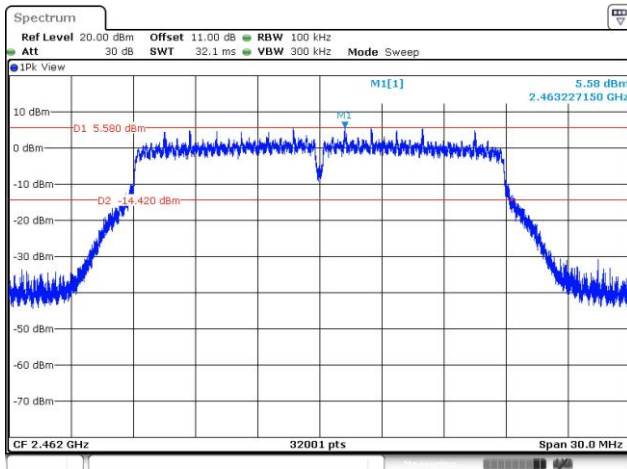
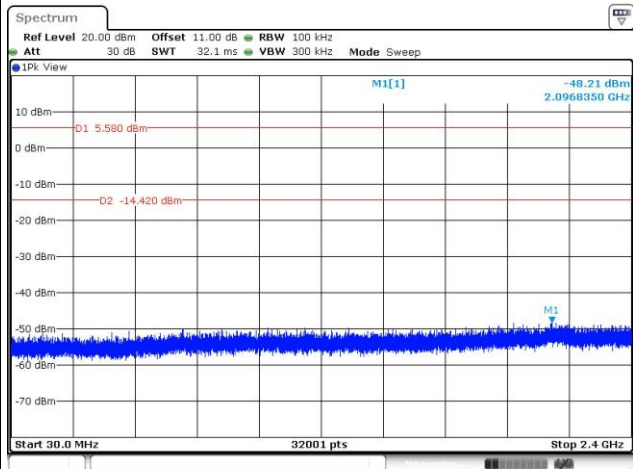
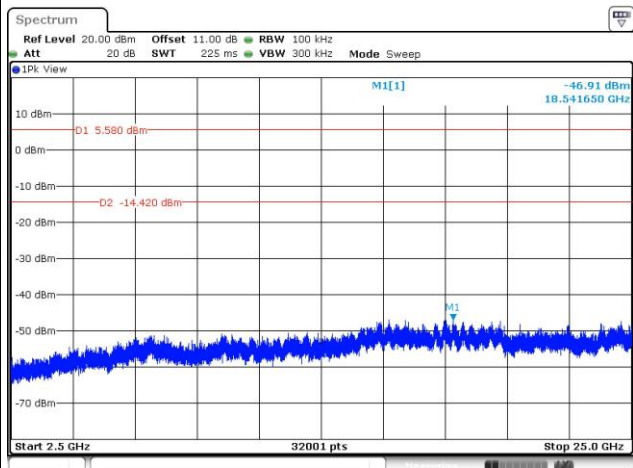


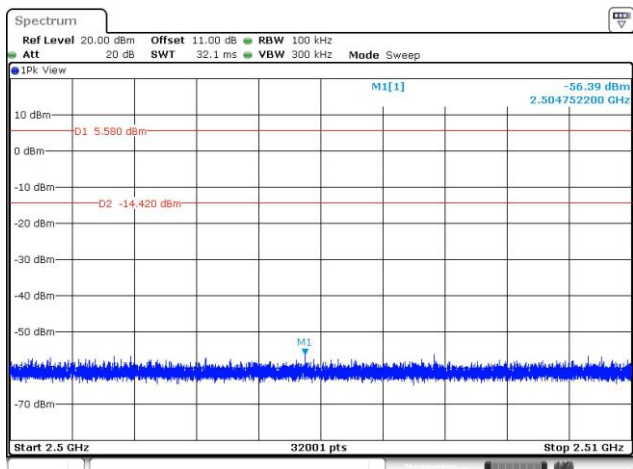
Reference Level



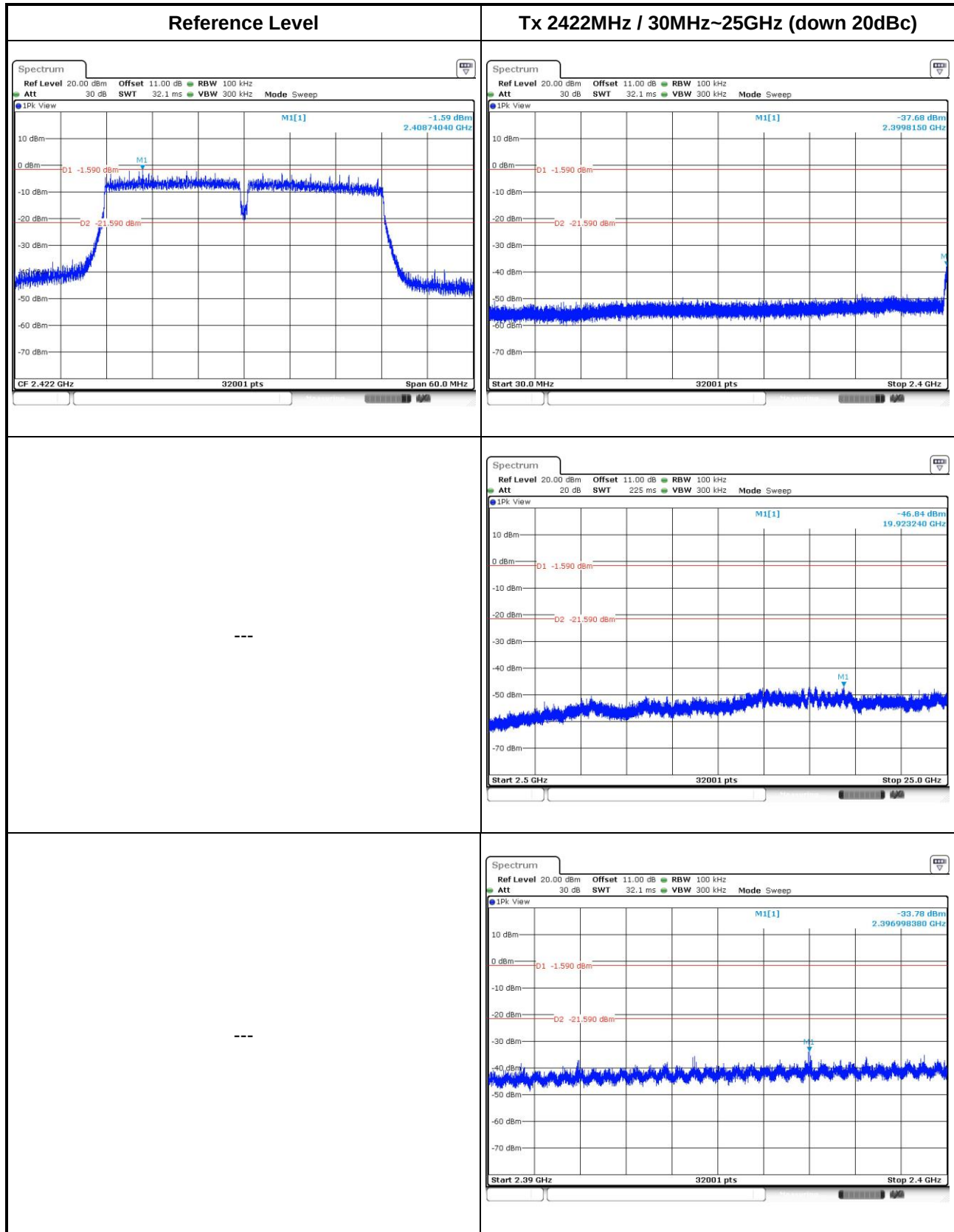
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



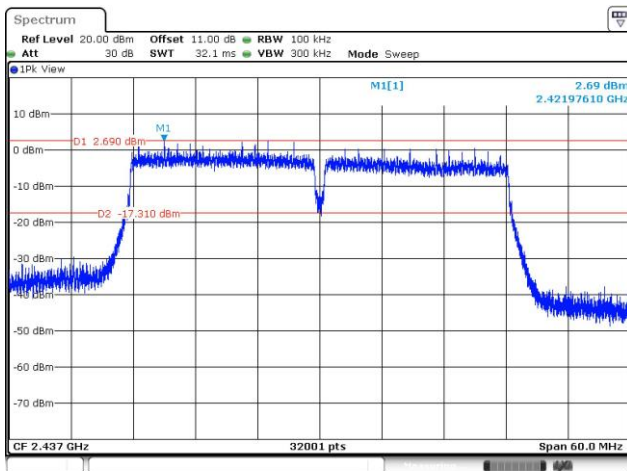




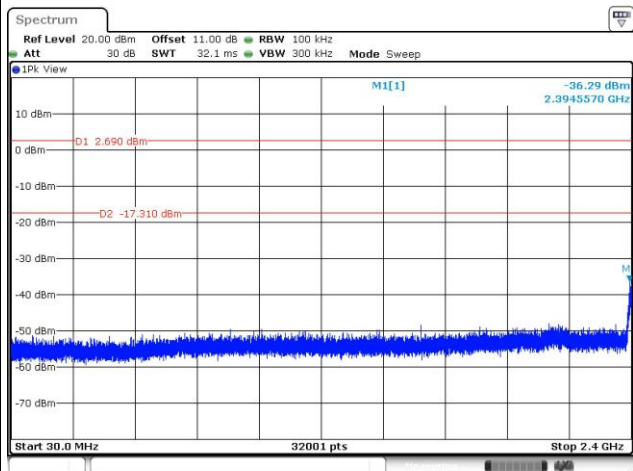
802.11n HT40

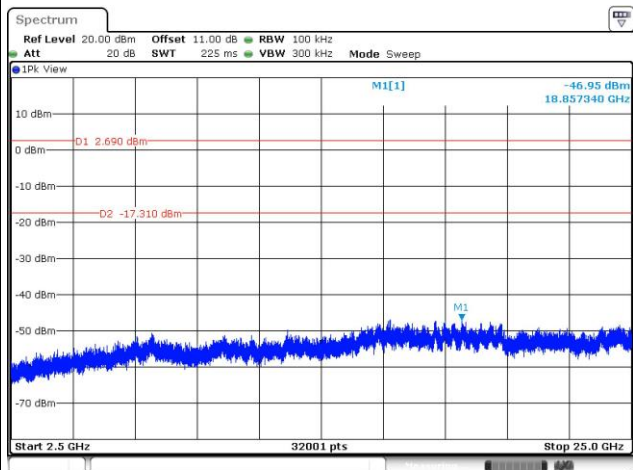


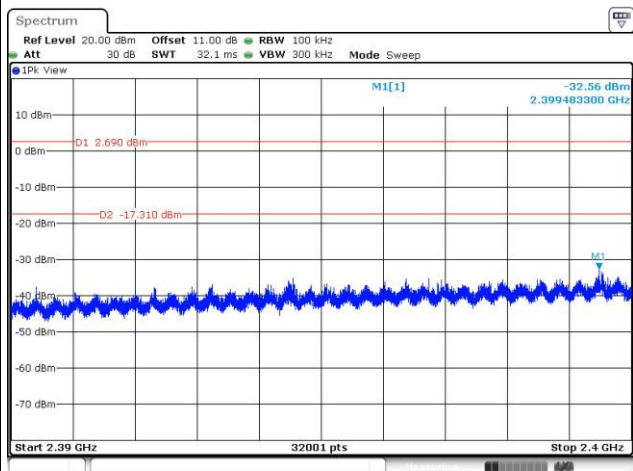
Reference Level



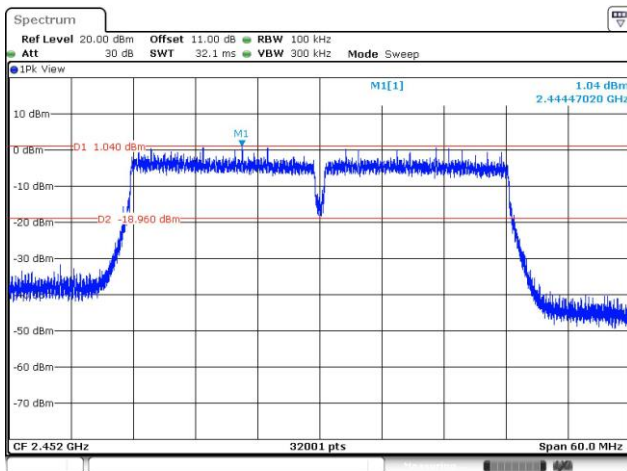
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



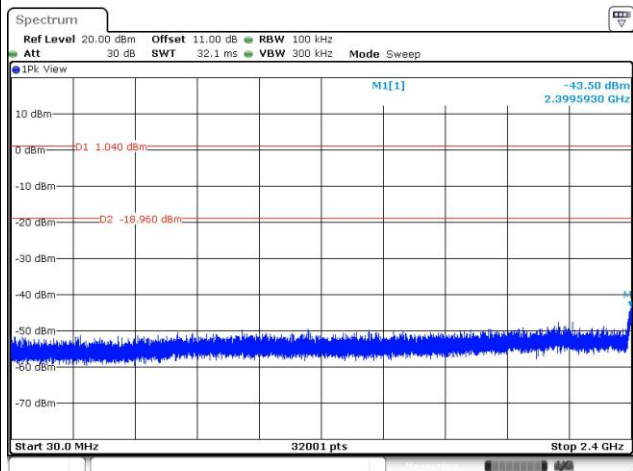


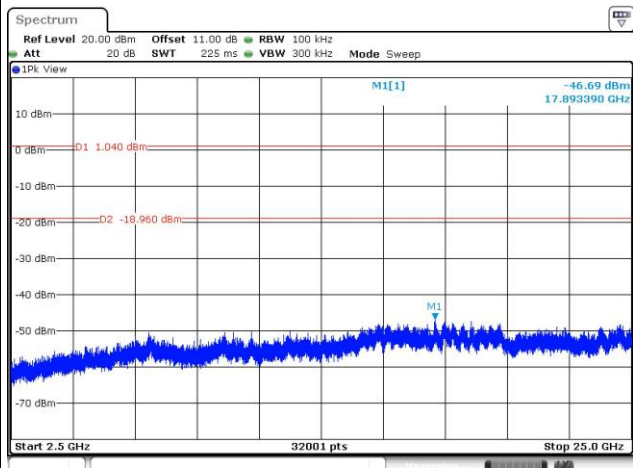


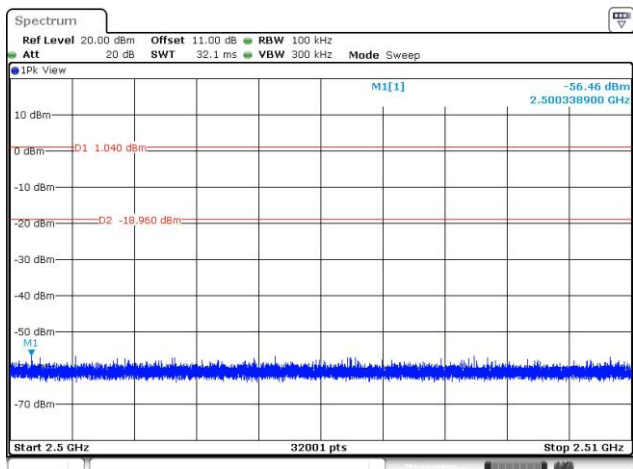
Reference Level



Tx 2452MHz / 30MHz~25GHz (down 20dBc)







4 Receiver Test Results

4.1 Conducted Emissions

4.1.1 Limit of Conducted Emissions

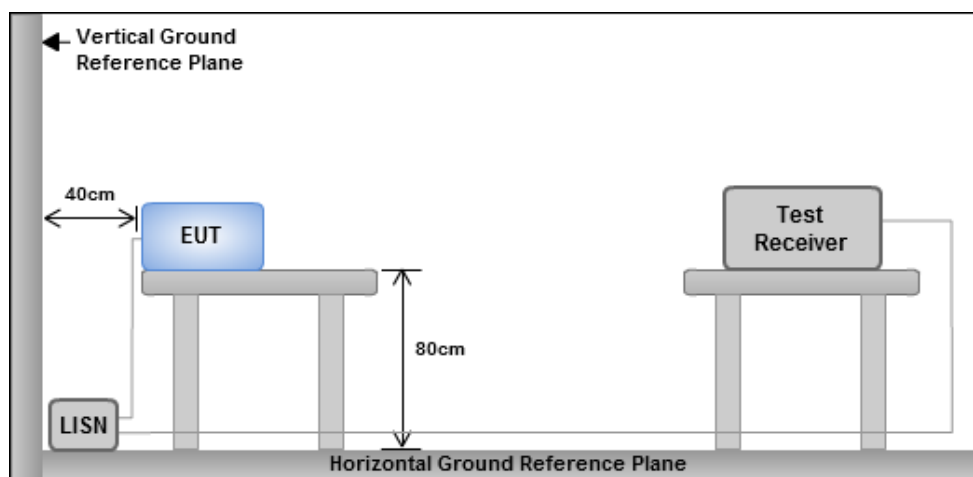
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

4.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

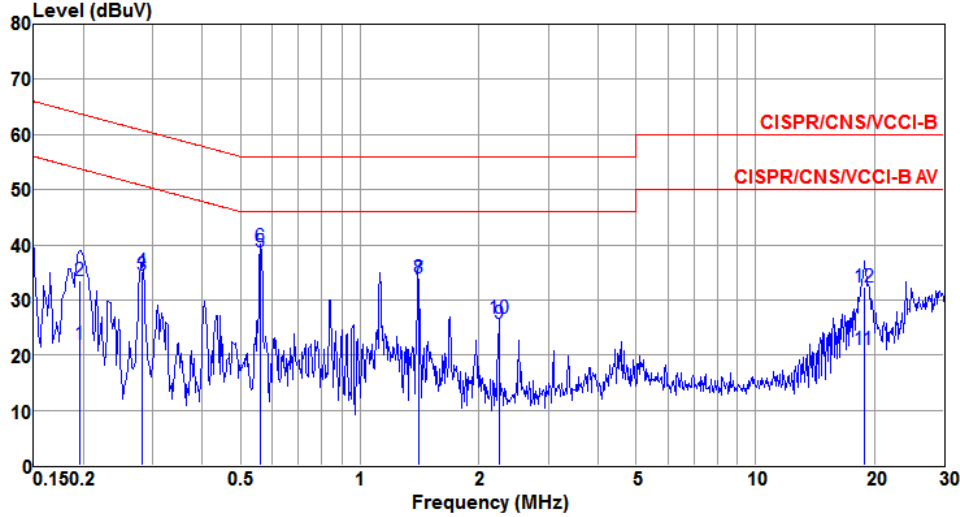
4.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

4.1.4 Test Result of Conducted Emissions

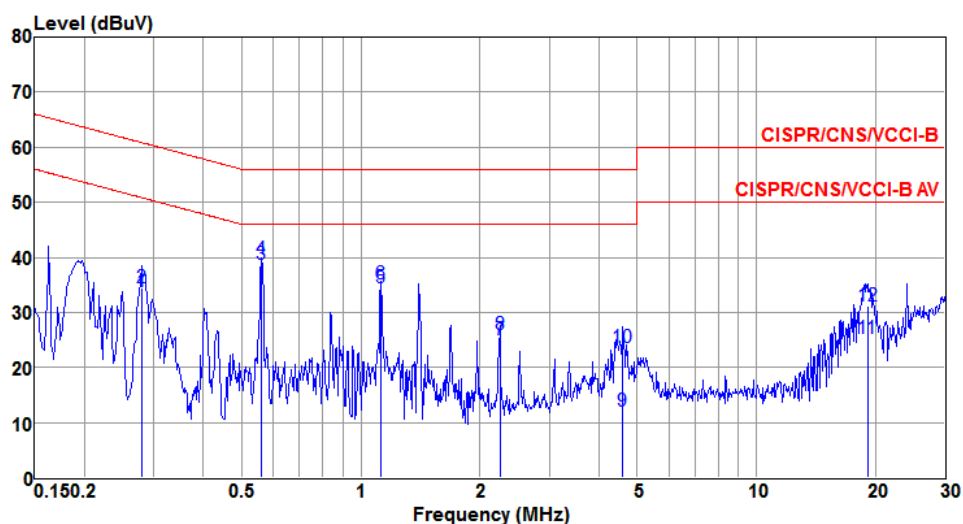
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test configuration	1



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	LISN factor dB	cable loss dB	Remark
1	0.195	21.96	53.80	-31.84	12.42	9.50	0.04	Average
2	0.195	33.55	63.80	-30.25	24.01	9.50	0.04	QP
3	0.282	34.49	50.76	-16.27	24.90	9.55	0.04	Average
4	0.282	35.15	60.76	-25.61	25.56	9.55	0.04	QP
5	0.562	38.68	46.00	-7.32	29.09	9.55	0.04	Average
6	0.562	39.55	56.00	-16.45	29.96	9.55	0.04	QP
7	1.405	33.84	46.00	-12.16	24.25	9.55	0.04	Average
8	1.405	33.91	56.00	-22.09	24.32	9.55	0.04	QP
9	2.245	25.62	46.00	-20.38	15.95	9.61	0.06	Average
10	2.245	26.60	56.00	-29.40	16.93	9.61	0.06	QP
11	18.820	21.11	50.00	-28.89	11.15	9.71	0.25	Average
12	18.820	32.30	60.00	-27.70	22.34	9.71	0.25	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB).
 Note 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

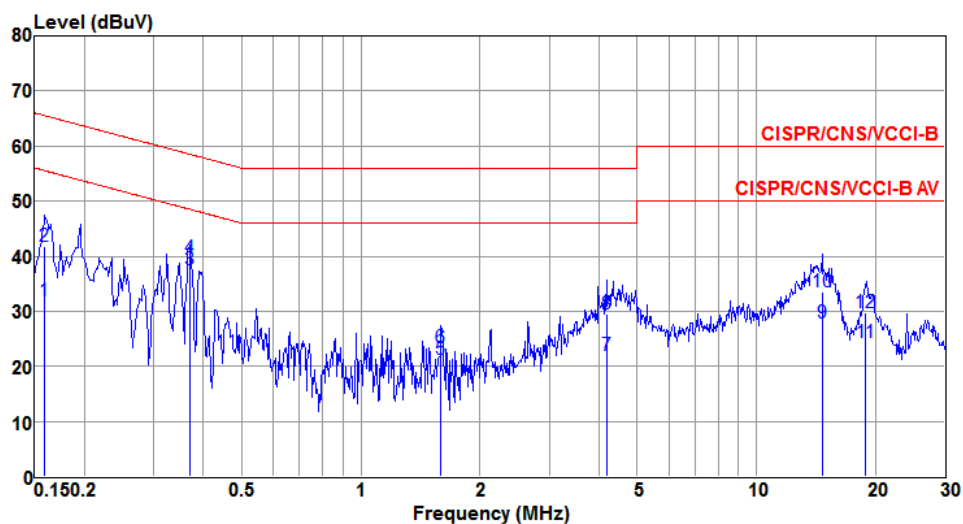
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral	Test configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.279	33.82	50.85	-17.03	24.21	9.57	0.04	Average
2	0.279	34.43	60.85	-26.42	24.82	9.57	0.04	QP
3@	0.561	38.70	46.00	-7.30	29.07	9.59	0.04	Average
4	0.561	39.56	56.00	-16.44	29.93	9.59	0.04	QP
5	1.123	34.57	46.00	-11.43	24.88	9.65	0.04	Average
6	1.123	35.19	56.00	-20.81	25.50	9.65	0.04	QP
7	2.246	25.08	46.00	-20.92	15.47	9.55	0.06	Average
8	2.246	25.98	56.00	-30.02	16.37	9.55	0.06	QP
9	4.598	12.04	46.00	-33.96	2.16	9.71	0.17	Average
10	4.598	23.59	56.00	-32.41	13.71	9.71	0.17	QP
11	19.122	25.18	50.00	-24.82	15.21	9.72	0.25	Average
12	19.122	31.26	60.00	-28.74	21.29	9.72	0.25	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

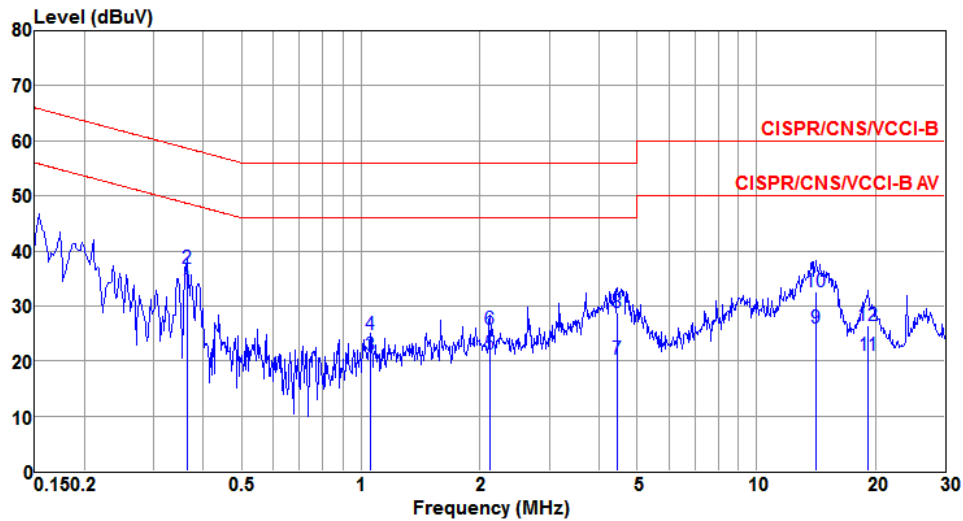
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test configuration	2



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.159	31.82	55.52	-23.70	22.28	9.50	0.04	Average
2	0.159	41.74	65.52	-23.78	32.20	9.50	0.04	QP
3@	0.369	37.62	48.52	-10.90	27.99	9.59	0.04	Average
4	0.369	39.76	58.52	-18.76	30.13	9.59	0.04	QP
5	1.592	21.32	46.00	-24.68	11.70	9.58	0.04	Average
6	1.592	23.47	56.00	-32.53	13.85	9.58	0.04	QP
7	4.195	21.94	46.00	-24.06	12.29	9.49	0.16	Average
8	4.195	29.40	56.00	-26.60	19.75	9.49	0.16	QP
9	14.670	27.80	50.00	-22.20	17.88	9.69	0.23	Average
10	14.670	33.61	60.00	-26.39	23.69	9.69	0.23	QP
11	18.921	24.28	50.00	-25.72	14.32	9.71	0.25	Average
12	18.921	29.74	60.00	-30.26	19.78	9.71	0.25	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral	Test configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1@	0.363	33.09	48.65	-15.56	23.50	9.55	0.04	Average
2	0.363	36.87	58.65	-21.78	27.28	9.55	0.04	QP
3	1.060	20.91	46.00	-25.09	11.21	9.66	0.04	Average
4	1.060	24.82	56.00	-31.18	15.12	9.66	0.04	QP
5	2.115	21.34	46.00	-24.66	11.75	9.54	0.05	Average
6	2.115	25.82	56.00	-30.18	16.23	9.54	0.05	QP
7	4.454	20.42	46.00	-25.58	10.54	9.71	0.17	Average
8	4.454	28.80	56.00	-27.20	18.92	9.71	0.17	QP
9	14.138	25.93	50.00	-24.07	16.02	9.68	0.23	Average
10	14.138	32.53	60.00	-27.47	22.62	9.68	0.23	QP
11	19.224	21.12	50.00	-28.88	11.14	9.72	0.26	Average
12	19.224	26.36	60.00	-33.64	16.38	9.72	0.26	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

4.2 Radiated Emissions

4.2.1 Limit of Radiated Emissions

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Quasi-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

4.2.2 Test Procedures

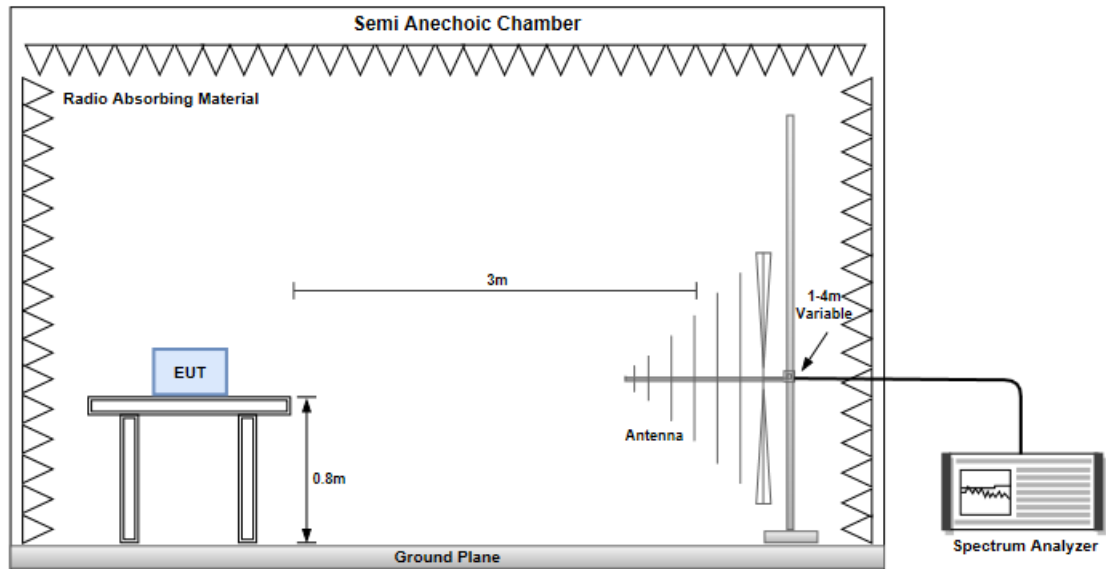
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

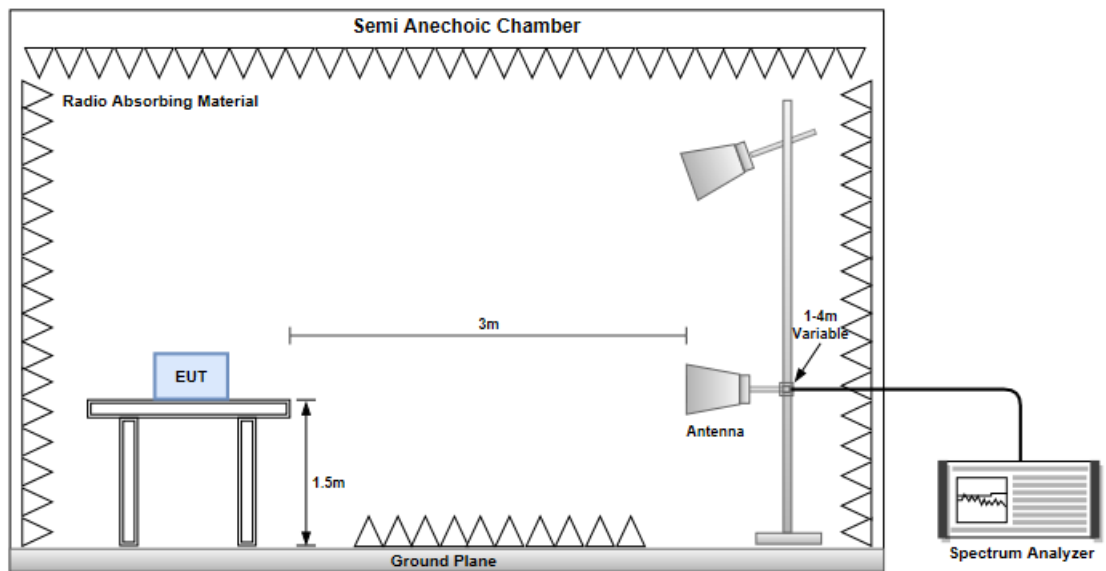
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=3MHz and RMS detector is for average measured value of radiated emission above 1GHz.

4.2.3 Test Setup

Radiated Emissions below 1 GHz

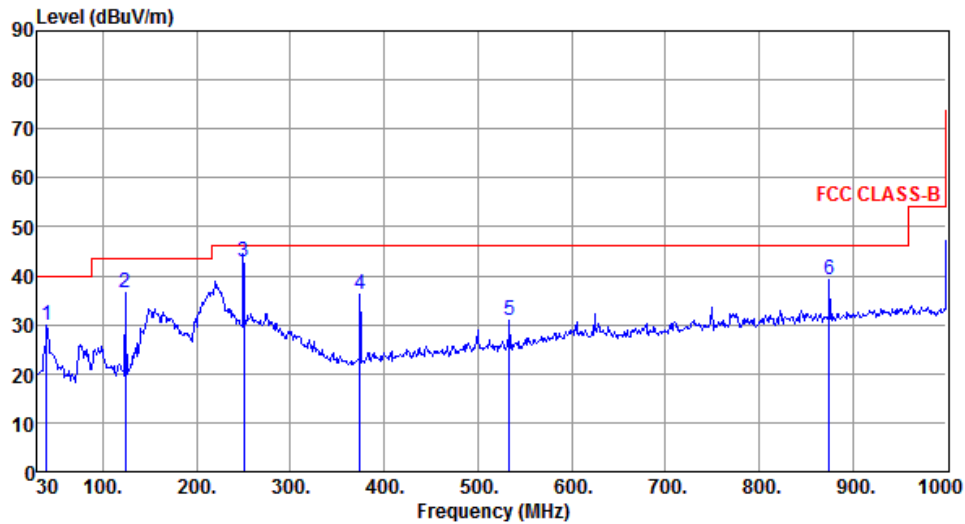


Radiated Emissions above 1 GHz



4.2.4 Receiver Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	39.70	29.97	40.00	-10.03	38.75	-8.78	Peak	---	---
2	124.09	36.63	43.50	-6.87	47.16	-10.53	Peak	---	---
3	250.00	42.91	46.00	-3.09	52.28	-9.37	QP	100	111
4	374.35	36.07	46.00	-9.93	42.13	-6.06	Peak	---	---
5	533.43	30.72	46.00	-15.28	33.38	-2.66	Peak	---	---
6	874.87	39.32	46.00	-6.68	36.08	3.24	Peak	---	---

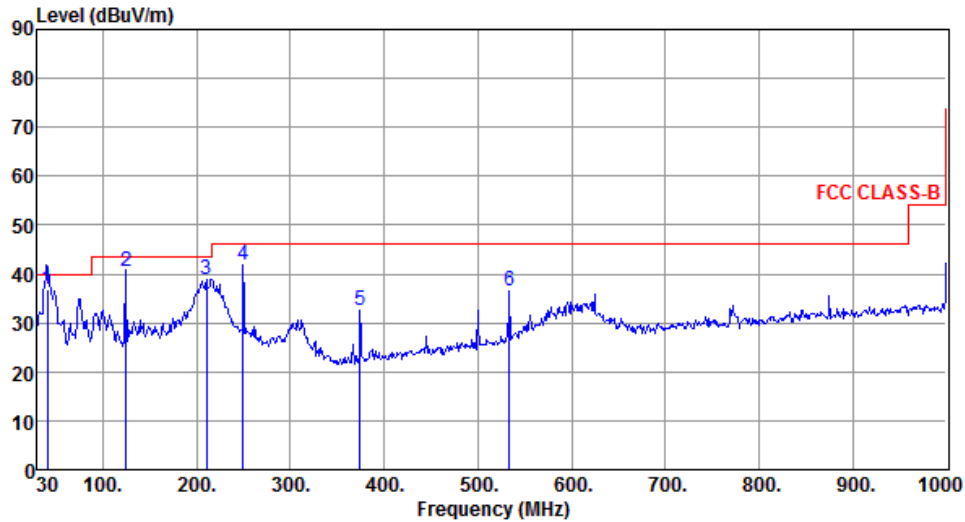
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	40.57	36.86	40.00	-3.14	45.57	-8.71	QP	100	11
2	125.00	40.44	43.50	-3.06	50.89	-10.45	QP	100	86
3	210.42	38.86	43.50	-4.64	49.85	-10.99	Peak	---	---
4	249.22	41.75	46.00	-4.25	51.14	-9.39	Peak	---	---
5	374.35	32.60	46.00	-13.40	38.66	-6.06	Peak	---	---
6	533.43	36.50	46.00	-9.50	39.16	-2.66	Peak	---	---

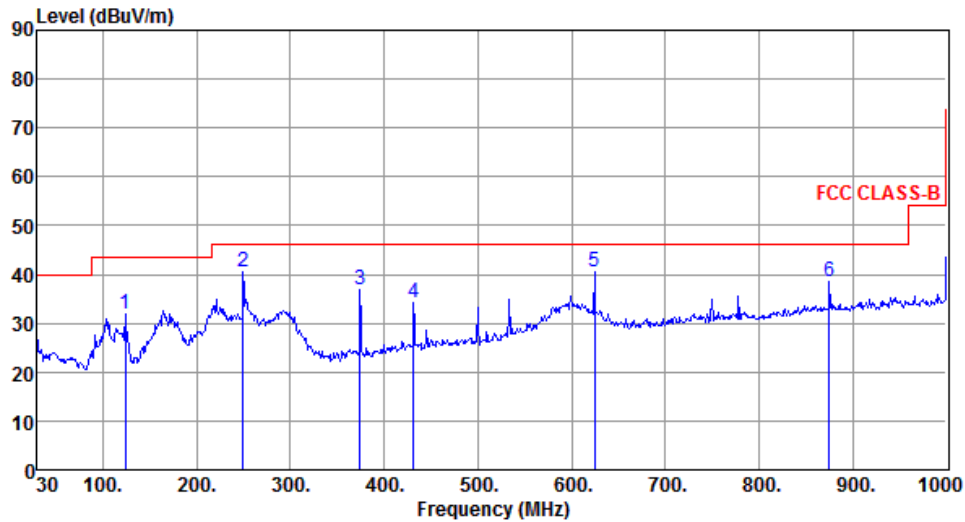
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.09	31.87	43.50	-11.63	42.40	-10.53	Peak	---	---
2	249.22	40.66	46.00	-5.34	50.05	-9.39	Peak	---	---
3	374.35	36.87	46.00	-9.13	42.93	-6.06	Peak	---	---
4	431.58	34.33	46.00	-11.67	38.86	-4.53	Peak	---	---
5	624.61	40.46	46.00	-5.54	41.17	-0.71	Peak	---	---
6	874.87	38.59	46.00	-7.41	35.35	3.24	Peak	---	---

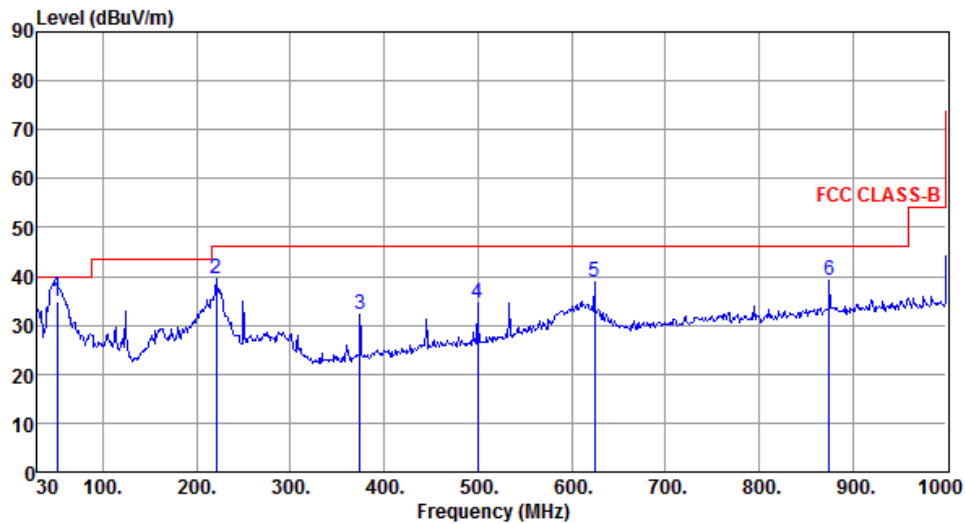
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.36	34.88	40.00	-5.12	43.13	-8.25	QP	100	85
2	221.09	39.56	46.00	-6.44	50.45	-10.89	Peak	---	---
3	374.35	32.06	46.00	-13.94	38.12	-6.06	Peak	---	---
4	499.48	34.63	46.00	-11.37	37.99	-3.36	Peak	---	---
5	624.61	38.91	46.00	-7.09	39.62	-0.71	Peak	---	---
6	874.87	39.33	46.00	-6.67	36.09	3.24	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

4.2.5 Receiver Emissions (Above 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		
Level (dBUV/m)			

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		
Level (dBUV/m) </			

5 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

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City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

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Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==