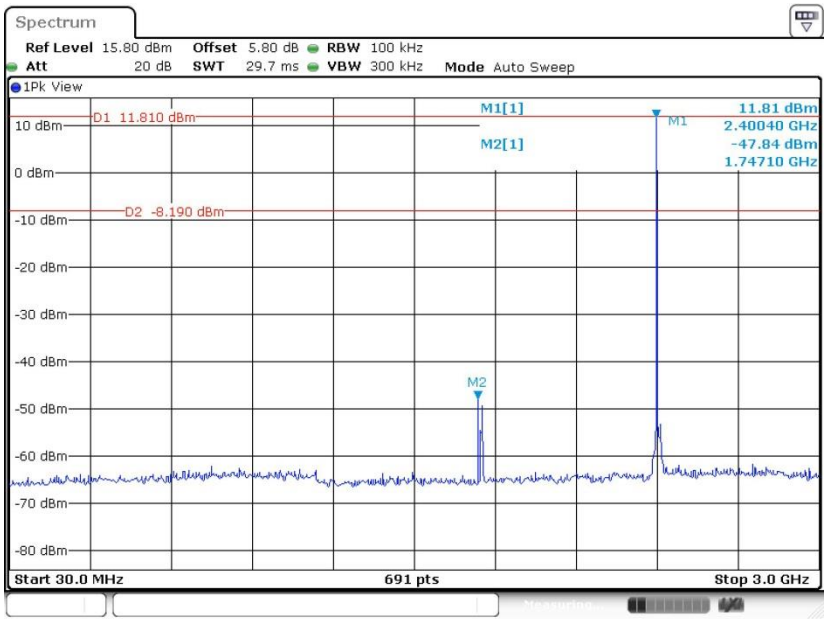
3.7.5 Test Result of Conducted Spurious Emission

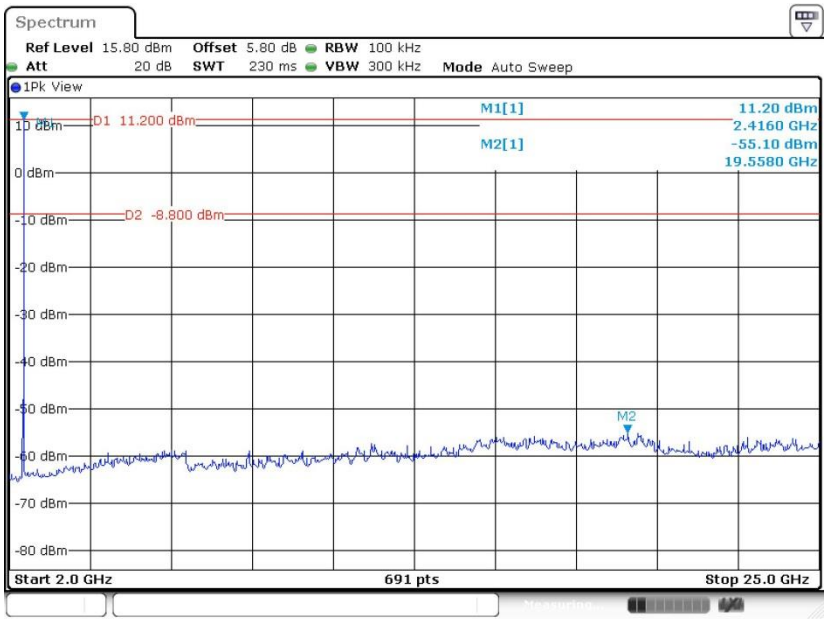
<1Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



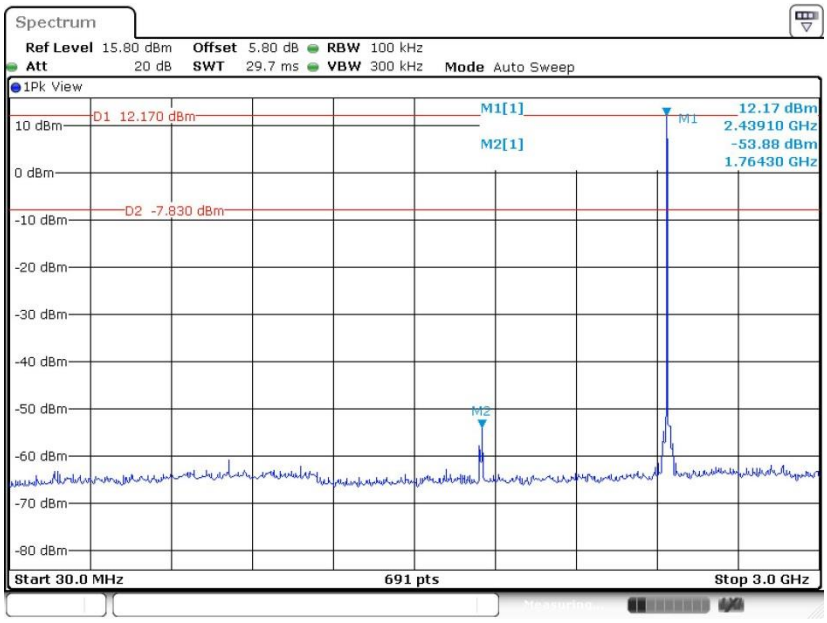
Date: 25.JUN.2020 14:59:36

CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



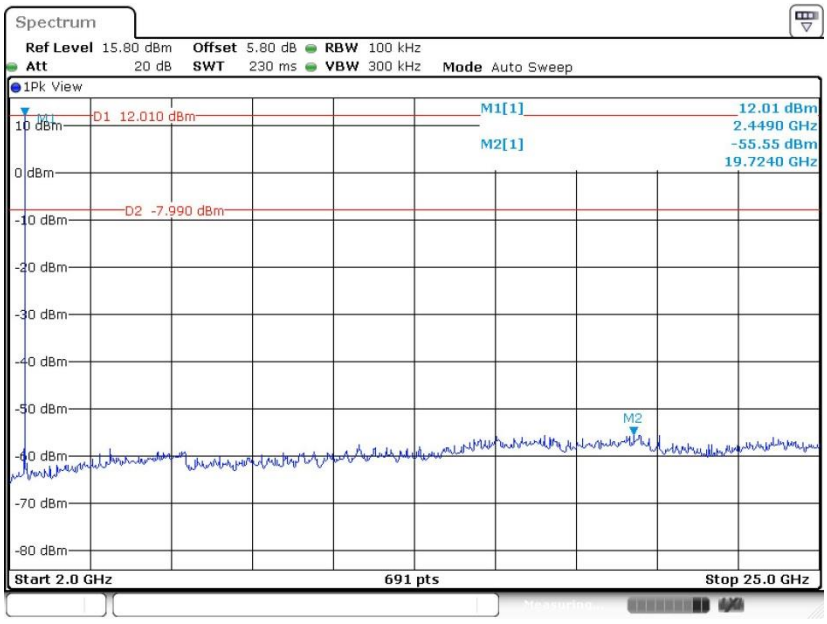
Date: 25.JUN.2020 15:00:02

CSE Plot on Ch 39 between 30MHz ~ 3 GHz



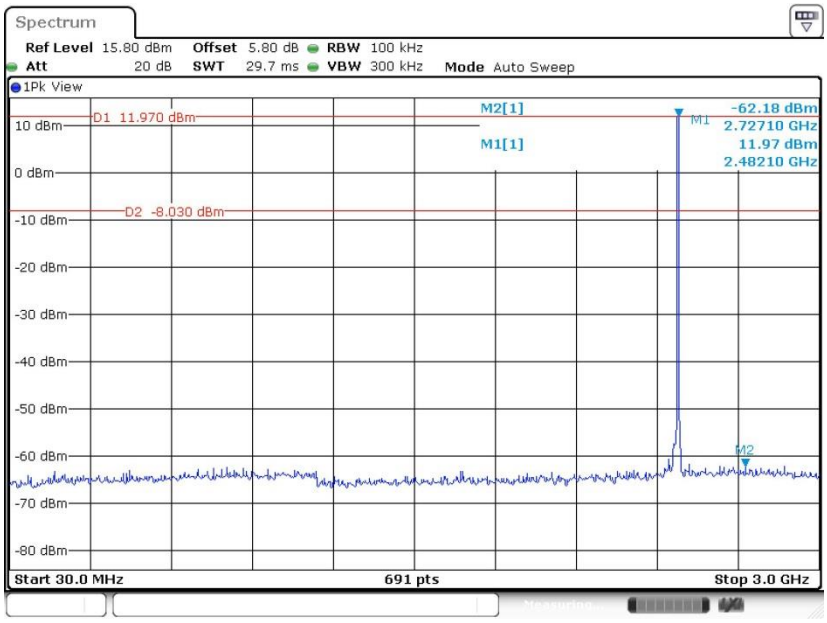
Date: 25.JUN.2020 15:03:19

CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



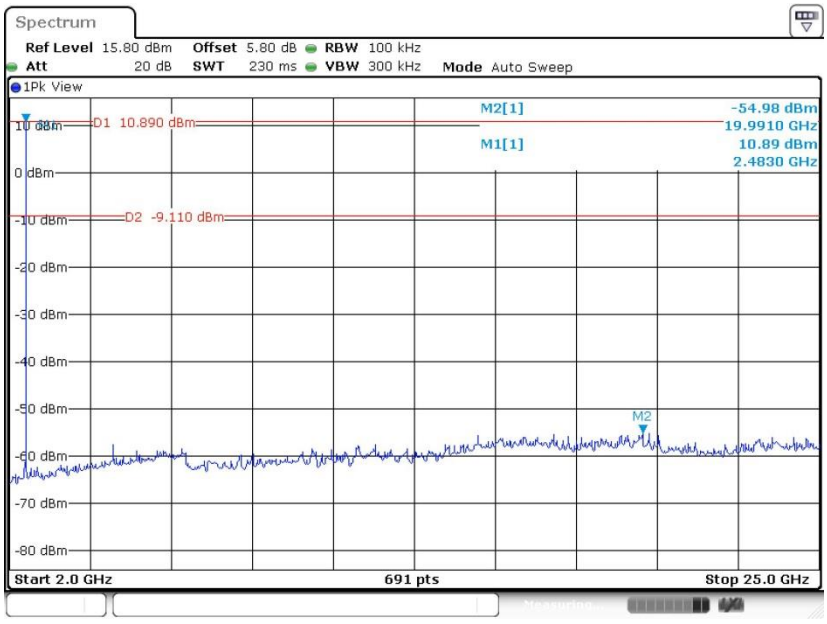
Date: 25.JUN.2020 15:03:48

CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 25.JUN.2020 15:07:38

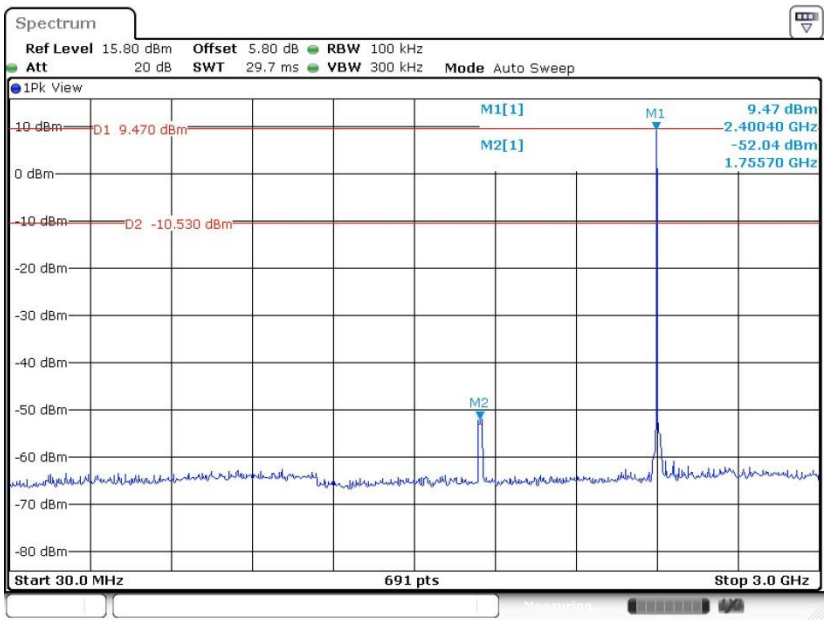
CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 25.JUN.2020 15:08:05

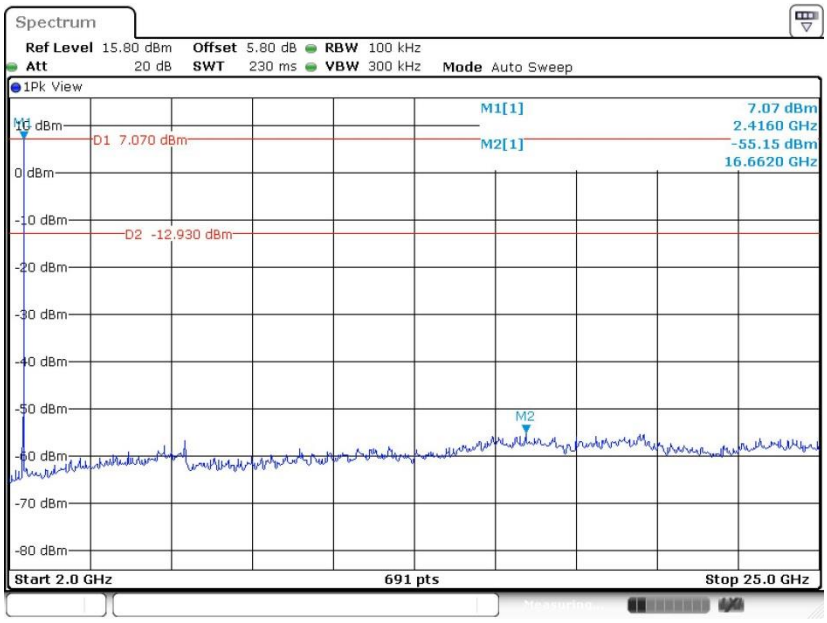
<2Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



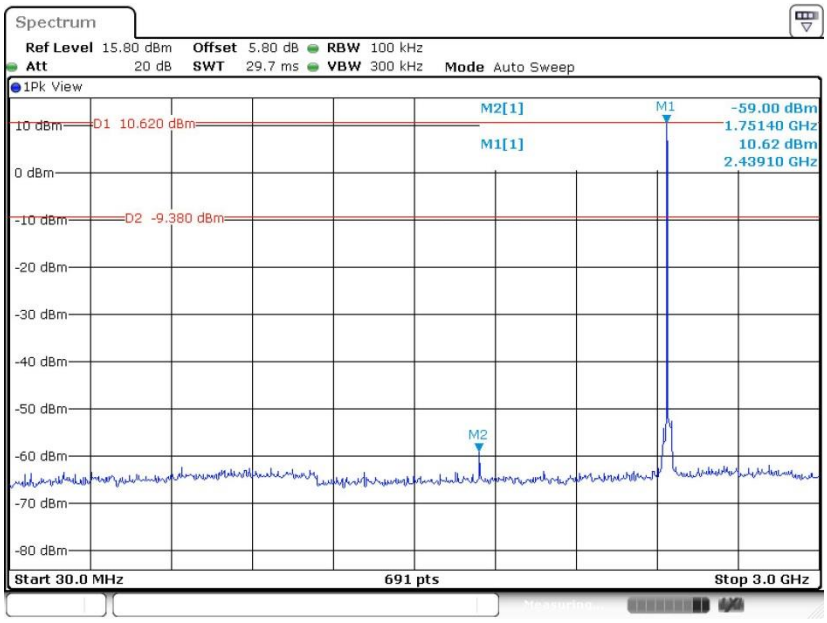
Date: 25.JUN.2020 15:11:40

CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



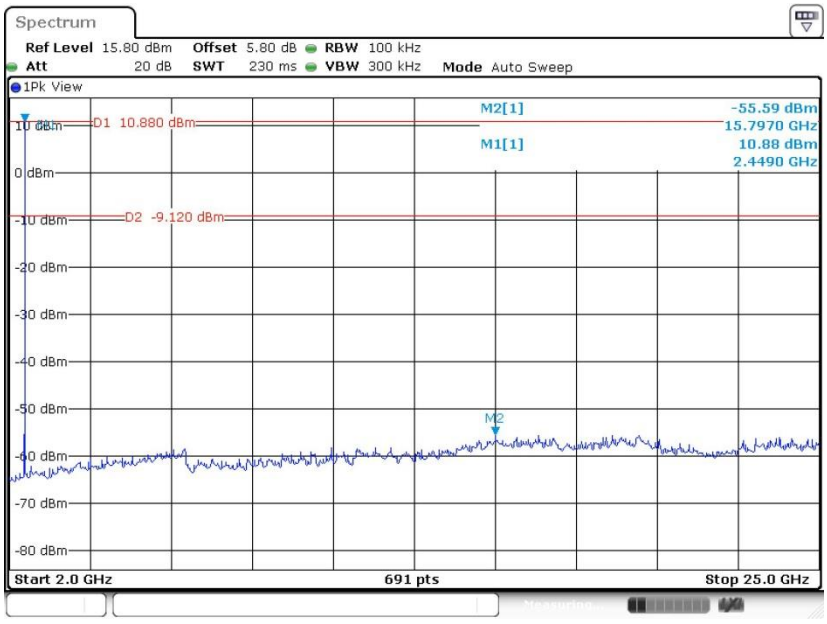
Date: 25.JUN.2020 15:12:07

CSE Plot on Ch 39 between 30MHz ~ 3 GHz



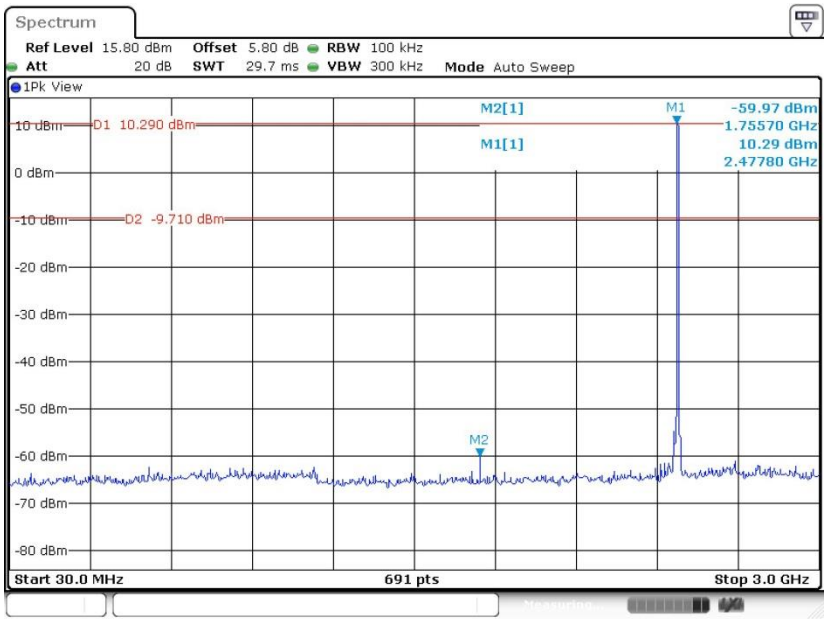
Date: 25.JUN.2020 15:16:34

CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



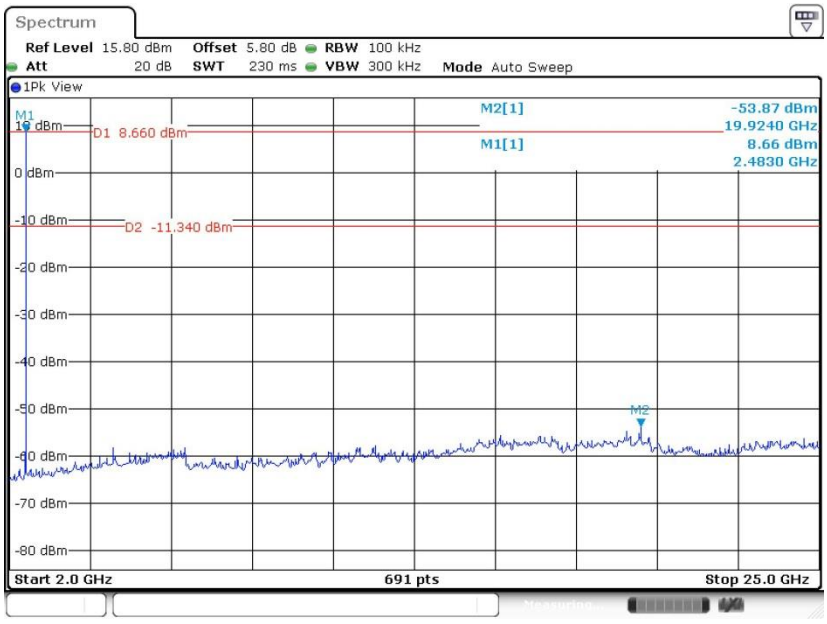
Date: 25.JUN.2020 15:17:06

CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 25.JUN.2020 15:21:07

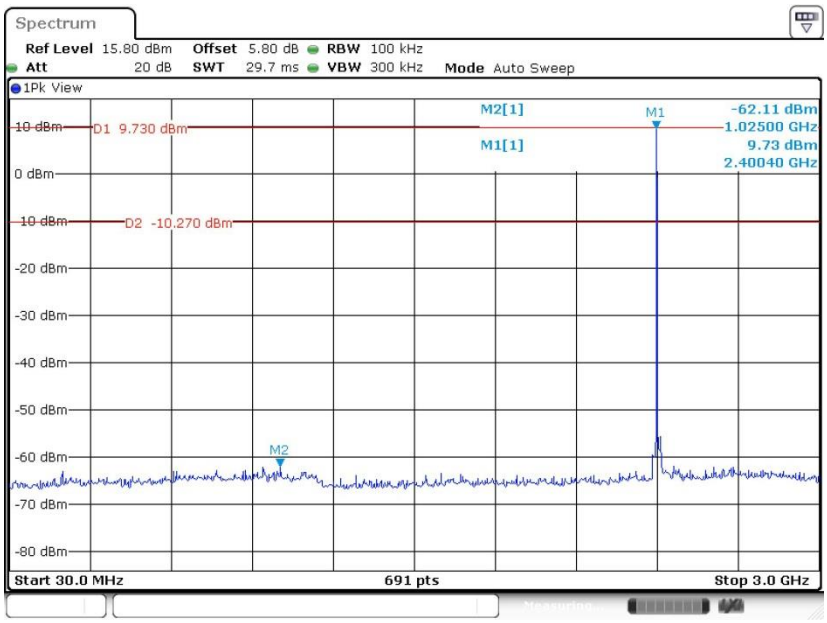
CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 25.JUN.2020 15:21:34

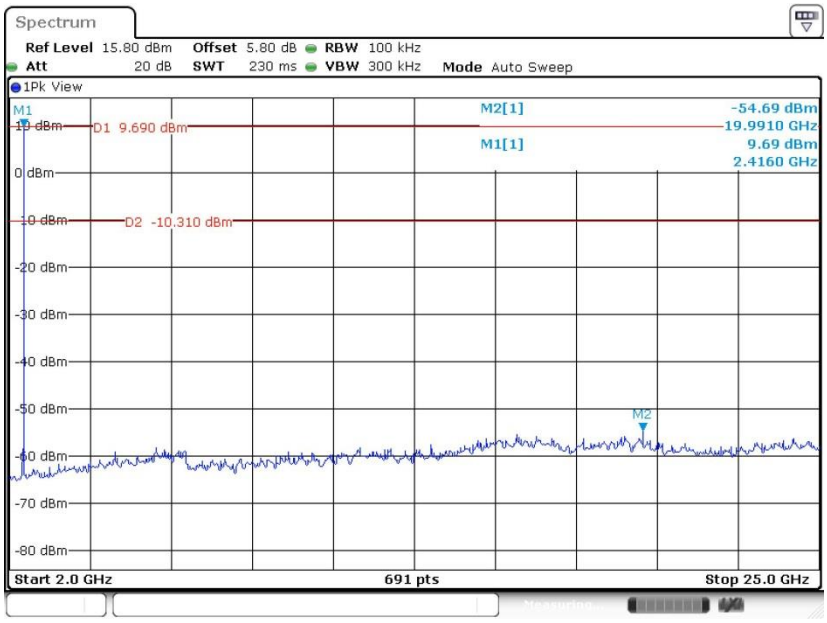
<3Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



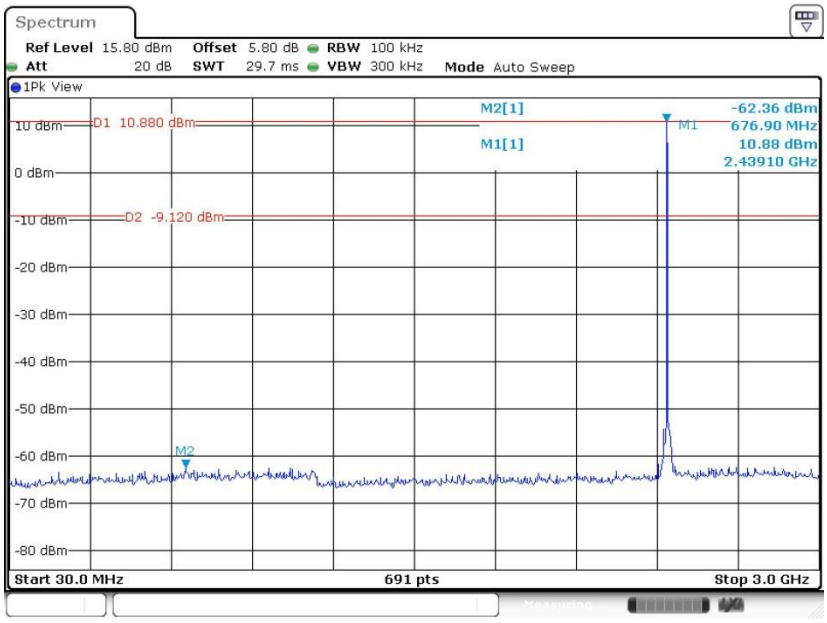
Date: 3.AUG.2020 19:41:04

CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



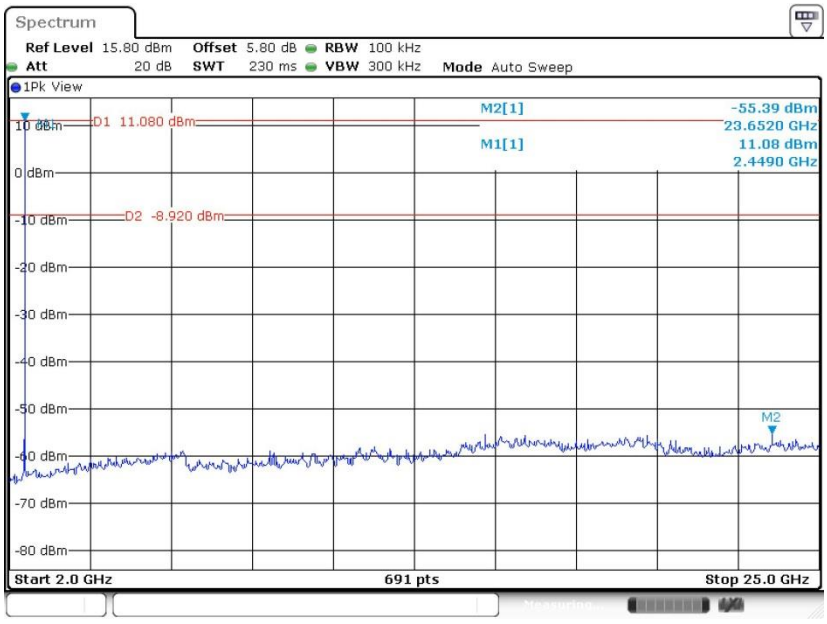
Date: 3.AUG.2020 19:41:32

CSE Plot on Ch 39 between 30MHz ~ 3 GHz



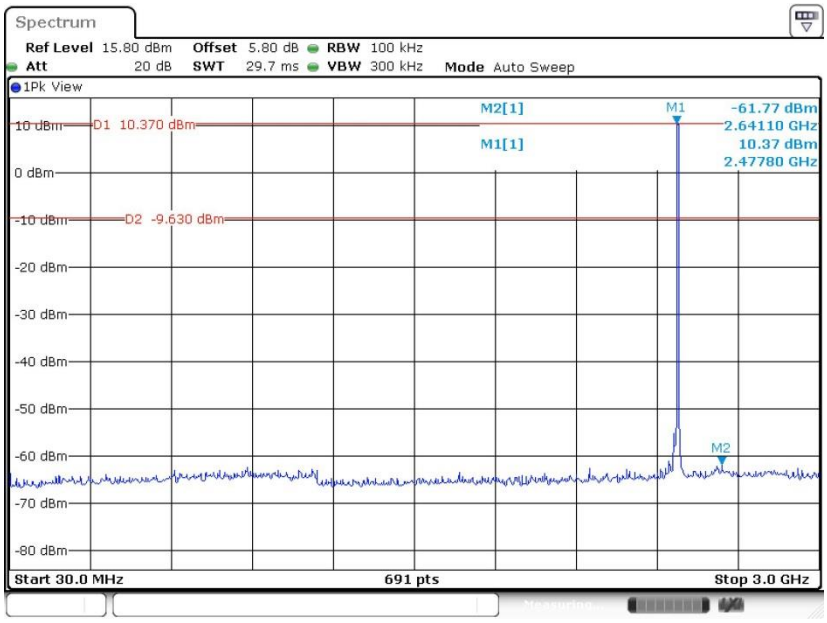
Date: 3.AUG.2020 19:43:26

CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



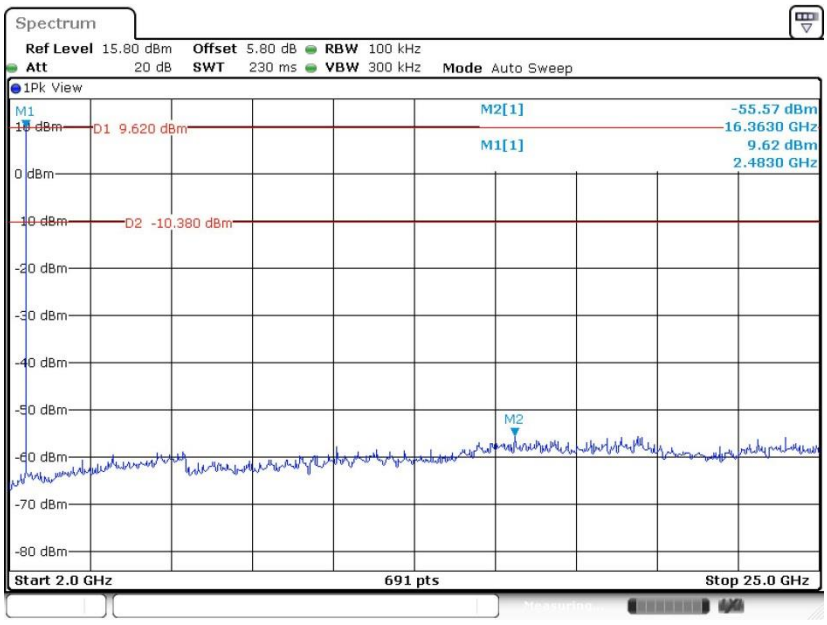
Date: 3.AUG.2020 19:43:54

CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 3.AUG.2020 19:45:16

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 3.AUG.2020 19:45:48

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

The measuring equipment is listed in the section 4 of this test report.

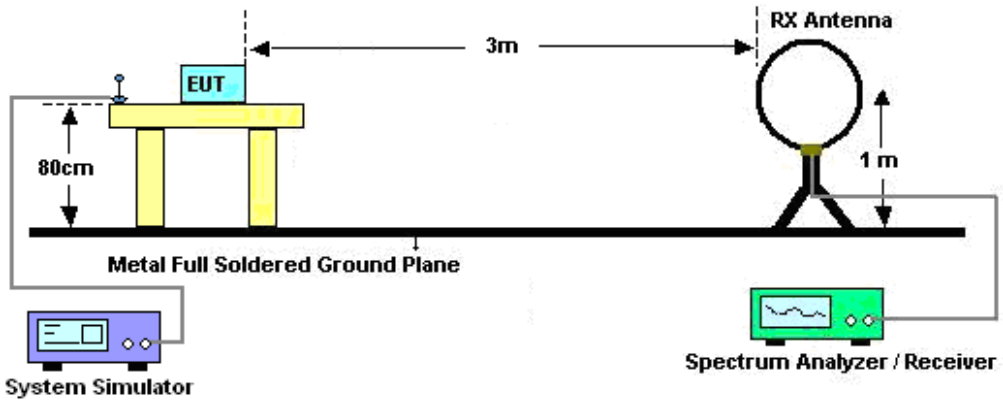
3.8.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz 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 to the maximum power setting and enable the EUT 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=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   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. For testing below 1GHz, 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 1GHz, the emission level of the EUT in peak mode was 20dB 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.

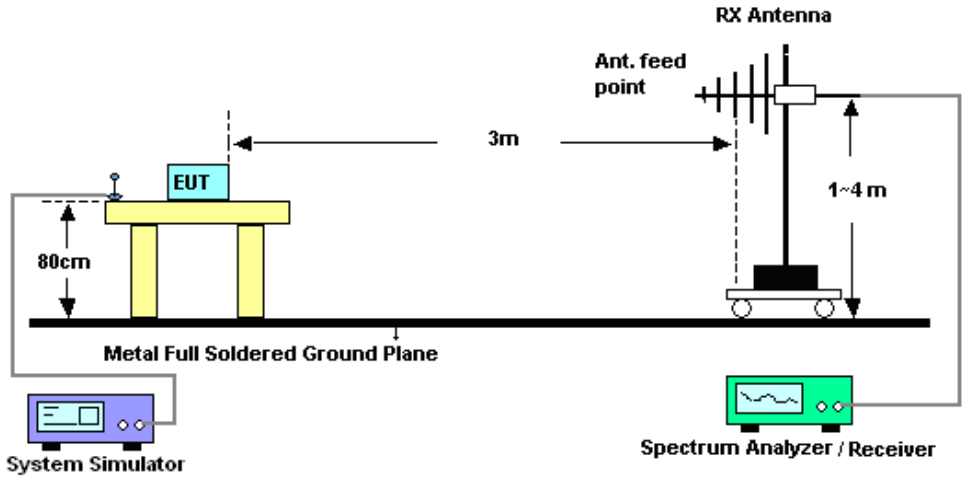
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent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

3.8.4 Test Setup

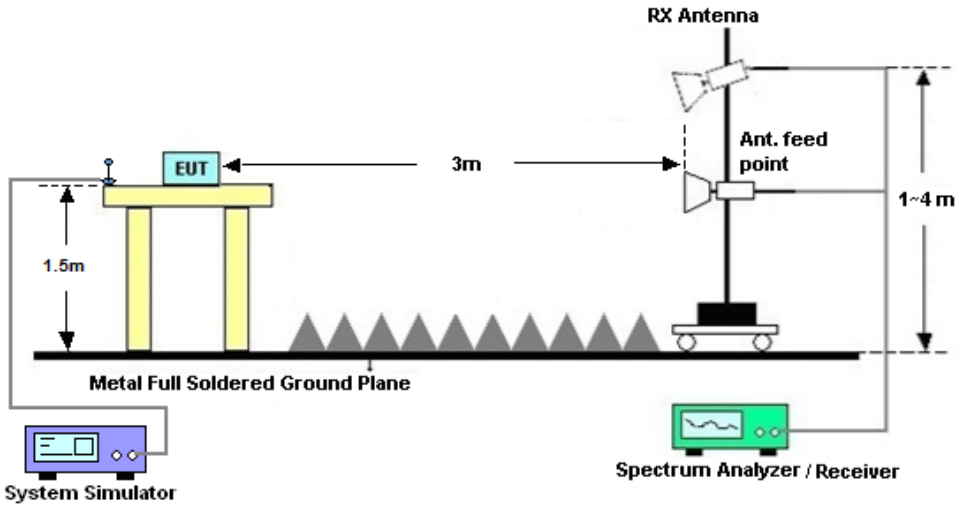
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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 a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

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

Please refer to Appendix C.

3.8.8 Duty cycle correction factor for average measurement

Please refer to Appendix 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 (dBμV)	
	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.

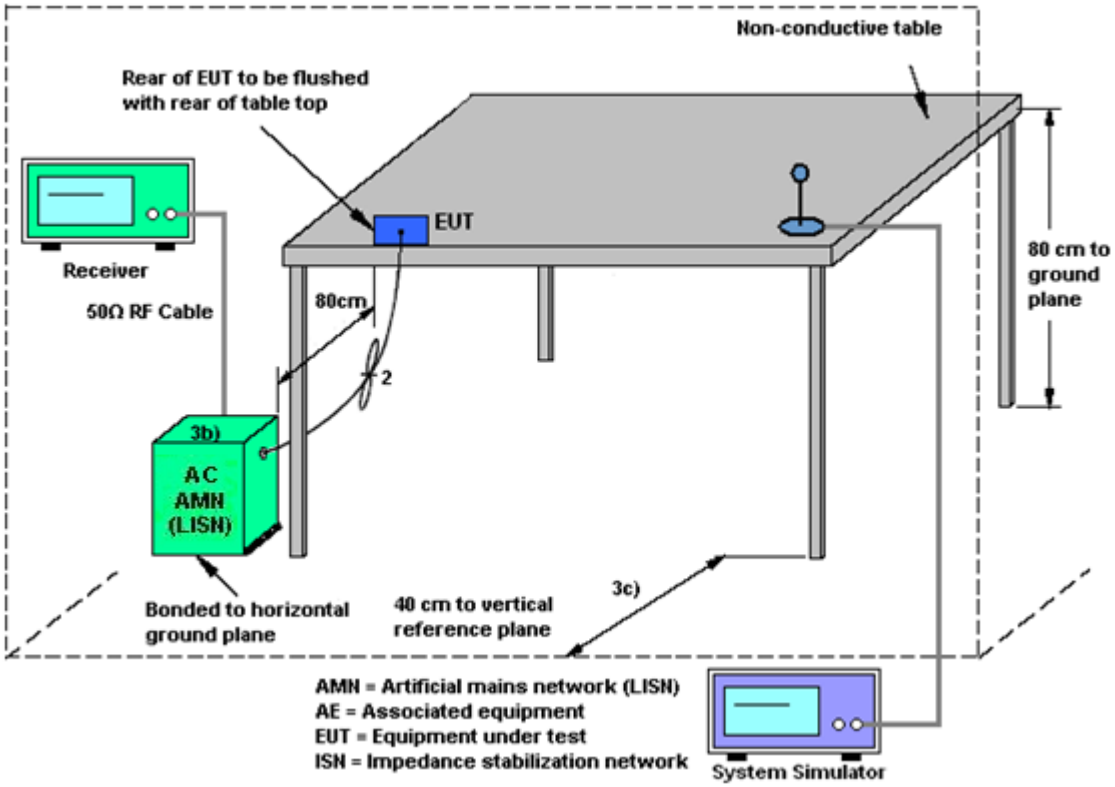
3.9.2 Measuring Instruments

The measuring equipment is listed in the section 4 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 should 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 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 02, 2019	Jun. 18, 2020~ Aug. 03, 2020	Nov. 01, 2020	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 15, 2020	Jun. 18, 2020~ Aug. 03, 2020	Jan. 14, 2021	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 08, 2020	Jun. 18, 2020~ Aug. 03, 2020	Jan. 07, 2021	Conducted (TH01-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 17, 2020	Jul. 25, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 17, 2020	Jul. 25, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 28, 2020	Jul. 25, 2020	May 27, 2021	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Apr. 17, 2020	Jul. 25, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 01, 2020	Jul. 25, 2020	Mar. 31, 2021	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 17, 2020	Jul. 25, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 18, 2019	Jul. 25, 2020	Oct. 17, 2020	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 23, 2019	Jul. 25, 2020	Dec. 22, 2020	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2019	Jul. 25, 2020	Oct. 17, 2020	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21, 2020	Jul. 25, 2020	Jul. 20, 2021	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jul. 25, 2020	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 25, 2020	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 25, 2020	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 14, 2020	Jul. 20, 2020	Apr. 13, 2021	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 18, 2019	Jul. 20, 2020	Oct. 17, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Oct. 28, 2019	Jul. 20, 2020	Oct. 27, 2020	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 18, 2019	Jul. 20, 2020	Oct. 17, 2020	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.9dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Appendix A. Conducted Test Results

Report Number : FR051926A

Bluetooth

Test Engineer:	Aaron Shen	Temperature:	20~26	°C
Test Date:	2020/6/18~2020/8/3	Relative Humidity:	40~51	%

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 (kHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
DH	1Mbps	1	0	2402	0.941	0.842	998.600	0.6271	Pass
DH	1Mbps	1	39	2441	0.935	0.836	1302.500	0.6233	Pass
DH	1Mbps	1	78	2480	0.938	0.842	1002.900	0.6252	Pass
2DH	2Mbps	1	0	2402	1.285	1.172	1002.900	0.8567	Pass
2DH	2Mbps	1	39	2441	1.285	1.178	972.500	0.8567	Pass
2DH	2Mbps	1	78	2480	1.289	1.178	1124.500	0.8596	Pass
3DH	3Mbps	1	0	2402	1.259	1.161	998.600	0.8393	Pass
3DH	3Mbps	1	39	2441	1.259	1.169	1302.500	0.8393	Pass
3DH	3Mbps	1	78	2480	1.259	1.166	1011.600	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	2.8841	0.31	0.4	Pass
AFH	20	53.33	2.8841	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	12.13	20.97	Pass
	39	1	**12.98**	20.97	Pass
	78	1	12.65	20.97	Pass

2DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
2DH1	0	1	11.29	20.97	Pass
	39	1	**12.32**	20.97	Pass
	78	1	11.76	20.97	Pass

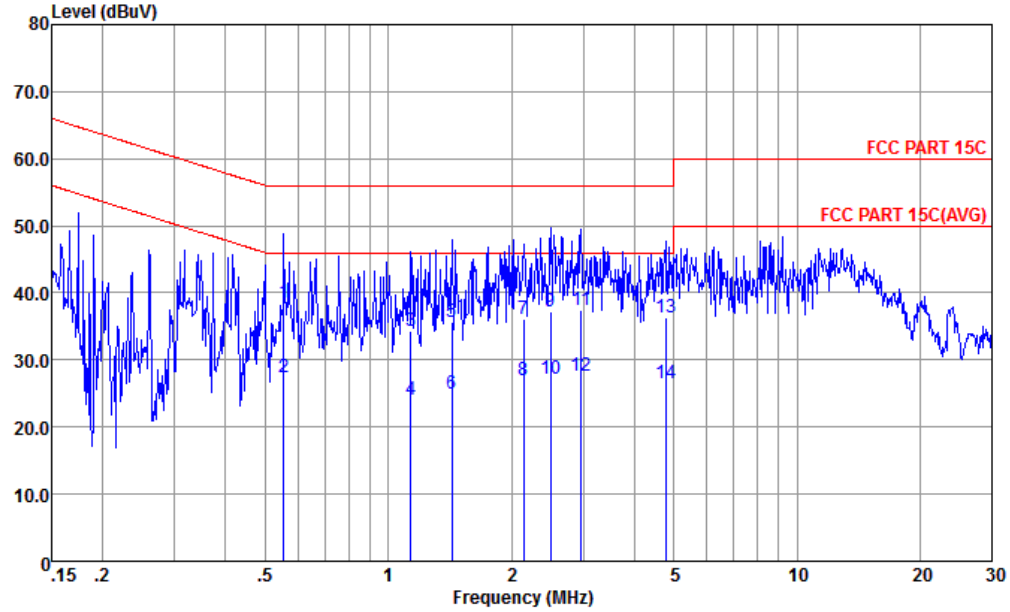
3DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
3DH1	0	1	11.62	20.97	Pass
	39	1	**12.70**	20.97	Pass
	78	1	12.10	20.97	Pass

TEST RESULTS DATA
Number of Hopping Frequency

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

Appendix B. AC Conducted Emission Test Results

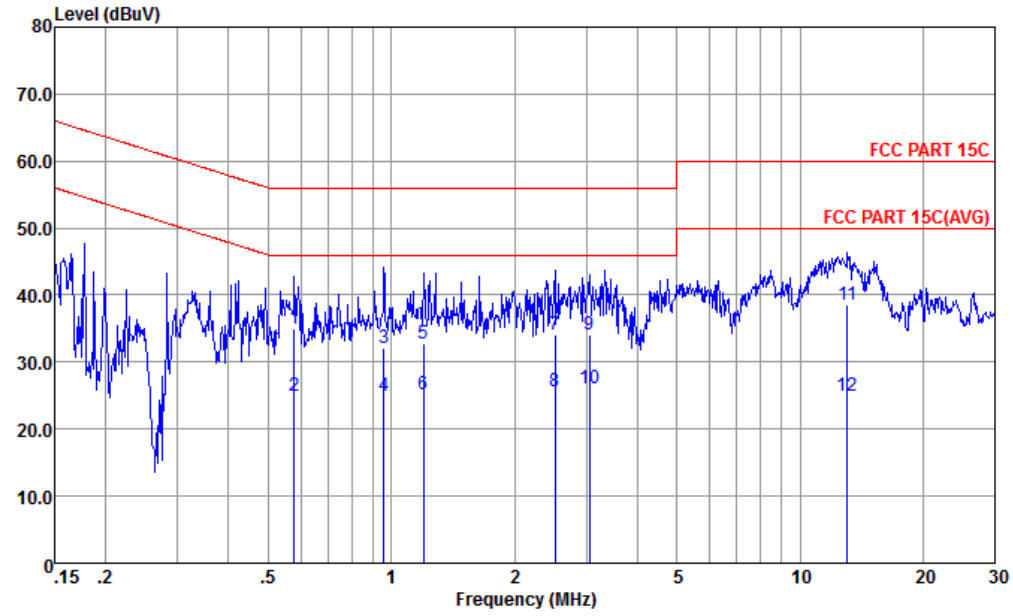
Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line



Site : CO01-KS
Condition : FCC PART 15C LISN-L-191028-CN02 LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	*	0.555	38.57	-17.43	56.00	28.19	0.14	10.24	QP
2		0.555	27.47	-18.53	46.00	17.09	0.14	10.24	Average
3		1.135	34.35	-21.65	56.00	23.90	0.22	10.23	QP
4		1.135	24.05	-21.95	46.00	13.60	0.22	10.23	Average
5		1.433	35.72	-20.28	56.00	25.20	0.29	10.23	QP
6		1.433	25.02	-20.98	46.00	14.50	0.29	10.23	Average
7		2.144	36.14	-19.86	56.00	25.50	0.41	10.23	QP
8		2.144	26.94	-19.06	46.00	16.30	0.41	10.23	Average
9		2.500	37.30	-18.70	56.00	26.60	0.46	10.24	QP
10		2.500	27.30	-18.70	46.00	16.60	0.46	10.24	Average
11		2.962	37.35	-18.65	56.00	26.60	0.51	10.24	QP
12		2.962	27.65	-18.35	46.00	16.90	0.51	10.24	Average
13		4.772	36.42	-19.58	56.00	25.50	0.65	10.27	QP
14		4.772	26.52	-19.48	46.00	15.60	0.65	10.27	Average

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral



Site : CO01-KS
Condition : FCC PART 15C LISN-N-191028-CN02 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.579	35.08	-20.92	56.00	24.60	0.24	10.24	QP
2	0.579	24.98	-21.02	46.00	14.50	0.24	10.24	Average
3	0.958	32.02	-23.98	56.00	21.49	0.29	10.24	QP
4	0.958	25.02	-20.98	46.00	14.49	0.29	10.24	Average
5	1.197	32.78	-23.22	56.00	22.20	0.35	10.23	QP
6	1.197	25.08	-20.92	46.00	14.50	0.35	10.23	Average
7	2.513	34.13	-21.87	56.00	23.29	0.60	10.24	QP
8	2.513	25.73	-20.27	46.00	14.89	0.60	10.24	Average
9	3.058	34.10	-21.90	56.00	23.20	0.66	10.24	QP
10 *	3.058	26.00	-20.00	46.00	15.10	0.66	10.24	Average
11	13.057	38.65	-21.35	60.00	26.60	1.67	10.38	QP
12	13.057	24.95	-25.05	50.00	12.90	1.67	10.38	Average

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable 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		2386.125	42.24	-31.76	74	43.2	27.8	4.82	33.58	291	40	P	H
		2386.125	17.45	-36.55	54	-	-	-	-	291	40	A	H
	*	2402	103.34	-	-	104.28	27.8	4.82	33.56	291	40	P	H
	*	2402	78.55	-	-	-	-	-	-	291	40	A	H
		2389.275	41.95	-32.05	74	42.91	27.8	4.82	33.58	177	114	P	V
		2389.275	17.16	-36.84	54	-	-	-	-	177	114	A	V
	*	2402	94.91	-	-	95.85	27.8	4.82	33.56	177	114	P	V
	*	2402	70.12	-	-	-	-	-	-	177	114	A	V
BT CH 39 2441MHz		2364.74	41.36	-32.64	74	42.31	27.85	4.78	33.58	148	30	P	H
		2364.74	16.57	-37.43	54	-	-	-	-	148	30	A	H
	*	2441	103.91	-	-	104.87	27.71	4.86	33.53	148	30	P	H
	*	2441	79.12	-	-	-	-	-	-	148	30	A	H
		2491.67	40.93	-33.07	74	41.91	27.63	4.9	33.51	148	30	P	H
		2491.67	16.14	-37.86	54	-	-	-	-	148	30	A	H
		2347.24	40	-34	74	40.93	27.88	4.78	33.59	207	45	P	V
		2347.24	15.21	-38.79	54	-	-	-	-	207	45	A	V
	*	2441	98.25	-	-	99.22	27.71	4.86	33.54	207	45	P	V
	*	2441	73.46	-	-	-	-	-	-	207	45	A	V
		2486.14	40.96	-33.04	74	41.91	27.66	4.9	33.51	207	45	P	V
		2486.14	16.17	-37.83	54	-	-	-	-	207	45	A	V

BT CH 78 2480MHz	*	2480	104.81	-	-	105.76	27.66	4.9	33.51	308	31	P	H
	*	2480	80.02	-	-	-	-	-	-	308	31	A	H
		2483.6	51.24	-22.76	74	52.19	27.66	4.9	33.51	308	31	P	H
		2483.6	26.45	-27.55	54	-	-	-	-	308	31	A	H
	*	2480	96.41	-	-	97.36	27.66	4.9	33.51	233	40	P	V
	*	2480	71.62	-	-	-	-	-	-	233	40	A	V
		2483.52	42.8	-31.2	74	43.75	27.66	4.9	33.51	233	40	P	V
		2483.52	18.01	-35.99	54	-	-	-	-	233	40	A	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	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 00 2402MHz		4804	42.02	-31.98	74	60.86	31.1	7.53	57.47	151	219	P	H
		4804	17.23	-36.77	54	-	-	-	-	151	219	A	H
		4804	43.2	-30.8	74	62.04	31.1	7.53	57.47	151	219	P	V
		4804	18.41	-35.59	54	-	-	-	-	151	219	A	V
BT CH 39 2441MHz		4882	42.34	-31.66	74	61.07	31.17	7.62	57.52	159	251	P	H
		4882	17.55	-36.45	54	-	-	-	-	159	251	A	H
		7323	45.05	-28.95	74	58.84	36.08	9.06	58.93	188	331	P	H
		7323	20.26	-33.74	54	-	-	-	-	188	331	A	H
		4882	44.28	-29.72	74	63.01	31.17	7.62	57.52	150	258	P	V
		4882	19.49	-34.51	54	-	-	-	-	150	258	A	V
		7323	45.25	-28.75	74	59.04	36.08	9.06	58.93	152	309	P	V
		7323	20.46	-33.54	54	-	-	-	-	152	309	A	V
BT CH 78 2480MHz		4960	40.45	-33.55	74	59.06	31.25	7.72	57.58	118	289	P	H
		4960	15.66	-38.34	54	-	-	-	-	118	289	A	H
		7440	45.2	-28.8	74	58.66	36.44	9.08	58.98	158	273	P	H
		7440	20.41	-33.59	54	-	-	-	-	158	273	A	H
		4960	42.23	-31.77	74	60.84	31.25	7.72	57.58	192	213	P	V
		4960	17.44	-36.56	54	-	-	-	-	192	213	A	V
		7440	47.11	-26.89	74	60.57	36.44	9.08	58.98	114	202	P	V
		7440	22.32	-31.68	54	-	-	-	-	114	202	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	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)
2.4GHz BT LF		30.97	22.8	-17.2	40	30.49	24.18	0.53	32.4	-	-	P	H
		85.29	29.77	-10.23	40	46.95	14.35	0.87	32.4	130	77	P	H
		227.88	26.7	-19.3	46	41.09	16.1	1.43	31.92	-	-	P	H
		343.31	25.36	-20.64	46	35.01	20.29	1.76	31.7	-	-	P	H
		754.59	28.08	-17.92	46	30.91	25.65	2.64	31.12	-	-	P	H
		992.24	29.12	-24.88	54	29.75	27.42	3.04	31.09	-	-	P	H
		34.85	32.61	-7.39	40	42.35	22.1	0.56	32.4	100	52	P	V
		86.26	22.23	-17.77	40	39.21	14.54	0.88	32.4	-	-	P	V
		202.66	25.62	-17.88	43.5	41.14	15.21	1.35	32.08	-	-	P	V
		607.15	27.23	-18.77	46	30.76	24.81	2.37	30.71	-	-	P	V
		890.39	28.62	-17.38	46	30.75	26.47	2.88	31.48	-	-	P	V
		997.09	30.49	-23.51	54	31.01	27.47	3.04	31.03	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		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. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable 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)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

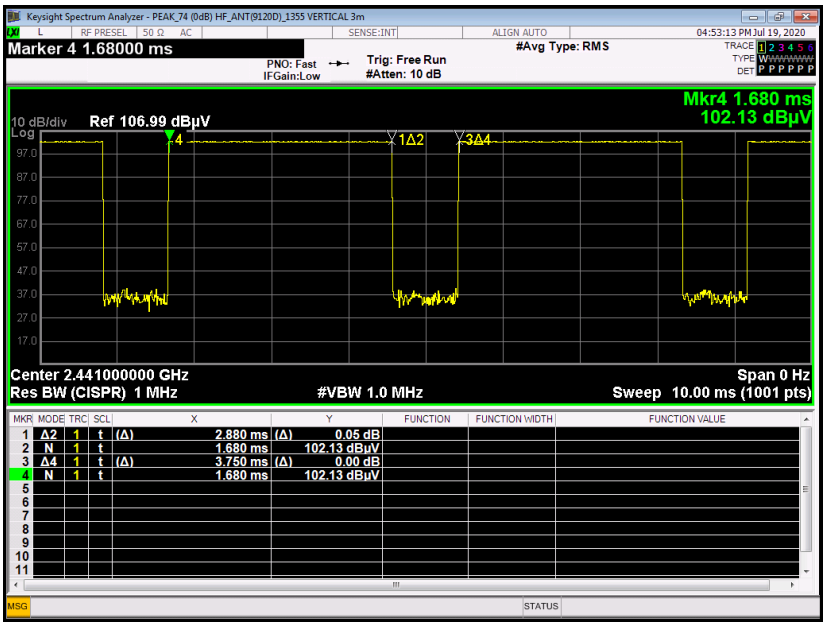
= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

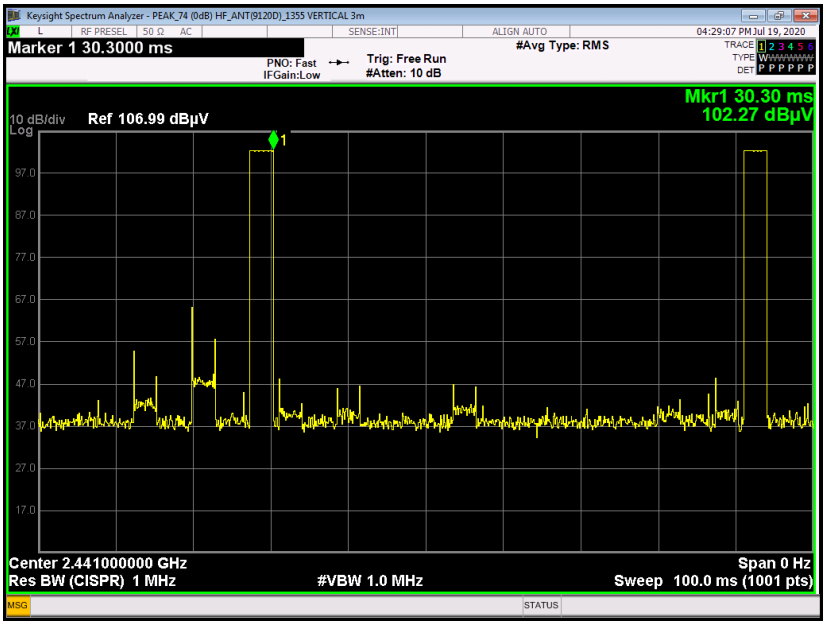
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix D. Duty Cycle Plots

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



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.