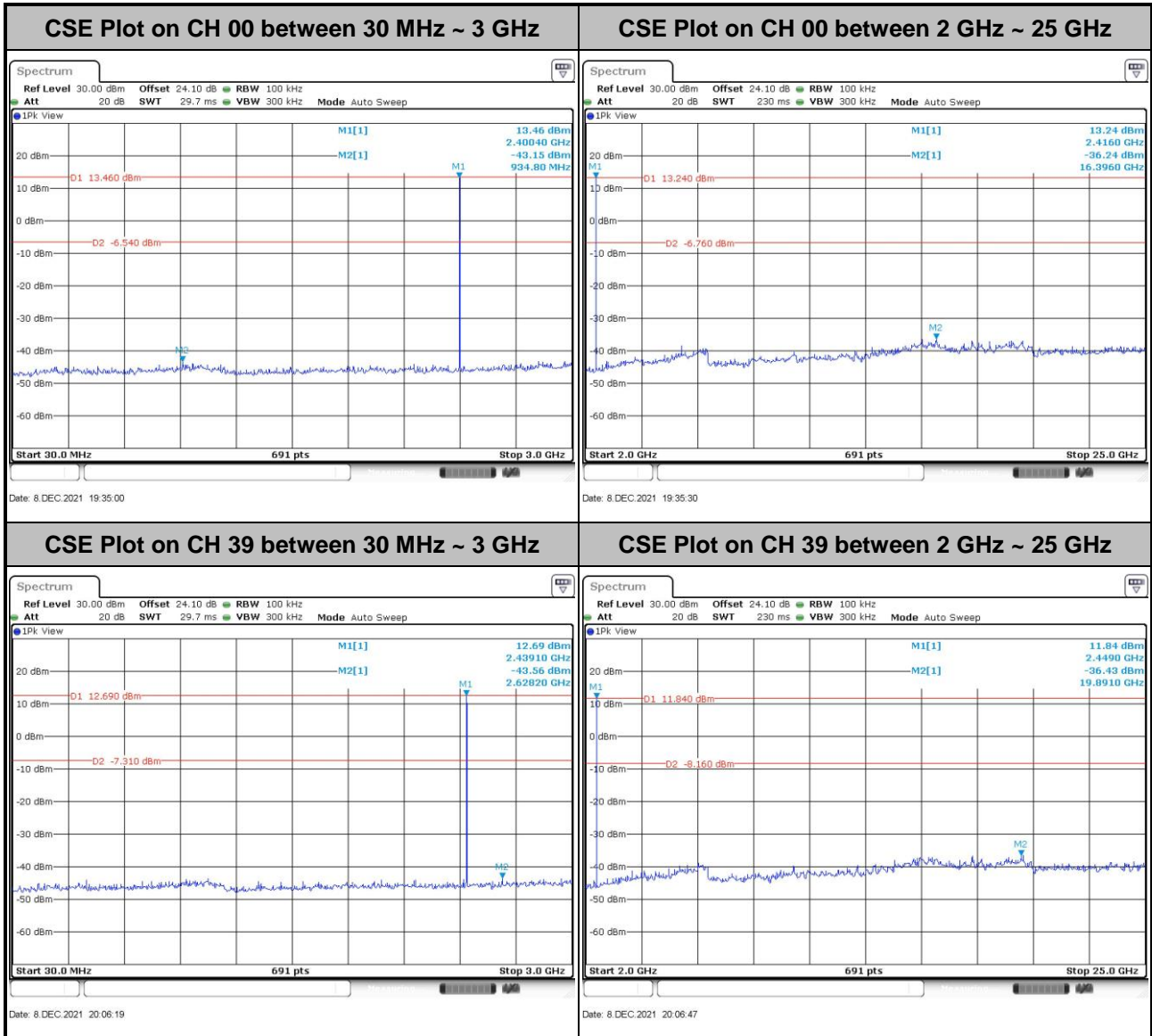
<1Mbps>

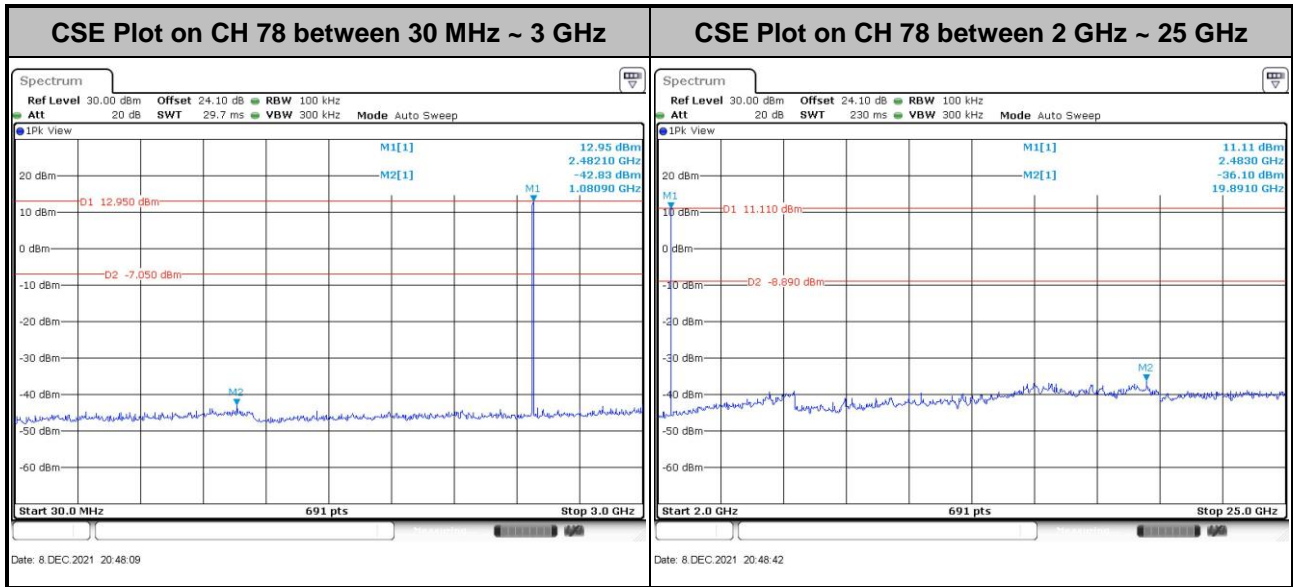






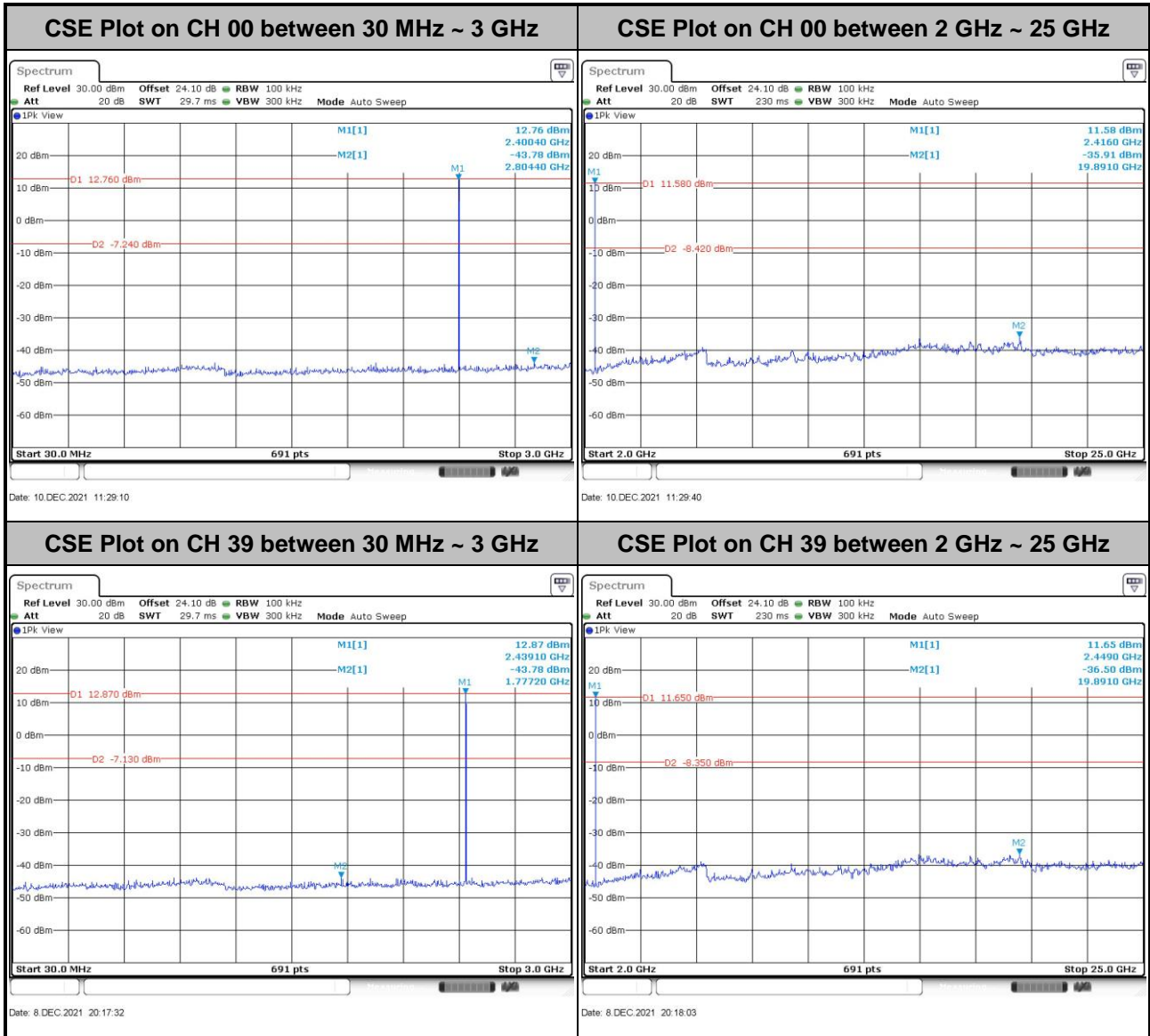
<2Mbps>

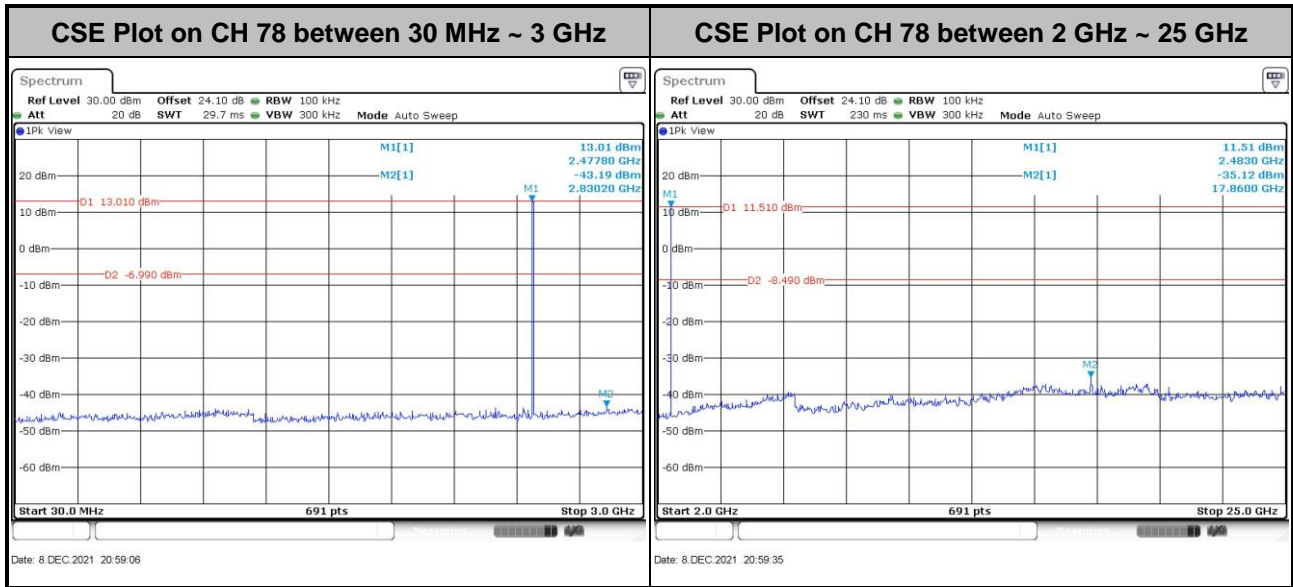






<3Mbps>







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.



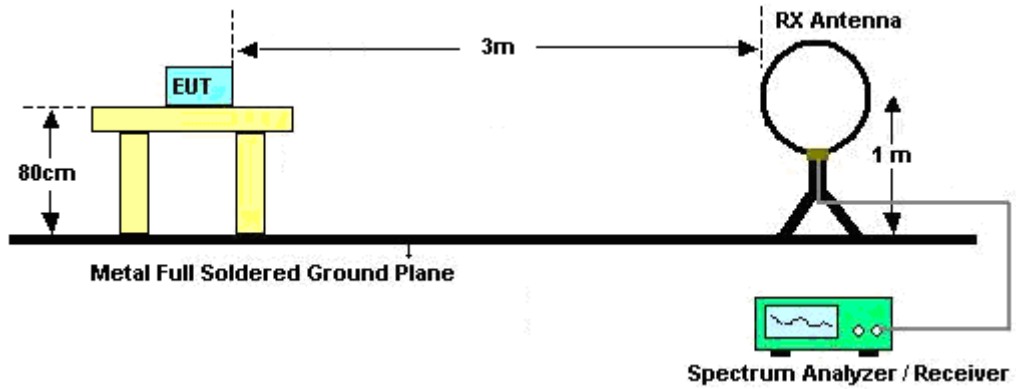
3.8.3 Test Procedures

1. The 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.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
3. 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.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. 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 \geq 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
On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$
Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
Average Emission Level = Peak Emission Level + $20 * \log$ (Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. 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 “-“.
8. 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 “-“.

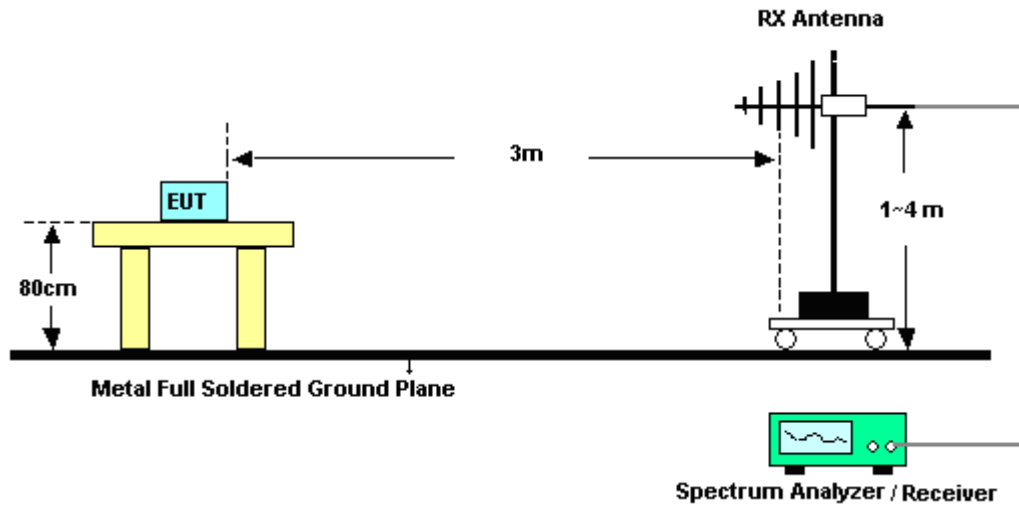
Note: The average levels are calculated from the peak level corrected with duty cycle correction factor (-24.76dB and -24.79dB) derived from $20 \log$ (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.8.4 Test Setup

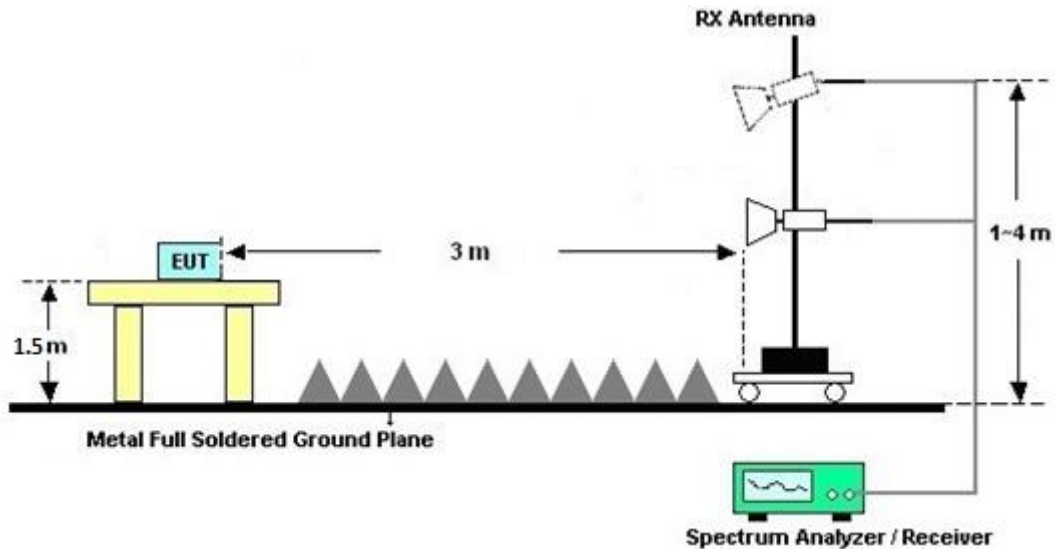
For radiated test below 30MHz



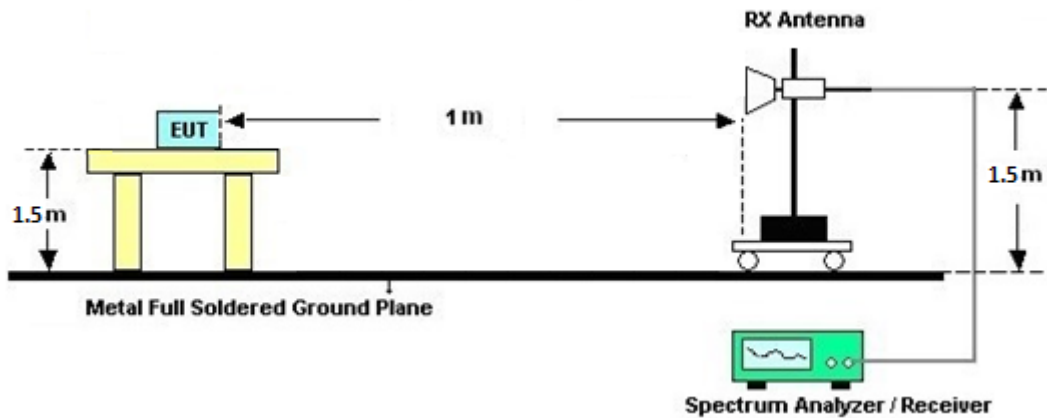
For radiated test from 30MHz to 1GHz



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 Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.8.7 Duty Cycle

Please refer to Appendix E.

3.8.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.



3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

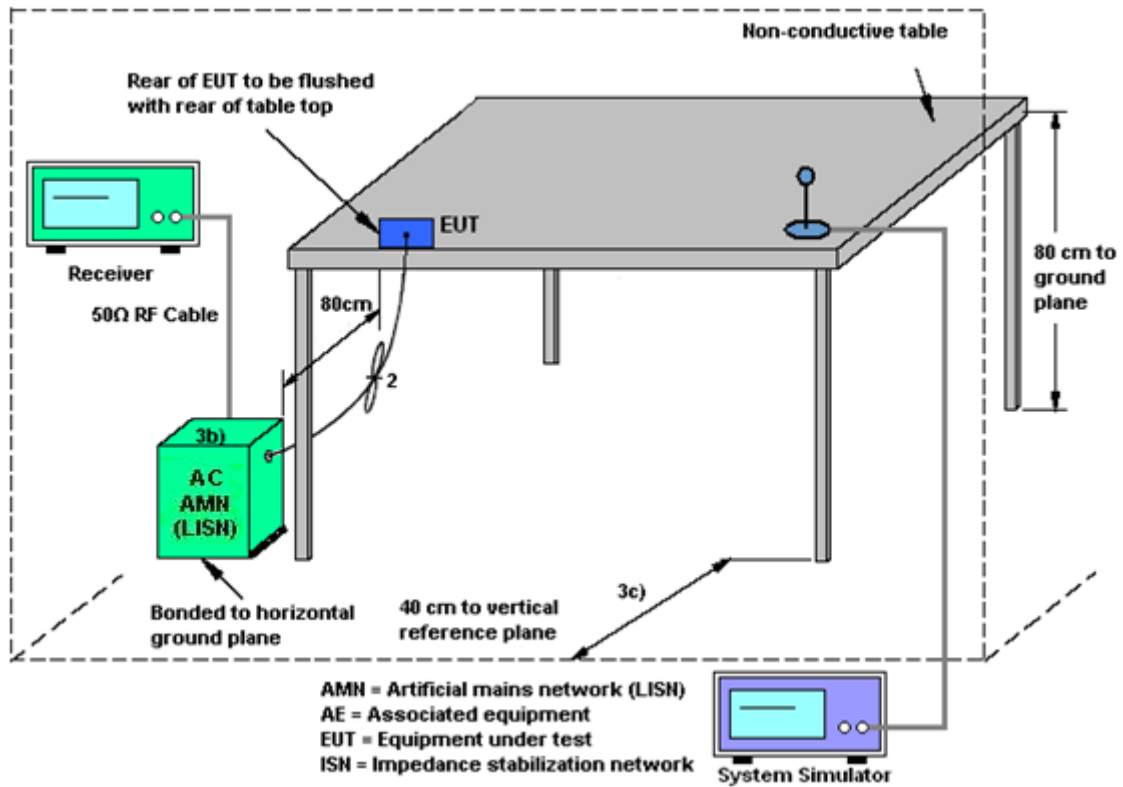
3.9.2 Measuring Instruments

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

3.9.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.10 Antenna Requirements

3.10.1 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.

3.10.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.10.3 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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Nov. 25, 2021~ Dec. 20, 2021	Jan. 03, 2022	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	41912 & 05	30MHz~1GHz	Feb. 08, 2021	Nov. 25, 2021~ Dec. 20, 2021	Feb. 07, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2020	Nov. 25, 2021~ Dec. 20, 2021	Dec. 27, 2021	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Oct. 25, 2021	Nov. 25, 2021~ Dec. 20, 2021	Oct. 24, 2022	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	00991	18GHz~40GHz	May 12, 2021	Nov. 25, 2021~ Dec. 20, 2021	May 11, 2022	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3	17100018000 55006	1GHz~18GHz	May 06, 2021	Nov. 25, 2021~ Dec. 20, 2021	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060802	1GHz-18GHz	Jul. 26, 2021	Nov. 25, 2021~ Dec. 02, 2021	Jul. 25, 2022	Radiation (03CH15-HY)
Preamplifier	E-INSTRUME NT TECH LTD.	ERA-10M-700 0-MR	EC1900247	10MHz-7GHz	Dec. 03, 2021	Dec. 03, 2021~ Dec. 20, 2021	Dec. 02, 2022	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18-40GHz	Jun. 22, 2021	Nov. 25, 2021~ Dec. 20, 2021	Jun. 21, 2022	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Jul. 15, 2021	Nov. 25, 2021~ Dec. 20, 2021	Jul. 14, 2022	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 07, 2021	Nov. 25, 2021~ Dec. 20, 2021	May 06, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Nov. 25, 2021~ Dec. 20, 2021	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Nov. 25, 2021~ Dec. 20, 2021	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Nov. 25, 2021~ Dec. 20, 2021	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 15, 2021	Nov. 25, 2021~ Dec. 20, 2021	Nov. 14, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 22, 2021	Nov. 25, 2021~ Dec. 20, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 22, 2021	Nov. 25, 2021~ Dec. 20, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Nov. 25, 2021~ Dec. 20, 2021	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-15 30-6000-40ST	SN4	1.53GHz Low Pass Filter	Jul. 02, 2021	Nov. 25, 2021~ Dec. 20, 2021	Jul. 01, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OST	SN4	3GHz High Pass Filter	Sep. 15, 2021	Nov. 25, 2021~ Dec. 20, 2021	Sep. 14, 2022	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 15, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 30, 2020	Nov. 15, 2021	Nov. 29, 2021	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201973	N/A	Oct. 22, 2021	Nov. 15, 2021	Oct. 21, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 01, 2020	Nov. 15, 2021	Nov. 30, 2021	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Nov. 15, 2021	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-FN	00691	N/A	Jul. 28, 2021	Nov. 15, 2021	Jul. 27, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Nov. 15, 2021	Dec. 30, 2021	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Nov. 22, 2021~ Dec. 14, 2021	Nov. 15, 2022	Conducted (TH05-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Jan. 14, 2021	Nov. 22, 2021~ Dec. 14, 2021	Jan. 13, 2022	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Jan. 14, 2021	Nov. 22, 2021~ Dec. 14, 2021	Jan. 13, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Nov. 22, 2021~ Dec. 14, 2021	Aug. 29, 2022	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW191204(BOX8)	N/A	Jan. 07, 2021	Nov. 22, 2021~ Dec. 14, 2021	Jan. 06, 2022	Conducted (TH05-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.1 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.8 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3 dB
---	--------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.6 dB
---	--------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2021/11/22~2021/12/14	Relative Humidity:	51~54	%

<Ant. 4>

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	1.022	0.906	1.003	0.6811	Pass
DH	1Mbps	1	39	2441	1.022	0.906	0.999	0.6811	Pass
DH	1Mbps	1	78	2480	1.022	0.906	0.999	0.6811	Pass
2DH	2Mbps	1	0	2402	1.303	1.184	1.003	0.8683	Pass
2DH	2Mbps	1	39	2441	1.303	1.181	1.003	0.8683	Pass
2DH	2Mbps	1	78	2480	1.298	1.181	1.003	0.8654	Pass
3DH	3Mbps	1	0	2402	1.255	1.161	0.999	0.8365	Pass
3DH	3Mbps	1	39	2441	1.259	1.164	0.999	0.8393	Pass
3DH	3Mbps	1	78	2480	1.259	1.161	0.999	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
Nomal	79	106.67	2.89	0.31	0.4	Pass
AFH	20	53.33	2.89	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	20.21	20.97	Pass
	39	1	20.17	20.97	Pass
	78	1	20.42	20.97	Pass
2DH1	0	1	20.56	20.97	Pass
	39	1	20.25	20.97	Pass
	78	1	20.47	20.97	Pass
3DH1	0	1	20.95	20.97	Pass
	39	1	20.92	20.97	Pass
	78	1	20.88	20.97	Pass

TEST RESULTS DATA				
Average Power Table				
(Reporting Only)				
DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	19.29	5.13
	39	1	19.18	5.13
	78	1	19.53	5.13
2DH1	0	1	17.92	5.08
	39	1	17.59	5.08
	78	1	17.76	5.08
3DH1	0	1	17.88	5.08
	39	1	17.82	5.08
	78	1	17.77	5.08

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

<Ant. 3>

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	1.022	0.905	1.003	0.6811	Pass
DH	1Mbps	1	39	2441	1.022	0.905	0.999	0.6811	Pass
DH	1Mbps	1	78	2480	1.019	0.905	0.999	0.6792	Pass
2DH	2Mbps	1	0	2402	1.303	1.184	0.999	0.8683	Pass
2DH	2Mbps	1	39	2441	1.303	1.184	0.999	0.8683	Pass
2DH	2Mbps	1	78	2480	1.298	1.181	1.003	0.8654	Pass
3DH	3Mbps	1	0	2402	1.259	1.161	0.999	0.8393	Pass
3DH	3Mbps	1	39	2441	1.259	1.161	1.003	0.8393	Pass
3DH	3Mbps	1	78	2480	1.259	1.161	0.999	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
Nomal	79	106.67	2.91	0.31	0.4	Pass
AFH	20	53.33	2.91	0.16	0.4	Pass

TEST RESULTS DATA**Peak Power Table**

DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	20.95	20.97	Pass
	39	1	20.85	20.97	Pass
	78	1	20.61	20.97	Pass
2DH1	0	1	20.15	20.97	Pass
	39	1	20.07	20.97	Pass
	78	1	19.96	20.97	Pass
3DH1	0	1	20.87	20.97	Pass
	39	1	20.64	20.97	Pass
	78	1	20.60	20.97	Pass

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

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	20.39	5.13
	39	1	20.20	5.13
	78	1	20.14	5.13
2DH5	0	1	17.52	1.12
	39	1	17.16	1.12
	78	1	17.14	1.12
3DH1	0	1	17.72	5.08
	39	1	17.37	5.08
	78	1	17.29	5.08

TEST RESULTS DATA**Number of Hopping Frequency**

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

MIMO <Ant. 4+3>

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
					Ant 4	Ant 3	Ant 4	Ant 3	Ant 4	Ant 3	Ant 4	Ant 3	
DH	1Mbps	2	0	2402	1.022	1.019	0.903	0.906	0.999	0.999	0.6811	0.6792	Pass
DH	1Mbps	2	39	2441	1.019	1.022	0.905	0.906	0.999	1.003	0.6792	0.6811	Pass
DH	1Mbps	2	78	2480	1.022	1.019	0.903	0.912	0.999	0.999	0.6811	0.6792	Pass
2DH	2Mbps	2	0	2402	1.303	1.298	1.184	1.175	0.999	0.999	0.8683	0.8654	Pass
2DH	2Mbps	2	39	2441	1.303	1.298	1.184	1.181	1.138	0.999	0.8683	0.8654	Pass
2DH	2Mbps	2	78	2480	1.303	1.298	1.181	1.181	1.003	0.999	0.8683	0.8654	Pass
3DH	3Mbps	2	0	2402	1.259	1.263	1.161	1.152	1.003	1.003	0.8393	0.8423	Pass
3DH	3Mbps	2	39	2441	1.259	1.263	1.161	1.158	0.999	1.003	0.8393	0.8423	Pass
3DH	3Mbps	2	78	2480	1.259	1.263	1.161	1.152	0.999	0.999	0.8393	0.8423	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
Nomal	79	106.67	2.90	0.31	0.4	Pass
AFH	20	53.33	2.90	0.15	0.4	Pass

TEST RESULTS DATA**Peak Power Table**

DH	CH.	NTX	Peak Power Ant 4 (dBm)	Peak Power Ant 3 (dBm)	Peak Power Total (dBm)	Power Limit (dBm)	Test Result
DH1	0	2	17.83	17.31	20.59	20.97	Pass
	39	2	17.69	17.26	20.49	20.97	Pass
	78	2	18.15	17.51	20.85	20.97	Pass
2DH1	0	2	17.55	17.08	20.33	20.97	Pass
	39	2	17.53	17.09	20.33	20.97	Pass
	78	2	17.45	17.14	20.31	20.97	Pass
3DH1	0	2	17.77	17.57	20.68	20.97	Pass
	39	2	17.52	17.35	20.45	20.97	Pass
	78	2	17.56	17.52	20.55	20.97	Pass

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

DH	CH.	NTX	Average Power Ant 4 (dBm)	Average Power Ant 3 (dBm)	Average Power Total (dBm)	Duty Factor (dB)
DH1	0	2	17.12	16.55	19.86	5.15
	39	2	16.75	16.35	19.57	5.15
	78	2	17.31	16.94	20.14	5.15
2DH1	0	2	14.94	14.44	17.71	5.05
	39	2	14.98	14.19	17.61	5.05
	78	2	14.63	14.27	17.46	5.05
3DH1	0	2	14.74	14.83	17.79	5.05
	39	2	14.45	14.21	17.34	5.05
	78	2	14.38	14.28	17.34	5.05

TEST RESULTS DATA**Number of Hopping Frequency**

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



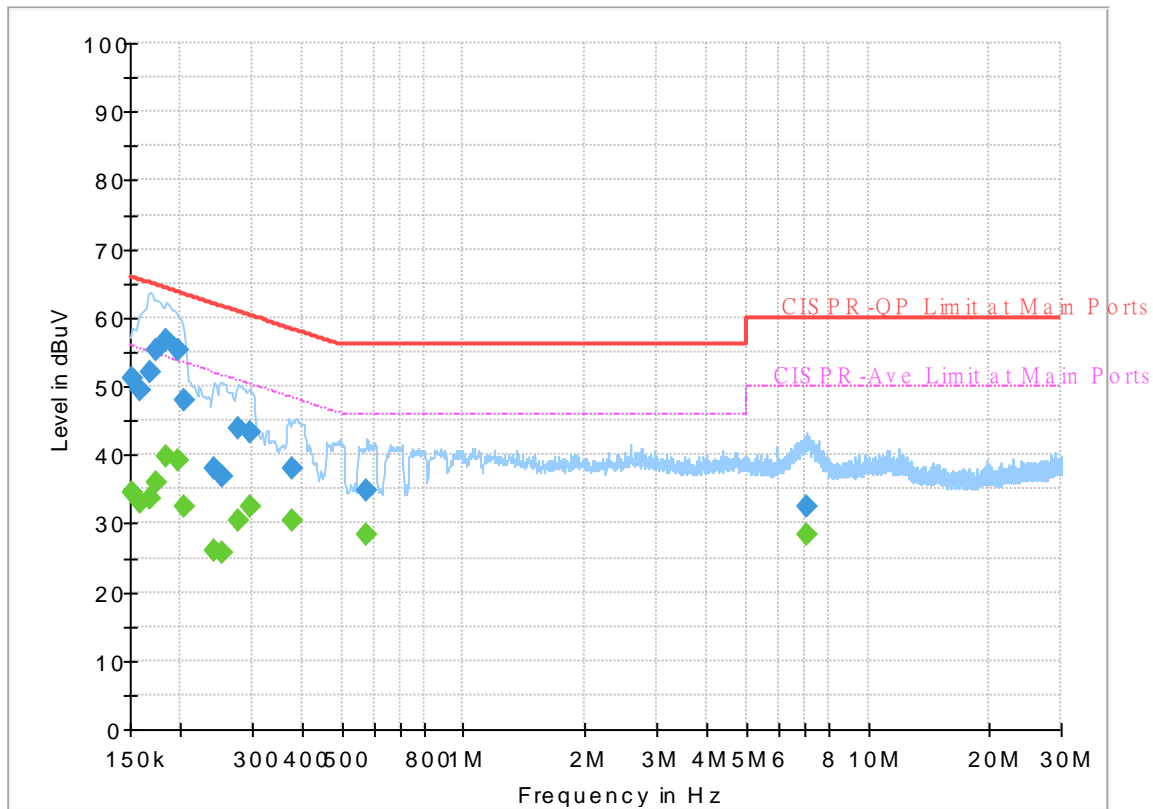
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	23~26°C
		Relative Humidity :	45~55%

EUT Information

Report NO : 161608-03
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



Final_Result

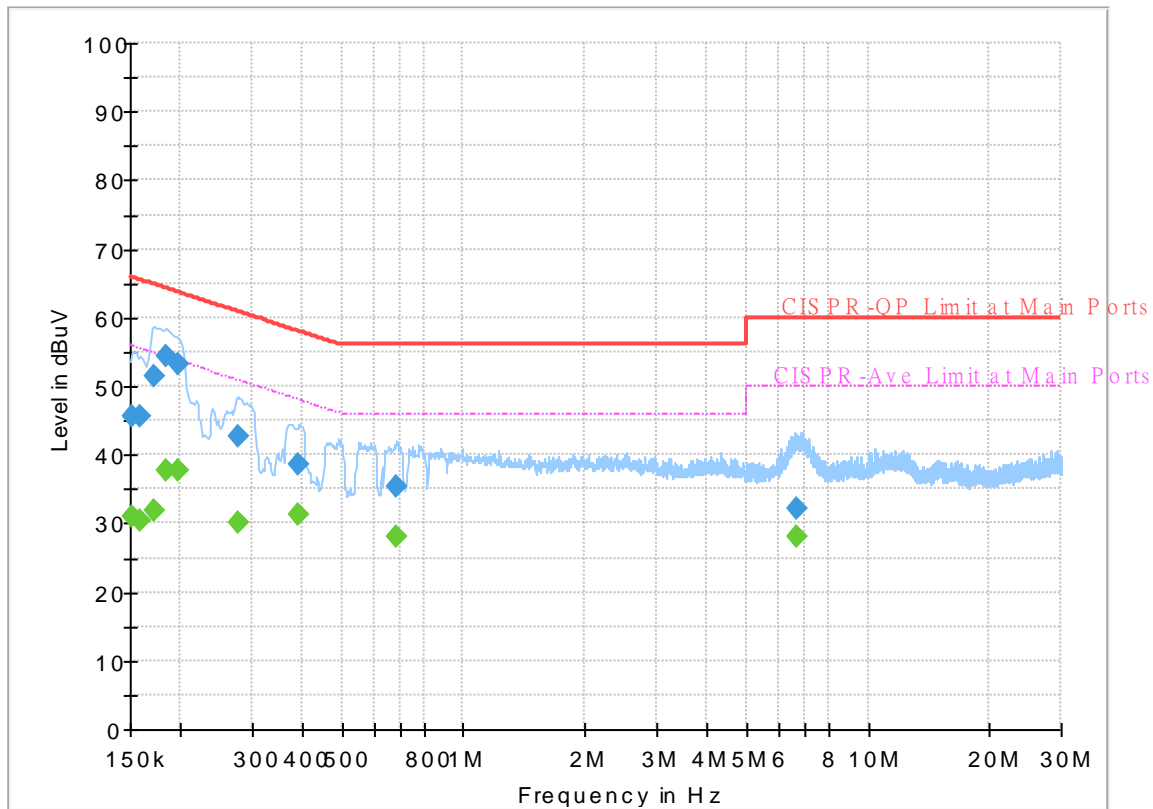
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	34.57	55.88	21.31	L1	OFF	19.7
0.152250	51.07	---	65.88	14.81	L1	OFF	19.7
0.159000	---	33.06	55.52	22.46	L1	OFF	19.7
0.159000	49.46	---	65.52	16.06	L1	OFF	19.7
0.168000	---	33.65	55.06	21.41	L1	OFF	19.7
0.168000	52.02	---	65.06	13.04	L1	OFF	19.7
0.174750	---	35.89	54.73	18.84	L1	OFF	19.7
0.174750	55.33	---	64.73	9.40	L1	OFF	19.7
0.183750	---	39.91	54.31	14.40	L1	OFF	19.7
0.183750	56.65	---	64.31	7.66	L1	OFF	19.7
0.197250	---	39.26	53.73	14.47	L1	OFF	19.7
0.197250	55.37	---	63.73	8.36	L1	OFF	19.7
0.204000	---	32.52	53.45	20.93	L1	OFF	19.7
0.204000	47.95	---	63.45	15.50	L1	OFF	19.7
0.242250	---	26.15	52.02	25.87	L1	OFF	19.7
0.242250	38.02	---	62.02	24.00	L1	OFF	19.7
0.253500	---	25.85	51.64	25.79	L1	OFF	19.7
0.253500	36.76	---	61.64	24.88	L1	OFF	19.7
0.278250	---	30.33	50.87	20.54	L1	OFF	19.7
0.278250	43.98	---	60.87	16.89	L1	OFF	19.7
0.296250	---	32.44	50.35	17.91	L1	OFF	19.7

0.296250	43.20	---	60.35	17.15	L1	OFF	19.7
0.379500	---	30.34	48.29	17.95	L1	OFF	19.7
0.379500	38.11	---	58.29	20.18	L1	OFF	19.7
0.577500	---	28.22	46.00	17.78	L1	OFF	19.9
0.577500	34.89	---	56.00	21.11	L1	OFF	19.9
7.035000	---	28.42	50.00	21.58	L1	OFF	20.1
7.035000	32.48	---	60.00	27.52	L1	OFF	20.1

EUT Information

Report NO : 161608-03
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	31.13	55.88	24.75	N	OFF	19.7
0.152250	45.70	---	65.88	20.18	N	OFF	19.7
0.159000	---	30.45	55.52	25.07	N	OFF	19.7
0.159000	45.51	---	65.52	20.01	N	OFF	19.7
0.172500	---	31.80	54.84	23.04	N	OFF	19.7
0.172500	51.32	---	64.84	13.52	N	OFF	19.7
0.183750	---	37.68	54.31	16.63	N	OFF	19.7
0.183750	54.51	---	64.31	9.80	N	OFF	19.7
0.197250	---	37.62	53.73	16.11	N	OFF	19.7
0.197250	53.26	---	63.73	10.47	N	OFF	19.7
0.276000	---	29.98	50.94	20.96	N	OFF	19.7
0.276000	42.78	---	60.94	18.16	N	OFF	19.7
0.390750	---	31.40	48.05	16.65	N	OFF	19.7
0.390750	38.59	---	58.05	19.46	N	OFF	19.7
0.685500	---	27.99	46.00	18.01	N	OFF	20.0
0.685500	35.35	---	56.00	20.65	N	OFF	20.0
6.666000	---	27.98	50.00	22.02	N	OFF	20.1
6.666000	32.16	---	60.00	27.84	N	OFF	20.1



Appendix C. Radiated Spurious Emission

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

<Ant. 4>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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		2389.065	39.03	-34.97	74	45.71	27.82	6.64	41.14	100	104	P	H	
		2389.065	14.27	-39.73	54	-	-	-	-	-	-	A	H	
	*	2402	107.55	-	-	114.24	27.79	6.66	41.14	100	104	P	H	
	*	2402	82.79	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2328.69	38.66	-35.34	74	45.31	27.94	6.54	41.13	380	209	P	V
			2328.69	13.9	-40.1	54	-	-	-	-	-	-	A	V
	*		2402	103.52	-	-	110.21	27.79	6.66	41.14	380	209	P	V
	*		2402	78.76	-	-	-	-	-	-	-	-	A	V
													V	
BT CH 39 2441MHz		2325.54	38.47	-35.53	74	45.1	27.95	6.54	41.12	100	117	P	H	
		2325.54	13.71	-40.29	54	-	-	-	-	-	-	A	H	
	*	2441	107.56	-	-	114.35	27.64	6.72	41.15	100	117	P	H	
	*	2441	82.8	-	-	-	-	-	-	-	-	A	H	
			2485.58	39.37	-34.63	74	46.15	27.6	6.79	41.17	100	117	P	H
			2485.58	14.61	-39.39	54	-	-	-	-	-	-	A	H
			2384.06	38.93	-35.07	74	45.61	27.83	6.63	41.14	400	206	P	V
			2384.06	14.17	-39.83	54	-	-	-	-	-	-	A	V
	*		2441	101.26	-	-	108.05	27.64	6.72	41.15	400	206	P	V
	*		2441	76.5	-	-	-	-	-	-	-	-	A	V
			2485.16	39.03	-34.97	74	45.81	27.6	6.79	41.17	400	206	P	V
			2485.16	14.27	-39.73	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	107.52	-	-	114.3	27.6	6.78	41.16	100	117	P	H
	*	2480	82.76	-	-	-	-	-	-	-	-	A	H
		2483.52	66.27	-7.73	74	73.05	27.6	6.79	41.17	100	117	P	H
		2483.52	41.51	-12.49	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	105.51	-	-	112.29	27.6	6.78	41.16	400	214	P	V
	*	2480	80.75	-	-	-	-	-	-	-	-	A	V
		2483.6	42.72	-31.28	74	49.5	27.6	6.79	41.17	400	214	P	V
		2483.6	17.96	-36.04	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



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

BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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	38.23	-35.77	74	55.57	31.38	10.13	58.85	-	-	P	H	
		4804	13.47	-40.53	54	-	-	-	-	-	-	A	H	
		10980	50.53	-23.47	74	56.09	40.56	14.74	60.86	-	-	P	H	
		10980	25.77	-28.23	54	-	-	-	-	-	-	A	H	
		14475	50.29	-23.71	74	55.29	41.33	16.85	63.18	-	-	P	H	
		14475	25.53	-28.47	54	-	-	-	-	-	-	A	H	
		18000	57.85	-16.15	74	47.74	48.4	18.95	57.24	-	-	P	H	
		18000	33.09	-20.91	54	-	-	-	-	-	-	A	H	
														H
														H
														H
														H
			4804	38.16	-35.84	74	55.5	31.38	10.13	58.85	-	-	P	V
			4804	13.4	-40.6	54	-	-	-	-	-	-	A	V
			10800	50.4	-23.6	74	56.44	40.2	14.65	60.89	-	-	P	V
			10800	25.64	-28.36	54	-	-	-	-	-	-	A	V
			14475	49.33	-24.67	74	54.33	41.33	16.85	63.18	-	-	P	V
			14475	24.57	-29.43	54	-	-	-	-	-	-	A	V
			18000	57.34	-16.66	74	47.23	48.4	18.95	57.24	-	-	P	V
			18000	32.58	-21.42	54	-	-	-	-	-	-	A	V
													V	
													V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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 39 2441MHz		4882	37.71	-36.29	74	55.08	31.33	10.21	58.91	-	-	P	H	
		4882	12.95	-41.05	54	-	-	-	-	-	-	A	H	
		7323	58.14	-15.86	74	67.77	36.35	12.43	58.41	100	30	P	H	
		7323	33.38	-20.62	54	-	-	-	-	100	30	A	H	
		10995	49.11	-24.89	74	54.63	40.59	14.75	60.86	-	-	P	H	
		10995	24.35	-29.65	54	-	-	-	-	-	-	A	H	
		14475	48.65	-25.35	74	53.65	41.33	16.85	63.18	-	-	P	H	
		14475	23.89	-30.11	54	-	-	-	-	-	-	A	H	
		18000	56.98	-17.02	74	46.87	48.4	18.95	57.24	-	-	P	H	
		18000	32.22	-21.78	54	-	-	-	-	-	-	A	H	
													H	
													H	
			4882	38.63	-35.37	74	56	31.33	10.21	58.91	-	-	P	V
			4882	13.87	-40.13	54	-	-	-	-	-	-	A	V
			7323	56.75	-17.25	74	66.38	36.35	12.43	58.41	100	20	P	V
			7323	31.99	-22.01	54	-	-	-	-	100	20	A	V
			10800	49.04	-24.96	74	55.08	40.2	14.65	60.89	-	-	P	V
			10800	24.28	-29.72	54	-	-	-	-	-	-	A	V
			14475	48.97	-25.03	74	53.97	41.33	16.85	63.18	-	-	P	V
			14475	24.21	-29.79	54	-	-	-	-	-	-	A	V
		18000	57.28	-16.72	74	47.17	48.4	18.95	57.24	-	-	P	V	
		18000	32.52	-21.48	54	-	-	-	-	-	-	A	V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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 78 2480MHz		4960	41.26	-32.74	74	58.52	31.44	10.28	58.98	-	-	P	H	
		4960	16.5	-37.5	54	-	-	-	-	-	-	A	H	
		7440	56.95	-17.05	74	66.31	36.36	12.48	58.2	-	-	P	H	
		7440	32.19	-21.81	54	-	-	-	-	-	-	A	H	
		10830	49.93	-24.07	74	55.88	40.26	14.67	60.88	-	-	P	H	
		10830	25.17	-28.83	54	-	-	-	-	-	-	A	H	
		14490	48.81	-25.19	74	53.75	41.37	16.86	63.17	-	-	P	H	
		14490	24.05	-29.95	54	-	-	-	-	-	-	A	H	
		18000	57.01	-16.99	74	46.9	48.4	18.95	57.24	-	-	P	H	
		18000	32.25	-21.75	54	-	-	-	-	-	-	A	H	
														H
														H
			4960	39.23	-34.77	74	56.49	31.44	10.28	58.98	-	-	P	V
			4960	14.47	-39.53	54	-	-	-	-	-	-	A	V
			7440	56.38	-17.62	74	65.74	36.36	12.48	58.2	-	-	P	V
			7440	31.62	-22.38	54	-	-	-	-	-	-	A	V
			11055	49.84	-24.16	74	55.49	40.43	14.78	60.86	-	-	P	V
			11055	25.08	-28.92	54	-	-	-	-	-	-	A	V
			14475	48.26	-25.74	74	53.26	41.33	16.85	63.18	-	-	P	V
			14475	23.5	-30.5	54	-	-	-	-	-	-	A	V
		17985	56.5	-17.5	74	46.73	48.1	18.94	57.27	-	-	P	V	
		17985	31.74	-22.26	54	-	-	-	-	-	-	A	V	
													V	
													V	

Remark

- No other spurious found.
- All results are PASS against Peak and Average limit line.
- The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
- The emission level close to 18GHz is checked that the average emission level is noise floor only.



Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT SHF		21440	39.84	-34.16	74	59.84	37.95	-3.25	54.7	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			21592	41.55	-32.45	74	61.43	38.07	-3.25	54.7	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	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.												



<Ant. 3>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
BT CH00 2402MHz		2379.825	51.93	-22.07	74	42.36	27.84	16.55	34.82	100	221	P	H	
		2379.825	27.17	-26.83	54	-	-	-	-	-	-	A	H	
	*	2402	115.46	-	-	105.92	27.79	16.58	34.83	100	221	P	H	
	*	2402	90.7	-	-	-	-	-	-	-	-	A	H	
													H	
													H	
			2348.745	52.31	-21.69	74	42.73	27.9	16.5	34.82	250	333	P	V
			2348.745	27.55	-26.45	54	-	-	-	-	-	-	A	V
	*		2402	107.92	-	-	98.38	27.79	16.58	34.83	250	333	P	V
	*		2402	83.16	-	-	-	-	-	-	-	-	A	V
													V	
													V	
BT CH 39 2441MHz		2311.12	52.54	-21.46	74	42.94	27.98	16.43	34.81	100	210	P	H	
		2311.12	27.78	-26.22	54	-	-	-	-	-	-	A	H	
	*	2441	114.36	-	-	104.92	27.64	16.64	34.84	100	210	P	H	
	*	2441	89.6	-	-	-	-	-	-	-	-	A	H	
			2488.24	52.14	-21.86	74	42.67	27.6	16.72	34.85	100	210	P	H
			2488.24	27.38	-26.62	54	-	-	-	-	-	-	A	H
			2371.6	52.44	-21.56	74	42.87	27.86	16.53	34.82	250	228	P	V
			2371.6	27.68	-26.32	54	-	-	-	-	-	-	A	V
	*		2441	104.53	-	-	95.09	27.64	16.64	34.84	250	228	P	V
	*		2441	79.77	-	-	-	-	-	-	-	-	A	V
			2497.06	52.42	-21.58	74	42.94	27.6	16.73	34.85	250	228	P	V
			2497.06	27.66	-26.34	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	115.31	-	-	105.86	27.6	16.7	34.85	100	221	P	H
	*	2480	90.55	-	-	-	-	-	-	-	-	A	H
		2483.72	54.6	-19.4	74	45.14	27.6	16.71	34.85	100	221	P	H
		2483.72	29.84	-24.16	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	103.83	-	-	94.38	27.6	16.7	34.85	250	231	P	V
	*	2480	79.07	-	-	-	-	-	-	-	-	A	V
		2492.6	52.3	-21.7	74	42.83	27.6	16.72	34.85	250	231	P	V
		2492.6	27.54	-26.46	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



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

BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	38.15	-35.85	74	55.49	31.38	10.13	58.85	-	-	P	H	
		4804	13.39	-40.61	54	-	-	-	-	-	-	A	H	
		11025	50.3	-23.7	74	55.87	40.52	14.77	60.86	-	-	P	H	
		11025	25.54	-28.46	54	-	-	-	-	-	-	A	H	
		14475	49.2	-24.8	74	54.2	41.33	16.85	63.18	-	-	P	H	
		14475	24.44	-29.56	54	-	-	-	-	-	-	A	H	
		18000	57.84	-16.16	74	47.73	48.4	18.95	57.24	-	-	P	H	
		18000	33.08	-20.92	54	-	-	-	-	-	-	A	H	
														H
														H
														H
														H
			4804	38.04	-35.96	74	55.38	31.38	10.13	58.85	-	-	P	V
			4804	13.28	-40.72	54	-	-	-	-	-	-	A	V
			11070	50	-24	74	55.68	40.39	14.79	60.86	-	-	P	V
			11070	25.24	-28.76	54	-	-	-	-	-	-	A	V
			14475	49.41	-24.59	74	54.41	41.33	16.85	63.18	-	-	P	V
			14475	24.65	-29.35	54	-	-	-	-	-	-	A	V
			18000	56.99	-17.01	74	46.88	48.4	18.95	57.24	-	-	P	V
			18000	32.23	-21.77	54	-	-	-	-	-	-	A	V
													V	
													V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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 39 2441MHz		4882	36.94	-37.06	74	54.31	31.33	10.21	58.91	-	-	P	H	
		4882	12.18	-41.82	54	-	-	-	-	-	-	A	H	
		7323	42.29	-31.71	74	51.92	36.35	12.43	58.41	-	-	P	H	
		7323	17.53	-36.47	54	-	-	-	-	-	-	A	H	
		11385	49.84	-24.16	74	55.59	40.17	14.95	60.87	-	-	P	H	
		11385	25.08	-28.92	54	-	-	-	-	-	-	A	H	
		14475	48.7	-25.3	74	53.7	41.33	16.85	63.18	-	-	P	H	
		14475	23.94	-30.06	54	-	-	-	-	-	-	A	H	
		17970	56.57	-17.43	74	47.15	47.8	18.93	57.31	-	-	P	H	
		17970	31.81	-22.19	54	-	-	-	-	-	-	A	H	
													H	
													H	
			4882	37.46	-36.54	74	54.83	31.33	10.21	58.91	-	-	P	V
			4882	12.7	-41.3	54	-	-	-	-	-	-	A	V
			7323	42.45	-31.55	74	52.08	36.35	12.43	58.41	-	-	P	V
			7323	17.69	-36.31	54	-	-	-	-	-	-	A	V
			10995	49.31	-24.69	74	54.83	40.59	14.75	60.86	-	-	P	V
			10995	24.55	-29.45	54	-	-	-	-	-	-	A	V
			14475	48.77	-25.23	74	53.77	41.33	16.85	63.18	-	-	P	V
			14475	24.01	-29.99	54	-	-	-	-	-	-	A	V
		18000	57.08	-16.92	74	46.97	48.4	18.95	57.24	-	-	P	V	
		18000	32.32	-21.68	54	-	-	-	-	-	-	A	V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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 78 2480MHz		4960	41.13	-32.87	74	58.39	31.44	10.28	58.98	-	-	P	H	
		4960	16.37	-37.63	54	-	-	-	-	-	-	A	H	
		7440	46.28	-27.72	74	55.64	36.36	12.48	58.2	-	-	P	H	
		7440	21.52	-32.48	54	-	-	-	-	-	-	A	H	
		11340	50.68	-23.32	74	56.54	40.08	14.93	60.87	-	-	P	H	
		11340	25.92	-28.08	54	-	-	-	-	-	-	A	H	
		14475	49.87	-24.13	74	54.87	41.33	16.85	63.18	-	-	P	H	
		14475	25.11	-28.89	54	-	-	-	-	-	-	A	H	
		18000	59.24	-14.76	74	49.13	48.4	18.95	57.24	-	-	P	H	
		18000	34.48	-19.52	54	-	-	-	-	-	-	A	H	
														H
														H
			4960	40.27	-33.73	74	57.53	31.44	10.28	58.98	-	-	P	V
			4960	15.51	-38.49	54	-	-	-	-	-	-	A	V
			7440	43.84	-30.16	74	53.2	36.36	12.48	58.2	-	-	P	V
			7440	19.08	-34.92	54	-	-	-	-	-	-	A	V
			10875	50.2	-23.8	74	56.04	40.35	14.69	60.88	-	-	P	V
			10875	25.44	-28.56	54	-	-	-	-	-	-	A	V
			14490	50.74	-23.26	74	55.68	41.37	16.86	63.17	-	-	P	V
			14490	25.98	-28.02	54	-	-	-	-	-	-	A	V
		18000	57.69	-16.31	74	47.58	48.4	18.95	57.24	-	-	P	V	
		18000	32.93	-21.07	54	-	-	-	-	-	-	A	V	
													V	
													V	

Remark

- No other spurious found.
- All results are PASS against Peak and Average limit line.
- The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
- The emission level close to 18GHz is checked that the average emission level is noise floor only.



Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT SHF		22784	40	-34	74	58.95	38.53	-3.21	54.27	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			23328	41.3	-32.7	74	59.52	38.87	-3.06	54.03	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	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.												



MIMO <Ant. 4+3>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
BT CH00 2402MHz		2337.615	38.95	-35.05	74	45.6	27.92	6.56	41.13	100	211	P	H	
		2337.615	14.19	-39.81	54	-	-	-	-	-	-	A	H	
	*	2402	103.17	-	-	109.86	27.79	6.66	41.14	100	211	P	H	
	*	2402	78.41	-	-	-	-	-	-	-	-	A	H	
													H	
													H	
			2348.43	39.62	-34.38	74	46.28	27.9	6.57	41.13	376	290	P	V
			2348.43	14.86	-39.14	54	-	-	-	-	-	-	A	V
	*		2402	98	-	-	104.69	27.79	6.66	41.14	376	290	P	V
	*		2402	73.24	-	-	-	-	-	-	-	-	A	V
													V	
													V	
BT CH 39 2441MHz		2348.64	38.13	-35.87	74	44.78	27.9	6.58	41.13	100	210	P	H	
		2348.64	13.37	-40.63	54	-	-	-	-	-	-	A	H	
	*	2441	104.99	-	-	111.78	27.64	6.72	41.15	100	210	P	H	
	*	2441	80.23	-	-	-	-	-	-	-	-	A	H	
			2486.49	38.74	-35.26	74	45.52	27.6	6.79	41.17	100	210	P	H
			2486.49	13.98	-40.02	54	-	-	-	-	-	-	A	H
			2380.7	39.77	-34.23	74	46.44	27.84	6.63	41.14	364	290	P	V
			2380.7	15.01	-38.99	54	-	-	-	-	-	-	A	V
	*		2441	99.06	-	-	105.85	27.64	6.72	41.15	364	290	P	V
	*		2441	74.3	-	-	-	-	-	-	-	-	A	V
			2484.53	38.76	-35.24	74	45.54	27.6	6.79	41.17	364	290	P	V
		2484.53	14	-40	54	-	-	-	-	-	-	A	V	



BT CH 78 2480MHz	*	2480	103.8	-	-	110.58	27.6	6.78	41.16	100	211	P	H
	*	2480	79.04	-	-	-	-	-	-	-	-	A	H
		2483.6	45.32	-28.68	74	52.1	27.6	6.79	41.17	100	211	P	H
		2483.6	20.56	-33.44	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	99.53	-	-	106.31	27.6	6.78	41.16	400	294	P	V
	*	2480	74.77	-	-	-	-	-	-	-	-	A	V
		2483.52	42.6	-31.4	74	49.38	27.6	6.79	41.17	400	294	P	V
		2483.52	17.84	-36.16	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. 												



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

BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (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	36.52	-37.48	74	53.86	31.38	10.13	58.85	-	-	P	H	
		4804	11.73	-42.27	54	-	-	-	-	-	-	A	H	
		11055	49.82	-24.18	74	55.47	40.43	14.78	60.86	-	-	P	H	
		11055	25.03	-28.97	54	-	-	-	-	-	-	A	H	
		14475	48.18	-25.82	74	53.18	41.33	16.85	63.18	-	-	P	H	
		14475	23.39	-30.61	54	-	-	-	-	-	-	A	H	
		18000	55.93	-18.07	74	45.82	48.4	18.95	57.24	-	-	P	H	
		18000	31.14	-22.86	54	-	-	-	-	-	-	A	H	
														H
														H
														H
														H
			4804	36.14	-37.86	74	53.48	31.38	10.13	58.85	-	-	P	V
			4804	11.35	-42.65	54	-	-	-	-	-	-	A	V
			10875	49.05	-24.95	74	54.89	40.35	14.69	60.88	-	-	P	V
			10875	24.26	-29.74	54	-	-	-	-	-	-	A	V
			14505	48.12	-25.88	74	53.02	41.4	16.87	63.17	-	-	P	V
			14505	23.33	-30.67	54	-	-	-	-	-	-	A	V
			18000	56.27	-17.73	74	46.16	48.4	18.95	57.24	-	-	P	V
			18000	31.48	-22.52	54	-	-	-	-	-	-	A	V
													V	
													V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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 39 2441MHz		4882	36.29	-37.71	74	53.66	31.33	10.21	58.91	-	-	P	H	
		4882	11.5	-42.5	54	-	-	-	-	-	-	A	H	
		7323	51.52	-22.48	74	61.15	36.35	12.43	58.41	-	-	P	H	
		7323	26.73	-27.27	54	-	-	-	-	-	-	A	H	
		10995	48.91	-25.09	74	54.43	40.59	14.75	60.86	-	-	P	H	
		10995	24.12	-29.88	54	-	-	-	-	-	-	A	H	
		14490	48.17	-25.83	74	53.11	41.37	16.86	63.17	-	-	P	H	
		14490	23.38	-30.62	54	-	-	-	-	-	-	A	H	
		18000	55.95	-18.05	74	45.84	48.4	18.95	57.24	-	-	P	H	
		18000	31.16	-22.84	54	-	-	-	-	-	-	A	H	
													H	
													H	
			4882	36.08	-37.92	74	53.45	31.33	10.21	58.91	-	-	P	V
			4882	11.29	-42.71	54	-	-	-	-	-	-	A	V
			7323	54.81	-19.19	74	64.44	36.35	12.43	58.41	-	-	P	V
			7323	30.02	-23.98	54	-	-	-	-	-	-	A	V
			11100	48.57	-25.43	74	54.32	40.3	14.81	60.86	-	-	P	V
			11100	23.78	-30.22	54	-	-	-	-	-	-	A	V
			14490	49.47	-24.53	74	54.41	41.37	16.86	63.17	-	-	P	V
			14490	24.68	-29.32	54	-	-	-	-	-	-	A	V
		18000	56.6	-17.4	74	46.49	48.4	18.95	57.24	-	-	P	V	
		18000	31.81	-22.19	54	-	-	-	-	-	-	A	V	
													V	
													V	



BT	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (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 78 2480MHz		4960	38.11	-35.89	74	55.37	31.44	10.28	58.98	-	-	P	H	
		4960	13.32	-40.68	54	-	-	-	-	-	-	A	H	
		7440	51.49	-22.51	74	60.85	36.36	12.48	58.2	-	-	P	H	
		7440	26.7	-27.3	54	-	-	-	-	-	-	A	H	
		11040	49.19	-24.81	74	54.79	40.48	14.78	60.86	-	-	P	H	
		11040	24.4	-29.6	54	-	-	-	-	-	-	A	H	
		14490	49.06	-24.94	74	54	41.37	16.86	63.17	-	-	P	H	
		14490	24.27	-29.73	54	-	-	-	-	-	-	A	H	
		18000	57.05	-16.95	74	46.94	48.4	18.95	57.24	-	-	P	H	
		18000	32.26	-21.74	54	-	-	-	-	-	-	A	H	
														H
														H
			4960	36.25	-37.75	74	53.51	31.44	10.28	58.98	-	-	P	V
			4960	11.46	-42.54	54	-	-	-	-	-	-	A	V
			7440	53.88	-20.12	74	63.24	36.36	12.48	58.2	-	-	P	V
			7440	29.09	-24.91	54	-	-	-	-	-	-	A	V
			10935	48.97	-25.03	74	54.65	40.47	14.72	60.87	-	-	P	V
			10935	24.18	-29.82	54	-	-	-	-	-	-	A	V
			14490	48.09	-25.91	74	53.03	41.37	16.86	63.17	-	-	P	V
			14490	23.3	-30.7	54	-	-	-	-	-	-	A	V
		17985	56.69	-17.31	74	46.92	48.1	18.94	57.27	-	-	P	V	
		17985	31.9	-22.1	54	-	-	-	-	-	-	A	V	
													V	
													V	

Remark

- No other spurious found.
- All results are PASS against Peak and Average limit line.
- The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.
- The emission level close to 18GHz is checked that the average emission level is noise floor only.



Emission above 18GHz

2.4GHz BT (SHF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT SHF		21664	40.92	-33.08	74	60.75	38.13	-3.26	54.7	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
			22392	40.18	-33.82	74	59.66	38.34	-3.28	54.54	-	-	P
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	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	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz BT LF		30	21.94	-18.06	40	29.23	24.59	0.61	32.49	-	-	P	H	
		95.96	30.2	-13.3	43.5	45.94	15.45	1.29	32.48	-	-	P	H	
		127.97	23.06	-20.44	43.5	36.51	17.51	1.57	32.53	-	-	P	H	
		175.5	24.39	-19.11	43.5	39.89	15.17	1.81	32.48	-	-	P	H	
		213.33	24.02	-19.48	43.5	39.43	15	2.02	32.43	-	-	P	H	
		716.76	31.82	-14.18	46	33.95	26.71	3.61	32.45	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
			34.85	32.32	-7.68	40	41.98	22.21	0.67	32.54	-	-	P	V
			67.83	24.86	-15.14	40	44.26	12.04	1.1	32.54	-	-	P	V
			95.96	23.95	-19.55	43.5	39.69	15.45	1.29	32.48	-	-	P	V
			174.53	21.22	-22.28	43.5	36.65	15.24	1.82	32.49	-	-	P	V
			562.53	26.61	-19.39	46	29.85	26.11	3.24	32.59	-	-	P	V
			872.93	31.45	-14.55	46	30.15	29.02	4.05	31.77	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line. 3. The emission level is with at least 6 dB margin against limit line, the position is marked as "-".													



Note symbol

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



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

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	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 @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

Both peak measured complies with the limit line, so test result is “PASS”.



Appendix D. Radiated Spurious Emission Plots

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

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 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_SC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

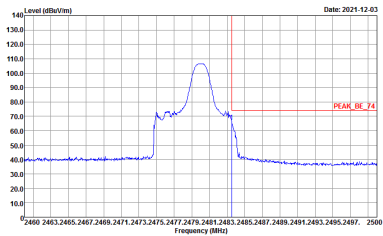
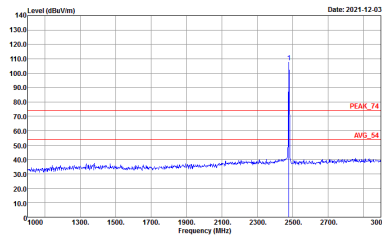


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</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 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Horizontal	Fundamental
Peak	 <p>Date: 2021-12-03</p> <p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2021-12-03</p> <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

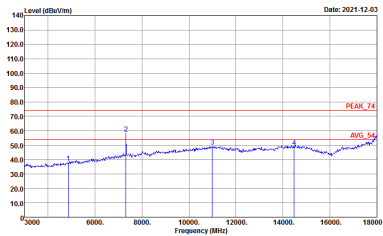
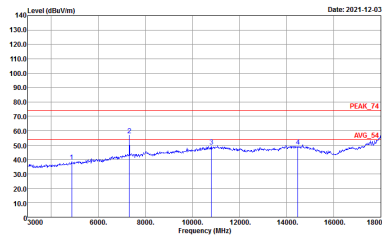


2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
4	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 VERTICAL Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
4	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
4	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>



Emission above 18GHz

2.4GHz BT (SHF @ 1m)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
4	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH16-HY Condition : PEAK_74 1m SHF HORN_00991_21051 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH16-HY Condition : PEAK_74 1m SHF HORN_00991_21051 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
3	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
3	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_SC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
3	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
3	Vertical	Fundamental
Peak		
Peak		Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
3	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

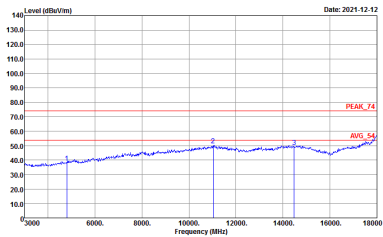
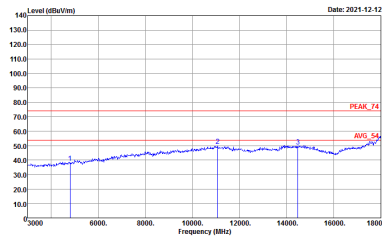


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
3	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
3	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 VERTICAL Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
3	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
3	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>



Emission above 18GHz

2.4GHz BT (SHF @ 1m)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
3	Horizontal	Vertical
Peak Avg.		



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4+3	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4+3	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_SC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

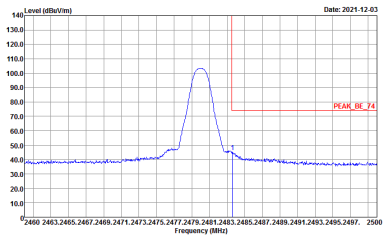
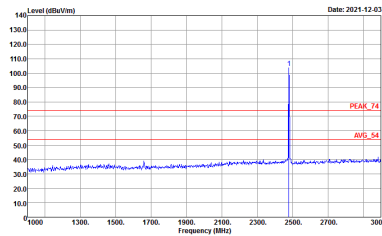


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4+3	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4+3	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4+3	Horizontal	Fundamental
Peak	 <p>Date: 2021-12-03</p> <p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	 <p>Date: 2021-12-03</p> <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4+3	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BC_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>

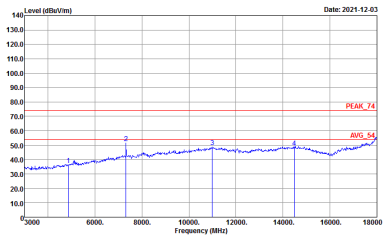
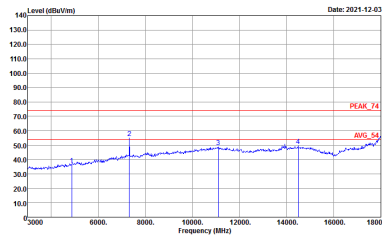


2.4GHz 2400~2483.5MHz

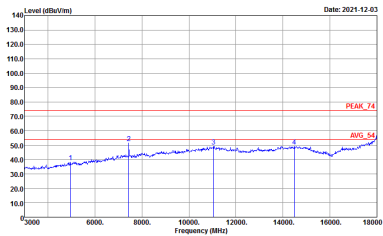
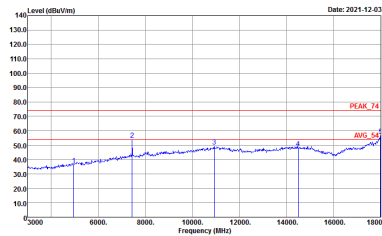
BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
4+3	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH15-HY Condition : PEAK_74 3m 91200_1620_20211025 VERTICAL Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
4+3	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>

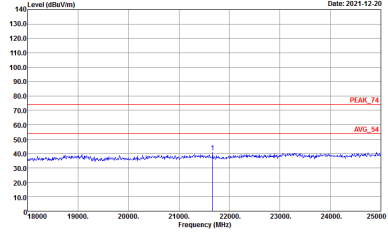
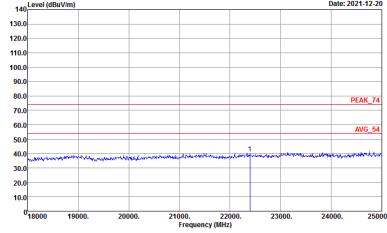


BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
4+3	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_74 3m 9120D_1620_20211025 VERTICAL Detector : Peak</p>



Emission above 18GHz

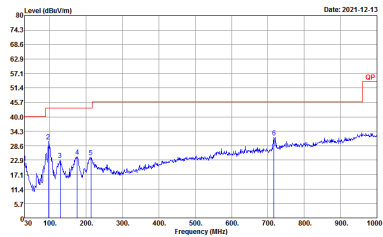
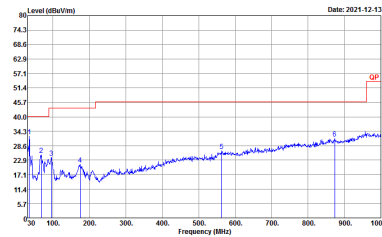
2.4GHz BT (SHF @ 1m)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
4+3	Horizontal	Vertical
Peak Avg.	 <p>Site : 03CH16-HY Condition : PEAK_74 1m SHF HORN_00991_21051 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH16-HY Condition : PEAK_74 1m SHF HORN_00991_21051 VERTICAL Detector : Peak</p>



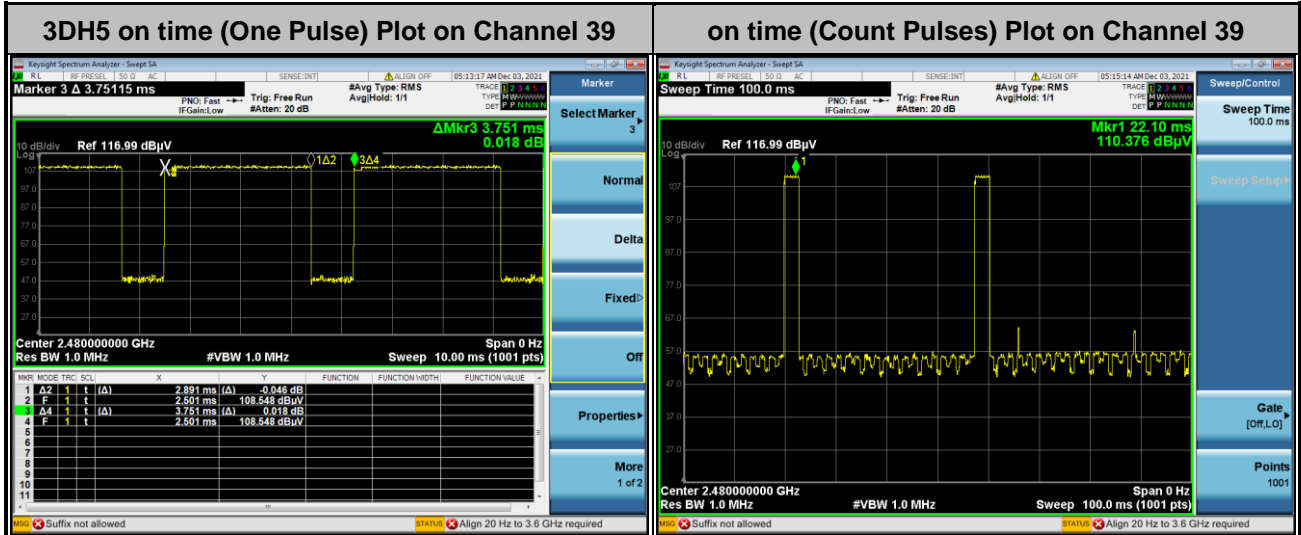
Emission below 1GHz

2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
4+3	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20210208 HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH15-HY Condition : QP 3m BIL06_41912_20210208 VERTICAL Detector : Peak</p>

Appendix E. Duty Cycle Plots

<Ant. 4>



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.89 / 100 = 5.78 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.76 \text{ dB}$
3. **3DH5** 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:

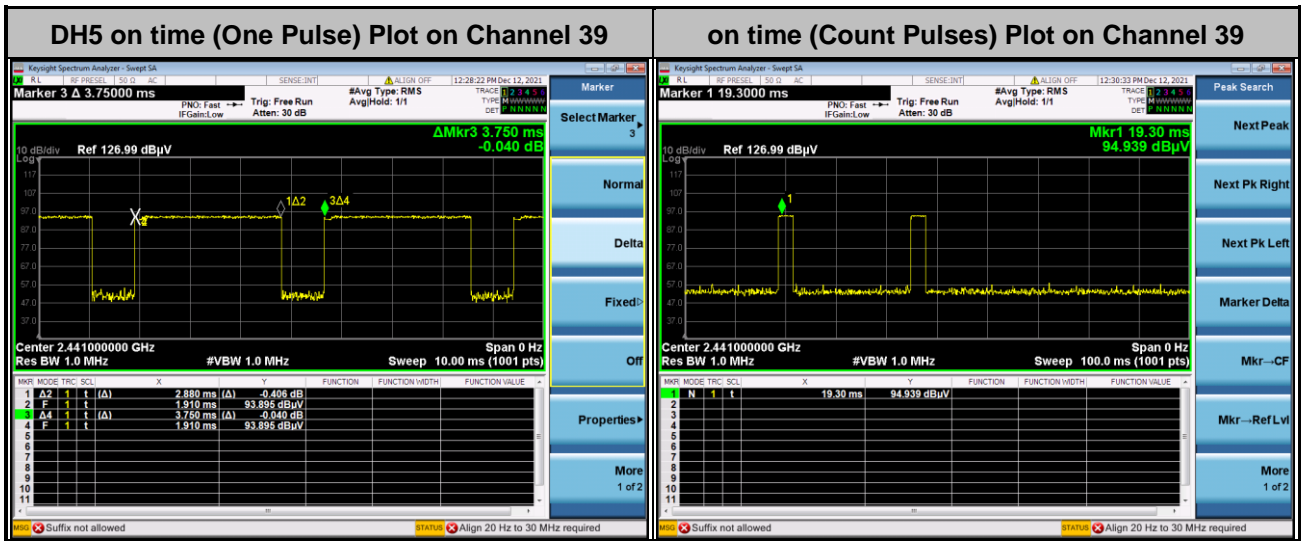
$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

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

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



<Ant. 3>



Note:

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 ms / 57.8 ms] = 2 hops

Thus, the maximum possible ON time:

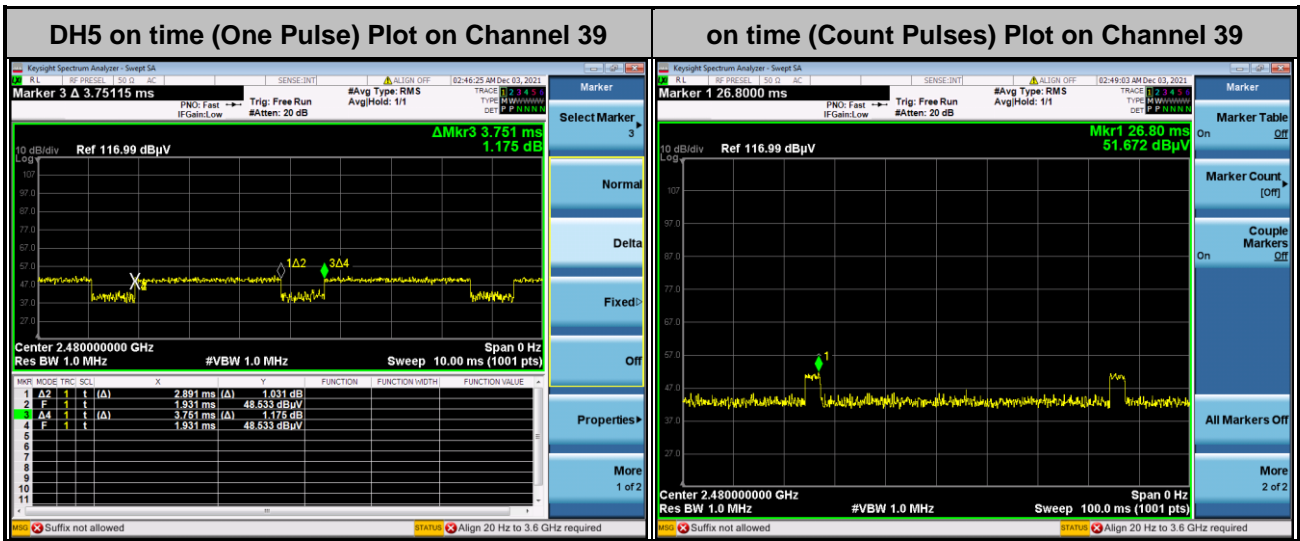
$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

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

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



MIMO <Ant. 4+3>



Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 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

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

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 ms / 57.6 ms] = 2 hops

Thus, the maximum possible ON time:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

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

$$20 \times \log(5.76 \text{ ms}/100 \text{ ms}) = -24.79 \text{ dB}$$

————THE END————