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FCC TEST REPORT

Application No:	ZR/2020/40028		
Applicant:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Applicant:	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		
Manufacturer:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Manufacturer	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		
Factory:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Factory:	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		
EUT Description:	OPPO Watch		
Model No.:	OW19W12		
Trade Mark:	OPPO		
FCC ID:	R9C-OW19W12		
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR Part 15, Subpart C		
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02		
i est methou.	ANSI C63.10 (2013)		
Date of Receipt:	2020/4/20		
Date of Test:	2020/4/20 to 2020/5/18		
Date of Issue:	2020/6/10		
Test Result:	PASS *		

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

中国·深圳·科技园中区M-10栋一号厂房

Authorized Signature:

Derde yang

Derek Yang Wireless Laboratory Manager



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2020/6/10		Original

Authorized for issue by:		
Tested By	Mike Mu (Mike Hu) /Project Engineer	
Checked By	David Chen (David Chen)/Reviewer	



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2 Test Summary

Test Item	Test Requirement	Test method	Test Result	Result
AC Power Line Conducted Emission	15.207	ANSI C63.10 2013	Clause 4.2	PASS
Duty Cycle			Clause 4.3	PASS
Conducted Output Power	15.247 (b)(3)	ANSI C63.10 2013	Clause 4.4	PASS
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth	15.247 (a)(2)	ANSI C63.10 2013	Clause 4.5	PASS
Power Spectral Density	15.247 (e)	ANSI C63.10 2013	Clause 4.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10 2013	Clause 4.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10 2013	Clause 4.8	PASS
Radiated Spurious Emissions	15.247(d);15.205/15.209	ANSI C63.10 2013	Clause 4.9	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d);15.205/15.209	ANSI C63.10 2013	Clause 4.10	PASS



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3 General Information

S

3.1 Client Information

Applicant:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Applicant:	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		
Manufacturer:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Manufacturer:	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		
Factory:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.		
Address of Factory:	NO.18 HaiBin Road, Wusha Village, Chang An Town, DongGuan City, GuangDong,China		

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch	
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China	
Post code:	518057	
Telephone:	+86 (0) 755 2601 2053	
Fax:	+86 (0) 755 2671 0594	
E-mail:	ee.shenzhen@sgs.com	



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3.3 Test Facility

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

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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SGS SGS

SGS-CSTC Standards Technical Services Co., Ltd.Shenzhen Branch

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OPPO Watch		
OW19W12		
OPPO		
XE922		
Wear OS by Google 2.18		
 ☑ 802.11B (20 MHz channel bandwidth), ☑ 802.11G (20 MHz channel bandwidth) ☑ 802.11N (20 MHz channel bandwidth), ☑ 802.11N (40 MHz channel bandwidth) 		
2400 MHz -2483.5MHz fc = 2407 MHz + N * 5 MHz, where: -fc = "Operating Frequency" in MHz, -N = "Channel Number" with the range from 1 to 11 for the 20 MHz channel bandwidth, or 3 to 9 for the 40 MHz channel bandwidth.		
IEEE for 802.11B: DSSS IEEE for 802.11G : OFDM IEEE for 802.11N(HT20) : OFDM		
☑ Portable Device, ☐Module		
☐ External, ⊠ Integrated		
🖂 Ant 1, 🗌 Ant 2, 🗌 Ant 3		
 ☑ SISO (for 802.11B/G/N), ☑ MIMO (for 802.11N): 2 Tx & 2 Rx, ☑ Diversity (for 802.11B/G): Tx & Rx 		
-4.0dBi		
AC/DC Adapter; Battery PoE:; Other:		

3.4 General Description of EUT



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Operation Frequency of each channel (802.11B/G/N HT20)							
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		

Remark:

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:

Channel	Frequency for 802.11B/G/N (HT20)
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz



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3.5 Test Environment and Mode

Operating Environment:			
Temperature:	25.0 °C		
Humidity:	50 % RH		
Atmospheric Pressure:	101.30 KPa		
Test mode:			
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.		

3.6 Description of Support Units

The EUT has been tested independent unit.



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4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203 /247(c)

15.203 requirement:

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.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -4dBi.



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Test Deguirement	47 CED Dart 150 Continue 41			
Test Requirement:	47 CFR Part 15C Section 15.207			
Test Method:	ANSI C63.10: 2013			
Test Frequency Range:	150kHz to 30MHz	ſ		
	Frequency range (MHz)	Limit (c	,	
		Quasi-peak	Average	
1 institu	0.15-0.5	66 to 56*	56 to 46*	
Limit:	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the logarith	hm of the frequency.		
Test Procedure:				

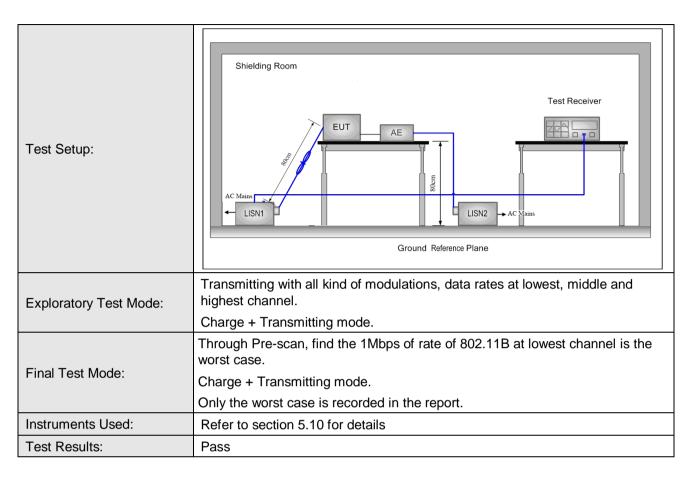
4.2 AC Power Line Conducted Emissions



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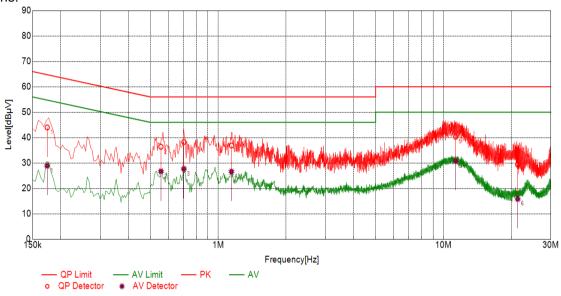
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Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



Test Graph

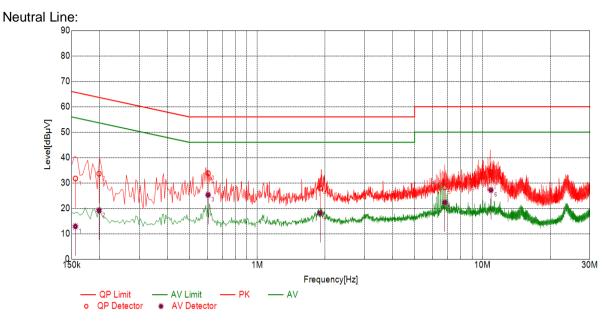
Final	l Data Lis	t							
	Freq.	Factor	QP	QP	QP	AV	AV	AV	Turne
NO.	[MHz]	[dB]	Value	Limit	Margin	Value	Limit	Margin	Туре
1	0.1742	10.10	44.00	64.76	20.76	28.90	54.76	25.86	L
2	0.5572	10.10	36.41	56.00	19.59	26.71	46.00	19.29	L
3	0.7043	10.10	38.27	56.00	17.73	27.67	46.00	18.33	L
4	1.1457	10.10	36.88	56.00	19.12	26.63	46.00	19.37	L
5	11.3308	10.10	40.30	60.00	19.70	30.83	50.00	19.17	L
6	21.3707	10.11	29.32	60.00	30.68	15.84	50.00	34.16	L



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Test Graph

Final	Final Data List								
	Freq.	Factor	QP	QP	QP	AV	AV	AV	Tures
NO.	[MHz]	[dB]	Value	Limit	Margin	Value	Limit	Margin	Туре
1	0.1560	10.10	31.74	65.67	33.93	12.89	55.67	42.78	N
2	0.1986	10.10	33.63	63.67	30.04	19.16	53.67	34.51	N
3	0.6058	10.10	33.83	56.00	22.17	25.32	46.00	20.68	N
4	1.9035	10.10	27.98	56.00	28.02	18.11	46.00	27.89	N
5	6.8046	10.10	28.30	60.00	31.70	22.33	50.00	27.67	N
6	10.9100	10.10	34.21	60.00	25.79	27.21	50.00	22.79	N

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.



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4.3 Duty Cycle

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99.71
11G	Ant 1: CH1,CH6,CH11	97.12
11N20	Ant 1: CH1,CH6,CH11	97.83

4.3.1 Test Plots



4.3.1.1.1 11B

0.50	rum vel 2	7.00 dBm	Offset 1.00 dB	RBW 3 MHz			
Att				VBW 3 MHz			
SGL							
1Pk Cl	rw						
				M1	D2[1]	en te	-0.04 d
20 dBm				IVIT.	and the second second	D2	8.2080 m
					M1[1]	T .	18.28 dBr
10 dBm							9.9240 m
0 dBm—	0.0						
-10 dBm							
-20 dBm							
-30 dBm	1						
10 10-							
-40 dBrr	1						
-50 dBrr							
-30 ubn							
-60 dBm							
-00 0011							
-70 dBm							
CF 2.4	C	z	1 1	2001	pts		2.4 ms/
1arker							
Type	Ref	Trc	X-value	Y-value	Function	tion Function Result	
M1	1	1	9.924 ms	18.28 dBm	1		
D1	M1	1	8.184 ms	-0.02 dB			
D2	M1	1	8.208 ms	-0.04 dB	3		

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4.3.1.1.2 11G

Spectrum Reflevel 27.00 dBm Offset 1.00 dB 👄 RBW 3 MHz Att 45 dB 👄 SWT 4 ms 🖷 VBW 3 MHz SGL ●1Pk Clrw D2[1] 1.17 d 20 dBm 1.38800 m an wat an in the second and the second of the second s 10 dem - Lut 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm--70 dBm CF 2.412 GHz 2001 pts 400.0 µs/ Marker Type | Ref | Trc X-value Y-value Function Function Result 12.06 dBm 0.34 dB 1.868 ms M1 D1 Μ1 1.348 ms 1.17 dB D2 M1 1.388 ms Ready IN THE REAL PROPERTY AND ADDRESS.

Date: 15.MAY.2020 12:58:34

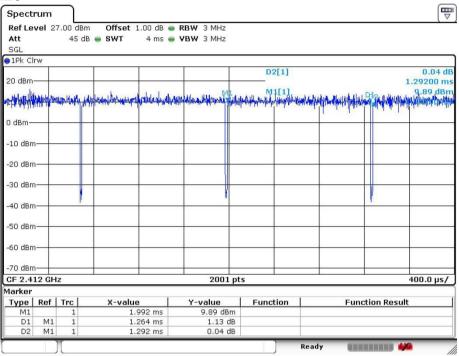


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4.3.1.1.3 11N20



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Test Requirement: 47 CFR Part 15C Section 15.247 (b)(3) Test Method: ANSI C63.10 :2013 Section 11.9.1.3 POWER METER E.U.T Test Setup: Non-Conducted Table **Ground Reference Plane** Test Instruments: Refer to section 5.10 for details Transmitting with all kind of modulations, data rates Exploratory Test Mode: Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; Final Test Mode: 6Mbps of rate is the worst case of 802.11G; 6.5Mbps of rate is the worst case of 802.11N(HT20); Limit: 30dBm Test Results: Pass

4.4 Conducted Output Power



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4.4.1 Test Results

Measurement Data of Average Power:

Mode	Test Channel	Average Output Power (dBm) [Duty Cycle Considered]	Result
	Lowest	17.98	Report purpose only
802.11B	Middle	17.78	Report purpose only
	Highest	18.02	Report purpose only
	Lowest	16.23	Report purpose only
802.11G	Middle	16.06	Report purpose only
0021110	Highest	16.00	Report purpose only
	Lowest	14.37	Report purpose only
802.11N20	Middle	14.26	Report purpose only
	Highest	14.34	Report purpose only

Measurement Data of Peak Power:

Mode	Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
	Lowest	20.93	30.00	Pass
802.11B	Middle	20.58	30.00	Pass
	Highest	20.88	30.00	Pass
	Lowest	24.68	30.00	Pass
802.11G	Middle	24.51	30.00	Pass
0021110	Highest	24.02	30.00	Pass
802.11N20	Lowest	22.99	30.00	Pass
	Middle	22.64	30.00	Pass
	Highest	22.80	30.00	Pass



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Test Requirement: 47 CFR Part 15C Section 15.247 (a)(2) Test Method: ANSI C63.10: 2013 Section 11.8.1 Option 1 Spectrum Analyzer E.U.T C Test Setup: Non-Conducted Table Ground Reference Plane Instruments Used: Refer to section 5.10 for details Exploratory Test Mode: Transmitting with all kind of modulations, data rates Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; Final Test Mode: 6Mbps of rate is the worst case of 802.11G; 6.5Mbps of rate is the worst case of 802.11N(HT20); Limit: ≥ 500 kHz Test Results: Pass

4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

4.5.1 Test Results

Mode	Test Channel	Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
	Lowest	9.44	8.03	≥500	Pass
802.11B	Middle	9.41	8.03	≥500	Pass
	Highest	10.08	7.55	≥500	Pass
	Lowest	16.73	16.38	≥500	Pass
802.11G	Middle	16.67	16.41	≥500	Pass
0021110	Highest	16.63	16.45	≥500	Pass
802.11N20	Lowest	17.67	17.58	≥500	Pass
	Middle	17.71	17.63	≥500	Pass
	Highest	17.71	17.58	≥500	Pass



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4.5.2 Test plots

4.5.2.1 ANT1

4.5.2.1.1 802.11B_Lowest Channel



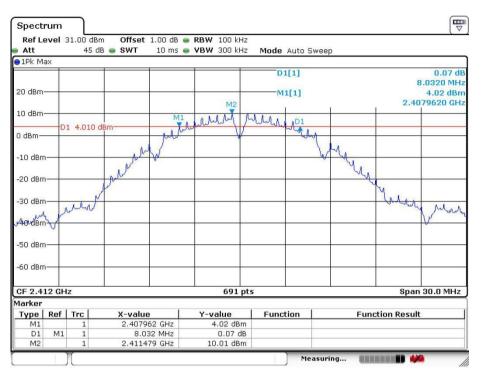
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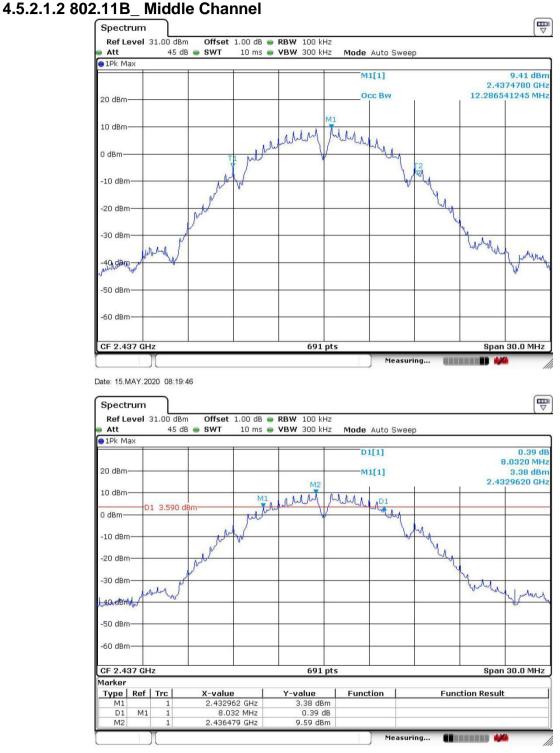
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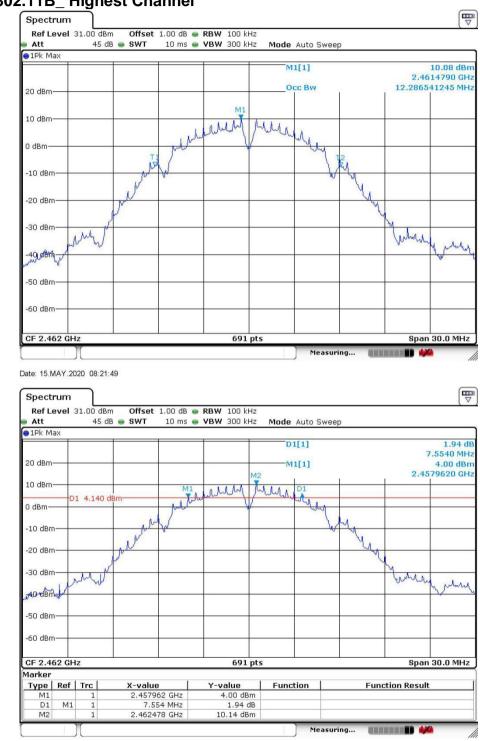
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4.5.2.1.3 802.11B_ Highest Channel

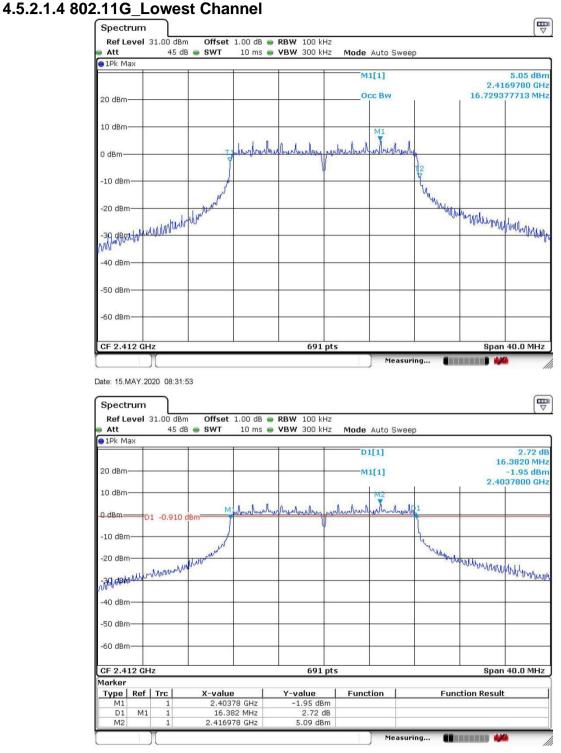
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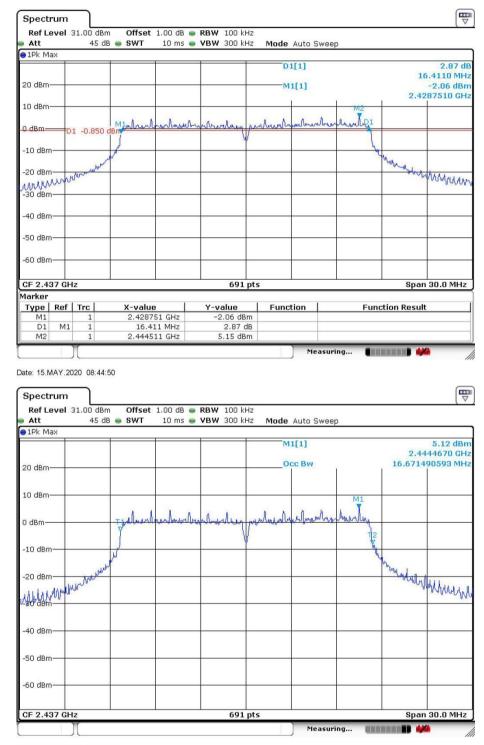
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4.5.2.1.5 802.11G_ Middle Channel

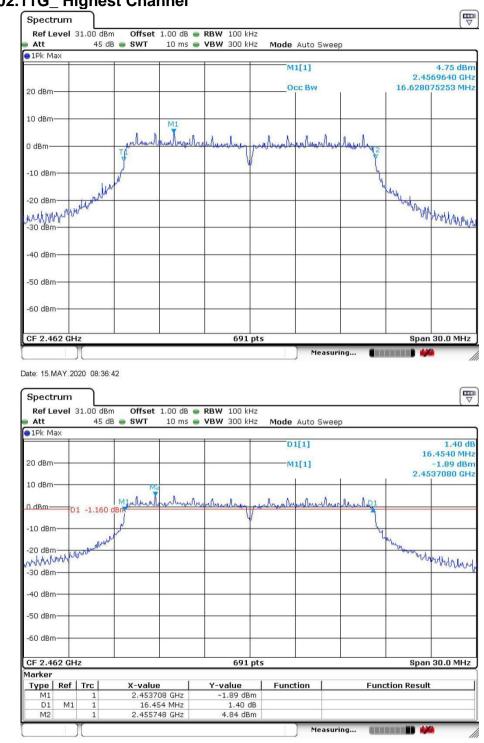
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4.5.2.1.6 802.11G_ Highest Channel

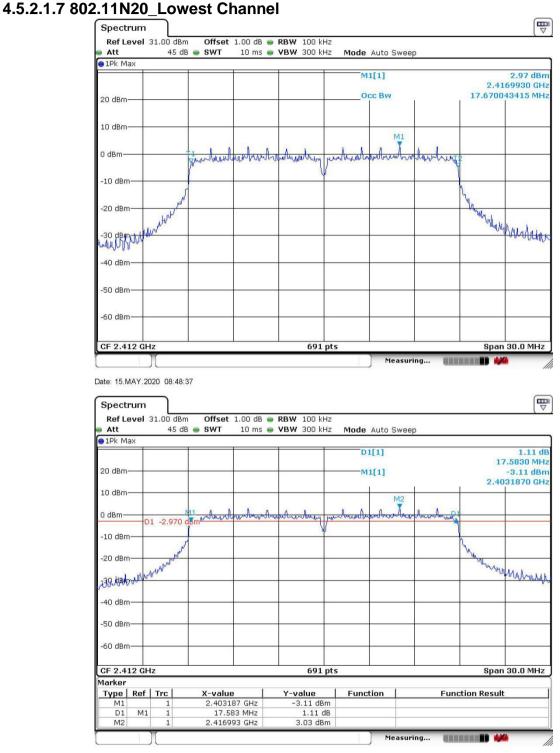
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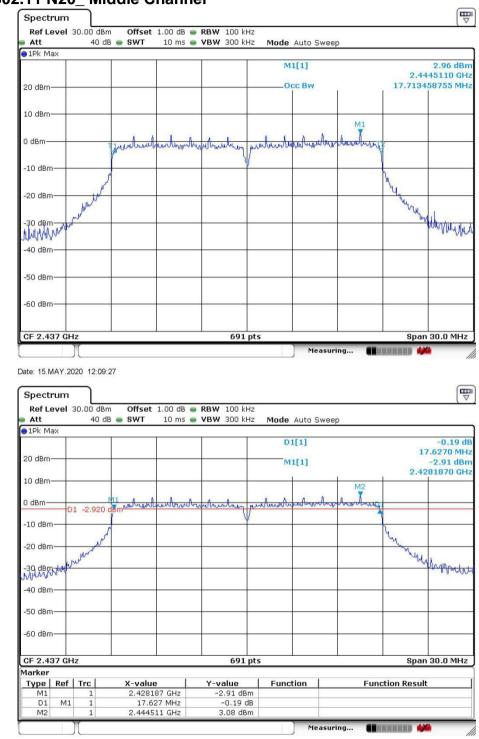
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4.5.2.1.8 802.11 N20_ Middle Channel

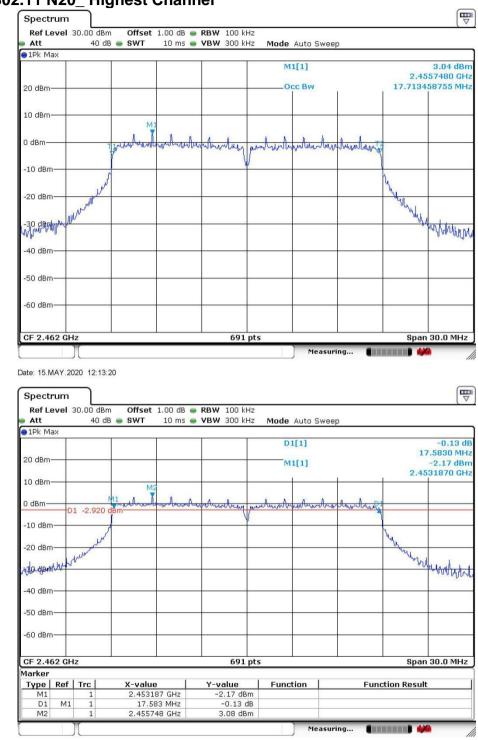
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4.5.2.1.9 802.11 N20_ Highest Channel

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•					
Test Requirement:	47 CFR Part 15C Section 15.247 (e)				
Test Method:	ANSI C63.10 :2013 Section 11.10.2				
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.10 for details				
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates				
	Through Pre-scan, find the				
Final Test Mode:	1Mbps of rate is the worst case of 802.11B;				
	6Mbps of rate is the worst case of 802.11G ;				
	6.5Mbps of rate is the worst case of 802.11N(HT20);				
Limit:	≤8.00dBm/3kHz				
Test Results:	Pass				

4.6 **Power Spectral Density**

4.6.1 Test Results

Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
	Lowest	-2.38	≤8.00	Pass
802.11B	Middle	-2.96	≤8.00	Pass
	Highest	-2.83	≤8.00	Pass
	Lowest	-7.59	≤8.00	Pass
802.11G	Middle	-6.44	≤8.00	Pass
	Highest	-7.16	≤8.00	Pass
	Lowest	-9.98	≤8.00	Pass
802.11N20	Middle	-9.11	≤8.00	Pass
	Highest	-9.37	≤8.00	Pass



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4.6.2 Test plots

4.6.2.1 ANT1

4.6.2.1.1 802.11B_Lowest Channel



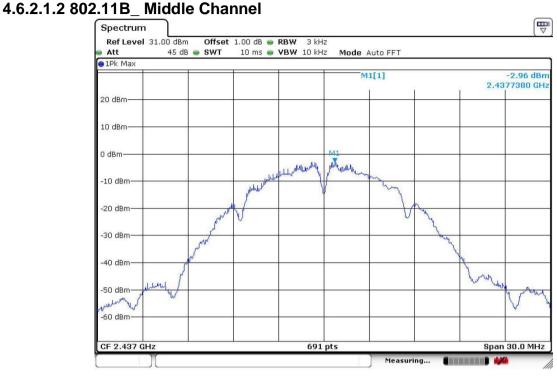
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Date: 15.MAY.2020 08:20:49

4.6.2.1.3 802.11B_ Highest Channel



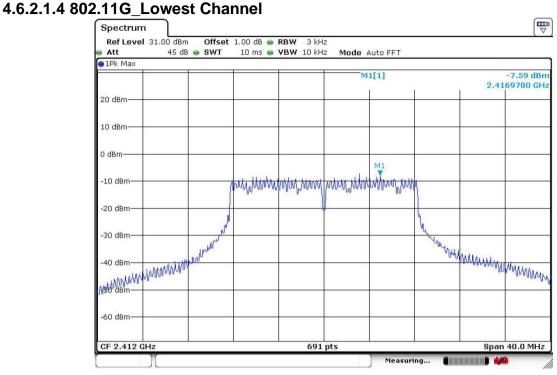
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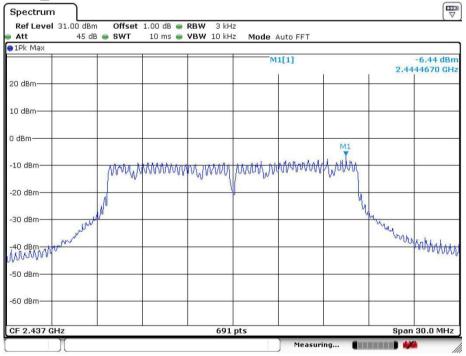


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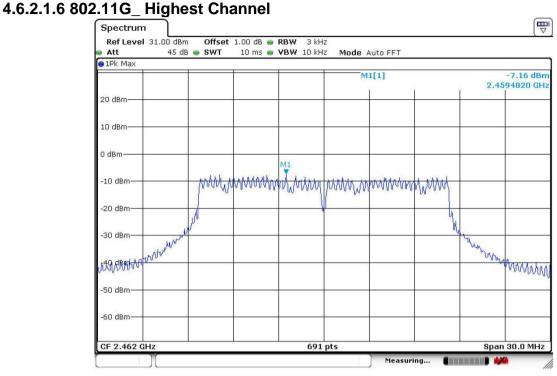
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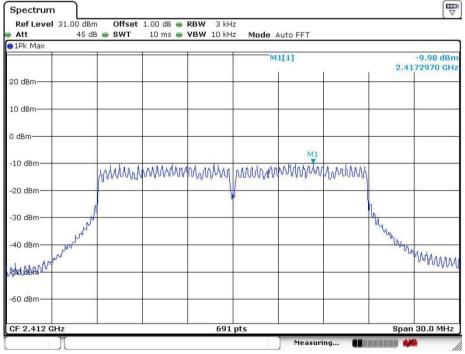


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Date: 15.MAY.2020 08:37:57

4.6.2.1.7 802.11N20_Lowest Channel



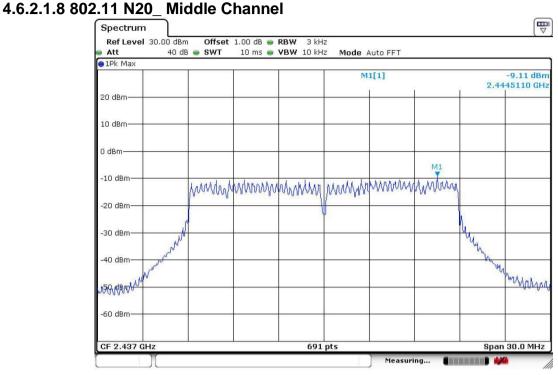
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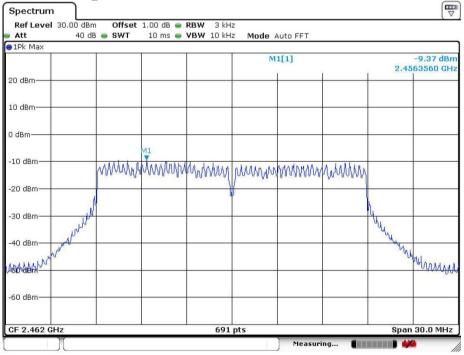


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4.6.2.1.9 802.11 N20_ Highest Channel



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T (D)	
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.13
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20) ;
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.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

4.7 Band-edge for RF Conducted Emissions



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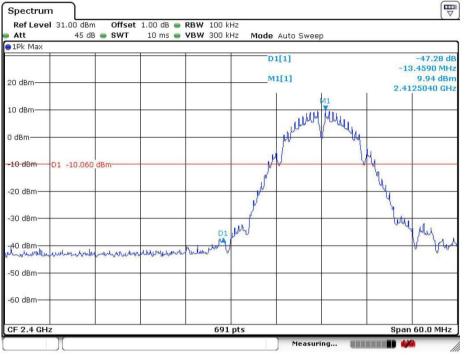


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4.7.1 Test plots

4.7.1.1 ANT1

4.7.1.1.1 802.11B_Lowest Channel



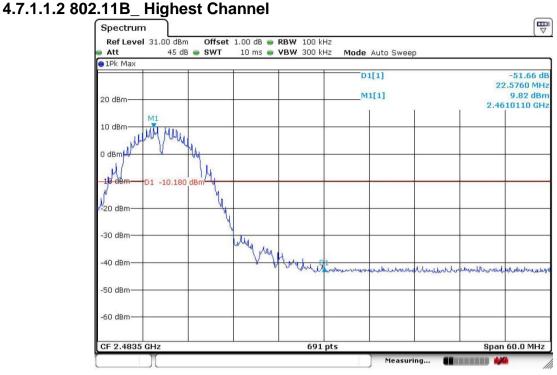
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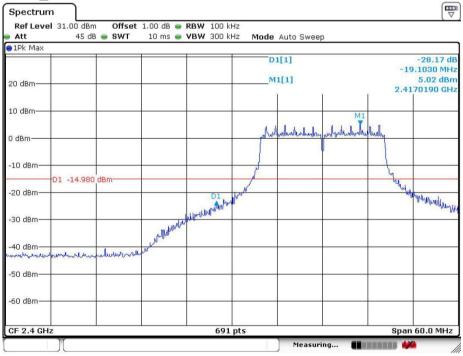


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4.7.1.1.3 802.11G_Lowest Channel



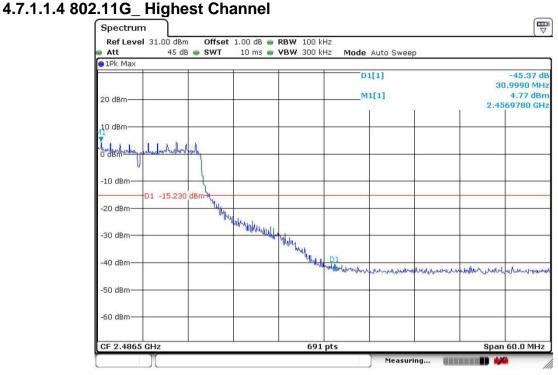
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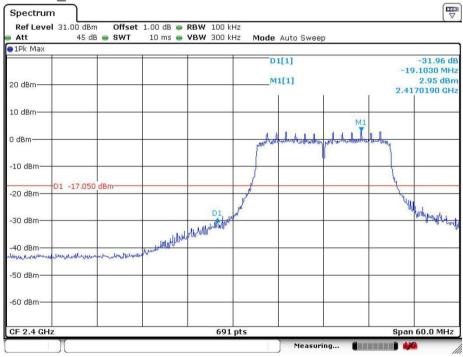


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Date: 15.MAY.2020 08:38:46

4.7.1.1.5 802.11N20_Lowest Channel



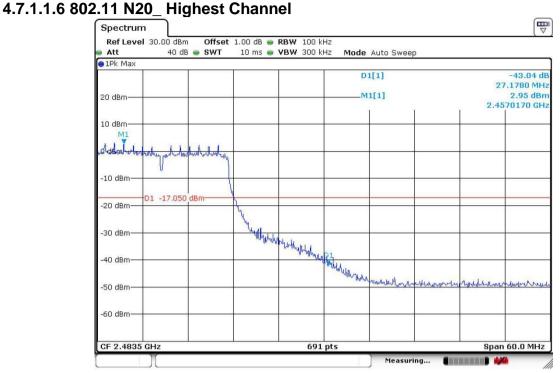
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Test Requirement: 47 CFR Part 15C Section 15.247 (d) Test Method: ANSI C63.10: 2013 Section 11.11 Spectrum Analyzer E.U.T Test Setup: Non-Conducted Table Ground Reference Plane **Exploratory Test Mode:** Transmitting with all kind of modulations, data rates Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; Final Test Mode: 6Mbps of rate is the worst case of 802.11G; 6.5Mbps of rate is the worst case of 802.11N(HT20); In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is Limit: 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. Instruments Used: Refer to section 5.10 for details **Test Results:** Pass

4.8 **RF Conducted Spurious Emissions**



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4.8.1 Test plots

4.8.1.1 ANT1

4.8.1.1.1 802.11B_Lowest Channel

Spectrum Ref Level 23.00 dBm Att 40 dB Mode Auto Sweep 1Pk Max M2[1] 42 25 dBm 20 dBm 19.520430 GHz M1[1] 10.05 dBn 10 dBm-2 412610 GH 0 dBm--10 dBm D1 -9.950 dBr -20 dBm -30 dBm -40 dBm ton to relate a discourse of -60 dBm -70 dBm Start 30.0 MH 32001 pts Stop 25.0 GHz Measuring...

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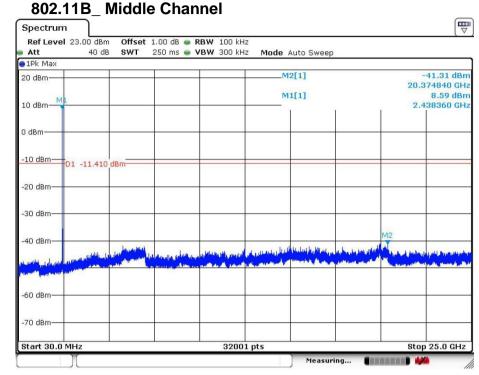
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4.8.1.1.2

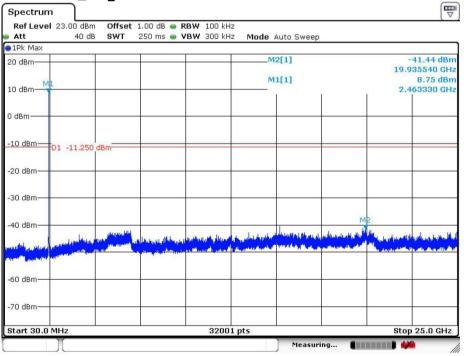
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4.8.1.1.3 802.11B_ Highest Channel



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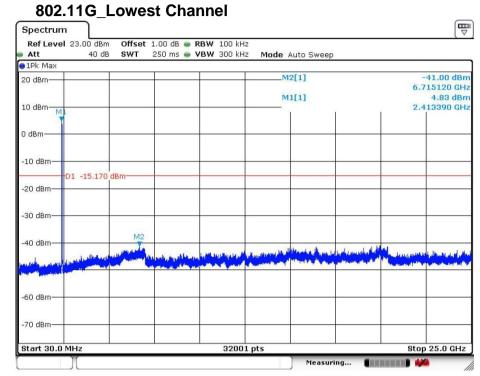
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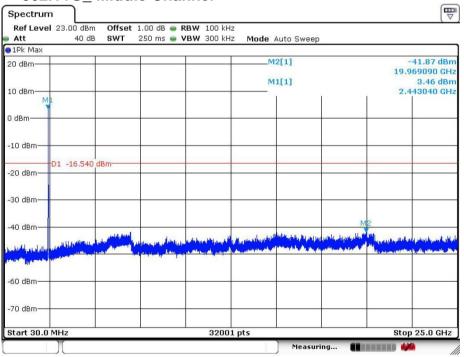
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4.8.1.1.5 802.11G_ Middle Channel



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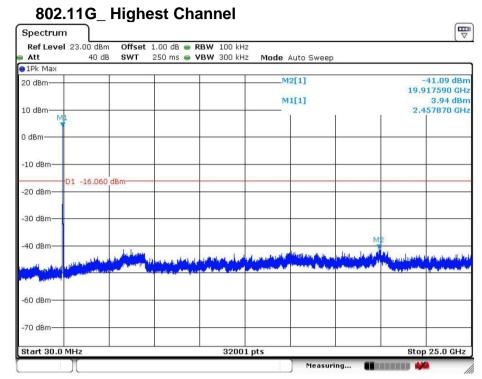
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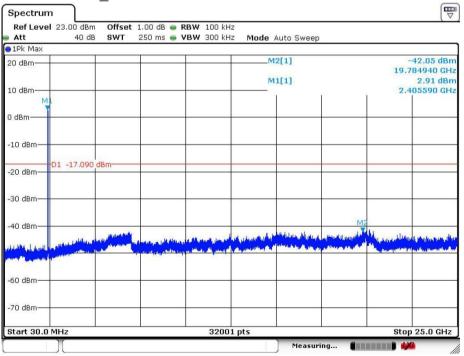
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4.8.1.1.7 802.11N20_Lowest Channel



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