

WLAN 802.11n HT40 (2422 MHz)

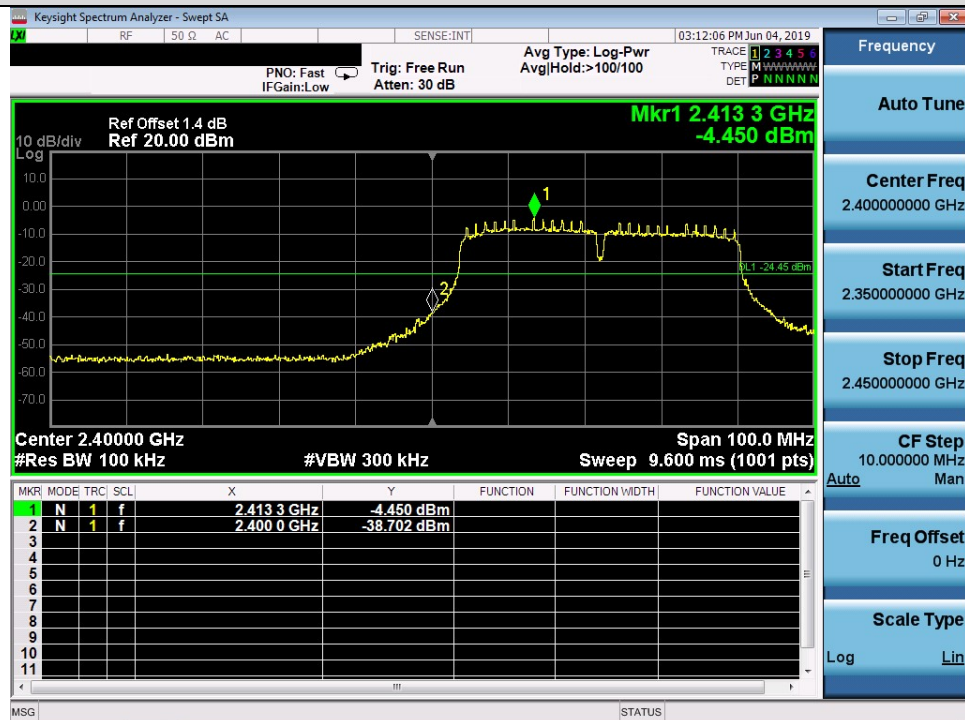
Reference Level

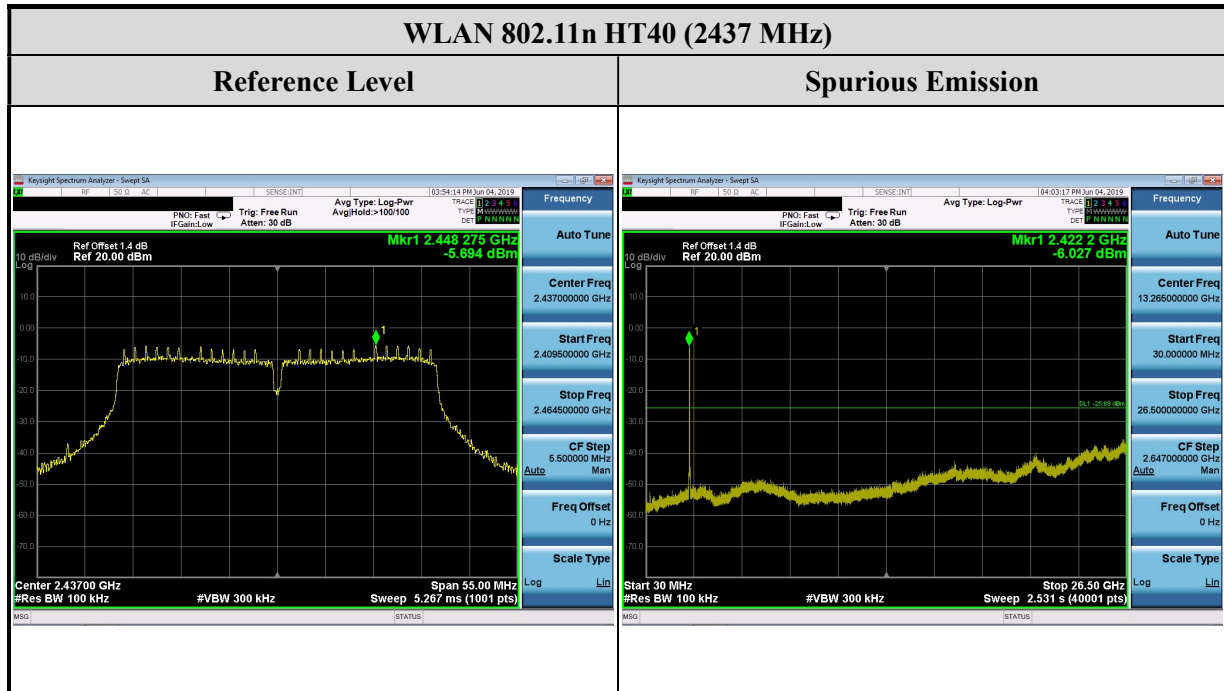


Spurious Emission



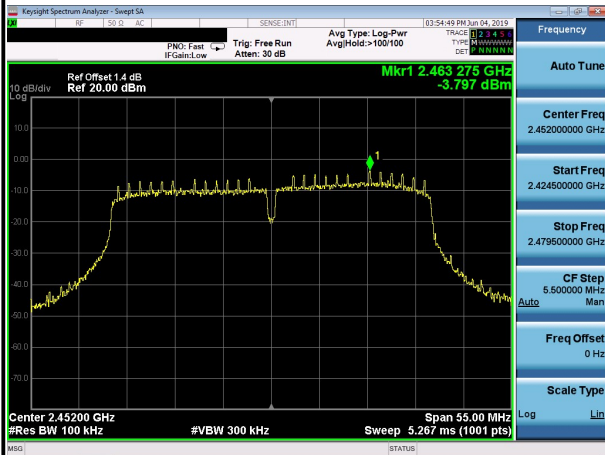
Band Edge



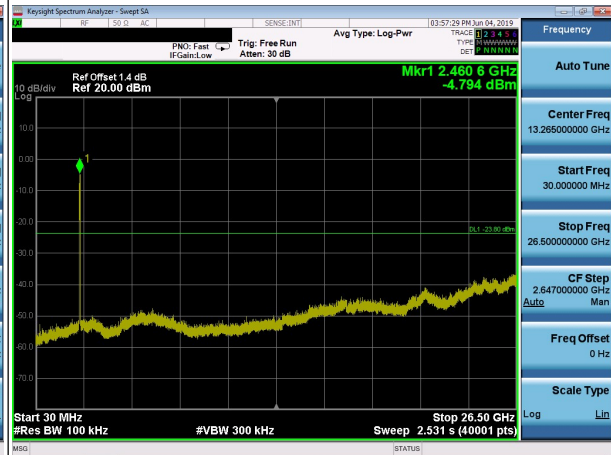


WLAN 802.11n HT40 (2452MHz)

Reference Level



Spurious Emission



Band Edge



2.6 Radiated Band Edges and Spurious Emission Measurement

2.6.1 Limit

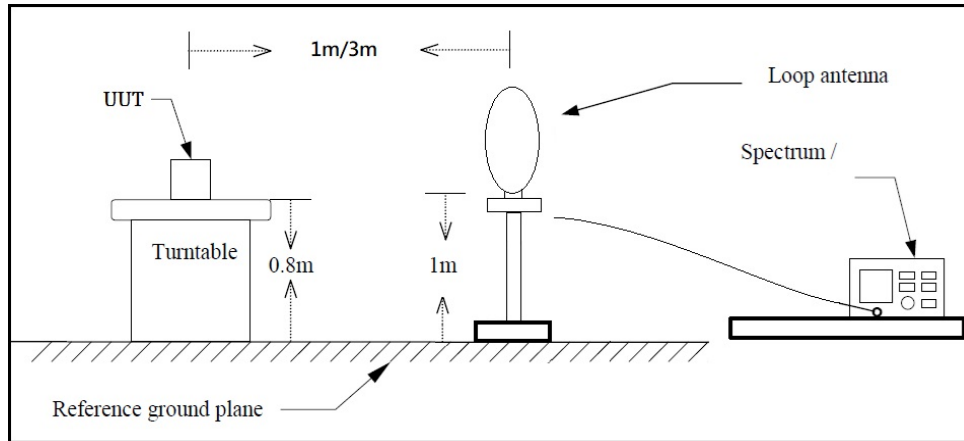
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Remarks:

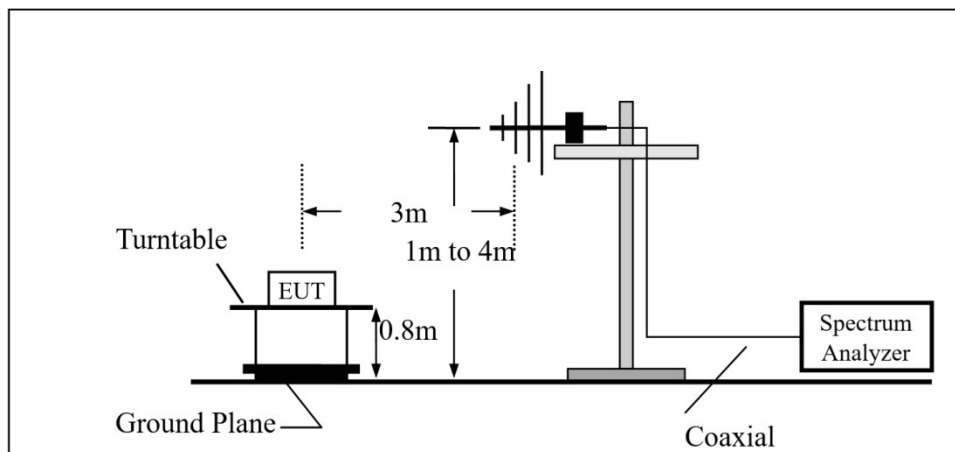
1. RF Voltage (dBuV) = $20 \log \text{RF Voltage}(\mu\text{V})$
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

2.6.2 Test Setup

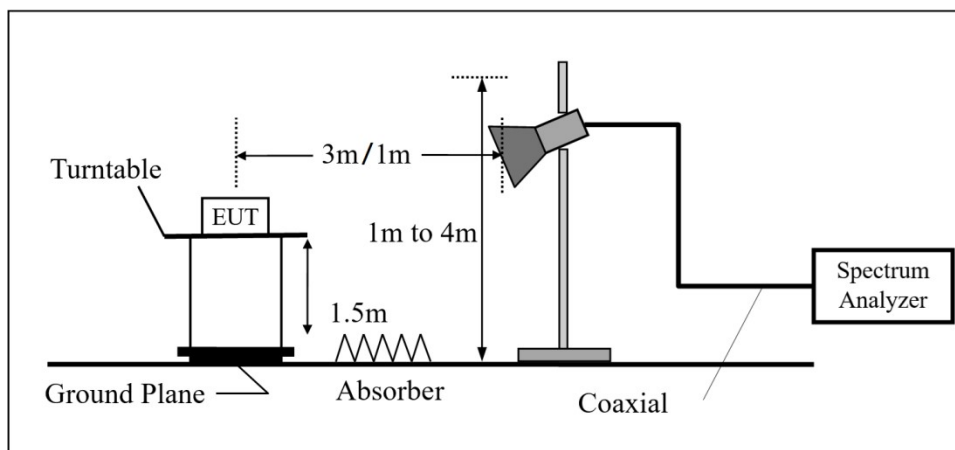
Below 30MHz



30MHz~1GHz



Above 1GHz



2.6.3 Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

For Radiated emission below 30MHz

- (1) The EUT was placed on the top of a rotating table 0.8 meters above the ground in a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- (4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- (5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

For Radiated emission Above 30MHz

- (1) The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for the test. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The EUT was set 3 meters away from the interference-receiving antenna, the height of the antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength.
- (3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- (4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- (5) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- (6) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets the average limit, measurement with the average detector is unnecessary.

2.6.4 Duty Cycle

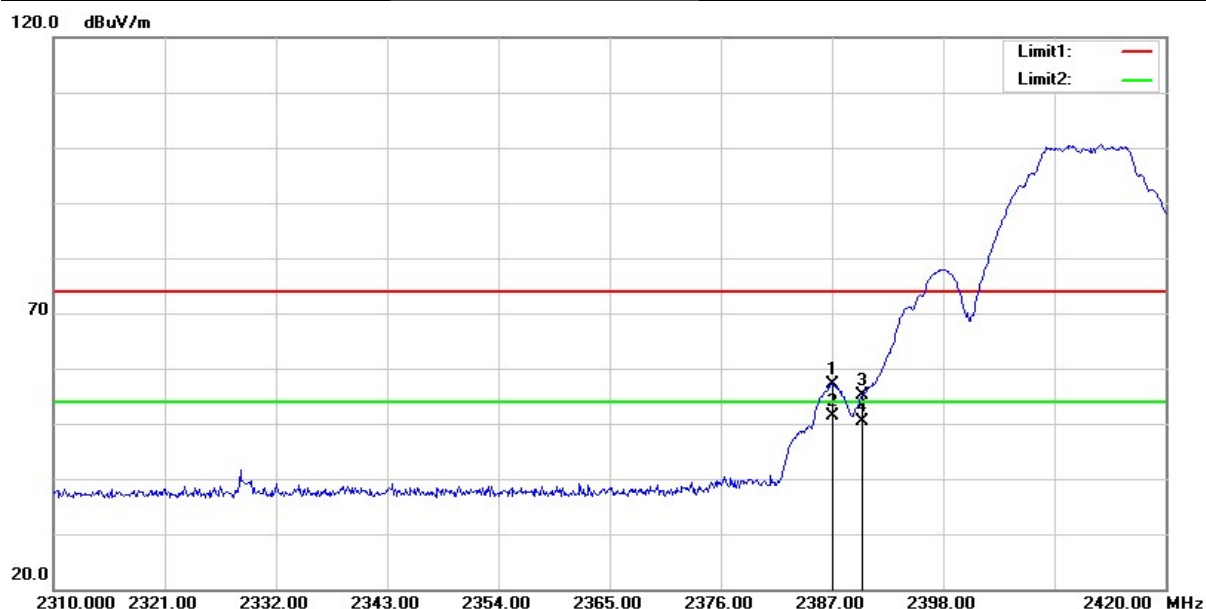
Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	2412	8.265	8.430	0.980	0.086	0.010
802.11g	2412	1.410	1.560	0.904	0.439	0.709
802.11n HT20	2412	1.350	1.500	0.900	0.458	0.741
802.11n HT40	2422	0.645	0.835	0.772	1.121	1.550

2.6.5 Test Result of Radiated Band Edge Measurement

The following tables for radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (**X** axis) were recorded in this report.

Test Frequency		
RF	802.11b / 802.11g / 802.11n HT20	802.11n HT40
Tx	CH01 (2412MHz)	CH03 (2422MHz)
	CH11 (2462MHz)	CH09 (2452MHz)

Test Mode :	Transmit(802.11b)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

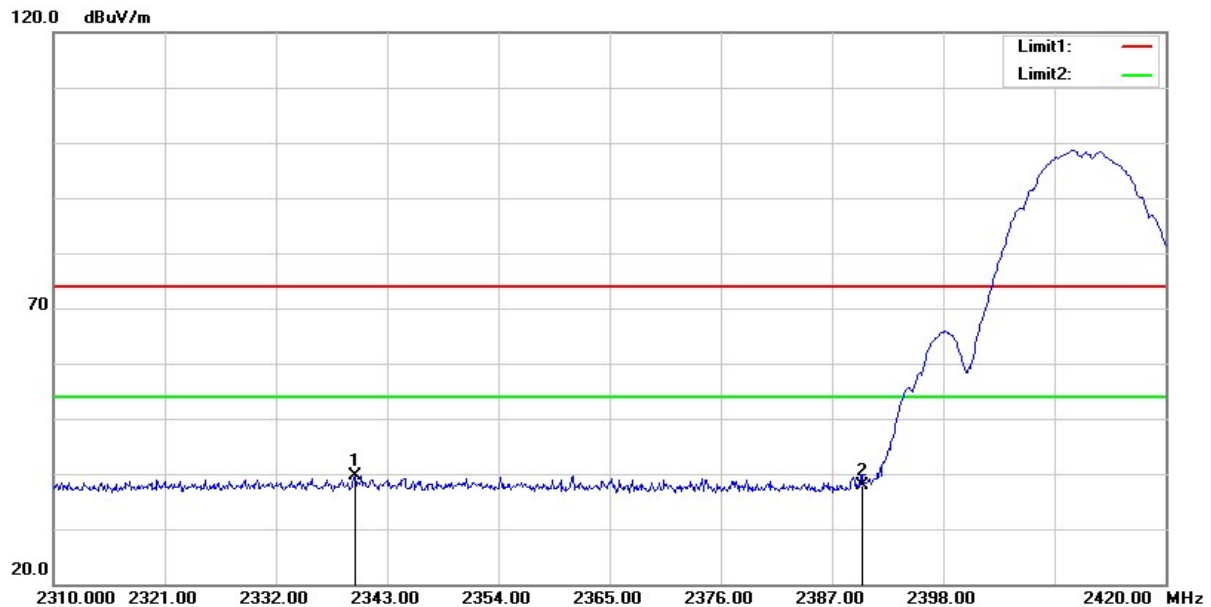


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.000	61.74	-4.69	57.05	74.00	-16.95	peak
2	2387.000	55.97	-4.69	51.28	54.00	-2.72	AVG
3	2390.000	59.95	-4.71	55.24	74.00	-18.76	peak
4	2390.000	55.17	-4.71	50.46	54.00	-3.54	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2339.810	44.25	-4.59	39.66	74.00	-34.34	peak
2	2390.000	42.51	-4.71	37.80	74.00	-36.20	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

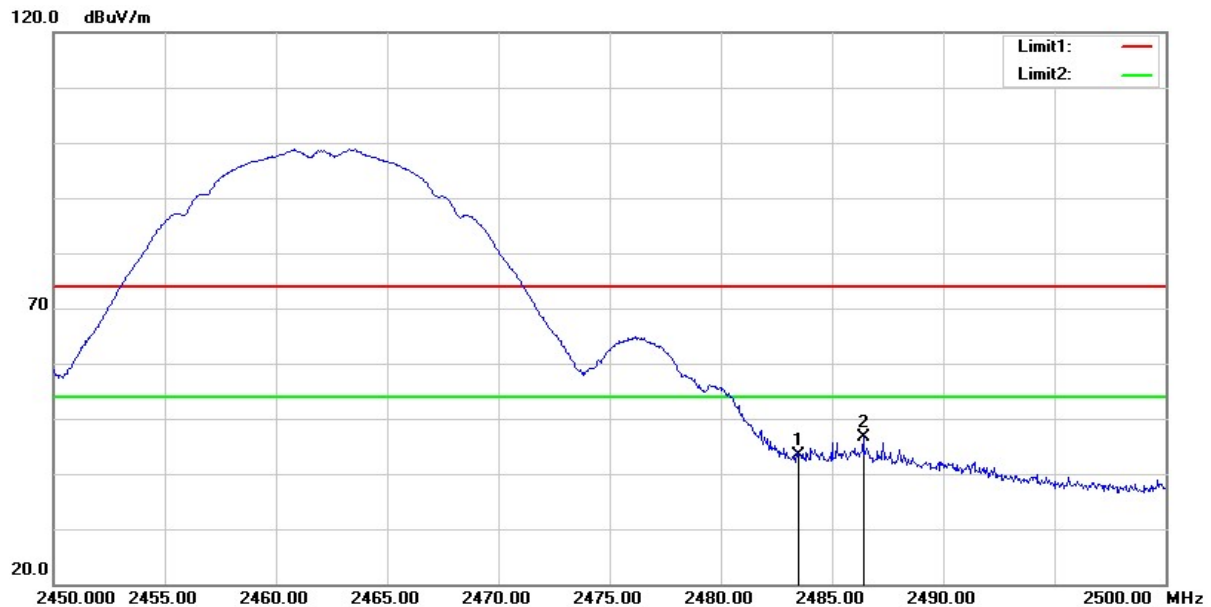


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	65.98	-4.62	61.36	74.00	-12.64	peak
2	2483.500	55.67	-4.62	51.05	54.00	-2.95	AVG
3	2487.300	68.06	-4.61	63.45	74.00	-10.55	peak
4	2487.300	56.37	-4.61	51.76	54.00	-2.24	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

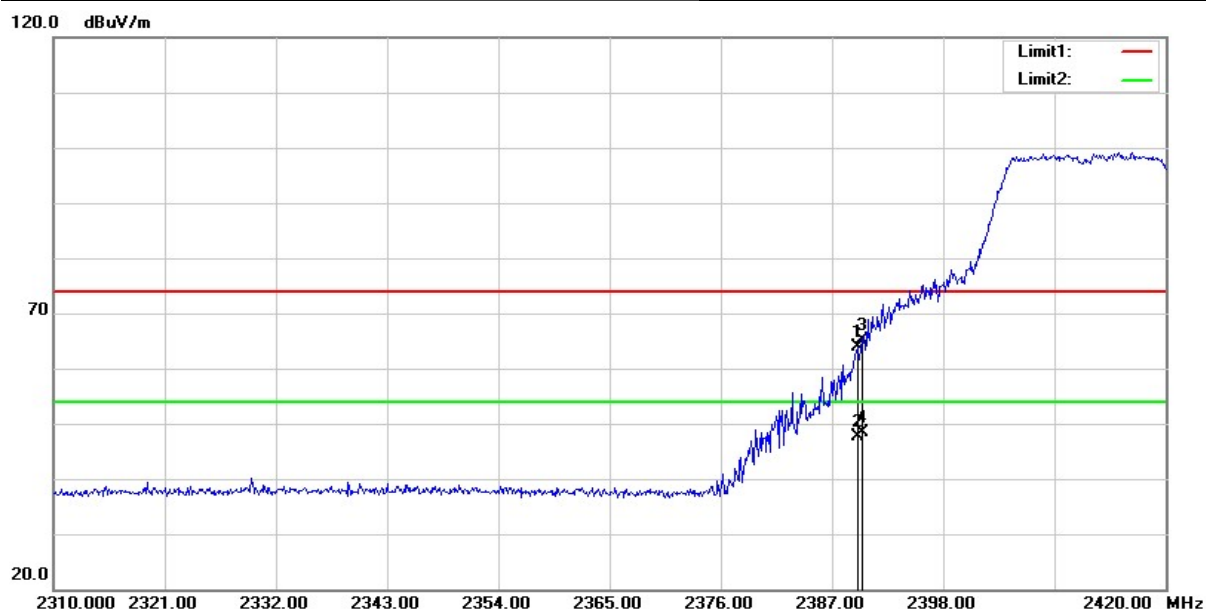


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	48.01	-4.62	43.39	74.00	-30.61	peak
2	2486.400	51.16	-4.61	46.55	74.00	-27.45	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

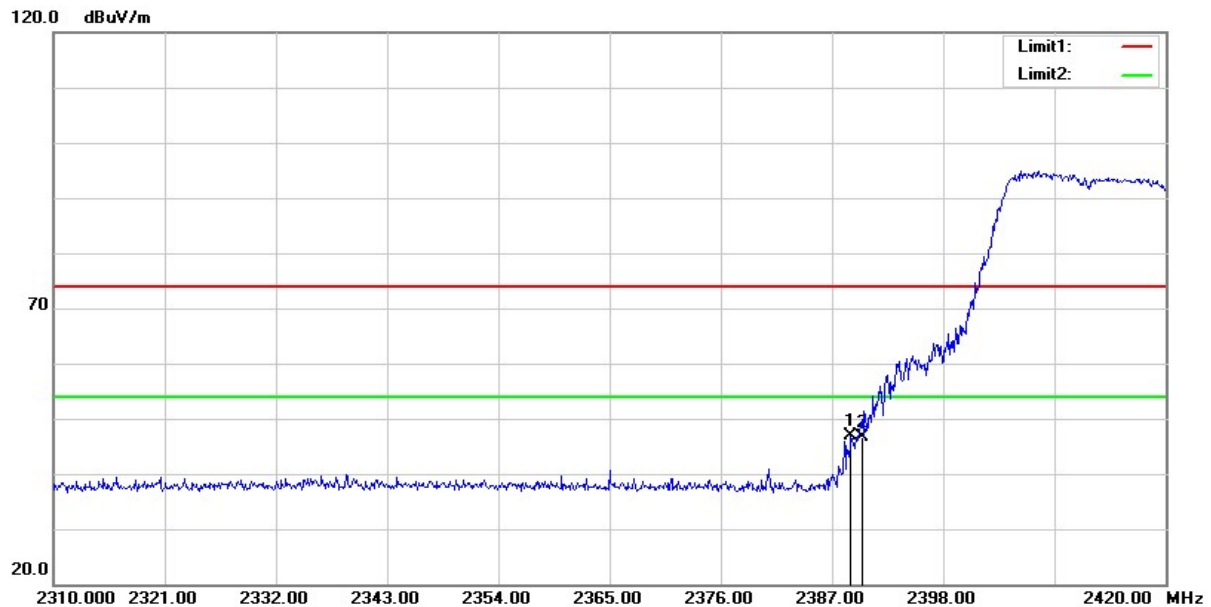


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.530	68.68	-4.71	63.97	74.00	-10.03	peak
2	2389.530	52.23	-4.71	47.52	54.00	-6.48	AVG
3	2390.000	69.84	-4.71	65.13	74.00	-8.87	peak
4	2390.000	53.01	-4.71	48.30	54.00	-5.70	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

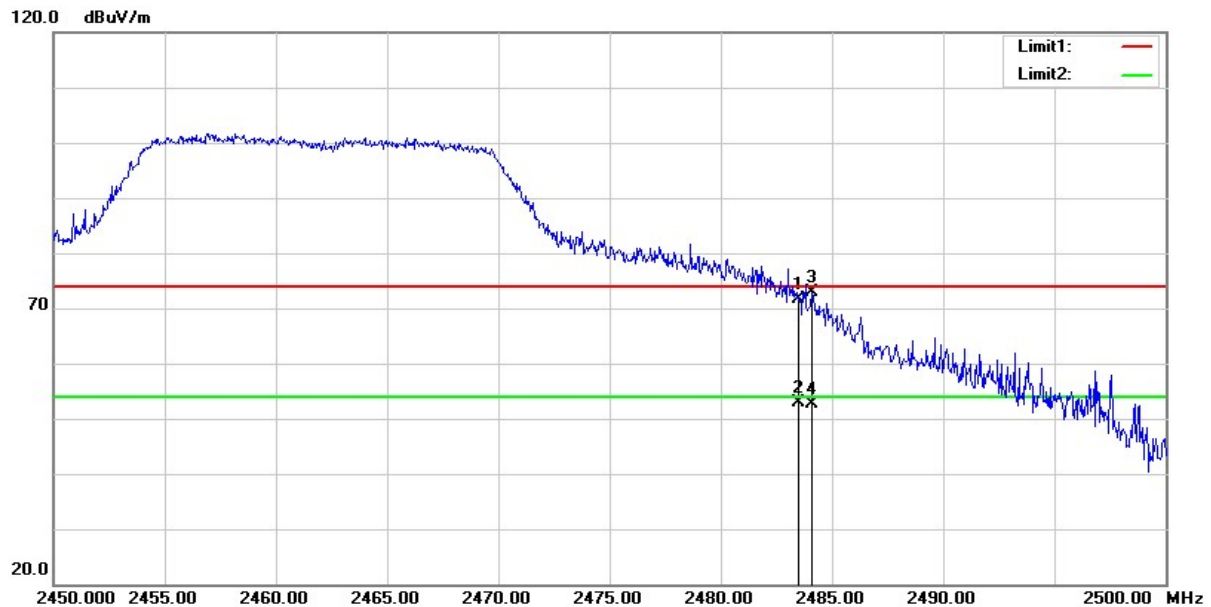


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.870	51.48	-4.70	46.78	74.00	-27.22	peak
2	2390.000	51.38	-4.71	46.67	74.00	-27.33	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

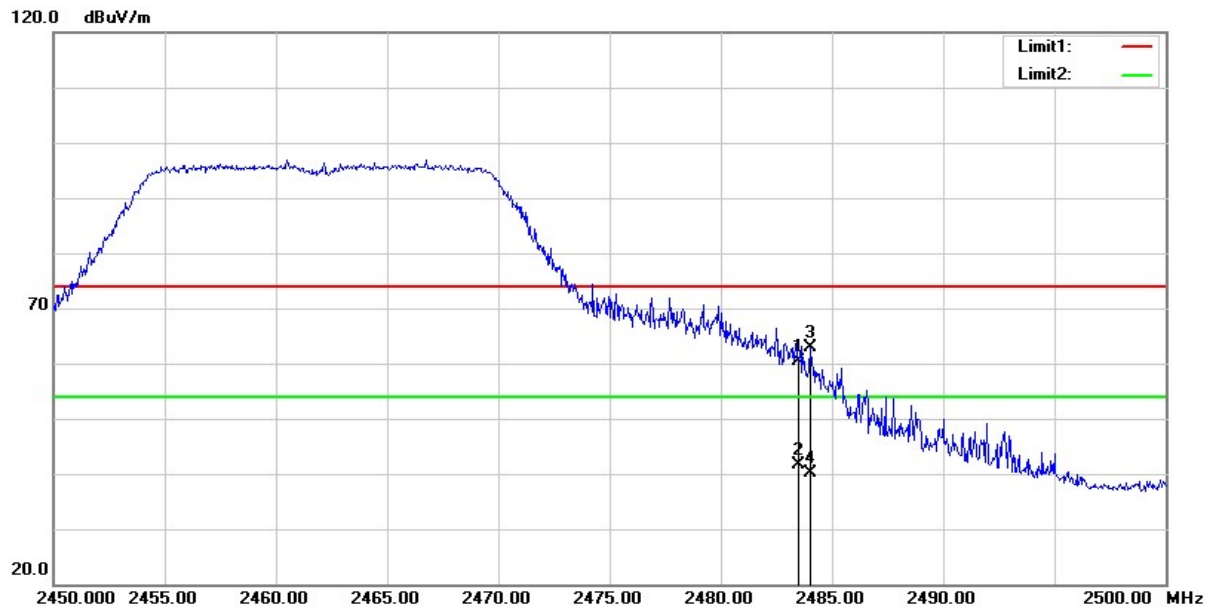


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	76.31	-4.62	71.69	74.00	-2.31	peak
2	2483.500	57.56	-4.62	52.94	54.00	-1.06	AVG
3	2484.100	77.38	-4.61	72.77	74.00	-1.23	peak
4	2484.100	57.28	-4.61	52.67	54.00	-1.33	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	65.05	-4.62	60.43	74.00	-13.57	peak
2	2483.500	46.34	-4.62	41.72	54.00	-12.28	AVG
3	2484.000	67.56	-4.61	62.95	74.00	-11.05	peak
4	2484.000	44.73	-4.61	40.12	54.00	-13.88	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

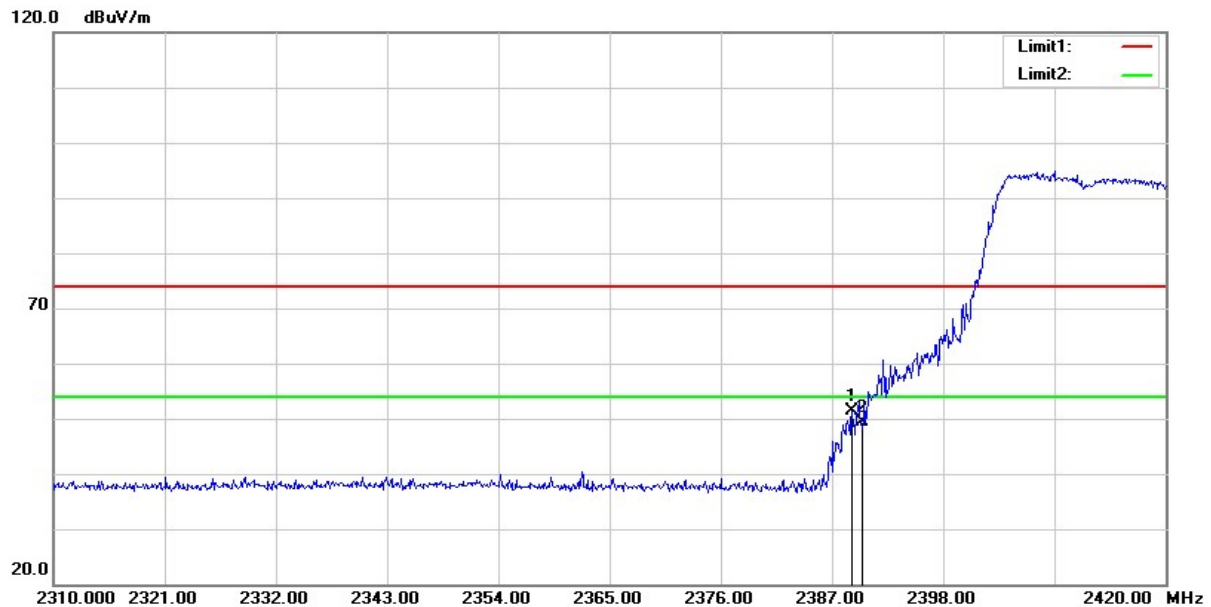


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.420	71.44	-4.71	66.73	74.00	-7.27	peak
2	2389.420	53.93	-4.71	49.22	54.00	-4.78	AVG
3	2390.000	71.63	-4.71	66.92	74.00	-7.08	peak
4	2390.000	54.76	-4.71	50.05	54.00	-3.95	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/05/14
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

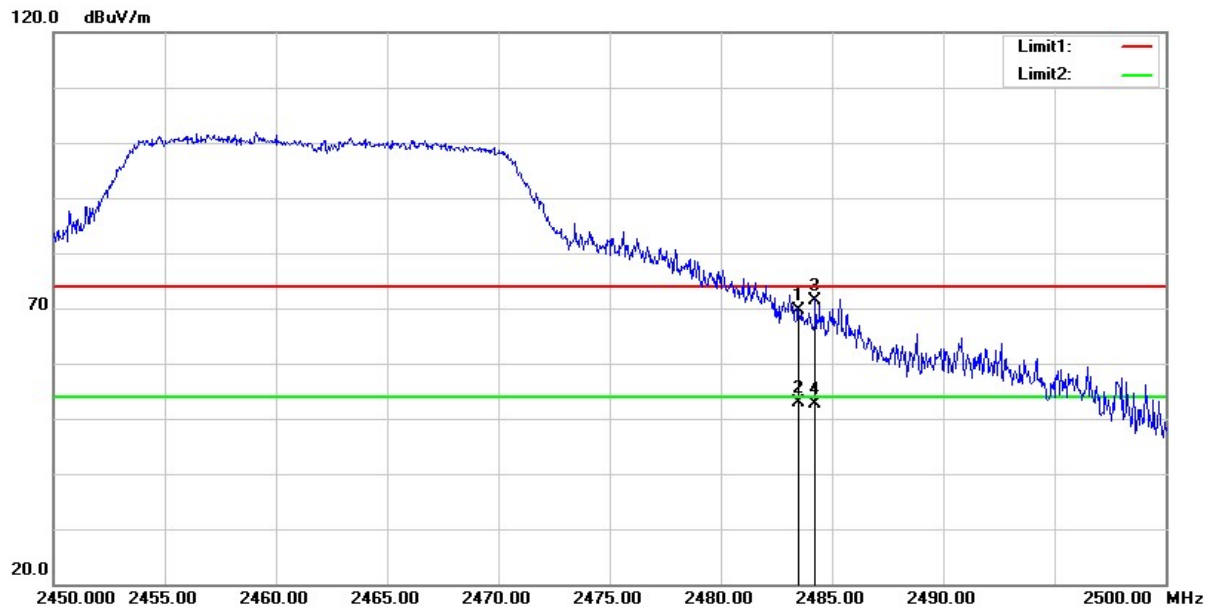


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.980	56.16	-4.70	51.46	74.00	-22.54	peak
2	2390.000	54.18	-4.71	49.47	74.00	-24.53	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

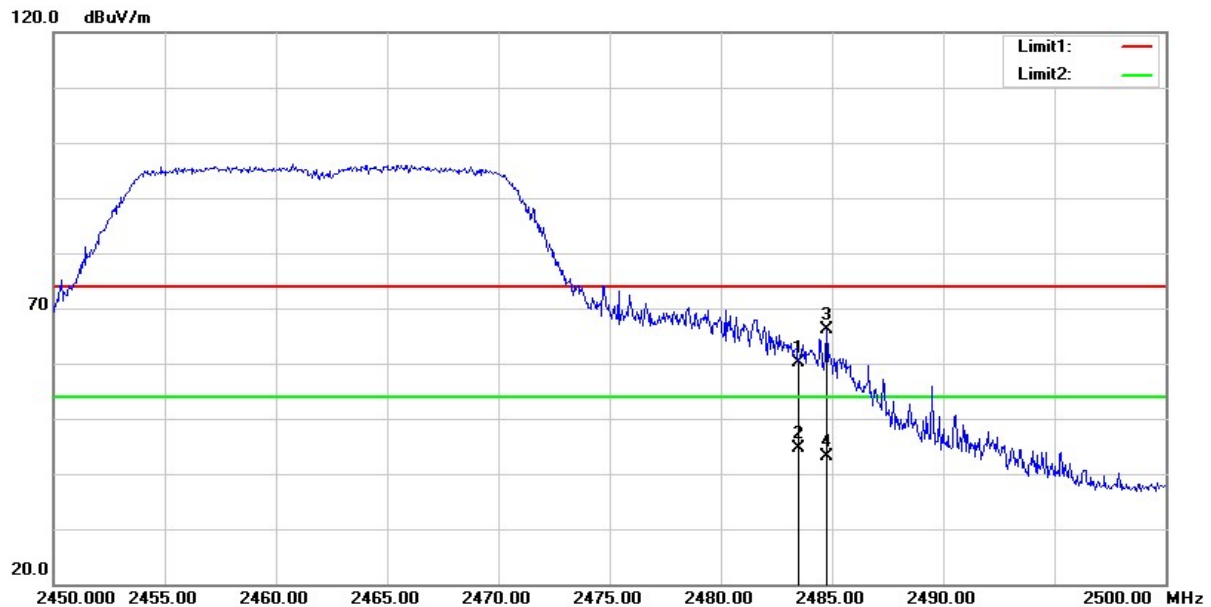


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	74.20	-4.62	69.58	74.00	-4.42	peak
2	2483.500	57.55	-4.62	52.93	54.00	-1.07	AVG
3	2484.250	76.11	-4.61	71.50	74.00	-2.50	peak
4	2484.250	57.16	-4.61	52.55	54.00	-1.45	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/05/14
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

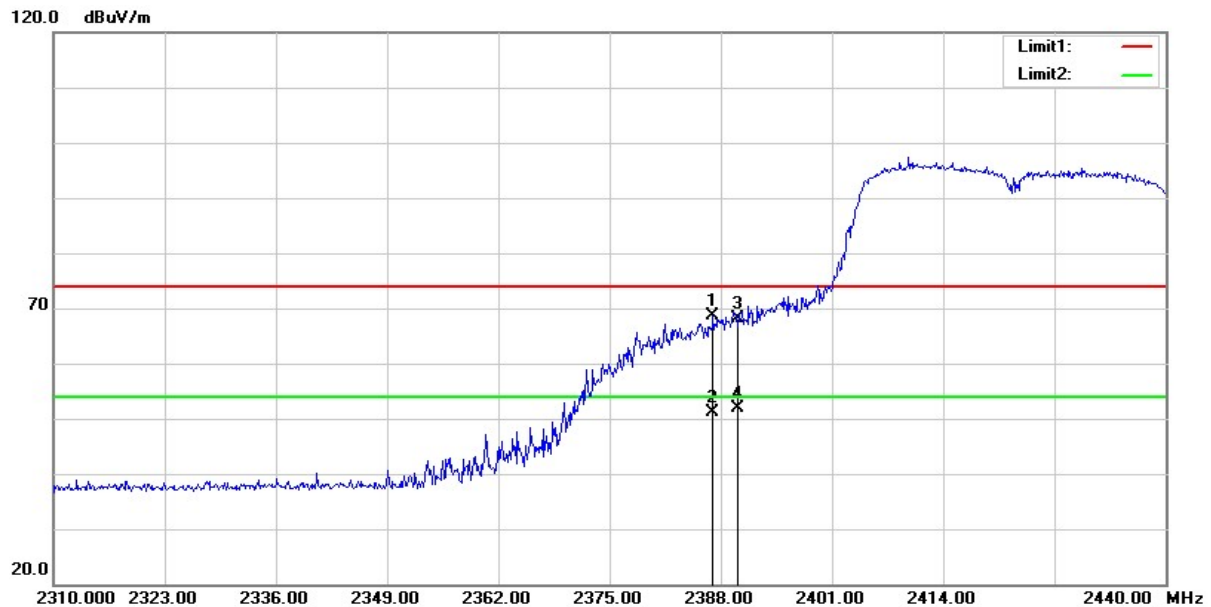


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.77	-4.62	60.15	74.00	-13.85	peak
2	2483.500	49.23	-4.62	44.61	54.00	-9.39	AVG
3	2484.750	70.79	-4.61	66.18	74.00	-7.82	peak
4	2484.750	47.86	-4.61	43.25	54.00	-10.75	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/05/14
Test Channel :	CH03(2422MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

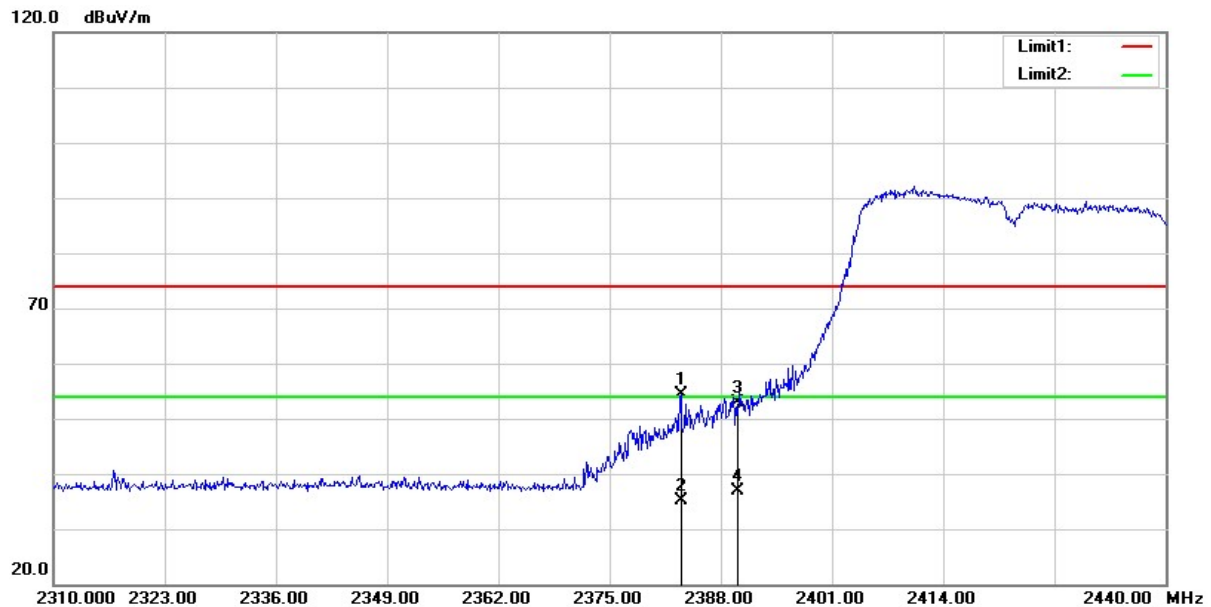


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.090	73.26	-4.69	68.57	74.00	-5.43	peak
2	2387.090	55.84	-4.69	51.15	54.00	-2.85	AVG
3	2390.000	72.74	-4.71	68.03	74.00	-5.97	peak
4	2390.000	56.68	-4.71	51.97	54.00	-2.03	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/05/14
Test Channel :	CH03(2422MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

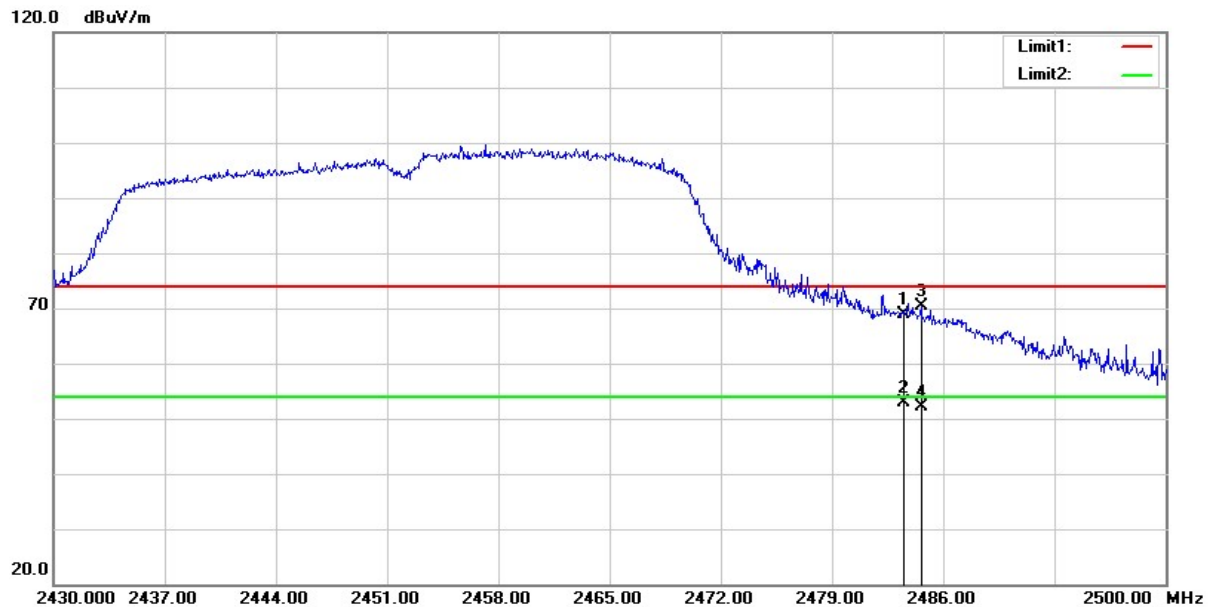


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2383.320	59.12	-4.69	54.43	74.00	-19.57	peak
2	2383.320	39.84	-4.69	35.15	54.00	-18.85	AVG
3	2390.000	57.56	-4.71	52.85	74.00	-21.15	peak
4	2390.000	41.61	-4.71	36.90	54.00	-17.10	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/05/14
Test Channel :	CH09(2452MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

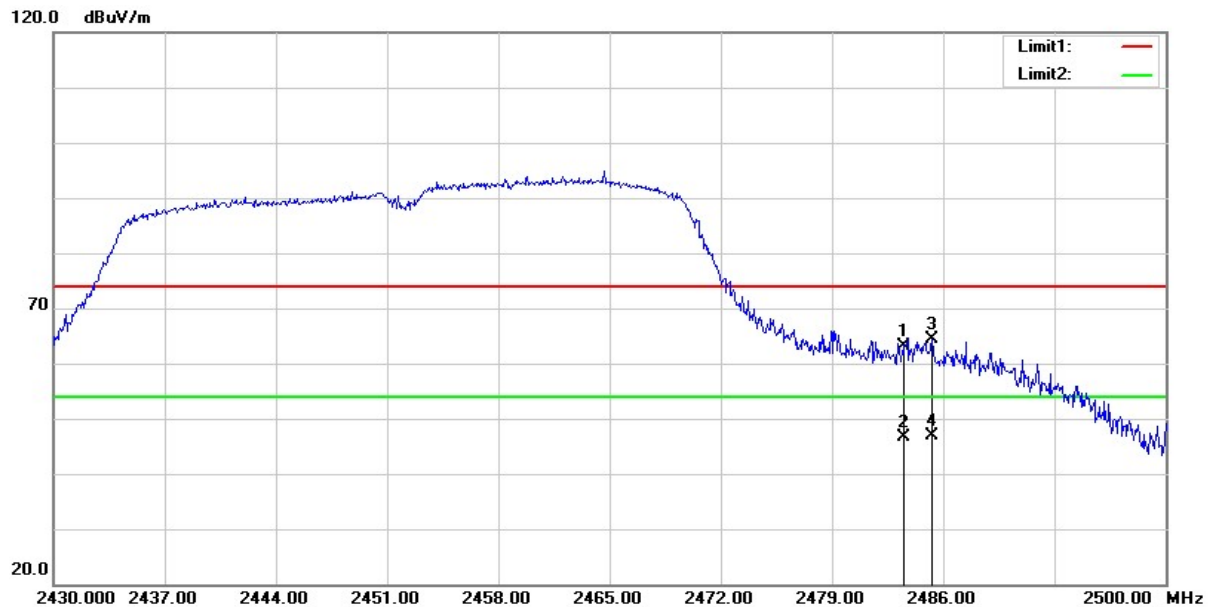


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	73.52	-4.62	68.90	74.00	-5.10	peak
2	2483.500	57.44	-4.62	52.82	54.00	-1.18	AVG
3	2484.600	74.94	-4.61	70.33	74.00	-3.67	peak
4	2484.600	56.64	-4.61	52.03	54.00	-1.97	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/05/14
Test Channel :	CH09(2452MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	67.87	-4.62	63.25	74.00	-10.75	peak
2	2483.500	51.24	-4.62	46.62	54.00	-7.38	AVG
3	2485.300	68.99	-4.61	64.38	74.00	-9.62	peak
4	2485.300	51.53	-4.61	46.92	54.00	-7.08	AVG

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

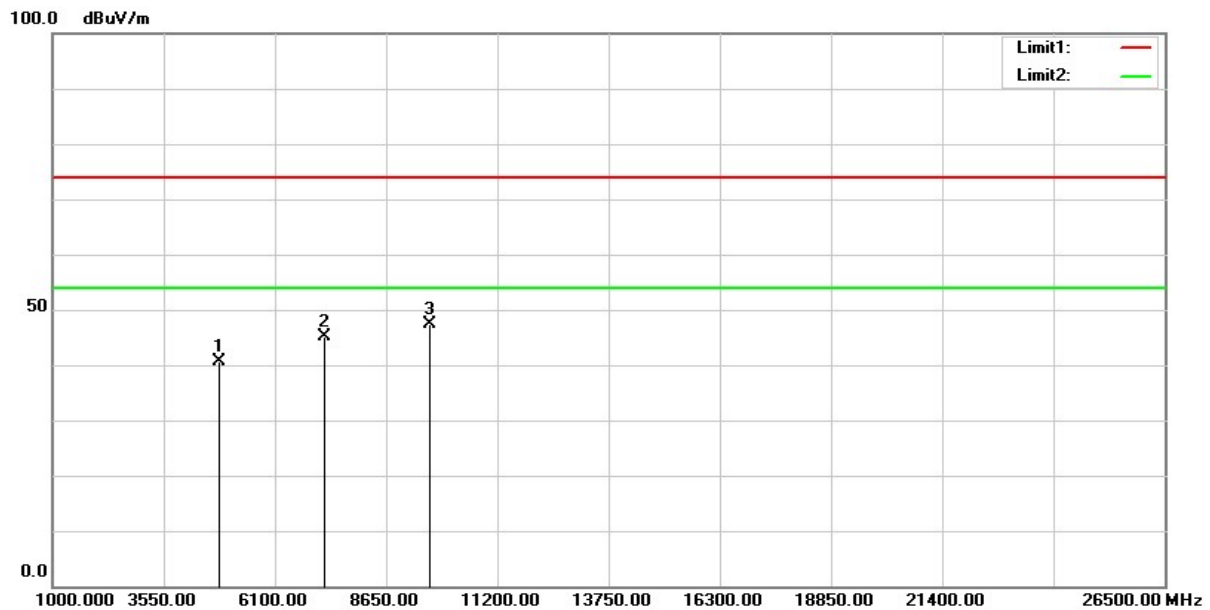
2.6.6 Test Result of Radiated Spurious Emission Measurement

- (1) The radiation measurement frequency is 9kHz ~ 30MHz. The interference value of this frequency range is less than the limit value of 20 dB. It is considered that the background noise value is not recorded.
- (2) The following table shows the radiation measurement frequency from 30MHz to 26.5GHz, pre-scanning in the X, Y and Z axes. The worst case (**X**-axis) is documented in this report.

Test Frequency		
RF	802.11b / 802.11g / 802.11n HT20	802.11n HT40
Tx	CH01 (2412MHz)	CH03 (2422MHz)
	CH06 (2437MHz)	CH06 (2437MHz)
	CH11 (2462MHz)	CH09 (2452MHz)

Above 1GHz Data

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	49.31	-8.73	40.58	74.00	-33.42	peak
2	7236.000	47.82	-2.66	45.16	74.00	-28.84	peak
3	9648.000	46.09	1.36	47.45	74.00	-26.55	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

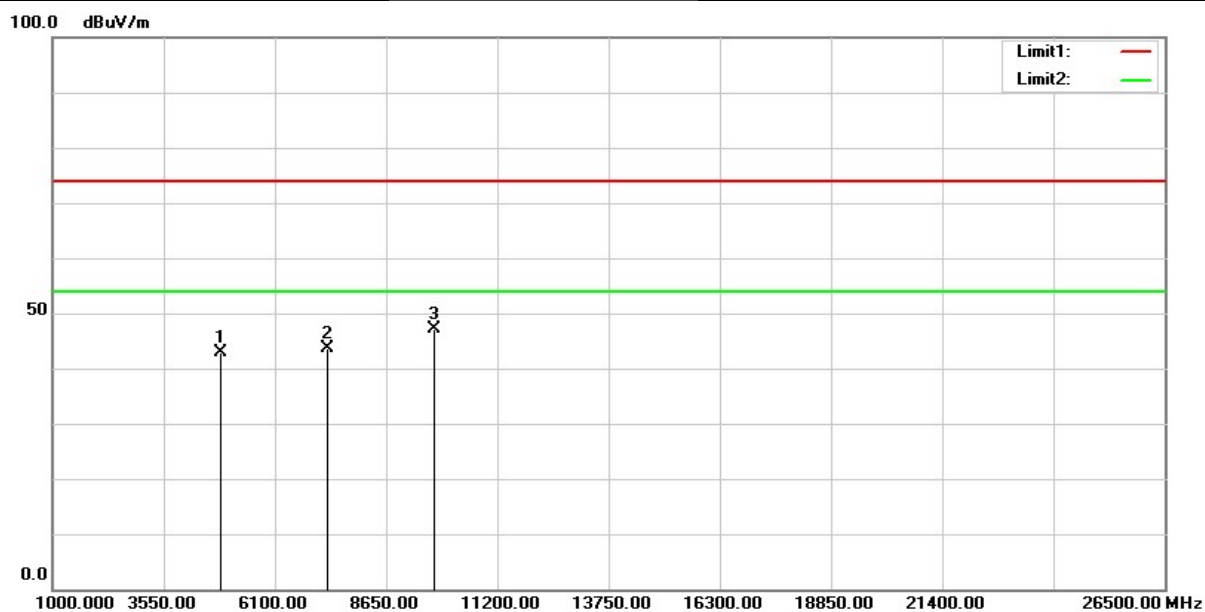


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	50.34	-8.73	41.61	74.00	-32.39	peak
2	7236.000	47.13	-2.66	44.47	74.00	-29.53	peak
3	9648.000	46.49	1.36	47.85	74.00	-26.15	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	51.71	-8.81	42.90	74.00	-31.10	peak
2	7311.000	46.33	-2.76	43.57	74.00	-30.43	peak
3	9748.000	45.21	2.04	47.25	74.00	-26.75	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	49.84	-8.81	41.03	74.00	-32.97	peak
2	7311.000	45.76	-2.76	43.00	74.00	-31.00	peak
3	9748.000	44.73	2.04	46.77	74.00	-27.23	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

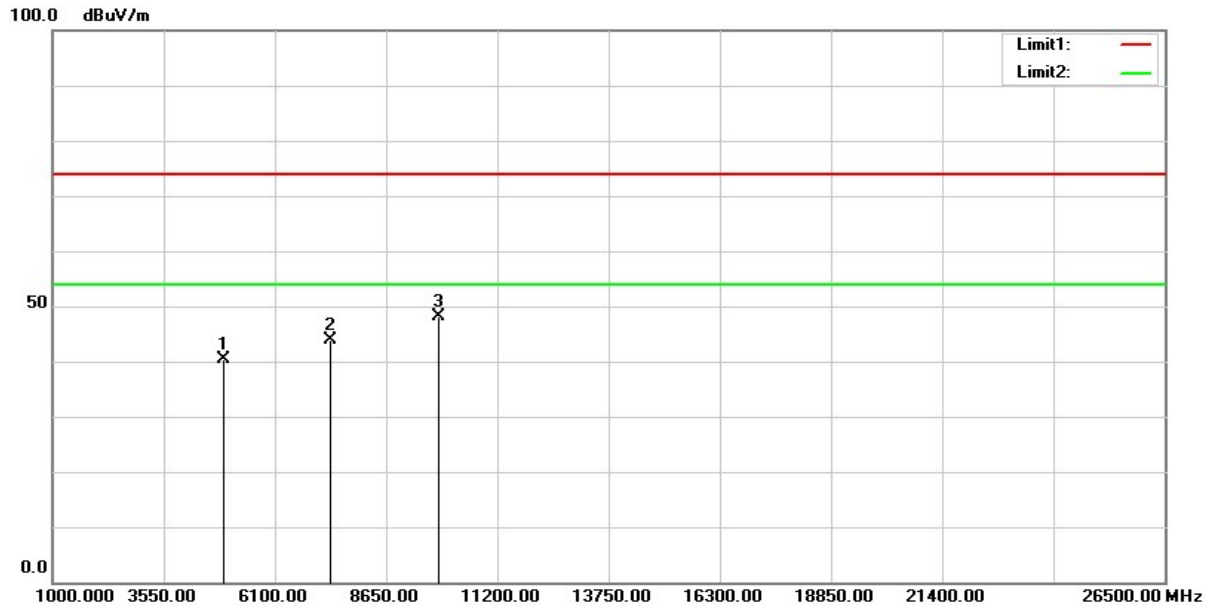


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	49.23	-8.65	40.58	74.00	-33.42	peak
2	7386.000	46.29	-2.60	43.69	74.00	-30.31	peak
3	9848.000	44.69	2.20	46.89	74.00	-27.11	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

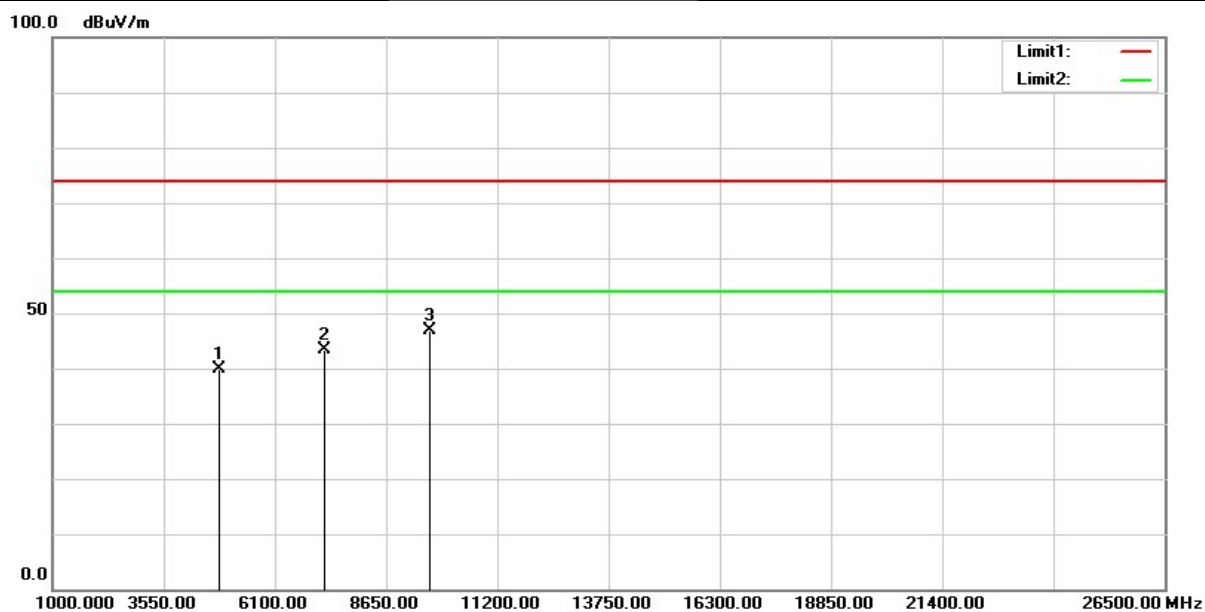


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	48.94	-8.65	40.29	74.00	-33.71	peak
2	7386.000	46.46	-2.60	43.86	74.00	-30.14	peak
3	9848.000	45.88	2.20	48.08	74.00	-25.92	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	48.64	-8.73	39.91	74.00	-34.09	peak
2	7236.000	45.96	-2.66	43.30	74.00	-30.70	peak
3	9648.000	45.57	1.36	46.93	74.00	-27.07	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

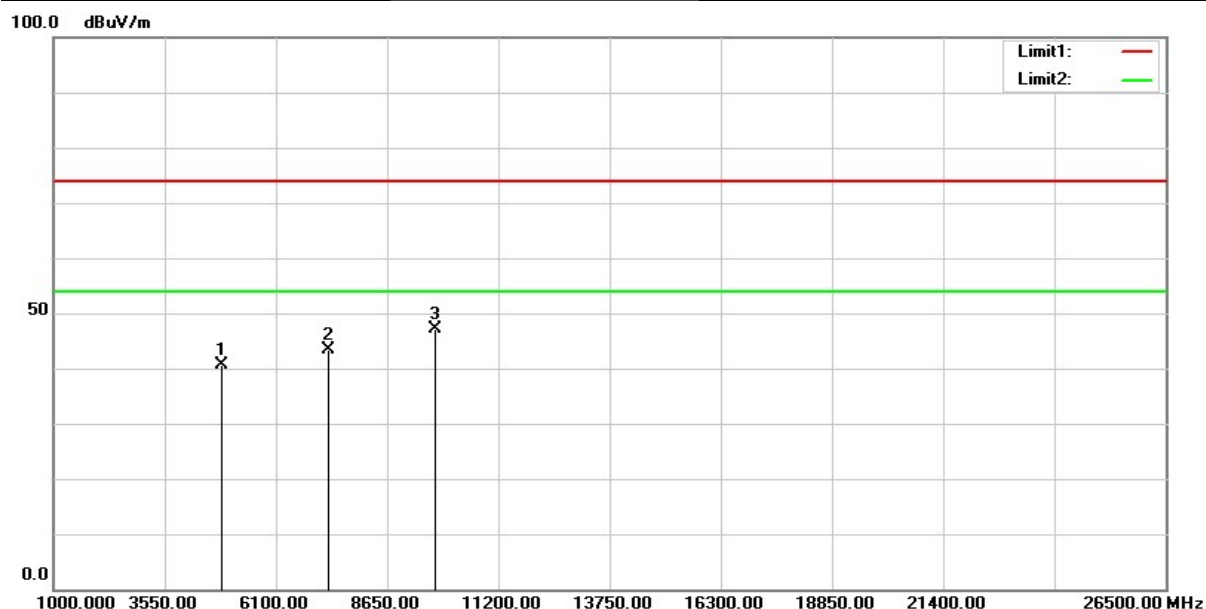


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	49.66	-8.73	40.93	74.00	-33.07	peak
2	7236.000	45.99	-2.66	43.33	74.00	-30.67	peak
3	9648.000	44.59	1.36	45.95	74.00	-28.05	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

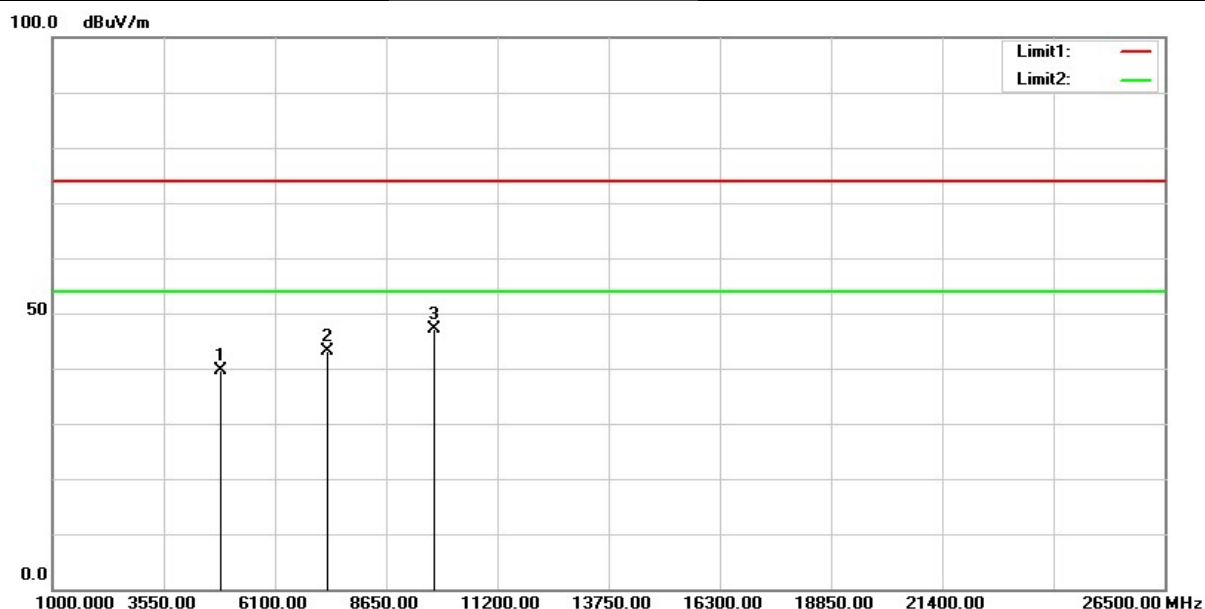


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	49.50	-8.81	40.69	74.00	-33.31	peak
2	7311.000	46.07	-2.76	43.31	74.00	-30.69	peak
3	9748.000	45.20	2.04	47.24	74.00	-26.76	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %

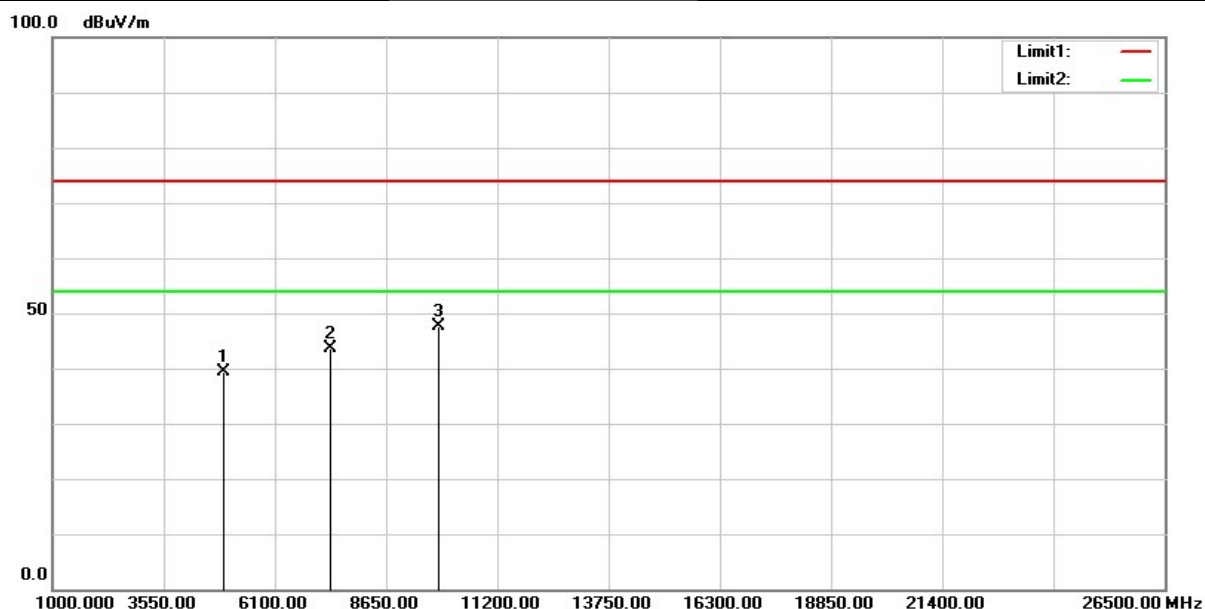


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	48.41	-8.81	39.60	74.00	-34.40	peak
2	7311.000	45.81	-2.76	43.05	74.00	-30.95	peak
3	9748.000	45.06	2.04	47.10	74.00	-26.90	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

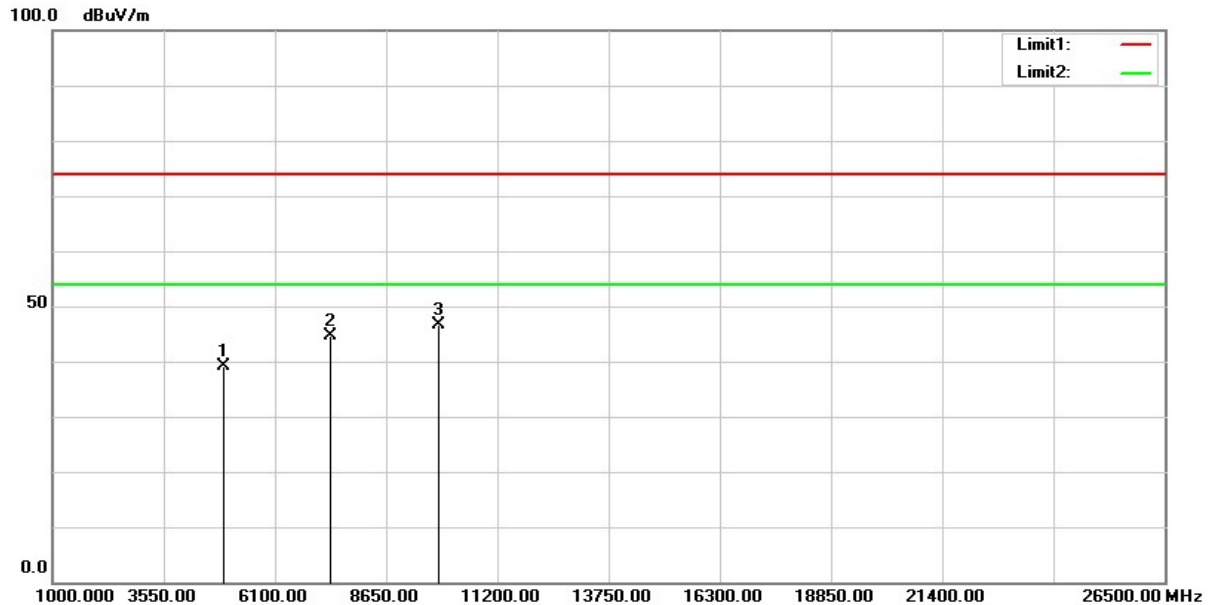


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	48.02	-8.65	39.37	74.00	-34.63	peak
2	7386.000	46.15	-2.60	43.55	74.00	-30.45	peak
3	9848.000	45.35	2.20	47.55	74.00	-26.45	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11g)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	47.77	-8.65	39.12	74.00	-34.88	peak
2	7386.000	47.18	-2.60	44.58	74.00	-29.42	peak
3	9848.000	44.41	2.20	46.61	74.00	-27.39	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	49.10	-8.73	40.37	74.00	-33.63	peak
2	7236.000	46.26	-2.66	43.60	74.00	-30.40	peak
3	9648.000	44.84	1.36	46.20	74.00	-27.80	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH01(2412MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	49.55	-8.73	40.82	74.00	-33.18	peak
2	7236.000	46.68	-2.66	44.02	74.00	-29.98	peak
3	9648.000	45.99	1.36	47.35	74.00	-26.65	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

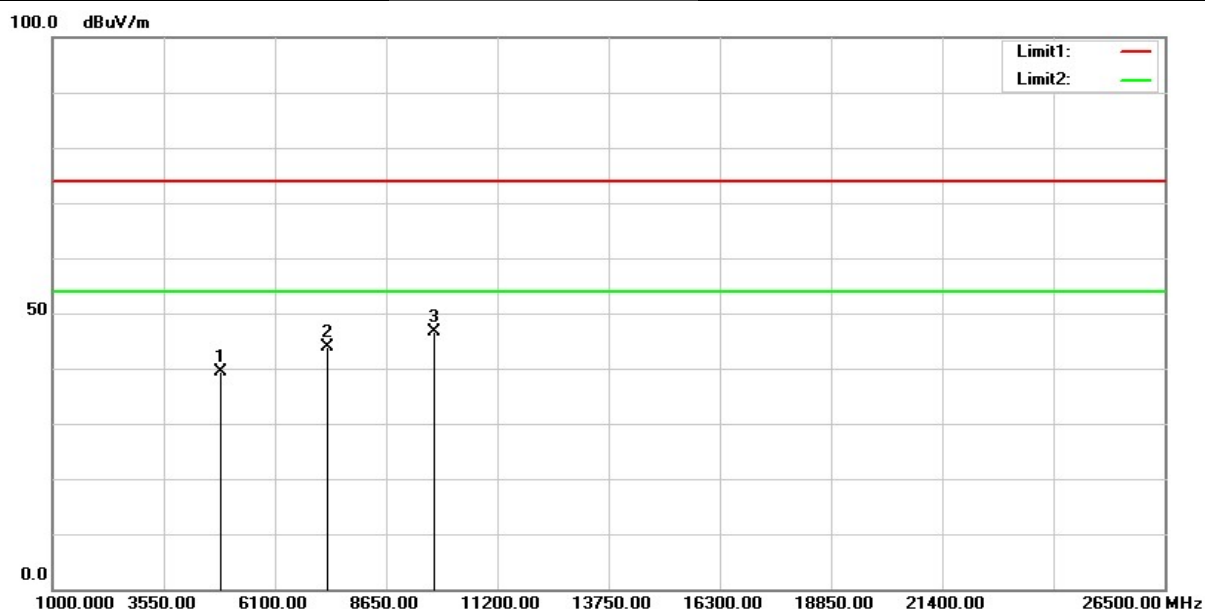


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	48.31	-8.81	39.50	74.00	-34.50	peak
2	7311.000	47.08	-2.76	44.32	74.00	-29.68	peak
3	9748.000	44.09	2.04	46.13	74.00	-27.87	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	48.14	-8.81	39.33	74.00	-34.67	peak
2	7311.000	46.61	-2.76	43.85	74.00	-30.15	peak
3	9748.000	44.70	2.04	46.74	74.00	-27.26	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

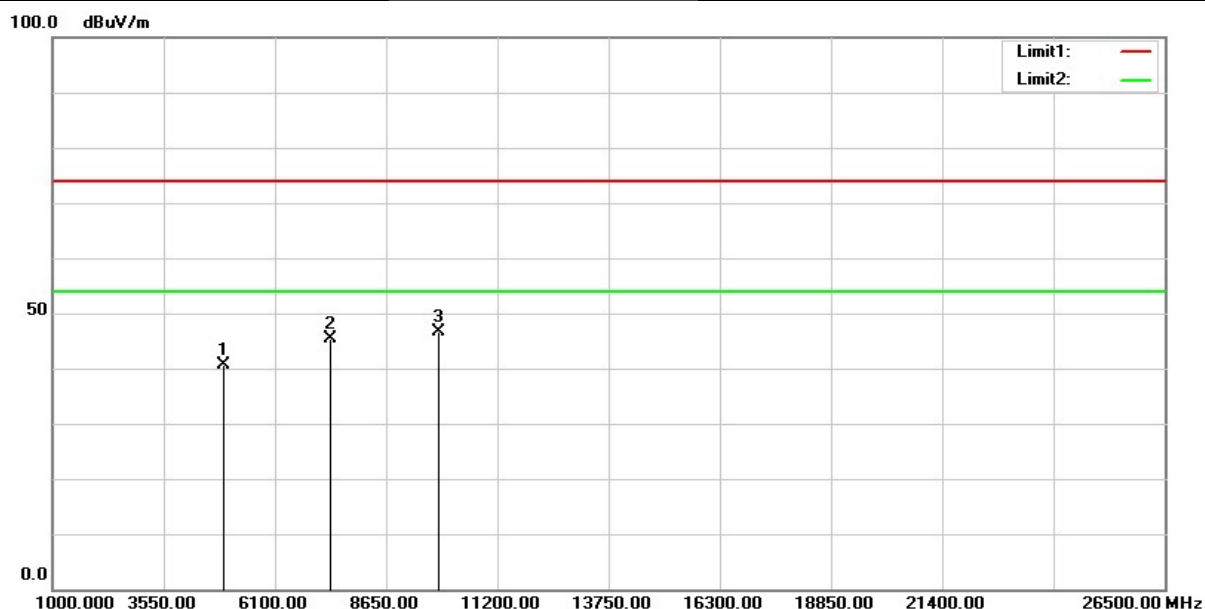


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	49.20	-8.65	40.55	74.00	-33.45	peak
2	7386.000	46.41	-2.60	43.81	74.00	-30.19	peak
3	9848.000	45.12	2.20	47.32	74.00	-26.68	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT20)	Test Date :	2019/06/20
Test Channel :	CH11(2462MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	49.22	-8.65	40.57	74.00	-33.43	peak
2	7386.000	47.90	-2.60	45.30	74.00	-28.70	peak
3	9848.000	44.52	2.20	46.72	74.00	-27.28	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH03(2422MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	48.49	-8.79	39.70	74.00	-34.30	peak
2	7266.000	46.04	-2.74	43.30	74.00	-30.70	peak
3	9688.000	45.57	1.82	47.39	74.00	-26.61	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH03(2422MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	47.33	-8.79	38.54	74.00	-35.46	peak
2	7266.000	46.21	-2.74	43.47	74.00	-30.53	peak
3	9688.000	45.23	1.82	47.05	74.00	-26.95	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	48.82	-8.81	40.01	74.00	-33.99	peak
2	7311.000	45.42	-2.76	42.66	74.00	-31.34	peak
3	9748.000	45.37	2.04	47.41	74.00	-26.59	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	48.65	-8.81	39.84	74.00	-34.16	peak
2	7311.000	45.94	-2.76	43.18	74.00	-30.82	peak
3	9748.000	45.80	2.04	47.84	74.00	-26.16	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH09(2452MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

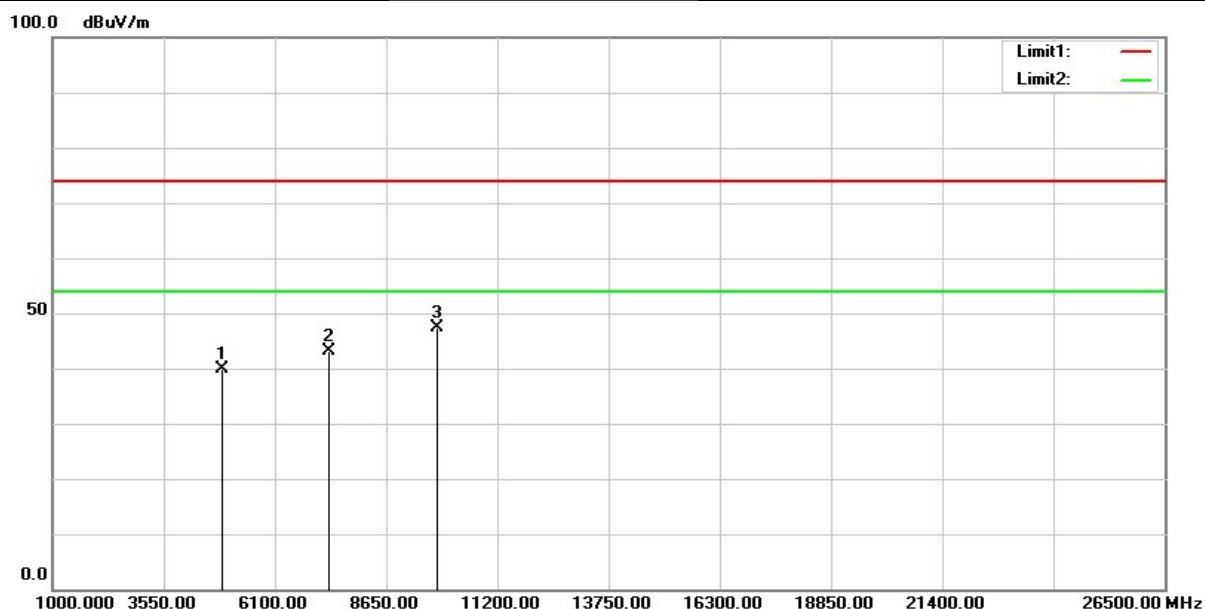


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	48.14	-8.80	39.34	74.00	-34.66	peak
2	7356.000	46.26	-2.60	43.66	74.00	-30.34	peak
3	9808.000	45.23	1.97	47.20	74.00	-26.80	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11n HT40)	Test Date :	2019/06/20
Test Channel :	CH09(2452MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	48.75	-8.80	39.95	74.00	-34.05	peak
2	7356.000	45.62	-2.60	43.02	74.00	-30.98	peak
3	9808.000	45.37	1.97	47.34	74.00	-26.66	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Below 1GHz Data

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Horizontal	Relative Humidity :	65 %

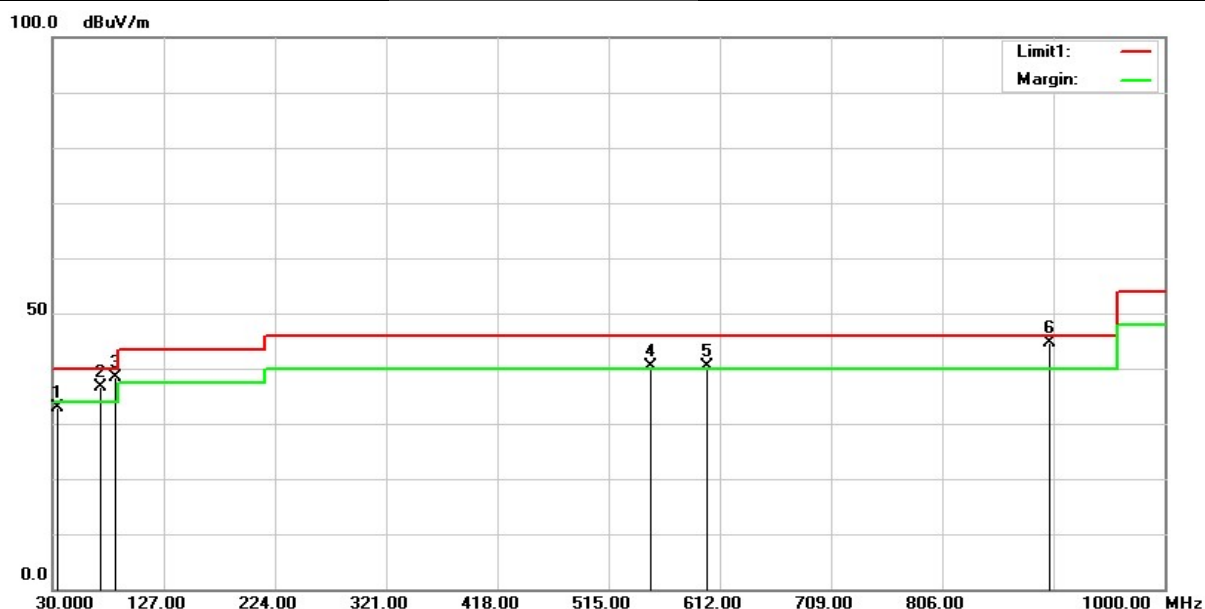


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	71.7100	50.50	-12.52	37.98	40.00	-2.02	QP
2	84.3200	52.97	-15.33	37.64	40.00	-2.36	QP
3	282.2000	49.43	-9.51	39.92	46.00	-6.08	QP
4	362.7100	48.41	-7.52	40.89	46.00	-5.11	QP
5	431.5800	45.80	-5.67	40.13	46.00	-5.87	QP
6	900.0900	41.57	2.11	43.68	46.00	-2.32	QP

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Test Mode :	Transmit(802.11b)	Test Date :	2019/06/20
Test Channel :	CH06(2437MHz)	Temperature :	25 °C
Polarization :	Vertical	Relative Humidity :	65 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	34.8500	43.34	-10.36	32.98	40.00	-7.02	QP
2	71.7100	49.17	-12.52	36.65	40.00	-3.35	QP
3	84.3200	53.60	-15.33	38.27	40.00	-1.73	QP
4	551.8600	43.74	-3.32	40.42	46.00	-5.58	QP
5	600.3600	42.40	-2.02	40.38	46.00	-5.62	QP
6	900.0900	42.56	2.11	44.67	46.00	-1.33	QP

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

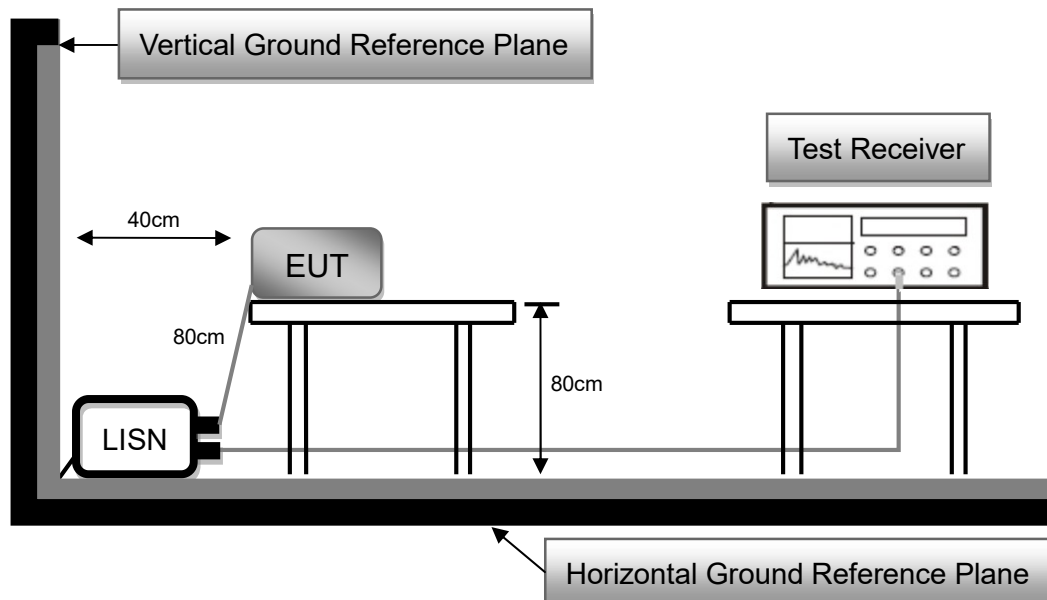
2.7 AC Conducted Emissions Measurement

2.7.1 Limit

Frequency (MHz)	FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50

*Decreases with the logarithm of the frequency

2.7.2 Test Setup

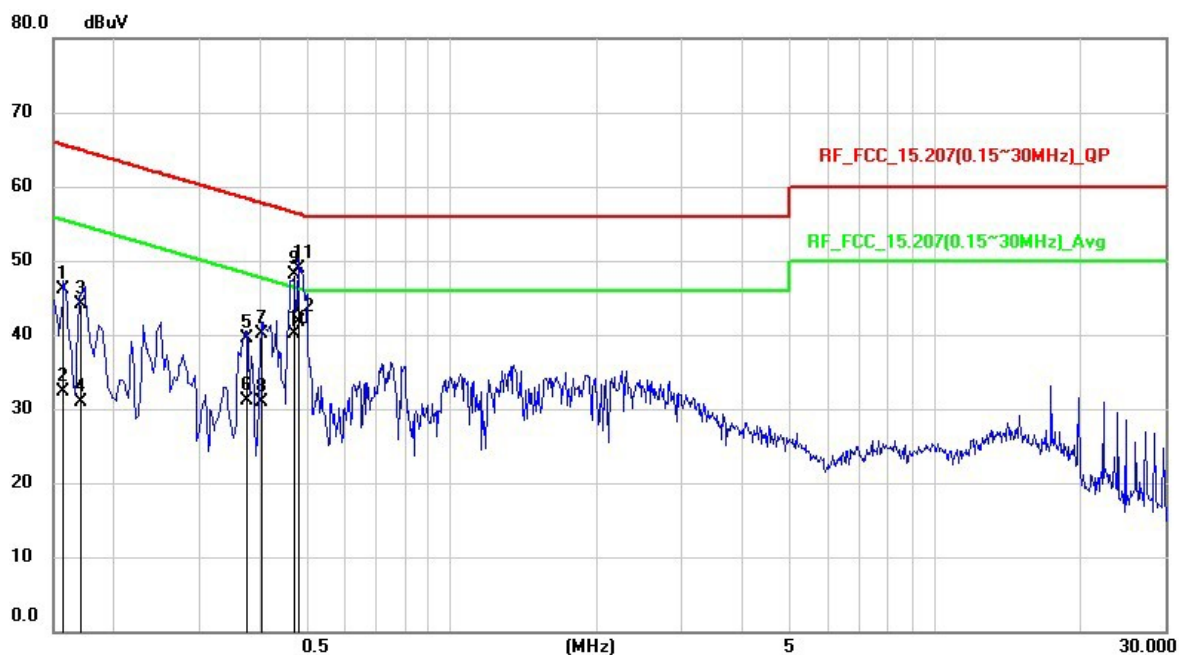


2.7.3 Test Procedure

1. The EUT was placed 0.8 meter height wooden table from the horizontal ground plane with EUT being connected to power source through a line impedance stabilization network (LISN). The LISN at least be 80 cm from nearest chassis of EUT.
2. The line impedance stabilization network (LISN) provides 50 ohm/50uH of coupling impedance for the measuring instrument. All other support equipments powered from additional LISN(s).
3. Interrelating cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle. All I/O cables were positioned to simulate typical usage.
4. All I/O cables that are not connected to a peripheral shall be bundle in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. The EMI test receiver connected to LISN powering the EUT. The actual test configuration, please refer to EUT test photos.
6. The receiver scanned from 150kHz to 30MHz for emissions in each of test modes. A scan was taken on both power lines, Line and Neutral, recording at least six highest emissions.
7. The EUT and cable configuration of the above highest emission levels were recorded. The test data of the worst case was recorded.

2.7.4 Test Result

Test Voltage :	120Vac, 60Hz	Frequency Range:	0.15-30 MHz
Test Mode :	Normal Link	6dB Bandwidth :	9 kHz
Test Date :	2019/06/05	Phase :	L
Temperature :	25°C	Humidity :	65 %



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1566	36.24	9.84	46.08	65.64	-19.56	QP
2	0.1566	22.44	9.84	32.28	55.64	-23.36	AVG
3	0.1709	34.28	9.84	44.12	64.92	-20.8	QP
4	0.1709	21.01	9.84	30.85	54.92	-24.07	AVG
5	0.3779	29.62	9.84	39.46	58.33	-18.87	QP
6	0.3779	21.18	9.84	31.02	48.33	-17.31	AVG
7	0.4049	30.26	9.84	40.1	57.75	-17.65	QP
8	0.4049	21.08	9.84	30.92	47.75	-16.83	AVG
9	0.4733	38.23	9.84	48.07	56.46	-8.39	QP
10	0.4733	30.28	9.84	40.12	46.46	-6.34	AVG
11	0.483	39.09	9.84	48.93	56.29	-7.36	QP
12	0.483	31.87	9.84	41.71	46.29	-4.58	AVG

Remark:

1. QP = Quasi Peak, AVG = Average
2. Correction Factor = Insertion loss of LISN + Cable loss
3. Measurement Value = Reading Level + Correct Factor
4. Margin Level = Measurement Value – Limit Value