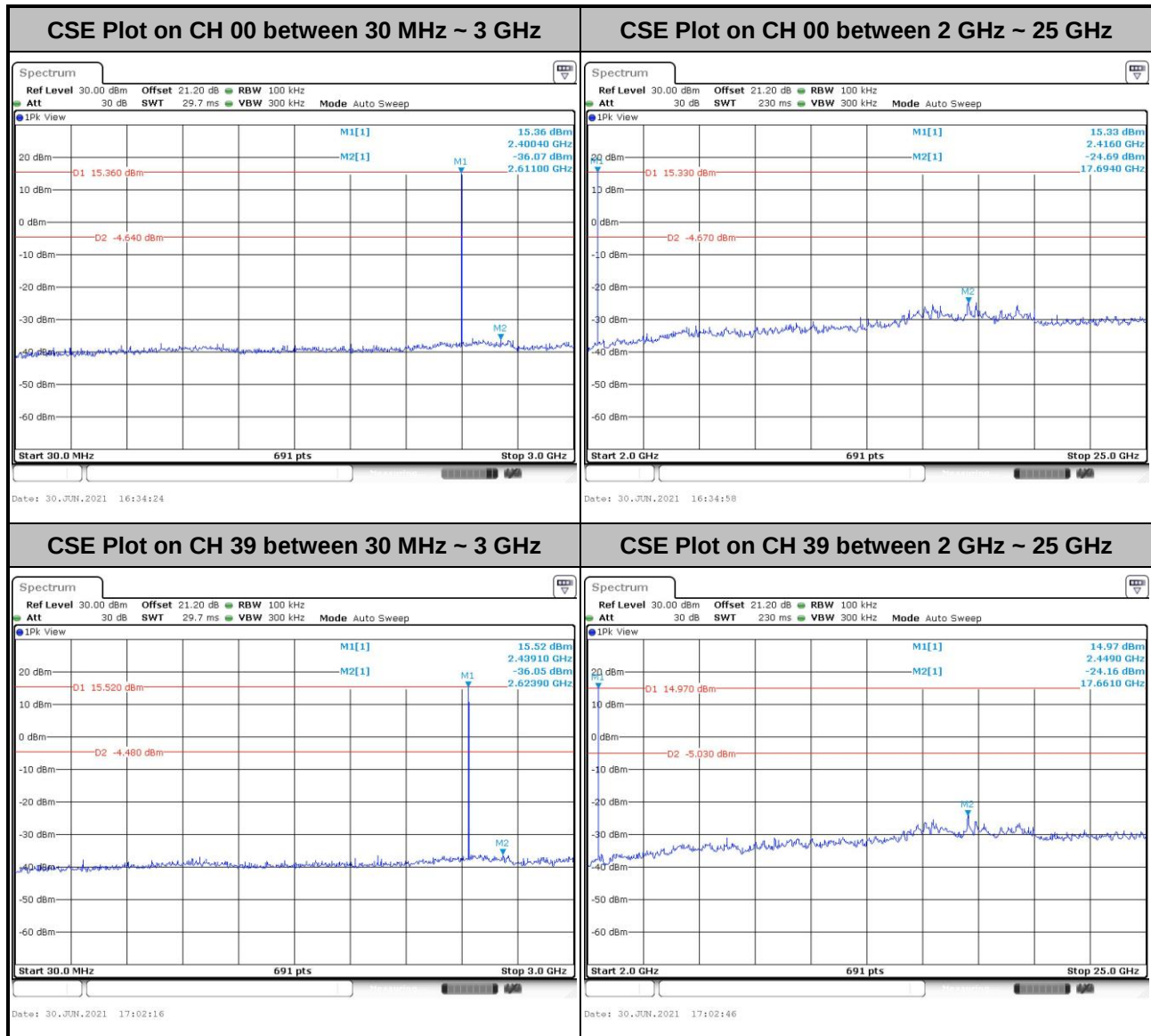
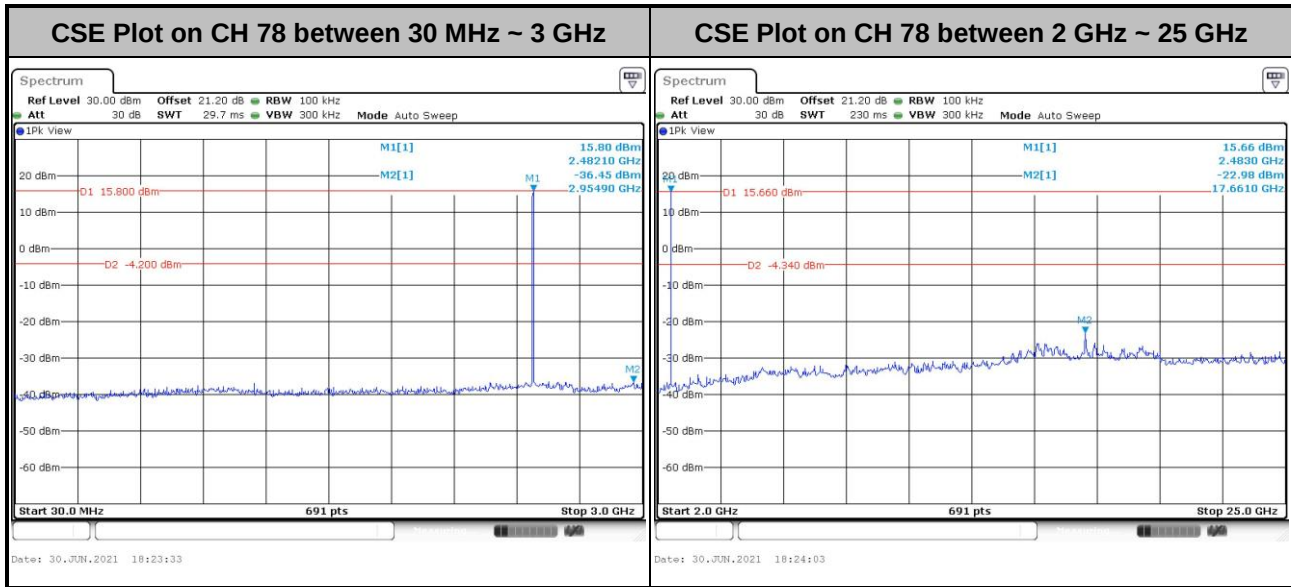




MIMO <Ant. 4>

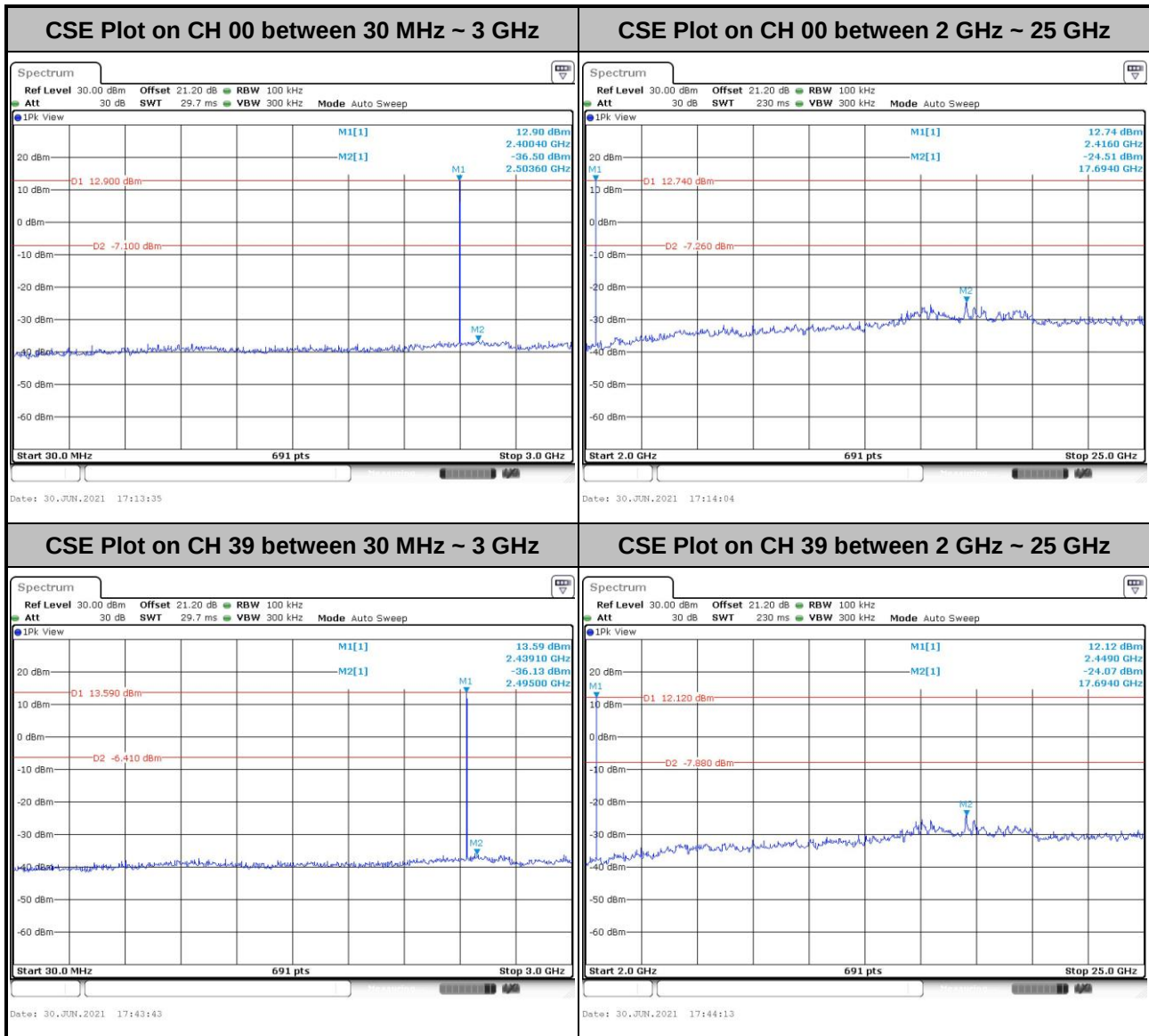
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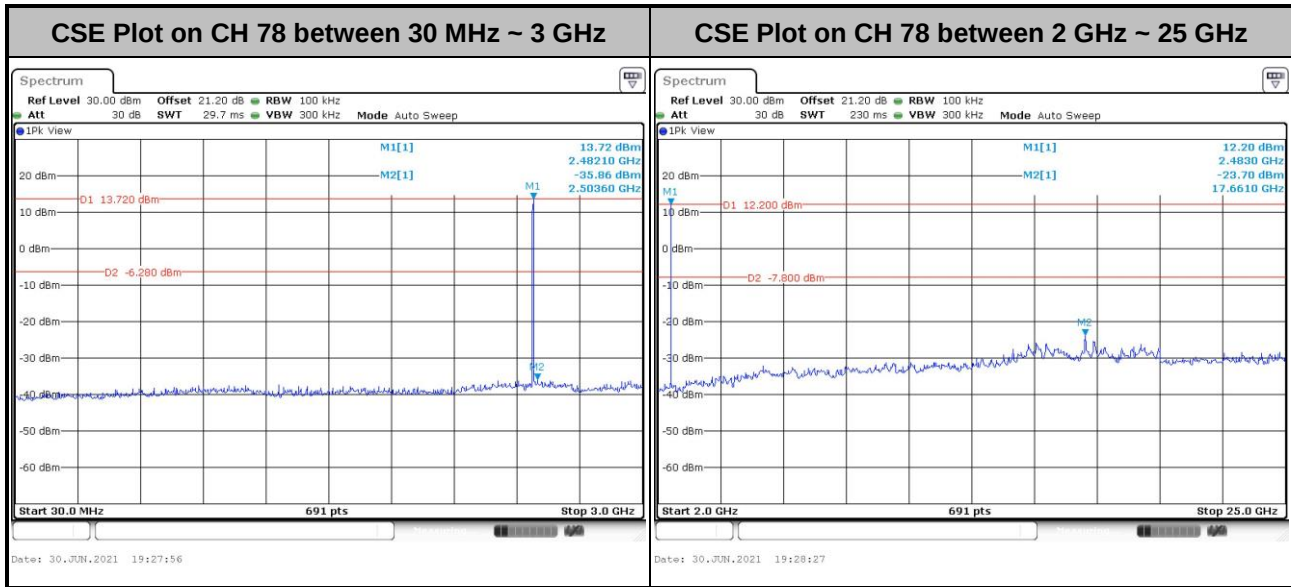






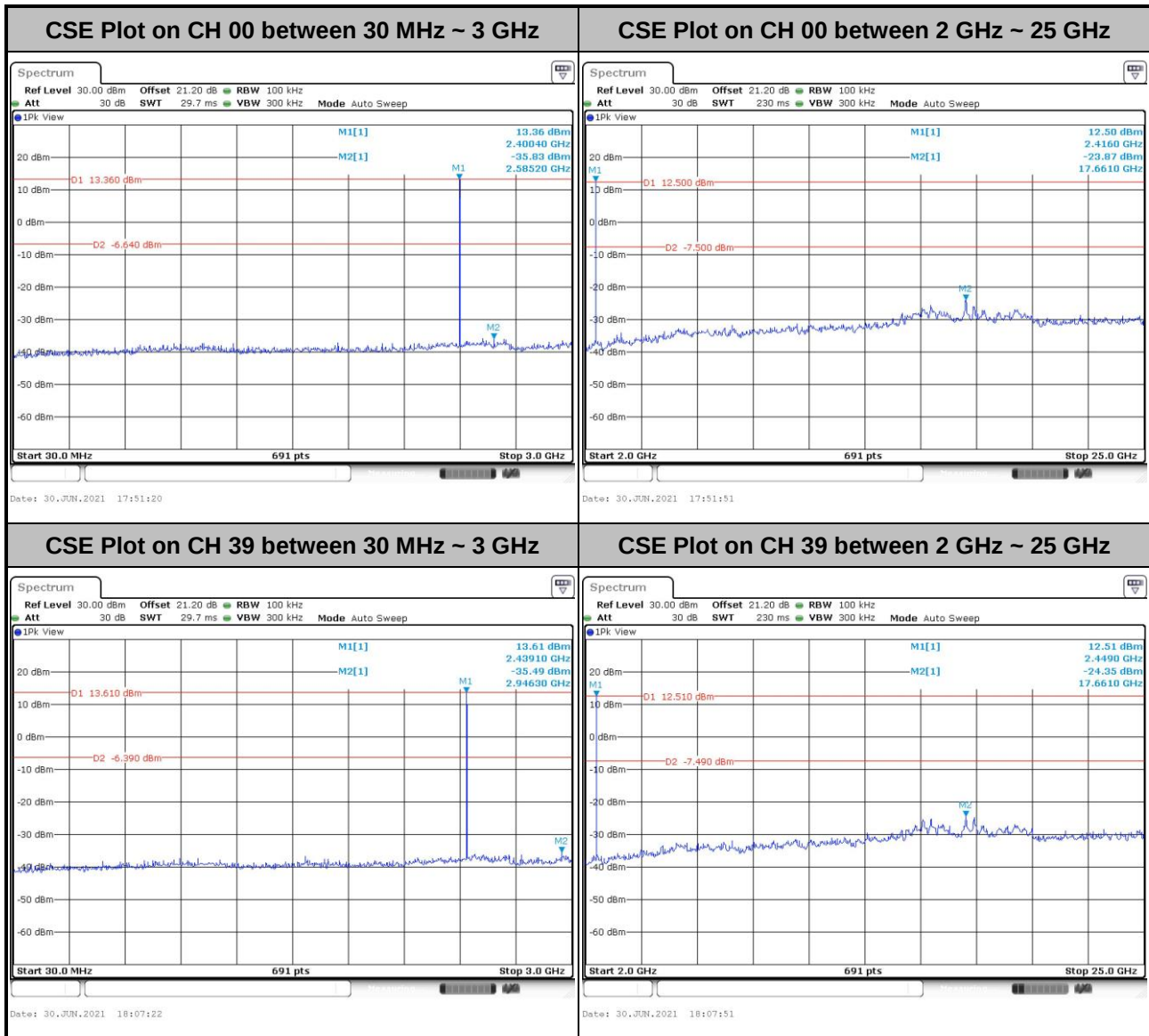
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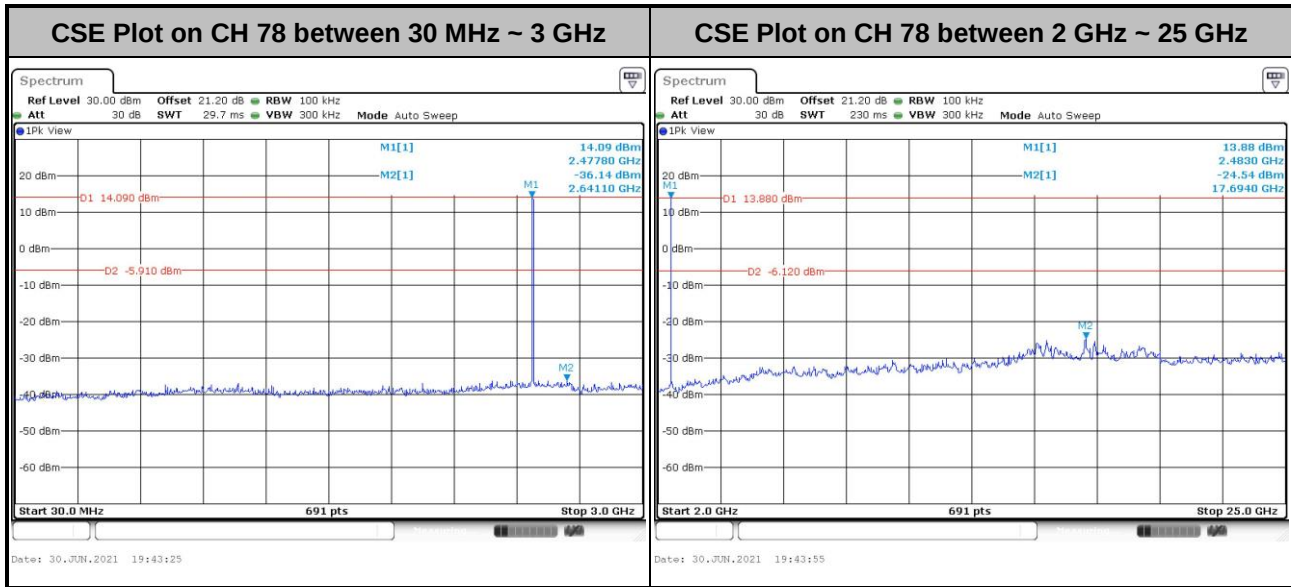






<3Mbps>

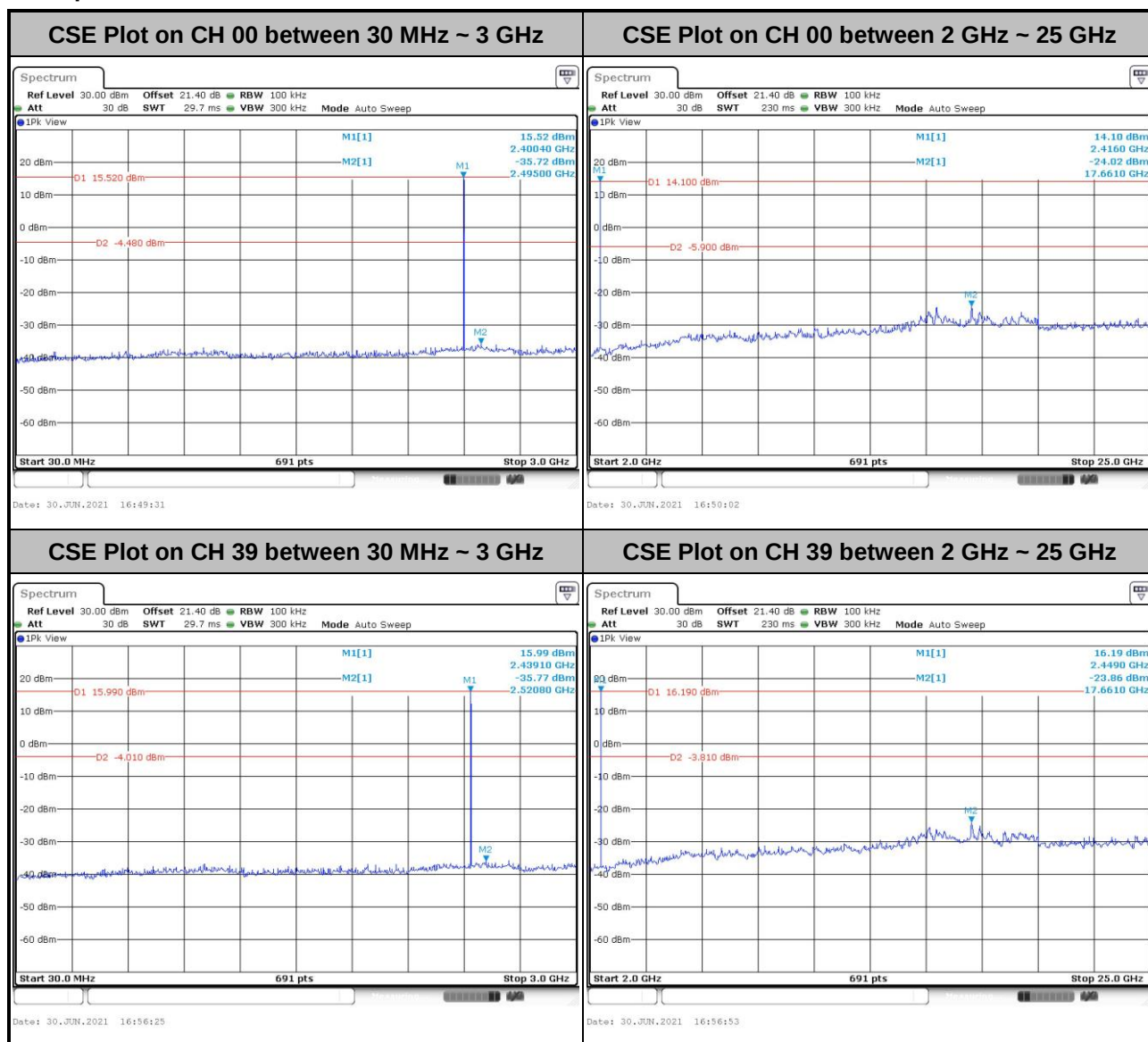


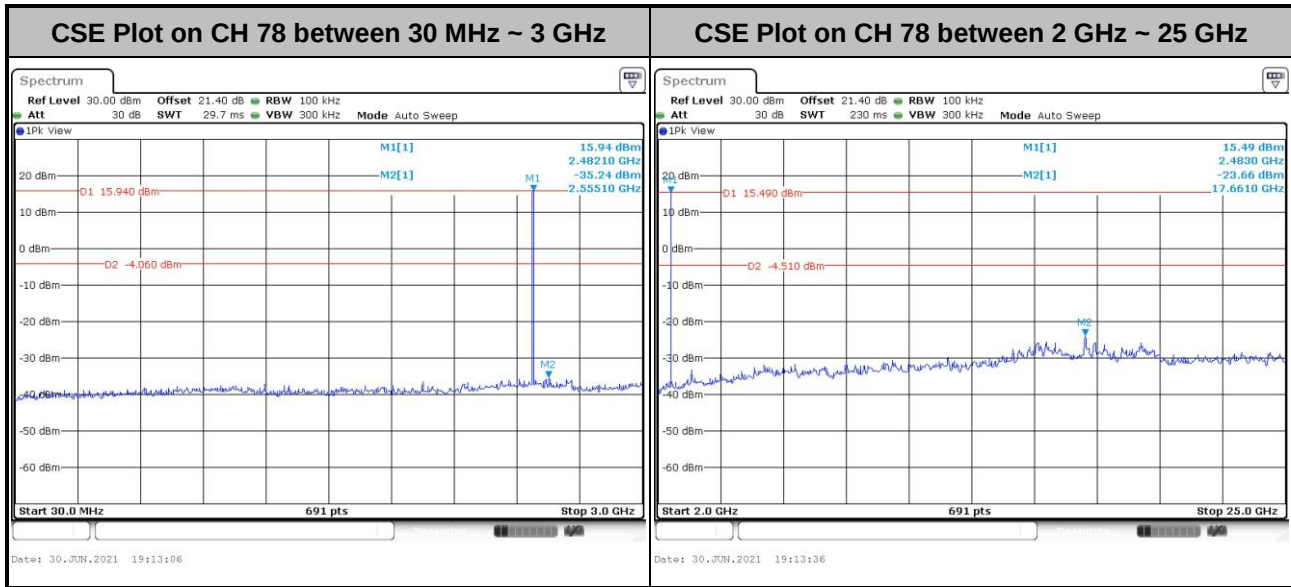




MIMO <Ant. 3>

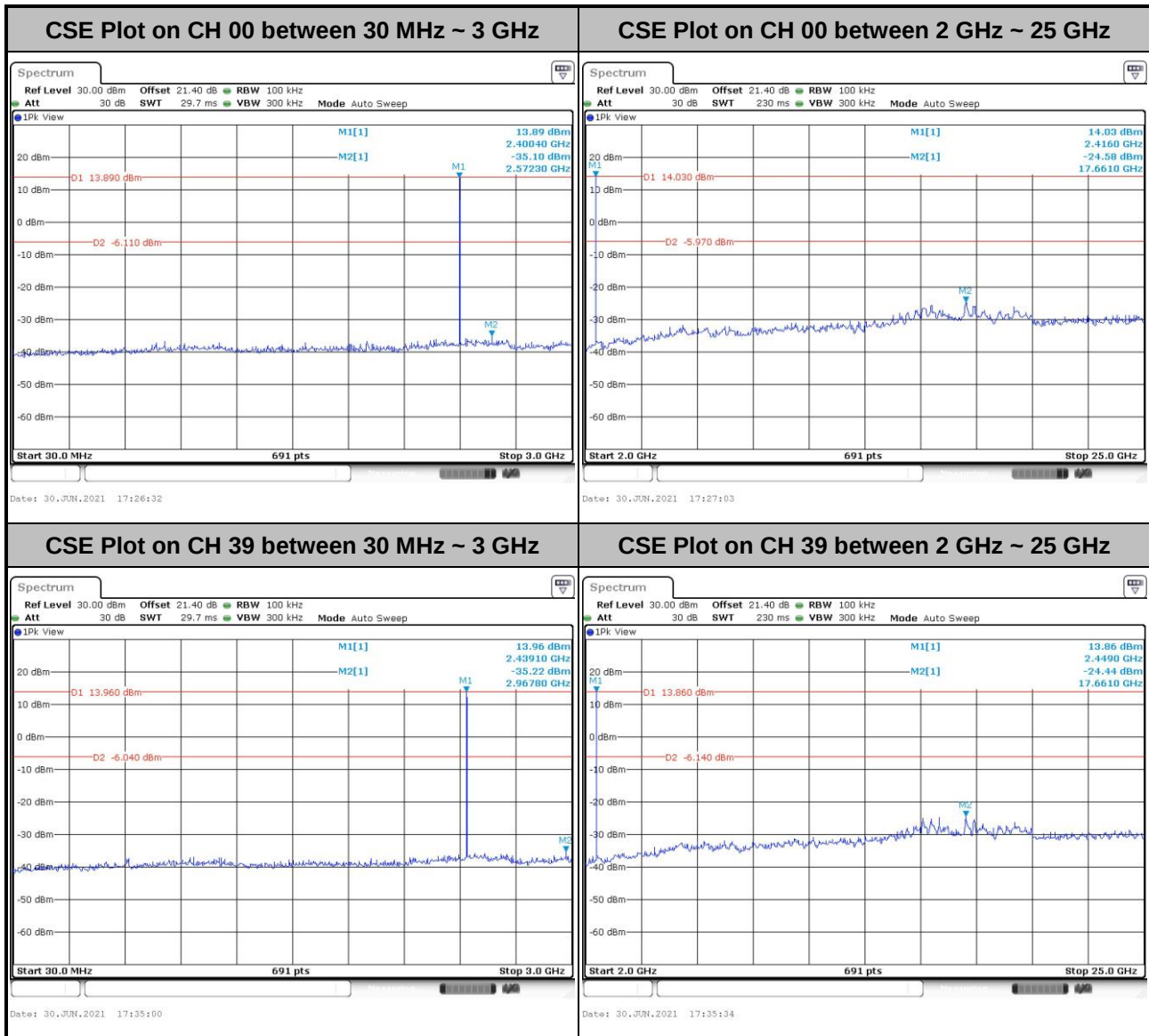
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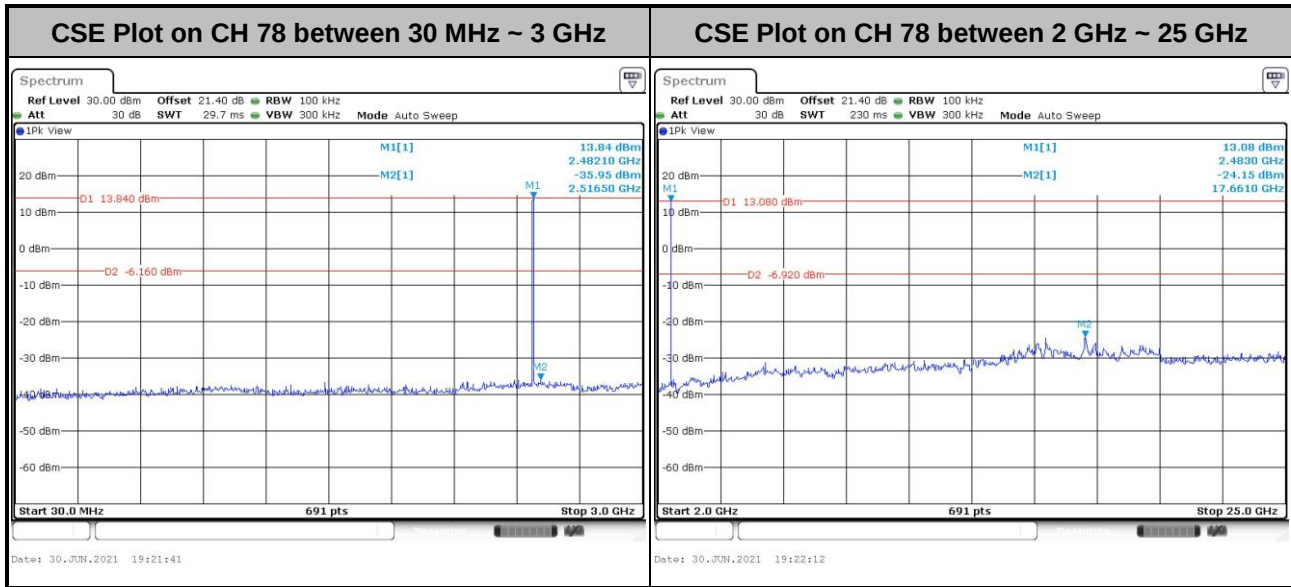






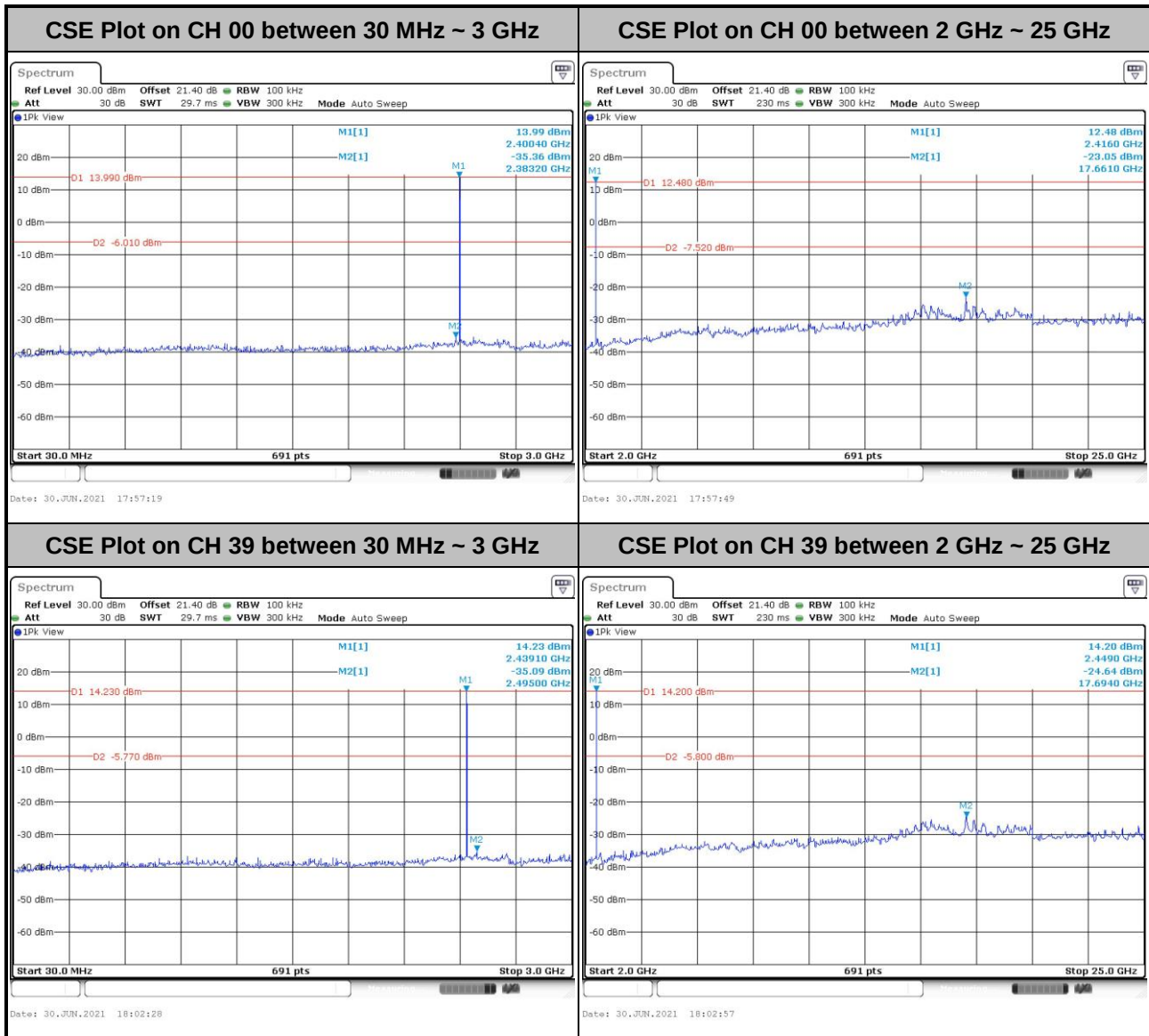
<2Mbps>

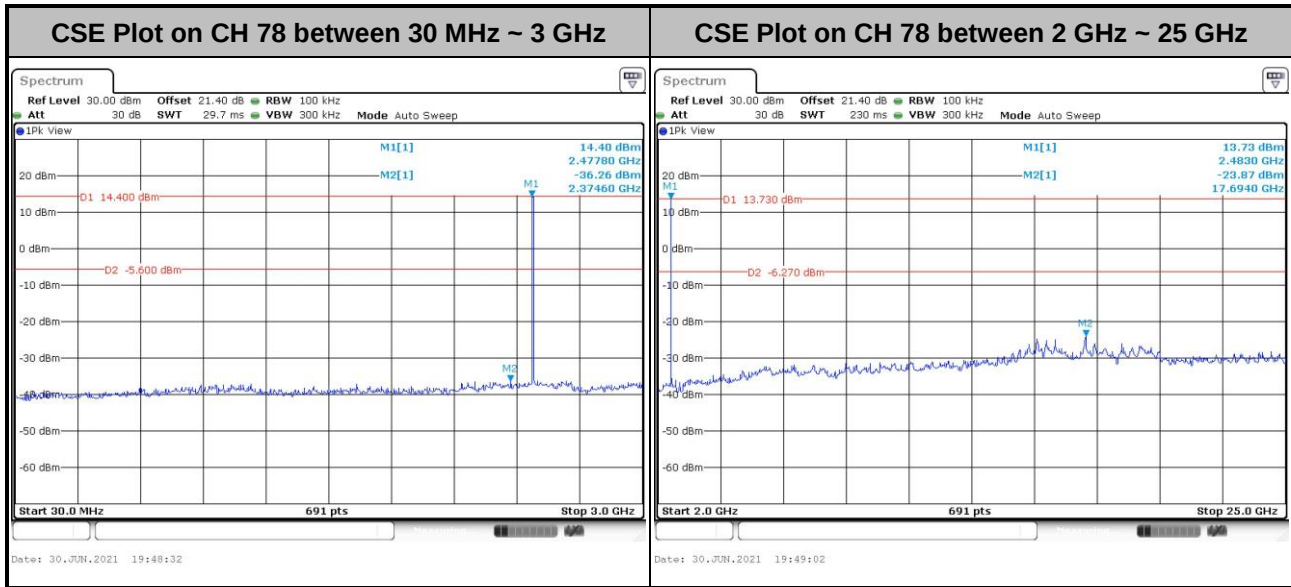






<3Mbps>





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

See list of measuring equipment of this test report.

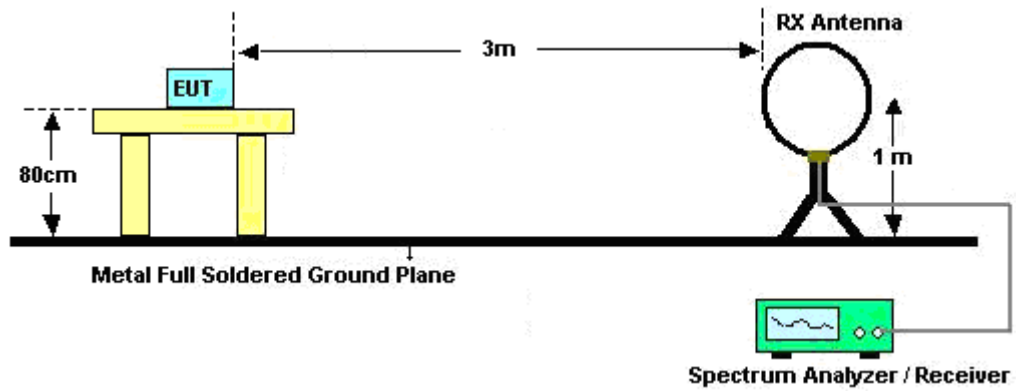
3.8.3 Test Procedures

1. The EUT was 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 was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was 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 + $20 * \log(\text{Duty cycle})$
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
8. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

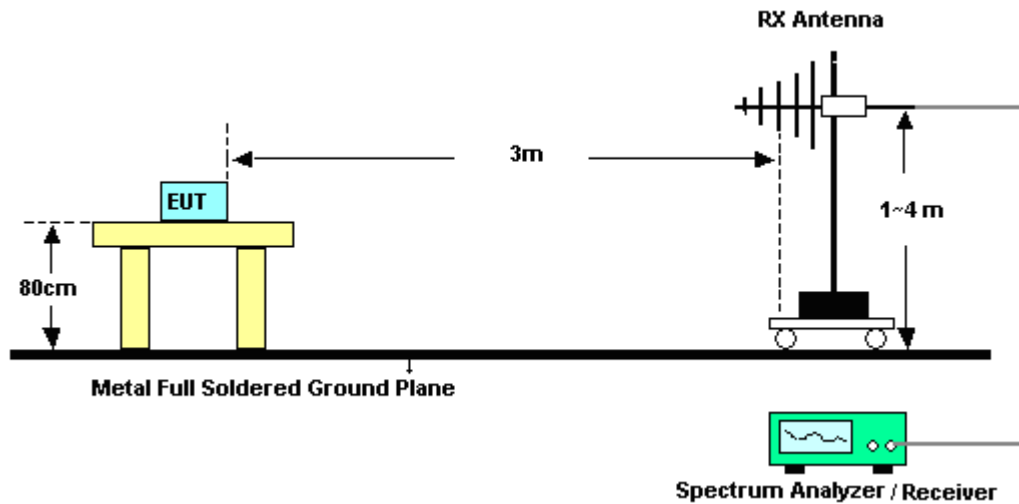
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.76dB) derived from $20 \log(\text{dwell time}/100\text{ms})$. This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals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

3.8.4 Test Setup

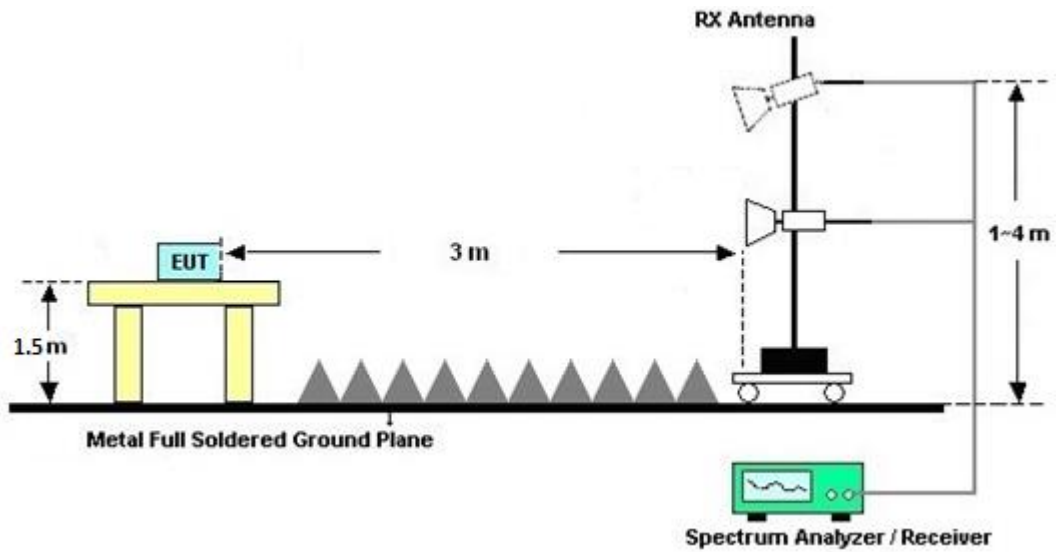
For radiated test below 30MHz



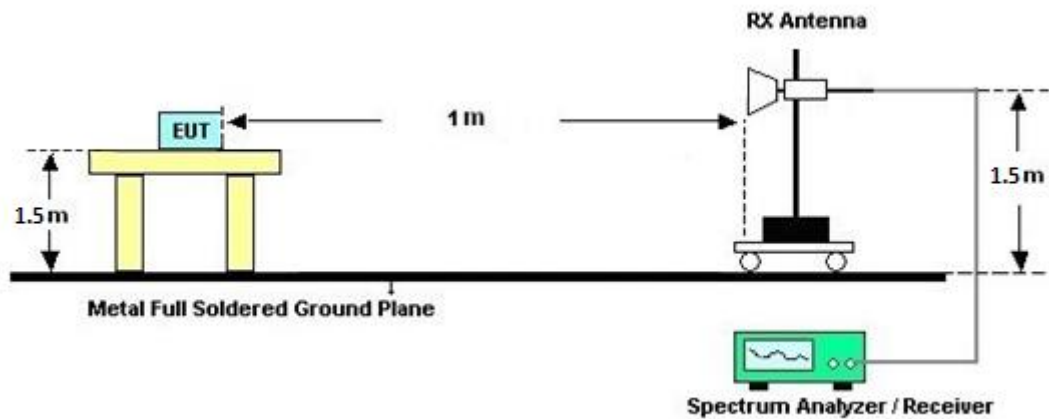
For radiated test from 30MHz to 1GHz



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 started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was 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 came 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.

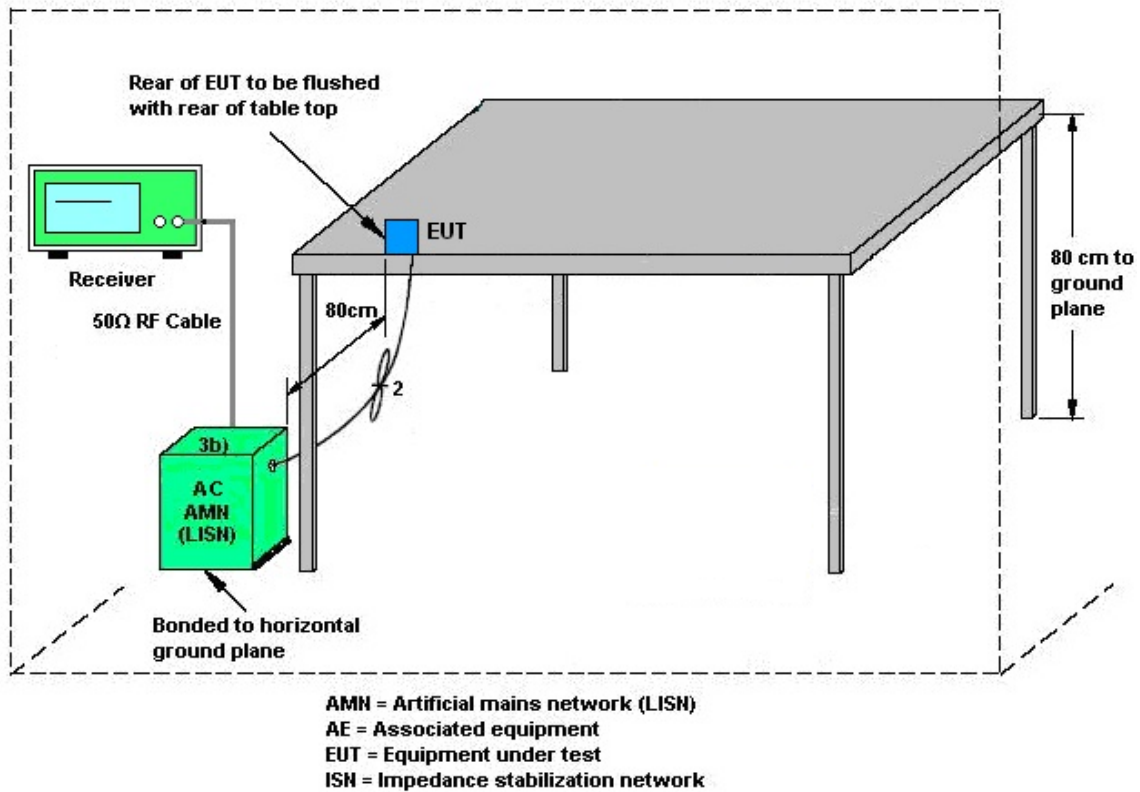
3.9.2 Measuring Instruments

See list of measuring equipment of this test report.

3.9.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was 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 sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) 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
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Nov. 03, 2020	Jun. 11, 2021~ Jul. 06, 2021	Nov. 02, 2021	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz~40GHz	May 12, 2021	Jun. 11, 2021~ Jul. 06, 2021	May 11, 2022	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 11, 2020	Jun. 11, 2021~ Jul. 06, 2021	Oct. 10, 2021	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Jun. 11, 2021~ Jul. 06, 2021	Jan. 03, 2022	Radiation (03CH11-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Oct. 27, 2020	Jun. 11, 2021~ Jul. 06, 2021	Oct. 26, 2021	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 12, 2020	Jun. 11, 2021~ Jul. 06, 2021	Nov. 11, 2021	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 22, 2021	Jul. 05, 2021~ Jul. 06, 2021	Jun. 21, 2022	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 02, 2020	Jun. 11, 2021~ Jul. 06, 2021	Dec. 01, 2021	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 23, 2020	Jun. 11, 2021~ Jul. 06, 2021	Oct. 22, 2021	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY54130085	20MHz~8.4GHz	Nov. 02, 2020	Jun. 11, 2021~ Jul. 06, 2021	Nov. 01, 2021	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500 -B	N/A	1~4m	N/A	Jun. 11, 2021~ Jul. 06, 2021	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jun. 11, 2021~ Jul. 06, 2021	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jun. 11, 2021~ Jul. 06, 2021	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 11, 2021	Jun. 11, 2021~ Jul. 06, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 11, 2021	Jun. 11, 2021~ Jul. 06, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 11, 2021	Jun. 11, 2021~ Jul. 06, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 11, 2021	Jun. 11, 2021~ Jul. 06, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-27 00-3000-180 00-60SS	SN3	3GHz High Pass Filter	Sep. 14, 2020	Jun. 11, 2021~ Jul. 06, 2021	Sep. 13, 2021	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000- 1530-8000-4 0SS	SN1	1.53GHz Low Pass Filter	Sep. 14, 2020	Jun. 11, 2021~ Jul. 06, 2021	Sep. 13, 2021	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Nov. 18, 2020	Jun. 11, 2021~ Jul. 06, 2021	Nov. 17, 2021	Radiation (03CH11-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 03, 2021	Jun. 28, 2021~ Jun. 30, 2021	Mar. 02, 2022	Conducted (TH05-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Jan. 14, 2021	Jun. 28, 2021~ Jun. 30, 2021	Jan. 13, 2022	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Jan. 14, 2021	Jun. 28, 2021~ Jun. 30, 2021	Jan. 13, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz ~ 40GHz	Jul. 22, 2020	Jun. 28, 2021~ Jun. 30, 2021	Jul. 21, 2021	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2021	Jun. 28, 2021~ Jun. 30, 2021	Mar. 16, 2022	Conducted (TH05-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jun. 29, 2021	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 29, 2021	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 02, 2020	Jun. 29, 2021	Nov. 01, 2021	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 17, 2021	Jun. 29, 2021	Mar. 16, 2022	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Feb. 01, 2021	Jun. 29, 2021	Jan. 31, 2022	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 11, 2020	Jun. 29, 2021	Sep. 10, 2021	Conduction (CO07-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.2 dB
--	--------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7 dB
--	--------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2 dB
--	--------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
--	--------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Richard Qiu	Temperature:	24~25.1	°C
Test Date:	2021/6/28~2021/6/30	Relative Humidity:	54.9~58.7	%

<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	1.013	0.906	0.999	0.6753	Pass
DH	1Mbps	1	39	2441	1.013	0.906	0.999	0.6753	Pass
DH	1Mbps	1	78	2480	1.013	0.905	0.999	0.6753	Pass
2DH	2Mbps	1	0	2402	1.289	1.184	1.003	0.8596	Pass
2DH	2Mbps	1	39	2441	1.289	1.184	0.999	0.8596	Pass
2DH	2Mbps	1	78	2480	1.294	1.181	0.999	0.8625	Pass
3DH	3Mbps	1	0	2402	1.246	1.161	0.994	0.8307	Pass
3DH	3Mbps	1	39	2441	1.246	1.161	0.999	0.8307	Pass
3DH	3Mbps	1	78	2480	1.250	1.161	0.999	0.8336	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 (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	20.17	20.97	Pass
	39	1	20.70	20.97	Pass
	78	1	20.49	20.97	Pass
2DH1	0	1	20.85	20.97	Pass
	39	1	20.96	20.97	Pass
	78	1	20.86	20.97	Pass
3DH1	0	1	19.99	20.97	Pass
	39	1	20.25	20.97	Pass
	78	1	19.95	20.97	Pass

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

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	19.22	5.15
	39	1	19.39	5.15
	78	1	19.55	5.15
2DH1	0	1	17.89	5.05
	39	1	18.18	5.05
	78	1	18.01	5.05
3DH1	0	1	16.63	5.08
	39	1	16.86	5.08
	78	1	16.75	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	1.010	0.906	0.999	0.6734	Pass
DH	1Mbps	1	39	2441	1.013	0.906	0.999	0.6753	Pass
DH	1Mbps	1	78	2480	1.010	0.906	0.999	0.6734	Pass
2DH	2Mbps	1	0	2402	1.289	1.181	1.003	0.8596	Pass
2DH	2Mbps	1	39	2441	1.294	1.181	1.007	0.8625	Pass
2DH	2Mbps	1	78	2480	1.294	1.181	0.994	0.8625	Pass
3DH	3Mbps	1	0	2402	1.250	1.161	0.999	0.8336	Pass
3DH	3Mbps	1	39	2441	1.246	1.161	1.003	0.8307	Pass
3DH	3Mbps	1	78	2480	1.250	1.161	1.003	0.8336	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 (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	20.78	20.97	Pass
	39	1	20.85	20.97	Pass
	78	1	20.47	20.97	Pass
2DH1	0	1	20.95	20.97	Pass
	39	1	20.95	20.97	Pass
	78	1	20.89	20.97	Pass
3DH1	0	1	20.42	20.97	Pass
	39	1	20.37	20.97	Pass
	78	1	20.47	20.97	Pass

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

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	19.71	5.15
	39	1	19.84	5.15
	78	1	19.61	5.15
2DH1	0	1	18.20	5.08
	39	1	18.34	5.08
	78	1	18.17	5.08
3DH1	0	1	17.21	5.08
	39	1	16.97	5.08
	78	1	17.14	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	1.013	1.013	0.935	0.903	1.012	1.003	0.6753	0.6753	Pass
DH	1Mbps	2	39	2441	1.013	1.013	0.906	0.906	0.999	0.999	0.6753	0.6753	Pass
DH	1Mbps	2	78	2480	1.013	1.010	0.906	0.906	0.999	0.999	0.6753	0.6734	Pass
2DH	2Mbps	2	0	2402	1.285	1.289	1.181	1.181	1.003	1.003	0.8567	0.8596	Pass
2DH	2Mbps	2	39	2441	1.289	1.294	1.181	1.184	1.003	1.003	0.8596	0.8625	Pass
2DH	2Mbps	2	78	2480	1.289	1.289	1.181	1.181	0.999	0.999	0.8596	0.8596	Pass
3DH	3Mbps	2	0	2402	1.246	1.246	1.161	1.161	0.999	0.999	0.8307	0.8307	Pass
3DH	3Mbps	2	39	2441	1.250	1.250	1.161	1.161	1.003	1.003	0.8336	0.8336	Pass
3DH	3Mbps	2	78	2480	1.246	1.255	1.161	1.161	0.994	1.007	0.8307	0.8365	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	17.78	17.96	20.88	20.97	Pass
	39	2	17.37	18.04	20.73	20.97	Pass
	78	2	17.82	17.60	20.72	20.97	Pass
2DH1	0	2	17.02	17.49	20.27	20.97	Pass
	39	2	17.15	17.48	20.33	20.97	Pass
	78	2	17.13	17.48	20.32	20.97	Pass
3DH1	0	2	17.36	18.02	20.71	20.97	Pass
	39	2	17.51	18.18	20.87	20.97	Pass
	78	2	17.67	18.04	20.87	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	16.72	16.95	19.85	5.15
	39	2	15.88	16.70	19.32	5.15
	78	2	16.52	16.44	19.49	5.15
2DH1	0	2	14.36	14.81	17.60	5.05
	39	2	14.47	14.83	17.67	5.05
	78	2	14.42	14.68	17.57	5.05
3DH1	0	2	14.10	14.83	17.49	5.05
	39	2	14.39	14.92	17.68	5.05
	78	2	14.46	14.80	17.65	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



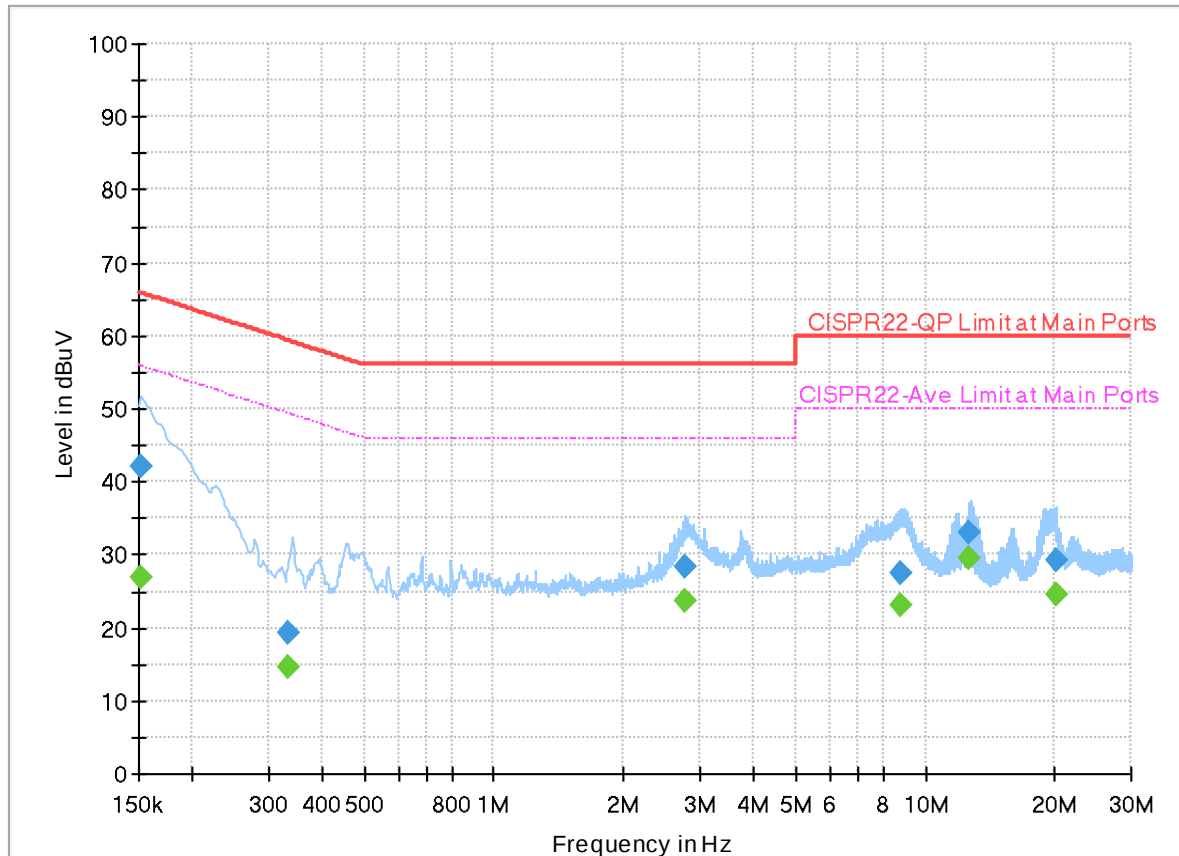
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Howard Huang	Temperature :	23~26°C
		Relative Humidity :	40~50%

EUT Information

Report NO : 0D2942-05
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



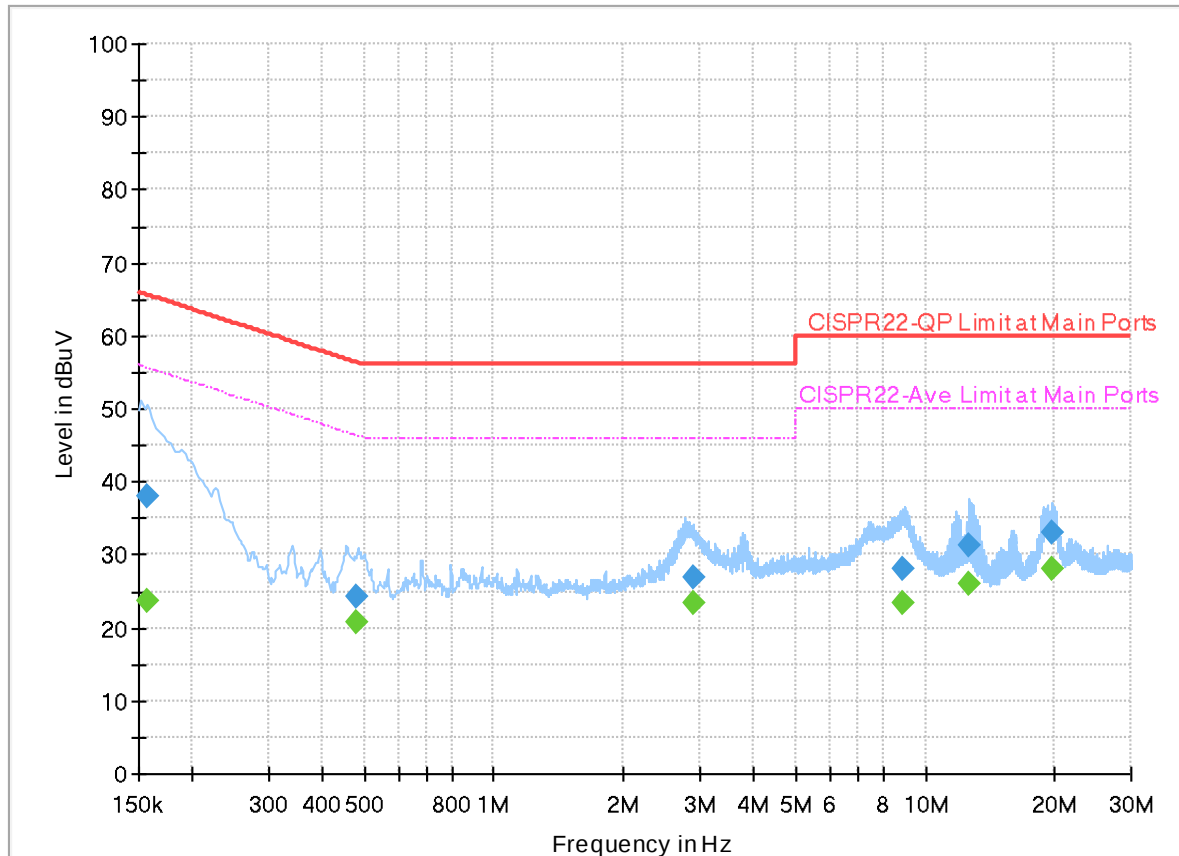
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.151620	---	26.99	55.91	28.92	L1	OFF	20.0
0.151620	42.19	---	65.91	23.72	L1	OFF	20.0
0.334680	---	14.57	49.33	34.76	L1	OFF	20.0
0.334680	19.41	---	59.33	39.92	L1	OFF	20.0
2.780340	---	23.71	46.00	22.29	L1	OFF	20.1
2.780340	28.50	---	56.00	27.50	L1	OFF	20.1
8.764530	---	23.23	50.00	26.77	L1	OFF	20.1
8.764530	27.60	---	60.00	32.40	L1	OFF	20.1
12.679350	---	29.44	50.00	20.56	L1	OFF	20.2
12.679350	32.92	---	60.00	27.08	L1	OFF	20.2
20.043240	---	24.48	50.00	25.52	L1	OFF	20.2
20.043240	29.13	---	60.00	30.87	L1	OFF	20.2

EUT Information

Report NO : 0D2942-05
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)
0.156750	---	23.55	55.63	32.08	N	OFF	20.0
0.156750	38.12	---	65.63	27.51	N	OFF	20.0
0.481380	---	20.78	46.32	25.54	N	OFF	20.0
0.481380	24.26	---	56.32	32.06	N	OFF	20.0
2.890500	---	23.46	46.00	22.54	N	OFF	20.1
2.890500	26.92	---	56.00	29.08	N	OFF	20.1
8.902860	---	23.31	50.00	26.69	N	OFF	20.1
8.902860	28.04	---	60.00	31.96	N	OFF	20.1
12.687000	---	26.12	50.00	23.88	N	OFF	20.2
12.687000	31.15	---	60.00	28.85	N	OFF	20.2
19.783050	---	28.20	50.00	21.80	N	OFF	20.3
19.783050	32.97	---	60.00	27.03	N	OFF	20.3



Appendix C. Radiated Spurious Emission

Test Engineer :	Harvey Guo, Fu Chen and Troye Hsieh	Temperature :	18.1~24.5°C
		Relative Humidity :	56.5~69.9%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT Ant	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamplifier 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		2353.05	43.13	-30.87	74	41.91	27.59	7.1	33.47	123	286	P	H
		2353.05	18.37	-35.63	54	-	-	-	-	-	-	A	H
	*	2402	104.29	-	-	103.1	27.5	7.14	33.45	123	286	P	H
	*	2402	79.53	-	-	-	-	-	-	-	-	A	H
													H
													H
		2322.705	44.28	-29.72	74	43.05	27.65	7.07	33.49	350	120	P	V
		2322.705	19.52	-34.48	54	-	-	-	-	-	-	A	V
	*	2402	98.33	-	-	97.14	27.5	7.14	33.45	350	120	P	V
	*	2402	73.57	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2317.28	43.4	-30.6	74	42.15	27.67	7.07	33.49	115	298	P	H
		2317.28	18.64	-35.36	54	-	-	-	-	-	-	A	H
	*	2441	104.06	-	-	102.79	27.5	7.2	33.43	115	298	P	H
	*	2441	79.3	-	-	-	-	-	-	-	-	A	H
		2491.81	43.55	-30.45	74	42.25	27.42	7.28	33.4	115	298	P	H
		2491.81	18.79	-35.21	54	-	-	-	-	-	-	A	H
		2362.22	43.53	-30.47	74	42.31	27.58	7.11	33.47	307	125	P	V
		2362.22	18.77	-35.23	54	-	-	-	-	-	-	A	V
	*	2441	98.6	-	-	97.33	27.5	7.2	33.43	307	125	P	V
	*	2441	73.84	-	-	-	-	-	-	-	-	A	V
		2494.05	43.3	-30.7	74	42	27.41	7.29	33.4	307	125	P	V
		2494.05	18.54	-35.46	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	103.99	-	-	102.7	27.44	7.26	33.41	111	303	P	H
	*	2480	79.23	-	-	-	-	-	-	-	-	A	H
		2483.52	47.58	-26.42	74	46.29	27.43	7.27	33.41	111	303	P	H
		2483.52	22.82	-31.18	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	98.32	-	-	97.03	27.44	7.26	33.41	375	7	P	V
	*	2480	73.56	-	-	-	-	-	-	-	-	A	V
		2483.6	45.03	-28.97	74	43.74	27.43	7.27	33.41	375	7	P	V
		2483.6	20.27	-33.73	54	-	-	-	-	-	-	A	V
													V
													V
Remark	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 4	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	36.75	-37.25	74	60.74	31	11.18	66.17	100	0	P	H
		4804	11.99	-42.01	54	-	-	-	-	-	-	A	H
		17985	58.07	-15.93	74	52.2	47.1	23.89	65.12	100	0	P	H
		17985	33.31	-20.69	54	-	-	-	-	-	-	A	H
		4804	37.78	-36.22	74	61.77	31	11.18	66.17	100	0	P	V
		4804	13.02	-40.98	54	-	-	-	-	-	-	A	V
		17985	58.04	-15.96	74	52.17	47.1	23.89	65.12	100	0	P	V
		17985	33.28	-20.72	54	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		4882	38.31	-35.69	74	61.5	31.58	11.34	66.11	100	0	P	H
		4882	13.55	-40.45	54	-	-	-	-	-	-	A	H
		7323	41.18	-32.82	74	57.04	36.4	13.46	65.72	100	0	P	H
		7323	16.42	-37.58	54	-	-	-	-	-	-	A	H
		17985	57.73	-16.27	74	51.86	47.1	23.89	65.12	100	0	P	H
		17985	32.97	-21.03	54	-	-	-	-	-	-	A	H
		4882	39.18	-34.82	74	62.37	31.58	11.34	66.11	100	0	P	V
		4882	14.42	-39.58	54	-	-	-	-	-	-	A	V
		7323	40.72	-33.28	74	56.58	36.4	13.46	65.72	100	0	P	V
		7323	15.96	-38.04	54	-	-	-	-	-	-	A	V
		17985	58.45	-15.55	74	52.58	47.1	23.89	65.12	100	0	P	V
		17985	33.69	-20.31	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz		4960	38.51	-35.49	74	62	31.06	11.51	66.06	100	0	P	H
		4960	13.75	-40.25	54	-	-	-	-	-	-	A	H
		7440	40.91	-33.09	74	56.4	36.56	13.74	65.79	100	0	P	H
		7440	16.15	-37.85	54	-	-	-	-	-	-	A	H
		17970	58.53	-15.47	74	53.01	46.8	23.87	65.15	100	0	P	H
		17970	33.77	-20.23	54	-	-	-	-	-	-	A	H
		4960	38.45	-35.55	74	61.94	31.06	11.51	66.06	100	0	P	V
		4960	13.69	-40.31	54	-	-	-	-	-	-	A	V
		7440	41.97	-32.03	74	57.46	36.56	13.74	65.79	100	0	P	V
		7440	17.21	-36.79	54	-	-	-	-	-	-	A	V
		17985	57.79	-16.21	74	51.92	47.1	23.89	65.12	100	0	P	V
		17970	33.03	-20.97	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

2.4GHz BT (SHF)

[illegible]

Emission below 1GHz

2.4GHz BT (LF)

[illegible]



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2358.615	43.6	-30.4	74	42.39	27.58	7.1	33.47	103	244	P	H
		2358.615	18.84	-35.16	54	-	-	-	-	-	-	A	H
	*	2402	113.74	-	-	112.55	27.5	7.14	33.45	103	244	P	H
		2402	88.98	34.98	54	-	-	-	-	-	-	A	H
													H
													H
		2347.8	43.57	-30.43	74	42.36	27.6	7.09	33.48	400	117	P	V
		2347.8	18.81	-35.19	54	-	-	-	-	-	-	A	V
	*	2402	109.87	-	-	108.68	27.5	7.14	33.45	400	117	P	V
		2402	85.11	31.11	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2364.32	43.64	-30.36	74	42.43	27.57	7.11	33.47	112	244	P	H
		2364.32	18.88	-35.12	54	-	-	-	-	-	-	A	H
	*	2441	113.07	-	-	111.8	27.5	7.2	33.43	112	244	P	H
		2441	88.31	34.31	54	-	-	-	-	-	-	A	H
		2485.79	43.81	-30.19	74	42.52	27.43	7.27	33.41	112	244	P	H
		2485.79	19.05	-34.95	54	-	-	-	-	-	-	A	H
		2347.24	44.16	-29.84	74	42.94	27.61	7.09	33.48	390	117	P	V
		2347.24	19.4	-34.6	54	-	-	-	-	-	-	A	V
	*	2441	107.52	-	-	106.25	27.5	7.2	33.43	390	117	P	V
		2441	82.76	28.76	54	-	-	-	-	-	-	A	V
		2483.5	43.75	-30.25	74	42.46	27.43	7.27	33.41	390	117	P	V
		2483.5	18.99	-35.01	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	113.3	-	-	112.01	27.44	7.26	33.41	114	241	P	H
		2480	88.54	34.54	54	-	-	-	-	-	-	A	H
		2483.92	47.59	-26.41	74	46.3	27.43	7.27	33.41	114	241	P	H
		2483.92	22.83	-31.17	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	106.74	-	-	105.45	27.44	7.26	33.41	373	60	P	V
		2480	81.98	27.98	54	-	-	-	-	-	-	A	V
		2485.8	44.08	-29.92	74	42.79	27.43	7.27	33.41	373	60	P	V
		2485.8	19.32	-34.68	54	-	-	-	-	-	-	A	V
													V
													V
Remark	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 3	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	37.28	-36.72	74	61.27	31	11.18	66.17	100	0	P	H
		4804	12.52	-41.48	54	-	-	-	-	-	-	A	H
		17970	57.6	-16.4	74	52.08	46.8	23.87	65.15	100	0	P	H
		17970	32.84	-21.16	54	-	-	-	-	-	-	A	H
		4804	37.72	-36.28	74	61.71	31	11.18	66.17	100	0	P	V
		4804	12.96	-41.04	54	-	-	-	-	-	-	A	V
		17955	57.92	-16.08	74	52.73	46.5	23.86	65.17	100	0	P	V
		17955	33.16	-20.84	54	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		4882	38.49	-35.51	74	61.68	31.58	11.34	66.11	100	0	P	H
		4882	13.73	-40.27	54	-	-	-	-	-	-	A	H
		7323	41.86	-32.14	74	57.72	36.4	13.46	65.72	100	0	P	H
		7323	17.1	-36.9	54	-	-	-	-	-	-	A	H
		17970	57.7	-16.3	74	52.18	46.8	23.87	65.15	100	0	A	H
		17970	32.94	-21.06	54	-	-	-	-	-	-	P	H
		4882	38.56	-35.44	74	61.75	31.58	11.34	66.11	100	0	A	V
		4882	13.8	-40.2	54	-	-	-	-	-	-	A	V
		7323	41.54	-32.46	74	57.4	36.4	13.46	65.72	100	0	P	V
		7323	16.78	-37.22	54	-	-	-	-	-	-	A	V
		17970	57.9	-16.1	74	52.38	46.8	23.87	65.15	100	0	P	V
		17970	33.14	-20.86	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz		4960	38.18	-35.82	74	61.67	31.06	11.51	66.06	100	0	P	H
		4960	13.42	-40.58	54	-	-	-	-	-	-	A	H
		7440	40.69	-33.31	74	56.18	36.56	13.74	65.79	100	0	P	H
		7440	15.93	-38.07	54	-	-	-	-	-	-	A	H
		17970	57.61	-16.39	74	52.09	46.8	23.87	65.15	100	0	A	H
		17970	32.85	-21.15	54	-	-	-	-	-	-	P	H
		4960	38.71	-35.29	74	62.2	31.06	11.51	66.06	100	0	A	V
		4960	13.95	-40.05	54	-	-	-	-	-	-	A	V
		7440	41.46	-32.54	74	56.95	36.56	13.74	65.79	100	0	P	V
		7440	16.7	-37.3	54	-	-	-	-	-	-	A	V
		17955	56.51	-17.49	74	51.32	46.5	23.86	65.17	100	0	P	V
		17955	31.75	-22.25	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

2.4GHz BT (SHF)

[illegible]

Emission below 1GHz

2.4GHz BT (LF)

[illegible]



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2338.98	44.12	-29.88	74	42.89	27.62	7.09	33.48	100	126	P	H
		2338.98	19.36	-34.64	54	-	-	-	-	-	-	A	H
	*	2402	106.81	-	-	105.62	27.5	7.14	33.45	100	126	P	H
	*	2402	82.05	-	-	-	-	-	-	-	-	A	H
													H
													H
		2375.52	42.93	-31.07	74	41.72	27.55	7.12	33.46	267	74	P	V
		2375.52	18.17	-35.83	54	-	-	-	-	-	-	A	V
	*	2402	106.78	-	-	105.59	27.5	7.14	33.45	267	74	P	V
	*	2402	82.02	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2335.62	43.84	-30.16	74	42.61	27.63	7.08	33.48	138	127	P	H
		2335.62	19.08	-34.92	54	-	-	-	-	-	-	A	H
	*	2441	107.68	-	-	106.41	27.5	7.2	33.43	138	127	P	H
	*	2441	82.92	-	-	-	-	-	-	-	-	A	H
		2483.5	44.21	-29.79	74	42.92	27.43	7.27	33.41	138	127	P	H
		2483.5	19.45	-34.55	54	-	-	-	-	-	-	A	H
		2344.16	43.65	-30.35	74	42.43	27.61	7.09	33.48	102	272	P	V
		2344.16	18.89	-35.11	54	-	-	-	-	-	-	A	V
	*	2441	110.55	-	-	109.28	27.5	7.2	33.43	102	272	P	V
	*	2441	85.79	-	-	-	-	-	-	-	-	A	V
		2499.37	43.32	-30.68	74	42.03	27.4	7.29	33.4	102	272	P	V
		2499.37	18.56	-35.44	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480	105.21	-	-	103.92	27.44	7.26	33.41	142	122	P	H
	*	2480	80.45	-	-	-	-	-	-	-	-	A	H
		2483.72	45.33	-28.67	74	44.04	27.43	7.27	33.41	142	122	P	H
		2483.72	20.57	-33.43	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	112.23	-	-	110.94	27.44	7.26	33.41	117	272	P	V
	*	2480	87.47	-	-	-	-	-	-	-	-	A	V
		2483.68	47.34	-26.66	74	46.05	27.43	7.27	33.41	117	272	P	V
		2483.68	22.58	-31.42	54	-	-	-	-	-	-	A	V
													V
													V
Remark	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 4+3	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	38.12	-35.88	74	62.11	31	11.18	66.17	100	0	P	H
		4804	13.36	-40.64	54	-	-	-	-	-	-	A	H
		17985	58.03	-15.97	74	52.16	47.1	23.89	65.12	100	0	P	H
		17985	33.27	-20.73	54	-	-	-	-	-	-	A	H
		4804	38.48	-35.52	74	62.47	31	11.18	66.17	100	0	P	V
		4804	13.72	-40.28	54	-	-	-	-	-	-	A	V
		17985	58.86	-15.14	74	52.99	47.1	23.89	65.12	100	0	P	V
		17985	34.1	-19.9	54	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		4882	38.67	-35.33	74	61.86	31.58	11.34	66.11	100	0	P	H
		4882	13.91	-40.09	54	-	-	-	-	-	-	A	H
		7323	41.08	-32.92	74	56.94	36.4	13.46	65.72	100	0	P	H
		7323	16.32	-37.68	54	-	-	-	-	-	-	A	H
		17985	58.24	-15.76	74	52.37	47.1	23.89	65.12	100	0	P	H
		17985	33.48	-20.52	54	-	-	-	-	-	-	A	H
		4882	37.9	-36.1	74	61.09	31.58	11.34	66.11	100	0	P	V
		4882	13.14	-40.86	54	-	-	-	-	-	-	A	V
		7323	40.62	-33.38	74	56.48	36.4	13.46	65.72	100	0	P	V
		7323	15.86	-38.14	54	-	-	-	-	-	-	A	V
		17955	58.4	-15.6	74	53.21	46.5	23.86	65.17	100	0	P	V
		17955	33.64	-20.36	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz		4960	43.01	-30.99	74	66.5	31.06	11.51	66.06	100	0	P	H
		4960	18.25	-35.75	54	-	-	-	-	-	-	A	H
		7320	41.08	-32.92	74	56.95	36.4	13.45	65.72	100	0	P	H
		7320	16.32	-37.68	54	-	-	-	-	-	-	A	H
		17985	58.69	-15.31	74	52.82	47.1	23.89	65.12	100	0	P	H
		17985	33.93	-20.07	54	-	-	-	-	-	-	A	H
		4960	42.92	-31.08	74	66.41	31.06	11.51	66.06	100	0	P	V
		4960	18.16	-35.84	54	-	-	-	-	-	-	A	V
		7320	40.83	-33.17	74	56.7	36.4	13.45	65.72	100	0	P	V
		7320	16.07	-37.93	54	-	-	-	-	-	-	A	V
		17985	58.9	-15.1	74	53.03	47.1	23.89	65.12	100	0	P	V
		17985	34.14	-19.86	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission above 18GHz

2.4GHz BT (SHF)

[illegible]

Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
4+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT LF		30	19.81	-20.19	40	27.4	24.06	0.79	32.44	-	-	P	H
		62.98	19.65	-20.35	40	39.18	11.78	1.23	32.54	-	-	P	H
		94.99	27.33	-16.17	43.5	43.2	15.14	1.5	32.51	-	-	P	H
		777.87	29.05	-16.95	46	28.5	28.13	4.19	31.77	-	-	P	H
		864.2	30.8	-15.2	46	28.44	29.26	4.44	31.34	100	0	P	H
		901.06	30.76	-15.24	46	28.24	29.14	4.57	31.19	-	-	P	H
													H
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		44.55	31.53	-8.47	40	46.12	16.88	1.05	32.52	100	189	Q	V
		64.92	30.21	-9.79	40	49.75	11.75	1.25	32.54	-	-	P	V
		92.08	25.78	-17.72	43.5	41.93	14.88	1.48	32.51	-	-	P	V
		446.13	26.39	-19.61	46	32.19	23.01	3.15	31.96	-	-	P	V
		872.93	30.77	-15.23	46	28.35	29.26	4.47	31.31	-	-	P	V
		956.35	32.01	-13.99	46	27.15	30.98	4.71	30.83	-	-	P	V
													V
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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.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(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 and average measured complies with the limit line, so test result is “PASS”.

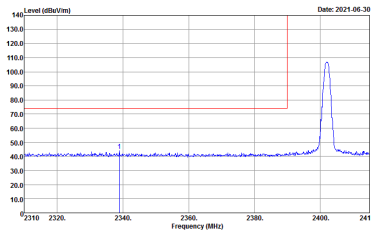
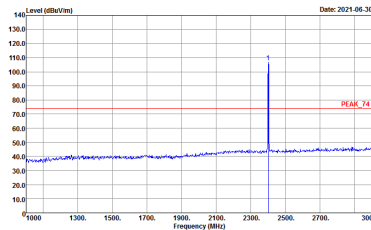


Appendix D. Radiated Spurious Emission Plots

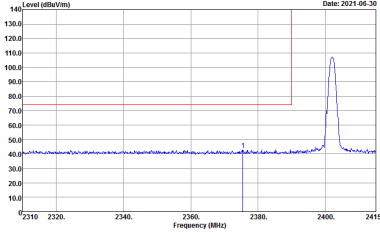
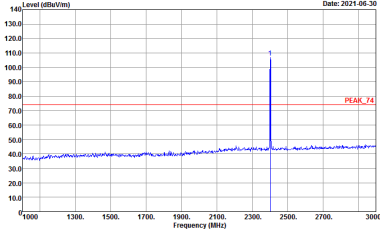
Test Engineer :	Harvey Guo, Fu Chen and Troye Hsieh	Temperature :	18.1~24.5°C
		Relative Humidity :	56.5~69.9%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

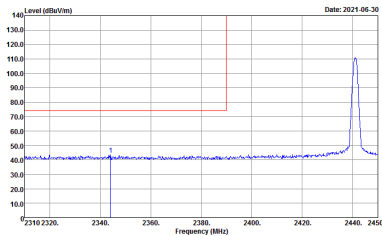
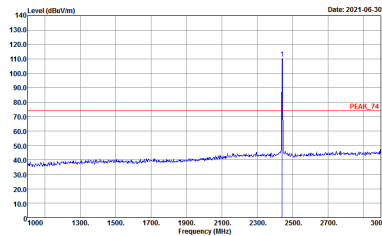
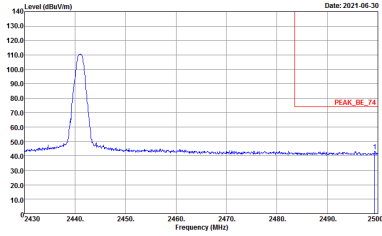
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.000GHz VBW:3000.000GHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.000GHz VBW:3000.000GHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4	Vertical	Fundamental
Peak	 Site : 09CH11-HY Condition : PEAK_SE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4	Horizontal	Fundamental
Peak	Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Horizontal	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B8_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4	Vertical	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B7_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

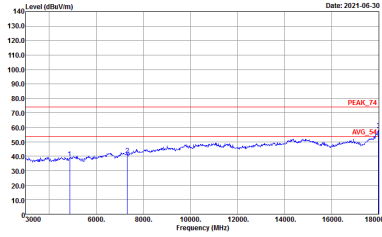
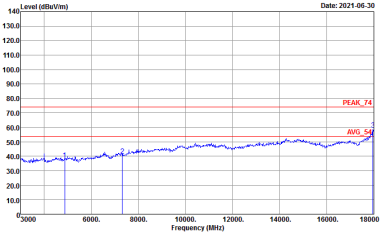


2.4GHz 2400~2483.5MHz

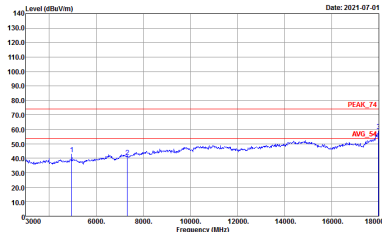
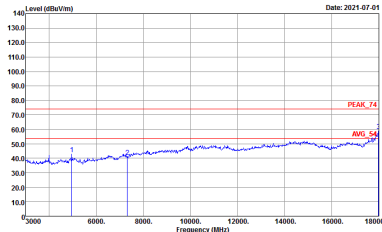
BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
4	Horizontal	Vertical
Peak Avg.	Level (dBu/1m) Date: 2021-07-01 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	Level (dBu/1m) Date: 2021-07-01 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
4	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
4	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL

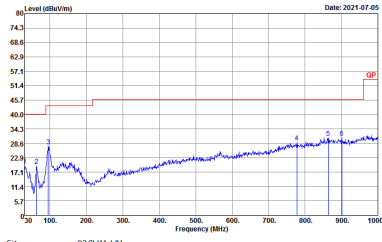
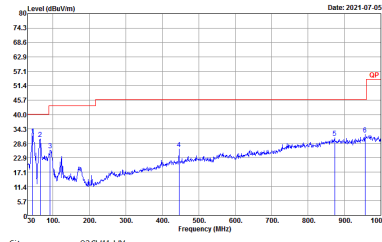


Emission above 18GHz

2.4GHz BT (SHF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
4	Horizontal	Vertical
Peak / Avg.	Level (dBm/1m) Date: 2021-07-06 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 HORIZONTAL	Level (dBm/1m) Date: 2021-07-06 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 VERTICAL

Emission below 1GHz
2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
4	Horizontal	Vertical
QP / Peak	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC HORIZONTAL	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC VERTICAL

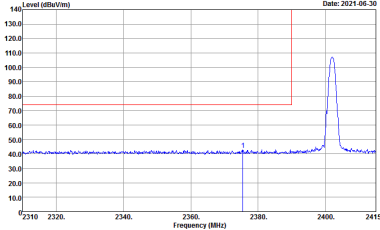
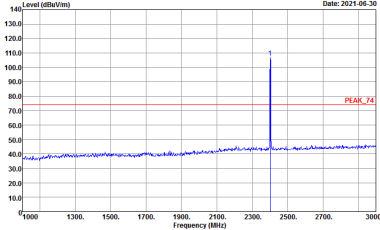


2.4GHz 2400~2483.5MHz

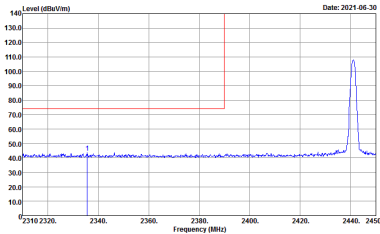
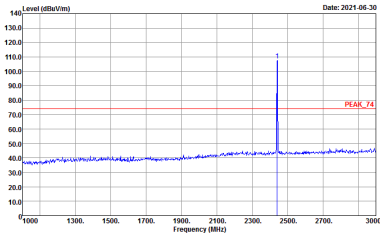
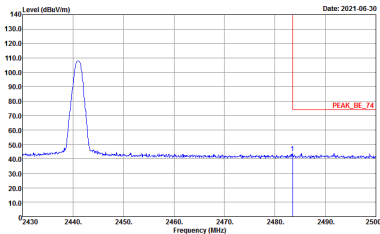
BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
3	Horizontal	Fundamental
Peak	Site : 03CH11-HY Condition : PEAK_ME_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto	Site : 03CH11-HY Condition : PEAK_ME_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto

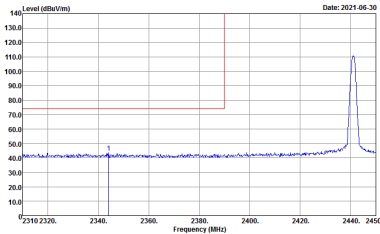
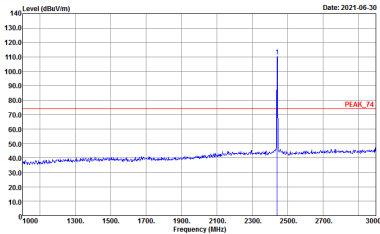
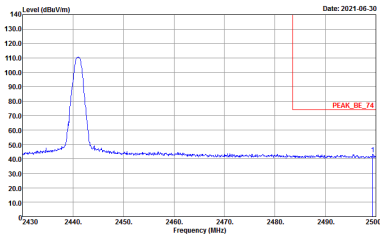


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
3	Vertical	Fundamental
Peak	 Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
3	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
3	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
3	Horizontal	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B7_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
3	Vertical	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B7_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

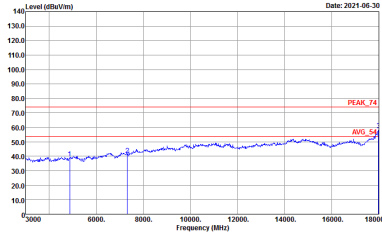
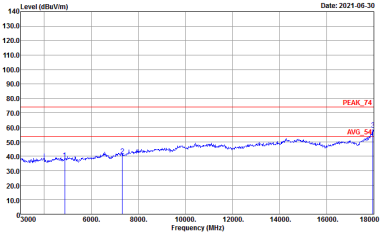


2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
3	Horizontal	Vertical
Peak Avg.	Level (dBu/1m) Date: 2021.07.01 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	Level (dBu/1m) Date: 2021.07.01 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
3	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL



BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
3	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2021-07-01 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	Level (dBuV/m) Date: 2021-07-01 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL

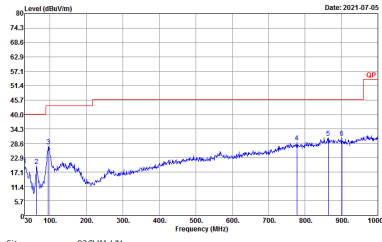
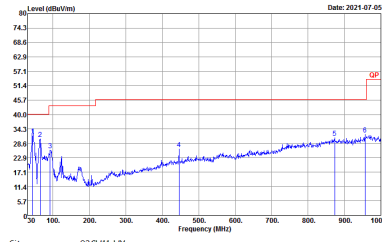


Emission above 18GHz

2.4GHz BT (SHF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
3	Horizontal	Vertical
Peak / Avg.	Level (dBuV/m) Date: 2021-07-06 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 HORIZONTAL	Level (dBuV/m) Date: 2021-07-06 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 VERTICAL

Emission below 1GHz
2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
3	Horizontal	Vertical
QP / Peak	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC HORIZONTAL	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC VERTICAL

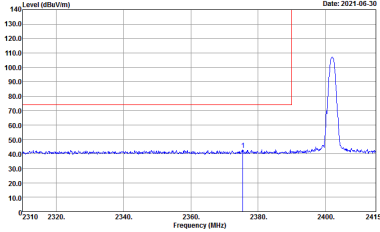
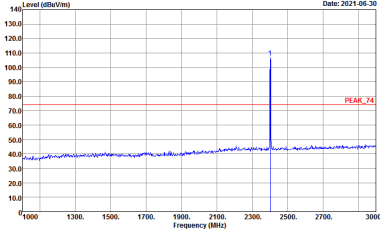


2.4GHz 2400~2483.5MHz

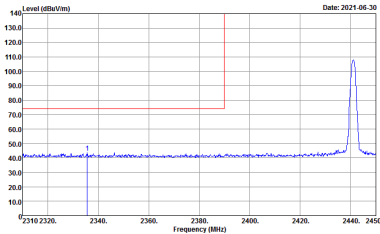
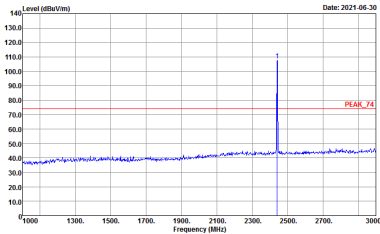
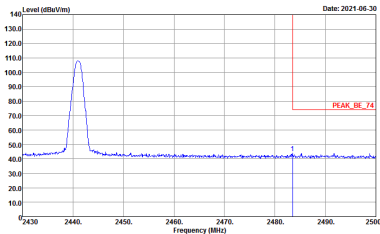
BT (Band Edge @ 3m)

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4+3	Horizontal	Fundamental
Peak	Site : 03CH11-HV Condition : PEAK_ME_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH11-HV Condition : PEAK_ME_74 3m HORN 9120D-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

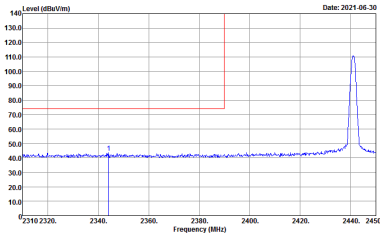
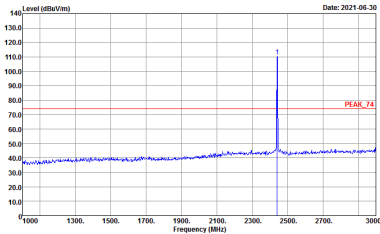
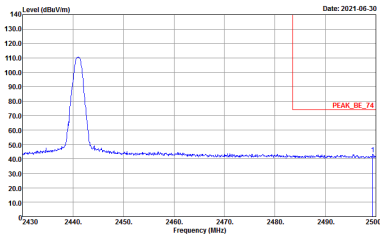


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH00 2402MHz	
4+3	Vertical	Fundamental
Peak	 Site : 09CH11-HY Condition : PEAK_SE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4+3	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
4+3	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4+3	Horizontal	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B8_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

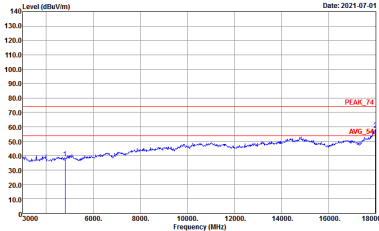
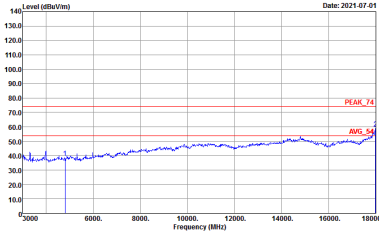


BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
4+3	Vertical	Fundamental
Peak	Site : 09CH11-HY Condition : PEAK_B7_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 09CH11-HY Condition : PEAK_74 3m HORN 91200-HF_1326 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



2.4GHz 2400~2483.5MHz

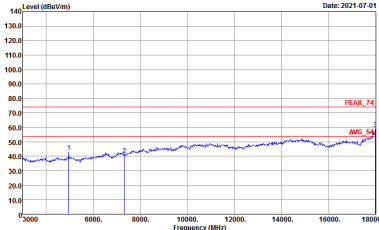
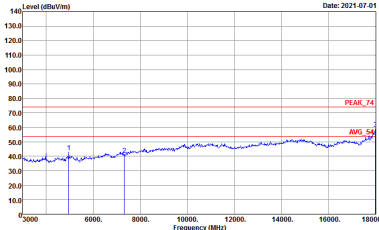
BT (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH00 2402MHz	
4+3	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL

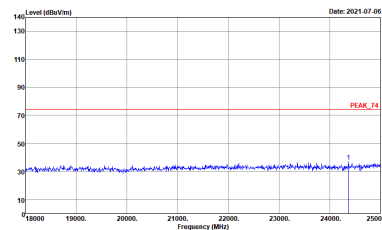
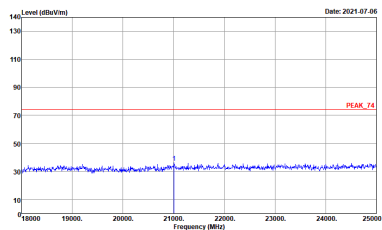


BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
4+3	Horizontal	Vertical
Peak Avg.	Level (dBuV/m) Date: 2021-06-30 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	Level (dBuV/m) Date: 2021-06-30 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL

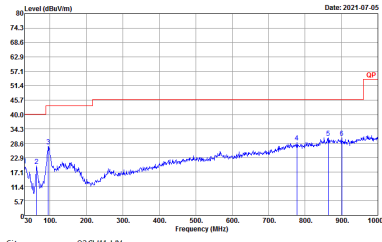
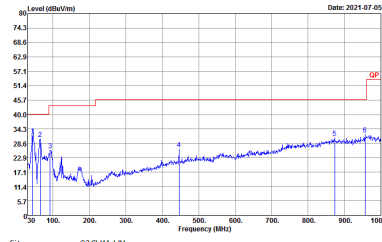


BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
4+3	Horizontal	Vertical
Peak Avg.	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 HORIZONTAL	 Site : 03CHI1-HY Condition : PEAK_74 3m HORN 9120D-HF_1326 VERTICAL

Emission above 18GHz
2.4GHz BT (SHF)

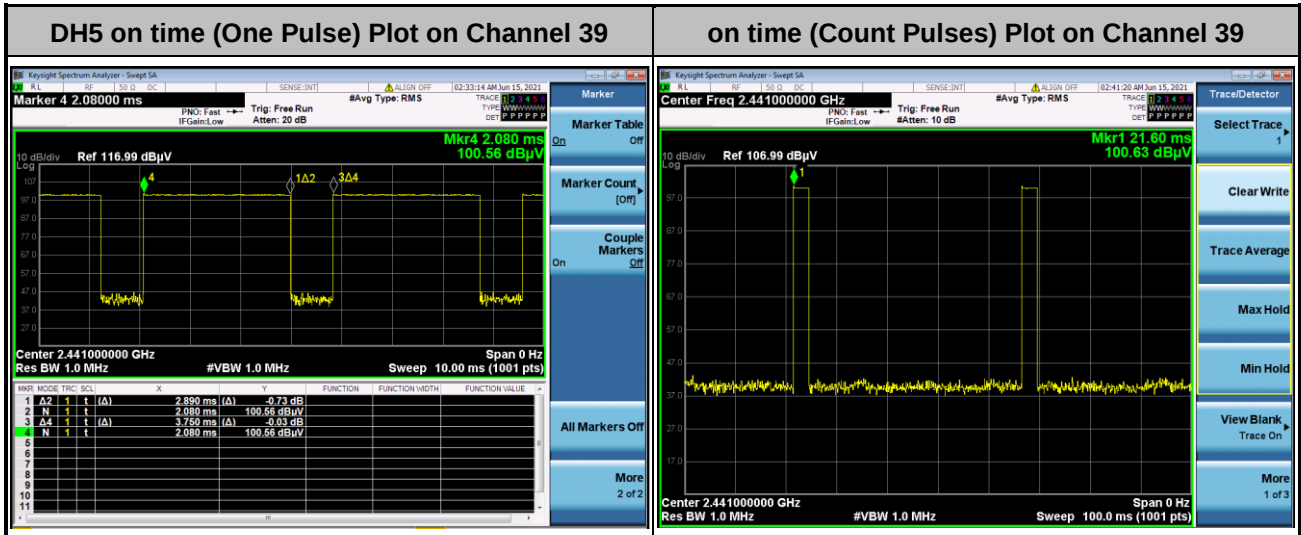
BT	2.4GHz 2400~2483.5MHz	
ANT	BT SHF	
4+3	Horizontal	Vertical
Peak / Avg.	 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 HORIZONTAL	 Site : 03CH11-HY Condition : PEAK_74 In SHF_00991_210512 VERTICAL

Emission below 1GHz
2.4GHz BT (LF)

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
4+3	Horizontal	Vertical
QP / Peak	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC HORIZONTAL	 Site : 03CHI1-HY Condition : QP 3m BE-LO6 6111D-LF_ETC VERTICAL

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. 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. $[100 \text{ ms} / 57.8 \text{ ms}] = 2 \text{ hops}$

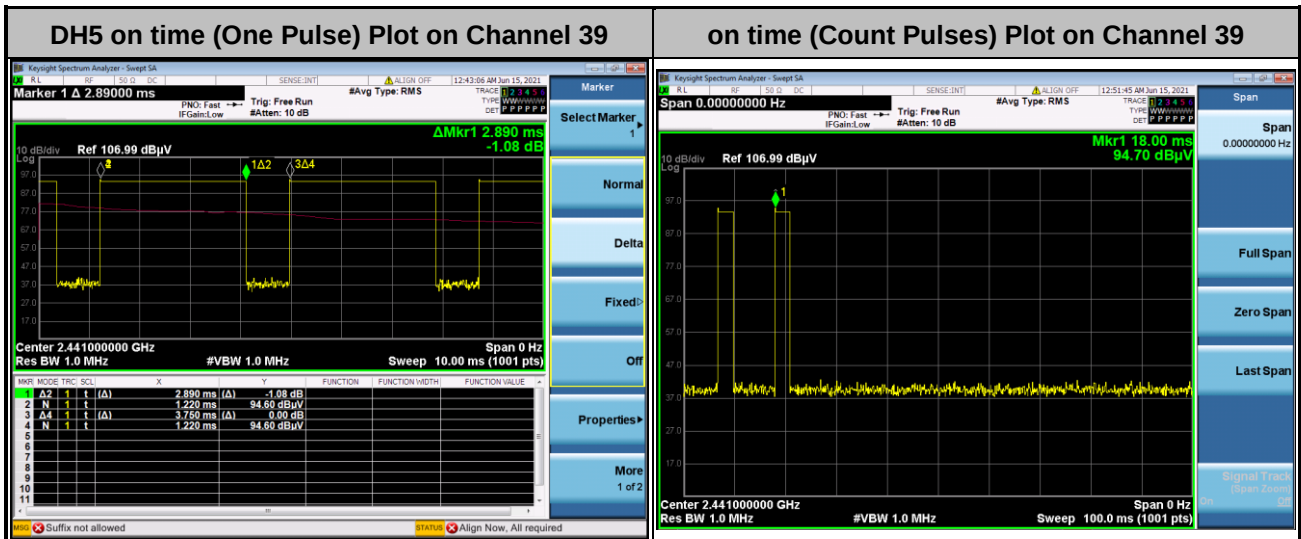
Thus, the maximum possible ON time:

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

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

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

<Ant. 3>



Note:

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

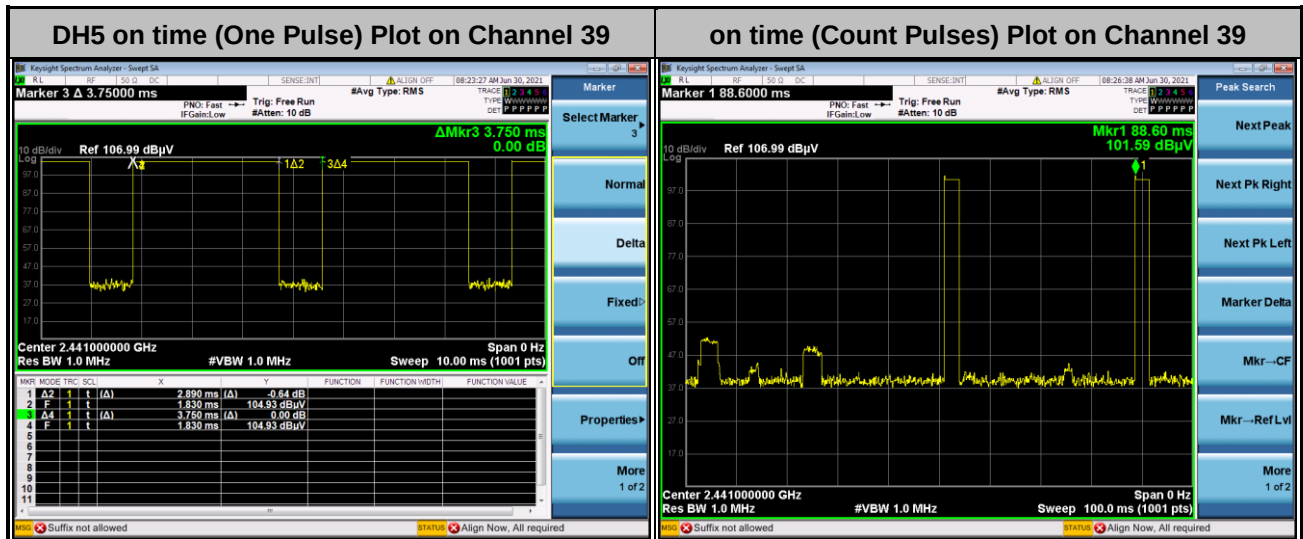
$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

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

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



MIMO <Ant. 4+3>



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.89 / 100 = 5.78 \%$
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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:

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

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

————THE END————