

FCC REPORT

Applicant: SUN CUPID TECHNOLOGY (HK) LIMITED

Address of Applicant: 16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan,
Hong Kong

Equipment Under Test (EUT)

Product Name: LTE mobile phone

Model No.: Z8

Trade mark: NUU

FCC ID: 2ADINNUUZ8

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

Date of sample receipt: 29 Jun., 2015

Date of Test: 29 Jun, to 24 Jul., 2015

Date of report issued: 27 Jul., 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	27 Jul., 2015	Original

Prepared by:

Sera Xiang

Date:

27 Jul., 2015

Report Clerk

Reviewed by:

Wimer Zhang

Date:

27 Jul., 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:	SUN CUPID TECHNOLOGY (HK) LIMITED
Address of Applicant:	16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Hong Kong
Manufacturer:	Suncupid (ShenZhen) Electronic Ltd
Address of Manufacturer:	Baolong Industrial City, Longgang District, Shenzhen Hi-Tech Road, Building 1, A 7

5.2 General Description of E.U.T.

Product Name:	LTE mobile phone
Model No.:	Z8
Operation Frequency:	Band 1: 5150MHz-5250MHz Band 4: 5725MHz-5850MHz
Operation mode:	Mobile operation
Channel numbers:	Band 1: 802.11ac:1, 802.11n40: 2 Band 4: 802.11ac:1, 802.11n40: 2
Channel separation:	802.11ac :80MHz, 802.11n40:40MHz
Modulation technology: (IEEE 802.11n)	BPSK,QPSK,16-QAM,64-QAM
Modulation technology: (IEEE 802.11ac)	BPSK,QPSK,16-QAM, 64-QAM, 256-QAM
Data speed (IEEE 802.11n40):	MCS0:13.5Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps
Data speed (IEEE 802.11ac):	Up to 1Gbps
Antenna Type:	Integral Antenna
Antenna gain:	-2.5 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V/2650mAh
AC adapter:	Input:100-240V AC,50/60Hz 0.35A Output:5V DC MAX 1.5A

Operation Frequency each of channel

Band 1			
802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency
38	5190MHz	50	5210MHz
46	5230MHz		
Band 4			
802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency
151	5755MHz	155	5775MHz
159	5795MHz		

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			
802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency
The lowest channel	5190MHz	The lowest channel	5210MHz
The highest channel	5230MHz		
Band 4			
802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency
The lowest channel	5755MHz	The lowest channel	5775MHz
The highest channel	5795MHz		

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
802.11n40	13.5 Mbps
802.11ac	29.3Mbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 13.5 Mbps for 802.11n40 and 29.3Mbps for 802.11ac. Duty cycle all above 98%, meet the requirements of KDB789033.

5.4 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **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 our 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

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	ESPI	CCIS0022	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

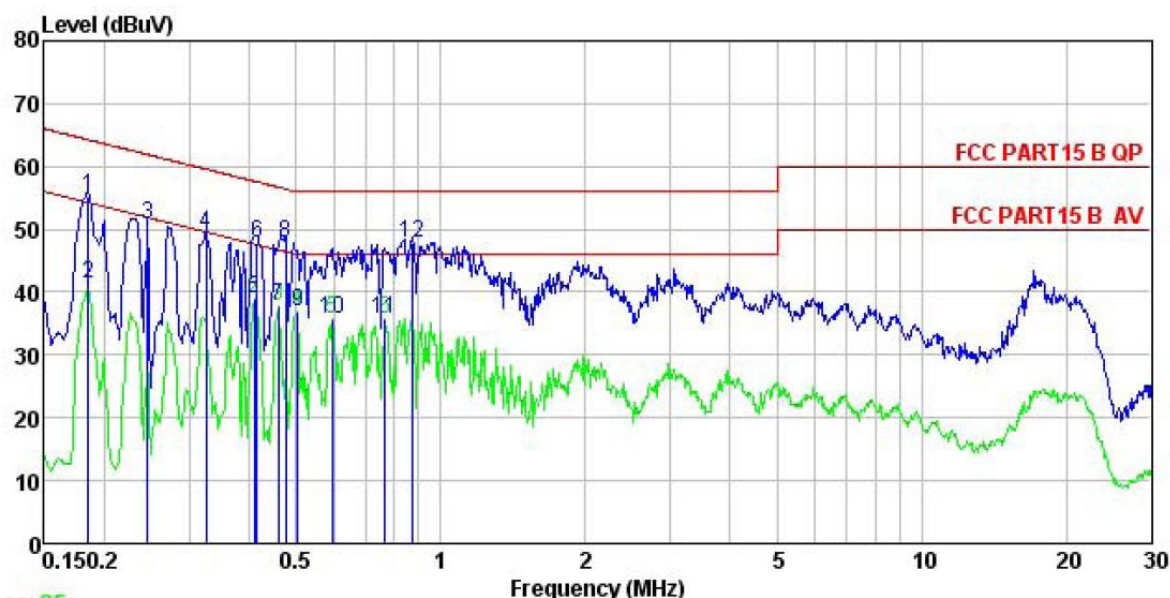
Standard requirement:	FCC Part 15 E Section 15.203 /407(a)
<p>15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses 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>The WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is -1.5 dBi.</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:	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	<div>1. 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.</div> <div>2. 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).</div> <div>3. 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.</div>			
Test setup:	<div><div><div>Reference Plane</div><div><div>LISN</div><div>AUX Equipment</div><div>E.U.T</div><div>Test table/Insulation plane</div></div><div><div>40cm</div><div>80cm</div></div><div><div>LISN</div><div>Filter</div><div>AC power</div><div>EMI Receiver</div></div></div></div> <div><div>Remark:</div><div>E.U.T: Equipment Under Test</div><div>LISN: Line Impedance Stabilization Network</div><div>Test table height=0.8m</div></div>			
Test Instruments:	Refer to section 5.6 for details			
Test mode:	Refer to section 5.3 for details.			
Test results:	Passed			

Measurement Data

Line:

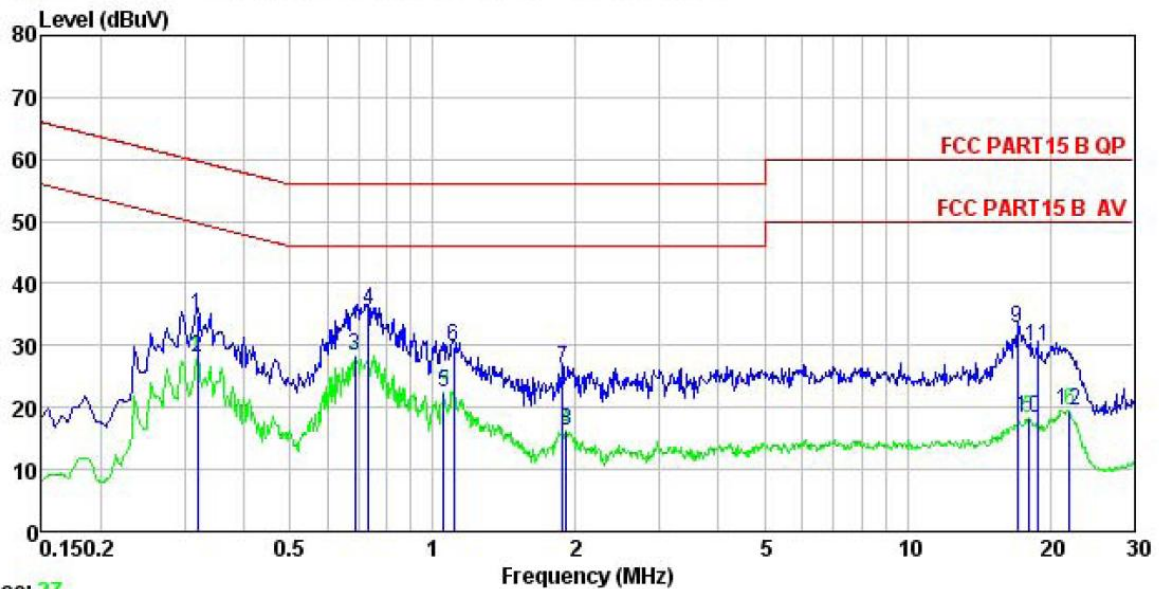


Trace: 25

Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : LTE mobile phone
 Model : Z8
 Test Mode : 5G WIFI-TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Carey
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.185	44.27	0.28	10.77	55.32	64.24	-8.92	QP
2	0.185	30.17	0.28	10.77	41.22	54.24	-13.02	Average
3	0.246	39.64	0.27	10.75	50.66	61.91	-11.25	QP
4	0.325	38.28	0.27	10.73	49.28	59.57	-10.29	QP
5	0.410	27.99	0.28	10.72	38.99	47.64	-8.65	Average
6	0.415	36.95	0.28	10.73	47.96	57.55	-9.59	QP
7	0.459	26.84	0.29	10.75	37.88	46.71	-8.83	Average
8	0.476	36.84	0.29	10.75	47.88	56.41	-8.53	QP
9	0.505	25.71	0.29	10.76	36.76	46.00	-9.24	Average
10	0.595	24.73	0.25	10.77	35.75	46.00	-10.25	Average
11	0.767	24.72	0.23	10.80	35.75	46.00	-10.25	Average
12	0.876	36.72	0.24	10.83	47.79	56.00	-8.21	QP

Neutral:



Trace: 27

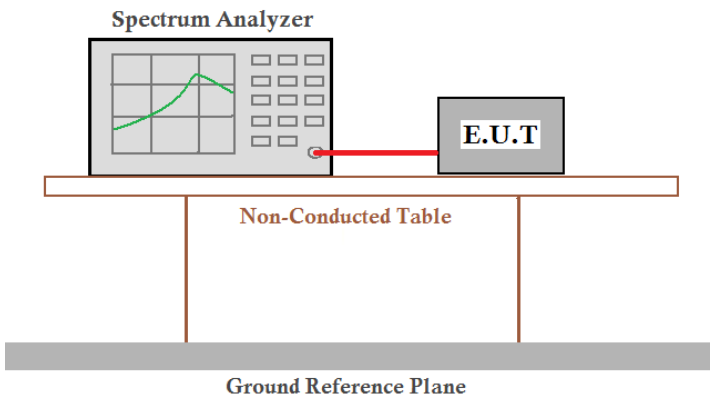
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : LTE mobile phone
 Model : Z8
 Test Mode : 5G WIFI-TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Carey
 Remark :

	Read	LISN	Cable	Level	Limit	Over	
Freq	Level	Factor	Loss	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.320	23.97	0.26	10.74	34.97	59.71	-24.74 QP
2	0.320	16.93	0.26	10.74	27.93	49.71	-21.78 Average
3	0.686	17.46	0.19	10.77	28.42	46.00	-17.58 Average
4	0.731	24.78	0.18	10.78	35.74	56.00	-20.26 QP
5	1.054	11.26	0.22	10.88	22.36	46.00	-23.64 Average
6	1.106	18.76	0.23	10.88	29.87	56.00	-26.13 QP
7	1.878	14.94	0.28	10.95	26.17	56.00	-29.83 QP
8	1.908	4.88	0.29	10.95	16.12	46.00	-29.88 Average
9	17.018	21.61	0.25	10.91	32.77	60.00	-27.23 QP
10	17.944	7.19	0.26	10.90	18.35	50.00	-31.65 Average
11	18.820	18.61	0.26	10.92	29.79	60.00	-30.21 QP
12	21.946	8.35	0.33	10.90	19.58	50.00	-30.42 Average

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 C63.10:2013, KDB 789033 D02
Limit:	<p>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);</p> <p>Band 5725MHz~5850MHz: 1W (If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.)</p>
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 vertical 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:

802.11n (HT40):

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
	802.11n40		
Lowest	9.88	24.00	Pass
Middle	--		
Highest	9.55		
Note: For the band 5150MHz-5250MHz, it used for mobile and portable client devices.			

802.11ac (VHT80):

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
	802.11ac		
Lowest	9.47	24.00	Pass
Note: For the band 5150MHz-5250MHz, it used for mobile and portable client devices.			

Band 4:

802.11n (HT40)

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
	802.11n40		
Lowest	13.72	30.00	Pass
Middle	--		
Highest	13.43		
Note: For the Band 5725MHz-5850MHz, the antenna gain of EUT is less than 6 dBi.			

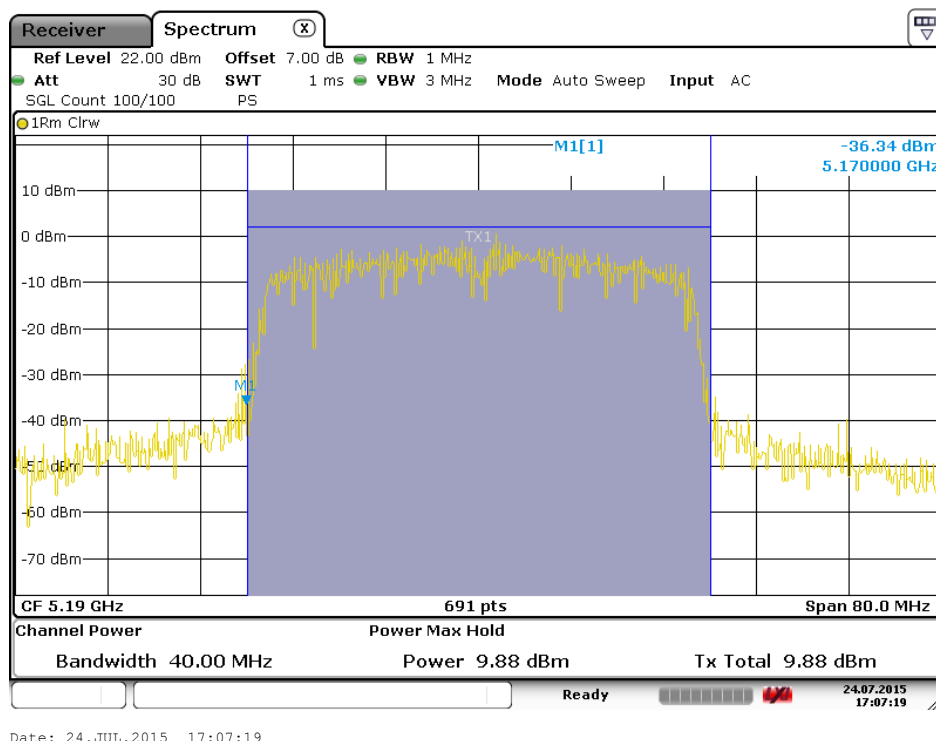
802.11ac (VHT80):

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
	802.11ac		
Lowest	12.03	30.00	Pass
Note: For the Band 5725MHz-5850MHz, the antenna gain of EUT is less than 6 dBi.			

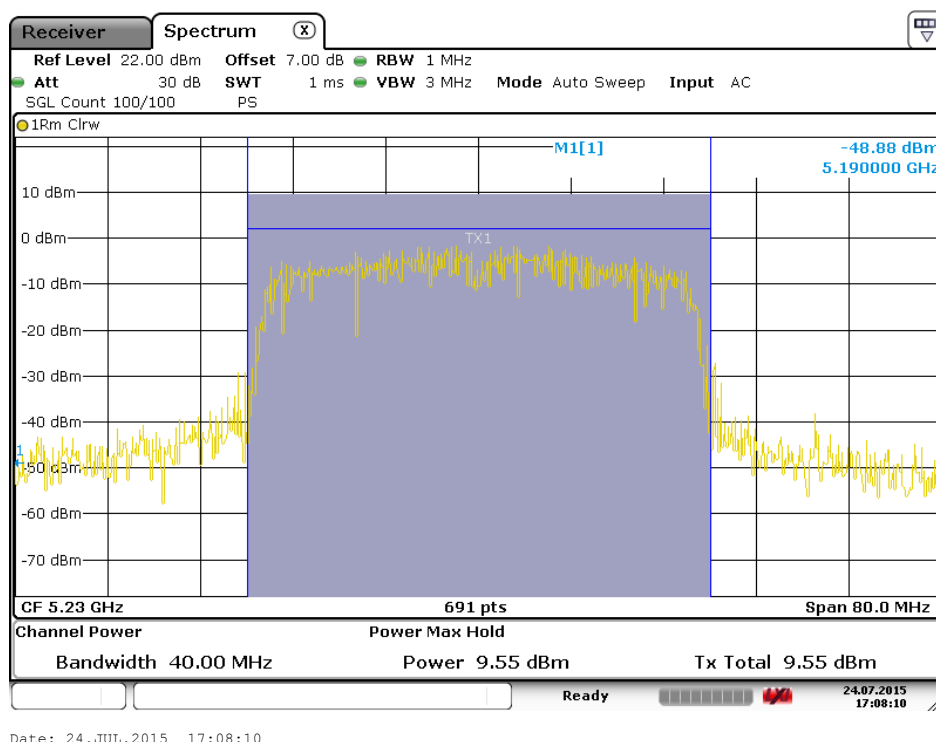
Test plot as follows:

Band 1:

802.11n40

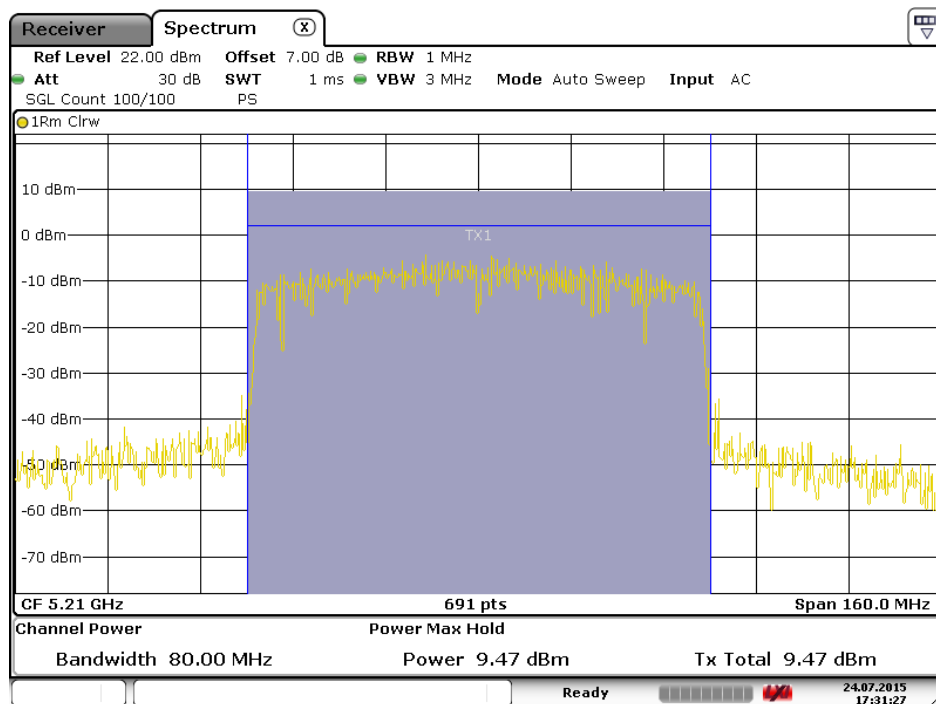


Lowest channel



Highest channel

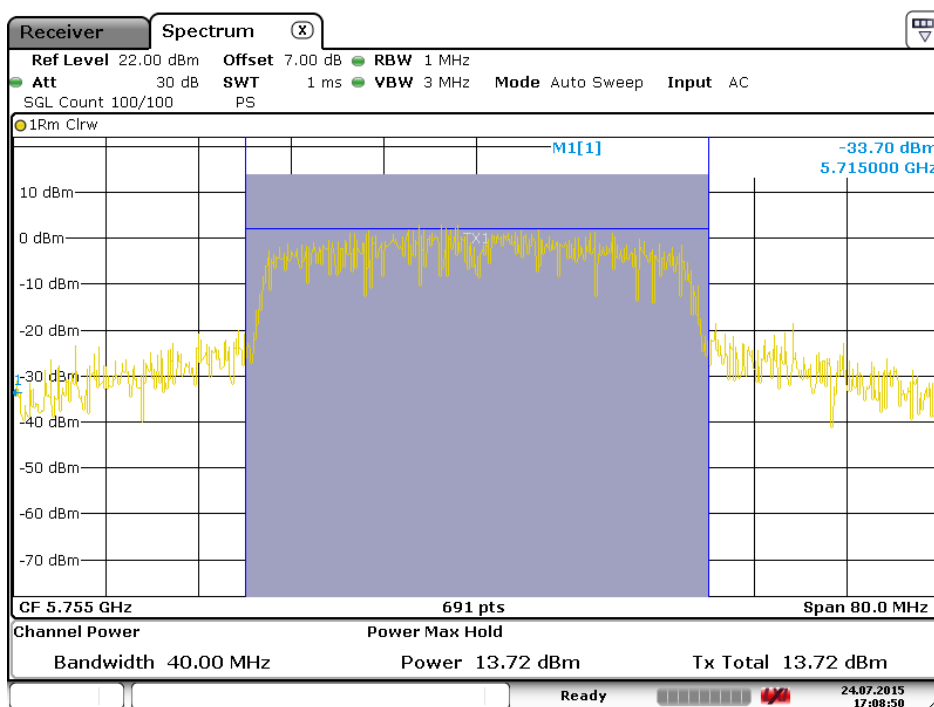
802.11ac



Date: 24.JUL.2015 17:31:27

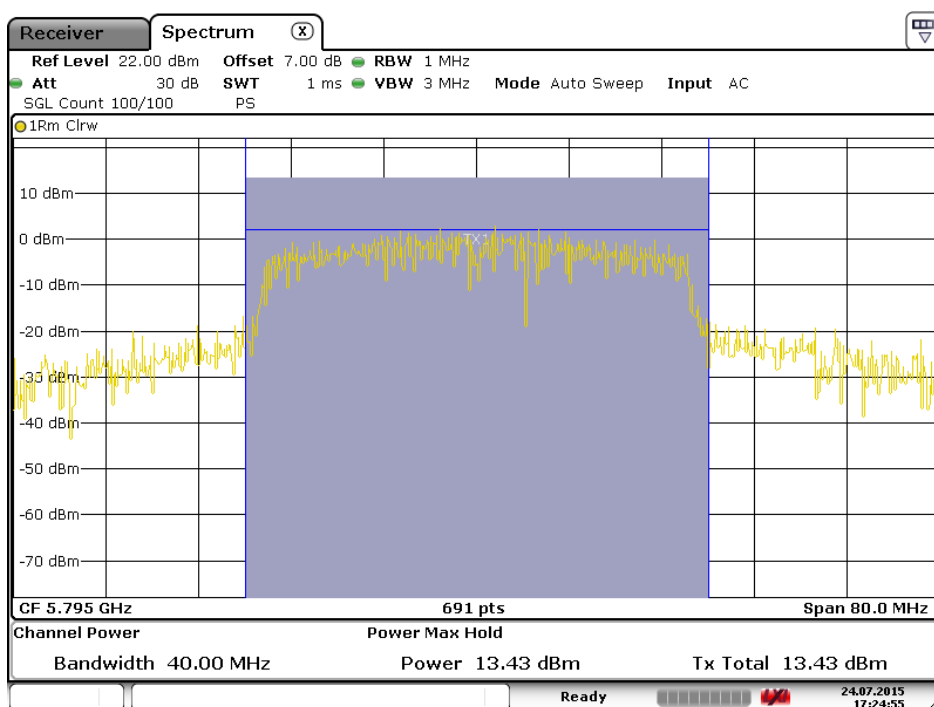
Band 4:

802.11n40



Date: 24.JUL.2015 17:08:49

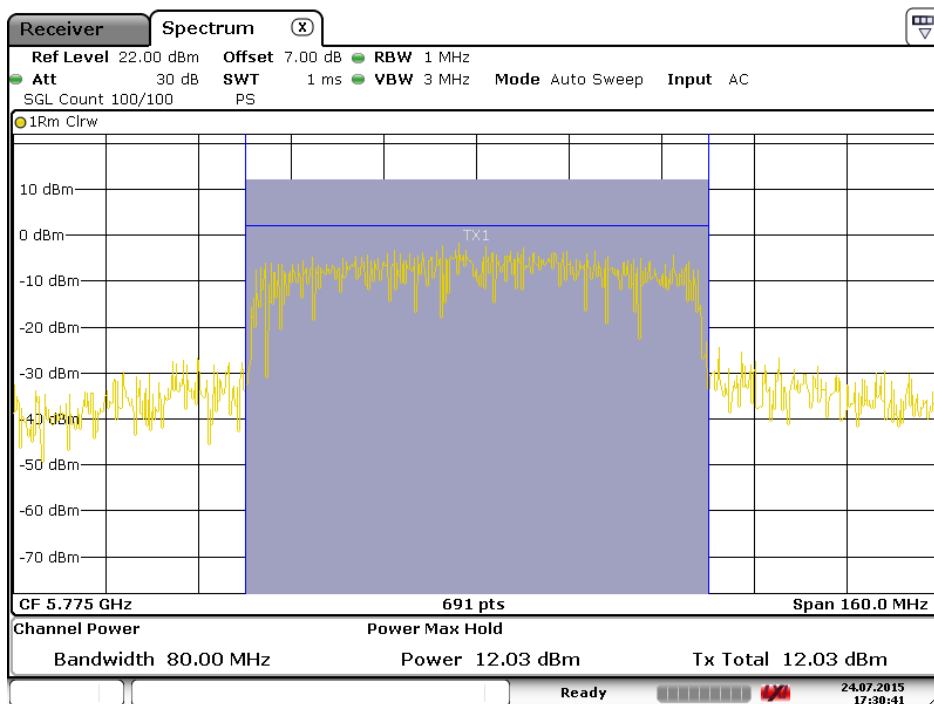
Lowest channel



Date: 24.JUL.2015 17:24:55

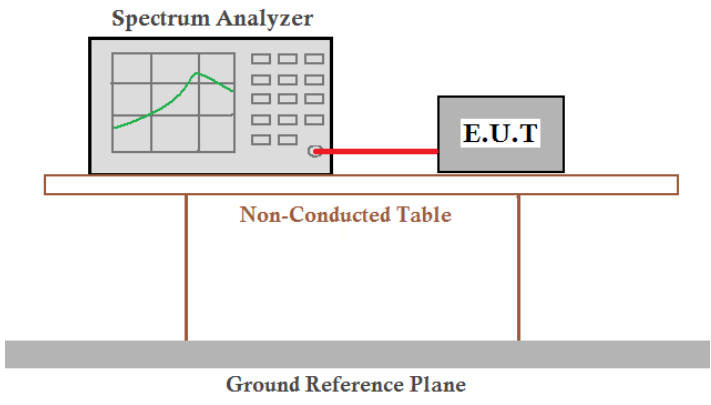
Highest channel

802.11ac



Date: 24.JUL.2015 17:30:41

6.4 Emission Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) and Section 15.407 (e)
Test Method:	ANSI C63.10: 2013 and KDB 789033 D02
Limit:	Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: >500kHz(6dB 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
	802.11n40	802.11ac		
Lowest	40.52	79.65	For report purpose	
Middle	---	---		
Highest	40.41	---		

Test Channel	99% Occupy Bandwidth (MHz)		Limit	Result
	802.11n40	802.11ac		
Lowest	36.01	75.02	For report purpose	
Middle	---	---		
Highest	36.01	---		

Band 4:

Test Channel	26dB Emission Bandwidth (MHz)		Limit	Result
	802.11n40	802.11ac		
Lowest	47.81	115.77	For report purpose	
Middle	---	---		
Highest	52.10	---		

Test Channel	99% Occupy Bandwidth (MHz)		Limit	Result
	802.11n40	802.11ac		
Lowest	36.58	75.95	For report purpose	
Middle	---	---		
Highest	36.58	---		

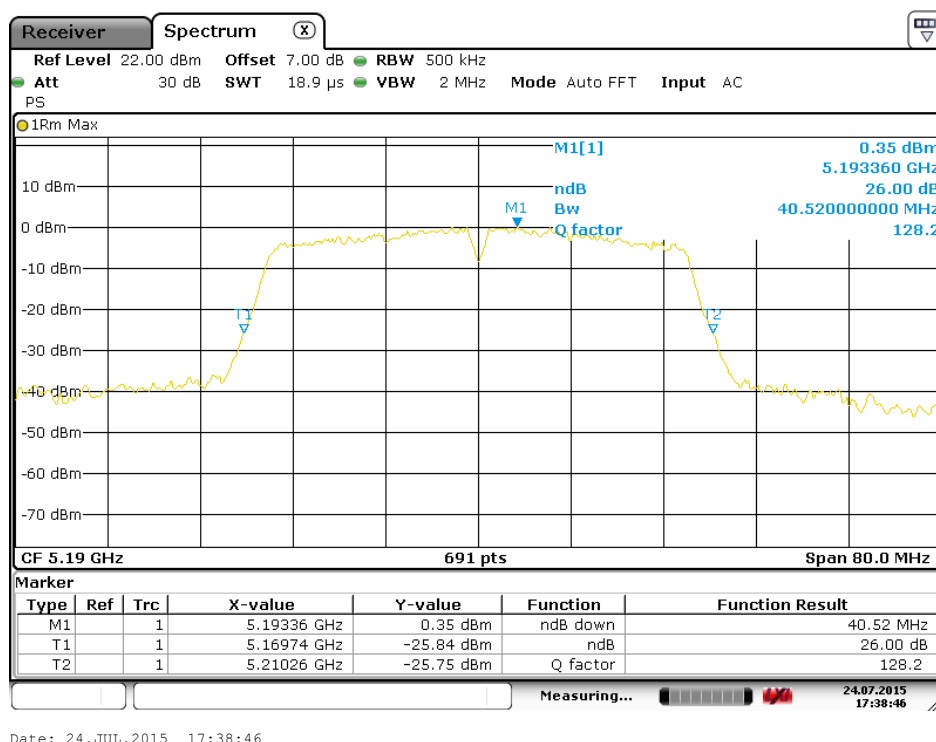
Test Channel	6dB Emission Bandwidth (MHz)		Limit	Result
	802.11n40	802.11ac		
Lowest	35.66	76.41	>500kHz	Pass
Middle	---	---		
Highest	35.77	---		

Test plot as follows:

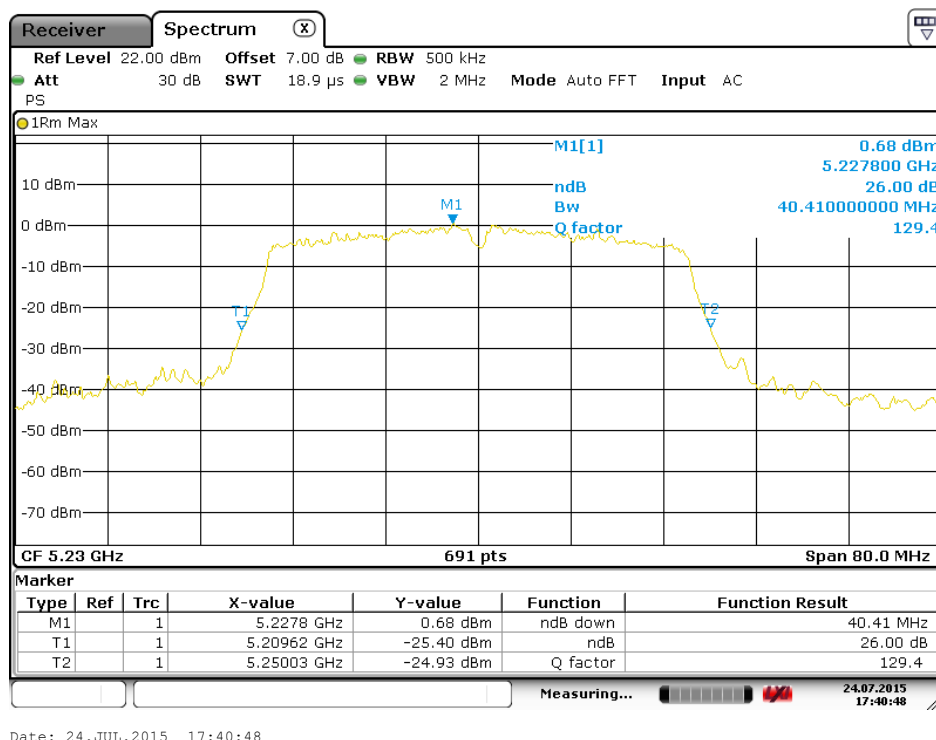
Band 1:

Test mode: 26dB EBW

802.11n40



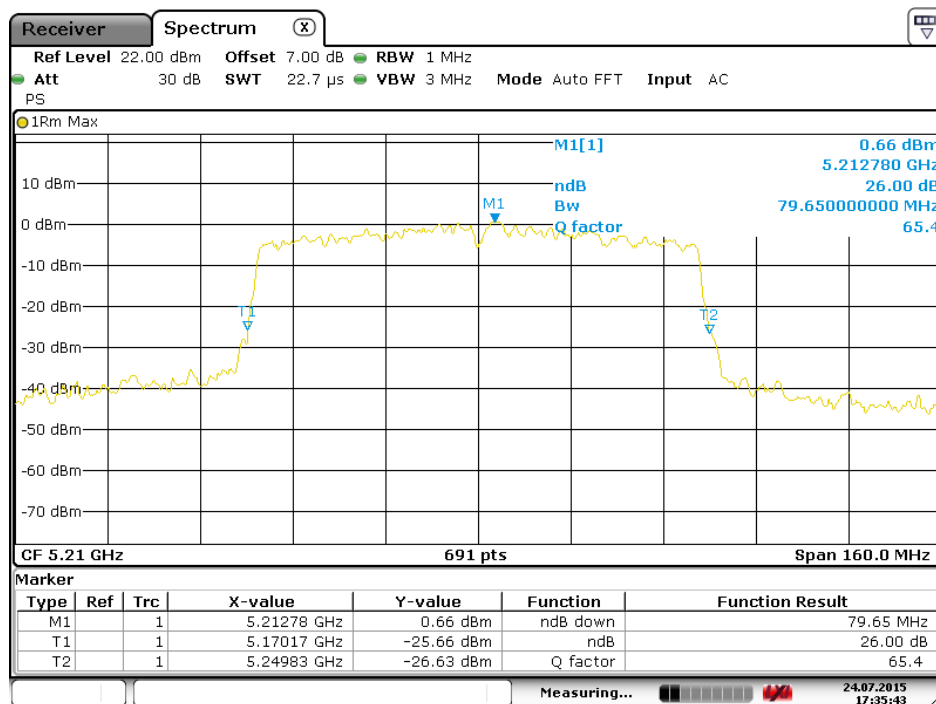
Lowest channel



Highest channel

Test mode: 26dB EBW

802.11ac

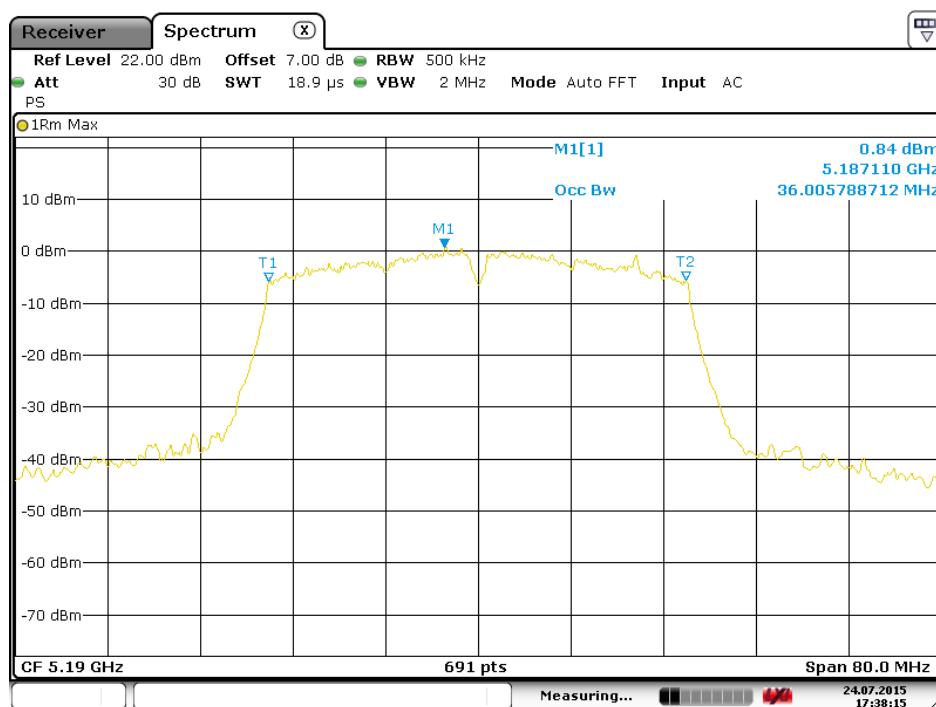


Date: 24.JUL.2015 17:35:43

Lowest channel

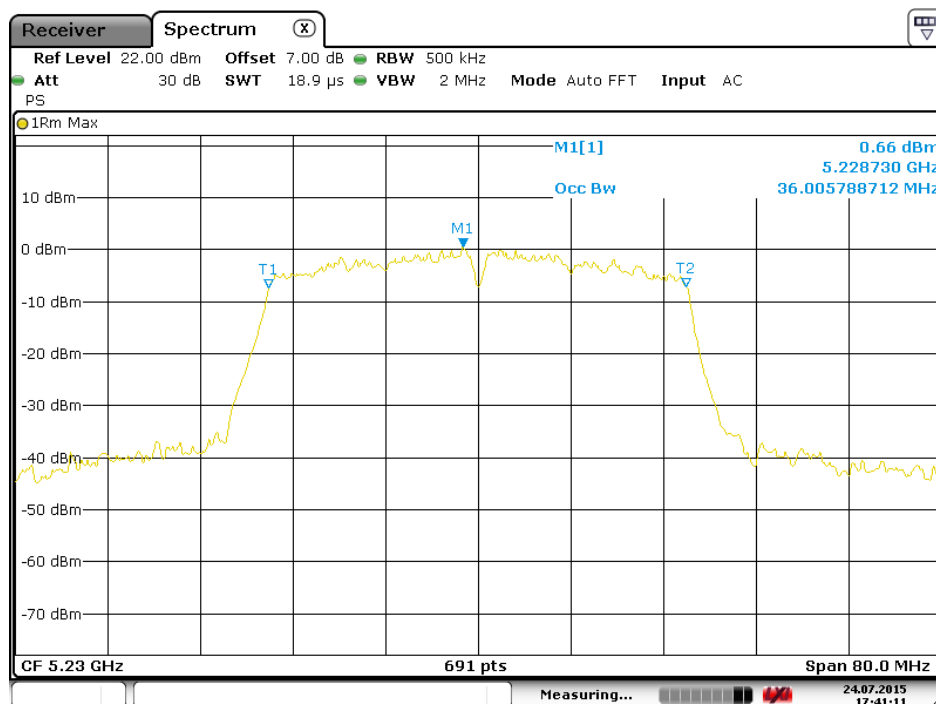
Test mode: 99% OBW

802.11n40



Date: 24..JUL..2015 17:38:14

Lowest channel

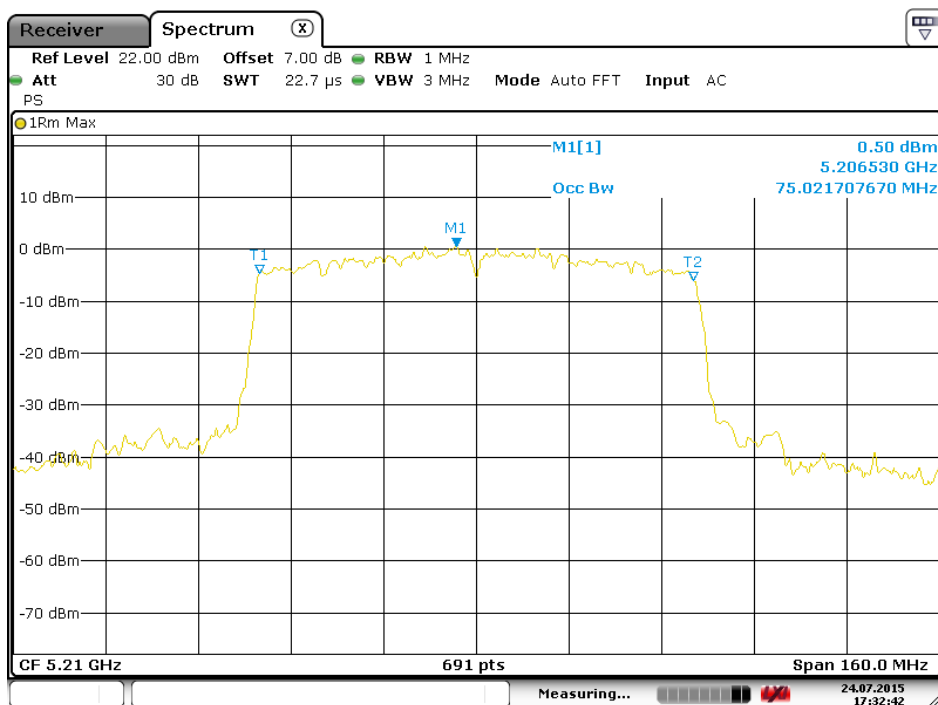


Date: 24..JUL..2015 17:41:11

Highest channel

Test mode: 99% OBW

802.11ac



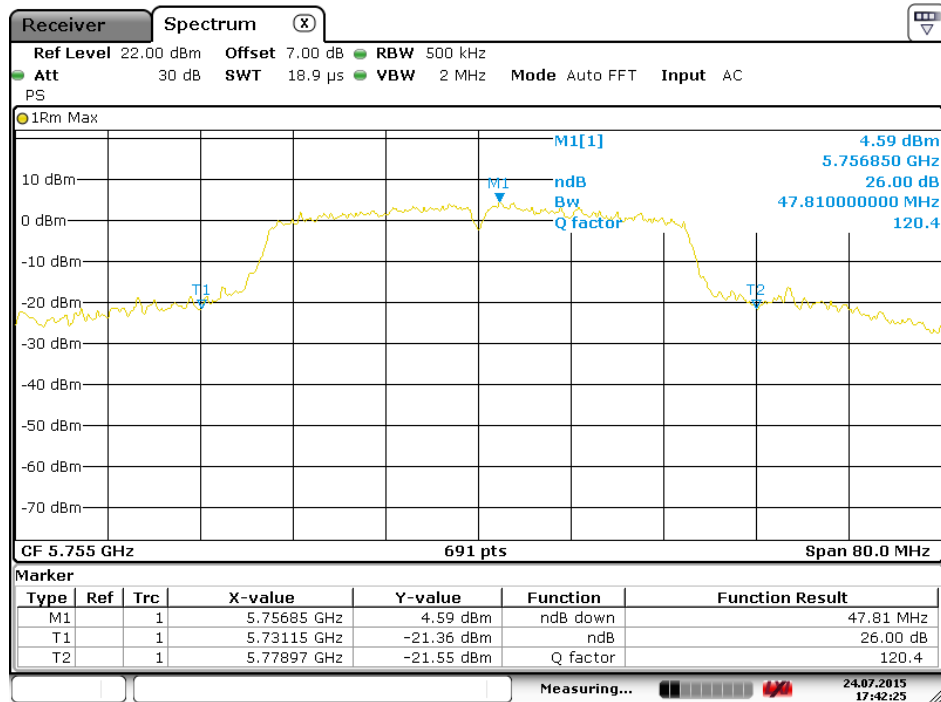
Date: 24.07.2015 17:32:41

Lowest channel

Band 4:

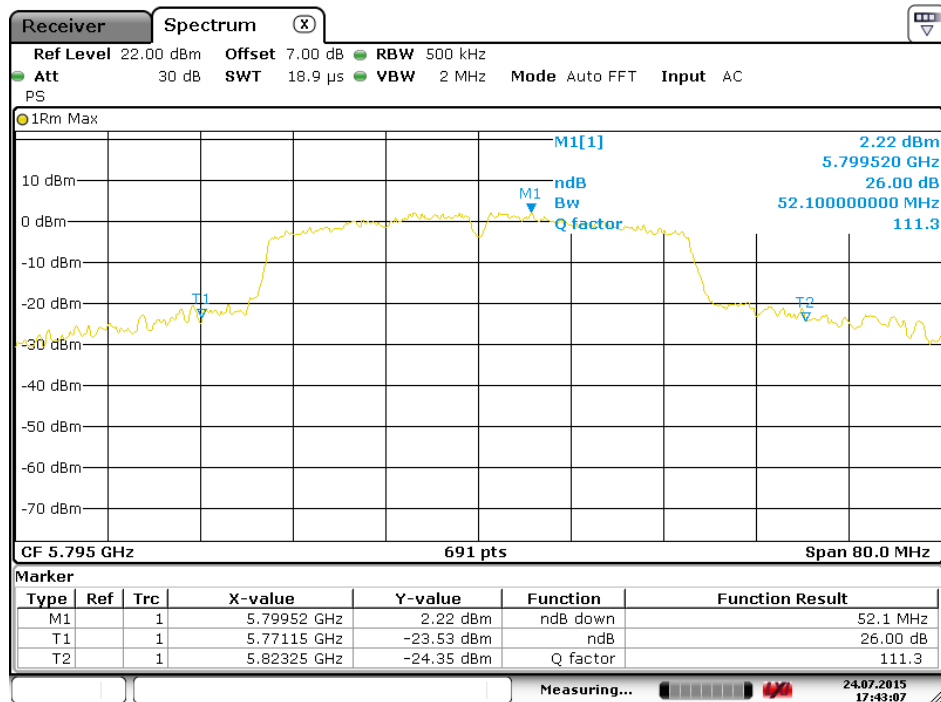
Test mode: 26dB EBW

802.11n40



Date: 24.JUL.2015 17:42:24

Lowest channel

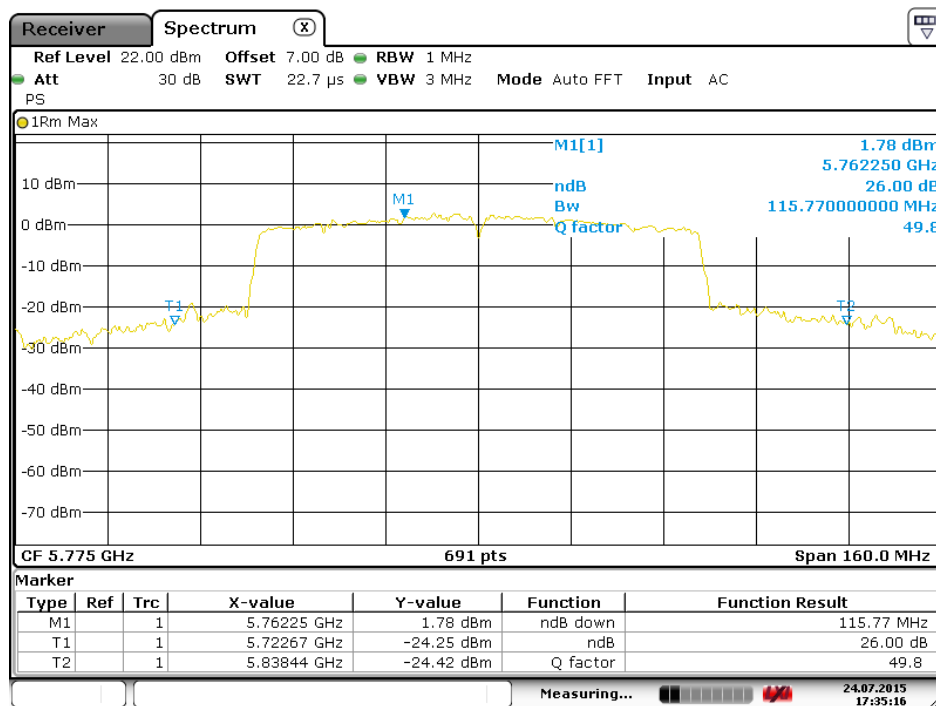


Date: 24.JUL.2015 17:43:07

Highest channel

Test mode: 26dB EBW

802.11ac

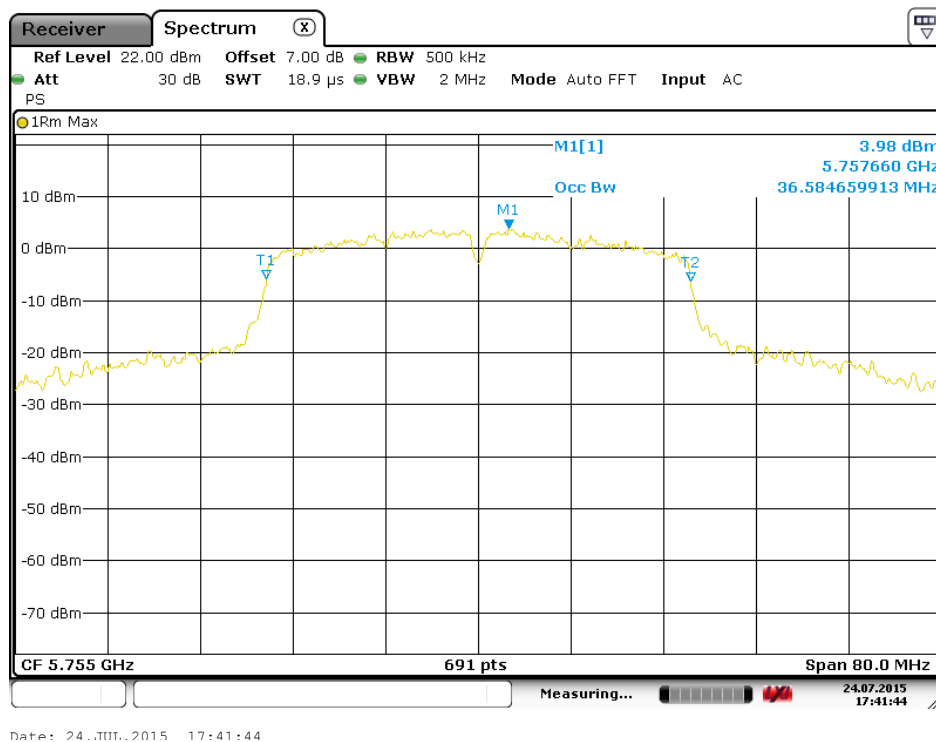


Date: 24.07.2015 17:35:16

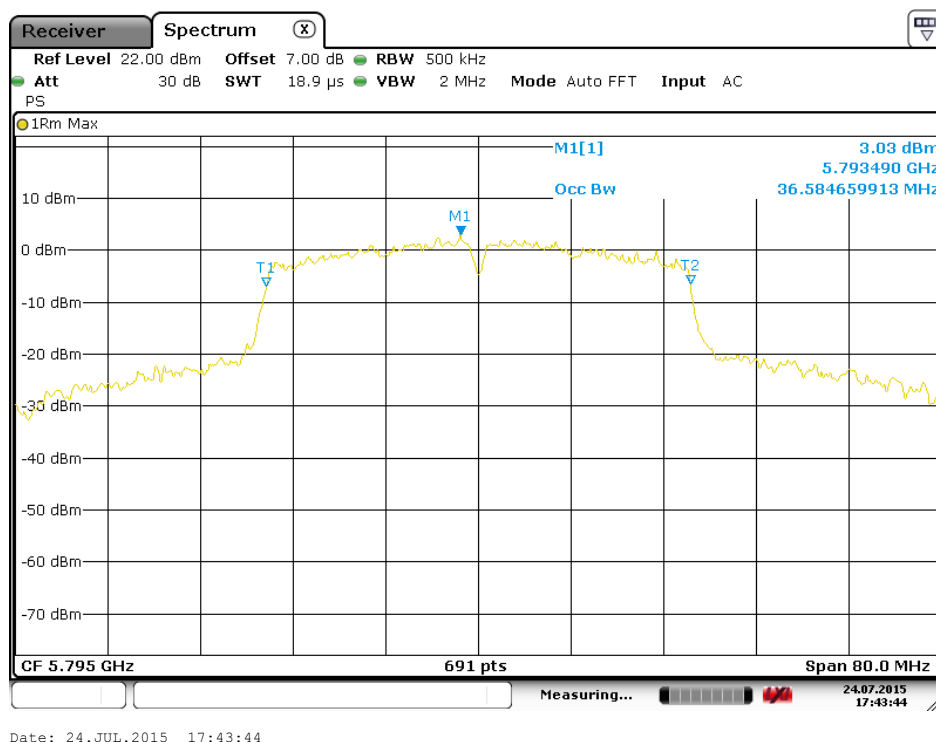
Lowest channel

Test mode: 99% OBW

802.11n40



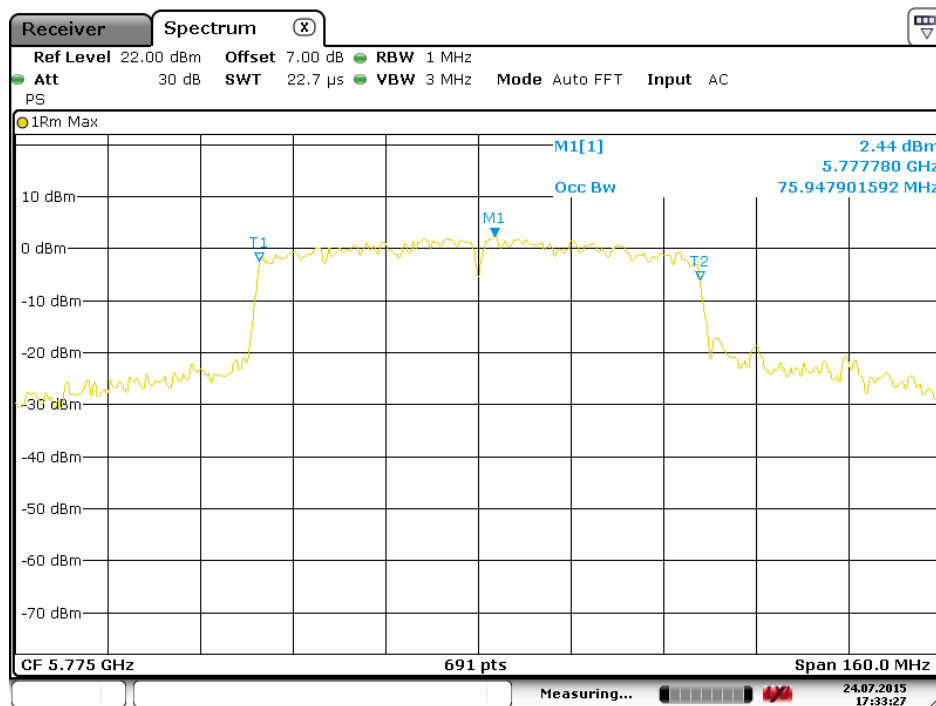
Lowest channel



Highest channel

Test mode: 99% OBW

802.11ac

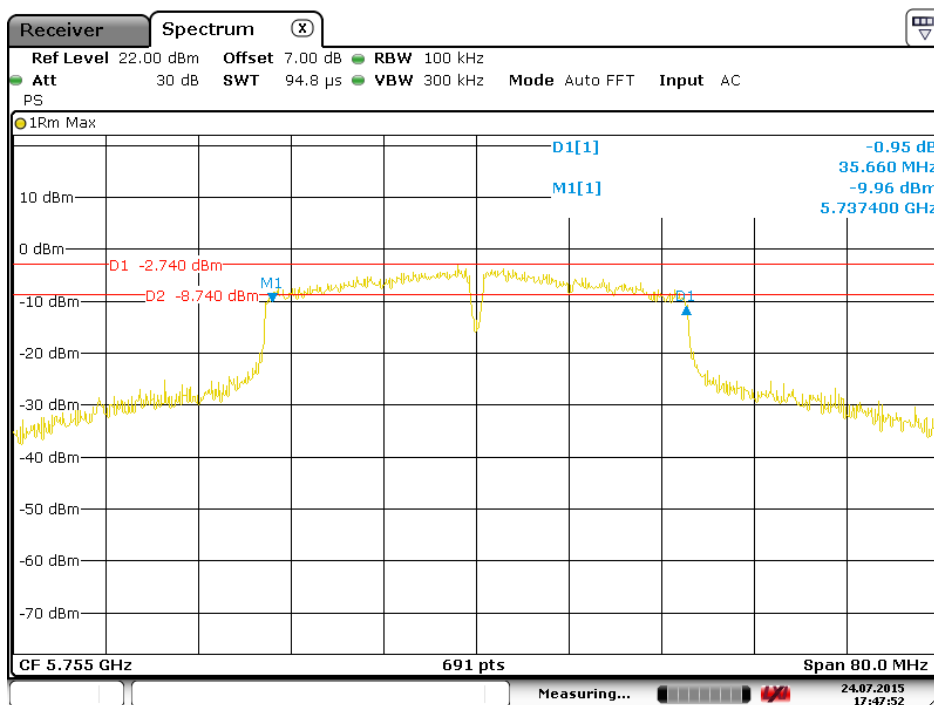


Date: 24.07.2015 17:33:27

Lowest channel

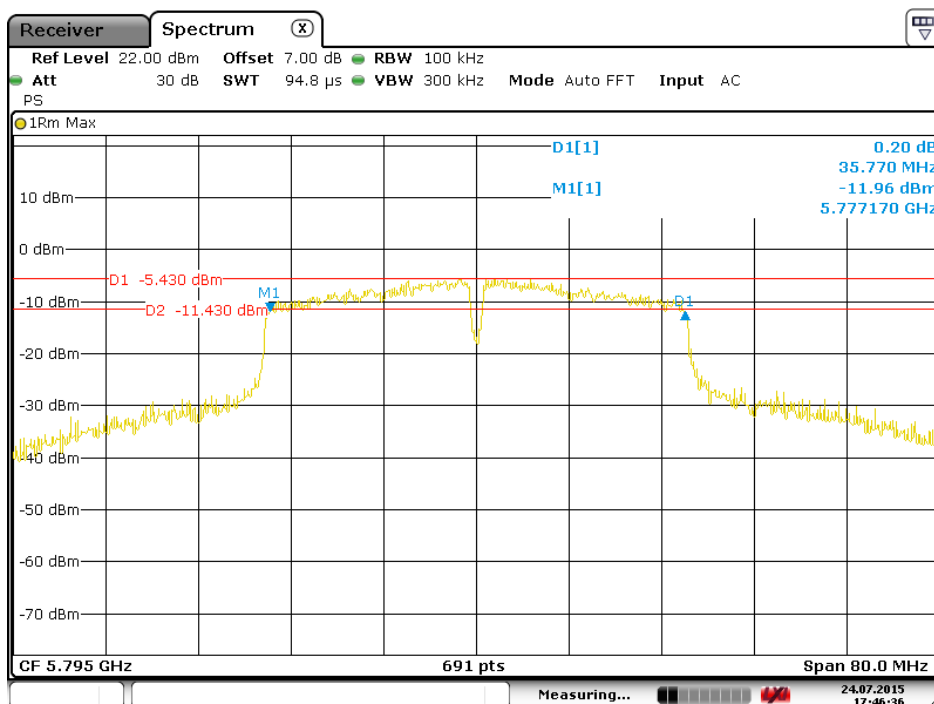
Test mode: 6dB BW

802.11n40



Date: 24..JUL..2015 17:47:51

Lowest channel

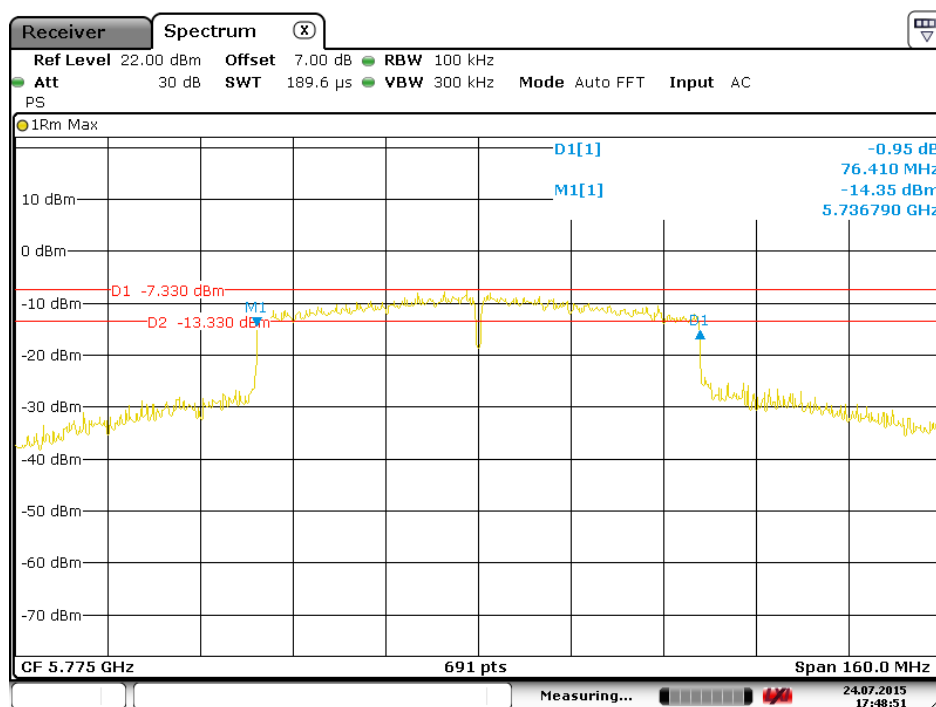


Date: 24..JUL..2015 17:46:36

Highest channel

Test mode: 6dB BW

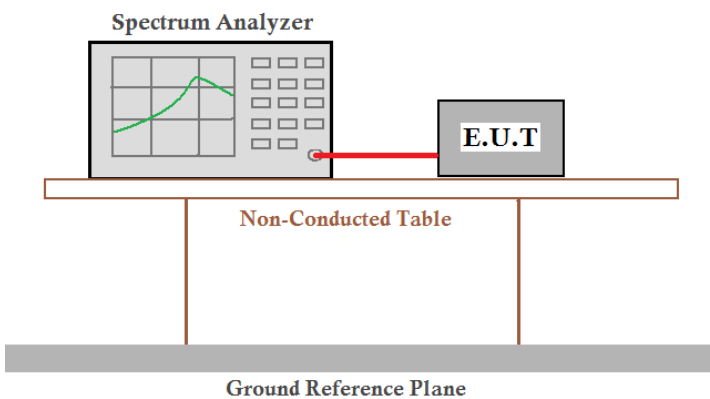
802.11ac



Date: 24. JUL. 2015 17:48:50

Lowest channel

6.5 Power Spectral Density

Test Requirement:	FCC Part 15 E Section 15.407 (a)
Test Method:	ANSI C63.10: 2013, KDB 789033 D02
Limit:	<p>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);</p> <p>Band 5725MHz-5850MHz: 30dBm/500kHz (If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.)</p>
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 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:

802.11n40:

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
	802.11n 40		
Lowest	3.80	11.00	Pass
Middle	--		
Highest	3.25		

Note: For the band 5150MHz-5250MHz, it used for mobile and portable client devices.

802.11ac:

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
	802.11ac		
Lowest	0.37	11.00	Pass
Note: For the band 5150MHz-5250MHz, it used for mobile and portable client devices.			

Band 4:

802.11n40:

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
	802.11n 40		
Lowest	5.13	30.00	Pass
Middle	--		
Highest	3.71		

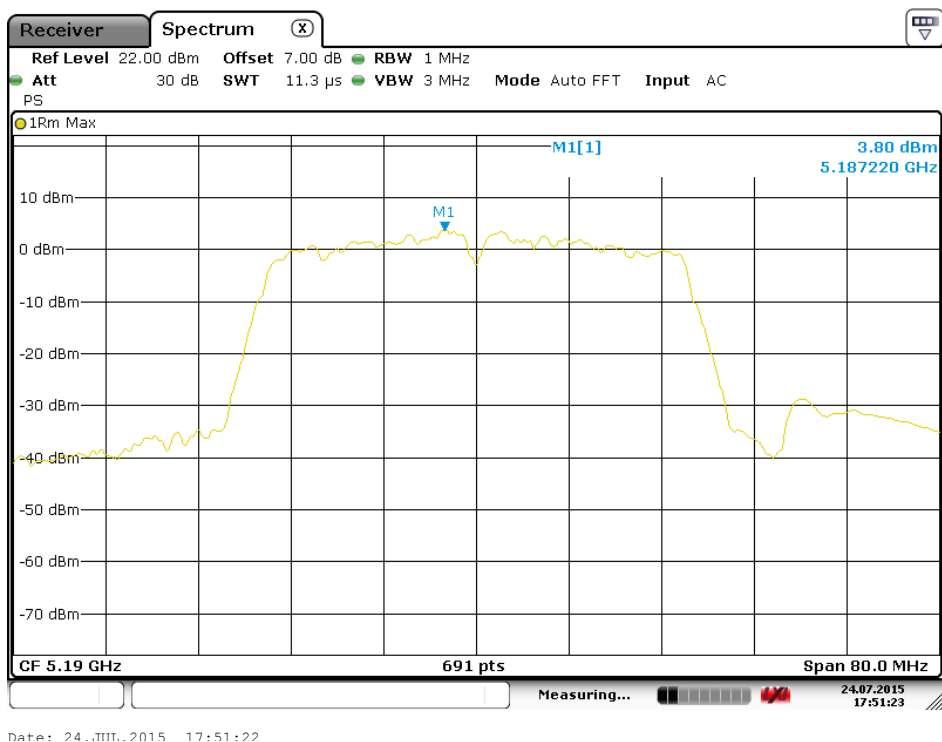
802.11ac:

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
	802.11n 40		
Highest	1.68	30.00	Pass

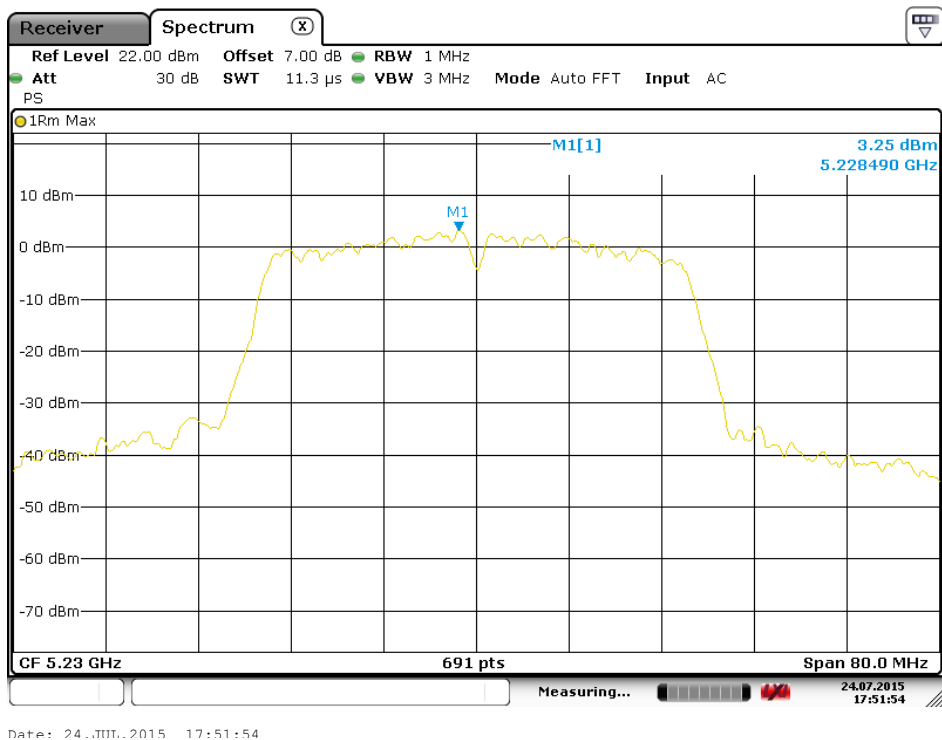
Test plot as follows:

Band 1:

802.11n40

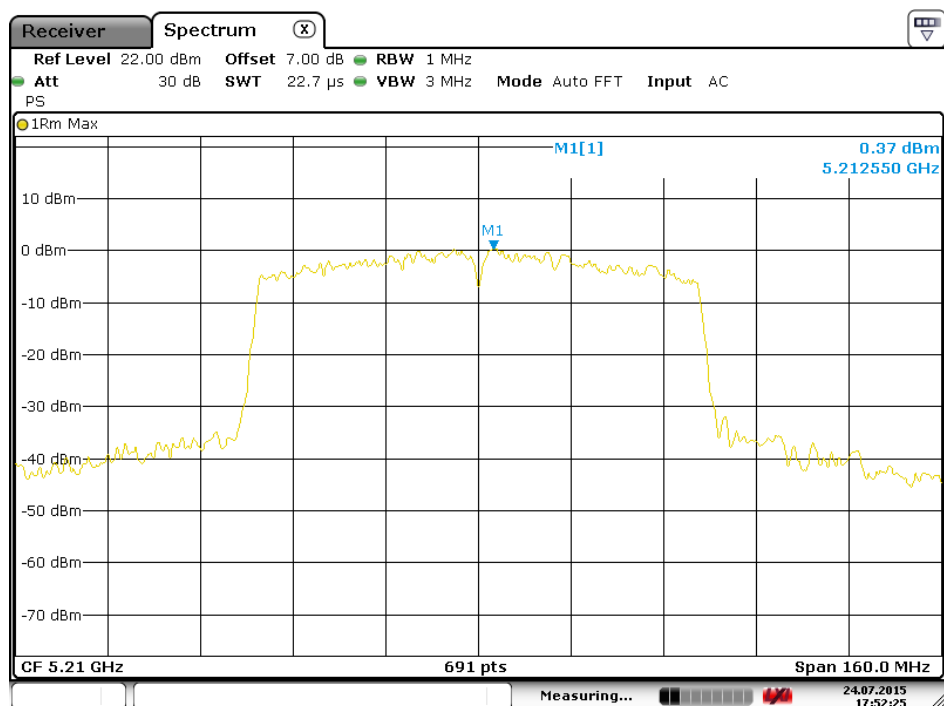


Lowest channel



Highest channel

802.11ac

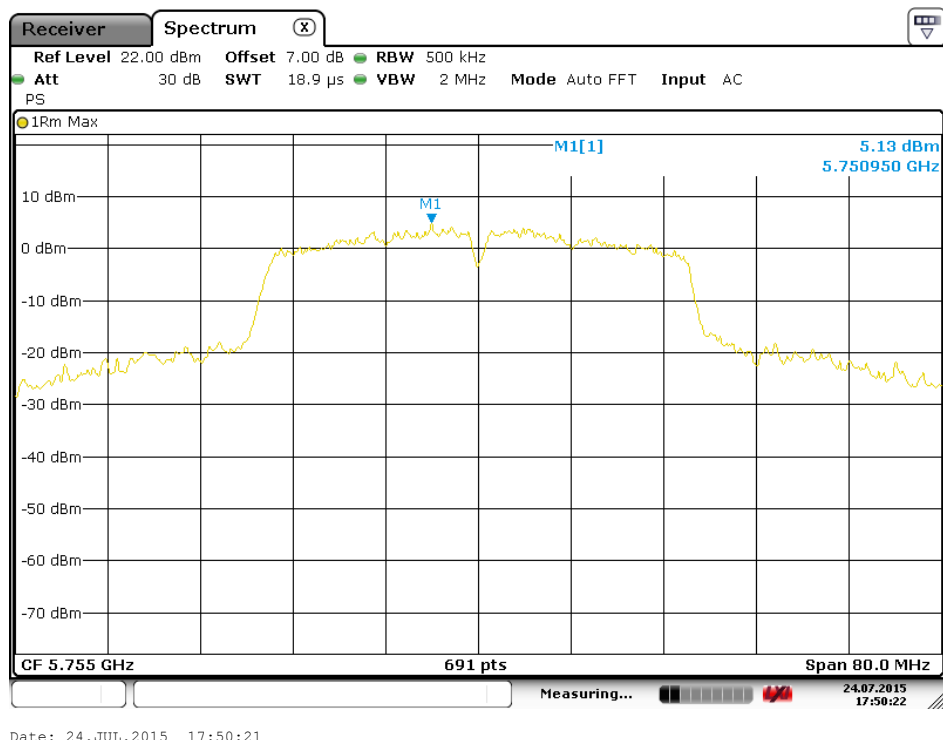


Date: 24..JUL..2015 17:52:25

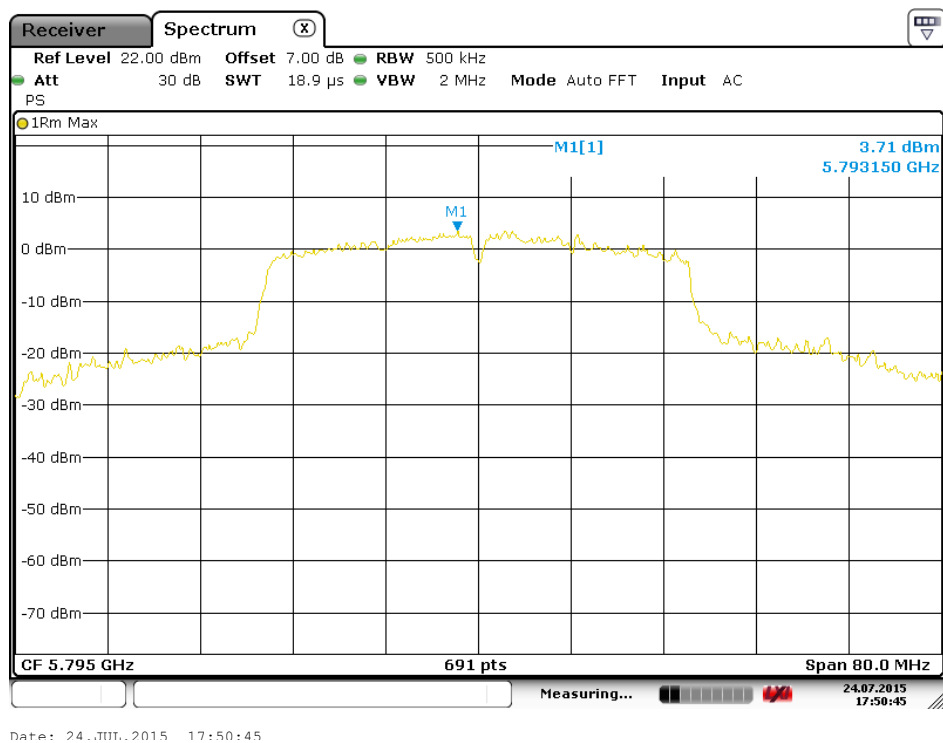
Lowest channel

Band 4:

802.11n40

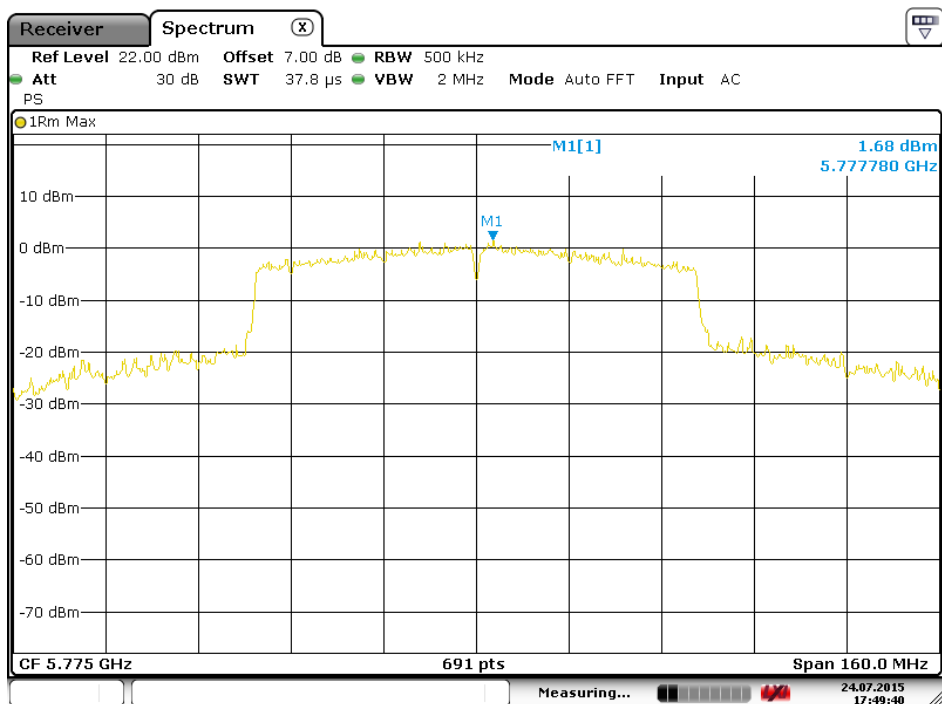


Lowest channel



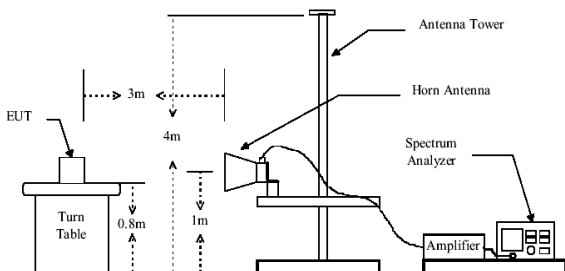
Highest channel

802.11ac



Date: 24.07.2015 17:49:39

6.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 (b)				
Test Method:	ANSI C63.10:2013, KDB 789033 D02				
Receiver setup:		Detector	RBW	VBW	Remark
		Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	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
	Remark: 1. Band 1 limit: $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 68.2 \text{ dBuV}/\text{m}$, for $\text{EIPR}[\text{dBm}] = -27\text{dBm}$. 2. Band 4 limit: $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 78.2 \text{ dBuV}/\text{m}$, for $\text{EIPR}[\text{dBm}] = -17\text{dBm}$.				
Test Procedure:	<div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>				
Test setup:					
Test Instruments:	Refer to section 5.6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Band 1:

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
5150.00	41.14	32.07	10.96	40.06	44.11	68.20	-24.09	Vertical
5150.00	40.56	32.07	10.96	40.06	43.53	68.20	-24.67	Horizontal

802.11n-HT40								
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
5150.00	31.01	32.07	10.96	40.06	33.98	54.00	-20.02	Vertical
5150.00	30.76	32.07	10.96	40.06	33.73	54.00	-20.27	Horizontal

802.11n-HT40								
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	39.98	31.78	11.19	40.18	42.77	68.20	-25.43	Vertical
5350.00	38.71	31.78	11.19	40.18	41.50	68.20	-26.70	Horizontal

802.11n-HT40								
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	29.19	31.78	11.19	40.18	42.77	54.00	-11.23	Vertical
5350.00	28.51	31.78	11.19	40.18	43.45	54.00	-10.55	Horizontal

802.11ac-VHT80								
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
5150.00	41.47	32.07	10.96	40.06	44.44	68.20	-23.76	Vertical
5150.00	40.25	32.07	10.96	40.06	43.22	68.20	-24.98	Horizontal

802.11ac-VHT80								
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
5150.00	31.31	32.07	10.96	40.06	34.28	54.00	-19.72	Vertical
5150.00	30.42	32.07	10.96	40.06	33.39	54.00	-20.61	Horizontal

802.11ac-VHT80								
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	40.53	31.78	11.19	40.18	43.32	68.20	-24.88	Vertical
5350.00	39.68	31.78	11.19	40.18	42.47	68.20	-25.73	Horizontal

802.11ac-VHT80								
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	30.74	31.78	11.19	40.18	33.53	54.00	-20.47	Vertical
5350.00	29.17	31.78	11.19	40.18	31.96	54.00	-22.04	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.

Band 4:

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
5725.00	39.42	32.27	9.30	40.54	40.45	68.20	-27.75	Vertical
5725.00	41.11	32.27	9.30	40.54	42.14	68.20	-26.06	Horizontal

802.11n-HT40								
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
5725.00	29.24	32.27	9.30	40.54	30.27	54.00	-23.73	Vertical
5725.00	31.27	32.27	9.30	40.54	32.3	54.00	-21.70	Horizontal

802.11n-HT40								
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
5850.00	43.73	32.71	9.37	40.69	45.12	68.20	-23.08	Vertical
5850.00	42.49	32.71	9.37	40.69	43.88	68.20	-24.32	Horizontal

802.11n-HT40								
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
5850.00	33.26	32.71	9.37	40.69	40.14	54.00	-13.86	Vertical
5850.00	32.82	32.71	9.37	40.69	40.58	54.00	-13.42	Horizontal

802.11ac-VHT80								
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
5725.00	39.18	32.27	9.30	40.54	40.21	68.20	-27.99	Vertical
5725.00	41.78	32.27	9.30	40.54	42.81	68.20	-25.39	Horizontal

802.11ac-VHT80								
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
5725.00	29.23	32.27	9.30	40.54	30.26	54.00	-23.74	Vertical
5725.00	31.11	32.27	9.30	40.54	32.14	54.00	-21.86	Horizontal

802.11ac-VHT80								
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
5850.00	43.58	32.71	9.37	40.69	44.97	68.20	-23.23	Vertical
5850.00	42.46	32.71	9.37	40.69	43.85	68.20	-24.35	Horizontal

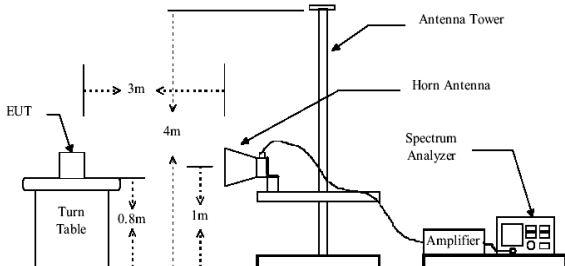
802.11ac-VHT80								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	33.42	32.71	9.37	40.69	34.81	54.00	-19.19	Vertical
5850.00	32.74	32.71	9.37	40.69	34.13	54.00	-19.87	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 Spurious Emission

6.7.1 Restricted Band

Test Requirement:	FCC Part15 E Section 15.407(b)				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	Band 1: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz Band 4: 5.35 GHz to 5.46 GHz				
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:	<div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>				
Test setup:					
Test Instruments:	Refer to section 5.6 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Band 1:

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
4500.00	42.01	30.72	10.22	40.67	42.28	74.00	-31.72	Vertical
4500.00	42.76	30.72	10.22	40.67	43.03	74.00	-30.97	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	32.11	30.72	10.22	40.67	32.38	54.00	-21.62	Vertical
4500.00	32.26	30.72	10.22	40.67	32.53	54.00	-21.47	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
5460.00	43.13	31.99	11.32	40.23	46.21	74.00	-27.79	Vertical
5460.00	40.56	31.99	11.32	40.23	43.64	74.00	-30.36	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
5460.00	33.25	31.99	11.32	40.23	36.33	54.00	-17.67	Vertical
5460.00	30.27	31.99	11.32	40.23	33.35	54.00	-20.65	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.*

802.11ac-VHT80								
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	42.72	30.72	10.22	40.67	42.99	74.00	-31.01	Vertical
4500.00	42.26	30.72	10.22	40.67	42.53	74.00	-31.47	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	32.57	30.72	10.22	40.67	32.84	54.00	-21.16	Vertical
4500.00	30.54	30.72	10.22	40.67	30.81	54.00	-23.19	Horizontal

802.11ac-VHT80								
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
5460.00	43.82	31.99	11.32	40.23	46.90	74.00	-27.10	Vertical
5460.00	40.93	31.99	11.32	40.23	44.01	74.00	-29.99	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
5460.00	33.15	31.99	11.32	40.23	36.23	54.00	-17.77	Vertical
5460.00	30.18	31.99	11.32	40.23	33.26	54.00	-20.74	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.

Band 4:

802.11n-HT40								
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	43.97	31.78	11.19	40.18	46.76	74.00	-27.24	Vertical
5460.00	43.39	31.99	11.32	40.23	46.47	74.00	-27.53	Vertical
5350.00	41.35	31.78	11.19	40.18	44.14	74.00	-29.86	Horizontal
5460.00	40.72	31.99	11.32	40.23	43.80	74.00	-30.20	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	33.24	31.78	11.19	40.18	36.03	54.00	-17.97	Vertical
5460.00	33.36	31.99	11.32	40.23	36.44	54.00	-17.56	Vertical
5350.00	31.33	31.78	11.19	40.18	34.12	54.00	-19.88	Horizontal
5460.00	30.12	31.99	11.32	40.23	33.20	54.00	-20.80	Horizontal

802.11ac-VHT80								
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	43.13	31.78	11.19	40.18	45.92	74.00	-28.08	Vertical
5460.00	43.28	31.99	11.32	40.23	46.36	74.00	-27.64	Vertical
5350.00	41.57	31.78	11.19	40.18	44.36	74.00	-29.64	Horizontal
5460.00	40.83	31.99	11.32	40.23	43.91	74.00	-30.09	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	33.14	31.78	11.19	40.18	35.93	54.00	-18.07	Vertical
5460.00	33.18	31.99	11.32	40.23	36.26	54.00	-17.74	Vertical
5350.00	31.27	31.78	11.19	40.18	34.06	54.00	-19.94	Horizontal
5460.00	30.42	31.99	11.32	40.23	33.50	54.00	-20.50	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

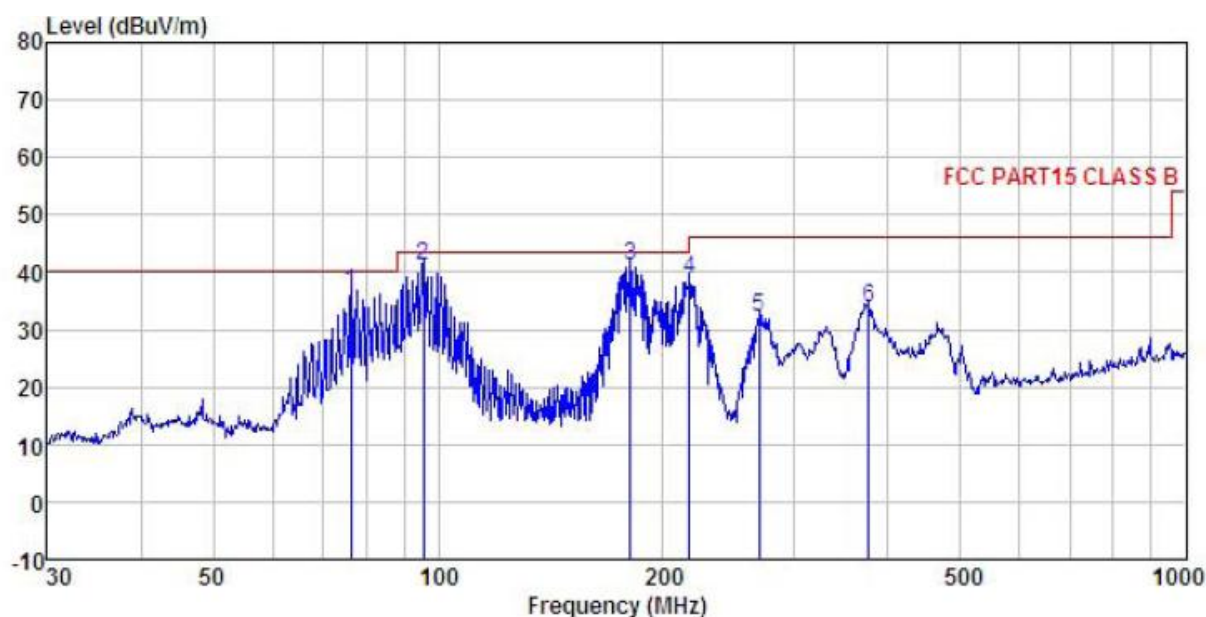
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	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 [dBμV/m] = EIRP [dBm] + 95.2=68.2 dBuV/m, for EIPR [dBm] =-27dBm.				
Test Procedure:	<div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>				

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

Band 1:

Below 1GHz

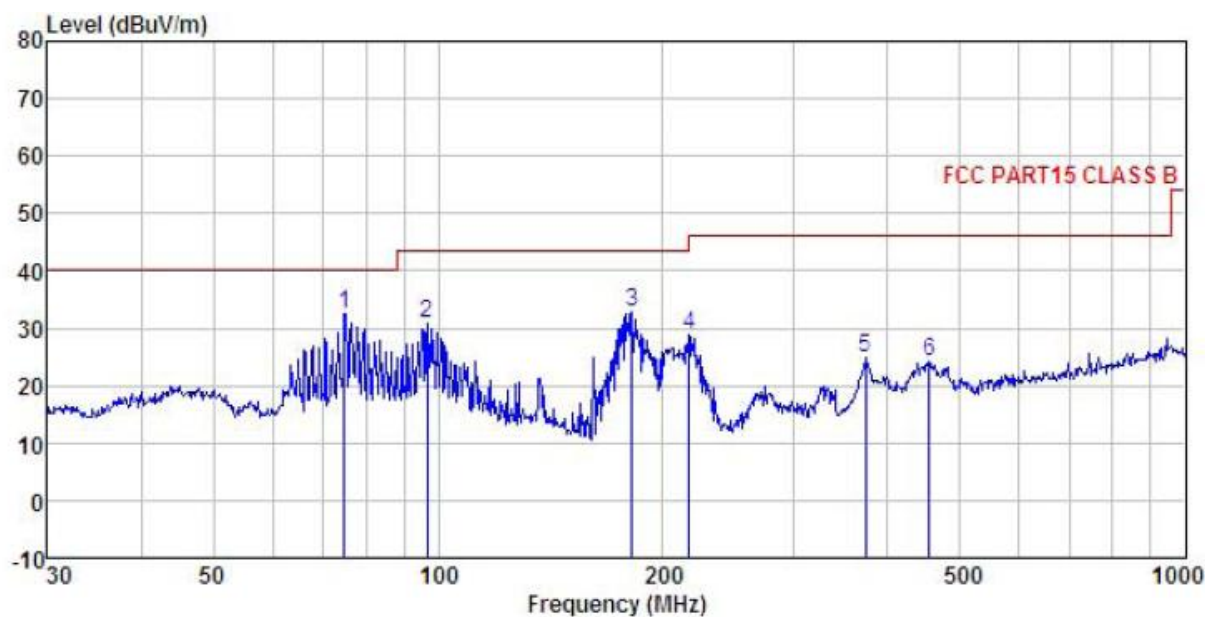
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 EUT : LTE mobile phone
 Model : Z8
 Test mode : 5G WIFI-TX Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: YT
 REMARK :

	Freq	ReadAntenna	Cable Preamp		Limit	Over	
		Level Factor	Loss Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	76.512	57.36	8.03	0.83	29.67	36.55	40.00 -3.45 QP
2	95.427	56.76	12.87	0.93	29.55	41.01	43.50 -2.49 QP
3	180.649	59.13	9.76	1.36	28.97	41.28	43.50 -2.22 QP
4	216.783	54.89	11.10	1.47	28.73	38.73	46.00 -7.27 QP
5	268.485	46.60	12.34	1.68	28.51	32.11	46.00 -13.89 QP
6	377.259	45.77	14.57	2.04	28.68	33.70	46.00 -12.30 QP

Vertical:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 EUT : LTE mobile phone
 Model : Z8
 Test mode : 5G WIFI-TX Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: YT
 REMARK :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	74.919	53.54	7.80	0.82	29.68	32.48	40.00
2	96.775	46.39	12.97	0.94	29.54	30.76	43.50
3	181.920	50.54	9.84	1.36	28.96	32.78	43.50
4	216.783	44.89	11.10	1.47	28.73	28.73	46.00
5	373.311	37.05	14.54	2.03	28.66	24.96	46.00
6	454.310	35.14	15.58	2.27	28.88	24.11	46.00

Above 1GHz:

Band 1:

802.11n-HT40 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	43.13	39.29	15.42	41.31	56.53	68.20	-11.67	Vertical
10380.00	42.65	39.29	15.42	41.31	56.05	68.20	-12.15	Horizontal
802.11n-HT40 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	33.15	39.29	15.42	41.31	46.55	54.00	-7.45	Vertical
10380.00	32.69	39.29	15.42	41.31	46.09	54.00	-7.91	Horizontal

802.11n-HT40 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	41.92	39.54	15.51	41.17	55.80	68.20	-12.40	Vertical
10460.00	41.46	39.54	15.51	41.17	55.34	68.20	-12.86	Horizontal
802.11n-HT40 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	31.51	39.54	15.51	41.17	45.39	54.00	-8.61	Vertical
10460.00	31.54	39.54	15.51	41.17	45.42	54.00	-8.58	Horizontal

802.11ac-VHT80 mode (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
10420.00	42.36	39.46	15.46	41.24	56.04	68.20	-12.16	Vertical
10420.00	42.57	39.46	15.46	41.24	56.25	68.20	-11.95	Horizontal
802.11ac-VHT80 mode (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
10420.00	32.06	39.46	15.46	41.24	45.74	54.00	-8.26	Vertical
10420.00	31.94	39.46	15.46	41.24	45.62	54.00	-8.38	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.*

Band 4:

802.11n-HT40 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
11510.00	40.74	40.26	16.83	40.77	57.06	68.20	-11.14	Vertical
11510.00	42.28	40.26	16.83	40.77	58.60	68.20	-9.60	Horizontal
802.11n-HT40 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
11510.00	30.19	40.26	16.83	40.77	46.51	54.00	-7.49	Vertical
11510.00	32.24	40.26	16.83	40.77	48.56	54.00	-5.44	Horizontal

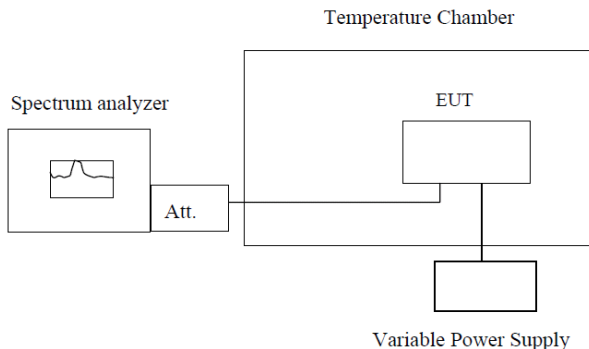
802.11n-HT40 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
11590.00	42.20	40.08	16.93	40.95	58.26	68.20	-9.94	Vertical
11590.00	40.12	40.08	16.93	40.95	56.18	68.20	-12.02	Horizontal
802.11n-HT40 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
11590.00	39.74	40.08	16.93	40.95	55.80	54.00	1.80	Vertical
11590.00	31.59	40.08	16.93	40.95	47.65	54.00	-6.35	Horizontal

802.11ac-VHT80 mode (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
11550.00	41.05	40.21	16.86	40.88	57.24	68.20	-10.96	Vertical
11550.00	42.23	40.21	16.86	40.88	58.42	68.20	-9.78	Horizontal
802.11ac-VHT80 mode (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
11550.00	31.01	40.21	16.86	40.88	47.20	54.00	-6.80	Vertical
11550.00	32.21	40.21	16.86	40.88	48.40	54.00	-5.60	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.*

6.8 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>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:

802.11n-HT40:

Voltage vs. Frequency Stability (Lowest channel=5190MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(°C)	Voltage(AC /60Hz)		
20	138	5189.987800	-2.35
	120	5189.990400	-1.85
	102	5189.986500	-2.60

Temperature vs. Frequency Stability (Lowest channel=5190MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(AC /60Hz)	Temp(°C)		
120	-20	5189.985800	-2.74
	-10	5189.985400	-2.81
	0	5189.991100	-1.71
	10	5189.984500	-2.99
	20	5189.984700	-2.95
	30	5189.986900	-2.52
	40	5189.989500	-2.02
	50	5189.990700	-2.74

802.11ac-VHT80:

Voltage vs. Frequency Stability (Lowest channel=5210MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(°C)	Voltage(AC /60Hz)		
20	138	5209.985700	-2.74
	120	5209.984800	-2.92
	102	5209.987500	-2.40

Temperature vs. Frequency Stability (Lowest channel=5210MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(AC /60Hz)	Temp(°C)		
120	-20	5209.985700	-2.74
	-10	5209.986200	-2.65
	0	5209.997500	-0.48
	10	5209.987400	-2.42
	20	5209.996700	-0.63
	30	5209.995700	-0.83
	40	5209.984700	-2.94
	50	5209.985700	-2.74

Band 4:

802.11n-HT40

Voltage vs. Frequency Stability (Lowest channel=5755MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(°C)	Voltage(AC /60Hz)		
20	138	5754.984500	-2.69
	120	5754.985700	-2.48
	102	5754.983600	-2.85

Temperature vs. Frequency Stability (Lowest channel=5755MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(AC /60Hz)	Temp(°C)		
120	-20	5754.988400	-2.02
	-10	5754.986700	-2.31
	0	5754.987700	-2.14
	10	5754.983700	-2.83
	20	5754.987500	-2.17
	30	5754.984500	-2.69
	40	5754.989800	-1.77
	50	5754.984800	-2.64

802.11ac-VHT80

Voltage vs. Frequency Stability (Lowest channel=5775MHz)

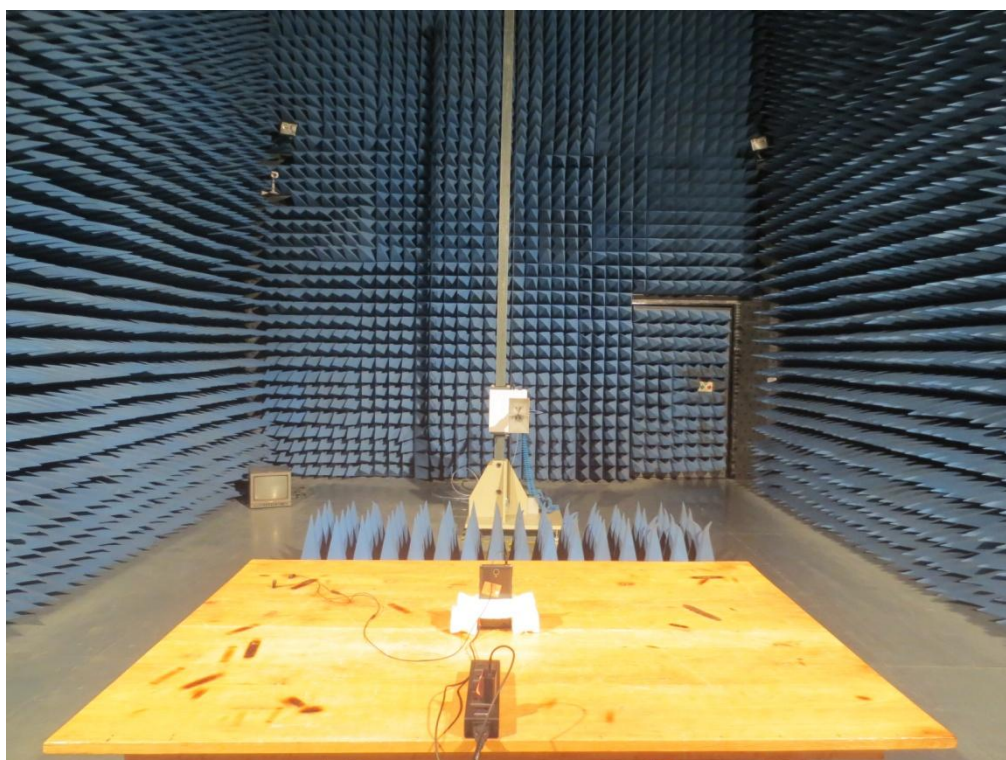
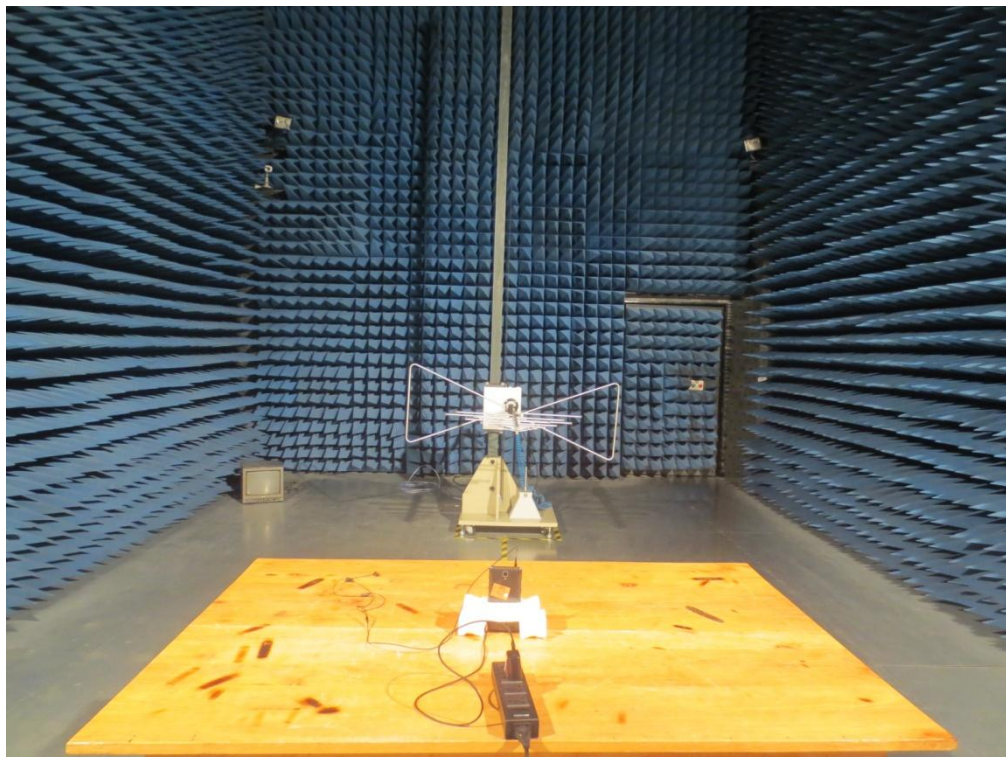
Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(°C)	Voltage(AC /60Hz)		
20	138	5774.984400	-2.70
	120	5774.987800	-2.11
	102	5774.988200	-2.04

Temperature vs. Frequency Stability (Lowest channel=5775MHz)

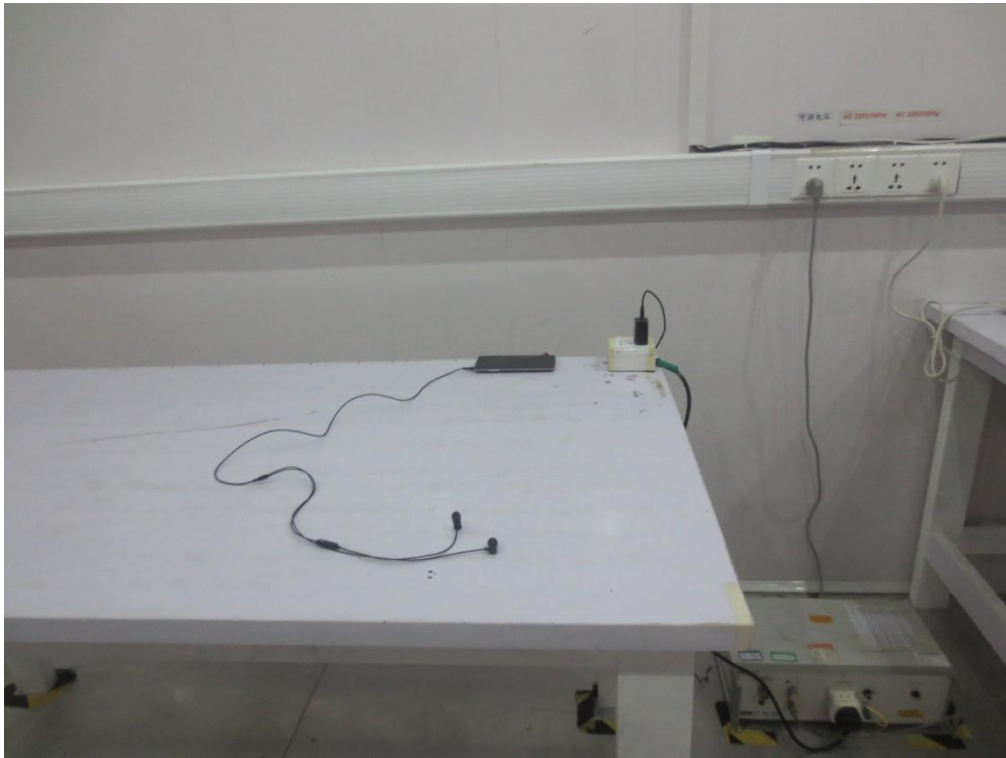
Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(AC /60Hz)	Temp(°C)		
120	-20	5774.986500	-2.34
	-10	5774.987400	-2.18
	0	5774.986300	-2.37
	10	5774.987400	-2.18
	20	5774.986300	-2.37
	30	5774.982500	-3.03
	40	5774.985100	-2.58
	50	5774.988400	-2.01

7 Test Setup Photo

Radiated emission



Conducted Emission



8 EUT Constructional Details

Reference to the test report No. CCIS15060051101

-----End of report-----