

1 CO-LOCATION

1.1 Transmitter Unwanted Emissions

1.1.1 Transmitter Unwanted Emissions Limit

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: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

1.1.2 Measuring Instruments

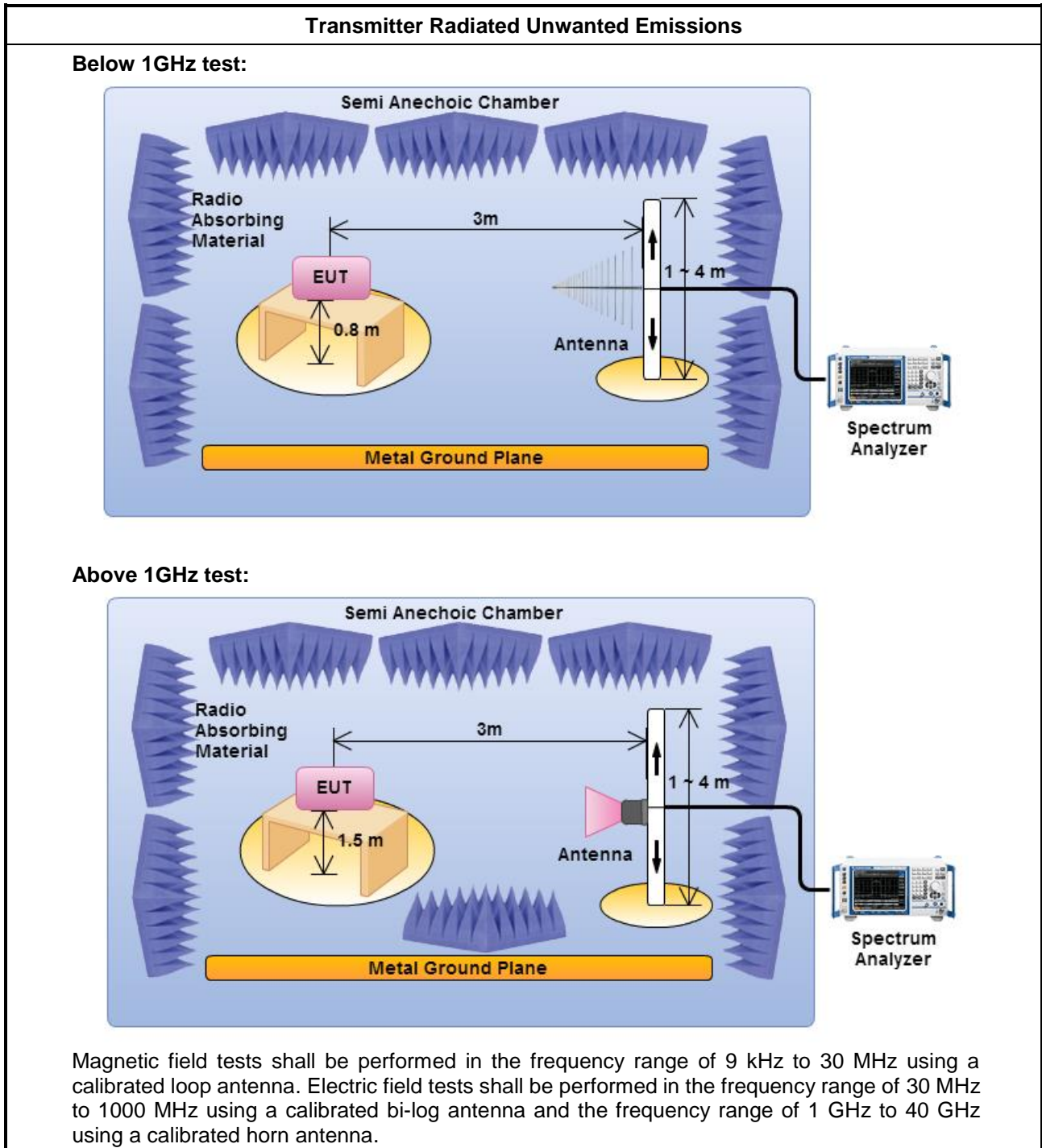
Refer a test equipment and calibration data table in this test report.

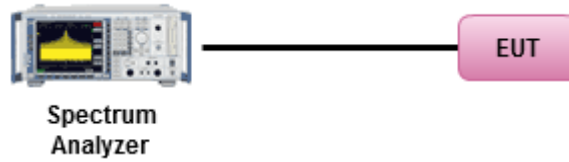


1.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$)
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12.2.4 measurement procedure peak limit.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r02, clause 12.2.3 measurement procedure Quasi-Peak limit.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause G)2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause G)1) for unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, G)6) Method VB (Reduced VBW).
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause G)5) measurement procedure peak limit.
<input checked="" type="checkbox"/>	For radiated measurement,
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.
<input checked="" type="checkbox"/>	For Conducted measurement,
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.7 for Antenna-port conducted emissions

1.1.4 Test Setup

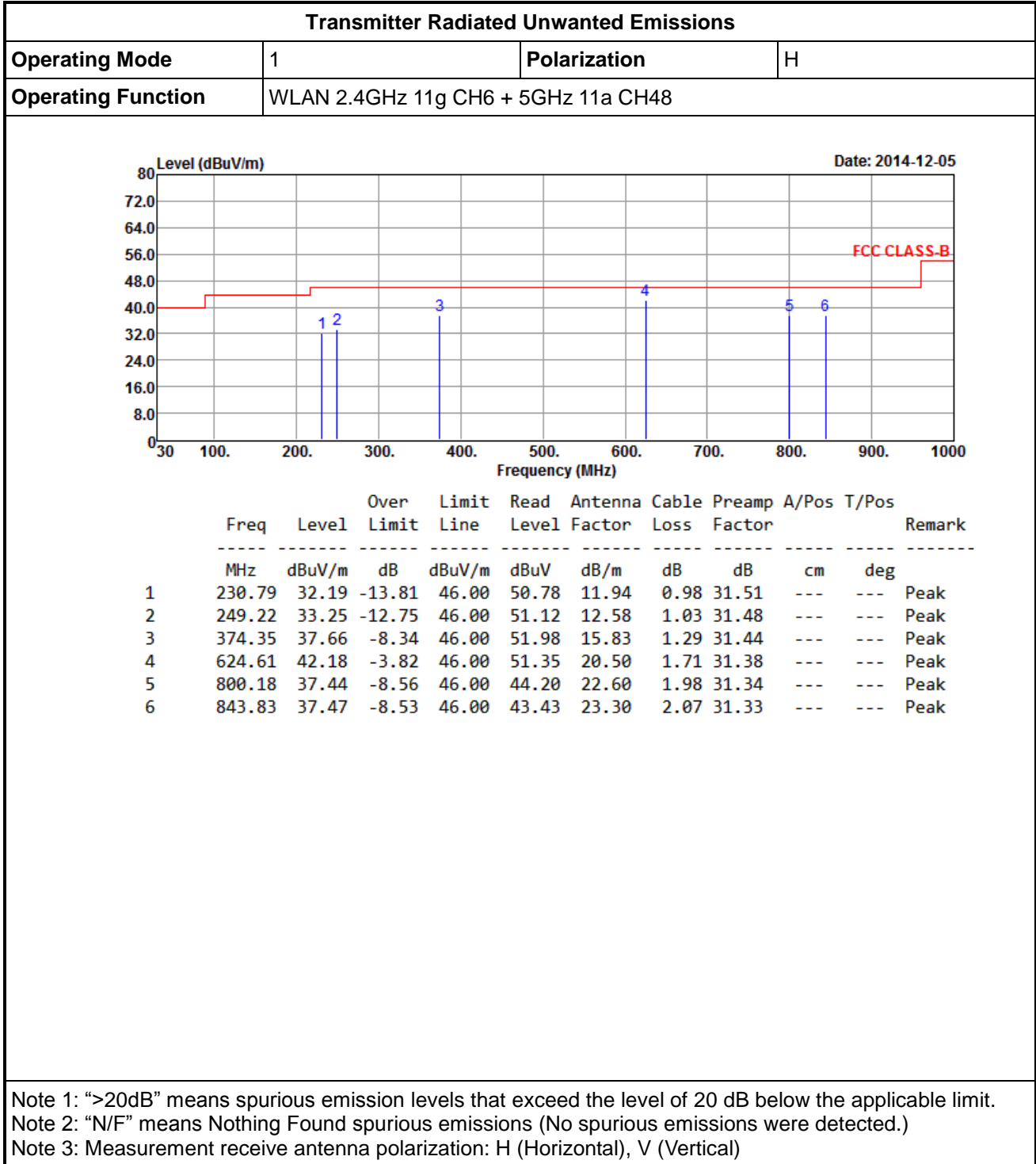


Transmitter Conducted Unwanted Emissions**1.1.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)**

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

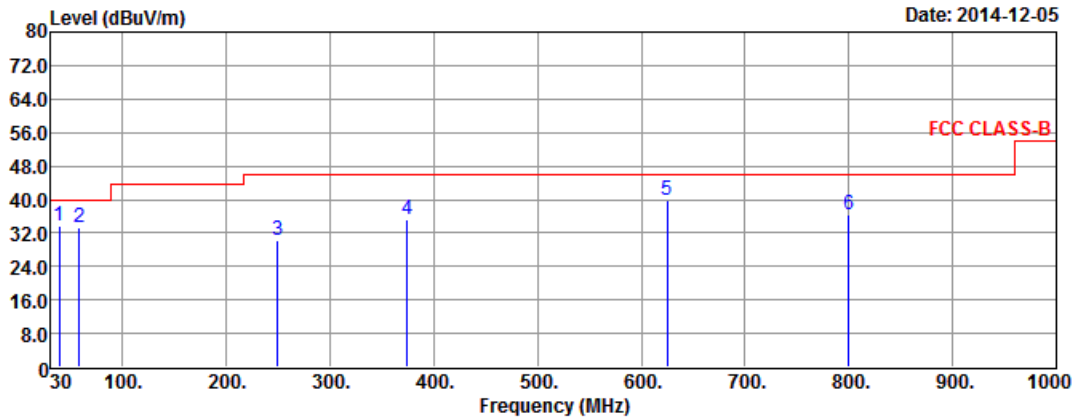


1.1.6 Results of Radiated Emissions (Below 1GHz)





Transmitter Radiated Unwanted Emissions			
Operating Mode	1	Polarization	V
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11a CH48		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	38.73	33.80	-6.20	40.00	51.17	14.00	0.47	31.84	---	---	Peak
2	58.13	33.26	-6.74	40.00	50.15	14.39	0.53	31.81	---	---	Peak
3	249.22	30.41	-15.59	46.00	48.28	12.58	1.03	31.48	---	---	Peak
4	374.35	35.26	-10.74	46.00	49.58	15.83	1.29	31.44	---	---	Peak
5	624.61	39.90	-6.10	46.00	49.07	20.50	1.71	31.38	---	---	Peak
6	800.18	36.52	-9.48	46.00	43.28	22.60	1.98	31.34	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



1.1.7 Results for Radiated Emissions (Above 1GHz)

Transmitter Radiated Unwanted Emissions																																																																																		
Operating Mode	1				Polarization	H																																																																												
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11a CH48																																																																																	
<div style="text-align: right;">Date: 2014-12-06</div> <table border="1"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over Limit</th> <th>Limit Line</th> <th>Read Level</th> <th>Antenna Factor</th> <th>Cable Loss</th> <th>Preamp Factor</th> <th>A/Pos</th> <th>T/Pos</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV/m</th> <th>dBuV</th> <th>dB/m</th> <th>dB</th> <th>dB</th> <th>cm</th> <th>deg</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2803.00</td> <td>38.97</td> <td>-15.03</td> <td>54.00</td> <td>39.80</td> <td>28.23</td> <td>5.16</td> <td>34.22</td> <td>---</td> <td>---</td> <td>Average</td> </tr> <tr> <td>2</td> <td>2803.00</td> <td>52.37</td> <td>-21.63</td> <td>74.00</td> <td>53.20</td> <td>28.23</td> <td>5.16</td> <td>34.22</td> <td>---</td> <td>---</td> <td>Peak</td> </tr> <tr> <td>3</td> <td>7677.00</td> <td>39.98</td> <td>-14.02</td> <td>54.00</td> <td>28.88</td> <td>36.71</td> <td>9.18</td> <td>34.79</td> <td>---</td> <td>---</td> <td>Average</td> </tr> <tr> <td>4</td> <td>7677.00</td> <td>51.99</td> <td>-22.01</td> <td>74.00</td> <td>40.89</td> <td>36.71</td> <td>9.18</td> <td>34.79</td> <td>---</td> <td>---</td> <td>Peak</td> </tr> </tbody> </table>												Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		1	2803.00	38.97	-15.03	54.00	39.80	28.23	5.16	34.22	---	---	Average	2	2803.00	52.37	-21.63	74.00	53.20	28.23	5.16	34.22	---	---	Peak	3	7677.00	39.98	-14.02	54.00	28.88	36.71	9.18	34.79	---	---	Average	4	7677.00	51.99	-22.01	74.00	40.89	36.71	9.18	34.79	---	---	Peak
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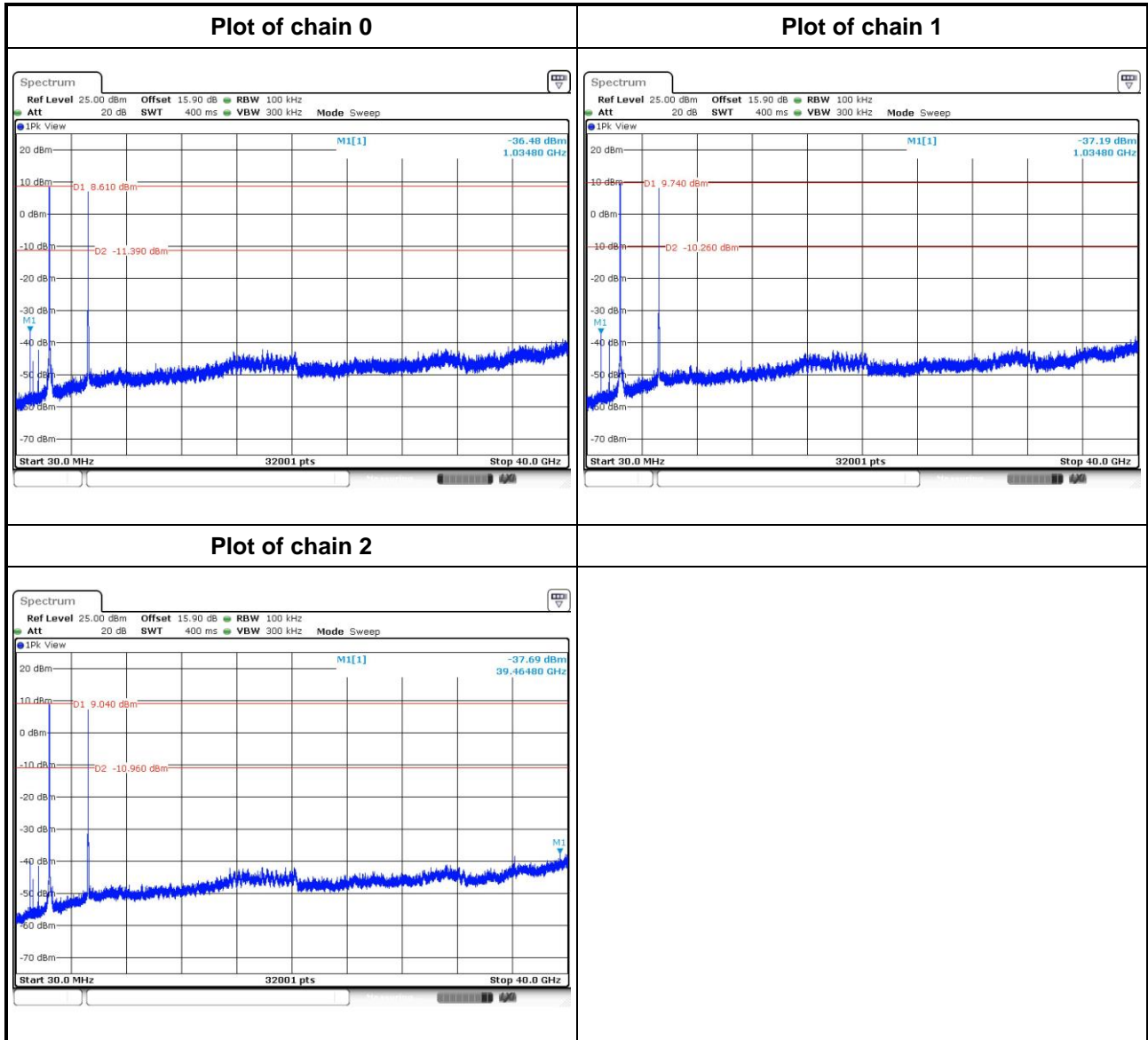


Transmitter Radiated Unwanted Emissions											
Operating Mode	1				Polarization	V					
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11a CH48										
<p style="text-align: right;">Date: 2014-12-06</p>											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2803.00	42.03	-11.97	54.00	42.86	28.23	5.16	34.22	---	---	Average
2	2803.00	55.88	-18.12	74.00	56.71	28.23	5.16	34.22	---	---	Peak
3	7677.00	40.16	-13.84	54.00	29.06	36.71	9.18	34.79	---	---	Average
4	7677.00	52.29	-21.71	74.00	41.19	36.71	9.18	34.79	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



1.1.8 Transmitter Conducted Unwanted Emissions





2 TEST EQUIPMENT AND CALIBRATION DATA

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 05, 2014	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Radiation (03CH03-HY)
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Mar. 27, 2014	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 20, 2014	Radiation (03CH03-HY)
Horn Antenna	ETS · LINDGREN	3115	6741	1GHz ~ 18GHz	Jul. 11, 2014	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 10, 2014	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Sep. 03, 2014	Radiation (03CH03-HY)
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Mar. 05, 2014	Radiation (03CH03-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	EM	EM18G40G	060604	18GHz ~ 40GHz	Oct. 17.2013	Radiation (03CH03-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9kHz ~ 30MHz	Jul. 28, 2014	Radiation (03CH03-HY)

Note: Calibration Interval of instruments listed above is two year.