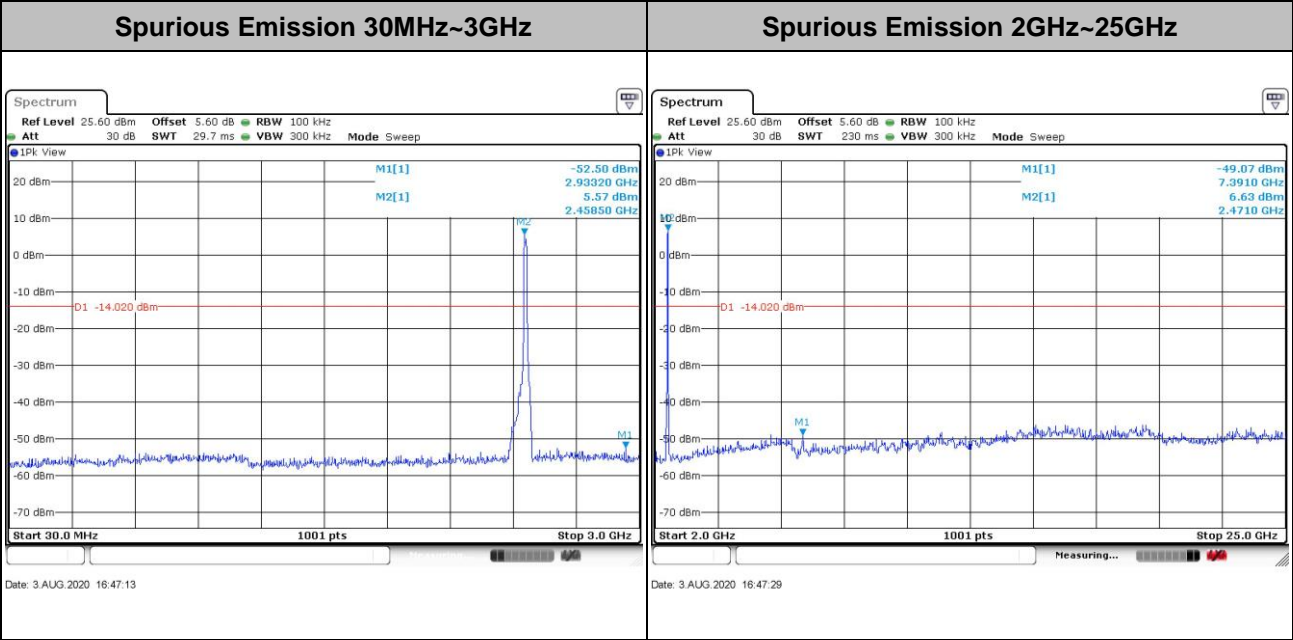
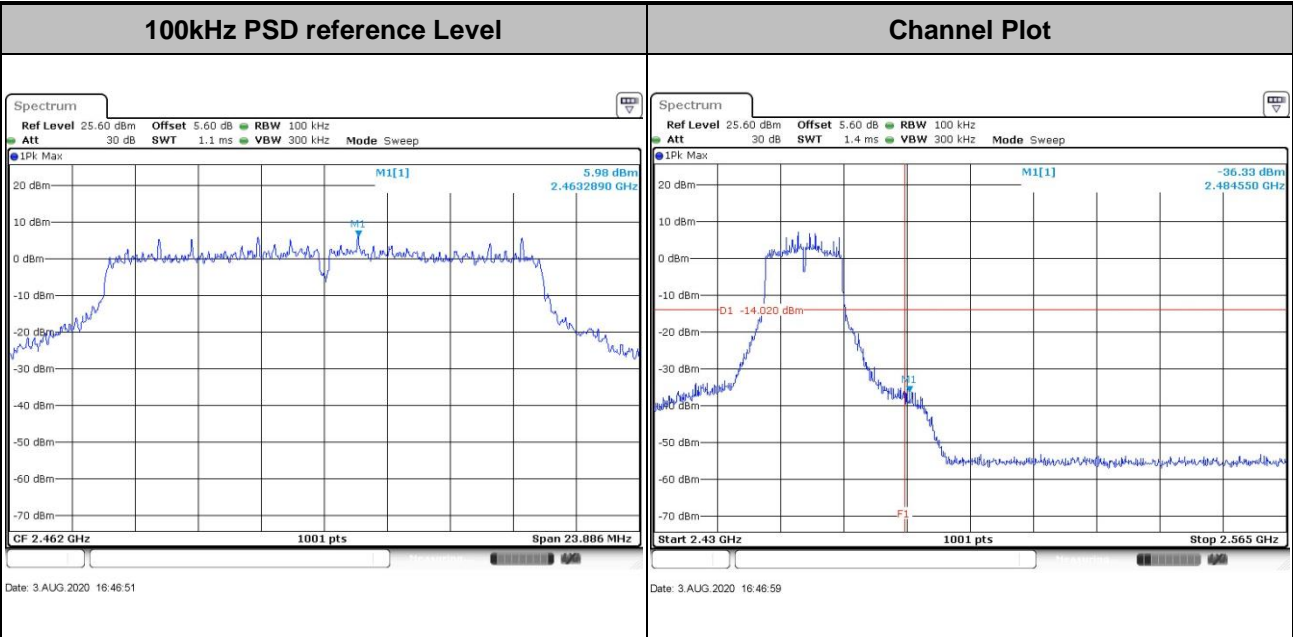


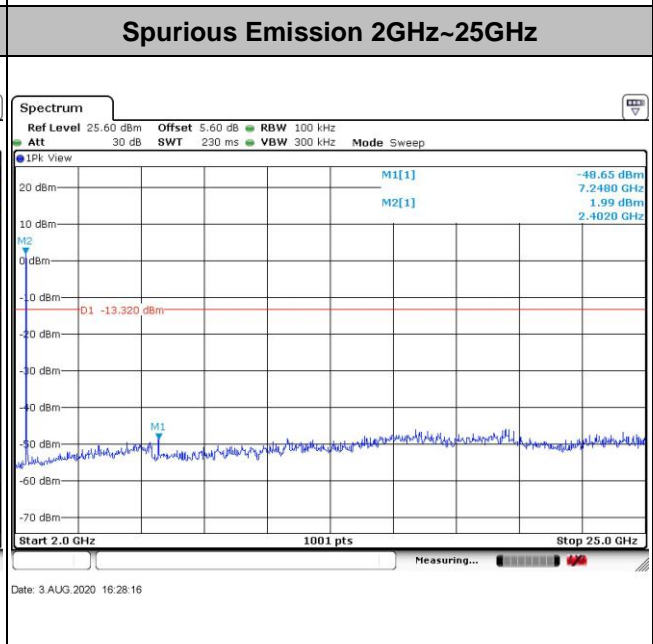
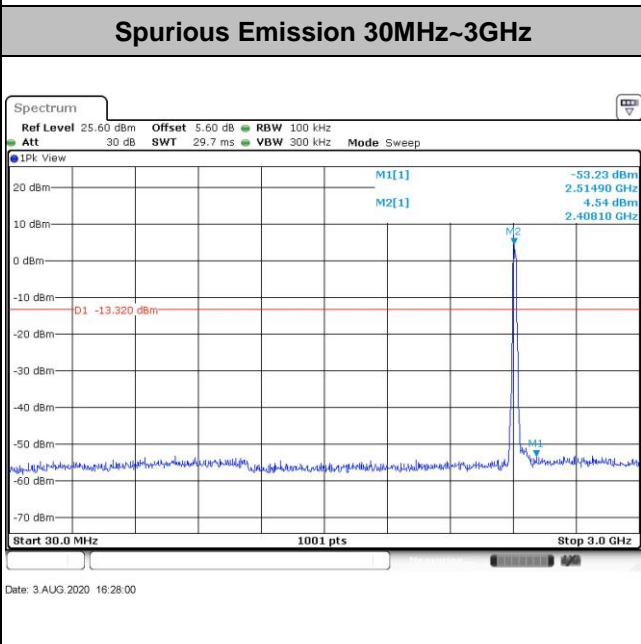
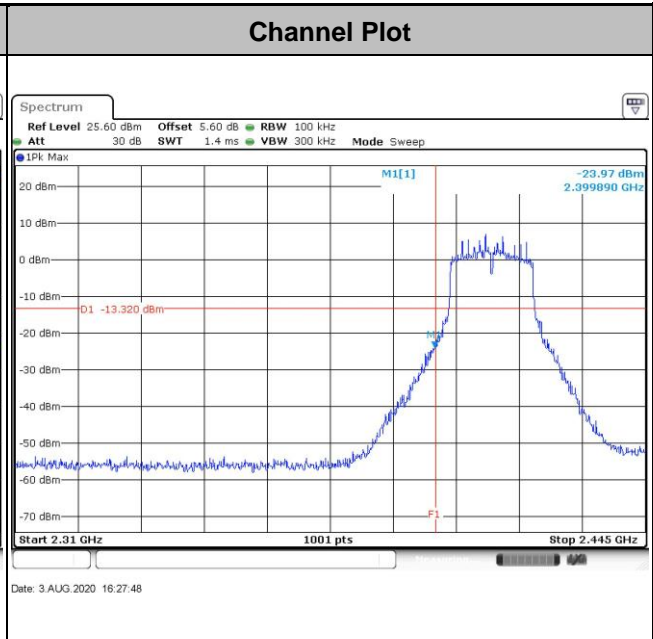
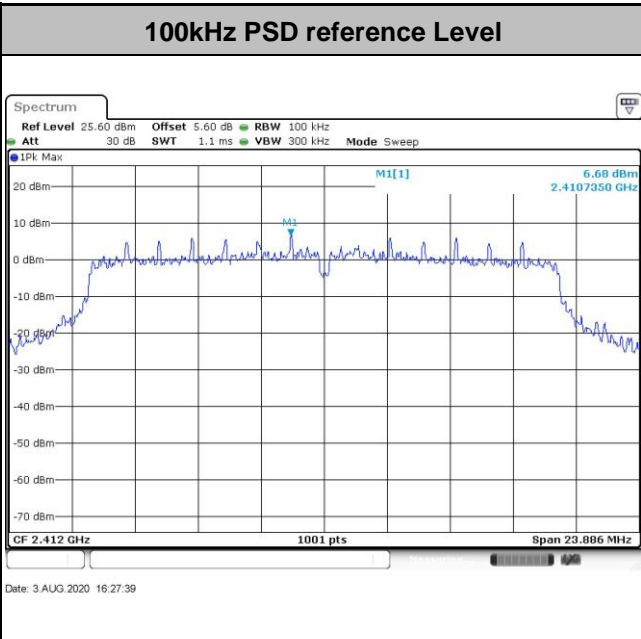


Test Mode :	802.11g	Test Channel :	11
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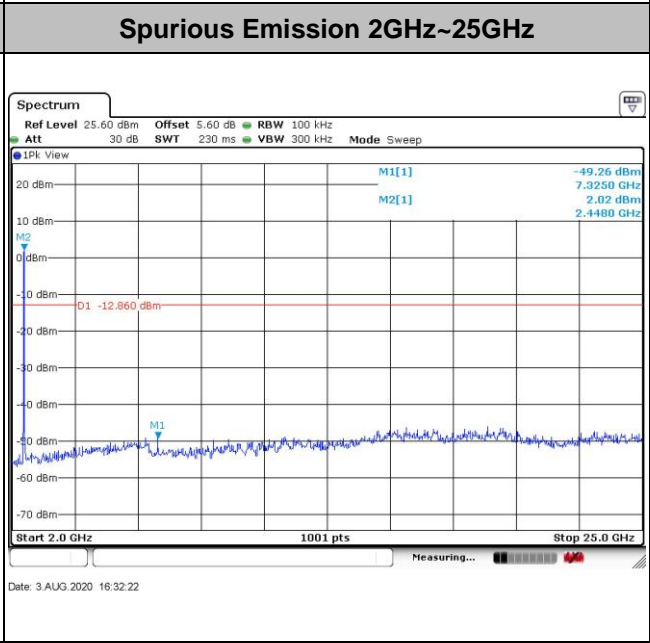
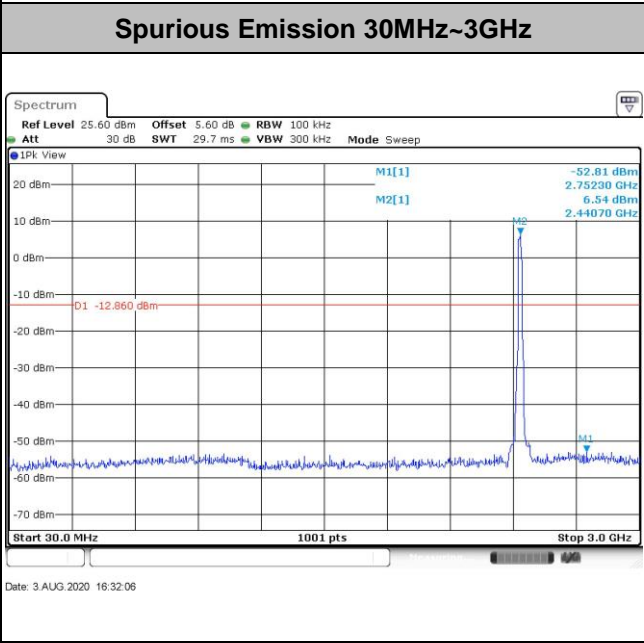
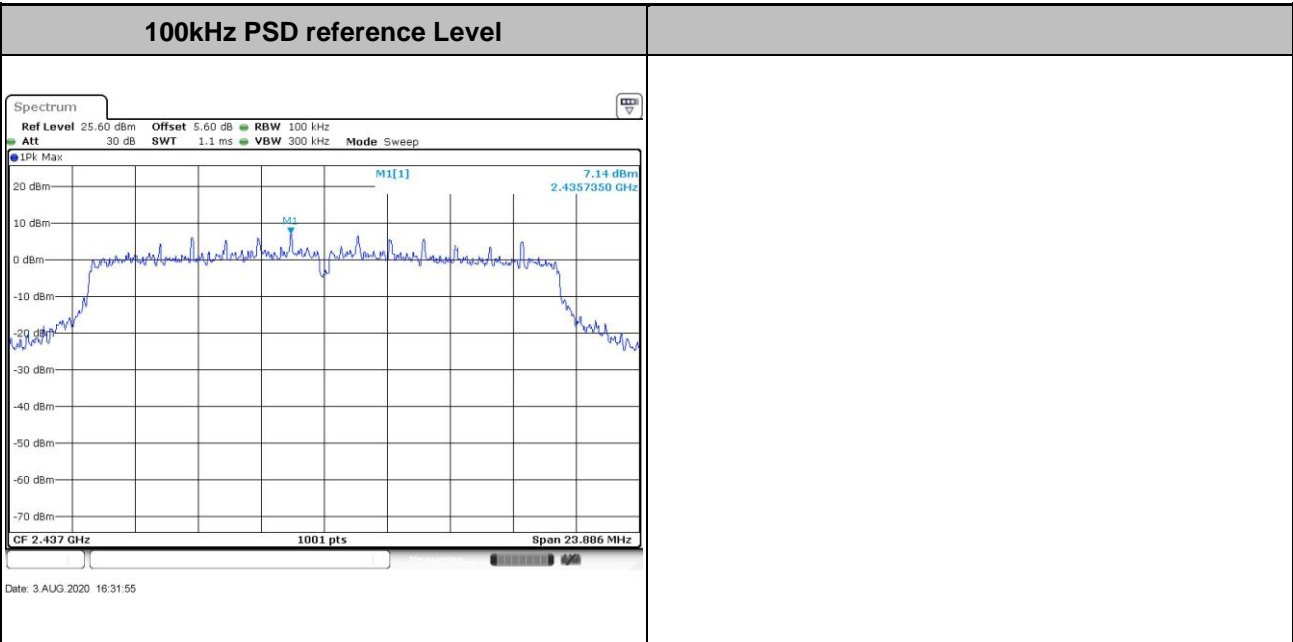


Test Mode : 802.11n HT20 Test Channel : 01



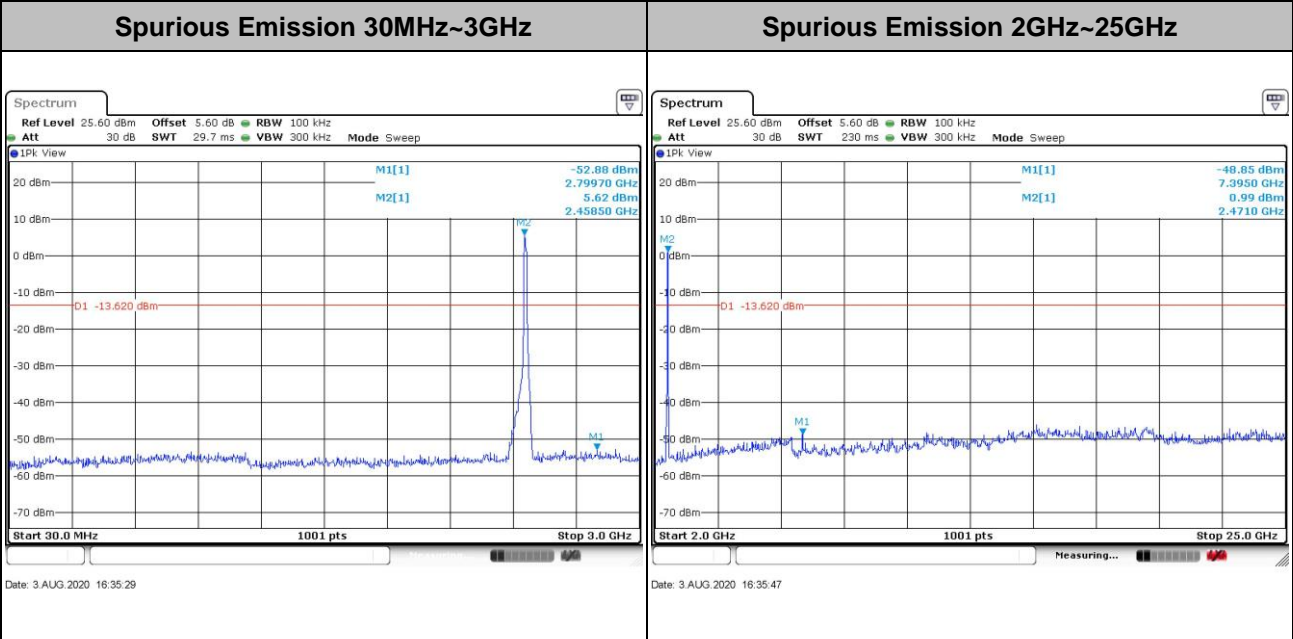
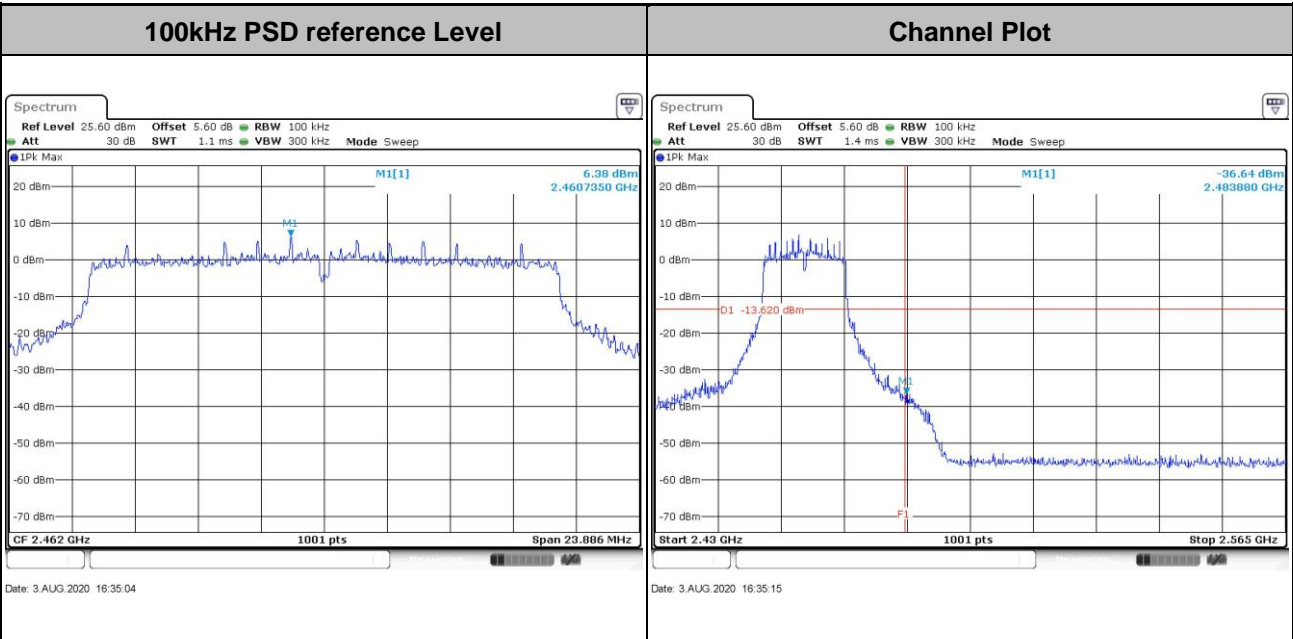


Test Mode :	802.11n HT20	Test Channel :	06
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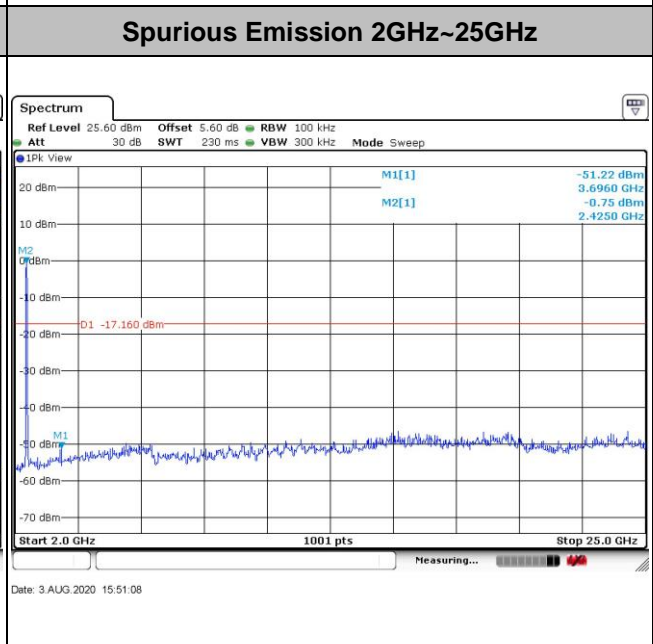
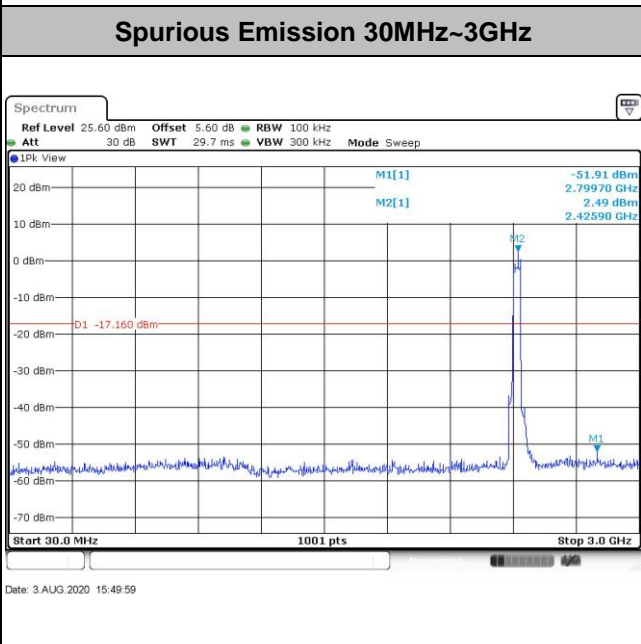
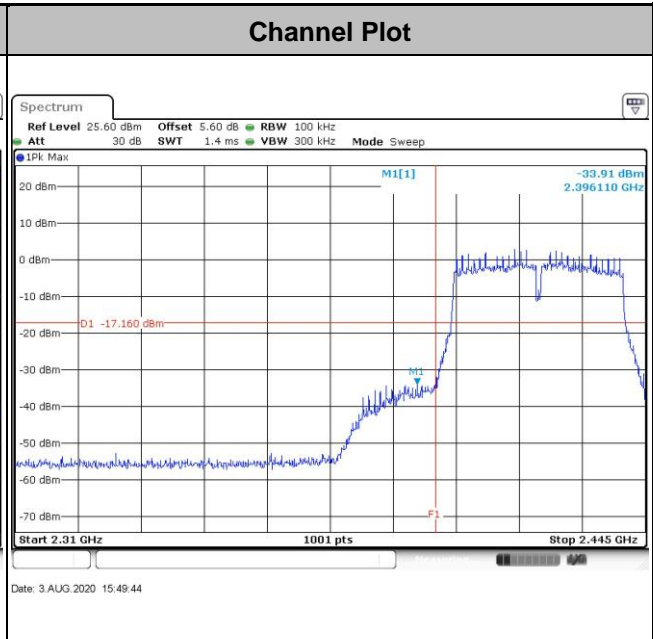
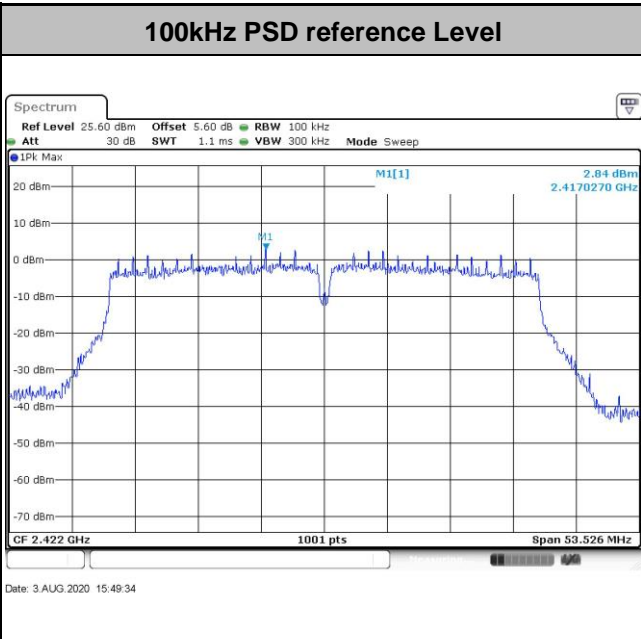


Test Mode : 802.11n HT20	Test Channel : 11
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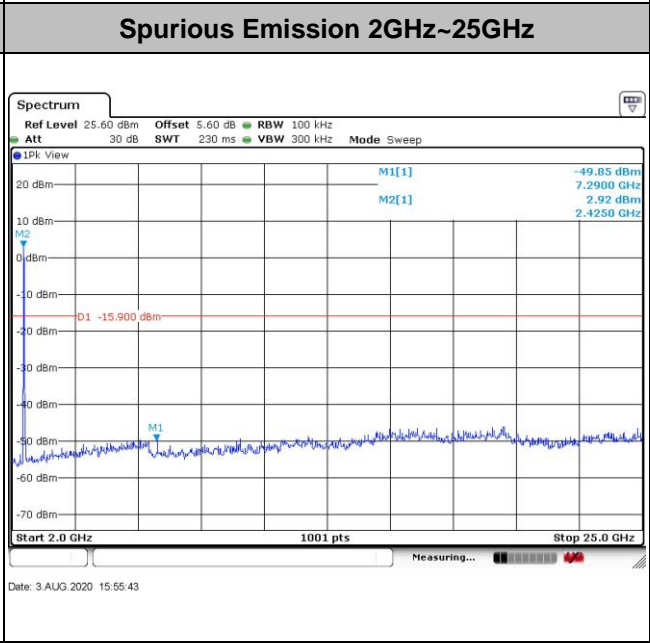
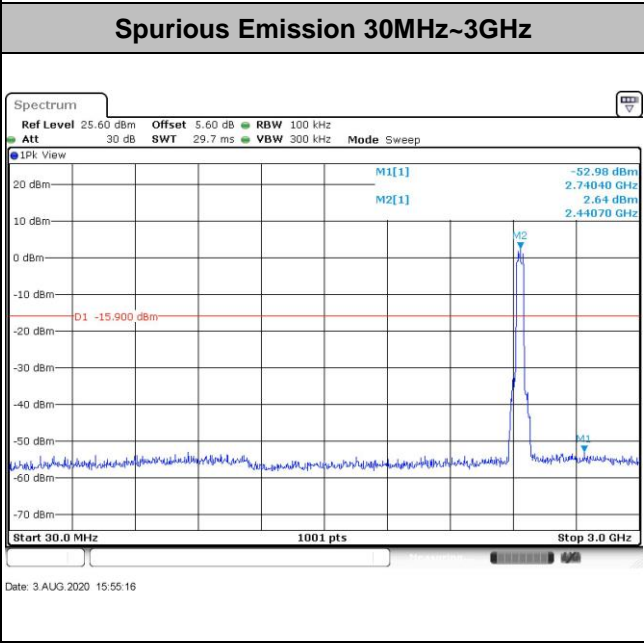
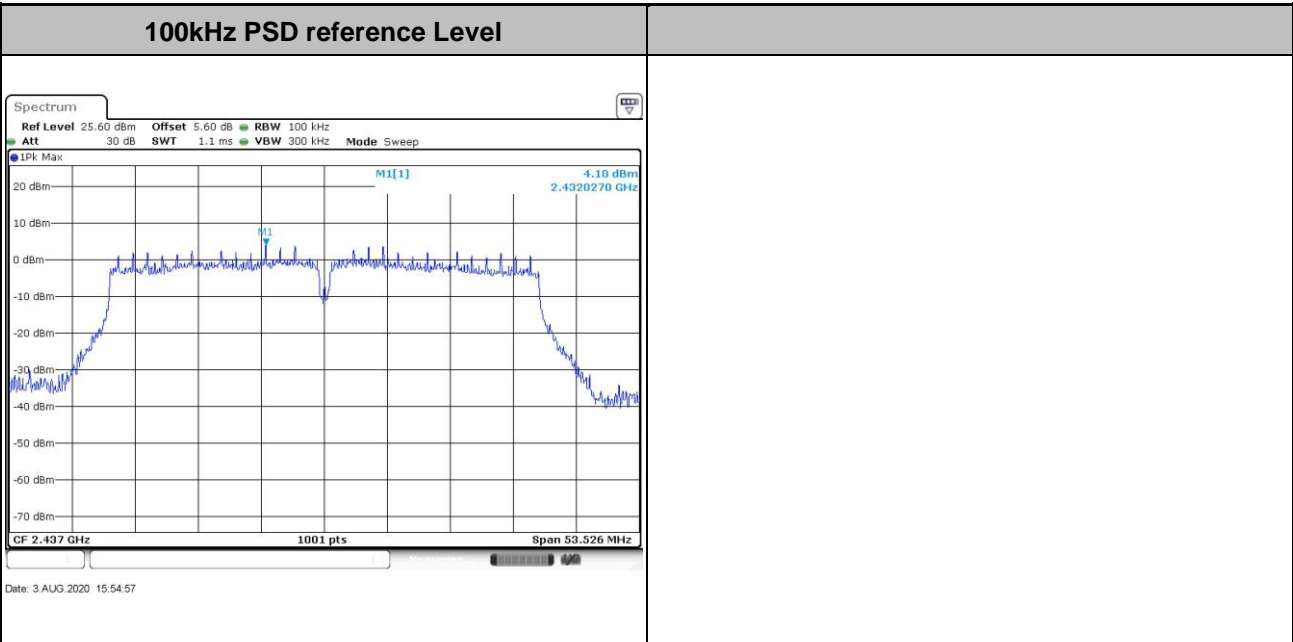


Test Mode : 802.11n HT40 Test Channel : 03



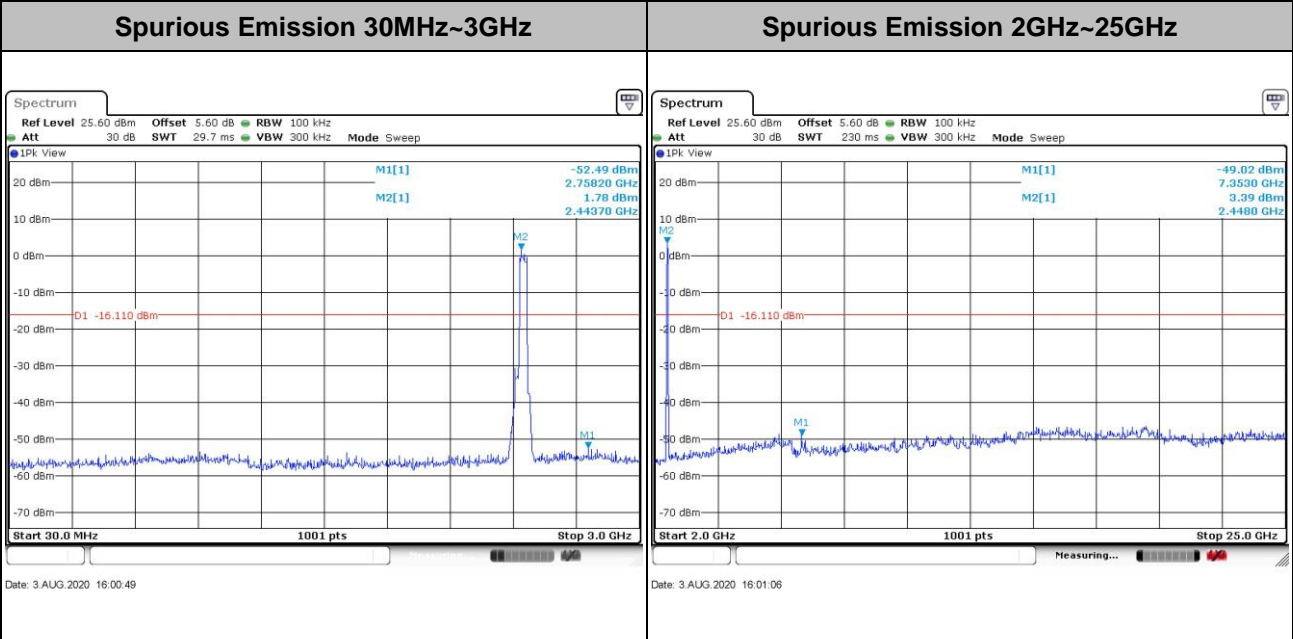
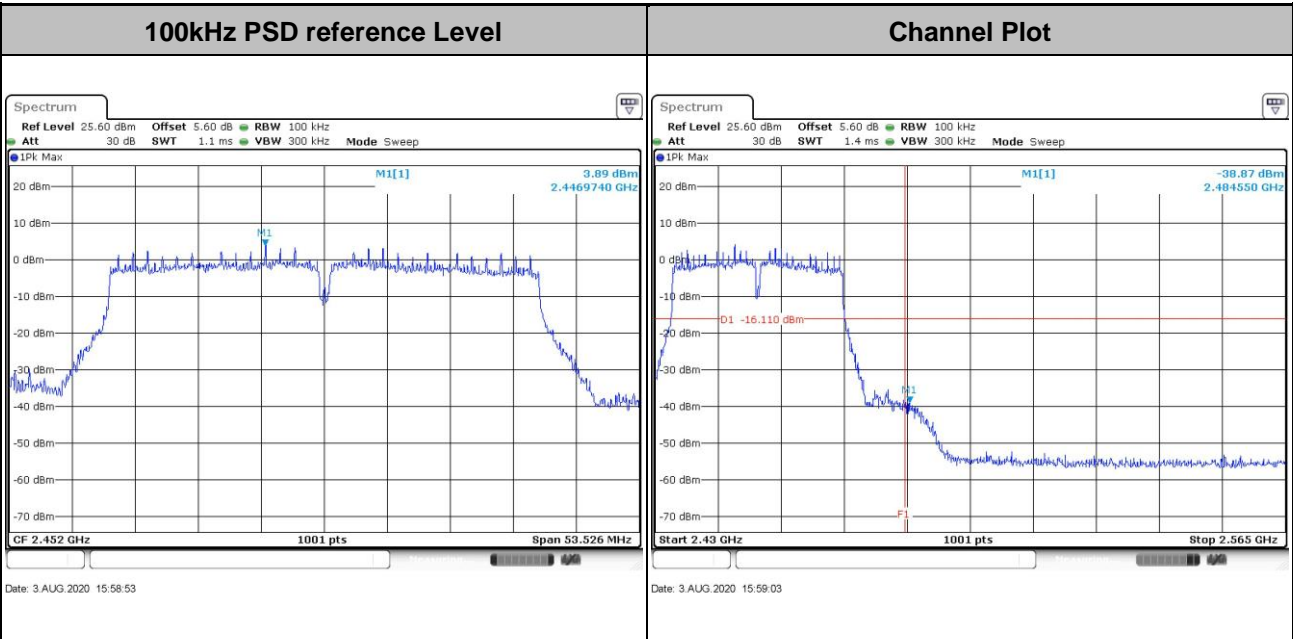


Test Mode :	802.11n HT40	Test Channel :	06
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Test Mode :	802.11n HT40	Test Channel :	09
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3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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

3.5.2 Measuring Instruments

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

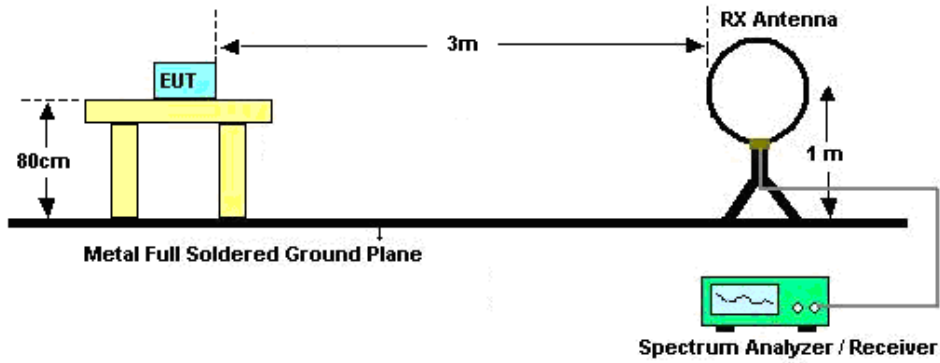


3.5.3 Test Procedures

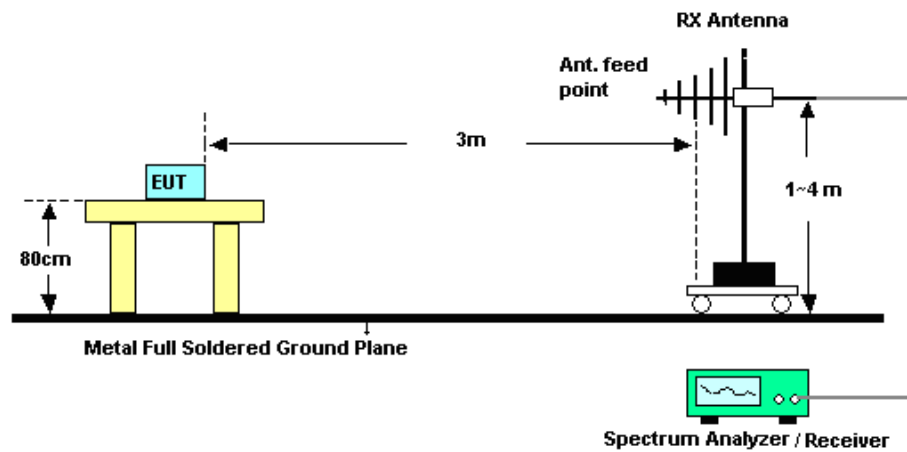
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. 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.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. 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.
7. 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.
8. 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; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

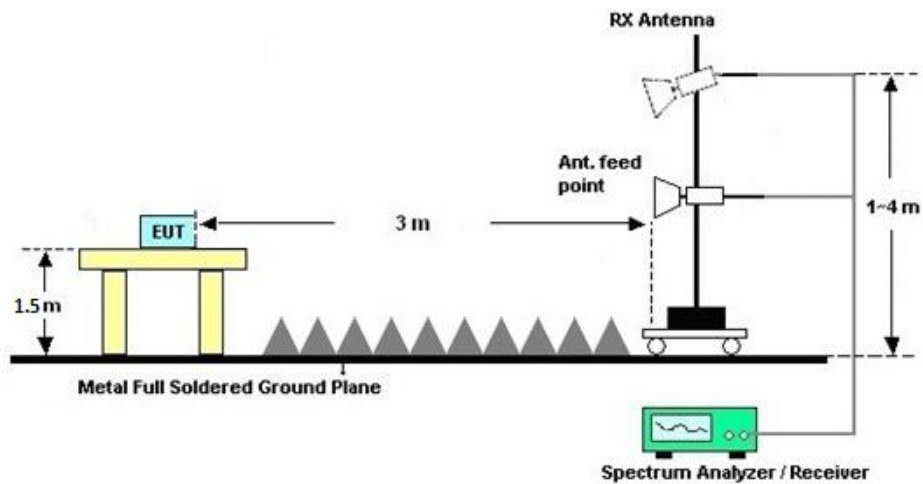
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





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

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.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.



3.6 AC Conducted Emission Measurement

3.6.1 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.

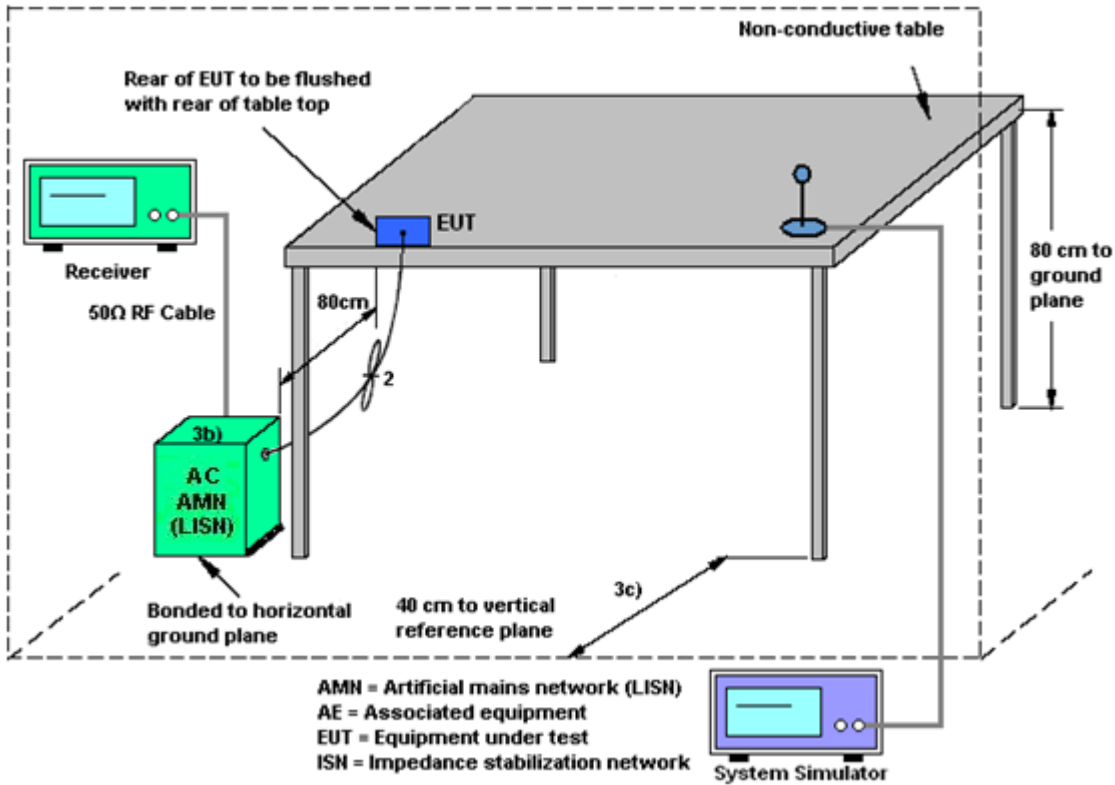
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with

G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	-5.00	-4.50	-4.50	-1.74	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



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	Aug. 03, 2020~ Aug. 12, 2020	Nov. 01, 2020	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 15, 2020	Aug. 03, 2020~ Aug. 12, 2020	Jan. 14, 2021	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 08, 2020	Aug. 03, 2020~ Aug. 12, 2020	Jan. 07, 2021	Conducted (TH01-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY544500 83	20Hz~8.4GHz	Apr. 17, 2020	Jul. 28, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY551502 46	10Hz~44GHz;	Apr. 17, 2020	Jul. 28, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 28, 2020	Jul. 28, 2020	May 27, 2022	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	Apr. 17, 2020	Jul. 28, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-135 5	1GHz~18GHz	Apr. 01, 2020	Jul. 28, 2020	Mar. 31, 2021	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz	Jul. 21, 2020	Jul. 28, 2020	Jul. 20, 2021	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 17, 2020	Jul. 28, 2020	Apr. 16, 2021	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 18, 2019	Jul. 28, 2020	Oct. 17, 2020	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P- R	1943528	1GHz~18GHz	Oct. 18, 2019	Jul. 28, 2020	Oct. 17, 2020	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY395013 02	500MHz~26.5G Hz	Dec. 23, 2019	Jul. 28, 2020	Dec. 22, 2020	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001 985	N/A	NCR	Jul. 28, 2020	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 28, 2020	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 28, 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	ABP00000 0811	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 (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.9dB
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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))	5.0dB
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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))	4.9dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB
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Appendix A. Conducted Test Results

Test Engineer:	Kib shi	Temperature:	0-40	°C
Test Date:	2020/8/3~2020/8/12	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2		
11b	1Mbps	2	1	2412	14.09	13.84	8.07	7.59	0.50	Pass
11b	1Mbps	2	6	2437	14.04	13.99	8.09	8.07	0.50	Pass
11b	1Mbps	2	11	2462	13.84	14.04	8.07	8.07	0.50	Pass
11g	6Mbps	2	1	2412	17.53	17.38	15.62	15.13	0.50	Pass
11g	6Mbps	2	6	2437	17.58	17.48	15.64	15.68	0.50	Pass
11g	6Mbps	2	11	2462	17.38	17.38	15.07	15.70	0.50	Pass
HT20	MCS0	2	1	2412	18.73	18.63	15.76	15.92	0.50	Pass
HT20	MCS0	2	6	2437	18.78	18.58	15.43	15.31	0.50	Pass
HT20	MCS0	2	11	2462	18.53	18.63	15.13	15.33	0.50	Pass
HT40	MCS0	2	3	2422	36.26	36.46	35.09	35.45	0.50	Pass
HT40	MCS0	2	6	2437	36.66	36.36	35.49	35.09	0.50	Pass
HT40	MCS0	2	9	2452	36.56	36.46	35.17	35.68	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	2	1	2412	20.45	19.97	23.23	30.00		-4.00		19.23		36.00		Pass
11b	1Mbps	2	6	2437	20.36	20.04	23.21	30.00		-4.00		19.21		36.00		Pass
11b	1Mbps	2	11	2462	19.66	19.68	22.68	30.00		-4.00		18.68		36.00		Pass
11g	6Mbps	2	1	2412	21.39	21.33	24.37	30.00		-4.00		20.37		36.00		Pass
11g	6Mbps	2	6	2437	21.56	21.59	24.59	30.00		-4.00		20.59		36.00		Pass
11g	6Mbps	2	11	2462	21.38	21.32	24.36	30.00		-4.00		20.36		36.00		Pass
HT20	MCS0	2	1	2412	21.19	20.98	24.10	30.00		-4.00		20.10		36.00		Pass
HT20	MCS0	2	6	2437	20.84	20.91	23.89	30.00		-4.00		19.89		36.00		Pass
HT20	MCS0	2	11	2462	21.12	21.18	24.16	30.00		-4.00		20.16		36.00		Pass
HT40	MCS0	2	3	2422	21.02	20.78	23.91	30.00		-4.00		19.91		36.00		Pass
HT40	MCS0	2	6	2437	22.28	22.14	25.22	30.00		-4.00		21.22		36.00		Pass
HT40	MCS0	2	9	2452	22.32	22.12	25.23	30.00		-4.00		21.23		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power

2.4GHz Band									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11b	1Mbps	2	1	2412	0.00	0.00	18.04	17.57	20.82
11b	1Mbps	2	6	2437	0.00	0.00	17.94	17.61	20.79
11b	1Mbps	2	11	2462	0.00	0.00	17.22	17.23	20.24
11g	6Mbps	2	1	2412	0.06	0.09	16.84	16.95	19.91
11g	6Mbps	2	6	2437	0.06	0.09	17.12	17.18	20.16
11g	6Mbps	2	11	2462	0.06	0.09	16.77	16.84	19.82
HT20	MCS0	2	1	2412	0.06	0.10	16.45	16.22	19.35
HT20	MCS0	2	6	2437	0.06	0.10	16.15	16.38	19.28
HT20	MCS0	2	11	2462	0.06	0.10	16.29	16.19	19.25
HT40	MCS0	2	3	2422	0.23	0.23	15.43	14.95	18.20
HT40	MCS0	2	6	2437	0.23	0.23	16.51	16.42	19.47
HT40	MCS0	2	9	2452	0.23	0.23	16.27	16.38	19.33

Note: Measured power (dBm) has offset with cable loss

TEST RESULTS DATA
Peak Power Spectral Density

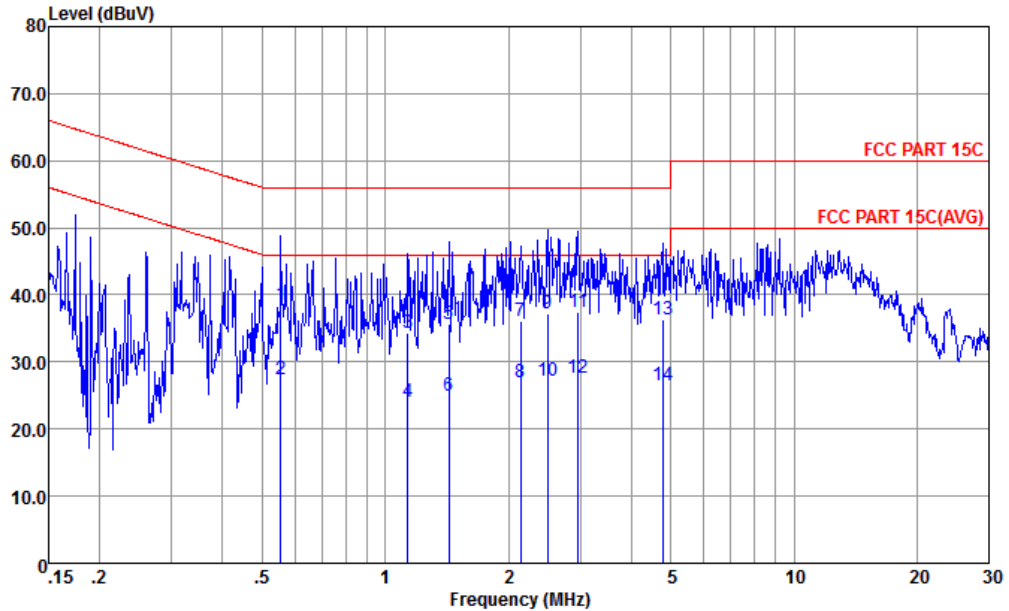
2.4GHz Band												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant 1	Ant 2	Worse + 3.01	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	2	1	2412	-9.38	-9.18	-6.17	-4.00		8.00		Pass
11b	1Mbps	2	6	2437	-9.54	-10.09	-6.53	-4.00		8.00		Pass
11b	1Mbps	2	11	2462	-9.18	-9.36	-6.17	-4.00		8.00		Pass
11g	6Mbps	2	1	2412	-10.14	-10.06	-7.05	-4.00		8.00		Pass
11g	6Mbps	2	6	2437	-9.81	-9.61	-6.60	-4.00		8.00		Pass
11g	6Mbps	2	11	2462	-9.80	-8.68	-5.67	-4.00		8.00		Pass
HT20	MCS0	2	1	2412	-10.52	-10.74	-7.51	-4.00		8.00		Pass
HT20	MCS0	2	6	2437	-9.88	-10.46	-6.87	-4.00		8.00		Pass
HT20	MCS0	2	11	2462	-9.83	-10.70	-6.82	-4.00		8.00		Pass
HT40	MCS0	2	3	2422	-12.73	-13.60	-9.72	-4.00		8.00		Pass
HT40	MCS0	2	6	2437	-12.77	-12.68	-9.67	-4.00		8.00		Pass
HT40	MCS0	2	9	2452	-13.26	-12.44	-9.43	-4.00		8.00		Pass

Measured power density (dBm) has offset with cable loss.



Appendix B. AC Conducted Emission Test Results

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

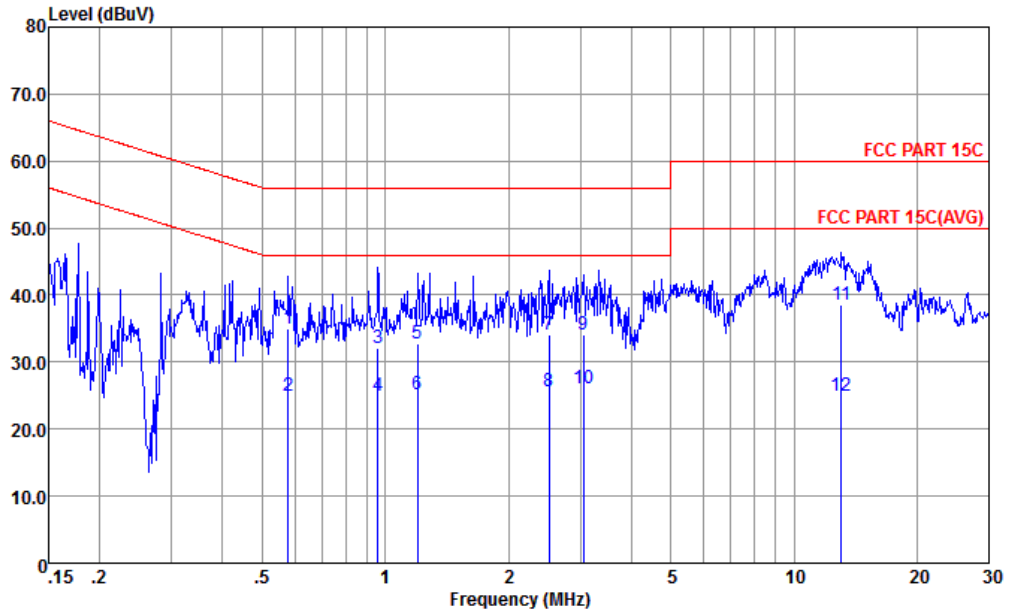


Site : CO01-KS
Condition : FCC PART 15C LISN-L-191028-CN02 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	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	26.62	-19.48	46.00	15.60	0.65	10.27	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		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	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			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

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2389.9	50.57	-23.43	74	51.51	27.8	4.82	33.56	108	341	P	H
		2389.59	39.68	-14.32	54	40.64	27.8	4.82	33.58	108	341	A	H
	*	2412	100.68	-	-	101.65	27.77	4.82	33.56	108	341	P	H
	*	2412	98.83	-	-	99.8	27.77	4.82	33.56	108	341	A	H
		2337.72	49.74	-24.26	74	50.71	27.88	4.75	33.6	112	71	P	V
		2390	39.8	-14.2	54	40.74	27.8	4.82	33.56	112	71	A	V
	*	2412	99.12	-	-	100.09	27.77	4.82	33.56	112	71	P	V
	*	2412	96.33	-	-	97.3	27.77	4.82	33.56	112	71	A	V
802.11b CH 06 2437MHz		2388.68	49.76	-24.24	74	50.72	27.8	4.82	33.58	103	350	P	H
		2389.52	39.54	-14.46	54	40.5	27.8	4.82	33.58	103	350	A	H
	*	2437	101.65	-	-	102.62	27.71	4.86	33.54	103	350	P	H
	*	2437	98.69	-	-	99.66	27.71	4.86	33.54	103	350	A	H
		2484.18	50.5	-23.5	74	51.45	27.66	4.9	33.51	103	350	P	H
		2483.97	39.45	-14.55	54	40.4	27.66	4.9	33.51	103	350	A	H
		2378.74	50.11	-23.89	74	51.08	27.83	4.78	33.58	100	75	P	V
		2389.66	39.32	-14.68	54	40.28	27.8	4.82	33.58	100	75	A	V
	*	2437	100.11	-	-	101.08	27.71	4.86	33.54	100	75	P	V
	*	2437	98.3	-	-	99.27	27.71	4.86	33.54	100	75	A	V
		2487.89	49.97	-24.03	74	50.95	27.63	4.9	33.51	100	75	P	V
	2483.97	39.28	-14.72	54	40.23	27.66	4.9	33.51	100	75	A	V	



802.11b CH 11 2462MHz	*	2462	101.35	-	-	102.33	27.69	4.86	33.53	100	351	P	H
	*	2462	99.49	-	-	100.47	27.69	4.86	33.53	100	351	A	H
		2487.12	50.25	-23.75	74	51.2	27.66	4.9	33.51	100	351	P	H
		2483.52	40.11	-13.89	54	41.06	27.66	4.9	33.51	100	351	A	H
	*	2462	99.91	-	-	100.89	27.69	4.86	33.53	100	77	P	V
	*	2462	97.94	-	-	98.92	27.69	4.86	33.53	100	77	A	V
		2487.08	50.19	-23.81	74	51.14	27.66	4.9	33.51	100	77	P	V
		2487.36	40.05	-13.95	54	41	27.66	4.9	33.51	100	77	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



**2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)**

WIFI Ant. 1+2	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)
802.11b CH 01 2412MHz		4824	51.29	-22.71	74	70.12	31.12	7.53	57.48	242	32	P	H
		4824	47.95	-6.05	54	66.78	31.12	7.53	57.48	242	32	A	H
		4824	42.38	-31.62	74	61.21	31.12	7.53	57.48	191	220	P	V
802.11b CH 06 2437MHz		4874	51.02	-22.98	74	69.79	31.17	7.58	57.52	115	27	P	H
		4874	47.93	-6.07	54	66.7	31.17	7.58	57.52	115	27	A	H
		7311	44.9	-29.1	74	58.73	36.03	9.06	58.92	174	100	P	H
		4874	45.73	-28.27	74	64.5	31.17	7.58	57.52	157	360	P	V
		7311	44.68	-29.32	74	58.51	36.03	9.06	58.92	120	106	P	V
802.11b CH 11 2462MHz		4924	51.24	-22.76	74	69.9	31.22	7.67	57.55	123	23	P	H
		4924	47.96	-6.04	54	66.62	31.22	7.67	57.55	123	23	A	H
		7386	45.29	-28.71	74	58.92	36.29	9.04	58.96	145	274	P	H
		4924	45.21	-28.79	74	63.87	31.22	7.67	57.55	157	360	P	V
		7386	45.29	-28.71	74	58.92	36.29	9.04	58.96	166	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

Table with 14 columns: WIFI Ant. 1+2, 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). Rows include data for 802.11g CH 01 (2412MHz) and 802.11g CH 06 (2437MHz).



802.11g CH 11 2462MHz	*	2462	104.7	-	-	105.68	27.69	4.86	33.53	125	360	P	H
	*	2462	98.1	-	-	99.08	27.69	4.86	33.53	125	360	A	H
		2487.04	53.98	-20.02	74	54.93	27.66	4.9	33.51	125	360	P	H
		2483.52	45.49	-8.51	54	46.44	27.66	4.9	33.51	125	360	A	H
	*	2462	102.55	-	-	103.53	27.69	4.86	33.53	398	73	P	V
	*	2462	96.19	-	-	97.17	27.69	4.86	33.53	398	73	A	V
		2483.92	52.96	-21.04	74	53.91	27.66	4.9	33.51	398	73	P	V
		2483.52	43.53	-10.47	54	44.48	27.66	4.9	33.51	398	73	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

Table with 14 columns: WIFI Ant. 1+2, 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). Rows include data for CH 01 (2412MHz), CH 06 (2437MHz), and CH 11 (2462MHz).



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1+2	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)
802.11n HT20 CH 01 2412MHz		2388.75	55.32	-18.68	74	56.28	27.8	4.82	33.58	100	343	P	H
		2390	44.68	-9.32	54	45.62	27.8	4.82	33.56	100	343	A	H
	*	2412	102.26	-	-	103.23	27.77	4.82	33.56	100	351	P	H
	*	2412	94.63	-	-	95.6	27.77	4.82	33.56	100	351	A	H
		2389.69	56.06	-17.94	74	57.02	27.8	4.82	33.58	100	68	P	V
		2390	44.49	-9.51	54	45.43	27.8	4.82	33.56	100	68	A	V
	*	2412	100.73	-	-	101.7	27.77	4.82	33.56	100	68	P	V
	*	2412	93.91	-	-	94.88	27.77	4.82	33.56	100	68	A	V
802.11n HT20 CH 06 2437MHz		2386.58	51.93	-22.07	74	52.89	27.8	4.82	33.58	100	15	P	H
		2389.94	41.53	-12.47	54	42.47	27.8	4.82	33.56	100	15	A	H
	*	2437	102.09	-	-	103.06	27.71	4.86	33.54	100	15	P	H
	*	2437	95.39	-	-	96.36	27.71	4.86	33.54	100	15	A	H
		2483.5	52.17	-21.83	74	53.12	27.66	4.9	33.51	100	15	P	H
		2483.5	42.4	-11.6	54	43.35	27.66	4.9	33.51	100	15	A	H
		2373	50.01	-23.99	74	50.98	27.83	4.78	33.58	100	74	P	V
		2389.94	40.18	-13.82	54	41.12	27.8	4.82	33.56	100	74	A	V
	*	2437	101.2	-	-	102.17	27.71	4.86	33.54	100	74	P	V
	*	2437	94.45	-	-	95.42	27.71	4.86	33.54	100	74	A	V
		2489.15	50.56	-23.44	74	51.54	27.63	4.9	33.51	100	74	P	V
	2491.95	41.3	-12.7	54	42.27	27.63	4.9	33.5	100	74	A	V	



802.11n HT20 CH 11 2462MHz	*	2462	102.19	-	-	103.17	27.69	4.86	33.53	100	353	P	H
	*	2462	95.32	-	-	96.3	27.69	4.86	33.53	100	353	A	H
		2484.36	56.14	-17.86	74	57.09	27.66	4.9	33.51	100	353	P	H
		2483.52	46.2	-7.8	54	47.15	27.66	4.9	33.51	100	353	A	H
	*	2462	101.34	-	-	102.32	27.69	4.86	33.53	140	164	P	V
	*	2462	94.98	-	-	95.96	27.69	4.86	33.53	140	164	A	V
		2484.6	56.3	-17.7	74	57.25	27.66	4.9	33.51	140	164	P	V
		2483.52	45.33	-8.67	54	46.28	27.66	4.9	33.51	140	164	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	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)
802.11n HT20 CH 01 2412MHz		4824	48.96	-25.04	74	67.79	31.12	7.53	57.48	145	274	P	H
		4824	43.32	-30.68	74	62.15	31.12	7.53	57.48	191	220	P	V
802.11n HT20 CH 06 2437MHz		4874	46.63	-27.37	74	65.4	31.17	7.58	57.52	112	229	P	H
		7311	44.93	-29.07	74	58.76	36.03	9.06	58.92	174	100	P	H
		4874	45.88	-28.12	74	64.65	31.17	7.58	57.52	156	360	P	V
		7311	44.31	-29.69	74	58.14	36.03	9.06	58.92	120	106	P	V
802.11n HT20 CH 11 2462MHz		4924	44.46	-29.54	74	63.12	31.22	7.67	57.55	133	180	P	H
		7386	44.72	-29.28	74	58.35	36.29	9.04	58.96	145	274	P	H
		4924	41.78	-32.22	74	60.44	31.22	7.67	57.55	157	360	P	V
		7386	44.8	-29.2	74	58.43	36.29	9.04	58.96	166	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

Table with 14 columns: WIFI Ant. 1+2, 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). Rows include data for 802.11n HT40 CH 03 (2422MHz) and 802.11n HT40 CH 06 (2437MHz).



802.11n HT40 CH 09 2452MHz		2387.28	50.41	-23.59	74	51.37	27.8	4.82	33.58	347	19	P	H
		2389.66	42.13	-11.87	54	43.09	27.8	4.82	33.58	347	19	A	H
	*	2452	101.29	-	-	102.25	27.71	4.86	33.53	347	19	P	H
	*	2452	94.35	-	-	95.31	27.71	4.86	33.53	347	19	A	H
		2483.5	57.8	-16.2	74	58.75	27.66	4.9	33.51	347	19	P	H
		2483.5	50.91	-3.09	54	51.86	27.66	4.9	33.51	347	19	A	H
		2363.48	50.2	-23.8	74	51.16	27.85	4.78	33.59	187	335	P	V
		2388.4	42.04	-11.96	54	43	27.8	4.82	33.58	187	335	A	V
	*	2452	97.9	-	-	98.86	27.71	4.86	33.53	187	335	P	V
	*	2452	91.2	-	-	92.16	27.71	4.86	33.53	187	335	A	V
		2483.69	55.97	-18.03	74	56.92	27.66	4.9	33.51	187	335	P	V
		2483.5	47.43	-6.57	54	48.38	27.66	4.9	33.51	187	335	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 1+2	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)
802.11n		4844	43.54	-30.46	74	62.32	31.13	7.58	57.49	156	360	P	H
HT40		7266	45.65	-28.35	74	59.57	35.93	9.06	58.91	200	360	P	H
CH 03		4844	43.24	-30.76	74	62.02	31.13	7.58	57.49	156	360	P	V
2422MHz		7266	45.05	-28.95	74	58.97	35.93	9.06	58.91	200	360	P	V
802.11n		4874	43.67	-30.33	74	62.44	31.17	7.58	57.52	157	360	P	H
HT40		7311	45.03	-28.97	74	58.86	36.03	9.06	58.92	157	360	P	H
CH 06		4874	44.5	-29.5	74	63.27	31.17	7.58	57.52	157	360	P	V
2437MHz		7311	44.62	-29.38	74	58.45	36.03	9.06	58.92	157	360	P	V
802.11n		4904	43.58	-30.42	74	62.3	31.2	7.62	57.54	153	360	P	H
HT40		7356	45.32	-28.68	74	59.02	36.19	9.05	58.94	153	360	P	H
CH 09		4904	42.05	-31.95	74	60.77	31.2	7.62	57.54	153	360	P	V
2452MHz		7356	44.99	-29.01	74	58.69	36.19	9.05	58.94	153	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11n HT40 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		30	23.22	-16.78	40	30.4	24.7	0.52	32.4	-	-	P	H
		87.23	29.12	-10.88	40	45.91	14.73	0.88	32.4	105	77	P	H
		224.97	27.29	-18.71	46	42.01	15.8	1.42	31.94	-	-	P	H
		339.43	24.38	-21.62	46	34.13	20.2	1.75	31.7	-	-	P	H
		641.1	27.92	-18.08	46	31.37	24.88	2.45	30.78	-	-	P	H
		967.99	28.9	-25.1	54	30.05	27.18	2.99	31.32	-	-	P	H
		36.79	32.82	-7.18	40	43.58	21.06	0.58	32.4	130	82	P	V
		86.26	22.57	-17.43	40	39.55	14.54	0.88	32.4	-	-	P	V
		198.78	25.49	-18.01	43.5	41.05	15.2	1.34	32.1	-	-	P	V
		611.03	26.84	-19.16	46	30.36	24.82	2.38	30.72	-	-	P	V
		763.32	28.35	-17.65	46	31.1	25.76	2.65	31.16	-	-	P	V
	993.21	29.48	-24.52	54	30.1	27.43	3.04	31.09	-	-	P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



For Co-location:

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 03 2422MHz + LTE Band13		2388.54	61.73	-12.27	74	62.69	27.8	4.82	33.58	150	30	P	H
		2389.94	52.67	-1.33	54	53.61	27.8	4.82	33.56	150	30	A	H
	*	2422	-	-	74	104.19	27.74	4.82	33.54	150	30	P	H
	*	2422	-	-	54	96.27	27.74	4.82	33.54	150	30	A	H
		2483.83	52.5	-21.5	74	53.45	27.66	4.9	33.51	150	30	P	H
		2483.5	44.02	-9.98	54	44.97	27.66	4.9	33.51	150	30	A	H
		2388.82	56.93	-17.07	74	57.89	27.8	4.82	33.58	253	4	P	V
		2389.66	48.52	-5.48	54	49.48	27.8	4.82	33.58	253	4	A	V
	*	2422	-	-	74	100.39	27.74	4.82	33.54	253	4	P	V
	*	2422	-	-	54	93.22	27.74	4.82	33.54	253	4	A	V
		2486.42	52.46	-21.54	74	53.41	27.66	4.9	33.51	253	4	P	V
		2483.9	43.33	-10.67	54	44.28	27.66	4.9	33.51	253	4	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 1+2	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)
802.11n HT40 CH 03 2422MHz + LTE Band13		1559.5	45.48	-28.52	74	50.25	25.81	3.85	34.43	100	358	P	H
		2339.25	52.84	-21.16	74	53.8	27.88	4.75	33.59	100	358	P	H
		2339.25	45.94	-8.06	54	46.9	27.88	4.75	33.59	100	358	A	H
		3900	46.28	-27.72	74	43.21	29.4	6.45	32.78	153	360	P	H
		4025	46.77	-27.23	74	43.38	29.4	6.68	32.69	153	360	P	H
		4904	45.69	-28.31	74	64.41	31.2	7.62	57.54	153	360	P	H
		7356	45.23	-28.77	74	58.93	36.19	9.05	58.94	153	360	P	H
		1559.5	45.46	-28.54	74	50.23	25.81	3.85	34.43	195	78	P	V
		2339.25	51.57	-22.43	74	52.53	27.88	4.75	33.59	195	78	P	V
		2339.25	44.16	-9.84	54	45.12	27.88	4.75	33.59	195	78	A	V
		3900	43.07	-30.93	74	40	29.4	6.45	32.78	153	360	P	V
		4025	45.44	-28.56	74	42.05	29.4	6.68	32.69	153	360	P	V
		4904	43.21	-30.79	74	61.93	31.2	7.62	57.54	153	360	P	V
	7356	45.08	-28.92	74	58.78	36.19	9.05	58.94	153	360	P	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average 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	Peak or Average
H/V	Horizontal or Vertical



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		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

For Peak Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- 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)
- 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

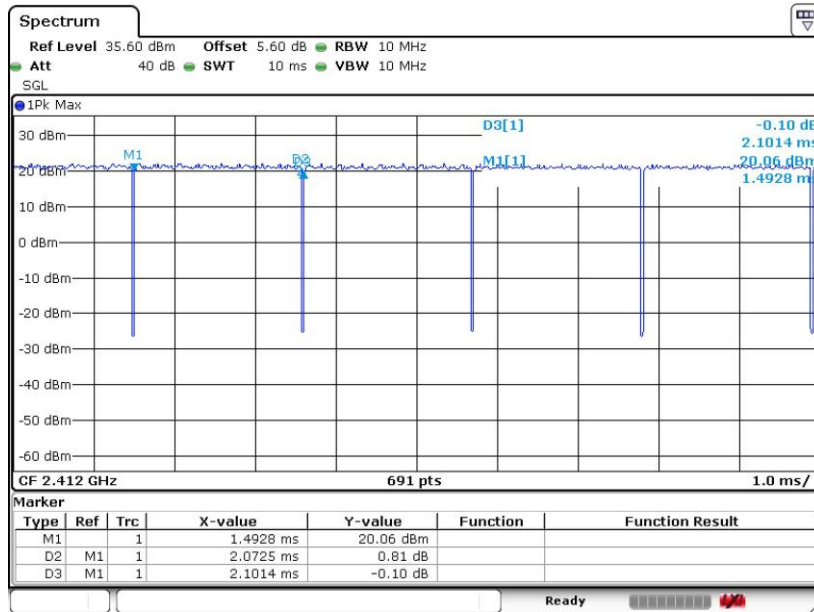
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11b	100	-	-	10Hz
1+2	802.11g	98.62	-	-	10Hz
1+2	802.11n HT20	98.52	-	-	10Hz
1+2	802.11n HT40	94.93	0.9493	1.0534	3kHz

802.11b

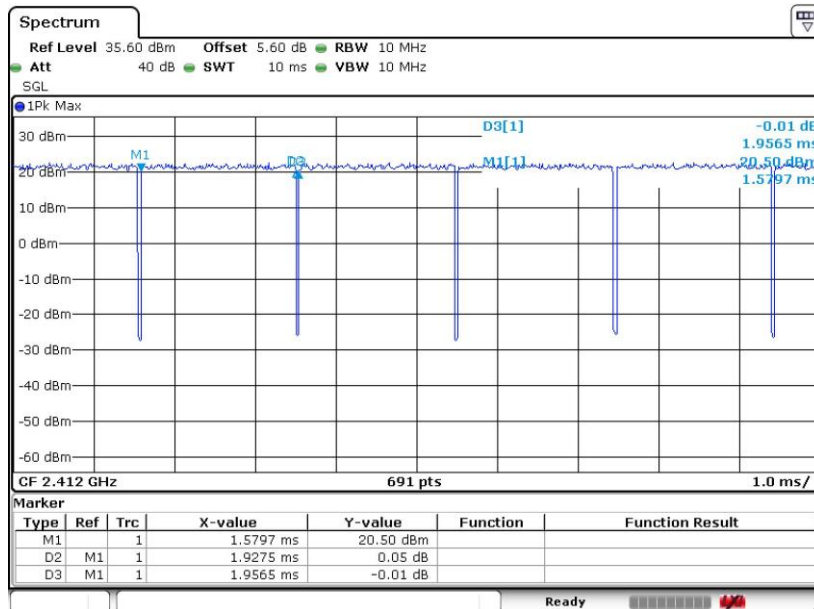




802.11g

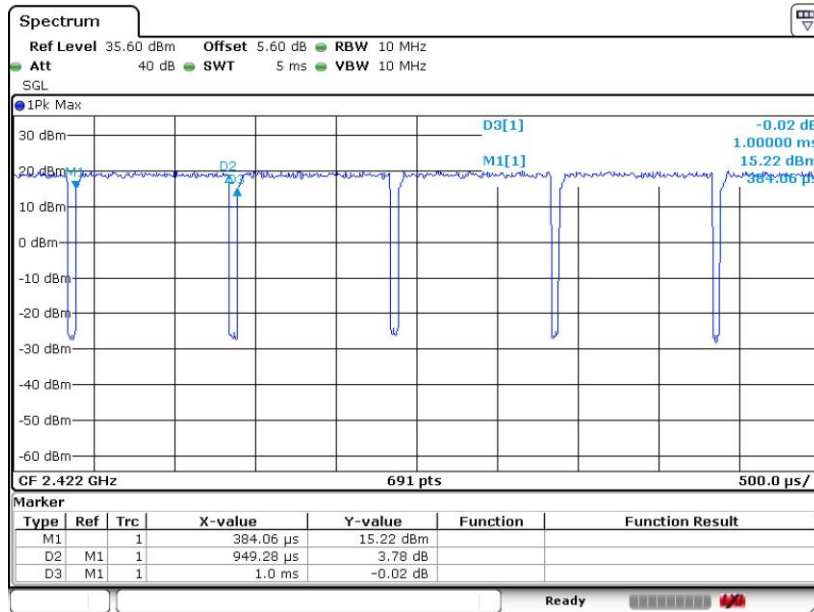


802.11n HT20





802.11n HT40



:11