



FCC TEST REPORT

Application No.: ZR/2020/40003
Applicant: Xiaomi Communications Co., Ltd.
Address of Applicant: #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer: Xiaomi Communications Co., Ltd.
Address of Manufacturer: #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
EUT Description: Mobile Phone
Model No.: M2004J19G
Trade Mark: Redmi
FCC ID: 2AFZZJ19G
Standards: 47 CFR FCC Part 2, Subpart J
 47 CFR FCC Part 15, Subpart C
 47 CFR FCC Part 15, Subpart E
 KDB 789033 D02 General UNII Test Procedures New Rules v02
 FCC KDB 558074 D01 DTS Meas Guidance v0502
Test Method: KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
 ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices
Date of Receipt: 2020/4/9
Date of Test: 2020/4/9 to 2020/4/28
Date of Issue: 2021/5/10

Test Result:	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2020/4/28		Original
01		2021/5/10	Flora Wang	1.Add test site Information 2.Modify data conversion error of antenna height 3.Update equipment list

*This report supersedes our previous report ZR/2020/4000305, issued on 2020-4-28, which is hereby deemed null and void.

Authorized for issue by:	
Prepared By	<p><i>Flora Wang</i></p> <hr/> <p>(Flora Wang) /Project Engineer</p>
Checked By	<p><i>David Chen</i></p> <hr/> <p>(David Chen) /Reviewer</p>



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6 EQUIPMENT LIST 395

7 PHOTOGRAPHS - EUT TEST SETUP DETAILS 396



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2 Test Summary

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict	Test Lab*
Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1)	No limit.	Clause 4.4 Clause 4.5	Pass	A
	5250-5350	15.403(i) 15.407(a)(2)				
	5470-5725	15.403(i) 15.407(a)(2)				
	5725-5850	15.403(i) 15.407(e)	≥ 500 kHz.			
Occupied Bandwidth	5150-5250	KDB 789033 D02	No limit.		Pass	A
	5250-5350					
	5470-5725					
	5725-5850					
Duty Cycle	5150-5850	--	No limit.			
Maximum Conducted Output Power	5150-5250	15.407(a)(1) 15.407(a)(4)	FCC < 250mW (avg during transmission)	Clause 4.3	Pass	A
	5250-5350	15.407(a)(2) 15.407(a)(4)	<MIN{250mW, 11dBm+10 *lg(EBW)} (avg during transmission)			
	5470-5725	15.407(a)(2) 15.407(a)(4)	<MIN{250mW, 11dBm+10 *lg(EBW)} (avg during transmission)			
	5725-5850	15.407(a)(3)	< 1W (avg during transmission)			
maximum Power Spectral Density	5150-5250	15.407(a)(1) 15.407(a)(4)	<11dBm/MHz (avg during transmission)	Clause 4.6		
	5250-5350	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)			
	5470-5725	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)			
	5725-5850	15.407(a)(3) 15.407(a)(4)	<30dBm/500KHz (avg during transmission)			
Unwanted Emissions that fall Outside of the Restricted Bands (Radiated)	5150-5250	15.407(b)(1) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.15-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).	Clause 4.7	Pass	B
	5250-5350	15.407(b)(2) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.25-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).			



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Test Item	Band	FCC Rule	Requirements	Test Result	Verdict	Test Lab*
	5470-5750	15.407(b)(3) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.47-5.725 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).			
	5725-5850	15.407(b)(4) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP) F≥1GHz & out-restricted:(QP) a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges; b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges; c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges. F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).			
Unwanted Emissions in the Restricted Bands (Radiated)	5150-5250 5250-5350 5470-5725 5725-5850	15.209		Clause 4.8	Pass	B
AC Power Line Conducted Emissions	5150-5250 5250-5350 5470-5725 5725-5850	15.207		Clause 4.2	Pass	B
Frequency Stability	5150-5250 5250-5350	15.209		Clause 4.9	Pass	A



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Test Item	Band	FCC Rule	Requirements	Test Result	Verdict	Test Lab*
	5470-5600 5650-5725 5725-5850					
Dynamic Frequency Selection	5250-5350 5470-5725	47 CFR Part 15, Subpart E 15.407	Channel Move Time:10 Seconds	Clause 4.10	Pass	A
			Transmission Time: milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.			
			Non-occupancy period: Minimum 30 minutes			

Remark: All test were performed by Lab A and B.
Parts of test items above were subcontracted to Lab B.
Lab A SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Lab B SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.



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3 General Information

3.1 Client Information

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

3.2 Test Location

Lab A:

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
Test Engineer	Dee Zheng, Mike Hu

Lab B:

Company:	SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.
Address:	1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, Xi'an, Shaanxi China
Post code:	710086
Test Engineer	Ben Huang, Leah Chen

3.3 Test Facility

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

Lab A:

- **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



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 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



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.

• Innovation, Science and Economic Development Canada

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

CAB identifier: CN0006.

IC#: 4620C.

Lab B:

• A2LA (Certificate No. 4854.01)

SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

• FCC –Designation Number: CN1271

3.4 General Description of EUT

EUT Description:	M2004J19G
Model No.:	Redmi
Trade Mark:	P2
Hardware Version:	MIUI 11
Software Version:	M2004J19G
IEEE 802.11 WLAN Mode Supported:	<input checked="" type="checkbox"/> 802.11a (20 MHz channel bandwidth) ; <input checked="" type="checkbox"/> 802.11n (20 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11n (40 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (20 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (40 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (80 MHz channel bandwidth); <input type="checkbox"/> 802.11ac (160 MHz channel bandwidth),
Operation Frequency:	IEEE 802.11n(HT20/40)/ ac(HT20/40/80/): 5150MHz to 5250MHz IEEE 802.11n(HT20/40)/ ac(HT20/40/80/160): 5250MHz to 5350MHz IEEE 802.11n(HT20/40)/ ac(HT20/40/80/160): 5470MHz to 5725MHz IEEE 802.11n(HT20/40)/ ac(HT20/40/80): 5725MHz to 5825MHz
Type of Modulation:	OFDM
DFS mode:	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection



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Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	PIFA Antenna
Antenna Ports	<input checked="" type="checkbox"/> Ant 1, <input type="checkbox"/> Ant 2, <input type="checkbox"/> Ant 3
Smart System	<input checked="" type="checkbox"/> SISO (for 802.11a/n/ac), <input type="checkbox"/> MIMO (for 802.11n/ac), <input type="checkbox"/> Diversity (for 802.11a) : Tx & Rx
Antenna Gain:	0.55dBi,
Power Supply	<input type="checkbox"/> AC/DC Adapter; <input checked="" type="checkbox"/> Battery ; <input type="checkbox"/> PoE; <input type="checkbox"/> Other:
Accessories	

Remark:

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre

For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5220
	The Highest channel	5240
IEEE 802.11n/ac 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11ac 80MHz	The Middle channel	5210

For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5260
	The Middle channel	5300
	The Highest channel	5320
IEEE 802.11n/ac 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11ac 80MHz	The Middle channel	5290

For UNII Band II-C:



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Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac 40MHz	The Lowest channel	5510
	The Middle channel	5550
	The Highest channel	5670
IEEE 802.11ac 80MHz	The Lowest channel	5530
	The Highest channel	5610

For UNII Band III:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5745
	The Middle channel	5785
	The Highest channel	5805
IEEE 802.11n/ac 40MHz	The Lowest channel	5755
	The Highest channel	5795
IEEE 802.11ac 80MHz	The Middle channel	5775

3.5 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	55 % RH
Atmospheric Pressure:	101.32 KPa
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.



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4 Test results and Measurement Data

4.1 Antenna Requirement

Test Requirement:	47 CFR Part 15 Section 15.203
The antenna is integrated antenna and no consideration of replacement. The best case gain of the antenna is 0.55dBi.	

4.2 Conducted Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
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:	<ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) 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. 		



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<p>Test Setup:</p>	
<p>Exploratory Test Mode:</p>	<p>Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.</p>
<p>Final Test Mode:</p>	<p>Through Pre-scan, find the 6Mbps of rate of 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.</p>
<p>Instruments Used:</p>	<p>Refer to section 5.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>

Measurement Data

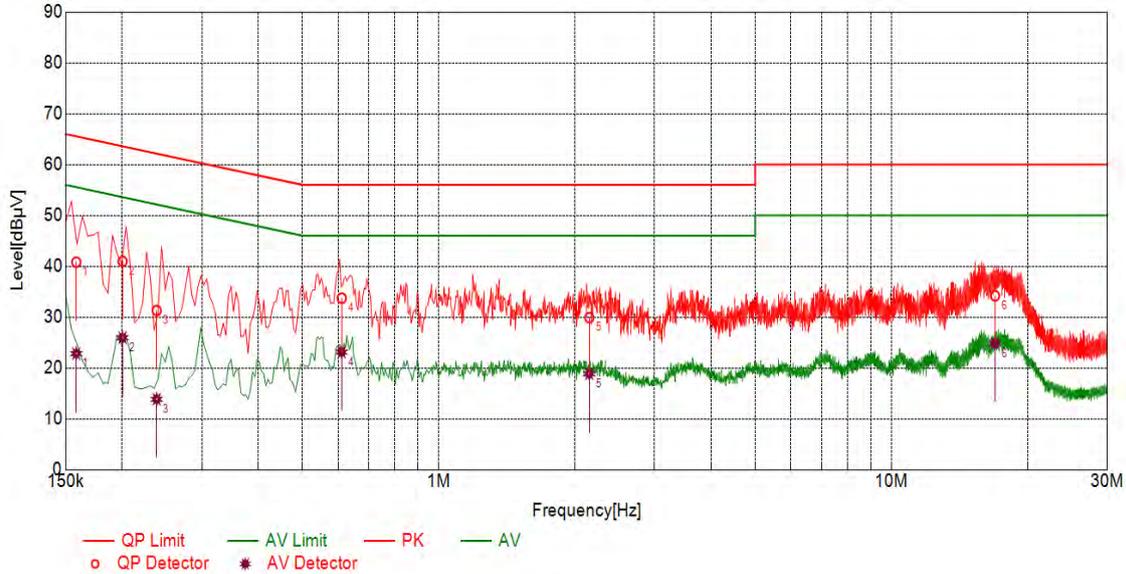
An initial pre-scan was performed on the live and neutral lines with peak detector.

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



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Live Line:

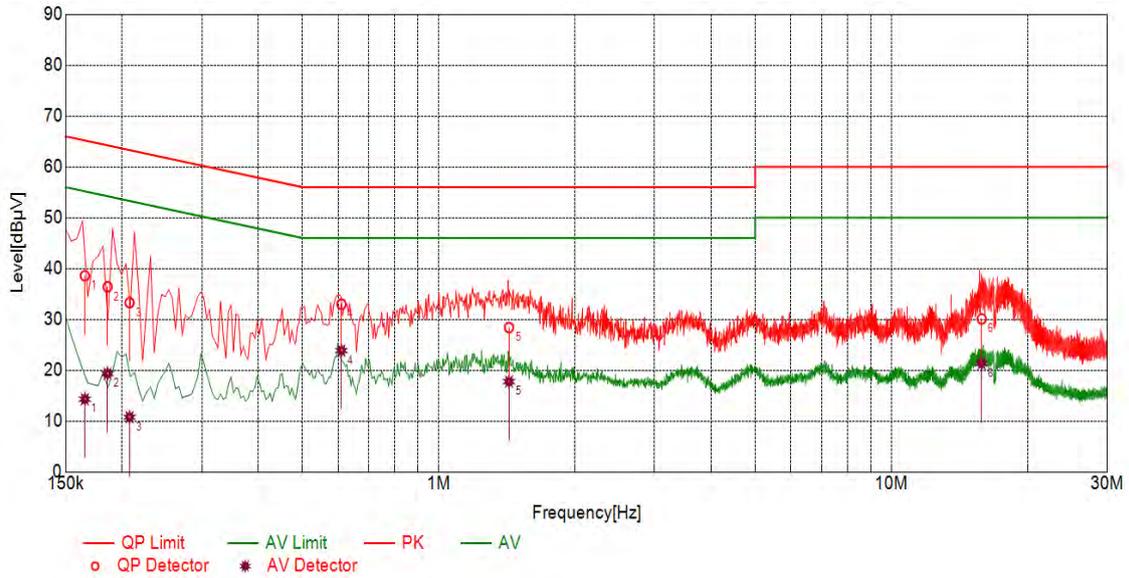


Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1584	10.10	40.81	65.55	24.74	22.83	55.55	32.72	L
2	0.2004	10.10	40.98	63.60	22.62	25.96	53.60	27.64	L
3	0.2384	10.10	31.30	62.15	30.85	13.85	52.15	38.30	L
4	0.6108	10.10	33.73	56.00	22.27	23.13	46.00	22.87	L
5	2.1519	10.10	29.90	56.00	26.10	18.84	46.00	27.16	L
6	16.9341	10.11	34.19	60.00	25.81	24.84	50.00	25.16	L



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Neutral Line:



Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1655	10.10	38.58	65.18	26.60	14.31	55.18	40.87	N
2	0.1857	10.10	36.41	64.22	27.81	19.33	54.22	34.89	N
3	0.2077	10.10	33.29	63.30	30.01	10.77	53.30	42.53	N
4	0.6100	10.10	33.01	56.00	22.99	23.88	46.00	22.12	N
5	1.4303	10.10	28.40	56.00	27.60	17.77	46.00	28.23	N
6	15.8243	10.11	30.10	60.00	29.90	21.33	50.00	28.67	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

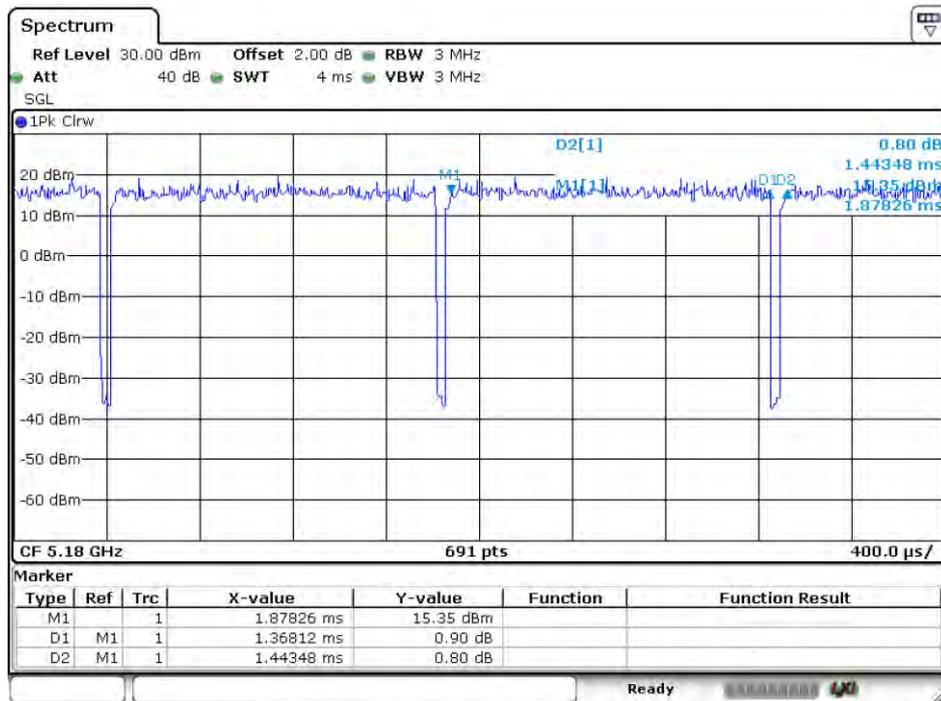
4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11A	Ant 1: CH149, CH157, CH161	94.78
11N20	Ant 1: CH149, CH157, CH161	94.85
11N40	Ant 1: CH151, CH159	93.75
11AC20	Ant 1: CH149, CH157, CH161	94.44
11AC40	Ant 1: CH151, CH159	93.78
11AC80	Ant 1: CH155	87.95

4.3.1 Test Plots

4.3.1.1 ANT1

4.3.1.1.1 11A

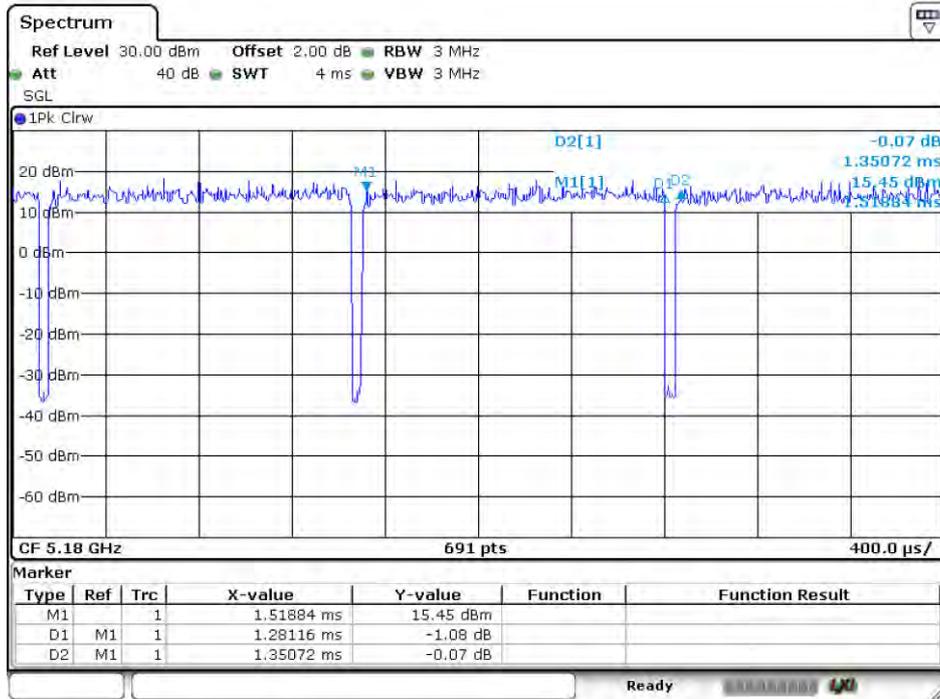


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4.3.1.1.2 11N20



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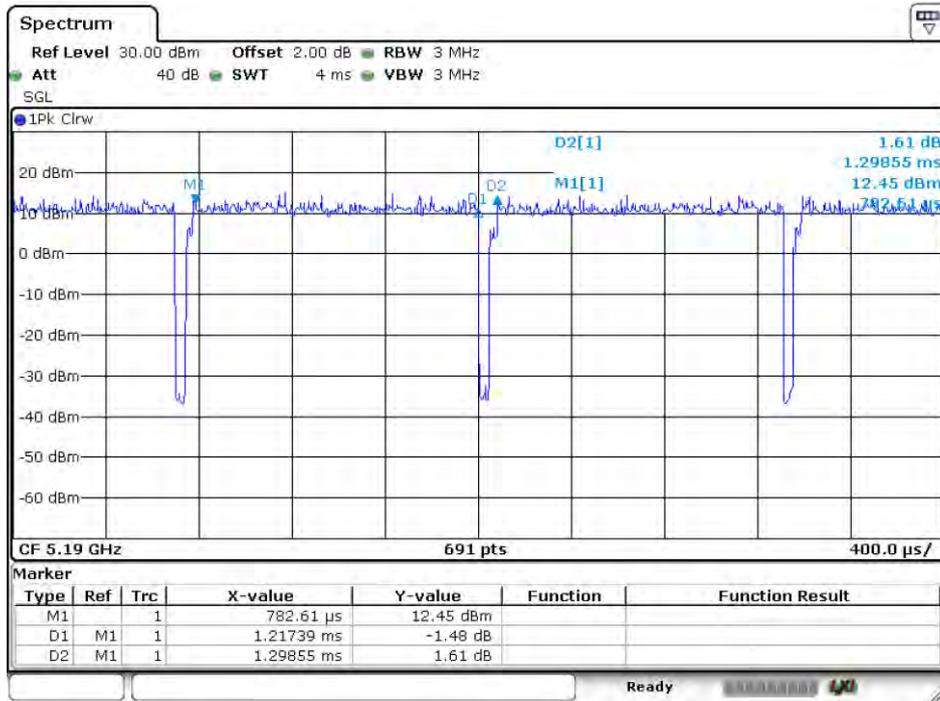


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4.3.1.1.3 11N40



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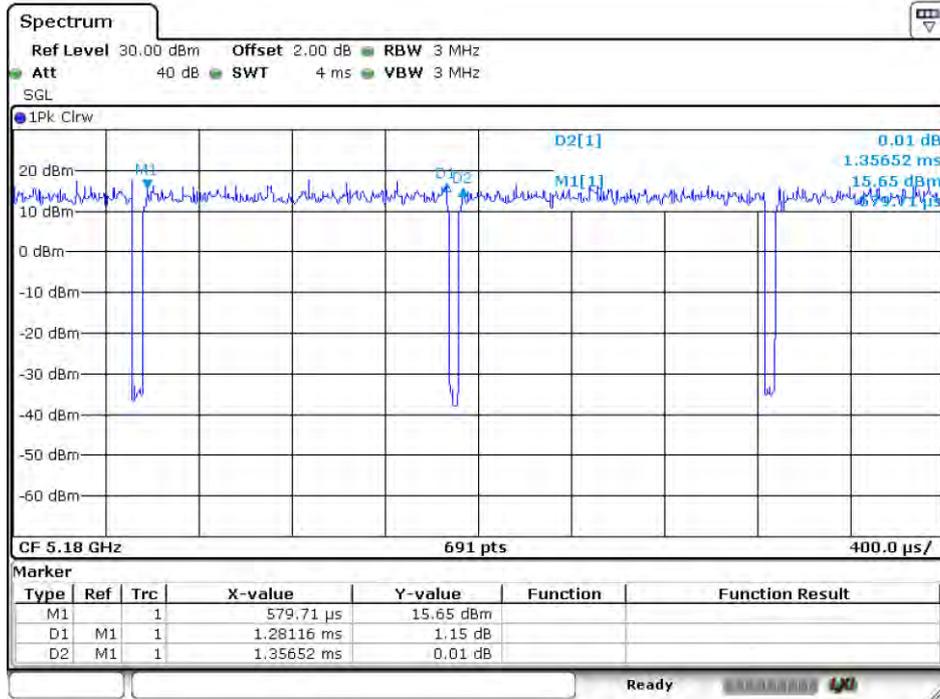
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4.3.1.1.4 11AC20



Date: 26, APR, 2020 02:23:44

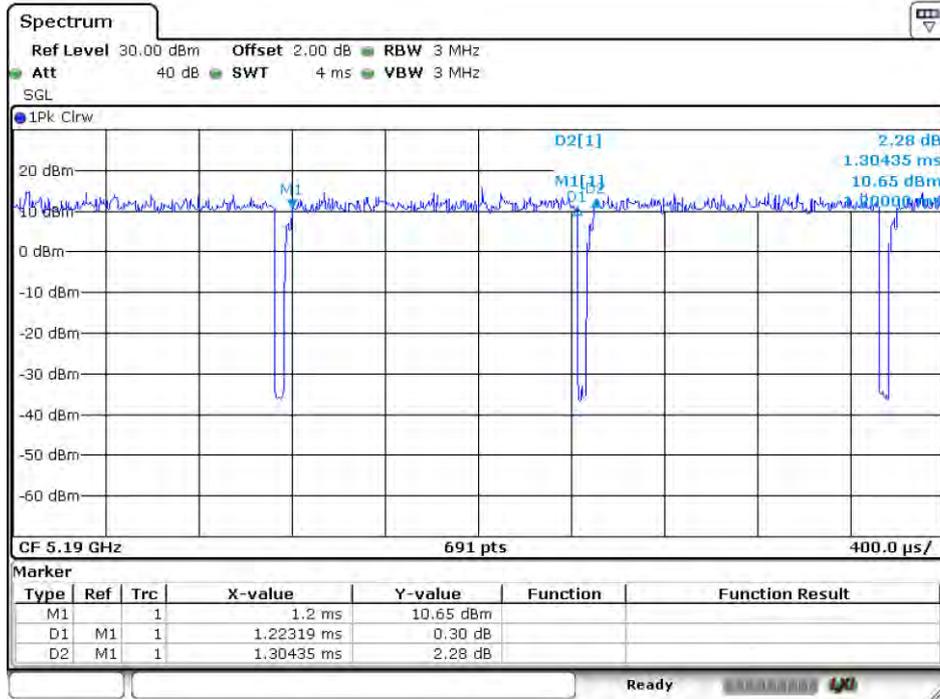


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4.3.1.1.5 11AC40



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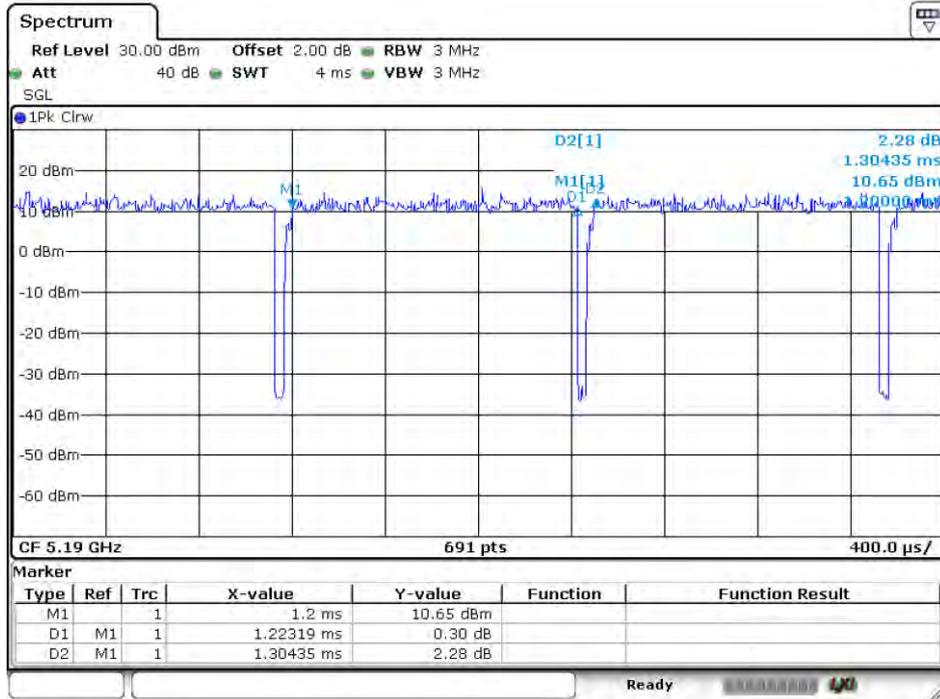


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4.3.1.1.6 11AC80



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4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find that</p> <p>6Mbps of rate is the worst case of 802.11a;</p> <p>MCS0 of rate is the worst case of 802.11n(HT20);</p> <p>MCS0 of rate is the worst case of 802.11n(HT40);</p> <p>MCS0 of rate is the worst case of 802.11ac(HT20);</p> <p>MCS0 of rate is the worst case of 802.11ac(HT40);</p> <p>MCS0 of rate is the worst case of 802.11ac(HT80)</p> <p>Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5470-5725MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5725-5850MHz	Not exceed 1W(30dBm)
		*Where B is the 26dB emission bandwidth in MHz
Test Results:	Pass	



4.4.1 Test Results for Conducted Output Power

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Meas. Level (Cond.) [dBm]	Verdict
11A20	36	5180	ANT 1	16.69	PASS
	44	5220	ANT 1	16.31	PASS
	48	5240	ANT 1	15.49	PASS
	52	5260	ANT 1	16.41	PASS
	60	5300	ANT 1	16.22	PASS
	64	5320	ANT 1	16.2	PASS
	100	5500	ANT 1	16.71	PASS
	116	5580	ANT 1	16.97	PASS
	140	5700	ANT 1	15.53	PASS
	149	5745	ANT 1	15.39	PASS
	157	5785	ANT 1	15.69	PASS
	161	5805	ANT 1	15.59	PASS
11N20	36	5180	ANT 1	16.18	PASS
	44	5220	ANT 1	16.29	PASS
	48	5240	ANT 1	15.9	PASS
	52	5260	ANT 1	15.78	PASS
	60	5300	ANT 1	15.62	PASS
	64	5320	ANT 1	15.51	PASS
	100	5500	ANT 1	16.08	PASS
	116	5580	ANT 1	15.96	PASS
	140	5700	ANT 1	15.1	PASS
	149	5745	ANT 1	14.89	PASS
	157	5785	ANT 1	14.99	PASS
	161	5805	ANT 1	15.47	PASS
11N40	38	5190	ANT 1	16.52	PASS
	46	5230	ANT 1	15.66	PASS
	54	5270	ANT 1	15.4	PASS
	62	5310	ANT 1	15.62	PASS



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	102	5510	ANT 1	15.82	PASS
	110	5550	ANT 1	16	PASS
	134	5670	ANT 1	15.13	PASS
	151	5755	ANT 1	14.71	PASS
	159	5795	ANT 1	14.97	PASS
11AC20	36	5180	ANT 1	15.93	PASS
	44	5220	ANT 1	16.23	PASS
	48	5240	ANT 1	15.74	PASS
	52	5260	ANT 1	15.75	PASS
	60	5300	ANT 1	15.52	PASS
	64	5320	ANT 1	15.58	PASS
	100	5500	ANT 1	15.83	PASS
	116	5580	ANT 1	15.88	PASS
	140	5700	ANT 1	15.03	PASS
	149	5745	ANT 1	15.9	PASS
	157	5785	ANT 1	15.82	PASS
	161	5805	ANT 1	15.02	PASS
11AC40	38	5190	ANT 1	15.97	PASS
	46	5230	ANT 1	14.72	PASS
	54	5270	ANT 1	14.48	PASS
	62	5310	ANT 1	15.52	PASS
	102	5510	ANT 1	15.89	PASS
	110	5550	ANT 1	16	PASS
	134	5670	ANT 1	15.08	PASS
	151	5755	ANT 1	14.87	PASS
	159	5795	ANT 1	14.92	PASS
11AC80	42	5210	ANT 1	15.62	PASS
	58	5290	ANT 1	15.28	PASS
	106	5530	ANT 1	15.87	PASS
	122	5610	ANT 1	15.73	PASS
	155	5775	ANT 1	14.92	PASS



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4.5 26dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
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>
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80). Only the worst case is recorded in the report.
Limit:	No restriction limits
Test Results:	Pass



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4.5.1 Test Results for 26dB Emission Bandwidth

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	26dB Emission Bandwidth [MHz]	Verdict
11A20	36	5180	ANT 1	23.73	PASS
	44	5220	ANT 1	24.72	PASS
	48	5240	ANT 1	24.51	PASS
	52	5260	ANT 1	24.87	PASS
	60	5300	ANT 1	25.44	PASS
	64	5320	ANT 1	25.5	PASS
	100	5500	ANT 1	26.1	PASS
	116	5580	ANT 1	25.5	PASS
	140	5700	ANT 1	20.31	PASS
11N20	36	5180	ANT 1	26.76	PASS
	44	5220	ANT 1	25.2	PASS
	48	5240	ANT 1	19.77	PASS
	52	5260	ANT 1	21.48	PASS
	60	5300	ANT 1	22.92	PASS
	64	5320	ANT 1	21.54	PASS
	100	5500	ANT 1	22.14	PASS
	116	5580	ANT 1	25.47	PASS
11N40	38	5190	ANT 1	43.5	PASS
	46	5230	ANT 1	48.06	PASS
	54	5270	ANT 1	38.76	PASS
	62	5310	ANT 1	49.5	PASS
	102	5510	ANT 1	38.4	PASS
	110	5550	ANT 1	41.22	PASS
	134	5670	ANT 1	41.4	PASS
11AC20	36	5180	ANT 1	24.15	PASS
	44	5220	ANT 1	25.56	PASS
	48	5240	ANT 1	19.71	PASS
	52	5260	ANT 1	26.31	PASS
	60	5300	ANT 1	24.57	PASS
	64	5320	ANT 1	19.53	PASS
	100	5500	ANT 1	19.41	PASS
	116	5580	ANT 1	26.61	PASS
11AC40	38	5190	ANT 1	59.7	PASS
	46	5230	ANT 1	58.86	PASS



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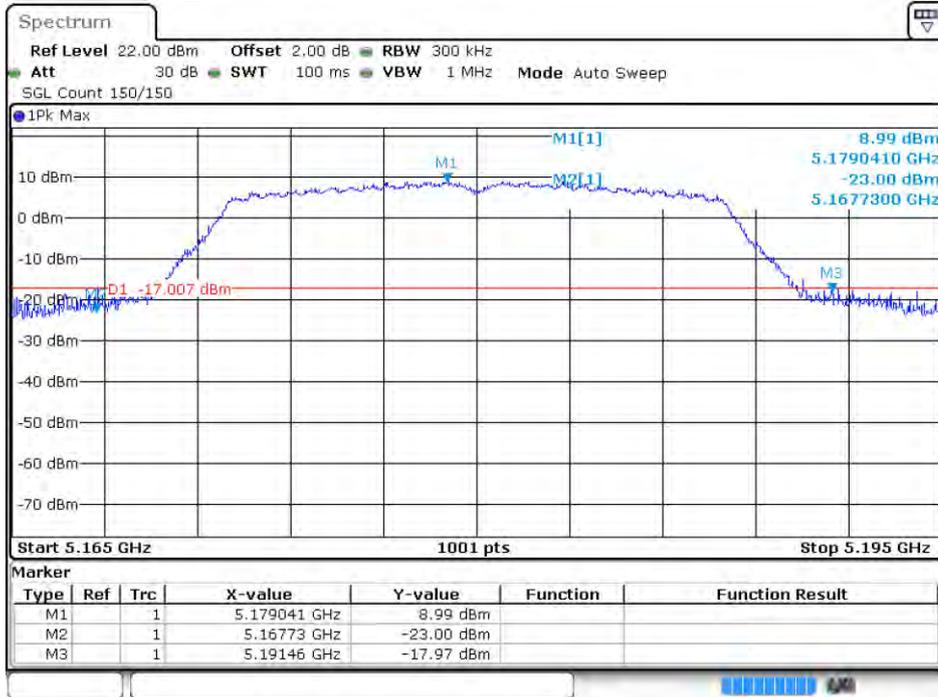
	54	5270	ANT 1	43.92	PASS
	62	5310	ANT 1	55.38	PASS
	102	5510	ANT 1	46.98	PASS
	110	5550	ANT 1	43.26	PASS
	134	5670	ANT 1	39.06	PASS
11AC80	42	5210	ANT 1	105.44	PASS
	58	5290	ANT 1	79.2	PASS
	106	5530	ANT 1	114.24	PASS
	122	5610	ANT 1	109.44	PASS



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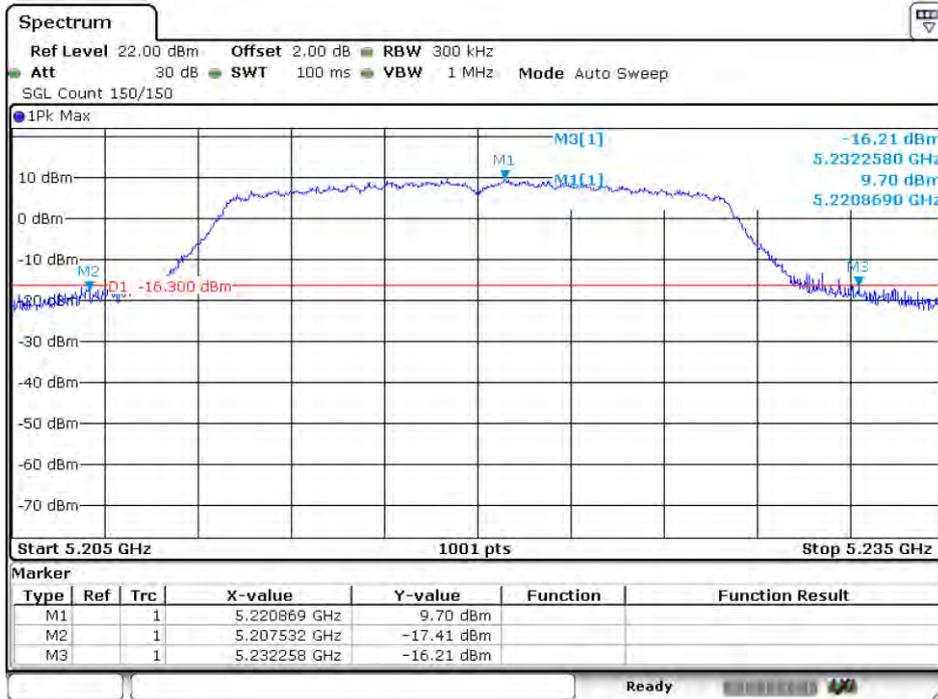
4.5.2 Plots for 26dB Emission Bandwidth
4.5.2.1 11A20_36 ANT 1



Date: 26, APR, 2020 02:48:01

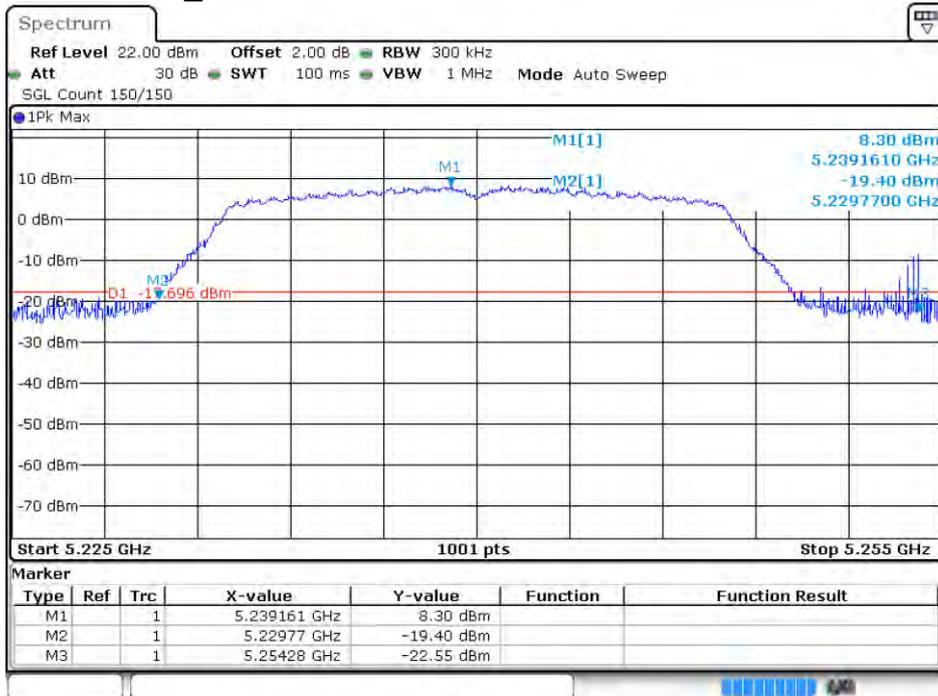
4.5.2.2 11A20_44 ANT 1





Date: 30.APR.2020 09:57:59

4.5.2.3 11A20_48 ANT 1

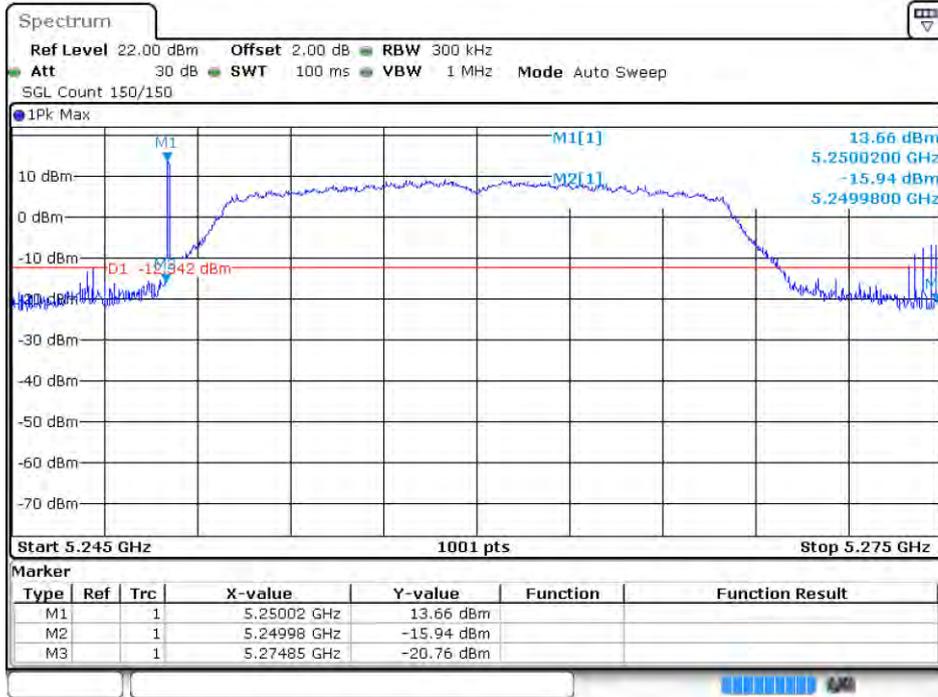


Date: 26.APR.2020 02:50:52



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4.5.2.4 11A20_52 ANT 1

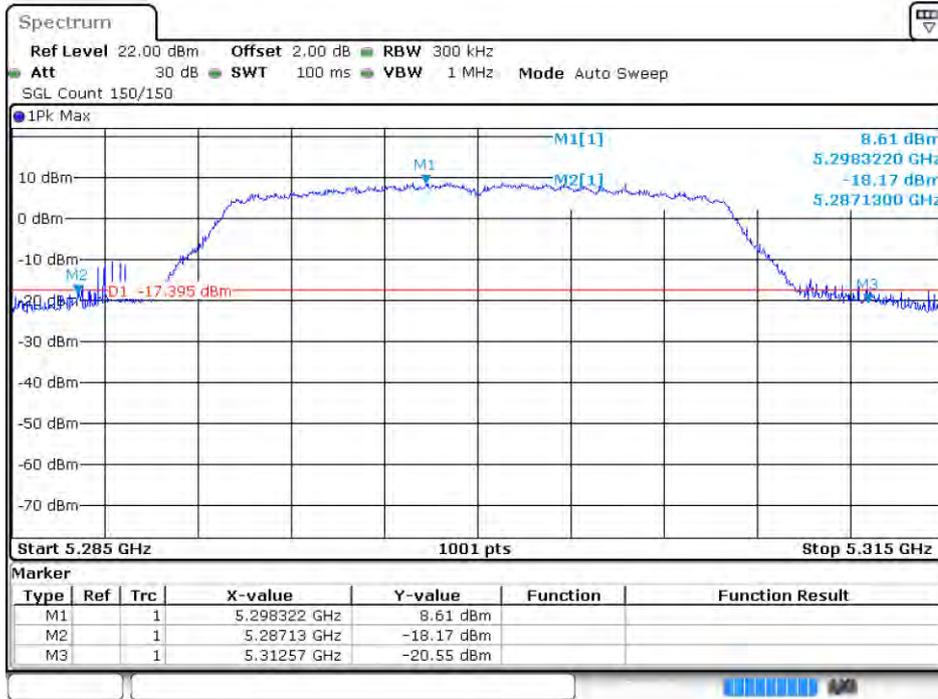


Date: 26 APR, 2020 02:52:33

4.5.2.5 11A20_60 ANT 1



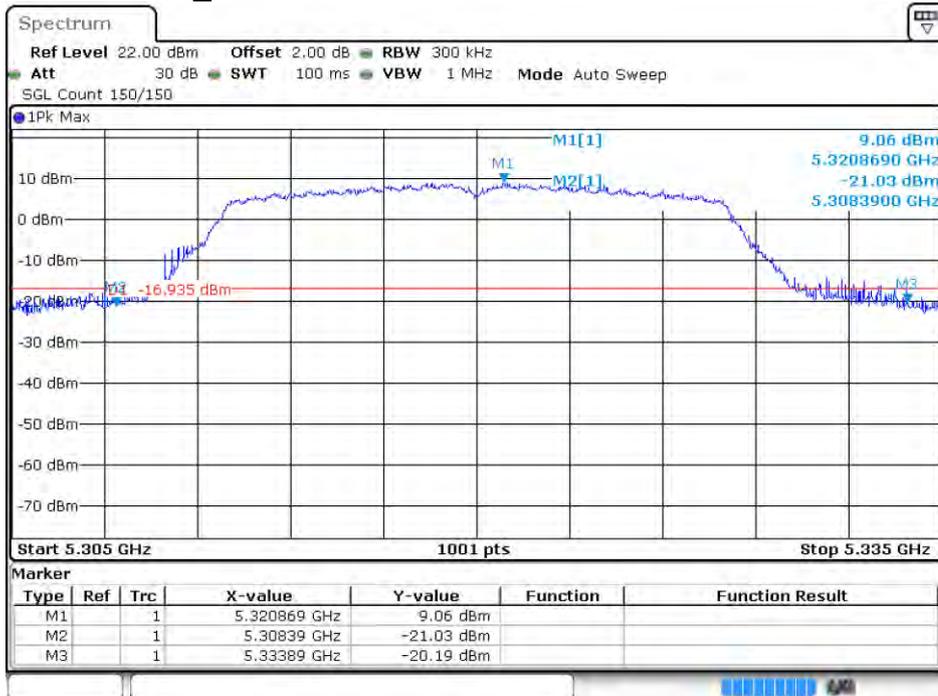
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Date: 26 APR.2020 02:54:04

4.5.2.6

11A20_64 ANT 1



Date: 26 APR.2020 02:55:32



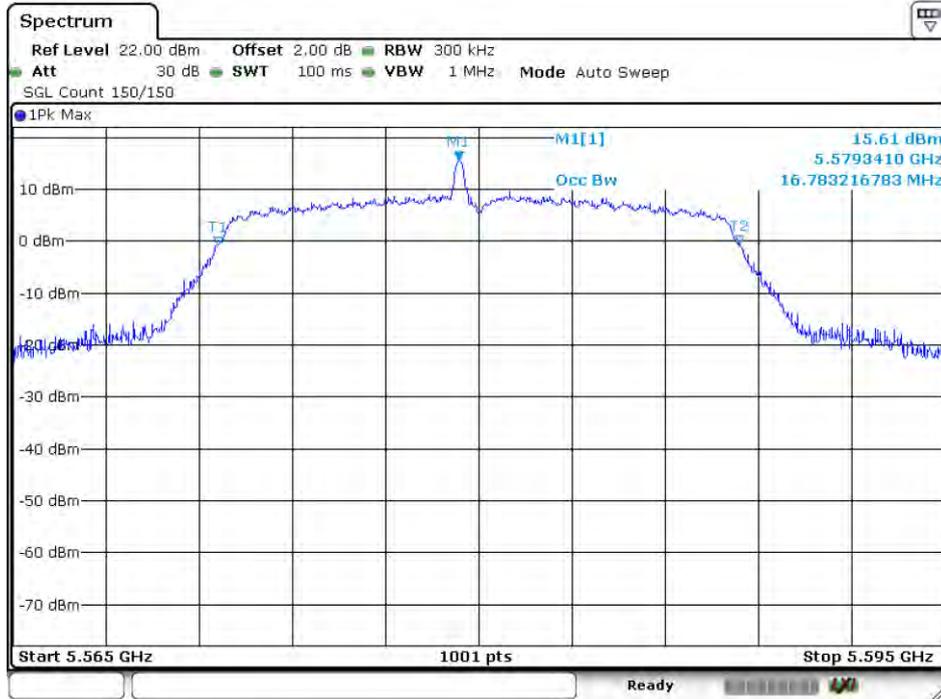
4.5.2.7 11A20_100 ANT 1



Date: 26 APR, 2020 02:59:43



4.5.2.8 11A20_116 ANT 1



Date: 30.APR.2020 10:06:49

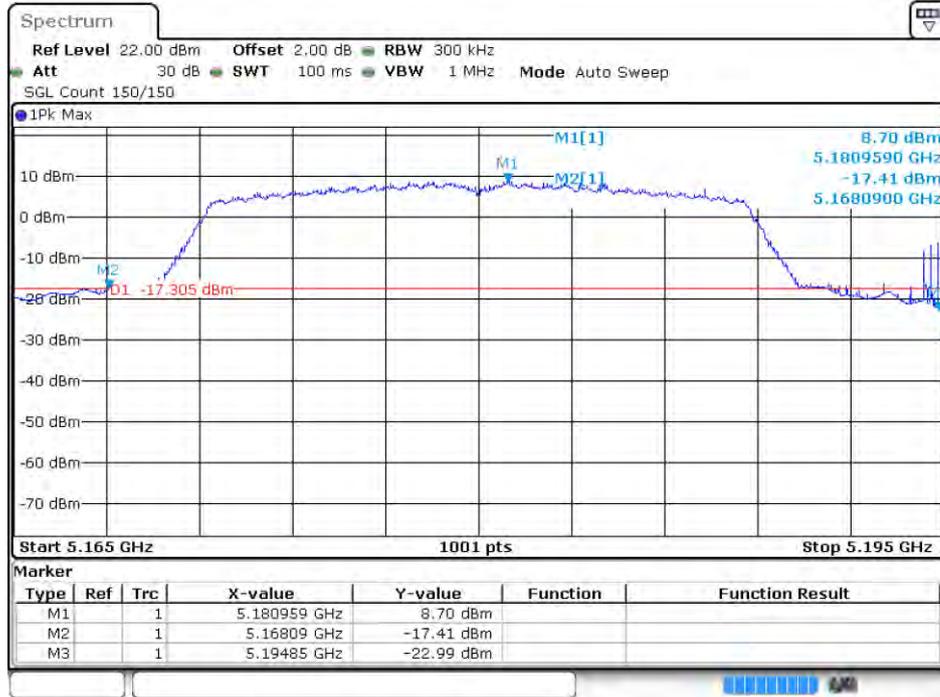
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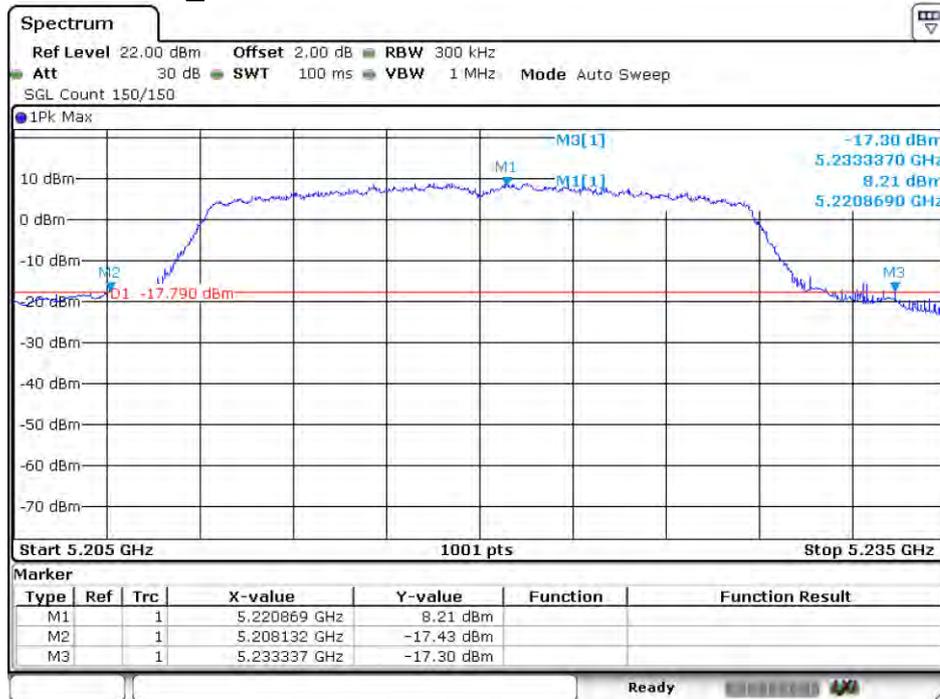


4.5.2.10 11N20_36 ANT 1



Date: 26, APR, 2020 03:07:41

4.5.2.11 11N20_44 ANT 1



Date: 30, APR, 2020 09:59:55



4.5.2.12 11N20_48 ANT 1



Date: 26 APR, 2020 03:10:29



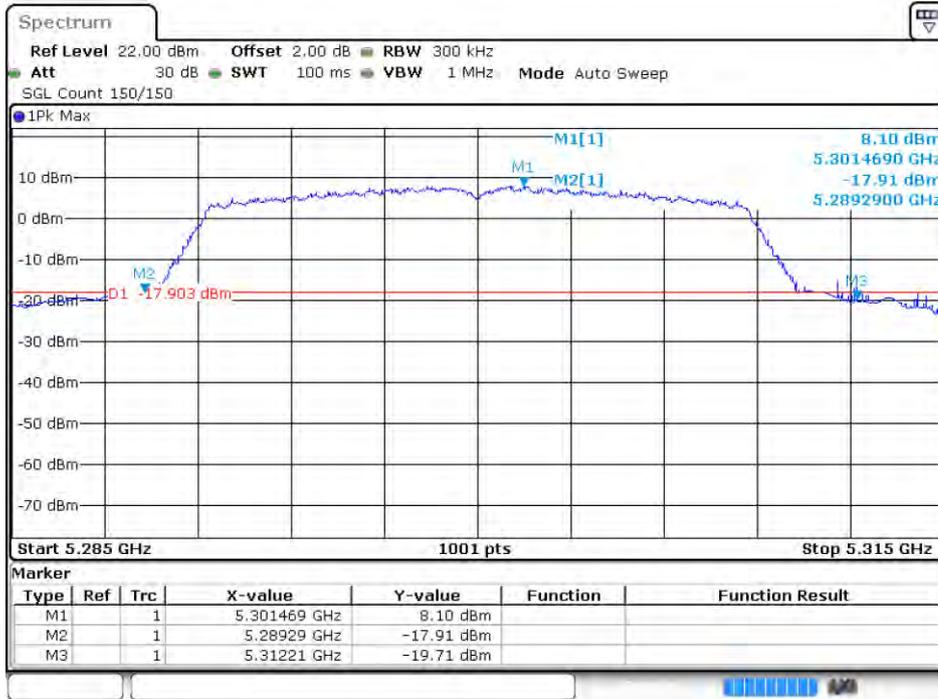
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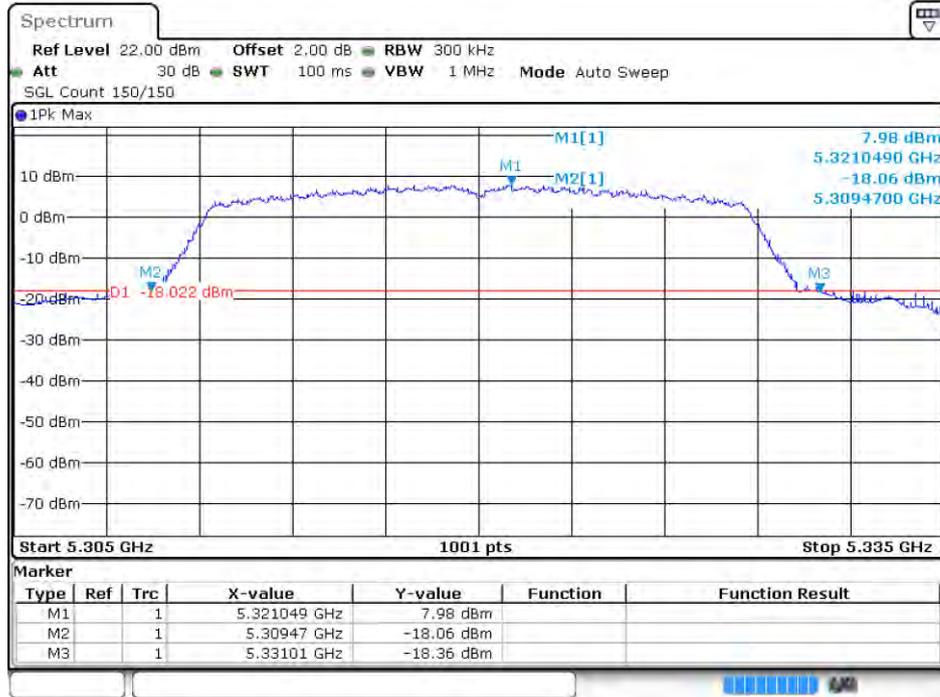




Date: 26 APR. 2020 03:13:30



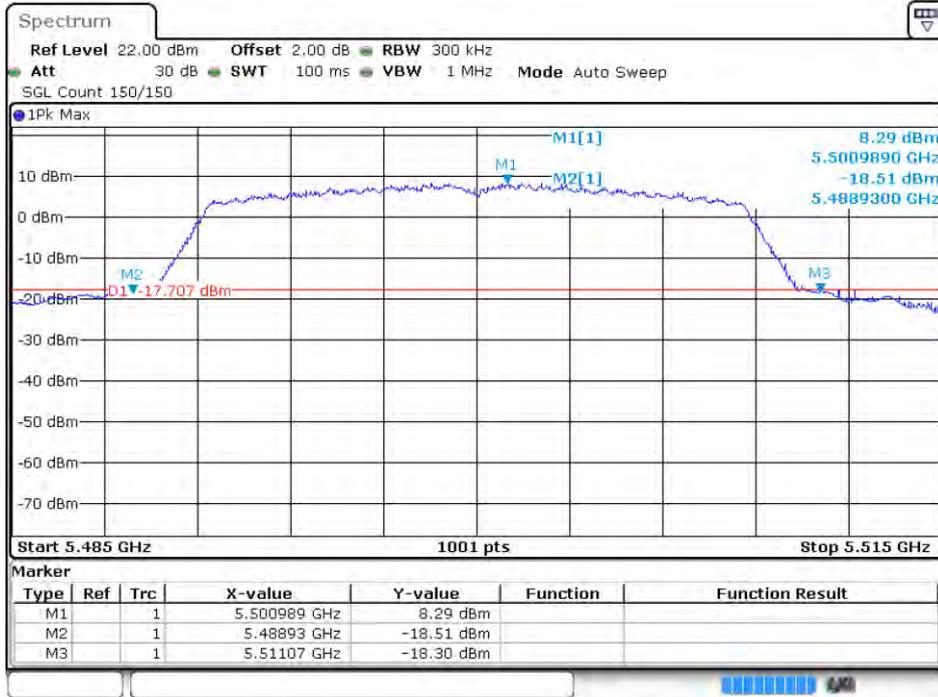
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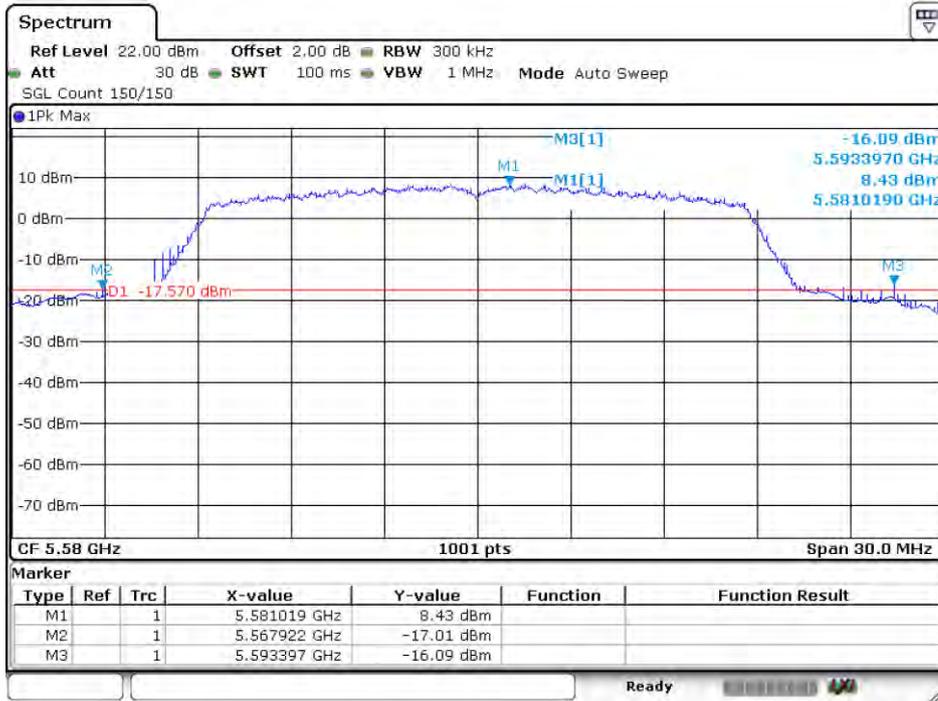
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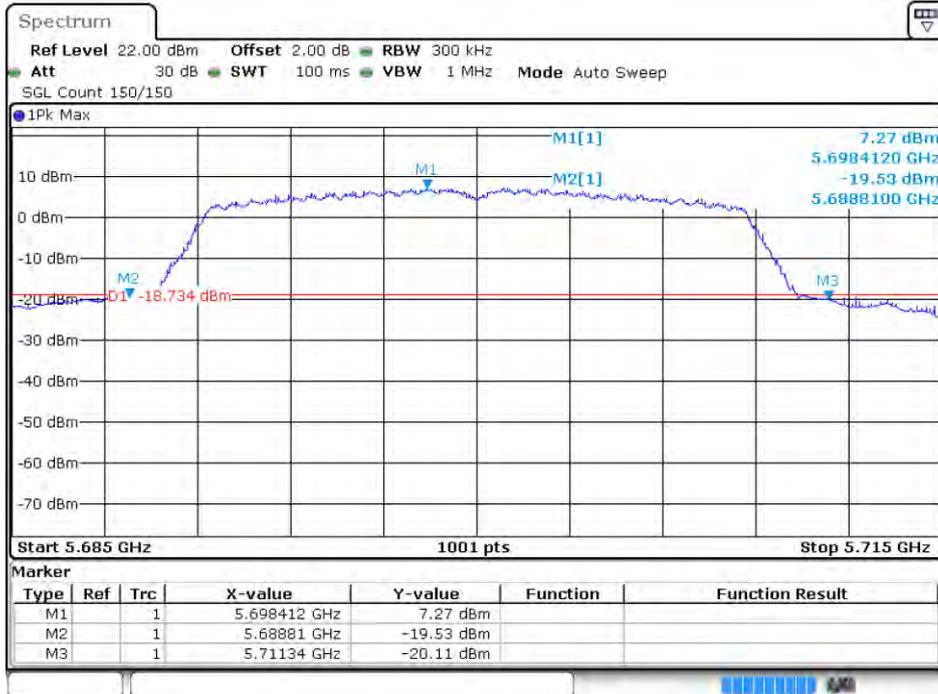
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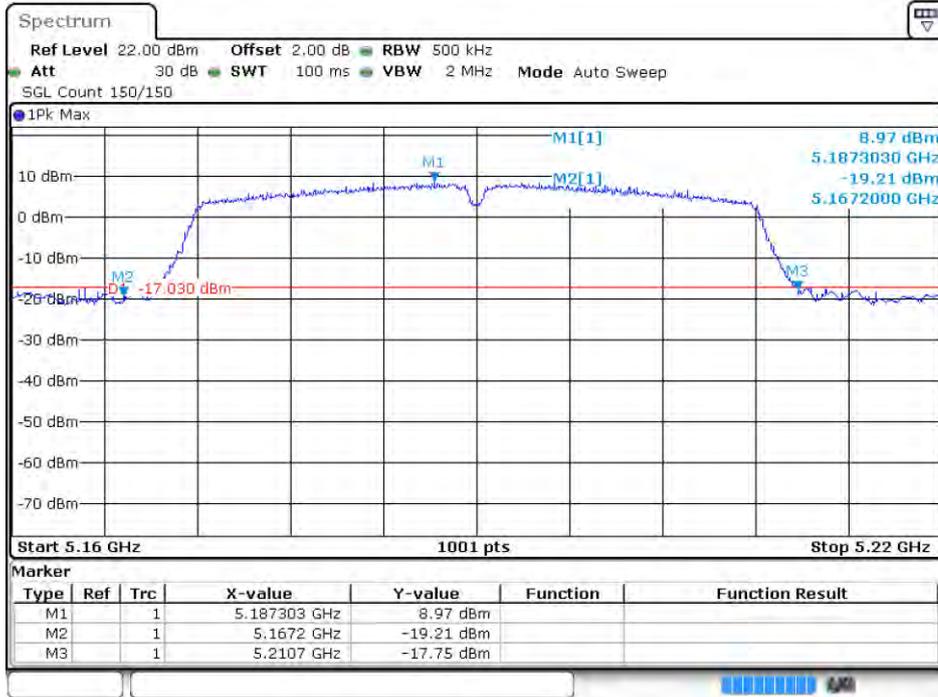
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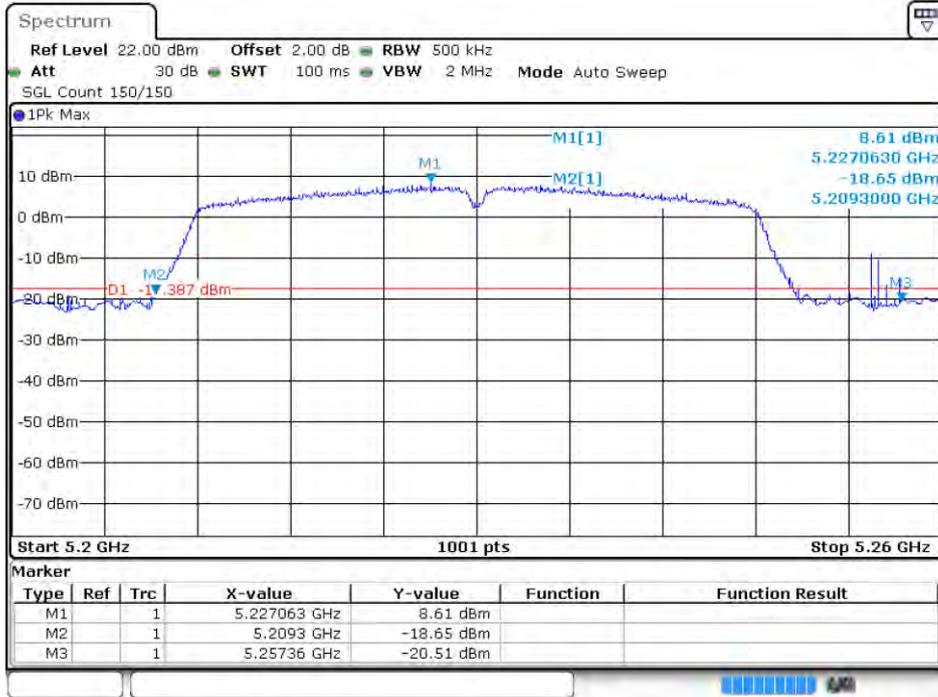
4.5.2.20 11N40_38 ANT 1



Date: 26 APR, 2020 03:30:36



4.5.2.21 11N40_46 ANT 1



Date: 26 APR, 2020 03:32:00



4.5.2.22 11N40_54 ANT 1



Date: 26 APR, 2020 03:33:43



4.5.2.23 11N40_62 ANT 1



Date: 26 APR, 2020 03:35:25



4.5.2.24 11N40_102 ANT 1



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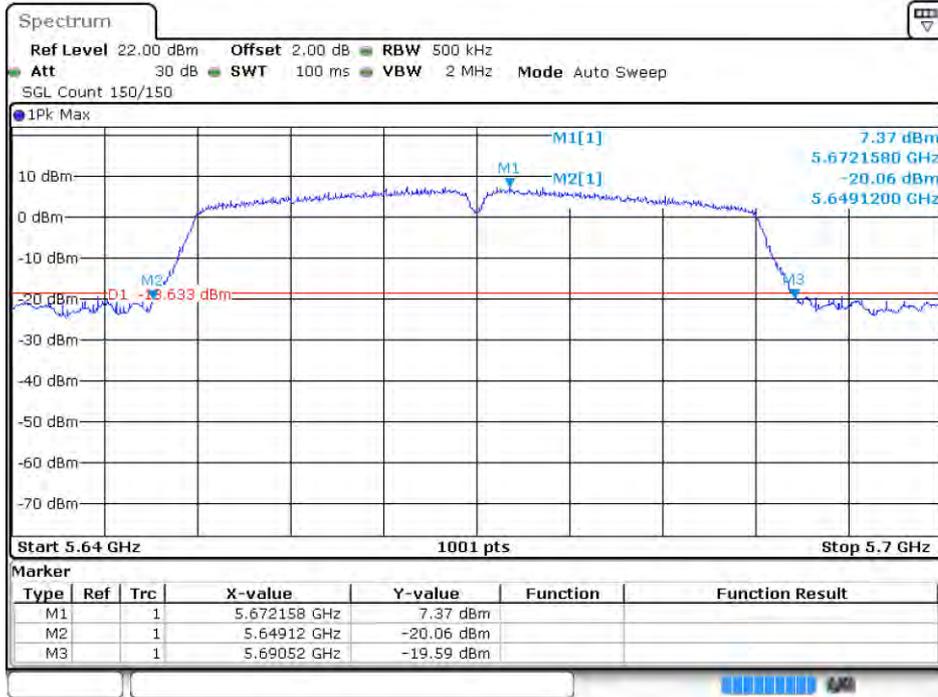
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4.5.2.26 11N40_134 ANT 1



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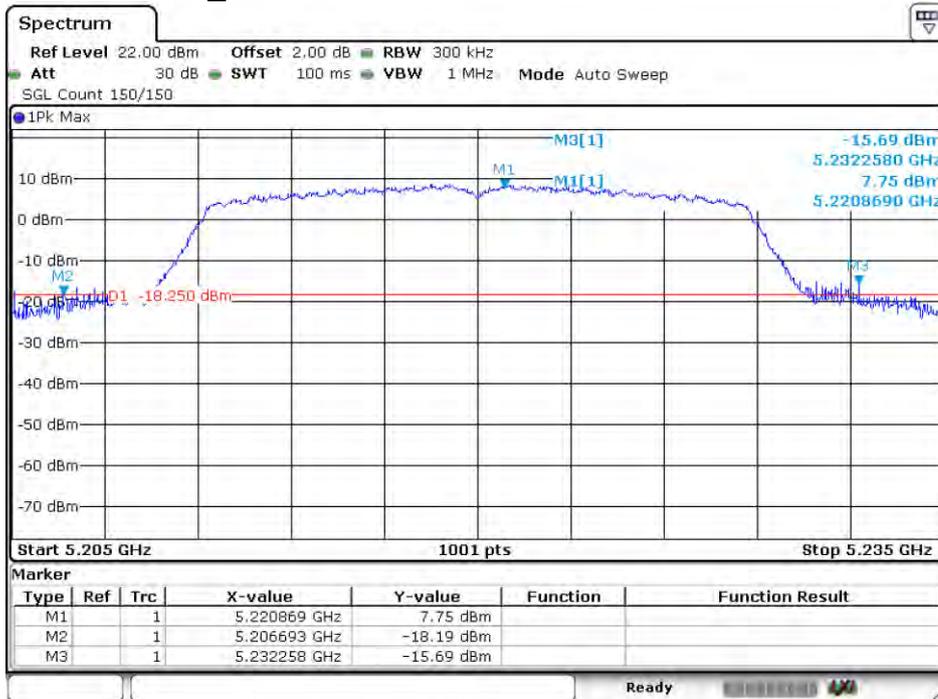


4.5.2.27 11AC20_36 ANT 1



Date: 26.APR.2020 03:49:30

4.5.2.28 11AC20_44 ANT 1



Date: 30.APR.2020 10:01:09



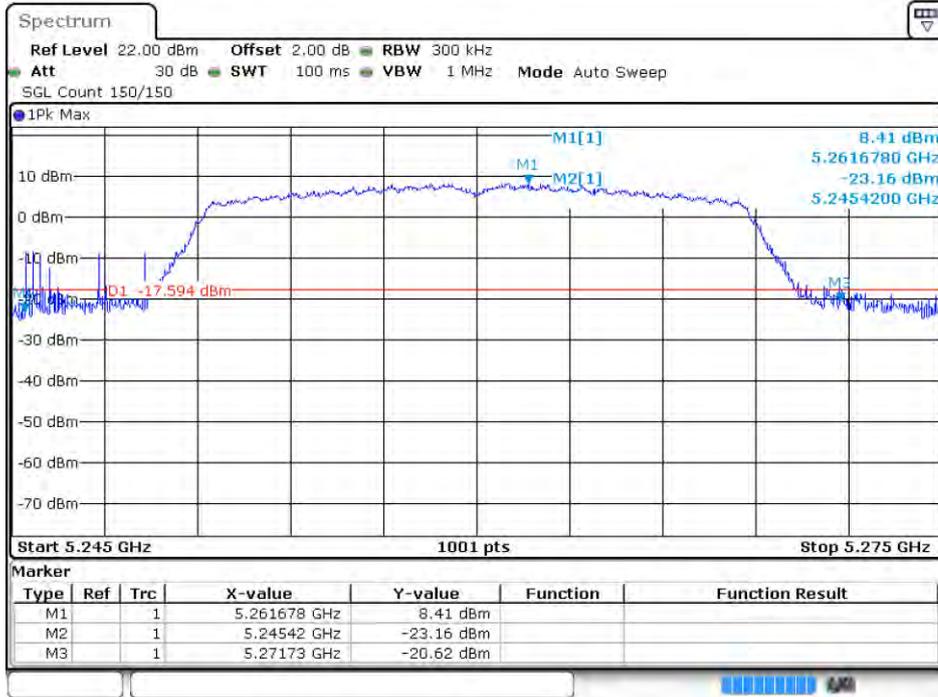
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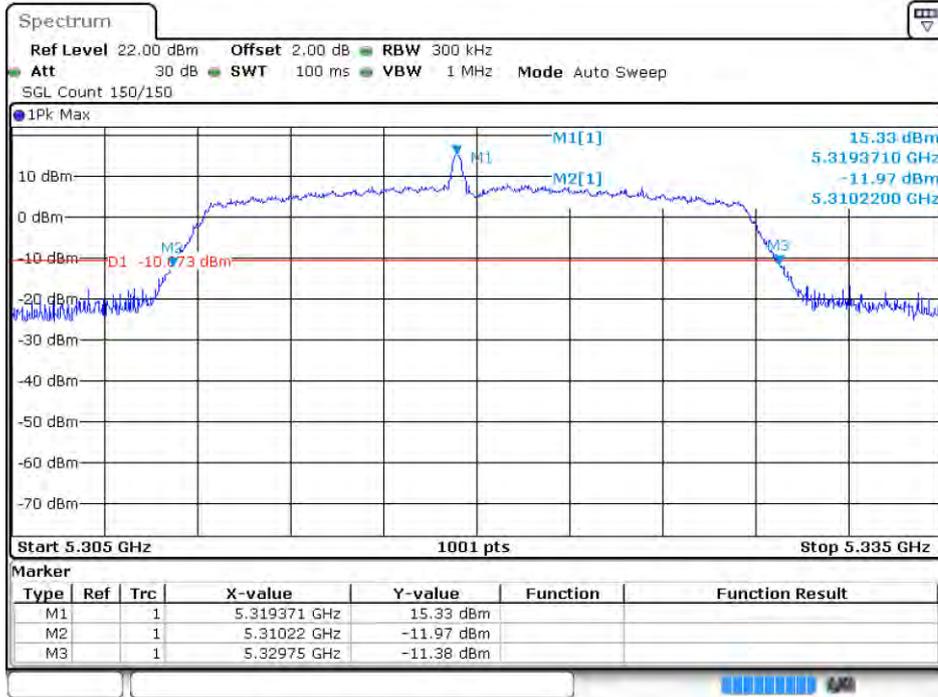
4.5.2.30 11AC20_52 ANT 1



Date: 26 APR, 2020 04:02:57



4.5.2.31 11AC20_64 ANT 1



Date: 26 APR, 2020 04:10:10

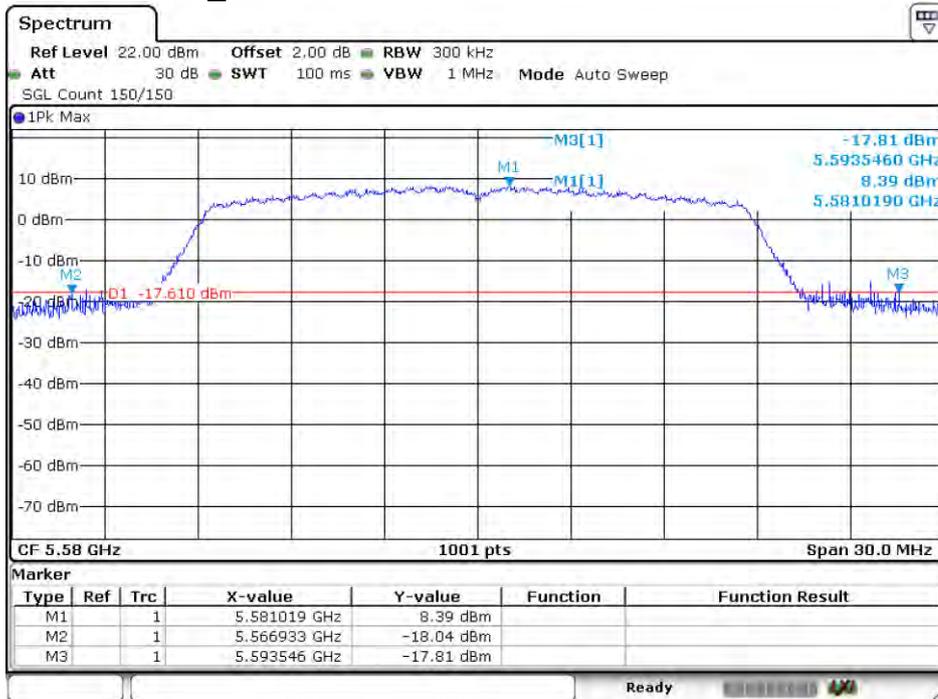


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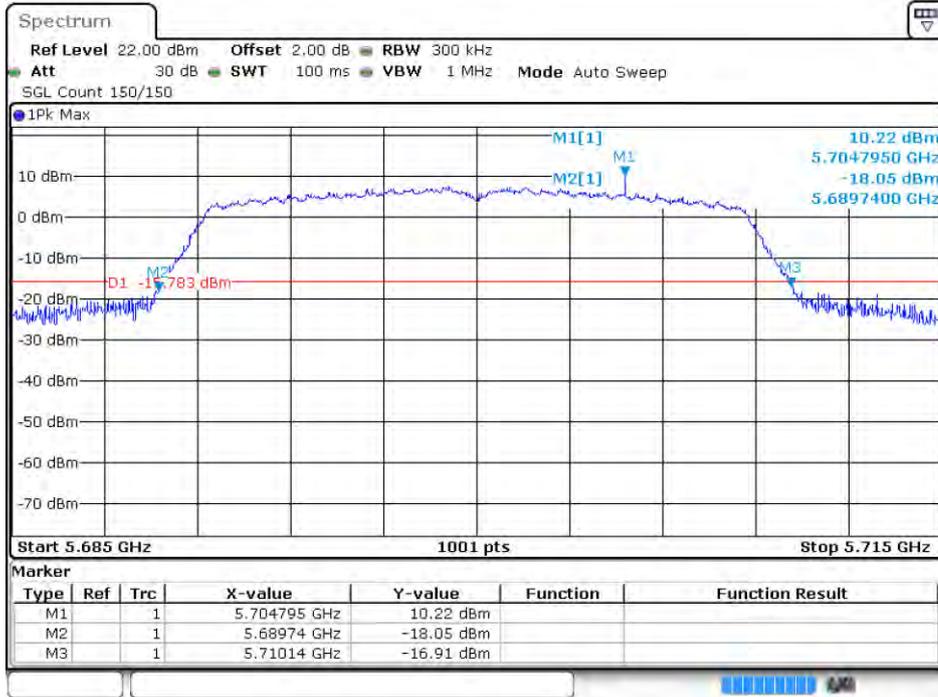
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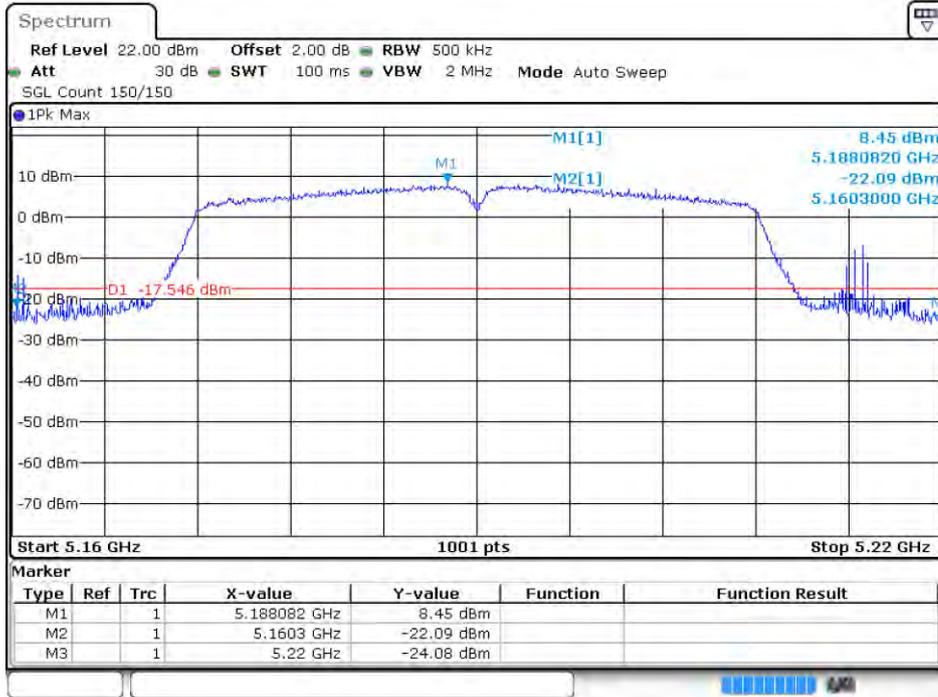
4.5.2.34 11AC20_140 ANT 1



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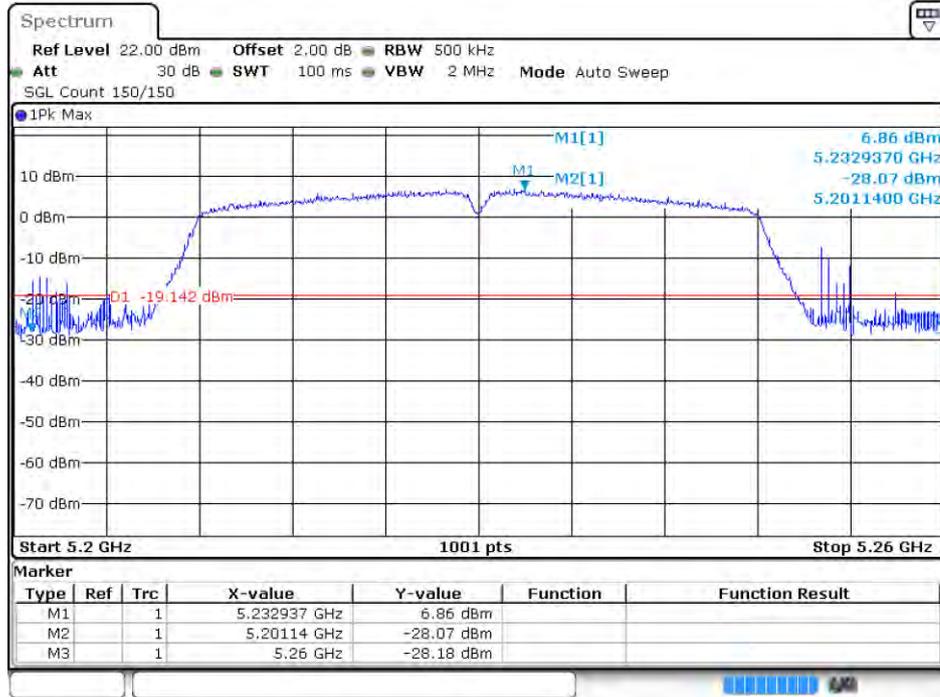
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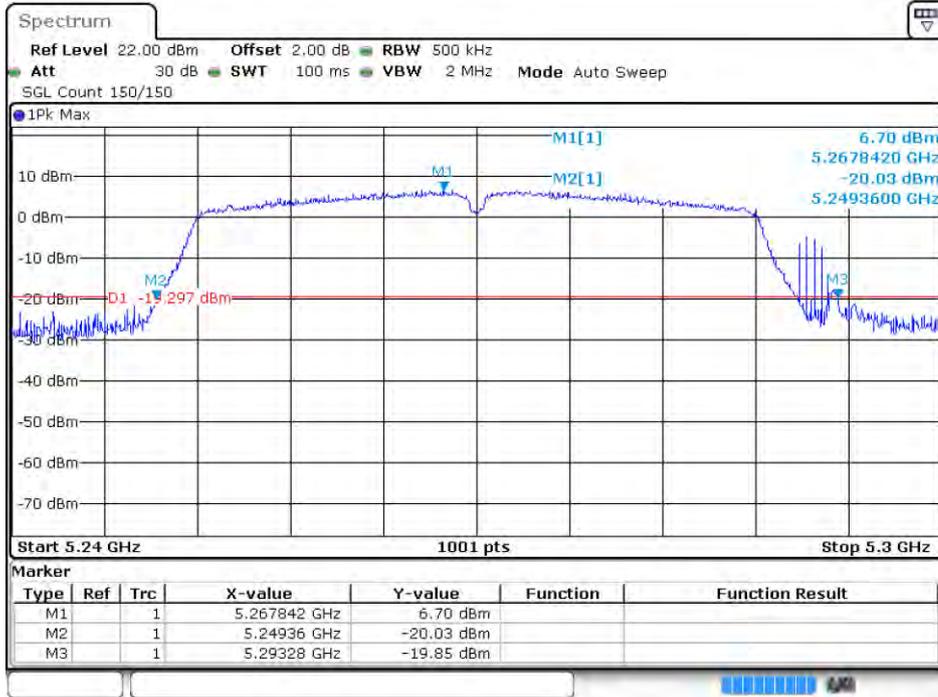
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Date: 26 APR, 2020 04:31:56



4.5.2.37 11AC40_54 ANT 1



Date: 26 APR, 2020 04:33:42



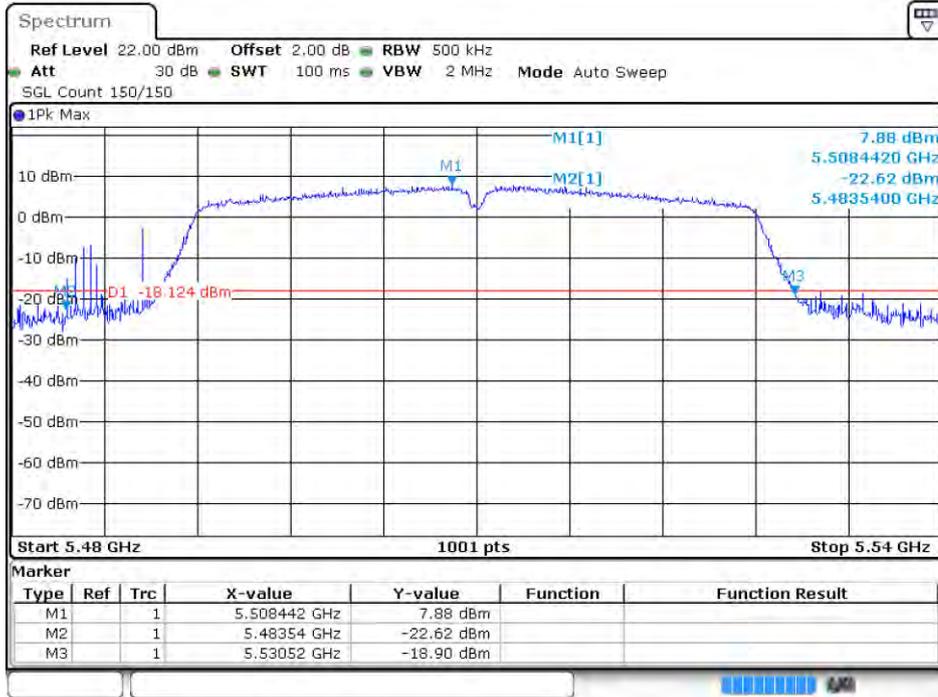
4.5.2.38 11AC40_62 ANT 1



Date: 26 APR, 2020 04:35:09

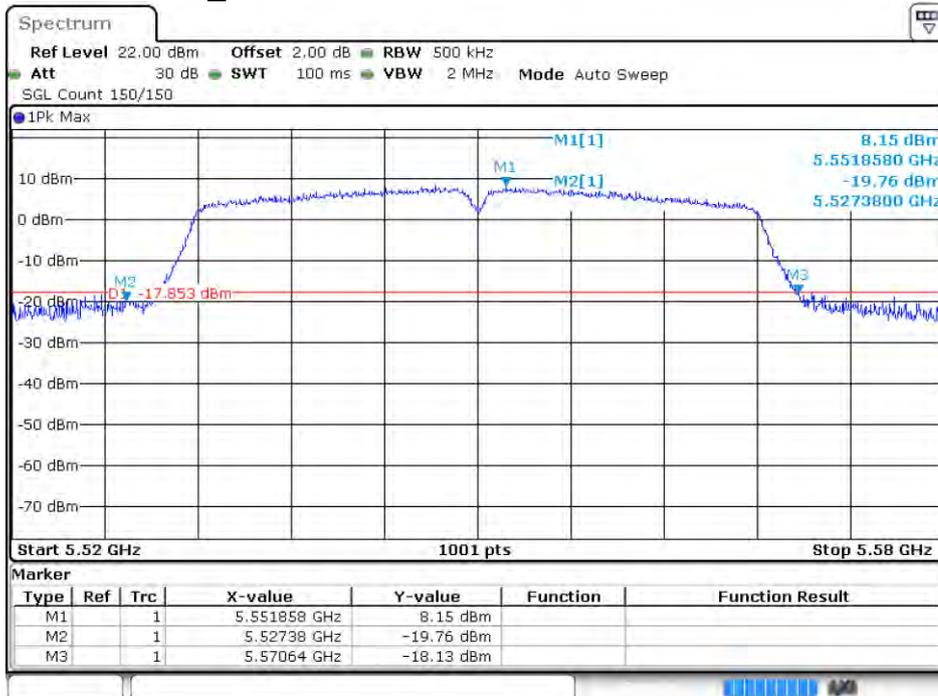


4.5.2.39 11AC40_102 ANT 1



Date: 26, APR, 2020 04:37:36

4.5.2.40 11AC40_110 ANT 1



Date: 30, APR, 2020 09:44:51



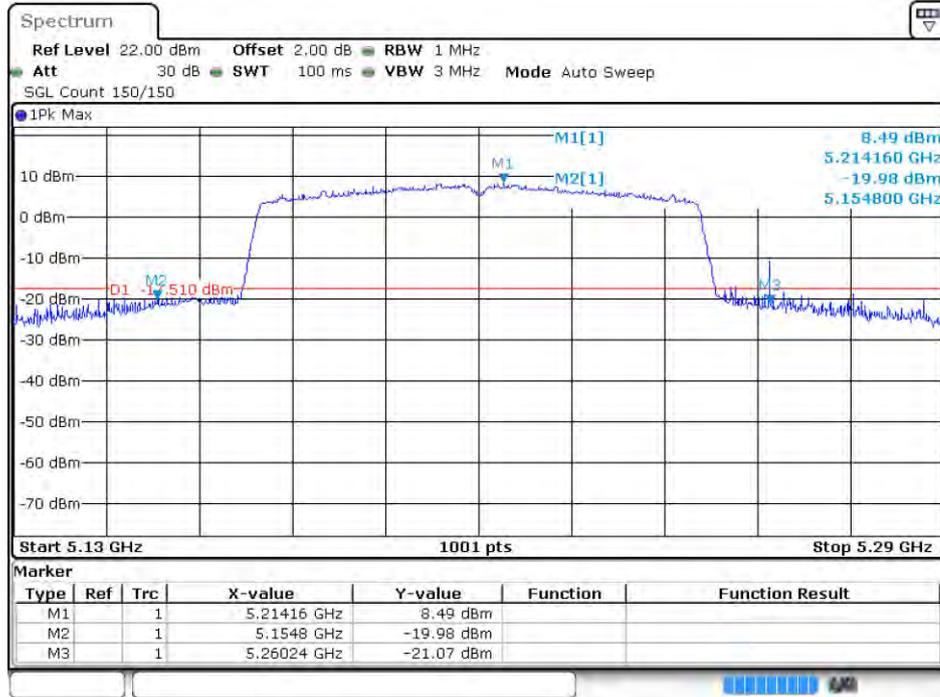
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Date: 26 APR, 2020 04:39:00



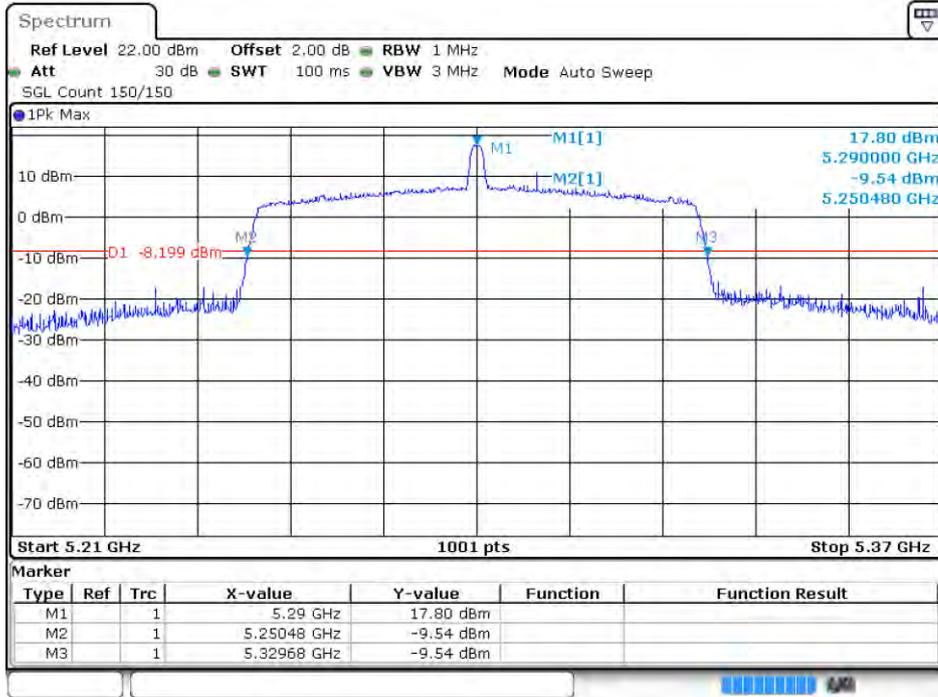
4.5.2.42 11AC80_42 ANT 1



Date: 26 APR, 2020 04:44:47



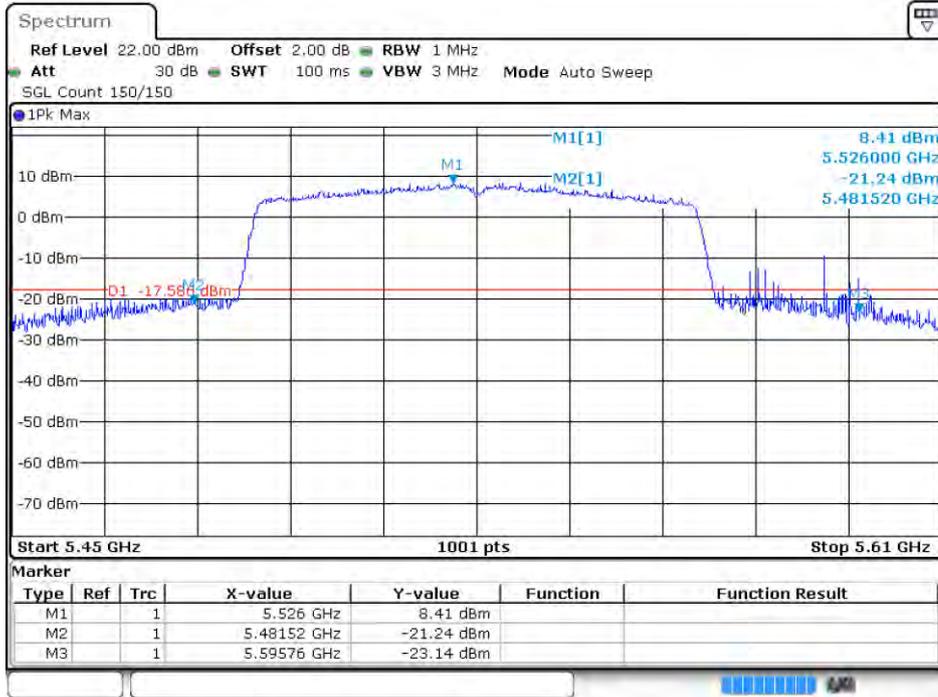
4.5.2.43 11AC80_58 ANT 1



Date: 26 APR, 2020 04:46:42



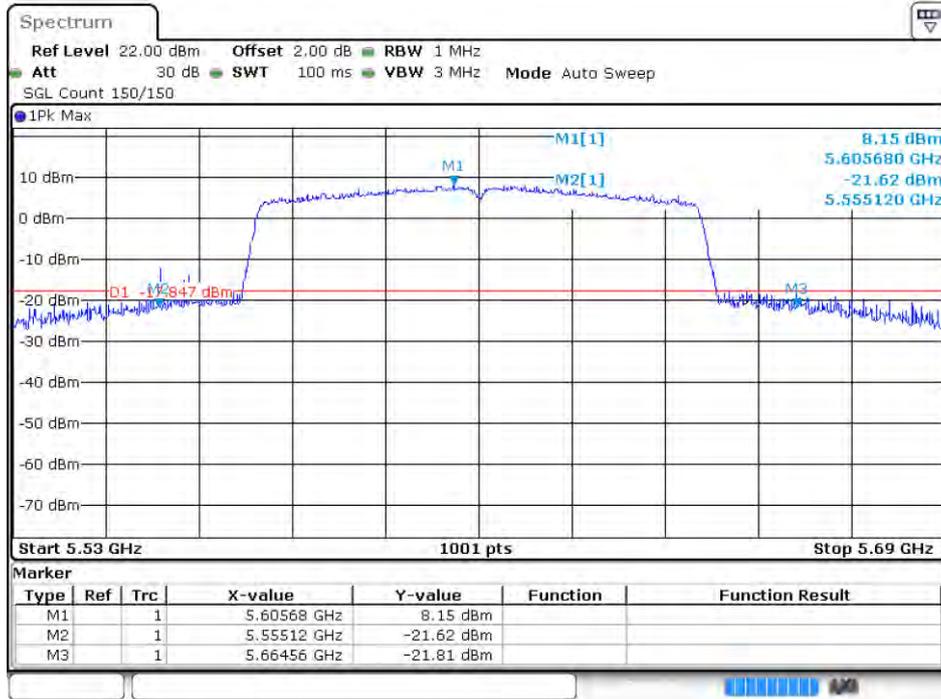
4.5.2.44 11AC80_106 ANT 1



Date: 26 APR, 2020 04:48:19



4.5.2.45 11AC80_122 ANT 1



Date: 30.APR.2020 09:52:56



4.6 6dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)	
Test Method:	ANSI C63.10: 2013	
Test Setup:		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find the</p> <ul style="list-style-type: none"> 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80). <p>Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5725-5850MHz	At least 500kHz
Test Results:	Pass	



4.6.1 Test Results for 6dB Emission Bandwidth

Test Mode	Test Channel	Frequency [MHz]	ANT	6dB Emission Bandwidth [MHz]	Verdict
11A20	149	5745	ANT 1	15.18	PASS
	157	5785	ANT 1	15.18	PASS
	161	5805	ANT 1	15.21	PASS
11N20	149	5745	ANT 1	15.21	PASS
	157	5785	ANT 1	15.18	PASS
	161	5805	ANT 1	15.21	PASS
11N40	151	5755	ANT 1	1.5	PASS
	159	5795	ANT 1	15.12	PASS
11AC20	149	5745	ANT 1	0.63	PASS
	157	5785	ANT 1	15.18	PASS
	161	5805	ANT 1	15.19	PASS
11AC40	151	5755	ANT 1	24	PASS
	159	5795	ANT 1	35.22	PASS
11AC80	155	5775	ANT 1	75.52	PASS

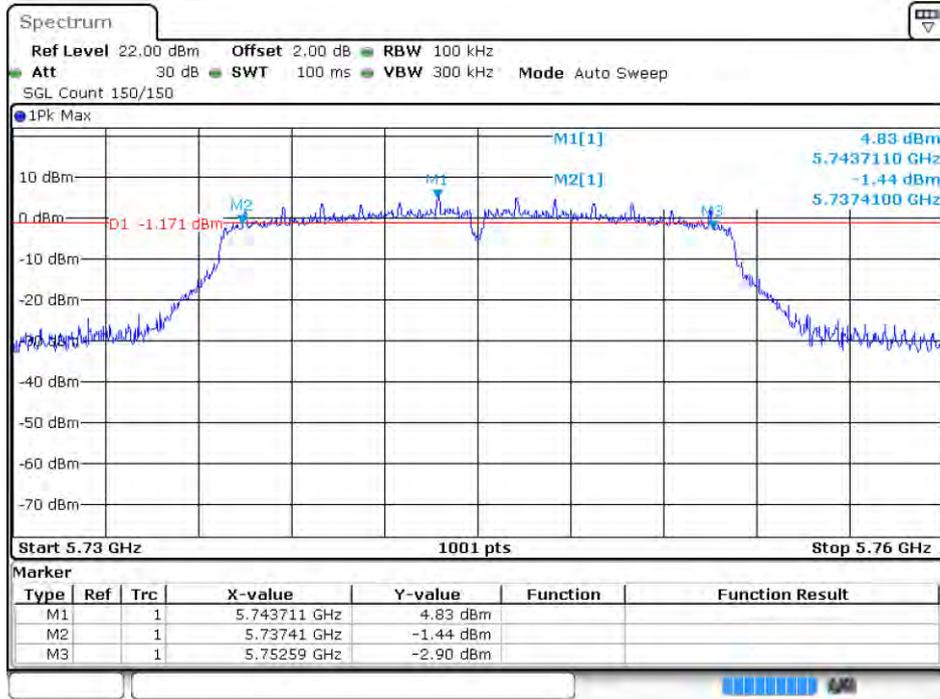


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4.6.2 Plots for 6dB Emission Bandwidth

4.6.2.1 11A20_149 ANT 1

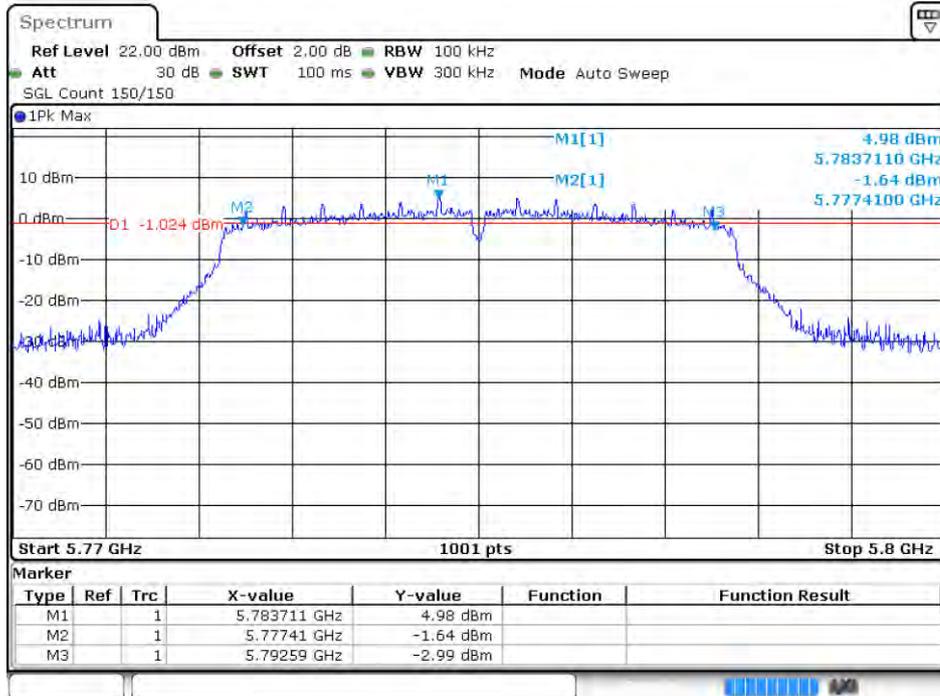


Date: 26, APR, 2020 03:02:41

4.6.2.2 11A20_157 ANT 1



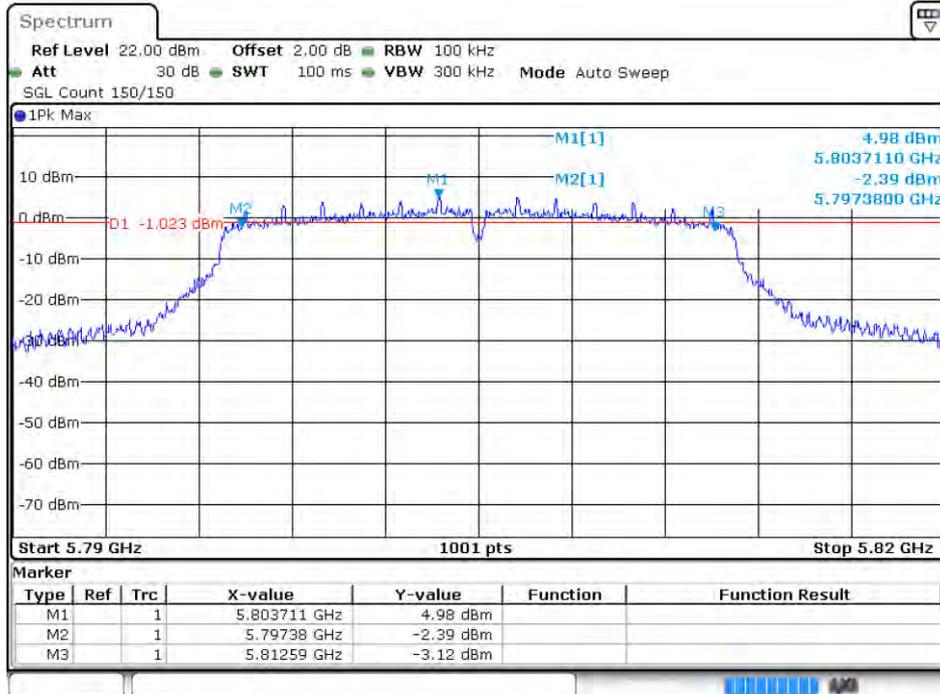
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4.6.2.3

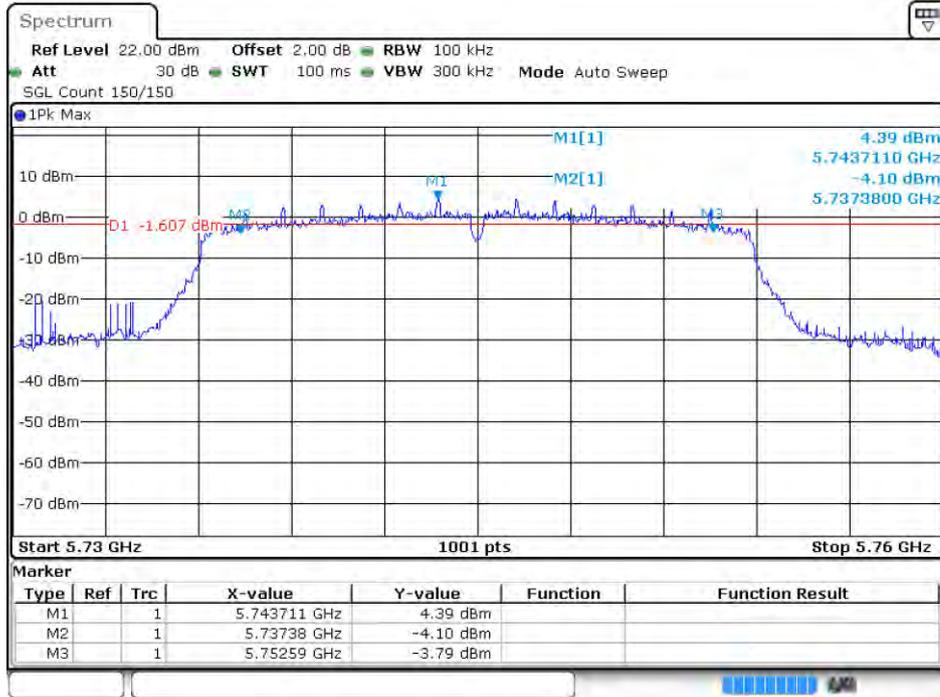
11A20_161 ANT 1



Date: 29.APR.2020 10:17:27



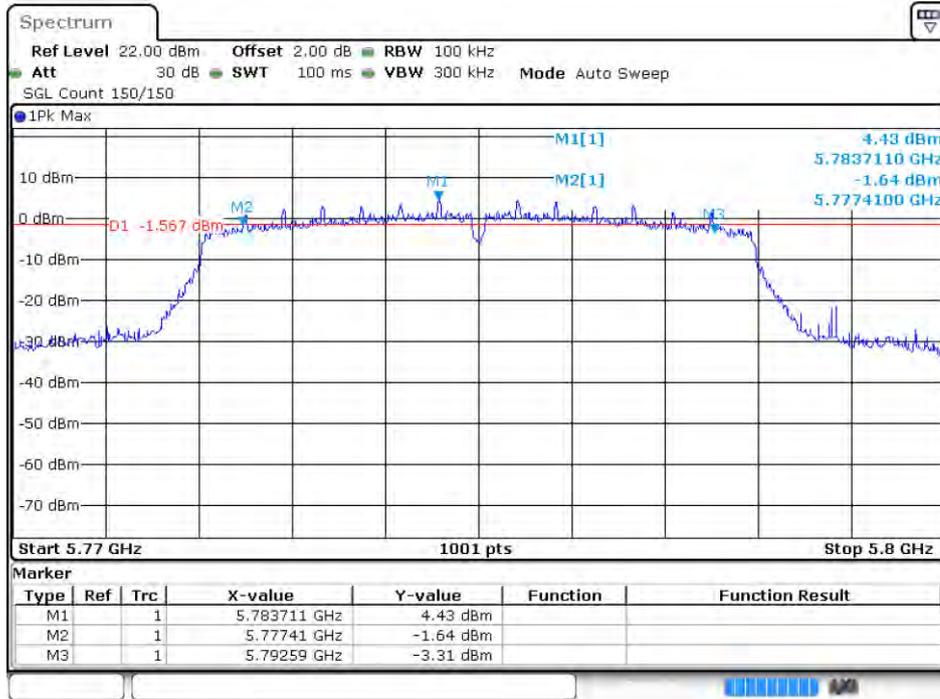
4.6.2.4 11N20_149 ANT 1



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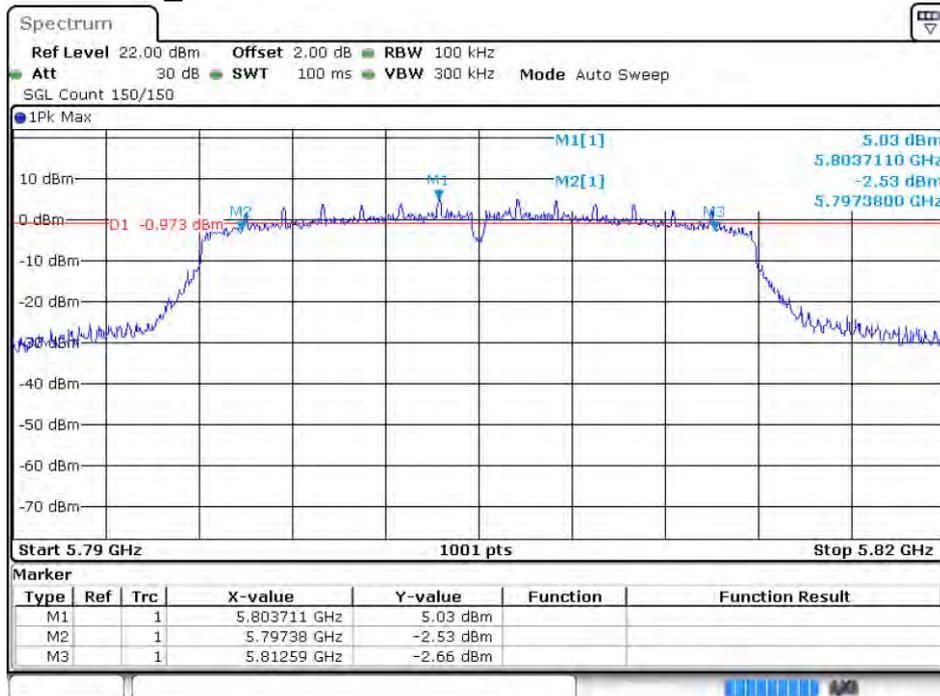
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Date: 26.APR.2020 03:26:21

4.6.2.6 11N20_161 ANT 1

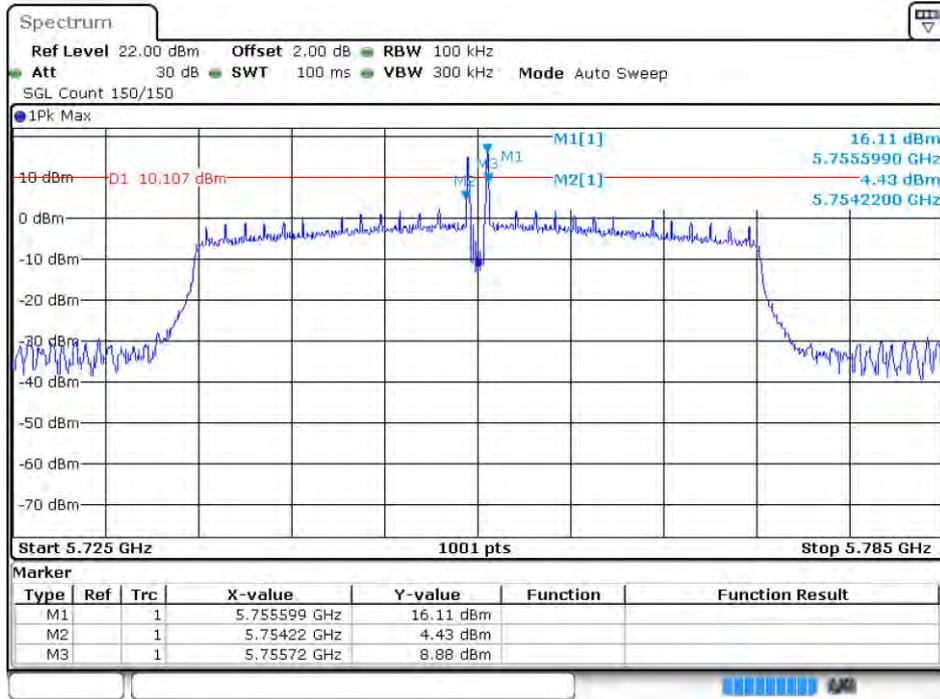


Date: 29.APR.2020 10:19:41

4.6.2.7 11N40_151 ANT 1

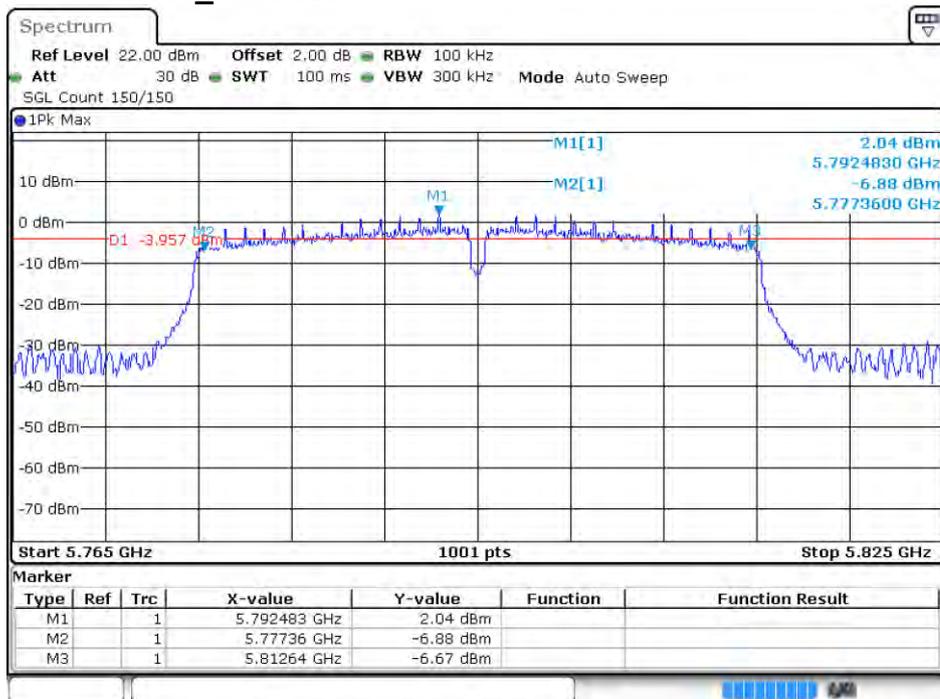


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Date: 26 APR, 2020 03:40:45

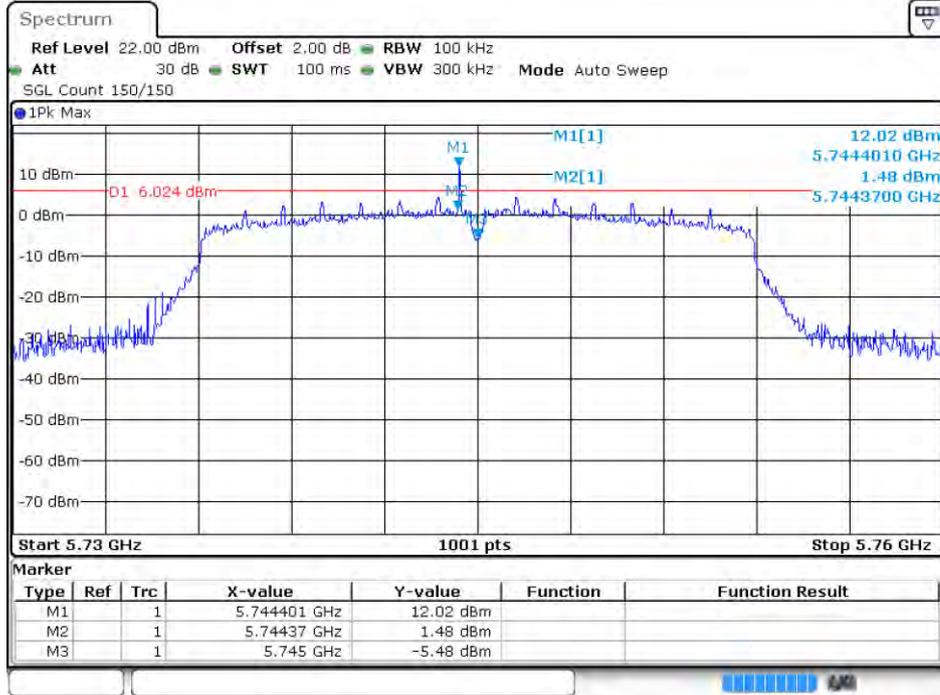
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Date: 26 APR, 2020 03:42:47



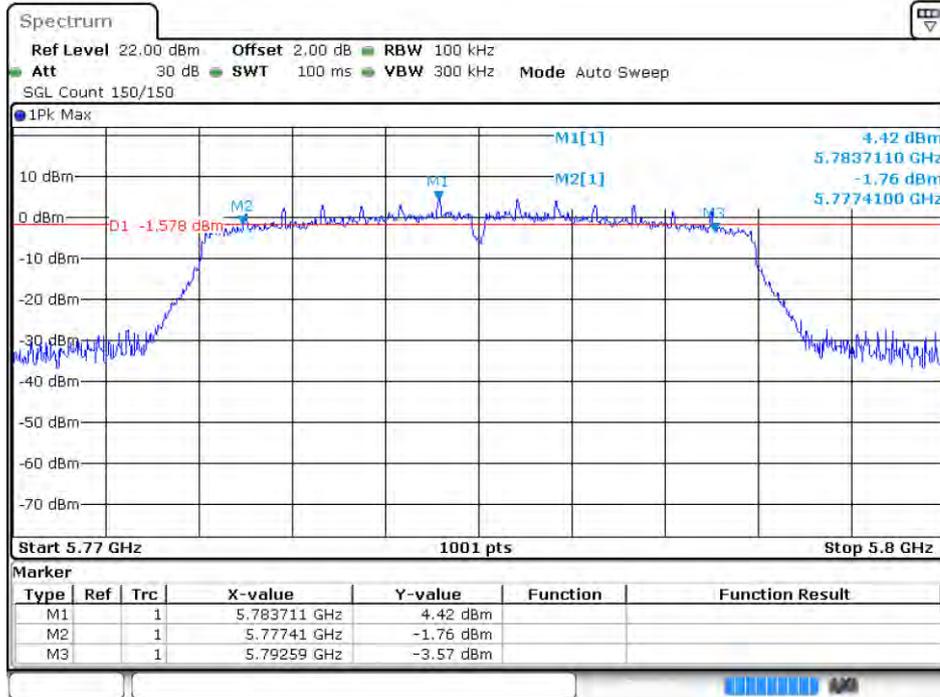
4.6.2.9 11AC20_149 ANT 1



Date: 26, APR, 2020 04:18:21



4.6.2.10 11AC20_157 ANT 1



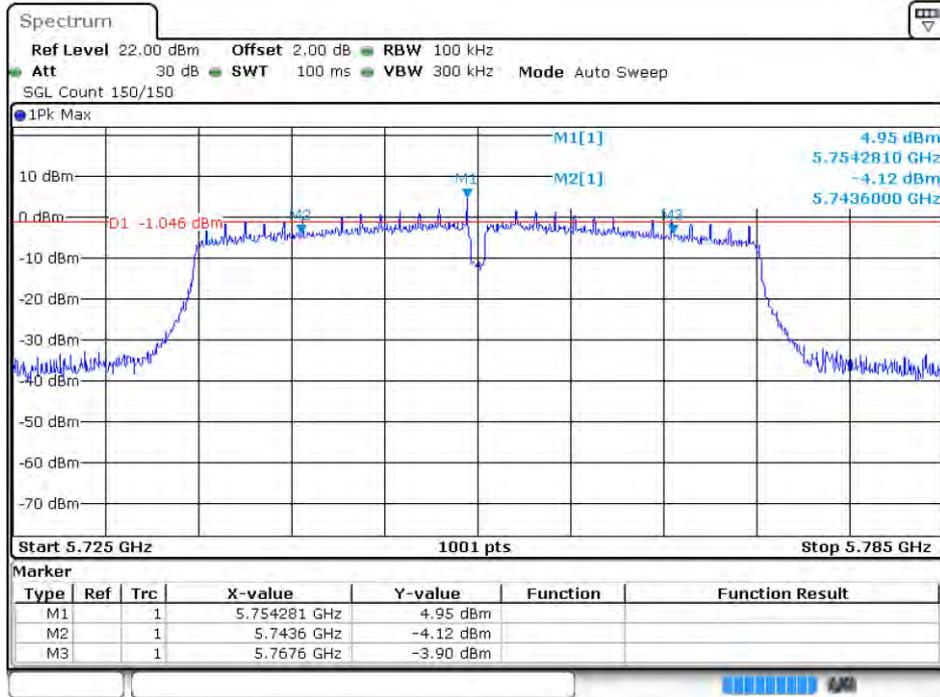
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4.6.2.11 11AC20_161 ANT 1



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4.6.2.12 11AC40_151 ANT 1

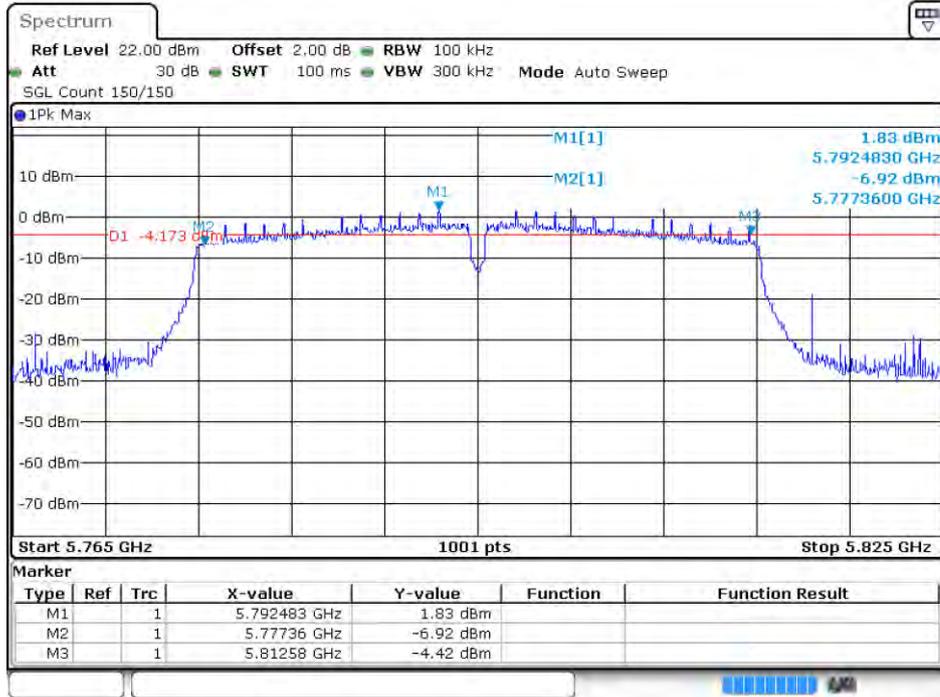


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4.6.2.13 11AC40_159 ANT 1

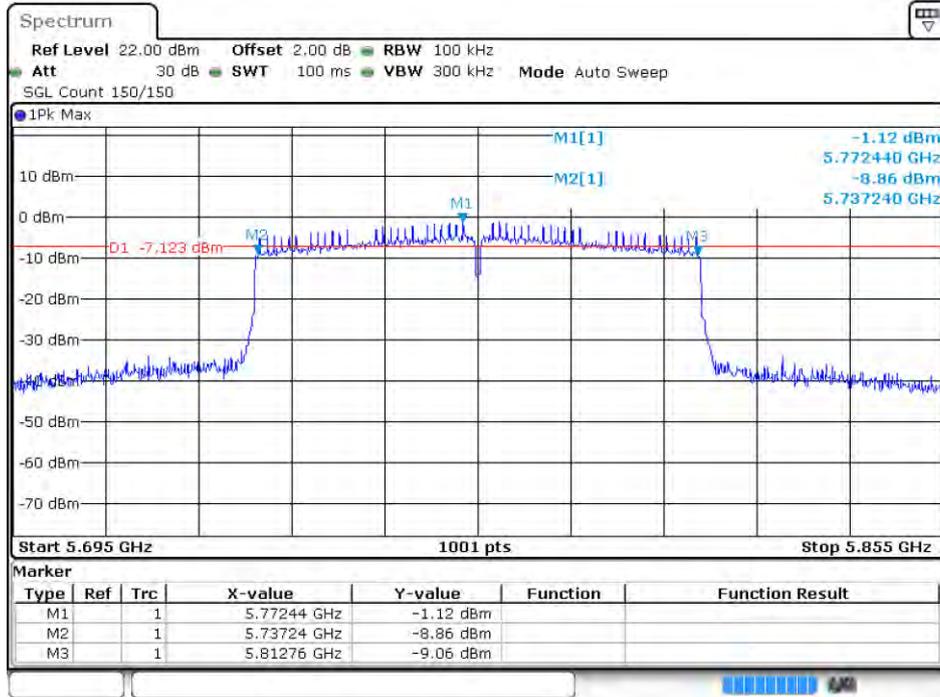


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4.6.2.14 11AC80_155 ANT 1



Date: 26, APR, 2020 04:50:14



4.7 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)	
Test Method:	ANSI C63.10: 2013	
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 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80). Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5725-5850MHz	At least 500kHz
Test Results:	Pass	



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4.7.1 Test Results for 99% Occupied Bandwidth

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Occupied Bandwidth [MHz]	Verdict
11A20	36	5180	ANT 1	16.8432	PASS
	44	5220	ANT 1	16.7832	PASS
	48	5240	ANT 1	16.8132	PASS
	52	5260	ANT 1	16.9031	PASS
	60	5300	ANT 1	16.8431	PASS
	64	5320	ANT 1	16.8731	PASS
	100	5500	ANT 1	16.8432	PASS
	116	5580	ANT 1	16.7832	PASS
	140	5700	ANT 1	16.8731	PASS
	149	5745	ANT 1	16.8432	PASS
	157	5785	ANT 1	16.8731	PASS
	161	5805	ANT 1	16.8731	PASS
	11N20	36	5180	ANT 1	17.8621
44		5220	ANT 1	17.8921	PASS
48		5240	ANT 1	17.8921	PASS
52		5260	ANT 1	17.8322	PASS
60		5300	ANT 1	17.8621	PASS
64		5320	ANT 1	17.8621	PASS
100		5500	ANT 1	17.8621	PASS
116		5580	ANT 1	17.8621	PASS
140		5700	ANT 1	17.6523	PASS
149		5745	ANT 1	17.7423	PASS
157		5785	ANT 1	17.8921	PASS
161		5805	ANT 1	17.8921	PASS
11N40	38	5190	ANT 1	36.2637	PASS
	46	5230	ANT 1	35.964	PASS
	54	5270	ANT 1	36.2637	PASS
	62	5310	ANT 1	36.2637	PASS
	102	5510	ANT 1	36.2637	PASS
	110	5550	ANT 1	36.2637	PASS
	134	5670	ANT 1	36.2637	PASS
	151	5755	ANT 1	36.3237	PASS
159	5795	ANT 1	35.8442	PASS	
11AC20	36	5180	ANT 1	17.8322	PASS
	44	5220	ANT 1	17.8322	PASS



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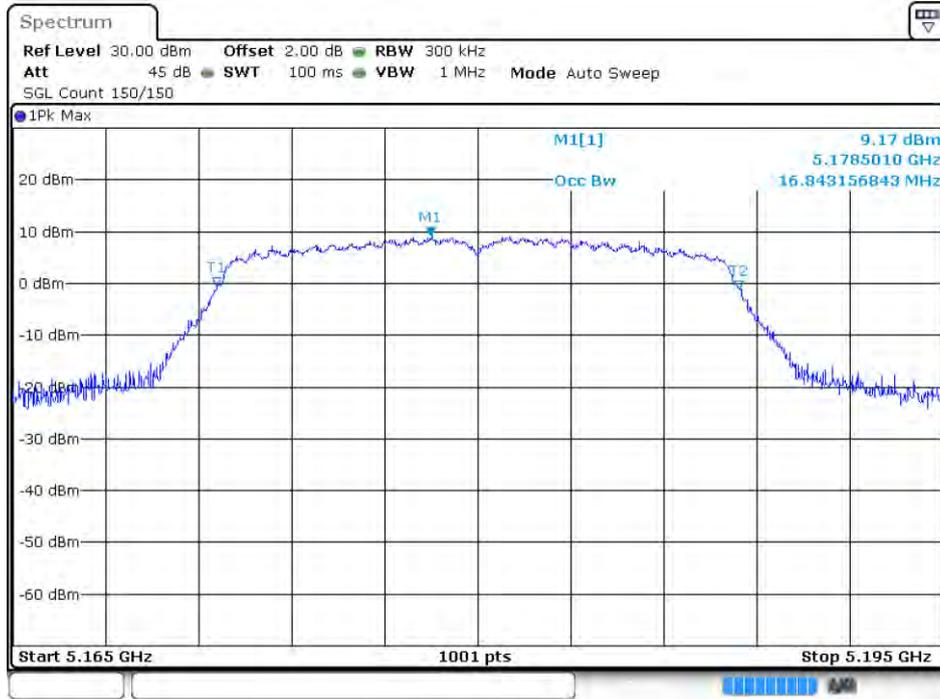


	48	5240	ANT 1	17.8322	PASS
	52	5260	ANT 1	17.8921	PASS
	60	5300	ANT 1	17.8621	PASS
	64	5320	ANT 1	17.8322	PASS
	100	5500	ANT 1	19.031	PASS
	116	5580	ANT 1	17.8022	PASS
	140	5700	ANT 1	17.7423	PASS
	149	5745	ANT 1	17.6823	PASS
	157	5785	ANT 1	17.5325	PASS
	161	5805	ANT 1	17.8322	PASS
11AC40	38	5190	ANT 1	36.2637	PASS
	46	5230	ANT 1	35.964	PASS
	54	5270	ANT 1	36.1439	PASS
	62	5310	ANT 1	36.2637	PASS
	102	5510	ANT 1	36.1439	PASS
	110	5550	ANT 1	36.2637	PASS
	134	5670	ANT 1	36.2637	PASS
	151	5755	ANT 1	36.2637	PASS
	159	5795	ANT 1	36.2038	PASS
11AC80	42	5210	ANT 1	75.2847	PASS
	58	5290	ANT 1	75.4046	PASS
	106	5530	ANT 1	74.6853	PASS
	122	5610	ANT 1	75.4046	PASS
	155	5775	ANT 1	75.5245	PASS



4.7.2 Plots for 99% Occupied Bandwidth

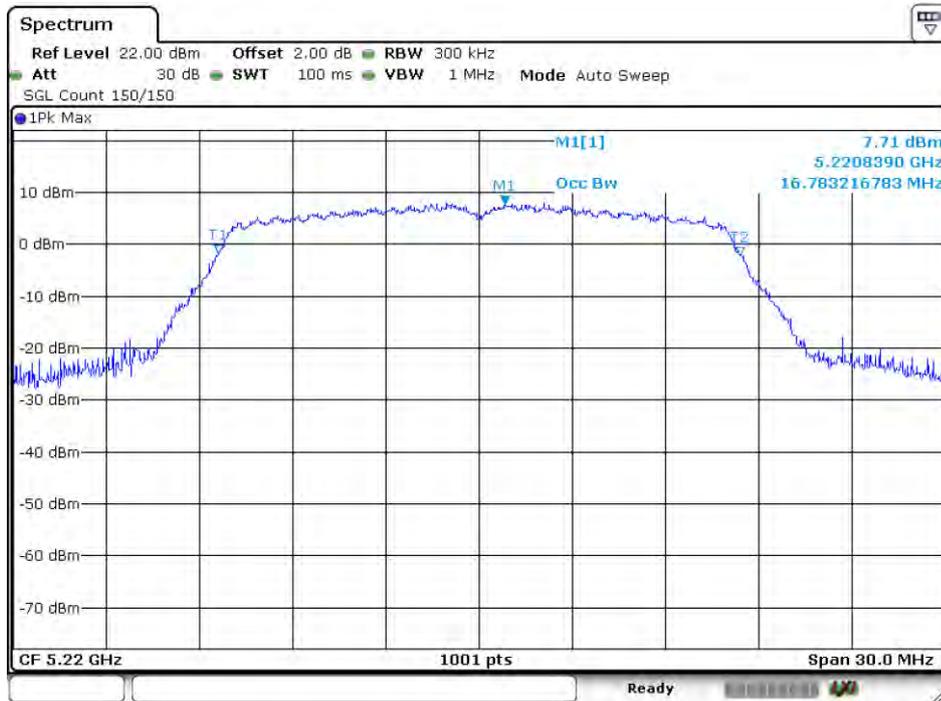
4.7.2.1 11A20_36 ANT 1



Date: 26.APR.2020 02:48:24

4.7.2.2 11A20_44 ANT 1





Date: 30.APR.2020 10:10:16

4.7.2.3

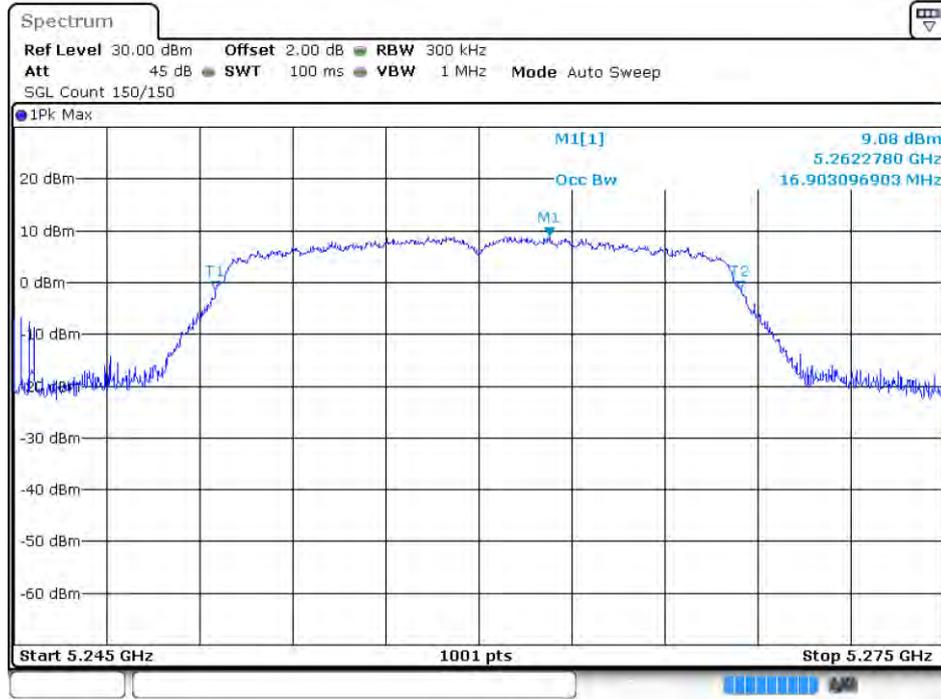
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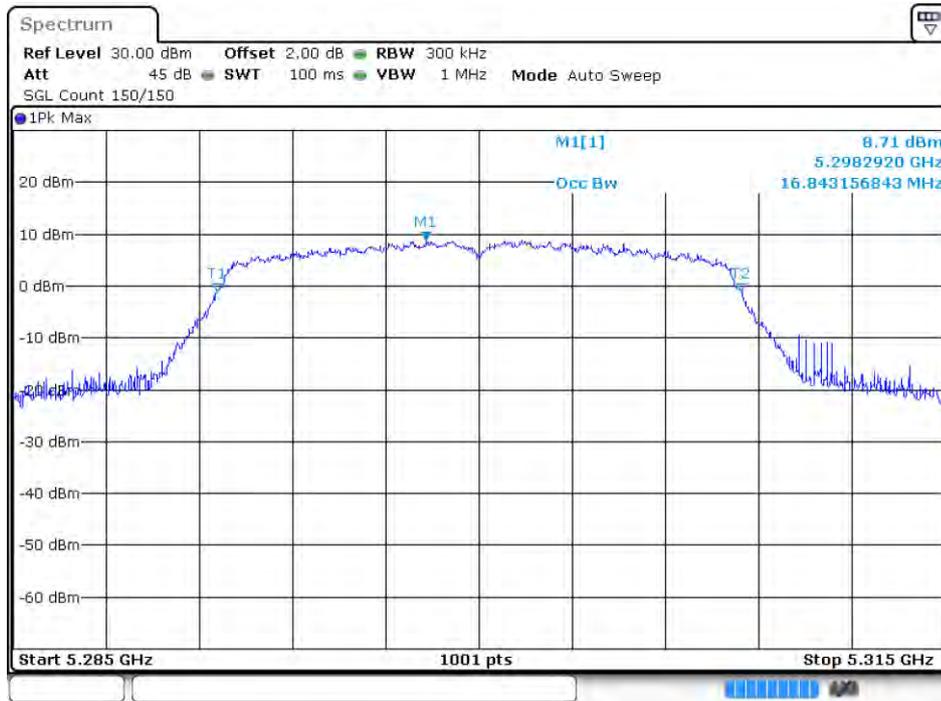


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4.7.2.5 11A20_60 ANT 1



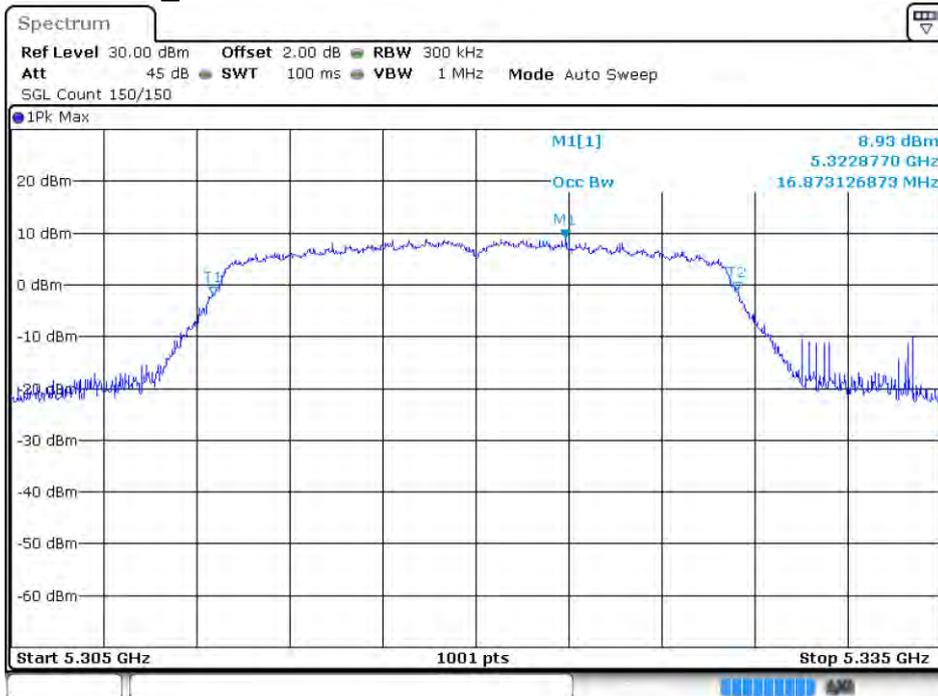
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4.7.2.6

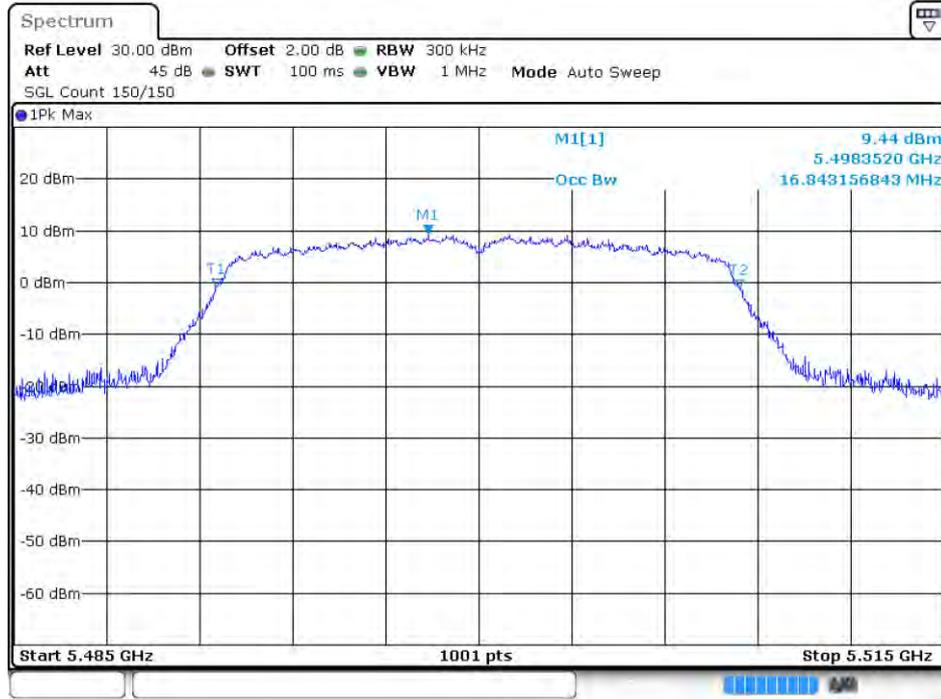
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Date: 26.APR.2020 02:55:52



4.7.2.7 11A20_100 ANT 1



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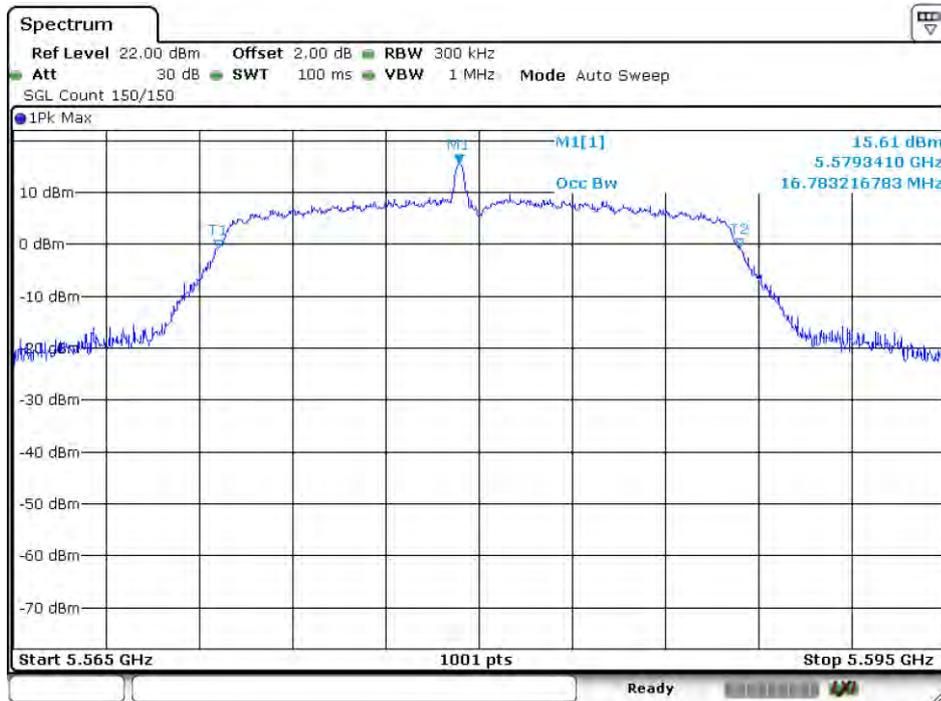
4.7.2.8 11A20_116 ANT 1



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4.7.2.9

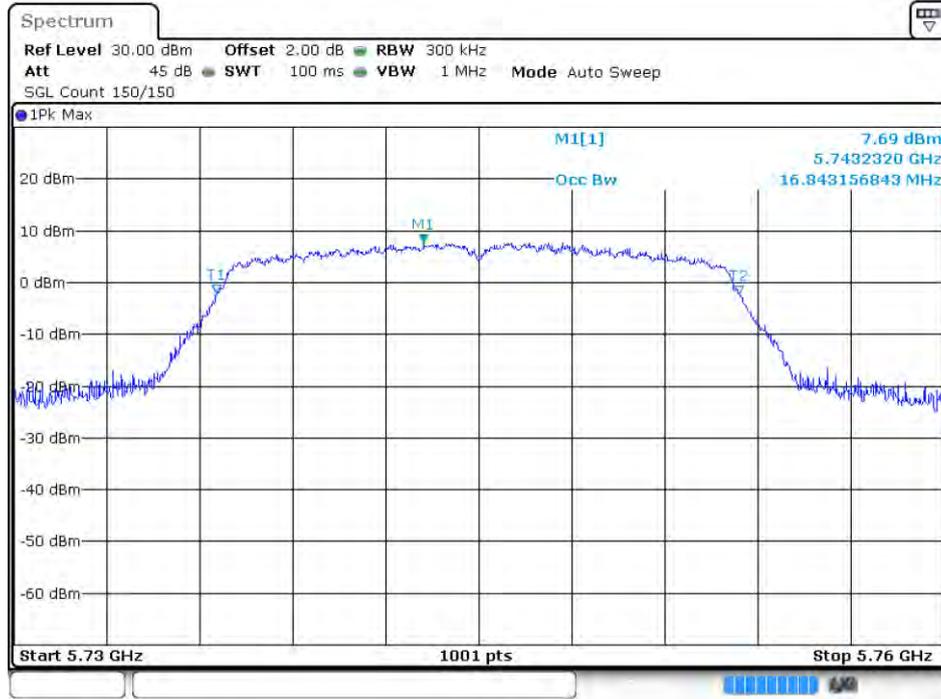
11A20_140 ANT 1



Date: 26.APR.2020 03:01:31



4.7.2.10 11A20_149 ANT 1



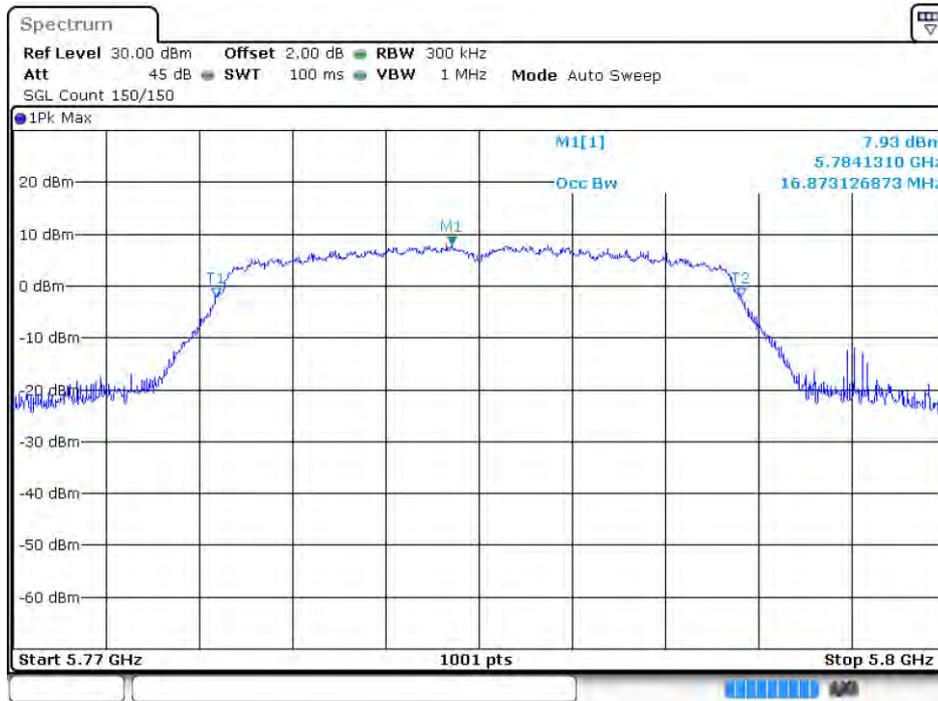
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4.7.2.11 11A20_157 ANT 1



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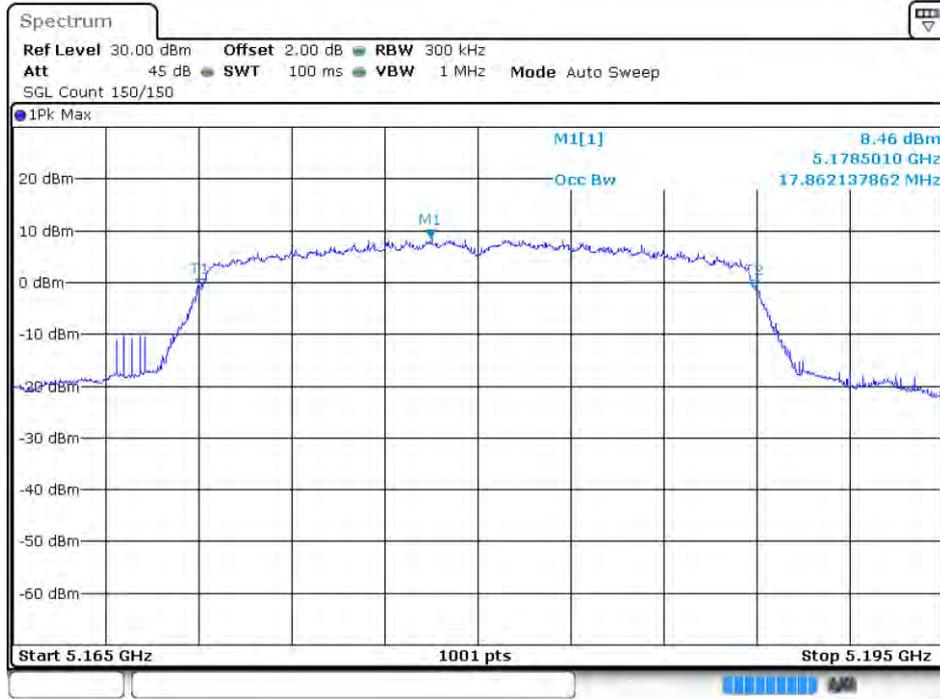
4.7.2.12 11A20_161 ANT 1



Date: 29.APR.2020 10:17:47



4.7.2.13 11N20_36 ANT 1



Date: 26.APR.2020 03:08:02

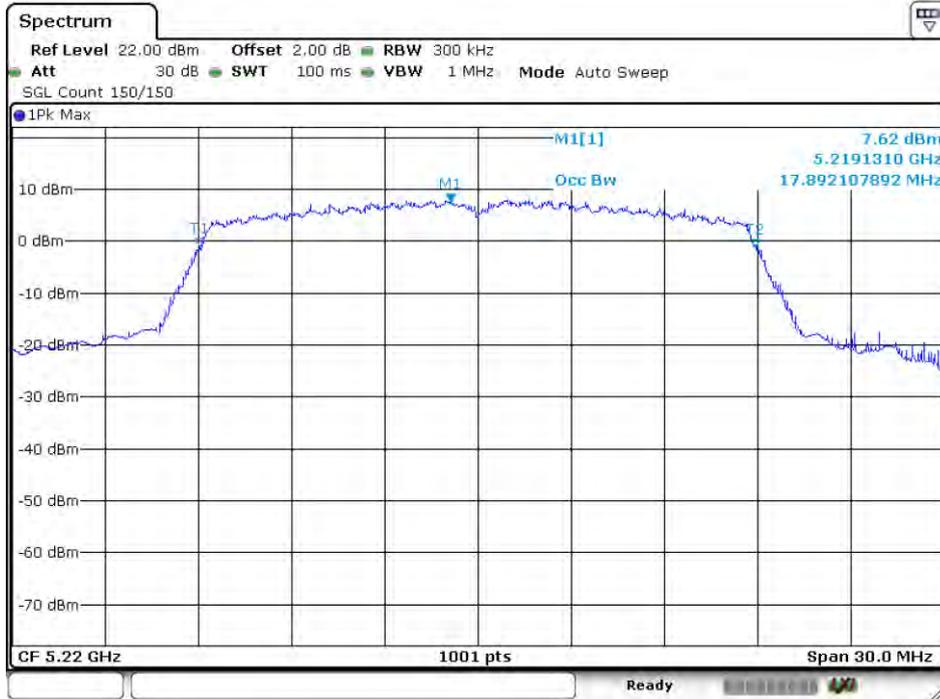


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4.7.2.14

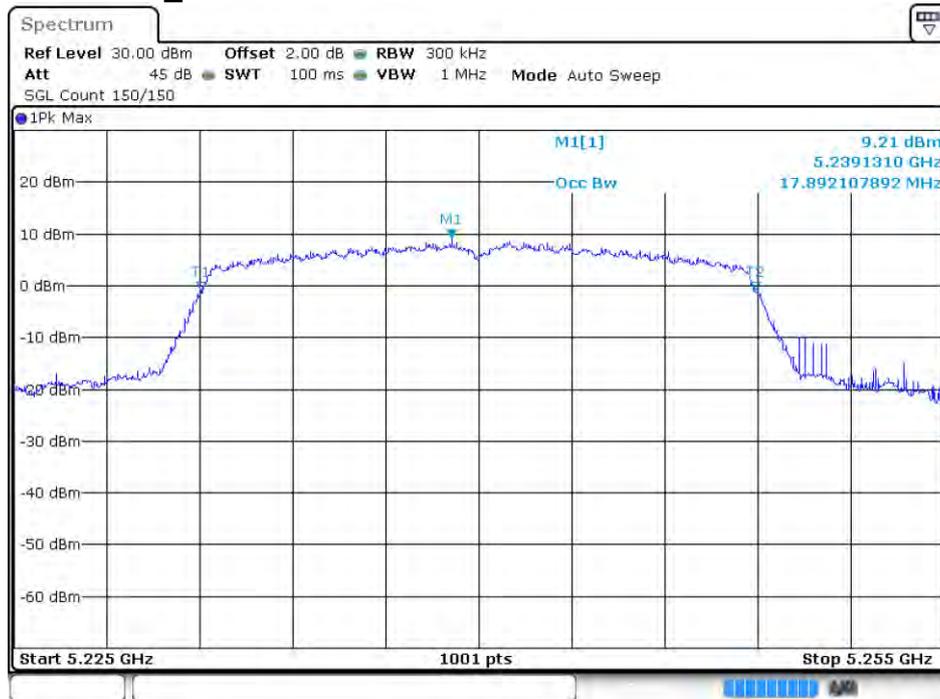
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4.7.2.15

11N20_48 ANT 1

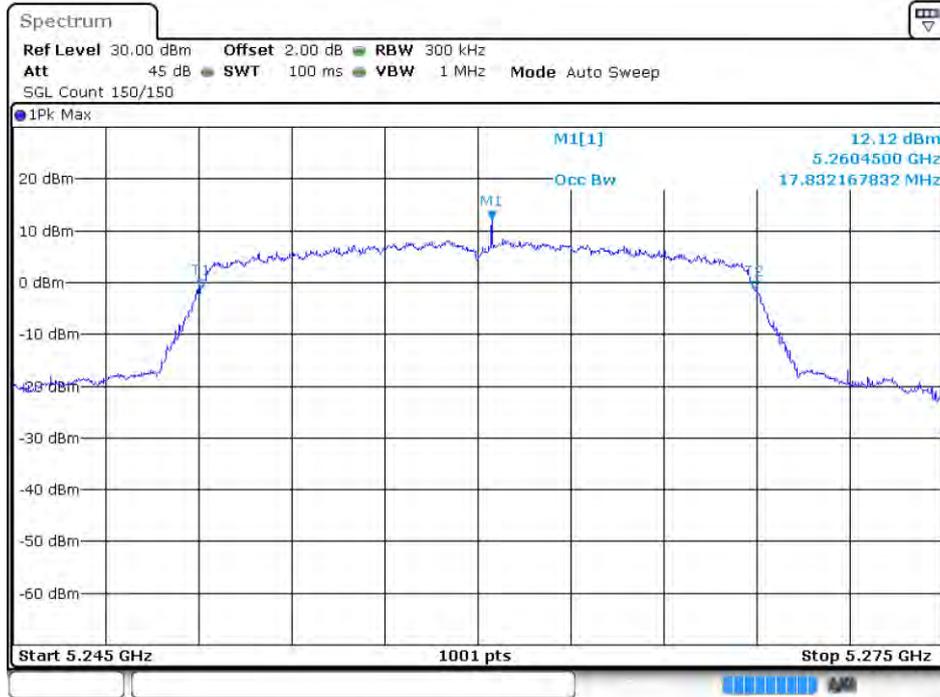


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4.7.2.16 11N20_52 ANT 1



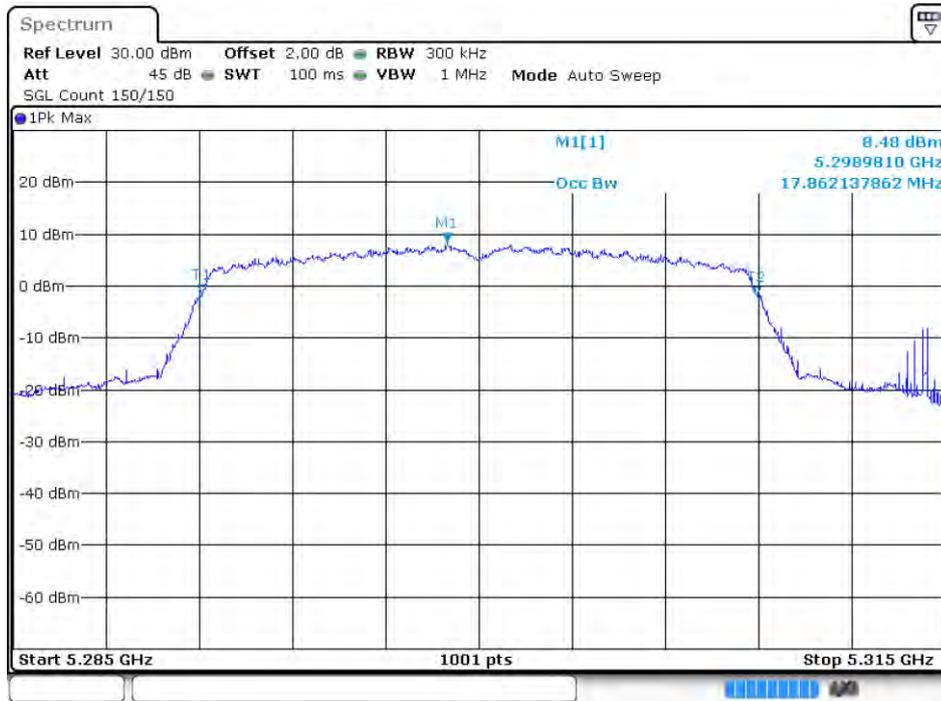
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4.7.2.17 11N20_60 ANT 1



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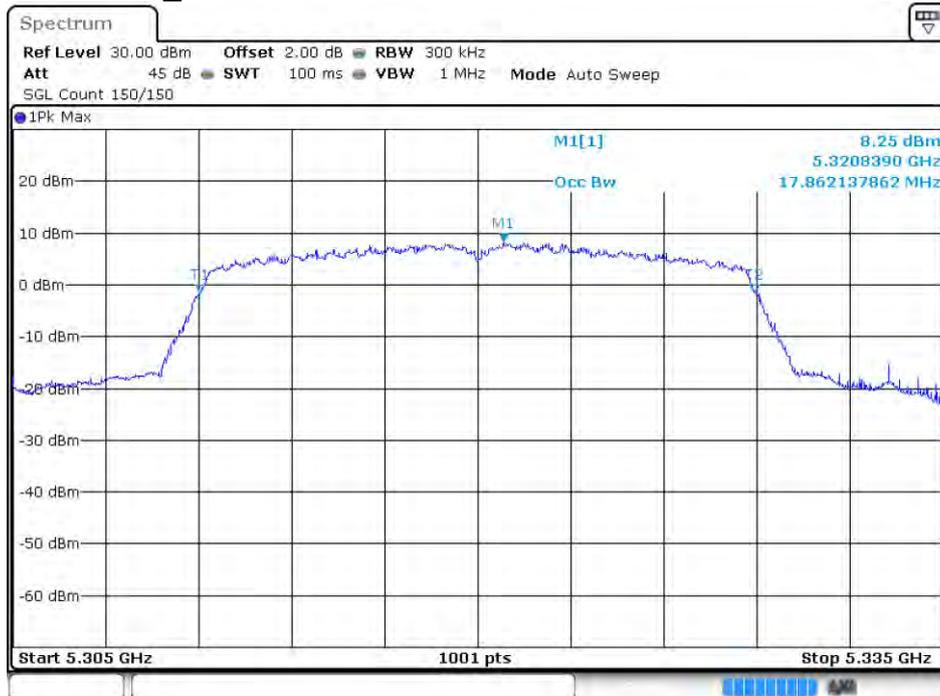
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4.7.2.18

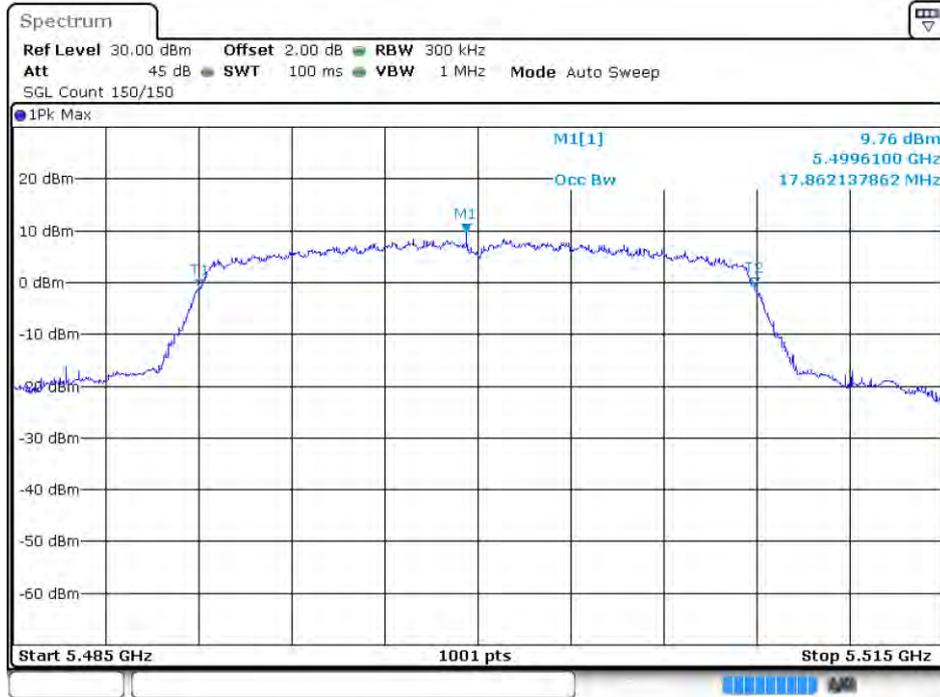
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4.7.2.19 11N20_100 ANT 1



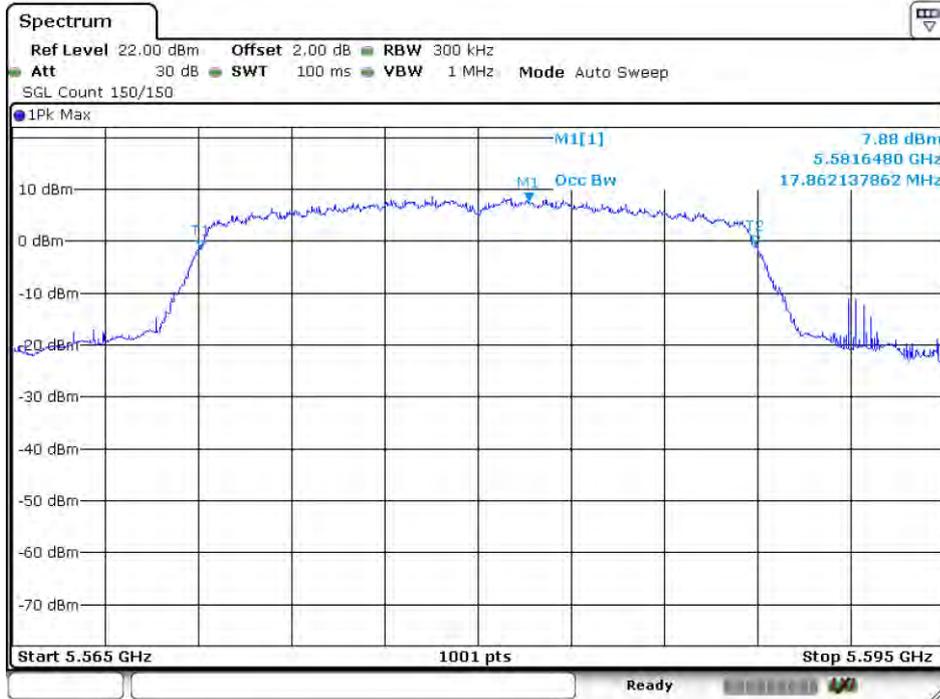
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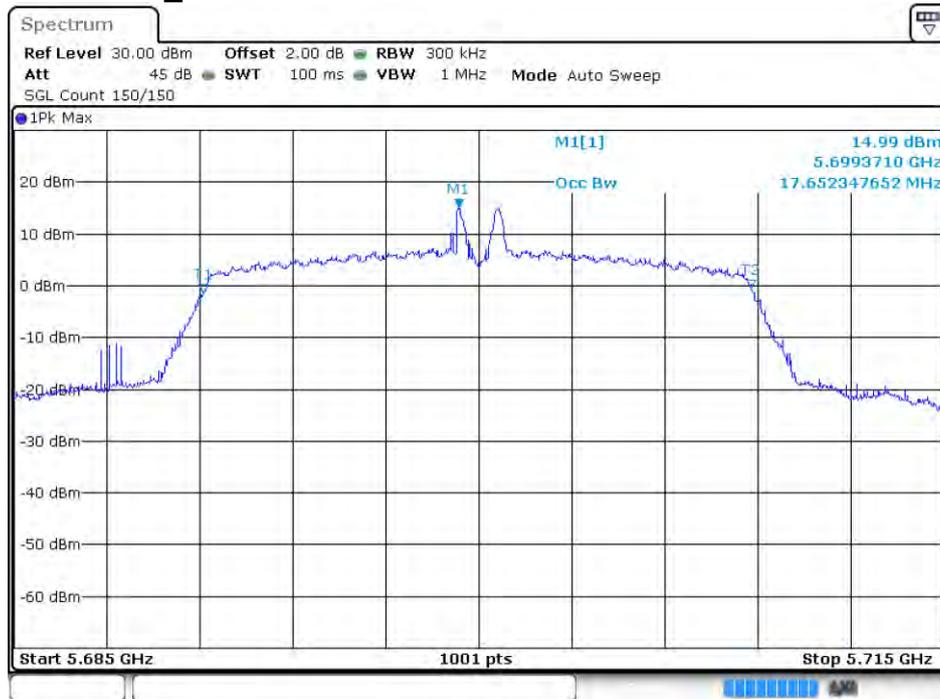
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4.7.2.20 11N20_116 ANT 1



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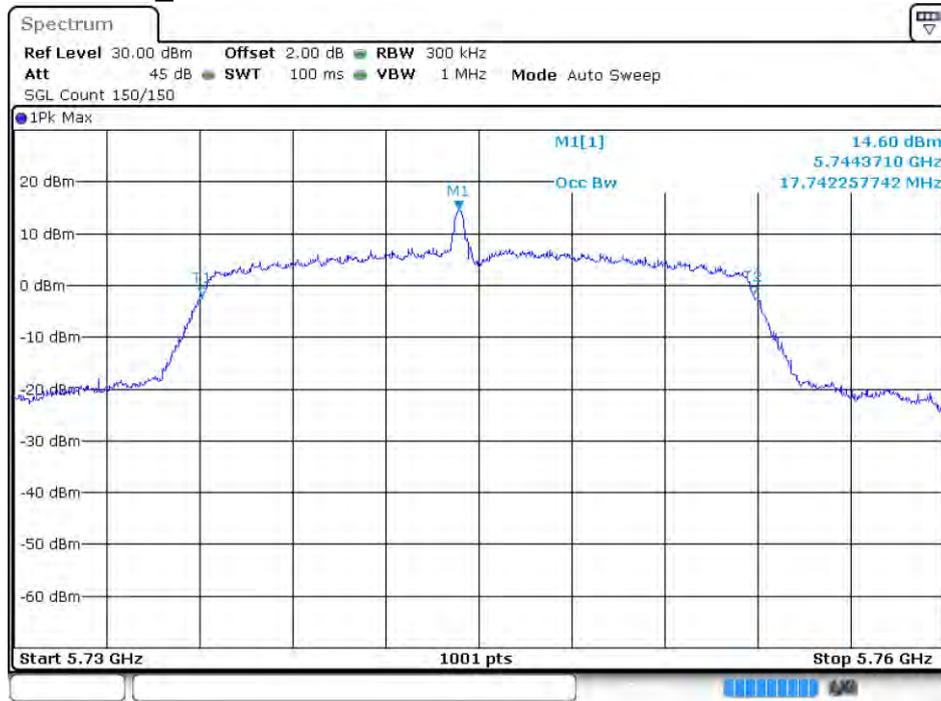
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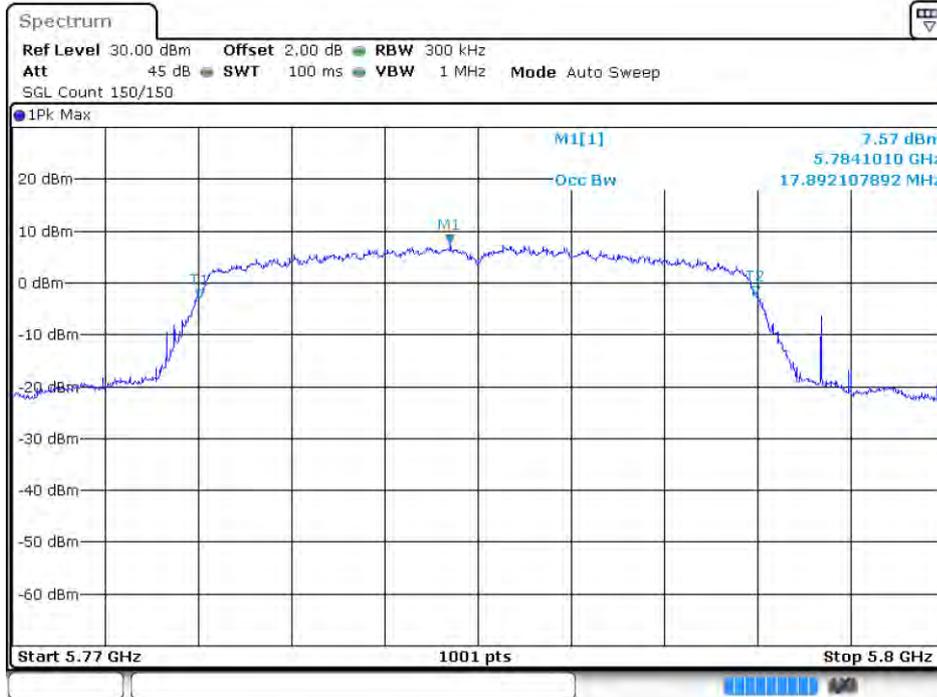
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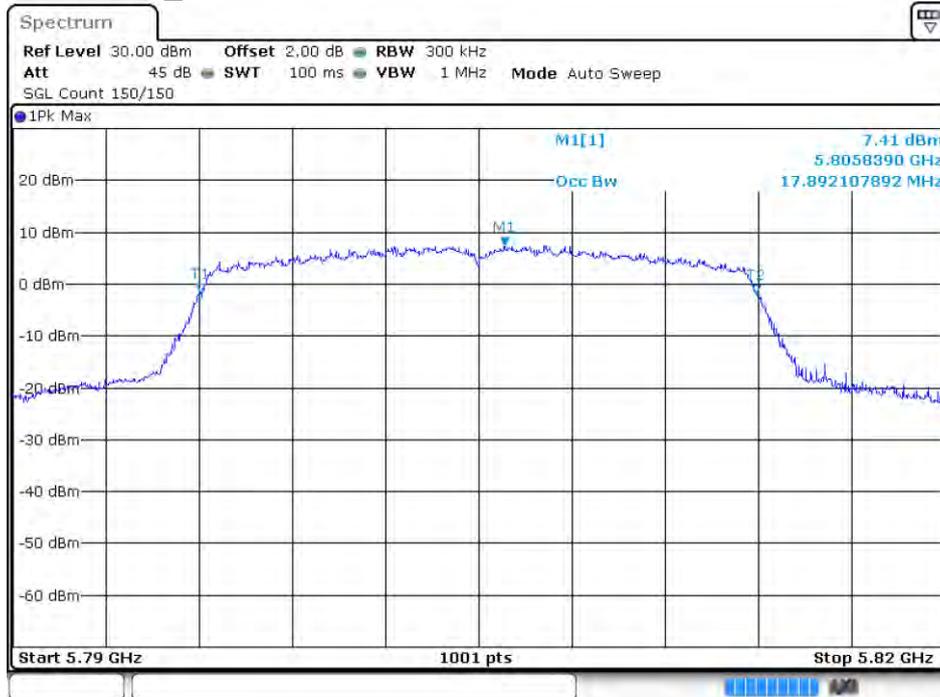


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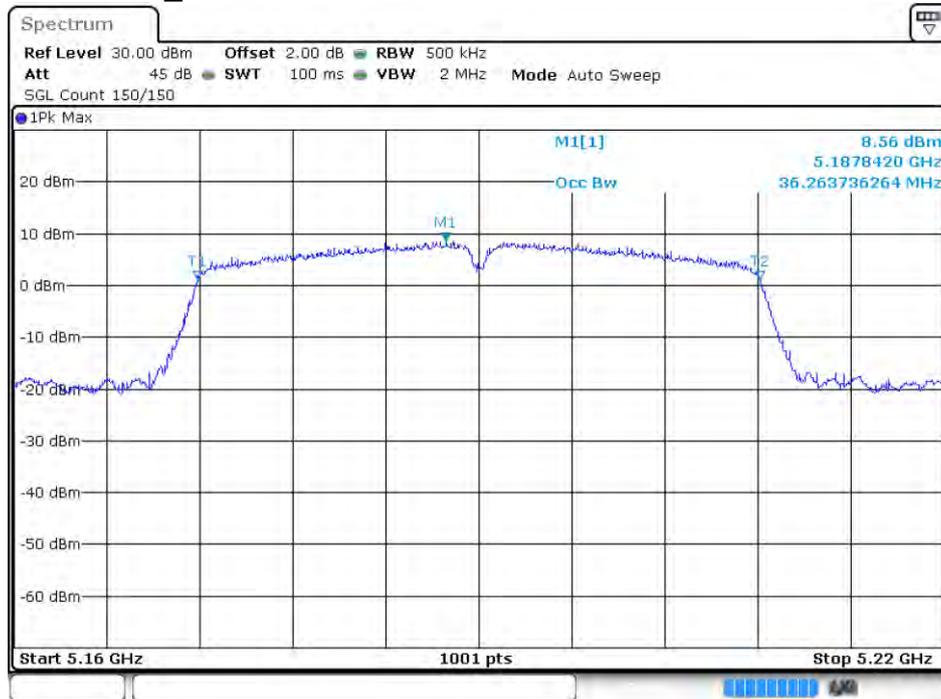
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4.7.2.25 11N40_38 ANT 1



Date: 26 APR.2020 03:30:57

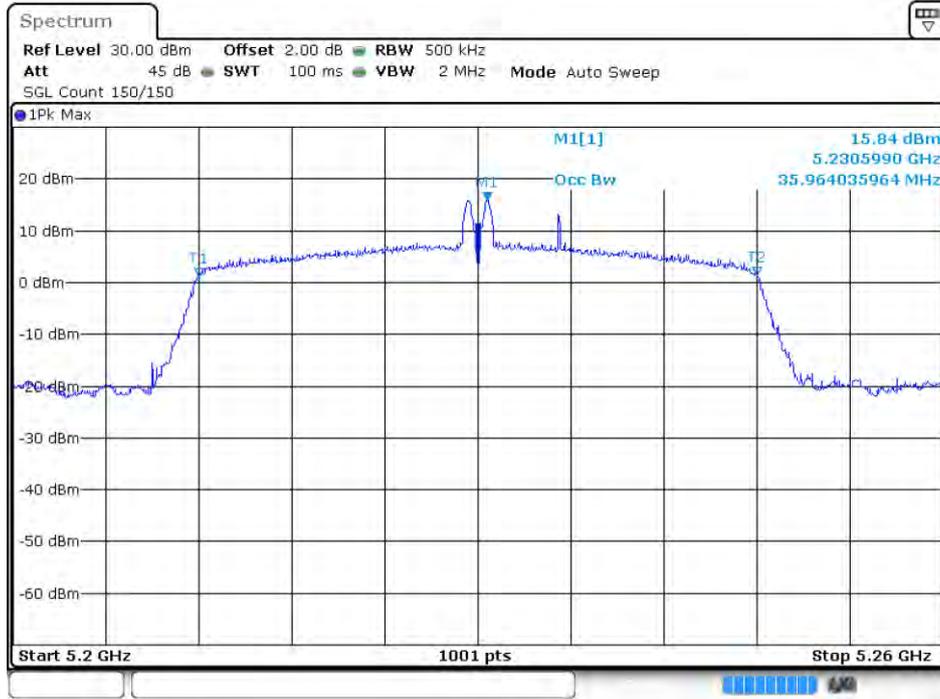


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4.7.2.26 11N40_46 ANT 1



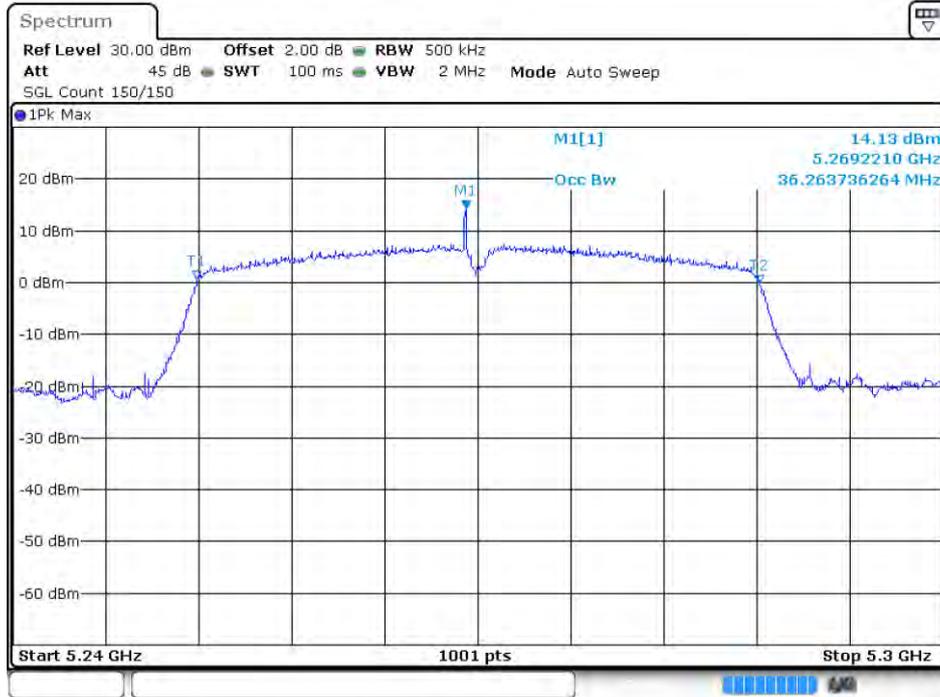
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4.7.2.27 11N40_54 ANT 1



Date: 26.APR.2020 03:34:05

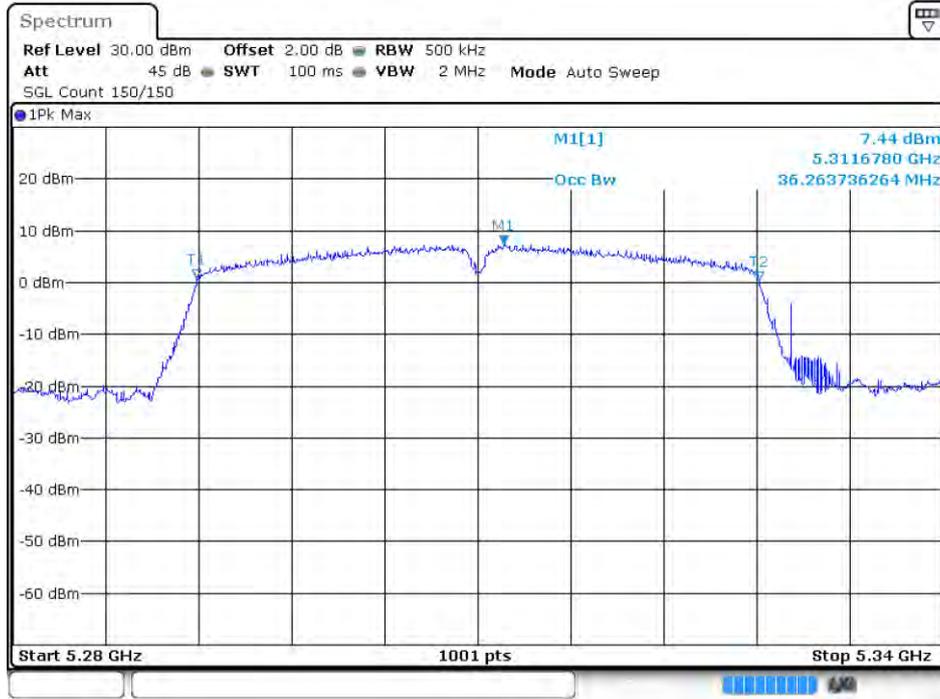


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4.7.2.28

11N40_62 ANT 1

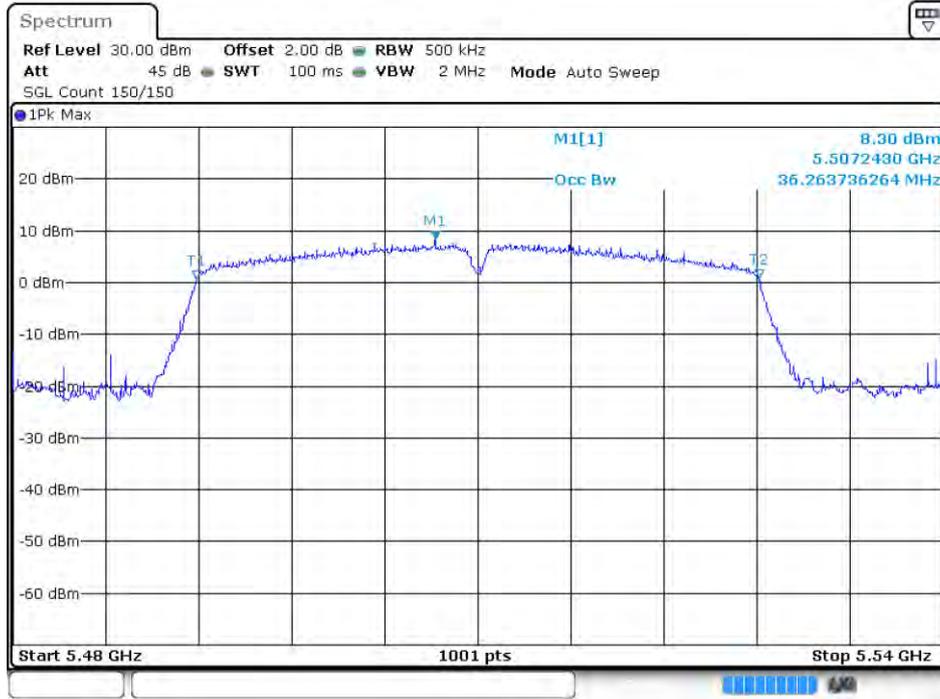


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4.7.2.29 11N40_102 ANT 1



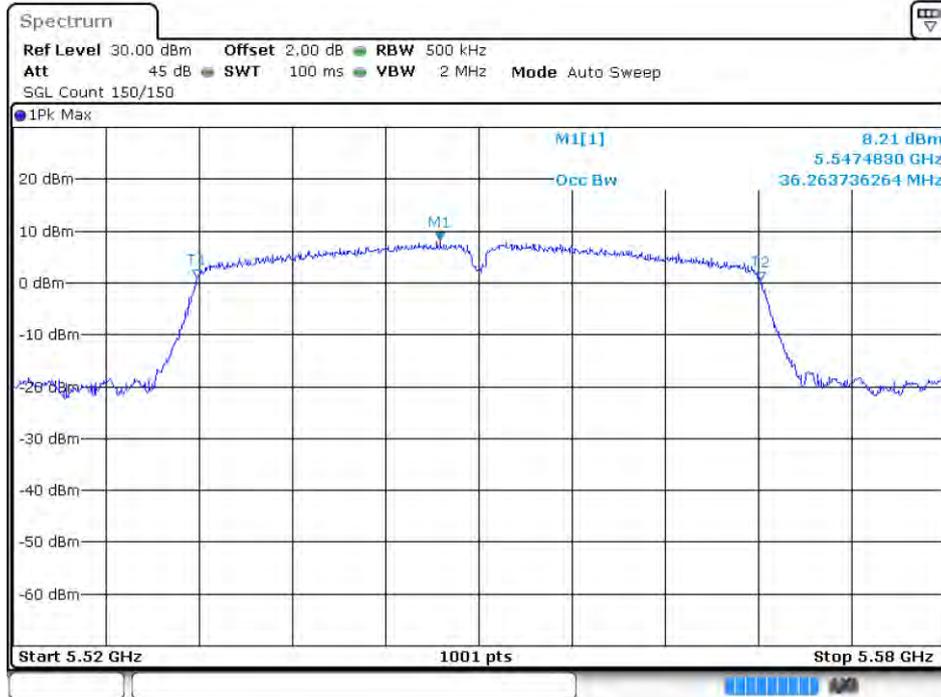
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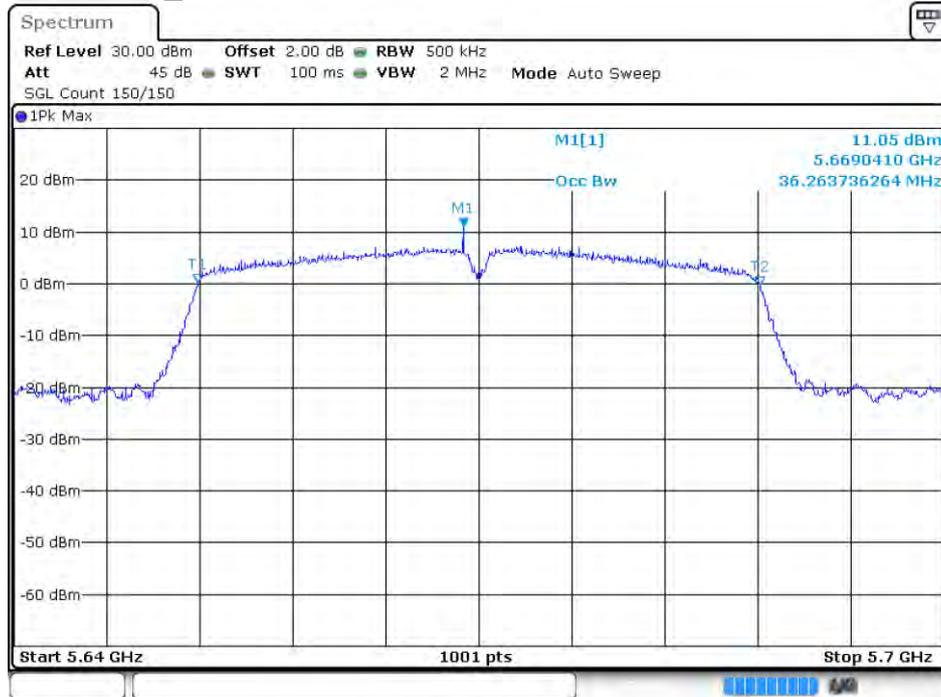
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4.7.2.30 11N40_110 ANT 1



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4.7.2.31 11N40_134 ANT 1



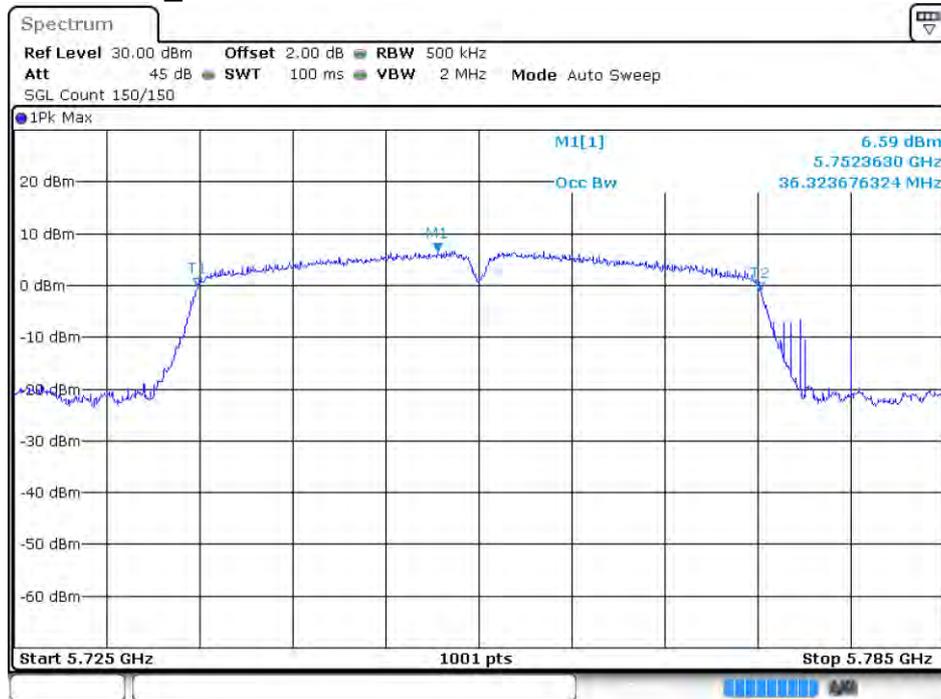
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4.7.2.32 11N40_151 ANT 1

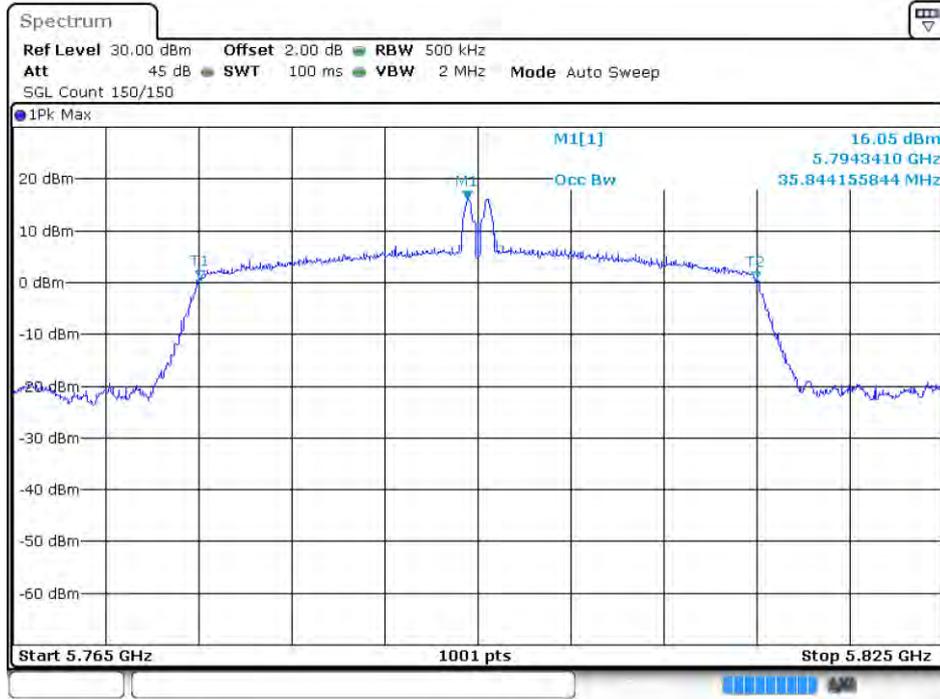


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4.7.2.33 11N40_159 ANT 1



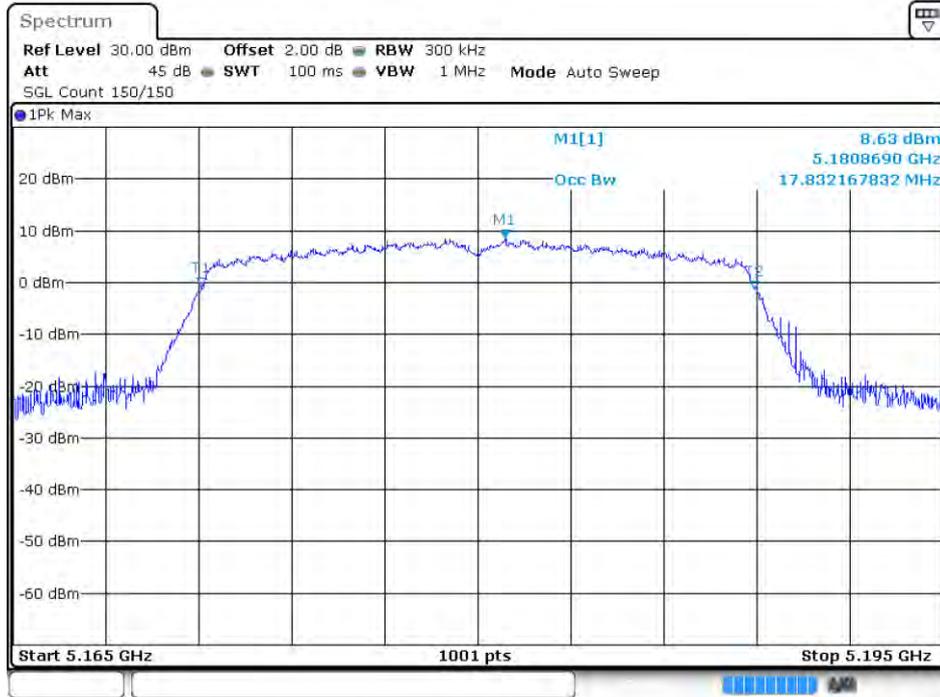
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4.7.2.34 11AC20_36 ANT 1



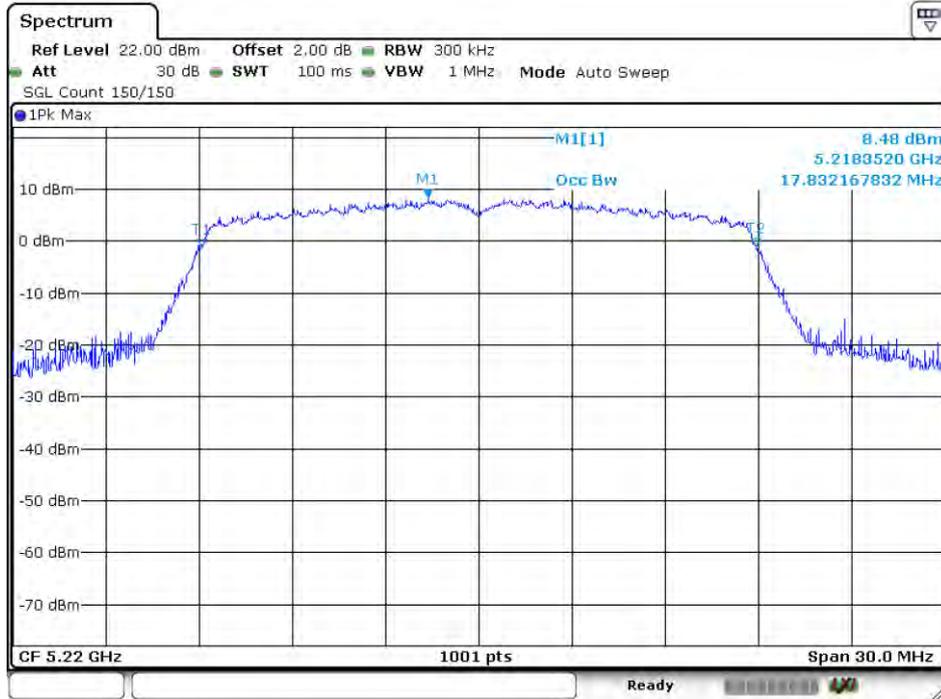
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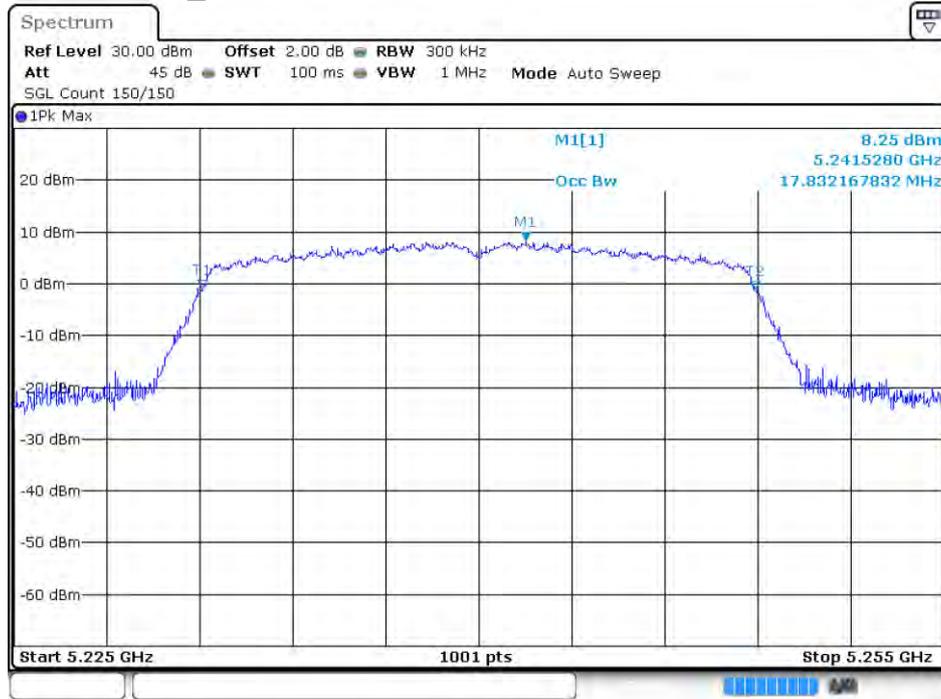
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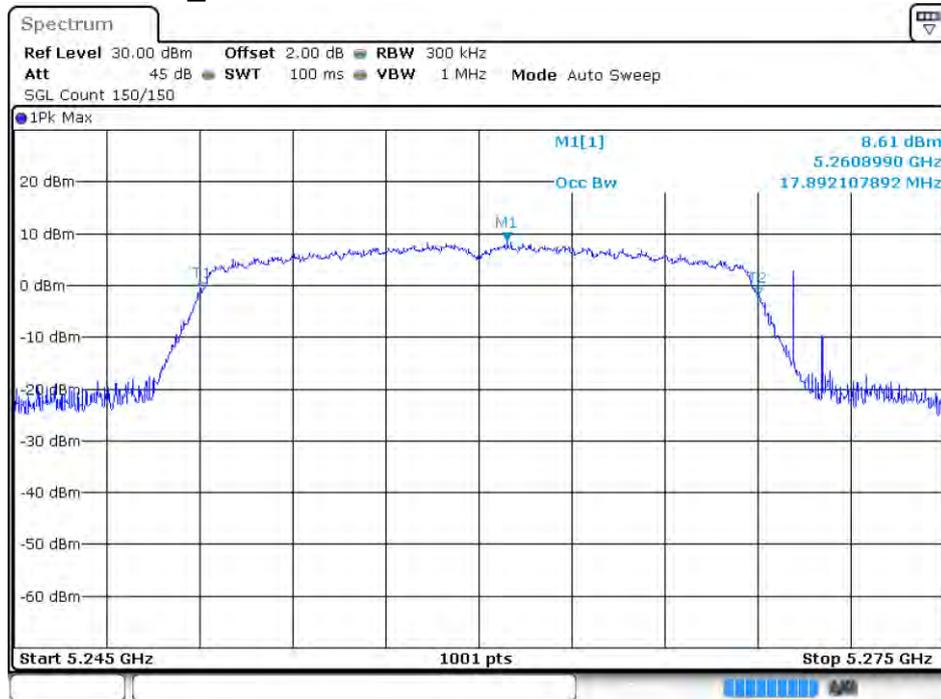
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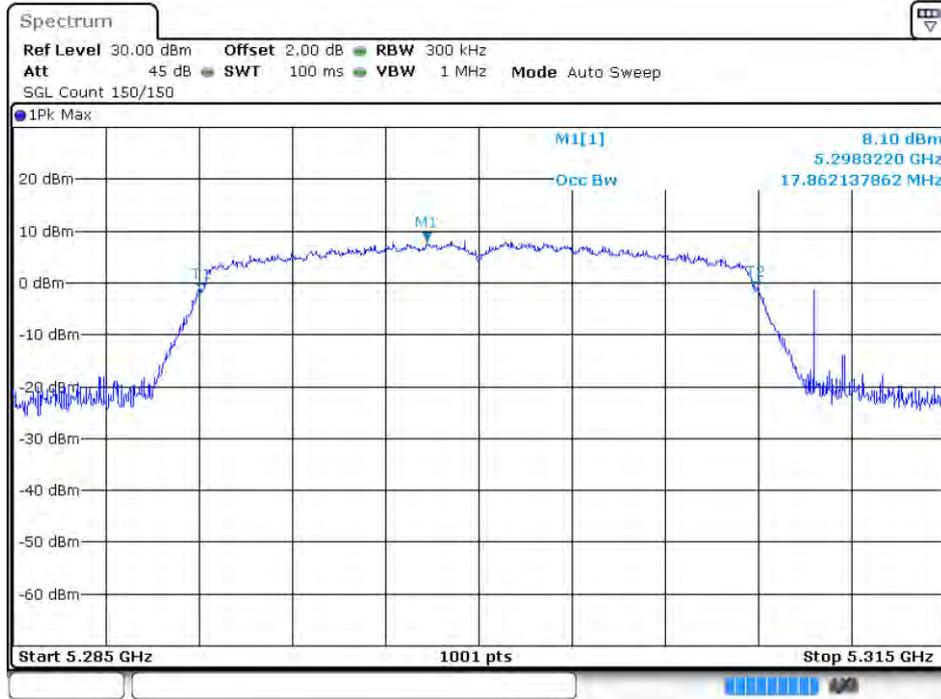


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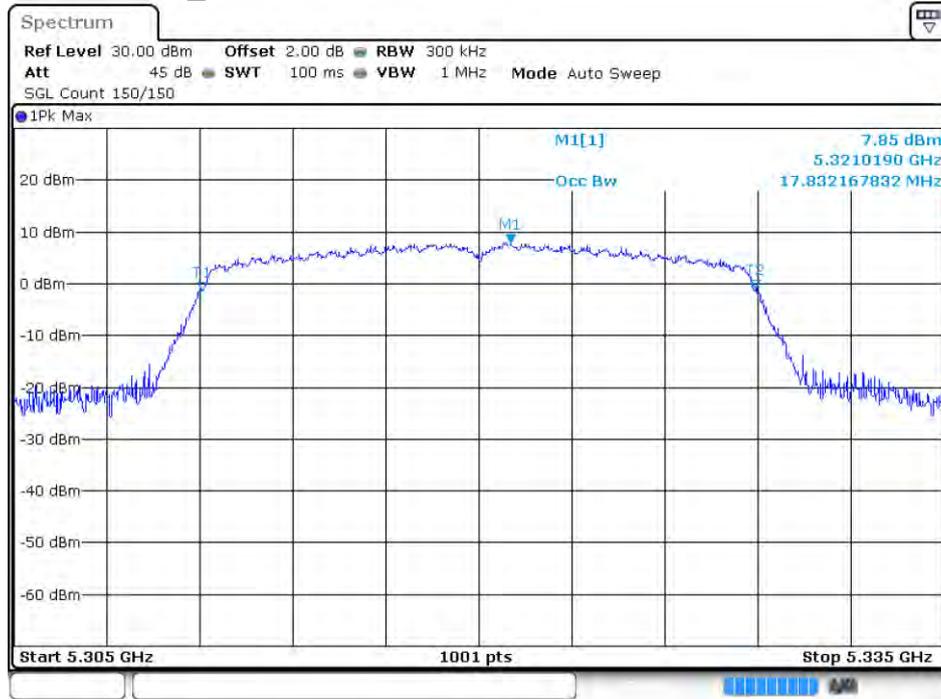
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4.7.2.38 11AC20_60 ANT 1



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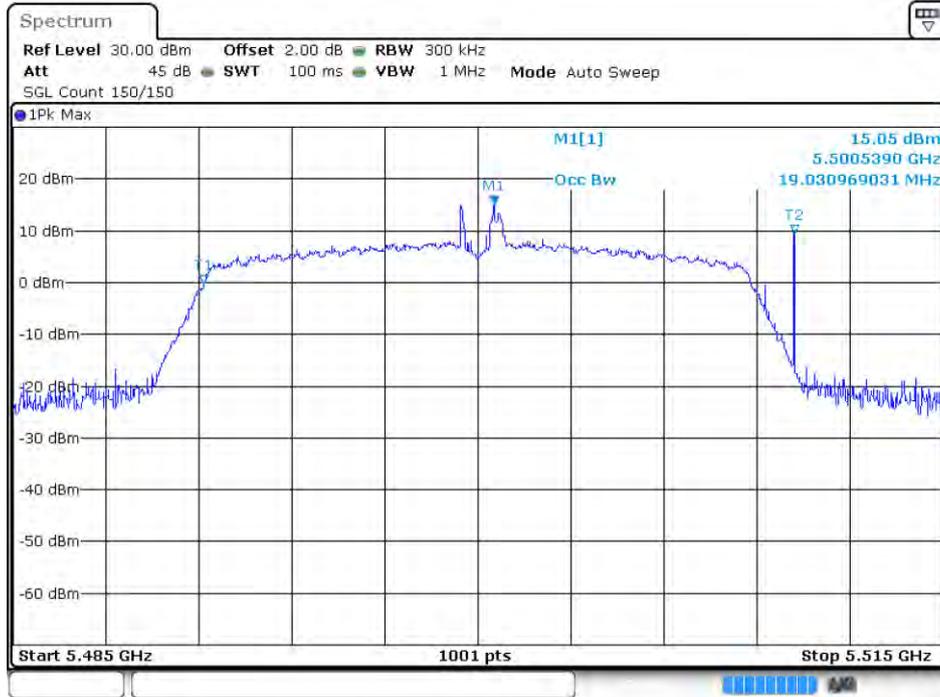
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Date: 26.APR.2020 04:10:32



4.7.2.40 11AC20_100 ANT 1

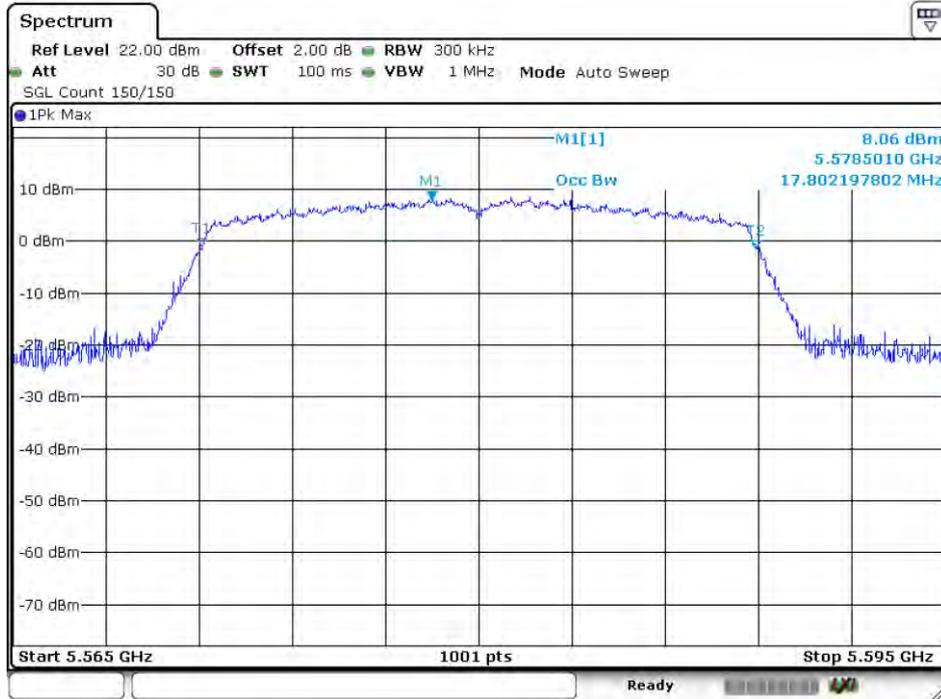


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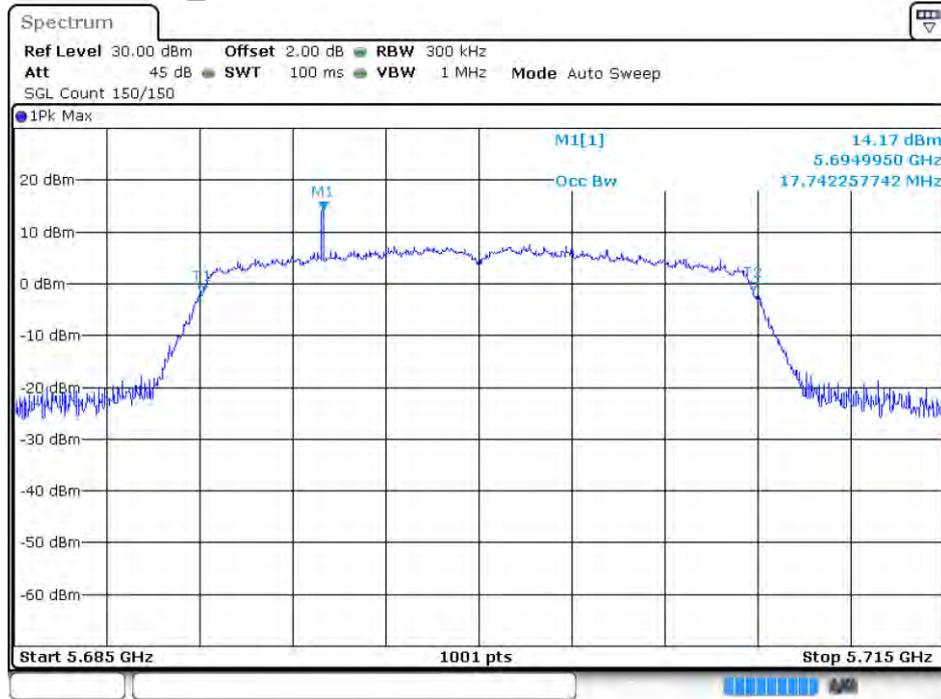
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4.7.2.41 11AC20_116 ANT 1



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4.7.2.42 11AC20_140 ANT 1

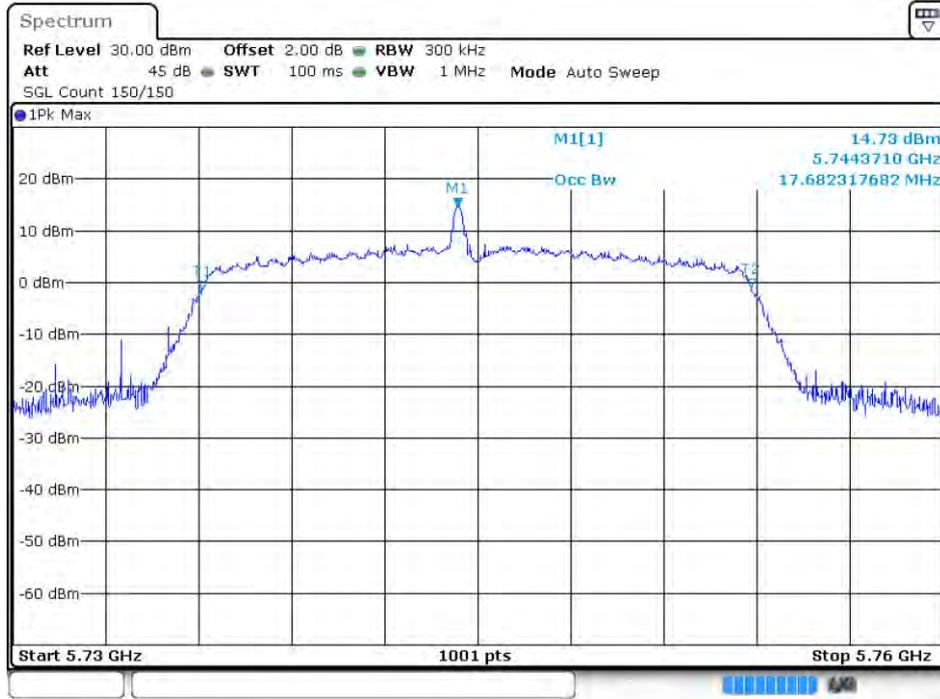


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4.7.2.43 11AC20_149 ANT 1



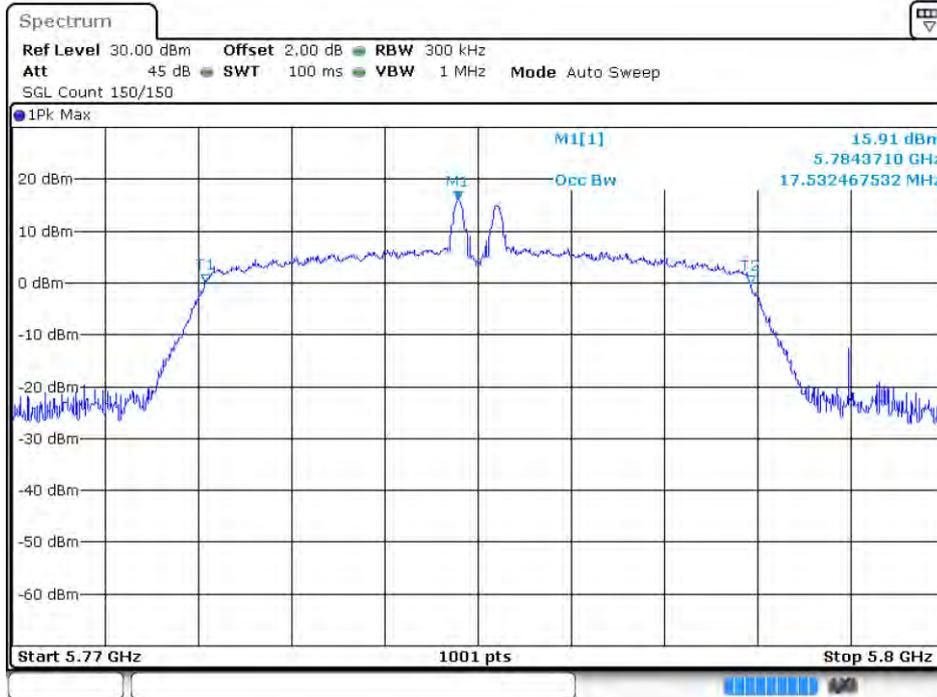
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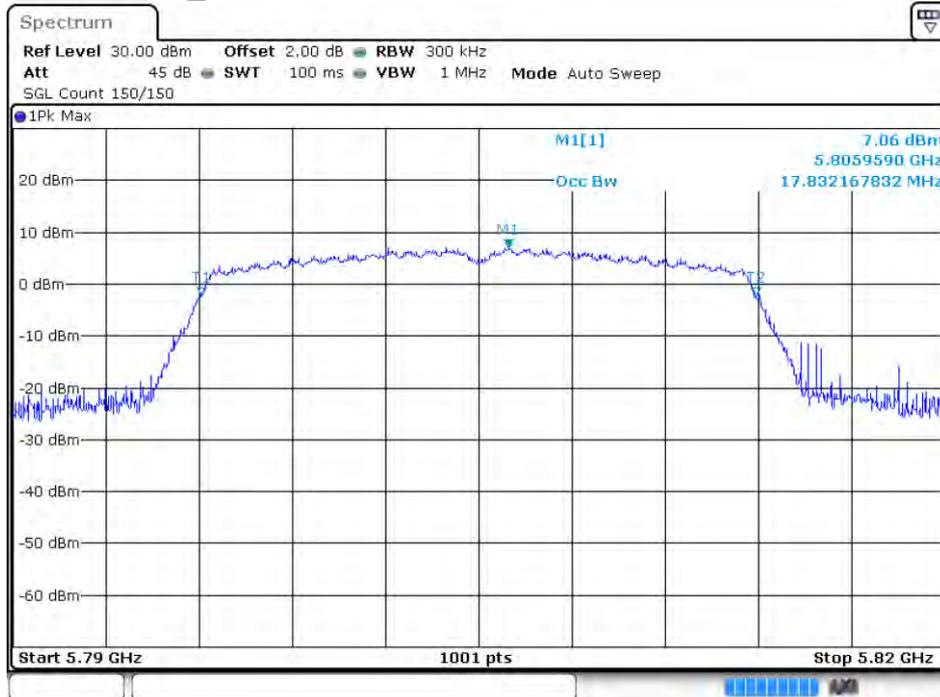
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4.7.2.44 11AC20_157 ANT 1



Date: 26.APR.2020 04:20:19

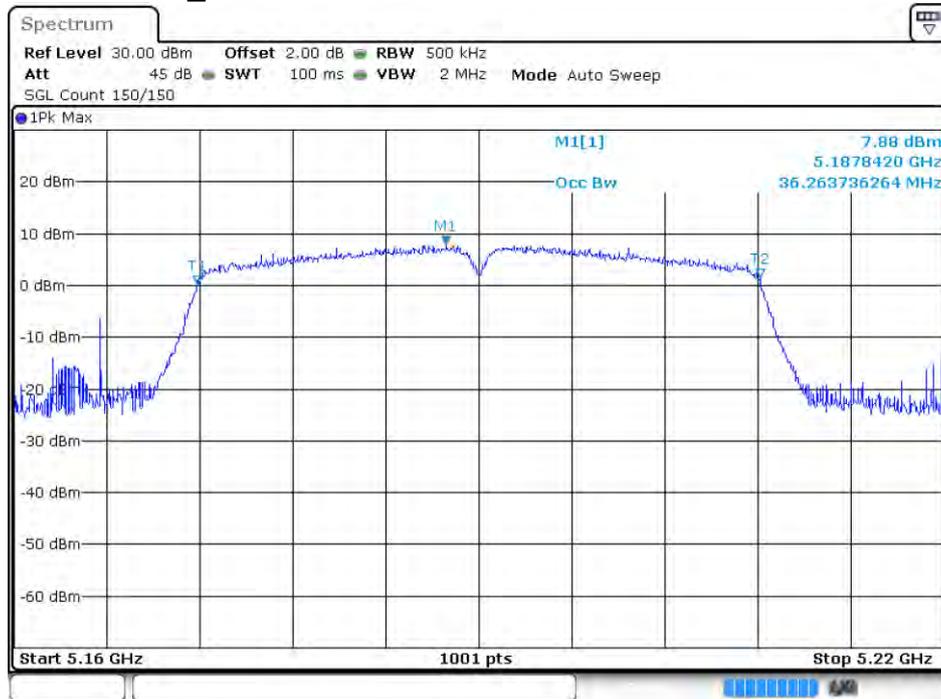
4.7.2.45 11AC20_161 ANT 1



Date: 29.APR.2020 10:23:06



4.7.2.46 11AC40_38 ANT 1



Date: 26 APR.2020 04:28:02

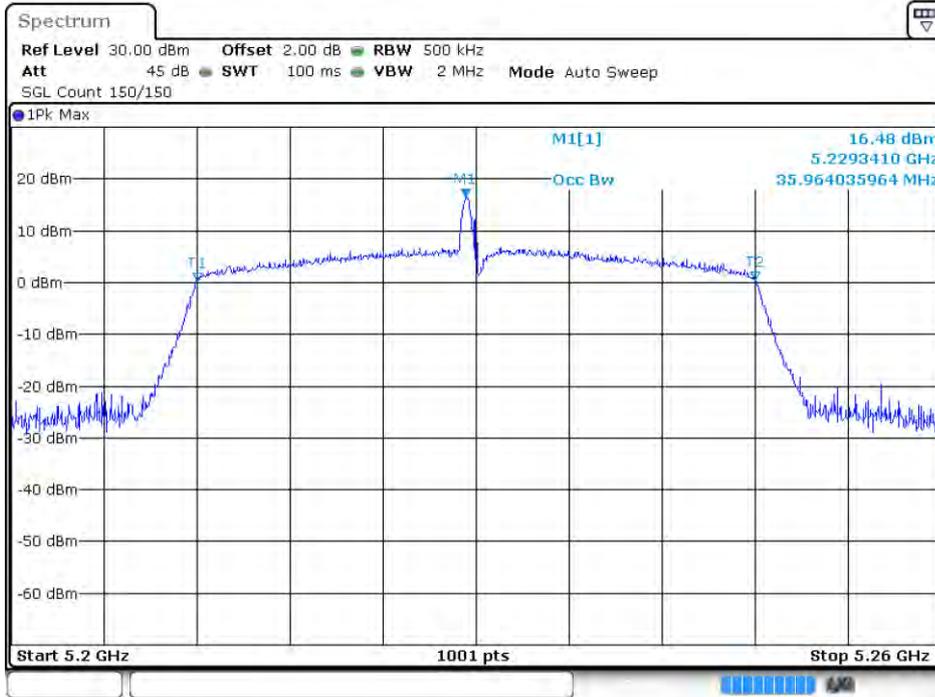


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4.7.2.47

11AC40_46 ANT 1



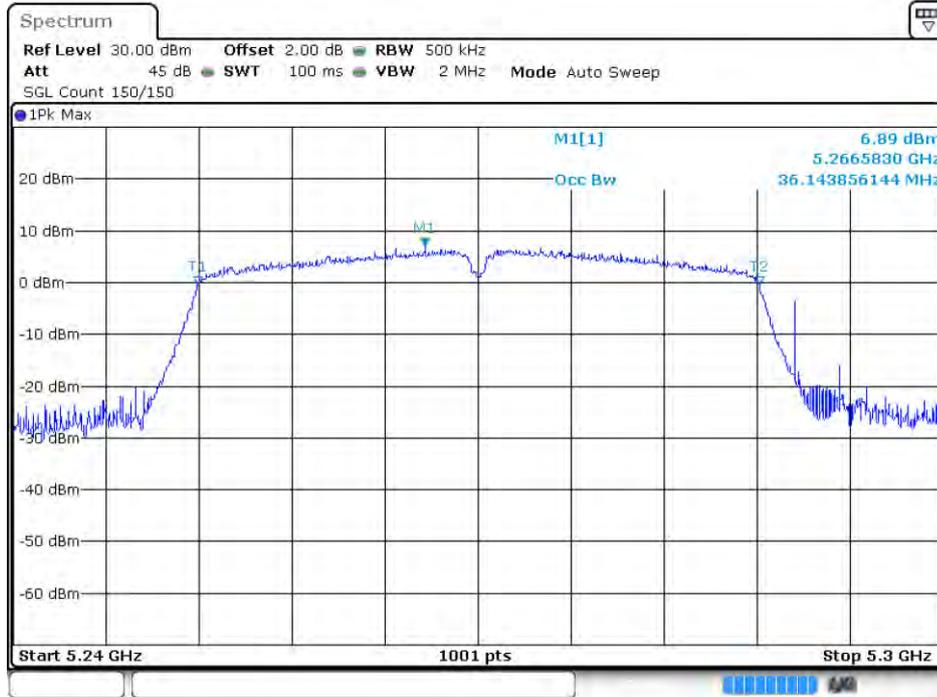
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4.7.2.48

11AC40_54 ANT 1



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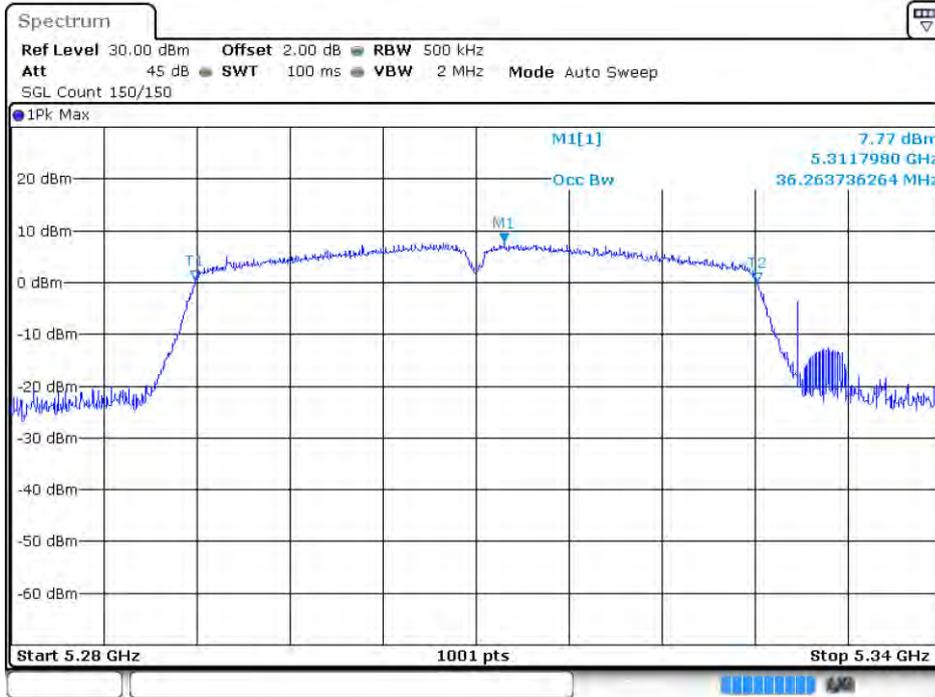


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4.7.2.49

11AC40_62 ANT 1



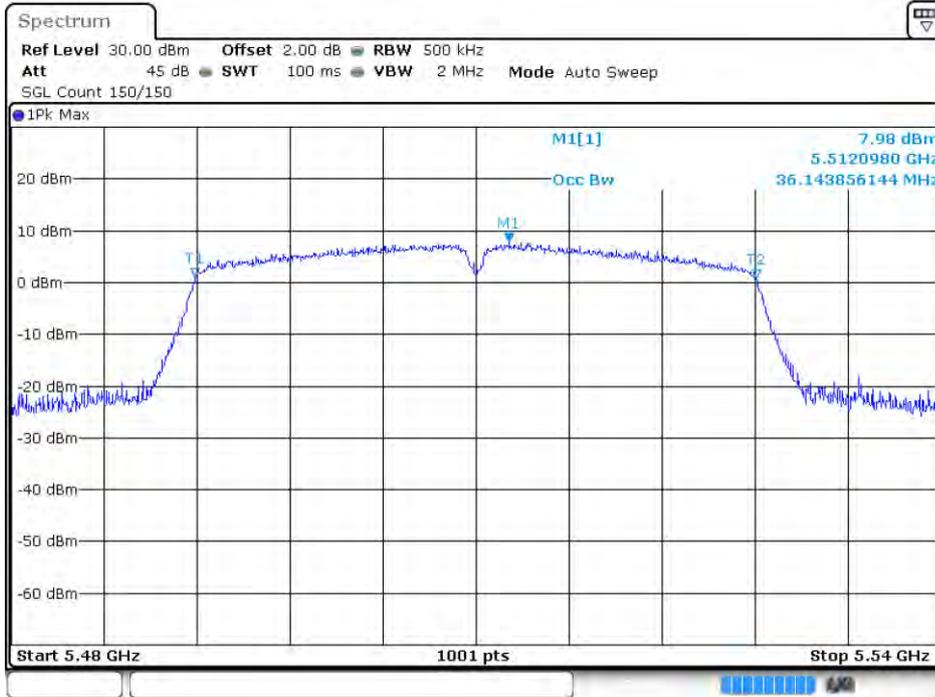
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4.7.2.50

11AC40_102 ANT 1



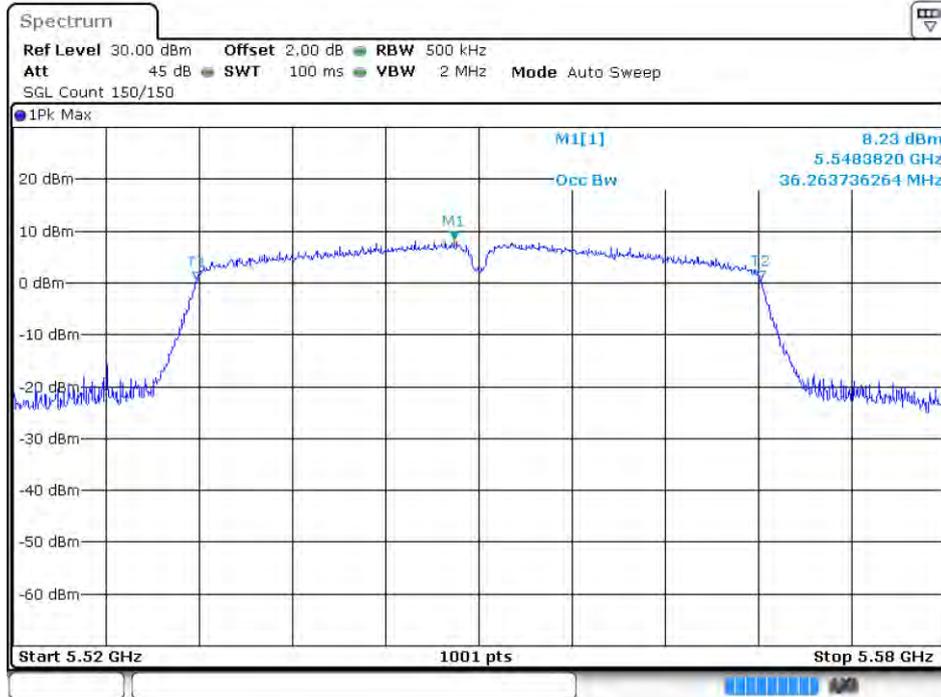
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4.7.2.51 11AC40_110 ANT 1

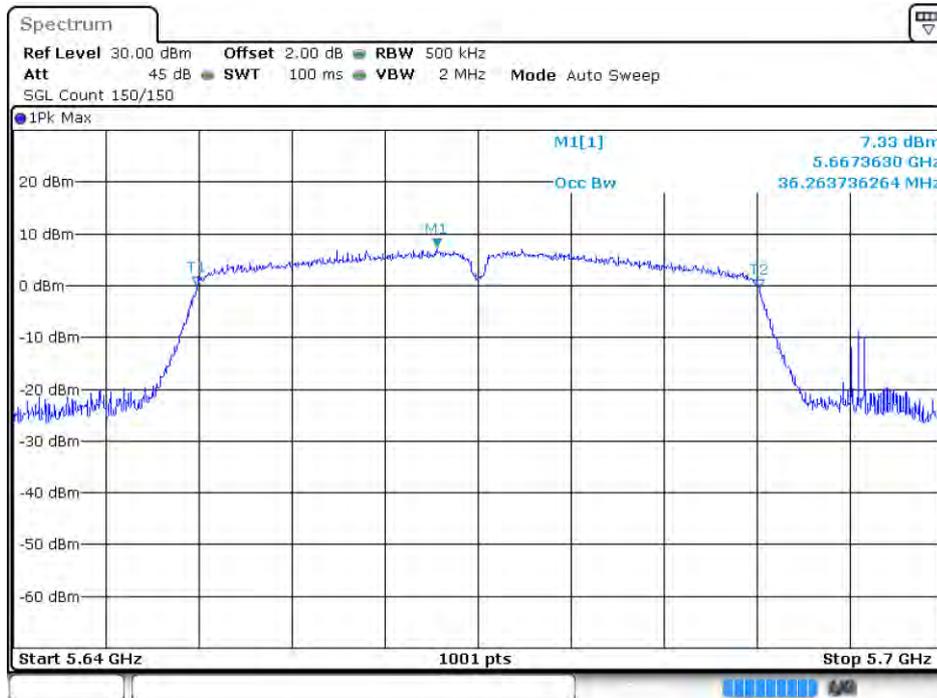


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4.7.2.52 11AC40_134 ANT 1



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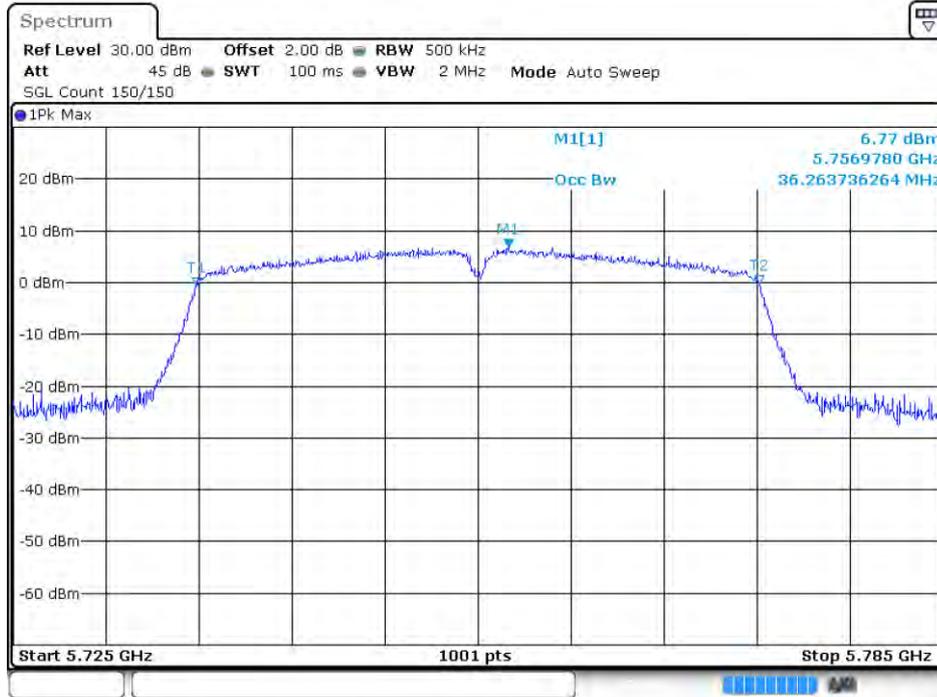
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4.7.2.53

11AC40_151 ANT 1



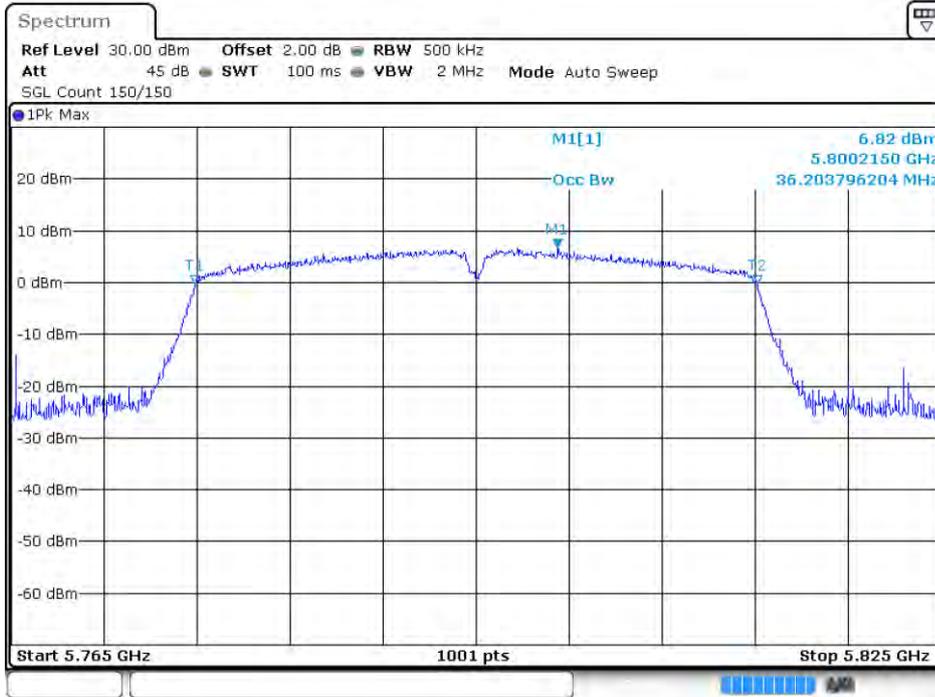
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4.7.2.54

11AC40_159 ANT 1



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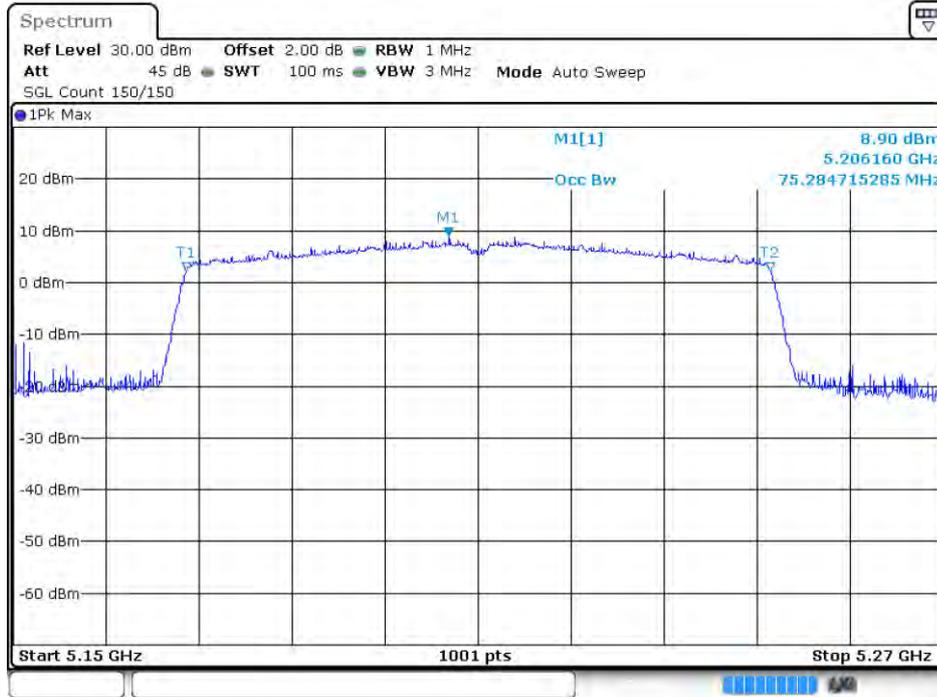


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4.7.2.55

11AC80_42 ANT 1



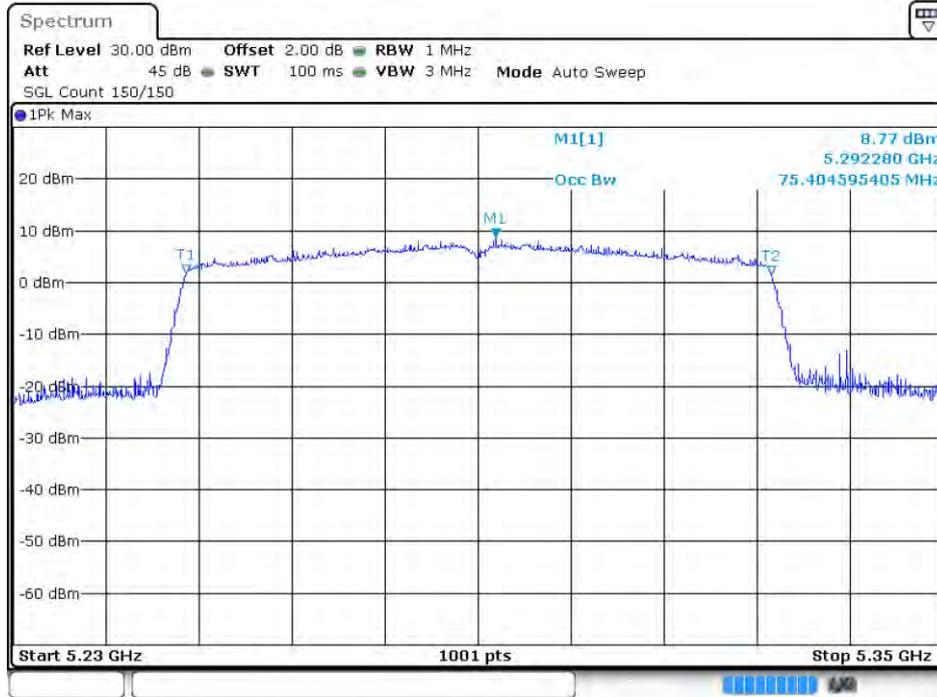
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4.7.2.56

11AC80_58 ANT 1



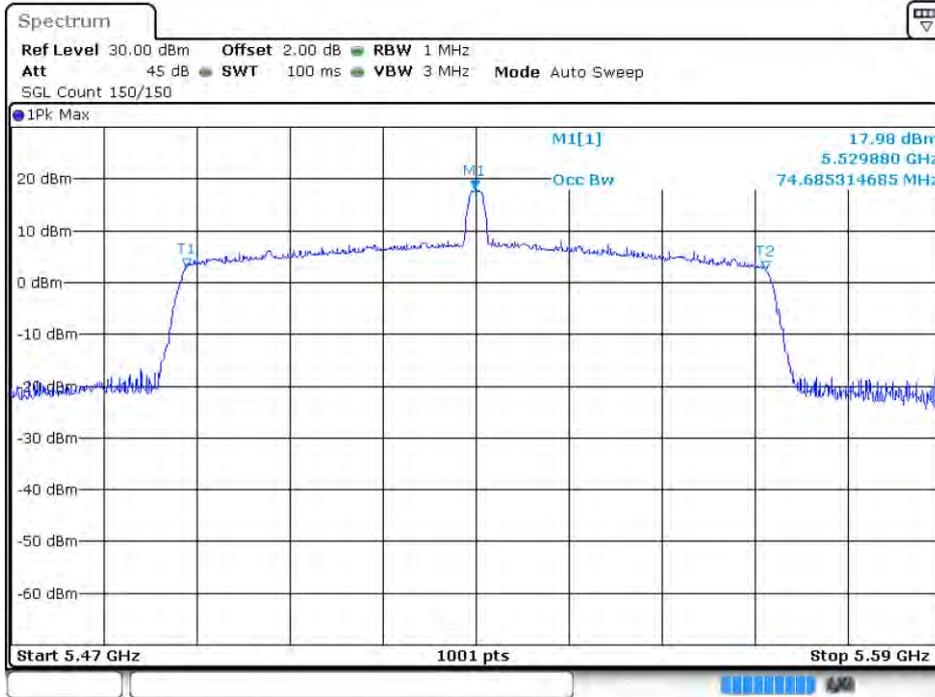
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4.7.2.57

11AC80_106 ANT 1



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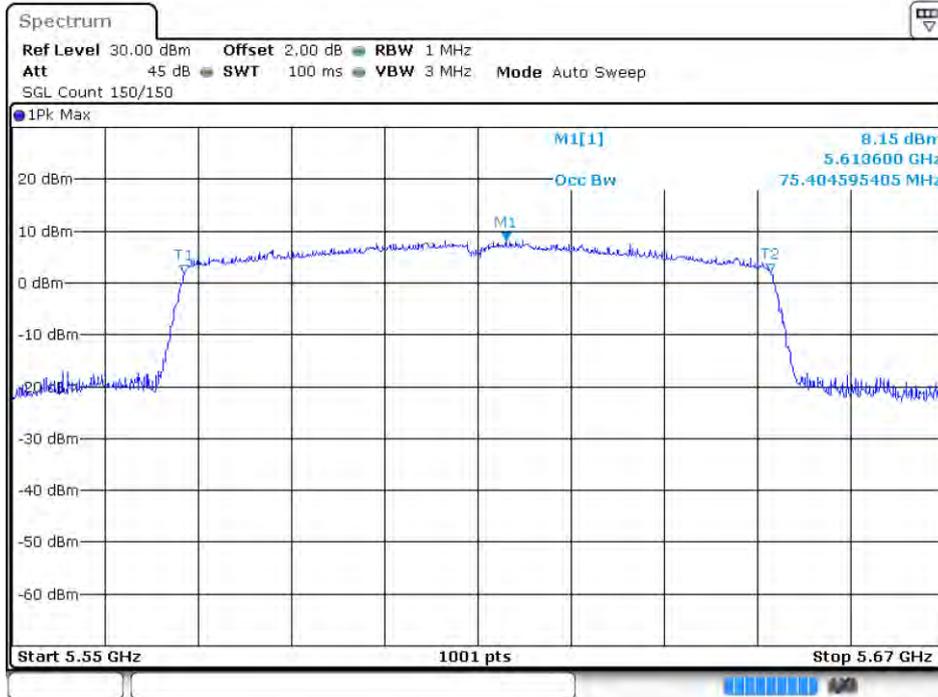
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4.7.2.58 11AC80_122 ANT 1

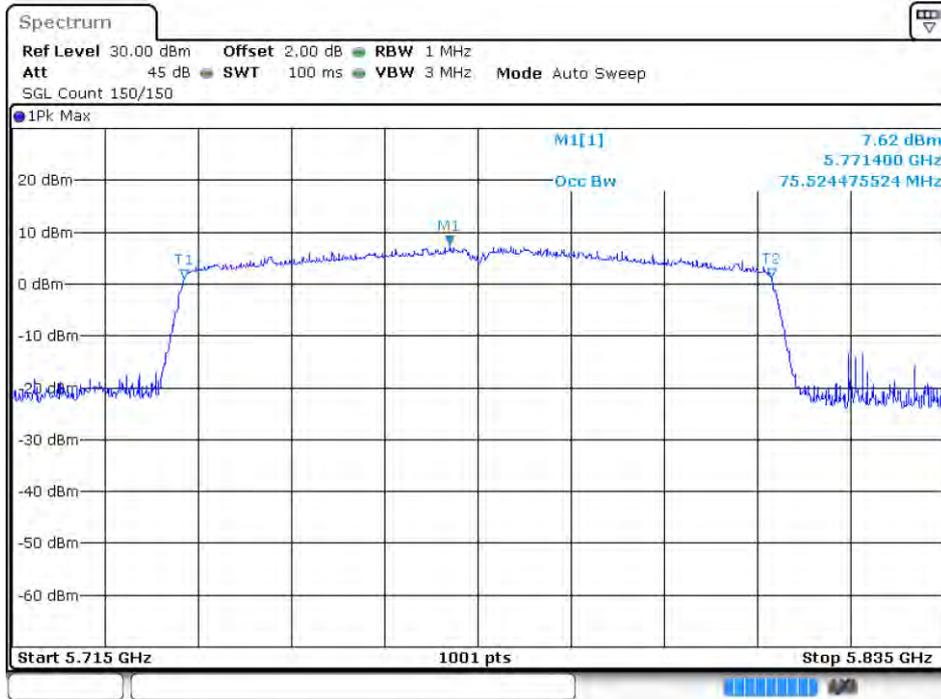


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4.7.2.59 11AC80_155 ANT 1



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4.8 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80). Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5150-5250MHz	The power spectral density less than 11dBm/1MHz
	5250-5350MHz	The power spectral density less than 11dBm/1MHz
	5470-5725MHz	The power spectral density less than 11dBm/1MHz
	5725-5850MHz	The power spectral density less than <30dBm/500KHz
Test Results:	Pass	



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4.8.1 Test Results For Power Density

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Meas. Level (Cond.) [dBm/500KHz]	Verdict
11A20	36	5180	ANT 1	5.97	PASS
	44	5220	ANT 1	6.29	PASS
	48	5240	ANT 1	4.99	PASS
	52	5260	ANT 1	5.83	PASS
	60	5300	ANT 1	5.73	PASS
	64	5320	ANT 1	5.5	PASS
	100	5500	ANT 1	5.76	PASS
	116	5580	ANT 1	5.15	PASS
	140	5700	ANT 1	4.81	PASS
	149	5745	ANT 1	1.85	PASS
	157	5785	ANT 1	2.01	PASS
	161	5805	ANT 1	1.88	PASS
11N20	36	5180	ANT 1	5.11	PASS
	44	5220	ANT 1	5.01	PASS
	48	5240	ANT 1	5.07	PASS
	52	5260	ANT 1	5.01	PASS
	60	5300	ANT 1	4.9	PASS
	64	5320	ANT 1	4.77	PASS
	100	5500	ANT 1	5.12	PASS
	116	5580	ANT 1	5.18	PASS
	140	5700	ANT 1	4.03	PASS
	149	5745	ANT 1	1.11	PASS
	157	5785	ANT 1	1.1	PASS
	161	5805	ANT 1	1.55	PASS
11N40	38	5190	ANT 1	2.77	PASS
	46	5230	ANT 1	1.99	PASS
	54	5270	ANT 1	1.74	PASS
	62	5310	ANT 1	1.68	PASS
	102	5510	ANT 1	1.86	PASS
	110	5550	ANT 1	1.92	PASS



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	134	5670	ANT 1	1.45	PASS
	151	5755	ANT 1	-2.13	PASS
	159	5795	ANT 1	-1.9	PASS
11AC20	36	5180	ANT 1	5.1	PASS
	44	5220	ANT 1	5.09	PASS
	48	5240	ANT 1	5.04	PASS
	52	5260	ANT 1	4.97	PASS
	60	5300	ANT 1	4.69	PASS
	64	5320	ANT 1	4.72	PASS
	100	5500	ANT 1	4.87	PASS
	116	5580	ANT 1	5.01	PASS
	140	5700	ANT 1	4.02	PASS
	149	5745	ANT 1	1.26	PASS
	157	5785	ANT 1	0.9	PASS
	161	5805	ANT 1	0.92	PASS
	11AC40	38	5190	ANT 1	2.22
46		5230	ANT 1	0.79	PASS
54		5270	ANT 1	0.86	PASS
62		5310	ANT 1	1.83	PASS
102		5510	ANT 1	1.81	PASS
110		5550	ANT 1	2.03	PASS
134		5670	ANT 1	1.21	PASS
151		5755	ANT 1	-1.99	PASS
159		5795	ANT 1	-1.92	PASS
11AC80	42	5210	ANT 1	-1.33	PASS
	58	5290	ANT 1	-1.47	PASS
	106	5530	ANT 1	-1.11	PASS
	122	5610	ANT 1	-1.16	PASS
	155	5775	ANT 1	-4.96	PASS

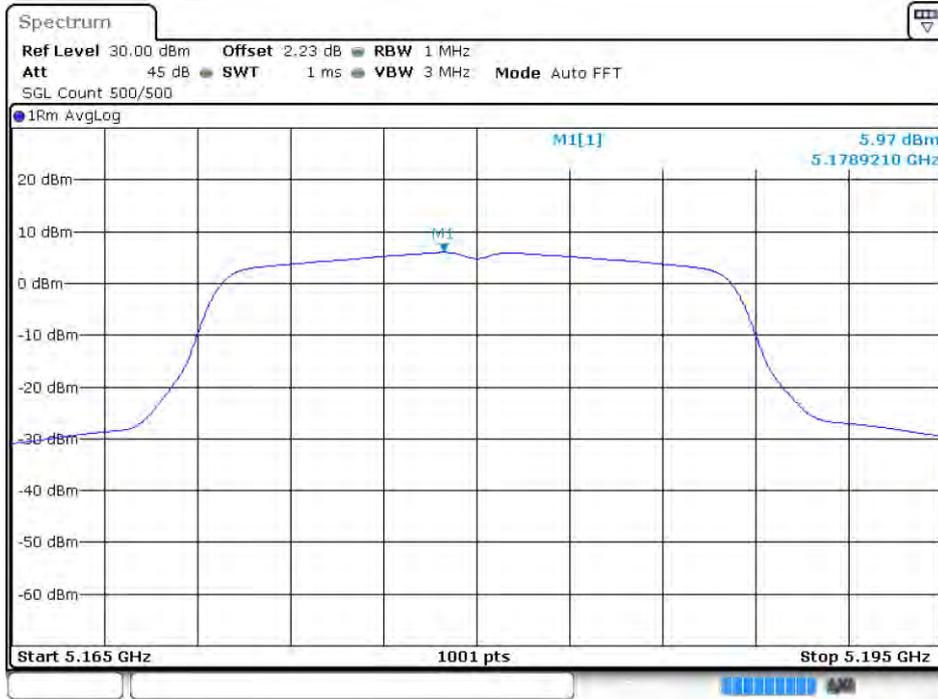


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4.8.2 Test plots For Power Density

4.8.2.1 11A20_36 ANT 1



Date: 26 APR, 2020 02:48:48

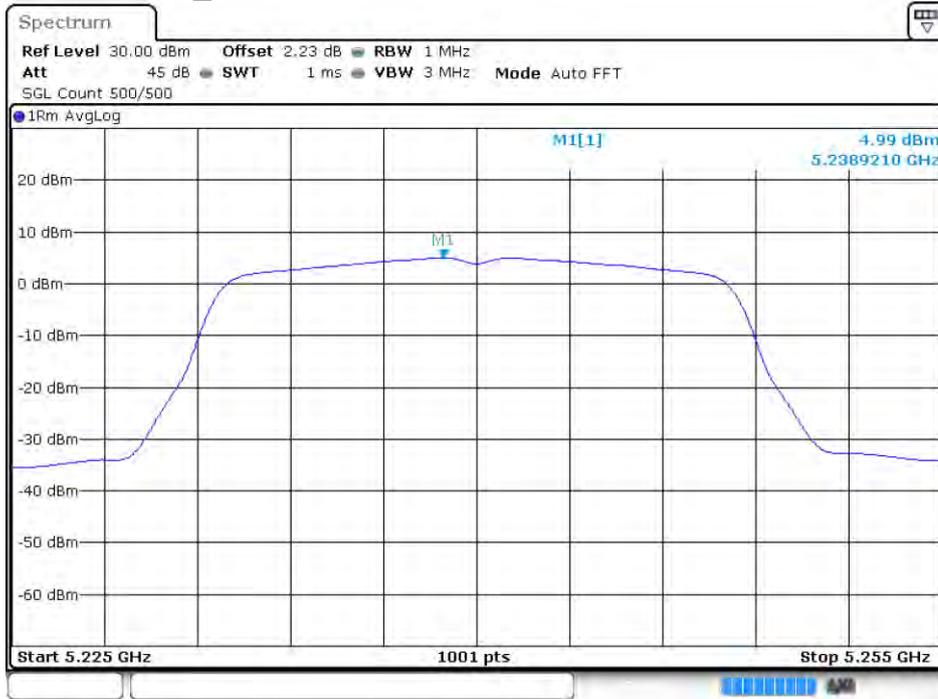


4.8.2.2 11A20_44 ANT 1



Date: 30.APR.2020 10:28:53

4.8.2.3 11A20_48 ANT 1

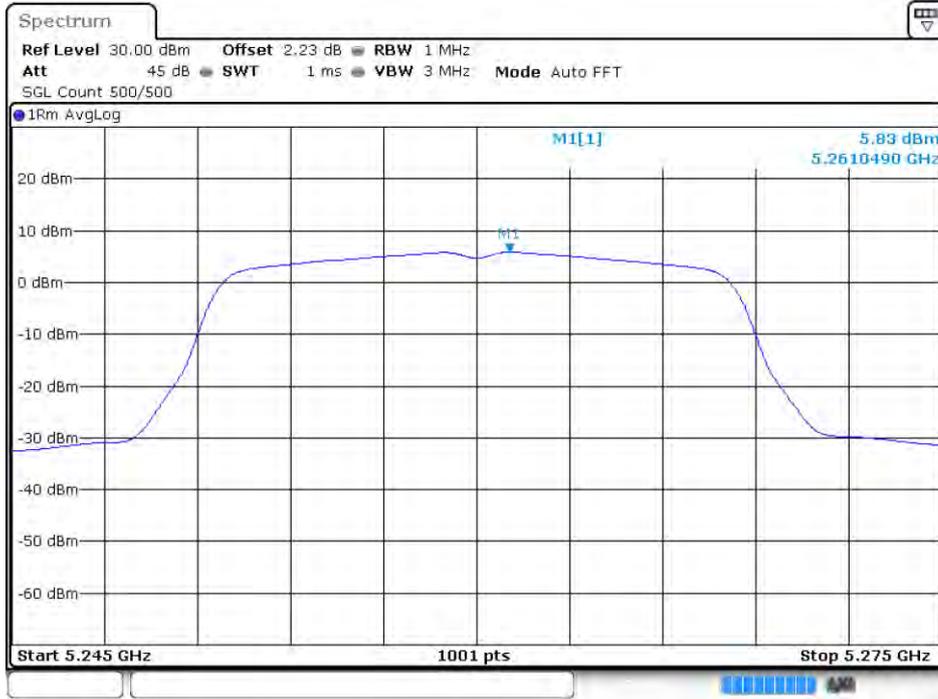


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4.8.2.4 11A20_52 ANT 1

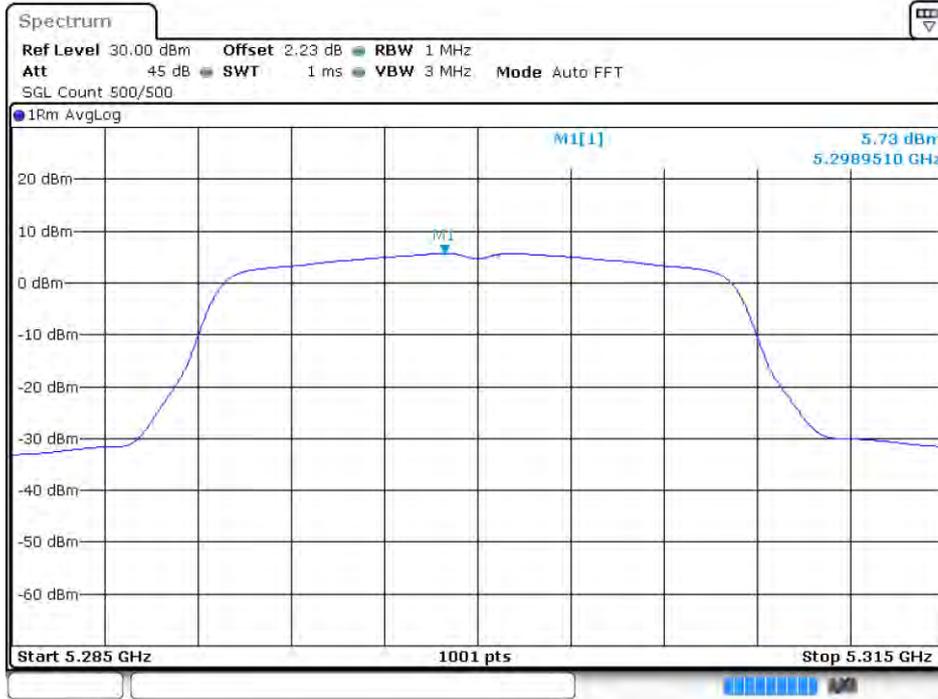


Date: 26.APR.2020 02:53:18



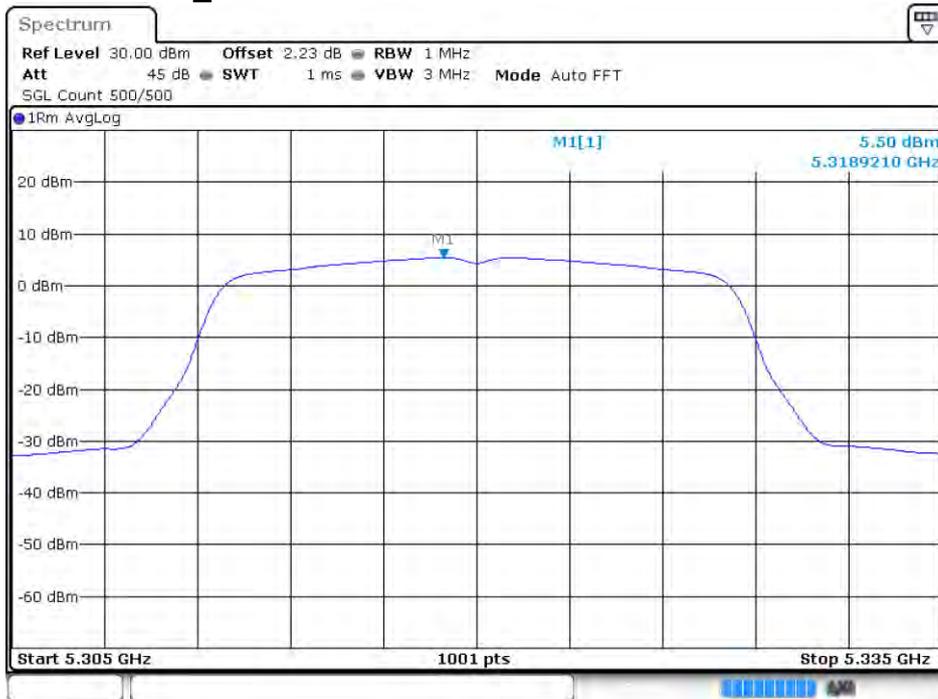
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4.8.2.5 11A20_60 ANT 1



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4.8.2.6 11A20_64 ANT 1



Date: 26 APR.2020 02:56:16



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