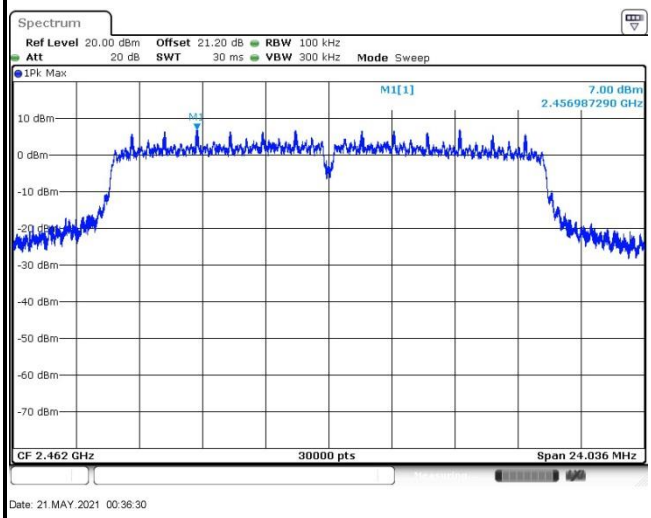
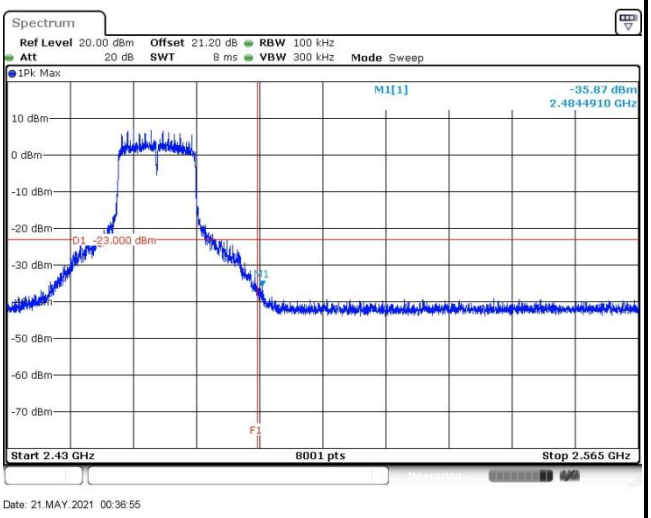
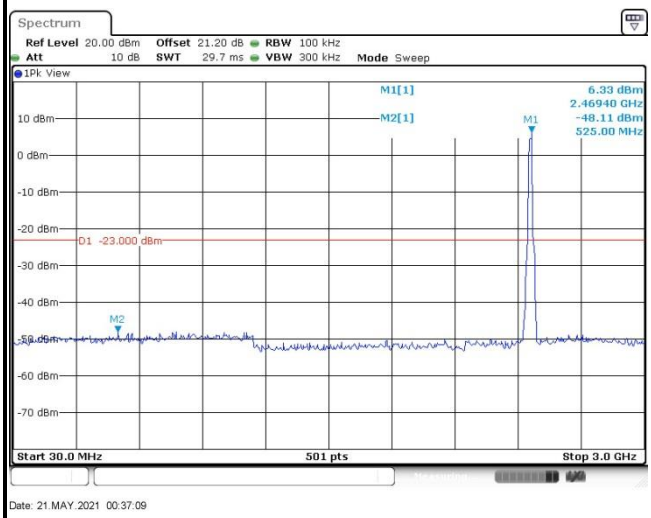
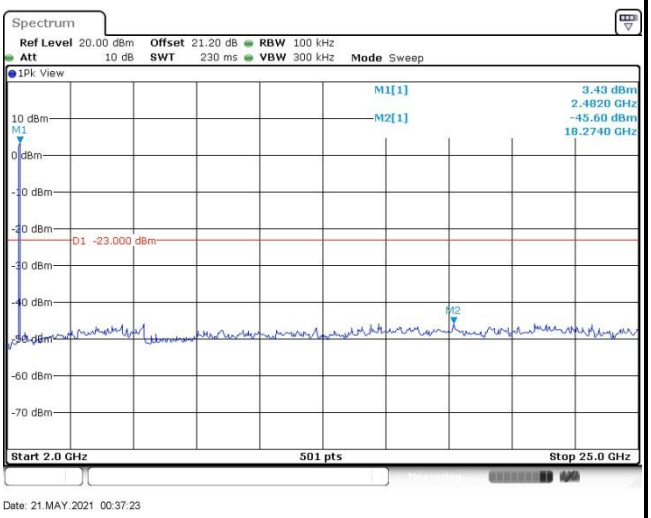
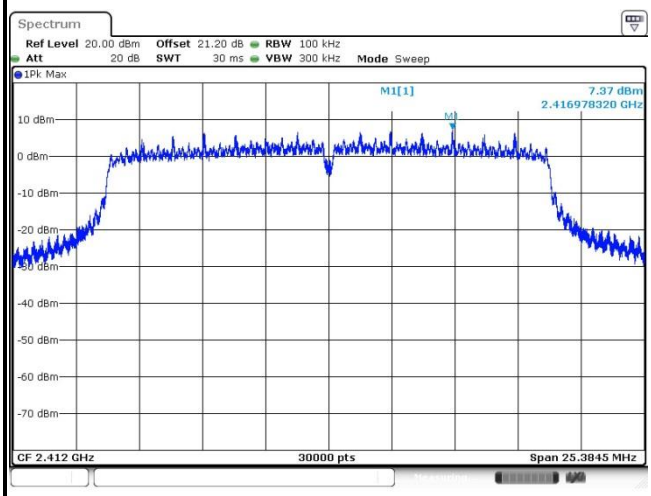
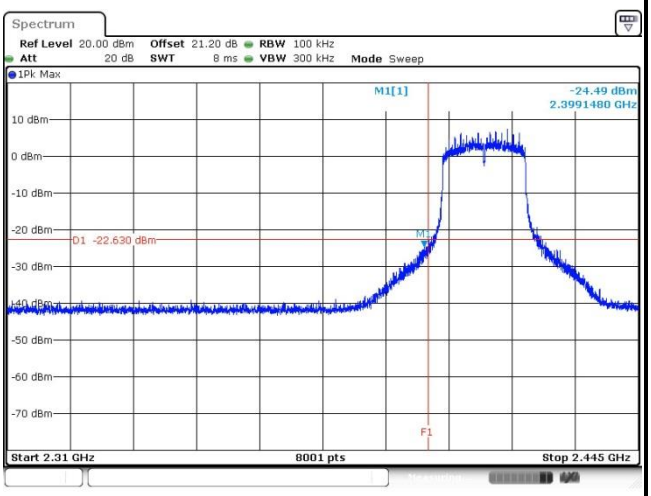
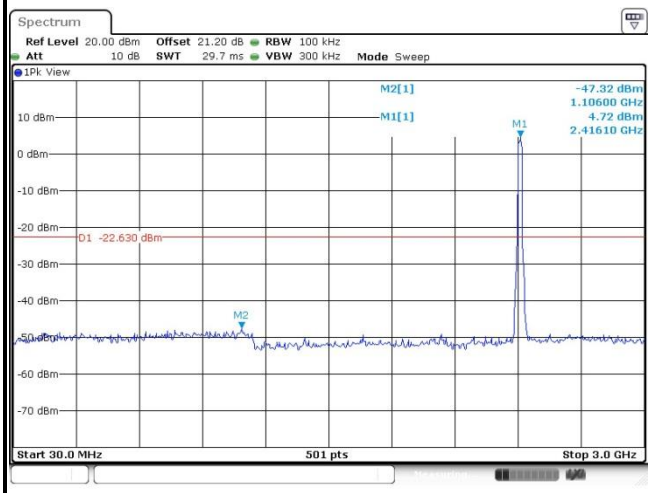
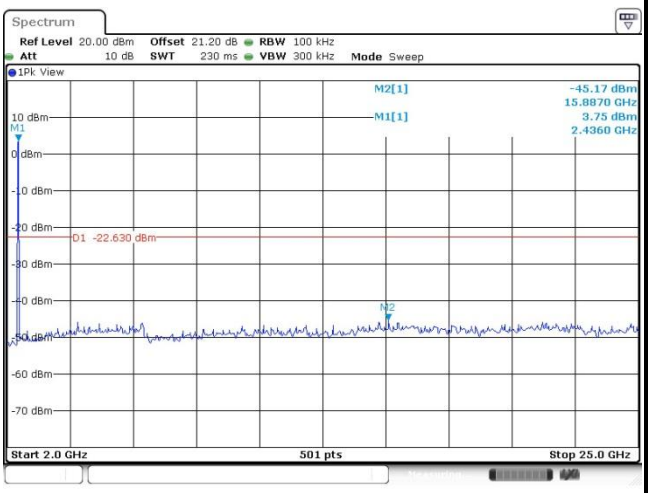
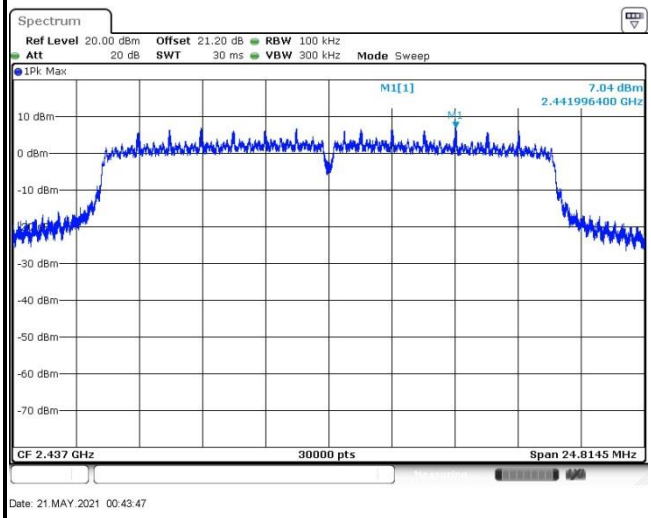
Test Mode :	802.11g	Test Channel :	11

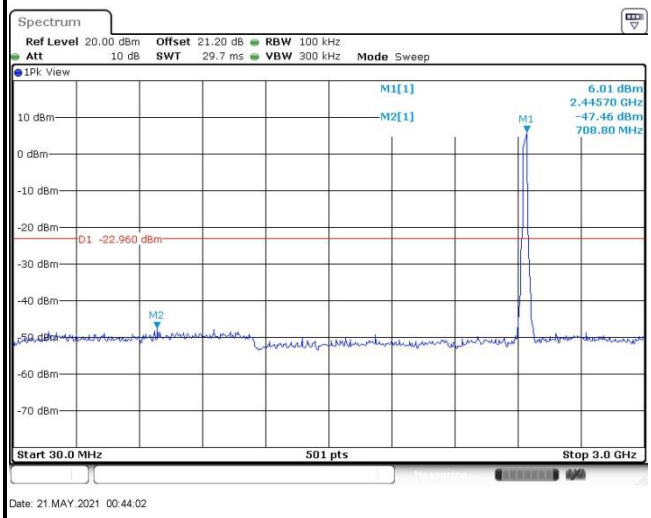
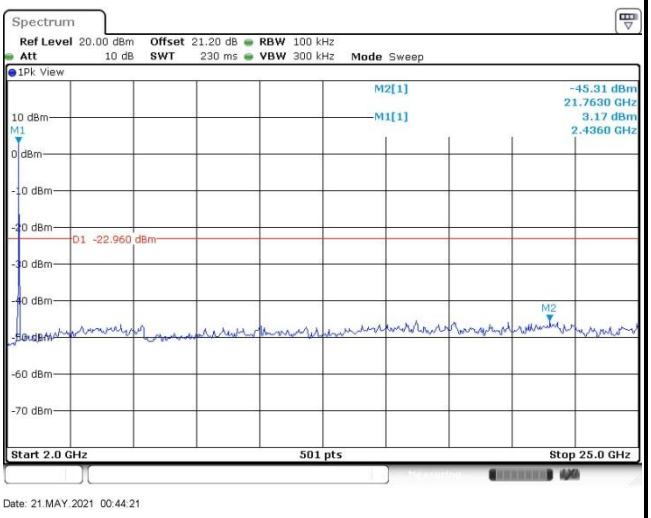
100kHz PSD reference Level	Channel Plot
	
Date: 21.MAY.2021 00:36:30	Date: 21.MAY.2021 00:36:55
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	
Date: 21.MAY.2021 00:37:09	Date: 21.MAY.2021 00:37:23

Test Mode :	802.11n HT20	Test Channel :	01

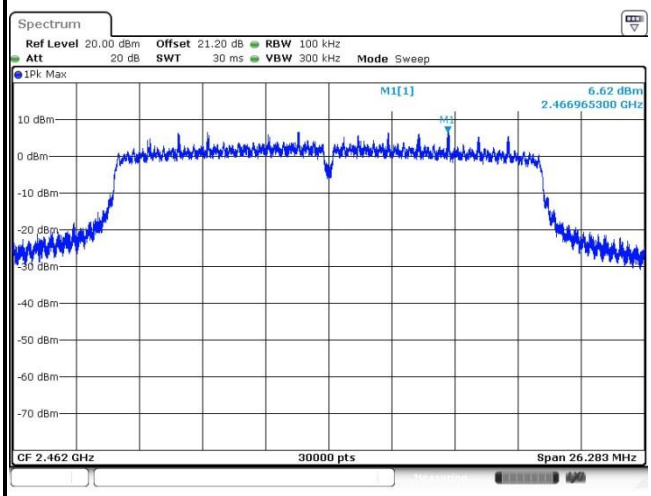
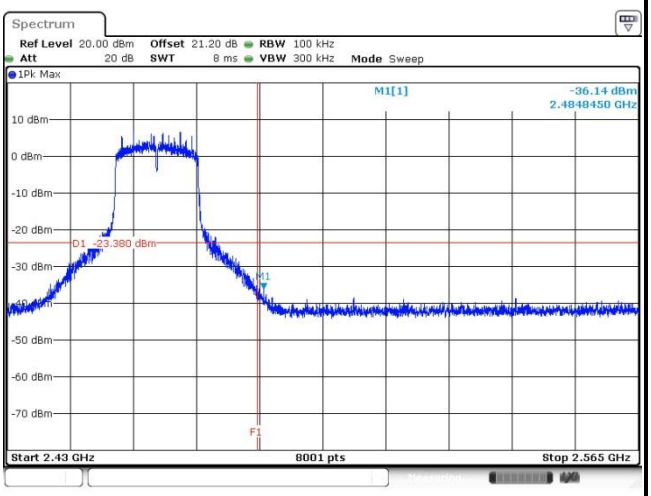
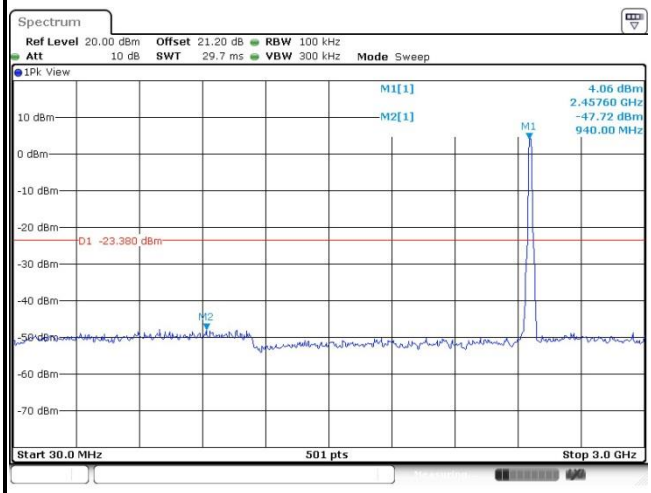
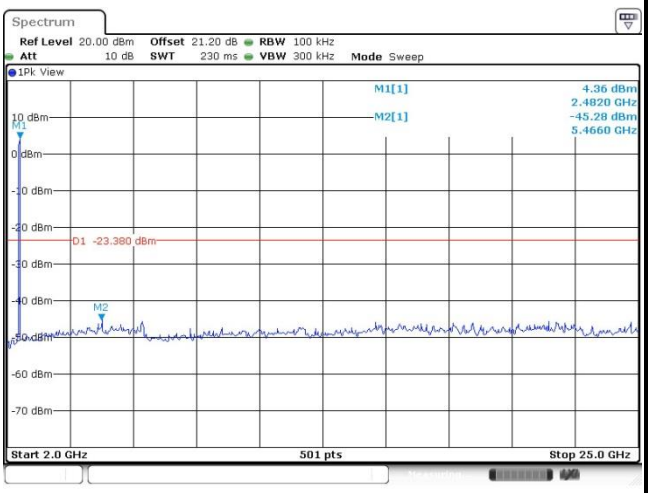
100kHz PSD reference Level	Channel Plot
	
Date: 1.JUN.2021 16:49:55	Date: 1.JUN.2021 16:51:10
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	
Date: 1.JUN.2021 16:52:40	Date: 1.JUN.2021 16:52:51

Test Mode :	802.11n HT20	Test Channel :	06

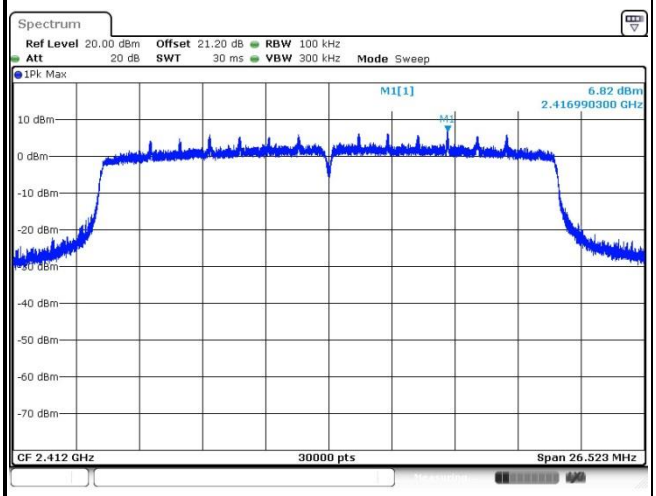
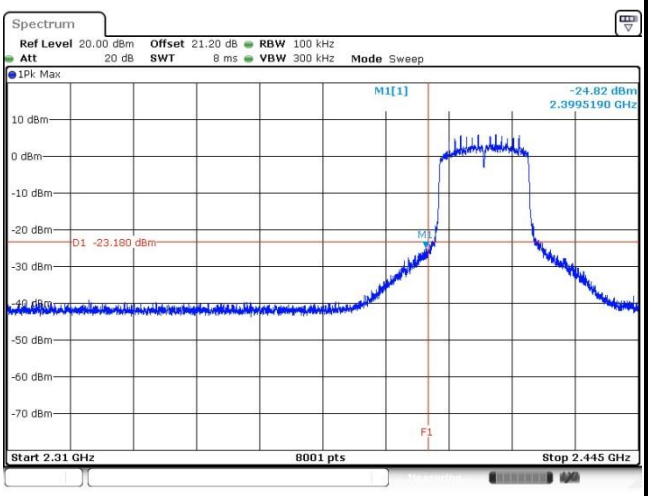
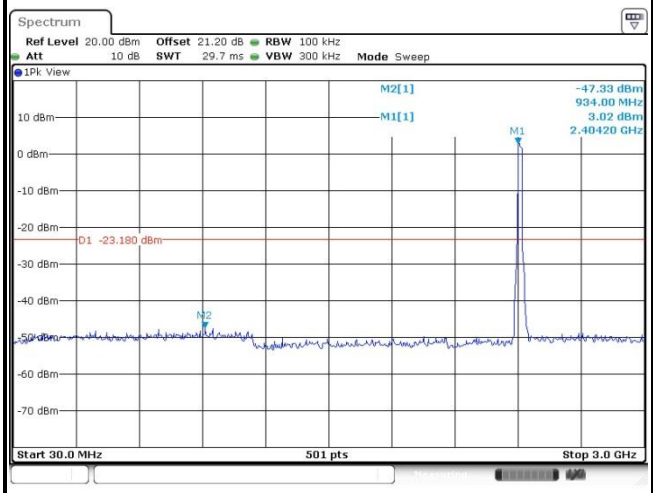
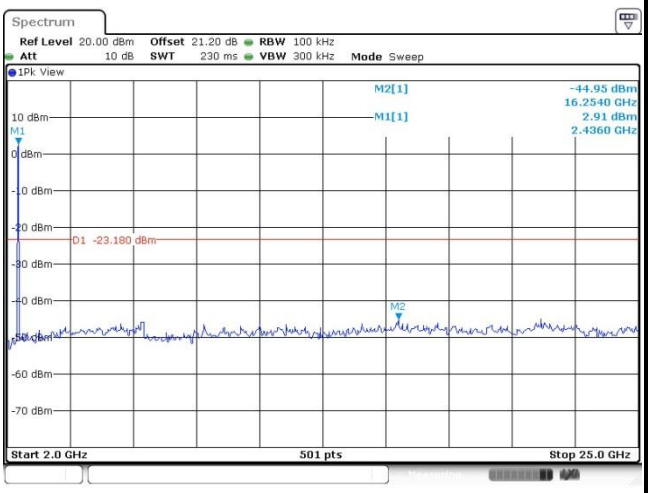
100kHz PSD reference Level	
	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

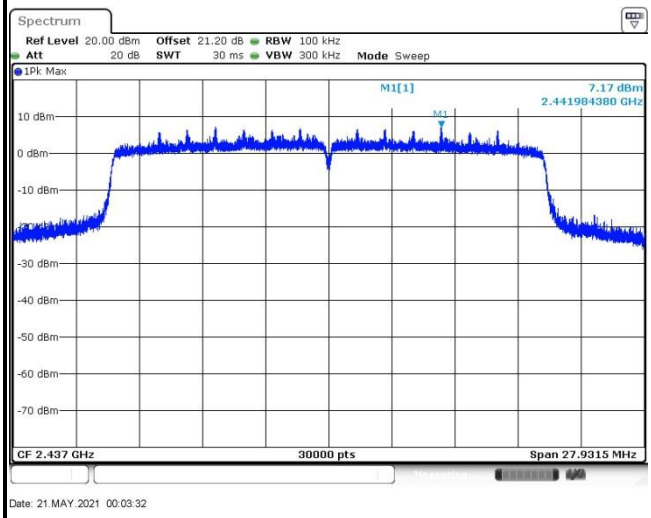
Test Mode :	802.11n HT20	Test Channel :	11

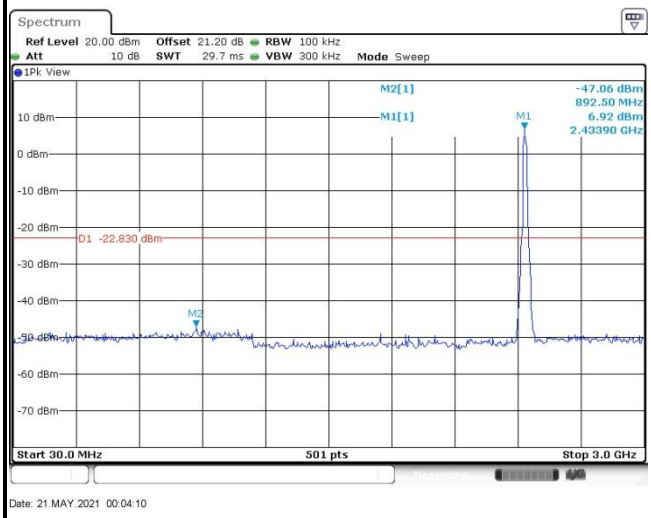
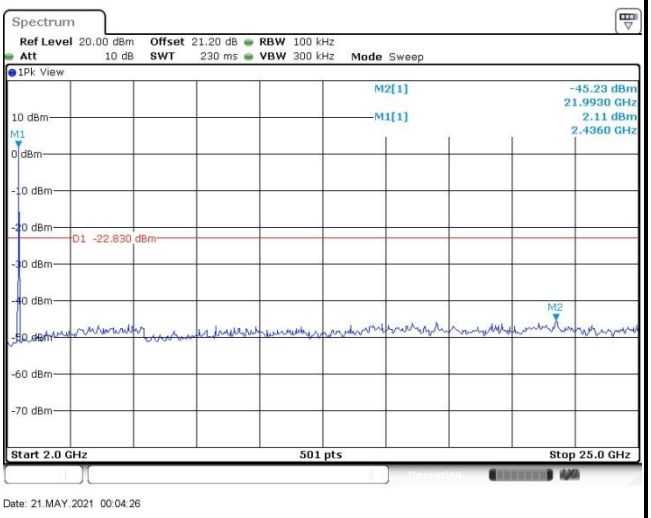
100kHz PSD reference Level	Channel Plot
	
Date: 21.MAY.2021 00:47:04	Date: 21.MAY.2021 00:47:26
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	
Date: 21.MAY.2021 00:47:41	Date: 21.MAY.2021 00:47:54

Test Mode :	802.11ax HE20	Test Channel :	01

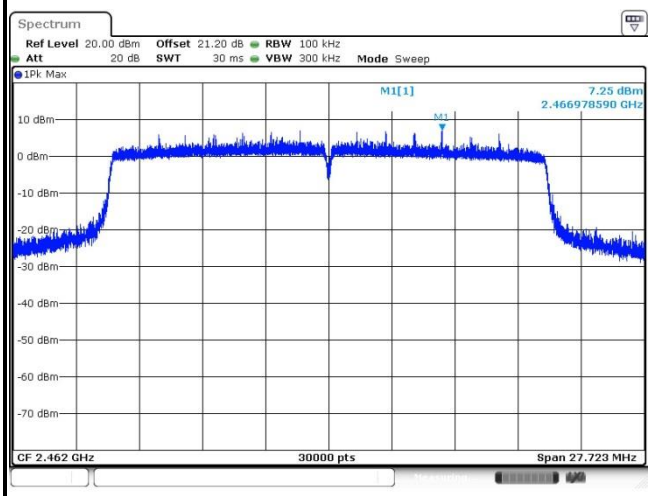
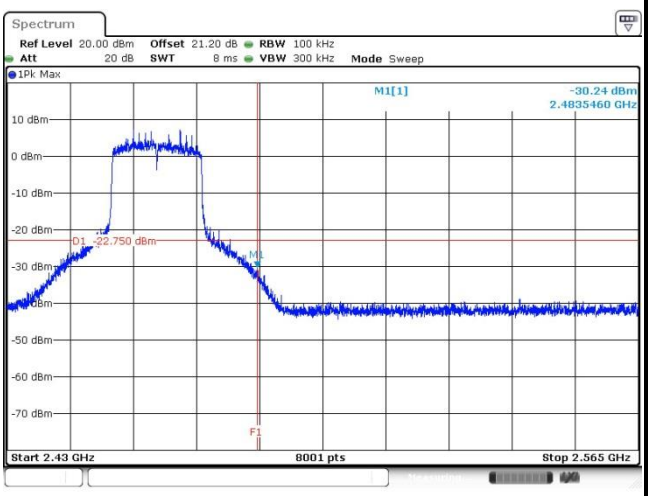
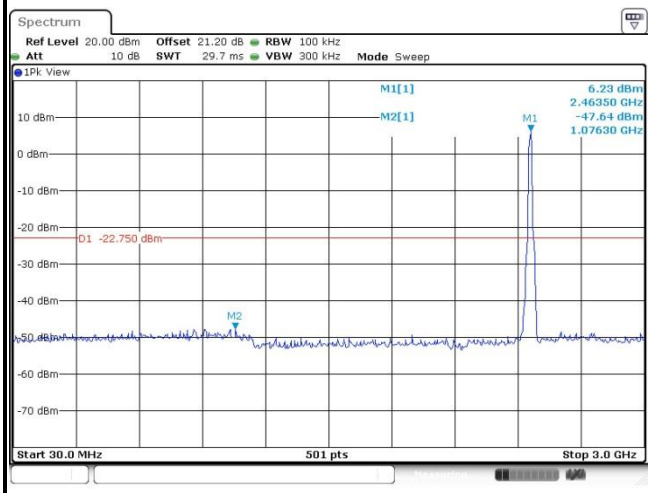
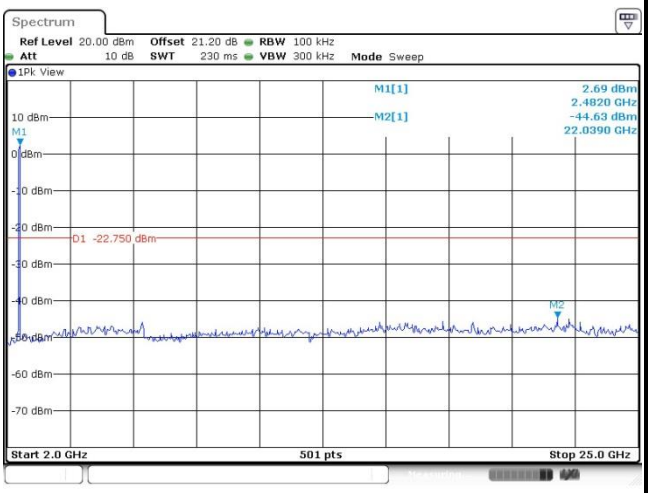
100kHz PSD reference Level	Channel Plot
	
Date: 1.JUN.2021 17:04:34	Date: 1.JUN.2021 17:05:18
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	
Date: 1.JUN.2021 17:05:56	Date: 1.JUN.2021 17:06:09

Test Mode :	802.11ax HE20	Test Channel :	06

100kHz PSD reference Level	
	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

Test Mode :	802.11ax HE20	Test Channel :	11

100kHz PSD reference Level	Channel Plot
	
Date: 5.JUN.2021 00:53:56	Date: 5.JUN.2021 00:54:10
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	
Date: 5.JUN.2021 00:54:23	Date: 5.JUN.2021 00:54:36

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

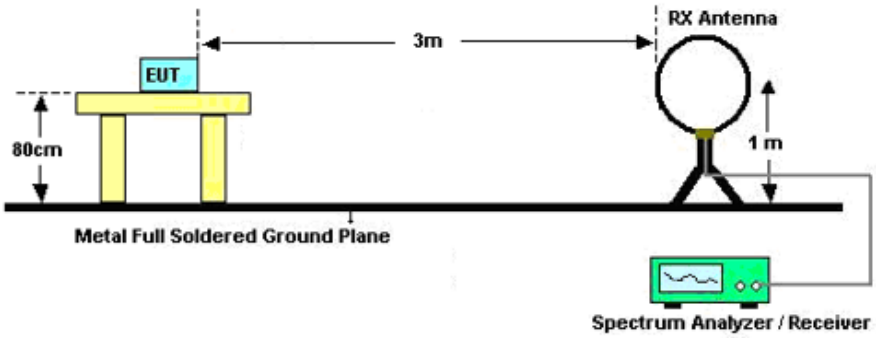
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

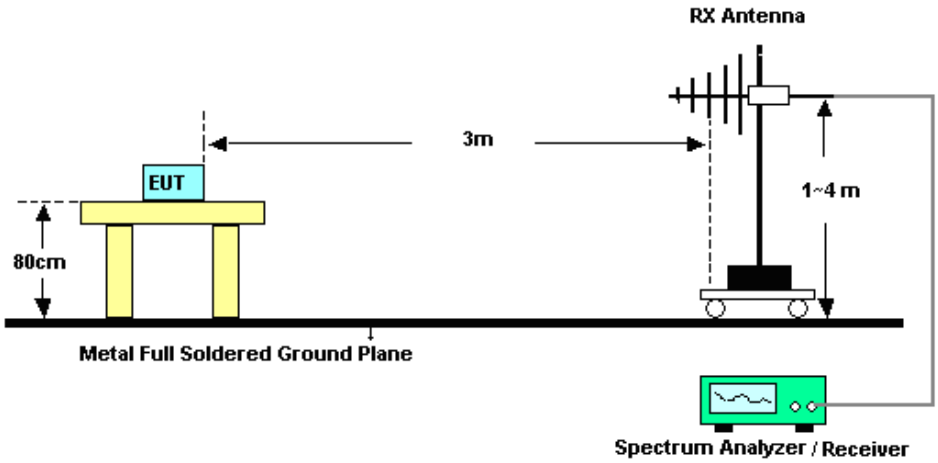
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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 peak 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 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

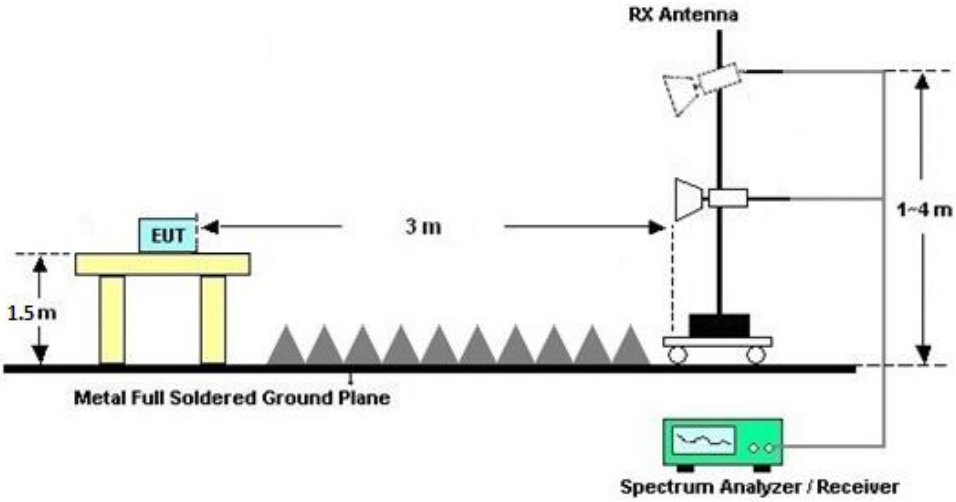
For radiated emissions below 30MHz



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 or 40GHz, whichever is lower)

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.

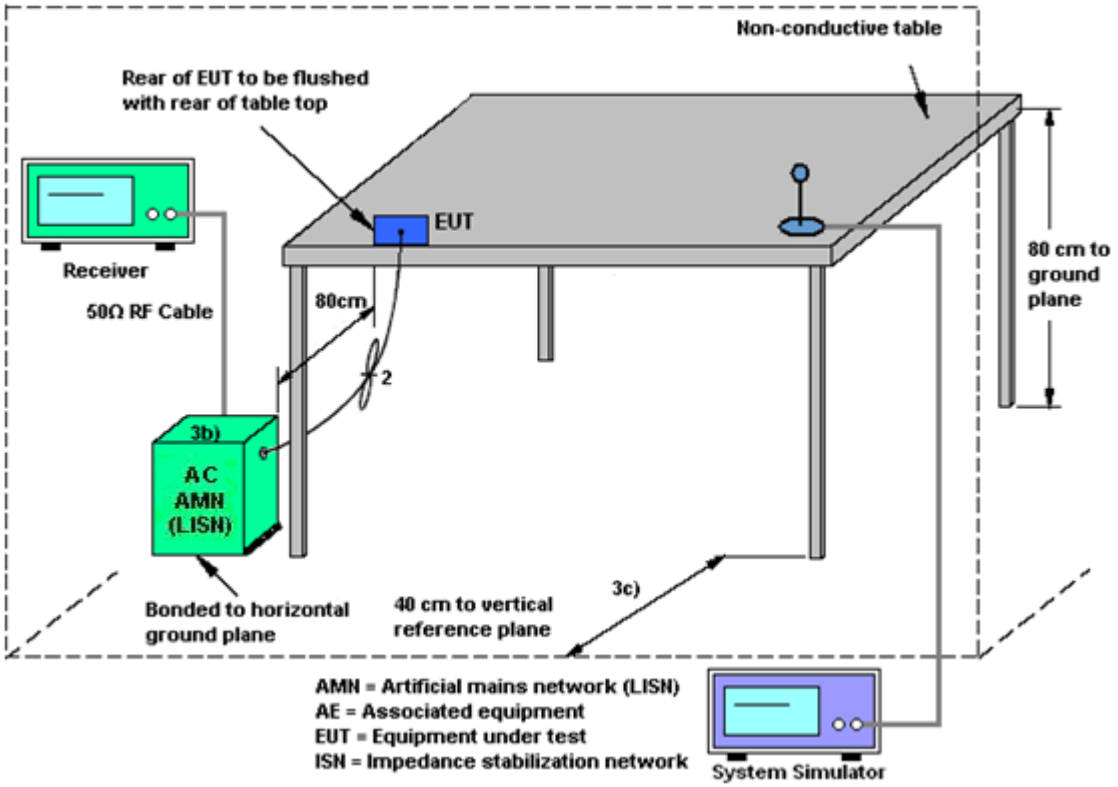
3.6.2 Measuring Instruments

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>

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
2.4 GHz	-5.00	-5.00	-5.00	-1.99	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	101078	10Hz~40GHz	Apr. 08, 2021	May 20, 2021~ Jun. 05, 2021	Apr. 07, 2022	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 25, 2020	May 20, 2021~ Jun. 05, 2021	Dec. 24, 2021	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 25, 2020	May 20, 2021~ Jun. 05, 2021	Dec. 24, 2021	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Jul. 21, 2020	Jun. 16, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 21, 2020	Jun. 16, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 22, 2020	Jun. 16, 2021	Jul. 21, 2021	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Jul. 15, 2020	Jun. 16, 2021	Jul. 14, 2021	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 25, 2020	Jun. 16, 2021	Jul. 24, 2021	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 23, 2021	Jun. 16, 2021	Apr. 22, 2022	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 17, 2021	Jun. 16, 2021	Apr. 16, 2022	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 17, 2020	Jun. 16, 2021	Oct. 16, 2021	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 16, 2020	Jun. 16, 2021	Oct. 15, 2021	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21, 2020	Jun. 16, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jun. 16, 2021	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 16, 2021	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 16, 2021	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Mar. 07, 2021	May 28, 2021	Mar. 06, 2022	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2 LISN	00103912	9kHz~30MHz	Dec. 25, 2020	May 28, 2021	Dec. 24, 2021	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 15, 2020	May 28, 2021	Oct. 14, 2021	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 21, 2020	May 28, 2021	Jul. 20, 2021	Conduction (CO01-SZ)

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))	**2.2dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.2dB**

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.3dB**

Appendix A. Conducted Test Results

Report Number : FR151407C

Test Engineer:	Chen Hong	Temperature:	24~26	°C
Test Date:	2021/5/20~2021/6/5	Relative Humidity:	50~53	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band MIMO										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant1	Ant2	Ant1	Ant2		
11b	1Mbps	2	1	2412	13.09	13.04	8.05	8.03	0.50	Pass
11b	1Mbps	2	6	2437	13.19	13.39	8.09	8.05	0.50	Pass
11b	1Mbps	2	11	2462	13.09	13.14	8.05	7.09	0.50	Pass
11g	6Mbps	2	1	2412	16.43	16.43	16.30	15.70	0.50	Pass
11g	6Mbps	2	6	2437	16.38	16.63	16.02	16.28	0.50	Pass
11g	6Mbps	2	11	2462	16.38	16.43	16.28	16.02	0.50	Pass
HT20	MCS0	2	1	2412	17.58	17.58	17.28	16.92	0.50	Pass
HT20	MCS0	2	6	2437	17.48	17.83	15.96	16.54	0.50	Pass
HT20	MCS0	2	11	2462	17.43	17.63	17.26	17.52	0.50	Pass

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band MIMO											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
						Ant1	Ant2	Ant1	Ant2		
HE20	MCS0	1	1	2412	Full	18.88	18.93	18.84	17.68	0.50	Pass
HE20	MCS0	1	6	2437	Full	18.83	19.03	18.48	18.62	0.50	Pass
HE20	MCS0	1	11	2462	Full	18.83	19.03	18.34	18.48	0.50	Pass

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	18.30	19.00	21.67	30.00		-5.00		16.67		36.00		Pass
11b	1Mbps	2	6	2437	18.10	18.20	21.16	30.00		-5.00		16.16		36.00		Pass
11b	1Mbps	2	11	2462	18.00	18.70	21.37	30.00		-5.00		16.37		36.00		Pass
11g	6Mbps	2	1	2412	17.60	18.30	20.97	30.00		-5.00		15.97		36.00		Pass
11g	6Mbps	2	6	2437	18.20	18.40	21.31	30.00		-5.00		16.31		36.00		Pass
11g	6Mbps	2	11	2462	18.00	18.90	21.48	30.00		-5.00		16.48		36.00		Pass
HT20	MCS0	2	1	2412	17.50	18.10	20.82	30.00		-5.00		15.82		36.00		Pass
HT20	MCS0	2	6	2437	18.20	18.20	21.21	30.00		-5.00		16.21		36.00		Pass
HT20	MCS0	2	11	2462	18.10	18.60	21.37	30.00		-5.00		16.37		36.00		Pass
VHT20	MCS0	2	1	2412	17.40	18.00	20.72	30.00		-5.00		15.72		36.00		Pass
VHT20	MCS0	2	6	2437	18.10	18.00	21.06	30.00		-5.00		16.06		36.00		Pass
VHT20	MCS0	2	11	2462	18.00	18.40	21.21	30.00		-5.00		16.21		36.00		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
HE20	MCS0	2	1	2412	Full	17.10	17.70	20.42	30.00		-5.00		15.42		36.00		Pass
HE20	MCS0	2	1	2412	26/0	8.60	9.00	11.81	30.00		-5.00		6.81		36.00		Pass
HE20	MCS0	2	1	2412	52/37	11.20	11.30	14.26	30.00		-5.00		9.26		36.00		Pass
HE20	MCS0	2	1	2412	106/53	14.00	14.50	17.27	30.00		-5.00		12.27		36.00		Pass
HE20	MCS0	2	6	2437	Full	18.20	18.30	21.26	30.00		-5.00		16.26		36.00		Pass
HE20	MCS0	2	11	2462	Full	18.00	18.70	21.37	30.00		-5.00		16.37		36.00		Pass
HE20	MCS0	2	11	2462	26/8	8.40	9.60	12.05	30.00		-5.00		7.05		36.00		Pass
HE20	MCS0	2	11	2462	52/40	10.90	12.20	14.61	30.00		-5.00		9.61		36.00		Pass
HE20	MCS0	2	11	2462	106/54	14.30	15.20	17.78	30.00		-5.00		12.78		36.00		Pass

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

TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	-6.54	-6.49	-3.48	-1.99		8.00		Pass
11b	1Mbps	2	6	2437	-6.80	-6.78	-3.77	-1.99		8.00		Pass
11b	1Mbps	2	11	2462	-6.58	-7.42	-3.57	-1.99		8.00		Pass
11g	6Mbps	2	1	2412	-8.88	-8.72	-5.71	-1.99		8.00		Pass
11g	6Mbps	2	6	2437	-8.39	-8.48	-5.38	-1.99		8.00		Pass
11g	6Mbps	2	11	2462	-9.01	-7.81	-4.80	-1.99		8.00		Pass
HT20	MCS0	2	1	2412	-8.61	-7.78	-4.77	-1.99		8.00		Pass
HT20	MCS0	2	6	2437	-7.29	-7.52	-4.28	-1.99		8.00		Pass
HT20	MCS0	2	11	2462	-8.64	-6.48	-3.47	-1.99		8.00		Pass

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

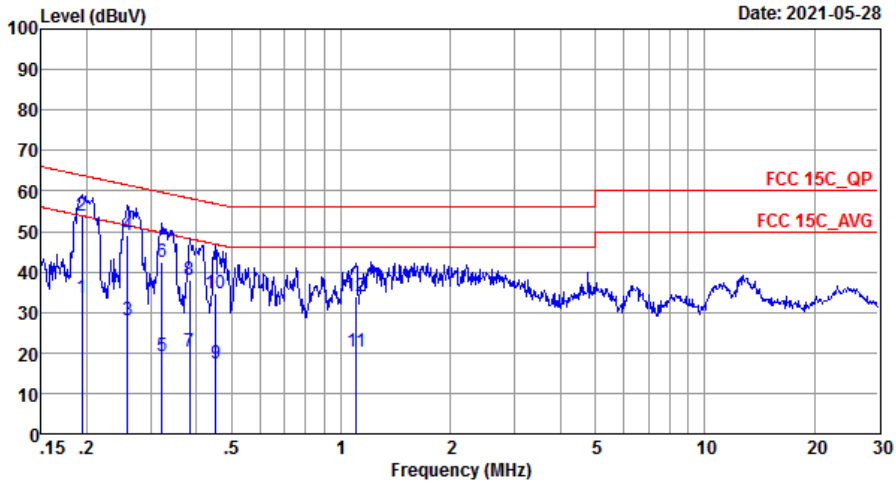
TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
						Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
HE20	MCS0	2	1	2412	Full	-9.44	-8.43	-5.42	-1.99		8.00		Pass
HE20	MCS0	2	1	2412	26/0	-9.58	-8.90	-5.89	-1.99		8.00		Pass
HE20	MCS0	2	1	2412	52/37	-9.87	-9.07	-6.06	-1.99		8.00		Pass
HE20	MCS0	2	1	2412	106/53	-9.68	-8.86	-5.85	-1.99		8.00		Pass
HE20	MCS0	2	6	2437	Full	-8.78	-8.99	-5.77	-1.99		8.00		Pass
HE20	MCS0	2	11	2462	Full	-8.88	-8.31	-5.30	-1.99		8.00		Pass
HE20	MCS0	2	11	2462	26/8	-9.26	-8.72	-5.71	-1.99		8.00		Pass
HE20	MCS0	2	11	2462	52/40	-9.19	-8.79	-5.78	-1.99		8.00		Pass
HE20	MCS0	2	11	2462	106/54	-9.02	-8.73	-5.72	-1.99		8.00		Pass

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

Appendix B. AC Conducted Emission Test Results

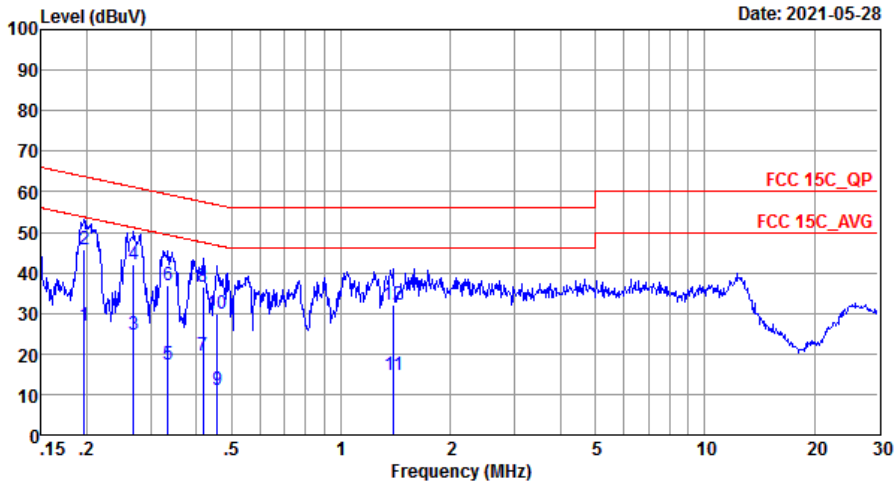
Test Engineer :	Yuqiang Xie	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20201030_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.19	33.61	-20.23	53.84	23.50	0.08	10.03	Average
2	*	0.19	53.91	-9.93	63.84	43.80	0.08	10.03	QP
3		0.26	27.97	-23.50	51.47	17.89	0.04	10.04	Average
4		0.26	49.17	-12.30	61.47	39.09	0.04	10.04	QP
5		0.32	19.17	-30.49	49.66	9.10	0.03	10.04	Average
6		0.32	42.47	-17.19	59.66	32.40	0.03	10.04	QP
7		0.38	20.11	-28.10	48.21	10.00	0.07	10.04	Average
8		0.38	38.11	-20.10	58.21	28.00	0.07	10.04	QP
9		0.45	17.44	-29.41	46.85	7.30	0.09	10.05	Average
10		0.45	34.64	-22.21	56.85	24.50	0.09	10.05	QP
11		1.10	20.43	-25.57	46.00	10.30	0.10	10.03	Average
12		1.10	34.13	-21.87	56.00	24.00	0.10	10.03	QP

Test Engineer :	Yuqiang Xie	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20201030_N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.20	27.11	-26.65	53.76	17.00	0.08	10.03	Average
2	*	0.20	45.91	-17.85	63.76	35.80	0.08	10.03	QP
3		0.27	24.57	-26.59	51.16	14.50	0.03	10.04	Average
4		0.27	41.97	-19.19	61.16	31.90	0.03	10.04	QP
5		0.33	17.18	-32.17	49.35	7.10	0.04	10.04	Average
6		0.33	36.88	-22.47	59.35	26.80	0.04	10.04	QP
7		0.42	19.53	-27.98	47.51	9.40	0.08	10.05	Average
8		0.42	36.53	-20.98	57.51	26.40	0.08	10.05	QP
9		0.46	11.24	-35.52	46.76	1.10	0.09	10.05	Average
10		0.46	30.04	-26.72	56.76	19.90	0.09	10.05	QP
11		1.40	14.85	-31.15	46.00	4.70	0.10	10.05	Average
12		1.40	32.25	-23.75	56.00	22.10	0.10	10.05	QP

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	Path 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		2315.04	49.04	-24.96	74	45.34	27.97	7.71	31.98	306	335	P	H
		2387.49	40.38	-13.62	54	36.66	27.83	7.8	31.91	306	335	A	H
		2412	105.35	-	-	101.66	27.75	7.83	31.89	306	335	P	H
		2412	103.75	-	-	100.06	27.75	7.83	31.89	306	335	A	H
		2324.7	48.77	-25.23	74	45.08	27.95	7.72	31.98	324	297	P	V
		2388.12	40.14	-13.86	54	36.43	27.82	7.8	31.91	324	297	A	V
		2412	102.27	-	-	98.58	27.75	7.83	31.89	324	297	P	V
		2412	100.79	-	-	97.1	27.75	7.83	31.89	324	297	A	V
802.11b CH 06 2437MHz		2325.12	49.05	-24.95	74	45.35	27.95	7.72	31.97	300	331	P	H
		2363.9	39.96	-14.04	54	36.26	27.87	7.77	31.94	300	331	A	H
		2437	105.12	-	-	101.47	27.65	7.86	31.86	300	331	P	H
		2437	103.36	-	-	99.71	27.65	7.86	31.86	300	331	A	H
		2490.97	48.96	-25.04	74	45.25	27.6	7.92	31.81	300	331	P	H
		2485.16	39.72	-14.28	54	36.02	27.6	7.91	31.81	300	331	A	H
		2335.06	48.52	-25.48	74	44.81	27.93	7.74	31.96	293	254	P	V
		2369.22	40.07	-13.93	54	36.36	27.86	7.78	31.93	293	254	A	V
		2437	102.35	-	-	98.7	27.65	7.86	31.86	293	254	P	V
		2437	100.54	-	-	96.89	27.65	7.86	31.86	293	254	A	V
		2487.4	48.33	-25.67	74	44.62	27.6	7.92	31.81	293	254	P	V
		2483.83	39.43	-14.57	54	35.74	27.6	7.91	31.82	293	254	A	V

802.11b CH 11 2462MHz	*	2462	104.38	-	-	100.73	27.6	7.89	31.84	301	331	P	H
	*	2462	102.06	-	-	98.41	27.6	7.89	31.84	301	331	A	H
		2491.76	49.03	-24.97	74	45.32	27.6	7.92	31.81	301	331	P	H
		2484.16	40.1	-13.9	54	36.41	27.6	7.91	31.82	301	331	A	H
	*	2462	100.56	-	-	96.91	27.6	7.89	31.84	326	289	P	V
	*	2462	98.55	-	-	94.9	27.6	7.89	31.84	326	289	A	V
		2487.08	49.34	-24.66	74	45.64	27.6	7.91	31.81	326	289	P	V
		2483.6	39.84	-14.16	54	36.15	27.6	7.91	31.82	326	289	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 802.11b (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	43.66	-30.34	74	51.51	31.3	10.39	49.54	141	214	P	H
		4824	44.01	-29.99	74	51.86	31.3	10.39	49.54	141	214	P	V
802.11b CH 06 2437MHz		4874	42.53	-31.47	74	50.33	31.3	10.43	49.53	122	136	P	H
		7311	49.47	-24.53	74	51.75	36.01	12.1	50.39	112	298	P	H
		4874	41.88	-32.12	74	49.68	31.3	10.43	49.53	233	102	P	V
		7311	48.03	-25.97	74	50.31	36.01	12.1	50.39	185	32	P	V
802.11b CH 11 2462MHz		4924	44.02	-29.98	74	51.66	31.4	10.48	49.52	102	203	P	H
		7386	49.72	-24.28	74	51.78	36.2	12.17	50.43	172	214	P	H
		4924	44.09	-29.91	74	51.73	31.4	10.48	49.52	102	203	P	V
		7386	47.91	-26.09	74	49.97	36.2	12.17	50.43	172	214	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)

WIFI Ant. 1+2	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)
802.11g CH 01 2412MHz		2390	60.43	-13.57	74	56.72	27.82	7.8	31.91	113	332	P	H
		2390	49.32	-4.68	54	45.61	27.82	7.8	31.91	113	332	A	H
		2412	106.37	-	-	102.68	27.75	7.83	31.89	113	332	P	H
		2412	100.22	-	-	96.53	27.75	7.83	31.89	113	332	A	H
		2390	57.89	-16.11	74	54.18	27.82	7.8	31.91	266	293	P	V
		2390	47.06	-6.94	54	43.35	27.82	7.8	31.91	266	293	A	V
		2412	105.35	-	-	101.66	27.75	7.83	31.89	266	293	P	V
		2412	97.96	-	-	94.27	27.75	7.83	31.89	266	293	A	V
802.11g CH 06 2437MHz		2364.18	49.84	-24.16	74	46.14	27.87	7.77	31.94	157	329	P	H
		2389.94	38.66	-15.34	54	34.95	27.82	7.8	31.91	157	329	A	H
		2437	107.91	-	-	104.26	27.65	7.86	31.86	157	329	P	H
		2437	101.25	-	-	97.6	27.65	7.86	31.86	157	329	A	H
		2497.2	49.31	-24.69	74	45.58	27.6	7.93	31.8	157	329	P	H
		2483.5	38.28	-15.72	54	34.59	27.6	7.91	31.82	157	329	A	H
		2387.84	49.09	-24.91	74	45.38	27.82	7.8	31.91	237	263	P	V
		2384.48	38.5	-15.5	54	34.8	27.83	7.79	31.92	237	263	A	V
		2437	106.12	-	-	102.47	27.65	7.86	31.86	237	263	P	V
		2437	99.43	-	-	95.78	27.65	7.86	31.86	237	263	A	V
		2491.67	48.41	-25.59	74	44.7	27.6	7.92	31.81	237	263	P	V
		2484.46	38.15	-15.85	54	34.46	27.6	7.91	31.82	237	263	A	V

802.11g CH 11 2462MHz		2462	106.56	-	-	102.91	27.6	7.89	31.84	154	328	P	H
		2462	100.27	-	-	96.62	27.6	7.89	31.84	154	328	A	H
		2484.72	53.95	-20.05	74	50.26	27.6	7.91	31.82	154	328	P	H
		2484.84	43.03	-10.97	54	39.34	27.6	7.91	31.82	154	328	A	H
		2462	104.6	-	-	100.95	27.6	7.89	31.84	217	257	P	V
		2462	97.5	-	-	93.85	27.6	7.89	31.84	217	257	A	V
		2484.28	52.46	-21.54	74	48.77	27.6	7.91	31.82	217	257	P	V
		2483.52	42.2	-11.8	54	38.51	27.6	7.91	31.82	217	257	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)

WIFI Ant. 1+2	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)
802.11g CH 01 2412MHz		4824	43.38	-30.62	74	51.23	31.3	10.39	49.54	121	236	P	H
		4824	43.37	-30.63	74	51.22	31.3	10.39	49.54	141	214	P	V
802.11g CH 06 2437MHz		4874	43.97	-30.03	74	51.77	31.3	10.43	49.53	122	136	P	H
		7311	48.85	-25.15	74	51.13	36.01	12.1	50.39	112	298	P	H
		4874	42.59	-31.41	74	50.39	31.3	10.43	49.53	233	102	P	V
		7311	47.74	-26.26	74	50.02	36.01	12.1	50.39	185	32	P	V
802.11g CH 11 2462MHz		4924	43.72	-30.28	74	51.36	31.4	10.48	49.52	102	203	P	H
		7386	52.56	-21.44	74	54.62	36.2	12.17	50.43	172	214	P	H
		7386	41.64	-12.36	54	43.7	36.2	12.17	50.43	172	214	A	H
		4924	43.85	-30.15	74	51.49	31.4	10.48	49.52	128	256	P	V
		7386	47.98	-26.02	74	50.04	36.2	12.17	50.43	131	202	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 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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.905	59.31	-14.69	74	55.6	27.82	7.8	31.91	169	332	P	H
		2390	49.34	-4.66	54	45.63	27.82	7.8	31.91	169	332	A	H
		2412	106.71	-	-	103.02	27.75	7.83	31.89	169	332	P	H
		2412	99.47	-	-	95.78	27.75	7.83	31.89	169	332	A	H
		2389.17	55.11	-18.89	74	51.4	27.82	7.8	31.91	100	259	P	V
		2390	45.7	-8.3	54	41.99	27.82	7.8	31.91	100	259	A	V
		2412	104.29	-	-	100.6	27.75	7.83	31.89	100	259	P	V
		2412	97.55	-	-	93.86	27.75	7.83	31.89	100	259	A	V
802.11n HT20 CH 06 2437MHz		2347.8	49.51	-24.49	74	45.81	27.9	7.75	31.95	165	332	P	H
		2389.94	38.54	-15.46	54	34.83	27.82	7.8	31.91	165	332	A	H
		2437	108.52	-	-	104.87	27.65	7.86	31.86	165	332	P	H
		2437	101.11	-	-	97.46	27.65	7.86	31.86	165	332	A	H
		2483.55	48.76	-25.24	74	45.07	27.6	7.91	31.82	165	332	P	H
		2483.5	38.19	-15.81	54	34.5	27.6	7.91	31.82	165	332	A	H
		2376.08	49.1	-24.9	74	45.39	27.85	7.78	31.92	261	261	P	V
		2384.48	38.31	-15.69	54	34.61	27.83	7.79	31.92	261	261	A	V
		2437	104.9	-	-	101.25	27.65	7.86	31.86	261	261	P	V
		2437	97.68	-	-	94.03	27.65	7.86	31.86	261	261	A	V
		2497.2	48.58	-25.42	74	44.85	27.6	7.93	31.8	261	261	P	V
		2484.32	38.04	-15.96	54	34.35	27.6	7.91	31.82	261	261	A	V

802.11n HT20 CH 11 2462MHz		2462	106.86	-	-	103.21	27.6	7.89	31.84	113	332	P	H
		2462	99.26	-	-	95.61	27.6	7.89	31.84	113	332	A	H
		2483.56	53.56	-20.44	74	49.87	27.6	7.91	31.82	113	332	P	H
		2483.52	43.79	-10.21	54	40.1	27.6	7.91	31.82	113	332	A	H
		2462	103.58	-	-	99.93	27.6	7.89	31.84	107	261	P	V
		2462	96.66	-	-	93.01	27.6	7.89	31.84	107	261	A	V
		2483.8	54.99	-19.01	74	51.3	27.6	7.91	31.82	107	261	P	V
		2483.52	44.55	-9.45	54	40.86	27.6	7.91	31.82	107	261	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)	Path 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	43.85	-30.15	74	51.7	31.3	10.39	49.54	141	214	P	H
		4824	43.73	-30.27	74	51.58	31.3	10.39	49.54	132	126	P	V
802.11n HT20 CH 06 2437MHz		4874	42.94	-31.06	74	50.74	31.3	10.43	49.53	122	136	P	H
		7311	49.65	-24.35	74	51.93	36.01	12.1	50.39	112	298	P	H
		4874	43.09	-30.91	74	50.89	31.3	10.43	49.53	233	102	P	V
		7311	48.15	-25.85	74	50.43	36.01	12.1	50.39	185	32	P	V
802.11n HT20 CH 11 2462MHz		4924	43.66	-30.34	74	51.3	31.4	10.48	49.52	102	203	P	H
		7386	47.91	-26.09	74	49.97	36.2	12.17	50.43	172	214	P	H
		4924	44.34	-29.66	74	51.98	31.4	10.48	49.52	102	203	P	V
		7386	48.24	-25.76	74	50.3	36.2	12.17	50.43	172	214	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 802.11 ax HE20 Full (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 01 2412MHz		2390	58.5	-15.5	74	54.79	27.82	7.8	31.91	168	334	P	H
		2390	49.13	-4.87	54	45.42	27.82	7.8	31.91	168	334	A	H
		2412	108.31	-	-	104.62	27.75	7.83	31.89	168	334	P	H
		2412	99.02	-	-	95.33	27.75	7.83	31.89	168	334	A	H
		2389.8	55.07	-18.93	74	51.36	27.82	7.8	31.91	100	258	P	V
		2390	44.82	-9.18	54	41.11	27.82	7.8	31.91	100	258	A	V
		2412	105.57	-	-	101.88	27.75	7.83	31.89	100	258	P	V
		2412	96.7	-	-	93.01	27.75	7.83	31.89	100	258	A	V
802.11ax HE20 Full CH 06 2437MHz		2351.72	49.35	-24.65	74	45.64	27.9	7.76	31.95	165	333	P	H
		2389.1	38.27	-15.73	54	34.56	27.82	7.8	31.91	165	333	A	H
		2437	110.76	-	-	107.11	27.65	7.86	31.86	165	333	P	H
		2437	100.7	-	-	97.05	27.65	7.86	31.86	165	333	A	H
		2483.55	49.49	-24.51	74	45.8	27.6	7.91	31.82	165	333	P	H
		2483.55	38.05	-15.95	54	34.36	27.6	7.91	31.82	165	333	A	H
		2372.86	49.74	-24.26	74	46.04	27.85	7.78	31.93	112	260	P	V
		2384.62	38.19	-15.81	54	34.49	27.83	7.79	31.92	112	260	A	V
		2437	107.7	-	-	104.05	27.65	7.86	31.86	112	260	P	V
		2437	97.67	-	-	94.02	27.65	7.86	31.86	112	260	A	V
		2486.42	48.26	-25.74	74	44.56	27.6	7.91	31.81	112	260	P	V
		2483.62	37.94	-16.06	54	34.25	27.6	7.91	31.82	112	260	A	V

WIFI Ant. 1+2	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)
8802.11ax HE20 Full CH 11 2462MHz		2462	107.51	-	-	103.86	27.6	7.89	31.84	159	332	P	H
		2462	98.58	-	-	94.93	27.6	7.89	31.84	159	332	A	H
		2483.52	58.3	-15.7	74	54.61	27.6	7.91	31.82	159	332	P	H
		2483.52	46.3	-7.7	54	42.61	27.6	7.91	31.82	159	332	A	H
		2462	105.46	-	-	101.81	27.6	7.89	31.84	106	261	P	V
		2462	96.63	-	-	92.98	27.6	7.89	31.84	106	261	A	V
		2484.04	58.86	-15.14	74	55.17	27.6	7.91	31.82	106	261	P	V
		2483.52	47.68	-6.32	54	43.99	27.6	7.91	31.82	106	261	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 802.11 ax HE20 Full (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 01 2412MHz		4824	43.5	-30.5	74	51.35	31.3	10.39	49.54	141	214	P	H
		4824	43.32	-30.68	74	51.17	31.3	10.39	49.54	141	214	P	V
802.11ax HE20 Full CH 06 2437MHz		4874	43.08	-30.92	74	50.88	31.3	10.43	49.53	122	136	P	H
		7311	47.92	-26.08	74	50.2	36.01	12.1	50.39	112	298	P	H
		4874	42.3	-31.7	74	50.1	31.3	10.43	49.53	233	102	P	V
		7311	47.49	-26.51	74	49.77	36.01	12.1	50.39	185	32	P	V
802.11ax HE20 Full CH 11 2462MHz		4924	43.5	-30.5	74	51.14	31.4	10.48	49.52	102	203	P	H
		7386	48.48	-25.52	74	50.54	36.2	12.17	50.43	172	214	P	H
		4924	43.76	-30.24	74	51.4	31.4	10.48	49.52	102	203	P	V
		7386	47.76	-26.24	74	49.82	36.2	12.17	50.43	172	214	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 802.11 ax HE20 Partial (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial CH 01 2412MHz		2388.96	51.42	-22.58	74	48.5	27.82	7.8	32.7	309	21	P	H
		2390	39.38	-14.62	54	36.46	27.82	7.8	32.7	309	21	A	H
		2412	106.29	-	-	103.41	27.75	7.83	32.7	309	21	P	H
		2412	98.57	-	-	95.69	27.75	7.83	32.7	309	21	A	H
		2389.905	52.21	-21.79	74	49.29	27.82	7.8	32.7	308	57	P	V
		2390	38.57	-15.43	54	35.65	27.82	7.8	32.7	308	57	A	V
		2412	103.35	-	-	100.47	27.75	7.83	32.7	308	57	P	V
		2412	94.62	-	-	91.74	27.75	7.83	32.7	308	57	A	V
802.11ax HE20 Partial CH 11 2437MHz		2462	106.39	-	-	103.6	27.6	7.89	32.7	100	332	P	H
		2462	98.08	-	-	95.29	27.6	7.89	32.7	100	332	A	H
		2485.52	59.38	-14.62	74	56.57	27.6	7.91	32.7	100	332	P	H
		2483.52	39.59	-14.41	54	36.78	27.6	7.91	32.7	100	332	A	H
		2466	106.36	-	-	103.57	27.6	7.89	32.7	200	281	P	V
		2470	95.98	-	-	93.19	27.6	7.89	32.7	200	281	A	V
		2483.8	59.89	-14.11	74	57.08	27.6	7.91	32.7	200	281	P	V
		2483.6	38.67	-15.33	54	35.86	27.6	7.91	32.7	200	281	A	V

2.4GHz 2400~2483.5MHz

WIFI 802.11 a*x HE20 Partial* (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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial CH 01 2412MHz		4824	44.1	-29.9	74	51.95	31.3	10.39	49.54	141	214	P	H
		4824	43.56	-30.44	74	51.41	31.3	10.39	49.54	141	214	P	V
802.11ax HE20 Partial CH 11 2462MHz		4924	44.12	-29.88	74	51.76	31.4	10.48	49.52	102	203	P	H
		7386	48.19	-25.81	74	50.25	36.2	12.17	50.43	172	214	P	H
		4924	44.78	-29.22	74	52.42	31.4	10.48	49.52	102	203	P	V
		7386	48.58	-25.42	74	50.64	36.2	12.17	50.43	172	214	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 HT20 (LF)

WIFI Ant. 1+2	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)
2.4GHz 802.11n HT20 LF		48.43	25.43	-14.57	40	38.03	20.28	2.2	35.08	-	-	P	H
		170.65	31.25	-12.25	43.5	44.65	19.07	2.63	35.1	100	159	P	H
		278.32	26.03	-19.97	46	38.66	19.27	3.04	34.94	-	-	P	H
		336.52	27.64	-18.36	46	38.62	20.7	3.22	34.9	-	-	P	H
		457.77	30.18	-15.82	46	38.27	23.28	3.33	34.7	-	-	P	H
		607.15	30.18	-15.82	46	34.92	25.87	3.89	34.5	-	-	P	H
		47.46	30.26	-9.74	40	42.89	20.27	2.17	35.07	-	-	P	V
		94.02	29.34	-14.16	43.5	48.09	13.98	2.46	35.19	-	-	P	V
		158.04	34.76	-8.74	43.5	47.97	19.31	2.58	35.1	100	325	P	V
		240.49	27.68	-18.32	46	41.83	18.04	2.83	35.02	-	-	P	V
		407.33	27.6	-18.4	46	36.88	22.2	3.31	34.79	-	-	P	V
		478.14	29.26	-16.74	46	37.03	23.53	3.4	34.7	-	-	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	Path	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. 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)

For Average 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) + 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)

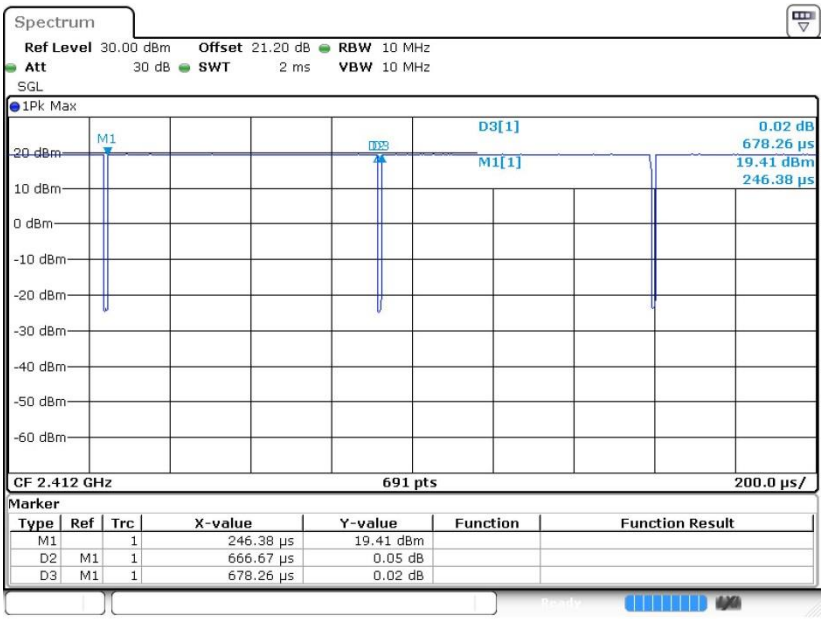
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix D. Duty Cycle Plots

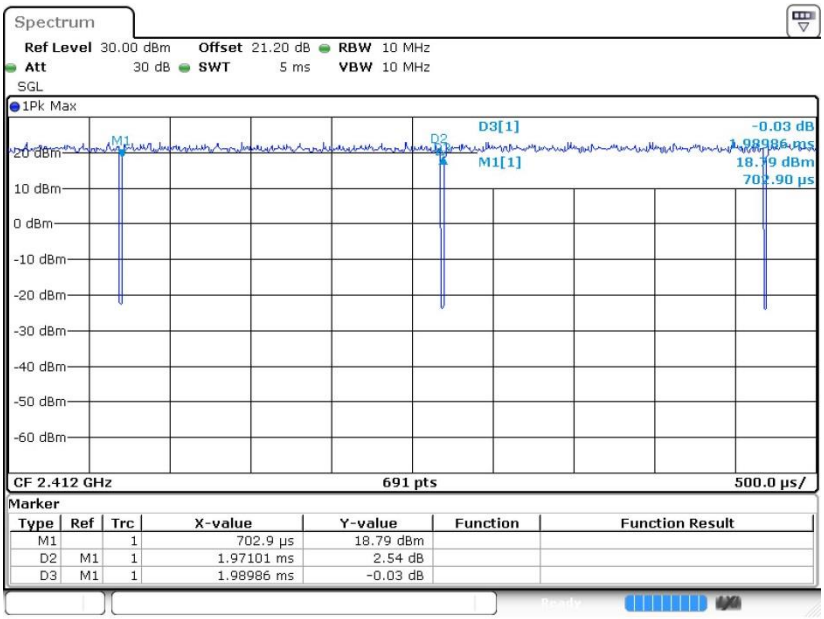
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11b	98.29	-	-	10Hz
1+2	802.11g	99.05	-	-	10Hz
1+2	802.11n HT20	100	-	-	10Hz
1+2	802.11ax HE20	100	-	-	10Hz

<MIMO Ant. 1+2>

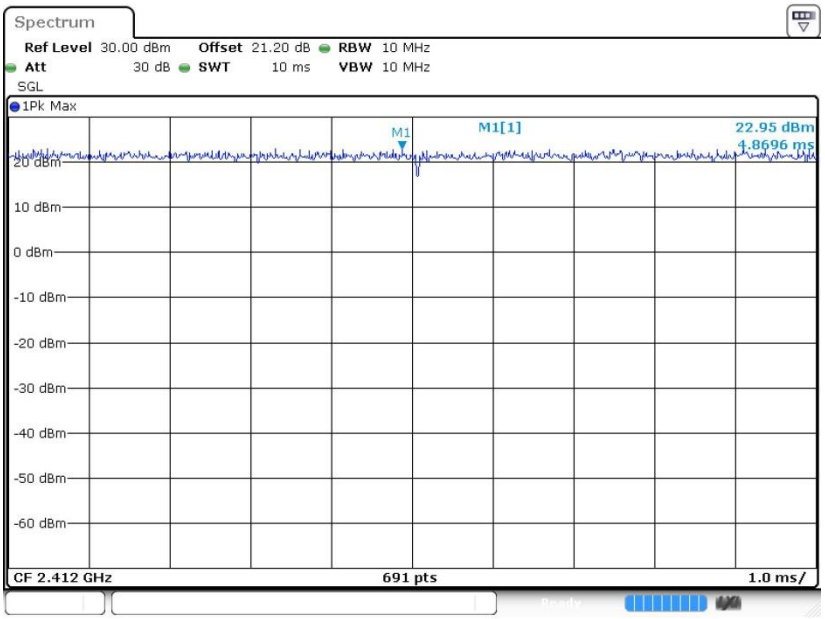
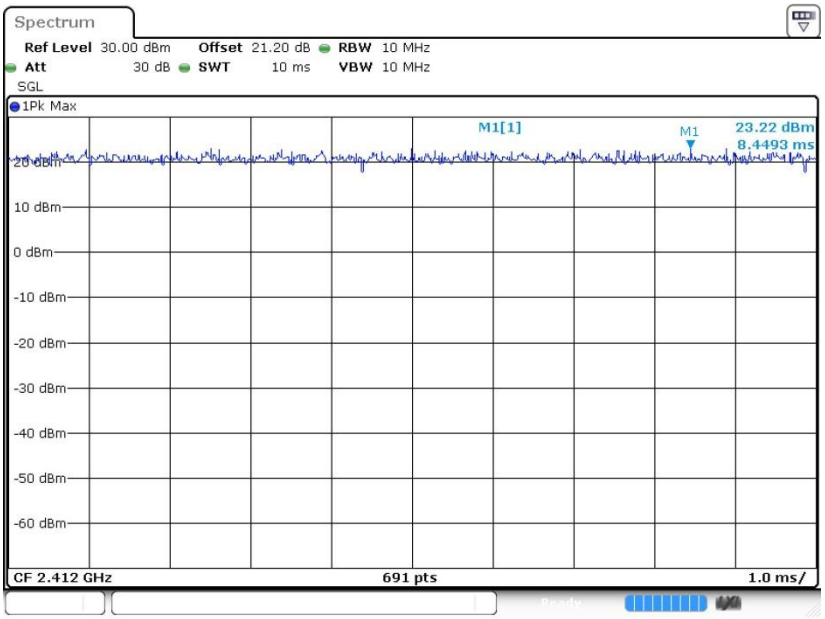
802.11b



802.11g



802.11n HT20



802.11ax HE20