

4.8. Spurious Emission (radiated)

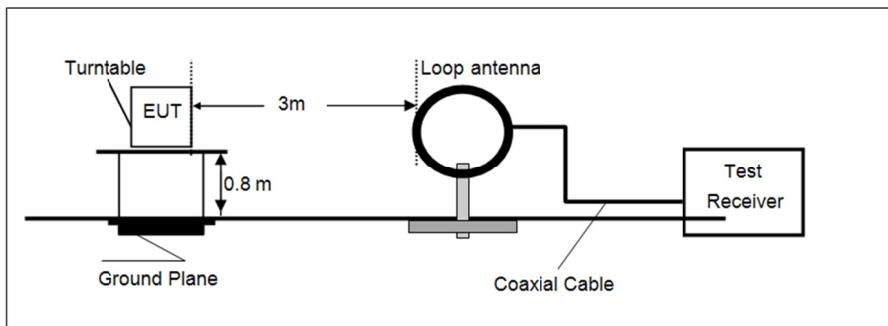
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

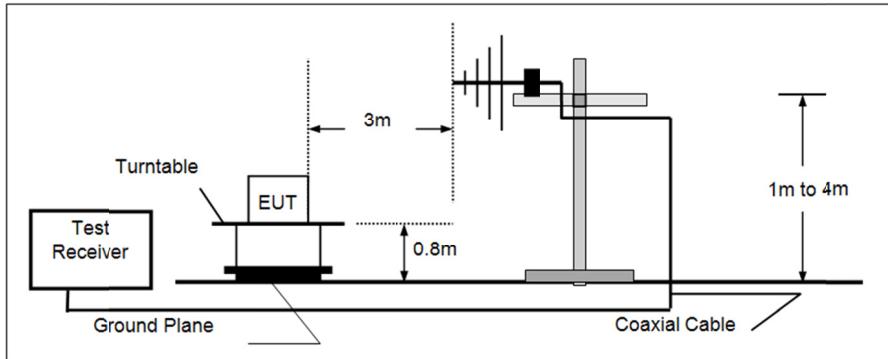
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

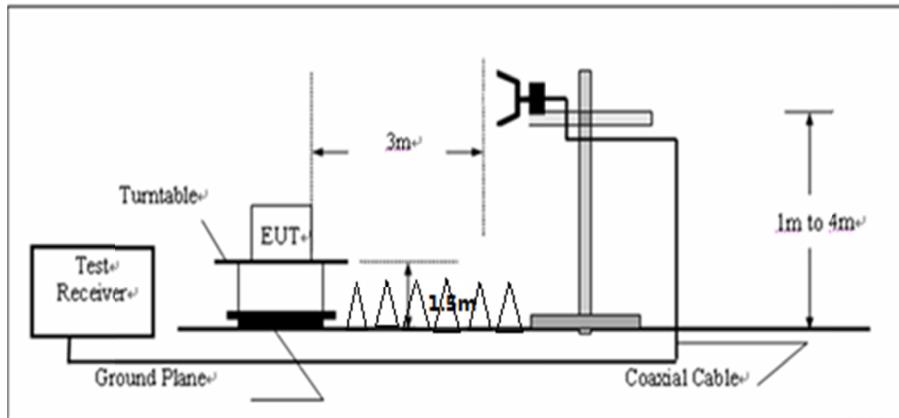
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1GHz, and 1.5m for above 1GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. Use the following spectrum analyzer settings
 - (1) Span shall be wide enough to fully capture the emission being measured;
 - (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - (3) Above 1GHz, RBW=1MHz, VBW=3MHz for Peak value
RBW=1MHz, VBW=10Hz for Average value.

TEST RESULTS**Noted:**

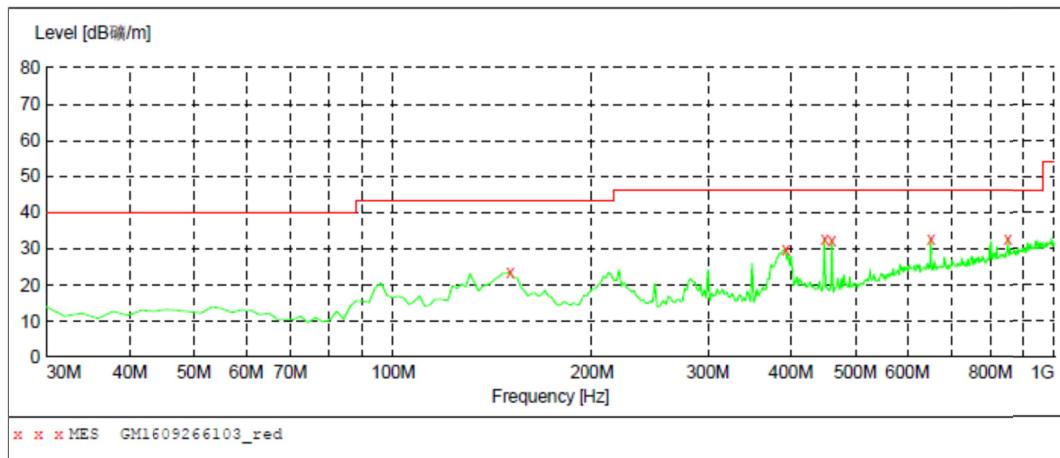
Below 1GHz, Have pre-scan all modulation mode, found the 802.11b mode CH06 which it was worst case, so only the worst case's data on the test report.

Measurement data:**■ 9kHz ~ 30MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

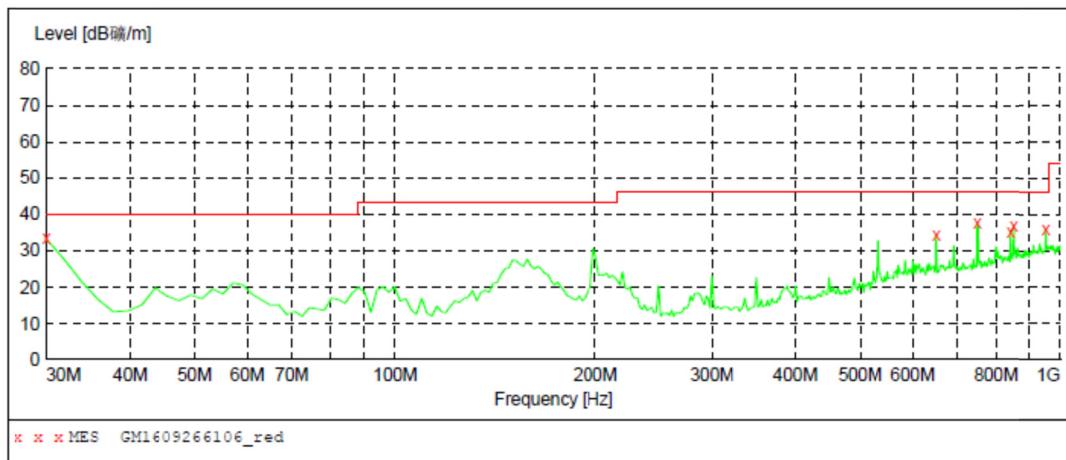
All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.

■ 30MHz ~ 1GHz

**MEASUREMENT RESULT: "GM1609266103_red"**

9/26/2016 9:08PM

Frequency MHz	Level dB/礦/m	Transd dB	Limit dB/礦/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
150.280000	23.60	-17.8	43.5	19.9	QP	300.0	289.00	HORIZONTAL
392.780000	30.00	-11.0	46.0	16.0	QP	100.0	172.00	HORIZONTAL
449.040000	32.70	-9.0	46.0	13.3	QP	100.0	266.00	HORIZONTAL
460.680000	32.20	-8.6	46.0	13.8	QP	100.0	266.00	HORIZONTAL
650.800000	32.70	-2.3	46.0	13.3	QP	100.0	47.00	HORIZONTAL
850.620000	32.50	1.6	46.0	13.5	QP	100.0	106.00	HORIZONTAL

**MEASUREMENT RESULT: "GM1609266106_red"**

9/26/2016 9:18PM

Frequency MHz	Level dB/礦/m	Transd dB	Limit dB/礦/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	33.40	-16.8	40.0	6.6	QP	100.0	223.00	VERTICAL
650.800000	34.20	-2.3	46.0	11.8	QP	100.0	93.00	VERTICAL
749.740000	37.50	-0.7	46.0	8.5	QP	100.0	313.00	VERTICAL
840.920000	35.30	1.3	46.0	10.7	QP	100.0	324.00	VERTICAL
850.620000	36.70	1.6	46.0	9.3	QP	100.0	313.00	VERTICAL
951.500000	36.20	3.7	46.0	9.8	QP	100.0	355.00	VERTICAL

Remark: Transd=Cable loss+Antenna factor-Pre-amplifier; Margin=Limit-Level

Above 1GHz

CH01 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
4824.00	40.63	29.18	8.61	37.99	40.43	74.00	-33.57	Vertical	Peak
7236.00	33.61	36.17	10.95	38.15	42.58	74.00	-31.42	Vertical	
9648.00	34.20	38.2	12.17	38.08	46.49	74.00	-27.51	Vertical	
13161.62	*					74.00		Vertical	
4824.00	37.71	32	9.53	38.39	40.85	74.00	-33.15	Horizontal	
7236.00	35.76	35.92	6.94	35.18	43.44	74	-28.16	Horizontal	
9648.00	34.00	38.2	12.17	38.08	46.285	74.00	-27.72	Horizontal	
13161.62	*					74.00		Horizontal	
4824.00	34.78	29.18	8.61	37.99	34.58	54.00	-19.42	Vertical	Average
7236.00	28.47	36.17	10.95	38.15	37.44	54.00	-16.56	Vertical	
9648.00	28.04	38.2	12.17	38.08	40.33	54.00	-13.67	Vertical	
13161.62	0.00					54.00		Vertical	
4824.00	31.38	32	9.53	38.39	34.52	54.00	-19.48	Horizontal	
7236.00	28.57	35.92	6.94	35.18	36.25	54.00	-17.75	Horizontal	
9648.00	28.39	38.2	12.17	38.08	40.68	54.00	-13.32	Horizontal	
13161.62	*					54.00		Horizontal	

CH06 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
4874.00	38.88	30.91	8.99	38.34	40.44	74.00	-33.56	Vertical	Peak
7311.00	35.41	35.44	10.53	38.02	43.36	74.00	-30.64	Vertical	
9748.00	34.33	38.02	12.17	38.08	46.44	74.00	-27.56	Vertical	
12341.44	*					74.00		Vertical	
4874.00	39.64	30.24	8.81	38.17	40.52	74.00	-33.48	Horizontal	
7311.00	35.13	35.44	10.53	38.02	43.08	74.00	-30.92	Horizontal	
9748.00	34.23	38.2	12.17	38.08	46.52	74.00	-27.48	Horizontal	
12341.44	*					74.00		Horizontal	
4874.00	33.02	30.91	8.99	38.34	34.58	54.00	-19.42	Vertical	Average
7311.00	29.93	35.44	10.53	38.02	37.88	54.00	-16.12	Vertical	
9748.00	28.41	38.02	12.17	38.08	40.52	54.00	-13.48	Vertical	
12341.44	0.00					54.00		Vertical	
4874.00	33.77	30.24	8.81	38.17	34.65	54.00	-19.35	Horizontal	
7311.00	28.94	35.44	10.53	38.02	36.89	54.00	-17.11	Horizontal	
9748.00	28.29	38.2	12.17	38.08	40.58	54.00	-13.42	Horizontal	
12341.44	*					54.00		Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

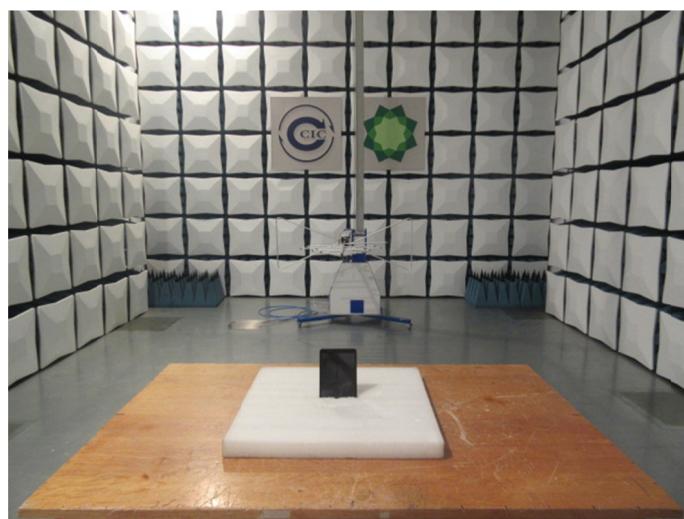
CH11 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
4924.00	38.79	31.17	9.31	38.62	40.65	74.00	-33.35	Vertical	Peak
7386.00	33.64	36.72	11.24	38.24	43.36	74.00	-30.64	Vertical	
9848.00	33.87	38.33	12.39	38.12	46.47	74.00	-27.53	Vertical	
11692.64	*					74.00		Vertical	
4924.00	38.39	31.17	9.31	38.62	40.25	74.00	-33.75	Horizontal	
7386.00	34.46	36.13	10.93	38.14	43.38	74.00	-30.62	Horizontal	
9848.00	33.68	38.33	12.39	38.12	46.28	74.00	-27.72	Horizontal	
11692.64	*					74.00		Horizontal	
4924.00	32.66	31.17	9.31	38.62	34.52	54.00	-19.48	Vertical	Average
7386.00	28.13	36.72	11.24	38.24	37.85	54.00	-16.15	Vertical	
9848.00	28.24	38.33	12.39	38.12	40.84	54.00	-13.16	Vertical	
11692.64	*					54.00		Vertical	
4924.00	32.89	31.17	9.31	38.62	34.75	54.00	-19.25	Horizontal	
7386.00	28.92	36.13	10.93	38.14	37.84	54.00	-16.16	Horizontal	
9848.00	28.06	38.33	12.39	38.12	40.66	54.00	-13.34	Horizontal	
11692.64	*					54.00		Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. Test Setup Photos of the EUT

Radiated Emission



Conducted Emission (AC Mains)



6. External and Internal Photos of the EUT

Reference to Test Report No.: TRE1609005901.

.....***End of Report***.....