

FCC REPORT

Applicant: AZUMI S.A

Address of Applicant: Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza,
Piso 16 of. 16-01, Marbella, Ciudad de Panamá City, Rep.
Panamá

Equipment Under Test (EUT)

Product Name: Mobile Phone

Model No.: A50LT

Trade mark: Azumi

FCC ID: QRP-AZUMIA50LT

Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407

Date of sample receipt: 20 Jul., 2015

Date of Test: 21 Jul., to 31 Aug., 2015

Date of report issued: 01 Sep., 2015

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	01 Sep., 2015	Original

Prepared by:

Luna Gao

Date:

01 Sep., 2015

Report Clerk

Reviewed by:

Carey Chen

Date:

01 Sep., 2015

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.407 (g)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Output Power	15.407 (a)	Pass
26dB Emission Bandwidth	15.407 (a)	Pass
6dB Emission Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407 (a)	Pass
Band Edge	15.407(b)	Pass
Spurious Emission	15.205/15.209	Pass
Frequency Stability	15.407(g)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	AZUMI S.A
Address of Applicant:	Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza, Piso 16 of. 16-01, Marbella, Ciudad de Panamá City, Rep. Panamá
Manufacturer:	AZUMI (HK) LTD
Address of Manufacturer:	FLAT/RM 18 BLK 1 14/F GOLDEN INDUSTRIAL BUILDING 16-26 KWAI TAK STREET KWAI CHUNG
Factory:	Heng Da Chuang Xin Technology Limited
Address of Factory	Rm14H, Taibang Technology building, Hi-Tech Park South, Nanshan District , Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Mobile Phone
Model No.:	A50LT
Operation Frequency:	Band 1: 5150MHz-5250MHz
Operation mode:	Mobile operation
Channel numbers:	Band 1: 802.11a/802.11n20: 4, 802.11n40: 2
Channel separation:	802.11a/802.11n20: 20MHz, 802.11n40: 40MHz
Modulation technology: (IEEE 802.11a)	BPSK, QPSK,16-QAM, 64-QAM
Modulation technology: (IEEE 802.11n)	BPSK, QPSK, 16-QAM, 64-QAM
Data speed(IEEE 802.11a)	6Mbps, 9Mbps,12Mbps,18Mbps, 24Mbps,36Mbps,48Mbps, 54Mbps
Data speed (IEEE 802.11n20):	MCS0: 6.5Mbps, MCS1:13Mbps, MCS2:19.5Mbps, MCS3:26Mbps, MCS4:39Mbps, MCS5:52Mbps, MCS6:58.5Mbps, MCS7:65Mbps
Data speed (IEEE 802.11n40):	MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps
Antenna Type:	Integral Antenna
Antenna gain:	2.9 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V/2000mAh
AC adapter:	Model: S0500100-US Input:100-240V AC,50/60Hz 0.4A Output:5V DC MAX 1.0A

Operation Frequency each of channel

Band 1			
802.11a/802.11n20		802.11n40	
Channel	Frequency	Channel	Frequency
36	5180MHz	39	5190MHz
40	5200MHz	45	5230MHz
44	5220MHz		
48	5240MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Band 1			
802.11a/802.11n20		802.11n40	
Channel	Frequency	Channel	Frequency
The lowest channel	5180MHz	The lowest channel	5190MHz
The middle channel	5200MHz	The highest channel	5230MHz
The highest channel	5240MHz		

5.3 Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation in SISO mode.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a	6 Mbps
802.11n20	6.5 Mbps
802.11n40	13 Mbps
Final Test Mode:	
According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 6 Mbps for 802.11a, 6.5 Mbps for 802.11n20 and 13 Mbps for 802.11n40. All test items for 802.11a and 802.11n were performed with duty cycle above 98%, meet the requirements of KDB789033.	

5.4 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> FCC - Registration No.: 817957 Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012. IC - Registration No.: 10106A-1 The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. CNAS - Registration No.: CNAS L6048 Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.5 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd. Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-23118282 Fax: +86-755-23116366
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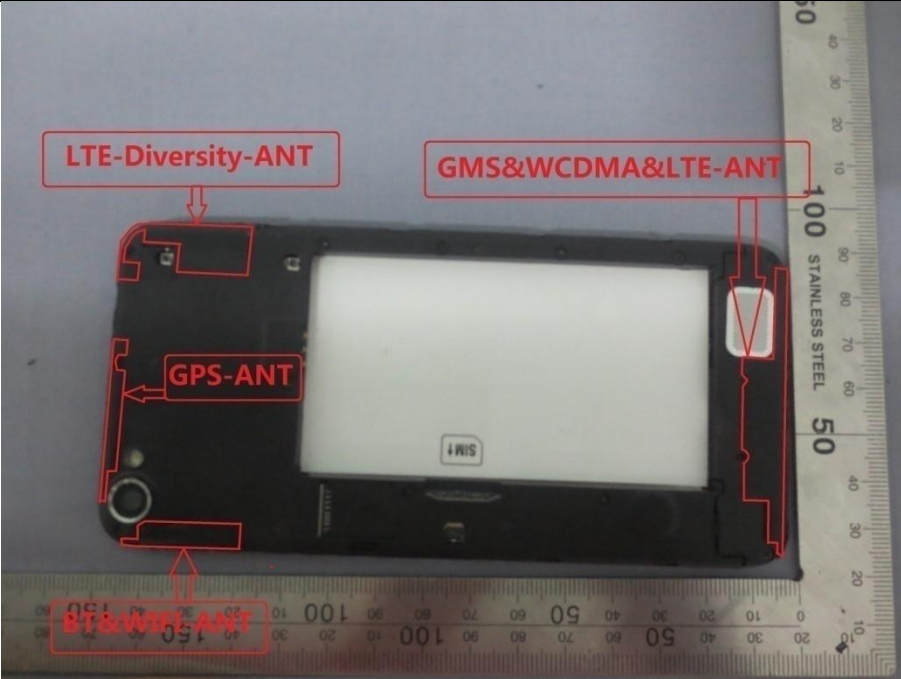
5.6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	CCIS0002	N/A	N/A
3	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2015	03-31-2016
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-28-2015	03-28-2016
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-28-2015	03-28-2016
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2015	03-31-2016
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2015	03-31-2016
9	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2015	03-31-2016
10	Pre-amplifier (18-40GHz)	A.H System	PAM-1840	GTS219	04-01-2015	03-31-2016
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	03-28-2015	03-28-2016
12	EMI Test Receiver	Rohde & Schwarz	ESRP	CCIS0167	03-28-2015	03-28-2016
13	Spectrum Analyzer	HP	8564E	CCIS0150	03-28-2015	03-28-2016

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	11-10-2012	11-09-2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-28-2015	03-28-2016
3	LISN	CHASE	MN2050D	CCIS0074	03-28-2015	03-28-2016
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2015	03-31-2016
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement

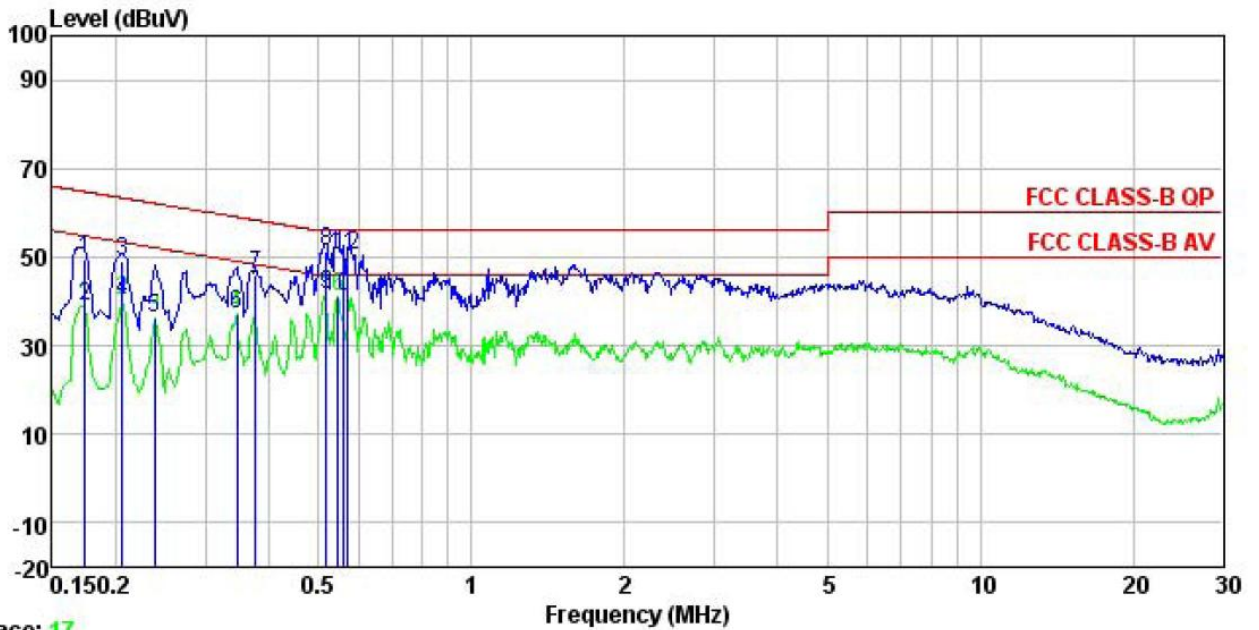
Standard requirement:	FCC Part 15 E Section 15.203 /407(a)
<p><i>15.203 requirement:</i> <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i> <i>This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.</i></p>	
E.U.T Antenna:	
<p><i>The WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 2.9 dBi.</i></p>	
	

6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 15.207														
Test Method:	ANSI C63.4: 2009														
Test Frequency Range:	150 kHz to 30 MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9 kHz, VBW=30 kHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
	Frequency range (MHz)		Limit (dBuV)												
		Quasi-peak	Average												
	0.15-0.5	66 to 56*	56 to 46*												
0.5-5	56	46													
5-30	60	50													
* Decreases with the logarithm of the frequency.															
Test procedure	<ol style="list-style-type: none"> The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement. 														
Test setup:	<p><i>Remark:</i> <i>E.U.T: Equipment Under Test</i> <i>LISN: Line Impedance Stabilization Network</i> <i>Test table height=0.8m</i></p>														
Test Instruments:	Refer to section 5.6 for details														
Test mode:	Refer to section 5.3 for details.														
Test results:	Passed														

Measurement Data

Line:

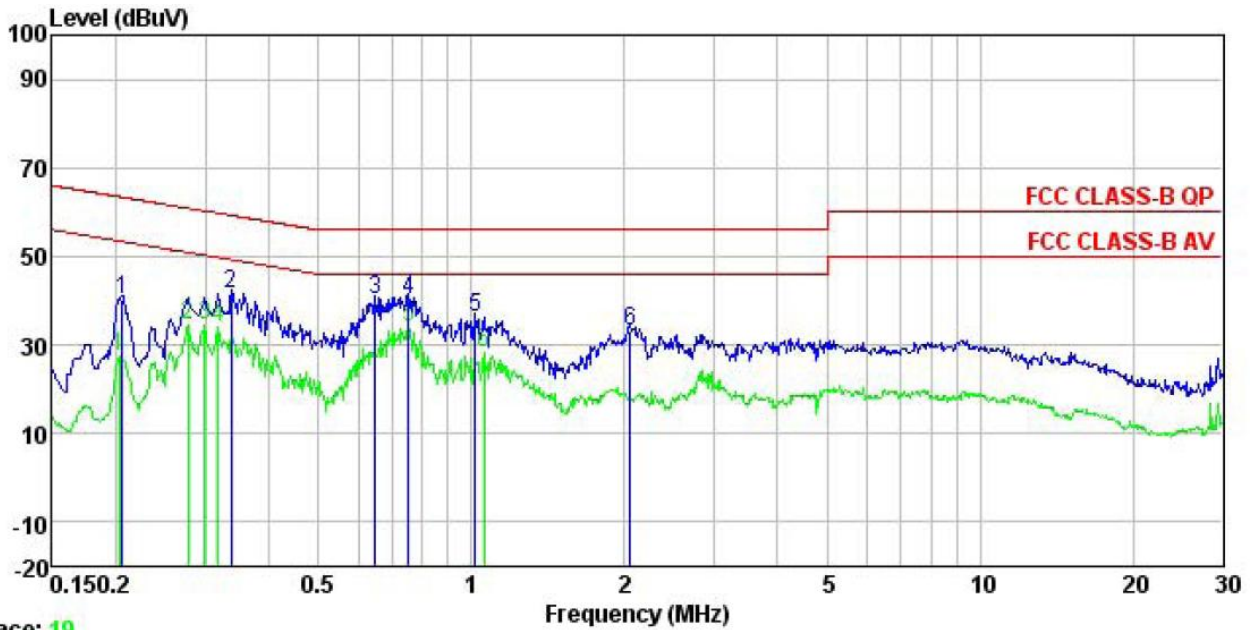


Trace: 17

Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN LINE
 EUT : Mobile Phone
 Model : A50LT
 Test Mode : 5G-WIFI mode
 Power Rating : AC120/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.174	38.30	0.27	10.77	49.34	64.77	-15.43	QP
2	0.174	27.78	0.27	10.77	38.82	54.77	-15.95	Average
3	0.206	37.97	0.28	10.76	49.01	63.36	-14.35	QP
4	0.206	29.37	0.28	10.76	40.41	53.36	-12.95	Average
5	0.238	25.13	0.27	10.75	36.15	52.17	-16.02	Average
6	0.346	26.03	0.27	10.73	37.03	49.05	-12.02	Average
7	0.377	34.94	0.28	10.72	45.94	58.34	-12.40	QP
8	0.518	40.04	0.28	10.76	51.08	56.00	-4.92	QP
9	0.518	30.61	0.28	10.76	41.65	46.00	-4.35	Average
10	0.546	29.93	0.27	10.76	40.96	46.00	-5.04	Average
11	0.558	39.39	0.27	10.77	50.43	56.00	-5.57	QP
12	0.570	39.20	0.26	10.77	50.23	56.00	-5.77	QP

Neutral:



Trace: 19

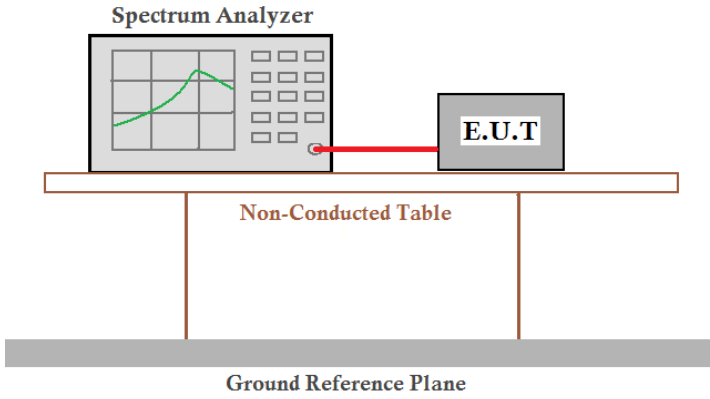
Site : CCIS Shielding Room
 Condition : FCC CLASS-B QP LISN NEUTRAL
 EUT : Mobile Phone
 Model : A50LT
 Test Mode : 5G-WIFI mode
 Power Rating : AC120/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.206	29.22	0.25	10.76	40.23	63.36	-23.13	QP
2	0.337	30.35	0.26	10.73	41.34	59.27	-17.93	QP
3	0.647	29.05	0.21	10.77	40.03	56.00	-15.97	QP
4	0.751	29.39	0.19	10.79	40.37	56.00	-15.63	QP
5	1.016	25.11	0.22	10.87	36.20	56.00	-19.80	QP
6	2.055	22.00	0.29	10.96	33.25	56.00	-22.75	QP

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

6.3 Conducted Output Power

Test Requirement:	FCC Part 15 E Section 15.407 (a)
Test Method:	ANSI C63.10:2009, KDB 789033 D02
Limit:	Band 5150MHz~5250MHz: 250mW (If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi);
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

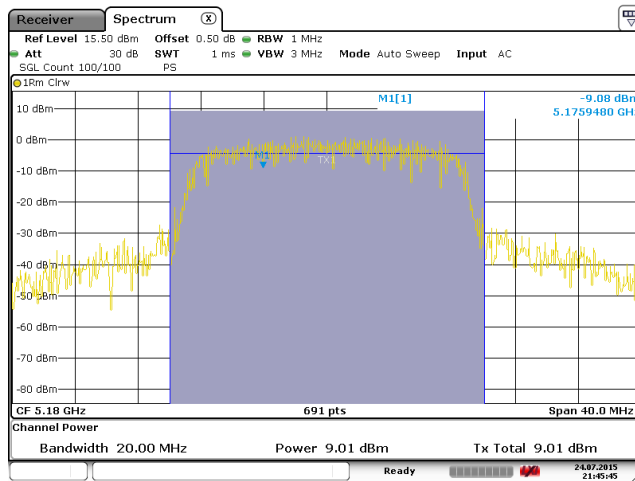
Measurement Data

Band 1:

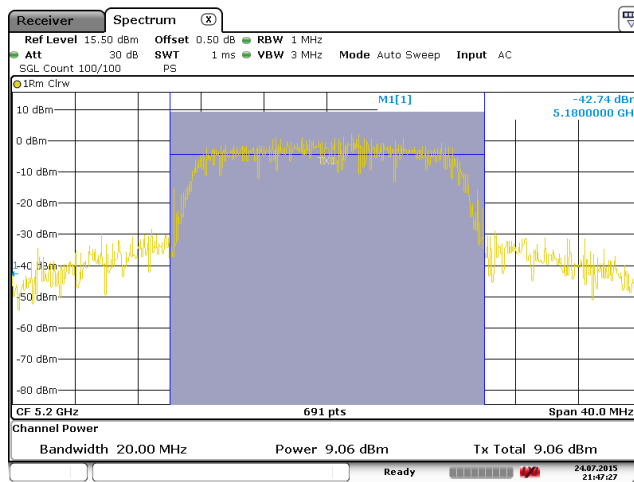
Mode	Test CH	Conducted Output power (dBm)	Limit (dBm)	Result
802.11a	Lowest	9.01	24.0	Pass
	Middle	9.06	24.0	Pass
	Highest	8.44	24.0	Pass
802.11n20	Lowest	8.07	24.0	Pass
	Middle	8.09	24.0	Pass
	Highest	8.52	24.0	Pass
802.11n40	Lowest	8.27	24.0	Pass
	Middle	---	24.0	Pass
	Highest	8.32	24.0	Pass
Remark: The directional Gain of antenna is less than 6 dBi, so the limit of power is 24 dBm (250mW).				

Test plot as follows:

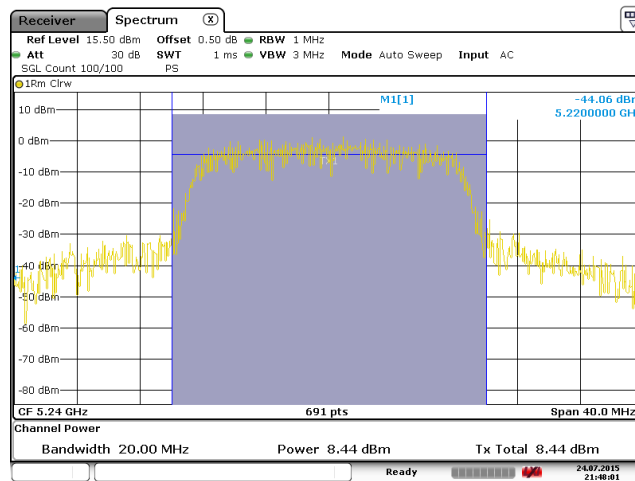
802.11a



Lowest channel

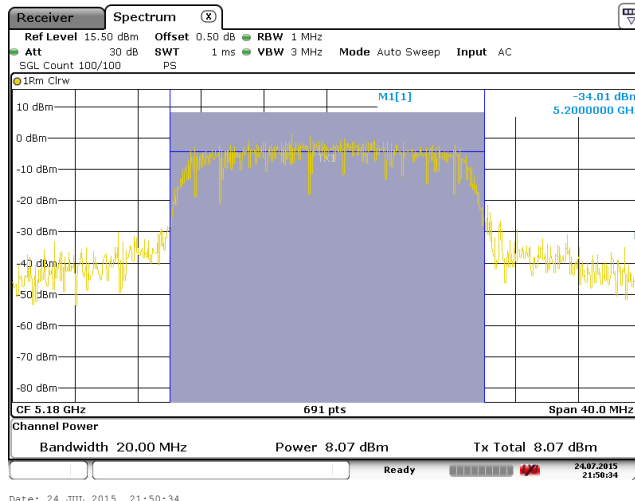


Middle channel

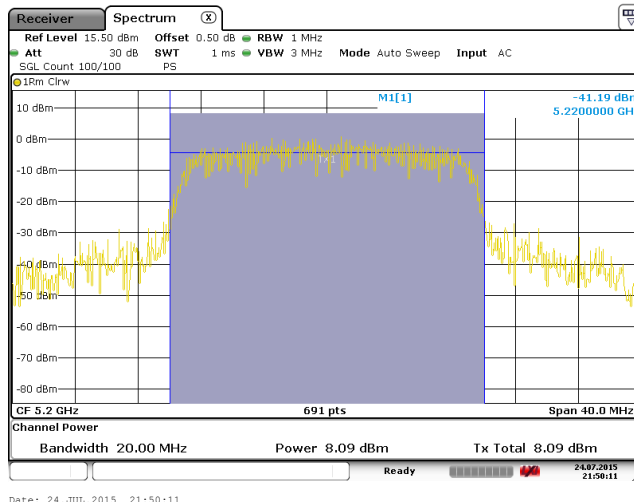


Highest channel

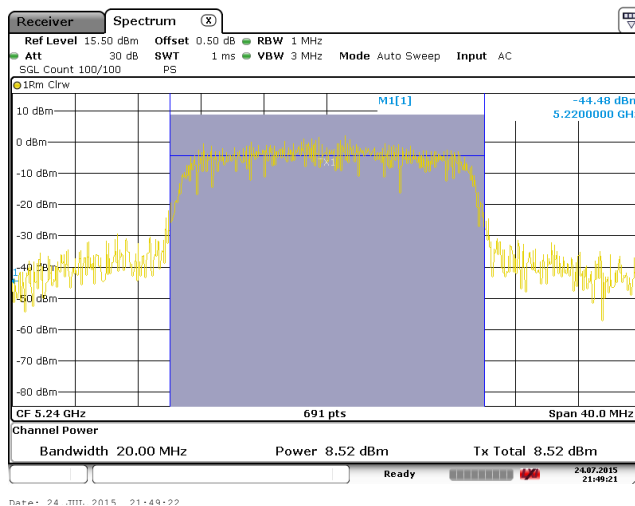
802.11n20



Lowest channel

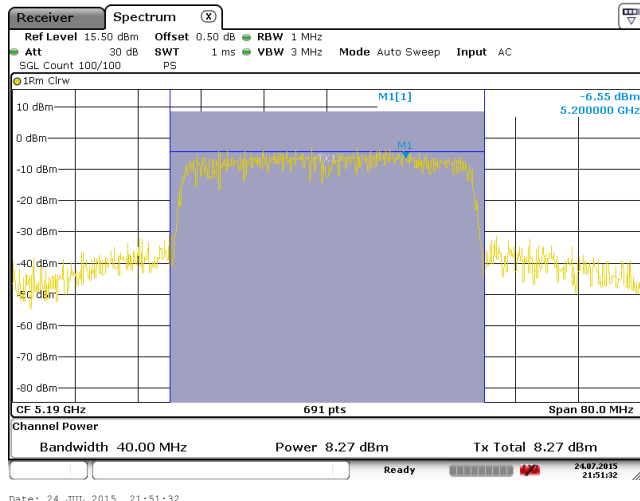


Middle channel

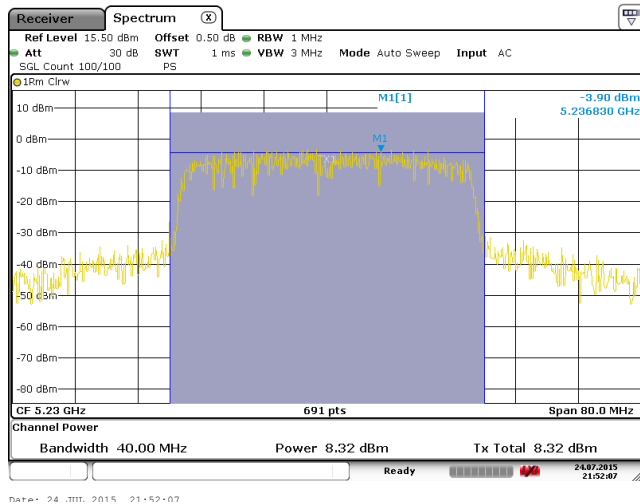


Highest channel

802.11n40



Lowest channel



Highest channel

6.4 Emission Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) and Section 15.407 (e)
Test Method:	ANSI C63.10: 2009 and KDB 789033 D02
Limit:	Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth)
Test setup:	<p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

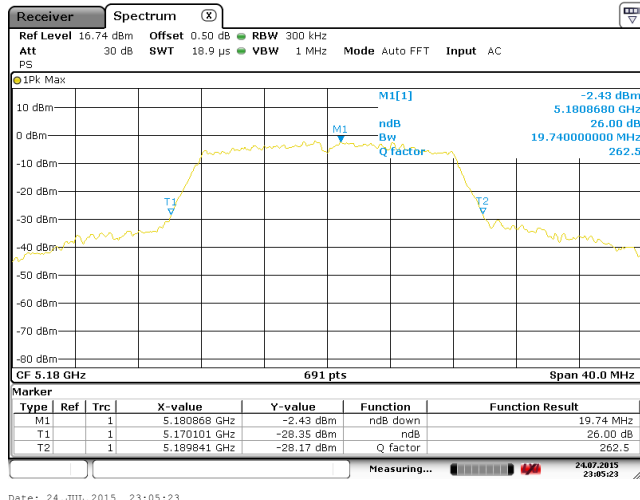
Band 1:

Test Channel	26dB Emission Bandwidth (MHz)			Limit	Result
	802.11a	802.11n20	802.11n40		
Lowest	19.74	19.97	39.71	For report purpose	
Middle	20.03	20.03	----		
Highest	19.86	19.91	39.71		

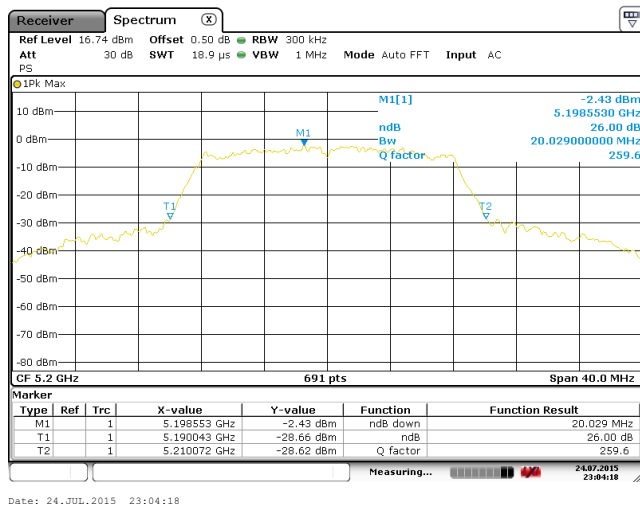
Test Channel	99% Occupy Bandwidth (MHz)			Limit	Result
	802.11a	802.11n20	802.11n40		
Lowest	16.79	17.66	36.01	For report purpose	
Middle	16.96	17.77	----		
Highest	16.96	17.71	36.01		

Test plot as follows:

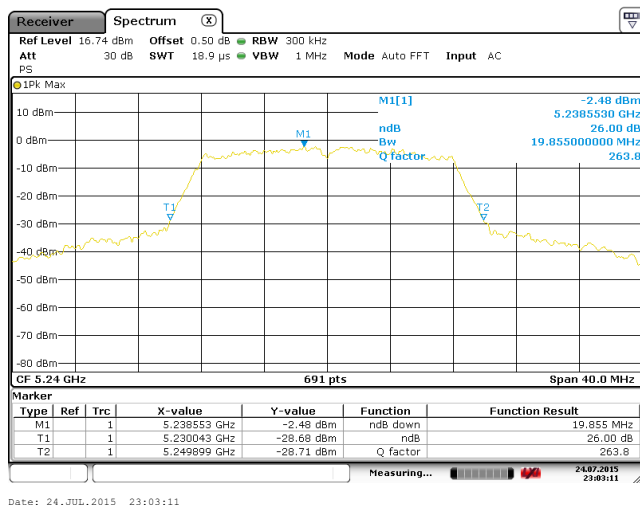
26 dB EBW - 802.11a



Lowest channel

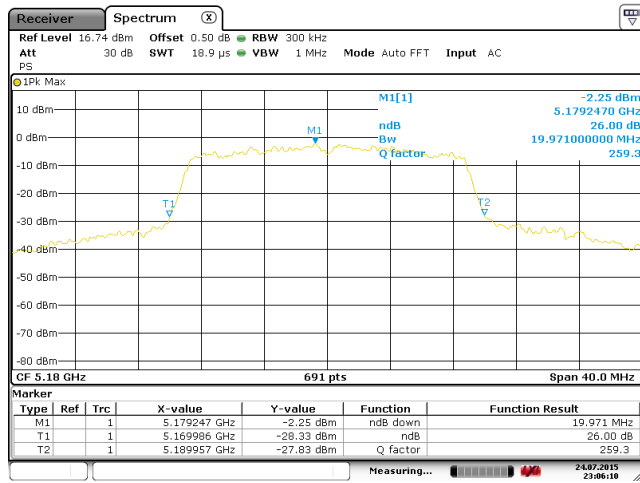


Middle channel

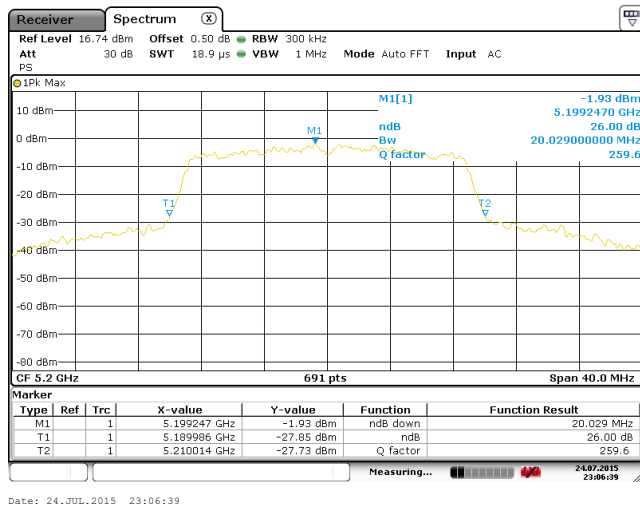


Highest channel

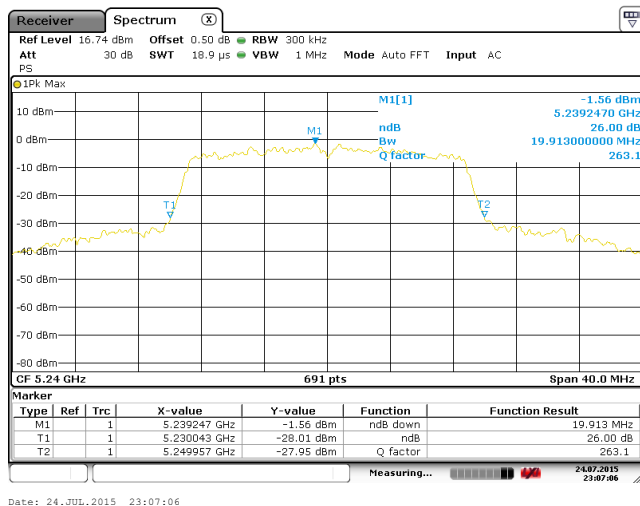
802.11n20



Lowest channel

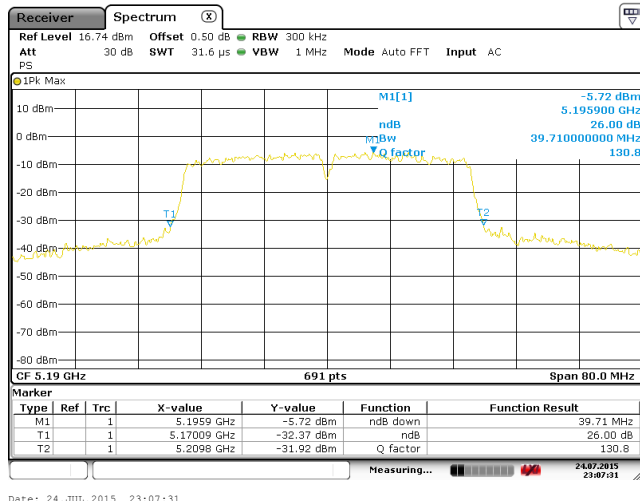


Middle channel

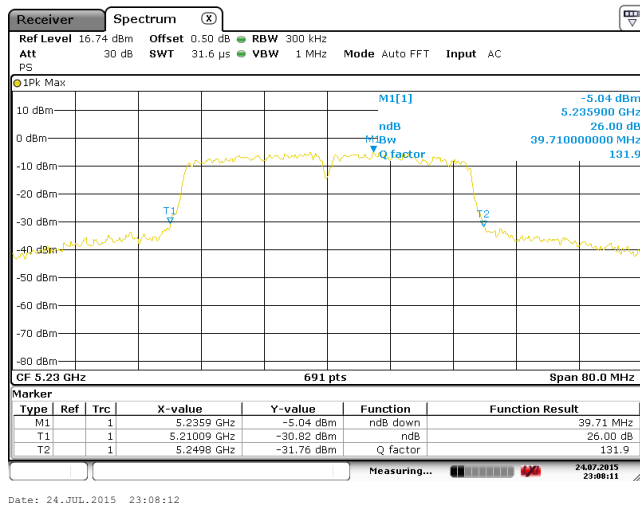


Highest channel

802.11n40

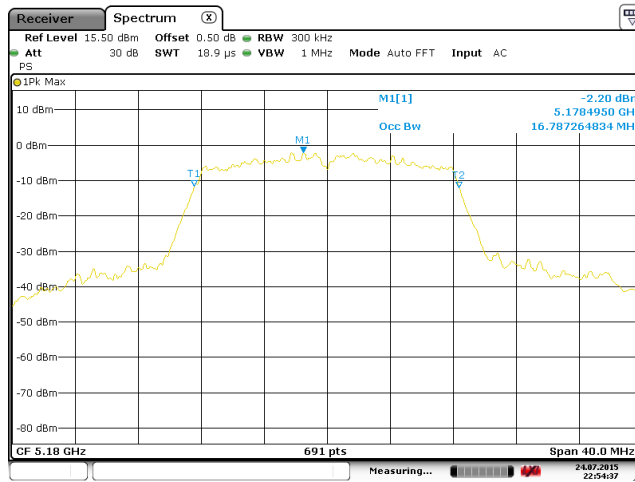


Lowest channel

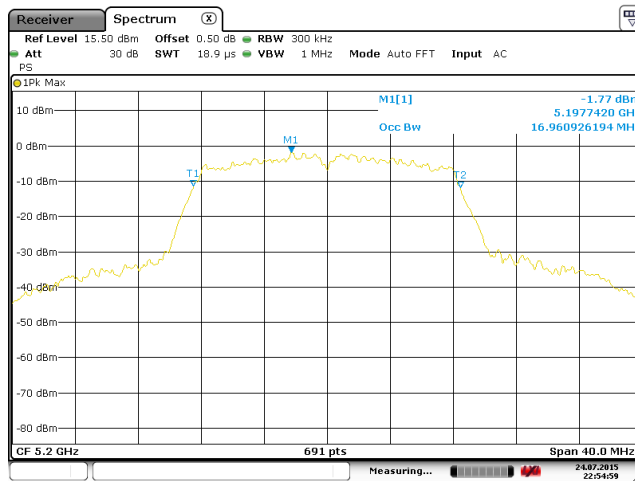


Highest channel

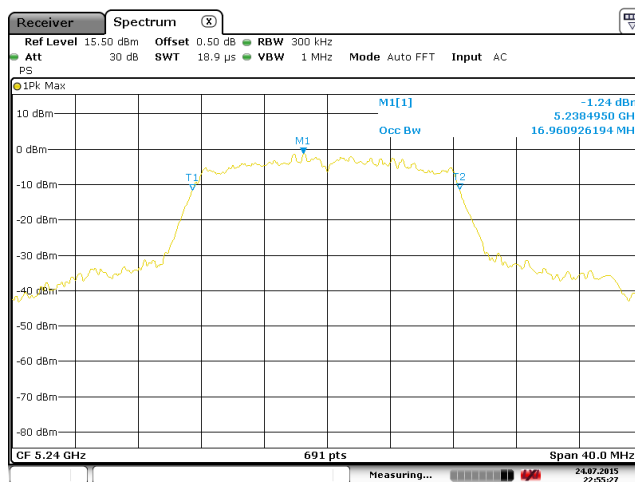
99% OBW - 802.11a



Lowest channel

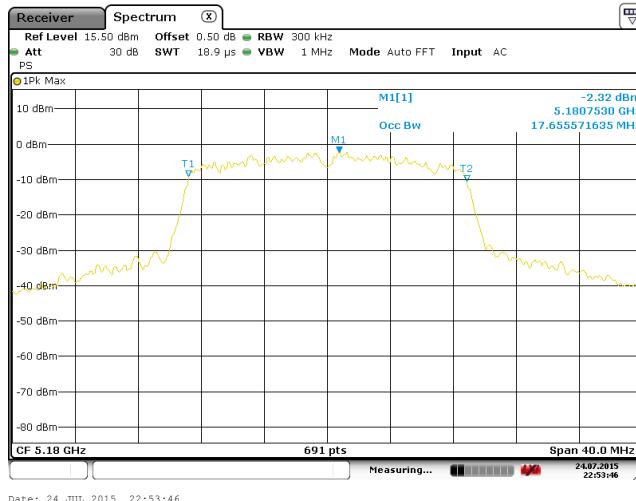


Middle channel

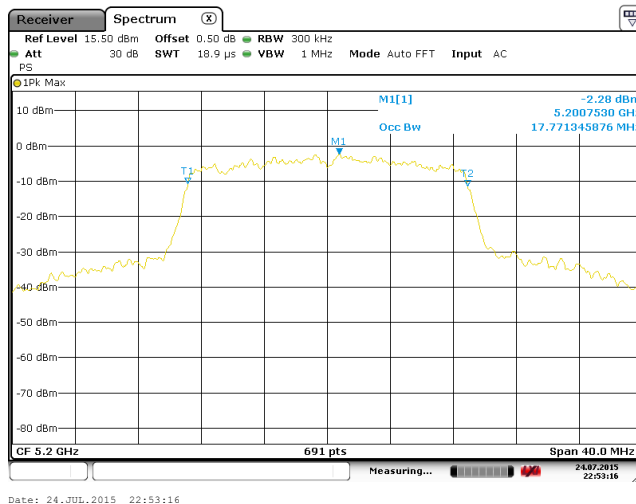


Highest channel

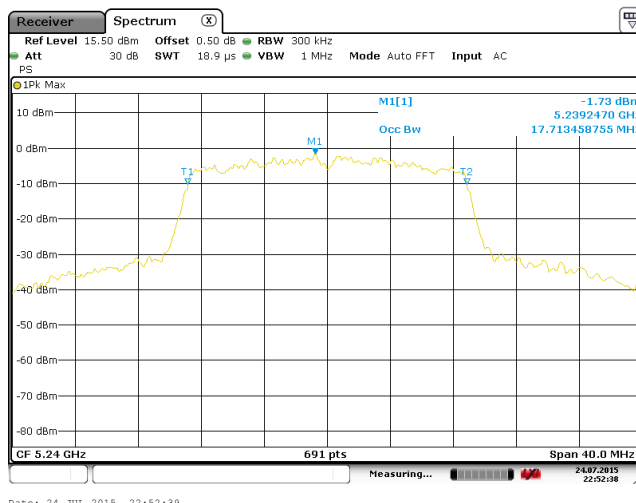
802.11n20



Lowest channel

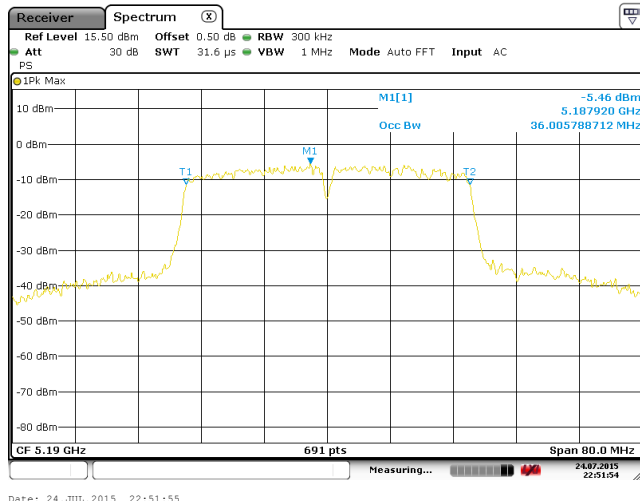


Middle channel

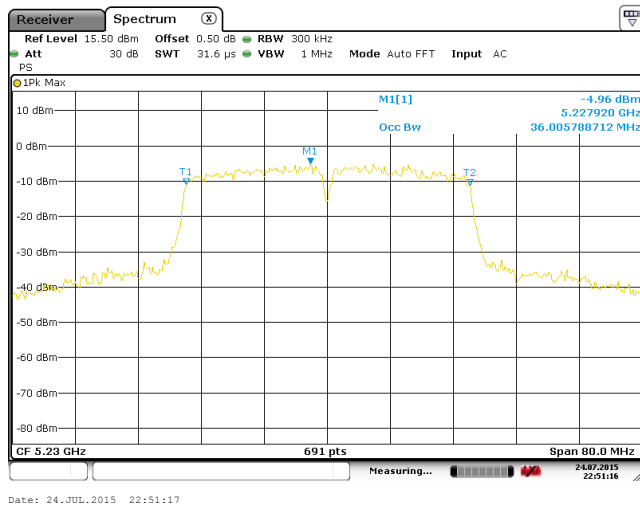


Highest channel

802.11n40

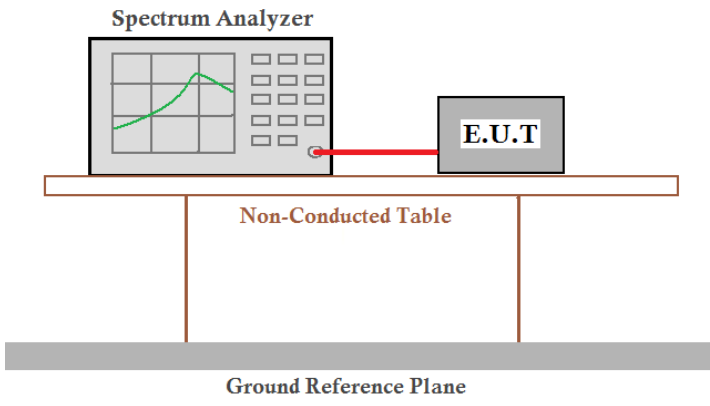


Lowest channel



Highest channel

6.5 Power Spectral Density

Test Requirement:	FCC Part 15 E Section 15.407 (a)
Test Method:	ANSI C63.10: 2009, KDB 789033 D02
Limit:	Band 5150MHz-5250MHz: 11 dBm/MHz (If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi);
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two legs and sits on a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

Measurement Data

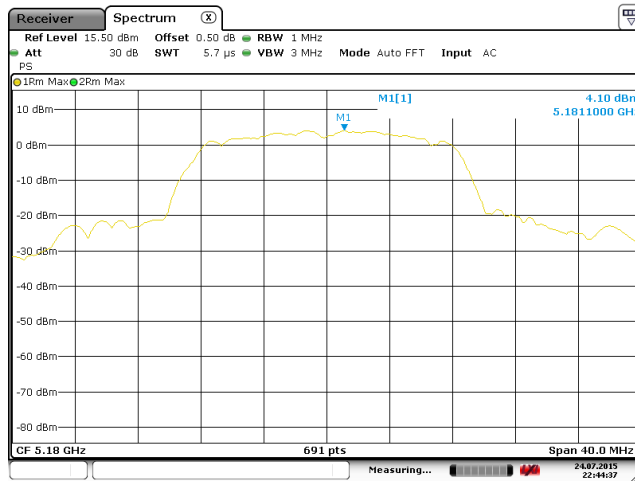
Band 1:

Mode	Test CH	PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	Lowest	4.10	11.00	Pass
	Middle	4.60	11.00	Pass
	Highest	3.55	11.00	Pass
802.11n20	Lowest	2.64	11.00	Pass
	Middle	3.06	11.00	Pass
	Highest	3.38	11.00	Pass
802.11n40	Lowest	-0.31	11.00	Pass
	Middle	----	11.00	Pass
	Highest	0.35	11.00	Pass

Remark:
The directional Gain of antenna is less than 6 dBi, so the limit of power spectral density is 11 dBm.

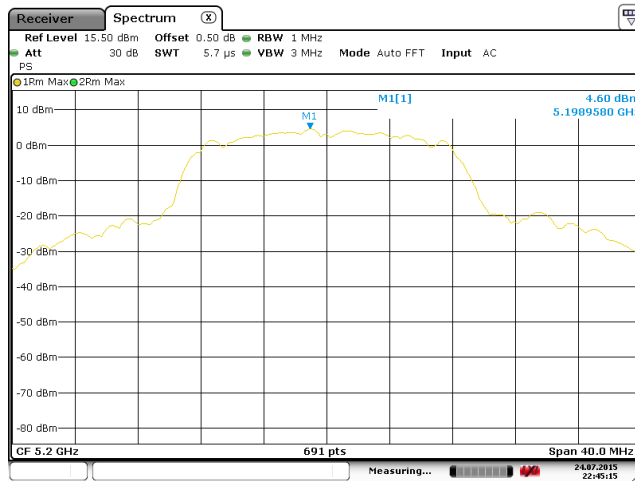
Test plot as follows:

Test mode: 802.11a



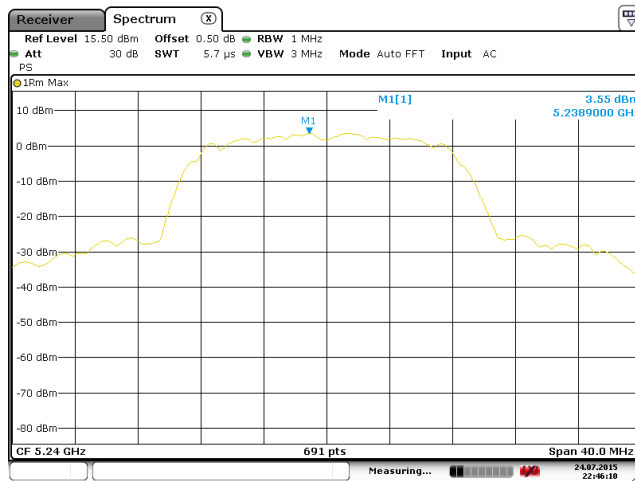
Date: 24.JUL.2015 22:44:37

Lowest channel



Date: 24.JUL.2015 22:45:15

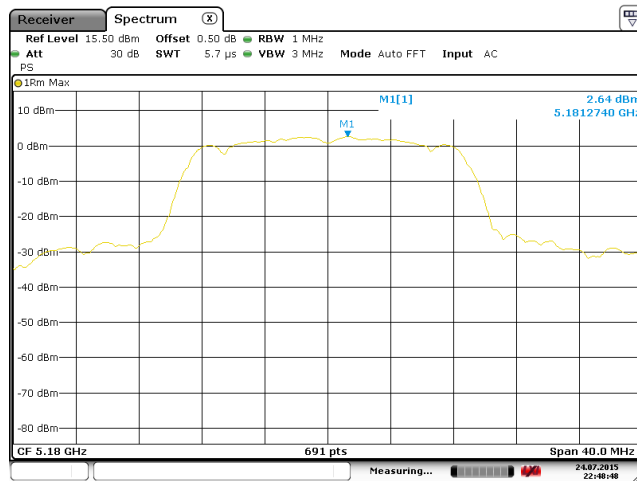
Middle channel



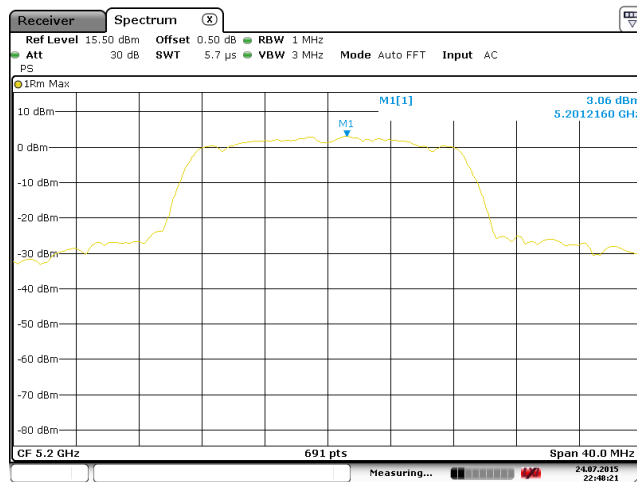
Date: 24.JUL.2015 22:46:10

Highest channel

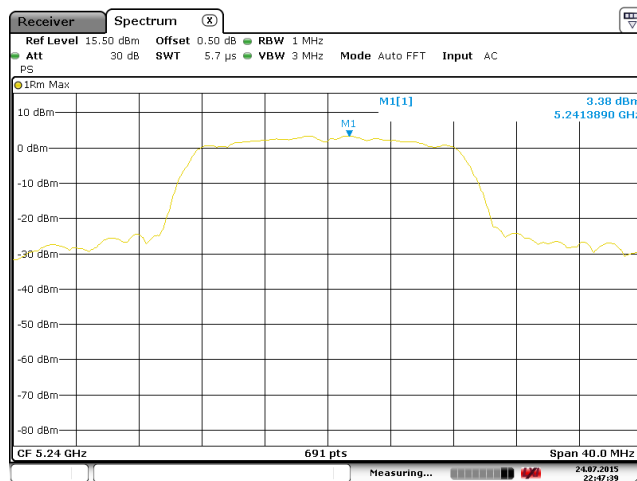
Test mode: 802.11n20



Lowest channel

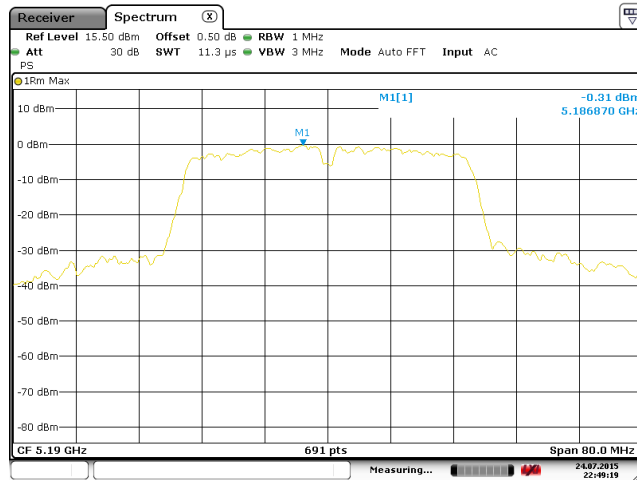


Middle channel

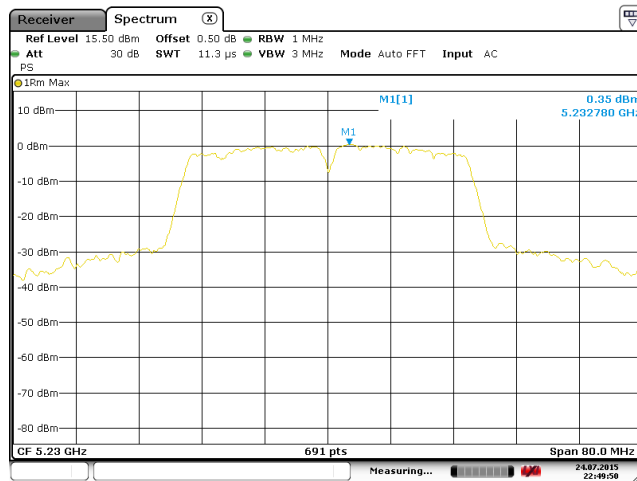


Highest channel

Test mode: 802.11n40



Lowest channel



Highest channel

6.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 (b)													
Test Method:	ANSI C63.10:2009, KDB 789033 D02													
Receiver setup:	<table border="1"> <tr> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>RMS</td> <td>1MHz</td> <td>3MHz</td> <td>Average Value</td> </tr> </table>	Detector	RBW	VBW	Remark	Peak	1MHz	3MHz	Peak Value	RMS	1MHz	3MHz	Average Value	
	Detector	RBW	VBW	Remark										
	Peak	1MHz	3MHz	Peak Value										
RMS	1MHz	3MHz	Average Value											
Limit:	<table border="1"> <tr> <th>Band</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> <tr> <td rowspan="2">Band 1</td> <td>68.20</td> <td>Peak Value</td> </tr> <tr> <td>54.00</td> <td>Average Value</td> </tr> <tr> <td rowspan="2">Band 4</td> <td>78.20</td> <td>Peak Value</td> </tr> <tr> <td>54.00</td> <td>Average Value</td> </tr> </table>	Band	Limit (dBuV/m @3m)	Remark	Band 1	68.20	Peak Value	54.00	Average Value	Band 4	78.20	Peak Value	54.00	Average Value
	Band	Limit (dBuV/m @3m)	Remark											
	Band 1	68.20	Peak Value											
		54.00	Average Value											
	Band 4	78.20	Peak Value											
54.00		Average Value												
<p>Remark:</p> <ol style="list-style-type: none"> Band 1 limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2 \text{ dBuV/m}$, for $EIPR[dBm] = -27\text{dBm}$. Band 4 limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 78.2 \text{ dBuV/m}$, for $EIPR[dBm] = -17\text{dBm}$. 														
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 													
Test setup:	<p>The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a Turn Table at a height of 0.8m. The Turn Table is positioned 3m away from an Antenna Tower. The Antenna Tower has a Horn Antenna at a height of 4m. A Spectrum Analyzer is connected to the Antenna Tower via an Amplifier. The distance from the ground to the Horn Antenna is also indicated as 1m.</p>													
Test Instruments:	Refer to section 5.6 for details													
Test mode:	Refer to section 5.3 for details													
Test results:	Passed													

802.11a								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	41.56	32.07	10.96	40.06	44.53	68.20	-23.67	Vertical
5150.00	42.65	32.07	10.96	40.06	45.62	68.20	-22.58	Horizontal
802.11a								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	31.42	32.07	10.96	40.06	34.39	54.00	-19.61	Vertical
5150.00	32.01	32.07	10.96	40.06	34.98	54.00	-19.02	Horizontal
802.11a								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.52	31.78	11.19	40.18	47.31	68.20	-20.89	Vertical
5350.00	43.57	31.78	11.19	40.18	46.36	68.20	-21.84	Horizontal
802.11a								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.93	31.78	11.19	40.18	37.72	54.00	-16.28	Vertical
5350.00	33.68	31.78	11.19	40.18	36.47	54.00	-17.53	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

802.11n-HT20								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	41.18	32.07	10.96	40.06	44.15	68.20	-24.05	Vertical
5150.00	42.98	32.07	10.96	40.06	45.95	68.20	-22.25	Horizontal
802.11n-HT20								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	31.27	32.07	10.96	40.06	34.24	54.00	-19.76	Vertical
5150.00	32.14	32.07	10.96	40.06	35.11	54.00	-18.89	Horizontal
802.11n-HT20								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.69	31.78	11.19	40.18	47.48	68.20	-20.72	Vertical
5350.00	43.64	31.78	11.19	40.18	46.43	68.20	-21.77	Horizontal
802.11n-HT20								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.28	31.78	11.19	40.18	37.68	54.00	-16.32	Vertical
5350.00	33.95	31.78	11.19	40.18	38.01	54.00	-15.99	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

802.11n-HT40								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	41.75	32.07	10.96	40.06	44.72	68.20	-23.48	Vertical
5150.00	42.69	32.07	10.96	40.06	45.66	68.20	-22.54	Horizontal
802.11n-HT40								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	31.29	32.07	10.96	40.06	34.26	54.00	-19.74	Vertical
5150.00	32.06	32.07	10.96	40.06	35.03	54.00	-18.97	Horizontal
802.11n-HT40								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.53	31.78	11.19	40.18	47.32	68.20	-20.88	Vertical
5350.00	43.38	31.78	11.19	40.18	46.17	68.20	-22.03	Horizontal
802.11n-HT40								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.88	31.78	11.19	40.18	37.08	54.00	-16.92	Vertical
5350.00	33.27	31.78	11.19	40.18	38.69	54.00	-15.31	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.7 Spurious Emission

6.7.1 Restricted Band

Test Requirement:	FCC Part15 E Section 15.407(b)				
Test Method:	ANSI C63.10: 2009				
Test Frequency Range:	Band 1: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. 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. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 				
Test setup:	<p>The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a Turn Table at a height of 0.8m from the ground. The Turn Table is positioned 3m away from an Antenna Tower. The Antenna Tower has a Horn Antenna mounted at a height of 1m to 4m from the ground. The Antenna Tower is connected to a Spectrum Analyzer via an Amplifier.</p>				
Test Instruments:	Refer to section 5.6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Band 1:

802.11a

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	42.21	30.72	10.22	40.67	42.48	74.00	-31.52	Vertical
5150.00	41.46	32.07	10.96	40.06	44.43	74.00	-29.57	Vertical
4500.00	44.22	30.72	10.22	40.67	44.49	74.00	-29.51	Horizontal
5150.00	42.51	32.07	10.96	40.06	45.48	74.00	-28.52	Horizontal
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	32.21	30.72	10.22	40.67	32.48	54.00	-21.52	Vertical
5150.00	31.64	32.07	10.96	40.06	34.61	54.00	-19.39	Vertical
4500.00	34.82	30.72	10.22	40.67	35.09	54.00	-18.91	Horizontal
5150.00	32.38	32.07	10.96	40.06	35.35	54.00	-18.65	Horizontal
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.27	31.78	11.19	40.18	47.06	74.00	-26.94	Vertical
5460.00	43.52	31.99	11.32	40.23	46.60	74.00	-27.40	Vertical
5350.00	43.36	31.78	11.19	40.18	46.15	74.00	-27.85	Horizontal
5460.00	42.95	31.99	11.32	40.23	46.03	74.00	-27.97	Horizontal
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.26	31.78	11.19	40.18	37.05	54.00	-16.95	Vertical
5460.00	33.87	31.99	11.32	40.23	36.95	54.00	-17.05	Vertical
5350.00	33.53	31.78	11.19	40.18	36.32	54.00	-17.68	Horizontal
5460.00	32.45	31.99	11.32	40.23	35.53	54.00	-18.47	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

802.11n-HT20

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	42.67	30.72	10.22	40.67	42.94	74.00	-31.06	Vertical
5150.00	41.36	32.07	10.96	40.06	44.33	74.00	-29.67	Vertical
4500.00	44.51	30.72	10.22	40.67	44.78	74.00	-29.22	Horizontal
5150.00	42.36	32.07	10.96	40.06	45.33	74.00	-28.67	Horizontal
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	32.96	30.72	10.22	40.67	33.23	54.00	-20.77	Vertical
5150.00	31.79	32.07	10.96	40.06	34.76	54.00	-19.24	Vertical
4500.00	34.62	30.72	10.22	40.67	34.89	54.00	-19.11	Horizontal
5150.00	32.73	32.07	10.96	40.06	35.70	54.00	-18.30	Horizontal
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.37	31.78	11.19	40.18	47.16	74.00	-26.84	Vertical
5460.00	43.17	31.99	11.32	40.23	46.25	74.00	-27.75	Vertical
5350.00	43.36	31.78	11.19	40.18	46.15	74.00	-27.85	Horizontal
5460.00	42.47	31.99	11.32	40.23	45.55	74.00	-28.45	Horizontal
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.18	31.78	11.19	40.18	36.97	54.00	-17.03	Vertical
5460.00	33.32	31.99	11.32	40.23	36.40	54.00	-17.60	Vertical
5350.00	33.41	31.78	11.19	40.18	36.20	54.00	-17.80	Horizontal
5460.00	32.57	31.99	11.32	40.23	35.65	54.00	-18.35	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

802.11n-HT40

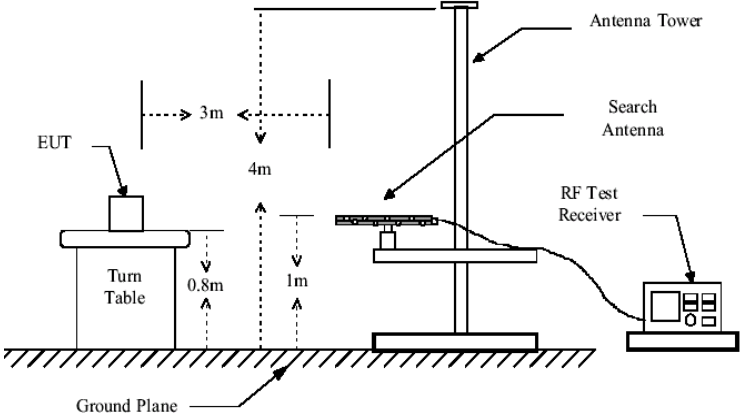
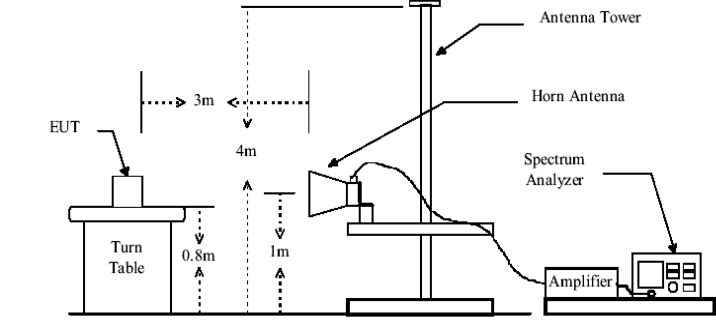
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	42.52	30.72	10.22	40.67	42.79	74.00	-31.21	Vertical
5150.00	41.77	32.07	10.96	40.06	44.74	74.00	-29.26	Vertical
4500.00	44.34	30.72	10.22	40.67	44.61	74.00	-29.39	Horizontal
5150.00	42.21	32.07	10.96	40.06	45.18	74.00	-28.82	Horizontal
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	32.44	30.72	10.22	40.67	32.71	54.00	-21.29	Vertical
5150.00	31.92	32.07	10.96	40.06	34.89	54.00	-19.11	Vertical
4500.00	34.36	30.72	10.22	40.67	34.63	54.00	-19.37	Horizontal
5150.00	32.52	32.07	10.96	40.06	35.49	54.00	-18.51	Horizontal
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	44.47	31.78	11.19	40.18	47.26	74.00	-26.74	Vertical
5460.00	43.41	31.99	11.32	40.23	46.49	74.00	-27.51	Vertical
5350.00	43.33	31.78	11.19	40.18	46.12	74.00	-27.88	Horizontal
5460.00	42.74	31.99	11.32	40.23	45.82	74.00	-28.18	Horizontal
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.39	31.78	11.19	40.18	37.18	54.00	-16.82	Vertical
5460.00	33.24	31.99	11.32	40.23	36.32	54.00	-17.68	Vertical
5350.00	33.89	31.78	11.19	40.18	36.68	54.00	-17.32	Horizontal
5460.00	32.51	31.99	11.32	40.23	35.59	54.00	-18.41	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.7.2 Radiated Spurious Emission

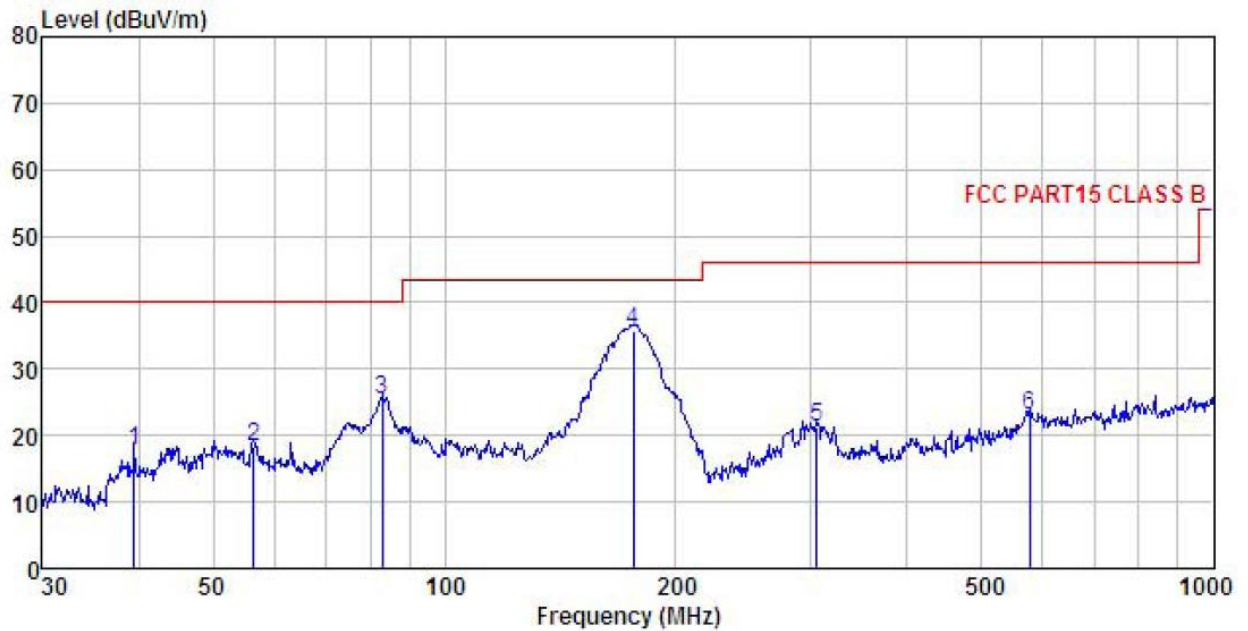
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2009				
Test Frequency Range:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-88MHz	40.00		Quasi-peak Value	
	88MHz-216MHz	43.50		Quasi-peak Value	
	216MHz-960MHz	46.00		Quasi-peak Value	
	960MHz-1GHz	54.00		Quasi-peak Value	
	Above 1GHz	68.20		Peak Value	
		54.00		Average Value	
Remark: 1. Above 1GHz limit: $E [dB\mu V/m] = EIRP [dBm] + 95.2 = 68.2 \text{ dBuV/m}$, for $EIPR [dBm] = -27dBm$.					
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 				

<p>Test setup:</p>	<p>Below 1GHz</p>  <p>Above 1GHz</p> 
<p>Test Instruments:</p>	<p>Refer to section 5.6 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>
<p>Test results:</p>	<p>Passed</p>

Band 1:

Below 1GHz

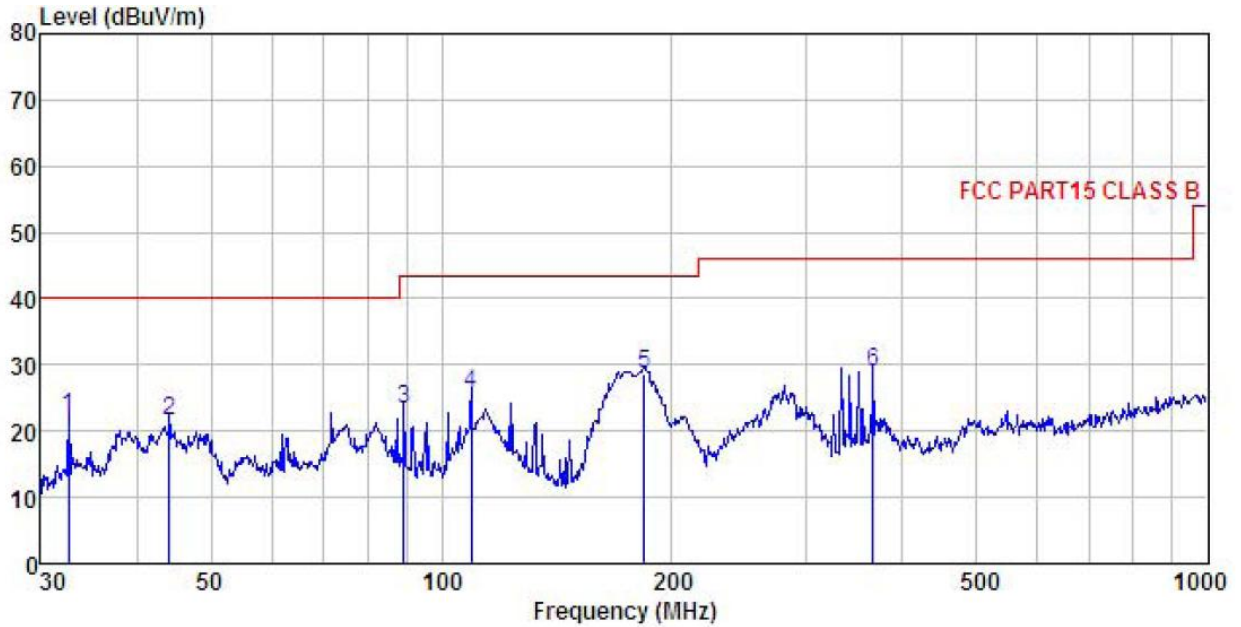
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 EUT : Mobile Phone
 Model : A50LT
 Test mode : 5G-WIFI Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	39.437	33.79	13.44	0.52	29.91	17.84	40.00	-22.16 QP
2	56.395	34.55	12.95	0.66	29.79	18.37	40.00	-21.63 QP
3	82.938	44.56	9.57	0.87	29.62	25.38	40.00	-14.62 QP
4	176.269	53.92	9.42	1.35	29.00	35.69	43.50	-7.81 QP
5	304.610	34.76	13.13	1.79	28.46	21.22	46.00	-24.78 QP
6	576.644	31.53	18.03	2.58	29.01	23.13	46.00	-22.87 QP

Vertical:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 EUT : Mobile Phone
 Model : A50LT
 Test mode : 5G-WIFI Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.634	39.22	12.31	0.46	29.96	22.03	40.00	-17.97 QP
2	44.120	37.28	13.56	0.55	29.87	21.52	40.00	-18.48 QP
3	89.276	40.33	11.76	0.91	29.57	23.43	43.50	-20.07 QP
4	109.412	41.74	12.30	1.04	29.46	25.62	43.50	-17.88 QP
5	183.844	46.17	10.00	1.36	28.94	28.59	43.50	-14.91 QP
6	365.539	41.21	14.48	2.00	28.63	29.06	46.00	-16.94 QP

Above 1GHz:

Band 1:

802.11a mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	41.97	39.23	13.84	41.34	53.70	68.20	-14.50	Vertical
10360.00	42.39	39.23	13.84	41.34	54.12	68.20	-14.08	Horizontal
802.11a mode Lowest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	31.36	39.23	13.84	41.34	43.09	54.00	-10.91	Vertical
10360.00	32.55	39.23	13.84	41.34	44.28	54.00	-9.72	Horizontal

802.11a mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	41.74	39.36	13.85	41.27	53.68	68.20	-14.52	Vertical
10400.00	41.73	39.36	13.85	41.27	53.67	68.20	-14.53	Horizontal
802.11a mode Middle channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	31.16	39.36	13.85	41.27	43.10	54.00	-10.90	Vertical
10400.00	31.52	39.36	13.85	41.27	43.46	54.00	-10.54	Horizontal

802.11a mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	41.46	39.56	13.90	41.06	53.86	68.20	-14.34	Vertical
10480.00	40.72	39.56	13.90	41.06	53.12	68.20	-15.08	Horizontal
802.11a mode Highest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	31.46	39.56	13.90	41.06	43.86	54.00	-10.14	Vertical
10480.00	30.54	39.56	13.90	41.06	42.94	54.00	-11.06	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

802.11n20 mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	41.73	39.23	13.84	41.34	53.46	68.20	-14.74	Vertical
10360.00	42.68	39.23	13.84	41.34	54.41	68.20	-13.79	Horizontal
802.11n20 mode Lowest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	31.67	39.23	13.84	41.34	43.40	54.00	-10.60	Vertical
10360.00	32.44	39.23	13.84	41.34	44.17	54.00	-9.83	Horizontal

802.11n20 mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	41.92	39.36	13.85	41.27	53.86	68.20	-14.34	Vertical
10400.00	41.57	39.36	13.85	41.27	53.51	68.20	-14.69	Horizontal
802.11n20 mode Middle channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	31.32	39.36	13.85	41.27	43.26	54.00	-10.74	Vertical
10400.00	31.36	39.36	13.85	41.27	43.30	54.00	-10.70	Horizontal

802.11n20 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	41.15	39.56	13.90	41.06	53.55	68.20	-14.65	Vertical
10480.00	40.51	39.56	13.90	41.06	52.91	68.20	-15.29	Horizontal
802.11n20 mode Highest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	31.33	39.56	13.90	41.06	43.73	54.00	-10.27	Vertical
10480.00	30.25	39.56	13.90	41.06	42.65	54.00	-11.35	Horizontal

Remark:

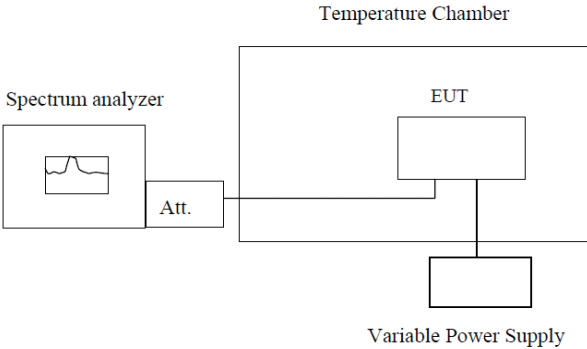
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

802.11n40 mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380.00	41.70	39.29	15.42	41.31	55.10	68.20	-13.10	Vertical
10380.00	42.37	39.29	15.42	41.31	55.77	68.20	-12.43	Horizontal
802.11n40 mode Lowest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380.00	31.14	39.29	15.42	41.31	44.54	54.00	-9.46	Vertical
10380.00	32.97	39.29	15.42	41.31	46.37	54.00	-7.63	Horizontal
802.11n40 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460.00	42.02	39.54	15.51	41.17	55.90	68.20	-12.30	Vertical
10460.00	41.74	39.54	15.51	41.17	55.62	68.20	-12.58	Horizontal
802.11n40 mode Highest channel (Average Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460.00	32.61	39.54	15.51	41.17	46.49	54.00	-7.51	Vertical
10460.00	31.63	39.54	15.51	41.17	45.51	54.00	-8.49	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

6.8 Frequency stability

Test Requirement:	FCC Part15 E Section 15.407 (g)
Limit:	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.
Test setup:	 <p style="text-align: center;">Temperature Chamber</p> <p style="text-align: center;">Spectrum analyzer Att. EUT</p> <p style="text-align: center;">Variable Power Supply</p> <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 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.
Test Instruments:	Refer to section 5.6 for details
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed

Measurement Data (the worst channel):

Band 1:

Voltage vs. Frequency Stability

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(°C)	Voltage(DC)		
20	5180MHz		
	3.8V	5179.986700	-2.568
	3.4V	5179.984600	-2.973
	4.1V	5179.983500	-3.185
	5240MHz		
	3.8V	5239.990300	-1.851
	3.4V	5239.987100	-2.462
	4.1V	5239.980800	-3.664

Temperature vs. Frequency Stability

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(DC)	Temp(°C)		
3.8V	5180MHz		
	-20	5179.982500	-3.378
	-10	5179.981400	-3.591
	0	5179.983200	-3.243
	10	5179.984100	-3.069
	20	5179.985700	-2.761
	30	5179.986400	-2.625
	40	5179.987200	-2.471
	50	5179.988300	-2.259
	5240MHz		
	-20	5239.981100	-3.607
	-10	5239.983400	-3.168
	0	5239.984900	-2.882
	10	5239.986300	-2.615
	20	5239.987500	-2.385
	30	5239.988300	-2.233
	40	5239.988900	-2.118
	50	5239.989700	-1.966