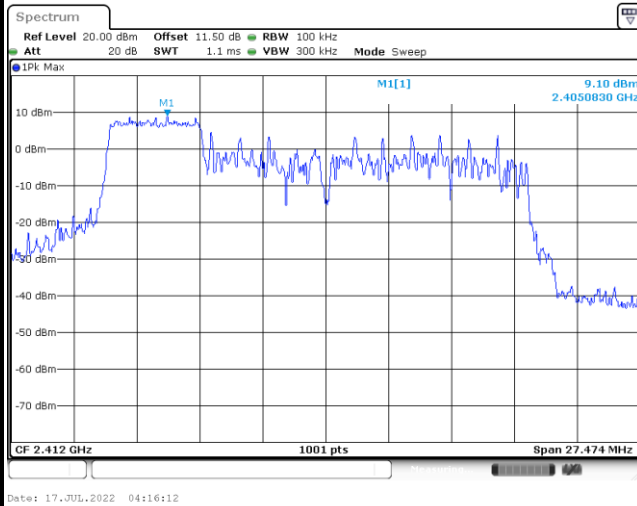




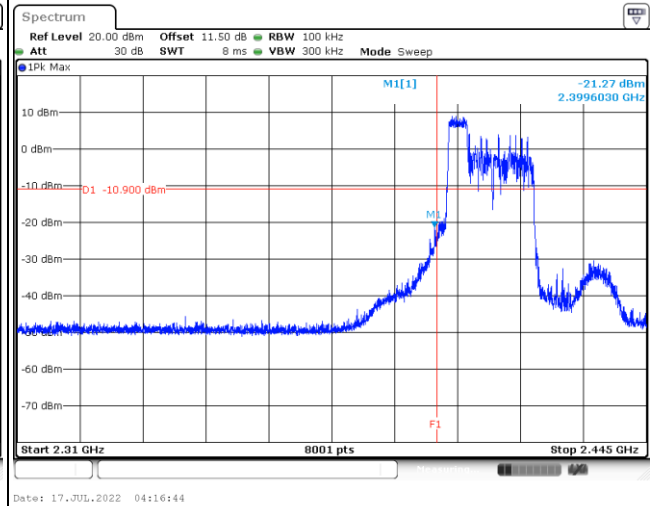
Test Mode : 802.11ax HE20(52RU37)

Test Channel : 01

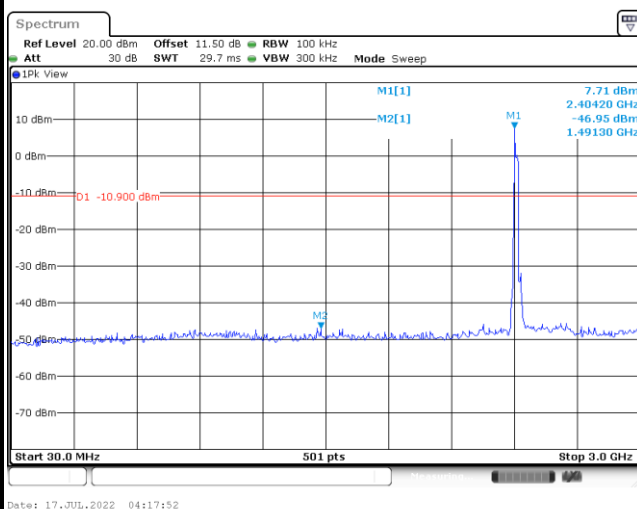
100kHz PSD reference Level



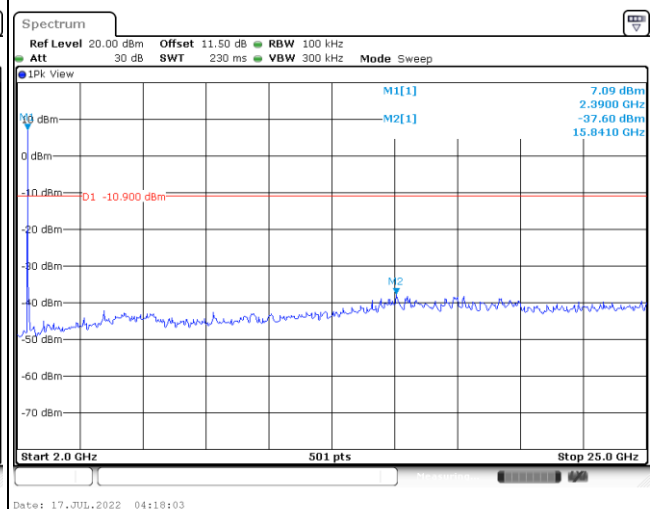
Channel Plot



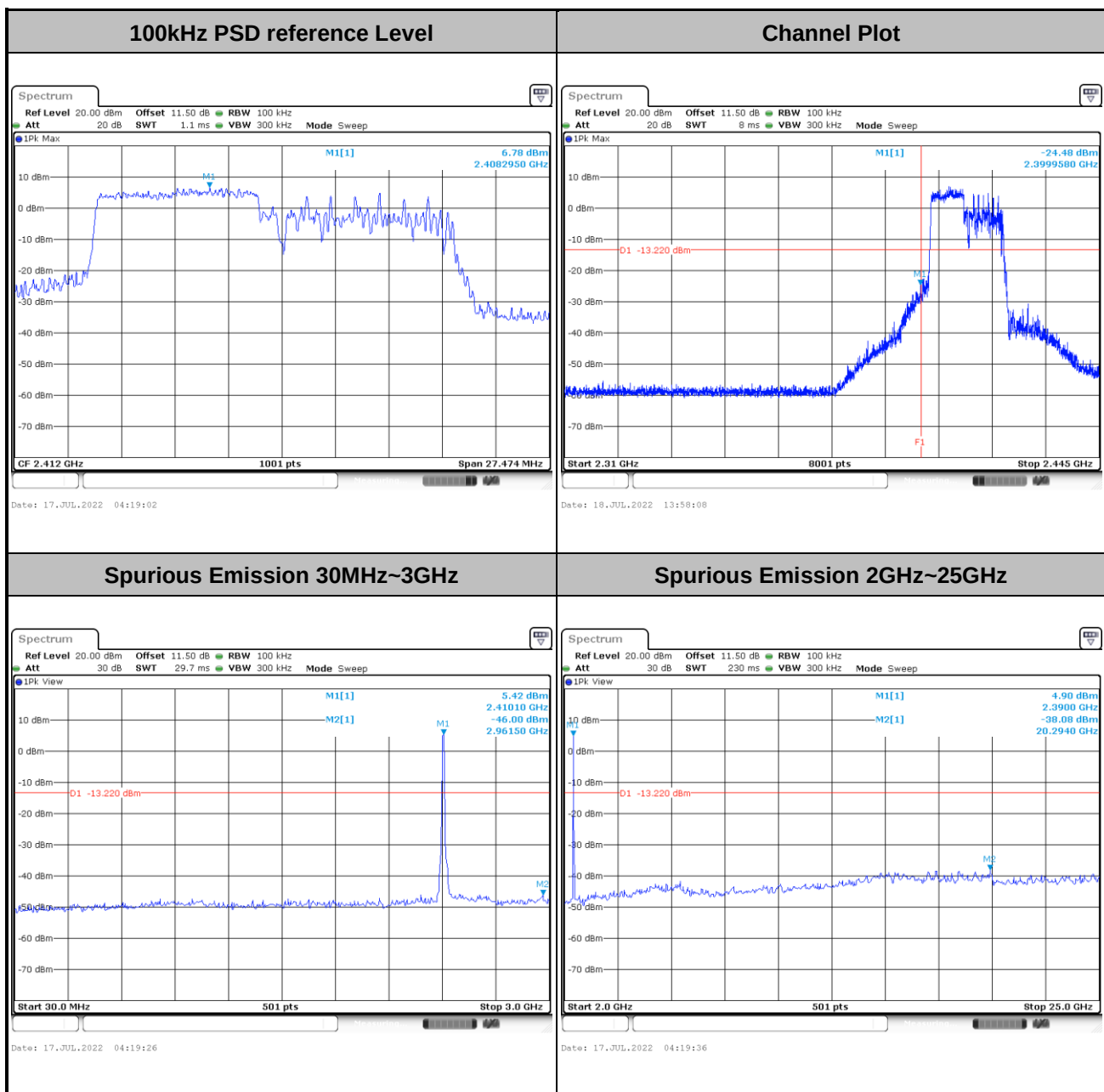
Spurious Emission 30MHz~3GHz

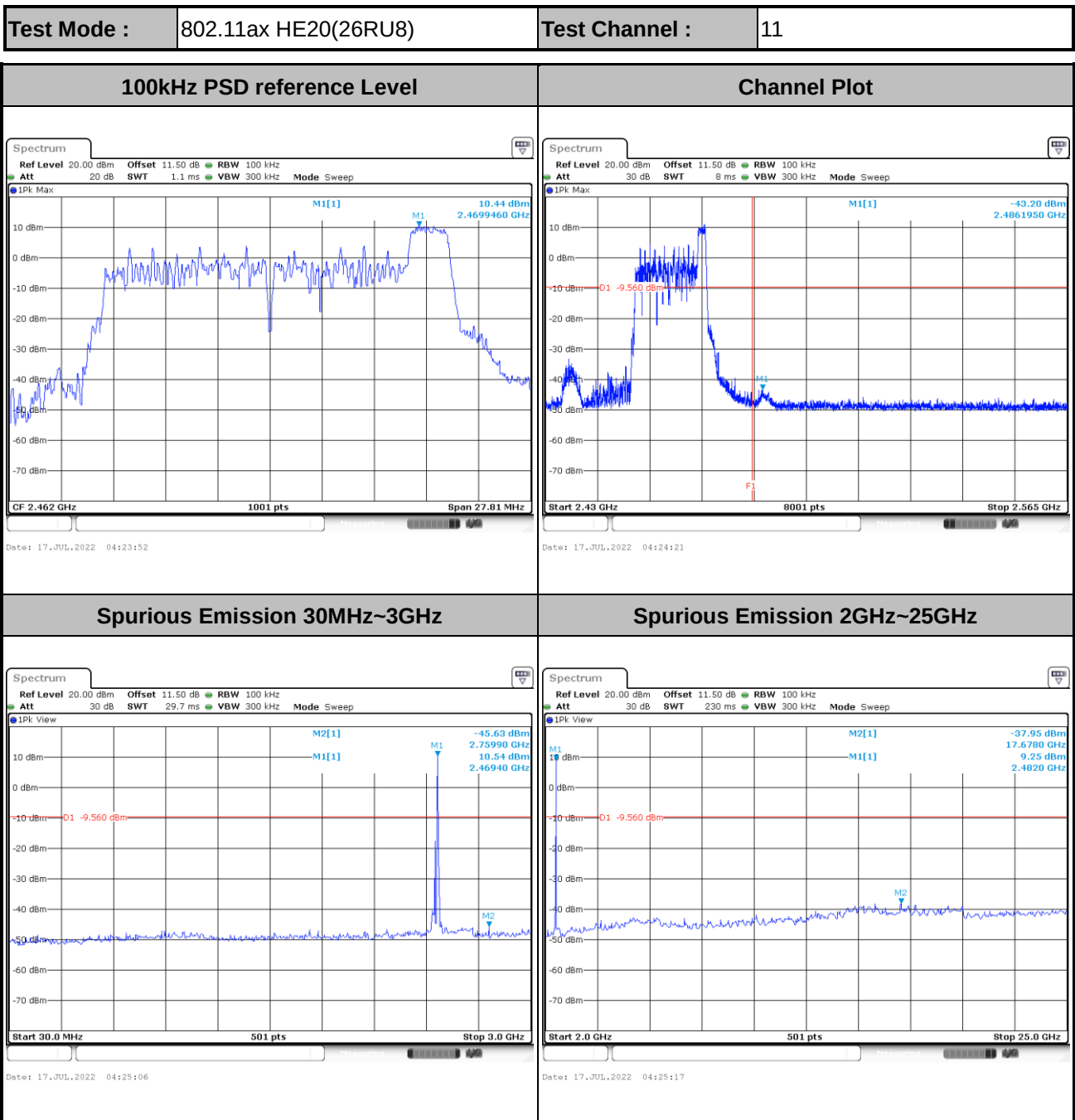


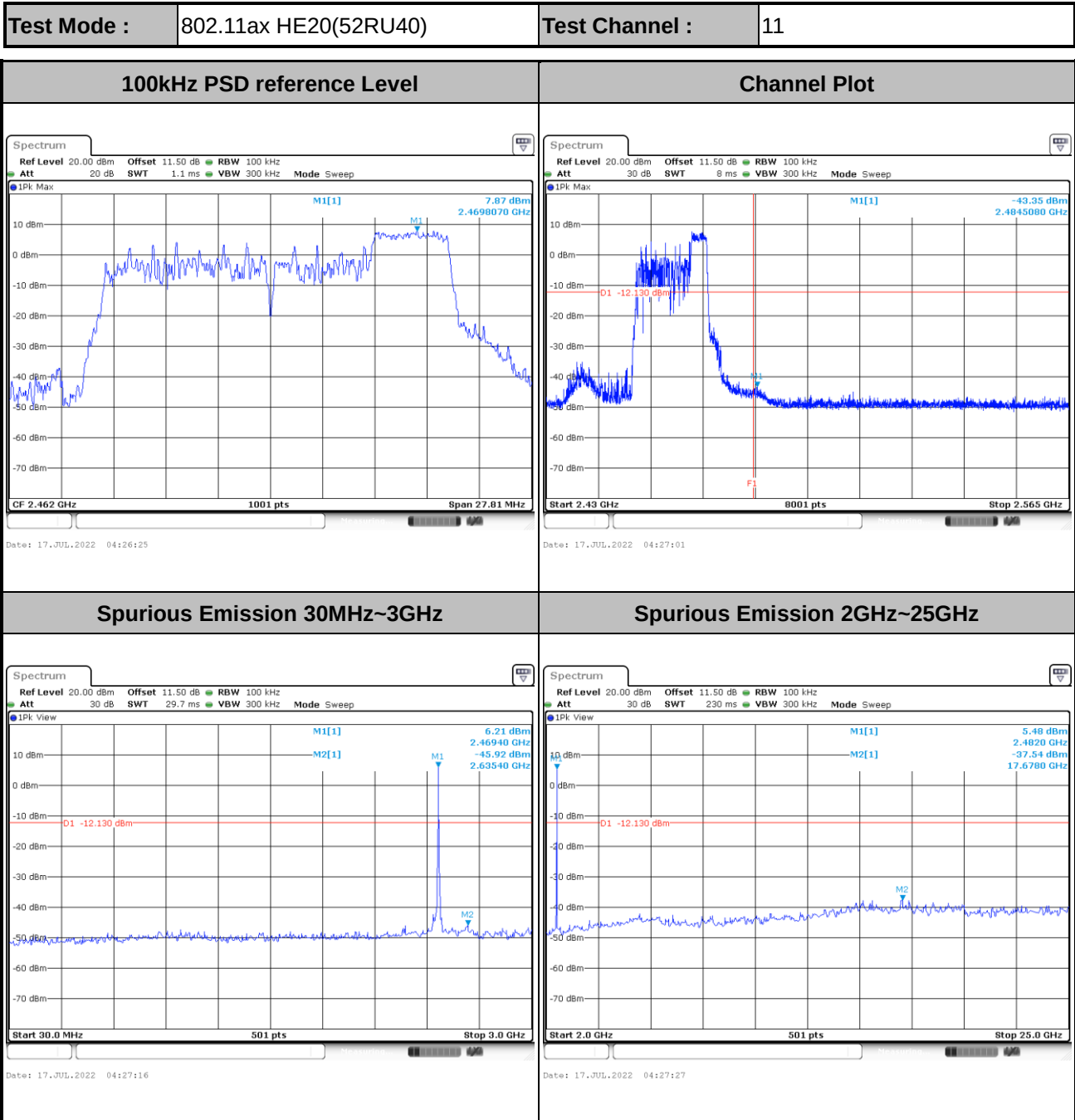
Spurious Emission 2GHz~25GHz



Test Mode :	802.11ax HE20(106RU53)	Test Channel :	01
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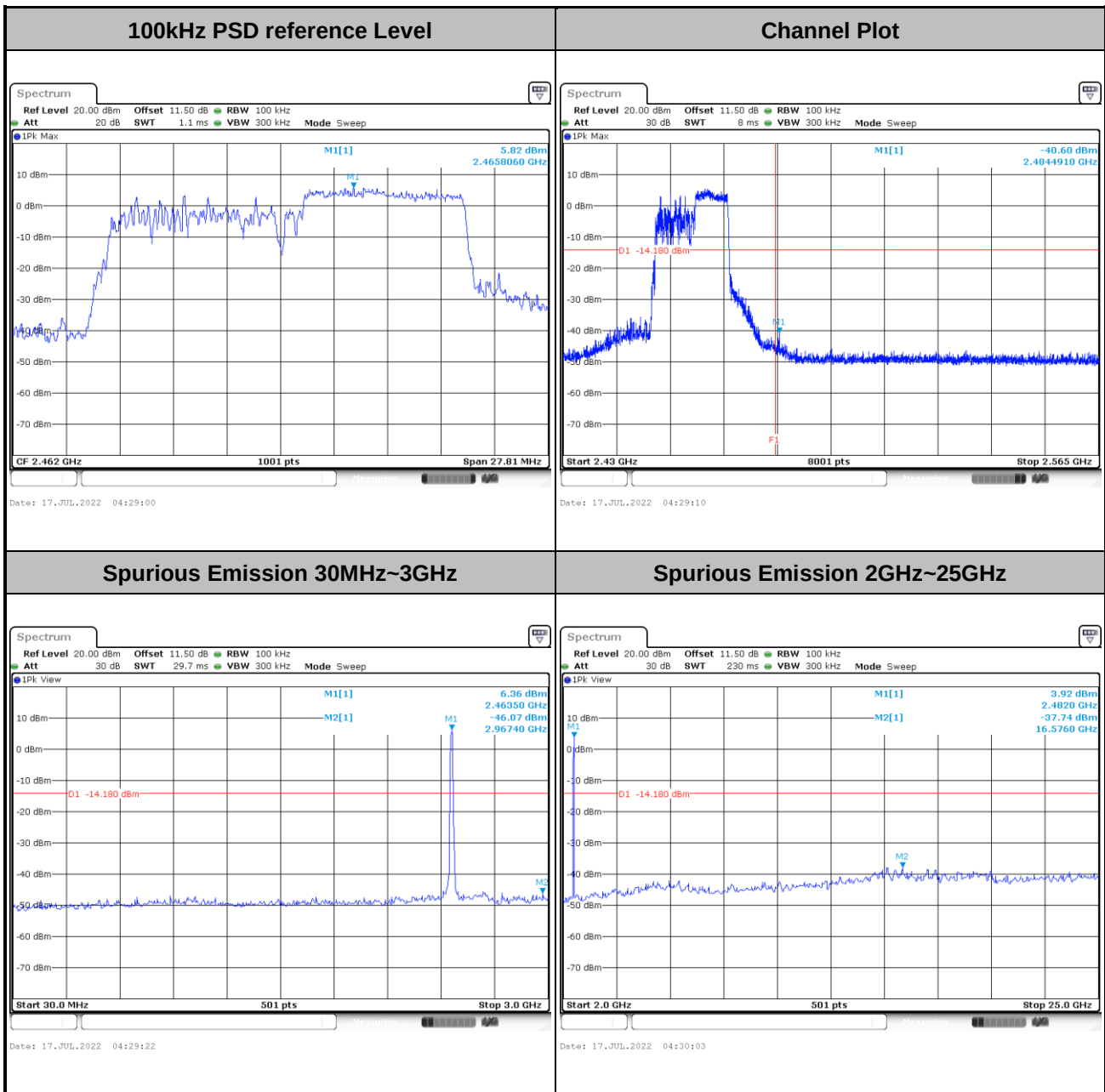








Test Mode :	802.11ax HE20(106RU54)	Test Channel :	11
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3.5 Radiated Band Edges and Spurious Emission Measurement

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

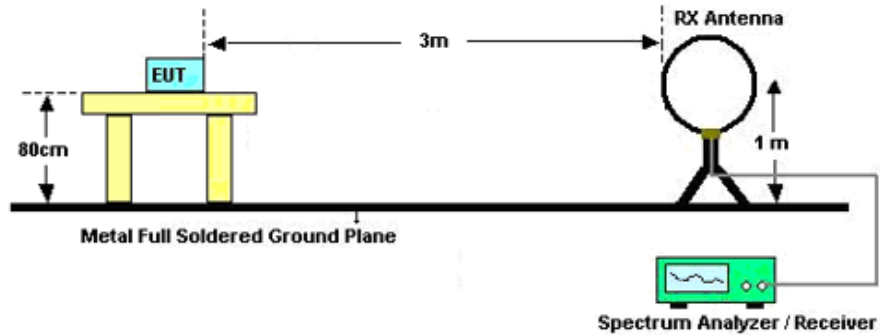
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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 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 $\geq$ 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:

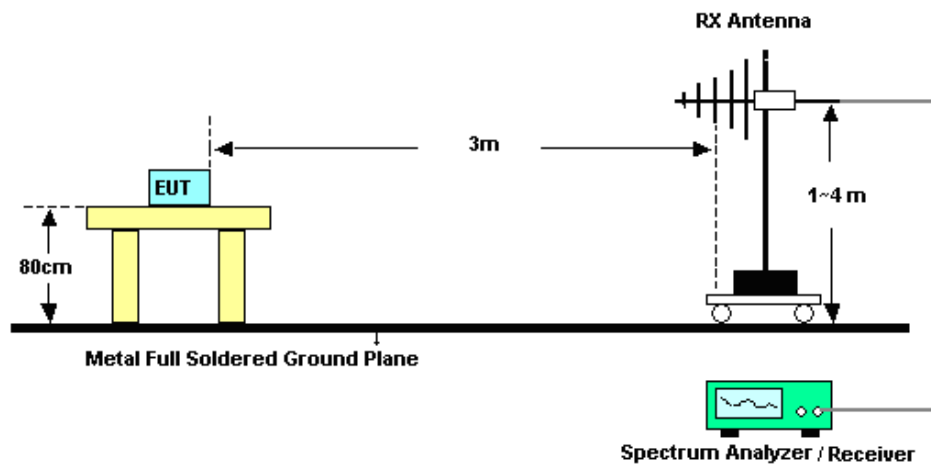
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

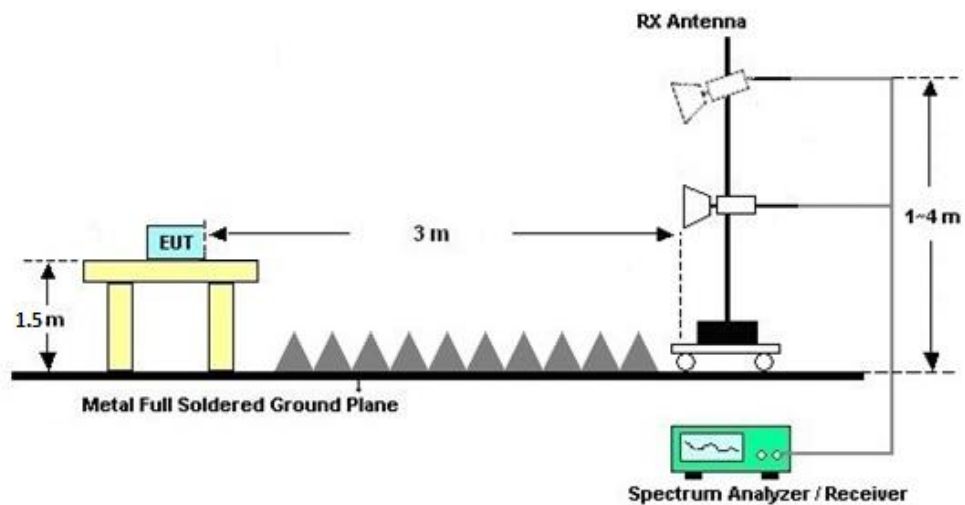
For radiated emissions below 30MHz



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 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 (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

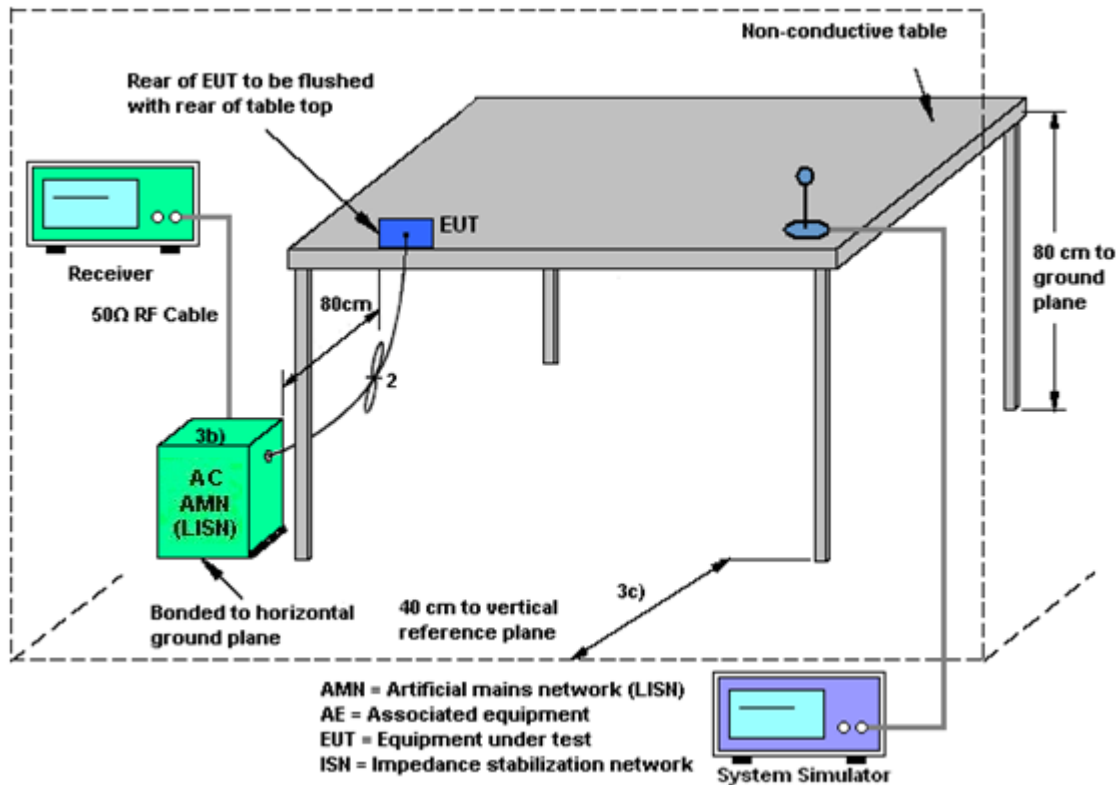
3.6.2 Measuring Instruments

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 for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
2.4 GHz	-3.00	-3.00	-3.00	0.01	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
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Sep. 01, 2021	Jul. 18, 2022	Aug. 31, 2022	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Sep. 01, 2021	Jul. 18, 2022	Aug. 31, 2022	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 29, 2021	Jul. 18, 2022	Oct. 28, 2022	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	61602000 0891	100Vac~250Vac	Jul. 07, 2022	Jul. 18, 2022	Jul. 06, 2023	Conduction (CO01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 07, 2022	Jul. 07, 2022~ Jul. 30, 2022	Apr. 06, 2023	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 28, 2021	Jul. 07, 2022~ Jul. 30, 2022	Dec. 27, 2022	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1542004	50MHz Bandwidth	Dec. 28, 2021	Jul. 07, 2022~ Jul. 30, 2022	Dec. 27, 2022	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 22, 2021	Jul. 26, 2022~ Jul. 28, 2022	Oct. 21, 2022	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY551502 46	10Hz~44GHz	Apr. 06, 2022	Jul. 26, 2022~ Jul. 28, 2022	Apr. 05, 2023	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 17, 2022	Jul. 26, 2022~ Jul. 28, 2022	Jul. 16, 2024	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	Oct. 22, 2021	Jul. 26, 2022~ Jul. 28, 2022	Oct. 21, 2022	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120 D	9120D-147 4	1GHz~18GHz	Jul. 07, 2022	Jul. 26, 2022~ Jul. 28, 2022	Jul. 06, 2023	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBE CK	BBHA9170	9170#679	15GHz~40GHz	Jul. 07, 2022	Jul. 26, 2022~ Jul. 28, 2022	Jul. 06, 2023	Radiation (03CH04-SZ)
LF Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 22, 2021	Jul. 26, 2022~ Jul. 28, 2022	Oct. 21, 2022	Radiation (03CH04-SZ)
HF Amplifier	EMEC	EM01G18G	060781	1GHz~18GHz	Oct. 22, 2021	Jul. 26, 2022~ Jul. 28, 2022	Oct. 21, 2022	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-3 5-HG	1871923	18GHz~40GHz	Apr. 06, 2022	Jul. 26, 2022~ Jul. 28, 2022	Apr. 05, 2023	Radiation (03CH04-SZ)
HF Amplifier	Agilent Technologies	83017A	MY532703 57	500MHz~26.5GHz	Apr. 06, 2022	Jul. 26, 2022~ Jul. 28, 2022	Apr. 05, 2023	Radiation (03CH04-SZ)
AC Power Source	Chroma	61601	N/A	N/A	NCR	Jul. 26, 2022~ Jul. 28, 2022	NCR	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	060795	0~360 degree	NCR	Jul. 26, 2022~ Jul. 28, 2022	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	060795	1 m~4 m	NCR	Jul. 26, 2022~ Jul. 28, 2022	NCR	Radiation (03CH04-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% ($U = 2Uc(y)$)	2.2 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
---	--------

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

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

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Ma Jie	Temperature:	21~25	°C
Test Date:	2022/7/6	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band MIMO										
Mod.	Data Rate	N _{TX}	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	12.69	12.64	8.06	8.06	0.50	Pass
11b	1Mbps	2	6	2437	12.69	12.84	8.06	8.06	0.50	Pass
11b	1Mbps	2	11	2462	12.74	12.64	8.06	8.01	0.50	Pass
11g	6Mbps	2	1	2412	16.73	16.73	15.13	15.11	0.50	Pass
11g	6Mbps	2	6	2437	16.78	16.78	15.33	15.45	0.50	Pass
11g	6Mbps	2	11	2462	16.73	16.58	15.13	15.31	0.50	Pass
HT20	MCS0	2	1	2412	17.78	17.73	15.13	16.29	0.50	Pass
HT20	MCS0	2	6	2437	17.78	17.68	15.09	16.53	0.50	Pass
HT20	MCS0	2	11	2462	17.73	17.68	15.11	16.29	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	18.78	18.83	18.52	18.32	0.50	Pass
HE20	MCS0	1	6	2437	Full	18.78	18.83	18.18	18.64	0.50	Pass
HE20	MCS0	1	11	2462	Full	18.78	18.78	18.62	18.54	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																
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
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	18.61	18.68	21.66	30.00		-3.00		18.66		36.00		Pass
11b	1Mbps	2	6	2437	16.70	16.74	19.73	30.00		-3.00		16.73		36.00		Pass
11b	1Mbps	2	11	2462	16.45	16.54	19.51	30.00		-3.00		16.51		36.00		Pass
11g	6Mbps	2	1	2412	25.19	23.64	27.49	30.00		-3.00		24.49		36.00		Pass
11g	6Mbps	2	6	2437	25.87	25.05	28.49	30.00		-3.00		25.49		36.00		Pass
11g	6Mbps	2	11	2462	25.17	24.35	27.79	30.00		-3.00		24.79		36.00		Pass
HT20	MCS0	2	1	2412	25.54	24.40	28.02	30.00		-3.00		25.02		36.00		Pass
HT20	MCS0	2	6	2437	25.72	25.10	28.43	30.00		-3.00		25.43		36.00		Pass
HT20	MCS0	2	11	2462	25.64	24.68	28.20	30.00		-3.00		25.20		36.00		Pass

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

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																	
Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	RU Config	Peak 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	24.67	23.45	27.11	30.00		-3.00		24.11		36.00		Pass
HE20	MCS0	2	1	2412	26/0	23.92	25.20	27.62	30.00		-3.00		24.62		36.00		Pass
HE20	MCS0	2	1	2412	52/37	24.01	25.41	27.78	30.00		-3.00		24.78		36.00		Pass
HE20	MCS0	2	1	2412	106/53	24.02	25.43	27.79	30.00		-3.00		24.79		36.00		Pass
HE20	MCS0	2	6	2437	Full	25.88	25.21	28.57	30.00		-3.00		25.57		36.00		Pass
HE20	MCS0	2	11	2462	Full	25.72	24.74	28.27	30.00		-3.00		25.27		36.00		Pass
HE20	MCS0	2	11	2462	26/8	24.35	25.44	27.94	30.00		-3.00		24.94		36.00		Pass
HE20	MCS0	2	11	2462	52/40	24.55	25.54	28.08	30.00		-3.00		25.08		36.00		Pass
HE20	MCS0	2	11	2462	106/54	24.66	25.74	28.24	30.00		-3.00		25.24		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)	Average Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	17.00	17.30	20.16	-3.00		17.16		Pass
11b	1Mbps	2	6	2437	14.90	15.00	17.96	-3.00		14.96		Pass
11b	1Mbps	2	11	2462	14.60	14.80	17.71	-3.00		14.71		Pass
11g	6Mbps	2	1	2412	16.40	16.30	19.36	-3.00		16.36		Pass
11g	6Mbps	2	6	2437	17.00	17.20	20.11	-3.00		17.11		Pass
11g	6Mbps	2	11	2462	16.40	16.40	19.41	-3.00		16.41		Pass
HT20	MCS0	2	1	2412	16.10	16.10	19.11	-3.00		16.11		Pass
HT20	MCS0	2	6	2437	16.40	16.50	19.46	-3.00		16.46		Pass
HT20	MCS0	2	11	2462	16.20	16.20	19.21	-3.00		16.21		Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO													
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)		Pass /Fail
						Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	
HE20	MCS0	2	1	2412	Full	15.50	15.40	18.46	-3.00		15.46		Pass
HE20	MCS0	2	1	2412	26/0	16.20	16.30	19.26	-3.00		16.26		Pass
HE20	MCS0	2	1	2412	52/37	16.30	16.40	19.36	-3.00		16.36		Pass
HE20	MCS0	2	1	2412	106/53	16.30	16.40	19.36	-3.00		16.36		Pass
HE20	MCS0	2	6	2437	Full	16.60	16.90	19.76	-3.00		16.76		Pass
HE20	MCS0	2	11	2462	Full	16.40	16.50	19.46	-3.00		16.46		Pass
HE20	MCS0	2	11	2462	26/8	16.30	15.50	18.93	-3.00		15.93		Pass
HE20	MCS0	2	11	2462	52/40	16.00	16.00	19.01	-3.00		16.01		Pass
HE20	MCS0	2	11	2462	106/54	16.30	16.40	19.36	-3.00		16.36		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	-4.36	-4.41	-1.35	0.01		8.00		Pass
11b	1Mbps	2	6	2437	-4.73	-4.55	-1.54	0.01		8.00		Pass
11b	1Mbps	2	11	2462	-4.84	-4.40	-1.39	0.01		8.00		Pass
11g	6Mbps	2	1	2412	-5.94	-6.05	-2.93	0.01		8.00		Pass
11g	6Mbps	2	6	2437	-7.06	-7.60	-4.05	0.01		8.00		Pass
11g	6Mbps	2	11	2462	-7.73	-7.89	-4.72	0.01		8.00		Pass
HT20	MCS0	2	1	2412	-7.11	-7.60	-4.10	0.01		8.00		Pass
HT20	MCS0	2	6	2437	-6.79	-7.62	-3.78	0.01		8.00		Pass
HT20	MCS0	2	11	2462	-7.19	-7.87	-4.18	0.01		8.00		Pass

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

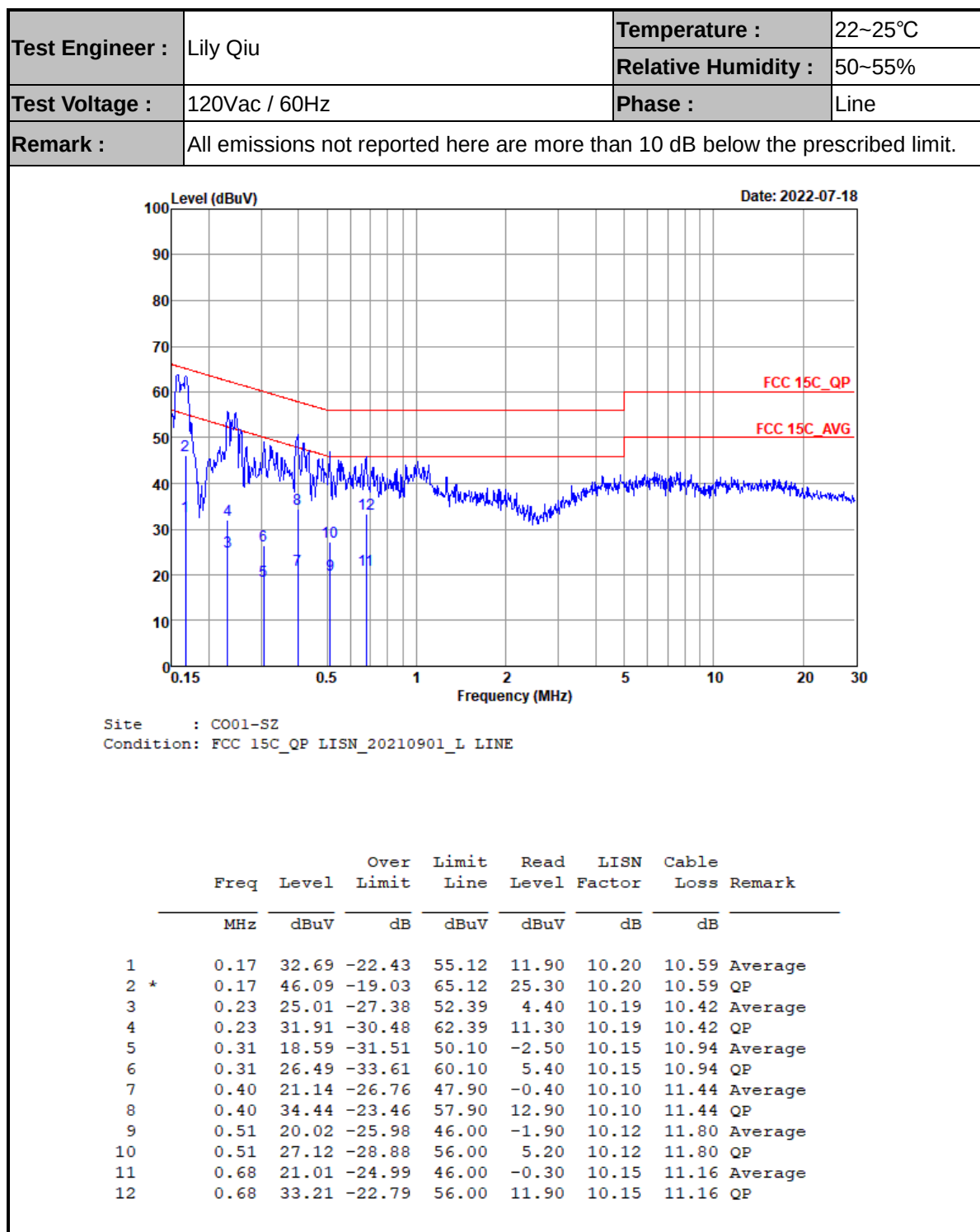
TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band MIMO													
Mod.	Data Rate	N _{TX}	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	-9.18	-7.93	-4.92	0.01		8.00		Pass
HE20	MCS0	2	1	2412	26/0	-1.63	-0.76	2.25	0.01		8.00		Pass
HE20	MCS0	2	1	2412	52/37	-3.04	-3.83	-0.03	0.01		8.00		Pass
HE20	MCS0	2	1	2412	106/53	-6.42	-5.56	-2.55	0.01		8.00		Pass
HE20	MCS0	2	6	2437	Full	-10.01	-7.87	-4.86	0.01		8.00		Pass
HE20	MCS0	2	11	2462	Full	-8.41	-7.76	-4.75	0.01		8.00		Pass
HE20	MCS0	2	11	2462	26/8	-2.00	-1.71	1.30	0.01		8.00		Pass
HE20	MCS0	2	11	2462	52/40	-4.16	-5.44	-1.15	0.01		8.00		Pass
HE20	MCS0	2	11	2462	106/54	-4.97	-6.11	-1.96	0.01		8.00		Pass

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

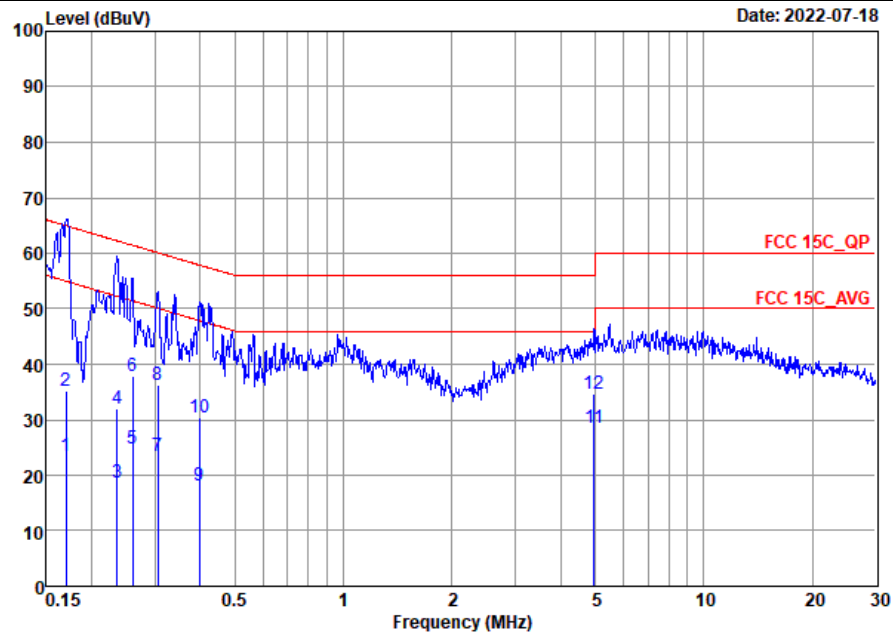


Appendix B. AC Conducted Emission Test Results





Test Engineer :	Lily Qiu	Temperature :	22~25°C
		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 : C001-SZ
Condition: FCC 15C_QP LISN_20210901_N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.17	23.53	-31.41	54.94	2.70	10.30	10.53	Average
2	0.17	35.13	-29.81	64.94	14.30	10.30	10.53	QP
3	0.24	18.61	-33.65	52.26	-2.10	10.26	10.45	Average
4	0.24	31.91	-30.35	62.26	11.20	10.26	10.45	QP
5	0.26	24.79	-26.63	51.42	3.90	10.24	10.65	Average
6	0.26	37.89	-23.53	61.42	17.00	10.24	10.65	QP
7	0.31	23.34	-26.76	50.10	2.19	10.21	10.94	Average
8	0.31	36.14	-23.96	60.10	14.99	10.21	10.94	QP
9	0.40	18.13	-29.77	47.90	-3.50	10.19	11.44	Average
10	0.40	30.53	-27.37	57.90	8.90	10.19	11.44	QP
11 *	4.95	28.57	-17.43	46.00	8.20	10.13	10.24	Average
12	4.95	34.77	-21.23	56.00	14.40	10.13	10.24	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

Test Engineer :	Zhang Xu	Temperature :	24~25°C
		Relative Humidity :	48~49%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					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	*	2377.305	50.36	-23.64	74	51.88	27	5.34	33.86	267	218	P	H
		2388.225	38.65	-15.35	54	40.12	27.02	5.37	33.86	267	218	A	H
	*	2412	104.26	-	-	105.69	27.03	5.37	33.83	267	218	P	H
		2412	101.16	-	-	102.59	27.03	5.37	33.83	267	218	A	H
	*	2325.75	49.82	-24.18	74	51.45	26.96	5.31	33.9	108	295	P	V
		2388.12	39.01	-14.99	54	40.48	27.02	5.37	33.86	108	295	A	V
	*	2412	107.96	-	-	109.39	27.03	5.37	33.83	108	295	P	V
		2412	104.95	-	-	106.38	27.03	5.37	33.83	108	295	A	V
802.11b CH 06 2437MHz	*	2337.3	50.32	-23.68	74	51.93	26.98	5.31	33.9	231	314	P	H
		2389.8	38.45	-15.55	54	39.89	27.02	5.37	33.83	231	314	A	H
	*	2437	102.58	-	-	103.9	27.06	5.41	33.79	231	314	P	H
		2437	99.55	-	-	100.87	27.06	5.41	33.79	231	314	A	H
	*	2497.62	50.07	-23.93	74	51.19	27.1	5.46	33.68	231	314	P	H
		2485.51	38.73	-15.27	54	39.9	27.09	5.46	33.72	231	314	A	H
	*	2310.84	49.84	-24.16	74	51.51	26.95	5.31	33.93	126	294	P	V
		2388.4	38.7	-15.3	54	40.17	27.02	5.37	33.86	126	294	A	V
	*	2437	105.13	-	-	106.45	27.06	5.41	33.79	126	294	P	V
		2437	102.04	-	-	103.36	27.06	5.41	33.79	126	294	A	V
	*	2498.11	50.62	-23.38	74	51.74	27.1	5.46	33.68	126	294	P	V
		2485.09	38.83	-15.17	54	40	27.09	5.46	33.72	126	294	A	V



802.11b CH 11 2462MHz	*	2462	101.91	-	-	103.19	27.07	5.41	33.76	100	233	P	H
		2462	99.91	-	-	101.19	27.07	5.41	33.76	100	233	A	H
	*	2492.4	50.71	-23.29	74	51.83	27.1	5.46	33.68	100	233	P	H
		2485	39.08	-14.92	54	40.25	27.09	5.46	33.72	100	233	A	H
	*	2462	106.25	-	-	107.53	27.07	5.41	33.76	100	293	P	V
		2462	102.2	-	-	103.48	27.07	5.41	33.76	100	293	A	V
	*	2483.56	51.14	-22.86	74	52.31	27.09	5.46	33.72	100	293	P	V
		2485.92	39.17	-14.83	54	40.34	27.09	5.46	33.72	100	293	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)	Margin (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	*	4824	54	-20	74	63.13	31.25	8.88	49.26	100	344	P	H
CH 01		4824	51.57	-2.43	54	60.7	31.25	8.88	49.26	100	344	A	H
2412MHz	*	4824	50.67	-23.33	74	59.8	31.25	8.88	49.26	-	-	P	V
802.11b	*	4874	54.65	-19.35	74	63.48	31.41	8.76	49	100	343	P	H
CH 06		4874	51.52	-2.48	54	60.35	31.41	8.76	49	100	343	A	H
2437MHz	*	7311	45.16	-28.84	74	50.33	36.46	10.18	51.81	-	-	P	H
	*	4874	48.88	-25.12	74	57.71	31.41	8.76	49	-	-	P	V
		7311	44.7	-29.3	74	49.87	36.46	10.18	51.81	-	-	P	V
802.11b	*	4924	53.46	-20.54	74	65.34	31.58	8.53	51.99	100	349	P	H
CH 11		4924	51.82	-2.18	54	63.7	31.58	8.53	51.99	100	349	A	H
2462MHz	*	7386	48.41	-25.59	74	53.3	36.61	10.18	51.68	-	-	P	H
	*	4924	49.58	-24.42	74	61.46	31.58	8.53	51.99	-	-	P	V
		7386	49.06	-24.94	74	53.95	36.61	10.18	51.68	-	-	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)	Margin (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	*	2389.17	65.53	-8.47	74	67	27.02	5.37	33.86	100	308	P	H
		2389.905	48.8	-5.2	54	50.24	27.02	5.37	33.83	100	308	A	H
	*	2412	106	-	-	107.43	27.03	5.37	33.83	100	308	P	H
		2412	98.48	-	-	99.91	27.03	5.37	33.83	100	308	A	H
	*	2389.8	70.55	-3.45	74	71.99	27.02	5.37	33.83	208	244	P	V
		2389.59	51.55	-2.15	54	53.02	27.02	5.37	33.86	208	244	A	V
	*	2412	108.32	-	-	109.75	27.03	5.37	33.83	208	244	P	V
		2412	100.51	-	-	101.94	27.03	5.37	33.83	208	244	A	V
802.11g CH 06 2437MHz	*	2388.96	52.05	-21.95	74	53.52	27.02	5.37	33.86	100	310	P	H
		2387.28	40.41	-13.59	54	41.88	27.02	5.37	33.86	100	310	A	H
	*	2437	106.64	-	-	107.96	27.06	5.41	33.79	100	310	P	H
		2437	98.95	-	-	100.27	27.06	5.41	33.79	100	310	A	H
	*	2487.54	51.25	-22.75	74	52.41	27.1	5.46	33.72	100	310	P	H
		2484.04	40.35	-13.65	54	41.52	27.09	5.46	33.72	100	310	A	H
	*	2387.14	54.47	-19.53	74	55.94	27.02	5.37	33.86	205	299	P	V
		2387.98	41.39	-12.61	54	42.86	27.02	5.37	33.86	205	299	A	V
	*	2437	109.72	-	-	111.04	27.06	5.41	33.79	205	299	P	V
		2437	101.84	-	-	103.16	27.06	5.41	33.79	205	299	A	V
	*	2484.74	54.61	-19.39	74	55.78	27.09	5.46	33.72	205	299	P	V
		2483.62	41.3	-12.7	54	42.47	27.09	5.46	33.72	205	299	A	V



802.11g CH 11 2462MHz	*	2462	105.68	-	-	106.96	27.07	5.41	33.76	100	308	P	H
		2462	98.2	-	-	99.48	27.07	5.41	33.76	100	308	A	H
	*	2484.96	64.72	-9.28	74	65.89	27.09	5.46	33.72	100	308	P	H
		2484.96	47.19	-6.81	54	48.36	27.09	5.46	33.72	100	308	A	H
	*	2462	108.79	-	-	110.07	27.07	5.41	33.76	233	302	P	V
		2462	101.18	-	-	102.46	27.07	5.41	33.76	233	302	A	V
	*	2485.36	68.67	-5.33	74	69.84	27.09	5.46	33.72	233	302	P	V
		2485.04	50.76	-3.24	54	51.93	27.09	5.46	33.72	233	302	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)	Margin (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	51.22	-22.78	74	63.07	31.12	8.88	51.85	100	345	P	H
		4824	40.08	-13.92	54	51.93	31.12	8.88	51.85	100	345	A	H
	*	4824	45.83	-28.17	74	57.68	31.12	8.88	51.85	183	79	P	V
		4824	36.04	-17.96	54	47.89	31.12	8.88	51.85	183	79	A	V
802.11g CH 06 2437MHz	*	4874	55.98	-18.02	74	65.02	31.2	8.76	49	100	344	P	H
		4874	45.49	-8.51	54	54.53	31.2	8.76	49	100	344	A	H
		7311	45.75	-28.25	74	51.2	36.18	10.18	51.81	-	-	P	H
	*	4874	50.66	-23.34	74	59.7	31.2	8.76	49	192	84	P	V
		4874	41.09	-12.91	54	50.13	31.2	8.76	49	192	84	A	V
		7311	45.26	-28.74	74	50.71	36.18	10.18	51.81	-	-	P	V
802.11g CH 11 2462MHz	*	4924	53.1	-20.9	74	65.28	31.28	8.53	51.99	100	345	P	H
		4924	43.3	-10.7	54	55.48	31.28	8.53	51.99	100	345	A	H
		7386	44.92	-29.08	74	50.07	36.35	10.18	51.68	-	-	P	H
	*	4924	48.84	-25.16	74	61.02	31.28	8.53	51.99	332	251	P	V
		4924	40.67	-13.33	54	52.85	31.28	8.53	51.99	332	251	A	V
		7386	44.08	-29.92	74	49.23	36.35	10.18	51.68			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)	Margin (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	*	2388.33	64.69	-9.31	74	66.16	27.02	5.37	33.86	108	304	P	H
		2388.54	48.27	-5.73	54	49.74	27.02	5.37	33.86	108	304	A	H
	*	2412	103.97	-	-	105.4	27.03	5.37	33.83	108	304	P	H
		2412	96.5	-	-	97.93	27.03	5.37	33.83	108	304	A	H
	*	2388.75	68.67	-5.33	74	70.14	27.02	5.37	33.86	247	296	P	V
		2388.435	51.94	-2.32	54	53.41	27.02	5.37	33.86	247	296	A	V
	*	2412	108.43	-	-	109.86	27.03	5.37	33.83	247	296	P	V
		2412	100.88	-	-	102.31	27.03	5.37	33.83	247	296	A	V
802.11n HT20 CH 06 2437MHz	*	2389.38	52.36	-21.64	74	53.83	27.02	5.37	33.86	102	308	P	H
		2389.66	40.29	-13.71	54	41.76	27.02	5.37	33.86	102	308	A	H
	*	2437	104.1	-	-	105.42	27.06	5.41	33.79	102	308	P	H
		2437	97.3	-	-	98.62	27.06	5.41	33.79	102	308	A	H
	*	2485.37	50.8	-23.2	74	51.97	27.09	5.46	33.72	102	308	P	H
		2484.67	40.14	-13.86	54	41.31	27.09	5.46	33.72	102	308	A	H
	*	2389.8	53.76	-20.24	74	55.2	27.02	5.37	33.83	244	278	P	V
		2389.8	41.1	-12.9	54	42.54	27.02	5.37	33.83	244	278	A	V
	*	2437	107.69	-	-	109.01	27.06	5.41	33.79	244	278	P	V
		2437	100.86	-	-	102.18	27.06	5.41	33.79	244	278	A	V
	*	2486.35	52.42	-21.58	74	53.59	27.09	5.46	33.72	244	278	P	V
		2484.25	40.44	-13.56	54	41.61	27.09	5.46	33.72	244	278	A	V



802.11n HT20 CH 11 2462MHz	*	2462	103.33	-	-	104.61	27.07	5.41	33.76	104	311	P	H
		2462	96.09	-	-	97.37	27.07	5.41	33.76	104	311	A	H
	*	2483.8	62.62	-11.38	74	63.79	27.09	5.46	33.72	104	311	P	H
		2483.52	44.79	-9.21	54	45.96	27.09	5.46	33.72	104	311	A	H
	*	2462	107.39	-	-	108.67	27.07	5.41	33.76	262	301	P	V
		2462	100.42	-	-	101.7	27.07	5.41	33.76	262	301	A	V
	*	2483.6	67.74	-6.26	74	68.91	27.09	5.46	33.72	262	301	P	V
		2483.6	49.04	-4.96	54	50.21	27.09	5.46	33.72	262	301	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)	Margin (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	48.35	-25.65	74	60.2	31.12	8.88	51.85	100	348	P	H
		4824	40.13	-13.87	54	51.98	31.12	8.88	51.85	100	348	A	H
	*	4824	44.87	-29.13	74	56.72	31.12	8.88	51.85	220	83	P	V
		4824	35.13	-18.87	54	46.98	31.12	8.88	51.85	220	83	A	V
802.11n HT20 CH 06 2437MHz	*	4874	50.4	-23.6	74	62.36	31.2	8.76	51.92	100	348	P	H
		4874	40.22	-13.78	54	52.18	31.2	8.76	51.92	100	348	A	H
		7311	44.79	-29.21	74	50.16	36.18	10.18	51.73	-	-	P	H
	*	4874	46.25	-27.75	74	58.21	31.2	8.76	51.92	236	86	P	V
		4874	35.66	-18.34	54	47.62	31.2	8.76	51.92	236	86	A	V
		7311	44.77	-29.23	74	50.14	36.18	10.18	51.73	-	-	P	V
802.11n HT20 CH 11 2462MHz	*	4924	52	-22	74	64.18	31.28	8.53	51.99	100	345	P	H
		4924	42.06	-11.94	54	54.24	31.28	8.53	51.99	100	345	A	H
		7386	45.57	-28.43	74	50.72	36.35	10.18	51.68	-	-	P	H
	*	4924	49.96	-24.04	74	62.14	31.28	8.53	51.99	366	247	P	V
		4924	40.34	-13.66	54	52.52	31.28	8.53	51.99	366	247	A	V
		7386	45.93	-28.07	74	51.08	36.35	10.18	51.68	-	-	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)	Margin (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		2389.59	64.27	-9.73	74	65.74	27.02	5.37	33.86	100	311	P	H
		2389.275	48.6	-5.4	54	50.07	27.02	5.37	33.86	100	311	A	H
		2412	104.44	-	-	105.87	27.03	5.37	33.83	100	311	P	H
		2412	95.47	-	-	96.9	27.03	5.37	33.83	100	311	A	H
		2389.695	69.3	-4.7	74	70.77	27.02	5.37	33.86	250	296	P	V
		2389.905	51.79	-2.21	54	53.23	27.02	5.37	33.83	250	296	A	V
		2412	107.97	-	-	109.4	27.03	5.37	33.83	250	296	P	V
		2412	98.1	-	-	99.53	27.03	5.37	33.83	250	296	A	V
802.11ax HE20 Full CH 06 2437MHz		2389.66	50.71	-23.29	74	52.18	27.02	5.37	33.86	100	305	P	H
		2389.38	40.45	-13.55	54	41.92	27.02	5.37	33.86	100	305	A	H
		2437	105.56	-	-	106.88	27.06	5.41	33.79	100	305	P	H
		2437	95.42	-	-	96.74	27.06	5.41	33.79	100	305	A	H
		2483.69	50.4	-23.6	74	51.57	27.09	5.46	33.72	100	305	P	H
		2485.02	40.14	-13.86	54	41.31	27.09	5.46	33.72	100	305	A	H
		2388.26	53.41	-20.59	74	54.88	27.02	5.37	33.86	243	294	P	V
		2388.82	41.9	-12.1	54	43.37	27.02	5.37	33.86	243	294	A	V
		2437	110.03	-	-	111.35	27.06	5.41	33.79	243	294	P	V
		2437	99.9	-	-	101.22	27.06	5.41	33.79	243	294	A	V
		2484.46	52.21	-21.79	74	53.38	27.09	5.46	33.72	243	294	P	V
		2483.55	41.01	-12.99	54	42.18	27.09	5.46	33.72	243	294	A	V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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	105.62	-	-	106.9	27.07	5.41	33.76	100	314	P	H
		2462	96.27	-	-	97.55	27.07	5.41	33.76	100	314	A	H
		2483.52	62.48	-11.52	74	63.65	27.09	5.46	33.72	100	314	P	H
		2483.52	47.26	-6.74	54	48.43	27.09	5.46	33.72	100	314	A	H
		2462	109.29	-	-	110.57	27.07	5.41	33.76	235	294	P	V
		2462	99.6	-	-	100.88	27.07	5.41	33.76	235	294	A	V
		2483.68	70.33	-3.67	74	71.5	27.09	5.46	33.72	235	294	P	V
		2483.52	50.95	-3.05	54	52.12	27.09	5.46	33.72	235	294	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)	Margin (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	*	4824	47.33	-26.67	74	59.18	31.12	8.88	51.85	100	343	P	H
HE20 Full		4824	37.28	-16.72	54	49.13	31.12	8.88	51.85	100	343	A	H
CH 01	*	4824	44.27	-29.73	74	56.12	31.12	8.88	51.85	210	81	P	V
2412MHz		4824	34.48	-19.52	54	46.33	31.12	8.88	51.85	210	81	A	V
802.11ax	*	4874	52.41	-21.59	74	64.37	31.2	8.76	51.92	100	344	P	H
		4874	39.87	-14.13	54	51.83	31.2	8.76	51.92	100	344	A	H
HE20 Full		7311	44.67	-29.33	74	50.04	36.18	10.18	51.73	-	-	P	H
CH 06	*	4874	46.27	-27.73	74	58.23	31.2	8.76	51.92	203	87	P	V
2437MHz		4874	35.67	-18.33	54	47.63	31.2	8.76	51.92	203	87	A	V
		7311	44.4	-29.6	74	49.77	36.18	10.18	51.73	-	-	P	V
802.11ax	*	4924	50.7	-23.3	74	62.88	31.28	8.53	51.99	100	341	P	H
		4924	40.44	-13.56	54	52.62	31.28	8.53	51.99	100	341	A	H
HE20 Full		7386	44.44	-29.56	74	49.59	36.35	10.18	51.68	-	-	P	H
CH 11	*	4924	50.69	-23.31	74	62.87	31.28	8.53	51.99	365	254	P	V
2462MHz		4924	39.27	-14.73	54	51.45	31.28	8.53	51.99	365	254	A	V
		7386	44.85	-29.15	74	50	36.35	10.18	51.68	-	-	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 802.11ax HE20 Partial 106 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 106/53 CH 01 2412MHz		2389.905	59.35	-14.65	74	60.66	27.15	5.37	33.83	100	302	P	H
		2389.905	45.31	-8.69	54	46.62	27.15	5.37	33.83	100	302	A	H
		2412	108.1	-	-	109.38	27.18	5.37	33.83	100	302	P	H
		2412	99.42	-	-	100.7	27.18	5.37	33.83	100	302	A	H
		2389.485	60.86	-13.14	74	62.2	27.15	5.37	33.86	120	298	P	V
		2389.485	49.03	-4.97	54	50.37	27.15	5.37	33.86	120	298	A	V
		2412	112.69	-	-	113.97	27.18	5.37	33.83	120	298	P	V
		2412	103	-	-	104.28	27.18	5.37	33.83	120	298	A	V
802.11ax HE20 Partial 106/54 CH 11 2462MHz		2462	108.48	-	-	109.58	27.25	5.41	33.76	100	304	P	H
		2462	98.74	-	-	99.84	27.25	5.41	33.76	100	304	A	H
		2484.12	63.32	-10.68	74	64.3	27.28	5.46	33.72	100	304	P	H
		2483.6	47.15	-6.85	54	48.13	27.28	5.46	33.72	100	304	A	H
		2462	113.69	-	-	114.79	27.25	5.41	33.76	128	303	P	V
		2462	104.07	-	-	105.17	27.25	5.41	33.76	128	303	A	V
		2487.92	67.07	-6.93	74	68.05	27.28	5.46	33.72	128	303	P	V
		2484.36	51.59	-2.41	54	52.57	27.28	5.46	33.72	128	303	A	V



Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					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)
2.4GHz 802.11g LF		30	25.22	-14.78	40	31.23	25.86	0.53	32.4	-	-	P	H
		101.78	18.04	-25.46	43.5	32.92	16.29	1.03	32.2	-	-	P	H
		197.81	17.44	-26.06	43.5	32.93	15.19	1.42	32.1	-	-	P	H
		562.53	28.45	-17.55	46	30.74	26.07	2.49	30.85	-	-	P	H
		786.6	31.64	-14.36	46	31.18	28.79	2.92	31.25	-	-	P	H
		956.35	33.12	-12.88	46	30.29	31.03	3.24	31.44	-	-	P	H
		30	24.86	-15.14	40	30.87	25.86	0.53	32.4	-	-	P	V
		43.58	22.17	-17.83	40	35.93	18	0.64	32.4	-	-	P	V
		120.21	17.2	-26.3	43.5	30.51	17.77	1.12	32.2	-	-	P	V
		511.12	26.59	-19.41	46	30.78	24.58	2.36	31.13	-	-	P	V
		881.66	31.99	-14.01	46	31.19	29.14	3.12	31.46	-	-	P	V
		954.41	34.48	-11.52	46	31.64	31.07	3.24	31.47	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Co-location

LTE B13 Link + BLE_TX_CH39

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE + LTE B13	*	2480	98.94	-	-	99.93	27.27	5.46	33.72	100	274	P	H
		2480	97.41	-	-	98.4	27.27	5.46	33.72	100	274	A	H
	*	2491.04	51.16	-22.84	74	52.13	27.29	5.46	33.72	100	274	P	H
		2483.6	43.17	-10.83	54	44.15	27.28	5.46	33.72	100	274	A	H
													H
													H
	*	2480	98.87	-	-	99.86	27.27	5.46	33.72	394	227	P	V
		2480	97.29	-	-	98.28	27.27	5.46	33.72	394	227	A	V
	*	2491.76	49.86	-24.14	74	50.79	27.29	5.46	33.68	394	227	P	V
		2483.52	43.65	-10.35	54	44.63	27.28	5.46	33.72	394	227	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
BLE + LTE B13		4960	38.91	-35.09	74	51.19	31.34	8.41	52.03	-	-	P	H
	*	7440	44.84	-29.16	74	49.85	36.47	10.17	51.65	-	-	P	H
													H
													H
		4960	38.54	-35.46	74	50.82	31.34	8.41	52.03	-	-	P	V
	*	7440	45.12	-28.88	74	50.13	36.47	10.17	51.65	-	-	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



LTE B13 Link + 11g_TX_CH01

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g + LTE B13	*	2389.8	66.4	-7.6	74	67.71	27.15	5.37	33.83	100	228	P	H
		2389.905	48.92	-5.08	54	50.23	27.15	5.37	33.83	100	228	A	H
	*	2412	106.13	-	-	107.41	27.18	5.37	33.83	100	228	P	H
		2412	98.52	-	-	99.8	27.18	5.37	33.83	100	228	A	H
													H
													H
	*	2389.905	67.08	-6.92	74	68.39	27.15	5.37	33.83	208	244	P	V
		2389.905	51.4	-2.6	54	52.71	27.15	5.37	33.83	208	244	A	V
	*	2412	107.84	-	-	109.12	27.18	5.37	33.83	208	244	P	V
		2412	99.39	-	-	100.67	27.18	5.37	33.83	208	244	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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 + LTE B13	*	4824	50.41	-23.59	74	62.13	31.25	8.88	51.85	100	332	P	H
		4824	39.64	-14.36	54	51.36	31.25	8.88	51.85	100	332	A	H
													H
													H
	*	4824	42.1	-31.9	74	53.82	31.25	8.88	51.85	-	-	P	V
													V
													V
													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 Margin 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	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
22+24		(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

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. Margin (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. Margin (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. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

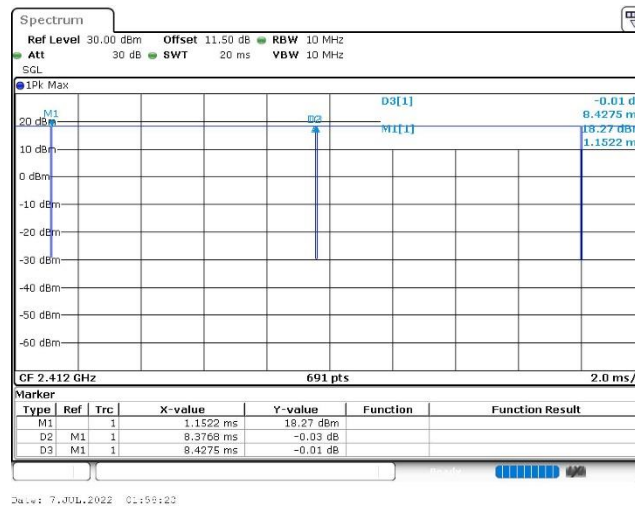
= -10.46(dB)

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

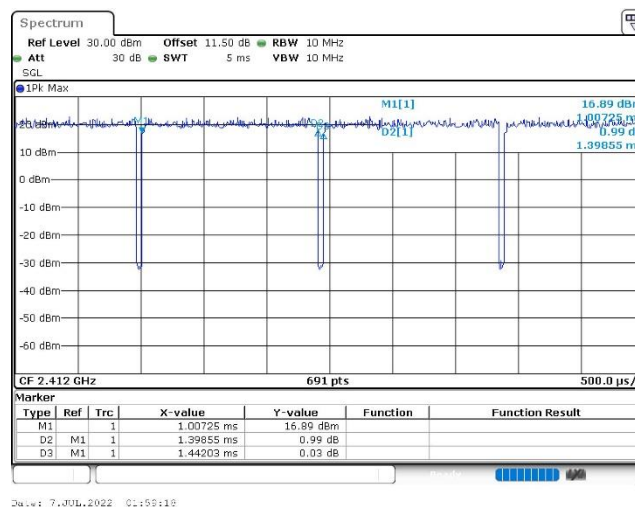
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	99.39	-	-	10Hz
802.11g	96.98	1.39	0.71	1KHz
802.11n HT20	96.23	1.29	0.77	1KHz
802.11ax HE20	95.89	1.01	0.98	1KHz

802.11b

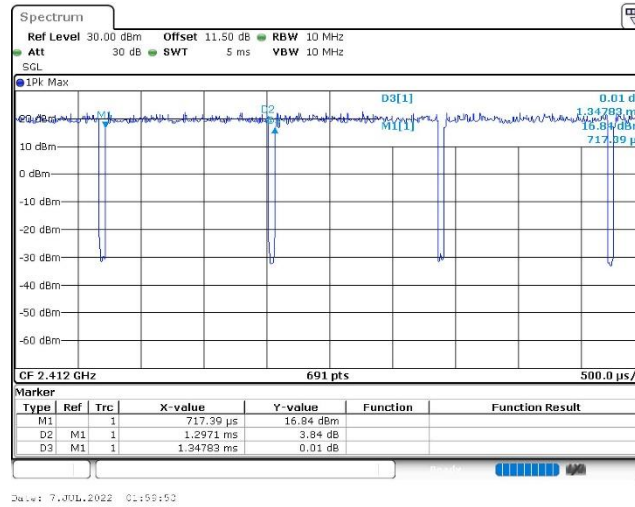


802.11g





802.11n HT20



802.11ax HE20

