

# TEST REPORT

**Applicant:** Guangdong Xintengda Communication Technology Co.,Ltd.

**Address of Applicant:** 3rd Floor, No. 256, Mingyue 2nd Road, Luangang Village, Shiwan Town, Boluo County, Huizhou City, Guangdong Province

**Manufacturer:** Guangdong Xintengda Communication Technology Co.,Ltd.

**Address of Manufacturer:** 3rd Floor, No. 256, Mingyue 2nd Road, Luangang Village, Shiwan Town, Boluo County, Huizhou City, Guangdong Province

### Equipment Under Test (EUT)

Product Name: WIFI REPEATER

Model No.: KP300, KP300W, KP300T, KP300M, KP305, KP308

Trade Mark: N/A

**FCC ID:** 2AWTP-KP300

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247

**Date of sample receipt:** Jun.15,2020

**Date of Test:** Jun.15,2020- Jun.29,2020

**Date of report issued:** Jun.29,2020

**Test Result :** PASS \*

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

Authorized Signature:

A circular blue stamp with the text "GTS" in the center and "GLOBAL UNITED TECHNOLOGY SERVICES CO., LTD." around the perimeter. A handwritten signature in black ink is written over the stamp, and the word "June" is written in blue ink below the signature.

**Robinson Lo**

**Laboratory Manager**

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

## 2 Version

Version No.	Date	Description
00	Jun.29,2020	Original

**Tested/ Prepared By:**



**Project Engineer**

**Date:**

Jun.29,2020

**Check By:**



**Reviewer**

**Date:**

Jun.29,2020

## 3 Contents

	Page
1 COVER PAGE .....	1
2 VERSION .....	2
3 CONTENTS .....	3
4 TEST SUMMARY .....	4
5 GENERAL INFORMATION .....	5
5.1 GENERAL DESCRIPTION OF EUT .....	5
5.2 TEST MODE .....	7
5.3 DESCRIPTION OF SUPPORT UNITS .....	7
5.4 DEVIATION FROM STANDARDS .....	7
5.5 ABNORMALITIES FROM STANDARD CONDITIONS .....	7
5.6 TEST FACILITY .....	7
5.7 TEST LOCATION .....	7
5.8 ADDITIONAL INSTRUCTIONS .....	7
6 TEST INSTRUMENTS LIST .....	8
7 TEST RESULTS AND MEASUREMENT DATA .....	10
7.1 ANTENNA REQUIREMENT .....	10
7.2 CONDUCTED EMISSIONS .....	11
7.3 CONDUCTED PEAK OUTPUT POWER .....	14
7.4 CHANNEL BANDWIDTH .....	16
7.5 POWER SPECTRAL DENSITY .....	22
7.6 BAND EDGES .....	28
7.6.1 Conducted Emission Method .....	28
7.6.2 Radiated Emission Method .....	31
7.7 SPURIOUS EMISSION .....	34
7.7.1 Conducted Emission Method .....	34
7.7.2 Radiated Emission Method .....	45
8 TEST SETUP PHOTO .....	53
9 EUT CONSTRUCTIONAL DETAILS .....	53

## 4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	FCC part 15.207	Pass
Conducted Peak Output Power	FCC part 15.247 (b)(3)	Pass
Channel Bandwidth & 99% OCB	FCC part 15.247 (a)(2)	Pass
Power Spectral Density	FCC part 15.247 (e)	Pass
Band Edge	FCC part 15.247(d)	Pass
Spurious Emission	FCC part 15.205/15.209	Pass

*Remark: Test according to ANSI C63.10:2013 and RSS-Gen*

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

### Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 5 General Information

### 5.1 General Description of EUT

Product Name:	WIFI REPEATER
Model No.:	KP300
Serial No.:	KP300W, KP300T, KP300M, KP305, KP308
Test sample(s) ID:	GTS202006000213-1
Sample(s) Status	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(H20) Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	External antenna
Antenna Gain:	5.00dBi
Power Supply:	AC 120V/60Hz
Note:	The EUT has two ANT and support MIMO

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz	X	

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:

Test channel	Frequency (MHz)
	802.11b/802.11g/802.11n(HT20)
Lowest channel	2412MHz
Middle channel	2437MHz
Highest channel	2462MHz

## 5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the dutycycle &gt;98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

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:				
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.				
Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

## 5.3 Description of Support Units

None.
-------

## 5.4 Deviation from Standards

None.
-------

## 5.5 Abnormalities from Standard Conditions

None.
-------

## 5.6 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC —Registration No.: 381383</b> Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383.</li> <li>● <b>IC —Registration No.: 9079A</b> The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A</li> <li>● <b>NVLAP (LAB CODE:600179-0)</b> Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0</li> </ul>
---

## 5.7 Test Location

All tests were performed at:
<p>Global United Technology Services Co., Ltd. Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960</p>

## 5.8 Additional Instructions

Test Software	Special AT test command provided by manufacturer
Power level setup	Default

## 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	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021



Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 25 2020	June. 24 2021
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 25 2020	June. 24 2021
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 25 2020	June. 24 2021
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 25 2020	June. 24 2021
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 25 2020	June. 24 2021

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

## 7 Test results and Measurement Data

### 7.1 Antenna requirement

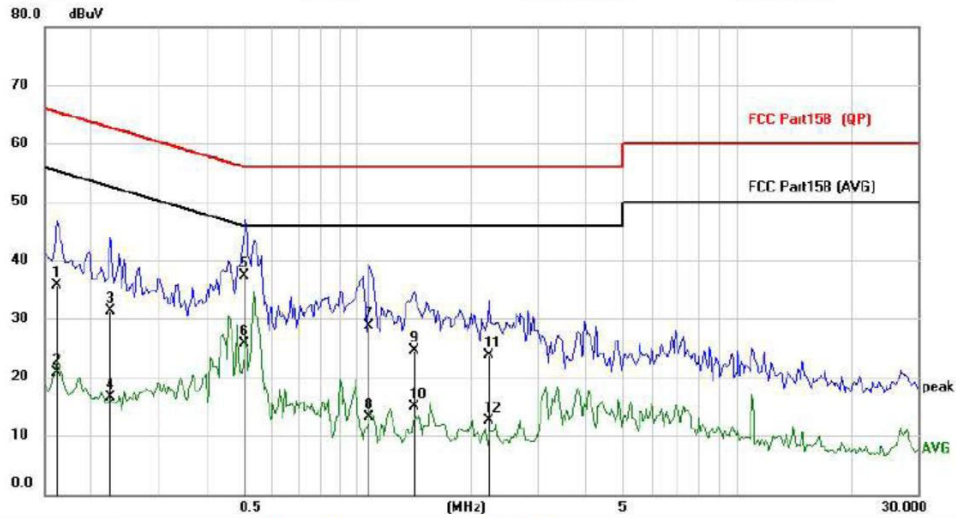
<b>Standard requirement:</b>	FCC Part15 C Section 15.203 /247(c)
<b>15.203 requirement:</b> An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna 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.	
<b>15.247(c) (1)(i) requirement:</b> (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
<b>EUT Antenna:</b>	
The antennas are External antenna, the best case gain of the antennas are 5.00dBi, reference to the appendix II for details	

## 7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
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 setup:	<p>Remark:  E.U.T: Equipment Under Test  LISN: Line Impedance Stabilization Network  Test table height=0.8m</p>					
Test procedure:	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>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).</li> <li>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 C63.10:2013 on conducted measurement.</li> </ol>					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

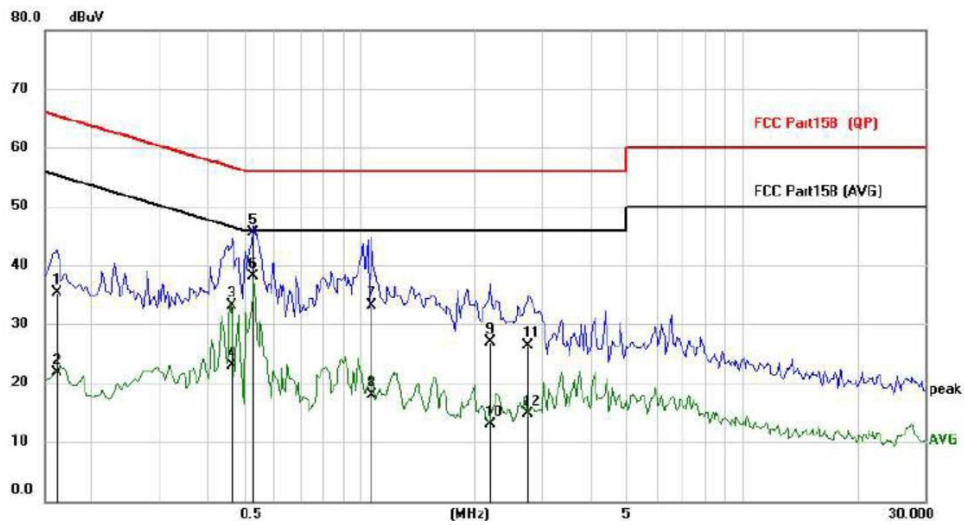
**Measurement data**

Line:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		0.1617	24.72	10.92	35.64	65.38	-29.74	QP
2		0.1617	9.88	10.92	20.80	55.38	-34.58	AVG
3		0.2241	20.32	10.92	31.24	62.67	-31.43	QP
4		0.2241	5.57	10.92	16.49	52.67	-36.18	AVG
5	*	0.5049	26.41	10.92	37.33	56.00	-18.67	QP
6		0.5049	14.84	10.92	25.76	46.00	-20.24	AVG
7		1.0743	17.84	10.92	28.76	56.00	-27.24	QP
8		1.0743	2.20	10.92	13.12	46.00	-32.88	AVG
9		1.4136	13.62	10.94	24.56	56.00	-31.44	QP
10		1.4136	3.94	10.94	14.88	46.00	-31.12	AVG
11		2.2209	12.66	10.98	23.64	56.00	-32.36	QP
12		2.2209	1.60	10.98	12.58	46.00	-33.42	AVG

**Neutral:**

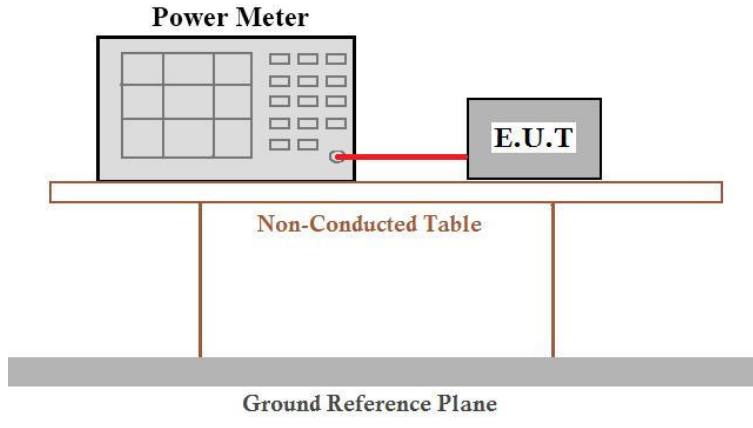


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1617	24.38	10.92	35.30	65.38	-30.08	QP
2		0.1617	10.84	10.92	21.76	55.38	-33.62	AVG
3		0.4659	22.21	10.92	33.13	56.59	-23.46	QP
4		0.4659	12.01	10.92	22.93	46.59	-23.66	AVG
5		0.5283	34.52	10.92	45.44	56.00	-10.56	QP
6	*	0.5283	27.13	10.92	38.05	46.00	-7.95	AVG
7		1.0743	22.24	10.92	33.16	56.00	-22.84	QP
8		1.0743	7.00	10.92	17.92	46.00	-28.08	AVG
9		2.1936	15.96	10.98	26.94	56.00	-29.06	QP
10		2.1936	1.97	10.98	12.95	46.00	-33.05	AVG
11		2.7552	15.27	11.00	26.27	56.00	-29.73	QP
12		2.7552	3.70	11.00	14.70	46.00	-31.30	AVG

**Notes:**

1. An initial pre-scan was performed on the line 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 + Correct Factor
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## 7.3 Conducted Peak Output Power

Test Requirement :	FCC Part15 C Section 15.247 (b)(3)				
Test Method :	KDB558074 D01 DTS Meas Guidance v05or02				
Limit:	30dBm				
Test setup:					
Test Instruments:	Refer to section 6.0 for details				
Test mode:	Refer to section 5.2 for details				
Test results:	Pass				
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.: 1012mbar

### Measurement Data

#### For ANT 1

Test CH	Peak Output Power (dBm)			Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	13.43	18.13	16.56	30.00	Pass
Middle	12.48	17.84	16.46		
Highest	13.19	16.23	16.55		

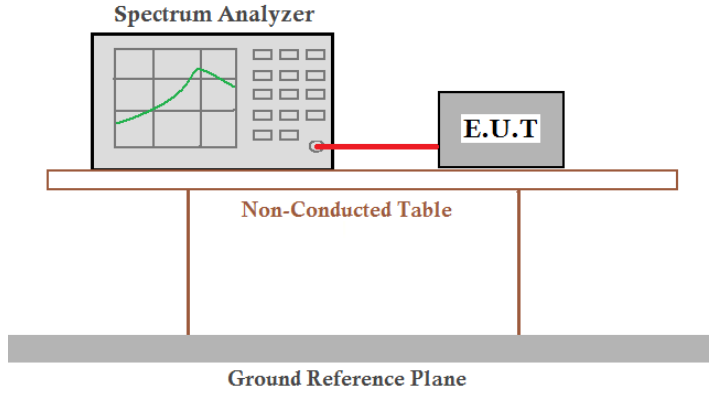
#### For ANT 2

Test CH	Peak Output Power (dBm)			Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	13.00	18.05	15.77	30.00	Pass
Middle	12.24	17.79	16.07		
Highest	13.05	16.07	16.75		

**For MIMO**

Test CH	802.11n(HT20) Peak Output Power (dBm)			Limit(dBm)	Result
	ANT1	ANT2	MIMO		
Lowest	16.56	15.77	19.19	27.99	Pass
Middle	16.46	16.07	19.28		
Highest	16.55	16.75	19.66		

## 7.4 Channel Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2)					
Test Method :	KDB558074 D01 DTS Meas Guidance v05or02					
Limit:	>500KHz					
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 a Ground Reference Plane.</p>					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar



**Measurement Data****For ANT1:**

Test CH	Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	9.082	17.58	17.40	>500	Pass
Middle	9.074	17.62	17.72		
Highest	8.587	16.38	17.69		

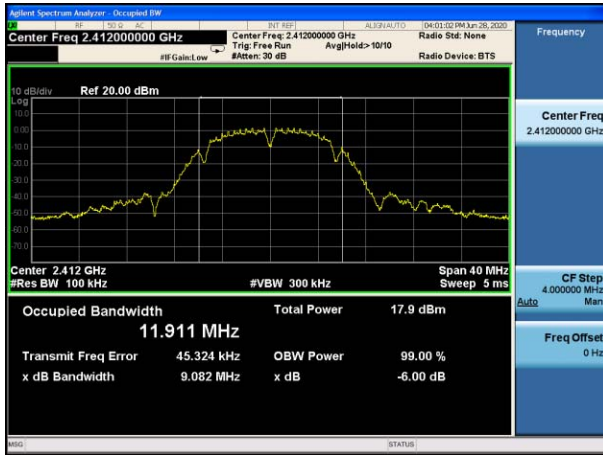
**For ANT2:**

Test CH	Channel Bandwidth (MHz)			Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	9.100	17.58	17.69	>500	Pass
Middle	9.074	17.61	17.73		
Highest	9.050	17.20	17.34		

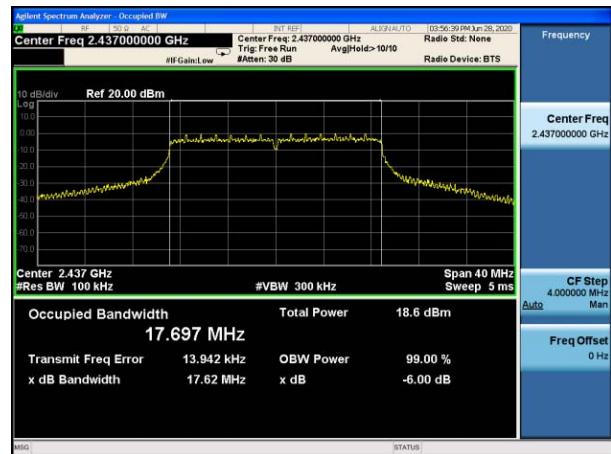
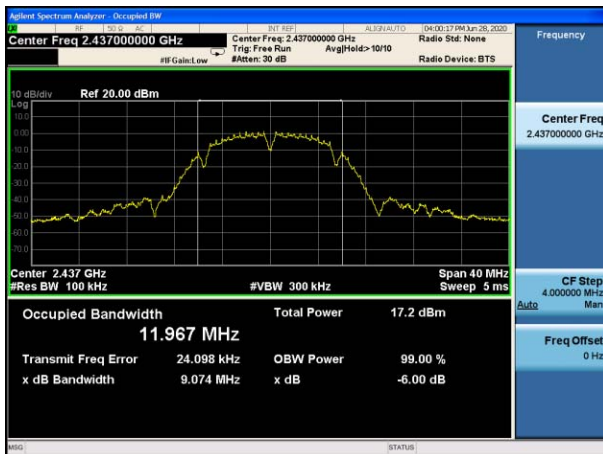
Test plot as follows:

For ANT1:

802.11b	802.11g	
---------	---------	--



Lowest channel

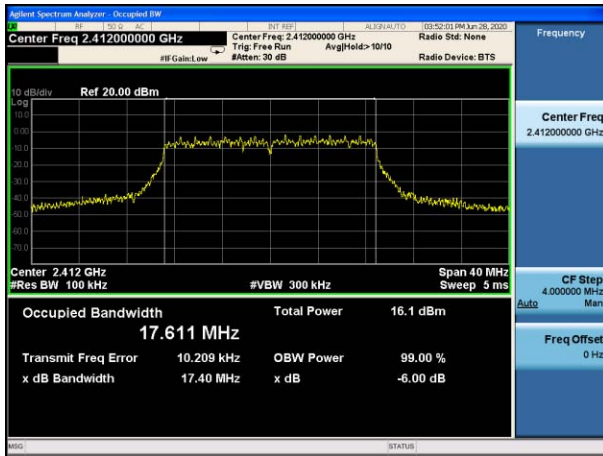


Middle channel

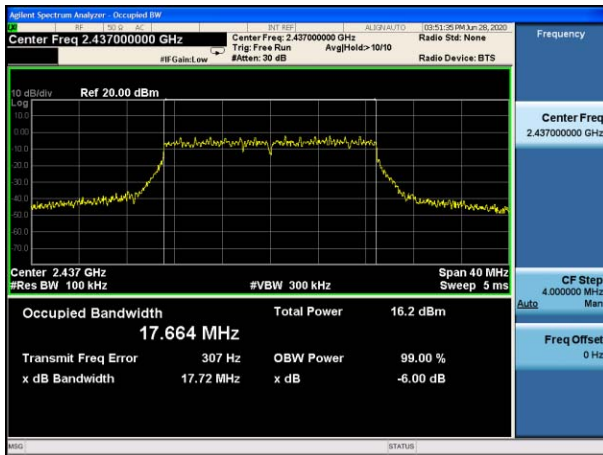


Highest channel

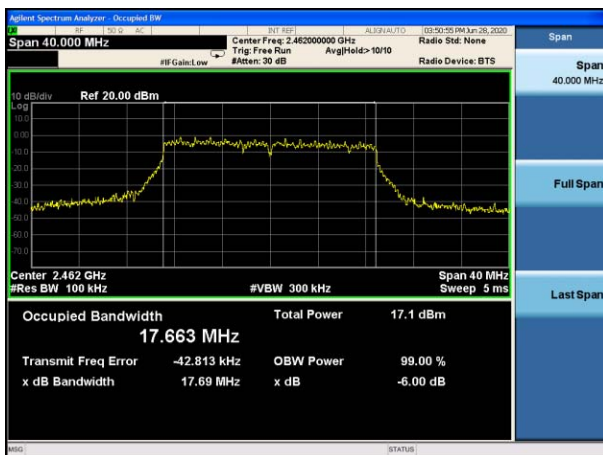
802.11n		
---------	--	--



Lowest channel



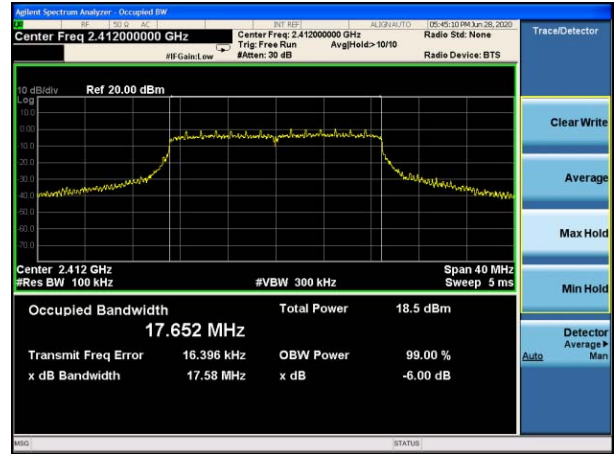
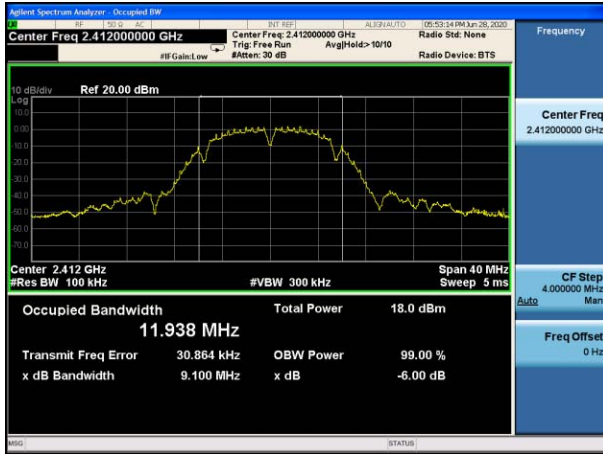
Middle channel



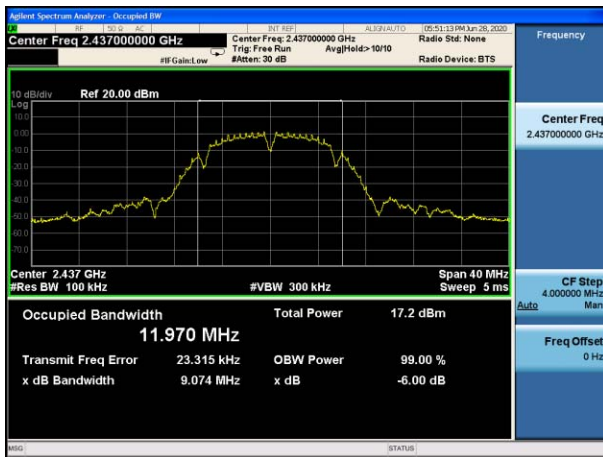
Highest channel

For ANT2:

802.11b		802.11g
---------	--	---------



Lowest channel

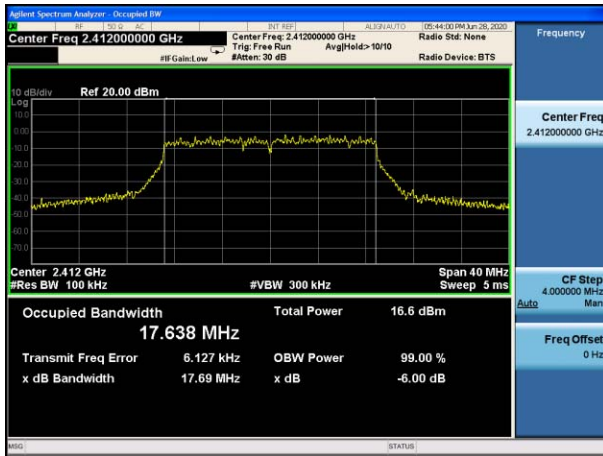


Middle channel

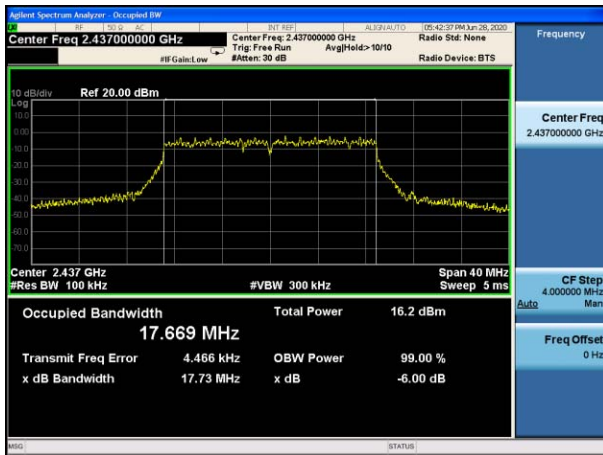


Highest channel

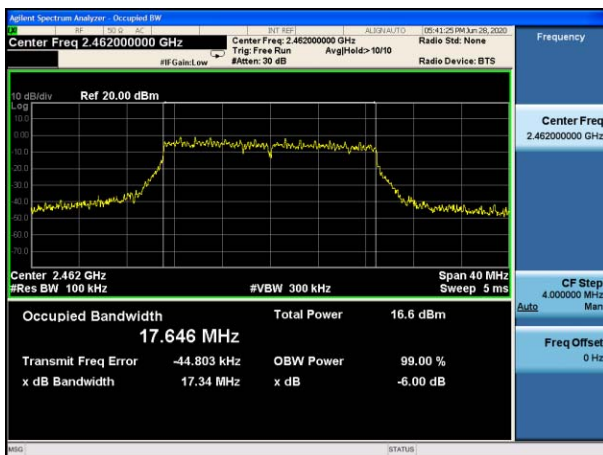
802.11n



Lowest channel



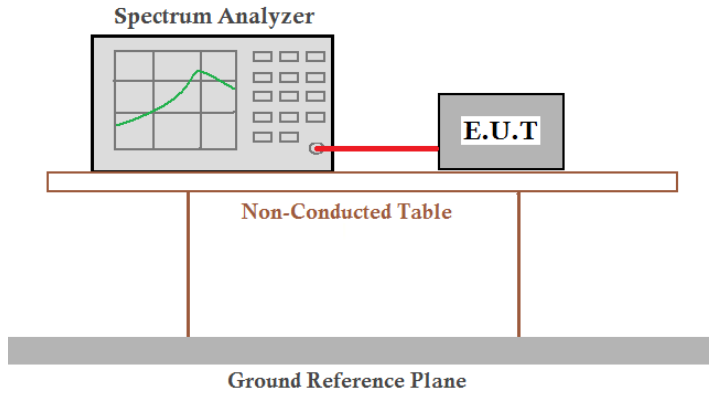
Middle channel



Highest channel



## 7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)					
Test Method:	KDB558074 D01 DTS Meas Guidance v05or02					
Limit:	8dBm/3kHz					
Test setup:						
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar

### Measurement Data

#### For ANT 1:

Test CH	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	-10.641	-12.065	-11.517	8.00	Pass
Middle	-10.771	-12.226	-13.704		
Highest	-9.506	-13.553	-13.240		

#### For ANT 2:

Test CH	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)		
Lowest	-10.415	-12.203	-12.122	8.00	Pass
Middle	-11.220	-13.013	-13.582		
Highest	-10.992	-13.950	-12.025		

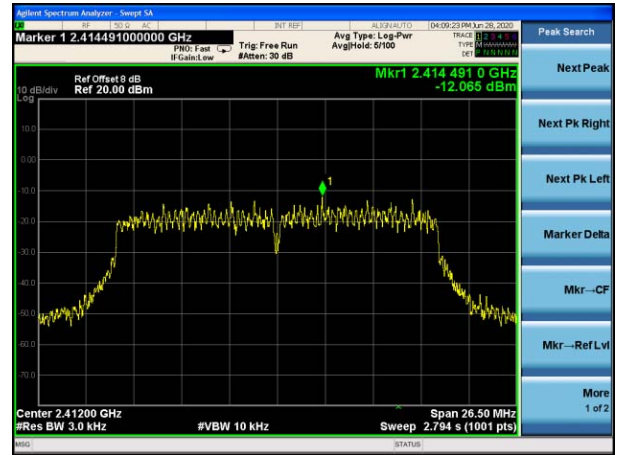
**For MIMO**

Test CH	802.11n(HT20) Power Spectral Density (dBm/3kHz)			Limit(dBm)	Result
	ANT1	ANT2	MIMO		
Lowest	-11.517	-12.122	-8.80	5.99	Pass
Middle	-13.704	-13.582	-10.63		
Highest	-13.240	-12.025	-9.58		

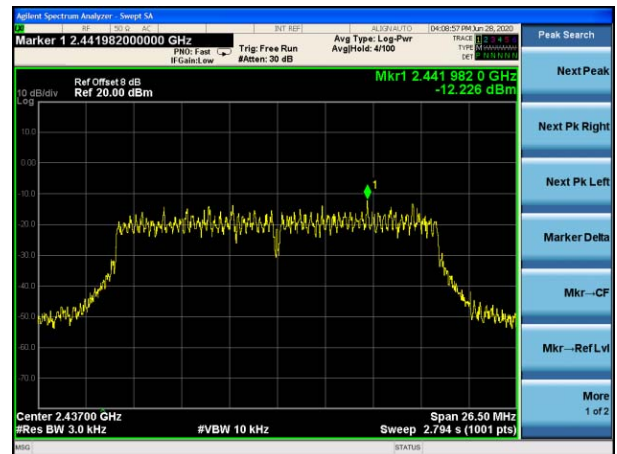
Test plot as follows:

For ANT1:

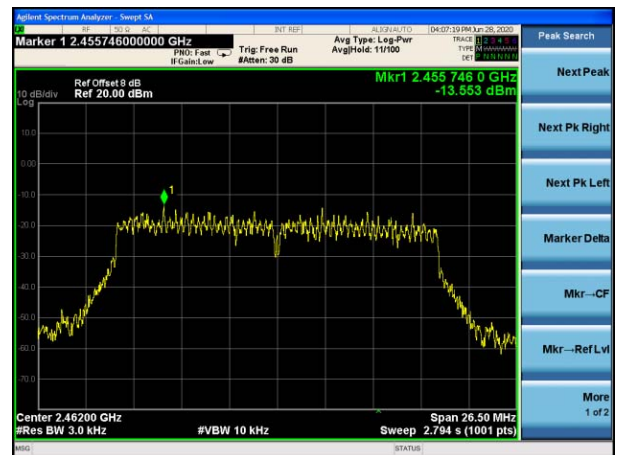
802.11b		802.11g	
---------	--	---------	--



Lowest channel



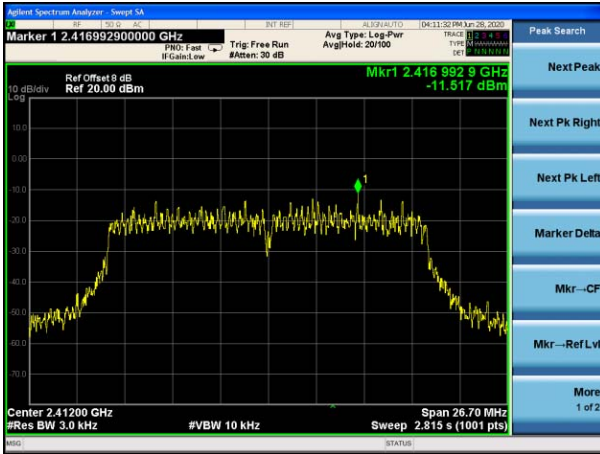
Middle channel



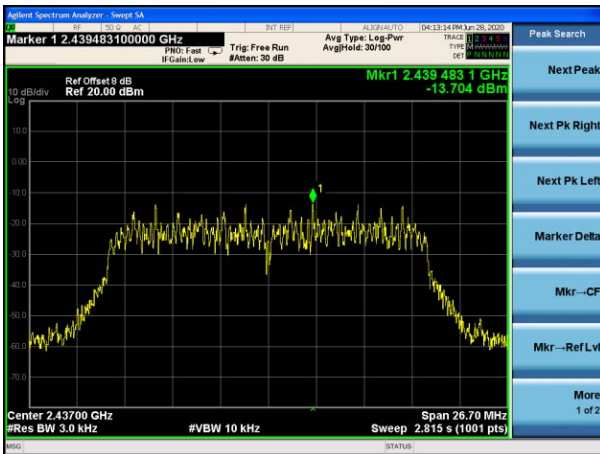
Highest channel



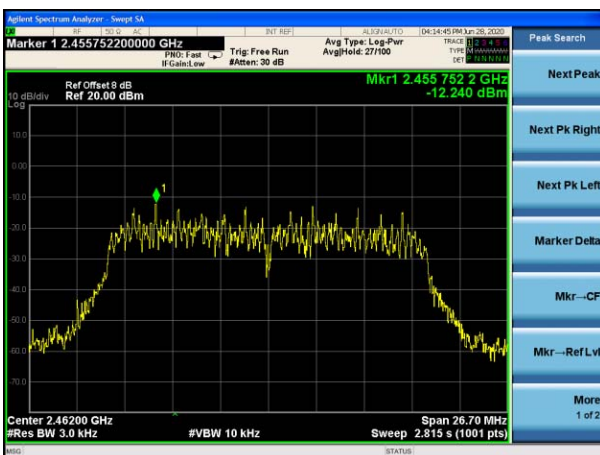
802.11n			
---------	--	--	--



Lowest channel



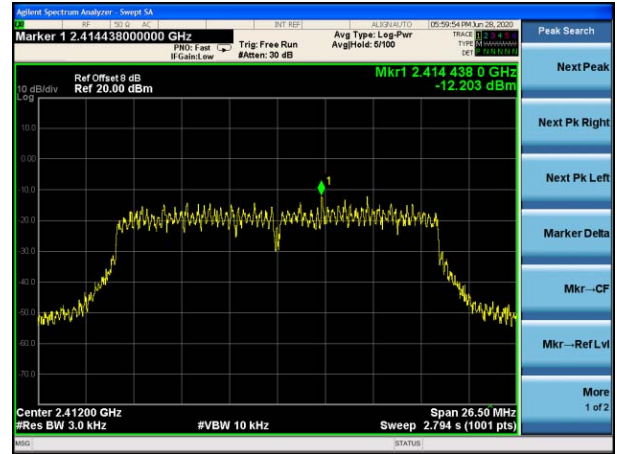
Middle channel



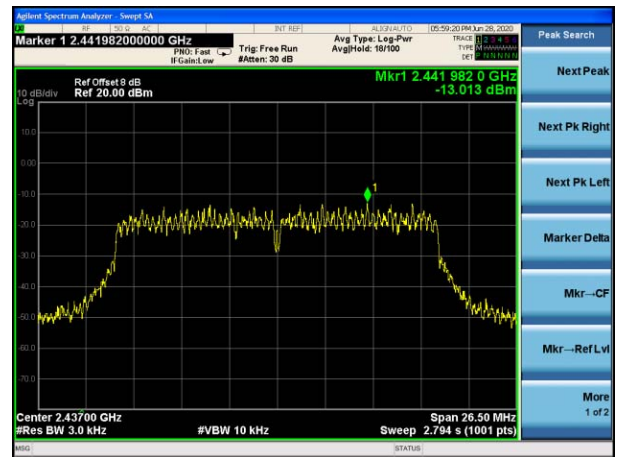
Highest channel

For ANT2:

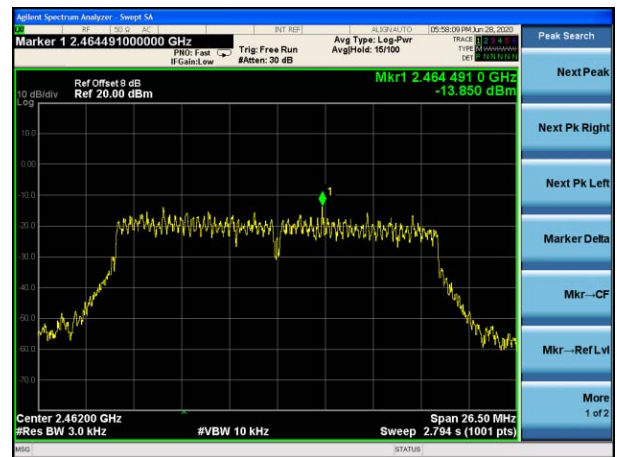
802.11b	802.11g	
---------	---------	--



Lowest channel

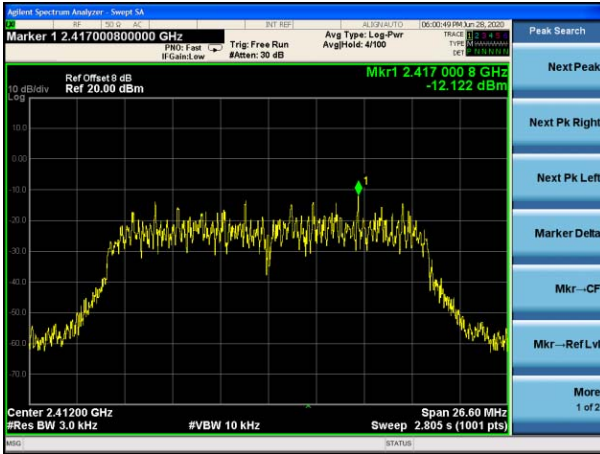


Middle channel

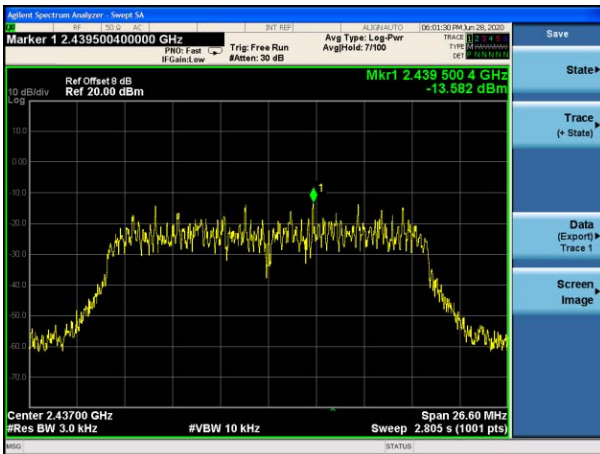


Highest channel

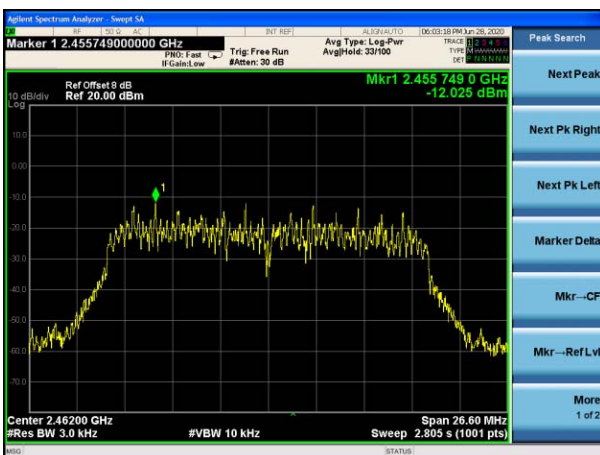
802.11n			
---------	--	--	--



Lowest channel



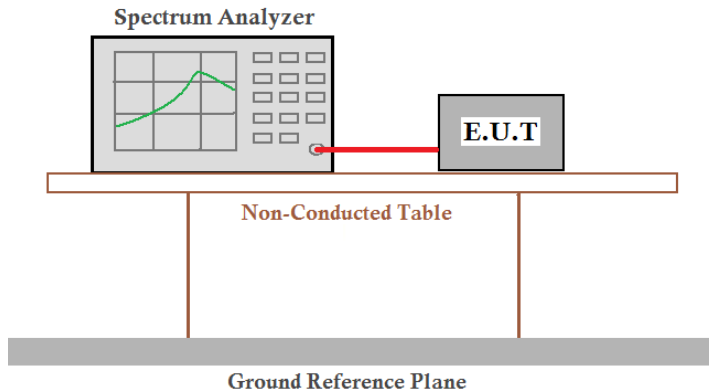
Middle channel



Highest channel

## 7.6 Band edges

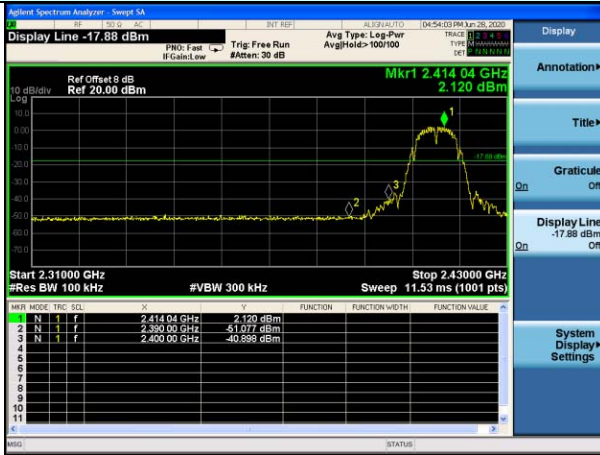
### 7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)					
Test Method:	KDB558074 D01 DTS Meas Guidance v05or02					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
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 a Ground Reference Plane.</p>					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar

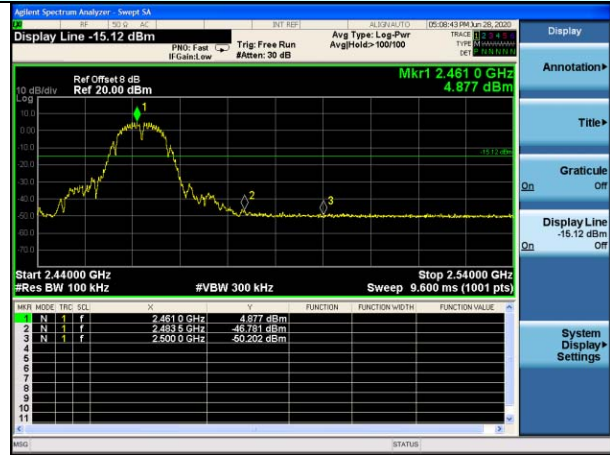
Test plot as follows:

For ANT1:

Test mode: 802.11b



Lowest channel



Highest channel

Test mode: 802.11g



Lowest channel



Highest channel

Test mode: 802.11n(HT20)



Lowest channel

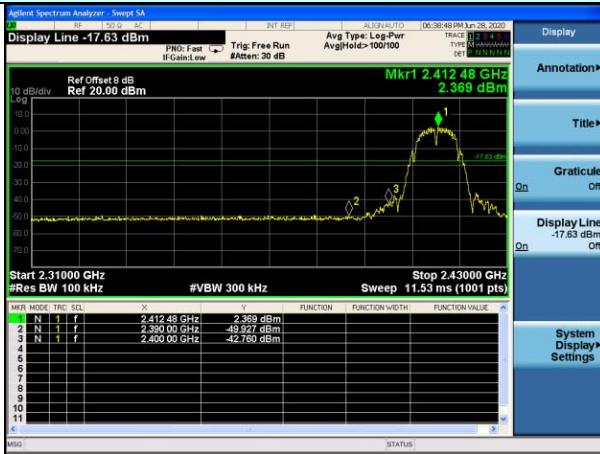


Highest channel



For ANT2:

Test mode: 802.11b



Lowest channel



Highest channel

Test mode: 802.11g



Lowest channel

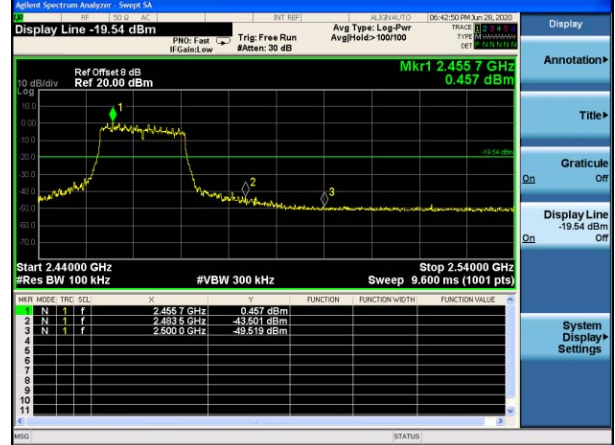


Highest channel

Test mode: 802.11n(HT20)



Lowest channel



Highest channel

## 7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205					
Test Method:	ANSI C63.10: 2013					
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.					
Test site:	Measurement Distance: 3m					
Receiver setup:	Frequency	Detector	RBW	VBW	Value	
	Above 1GHz	Peak	1MHz	3MHz	Peak	
		Average	1MHz	3MHz	Average	
Limit:	Frequency		Limit (dBuV/m @3m)		Value	
	Above 1GHz		54.00		Average	
			74.00		Peak	
Test setup:						
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> <li>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.</li> </ol>					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar

**Measurement data:**

Note: 802.11b/802.11g/802.11n (H20)/802.11n (20)MIMO and all have been tested, only worse case 802.11n (20)MIMO is reported

Horizontal: 802.11n MIMO Mode TX CH Low (2412MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390	66.12	-5.68	60.44	74	-13.56	peak
2390	47.35	-5.68	41.67	54	-12.33	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical: 802.11n MIMO Mode TX CH Low (2412MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390	68.55	-5.68	62.87	74	-11.13	peak
2390	51.48	-5.68	45.8	54	-8.2	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal: 802.11n MIMO Mode TX CH HIGH (2462MHz)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	65.98	-5.85	60.13	74	-13.87	peak
2483.5	49.06	-5.85	43.21	54	-10.79	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical: 802.11n MIMO Mode TX CH HIGH (2462MHz)



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
2483.5	69.27	-5.65	63.62	74	-10.38	peak
2483.5	50.48	-5.85	44.63	54	-9.37	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						