8.5 MAXIMUM POWER SPECTRAL DENSITY

8.5.1 Applicable Standard

According to FCC Part15.247(e)
According to RSS-247 5.2(b)
According to RSS-Gen 6.12
According to 558074 D01 15.247 Meas Guidance v05r02 Section 8.4
According to ANSI C63.10 Section 11.10.5

8.5.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

8.5.3 Test Configuration

Test according to clause 7.1 radio frequency test setup

8.5.4 Test Procedure

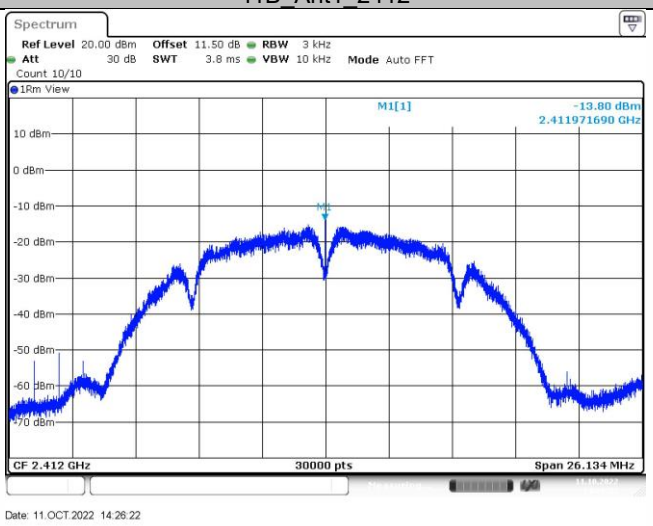
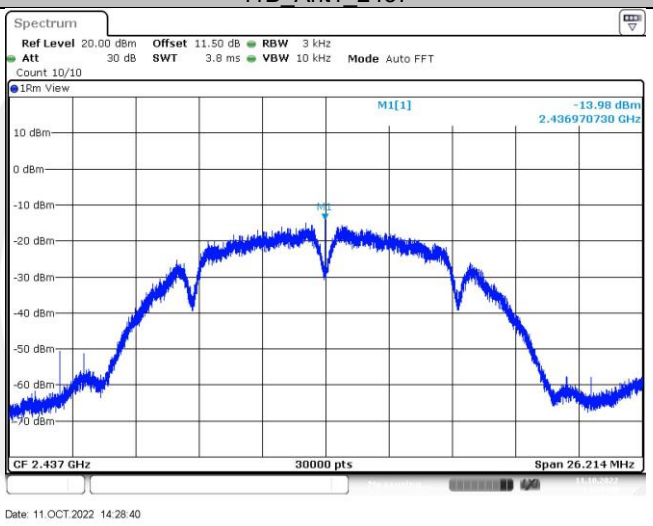
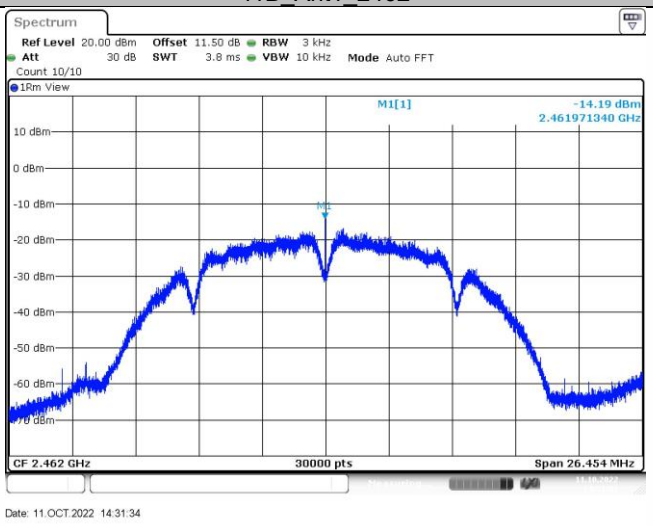
a) Measure the duty cycle (D) of the transmitter output signal
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to at least 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e) Set VBW ≥ [3 × RBW].
f) Detector = power averaging (rms) or sample detector (when rms not available).
g) Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
h) Sweep time = auto couple.
i) Do not use sweep triggering; allow sweep to “free run.”
j) Employ trace averaging (rms) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.
m) If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

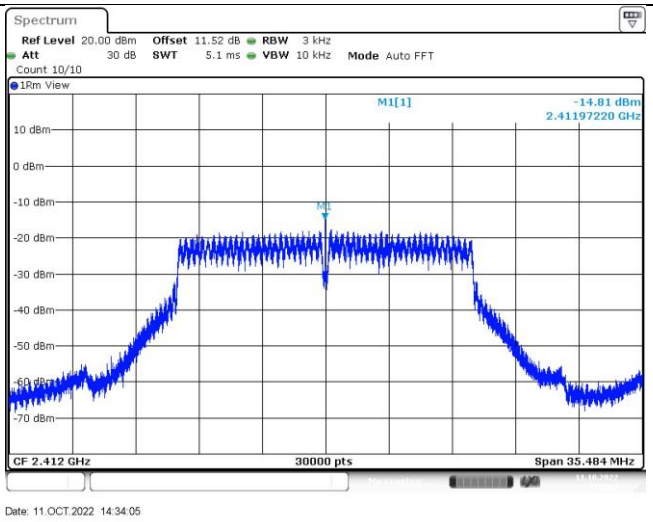
8.5.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar
Test Engineer:	XXH

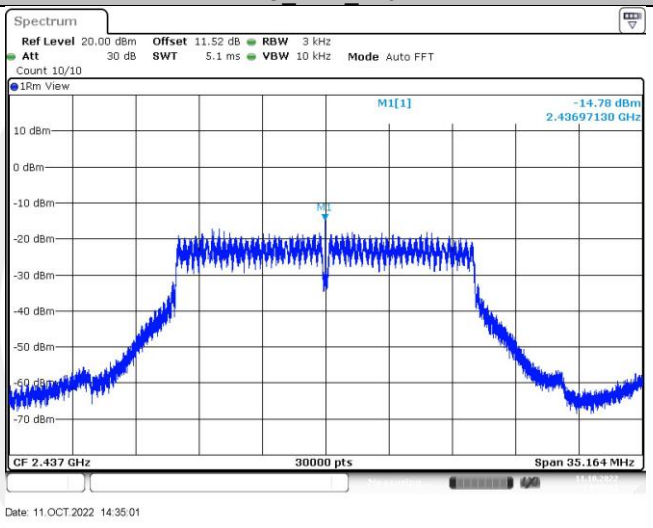
Note: N/A

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-13.8	≤8.00	PASS
		2437	-13.98	≤8.00	PASS
		2462	-14.19	≤8.00	PASS
11G	Ant1	2412	-14.81	≤8.00	PASS
		2437	-14.78	≤8.00	PASS
		2462	-15.09	≤8.00	PASS
11N20SISO	Ant1	2412	-15.67	≤8.00	PASS
		2437	-15.63	≤8.00	PASS
		2462	-17.06	≤8.00	PASS
11N40SISO	Ant1	2422	-17.41	≤8.00	PASS
		2437	-17.61	≤8.00	PASS
		2452	-18.13	≤8.00	PASS

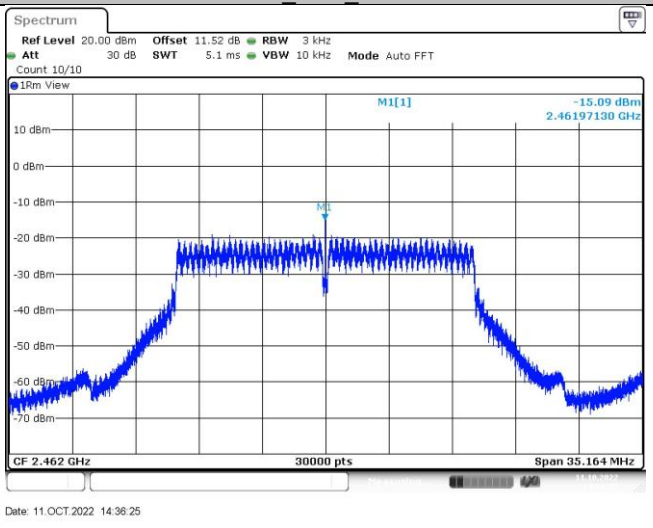
11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462

11G_Ant1_2412



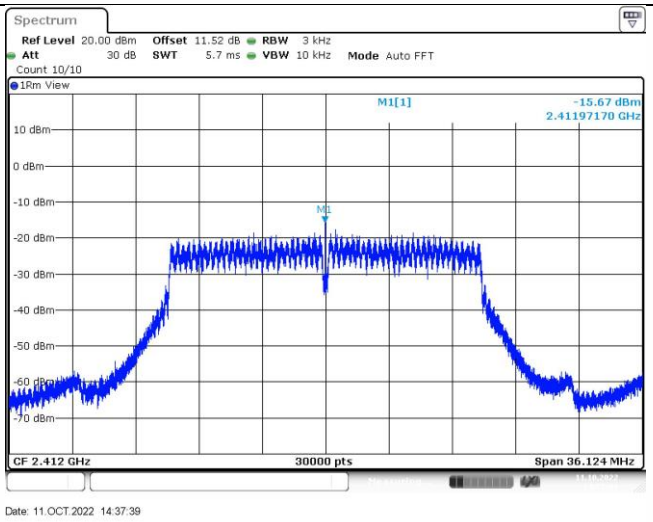
11G_Ant1_2437



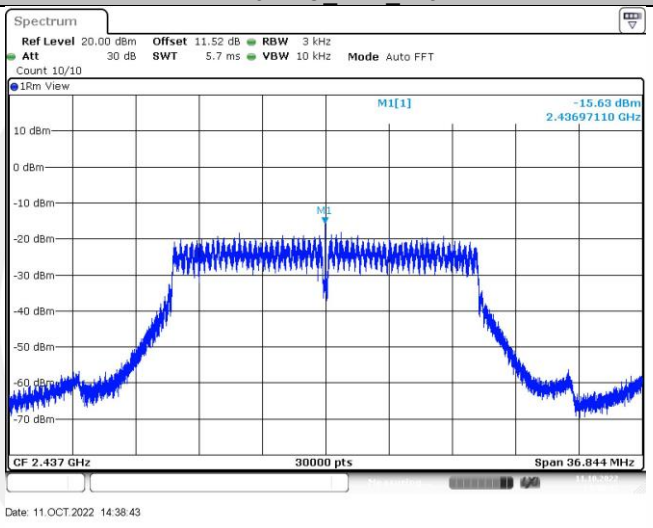
11G_Ant1_2462



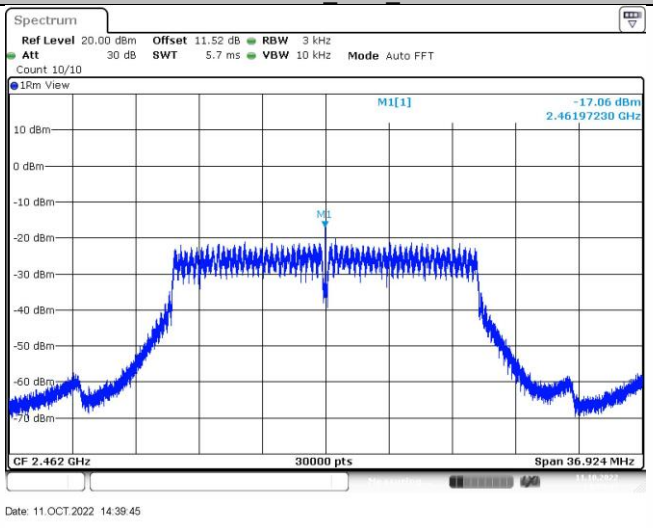
11N20SISO_Ant1_2412



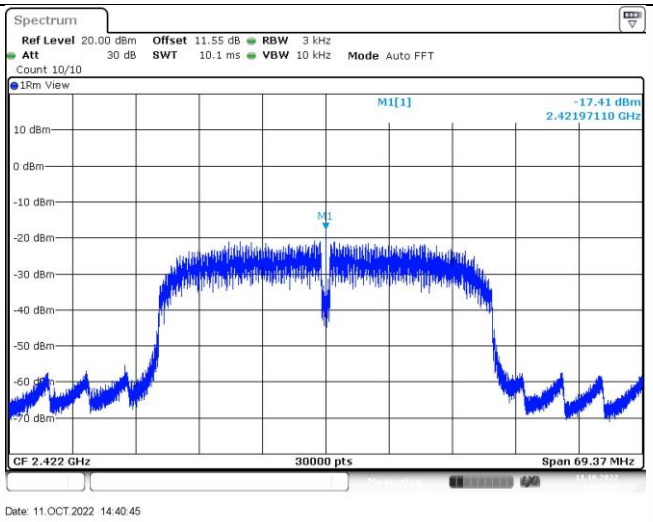
11N20SISO_Ant1_2437



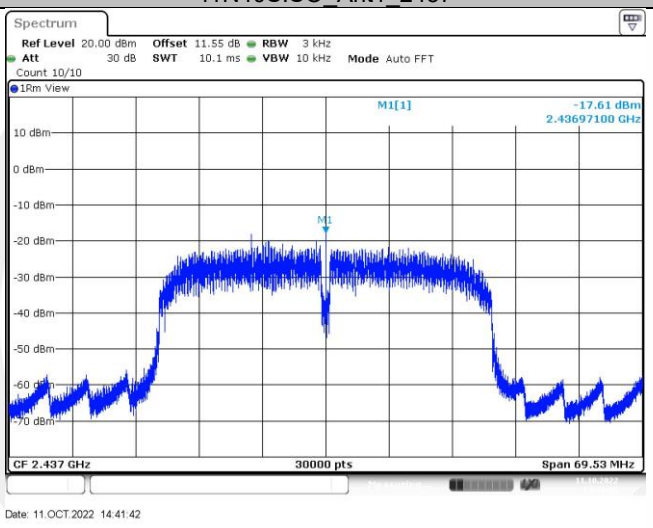
11N20SISO_Ant1_2462



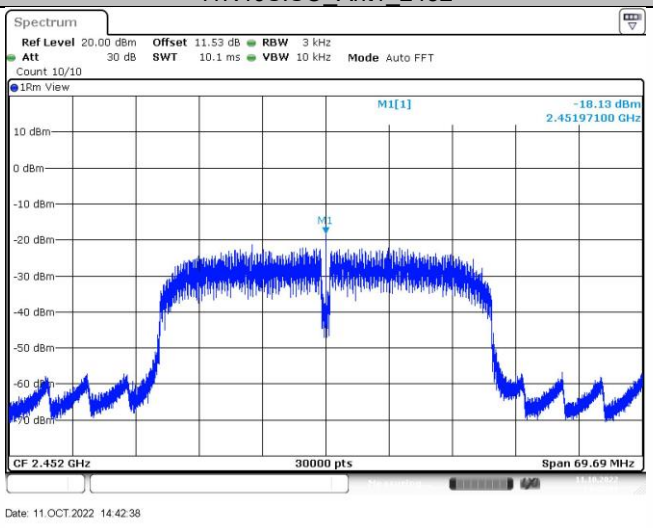
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



8.6 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

8.6.1 Applicable Standard

According to FCC Part15.247(d)
According to RSS-247 5.5
According to 558074 D01 15.247 Meas Guidance v05r02 Section 8.5
According to ANSI C63.10 Section 11.11

8.6.2 Conformance Limit

According to FCC Part 15.247(d):
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted undersection 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

8.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup

8.6.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

- **Reference level measurement**

Establish a reference level by using the following procedure:
Set instrument center frequency to DTS channel center frequency.
Set the span to ≥ 1.5 times the DTS bandwidth.
Set the RBW = 100 kHz.
Set the VBW ≥ 3 x RBW.
Set Detector = peak.
Set Sweep time = auto couple.
Set Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum PSD level.
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

- **Band-edge measurement**

Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation
Set RBW ≥ 1% of the span=100kHz Set VBW ≥ 3 x RBW
Set Sweep = auto Set Detector function = peak Set Trace = max hold
Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

- **Emission level measurement**

Set the center frequency and span to encompass frequency range to be measured.
Set the RBW = 100 kHz.
Set the VBW =300 kHz.
Set Detector = peak
Sweep time = auto couple.
Trace mode = max hold.
Allow trace to fully stabilize.
Use the peak marker function to determine the maximum amplitude level.
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding

restricted frequency bands) are attenuated by at least the minimum requirements . Report the three highest emissions relative to the limit.

8.6.5 Test Results

Temperature:	25 ˚C
Relative Humidity:	45%
ATM Pressure:	1011 mbar
Test Engineer:	XXH

Note: N/A

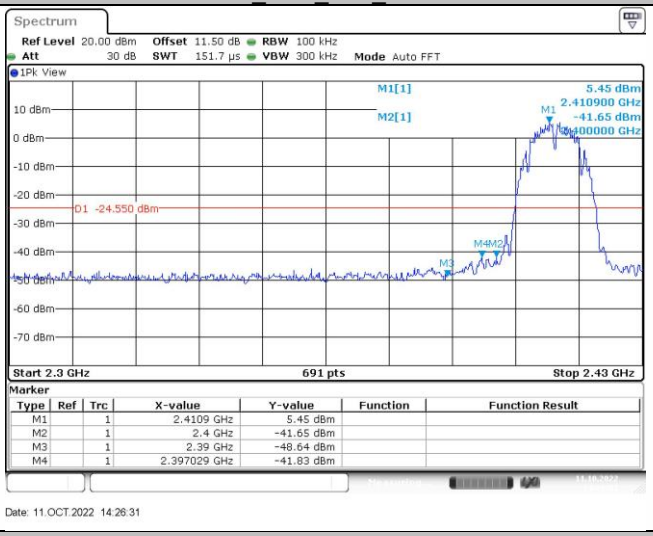
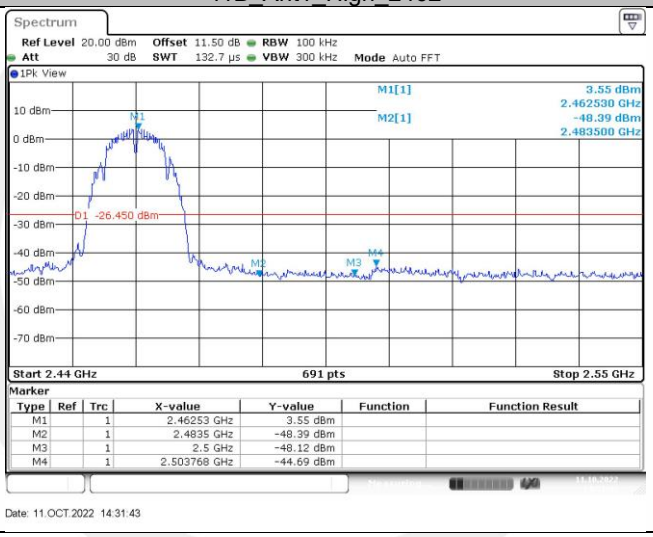
Band-edge measurement

Test Mode	Antenna	ChName	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	Low	2412	5.45	-41.83	≤-24.55	PASS
		High	2462	3.55	-44.69	≤-26.45	PASS

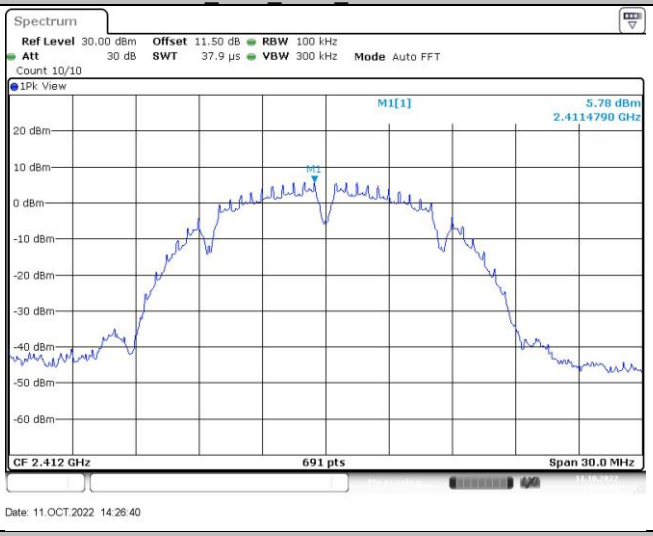
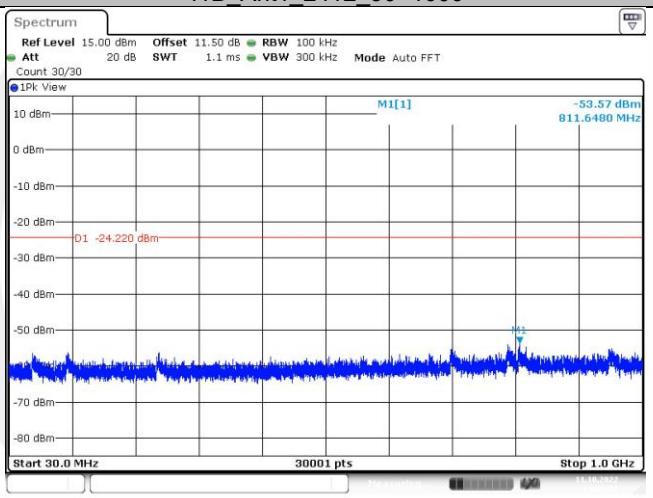
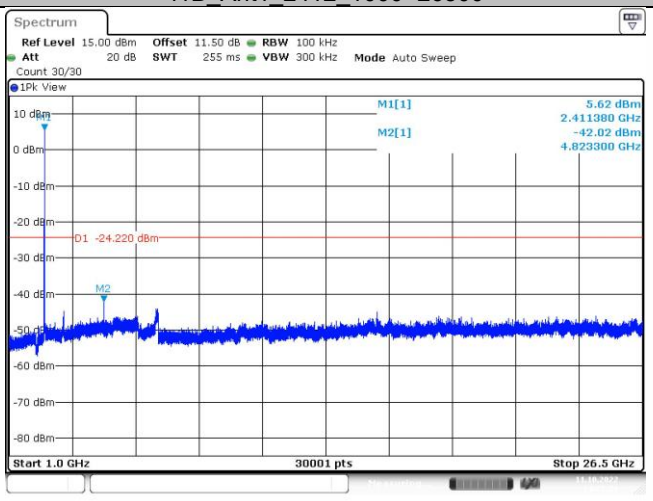
Emission level measurement

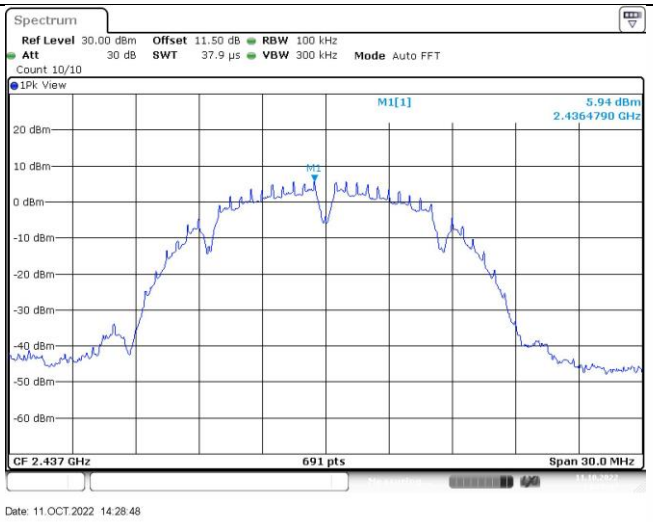
TestMode	Antenna	Frequency [MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.78	5.78	---	PASS
			30~1000	5.78	-53.57	≤-24.22	PASS
			1000~26500	5.78	-42.02	≤-24.22	PASS
		2437	Reference	5.94	5.94	---	PASS
			30~1000	5.94	-54.21	≤-24.06	PASS
			1000~26500	5.94	-43.55	≤-24.06	PASS
		2462	Reference	3.86	3.86	---	PASS
			30~1000	3.86	-53.54	≤-26.14	PASS
			1000~26500	3.86	-44.05	≤-26.14	PASS

Band-edge measurement

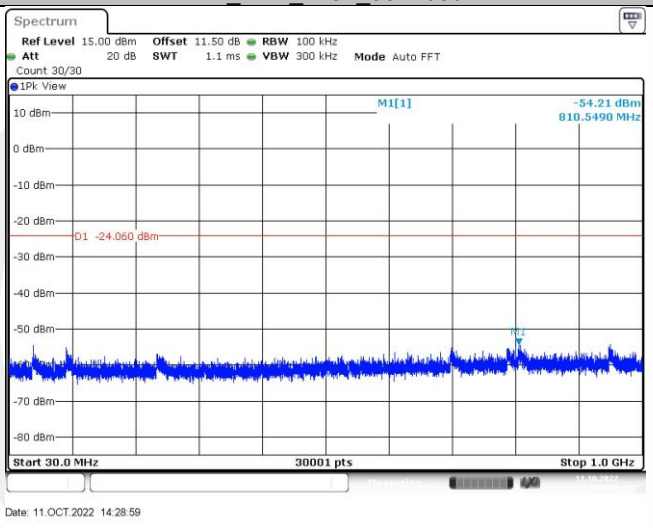
11B_Ant1_Low_2412

11B_Ant1_High_2462


Emission level measurement

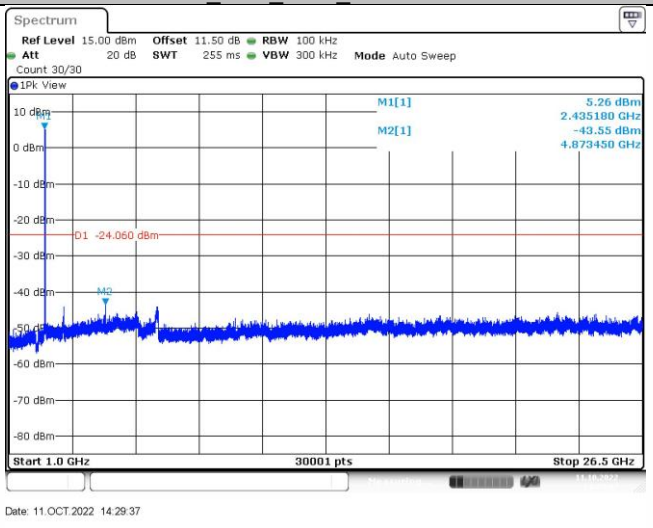
11B_Ant1_2412_0~Reference

11B_Ant1_2412_30~1000

11B_Ant1_2412_1000~26500

11B_Ant1_2437_0~Reference



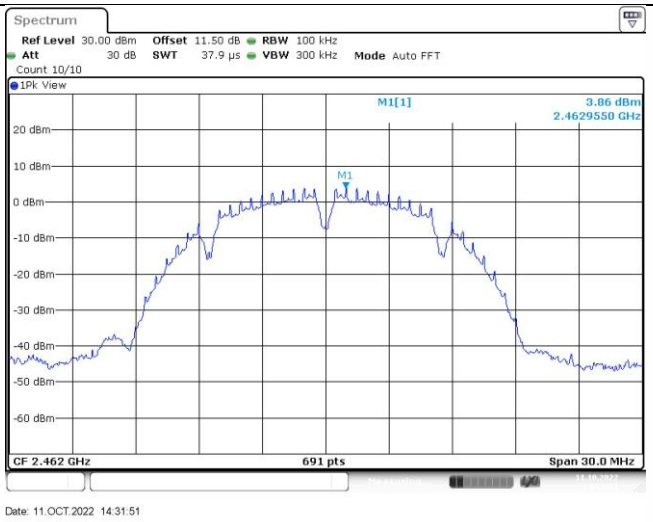
11B_Ant1_2437_30~1000



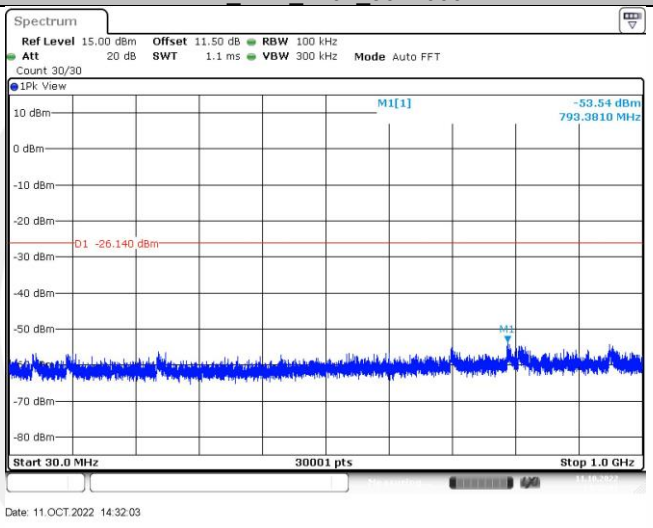
11B_Ant1_2437_1000~26500



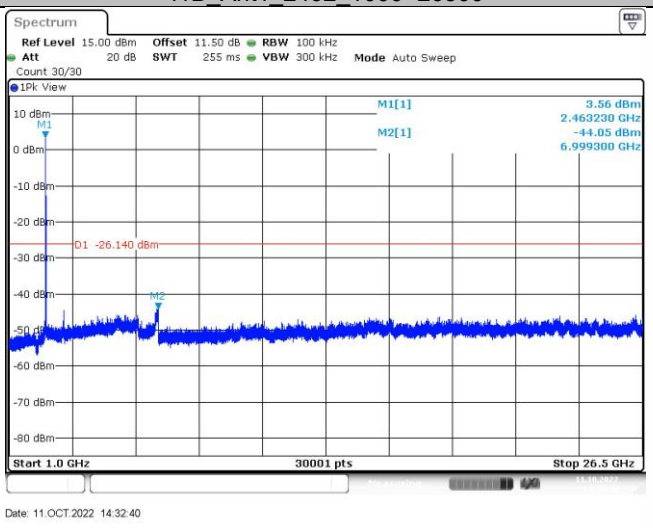
11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500



8.7 RADIATED SPURIOUS EMISSION

8.7.1 Applicable Standard

According to FCC Part 15.247(d), 15.205, 15.209
According to RSS-Gen and RSS-247
According to 558074 D01 15.247 Meas Guidance v05r02 Section 8.6
According to ANSI C63.10 Section 11.12

8.7.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

According to FCC Part15.205 the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

8.7.3 Test Configuration

Test according to clause 7.2 radio frequency test setup

8.7.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:
For Above 1GHz:
The EUT was placed on a turn table which is 1.5m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz
VBW ≥ RBW
Sweep = auto

Detector function = peak
Trace = max hold
For average measurements the resolution bandwidth of spectrum analyzer is 1 MHz with the video bandwidth is ≥ 1/T with peak detector.
For Below 1GHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 100 kHz for
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Below 30MHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 9kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Below 150KHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 200Hz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Follow the guidelines in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit. Submit this data.

8.7.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar
Test Engineer:	XXH

■ Spurious Emission below 30MHz(9KHz to 30MHz)

For Spurious Emission below 30MHz (9KHz to 30MHz), was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

■ Spurious Emission Above 1GHz(1GHz to 25GHz)

All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1, 802.11b) result recorded was report as below:

Test mode:	802.11b	Frequency:	Channel 1: 2412MHz

Freq. (MHz)	Ant.Pol.	Reading Level (dBuV/m)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Remark
5199.000	V	54.19	-5.12	49.07	74.00	-24.93	Peak
5199.000	V	36.23	-5.12	31.11	54.00	-22.89	Avg
10979.00	V	49.98	10.93	60.91	74.00	-13.09	Peak
10979.00	V	31.51	10.93	42.44	54.00	-11.56	Avg
18000.00	V	49.48	14.59	64.07	74.00	-9.93	Peak
18000.00	V	31.96	14.59	46.55	54.00	-7.45	Avg
3992.000	H	54.78	-6.71	48.07	74.00	-25.93	Peak
3992.000	H	36.82	-6.71	30.11	54.00	-23.89	Avg
10894.00	H	50.32	10.37	60.69	74.00	-13.31	Peak
10894.00	H	32.29	10.37	42.66	54.00	-11.34	Avg
18000.00	H	49.36	14.59	63.95	74.00	-10.05	Peak
18000.00	H	30.52	14.59	45.11	54.00	-8.89	Avg

Note:
(1) PeaK RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = Peak;
(2) Avg RBW = 1 MHz, VBW = $1/T_{on}$, Detector = Peak, where: T_{on} is transmit duration;
(3) Corrected Reading = Reading Level + Correct Factor;
(4) Correct Factor = Ant_F + Cab_L - Preamp;
(5) Margin = Limit - Corrected Reading;

Test mode:	802.11b	Frequency:	Channel 6: 2437MHz

Freq. (MHz)	Ant.Pol.	Reading Level (dBuV/m)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Remark
8072.000	V	50.47	3.18	53.65	74.00	-20.35	Peak
8072.000	V	32.15	3.18	35.33	54.00	-18.67	Avg
11013.00	V	49.36	10.99	60.35	74.00	-13.65	Peak
11013.00	V	31.34	10.99	42.33	54.00	-11.67	Avg
18000.00	V	49.53	14.59	64.12	74.00	-9.88	Peak
18000	V	31.52	14.59	46.11	54.00	-7.89	Avg
7970.000	H	50.39	3.06	53.45	74.00	-20.55	Peak
7970.000	H	32.82	3.06	35.88	54.00	-18.12	Avg
11251.00	H	50.20	10.17	60.37	74.00	-13.63	Peak
11251.00	H	32.21	10.17	42.38	54.00	-11.62	Avg
18000.00	H	49.07	14.59	63.66	74.00	-10.34	Peak
18000	H	29.96	14.59	44.55	54.00	-9.45	Avg

Note:
(1) PeaK RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = Peak;
(2) Avg RBW = 1 MHz, VBW = $1/T_{on}$, Detector = Peak, where: T_{on} is transmit duration;
(3) Corrected Reading = Reading Level + Correct Factor;
(4) Correct Factor = Ant_F + Cab_L - Preamp;
(5) Margin = Limit - Corrected Reading;

Test mode:	802.11b	Frequency:	Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol.	Reading Level (dBuV/m)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Remark
4723.000	V	50.66	-5.19	45.47	74.00	-28.53	Peak
4723.000	V	32.52	-5.19	27.33	54.00	-26.67	Avg
10877.00	V	48.82	10.34	59.16	74.00	-14.84	Peak
10877.00	V	31.00	10.34	41.34	54.00	-12.66	Avg
18000.00	V	47.57	14.59	62.16	74.00	-11.84	Peak
18000	V	29.52	14.59	44.11	54.00	-9.89	Avg
8123.000	H	51.15	3.20	54.35	74.00	-19.65	Peak
8123.000	H	33.02	3.20	36.22	54.00	-17.78	Avg
11030.00	H	49.54	10.84	60.38	74.00	-13.62	Peak
11030.00	H	31.93	10.84	42.77	54.00	-11.23	Avg
18000.00	H	49.73	14.59	64.32	74.00	-9.68	Peak
18000	H	31.63	14.59	46.22	54.00	-7.78	Avg

Note:
(1) PeaK RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = Peak;
(2) Avg RBW = 1 MHz, VBW = $1/T_{on}$, Detector = Peak, where: T_{on} is transmit duration;
(3) Corrected Reading = Reading Level + Correct Factor;
(4) Correct Factor = Ant_F + Cab_L - Preamp;
(5) Margin = Limit - Corrected Reading;

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1, 802.11b) result recorded was report as below:

Test mode: 802.11b Frequency: Channel 1: 2412MHz

Freq. (MHz)	Ant.Pol.	Reading Level (dBuV/m)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Remark
2332.960	V	10.90	42.24	53.14	74.00	-20.86	peak
2332.96	V	-6.45	42.24	35.79	54.00	-18.21	AVG
2386.720	H	12.48	42.46	54.94	74.00	-19.06	peak
2386.72	H	-6.02	42.46	36.44	54.00	-17.56	AVG

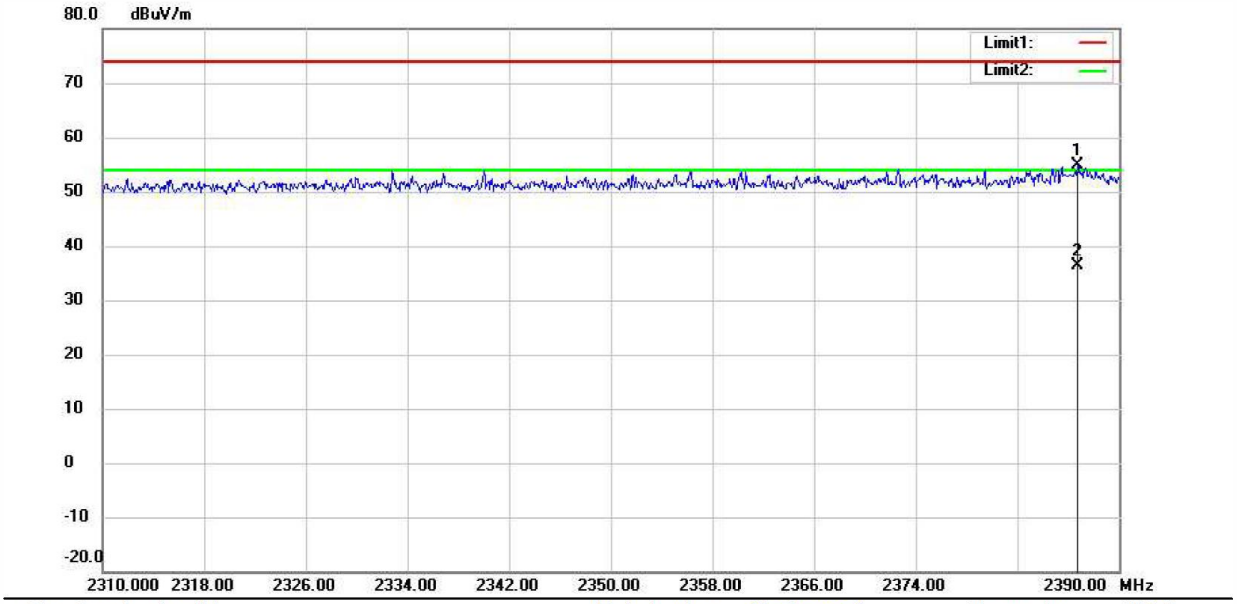
Note: (1) PeaK RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = Peak;
(2) Avg RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = RMS;
(3) Corrected Reading = Reading Level + Correct Factor;
(4) Correct Factor = Ant_F + Cab_L - Preamp;
(5) Margin = Limit - Corrected Reading;

Test mode: 802.11b Frequency: Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol.	Reading Level (dBuV/m)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Remark
2487.113	V	10.41	42.21	52.62	74.00	-21.38	peak
2487.113	V	-7.59	42.21	34.62	54.00	-19.38	AVG
2488.070	H	12.91	42.20	55.11	74.00	-18.89	peak
2488.07	H	-4.92	42.20	37.28	54.00	-16.72	AVG

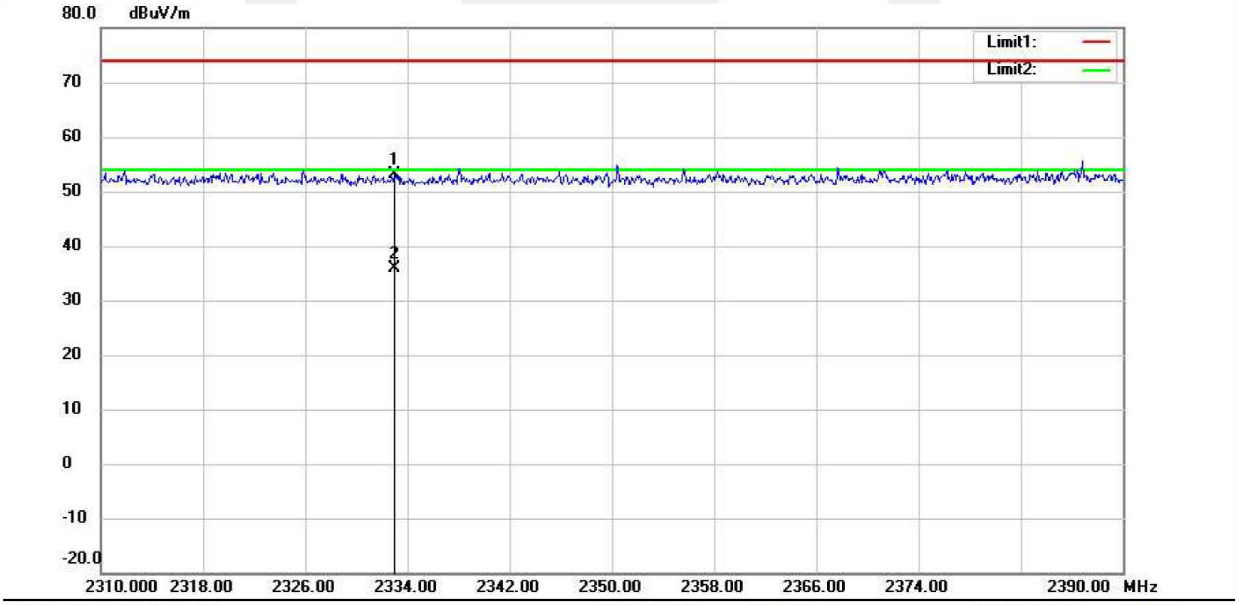
Note: (1) PeaK RBW = 1 MHz, VBW ≥ 3 × RBW, Detector = Peak;
(2) Avg RBW = 1 MHz, VBW = 1/T_{on}, Detector = Peak, where: T_{on} is transmit duration;
(3) Corrected Reading = Reading Level + Correct Factor;
(4) Correct Factor = Ant_F + Cab_L - Preamp;
(5) Margin = Limit - Corrected Reading;

Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	802.11b	Channel 1: 2412MHz	Polarity: H



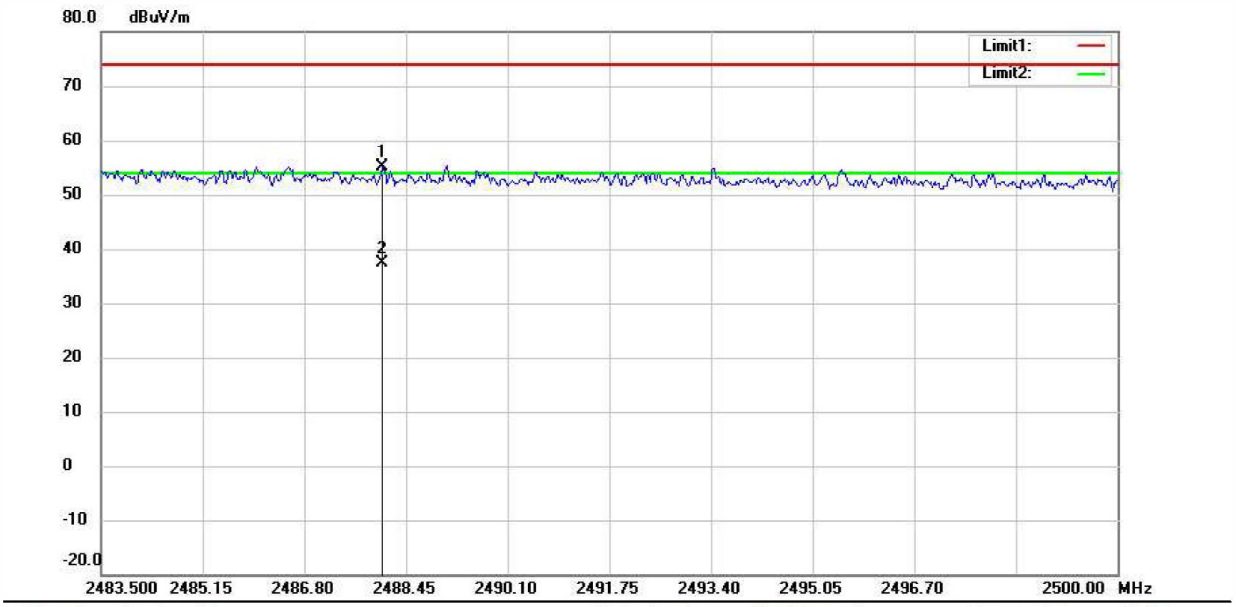
Site Conduction #1	Polarization: *Horizontal*	Temperature:	25.7 C
Limit: (RE)FCC PART 15 CLASS B	Power: AC 120V/60Hz	Humidity:	55 %

Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	802.11b	Channel 1: 2412MHz	Polarity: V



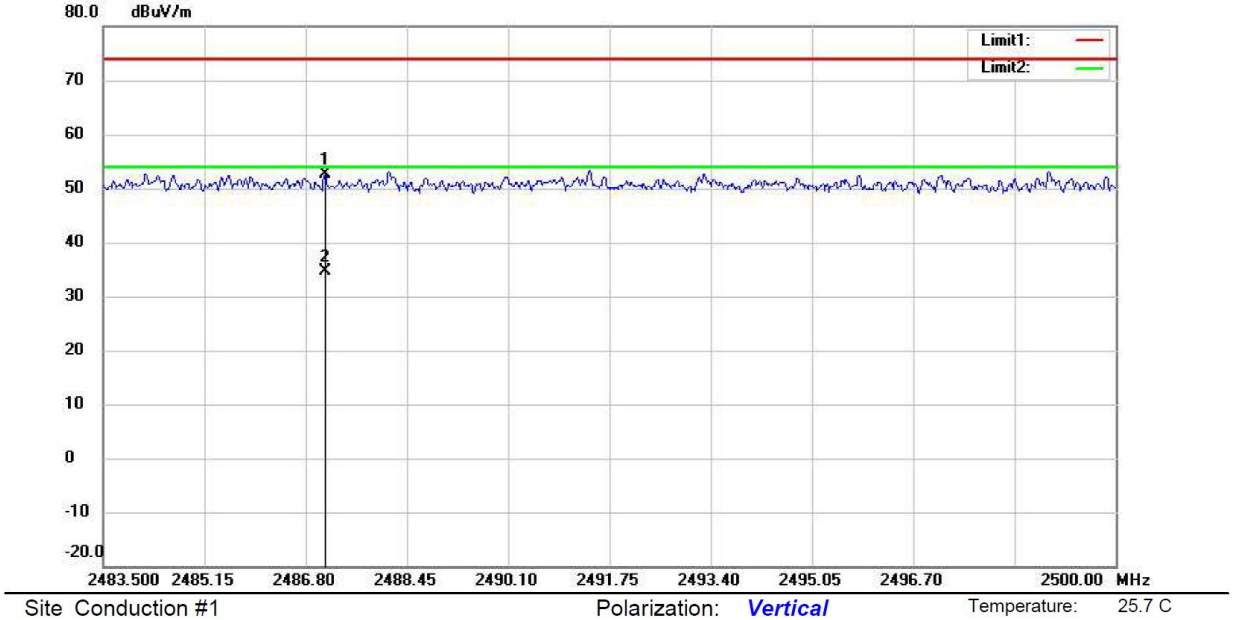
Site Conduction #1	Polarization: *Vertical*	Temperature:	25.7 C
Limit: (RE)FCC PART 15 CLASS B	Power: AC 120V/60Hz	Humidity:	55 %

Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	802.11b	Channel 11: 2462MHz	Polarity: H



Site Conduction #1	Polarization: *Horizontal*	Temperature:	25.7 C
Limit: (RE)FCC PART 15 CLASS B	Power: AC 120V/60Hz	Humidity:	55 %

Test Model	Spurious Emission in Restricted Band2483.5-2500MHz		
	802.11b	Channel 11: 2462MHz	Polarity: V



Site Conduction #1	Polarization: *Vertical*	Temperature:	25.7 C
Limit: (RE)FCC PART 15 CLASS B	Power: AC 120V/60Hz	Humidity:	55 %

■ Spurious Emission below 1GHz (30MHz to 1GHz)

All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1, 802.11b) result recorded was report as below:

Site Conduction #1 Polarization: *Horizontal* Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2412

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		556.7744	43.00	-6.95	36.05	46.00	-9.95	QP			
2		396.2415	42.16	-9.28	32.88	46.00	-13.12	QP			
3		195.8220	50.52	-15.04	35.48	43.50	-8.02	QP			
4		120.6991	45.51	-11.50	34.01	43.50	-9.49	QP			
5	*	79.2426	50.98	-18.08	32.90	40.00	-7.10	QP			
6		51.1210	46.95	-14.22	32.73	40.00	-7.27	QP			

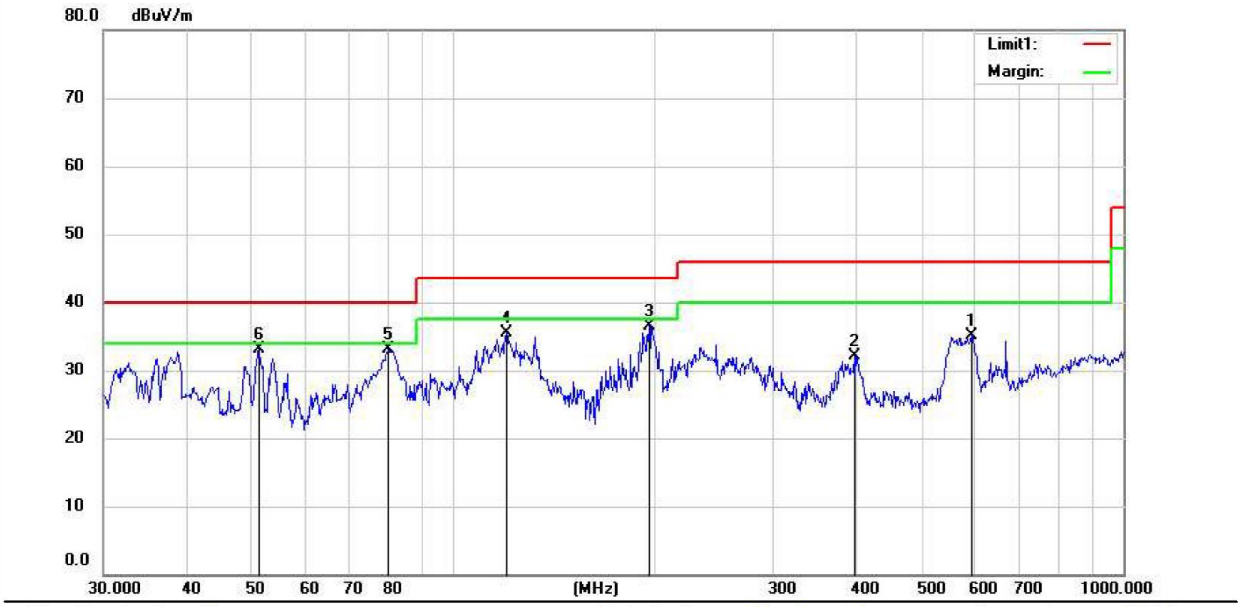
Site Conduction #1 Polarization: *Vertical* Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2412

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		560.6928	42.78	-6.59	36.19	46.00	-9.81	QP			
2		396.2415	41.22	-9.28	31.94	46.00	-14.06	QP			
3		195.8220	50.54	-15.04	35.50	43.50	-8.00	QP			
4		120.2766	46.41	-11.44	34.97	43.50	-8.53	QP			
5		80.0806	50.86	-18.05	32.81	40.00	-7.19	QP			
6	*	51.3005	47.08	-14.24	32.84	40.00	-7.16	QP			



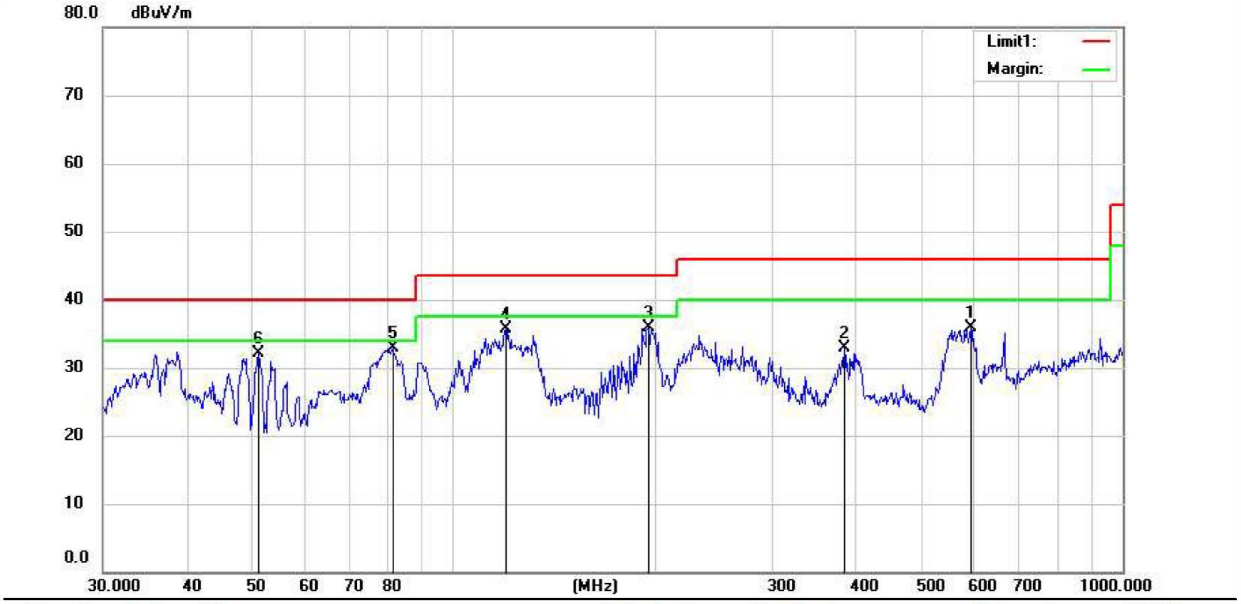
Site Conduction #1 Polarization: *Horizontal* Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2437

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		593.0497	43.30	-8.18	35.12	46.00	-10.88	QP			
2		396.2415	41.30	-9.28	32.02	46.00	-13.98	QP			
3		195.8220	51.50	-15.04	36.46	43.50	-7.04	QP			
4		119.8556	46.89	-11.40	35.49	43.50	-8.01	QP			
5	*	79.8003	51.14	-18.08	33.06	40.00	-6.94	QP			
6		51.1210	47.26	-14.22	33.04	40.00	-6.96	QP			



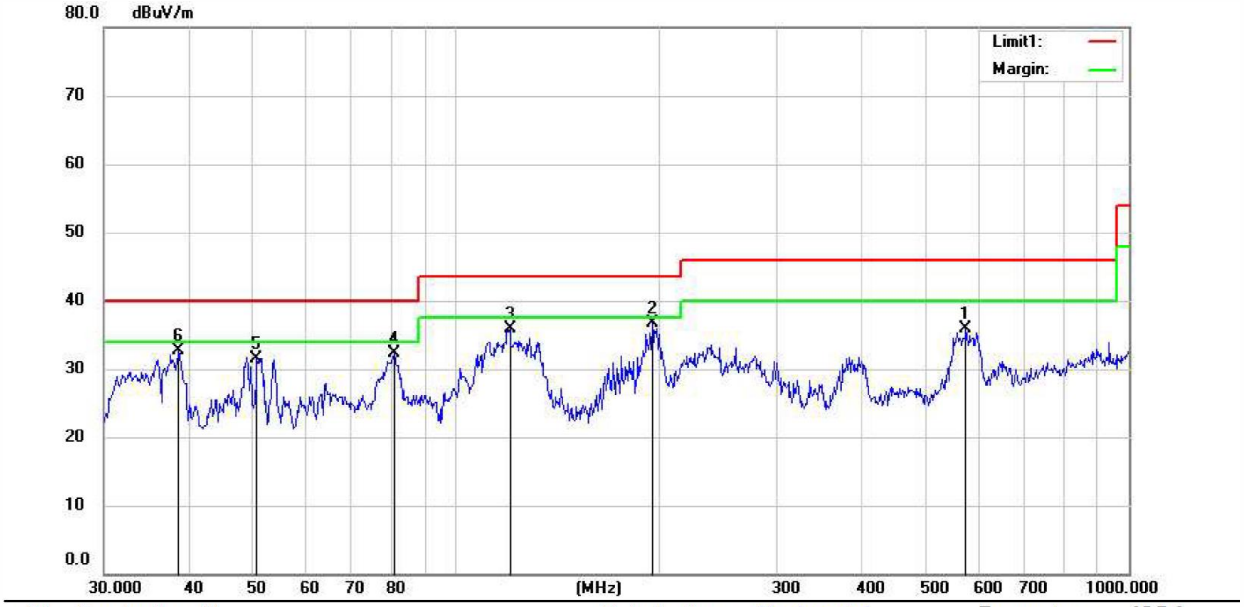
Site Conduction #1 Polarization: *Vertical* Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2437

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		593.0497	42.35	-6.46	35.89	46.00	-10.11	QP			
2		383.9318	42.88	-10.07	32.81	46.00	-13.19	QP			
3		195.8220	50.99	-15.04	35.95	43.50	-7.55	QP			
4		119.8556	47.14	-11.40	35.74	43.50	-7.76	QP			
5	*	81.2117	50.40	-17.41	32.99	40.00	-7.01	QP			
6		51.1210	46.38	-14.22	32.16	40.00	-7.84	QP			



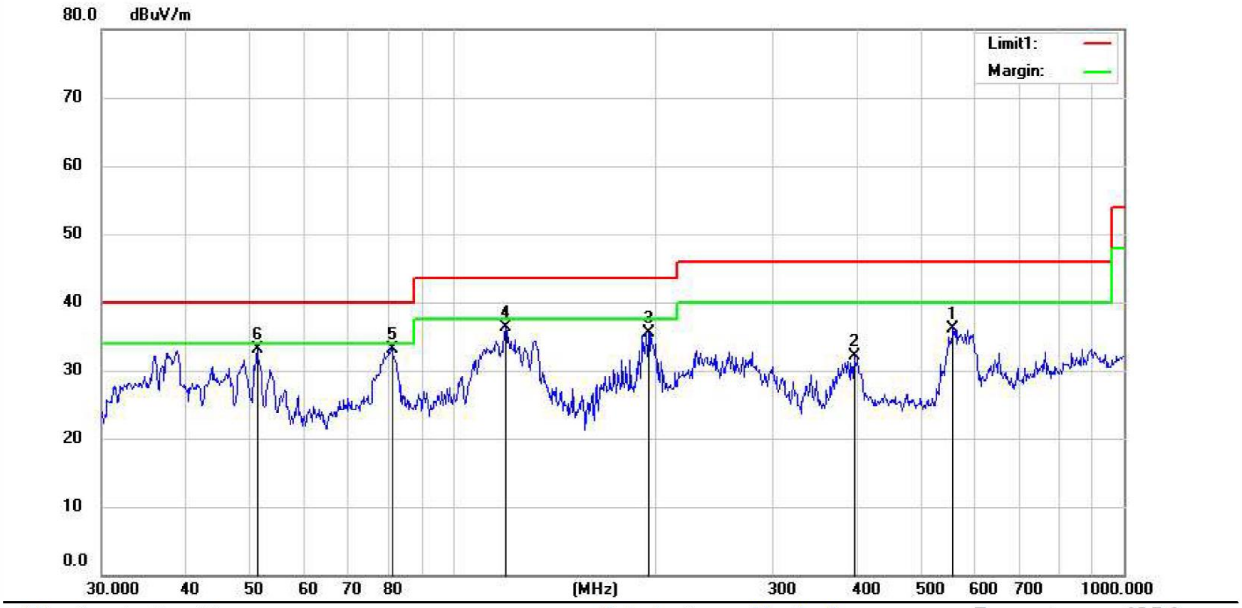
Site Conduction #1 Polarization: ***Horizontal*** Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2462

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		572.6144	43.84	-7.97	35.87	46.00	-10.13	QP			
2	*	195.8220	51.65	-15.04	36.61	43.50	-6.89	QP			
3		120.2766	47.27	-11.44	35.83	43.50	-7.67	QP			
4		80.9275	49.88	-17.57	32.31	40.00	-7.69	QP			
5		50.5860	45.65	-14.16	31.49	40.00	-8.51	QP			
6		38.7518	47.78	-15.11	32.67	40.00	-7.33	QP			



Site Conduction #1 Polarization: *Vertical* Temperature: 25.7 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 55 %

Mode:2.4G 2462

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		556.7744	42.88	-6.68	36.20	46.00	-9.80	QP			
2		396.2415	41.33	-9.28	32.05	46.00	-13.95	QP			
3		195.8220	50.57	-15.04	35.53	43.50	-7.97	QP			
4		119.8556	47.65	-11.40	36.25	43.50	-7.25	QP			
5	*	81.2117	50.61	-17.41	33.20	40.00	-6.80	QP			
6		51.1210	47.32	-14.22	33.10	40.00	-6.90	QP			

8.8 CONDUCTED EMISSION TEST

8.8.1 Applicable Standard

According to FCC Part 15.207(a)
According to RSS-Gen 8.8

8.8.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.8.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

8.8.4 Test Procedure

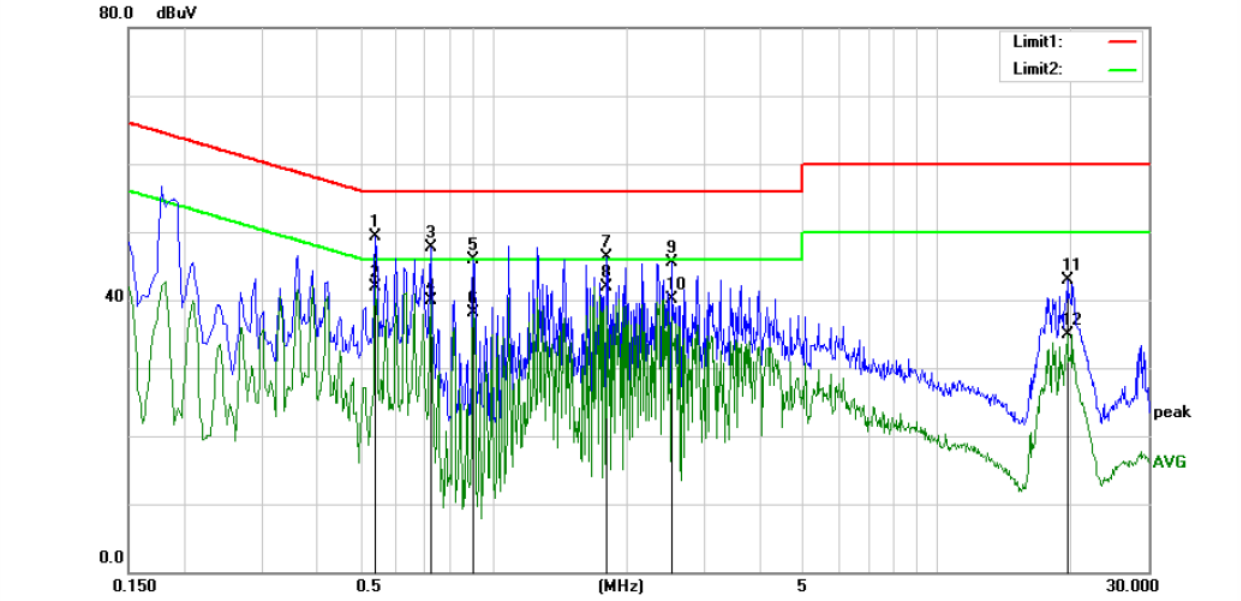
The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.8.5 Test Results

Pass

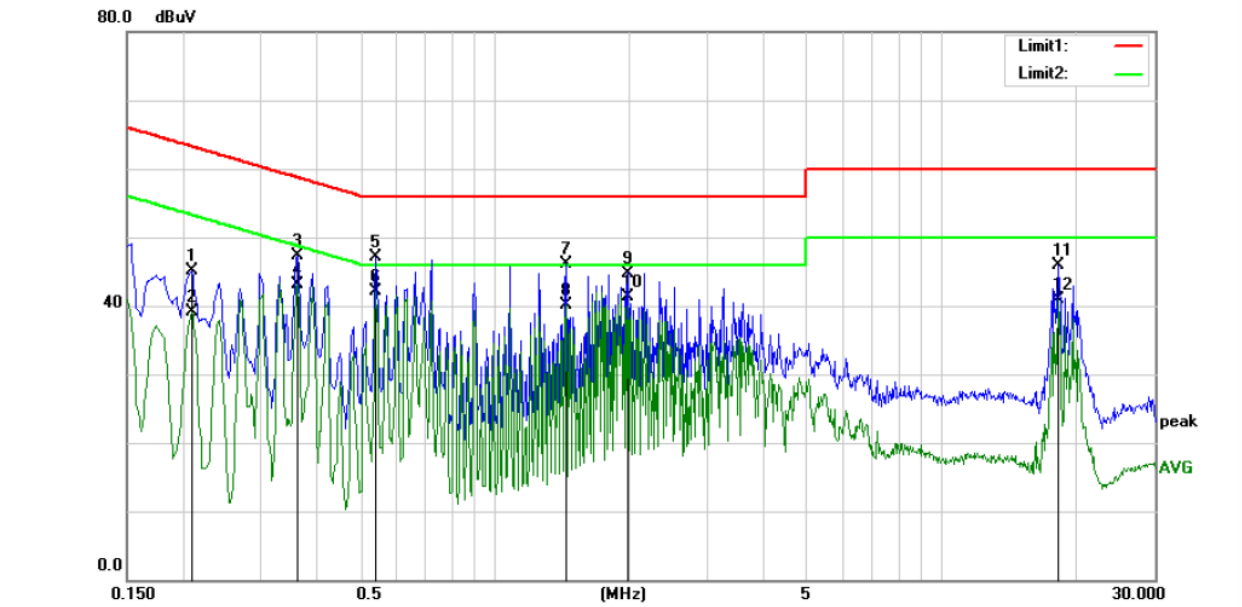
The AC120V &240V voltage have been tested, and the worst result recorded was report as below:

Power supply model 1



Site Conduction #2 Phase: N Temperature: 25.1
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 45 %
Mode: wifi mode
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.5406	39.27	10.11	49.38	56.00	-6.62	QP	
2		0.5406	31.76	10.11	41.87	46.00	-4.13	AVG	
3		0.7197	37.55	10.14	47.69	56.00	-8.31	QP	
4		0.7197	29.73	10.14	39.87	46.00	-6.13	AVG	
5		0.8991	35.72	10.16	45.88	56.00	-10.12	QP	
6		0.8991	27.99	10.16	38.15	46.00	-7.85	AVG	
7		1.8000	36.26	10.13	46.39	56.00	-9.61	QP	
8	*	1.8000	31.75	10.13	41.88	46.00	-4.12	AVG	
9		2.5132	35.44	10.14	45.58	56.00	-10.42	QP	
10		2.5132	29.91	10.14	40.05	46.00	-5.95	AVG	
11		19.6353	32.51	10.39	42.90	60.00	-17.10	QP	
12		19.6353	24.53	10.39	34.92	50.00	-15.08	AVG	



Site Conduction #2 Phase: *L1* Temperature: 25.1

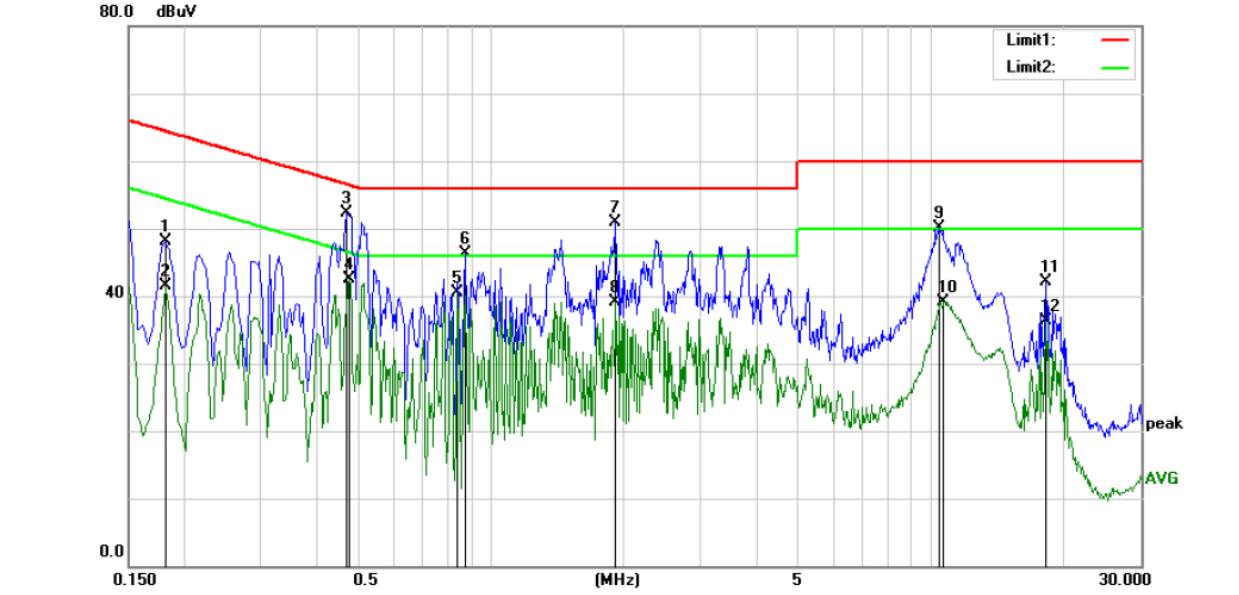
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 45 %

Mode: wifi mode

Note:

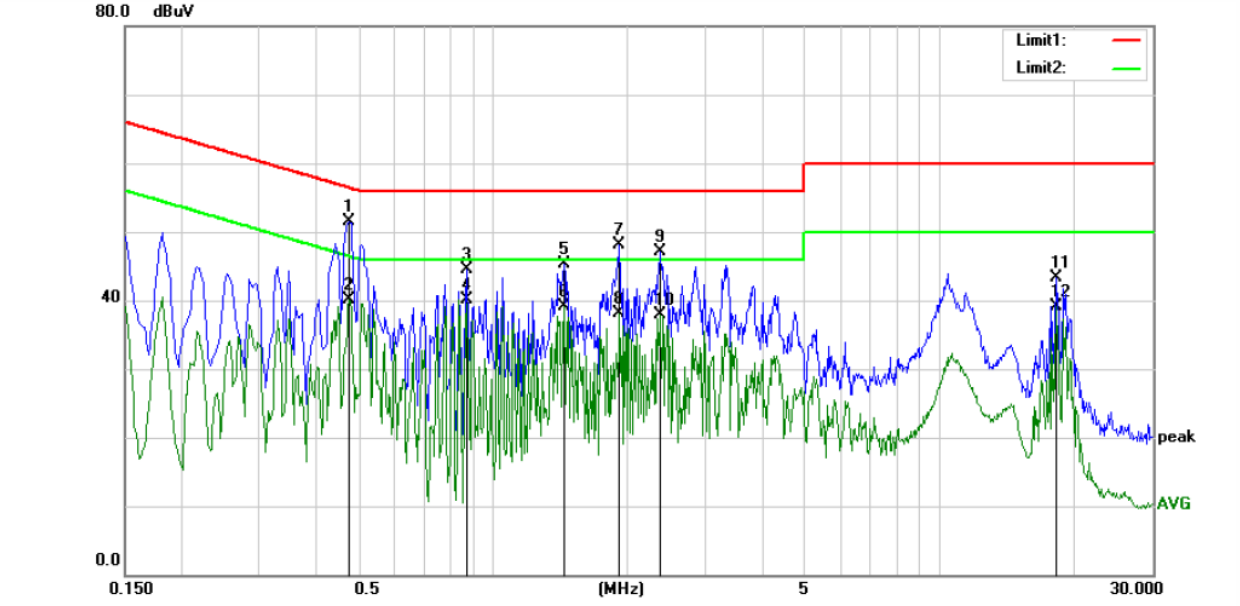
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	34.96	10.10	45.06	63.21	-18.15	QP	
2		0.2100	28.95	10.10	39.05	53.21	-14.16	AVG	
3		0.3620	37.16	10.10	47.26	58.68	-11.42	QP	
4		0.3620	32.99	10.10	43.09	48.68	-5.59	AVG	
5		0.5420	37.02	10.11	47.13	56.00	-8.87	QP	
6	*	0.5420	31.96	10.11	42.07	46.00	-3.93	AVG	
7		1.4420	36.05	10.14	46.19	56.00	-9.81	QP	
8		1.4420	29.93	10.14	40.07	46.00	-5.93	AVG	
9		1.9820	34.69	10.11	44.80	56.00	-11.20	QP	
10		1.9820	31.26	10.11	41.37	46.00	-4.63	AVG	
11		18.2460	35.57	10.42	45.99	60.00	-14.01	QP	
12		18.2460	30.43	10.42	40.85	50.00	-9.15	AVG	

Power supply model 2



Site Conduction #2 Phase: L1 Temperature: 25.1
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 45 %
Mode: wifi mode
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1820	38.04	10.10	48.14	64.39	-16.25	peak	
2		0.1820	31.45	10.10	41.55	54.39	-12.84	AVG	
3		0.4700	42.11	10.10	52.21	56.51	-4.30	peak	
4	*	0.4780	32.47	10.10	42.57	46.37	-3.80	AVG	
5		0.8420	30.28	10.16	40.44	46.00	-5.56	AVG	
6		0.8740	36.09	10.16	46.25	56.00	-9.75	peak	
7		1.9180	40.78	10.12	50.90	56.00	-5.10	peak	
8		1.9260	28.98	10.12	39.10	46.00	-6.90	AVG	
9		10.5060	39.67	10.44	50.11	60.00	-9.89	peak	
10		10.6900	28.73	10.44	39.17	50.00	-10.83	AVG	
11		18.2460	31.60	10.42	42.02	60.00	-17.98	peak	
12		18.2460	25.96	10.42	36.38	50.00	-13.62	AVG	



Site Conduction #2 Phase: N Temperature: 25.1

Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 45 %

Mode: wifi mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4780	41.34	10.10	51.44	56.37	-4.93	QP	
2		0.4780	30.09	10.10	40.19	46.37	-6.18	AVG	
3		0.8740	34.33	10.16	44.49	56.00	-11.51	QP	
4		0.8740	29.95	10.16	40.11	46.00	-5.89	AVG	
5		1.4420	35.19	10.14	45.33	56.00	-10.67	QP	
6		1.4420	29.03	10.14	39.17	46.00	-6.83	AVG	
7		1.9260	38.03	10.12	48.15	56.00	-7.85	QP	
8		1.9260	27.91	10.12	38.03	46.00	-7.97	AVG	
9		2.3700	37.05	10.12	47.17	56.00	-8.83	QP	
10		2.3700	27.73	10.12	37.85	46.00	-8.15	AVG	
11		18.2460	32.82	10.42	43.24	60.00	-16.76	QP	
12		18.2460	28.65	10.42	39.07	50.00	-10.93	AVG	

8.9 ANTENNA APPLICATION

8.9.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
FCC 47 CFR Part 15.247 (b)	If transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
RSS-Gen Section 6.8	The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
RSS-247 Section 5.4	If the transmitter employs an antenna system that emits multiple directional beams, but does not emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device (i.e. the sum of the power supplied to all antennas, antenna elements, staves, etc., and summed across all carriers or frequency channels) shall not exceed the applicable output power limit. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

8.9.2 Result

PASS.

Note: ☑ Antenna use a permanently attached antenna which is not replaceable.
☐ Not using a standard antenna jack or electrical connector for antenna replacement
☐ The antenna has to be professionally installed (please provide method of installation)

Please refer to the attached document Internal Photos to show the antenna connector.

--------- END OF REPORT --------