FCC TEST REPORT

Application No:	HR/2019/50006
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Factory:	Quectel Wireless Solutions Co., Ltd.
Address of Factory	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
EUT Description:	LTE Module
Model No.:	SC600Y-NA, SC600T-NA
Trade Mark::	Quectel
FCC ID:	XMR2019SC600NA
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR FCC Part 15, Subpart C 47 CFR FCC Part 15, Subpart E
Test Method	KDB 789033 D02 General UNII Test Procedures New Rules v02 FCC KDB 558074 D01 DTS Meas Guidance v05r02 KDB 662911 D01 Multiple Transmitter Output v02r01 KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 KDB 905462 D03 Client Without DFS New Rules v01r02 ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices
Date of Receipt:	2019/5/29
Date of Test:	2019/5/30 to 2019/7/3
Date of Issue:	2019/7/3
Test Result:	**PASS ***

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

Authorized Signature:

Derek Yang
Wireless Laboratory Manager

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1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2019/7/3		Original

Authorized for issue by:				
Tested By		Mike Hu **(Mike Hu) /Project Engineer**		2019/7/3 **Date**
Checked By		David Chen **(David Chen) /Reviewer**		2019/7/3 **Date**

Remark:
The difference between SC600Y-NA and SC600T-NA showed as following:
SC600Y-NA and SC600T-NA are all LTE modules. They share the same software & hardware design（the chip component is pin-for-pin compatible；have the same basic function；no change in radio parameters has occurred.）. The difference is on chipset with different CPU frequency. The Chipset SDM450 is a de-rated version of the MSM8953. We hereby state that two models are identical in interior structure and components.

The detail is shown as following table.

Module	Chipset	frequency
SC600T-NA	Qualcomm MSM8953	2.0GHz
SC600Y-NA	Qualcomm SDM450	1.8GHz

According to the difference above, all the test were performed on SC600T-NA, and spot check the worst case Conducted power and RSE on SC600Y-NA, the conducted and RSE data shown in the report is the worst data.. and other data of SC600Y-NA can refer to SC600T-NA.

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2 Test Summary

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1)	No limit.	Clause 4.4 Clause 4.5	Pass
	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§ D	No limit.		Pass
	5250-5350				
	5470-5725				
	5725-5850				
Duty Cycle	5150-5850	--	No limit.		Pass
Maximum Conducted Output Power	5150-5250	15.407(a)(1) 15.407(a)(4)	FCC < 250mW (avg during transmission)	Clause 4.3	
	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
	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
	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
AC Power Line Conducted Emissions	5150-5250 5250-5350 5470-5725 5725-5850	15.207		Clause 4.2	Pass
Frequency Stability	5150-5250 5250-5350 5470-5600 5650-5725 5725-5850	15.209		Clause 4.9	Pass
Dynamic Frequency Selection	5250-5350 5470-5725	47 CFR Part 15, Subpart E 15.407	Channel Move Time:10 Seconds Transmission Time: milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. Non-occupancy period: Minimum 30 minutes	Clause 4.10	Pass

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3 General Information

3.1 Client Information

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Factory:	Quectel Wireless Solutions Co., Ltd.
Address of Factory:	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, 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

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)

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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.

3.4 General Description of EUT

EUT Description::	LTE Module
Model No.:	SC600Y-NA, SC600T-NA
Trade Mark:	Quectel
Hardware Version:	R1.0
Software Version:	SC600YNAPAR05A02
IEEE 802.11 WLAN Mode Supported	☒ 802.11a (20 MHz channel bandwidth) ; ☒ 802.11n (20 MHz channel bandwidth); ☒ 802.11n (40 MHz channel bandwidth); ☒ 802.11ac (20 MHz channel bandwidth); ☒ 802.11ac (40 MHz channel bandwidth); ☒ 802.11ac (80 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 5850MHz
Type of Modulation:	OFDM
DFS mode:	☐Master ☐ Slave with radar detection ☒Slave without radar detection
Sample Type:	☐ Portable Device, ☒Module
Antenna Type:	☐ External, ☒ Integrated
Antenna Ports	☒ Ant 1, ☐ Ant 2, ☐ Ant 3
Smart System	☒ SISO (for 802.11a/n/ac), ☐ MIMO (for 802.11n/ac), ☐ Diversity (for 802.11a) : Tx & Rx
Antenna Gain:	5.0dBi,
Power Supply	☒ AC/DC Adapter; ☐ PoE:; ☐ Other:

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

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For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5200
	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	5280
	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:

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	5500
	The Highest channel	5670
IEEE 802.11ac 80MHz	The Lowest channel	5500
	The Highest channel	5580

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	5825

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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 5.0dBi.	

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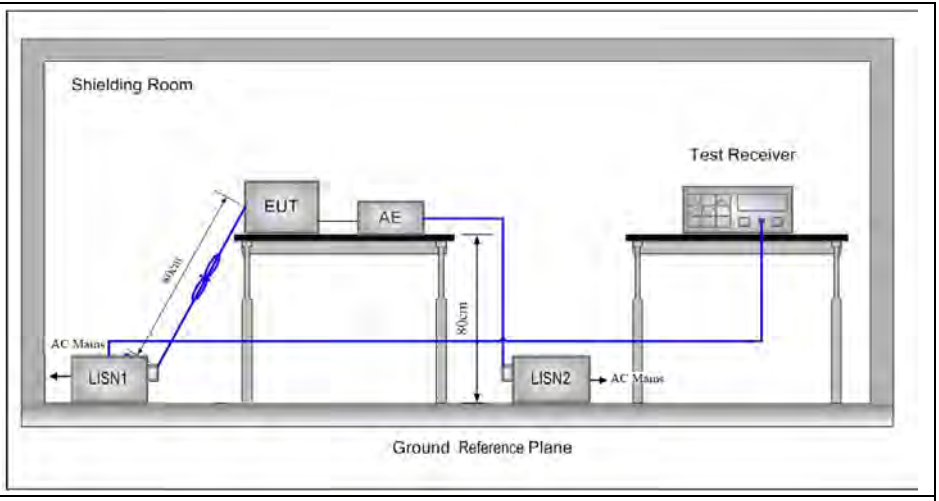
Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate of 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.
Instruments Used:	Refer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

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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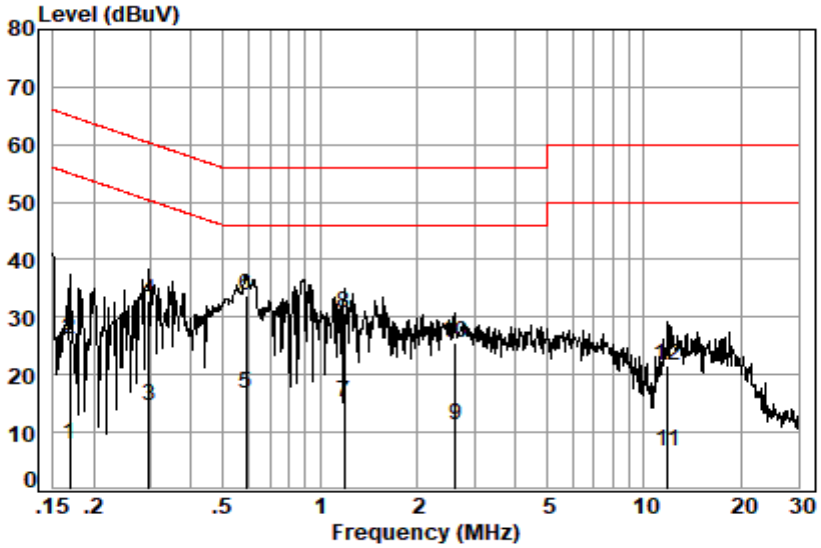
Live Line:



Site : Shielding Room
Condition: Line
Job No. : 15593CR
Test mode: e

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1685	0.01	9.66	-1.69	7.98	55.03	-47.05	Average
2	0.1685	0.01	9.66	16.53	26.20	65.03	-38.83	QP
3	0.2971	0.04	9.67	4.92	14.63	50.32	-35.69	Average
4	0.2971	0.04	9.67	23.20	32.91	60.32	-27.41	QP
5	0.5916	0.07	9.67	6.84	16.58	46.00	-29.42	Average
6	0.5916	0.07	9.67	24.17	33.91	56.00	-22.09	QP
7	1.1844	0.11	9.73	5.51	15.35	46.00	-30.65	Average
8	1.1844	0.11	9.73	21.00	30.84	56.00	-25.16	QP
9	2.6082	0.16	9.71	1.26	11.13	46.00	-34.87	Average
10	2.6082	0.16	9.71	15.72	25.59	56.00	-30.41	QP
11	11.8697	0.19	10.06	-3.43	6.82	50.00	-43.18	Average
12	11.8697	0.19	10.06	11.40	21.65	60.00	-38.35	QP

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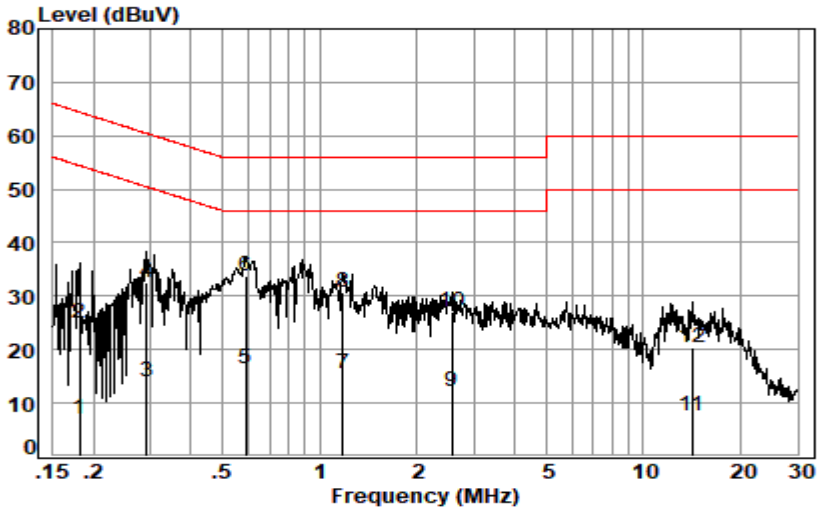
Neutral Line:



Site : Shielding Room
Condition: Neutral
Job No. : 15593CR
Test mode: e

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1815	0.02	9.64	-2.78	6.88	54.42	-47.54	Average
2	0.1815	0.02	9.64	15.34	25.00	64.42	-39.42	QP
3	0.2924	0.04	9.64	4.30	13.98	50.46	-36.48	Average
4	0.2924	0.04	9.64	22.74	32.42	60.46	-28.04	QP
5	0.5916	0.07	9.64	6.73	16.44	46.00	-29.56	Average
6	0.5916	0.07	9.64	24.05	33.76	56.00	-22.24	QP
7	1.1781	0.11	9.70	5.68	15.49	46.00	-30.51	Average
8	1.1781	0.11	9.70	20.99	30.80	56.00	-25.20	QP
9	2.5671	0.16	9.68	2.32	12.16	46.00	-33.84	Average
10	2.5671	0.16	9.68	17.27	27.11	56.00	-28.89	QP
11	14.1376	0.20	10.30	-2.86	7.64	50.00	-42.36	Average
12	14.1376	0.20	10.30	9.87	20.37	60.00	-39.63	QP

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

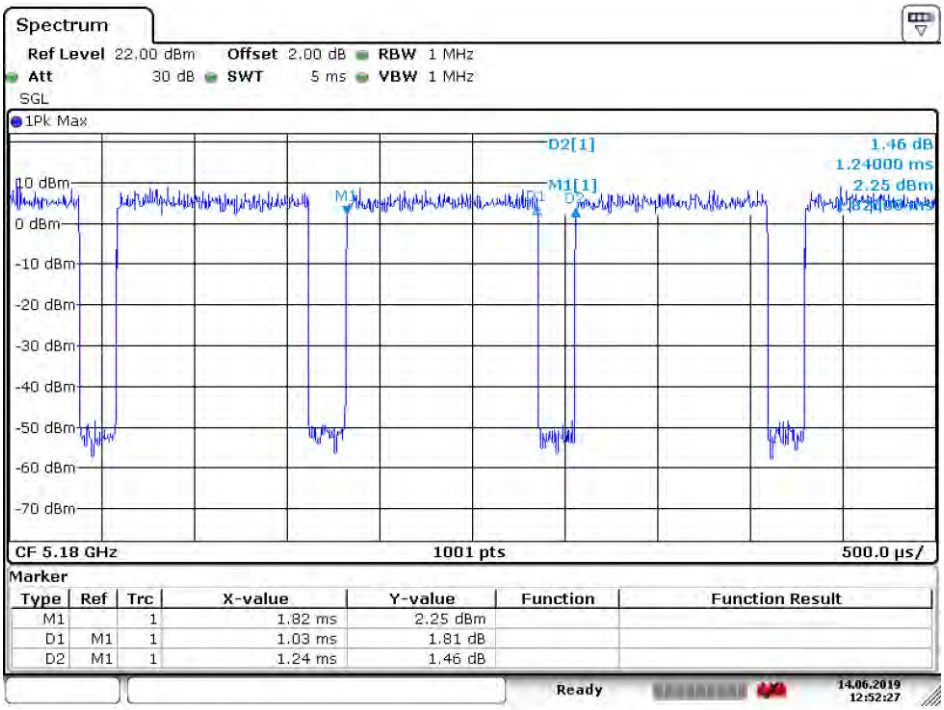
4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11A	Ant 1: CH149	83.06
11N20	Ant 1: CH149	82.13
11N40	Ant 1: CH151	65.46
11AC20	Ant 1: CH149	82.55
11AC40	Ant 1: CH151	66.33
11AC80	Ant 1: CH155	54.89

4.3.1 Test Plots

4.3.1.1 ANT1

4.3.1.1.1 11A



Date: 14.JUN.2019 12:52:27

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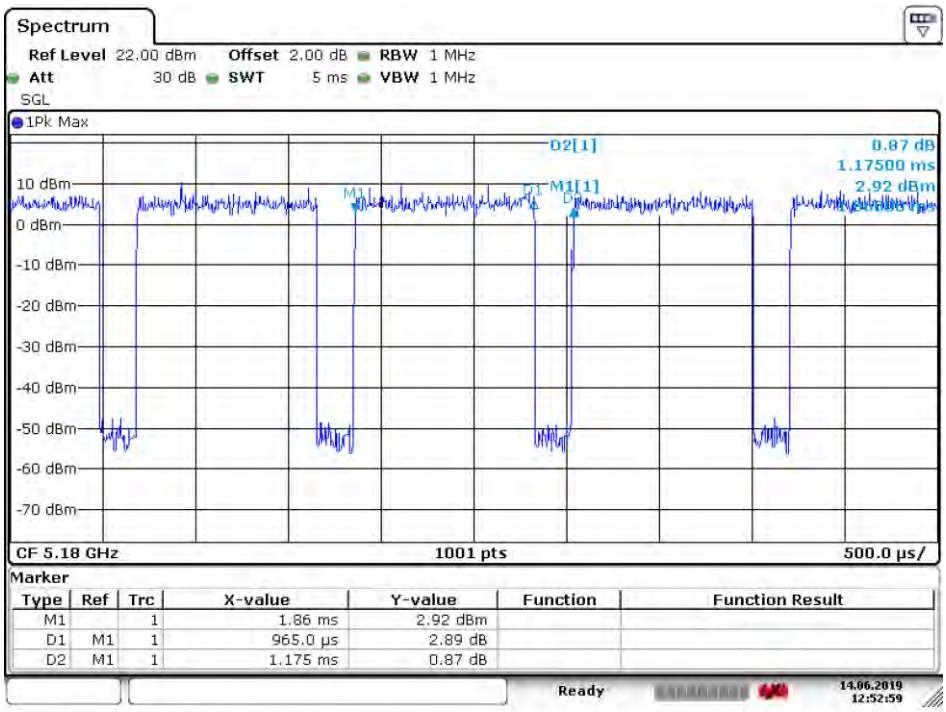
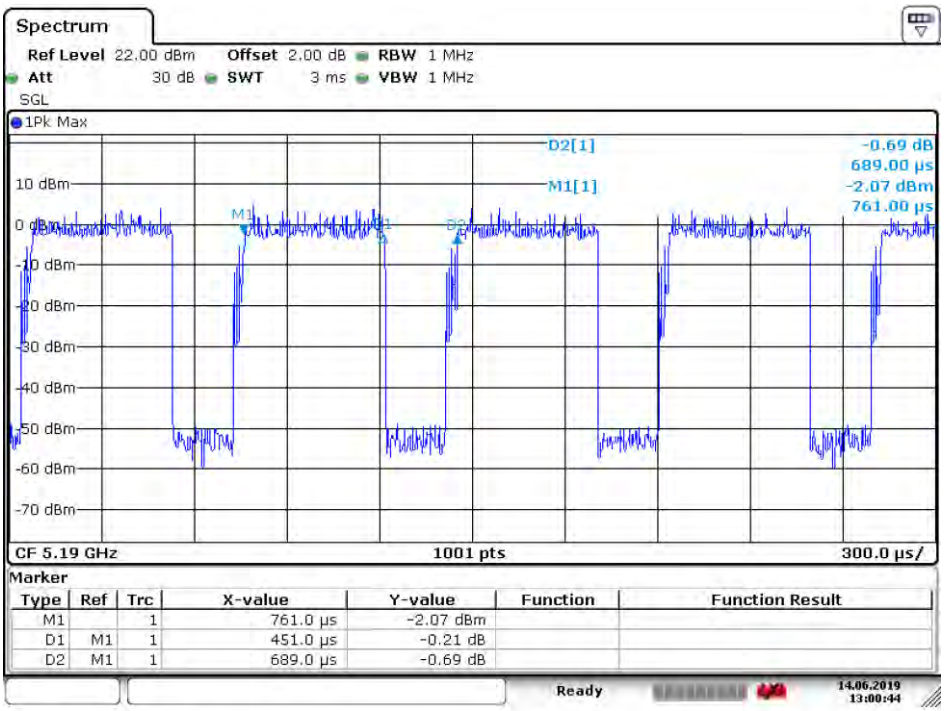
4.3.1.1.2 11N20



Date: 14.JUN.2019 12:52:59

4.3.1.1.3 11N40



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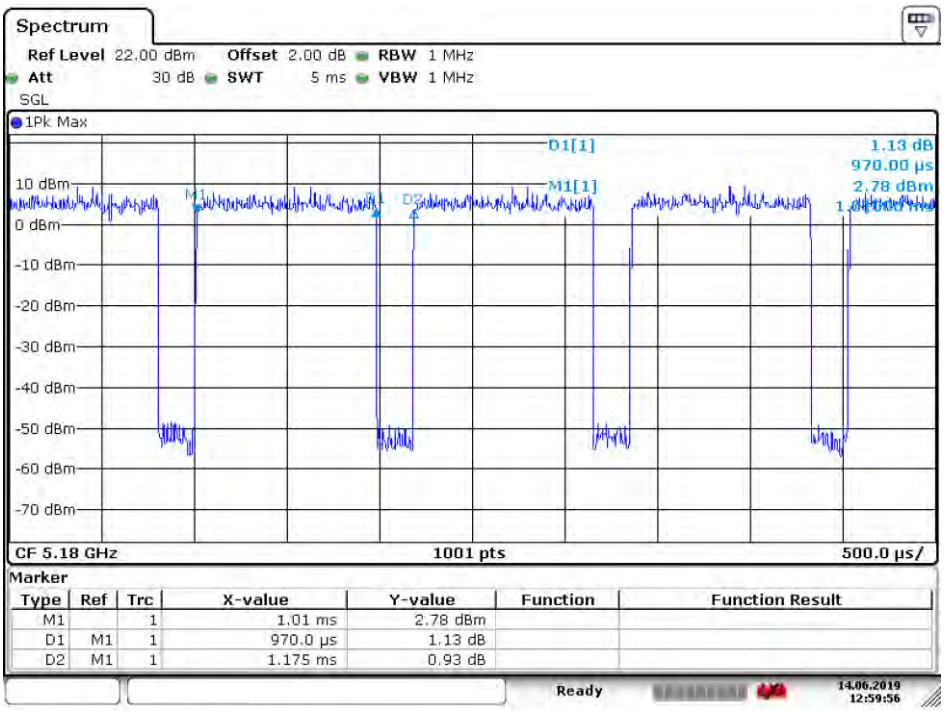
4.3.1.1.4 11AC20



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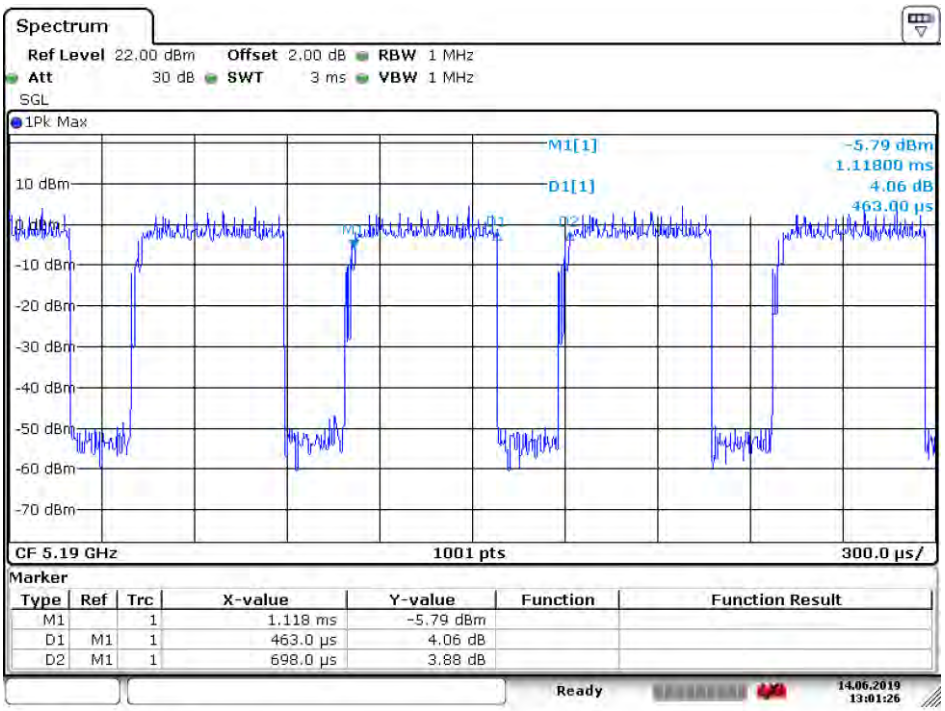
4.3.1.1.5 11AC40



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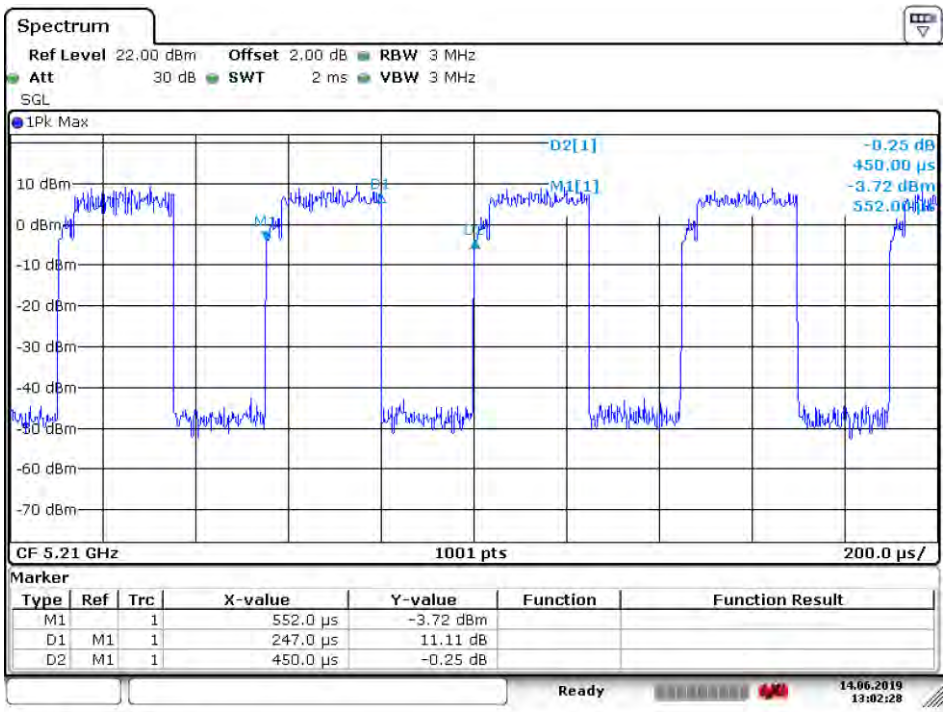
4.3.1.1.6 11AC80



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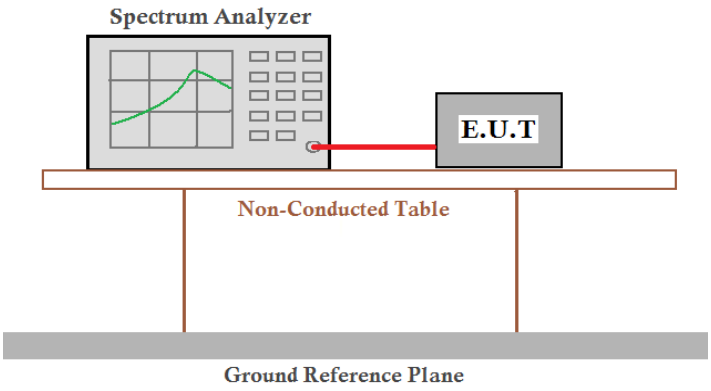
4.4 Conducted Output Power

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:	Through Pre-scan, find that 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); MCSAC0 of rate is the worst case of 802.11ac(HT20); MCSAC0 of rate is the worst case of 802.11ac(HT40); MCSAC0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.
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

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Measurement Data:

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Meas. Level (Cond.) [dBm]	Meas. Level (EIRP) [dBm]	Verdict
11A20	36	5180	ANT 1	13.74	18.74	PASS
	44	5220	ANT 1	13.71	18.71	PASS
	48	5240	ANT 1	13.68	18.68	PASS
	52	5260	ANT 1	13.73	18.73	PASS
	60	5300	ANT 1	13.66	18.66	PASS
	64	5320	ANT 1	13.52	18.52	PASS
	100	5500	ANT 1	12.85	17.85	PASS
	116	5580	ANT 1	12.56	17.56	PASS
	140	5700	ANT 1	12.48	17.48	PASS
	149	5745	ANT 1	12.55	17.55	PASS
	157	5785	ANT 1	12.45	17.45	PASS
	165	5825	ANT 1	12.33	17.33	PASS
11N20	36	5180	ANT 1	13.82	18.82	PASS
	44	5220	ANT 1	13.48	18.48	PASS
	48	5240	ANT 1	13.52	18.52	PASS
	52	5260	ANT 1	13.55	18.55	PASS
	60	5300	ANT 1	13.44	18.44	PASS
	64	5320	ANT 1	13.38	18.38	PASS
	100	5500	ANT 1	12.67	17.67	PASS
	116	5580	ANT 1	12.42	17.42	PASS
	140	5700	ANT 1	12.28	17.28	PASS
	149	5745	ANT 1	12.38	17.38	PASS
	157	5785	ANT 1	12.30	17.30	PASS
	165	5825	ANT 1	12.25	17.25	PASS
11N40	38	5190	ANT 1	13.68	18.68	PASS
	46	5230	ANT 1	13.62	18.62	PASS
	54	5270	ANT 1	13.68	18.68	PASS
	62	5310	ANT 1	13.72	18.72	PASS
	102	5510	ANT 1	13.11	18.11	PASS
	110	5550	ANT 1	12.96	17.96	PASS
	134	5670	ANT 1	12.55	17.55	PASS
	151	5755	ANT 1	12.65	17.65	PASS
	159	5795	ANT 1	12.51	17.51	PASS

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11AC20	36	5180	ANT 1	13.66	18.66	PASS
	44	5220	ANT 1	13.71	18.71	PASS
	48	5240	ANT 1	13.62	18.62	PASS
	52	5260	ANT 1	13.59	18.59	PASS
	60	5300	ANT 1	13.56	18.56	PASS
	64	5320	ANT 1	13.57	18.57	PASS
	100	5500	ANT 1	12.72	17.72	PASS
	116	5580	ANT 1	12.52	17.52	PASS
	140	5700	ANT 1	12.31	17.31	PASS
	149	5745	ANT 1	12.44	17.44	PASS
	157	5785	ANT 1	12.21	17.21	PASS
	165	5825	ANT 1	12.20	17.20	PASS
11AC40	38	5190	ANT 1	13.84	18.84	PASS
	46	5230	ANT 1	13.87	18.87	PASS
	54	5270	ANT 1	13.85	18.85	PASS
	62	5310	ANT 1	13.88	18.88	PASS
	102	5510	ANT 1	13.01	18.01	PASS
	110	5550	ANT 1	12.88	17.88	PASS
	134	5670	ANT 1	12.63	17.63	PASS
	151	5755	ANT 1	12.66	17.66	PASS
	159	5795	ANT 1	12.56	17.56	PASS
11AC80	42	5210	ANT 1	12.80	17.80	PASS
	58	5290	ANT 1	12.82	17.82	PASS
	106	5530	ANT 1	12.05	17.05	PASS
	122	5610	ANT 1	11.91	16.91	PASS
	155	5775	ANT 1	11.71	16.71	PASS

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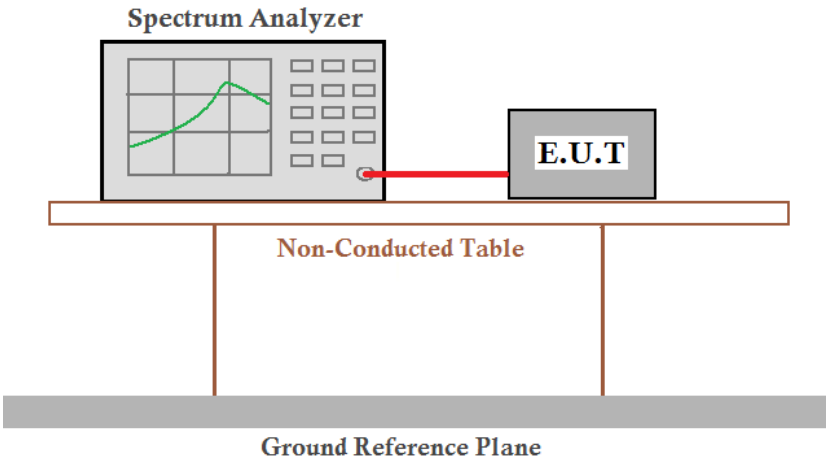
4.5 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
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); MCSAC0 of rate is the worst case of 802.11ac(HT20); MCSAC0 of rate is the worst case of 802.11ac(HT40); MCSAC0 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 Measurement Data:

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	26dB Emission Bandwidth [MHz]	Occupied Bandwidth [MHz]	Verdict
11A20	36	5180	ANT 1	22.42	17.22	PASS
	44	5220	ANT 1	22.30	17.22	PASS
	48	5240	ANT 1	22.34	17.14	PASS
	52	5260	ANT 1	22.26	17.14	PASS
	60	5300	ANT 1	22.14	17.22	PASS
	64	5320	ANT 1	22.34	17.18	PASS
	100	5500	ANT 1	22.24	17.18	PASS
	116	5580	ANT 1	22.30	17.14	PASS
	140	5700	ANT 1	22.06	17.18	PASS
11N20	36	5180	ANT 1	22.42	18.10	PASS
	44	5220	ANT 1	22.66	18.14	PASS
	48	5240	ANT 1	22.54	18.14	PASS
	52	5260	ANT 1	22.50	18.14	PASS
	60	5300	ANT 1	22.62	18.14	PASS
	64	5320	ANT 1	22.90	18.14	PASS
	100	5500	ANT 1	22.70	18.14	PASS
	116	5580	ANT 1	22.58	18.14	PASS
	140	5700	ANT 1	22.70	18.22	PASS
11N40	38	5190	ANT 1	44.20	36.44	PASS
	46	5230	ANT 1	43.24	36.36	PASS
	54	5270	ANT 1	43.40	36.44	PASS
	62	5310	ANT 1	43.80	36.36	PASS
	102	5510	ANT 1	43.72	36.36	PASS
	110	5550	ANT 1	42.92	36.36	PASS
	134	5670	ANT 1	44.04	36.28	PASS
11AC20	36	5180	ANT 1	22.26	18.10	PASS
	44	5220	ANT 1	22.18	18.10	PASS
	48	5240	ANT 1	22.26	18.10	PASS
	52	5260	ANT 1	22.18	18.10	PASS
	60	5300	ANT 1	22.22	18.14	PASS
	64	5320	ANT 1	22.30	18.10	PASS
	100	5500	ANT 1	22.18	18.06	PASS
	116	5580	ANT 1	22.22	18.14	PASS
	140	5700	ANT 1	22.26	18.06	PASS
11AC40	38	5190	ANT 1	43.24	36.36	PASS

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	46	5230	ANT 1	43.24	36.44	PASS
	54	5270	ANT 1	43.24	36.36	PASS
	62	5310	ANT 1	43.24	36.44	PASS
	102	5510	ANT 1	43.08	36.36	PASS
	110	5550	ANT 1	43.00	36.44	PASS
	134	5670	ANT 1	43.16	36.44	PASS
11AC80	42	5210	ANT 1	84.72	74.81	PASS
	58	5290	ANT 1	84.56	74.81	PASS
	106	5530	ANT 1	84.40	74.65	PASS
	122	5610	ANT 1	85.03	74.65	PASS

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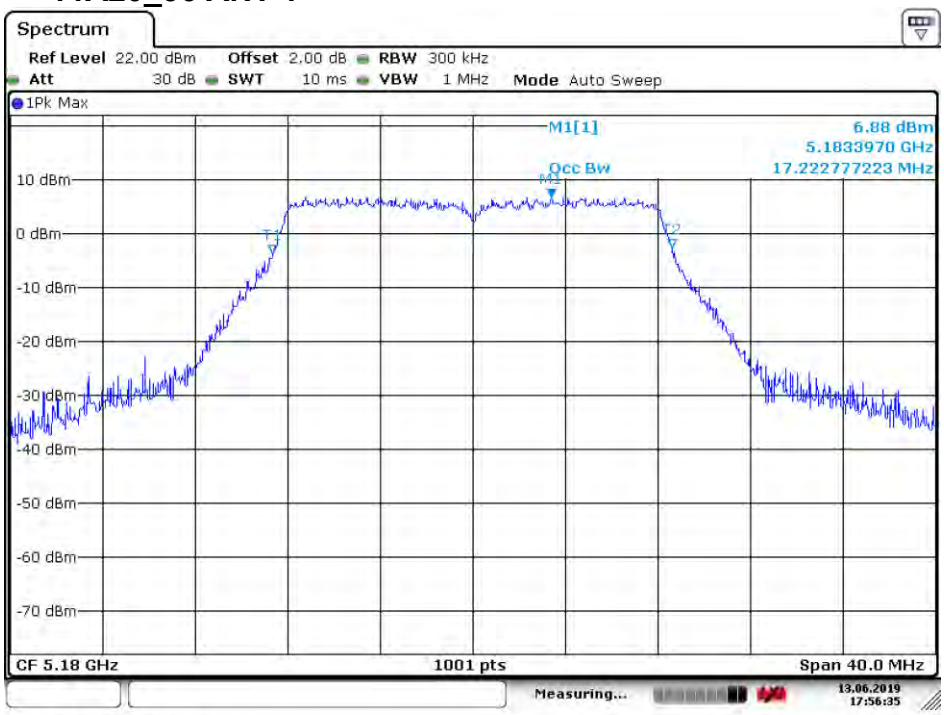
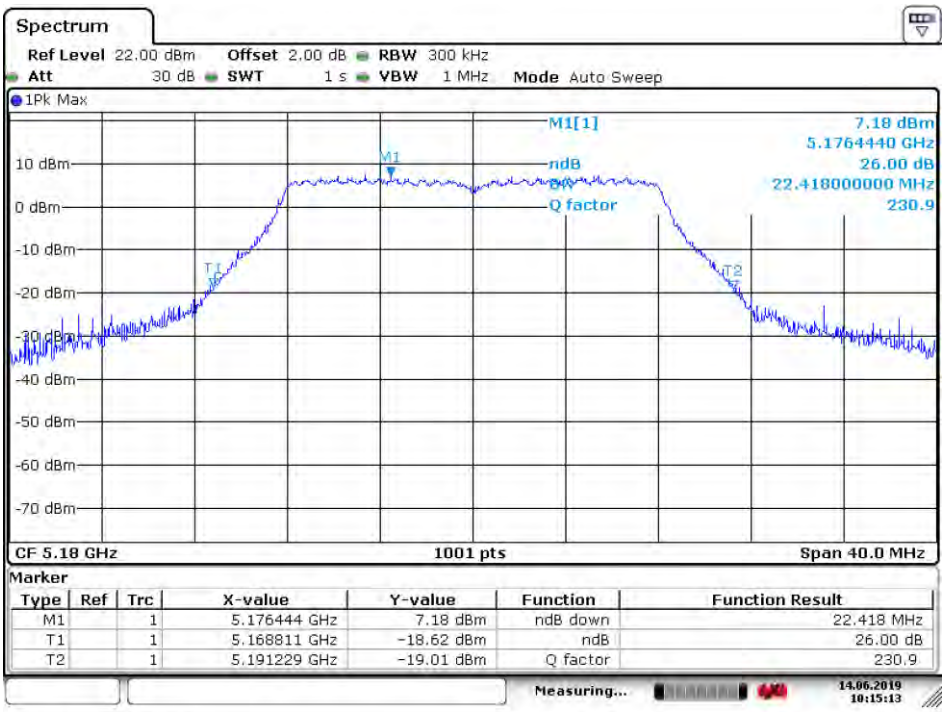
4.5.2 Plots for 26dB Emission Bandwidth & 99% Occupied Bandwidth

4.5.2.1 11A20_36 ANT 1



Date: 13.JUN.2019 17:56:36



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.176444 GHz	7.18 dBm	ndB down	22.418 MHz
T1		1	5.168811 GHz	-18.62 dBm	ndB	26.00 dB
T2		1	5.191229 GHz	-19.01 dBm	Q factor	230.9

Date: 14.JUN.2019 10:15:14

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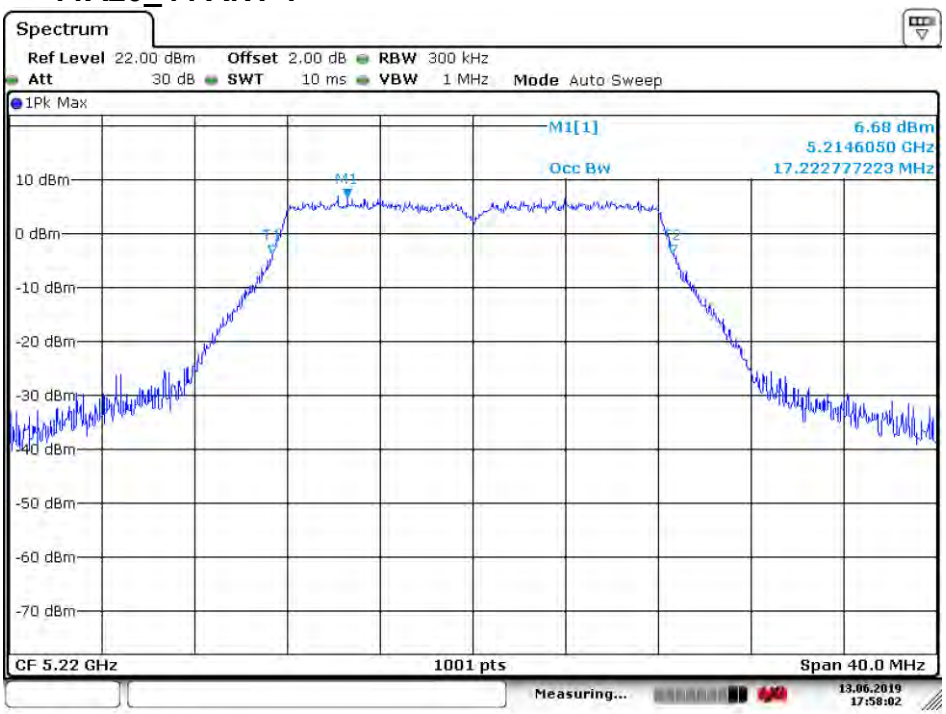
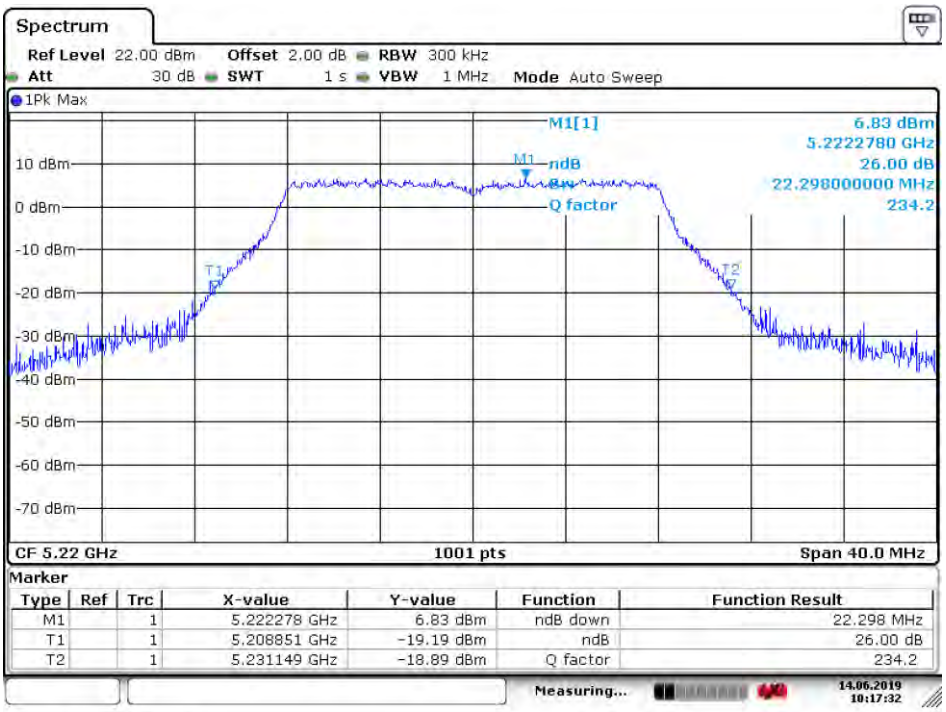
4.5.2.2 11A20_44 ANT 1



Date: 13.JUN.2019 17:58:02



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.222278 GHz	6.83 dBm	ndB down	22.298 MHz
T1		1	5.208851 GHz	-19.19 dBm	ndB	26.00 dB
T2		1	5.231149 GHz	-18.89 dBm	Q factor	234.2

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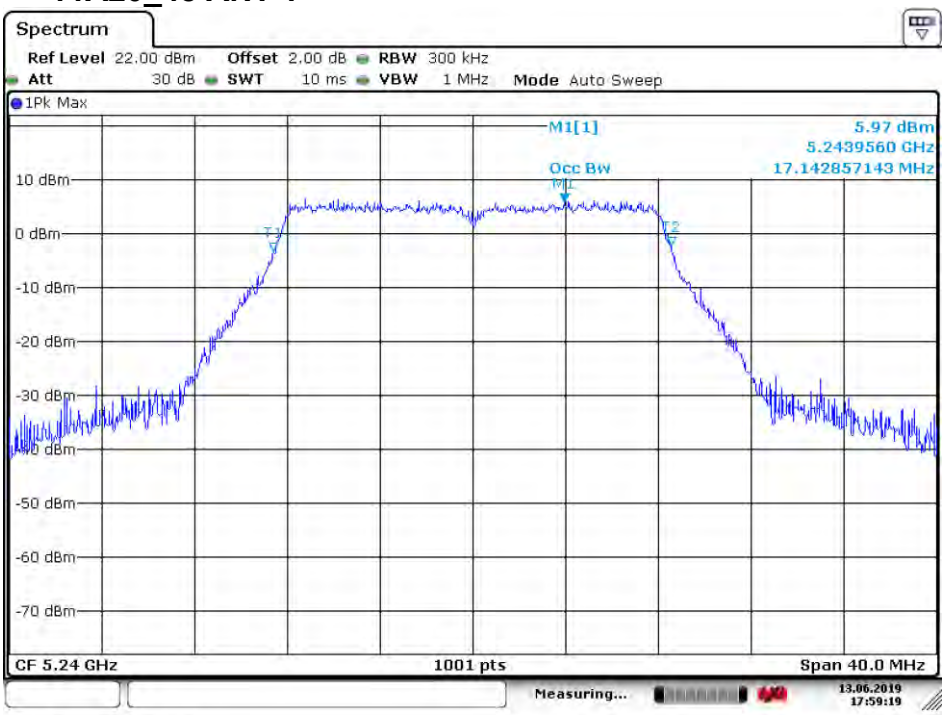
4.5.2.3 11A20_48 ANT 1



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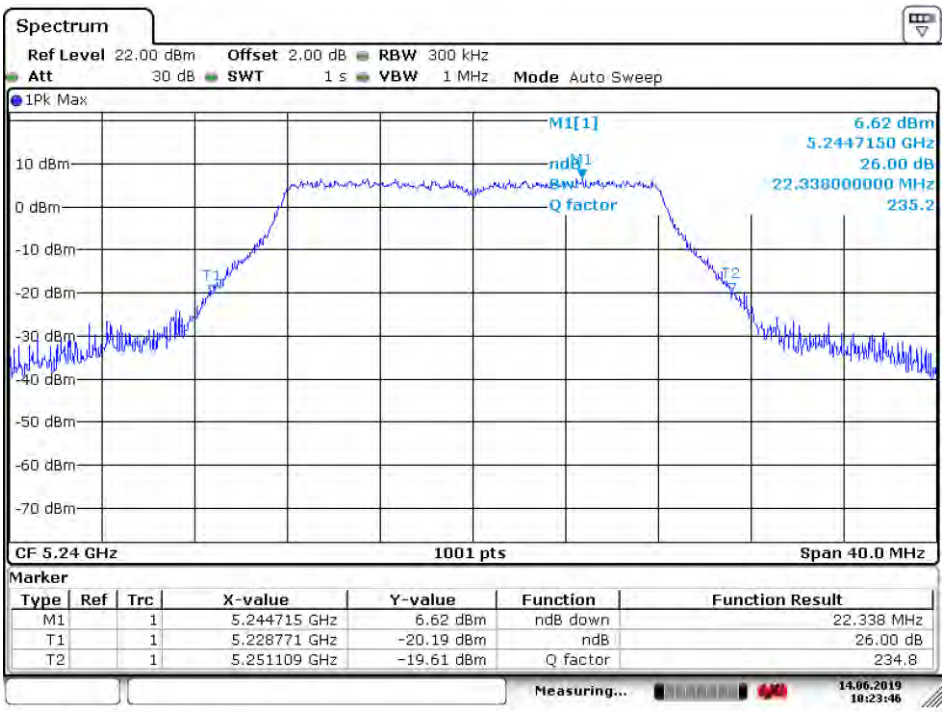

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.244715 GHz	6.62 dBm	ndB down	22.338 MHz
T1		1	5.228771 GHz	-20.19 dBm	ndB	26.00 dB
T2		1	5.251109 GHz	-19.61 dBm	Q factor	234.8

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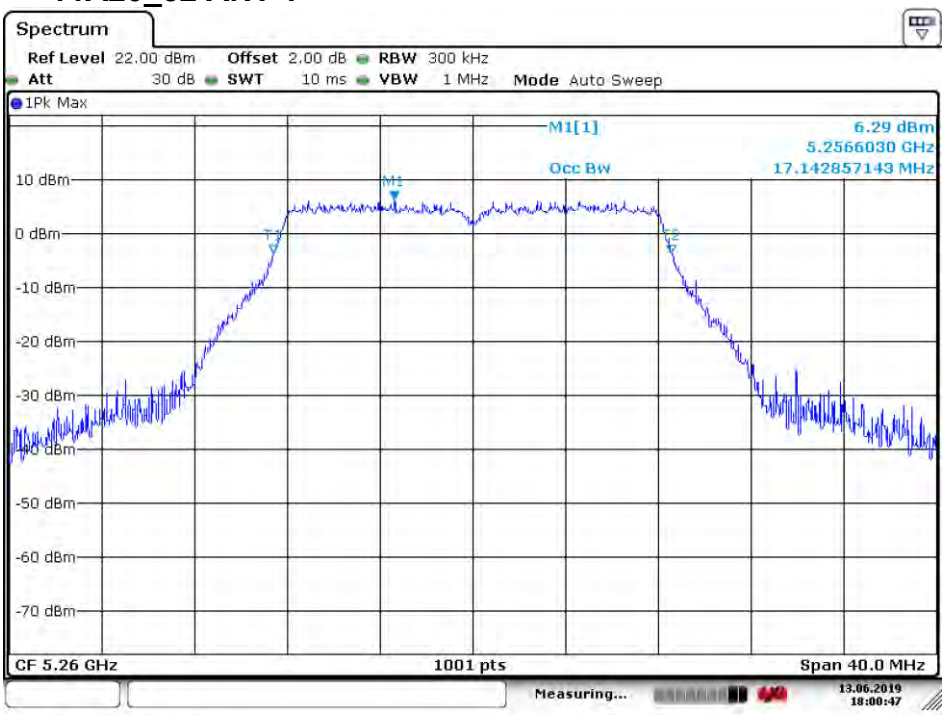
4.5.2.4 11A20_52 ANT 1



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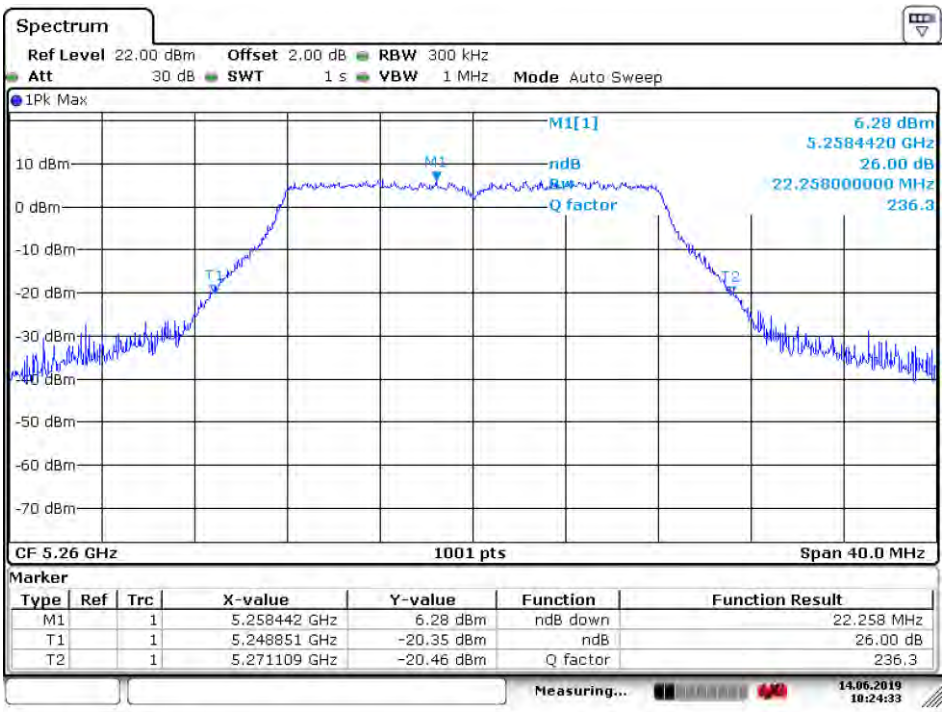

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.258442 GHz	6.28 dBm	ndB down	22.258 MHz
T1		1	5.248851 GHz	-20.35 dBm	ndB	26.00 dB
T2		1	5.271109 GHz	-20.46 dBm	Q factor	236.3

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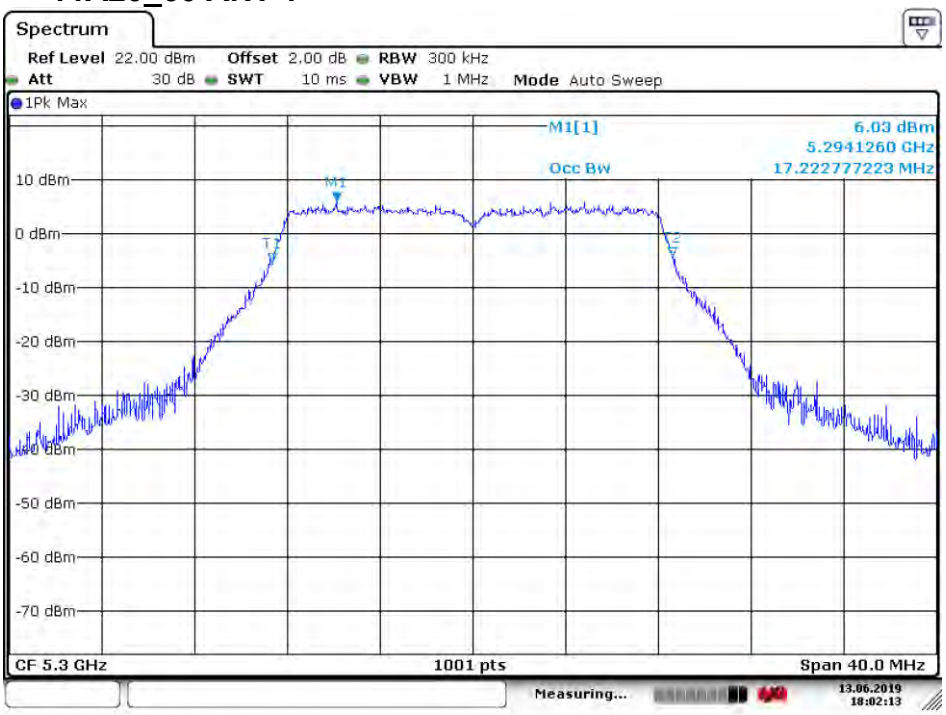
4.5.2.5 11A20_60 ANT 1



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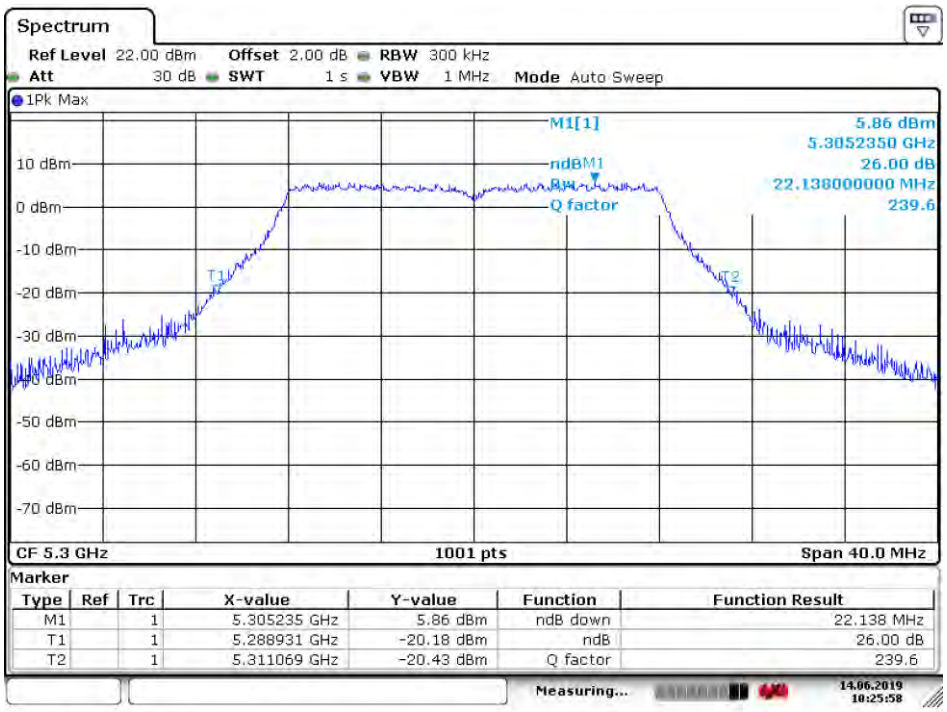

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.305235 GHz	5.86 dBm	ndB down	22.138 MHz
T1		1	5.288931 GHz	-20.18 dBm	ndB	26.00 dB
T2		1	5.311069 GHz	-20.43 dBm	Q factor	239.6

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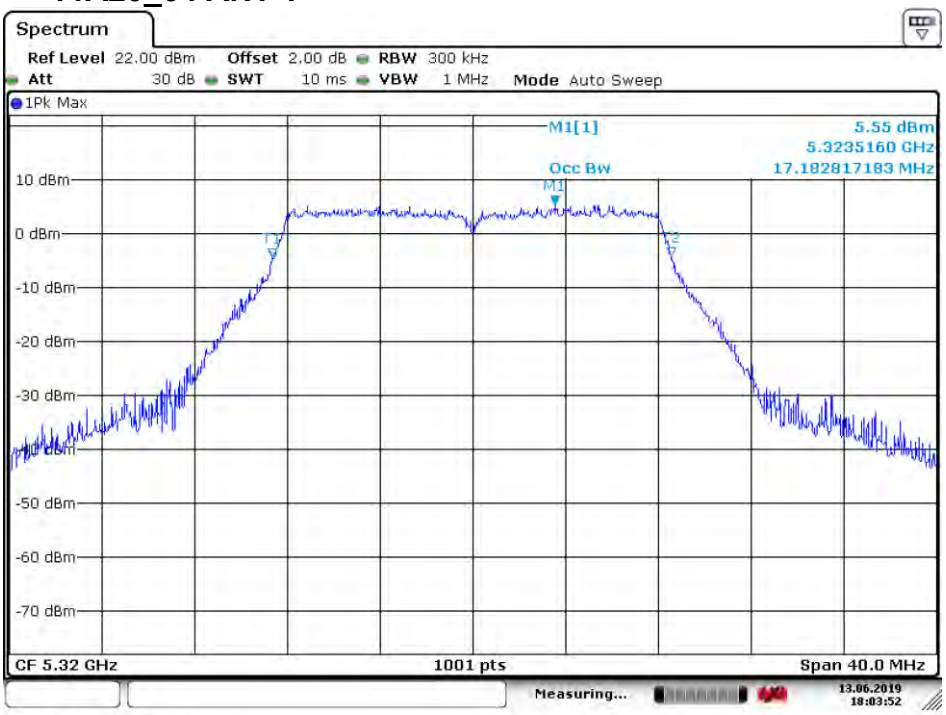
4.5.2.6 11A20_64 ANT 1



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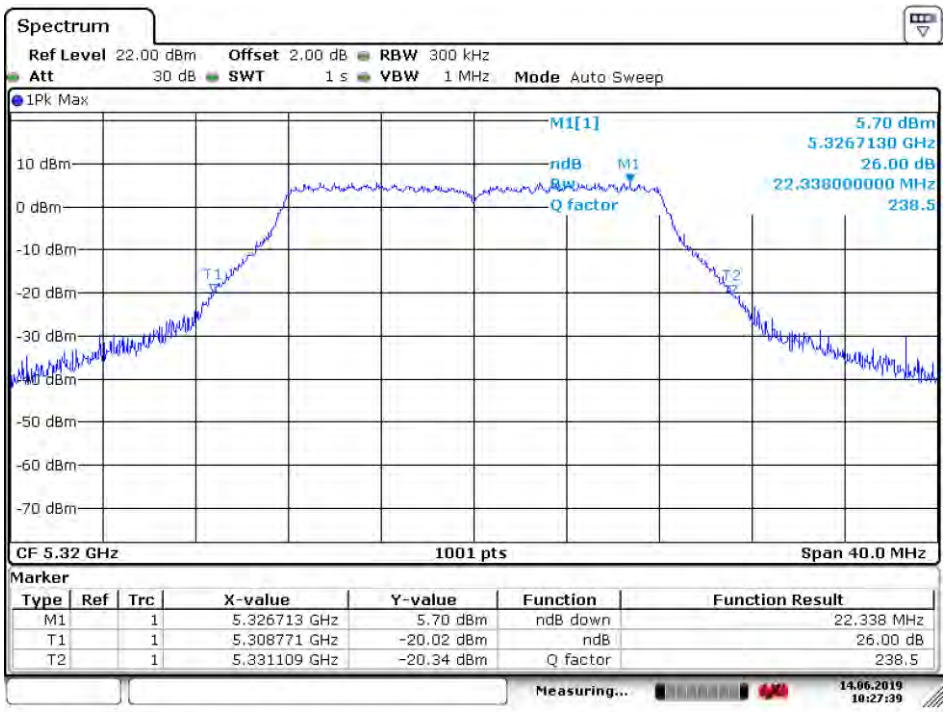

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.326713 GHz	5.70 dBm	ndB down	22.338 MHz
T1		1	5.308771 GHz	-20.02 dBm	ndB	26.00 dB
T2		1	5.331109 GHz	-20.34 dBm	Q factor	238.5

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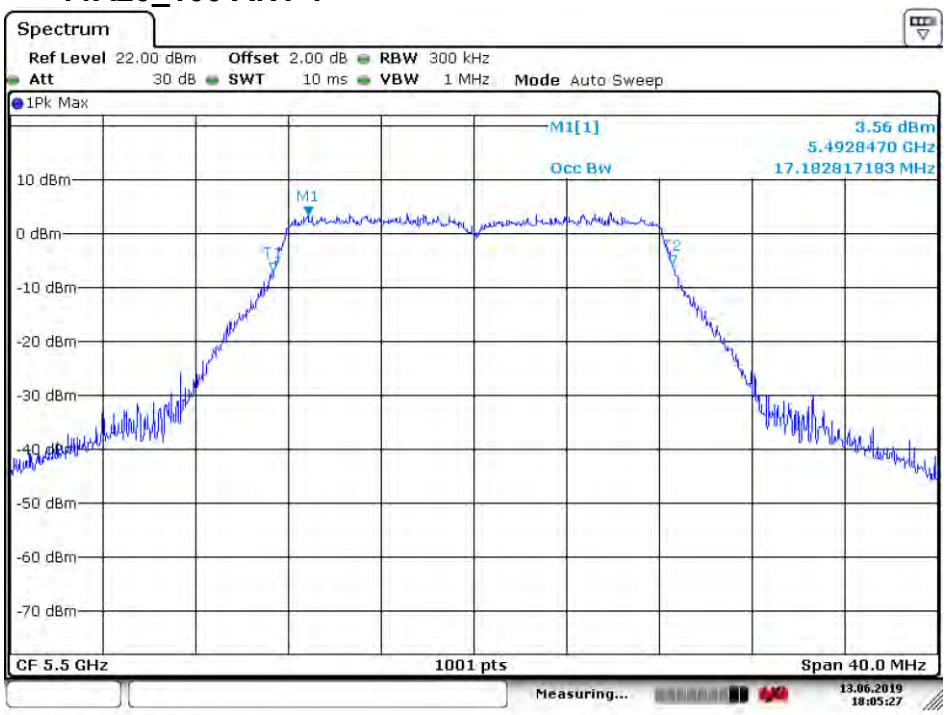
4.5.2.7 11A20_100 ANT 1



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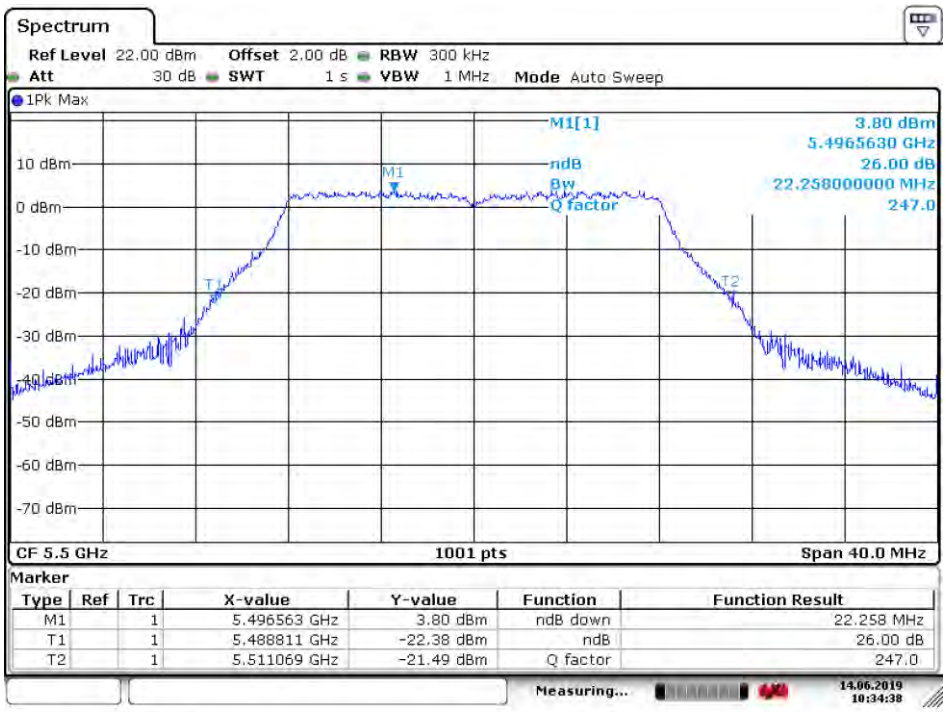

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.496563 GHz	3.80 dBm	ndB down	22.258 MHz
T1		1	5.488811 GHz	-22.38 dBm	ndB	26.00 dB
T2		1	5.511069 GHz	-21.49 dBm	Q factor	247.0

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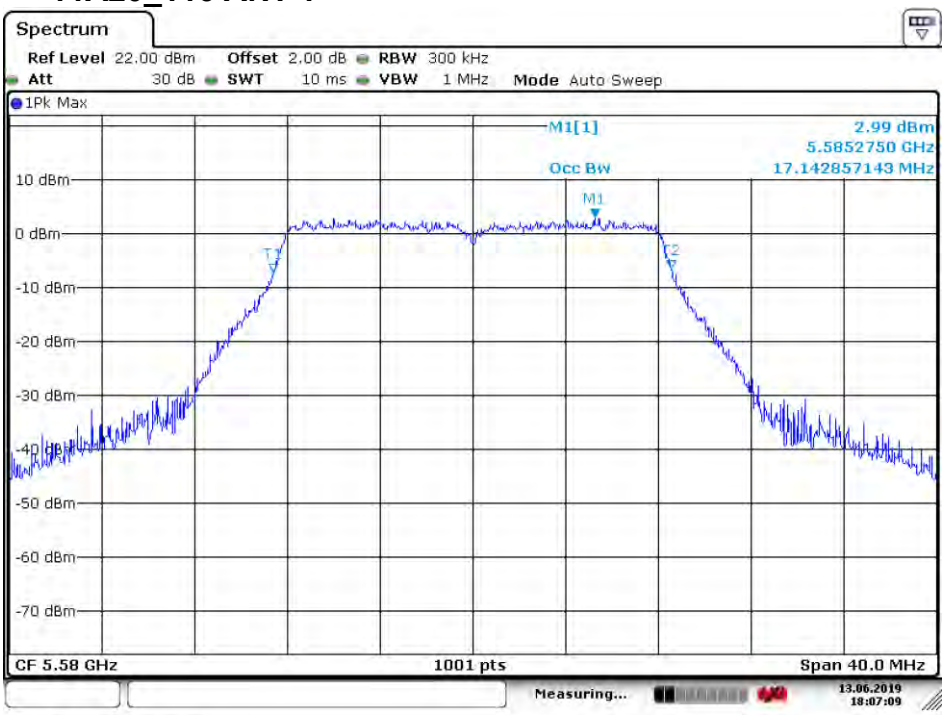
4.5.2.8 11A20_116 ANT 1



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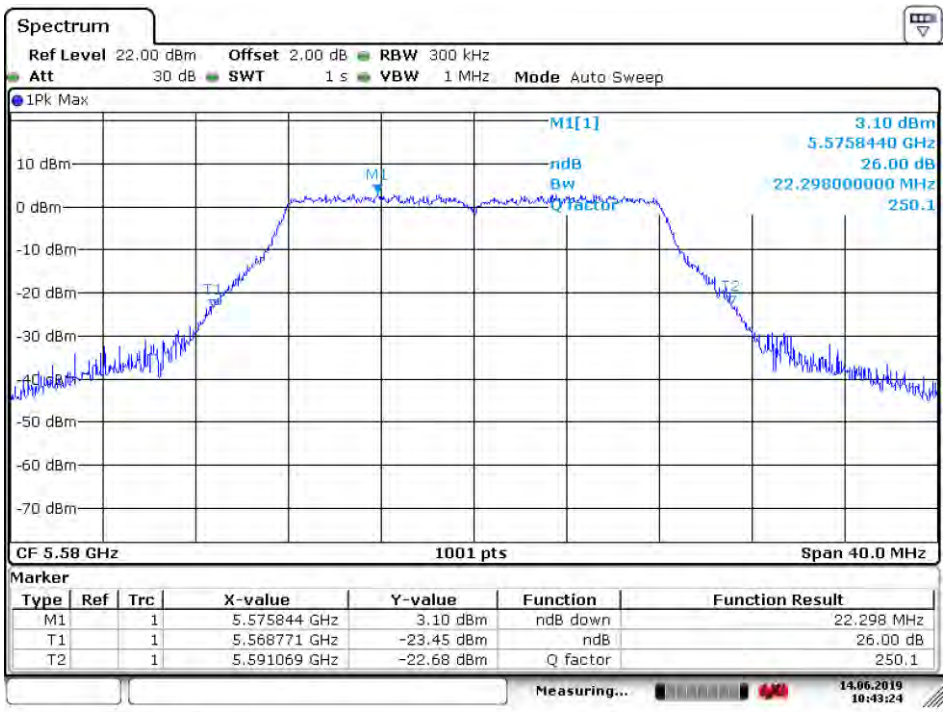

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.575844 GHz	3.10 dBm	ndB down	22.298 MHz
T1		1	5.568771 GHz	-23.45 dBm	ndB	26.00 dB
T2		1	5.591069 GHz	-22.68 dBm	Q factor	250.1

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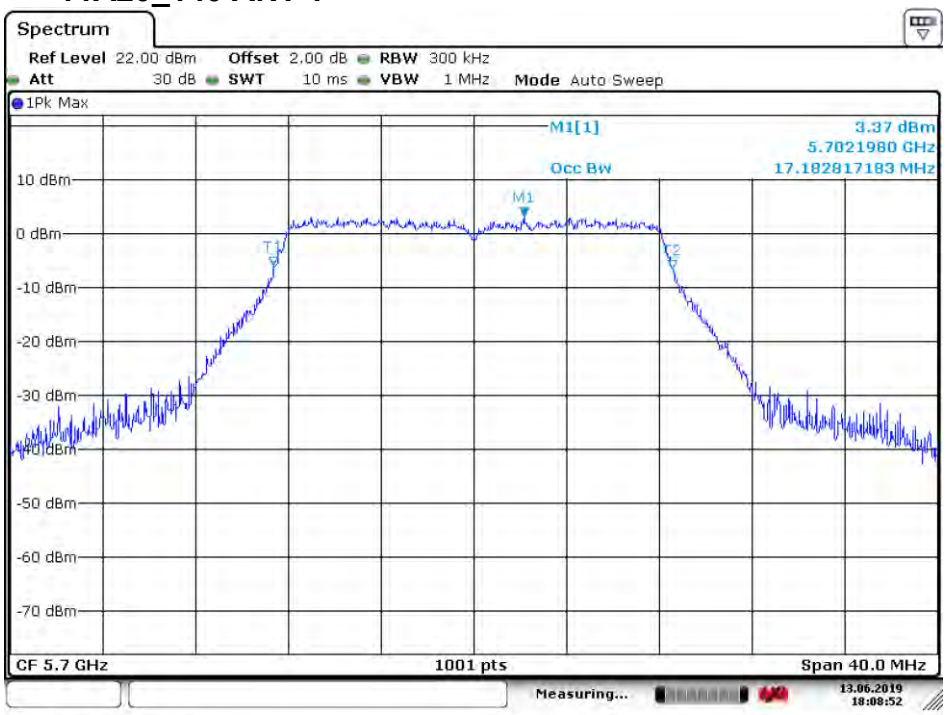
4.5.2.9 11A20_140 ANT 1



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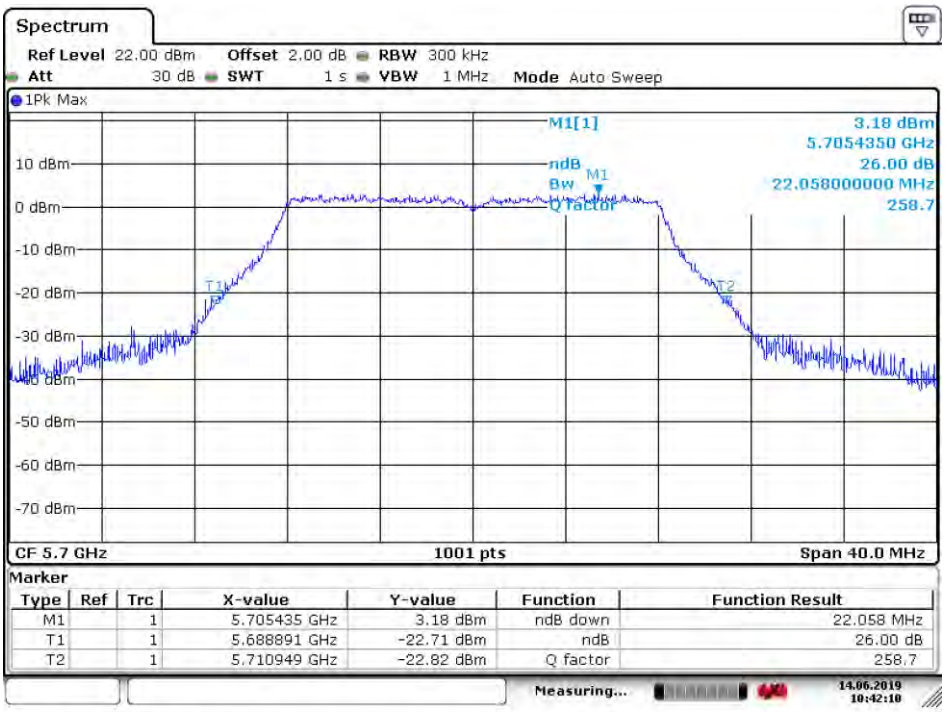

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.705435 GHz	3.18 dBm	ndB down	22.058 MHz
T1		1	5.688891 GHz	-22.71 dBm	ndB	26.00 dB
T2		1	5.710949 GHz	-22.82 dBm	Q factor	258.7

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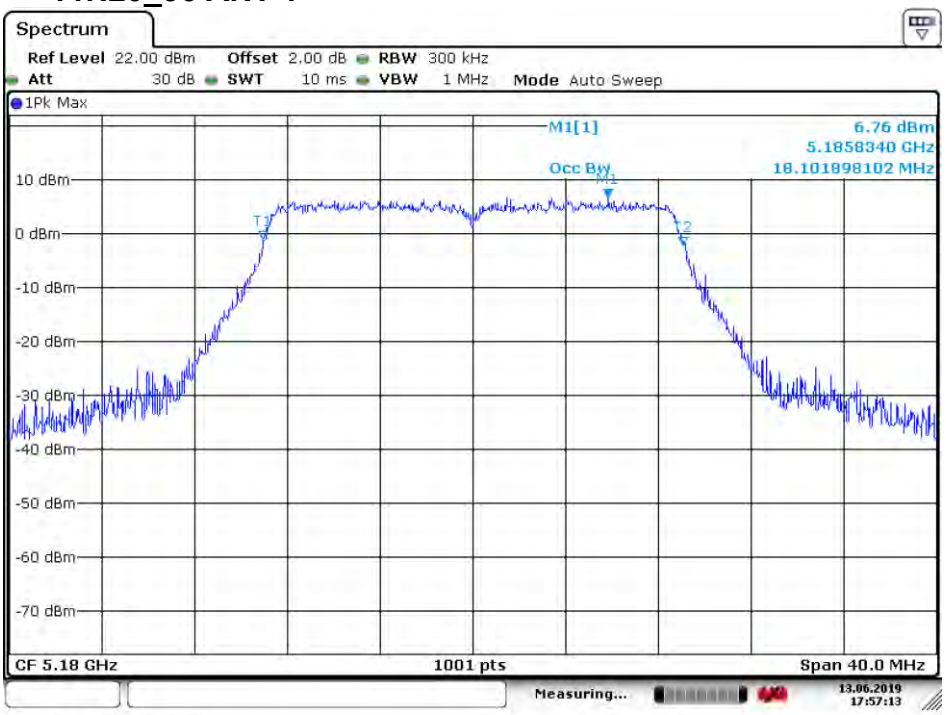
4.5.2.10 11N20_36 ANT 1



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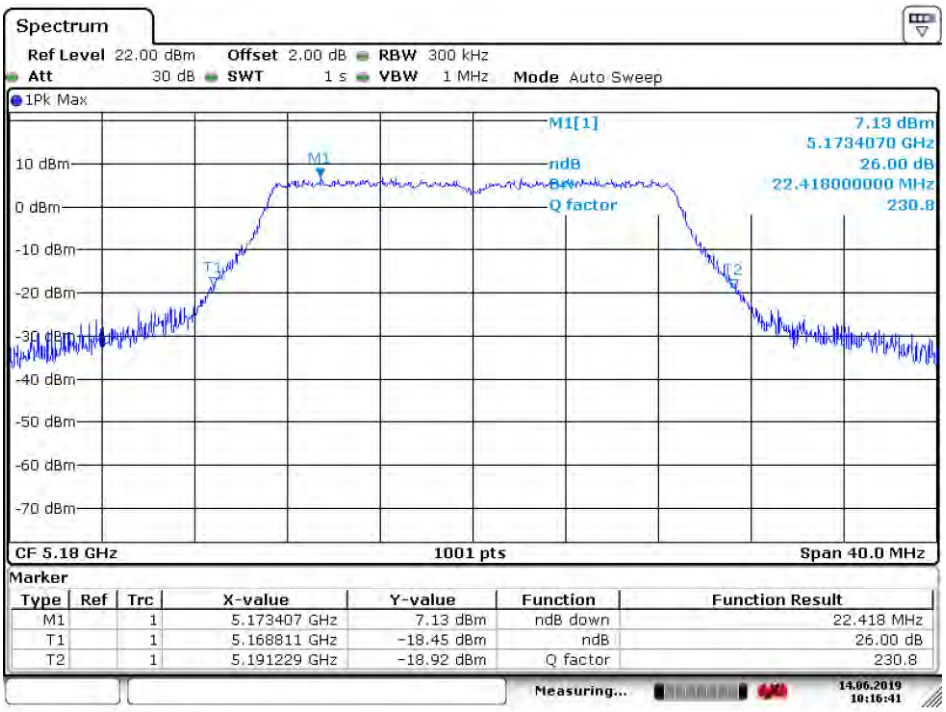

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.173407 GHz	7.13 dBm	ndB down	22.418 MHz
T1		1	5.168811 GHz	-18.45 dBm	ndB	26.00 dB
T2		1	5.191229 GHz	-18.92 dBm	Q factor	230.8

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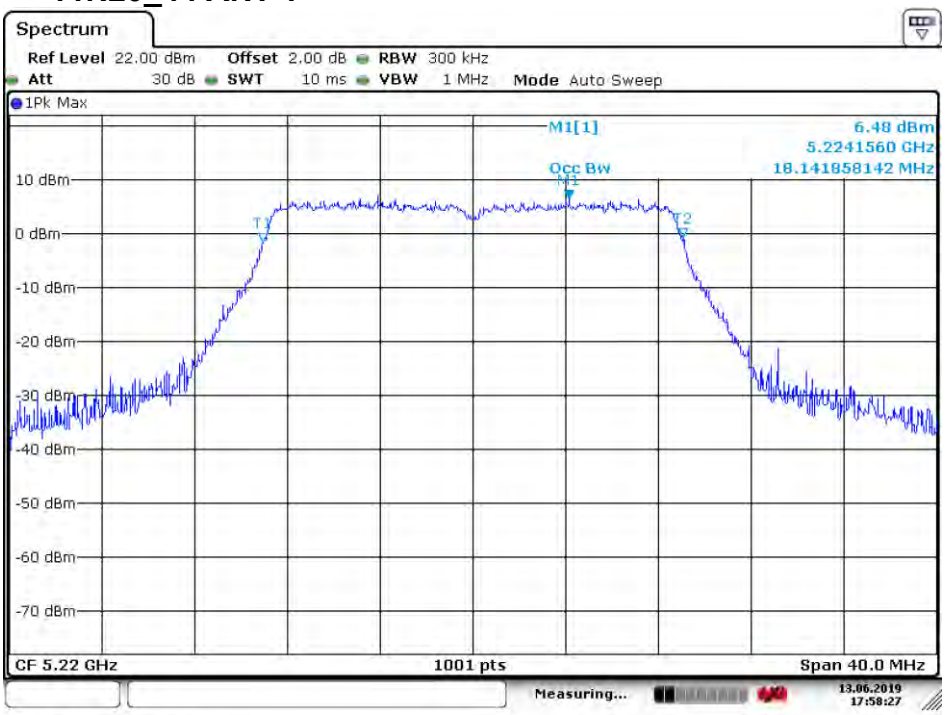
4.5.2.11 11N20_44 ANT 1



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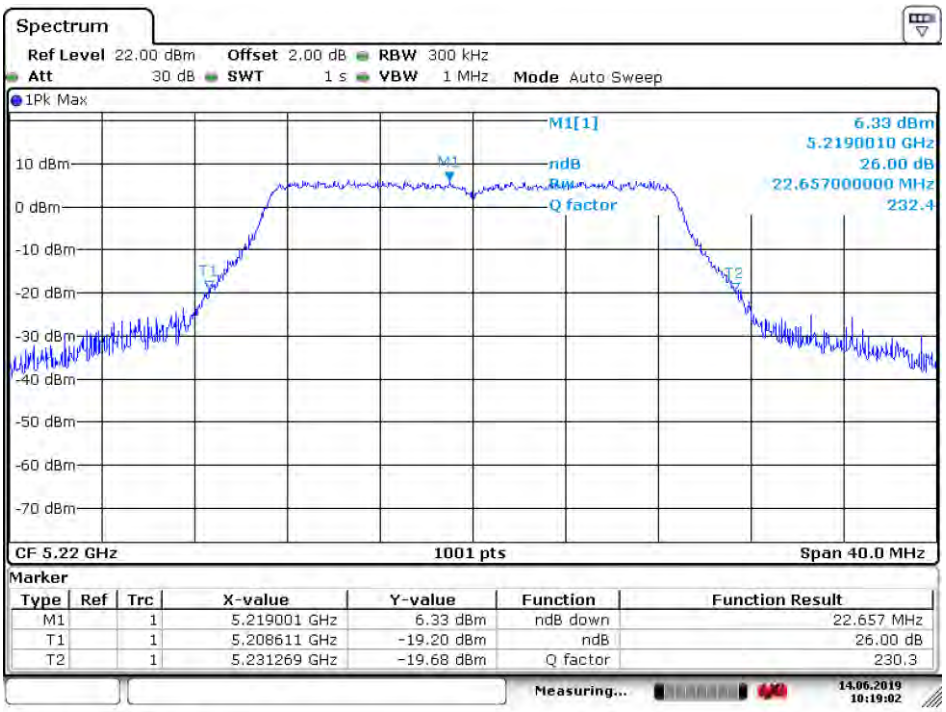

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.219001 GHz	6.33 dBm	ndB down	22.657 MHz
T1		1	5.208611 GHz	-19.20 dBm	ndB	26.00 dB
T2		1	5.231269 GHz	-19.68 dBm	Q factor	230.3

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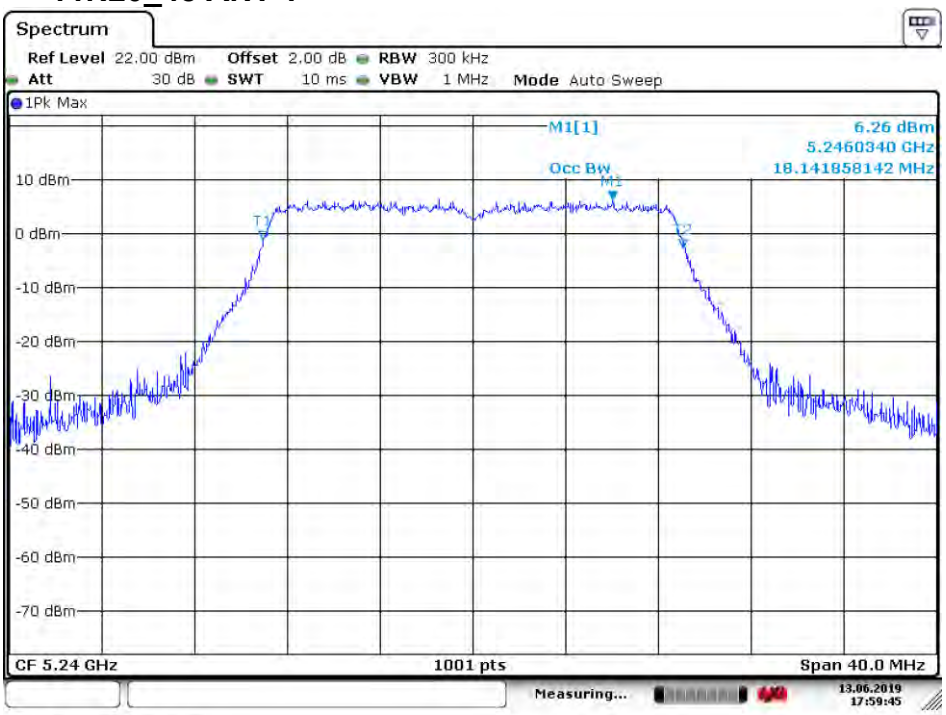
4.5.2.12 11N20_48 ANT 1



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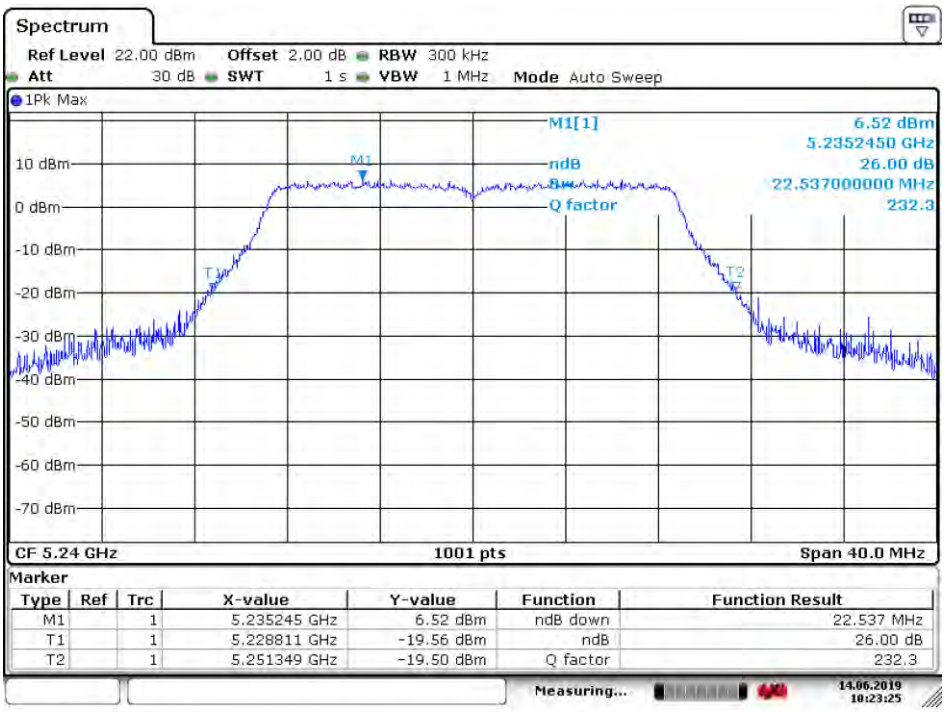

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.235245 GHz	6.52 dBm	ndB down	22.537 MHz
T1		1	5.228811 GHz	-19.56 dBm	ndB	26.00 dB
T2		1	5.251349 GHz	-19.50 dBm	Q factor	232.3

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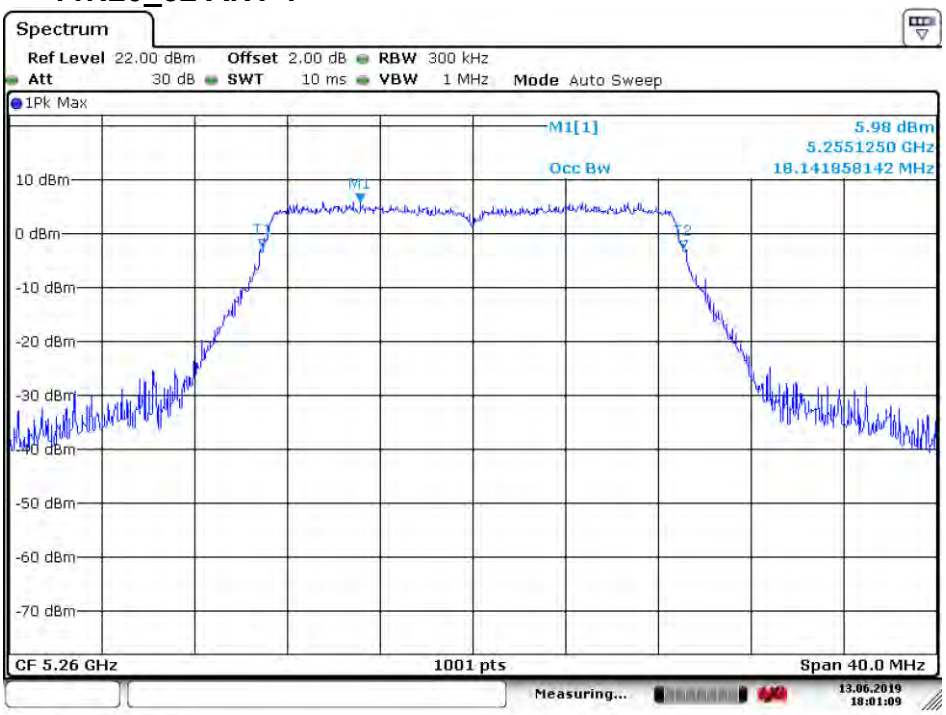
4.5.2.13 11N20_52 ANT 1



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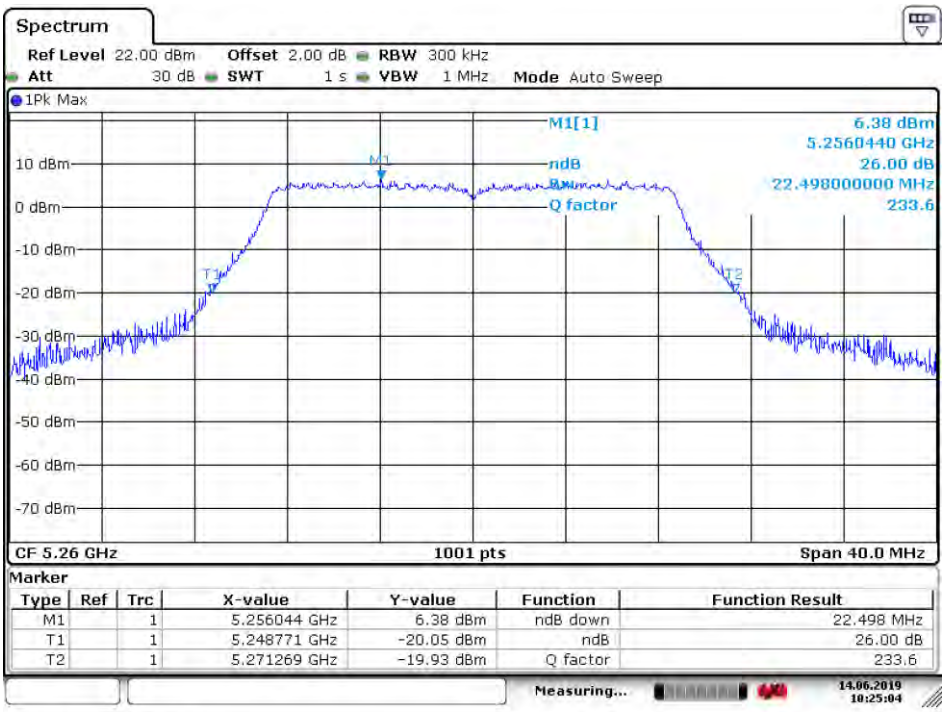

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.256044 GHz	6.38 dBm	ndB down	22.498 MHz
T1		1	5.248771 GHz	-20.05 dBm	ndB	26.00 dB
T2		1	5.271269 GHz	-19.93 dBm	Q factor	233.6

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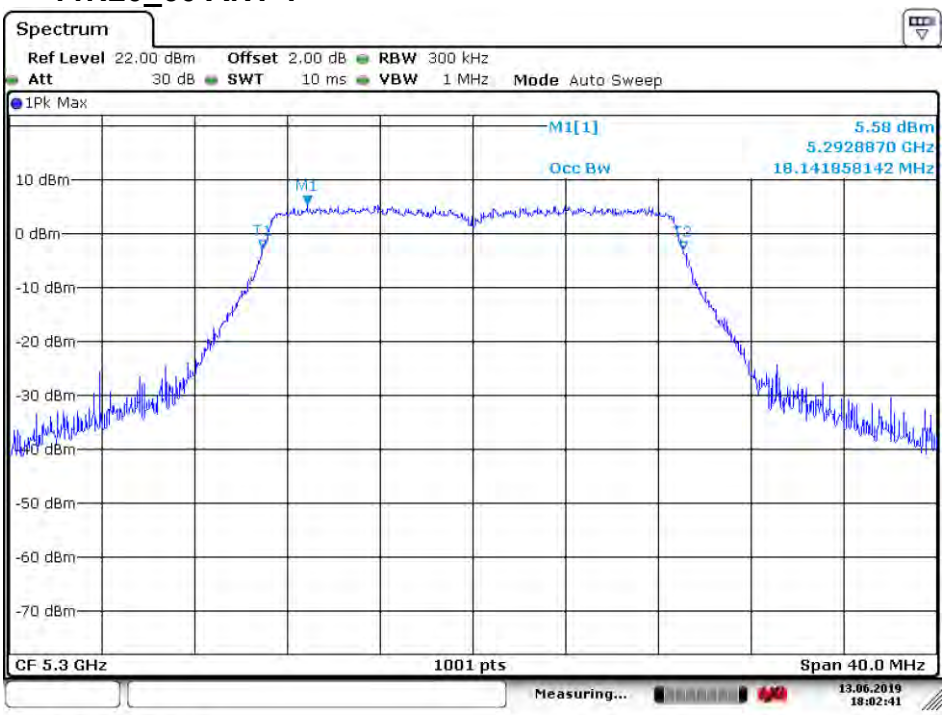
4.5.2.14 11N20_60 ANT 1



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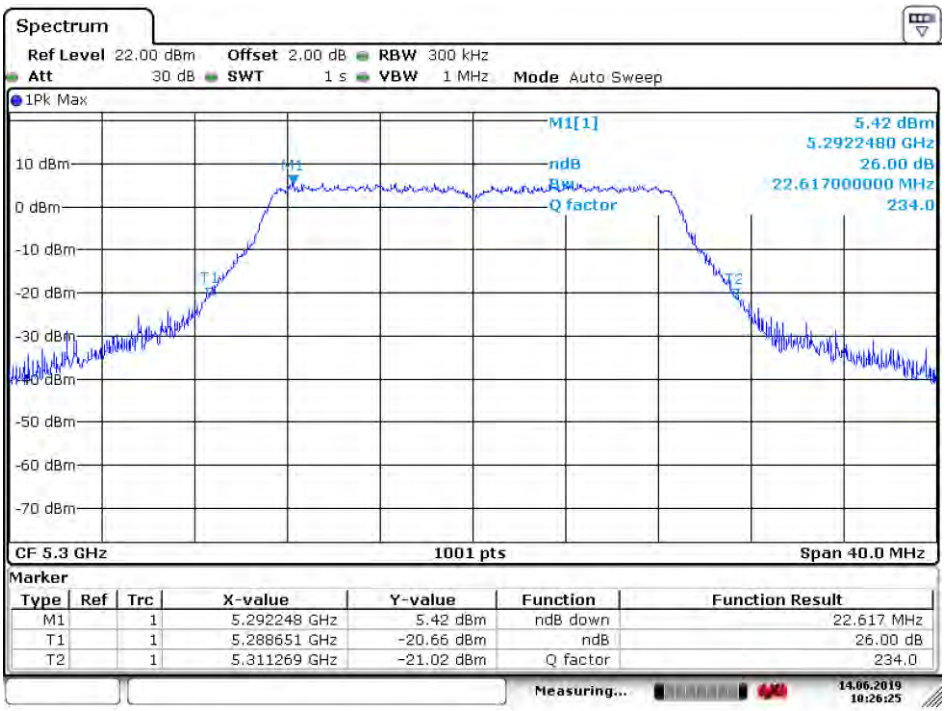

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.292248 GHz	5.42 dBm	ndB down	22.617 MHz
T1		1	5.288651 GHz	-20.66 dBm	ndB	26.00 dB
T2		1	5.311269 GHz	-21.02 dBm	Q factor	234.0

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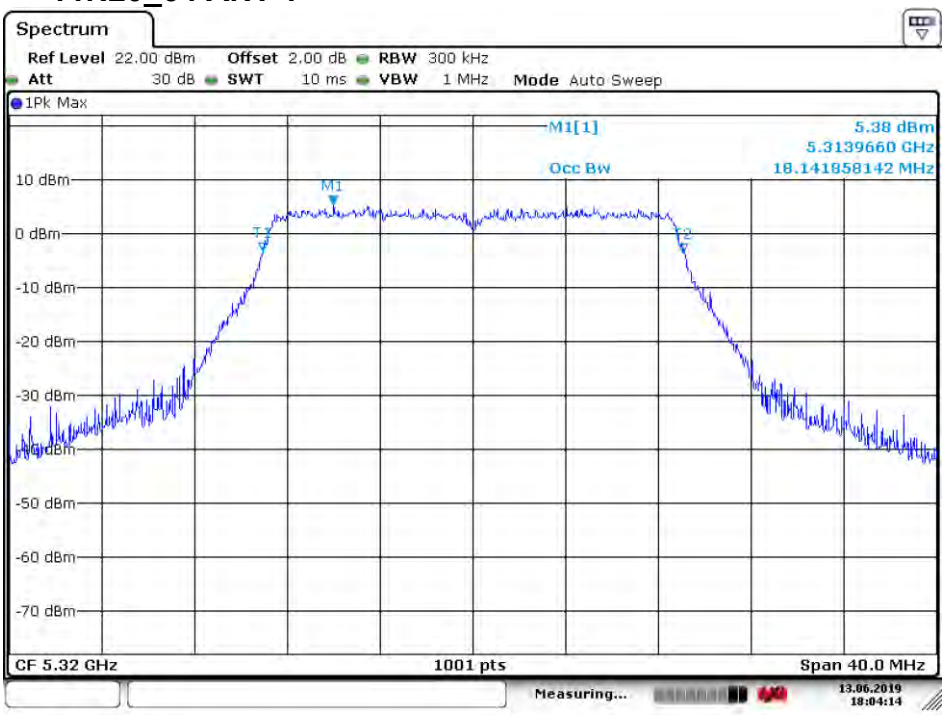
4.5.2.15 11N20_64 ANT 1



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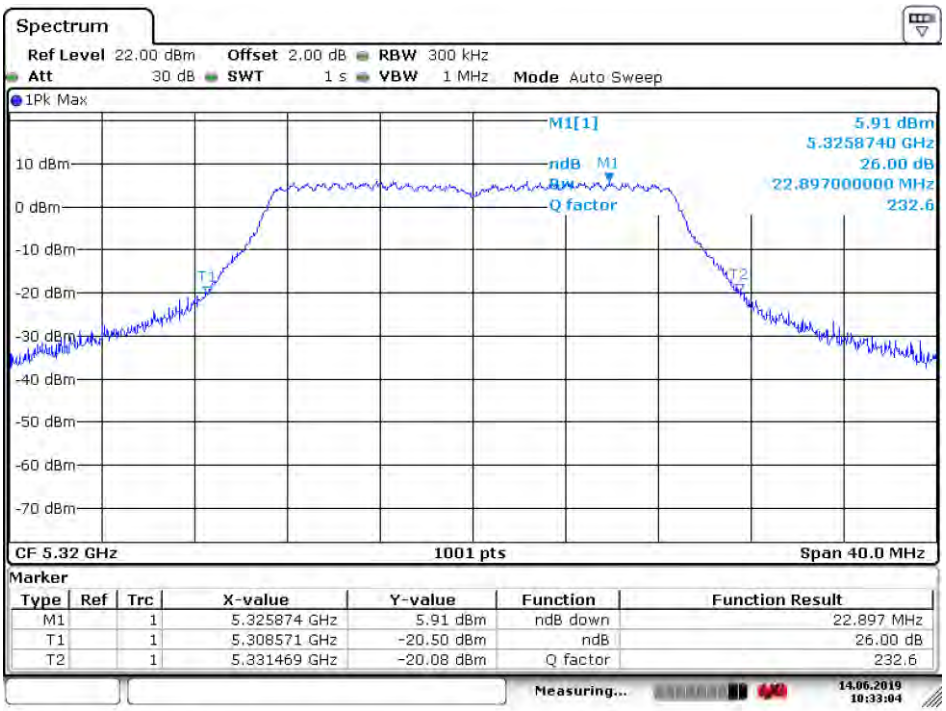

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.325874 GHz	5.91 dBm	ndB down	22.897 MHz
T1		1	5.308571 GHz	-20.50 dBm	ndB	26.00 dB
T2		1	5.331469 GHz	-20.08 dBm	Q factor	232.6

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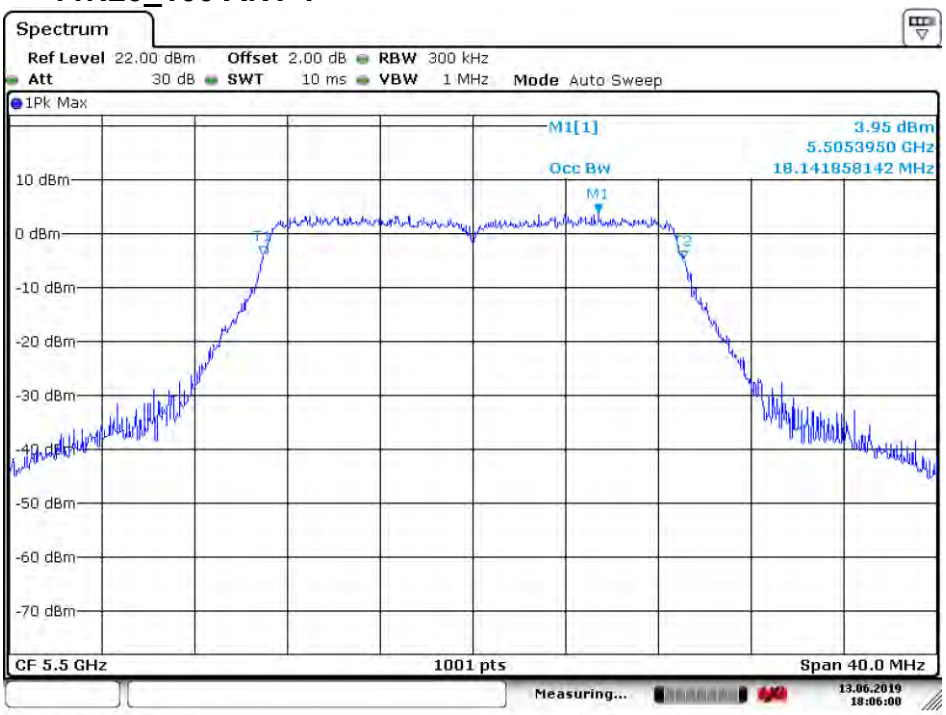

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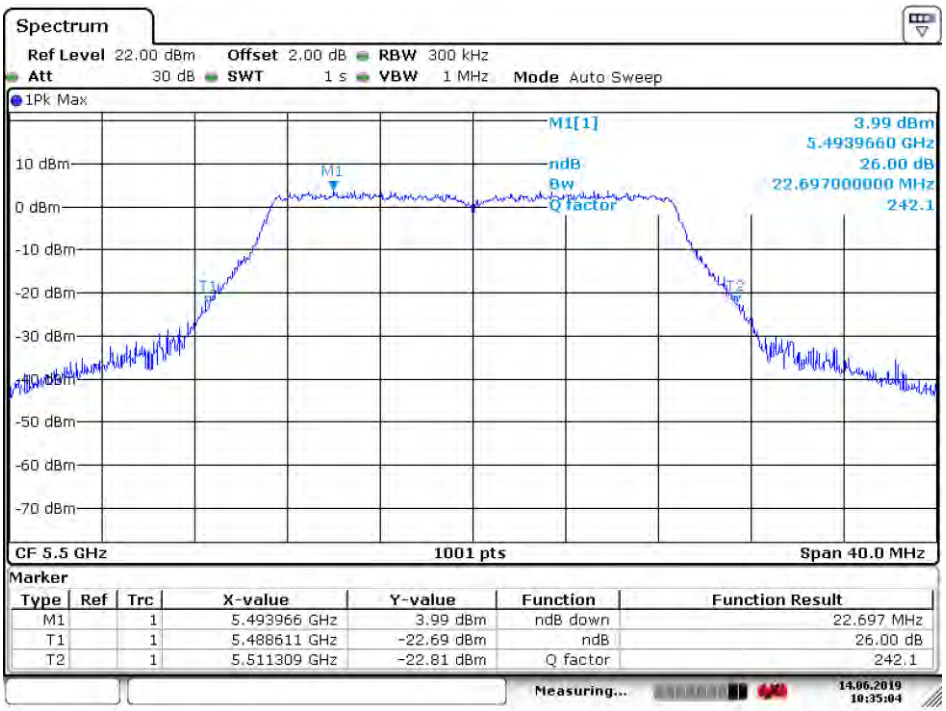

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.493966 GHz	3.99 dBm	ndB down	22.697 MHz
T1		1	5.488611 GHz	-22.69 dBm	ndB	26.00 dB
T2		1	5.511309 GHz	-22.81 dBm	Q factor	242.1

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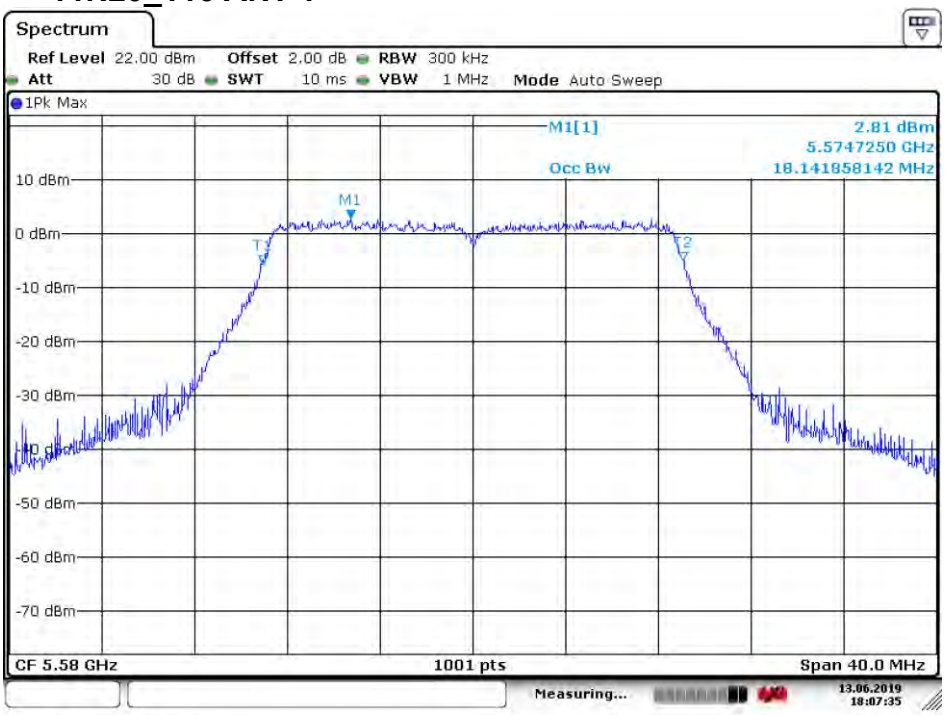
4.5.2.17 11N20_116 ANT 1



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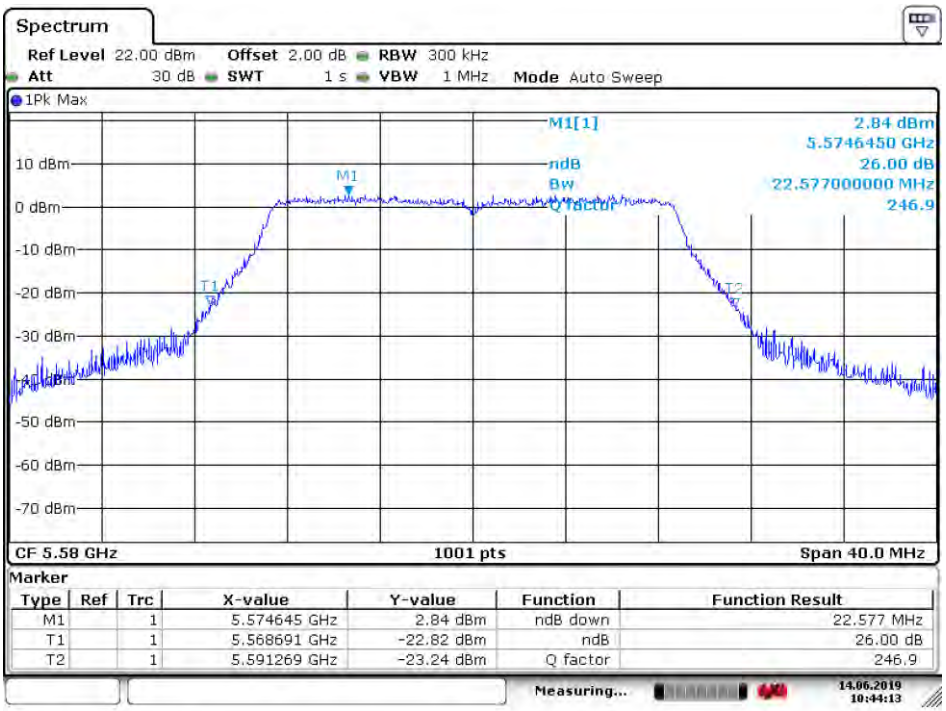

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.574645 GHz	2.84 dBm	ndB down	22.577 MHz
T1		1	5.568691 GHz	-22.82 dBm	ndB	26.00 dB
T2		1	5.591269 GHz	-23.24 dBm	Q factor	246.9

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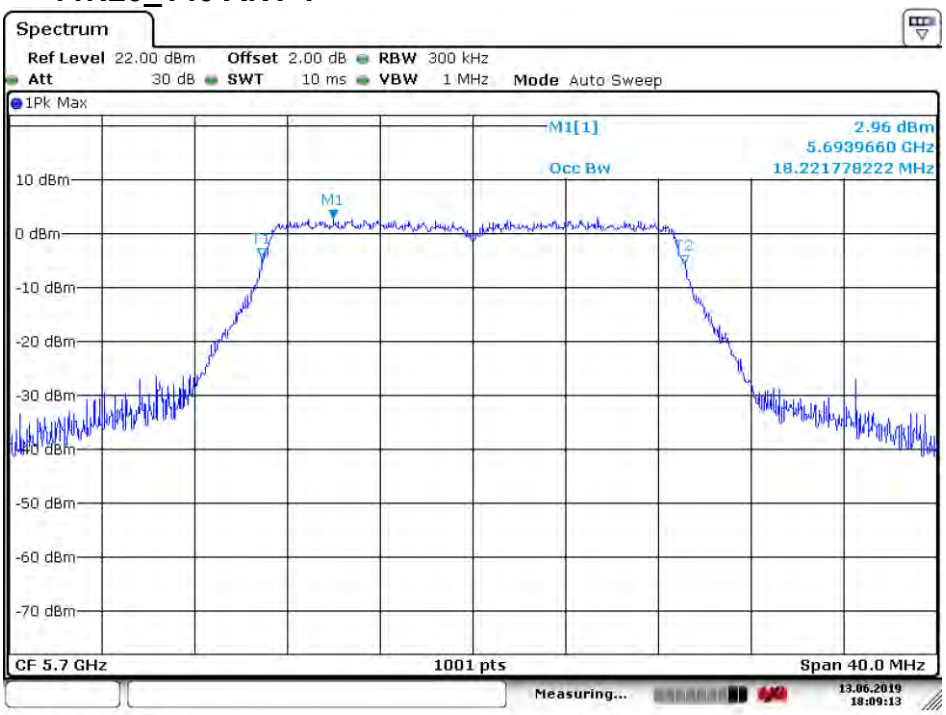
4.5.2.18 11N20_140 ANT 1



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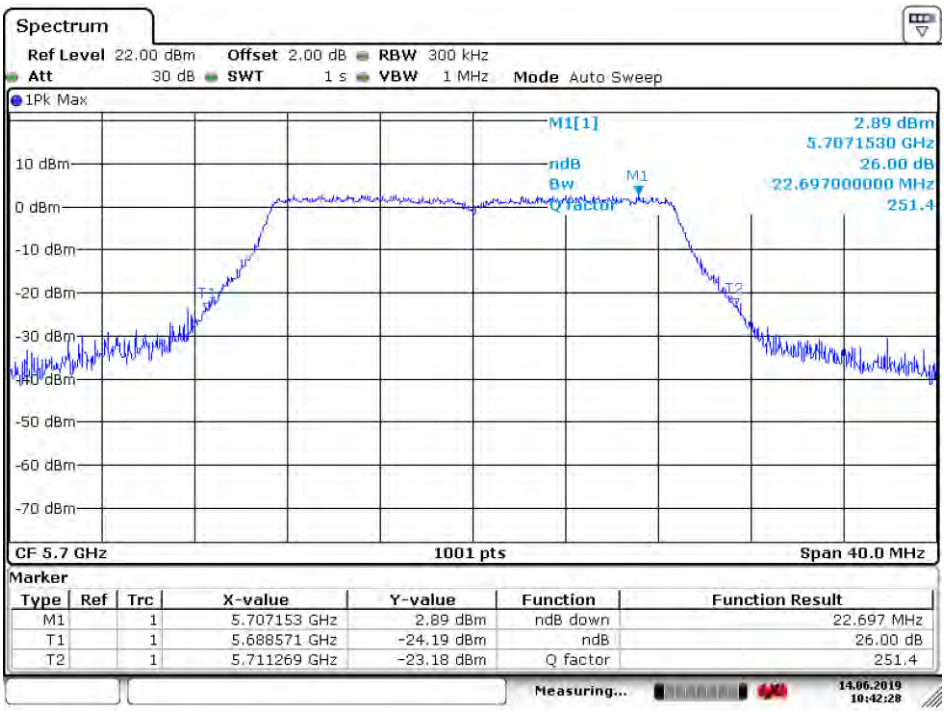

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.707153 GHz	2.89 dBm	ndB down	22.697 MHz
T1		1	5.688571 GHz	-24.19 dBm	ndB	26.00 dB
T2		1	5.711269 GHz	-23.18 dBm	Q factor	251.4

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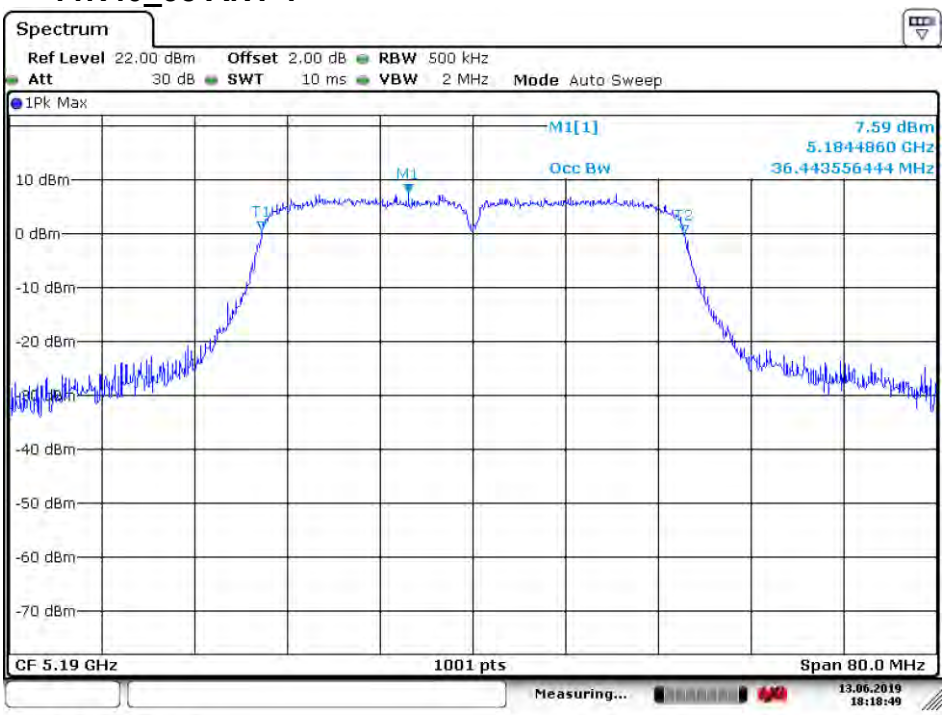
4.5.2.19 11N40_38 ANT 1



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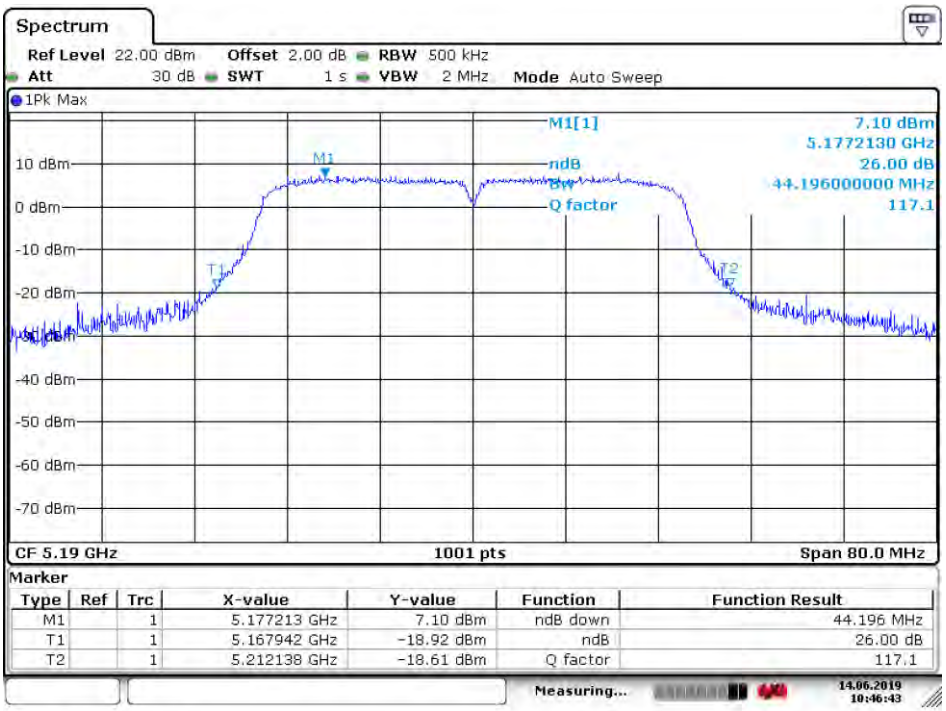

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.177213 GHz	7.10 dBm	ndB down	44.196 MHz
T1		1	5.167942 GHz	-18.92 dBm	ndB	26.00 dB
T2		1	5.212138 GHz	-18.61 dBm	Q factor	117.1

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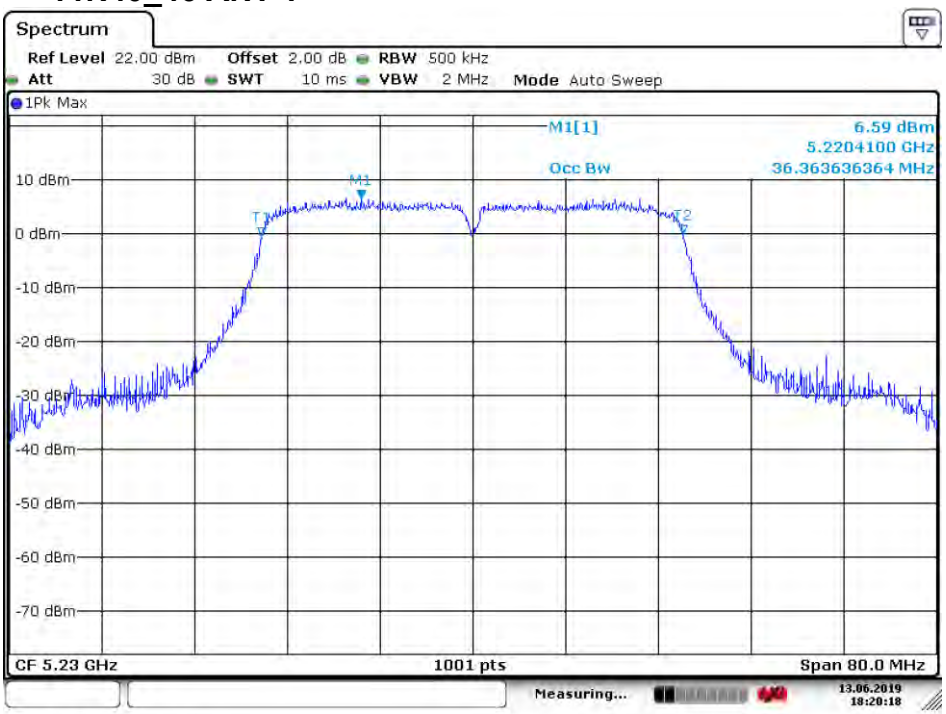
4.5.2.20 11N40_46 ANT 1



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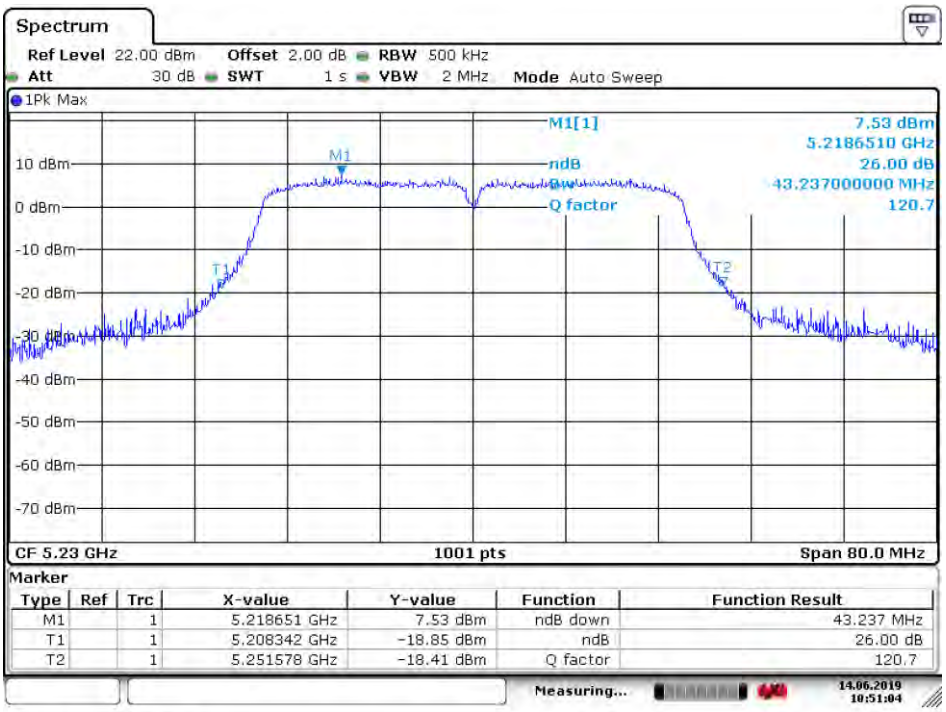

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.218651 GHz	7.53 dBm	ndB down	43.237 MHz
T1		1	5.208342 GHz	-18.85 dBm	ndB	26.00 dB
T2		1	5.251578 GHz	-18.41 dBm	Q factor	120.7

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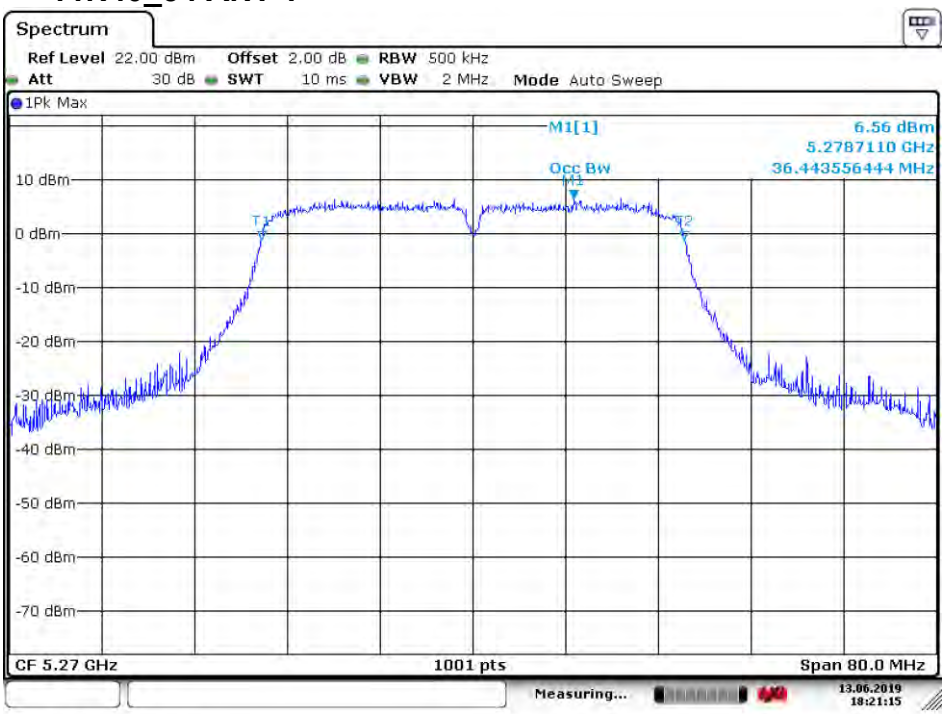
4.5.2.21 11N40_54 ANT 1



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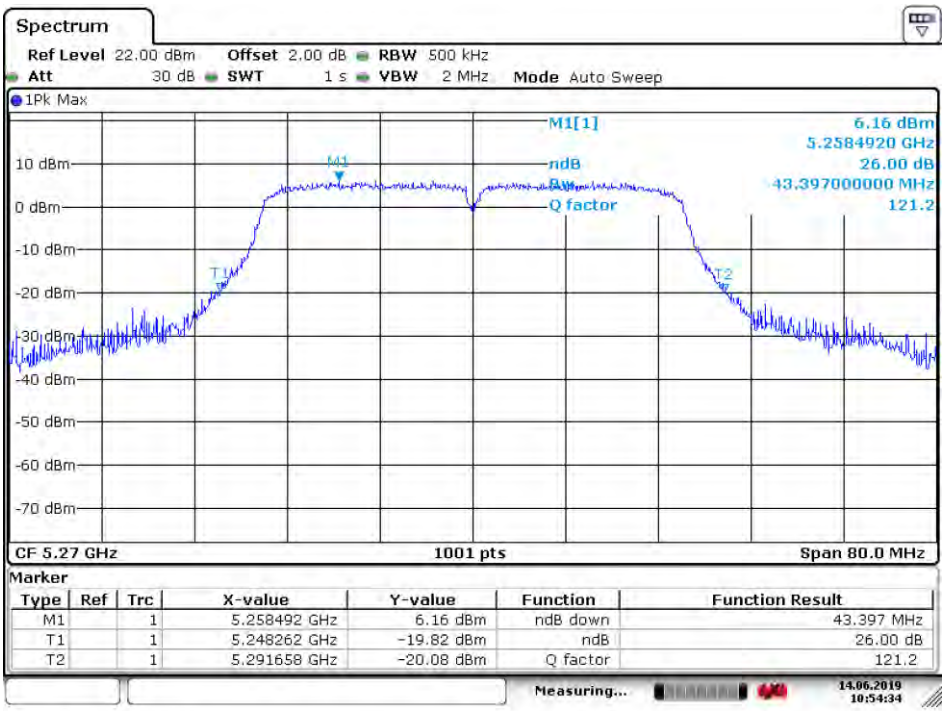

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.258492 GHz	6.16 dBm	ndB down	43.397 MHz
T1		1	5.248262 GHz	-19.82 dBm	ndB	26.00 dB
T2		1	5.291658 GHz	-20.08 dBm	Q factor	121.2

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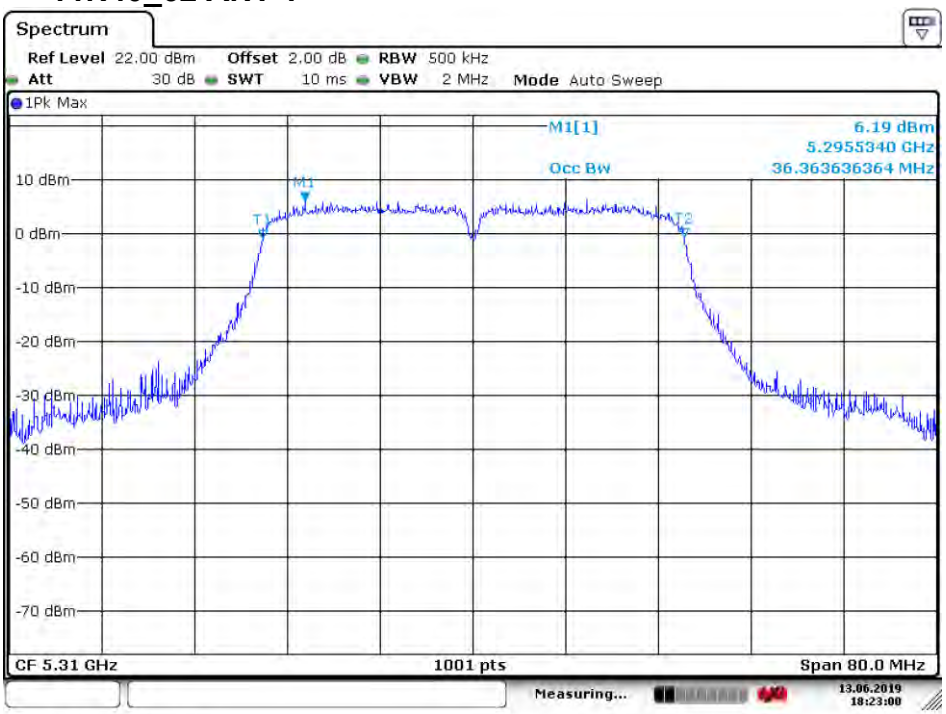
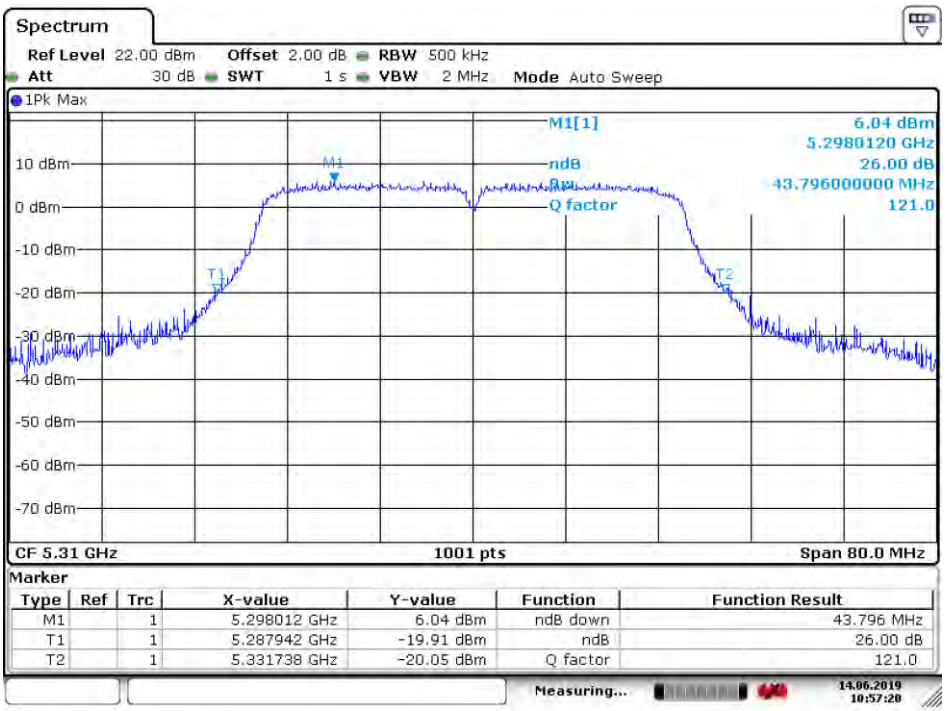
4.5.2.22 11N40_62 ANT 1



Date: 13.JUN.2019 18:23:01



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.298012 GHz	6.04 dBm	ndB down	43.796 MHz
T1		1	5.287942 GHz	-19.91 dBm	ndB	26.00 dB
T2		1	5.331738 GHz	-20.05 dBm	Q factor	121.0

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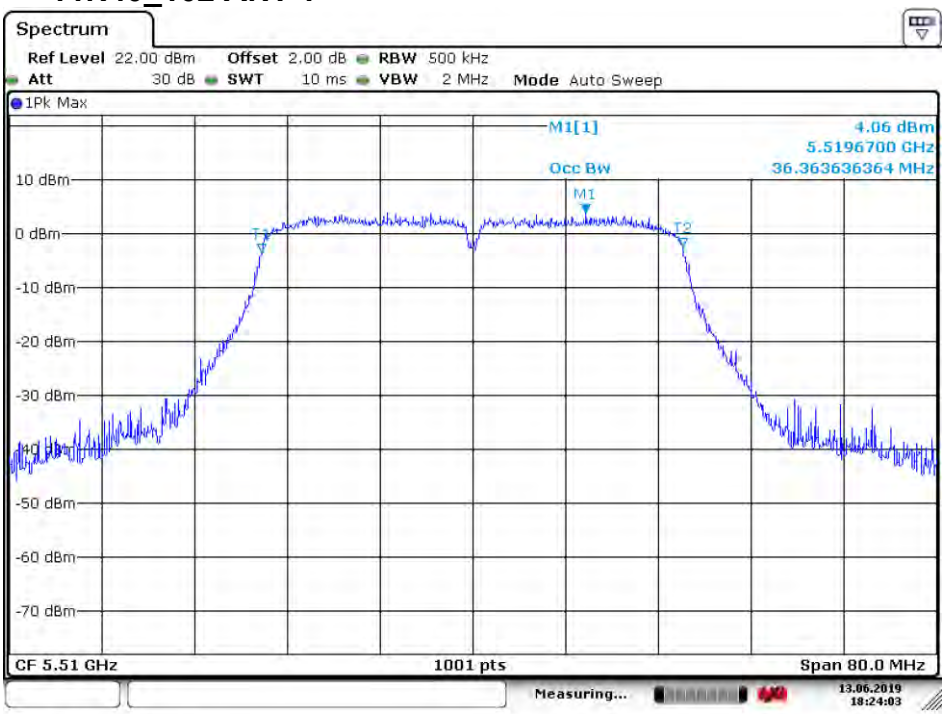
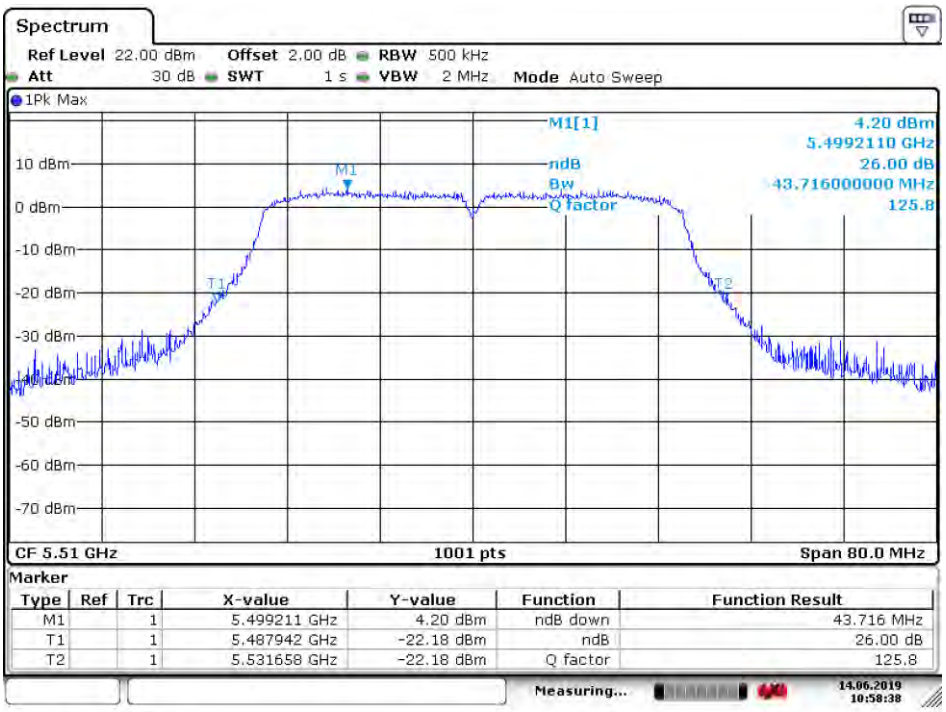
4.5.2.23 11N40_102 ANT 1



Date: 13.JUN.2019 18:24:03



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.499211 GHz	4.20 dBm	ndB down	43.716 MHz
T1		1	5.487942 GHz	-22.18 dBm	ndB	26.00 dB
T2		1	5.531658 GHz	-22.18 dBm	Q factor	125.8

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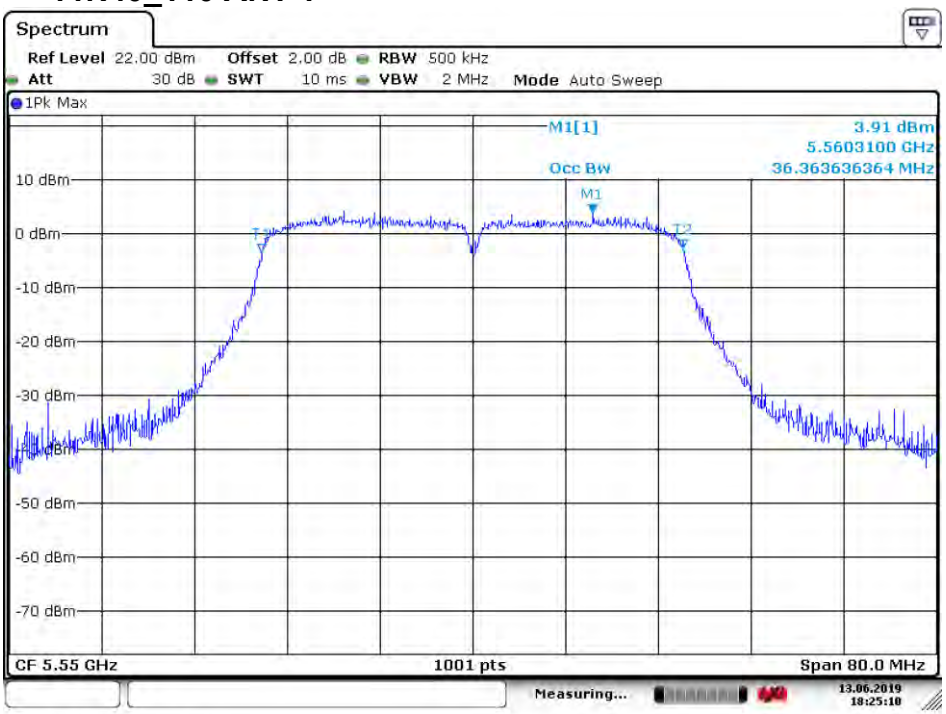
4.5.2.24 11N40_110 ANT 1



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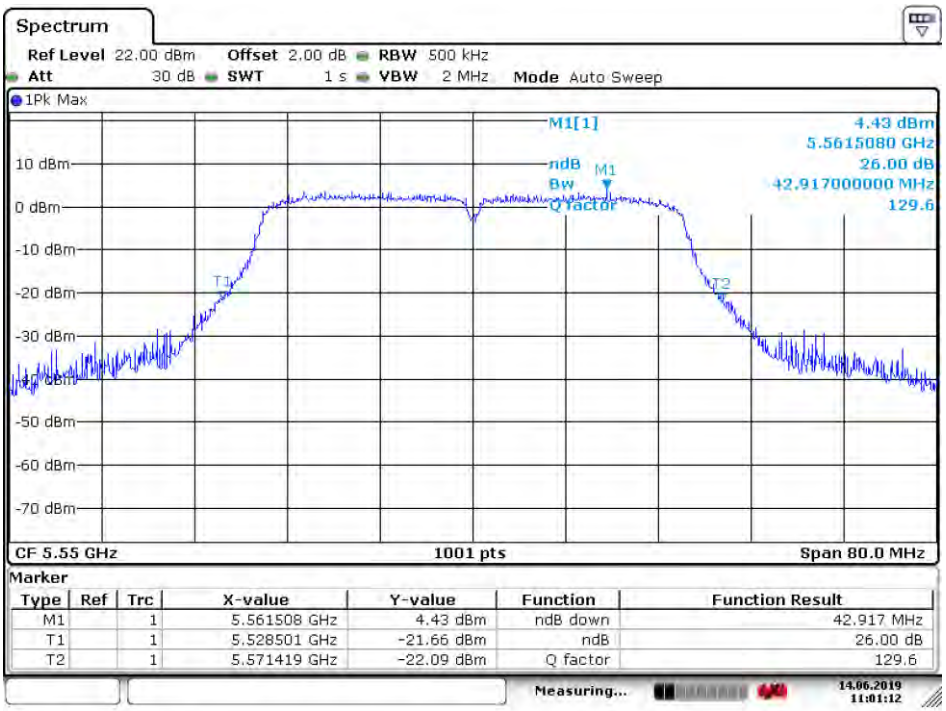

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.561508 GHz	4.43 dBm	ndB down	42.917 MHz
T1		1	5.528501 GHz	-21.66 dBm	ndB	26.00 dB
T2		1	5.571419 GHz	-22.09 dBm	Q factor	129.6

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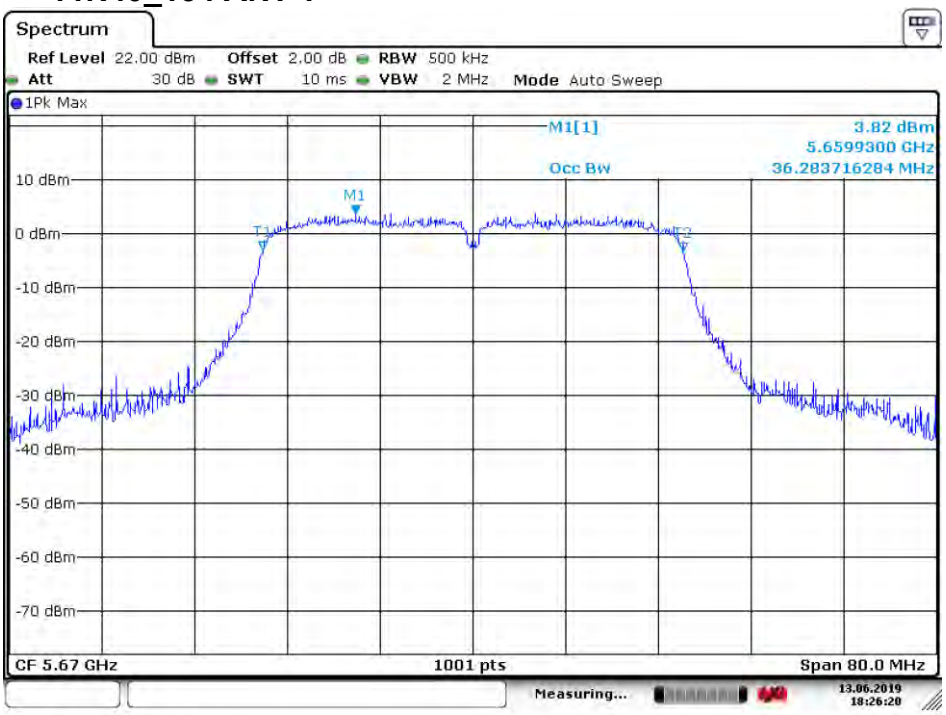
4.5.2.25 11N40_134 ANT 1



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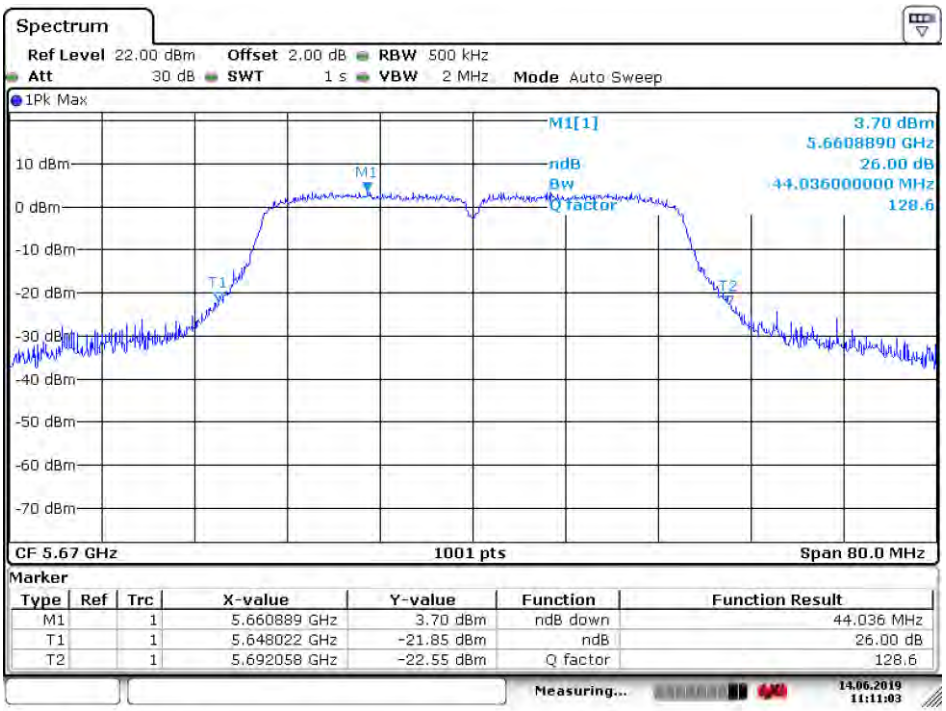

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.660889 GHz	3.70 dBm	ndB down	44.036 MHz
T1		1	5.648022 GHz	-21.85 dBm	ndB	26.00 dB
T2		1	5.692058 GHz	-22.55 dBm	Q factor	128.6

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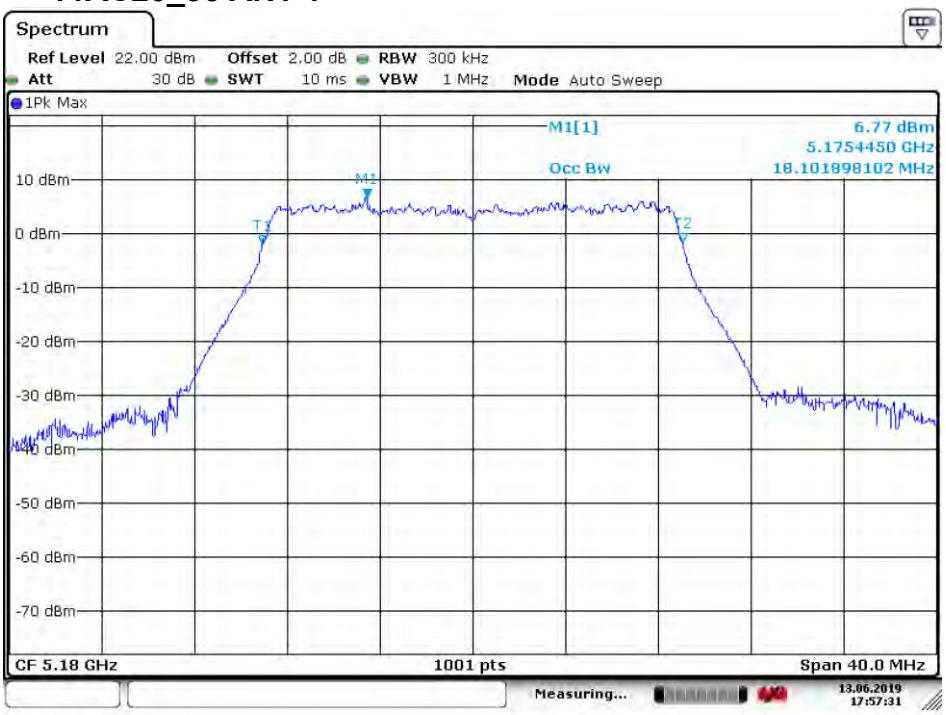
4.5.2.26 11AC20_36 ANT 1



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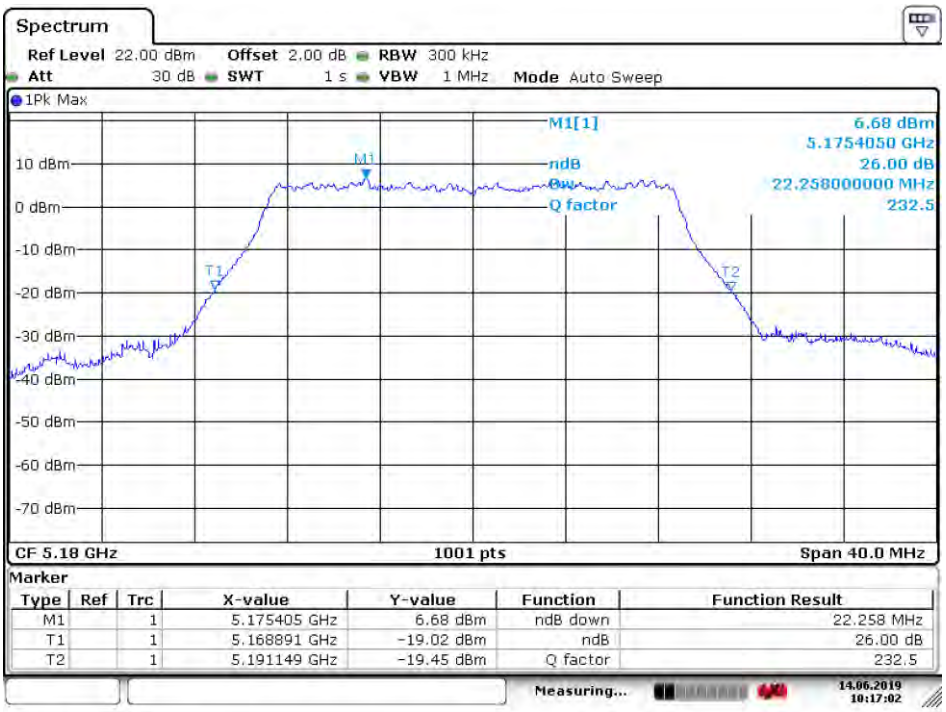

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.175405 GHz	6.68 dBm	ndB down	22.258 MHz
T1		1	5.168891 GHz	-19.02 dBm	ndB	26.00 dB
T2		1	5.191149 GHz	-19.45 dBm	Q factor	232.5

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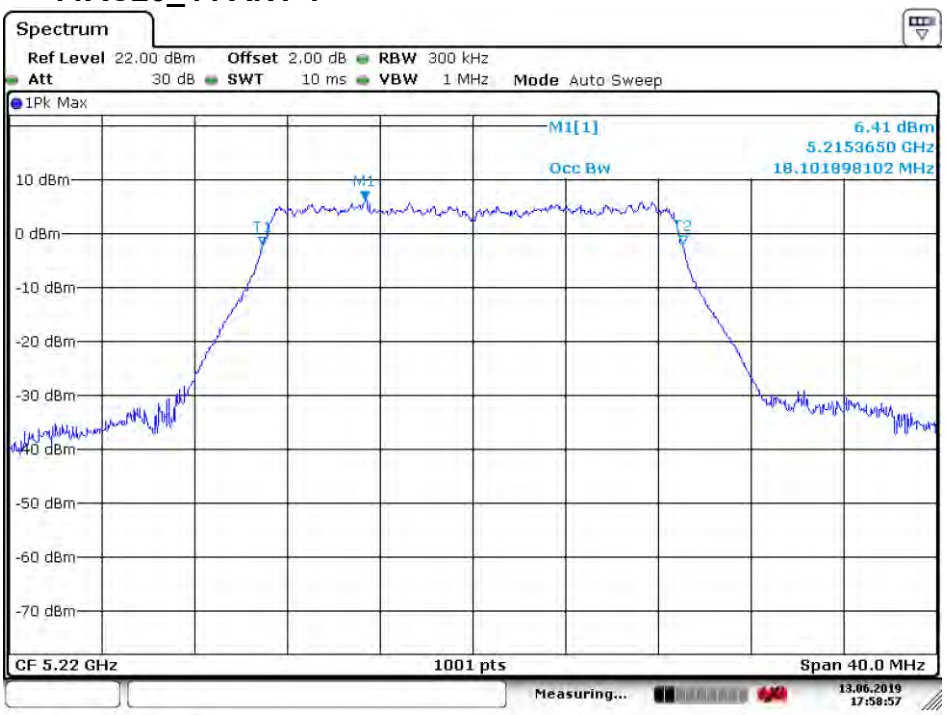
4.5.2.27 11AC20_44 ANT 1



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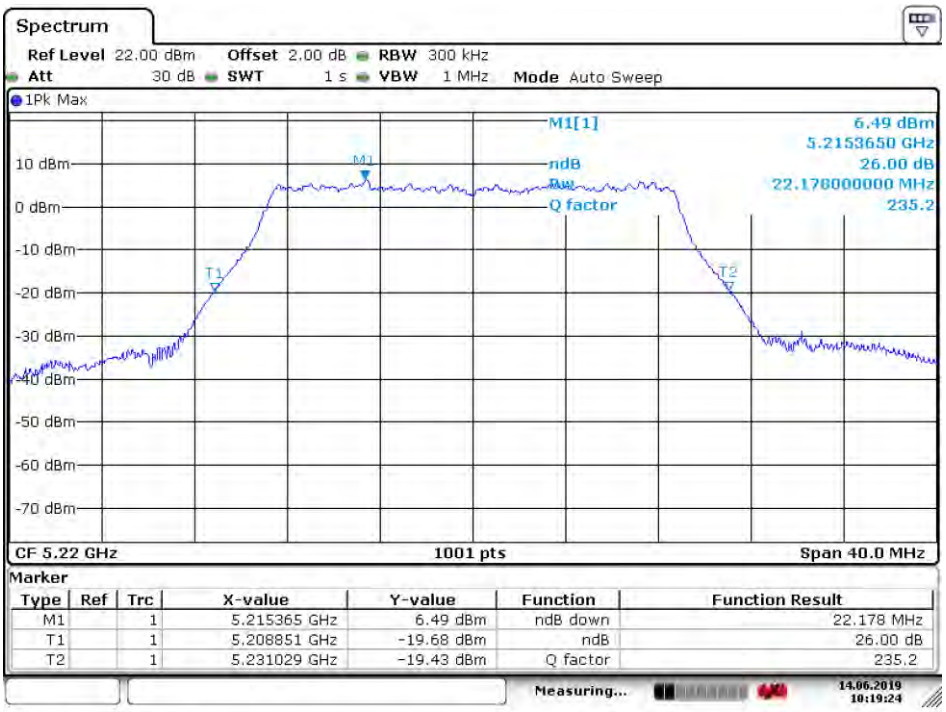

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.215365 GHz	6.49 dBm	ndB down	22.178 MHz
T1		1	5.208851 GHz	-19.68 dBm	ndB	26.00 dB
T2		1	5.231029 GHz	-19.43 dBm	Q factor	235.2

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4.5.2.28 11AC20_48 ANT 1

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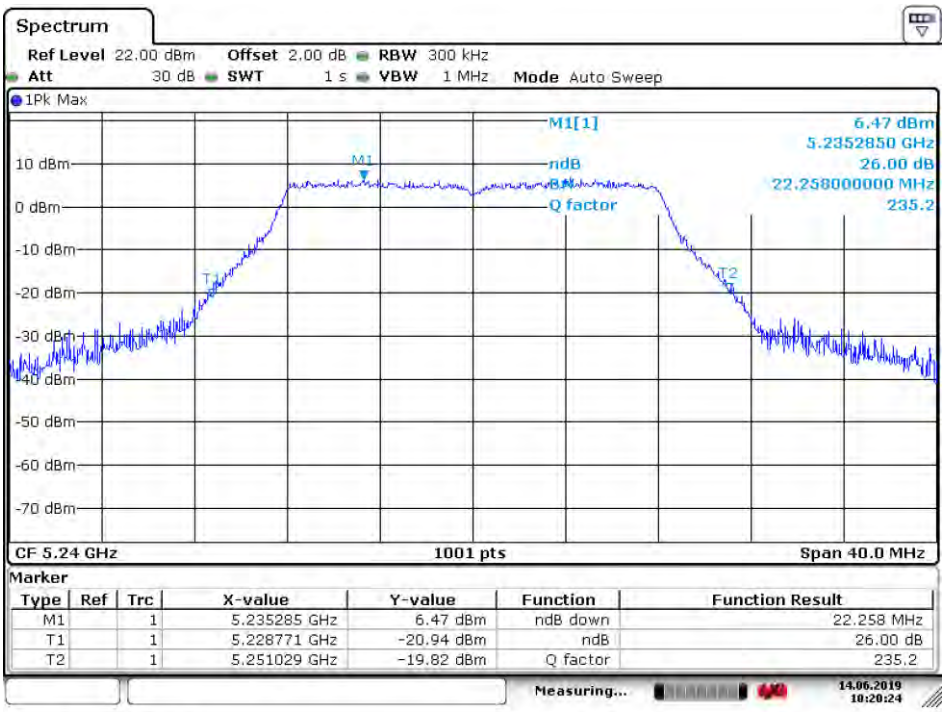

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.235285 GHz	6.47 dBm	ndB down	22.258 MHz
T1		1	5.228771 GHz	-20.94 dBm	ndB	26.00 dB
T2		1	5.251029 GHz	-19.82 dBm	Q factor	235.2

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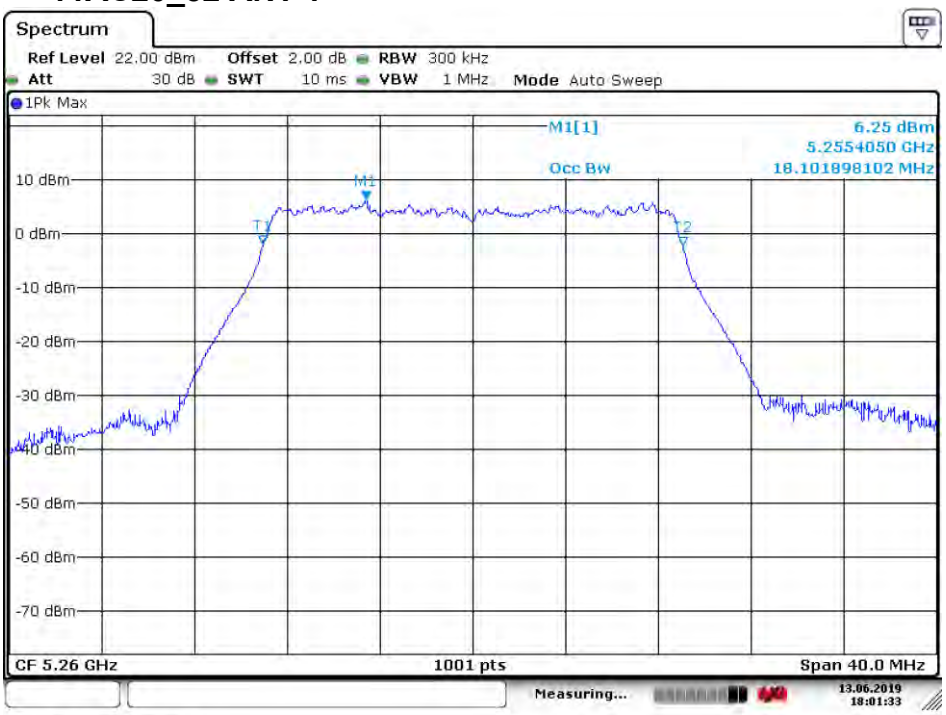
4.5.2.29 11AC20_52 ANT 1



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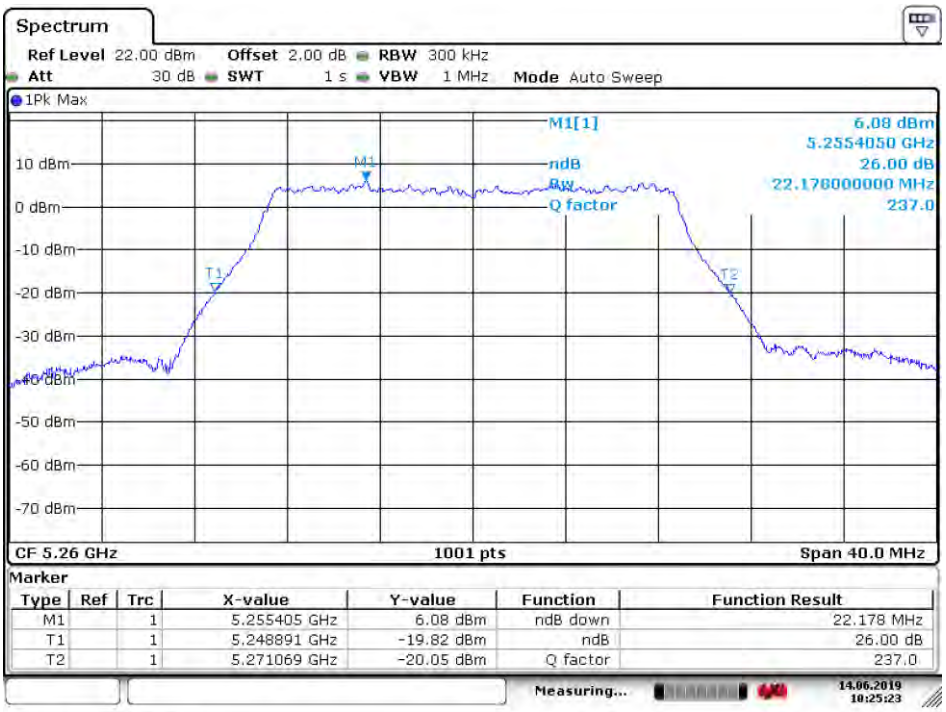

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.255405 GHz	6.08 dBm	ndB down	22.178 MHz
T1		1	5.248891 GHz	-19.82 dBm	ndB	26.00 dB
T2		1	5.271069 GHz	-20.05 dBm	Q factor	237.0

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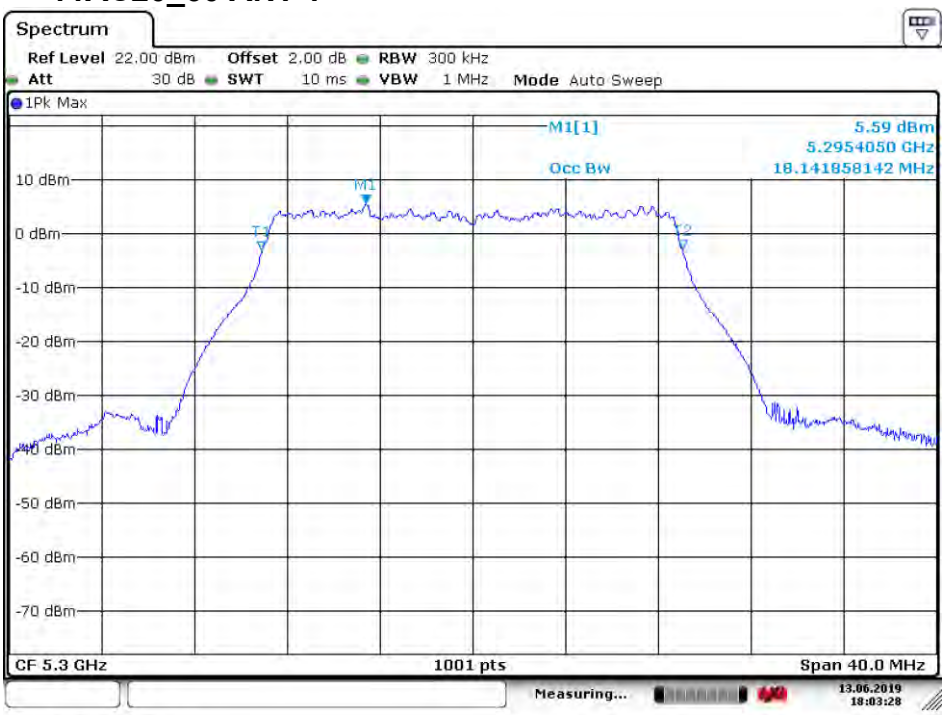
4.5.2.30 11AC20_60 ANT 1



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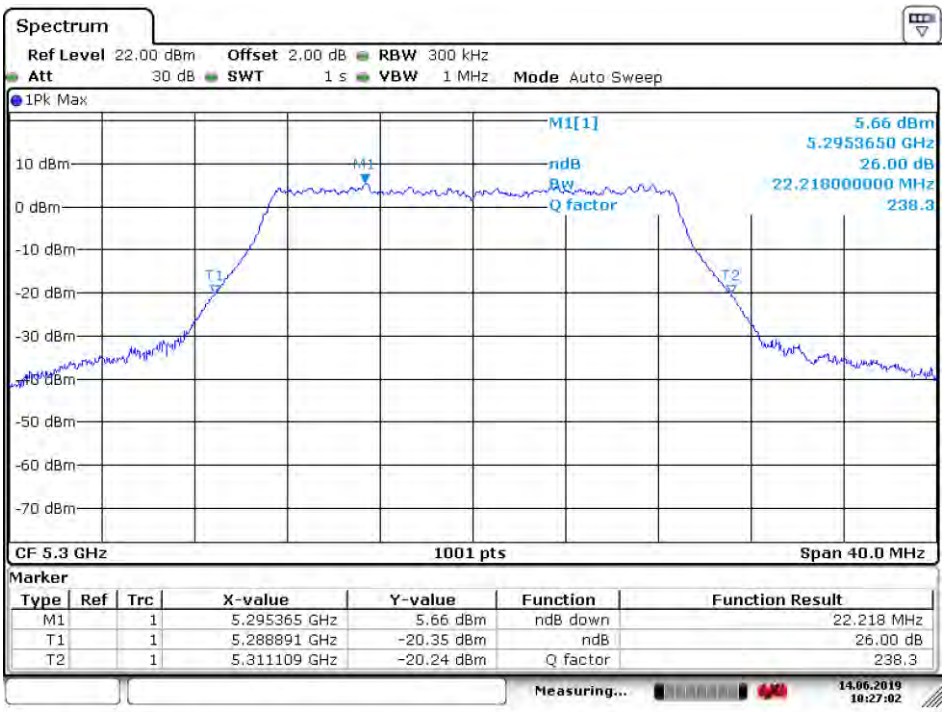

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.295365 GHz	5.66 dBm	ndB down	22.218 MHz
T1		1	5.288891 GHz	-20.35 dBm	ndB	26.00 dB
T2		1	5.311109 GHz	-20.24 dBm	Q factor	238.3

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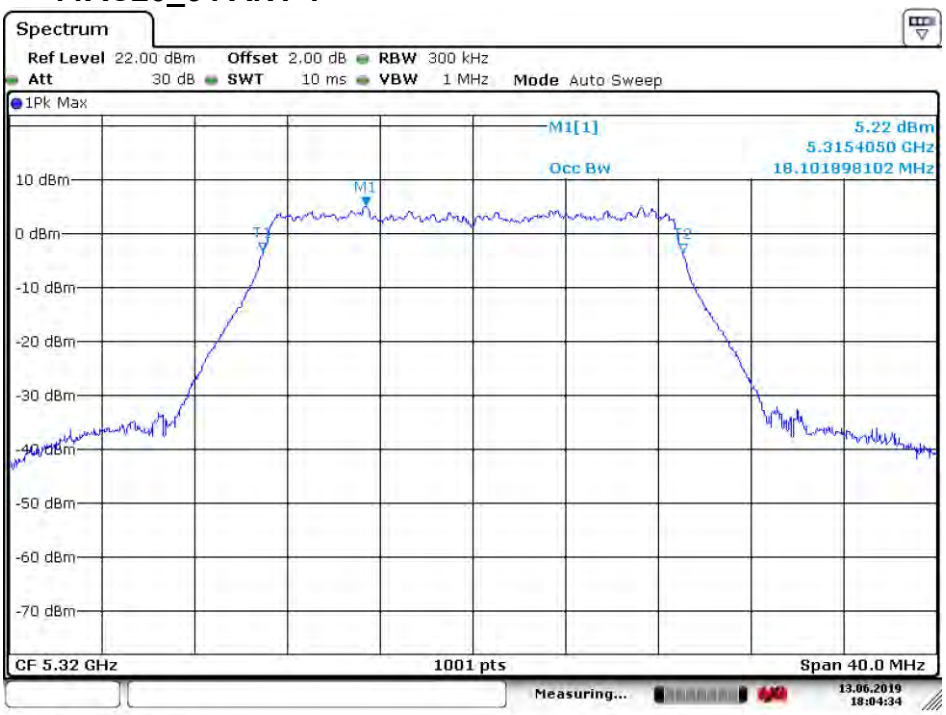

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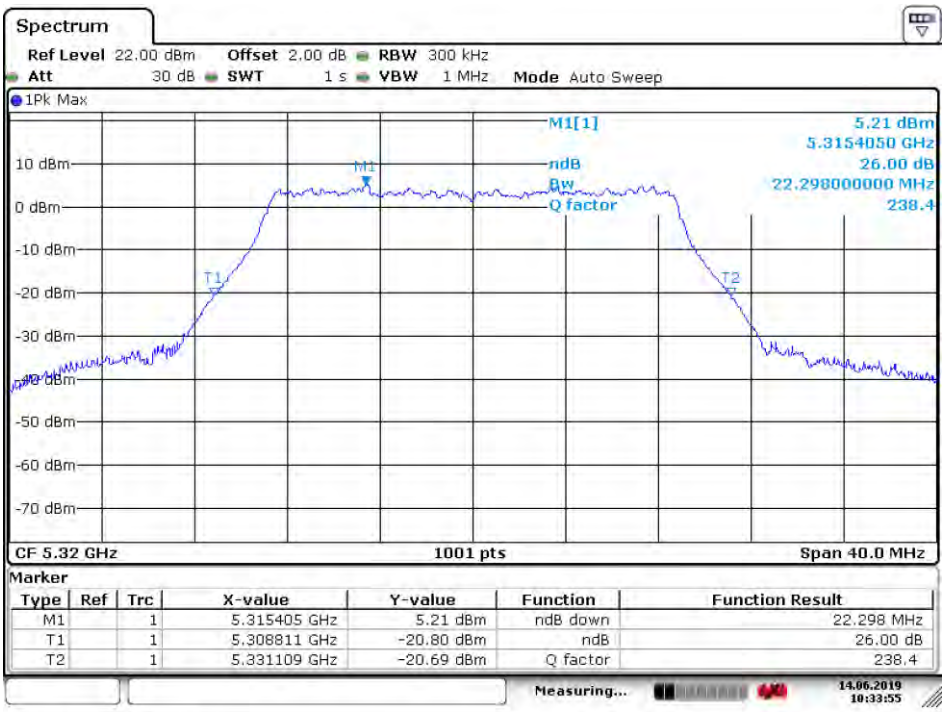

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.315405 GHz	5.21 dBm	ndB down	22.298 MHz
T1		1	5.308811 GHz	-20.80 dBm	ndB	26.00 dB
T2		1	5.331109 GHz	-20.69 dBm	Q factor	238.4

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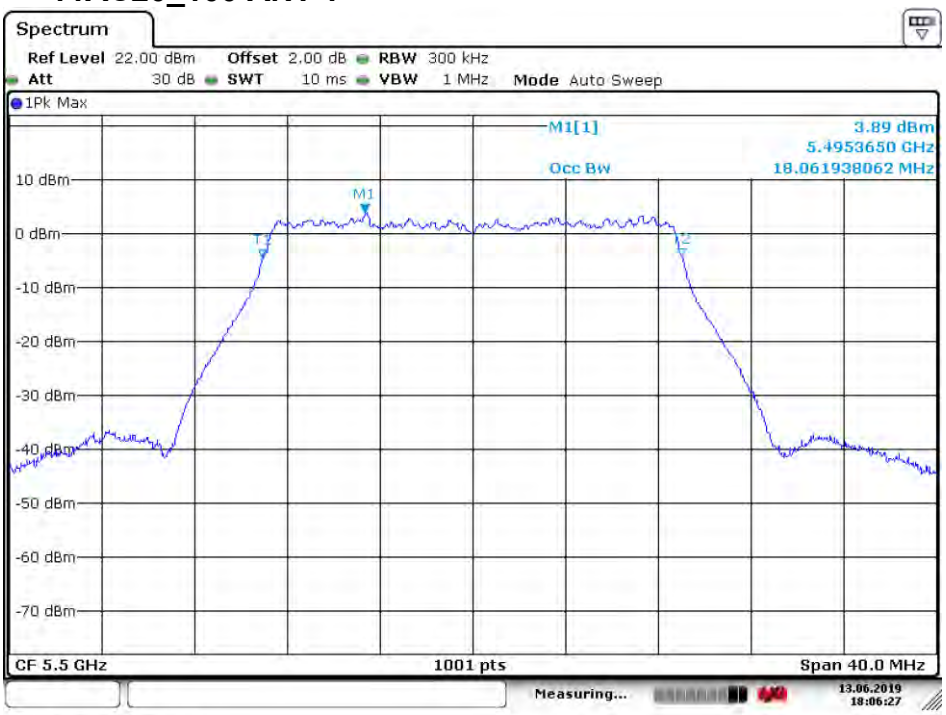
4.5.2.32 11AC20_100 ANT 1



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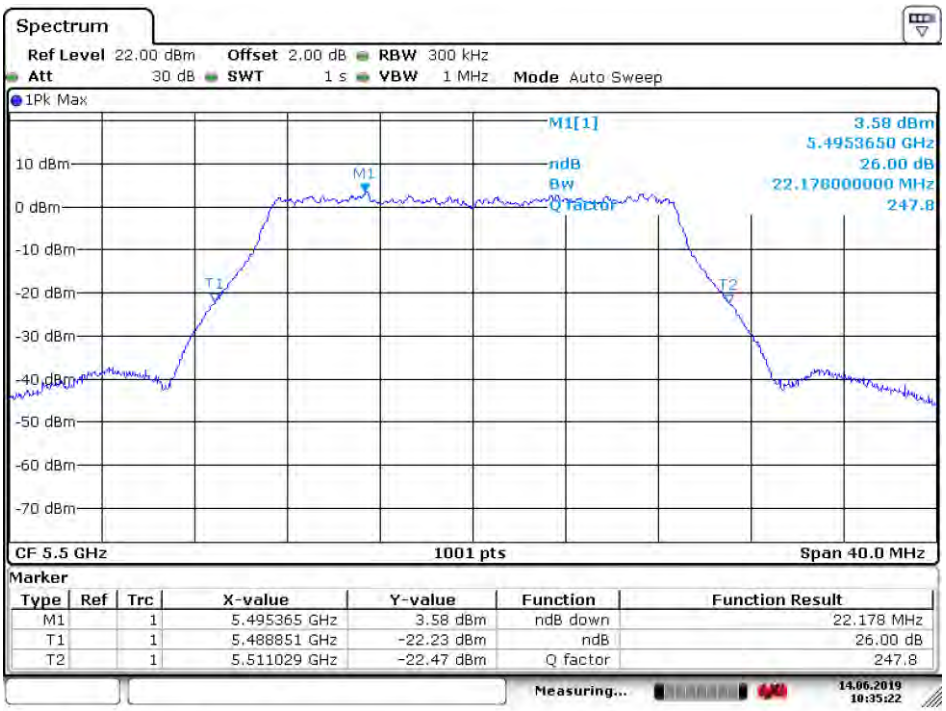

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.495365 GHz	3.58 dBm	ndB down	22.178 MHz
T1		1	5.488851 GHz	-22.23 dBm	ndB	26.00 dB
T2		1	5.511029 GHz	-22.47 dBm	Q factor	247.8

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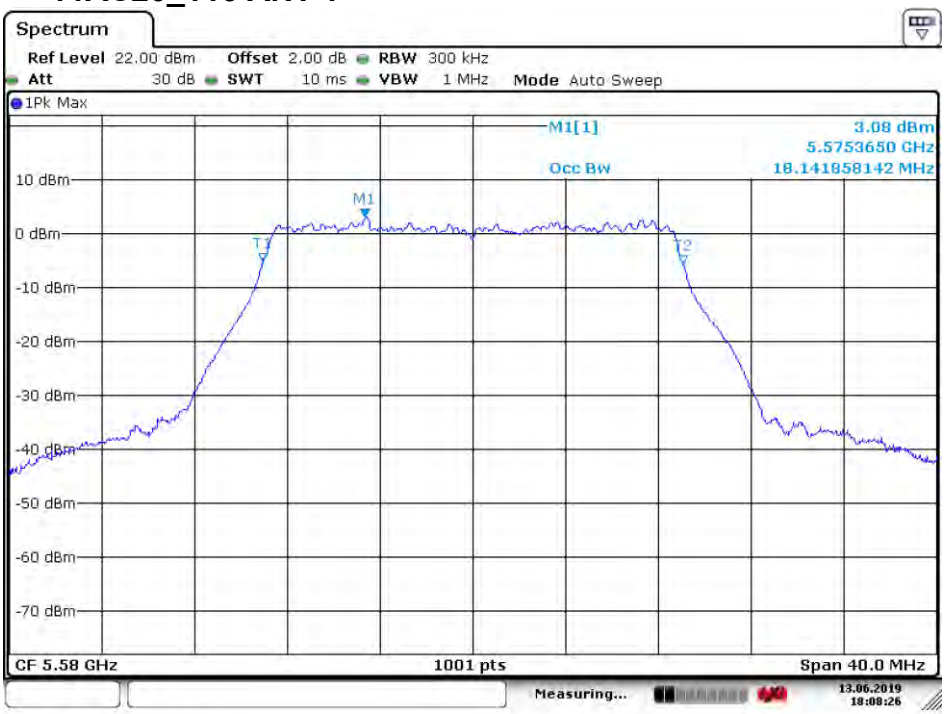
4.5.2.33 11AC20_116 ANT 1



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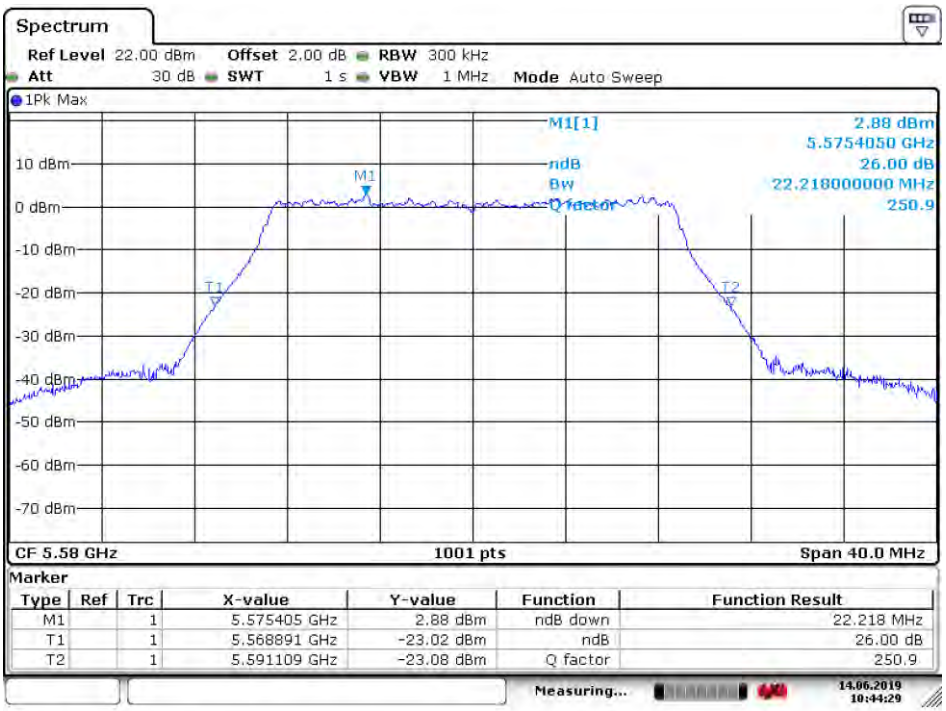

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.575405 GHz	2.88 dBm	ndB down	22.218 MHz
T1		1	5.568891 GHz	-23.02 dBm	ndB	26.00 dB
T2		1	5.591109 GHz	-23.08 dBm	Q factor	250.9

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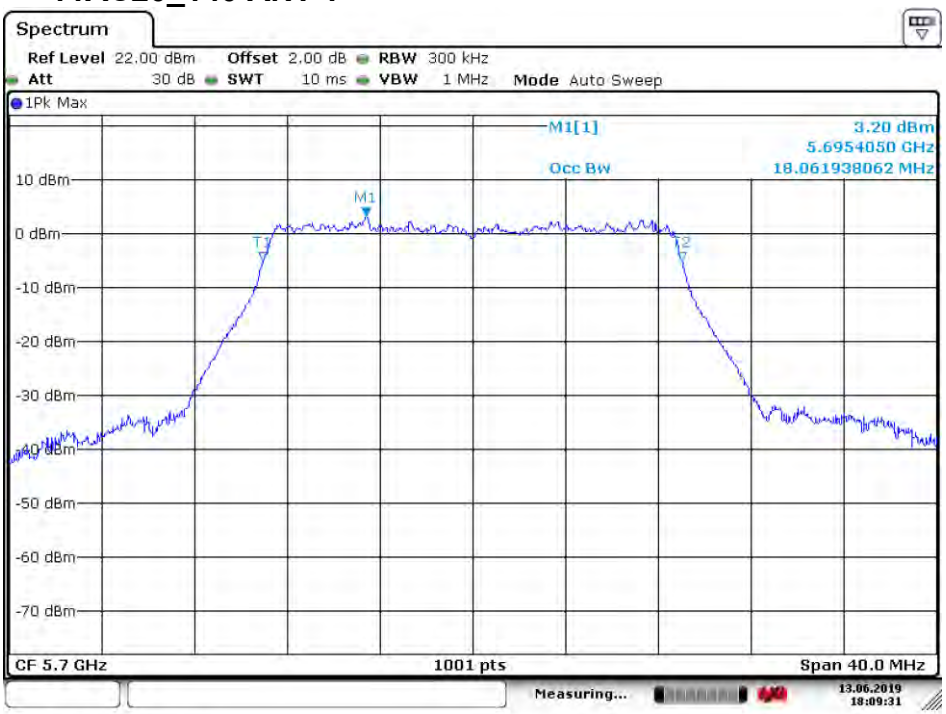
4.5.2.34 11AC20_140 ANT 1



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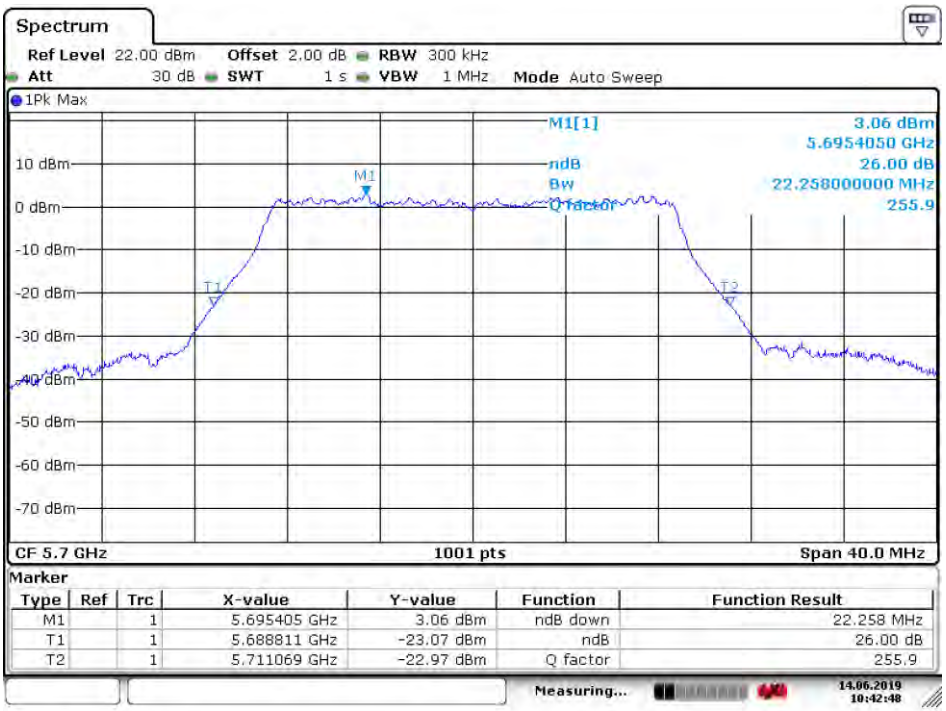

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.695405 GHz	3.06 dBm	ndB down	22.258 MHz
T1		1	5.688811 GHz	-23.07 dBm	ndB	26.00 dB
T2		1	5.711069 GHz	-22.97 dBm	Q factor	255.9

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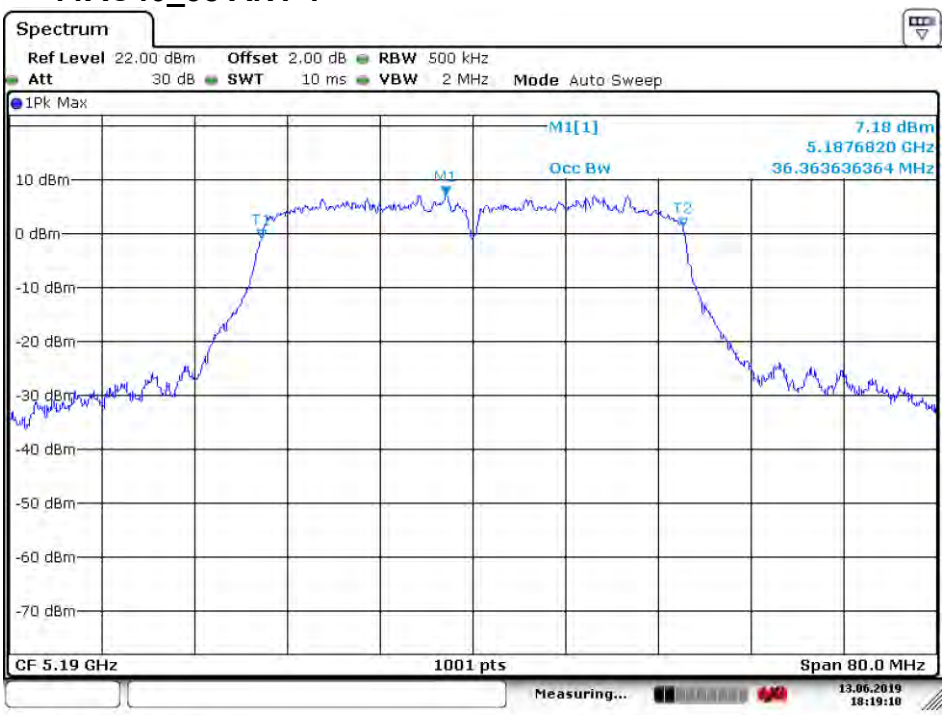
4.5.2.35 11AC40_38 ANT 1



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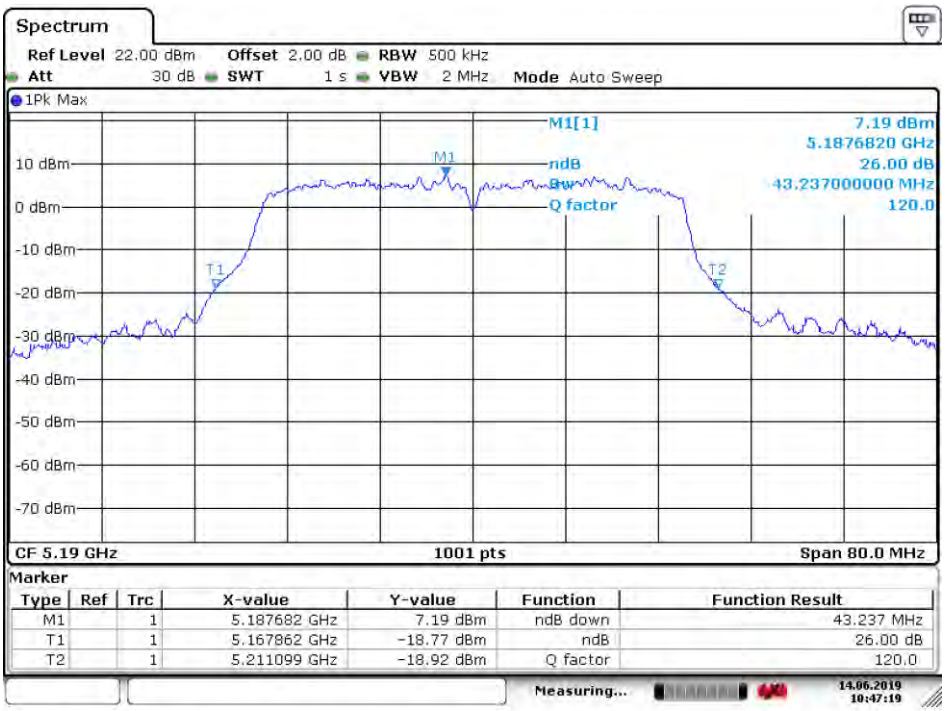

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.187682 GHz	7.19 dBm	ndB down	43.237 MHz
T1		1	5.167862 GHz	-18.77 dBm	ndB	26.00 dB
T2		1	5.211099 GHz	-18.92 dBm	Q factor	120.0

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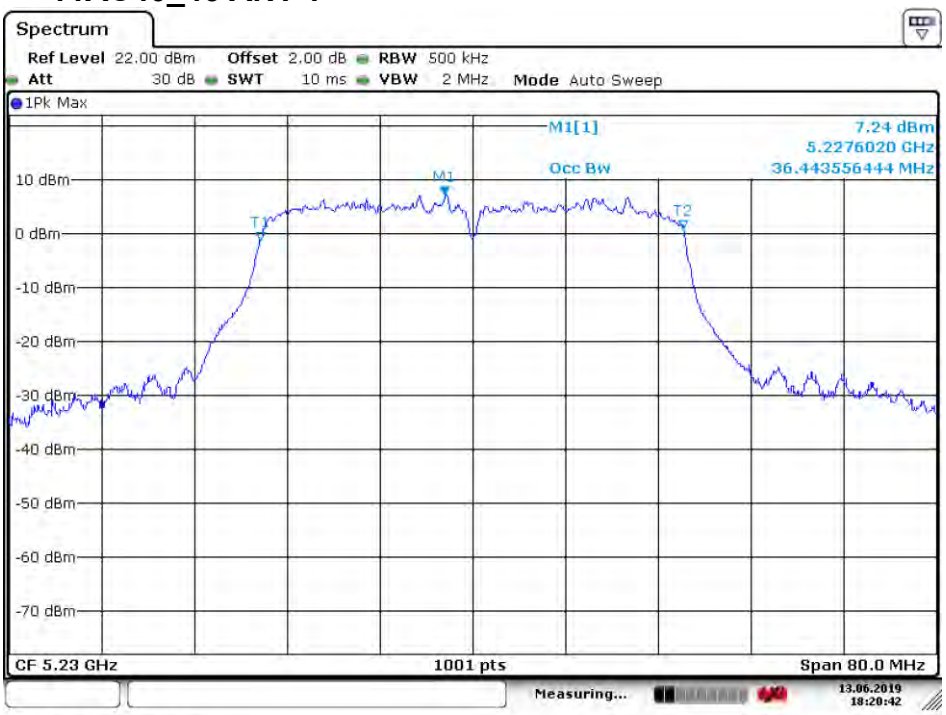
4.5.2.36 11AC40_46 ANT 1



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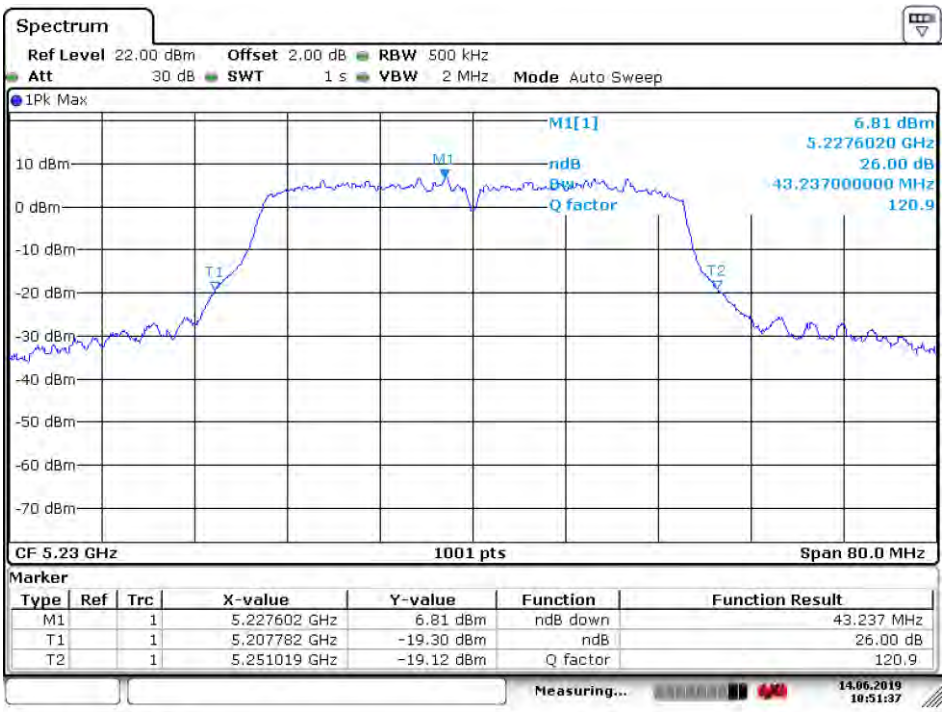

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.227602 GHz	6.81 dBm	ndB down	43.237 MHz
T1		1	5.207782 GHz	-19.30 dBm	ndB	26.00 dB
T2		1	5.251019 GHz	-19.12 dBm	Q factor	120.9

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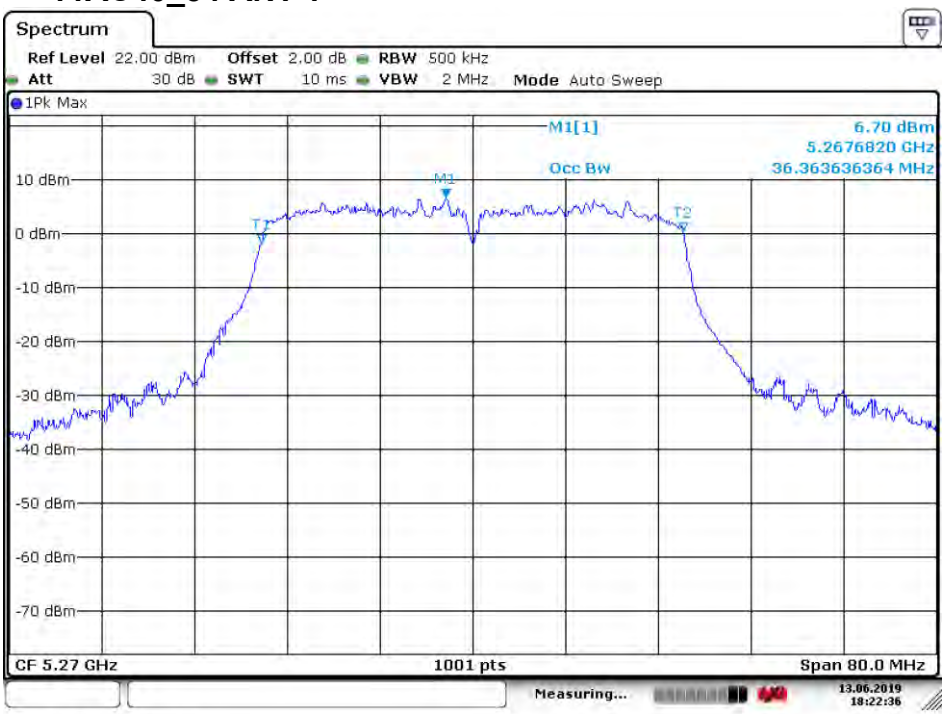
4.5.2.37 11AC40_54 ANT 1



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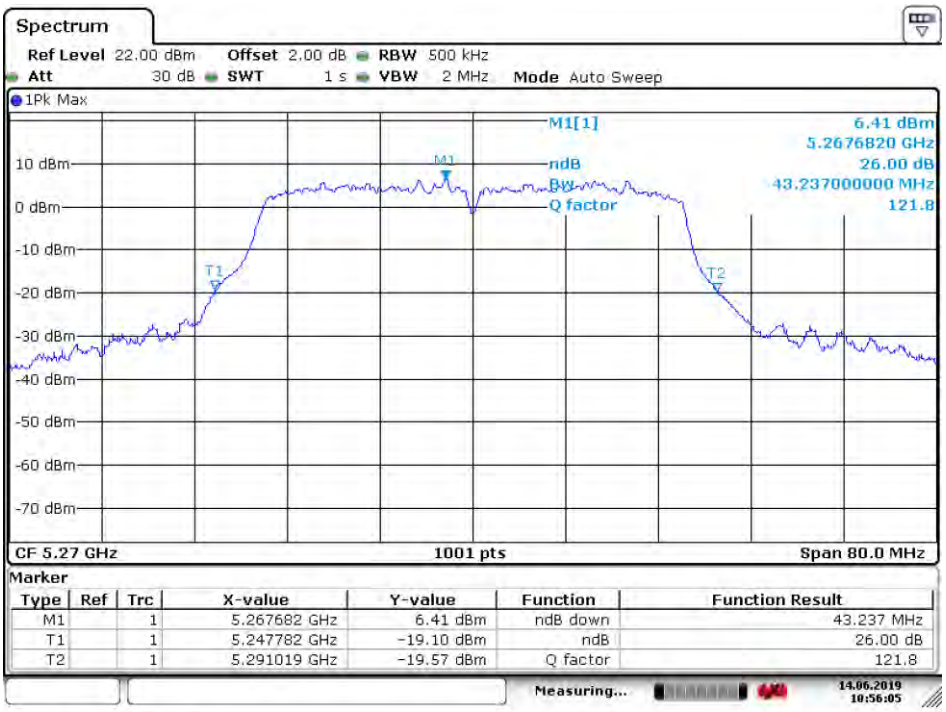

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.267682 GHz	6.41 dBm	ndB down	43.237 MHz
T1		1	5.247782 GHz	-19.10 dBm	ndB	26.00 dB
T2		1	5.291019 GHz	-19.57 dBm	Q factor	121.8

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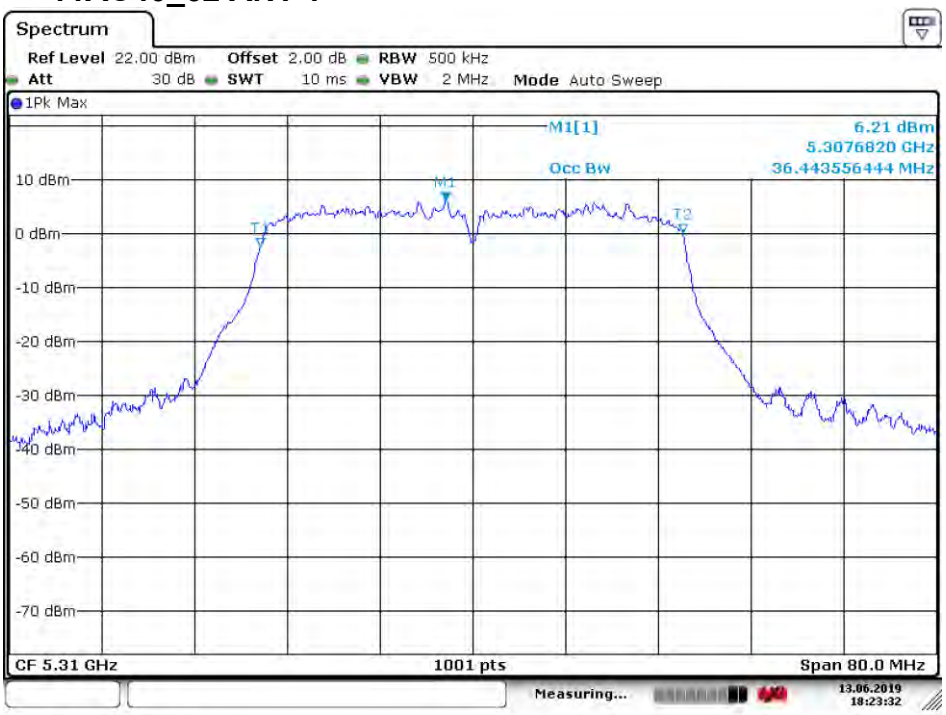
4.5.2.38 11AC40_62 ANT 1



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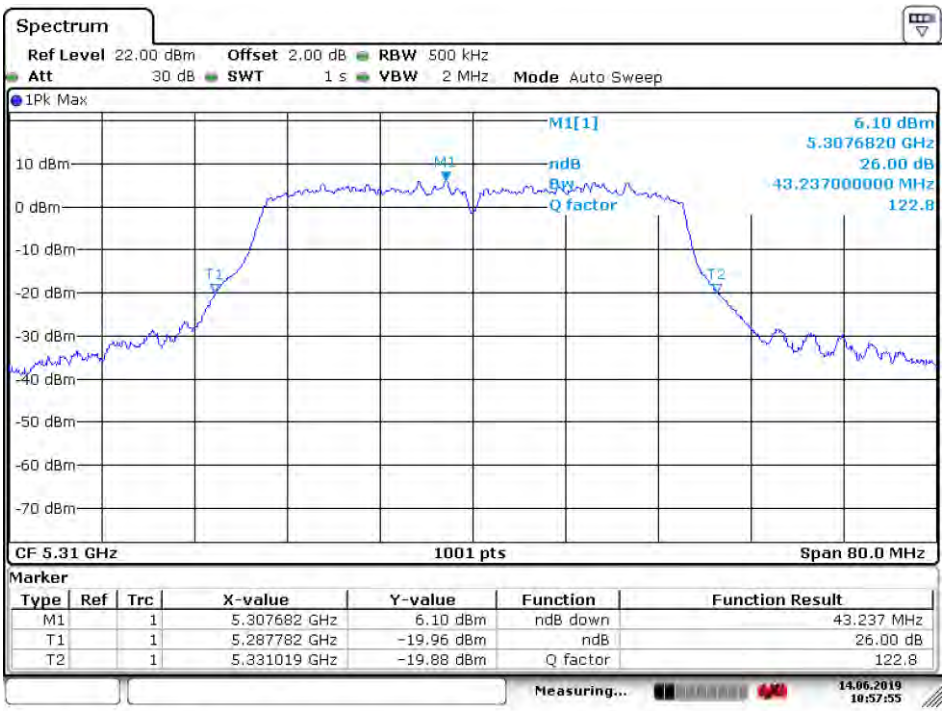

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.307682 GHz	6.10 dBm	ndB down	43.237 MHz
T1		1	5.287782 GHz	-19.96 dBm	ndB	26.00 dB
T2		1	5.331019 GHz	-19.88 dBm	Q factor	122.8

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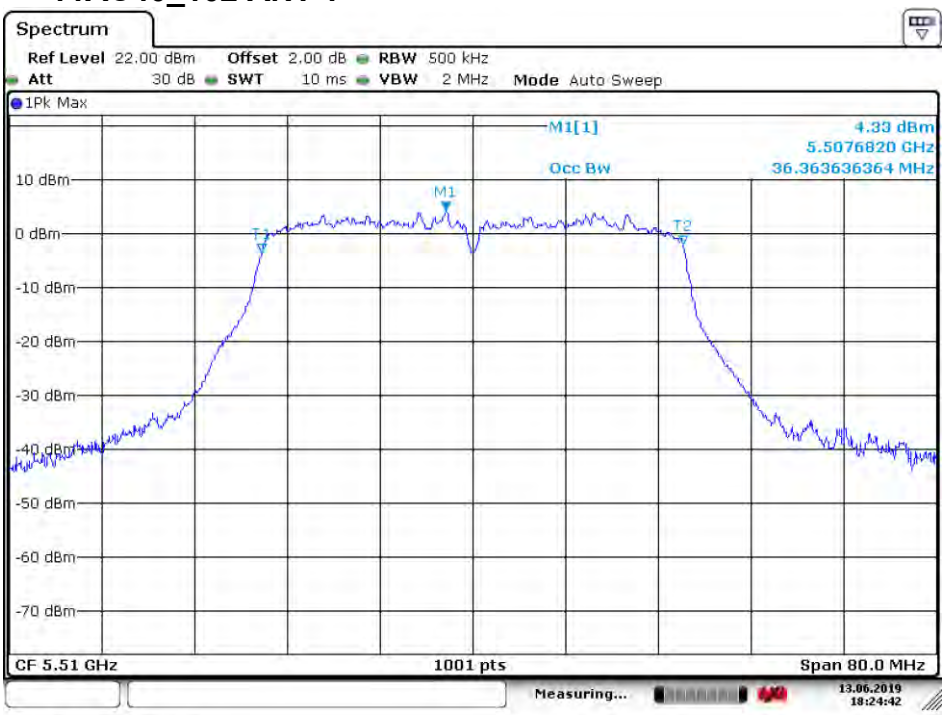
4.5.2.39 11AC40_102 ANT 1



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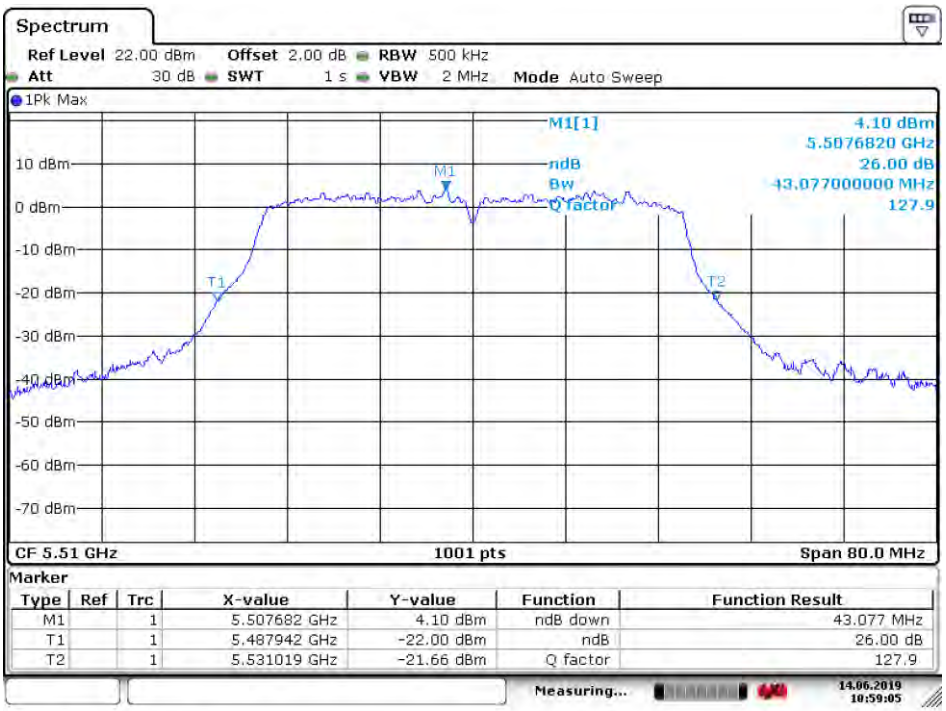

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.507682 GHz	4.10 dBm	ndB down	43.077 MHz
T1		1	5.487942 GHz	-22.00 dBm	ndB	26.00 dB
T2		1	5.531019 GHz	-21.66 dBm	Q factor	127.9

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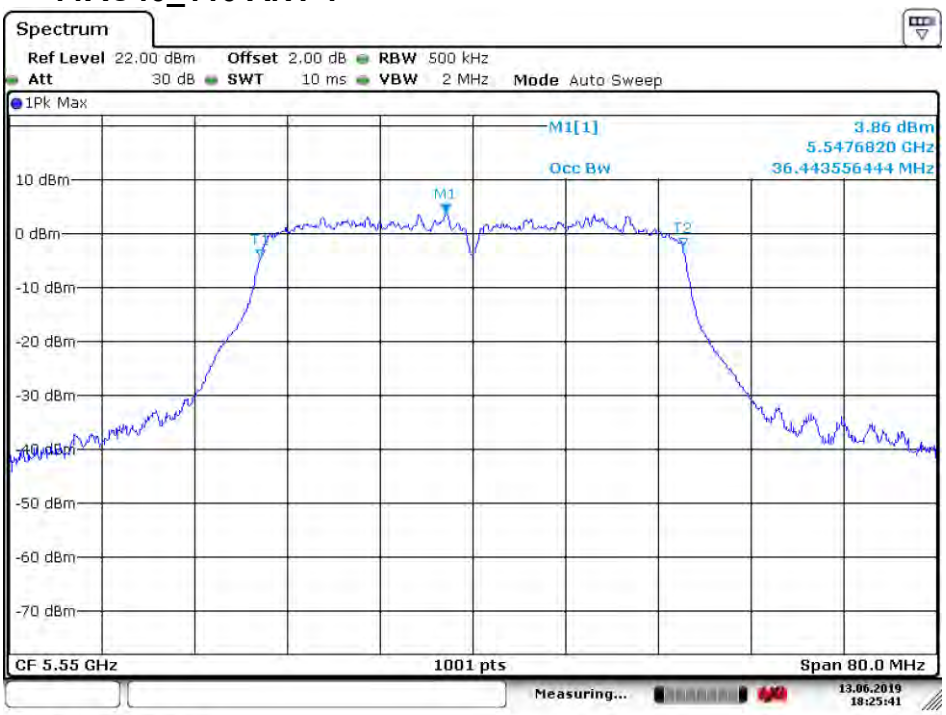
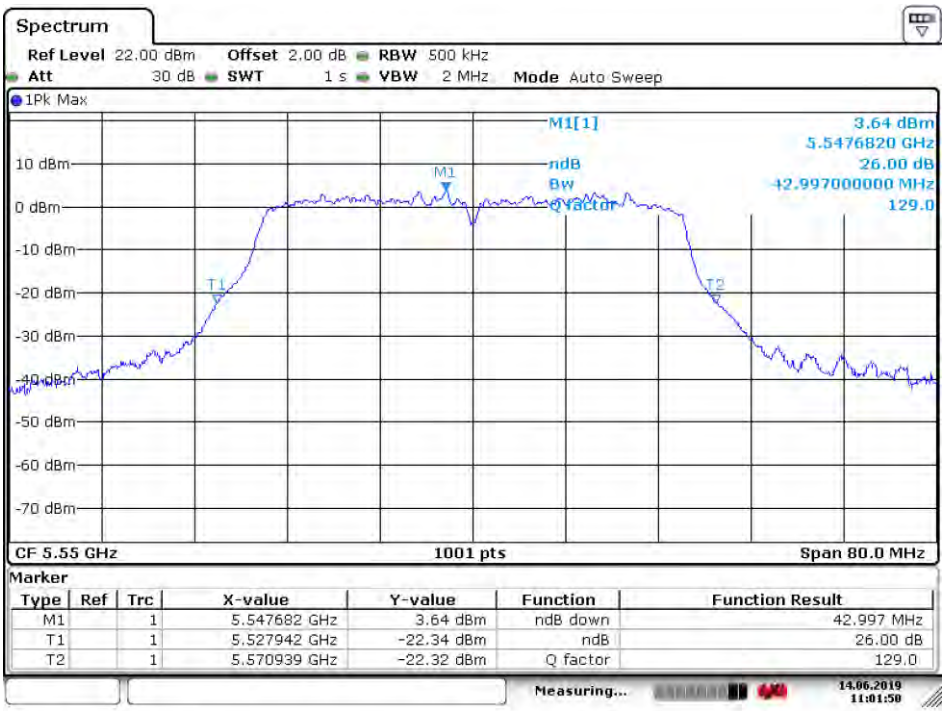
4.5.2.40 11AC40_110 ANT 1



Date: 13.JUN.2019 18:25:41



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.547682 GHz	3.64 dBm	ndB down	42.997 MHz
T1		1	5.527942 GHz	-22.34 dBm	ndB	26.00 dB
T2		1	5.570939 GHz	-22.32 dBm	Q factor	129.0

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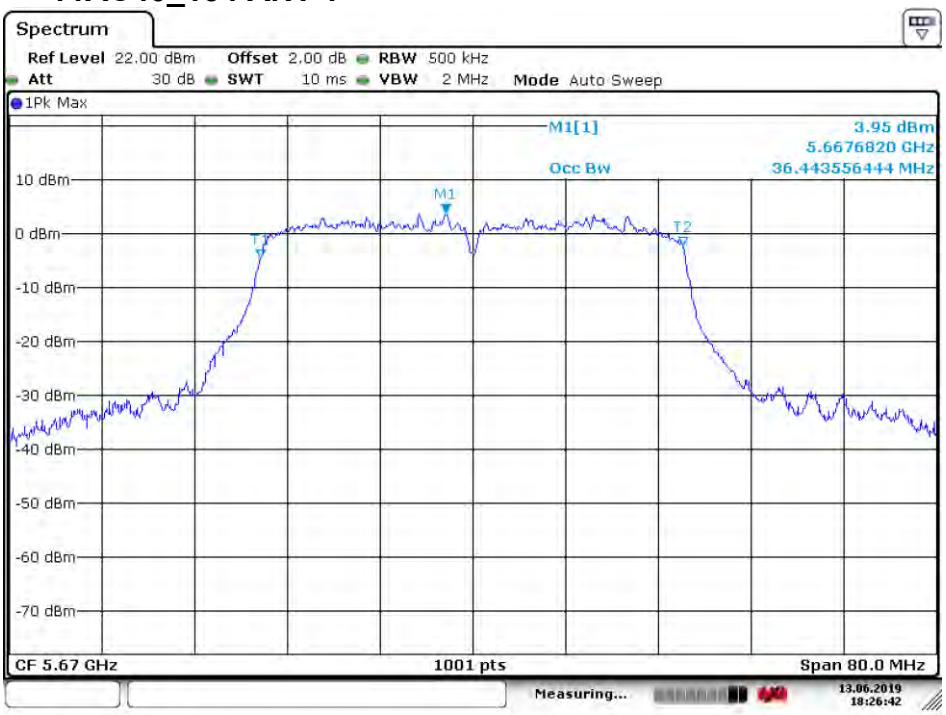
4.5.2.41 11AC40_134 ANT 1



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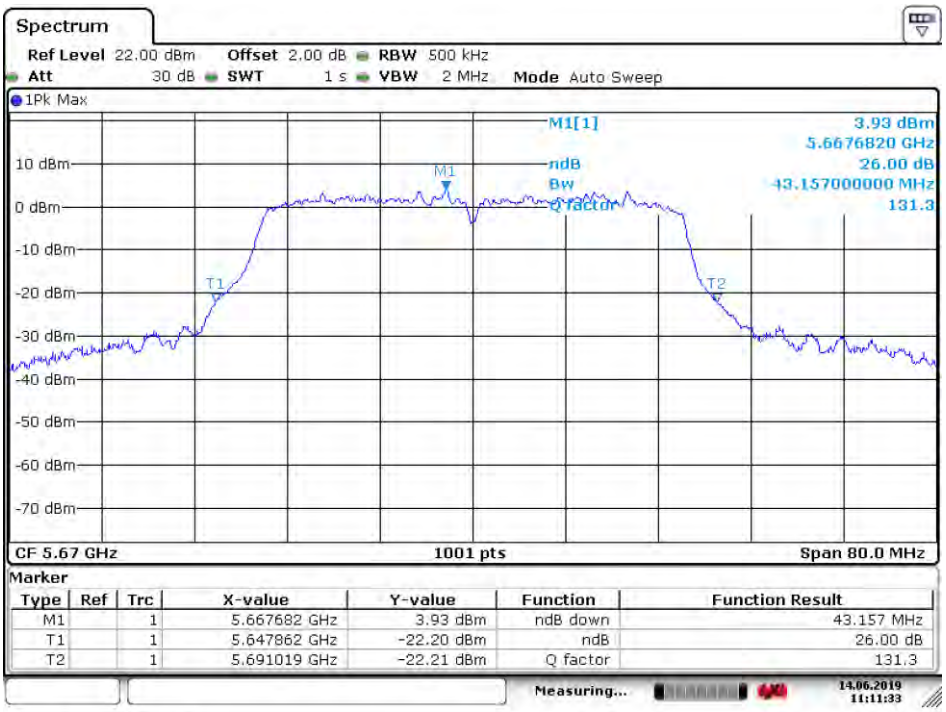

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.667682 GHz	3.93 dBm	ndB down	43.157 MHz
T1		1	5.647862 GHz	-22.20 dBm	ndB	26.00 dB
T2		1	5.691019 GHz	-22.21 dBm	Q factor	131.3

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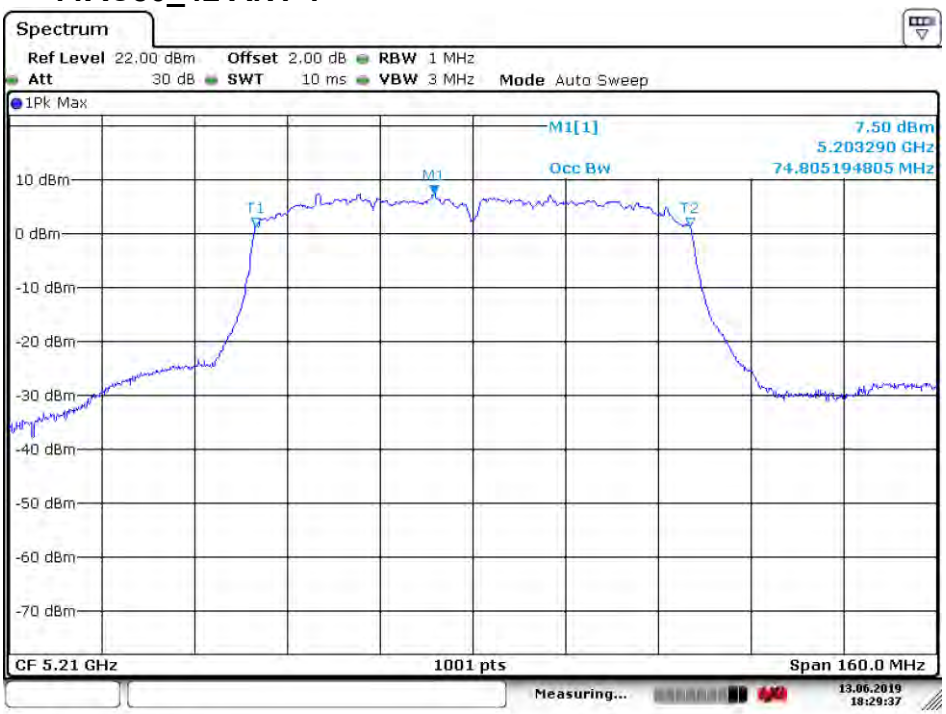
4.5.2.42 11AC80_42 ANT 1



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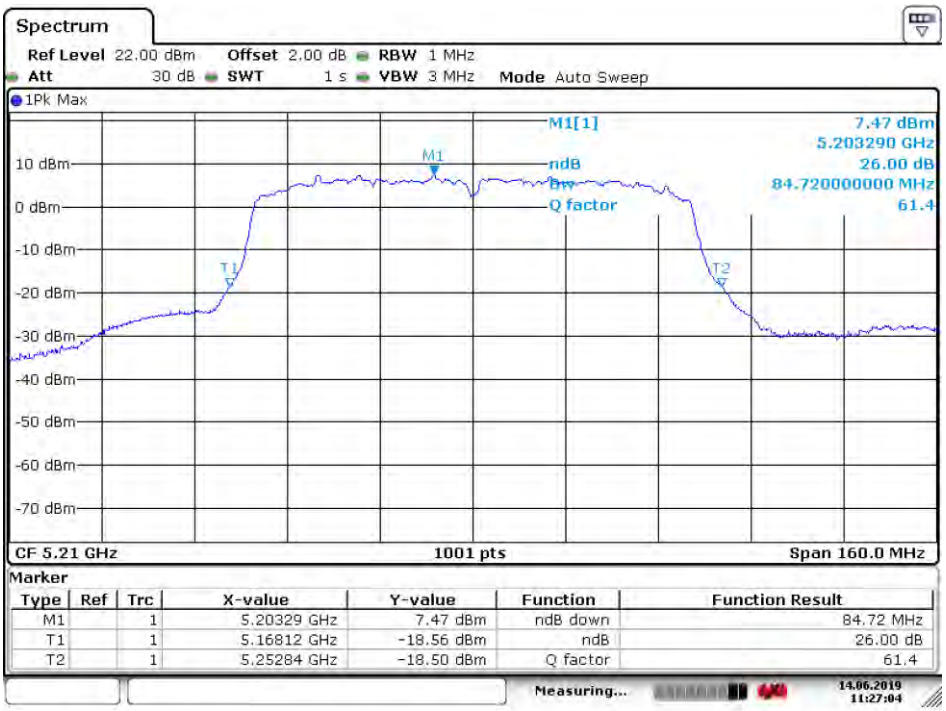

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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.20329 GHz	7.47 dBm	ndB down	84.72 MHz
T1		1	5.16812 GHz	-18.56 dBm	ndB	26.00 dB
T2		1	5.25284 GHz	-18.50 dBm	Q factor	61.4

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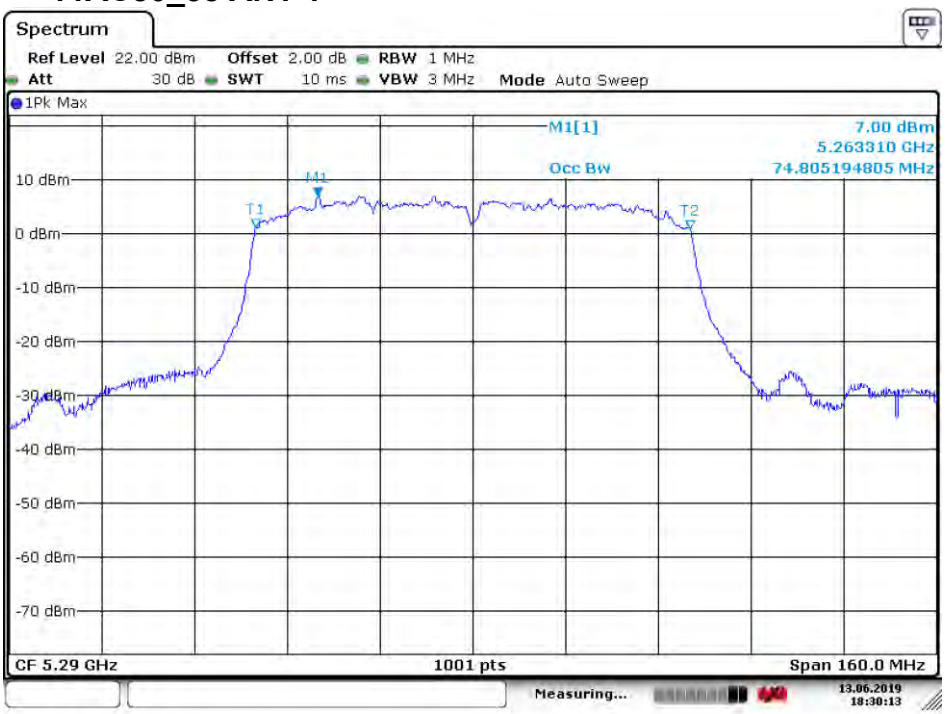
4.5.2.43 11AC80_58 ANT 1



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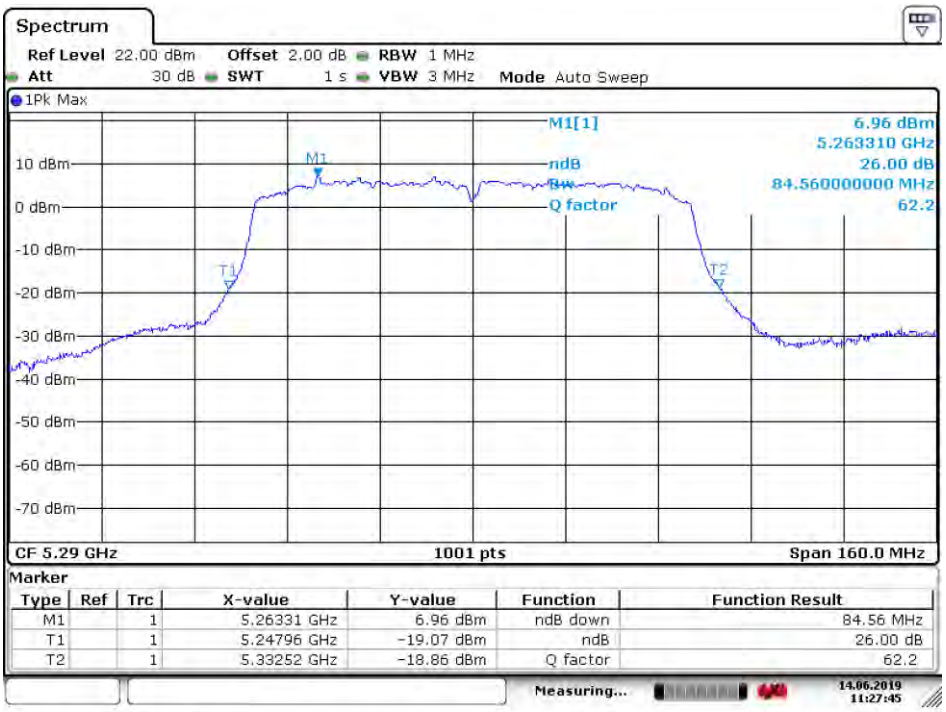

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.26331 GHz	6.96 dBm	ndB down	84.56 MHz
T1		1	5.24796 GHz	-19.07 dBm	ndB	26.00 dB
T2		1	5.33252 GHz	-18.86 dBm	Q factor	62.2

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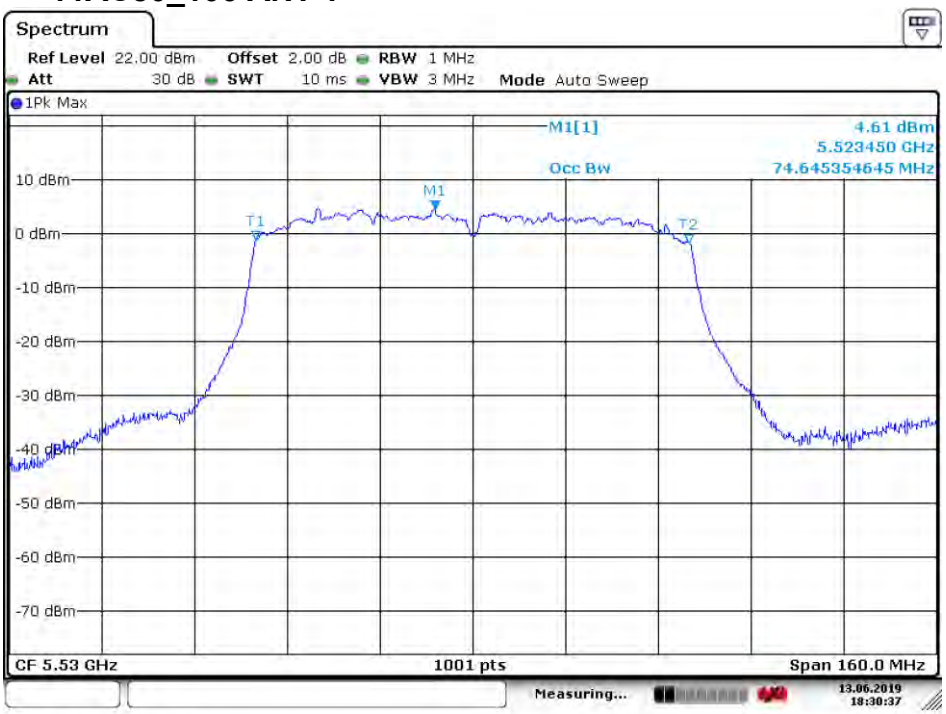
4.5.2.44 11AC80_106 ANT 1



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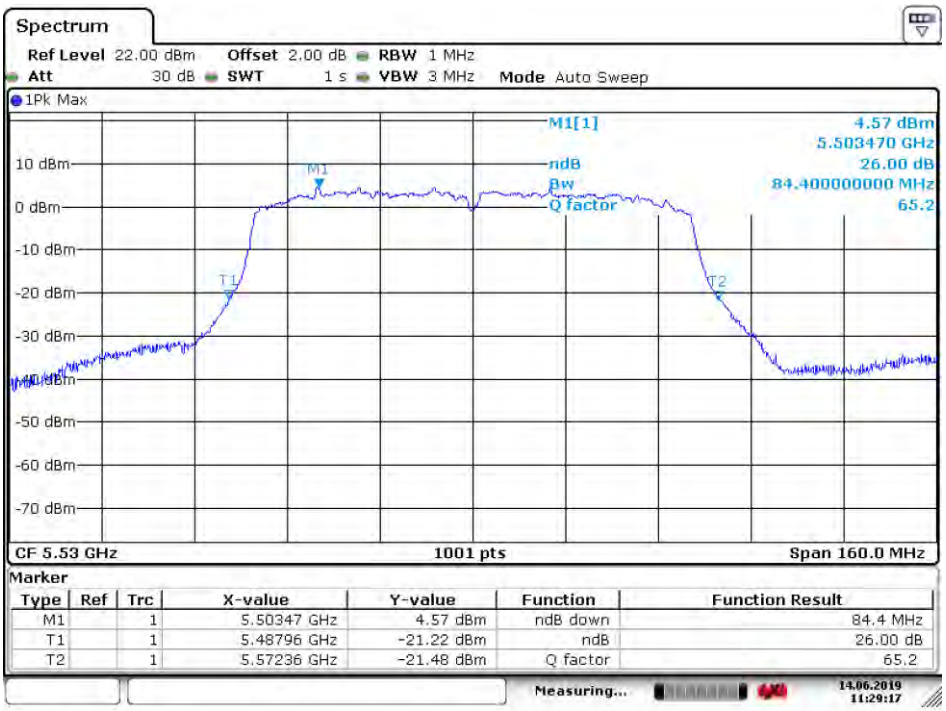

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.50347 GHz	4.57 dBm	ndB down	84.4 MHz
T1		1	5.48796 GHz	-21.22 dBm	ndB	26.00 dB
T2		1	5.57236 GHz	-21.48 dBm	Q factor	65.2

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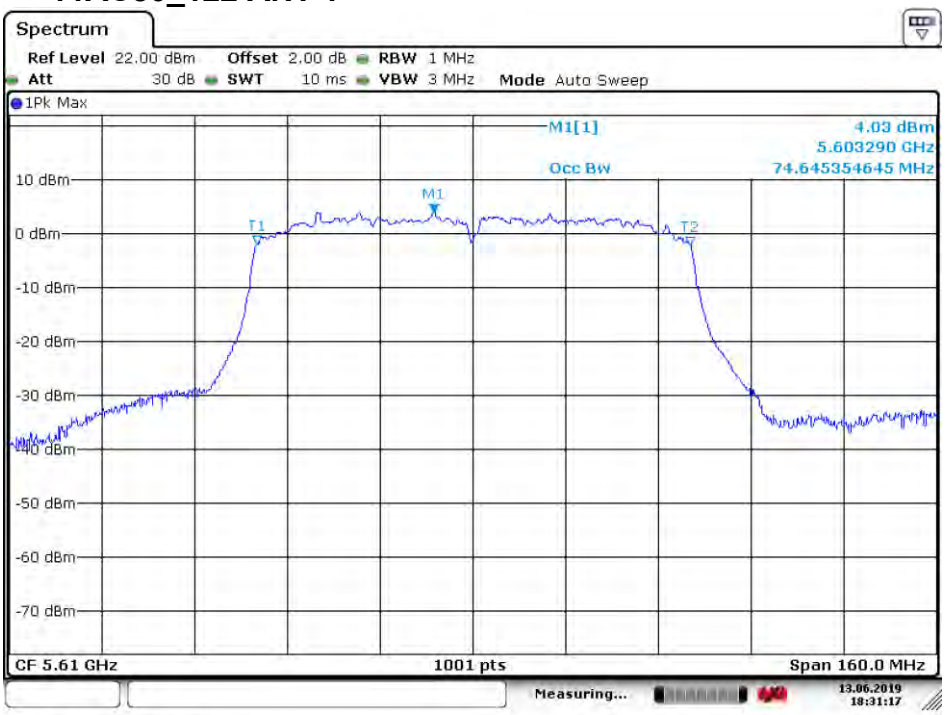
4.5.2.45 11AC80_122 ANT 1



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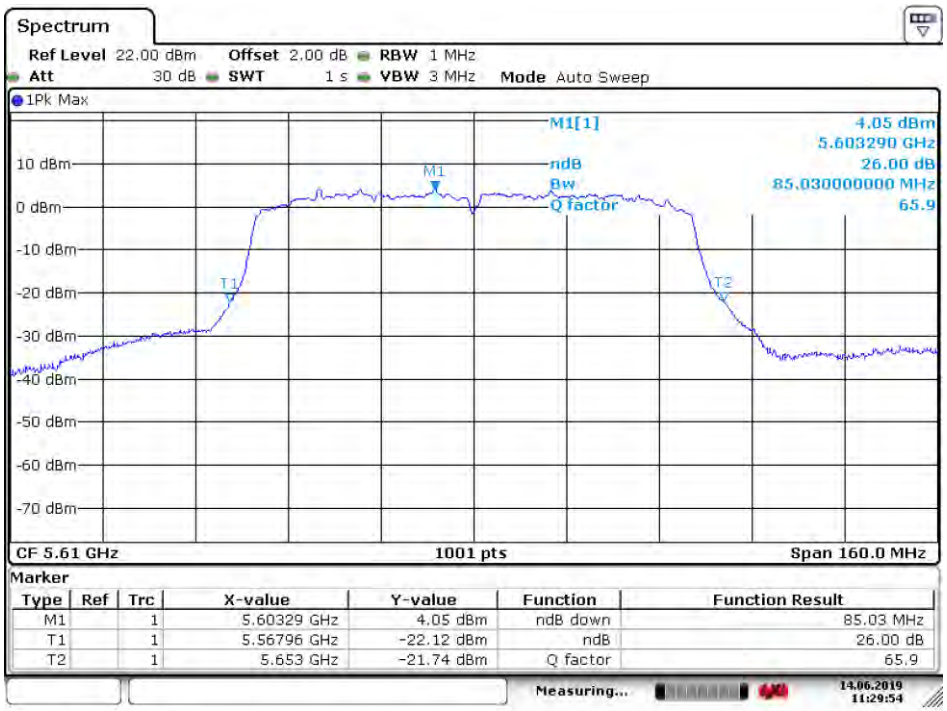

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.60329 GHz	4.05 dBm	ndB down	85.03 MHz
T1		1	5.56796 GHz	-22.12 dBm	ndB	26.00 dB
T2		1	5.653 GHz	-21.74 dBm	Q factor	65.9

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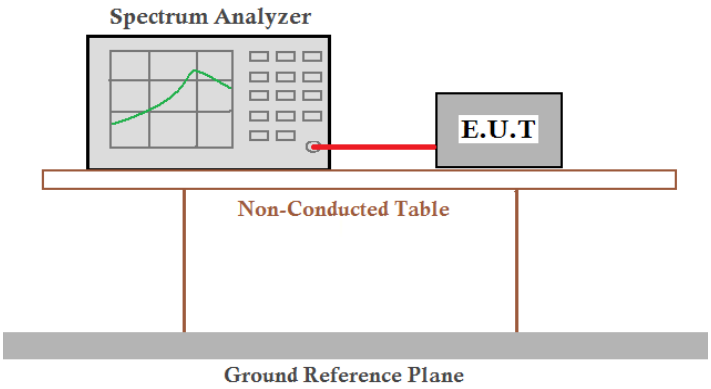
4.6 6dB Emission Bandwidth & 99% Occupied Bandwidth

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:	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); MCSAC0 of rate is the worst case of 802.11ac(HT20); MCSAC0 of rate is the worst case of 802.11ac(HT40); MCSAC0 of rate is the worst case of 802.11ac(HT80). Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5725-5850MHz	At lease 500kHz
Test Results:	Pass	

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Test Mode	Test Channel	Frequency [MHz]	ANT	6dB Emission Bandwidth [MHz]	Occupied Bandwidth [MHz]	Verdict
11A20	149	5745	ANT 1	16.38	17.18	PASS
	157	5785	ANT 1	16.42	17.26	PASS
	165	5825	ANT 1	16.42	17.26	PASS
11N20	149	5745	ANT 1	17.62	18.18	PASS
	157	5785	ANT 1	17.58	18.26	PASS
	165	5825	ANT 1	17.42	18.18	PASS
11N40	151	5755	ANT 1	35.33	36.36	PASS
	159	5795	ANT 1	35.33	36.44	PASS
11AC20	149	5745	ANT 1	17.42	18.10	PASS
	157	5785	ANT 1	17.38	18.14	PASS
	165	5825	ANT 1	17.42	18.10	PASS
11AC40	151	5755	ANT 1	35.25	36.52	PASS
	159	5795	ANT 1	35.25	36.52	PASS
11AC80	155	5775	ANT 1	75.12	74.81	PASS

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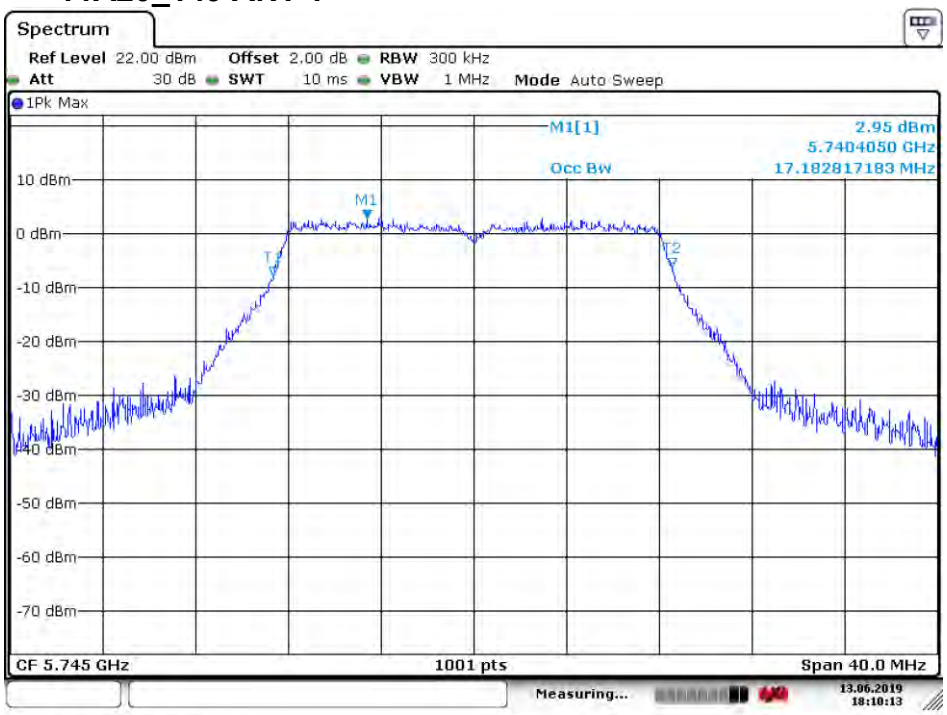
4.6.1 Plots for 6dB Emission Bandwidth & 99% Occupied Bandwidth

4.6.1.1 11A20_149 ANT 1



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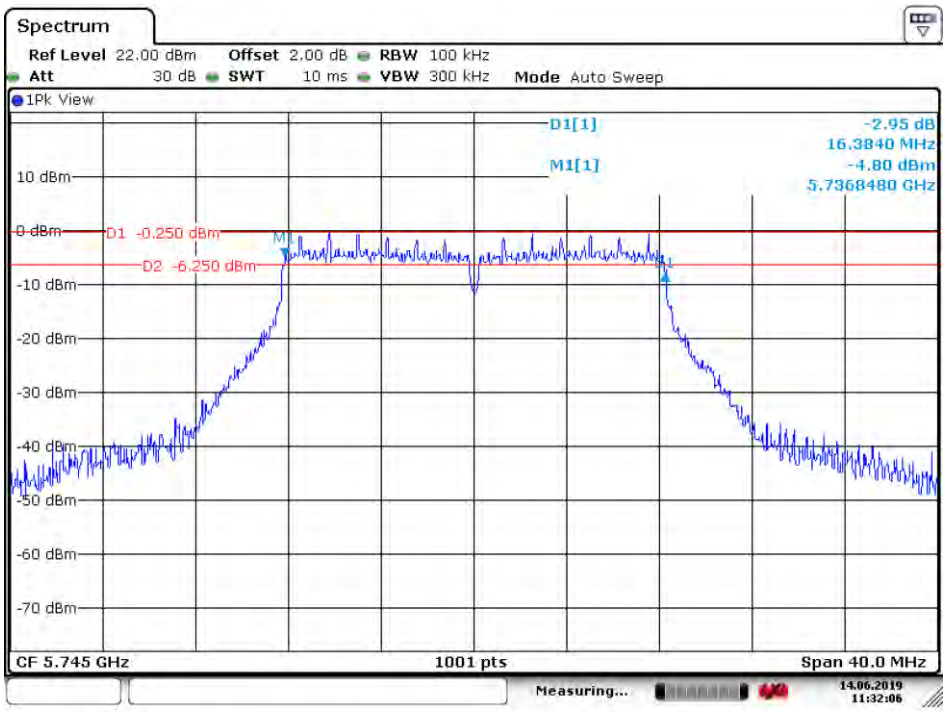

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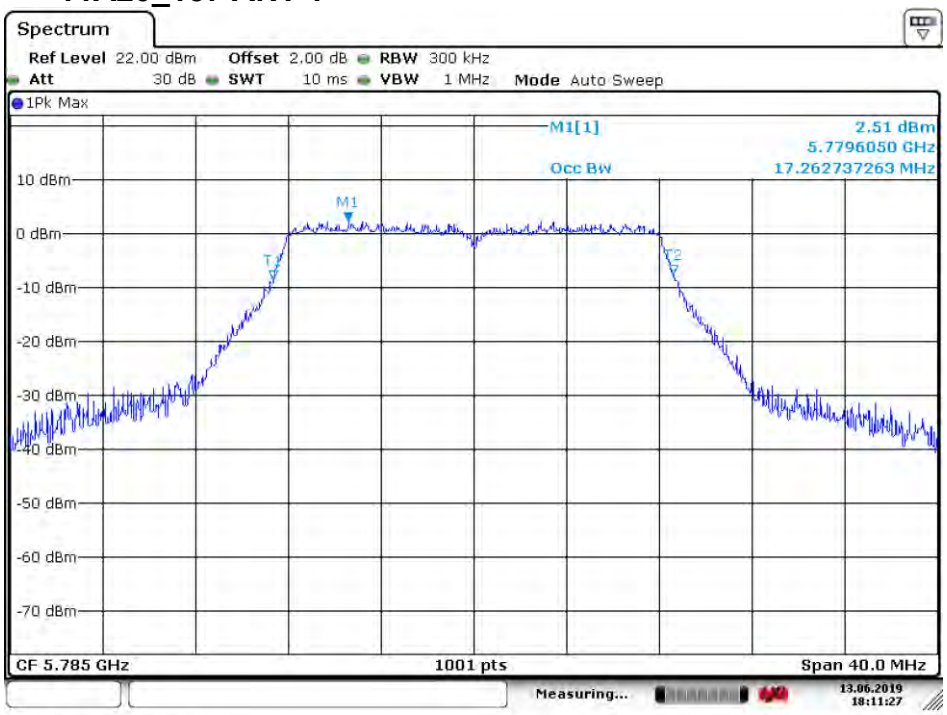
4.6.1.2 11A20_157 ANT 1



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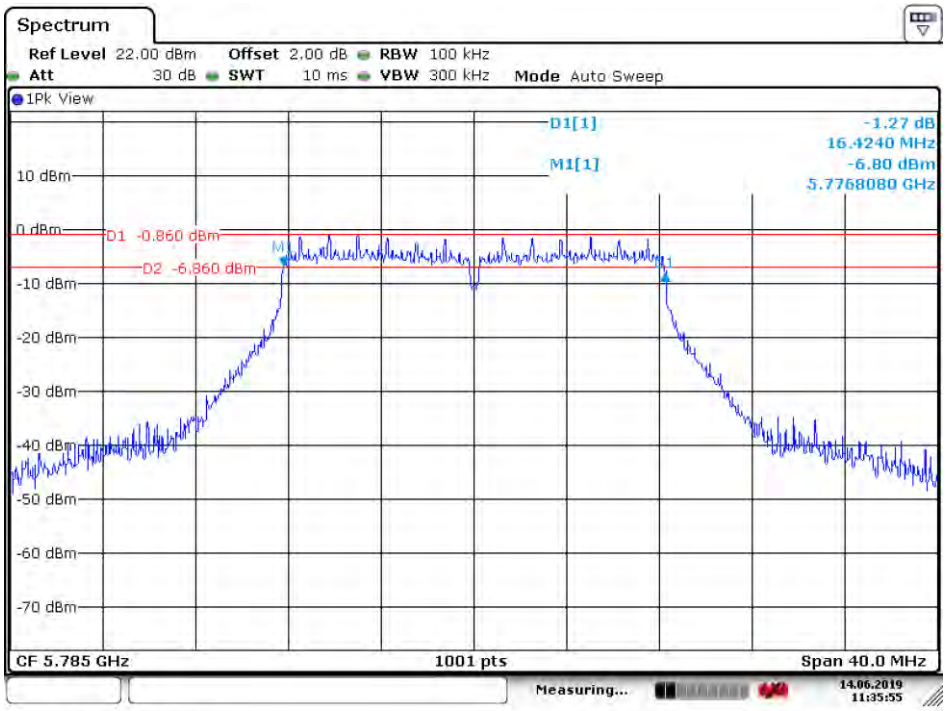

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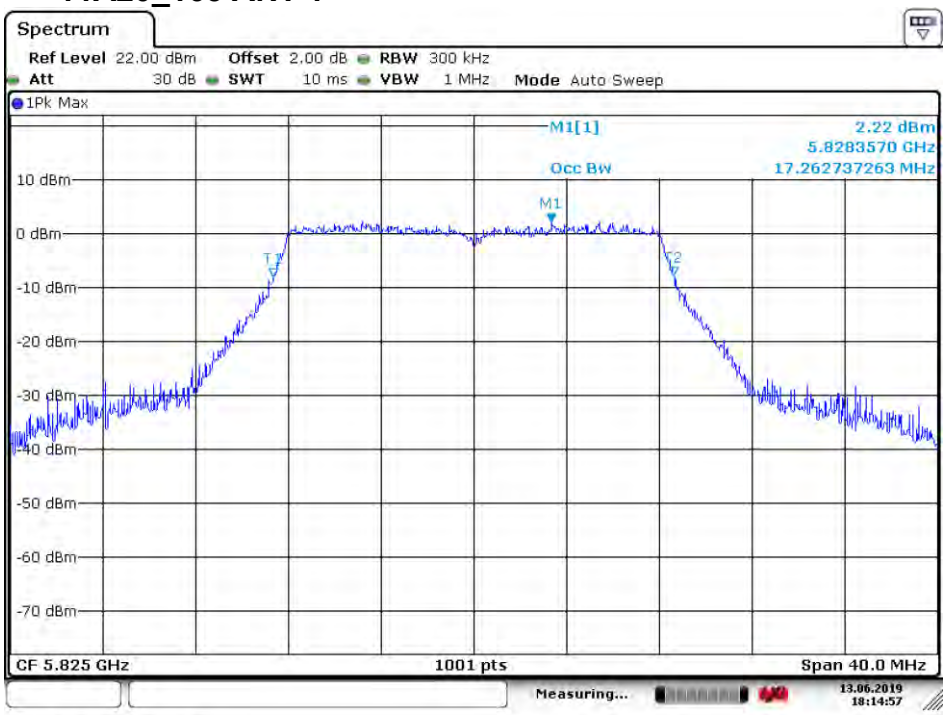
4.6.1.3 11A20_165 ANT 1



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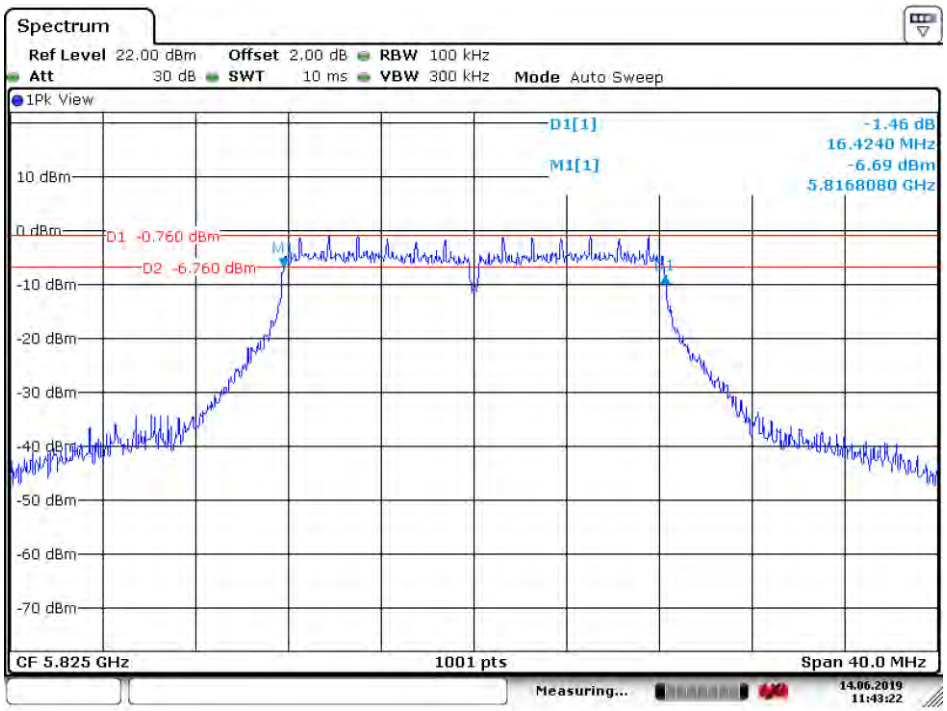

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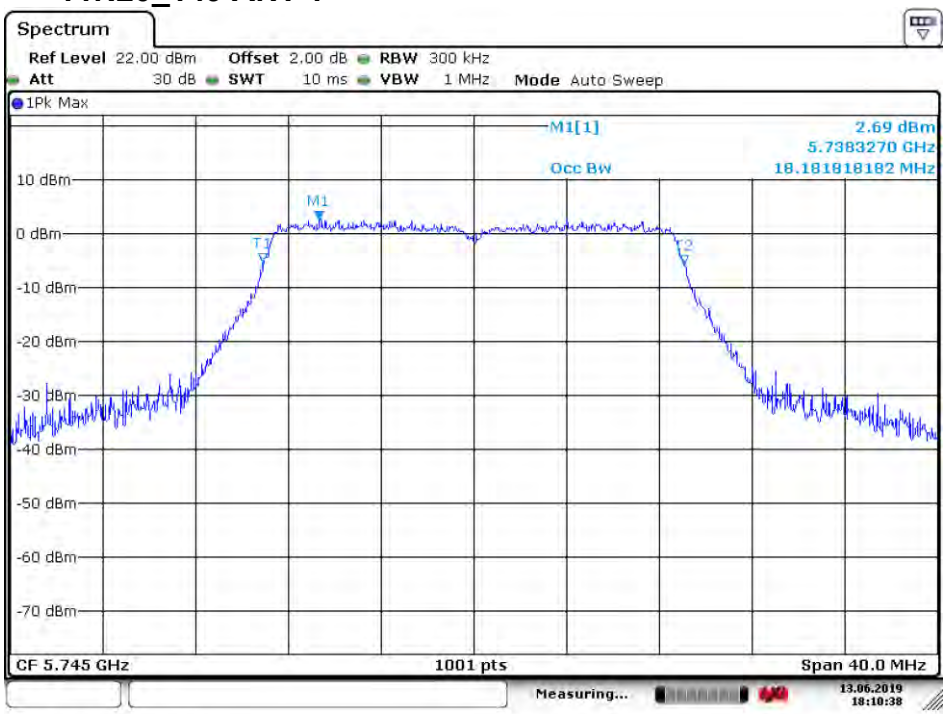
4.6.1.4 11N20_149 ANT 1



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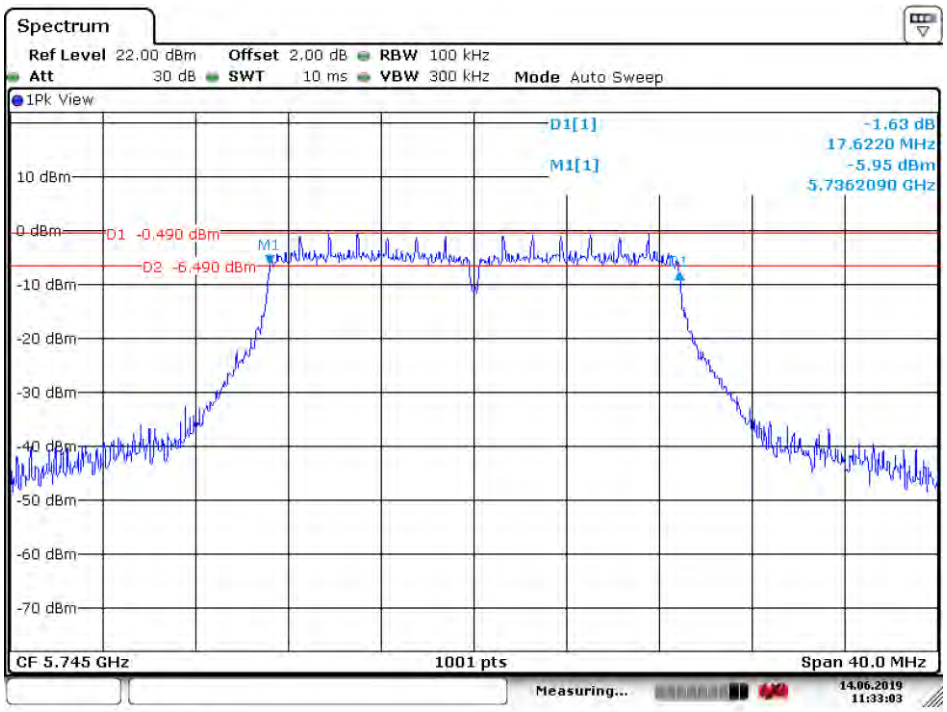

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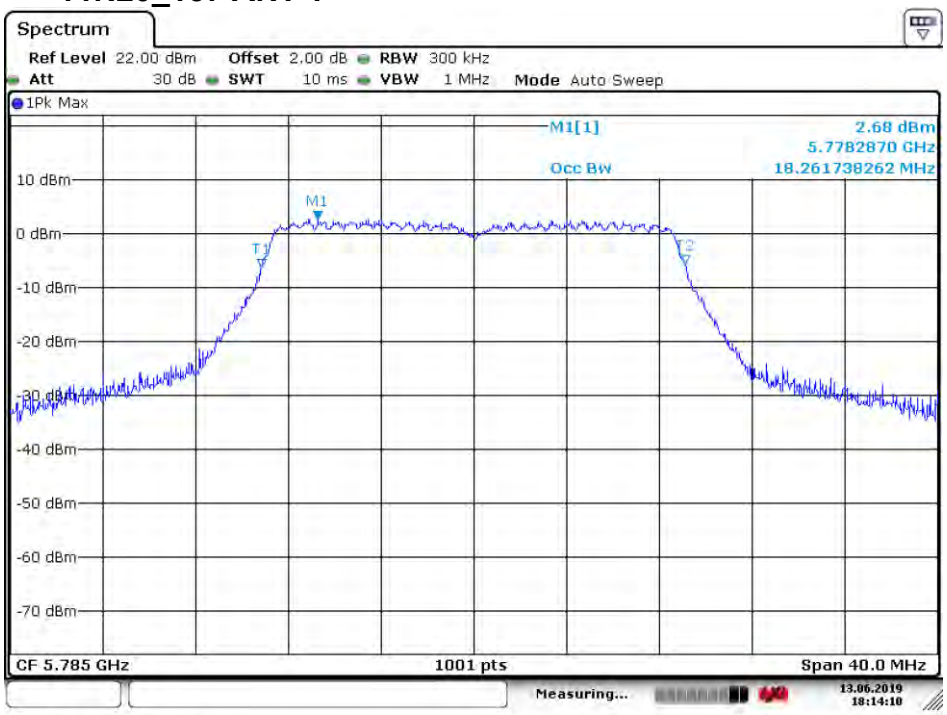
4.6.1.5 11N20_157 ANT 1



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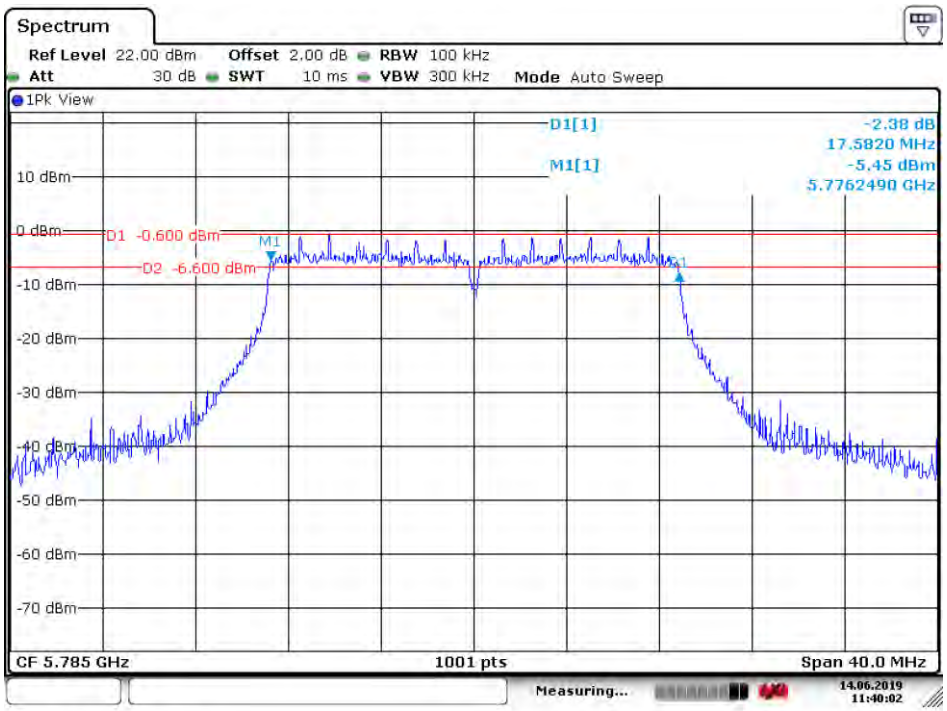

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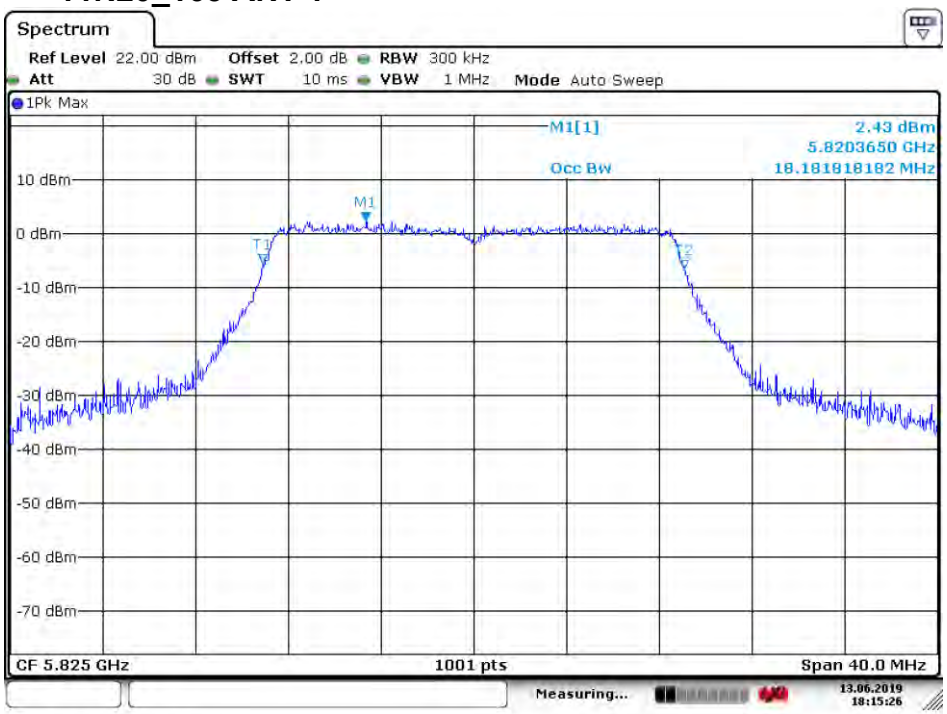
4.6.1.6 11N20_165 ANT 1



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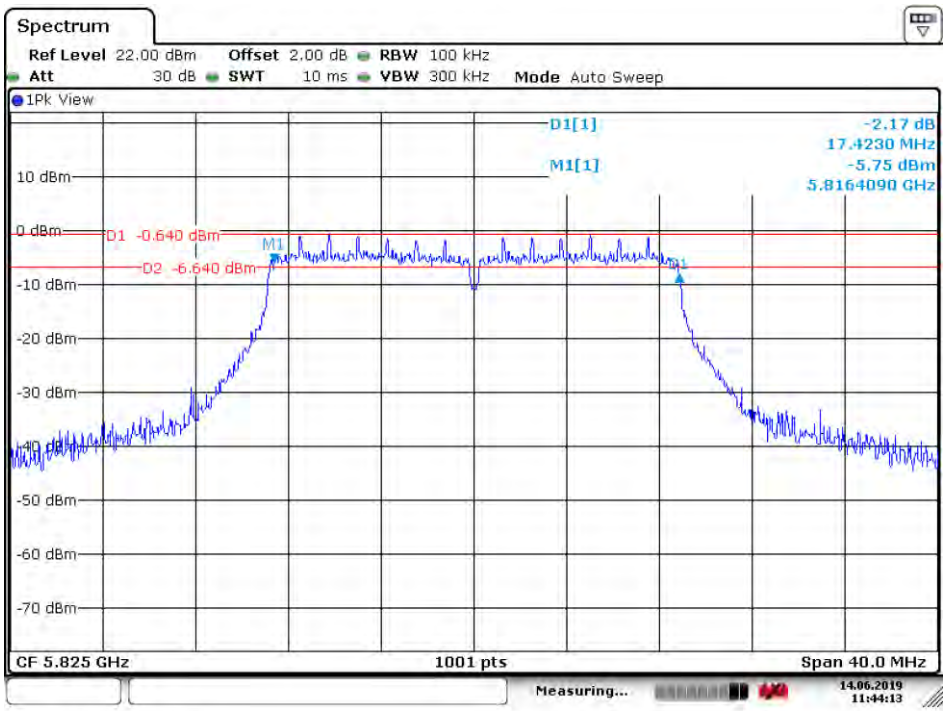

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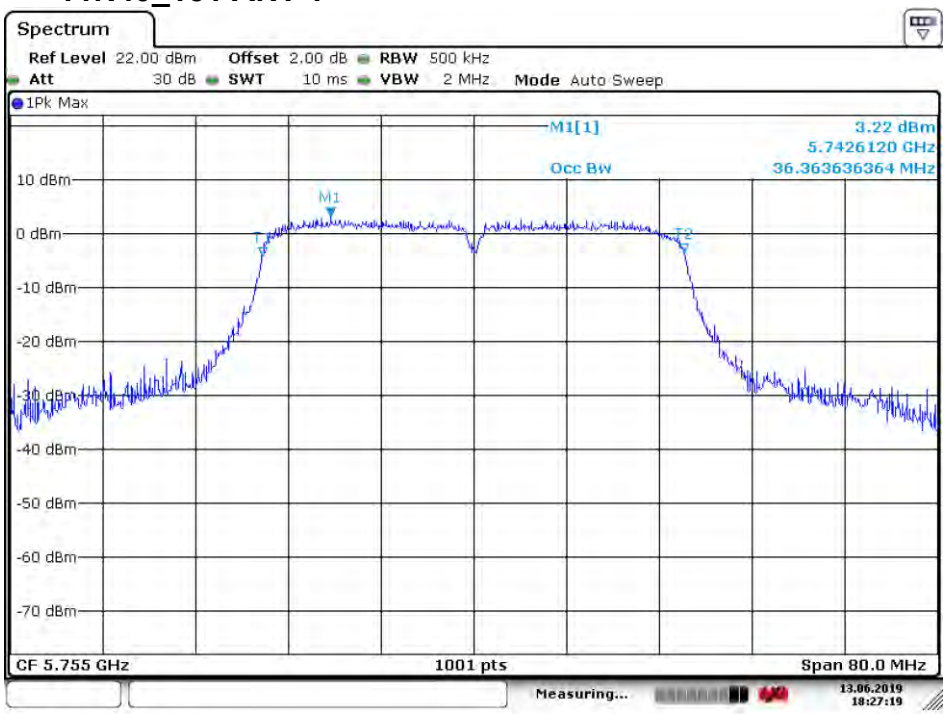
4.6.1.7 11N40_151 ANT 1



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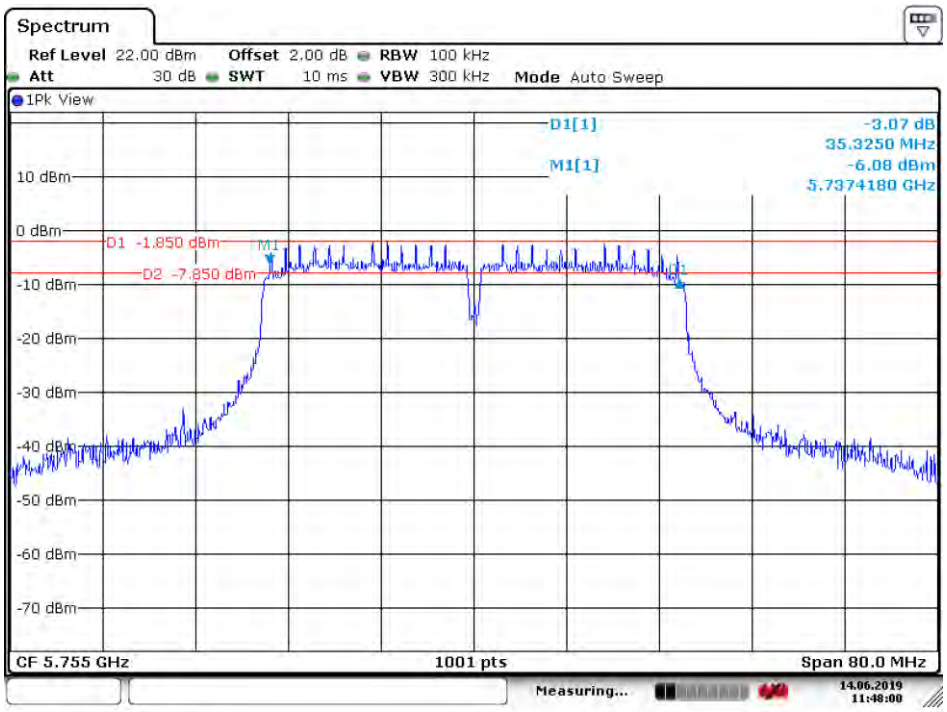

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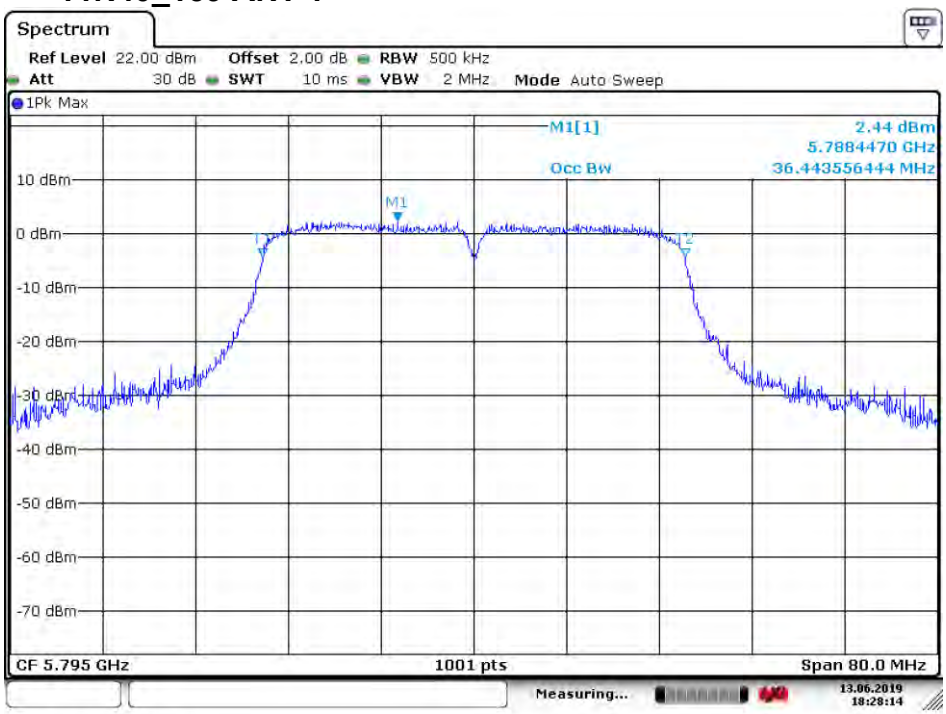
4.6.1.8 11N40_159 ANT 1



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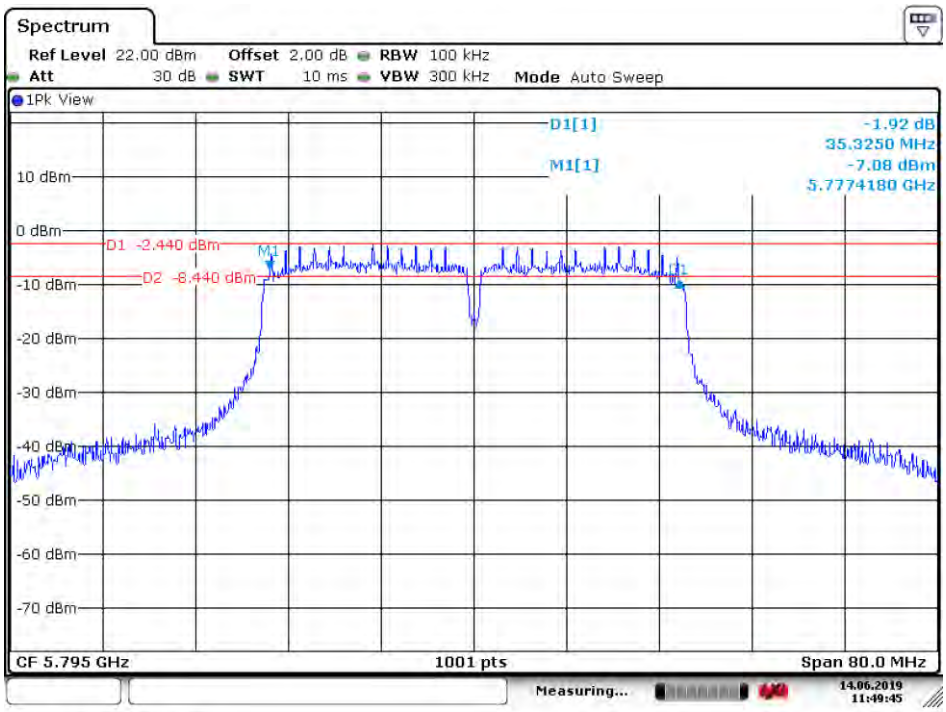

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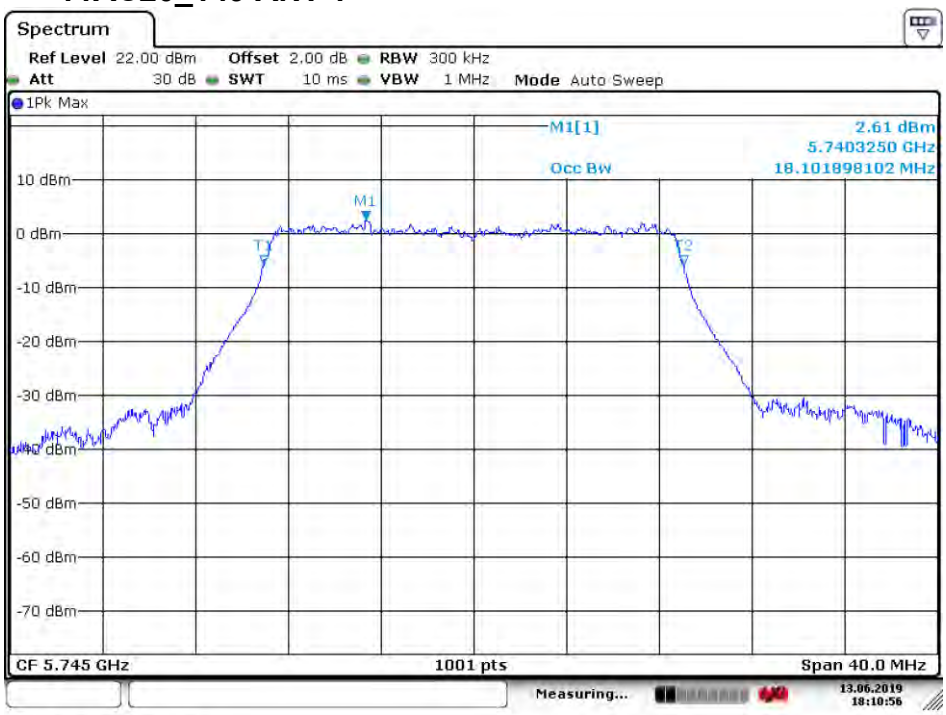
4.6.1.9 11AC20_149 ANT 1



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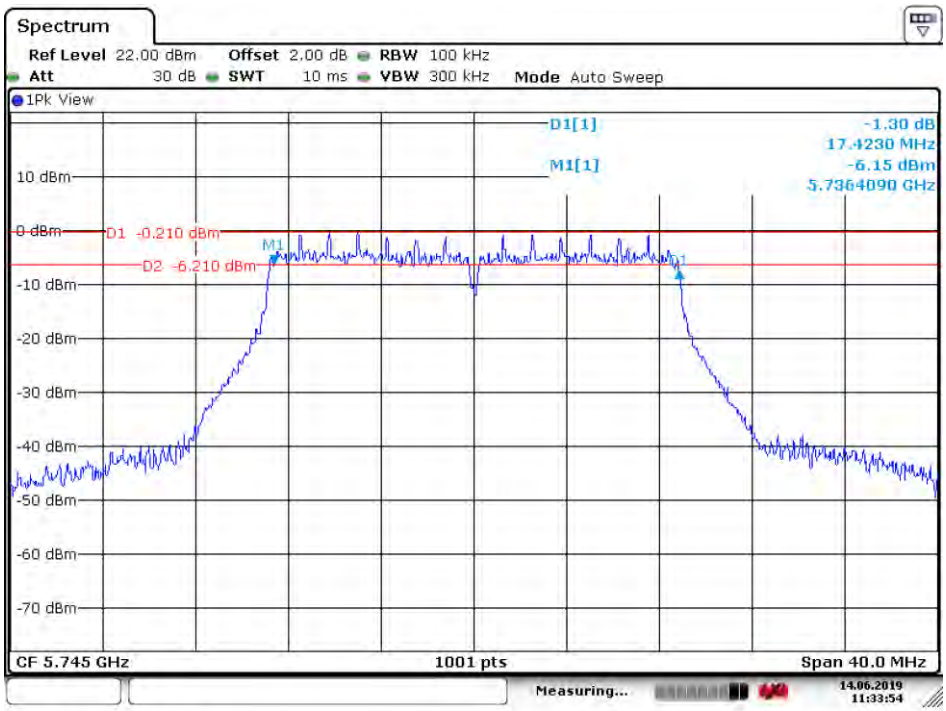

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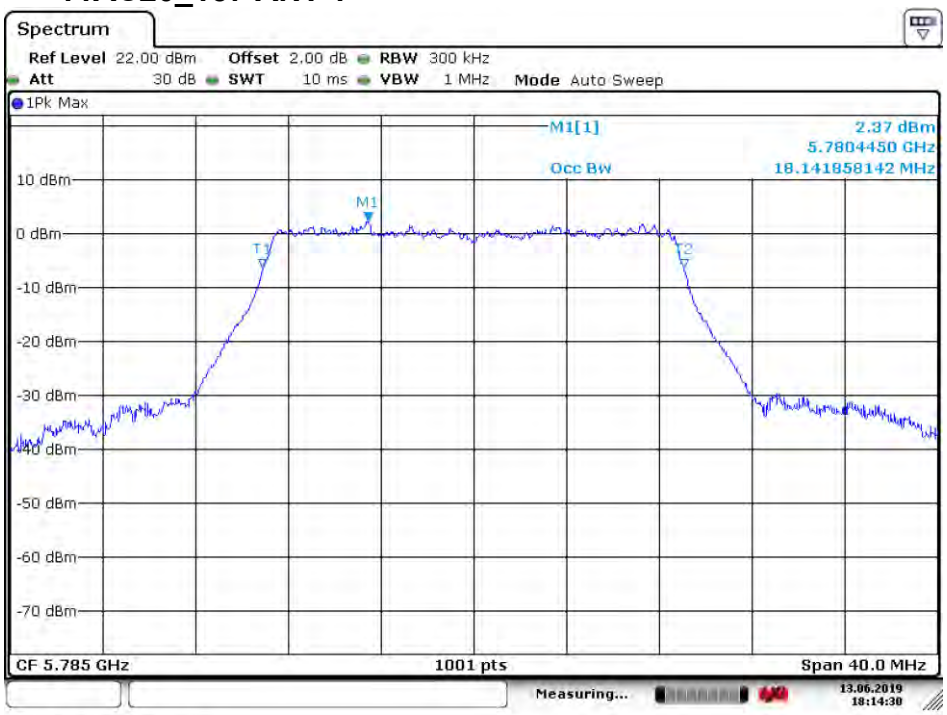
4.6.1.10 11AC20_157 ANT 1



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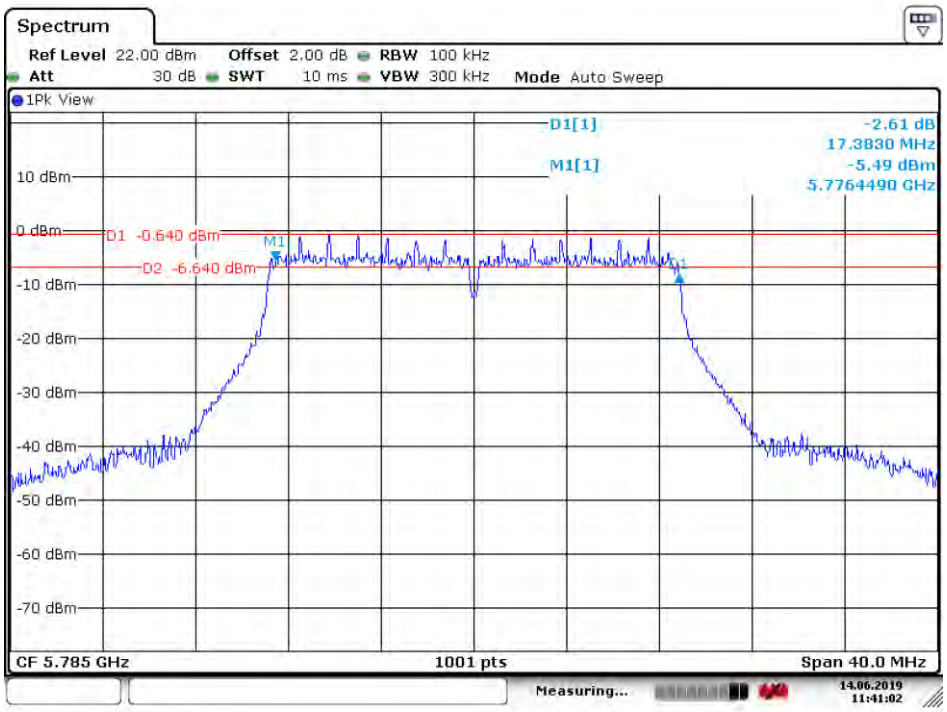

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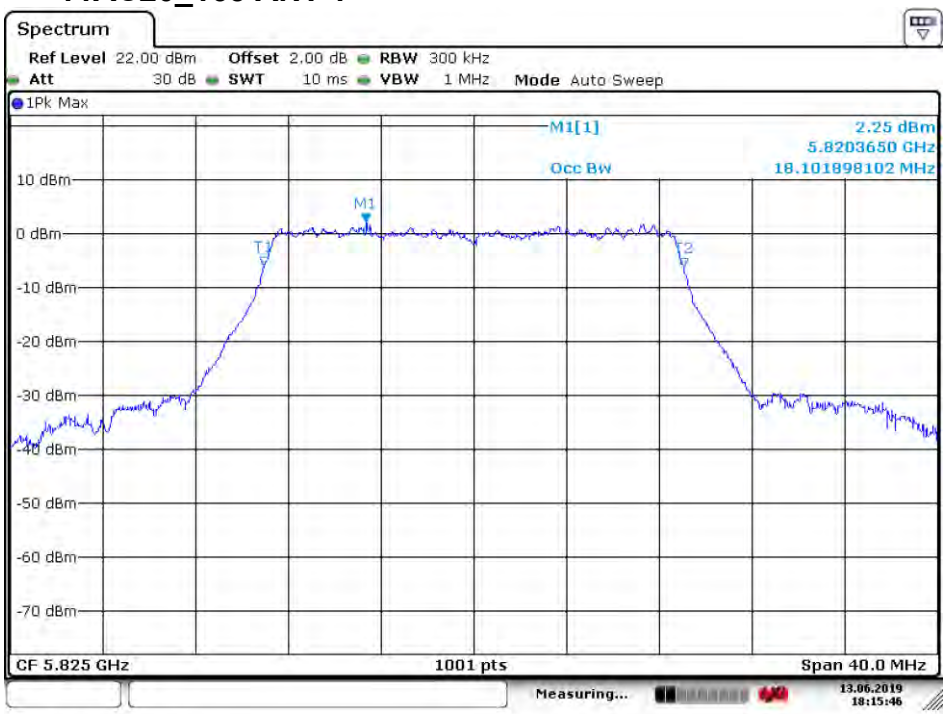
4.6.1.11 11AC20_165 ANT 1



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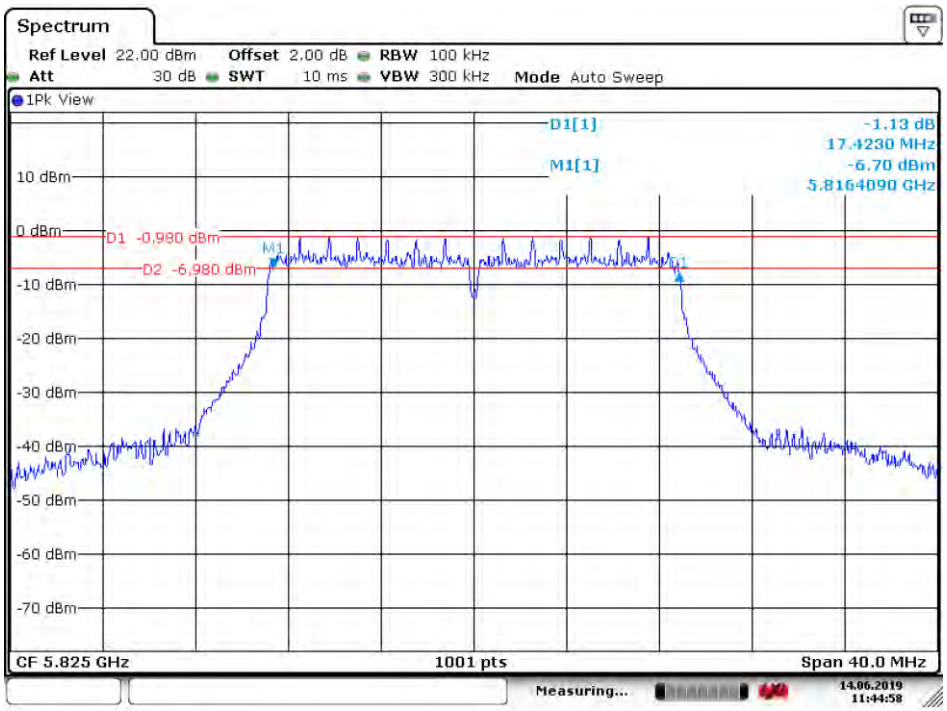

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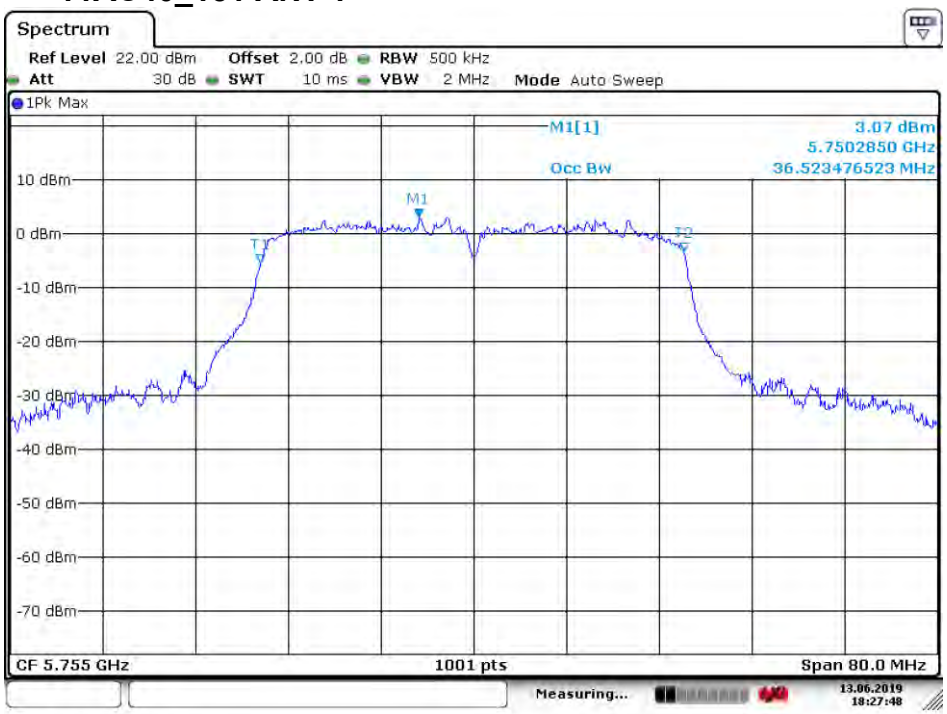

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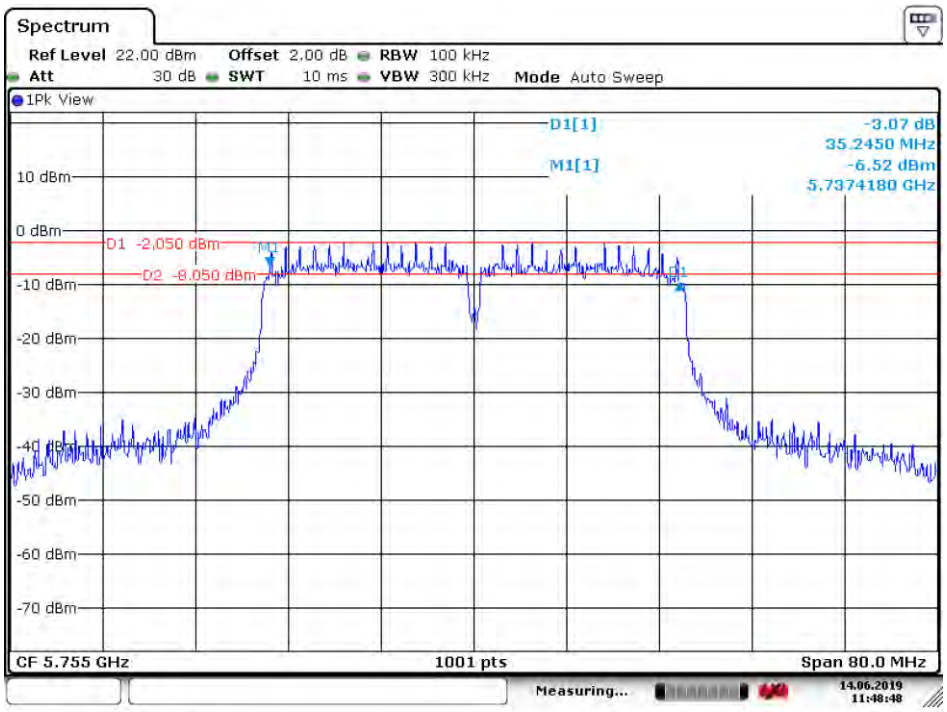

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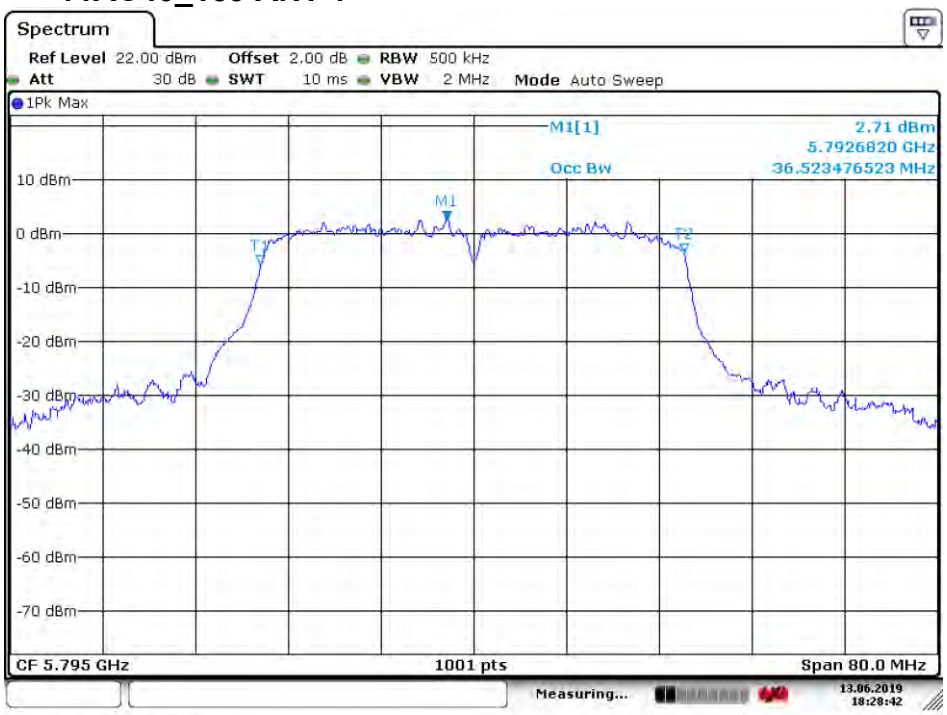
4.6.1.13 11AC40_159 ANT 1



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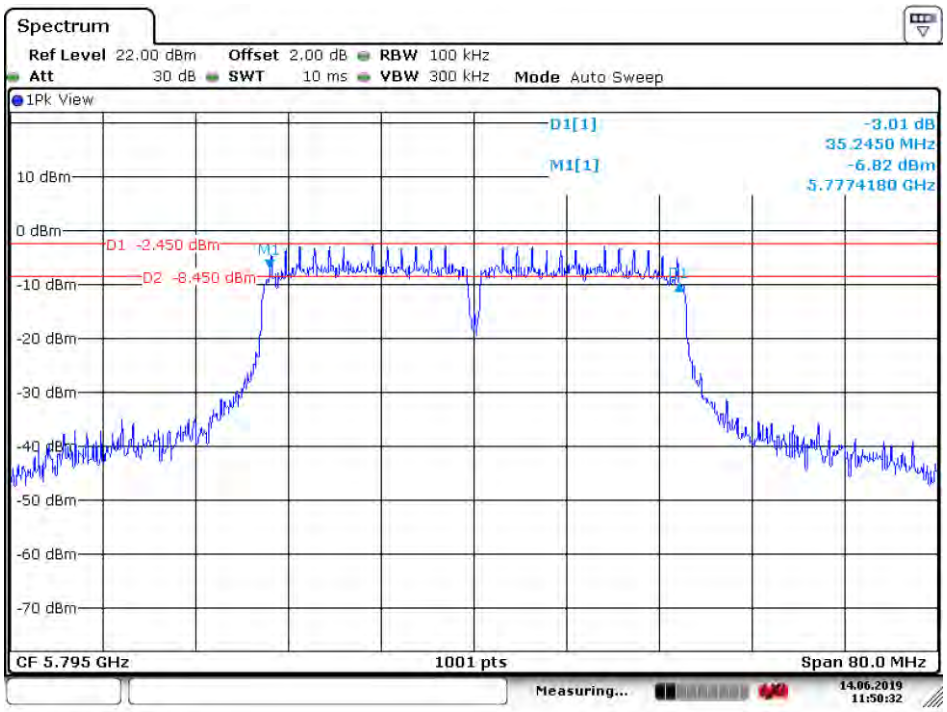

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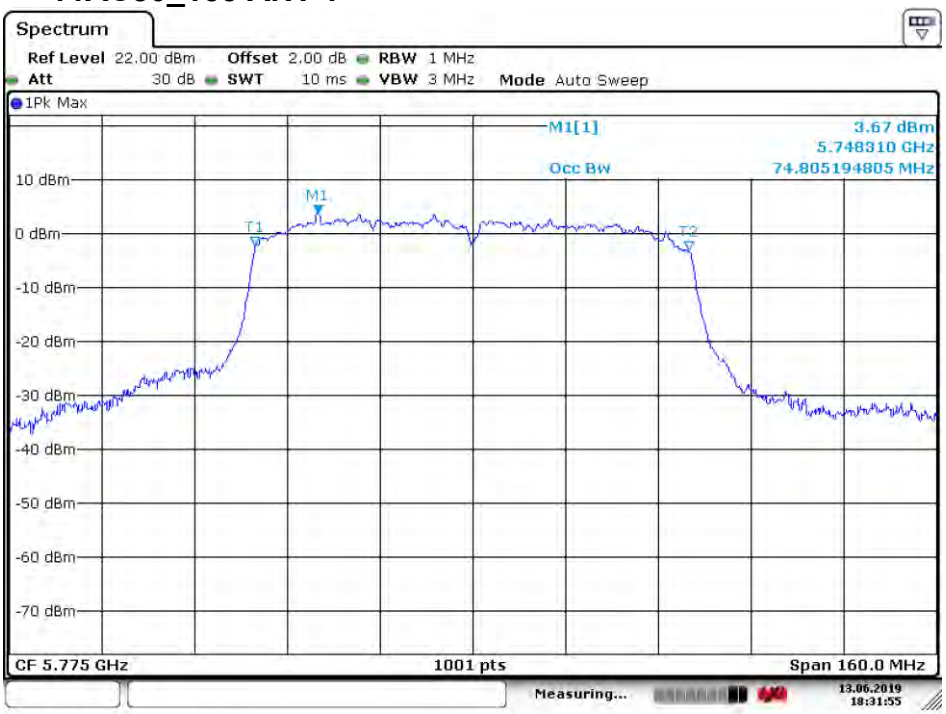
4.6.1.14 11AC80_155 ANT 1



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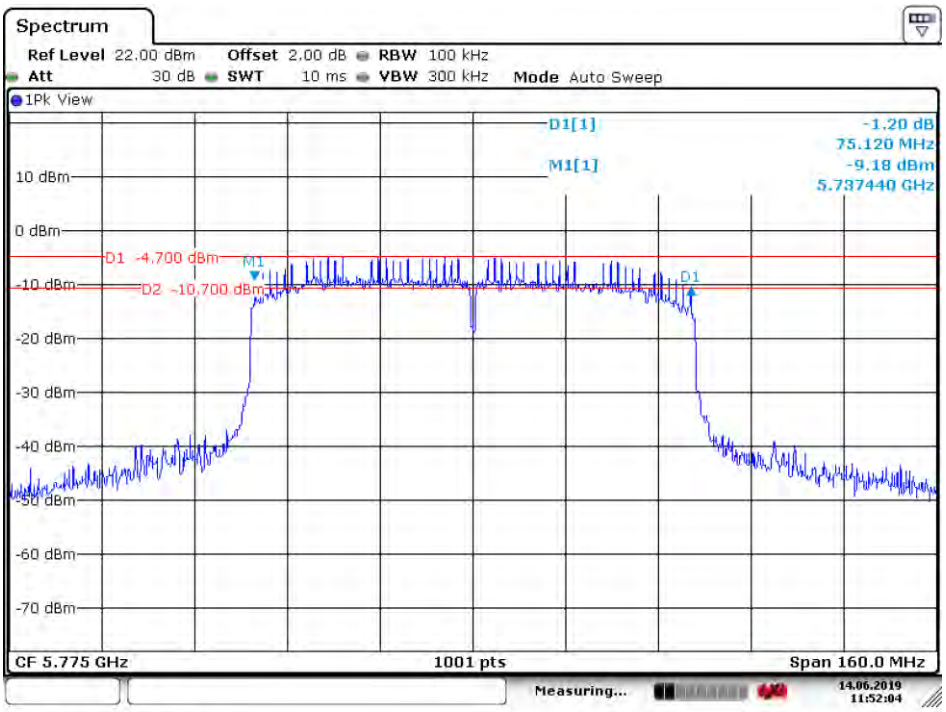

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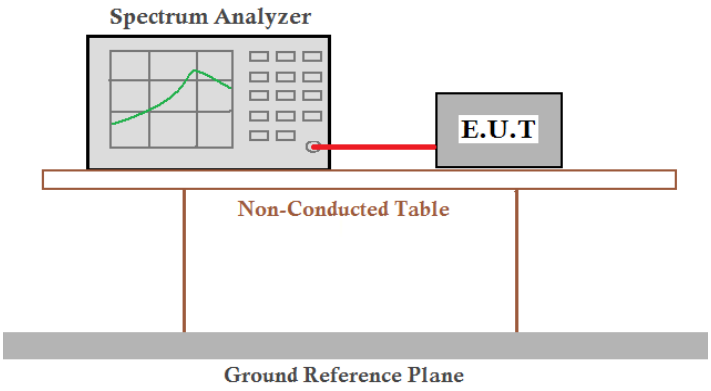
4.7 Power Spectral Density

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:	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); MCSAC0 of rate is the worst case of 802.11ac(HT20); MCSAC0 of rate is the worst case of 802.11ac(HT40); MCSAC0 of rate is the worst case of 802.11ac(HT80). Only the worst case is recorded in the report.	
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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Measurement Data: Test Mode	Test Channel	Frequency [MHz]	Meas. Level (Cond.) [dBm/500KHz]	Verdict
11A20	36	5180	5.57	PASS
	44	5220	4.86	PASS
	48	5240	4.97	PASS
	52	5260	5.00	PASS
	60	5300	4.39	PASS
	64	5320	4.32	PASS
	100	5500	2.26	PASS
	116	5580	1.45	PASS
	140	5700	1.98	PASS
	149	5745	-0.11	PASS
	157	5785	-1.05	PASS
	165	5825	-0.06	PASS
11N20	36	5180	4.98	PASS
	44	5220	4.60	PASS
	48	5240	4.87	PASS
	52	5260	4.42	PASS
	60	5300	4.31	PASS
	64	5320	3.89	PASS
	100	5500	2.42	PASS
	116	5580	1.41	PASS
	140	5700	1.72	PASS
	149	5745	-0.14	PASS
	157	5785	-0.79	PASS
	165	5825	-0.20	PASS
11N40	38	5190	3.36	PASS
	46	5230	2.70	PASS
	54	5270	2.17	PASS
	62	5310	1.58	PASS
	102	5510	0.09	PASS
	110	5550	-0.37	PASS
	134	5670	-0.50	PASS
	151	5755	-1.82	PASS
	159	5795	-2.64	PASS
11AC20	36	5180	5.30	PASS
	44	5220	4.83	PASS
	48	5240	4.38	PASS
	52	5260	4.30	PASS
	60	5300	4.16	PASS
	64	5320	3.57	PASS
	100	5500	2.13	PASS
	116	5580	1.52	PASS
	140	5700	1.36	PASS
	149	5745	-0.13	PASS
	157	5785	-0.79	PASS
	165	5825	-1.13	PASS
11AC40	38	5190	3.16	PASS
	46	5230	2.97	PASS

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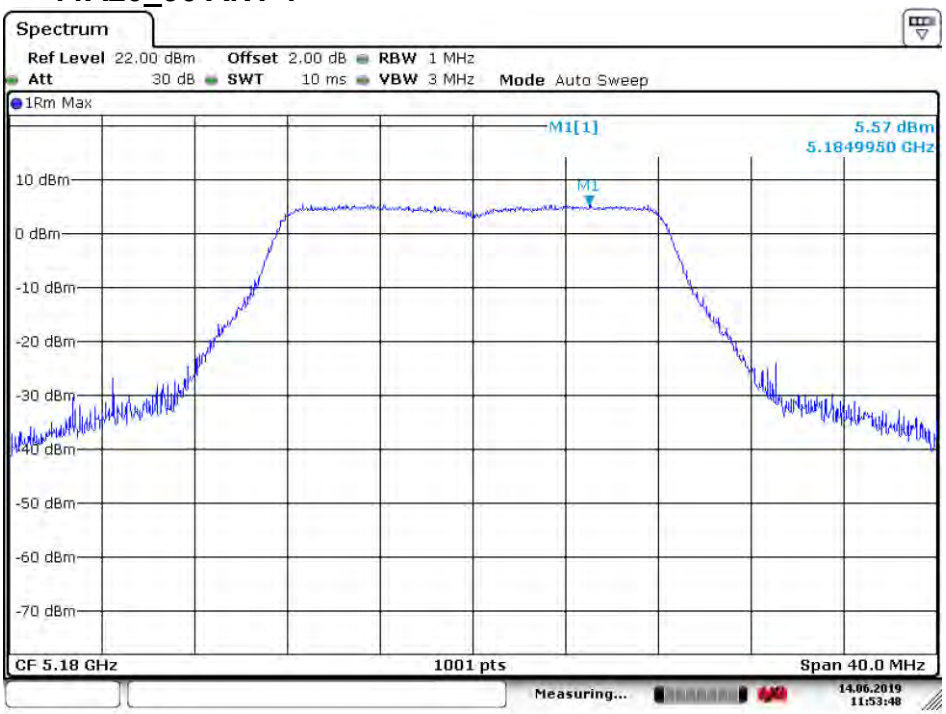
	54	5270	2.43	PASS
	62	5310	2.34	PASS
	102	5510	0.12	PASS
	110	5550	-0.52	PASS
	134	5670	-0.40	PASS
	151	5755	-2.17	PASS
	159	5795	-2.33	PASS
11AC80	42	5210	0.56	PASS
	58	5290	-0.13	PASS
	106	5530	-2.45	PASS
	122	5610	-3.06	PASS
	155	5775	-5.02	PASS

4.7.1 Test plots

4.7.1.1 11A20_36 ANT 1



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