

FCC Test Report

FCC ID : 2AAS9-1254XW
Equipment : Dual Radio 802.11a/n+b/g/n Indoor Access Point
Model No. : BW1254
Brand Name : BROWAN
Applicant : BROWAN COMMUNICATIONS Co., Ltd.
Address : No. 15-1, Zhonghua Rd., Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, R. O. C. 303
Manufacturer : Gemtek Technology Co., Ltd.
Address : No. 15-1, Zhonghua Rd., Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, R. O. C. 303
Standard : 47 CFR FCC Part 15.407
Received Date : Aug. 02, 2013
Tested Date : Aug. 02, 2013 ~ Jan.02, 2014

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:


Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
FR380701AN	Rev. 01	Initial issue	Feb. 14, 2014

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 2.877MHz 43.89 (Margin -2.11dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5725.00MHz 52.96 (Margin -1.04dB) - AV	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(a)	RF Output Power	Power [dBm]: 5150~5250 MHz:16.51 5250~5350 MHz:23.63 5470~5725 MHz:23.95	Pass
15.407(a)	Peak Power Spectral Density	Meet the requirement of limit	Pass
15.407(a)	Peak Excursion	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5150-5250 5250-5350 5470-5725	a	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [6]	2	6-54 Mbps
5150-5250 5250-5350 5470-5725	n (HT20)	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [6]	2	MCS 0-15
5150-5250 5250-5350 5470-5725	n (HT40)	5190-5230 5270-5310 5510-5550	38-46 [2] 54-62 [2] 102-110 [2]	2	MCS 0-15

Note 1: RF output power specifies that Maximum Conducted Output Power.
Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)				
				2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850
1	EDA-1713 2G4 R2-A7	Dipole (Omni-directional)	R-SMA	5	X	X	X	X
2	EDA-1713 5G0 R2-A2	Dipole (Omni-directional)	R-SMA	X	5	5	5	5
3	EDA-870P-2 5G R2-A11	Dipole (Omni-directional)	R-SMA	2	2	2	2	2
4	EDA-1713-2 5G R2-A4	Dipole (Omni-directional)	R-SMA	5	5	5	5	5
5	SAA05-2201 70	Dipole (Omni-directional)	R-SMA	3	5	5	5	5

Note: Highest antenna gain (Antenna 2) was chosen for test.

1.1.3 EUT Operational Condition

Supply Voltage	☒ AC mains	☐ DC	
Type of DC Source	☐ Internal DC supply	☐ External DC adapter	☐ Battery

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC Adapter	Brand Name: LEI Model Name: MU24-B480050-A1 Power Rating: I/P: 100-240Vac, 50-60Hz, 1.0A O/P: 48Vdc, 0.5A Power Line: 1.5m non-shielded cable w/o core
2	POE	Brand Name: BROWAN Model Name: BE3013 Power Rating: I/P: 8~57Vdc O/P: 8~57Vdc,

1.1.5 Channel List

Frequency band (MHz)		5150~5725	
802.11 a / n HT20		802.11n HT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	54	5270
48	5240	62	5310
52	5260	102	5510
56	5280	110	5550
60	5300	---	---
64	5320	---	---
100	5500	---	---
104	5520	---	---
108	5540	---	---
112	5560	---	---
136	5680	---	---
140	5700	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	ART2-GUI V2.3
Duty Cycle Of Test Signal (%)	100.00% - IEEE 802.11a 100.00% - IEEE 802.11n (HT20) 100.00% - IEEE 802.11n (HT40)
Duty Factor	0 - IEEE 802.11a 0 - IEEE 802.11n (HT20) 0 - IEEE 802.11n (HT40)

1.1.7 Power Setting

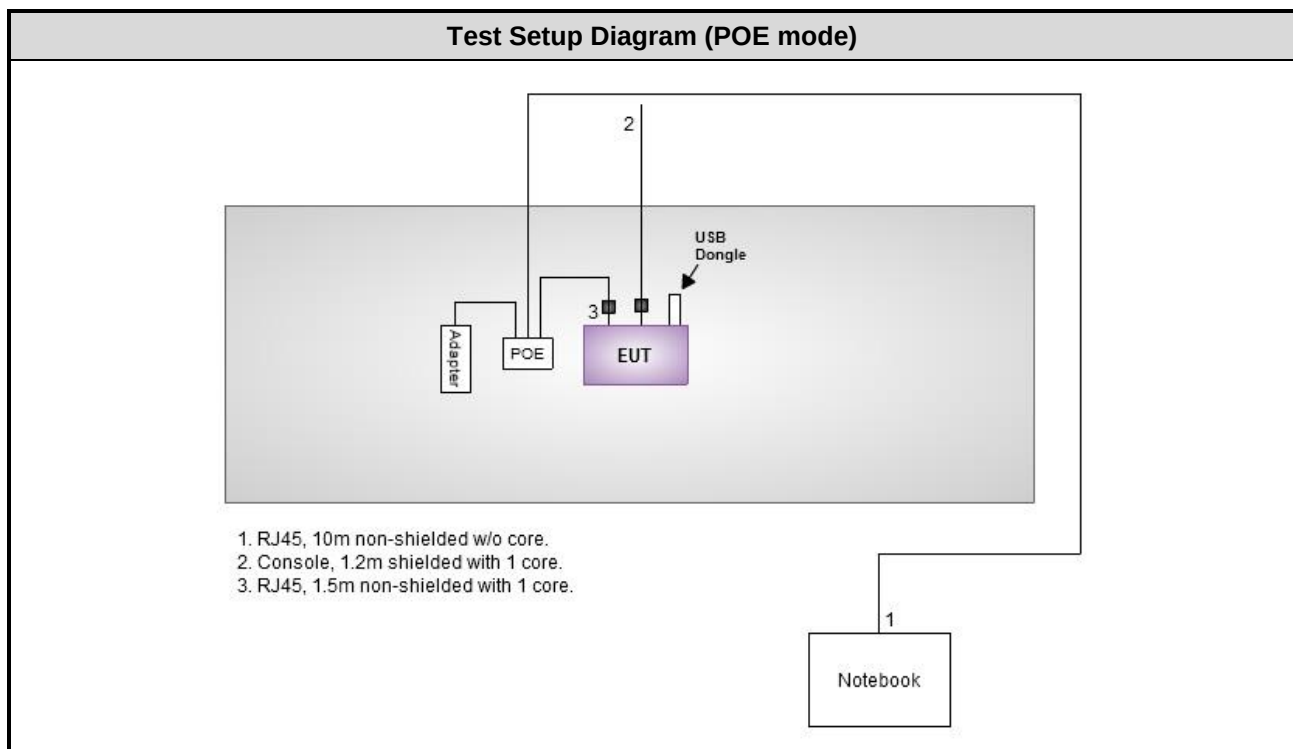
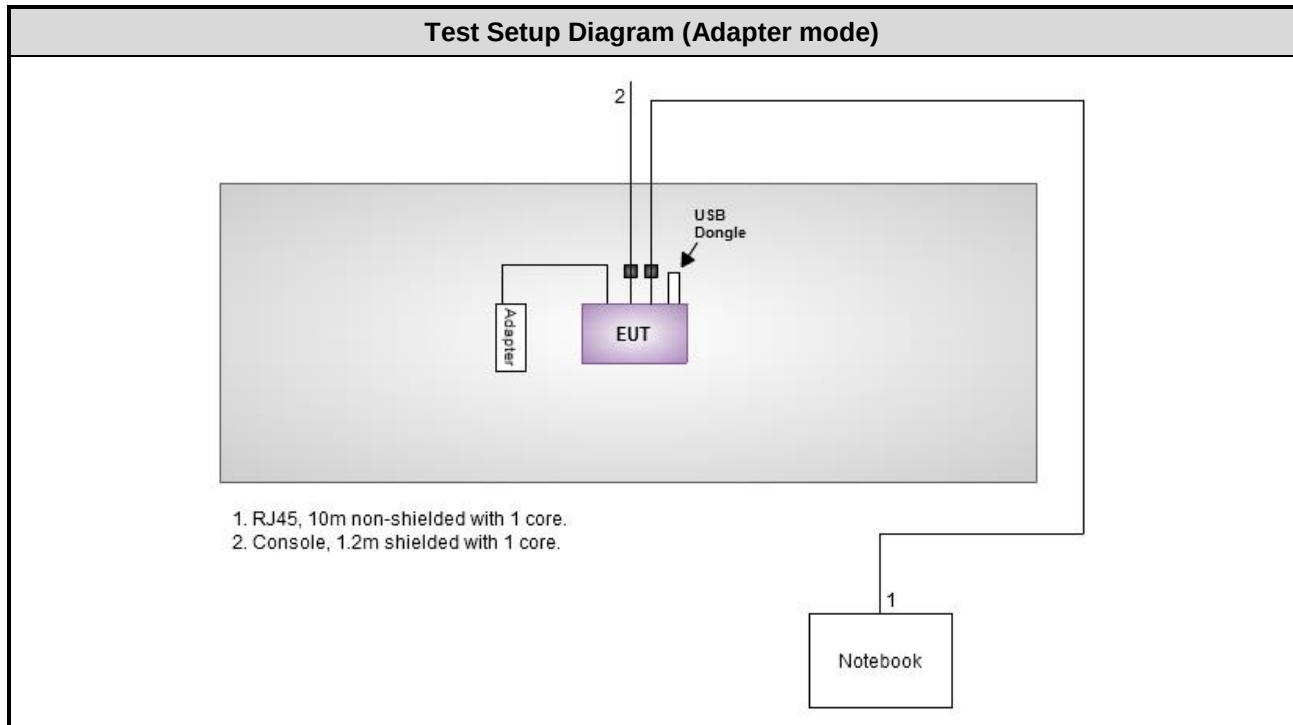
Channel	Frequency(MHz)	Modulation Mode		
		11a	HT20	HT40
CH 36	5180	9.5	9.5	---
CH 40	5200	9.5	10	---
CH 48	5240	10.5	10.5	---
CH 52	5260	18	18.5	---
CH 60	5300	18	18.5	---
CH 64	5320	18	18	---
CH 100	5500	16	16.5	---
CH 112	5560	16.5	17	---
CH 140	5700	17.5	18	---
CH 38	5190	---	---	12
CH 46	5230	---	---	12.5
CH 54	5270	---	---	20
CH 62	5310	---	---	16
CH 102	5510	---	---	13.5
CH 110	5550	---	---	20.5

1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	E6430	---	DoC	RJ45, 10m non-shielded with 1 core.
2	USB Dongle	PQI	U273V	---	--	--

Note: Console cable was supplied by applicant.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Test date	Sep. 30, 2013				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 02, 2012	Oct. 01, 2013
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013
ISN	TESEQ	ISN T800	34406	Apr. 08, 2013	Apr. 07, 2014
ISN	TESEQ	ISN T200A	30494	Apr. 09, 2013	Apr. 08, 2014
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013
ESH3-Z6 V-Network(+)	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013
ESH3-Z6 V-Network(-)	R&S	ESH3-Z6	100951	Jan. 30, 2013	Jan. 29, 2014
Two-Line V-Network	R&S	ENV216	101579	Jan. 07, 2013	Jan. 06, 2014
50 ohm terminal	NA	50	01	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	02	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	03	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Test date	Aug. 20 ~ 22 , 2013				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 29, 2012	Nov. 28, 2013
Power Meter	Anritsu	ML2495A	1241002	Oct. 15, 2012	Oct. 14, 2013
Power Sensor	Anritsu	MA2411B	1027366	Oct. 24, 2012	Oct. 23, 2013
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Test date	Aug. 2 ~ 20 , 2013				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014
Receiver	ROHDE&SCHWARZ	ESR3	101658	Jan. 28, 2013	Jan. 27, 2014
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 25, 2012	Dec. 24, 2013
control	EM Electronics	EM1000	60612	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014
Amplifier	MITEQ	AMF-6F-260400	9121372	Apr. 19, 2013	Apr. 18, 2015
Note: Calibration Interval of instruments listed above is two year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Test date	Jan.02 , 2014				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 11, 2013	Dec. 10, 2014
Power Meter	Anritsu	ML2495A	1241002	Oct. 24, 2013	Oct. 23, 2014
Power Sensor	Anritsu	MA2411B	1027366	Oct. 24, 2013	Oct. 23, 2014
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Test date	Jan.02 , 2014				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014
Receiver	ROHDE&SCHWARZ	ESR3	101658	Jan. 28, 2013	Jan. 27, 2014
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100219	Nov. 22, 2013	Nov. 21, 2014
Amplifier	Agilent	83017A	MY39501308	Dec. 16, 2013	Dec. 15, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 16, 2013	Dec. 15, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 16, 2013	Dec. 15, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 16, 2013	Dec. 15, 2014
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 16, 2013	Dec. 15, 2014
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 16, 2013	Dec. 15, 2014
control	EM Electronics	EM1000	60612	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.407

ANSI C63.10-2009

FCC KDB 412172

FCC KDB 789033 D01 General UNII Test procedures v01r03

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 74.147 Hz
Conducted power	± 0.717 dB
Power density	± 2.687 dB
Frequency error	± 74.147 Hz
Temperature	± 0.3 °C
AC conducted emission	± 2.43 dB
Radiated emission	± 2.49 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	24°C / 72%	Peter Lin
Radiated Emissions	03CH01-WS	25°C / 65%	Aska Huang Haru Yang
RF Conducted	TH01-WS	23°C / 62%	Felix Sung

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data rate (Mbps) / MCS	Test Configuration
Conducted Emissions	HT40	5550	MCS 0	1, 2
Radiated Emissions <1GHz	HT40	5550	MCS 0	1, 2
Radiated Emissions >1GHz RF Output Power Emission Bandwidth Peak Power Spectral Density	11a	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5560 / 5700	6	1
	HT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5560 / 5700	MCS 0	1
	HT40	5190 / 5230 / 5270 / 5310 / 5510 5550	MCS 0	1
Peak Excursion	11a	5240 / 5300 / 5700	6	1
	HT20	5240 / 5300 / 5700	MCS 0	
	HT40	5230 / 5270 / 5550	MCS 0	
Frequency Stability	Un-modulation	5320	---	1

NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** results were found as the worst case and were shown in this report.
- Test Configuration 1 : Adapter Mode
Test Configuration 2 : POE Mode

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

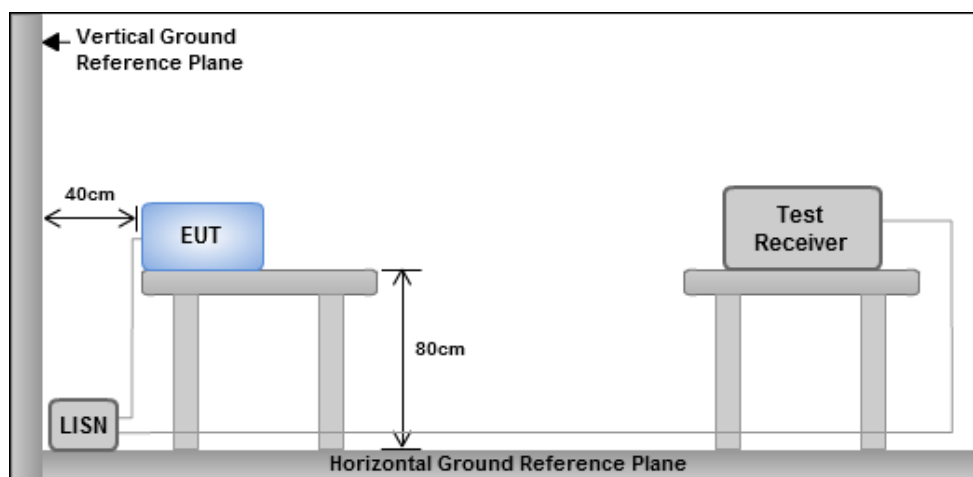
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

3.1.2 Test Procedures

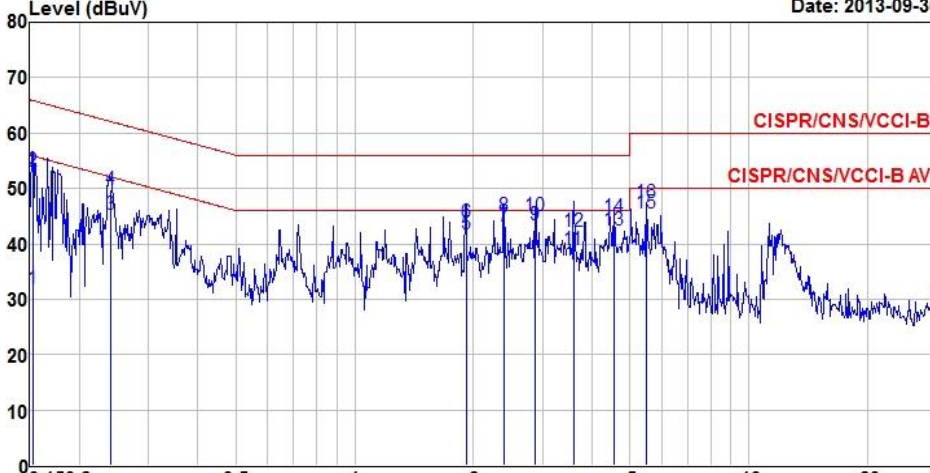
1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels 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.

3.1.3 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

3.1.4 Test Result of Conducted Emissions

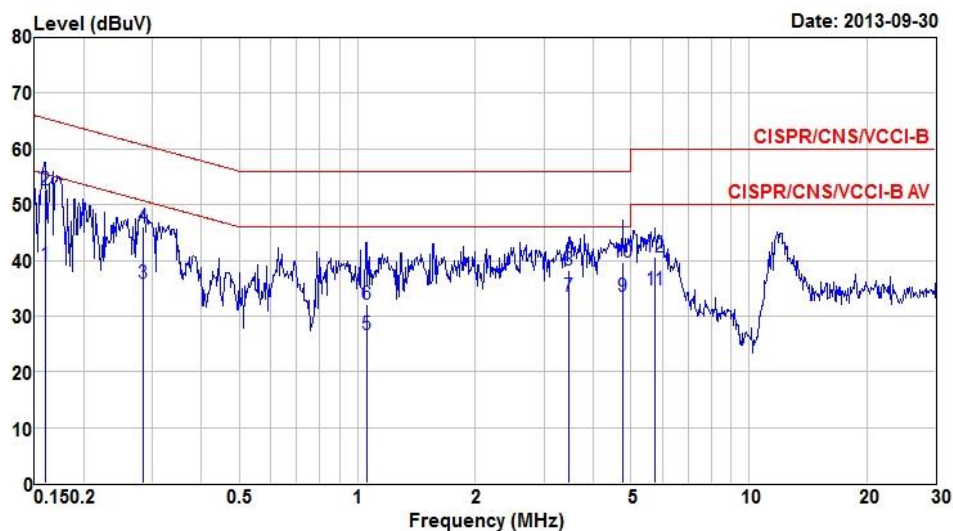
Power Phase	Line	Test Freq. (MHz)	5550																																																																																																																																																																											
Test Configuration	1																																																																																																																																																																													
Level (dBuV)  Frequency (MHz) Date: 2013-09-30 CISPR/CNS/VCCI-B CISPR/CNS/VCCI-B AV <table><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Read</th><th>LISN</th><th>cable</th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV</th><th>Line</th><th>Limit</th><th>Level</th><th>factor</th><th>loss</th><th>Remark</th></tr><tr><th></th><th></th><th></th><th>dBuV</th><th>dB</th><th>dBuV</th><th>dB</th><th>dB</th><th></th></tr><tr><td>1</td><td>0.152</td><td>31.93</td><td>55.88</td><td>-23.95</td><td>31.81</td><td>0.05</td><td>0.07</td><td>Average</td></tr><tr><td>2</td><td>0.152</td><td>53.16</td><td>65.88</td><td>-12.72</td><td>53.04</td><td>0.05</td><td>0.07</td><td>QP</td></tr><tr><td>3</td><td>0.240</td><td>45.37</td><td>52.08</td><td>-6.71</td><td>45.17</td><td>0.05</td><td>0.15</td><td>Average</td></tr><tr><td>4</td><td>0.240</td><td>49.76</td><td>62.08</td><td>-12.32</td><td>49.56</td><td>0.05</td><td>0.15</td><td>QP</td></tr><tr><td>5</td><td>1.918</td><td>41.87</td><td>46.00</td><td>-4.13</td><td>41.51</td><td>0.21</td><td>0.15</td><td>Average</td></tr><tr><td>6</td><td>1.918</td><td>43.93</td><td>56.00</td><td>-12.07</td><td>43.57</td><td>0.21</td><td>0.15</td><td>QP</td></tr><tr><td>7</td><td>2.398</td><td>43.25</td><td>46.00</td><td>-2.75</td><td>42.86</td><td>0.21</td><td>0.18</td><td>Average</td></tr><tr><td>8</td><td>2.398</td><td>45.07</td><td>56.00</td><td>-10.93</td><td>44.68</td><td>0.21</td><td>0.18</td><td>QP</td></tr><tr><td>9</td><td>2.878</td><td>43.46</td><td>46.00</td><td>-2.54</td><td>43.07</td><td>0.19</td><td>0.20</td><td>Average</td></tr><tr><td>10</td><td>2.878</td><td>45.16</td><td>56.00</td><td>-10.84</td><td>44.77</td><td>0.19</td><td>0.20</td><td>QP</td></tr><tr><td>11</td><td>3.597</td><td>39.06</td><td>46.00</td><td>-6.94</td><td>38.66</td><td>0.17</td><td>0.23</td><td>Average</td></tr><tr><td>12</td><td>3.597</td><td>42.19</td><td>56.00</td><td>-13.81</td><td>41.79</td><td>0.17</td><td>0.23</td><td>QP</td></tr><tr><td>13</td><td>4.556</td><td>42.50</td><td>46.00</td><td>-3.50</td><td>42.09</td><td>0.19</td><td>0.22</td><td>Average</td></tr><tr><td>14</td><td>4.556</td><td>44.83</td><td>56.00</td><td>-11.17</td><td>44.42</td><td>0.19</td><td>0.22</td><td>QP</td></tr><tr><td>15</td><td>5.516</td><td>45.47</td><td>50.00</td><td>-4.53</td><td>45.03</td><td>0.24</td><td>0.20</td><td>Average</td></tr><tr><td>16</td><td>5.516</td><td>47.35</td><td>60.00</td><td>-12.65</td><td>46.91</td><td>0.24</td><td>0.20</td><td>QP</td></tr></table>					Freq	Level	Limit	Over	Read	LISN	cable			MHz	dBuV	Line	Limit	Level	factor	loss	Remark				dBuV	dB	dBuV	dB	dB		1	0.152	31.93	55.88	-23.95	31.81	0.05	0.07	Average	2	0.152	53.16	65.88	-12.72	53.04	0.05	0.07	QP	3	0.240	45.37	52.08	-6.71	45.17	0.05	0.15	Average	4	0.240	49.76	62.08	-12.32	49.56	0.05	0.15	QP	5	1.918	41.87	46.00	-4.13	41.51	0.21	0.15	Average	6	1.918	43.93	56.00	-12.07	43.57	0.21	0.15	QP	7	2.398	43.25	46.00	-2.75	42.86	0.21	0.18	Average	8	2.398	45.07	56.00	-10.93	44.68	0.21	0.18	QP	9	2.878	43.46	46.00	-2.54	43.07	0.19	0.20	Average	10	2.878	45.16	56.00	-10.84	44.77	0.19	0.20	QP	11	3.597	39.06	46.00	-6.94	38.66	0.17	0.23	Average	12	3.597	42.19	56.00	-13.81	41.79	0.17	0.23	QP	13	4.556	42.50	46.00	-3.50	42.09	0.19	0.22	Average	14	4.556	44.83	56.00	-11.17	44.42	0.19	0.22	QP	15	5.516	45.47	50.00	-4.53	45.03	0.24	0.20	Average	16	5.516	47.35	60.00	-12.65	46.91	0.24	0.20	QP
	Freq	Level	Limit	Over	Read	LISN	cable																																																																																																																																																																							
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark																																																																																																																																																																						
			dBuV	dB	dBuV	dB	dB																																																																																																																																																																							
1	0.152	31.93	55.88	-23.95	31.81	0.05	0.07	Average																																																																																																																																																																						
2	0.152	53.16	65.88	-12.72	53.04	0.05	0.07	QP																																																																																																																																																																						
3	0.240	45.37	52.08	-6.71	45.17	0.05	0.15	Average																																																																																																																																																																						
4	0.240	49.76	62.08	-12.32	49.56	0.05	0.15	QP																																																																																																																																																																						
5	1.918	41.87	46.00	-4.13	41.51	0.21	0.15	Average																																																																																																																																																																						
6	1.918	43.93	56.00	-12.07	43.57	0.21	0.15	QP																																																																																																																																																																						
7	2.398	43.25	46.00	-2.75	42.86	0.21	0.18	Average																																																																																																																																																																						
8	2.398	45.07	56.00	-10.93	44.68	0.21	0.18	QP																																																																																																																																																																						
9	2.878	43.46	46.00	-2.54	43.07	0.19	0.20	Average																																																																																																																																																																						
10	2.878	45.16	56.00	-10.84	44.77	0.19	0.20	QP																																																																																																																																																																						
11	3.597	39.06	46.00	-6.94	38.66	0.17	0.23	Average																																																																																																																																																																						
12	3.597	42.19	56.00	-13.81	41.79	0.17	0.23	QP																																																																																																																																																																						
13	4.556	42.50	46.00	-3.50	42.09	0.19	0.22	Average																																																																																																																																																																						
14	4.556	44.83	56.00	-11.17	44.42	0.19	0.22	QP																																																																																																																																																																						
15	5.516	45.47	50.00	-4.53	45.03	0.24	0.20	Average																																																																																																																																																																						
16	5.516	47.35	60.00	-12.65	46.91	0.24	0.20	QP																																																																																																																																																																						
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB). Note 2: Over Limit (dBuV) = Level (dBuV) – Limit Line (dBuV).																																																																																																																																																																														

Power Phase	Line	Test Freq. (MHz)	5550
Test Configuration	2		

Level (dBuV)

</

Power Phase	Neutral	Test Freq. (MHz)	5550
Test Configuration	2		



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.160	39.13	55.47	-16.34	39.00	0.04	0.09	Average
2	0.160	52.72	65.47	-12.75	52.59	0.04	0.09	QP
3	0.283	35.77	50.72	-14.95	35.60	0.05	0.12	Average
4	0.283	45.93	60.72	-14.79	45.76	0.05	0.12	QP
5	1.054	26.66	46.00	-19.34	26.46	0.15	0.05	Average
6	1.054	32.06	56.00	-23.94	31.86	0.15	0.05	QP
7	3.472	33.53	46.00	-12.47	33.15	0.16	0.22	Average
8	3.472	38.29	56.00	-17.71	37.91	0.16	0.22	QP
9	4.746	33.48	46.00	-12.52	33.08	0.18	0.22	Average
10	4.746	39.70	56.00	-16.30	39.30	0.18	0.22	QP
11	5.774	34.59	50.00	-15.41	34.17	0.23	0.19	Average
12	5.774	40.56	60.00	-19.44	40.14	0.23	0.19	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

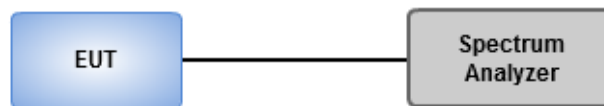
2: Over Limit (dBuV) = Level (dBuV) – Limit Line (dBuV).

3.2 Emission Bandwidth

3.2.1 Test Procedures

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW, Detector = Peak.
3. Trace mode = max hold.
4. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

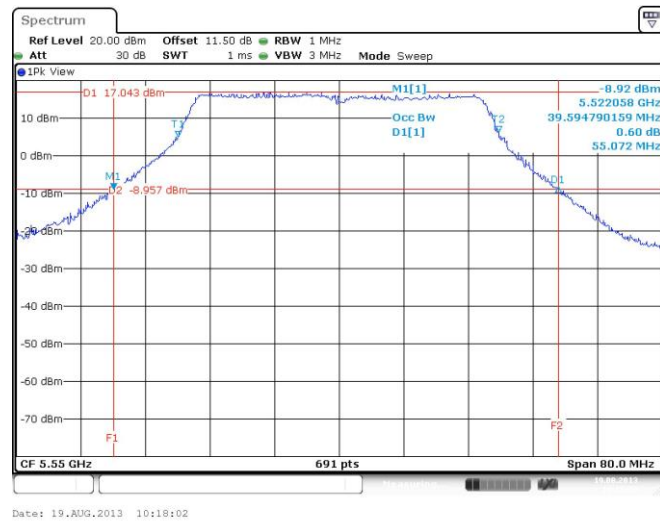
3.2.2 Test Setup



3.2.3 Test Result of Emission Bandwidth

Modulation Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Limit (dBm)	
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	26 dB BW	99 % BW
11a	2	5180	25.10	23.13	---	---	17.37	16.96	---	---	17.00	16.29
11a	2	5200	24.52	23.54	---	---	17.42	17.08	---	---	17.00	16.32
11a	2	5240	24.41	23.94	---	---	17.42	17.08	---	---	17.00	16.32
11a	2	5260	24.64	23.42	---	---	17.31	16.90	---	---	24.00	23.28
11a	2	5300	24.87	23.54	---	---	17.37	16.96	---	---	24.00	23.29
11a	2	5320	24.87	23.13	---	---	17.37	16.96	---	---	24.00	23.29
11a	2	5500	24.81	24.00	---	---	17.42	16.90	---	---	24.00	23.28
11a	2	5560	24.12	23.42	---	---	17.08	16.96	---	---	24.00	23.29
11a	2	5700	24.52	24.06	---	---	17.48	17.08	---	---	24.00	23.32
HT20	2	5180	25.33	24.35	---	---	18.47	18.18	---	---	17.00	16.60
HT20	2	5200	25.62	24.75	---	---	18.47	18.23	---	---	17.00	16.61
HT20	2	5240	25.45	24.81	---	---	18.35	18.23	---	---	17.00	16.61
HT20	2	5260	25.74	25.16	---	---	18.64	18.41	---	---	24.00	23.65
HT20	2	5300	25.62	25.16	---	---	18.52	18.58	---	---	24.00	23.68
HT20	2	5320	25.33	24.58	---	---	18.35	18.12	---	---	24.00	23.58
HT20	2	5500	25.62	25.39	---	---	18.52	18.47	---	---	24.00	23.66
HT20	2	5560	25.86	24.46	---	---	18.41	18.47	---	---	24.00	23.65
HT20	2	5700	25.62	25.39	---	---	18.47	18.23	---	---	24.00	23.61
HT40	2	5190	54.96	50.90	---	---	38.90	38.21	---	---	17.00	17.00
HT40	2	5230	54.38	52.52	---	---	38.90	38.32	---	---	17.00	17.00
HT40	2	5270	54.38	51.71	---	---	38.78	38.90	---	---	24.00	24.00
HT40	2	5310	53.80	52.75	---	---	39.02	38.78	---	---	24.00	24.00
HT40	2	5510	54.61	53.33	---	---	39.25	38.78	---	---	24.00	24.00
HT40	2	5550	55.07	52.87	---	---	39.59	38.67	---	---	24.00	24.00

Worst Plots



3.3 RF Output Power

3.3.1 Limit of RF Output Power

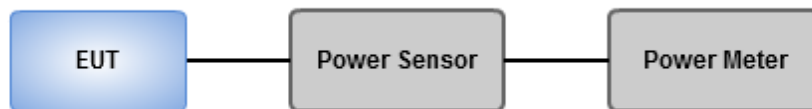
	Frequency Band (GHz)	Limit
☒	5.15~5.25	50mW or 4dBm+10 log B
☒	5.25~5.35	250mW or 11dBm+10 log B
☒	5.47~5.725	250mW or 11dBm+10 log B

Note: "B" is the 26dB emission bandwidth in MHz.

3.3.2 Test Procedures

- ☒ **Method PM-G (Measurement using a gated RF average power meter)**
 - ☒ Measurements may is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Conducted Output Power

Modulation Mode	N _{TX}	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11a	2	5180	10.93	10.08	---	---	22.574	13.54	17.00
11a	2	5200	10.83	9.93	---	---	21.946	13.41	17.00
11a	2	5240	11.01	10.32	---	---	23.383	13.69	17.00
11a	2	5260	17.82	17.87	---	---	121.769	20.86	24.00
11a	2	5300	17.33	17.78	---	---	114.055	20.57	24.00
11a	2	5320	17.29	17.71	---	---	112.600	20.52	24.00
11a	2	5500	17.89	17.67	---	---	119.997	20.79	24.00
11a	2	5560	18.71	16.79	---	---	122.055	20.87	24.00
11a	2	5700	18.92	16.91	---	---	127.074	21.04	24.00
HT20	2	5180	11.04	10.16	---	---	23.081	13.63	17.00
HT20	2	5200	11.03	10.23	---	---	23.220	13.66	17.00
HT20	2	5240	11.07	10.24	---	---	23.362	13.69	17.00
HT20	2	5260	18.14	18.09	---	---	129.580	21.13	24.00
HT20	2	5300	17.68	18.62	---	---	131.392	21.19	24.00
HT20	2	5320	17.62	18.31	---	---	125.574	20.99	24.00
HT20	2	5500	18.43	17.78	---	---	129.642	21.13	24.00
HT20	2	5560	18.87	17.22	---	---	129.813	21.13	24.00
HT20	2	5700	19.02	17.08	---	---	130.850	21.17	24.00
HT40	2	5190	13.71	13.15	---	---	44.150	16.45	17.00
HT40	2	5230	13.78	13.21	---	---	44.819	16.51	17.00
HT40	2	5270	20.42	20.81	---	---	230.658	23.63	24.00
HT40	2	5310	17.13	17.24	---	---	104.608	20.20	24.00
HT40	2	5510	15.55	14.36	---	---	63.182	18.01	24.00
HT40	2	5550	21.48	20.33	---	---	248.499	23.95	24.00

3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

	Frequency Band (GHz)	Limit (dBm)
☒	5.15~5.25	4
☒	5.25~5.35	11
☒	5.47~5.725	11

3.4.2 Test Procedures

☒ Method SA-1

1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

☐ Method SA-2

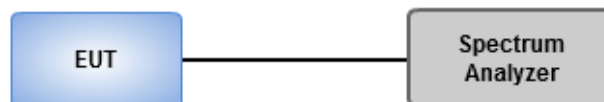
1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average at 100 traces
3. Use the peak marker function to determine the maximum amplitude level.
4. Add $10 \log(1/x)$, where x is the duty cycle

☐ Method SA-2 Alternative

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$.
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add $10 \log(1/x)$, where x is the duty cycle.

Note: 11a and HT20 uses Method SA-1, HT40 uses Method SA-2 Alternative.

3.4.3 Test Setup



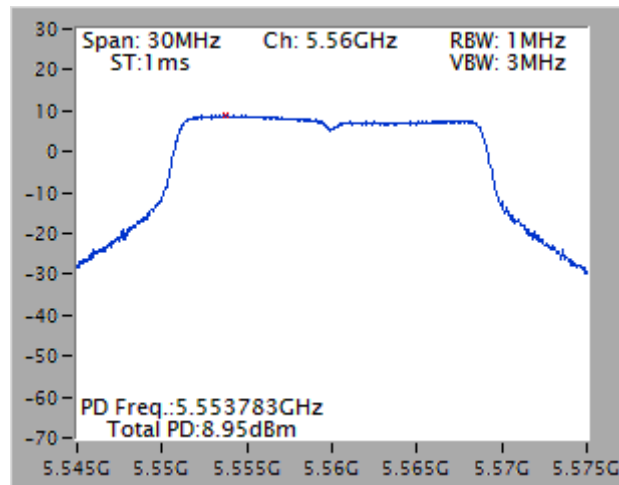
3.4.4 Test Result of Peak Power Spectral Density

Modulation Mode	N _{TX}	Freq. (MHz)	PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)
11a	2	5180	1.50	0.00	1.50	1.99
11a	2	5200	1.54	0.00	1.54	1.99
11a	2	5240	1.66	0.00	1.66	1.99
11a	2	5260	8.73	0.00	8.73	8.99
11a	2	5300	8.75	0.00	8.75	8.99
11a	2	5320	8.70	0.00	8.70	8.99
11a	2	5500	8.61	0.00	8.61	8.99
11a	2	5560	8.48	0.00	8.48	8.99
11a	2	5700	8.59	0.00	8.59	8.99
HT20	2	5180	1.31	0.00	1.31	1.99
HT20	2	5200	1.38	0.00	1.38	1.99
HT20	2	5240	1.52	0.00	1.52	1.99
HT20	2	5260	8.51	0.00	8.51	8.99
HT20	2	5300	8.94	0.00	8.94	8.99
HT20	2	5320	8.84	0.00	8.84	8.99
HT20	2	5500	8.79	0.00	8.79	8.99
HT20	2	5560	8.95	0.00	8.95	8.99
HT20	2	5700	8.88	0.00	8.88	8.99
HT40	2	5190	1.17	0.00	1.17	1.99
HT40	2	5230	0.89	0.00	0.89	1.99
HT40	2	5270	8.62	0.00	8.62	8.99
HT40	2	5310	4.74	0.00	4.74	8.99
HT40	2	5510	2.50	0.00	2.50	8.99
HT40	2	5550	7.75	0.00	7.75	8.99

Note:

- Test result is bin-by-bin summing measured value of each TX port.
- Directional gain = $5 + 10 \cdot \log(2/1) = 8.01 \text{ dBi} > 6 \text{ dBi}$
For 5150~5250 MHz band,
Limit shall be reduced to $4 \text{ dBm} - (8.01 \text{ dBi} - 6 \text{ dBi}) = 1.99 \text{ dBm}$
For 5250~5350 and 5470~5725 MHz band,
Limit shall be reduced to $11 \text{ dBm} - (8.01 \text{ dBi} - 6 \text{ dBi}) = 8.99 \text{ dBm}$

Worst Plots



3.5 Peak Excursion

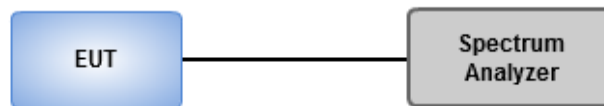
3.5.1 Peak Excursion Limit

Peak excursion of the modulation envelope shall not exceed 13 dB across any 1 MHz bandwidth.

3.5.2 Test Procedures

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Use the procedure of section 3.4.2 to measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD

3.5.3 Test Setup



3.5.4 Test Result of Peak Excursion

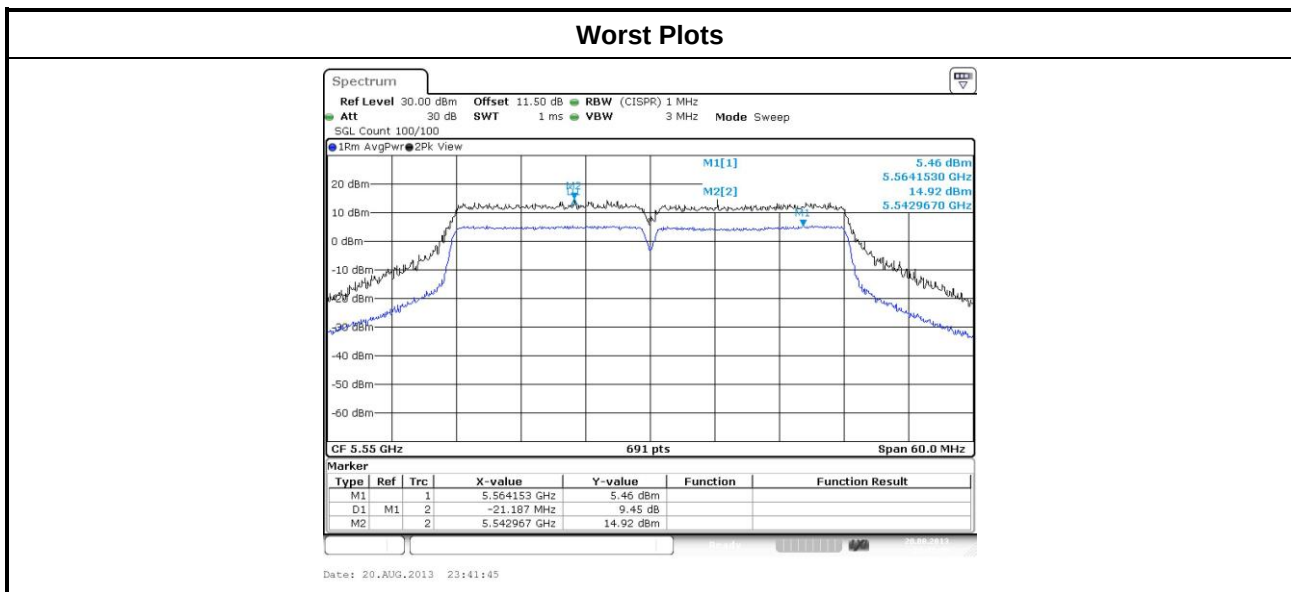
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit
11a	BPSK	2	5240	7.96	0.00	7.96	13
11a	QPSK	2	5240	8.72	0.00	8.72	13
11a	16QAM	2	5240	8.34	0.00	8.34	13
11a	64QAM	2	5240	8.15	0.00	8.15	13
HT20	BPSK	2	5240	8.45	0.00	8.45	13
HT20	QPSK	2	5240	8.44	0.00	8.44	13
HT20	16QAM	2	5240	8.6	0.00	8.60	13
HT20	64QAM	2	5240	9.28	0.00	9.28	13
HT40	BPSK	2	5230	8.72	0.00	8.72	13
HT40	QPSK	2	5230	9.37	0.00	9.37	13
HT40	16QAM	2	5230	8.55	0.00	8.55	13
HT40	64QAM	2	5230	8.06	0.00	8.06	13

Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit
11a	BPSK	2	5260	8.54	0.00	8.54	13
11a	QPSK	2	5260	8.53	0.00	8.53	13
11a	16QAM	2	5260	8.96	0.00	8.96	13
11a	64QAM	2	5260	8.39	0.00	8.39	13
HT20	BPSK	2	5300	8.07	0.00	8.07	13
HT20	QPSK	2	5300	8.35	0.00	8.35	13
HT20	16QAM	2	5300	8.99	0.00	8.99	13
HT20	64QAM	2	5300	8.45	0.00	8.45	13
HT40	BPSK	2	5270	7.42	0.00	7.42	13
HT40	QPSK	2	5270	8.25	0.00	8.25	13
HT40	16QAM	2	5270	8.59	0.00	8.59	13
HT40	64QAM	2	5270	8.08	0.00	8.08	13

Note: Measured value = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission. Since the duty cycle is < 98 %, duty factor is required to average spectrum
Peak excursion = Measured value – duty factor

Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit
11a	BPSK	2	5700	7.88	0.00	7.88	13
11a	QPSK	2	5700	8.32	0.00	8.32	13
11a	16QAM	2	5700	9.3	0.00	9.30	13
11a	64QAM	2	5700	8.3	0.00	8.30	13
HT20	BPSK	2	5700	8.09	0.00	8.09	13
HT20	QPSK	2	5700	8.95	0.00	8.95	13
HT20	16QAM	2	5700	8.52	0.00	8.52	13
HT20	64QAM	2	5700	9.05	0.00	9.05	13
HT40	BPSK	2	5550	8.53	0.00	8.53	13
HT40	QPSK	2	5550	7.97	0.00	7.97	13
HT40	16QAM	2	5550	9.45	0.00	9.45	13
HT40	64QAM	2	5550	9.25	0.00	9.25	13

Note: Measured value = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission.



Note: Measured value
 = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission
 = Mark 2 – Mark 1

3.6 Transmitter Radiated and Band Edge Emissions

3.6.1 Limit of Transmitter Radiated and Band Edge 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:
Qusai-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.

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.825 GHz	5.715 5.725 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] 5.825 5.835 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

Note 1: 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).

3.6.2 Test Procedures

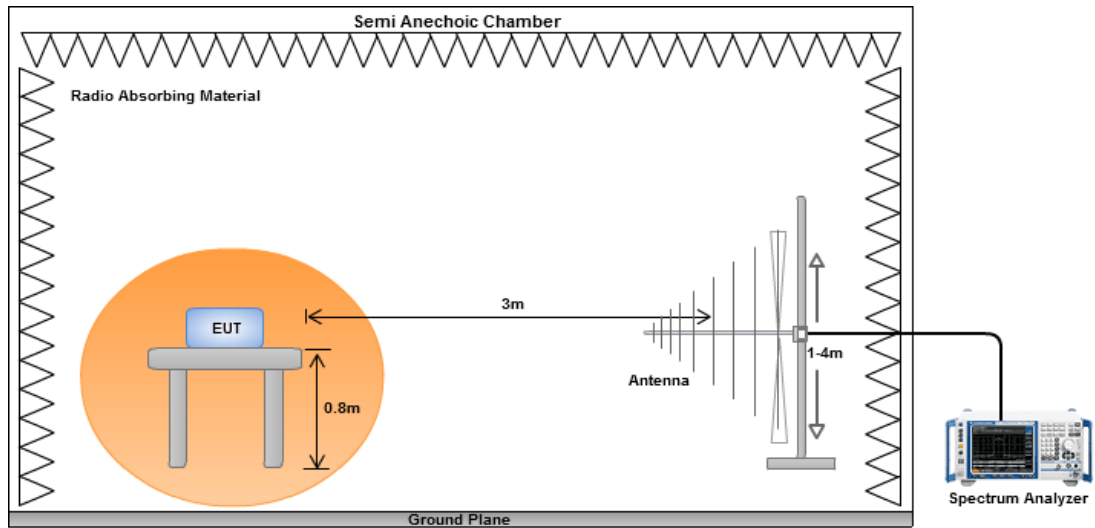
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
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:

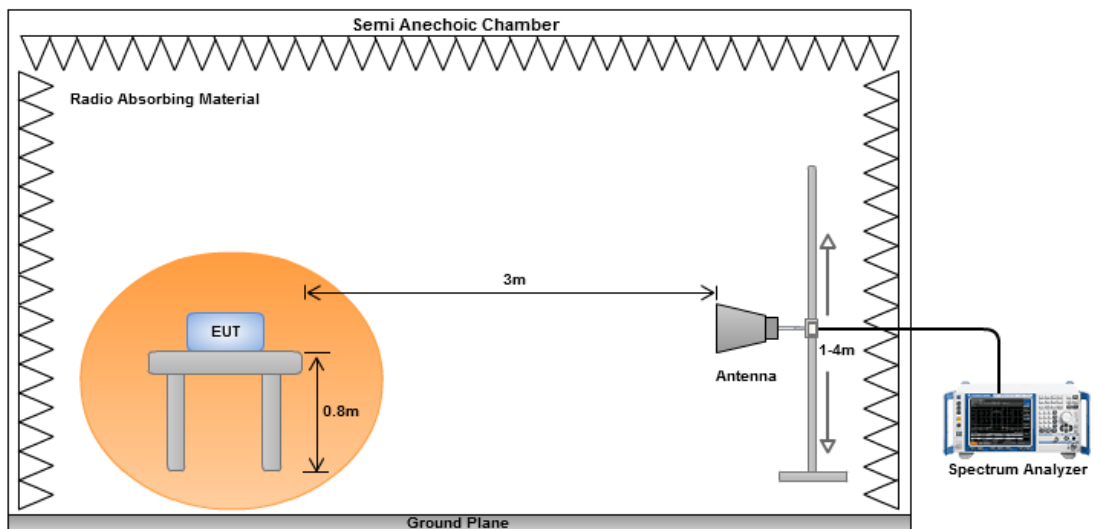
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.6.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.6.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Polarization	Horizontal	Test Freq. (MHz)	5550
Test Configuration	1		
Level (dBuV/m) </			

Polarization	Vertical	Test Freq. (MHz)	5550
Test Configuration	1		
Level (dBUV/m)			

Polarization	Horizontal	Test Freq. (MHz)	5550
Test Configuration	2		
Level (dBUV/m)			

Polarization	Vertical	Test Freq. (MHz)	5550
Test Configuration	2		
Level (dBuV/m)			

3.6.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a

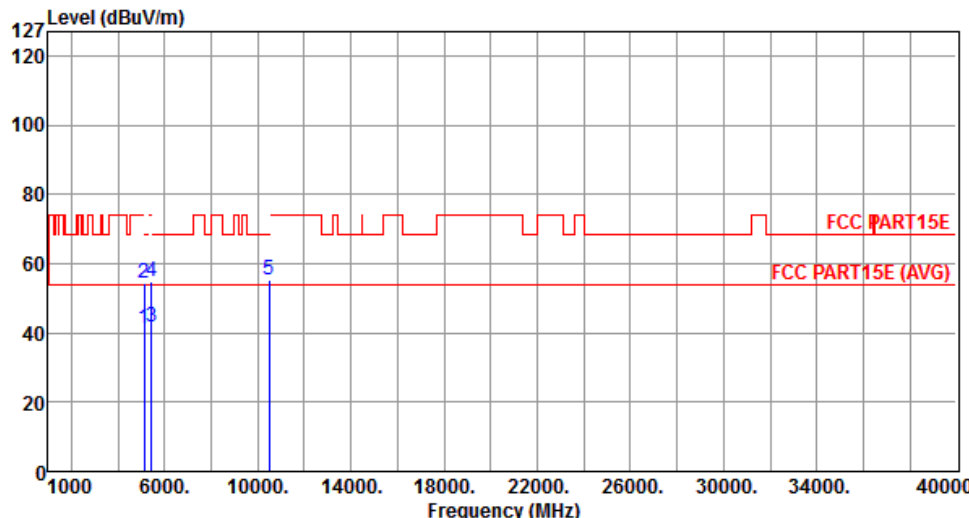
Polarization	Horizontal			Test Freq. (MHz)	5180				
Level (dBuV/m) <									

Polarization	Vertical	Test Freq. (MHz)	5180
Level (dBuV/m)			

Polarization	Horizontal				Test Freq. (MHz)		5200		
Level (dBuV/m) </									

Polarization	Vertical	Test Freq. (MHz)	5200
Level (dBuV/m)			

Polarization	Horizontal				Test Freq. (MHz)	5240			
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	41.32	54.00	-12.68	36.45	4.87	Average	---	---
2	5120.00	54.39	74.00	-19.61	49.52	4.87	Peak	---	---
3	5440.00	41.58	54.00	-12.42	36.43	5.15	Average	---	---
4	5440.00	55.02	74.00	-18.98	49.87	5.15	Peak	---	---
5	10480.00	55.21	68.30	-13.09	40.37	14.84	Peak	---	---

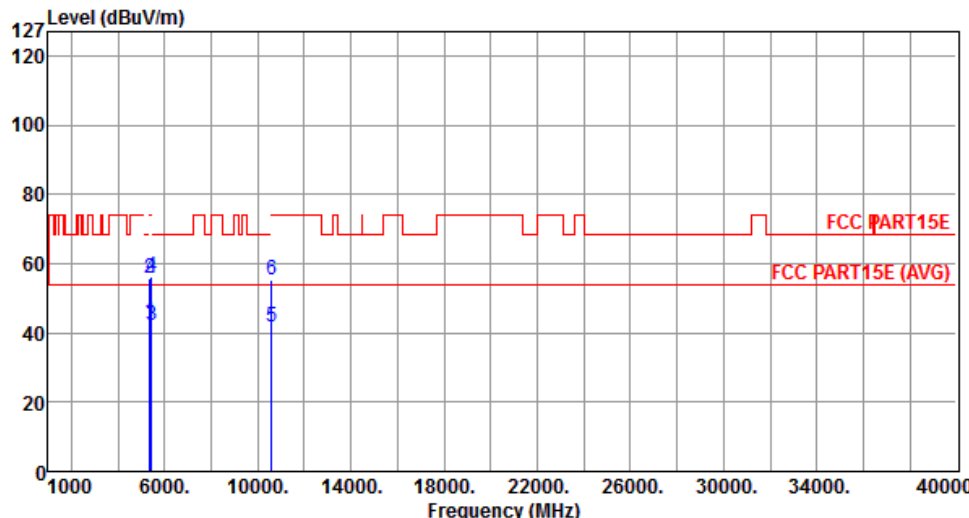
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5240
Level (dBuV/m) <			

Polarization	Horizontal	Test Freq. (MHz)	5260						
Level (dBuV/m)									

Polarization	Vertical	Test Freq. (MHz)	5260						
Level (dBuV/m)									

Polarization	Horizontal			Test Freq. (MHz)	5300				
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5360.00	42.90	54.00	-11.10	37.81	5.09	Average	---	---
2	5360.00	55.62	74.00	-18.38	50.53	5.09	Peak	---	---
3	5440.00	42.39	54.00	-11.61	37.24	5.15	Average	---	---
4	5440.00	56.35	74.00	-17.65	51.20	5.15	Peak	---	---
5	10600.00	41.62	54.00	-12.38	26.68	14.94	Average	---	---
6	10600.00	55.21	74.00	-18.79	40.27	14.94	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5300						
Level (dBuV/m)									

Polarization	Horizontal	Test Freq. (MHz)	5320
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5320						
Level (dBuV/m) </									

Polarization	Horizontal	Test Freq. (MHz)	5500
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5500
Level (dBuV/m)			

Polarization	Horizontal				Test Freq. (MHz)		5560		
Level (dBuV/m) <									

Polarization	Vertical	Test Freq. (MHz)	5560						
Level (dBuV/m)									

Polarization	Horizontal	Test Freq. (MHz)	5700
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5700						
Level (dBuV/m)									

3.6.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

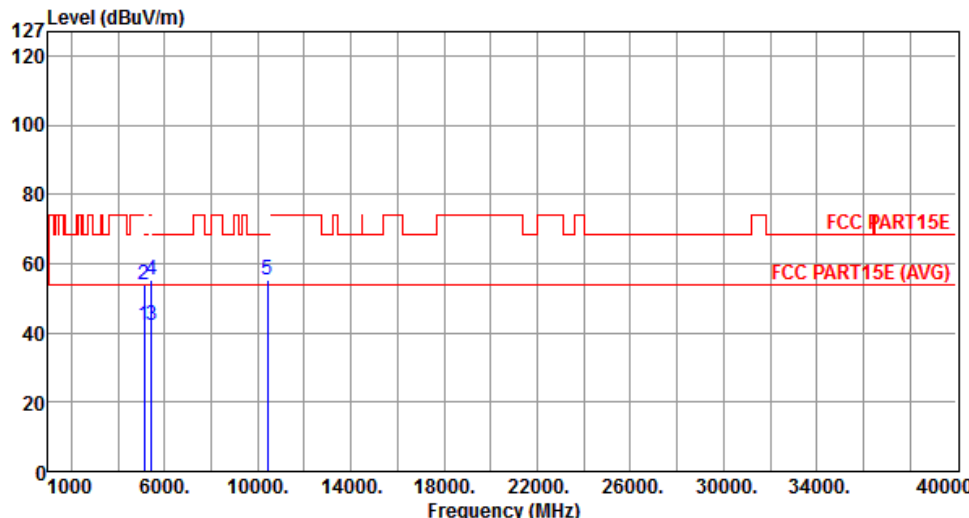
Polarization	Horizontal	Test Freq. (MHz)	5180
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	41.89	54.00	-12.11	37.02	4.87	Average	---	---
2	5120.00	55.00	74.00	-19.00	50.13	4.87	Peak	---	---
3	5440.00	41.86	54.00	-12.14	36.71	5.15	Average	---	---
4	5440.00	55.08	74.00	-18.92	49.93	5.15	Peak	---	---
5	10360.00	55.22	68.30	-13.08	40.51	14.71	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5180
Level (dBuV/m) <			

Polarization	Horizontal			Test Freq. (MHz)	5200				
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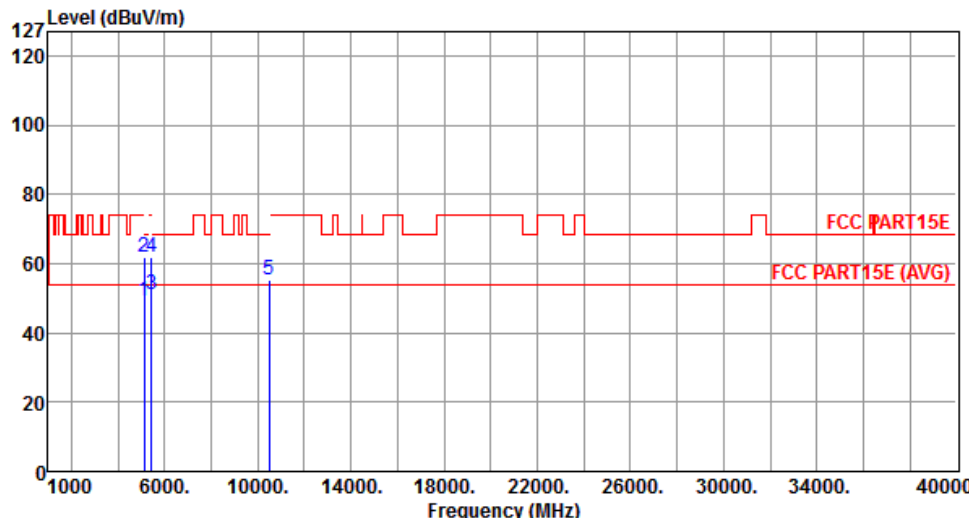
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	42.03	54.00	-11.97	37.16	4.87	Average	---	---
2	5120.00	54.12	74.00	-19.88	49.25	4.87	Peak	---	---
3	5440.00	42.02	54.00	-11.98	36.87	5.15	Average	---	---
4	5440.00	55.16	74.00	-18.84	50.01	5.15	Peak	---	---
5	10400.00	55.23	68.30	-13.07	40.48	14.75	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5200						
Level (dBuV/m)									

Polarization	Horizontal				Test Freq. (MHz)		5240		
Level (dBuV/m)									

Polarization	Vertical				Test Freq. (MHz)	5240			
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	49.25	54.00	-4.75	44.38	4.87	Average	---	---
2	5120.00	61.66	74.00	-12.34	56.79	4.87	Peak	---	---
3	5440.00	51.03	54.00	-2.97	45.88	5.15	Average	---	---
4	5440.00	61.94	74.00	-12.06	56.79	5.15	Peak	---	---
5	10480.00	55.23	68.30	-13.07	40.39	14.84	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5260						
Level (dBuV/m) <									

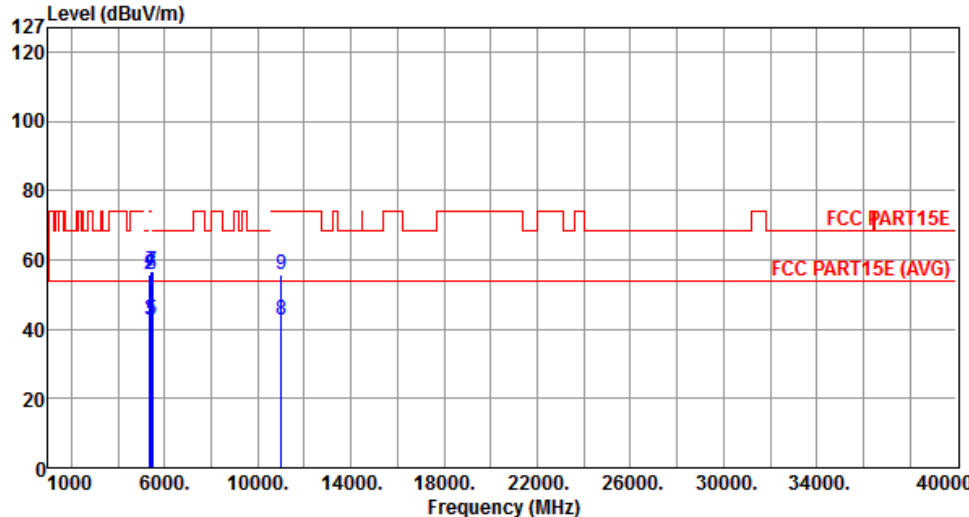
Polarization	Horizontal			Test Freq. (MHz)		5300			
Level (dBuV/m) </									

Polarization	Vertical	Test Freq. (MHz)	5300						
Level (dBuV/m)									

Polarization	Horizontal	Test Freq. (MHz)	5320
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5320
Level (dBuV/m)			

Polarization	Horizontal			Test Freq. (MHz)		5500			
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5360.00	42.77	54.00	-11.23	37.68	5.09	Average	---	---
2	5360.00	55.64	74.00	-18.36	50.55	5.09	Peak	---	---
3	5400.00	42.75	54.00	-11.25	37.65	5.10	Average	---	---
4	5400.00	56.65	74.00	-17.35	51.55	5.10	Peak	---	---
5	5440.00	42.82	54.00	-11.18	37.67	5.15	Average	---	---
6	5440.00	55.63	74.00	-18.37	50.48	5.15	Peak	---	---
7	5470.00	56.91	68.30	-11.39	51.72	5.19	Peak	---	---
8	11000.00	42.50	54.00	-11.50	27.22	15.28	Average	---	---
9	11000.00	55.89	74.00	-18.11	40.61	15.28	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5500						
Level (dBuV/m)									

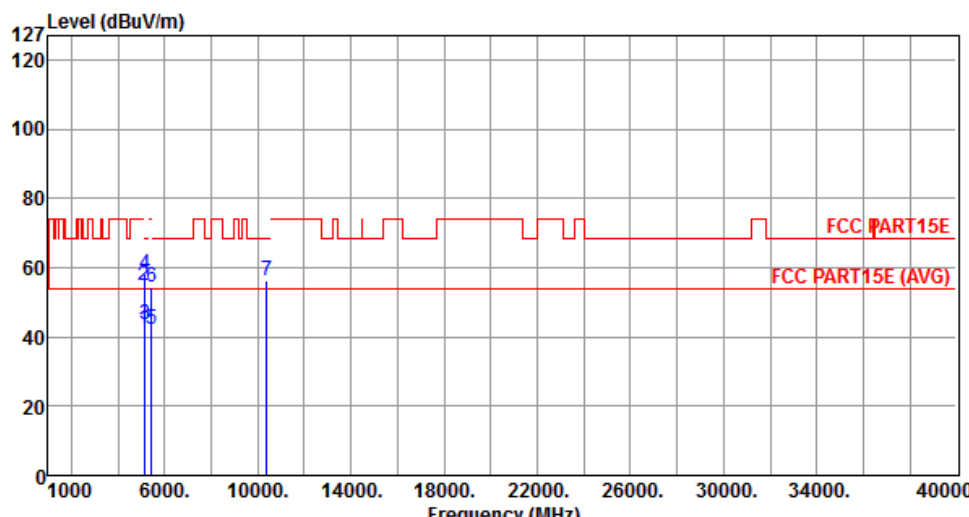
Polarization	Vertical	Test Freq. (MHz)	5560						
Level (dBuV/m)									

Polarization	Horizontal	Test Freq. (MHz)	5700
Level (dBuV/m) <			

Polarization	Vertical	Test Freq. (MHz)	5700						
Level (dBuV/m)									

3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

Polarization	Horizontal	Test Freq. (MHz)	5190
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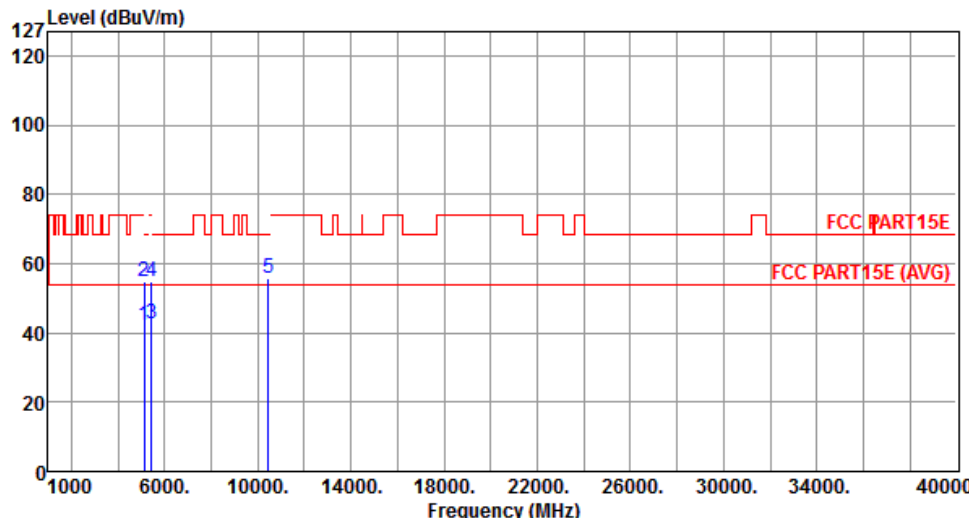
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	42.24	54.00	-11.76	37.37	4.87	Average	---	---
2	5120.00	54.71	74.00	-19.29	49.84	4.87	Peak	---	---
3	5150.00	43.68	54.00	-10.32	38.74	4.94	Average	---	---
4	5150.00	58.16	74.00	-15.84	53.22	4.94	Peak	---	---
5	5440.00	42.39	54.00	-11.61	37.24	5.15	Average	---	---
6	5440.00	54.40	74.00	-19.60	49.25	5.15	Peak	---	---
7	10380.00	56.07	68.30	-12.23	41.34	14.73	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5190						
Level (dBuV/m)									

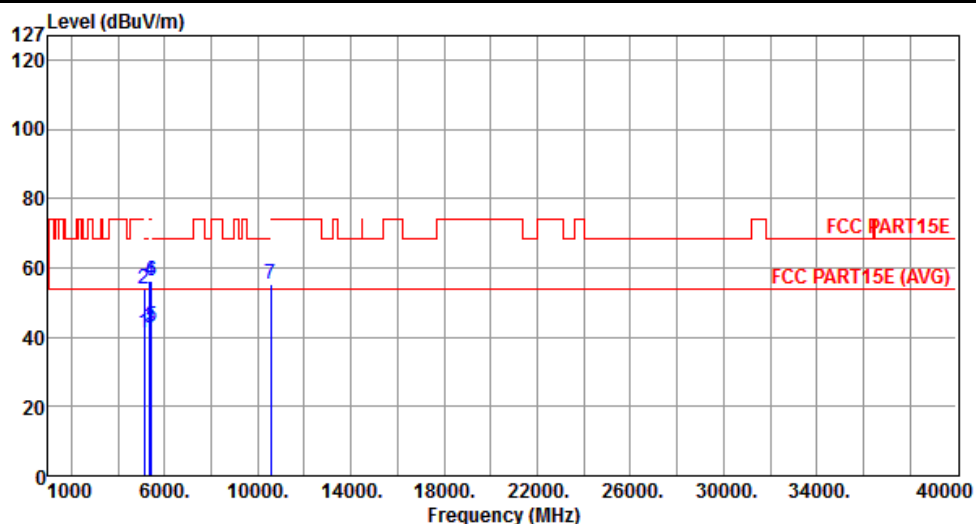
Polarization	Horizontal				Test Freq. (MHz)	5230			
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	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	42.11	54.00	-11.89	37.24	4.87	Average	---	---
2	5120.00	54.66	74.00	-19.34	49.79	4.87	Peak	---	---
3	5440.00	42.51	54.00	-11.49	37.36	5.15	Average	---	---
4	5440.00	54.89	74.00	-19.11	49.74	5.15	Peak	---	---
5	10460.00	55.68	68.30	-12.62	40.86	14.82	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Polarization	Vertical	Test Freq. (MHz)	5230						
Level (dBuV/m)									



Polarization	Horizontal	Test Freq. (MHz)	5270
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5270						
Level (dBuV/m)									

Polarization	Horizontal			Test Freq. (MHz)		5310			
Level (dBuV/m) <									

Polarization	Vertical	Test Freq. (MHz)	5310
Level (dBuV/m)			

Polarization	Horizontal	Test Freq. (MHz)	5510
Level (dBuV/m)			

Polarization	Vertical	Test Freq. (MHz)	5510						
Level (dBuV/m)									

Polarization	Horizontal	Test Freq. (MHz)	5550						
Level (dBuV/m)									

Polarization	Vertical	Test Freq. (MHz)	5550						
Level (dBuV/m)									

3.7 Frequency Stability

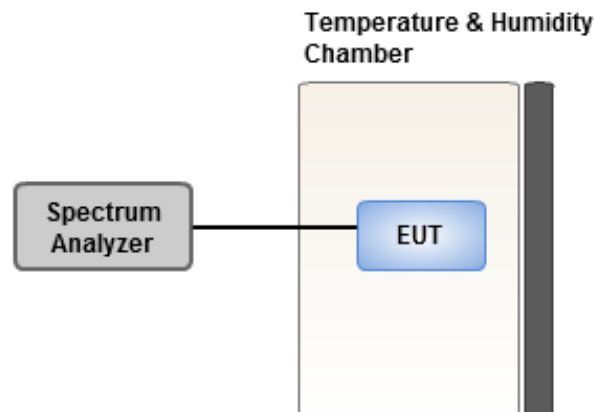
3.7.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

3.7.2 Test Procedures

1. The EUT is installed in an environment test chamber with external power source.
2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.
3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.
4. When temperature is stabled, measure the frequency stability.
5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.

3.7.3 Test Setup



3.7.4 Test Result of Frequency Stability

Frequency: 5320 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	-0.01	0.04	0.42	0.33
T20°CVmin	4.23	4.18	4.30	3.87
T55°CVnom	4.50	4.73	4.94	5.04
T50°CVnom	4.45	4.17	4.62	5.01
T40°CVnom	-2.55	-1.88	-2.04	-2.04
T30°CVnom	0.78	0.83	0.60	0.77
T20°CVnom	0.74	0.94	0.94	1.58
T10°CVnom	-0.45	0.08	-0.51	-0.64
T0°CVnom	0.46	1.23	0.82	0.33
T-10°CVnom	0.12	-0.12	0.57	0.34
T-20°CVnom	-0.42	-0.71	-0.22	-0.60
T-30°CVnom	0.51	1.23	0.60	1.04
Vnom [V]: 110		Vmax [V]: 126.5		Vmin [V]: 93.5
Tnom [°C]: 20		Tmax [°C]: 55		Tmin [°C]: -30

4 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, 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 Hsiang. Location map can be found on our website <http://www.icertifi.com.tw>.

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

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

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