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

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057

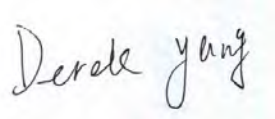
Telephone: +86 (0) 755 2601 2053
Fax: +86 (0) 755 2671 0594
Email: ee.shenzhen@sgs.com

FCC TEST REPORT

Application No:	SZEM1806004850RG
Applicant:	Fibocom Wireless Inc.
Address of Applicant	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China
Manufacturer:	Fibocom Wireless Inc.
Address of Manufacturer	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China
Factory:	Shenzhen Eternity Technology Co.,Ltd
Address of Factory	1F,2F,4F Building A2, Yingzhan Industrial Zone, Longtian Community, Longtian Road, Pingshan District, Shenzhen, Guangdong Province, P.R. China
Product Name:	LTE Module
Model No.(EUT):	SC806-AM
Trade Mark::	Fibocom
FCC ID:	ZMOSC806AM
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 v04 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices
Date of Receipt:	2018-07-08
Date of Test:	2018-07-19 to 2018-08-19
Date of Issue:	2018-08-20
Test Result:	**PASS ***

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

Authorized Signature:



Derek Yang
Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2018-08-20		Original

Authorized for issue by:				
Tested By		Mike Hu **(Mike Hu) /Project Engineer**		2018-08-20 **Date**
Checked By		David Chen **(David Chen) /Reviewer**		2018-08-20 **Date**

Contents

3 Test Summary

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1) 15.407(c)	No limit.	Clause 5.4 Clause 5.5	Pass
	5250-5350	15.403(i) 15.407(a)(2) 15.407(c)			
	5470-5725	15.403(i) 15.407(a)(2) 15.407(c)			
	5725-5850	15.403(i) 15.407(e) 15.407(c)	≥ 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) 15.407(c)	FCC < 250mW (avg during transmission)	Clause 5.3	
	5250-5350	15.407(a)(2) 15.407(a)(4) 15.407(c)	<MIN{250mW,11dBm+10*lg (EBW)} (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4) 15.407(c)	<MIN{250mW,11dBm+10*lg (EBW)} (avg during transmission)		
	5725-5850	15.407(a)(3) 15.407(c)	< 1W (avg during transmission)		
maximum Power Spectral Density	5150-5250	15.407(a)(1) 15.407(a)(4) 15.407(c)	<11dBm/MHz (avg during transmission)	Clause 5.6	
	5250-5350	15.407(a)(2) 15.407(a)(4) 15.407(c)	<11dBm/MHz (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4) 15.407(c)	<11dBm/MHz (avg during transmission)		
	5725-5850	15.407(a)(3) 15.407(a)(4) 15.407(c)	<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) 15.407(c) 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	Clause 5.7	Pass

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
			(AV&PK).		
	5250-5350	15.407(b)(2) 15.407(b)(6) 15.407(b)(7) 15.407(c) 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).		
	5470-5750	15.407(b)(3) 15.407(b)(6) 15.407(b)(7) 15.407(c) 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) 15.407(c) 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).		

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Unwanted Emissions in the Restricted Bands（Radiated）	5150-5250 5250-5350 5470-5725 5725-5850	15.209	FCC: Part 15.209	Clause 5.8	Pass
AC Power Line Conducted Emissions	5150-5250 5250-5350 5470-5725 5725-5850	15.207	FCC:Part 15.207 conducted limit;	Clause 5.2	Pass
Frequence Stability	5150-5250 5250-5350 5470-5725 5725-5850	15.407(g) 15.407(c)	FCC Part 15.407(g)	Clause 5.9	Pass
Frequency Stability	5150-5250 5250-5350 5470-5725 5725-5850	15.407(g) 15.407(c)	FCC Part 15.407(g)	Clause 5.9	Pass
DFS: Non-occupancy period	5250-5350 5470-5725	47 CFR Part 15, Subpart E 15.407	Minimum 30 minutes	Clause 5.10	Pass
DFS: Channel Move Time		47 CFR Part 15, Subpart E 15.407	10 seconds		Pass
DFS: Channel Closing Transmission Time		47 CFR Part 15, Subpart E 15.407	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.		Pass

4 General Information

4.1 Client Information

Applicant:	Fibocom Wireless Inc.
Address of Applicant:	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China
Manufacturer:	Fibocom Wireless Inc.
Address of Manufacturer:	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China
Factory:	Shenzhen Eternity Technology Co.,Ltd
Address of Factory:	1F,2F,4F Building A2, Yingzhan Industrial Zone, Longtian Community, Longtian Road, Pingshan District, Shenzhen, Guangdong Province, P.R. China

4.2 General Description of EUT

Product Name:	LTE Module
Model No.:	SC806-AM
Trade Mark:	Fibocom
Hardware Version:	V1.0.1
Software Version:	19060.1000.00.12.20.06
Operation Frequency:	IEEE 802.11a/ n(HT20/40): 5150MHz to 5250MHz IEEE 802.11a/ n(HT20/40): 5250MHz to 5350MHz IEEE 802.11a/ n(HT20/40): 5470MHz to 5725MHz IEEE 802.11a/ n(HT20/40): 5725MHz to 5850MHz
	* The 5580-5650MHz can not be used.
Type of Modulation:	IEEE 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM)
DFS mode:	Slave without radar detection
Sample Type:	LTE Module
Antenna Type:	Monopole Antenna
Antenna Gain:	Antenna :2.1 dBi,
EUT Power Supply:	DC3.85V

Note:
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 20MHz	The Lowest channel	5180
	The Middle channel	5200
	The Highest channel	5240
IEEE 802.11n 40MHz	The Lowest channel	5190
	The Highest channel	5230

For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n 20MHz	The Lowest channel	5260
	The Middle channel	5280
	The Highest channel	5320
IEEE 802.11n 40MHz	The Lowest channel	5270
	The Highest channel	5310

For UNII Band II-C:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n 20MHz	The Lowest channel	5500
	The Middle channel	5600
	The Highest channel	5720
IEEE 802.11n 40MHz	The Lowest channel	5510
	The Middle channel	5670
	The Highest channel	5710

For UNII Band III:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n 20MHz	The Lowest channel	5745
	The Middle channel	5785
	The Highest channel	5825
IEEE 802.11n 40MHz	The Lowest channel	5755
	The Highest channel	5795

4.3 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.

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch,
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594
No tests were sub-contracted.

4.6 Test Facility

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

• CNAS (No. CNAS L2929)

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

• A2LA (Certificate No. 3816.01)

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

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have

been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

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

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

• Industry Canada (IC)

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

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

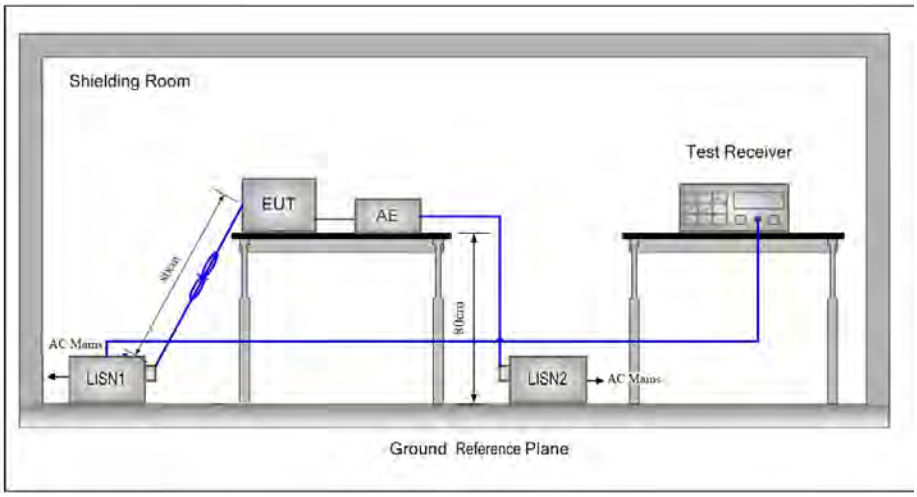
5 Test results and Measurement Data

5.1 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 2.1dBi.	

5.2 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

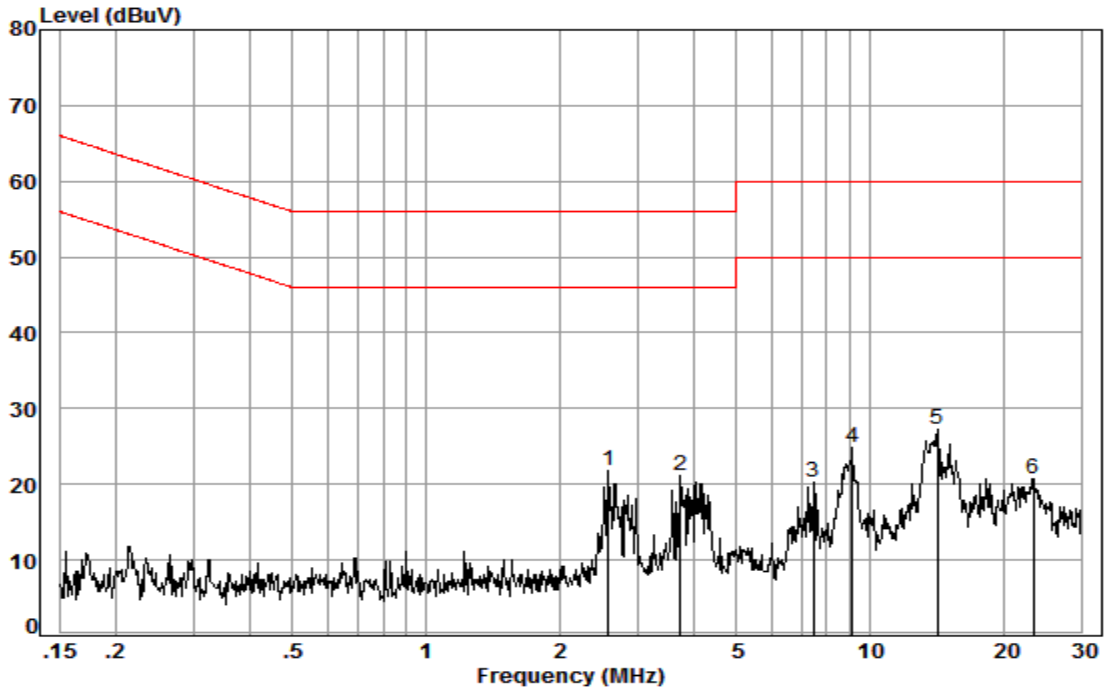
	plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. 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.
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.

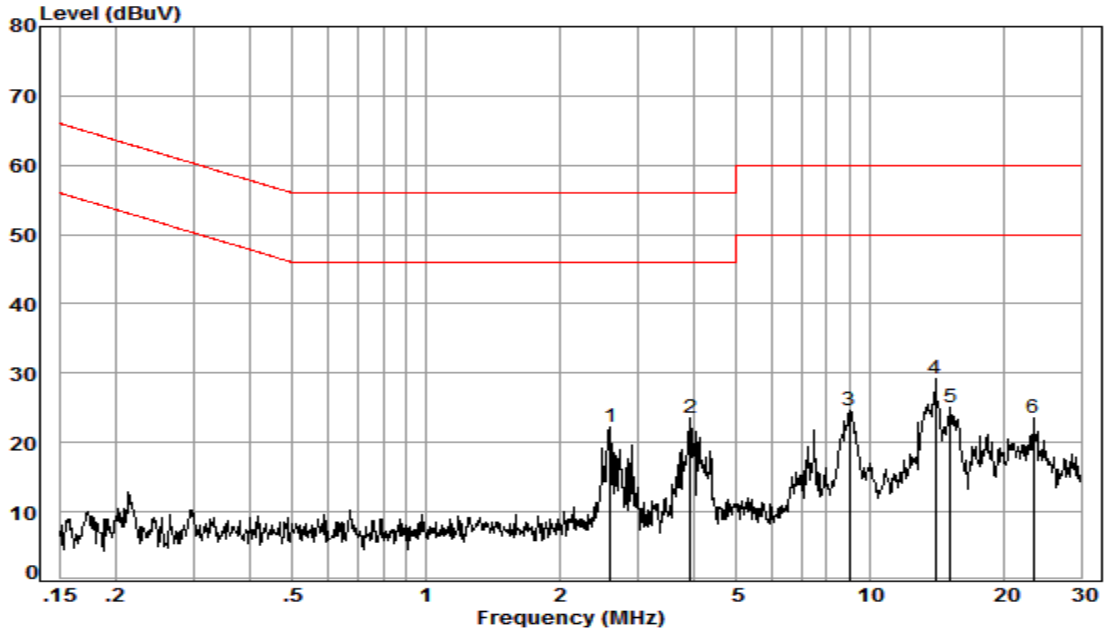
Live Line:



Site : Shielding Room
Condition: Line
Job No. : 04850RG
Test mode: j

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	2.58	0.17	9.53	12.01	21.71	46.00	-24.29	Peak
2	3.74	0.19	9.54	11.40	21.13	46.00	-24.87	Peak
3	7.45	0.18	9.60	10.56	20.34	50.00	-29.66	Peak
4	9.16	0.19	9.62	15.00	24.81	50.00	-25.19	Peak
5	14.21	0.24	9.70	17.31	27.25	50.00	-22.75	Peak
6	23.39	0.27	9.84	10.66	20.77	50.00	-29.23	Peak

Neutral Line:



Site : Shielding Room
Condition: Neutral
Job No. : 04850RG
Test mode: j

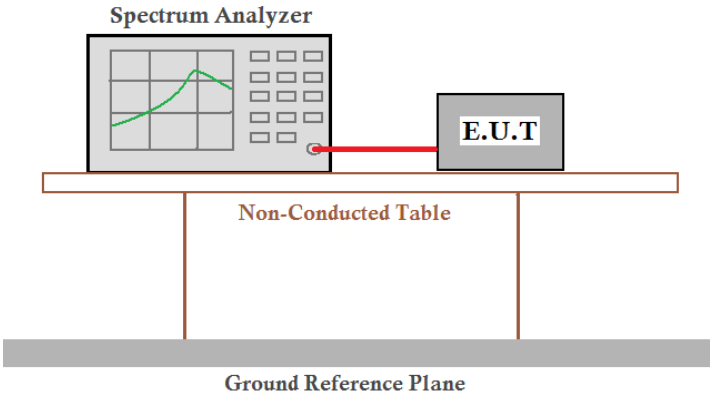
	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	2.61	0.17	9.64	12.32	22.13	46.00	-23.87	Peak
2	3.94	0.19	9.67	13.78	23.64	46.00	-22.36	Peak
3	9.01	0.19	9.76	14.72	24.67	50.00	-25.33	Peak
4	14.06	0.24	9.91	18.98	29.13	50.00	-20.87	Peak
5	15.23	0.25	9.94	14.87	25.06	50.00	-24.94	Peak
6	23.39	0.27	10.17	13.01	23.45	50.00	-26.55	Peak

Notes:

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

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

5.3 Conducted Output Power

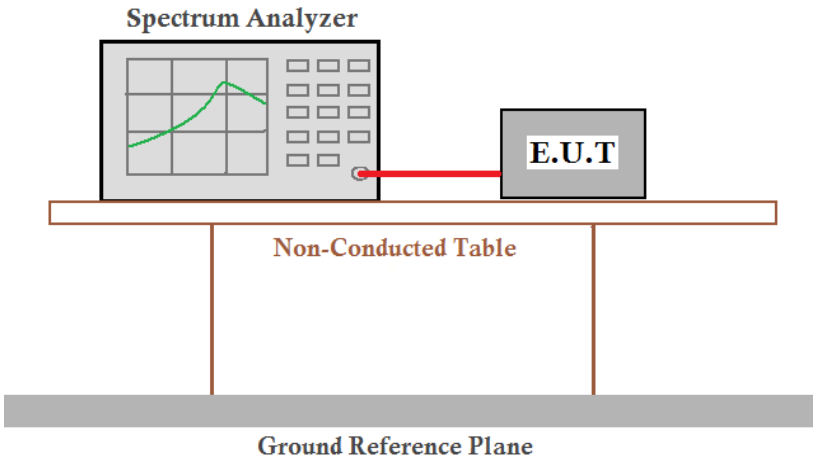
Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case 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); 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	

Measurement Data:

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Meas. Level (Cond.) [dBm]	Meas. Level (EIRP) [dBm]	Verdict
11A20	36	5180	ANT 1	12.78	14.88	PASS
	40	5200	ANT 1	13.39	15.49	PASS
	44	5220	ANT 1	13.49	15.59	PASS
	48	5240	ANT 1	13.76	15.86	PASS
	52	5260	ANT 1	13.37	15.47	PASS
	56	5280	ANT 1	13.45	15.55	PASS
	60	5300	ANT 1	13.83	15.93	PASS
	64	5320	ANT 1	13.76	15.86	PASS
	100	5500	ANT 1	13.29	15.39	PASS
	116	5580	ANT 1	13.67	15.77	PASS
	120	5600	ANT 1	13.52	15.62	PASS
	140	5700	ANT 1	11.7	13.8	PASS
	149	5745	ANT 1	12.3	14.4	PASS
	157	5785	ANT 1	11.85	13.95	PASS
	165	5825	ANT 1	11.96	14.06	PASS
11N20	36	5180	ANT 1	10.84	12.94	PASS
	40	5200	ANT 1	11.44	13.54	PASS
	48	5240	ANT 1	11.73	13.83	PASS
	52	5260	ANT 1	10.97	13.07	PASS
	60	5300	ANT 1	11.56	13.66	PASS
	64	5320	ANT 1	11.56	13.66	PASS
	100	5500	ANT 1	10.94	13.04	PASS
	116	5580	ANT 1	10.57	12.67	PASS
	140	5700	ANT 1	11.23	13.33	PASS
	149	5745	ANT 1	11.32	13.42	PASS
	157	5785	ANT 1	11.02	13.12	PASS
	161	5805	ANT 1	11.04	13.14	PASS
	165	5825	ANT 1	11.01	13.11	PASS
11N40	38	5190	ANT 1	9.76	11.86	PASS
	46	5230	ANT 1	10.59	12.69	PASS
	54	5270	ANT 1	10.46	12.56	PASS
	62	5310	ANT 1	10.49	12.59	PASS

	102	5510	ANT 1	10.29	12.39	PASS
	110	5550	ANT 1	9.78	11.88	PASS
	134	5670	ANT 1	10.11	12.21	PASS
	151	5755	ANT 1	10.11	12.21	PASS
	159	5795	ANT 1	9.79	11.89	PASS

5.4 Emission Bandwidth and 99% Occupied Bandwidth

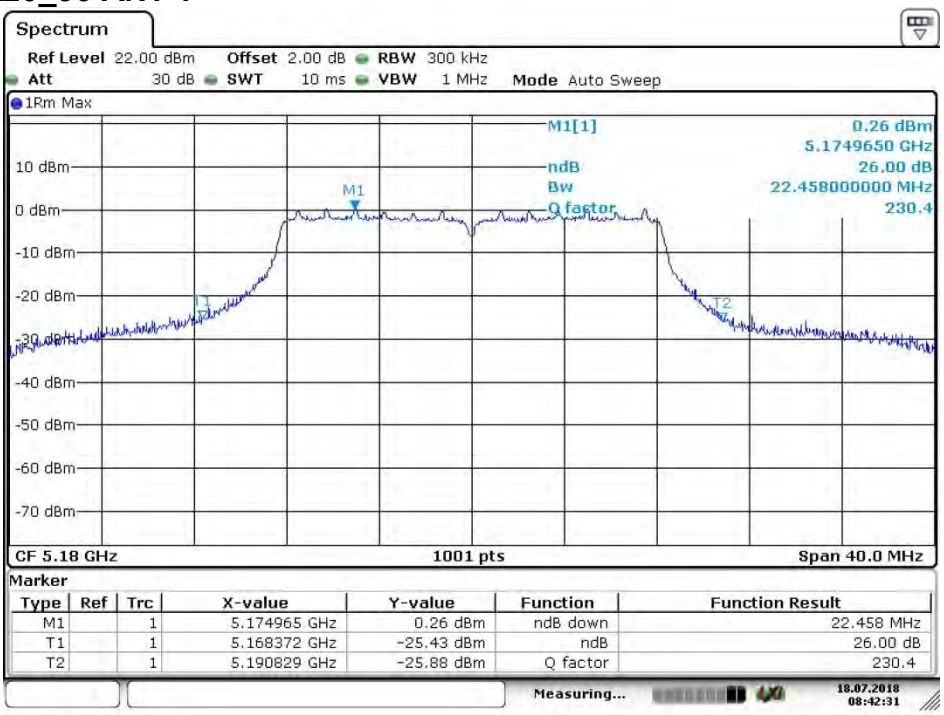
Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of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

5.4.1 Measurement Data:

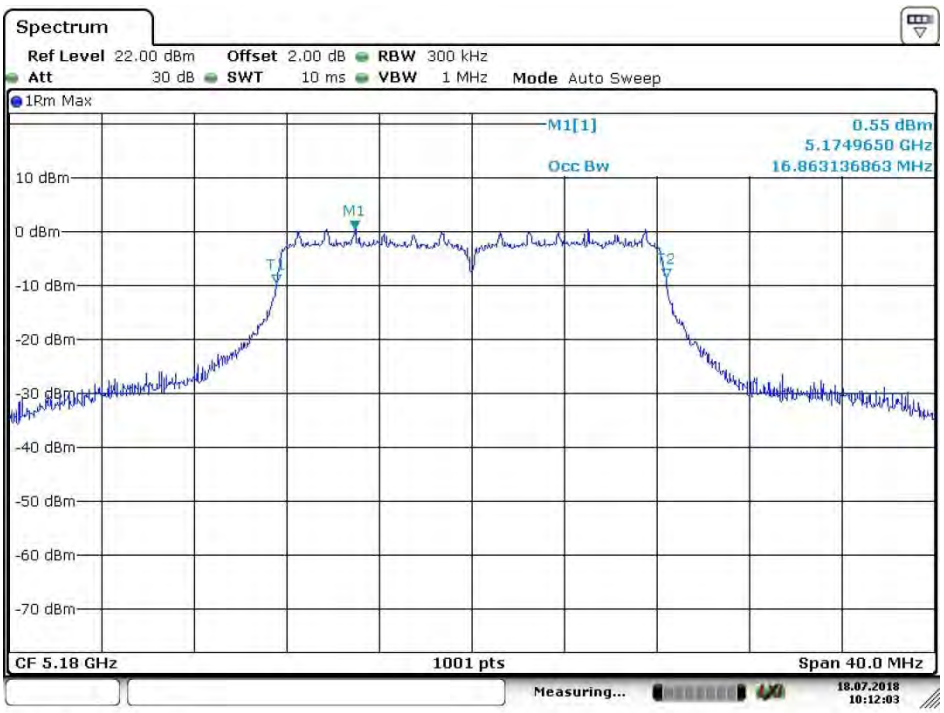
Test Mode	Test Channel	Frequency [MHz]	Antenna Port	26dB Emission Bandwidth [MHz]	Occupied Bandwidth [MHz]	Verdict
11A20	36	5180	ANT 1	22.46	16.86	PASS
	44	5220	ANT 1	26.93	17.02	PASS
	48	5240	ANT 1	26.53	17.22	PASS
	52	5260	ANT 1	28.89	17.34	PASS
	60	5300	ANT 1	37.44	19.66	PASS
	64	5320	ANT 1	32.85	19.42	PASS
	100	5500	ANT 1	37.36	17.90	PASS
	116	5580	ANT 1	38.12	17.30	PASS
	140	5700	ANT 1	25.61	22.14	PASS
11N20	36	5180	ANT 1	21.74	17.86	PASS
	40	5200	ANT 1	21.30	17.90	PASS
	48	5240	ANT 1	21.98	17.94	PASS
	52	5260	ANT 1	21.98	17.94	PASS
	60	5300	ANT 1	24.14	18.10	PASS
	64	5320	ANT 1	24.18	18.14	PASS
	100	5500	ANT 1	28.65	18.10	PASS
	116	5580	ANT 1	27.50	18.26	PASS
	140	5700	ANT 1	25.65	18.26	PASS
11N40	38	5190	ANT 1	41.32	36.12	PASS
	46	5230	ANT 1	41.32	36.12	PASS
	54	5270	ANT 1	41.95	36.12	PASS
	62	5310	ANT 1	44.17	36.28	PASS
	102	5510	ANT 1	45.24	36.68	PASS
	134	5670	ANT 1	42.83	36.36	PASS

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

5.4.2.1 11A20_36 ANT 1

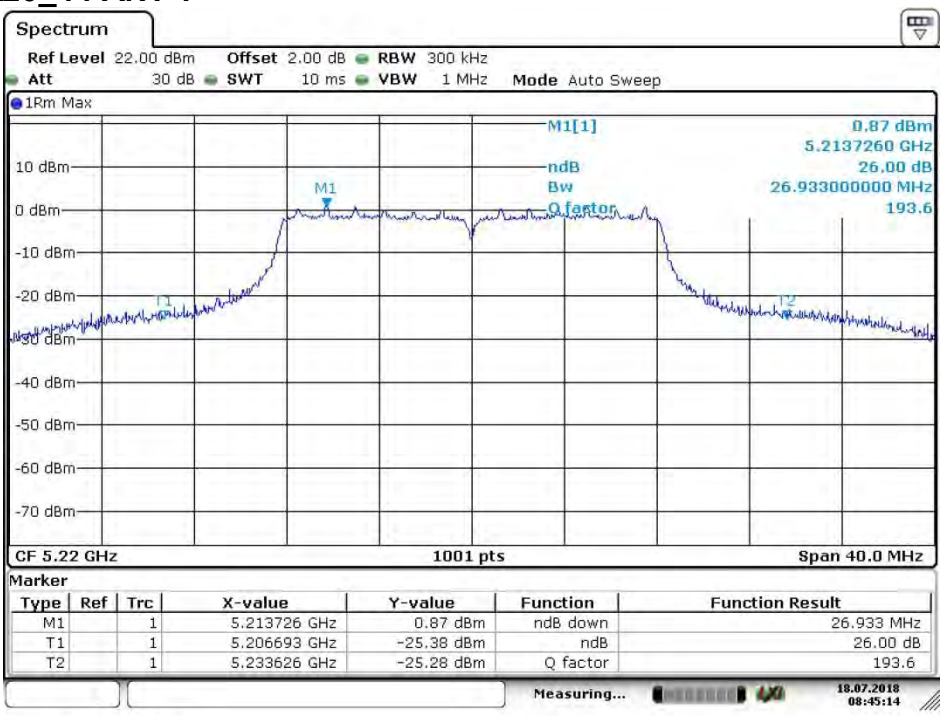


Date: 18.JUL.2018 08:42:32

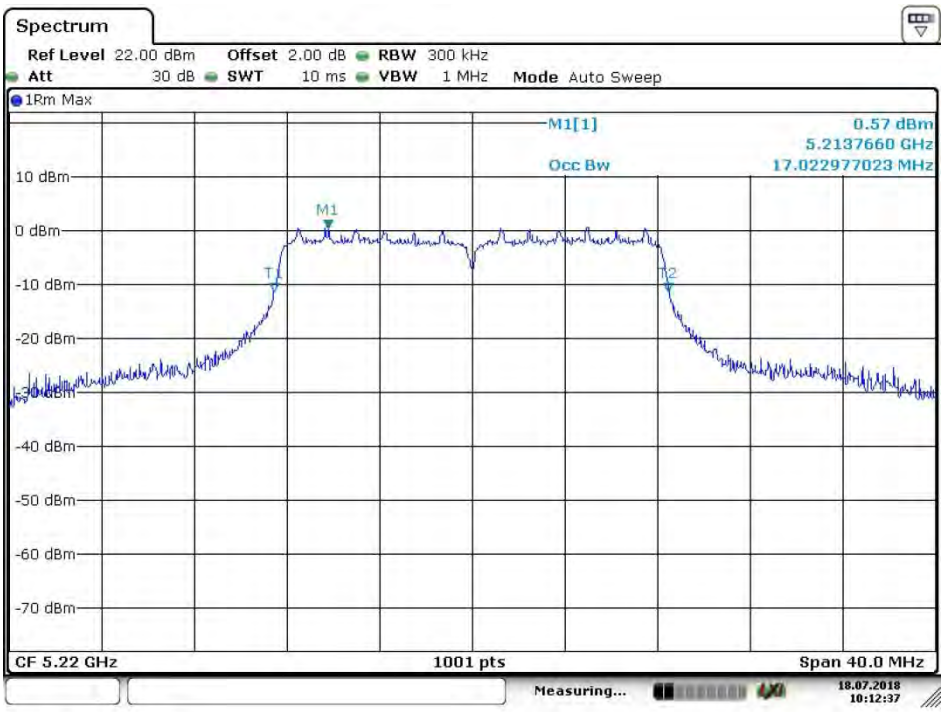


Date: 18.JUL.2018 10:12:04

5.4.2.2 11A20_44 ANT 1

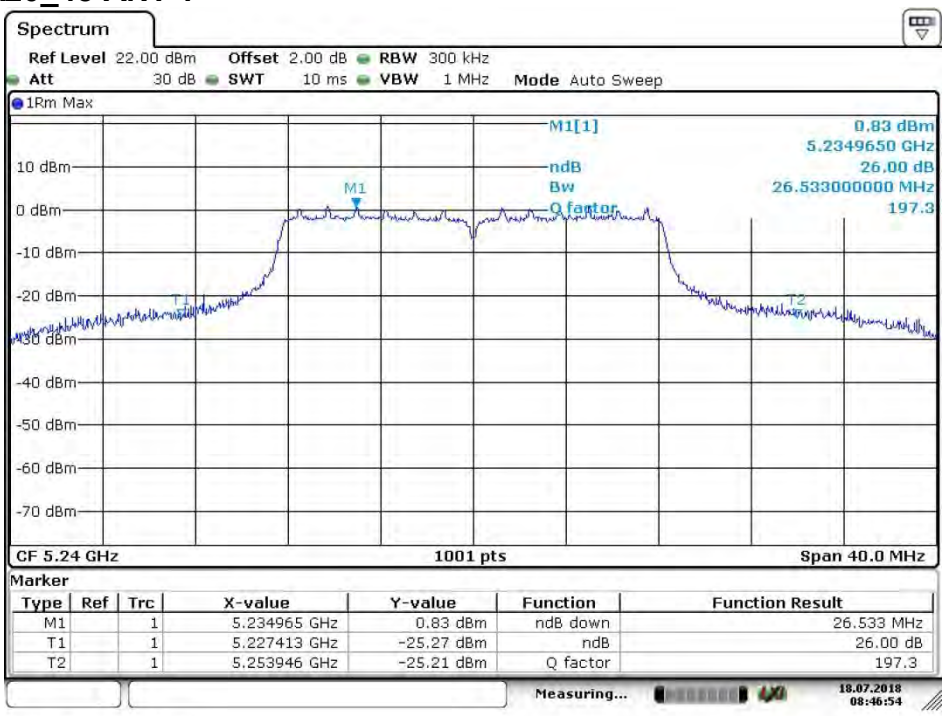


Date: 18.JUL.2018 08:45:15

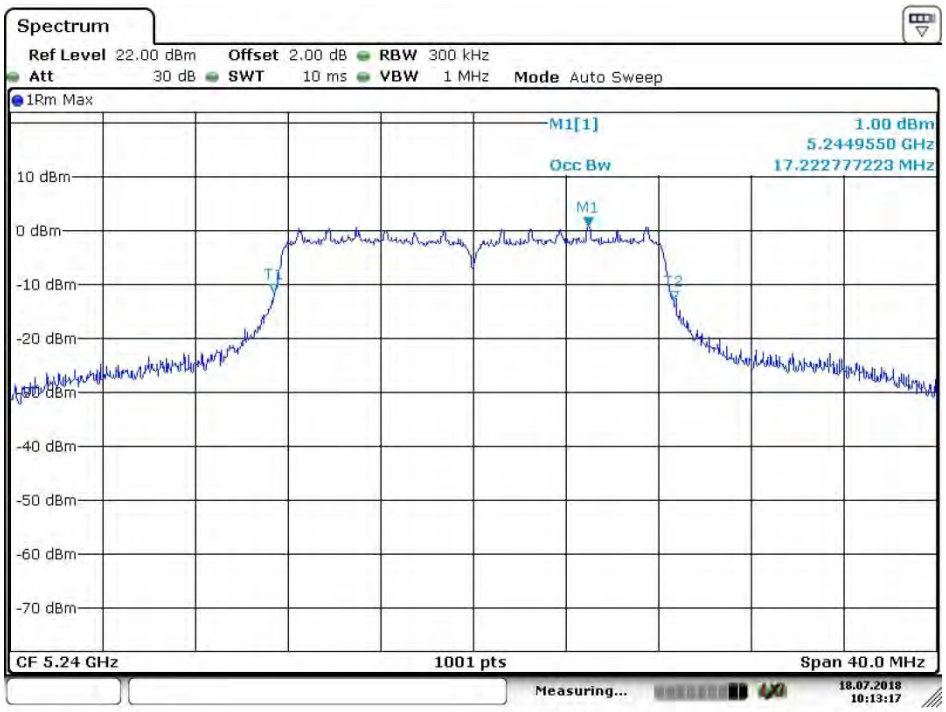


Date: 18.JUL.2018 10:12:36

5.4.2.3 11A20_48 ANT 1

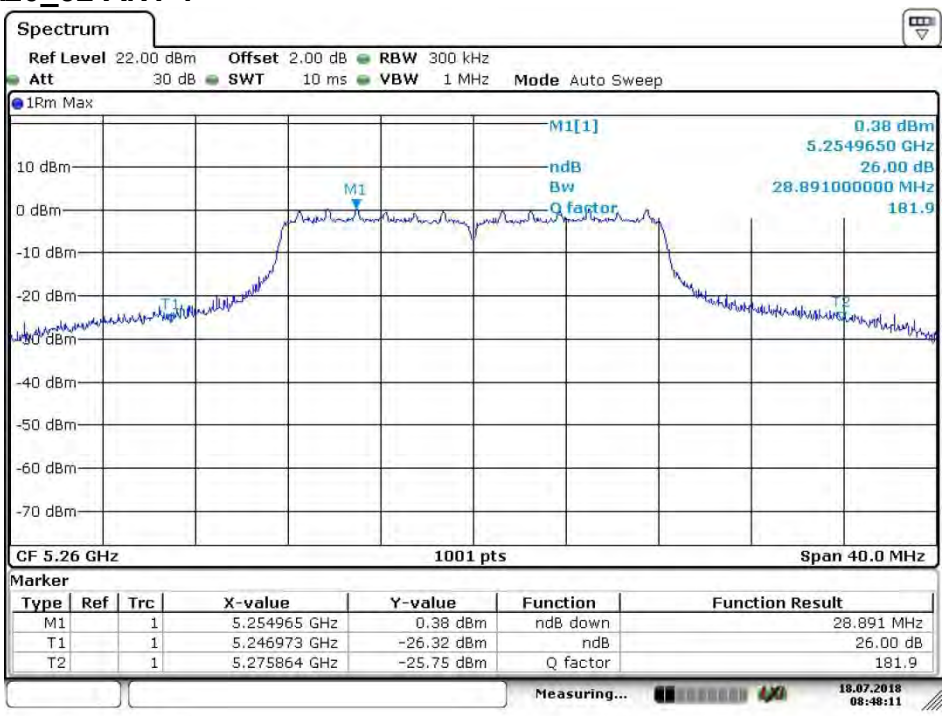


Date: 18.JUL.2018 08:46:53

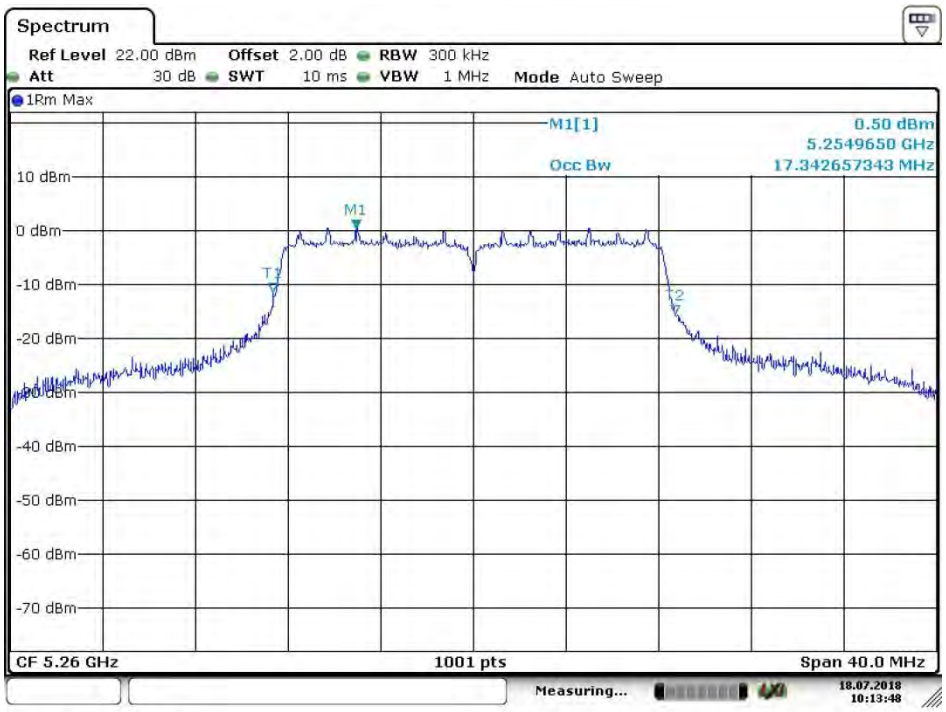


Date: 18.JUL.2018 10:13:17

5.4.2.4 11A20_52 ANT 1

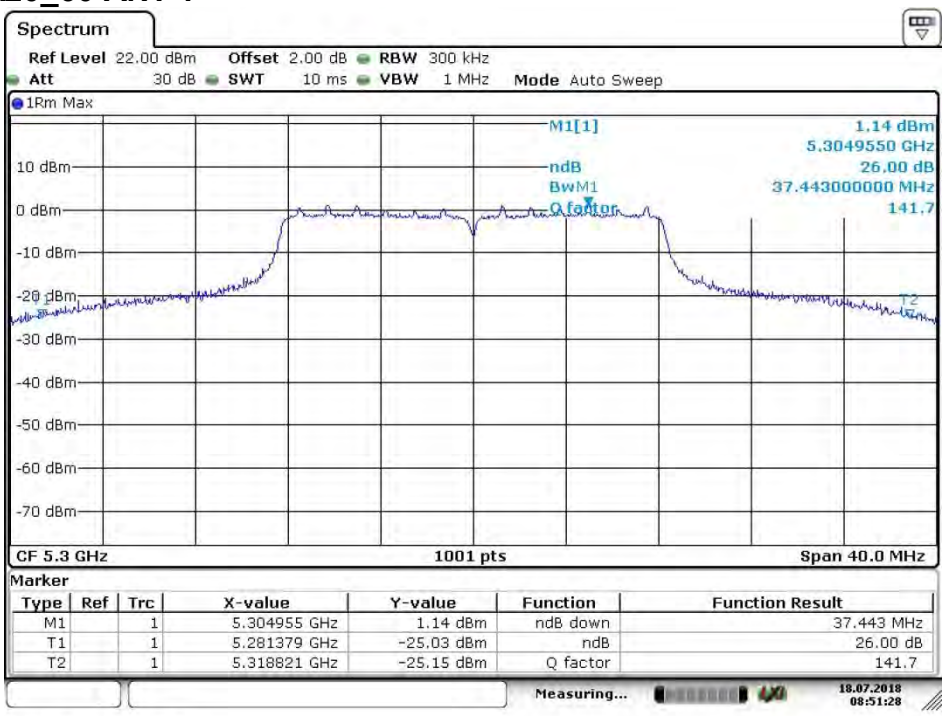


Date: 18.JUL.2018 08:48:11

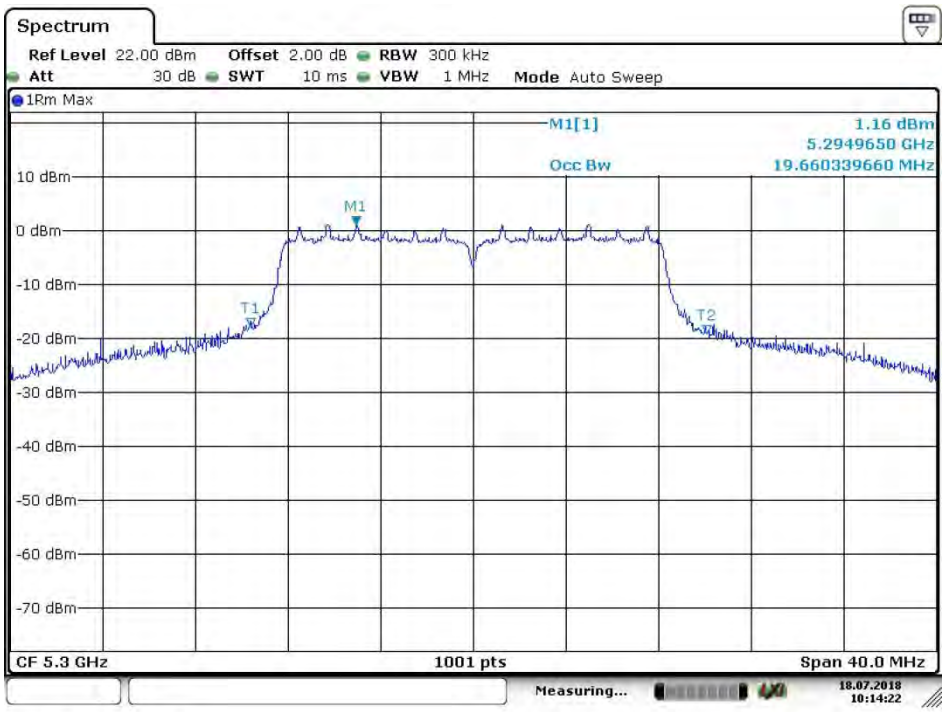


Date: 18.JUL.2018 10:13:48

5.4.2.5 11A20_60 ANT 1

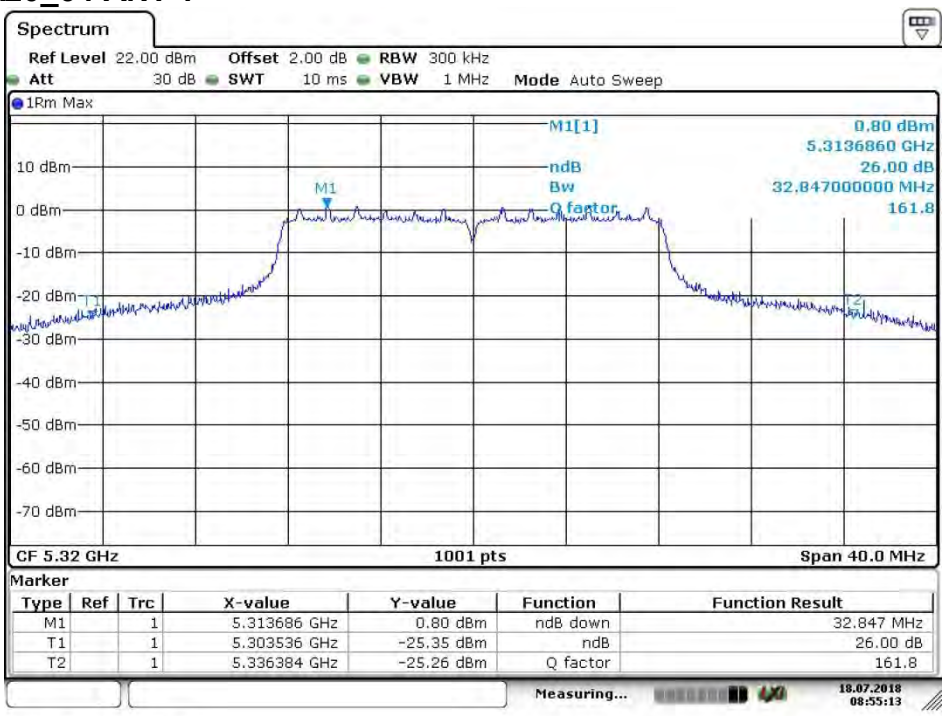


Date: 18.JUL.2018 08:51:29



Date: 18.JUL.2018 10:14:22

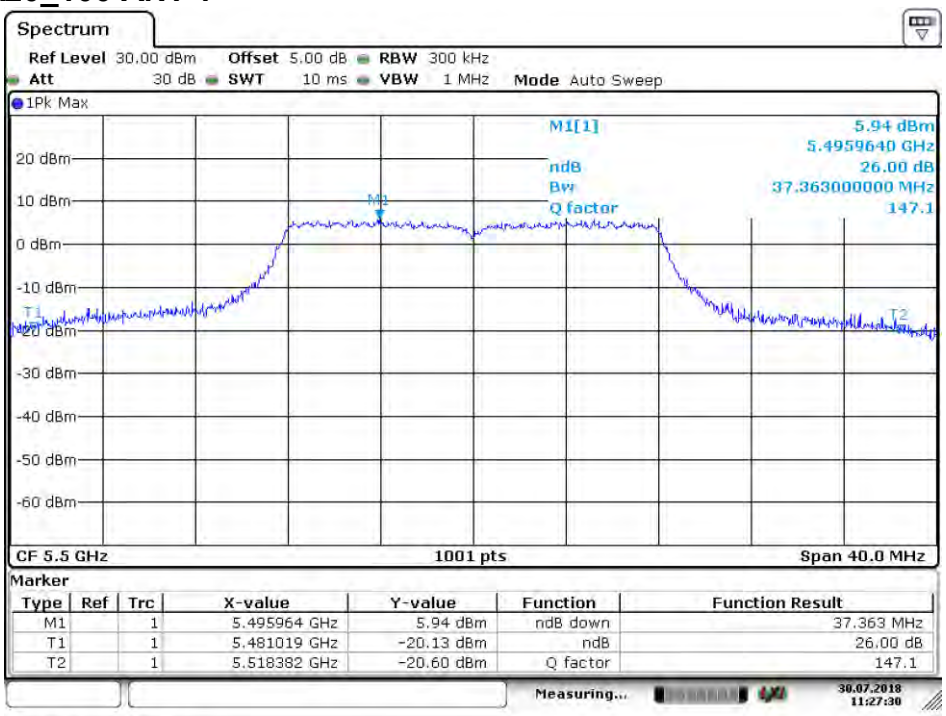
5.4.2.6 11A20_64 ANT 1



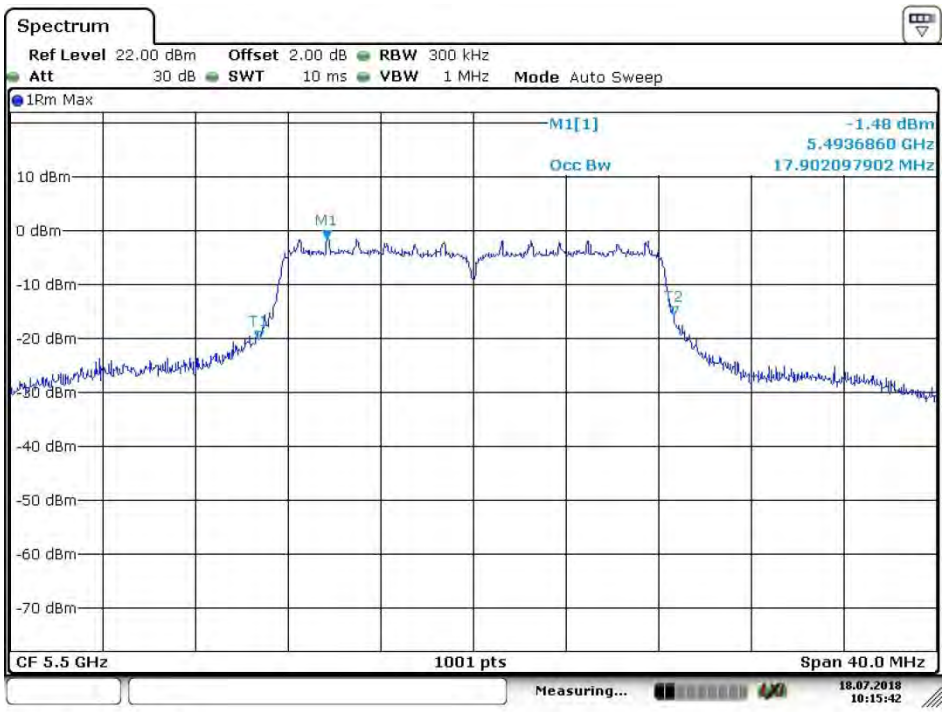
Date: 18.JUL.2018 08:55:14

Date: 18.JUL.2018 10:14:46

5.4.2.7 11A20_100 ANT 1

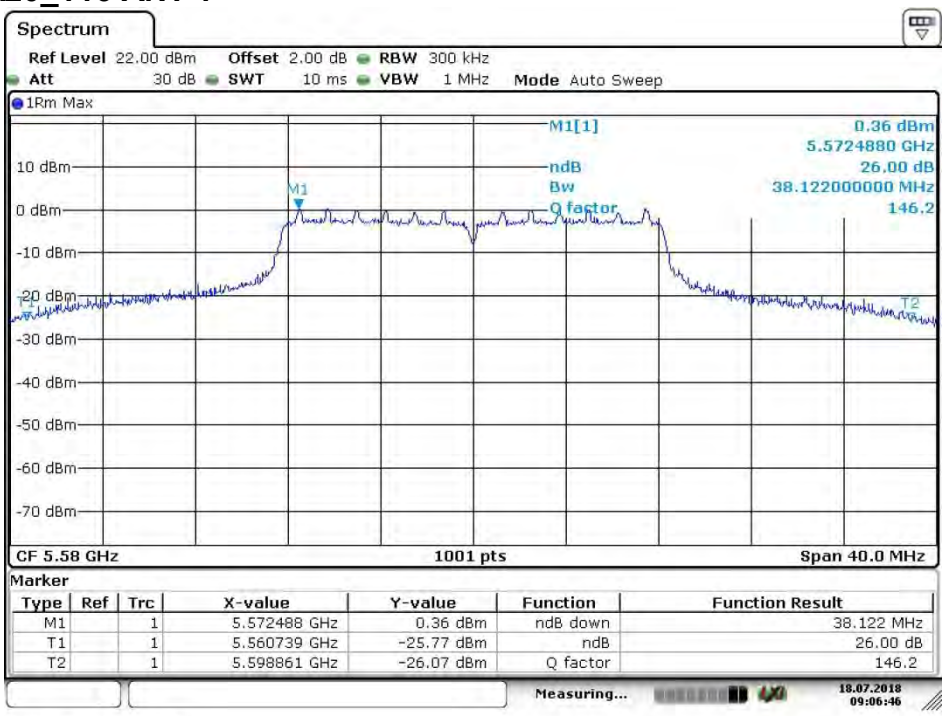


Date: 30.JUL.2018 11:27:31

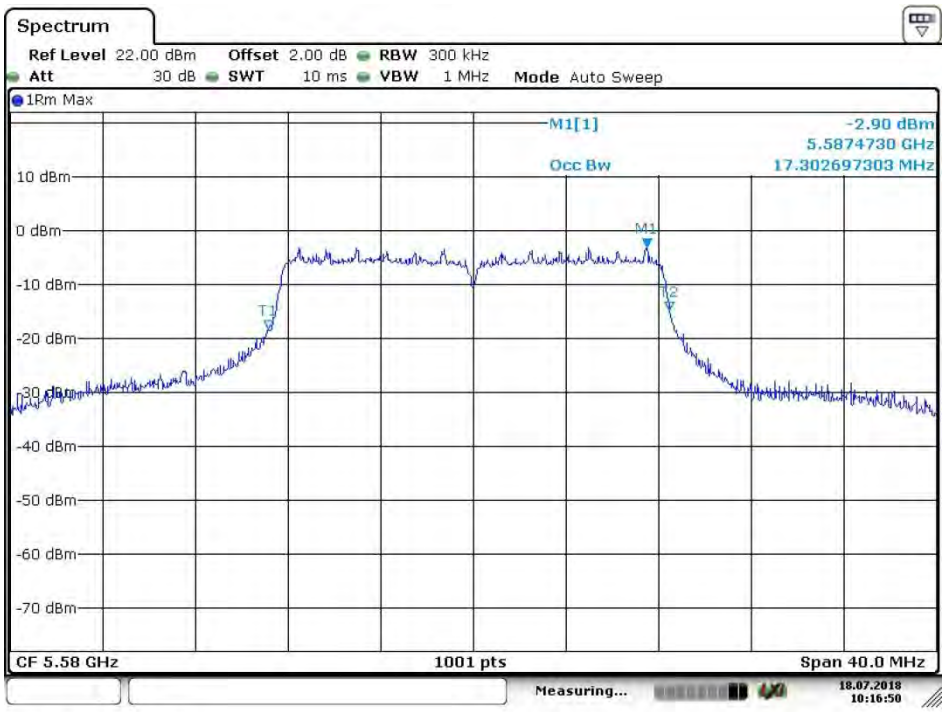


Date: 18.JUL.2018 10:15:43

5.4.2.8 11A20_116 ANT 1

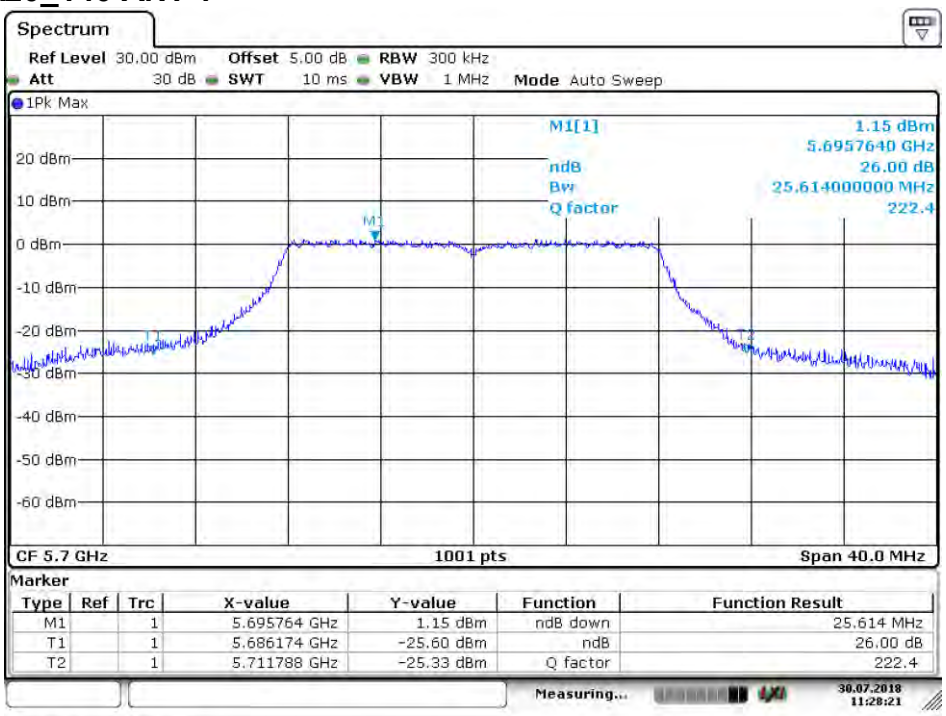


Date: 18.JUL.2018 09:06:47

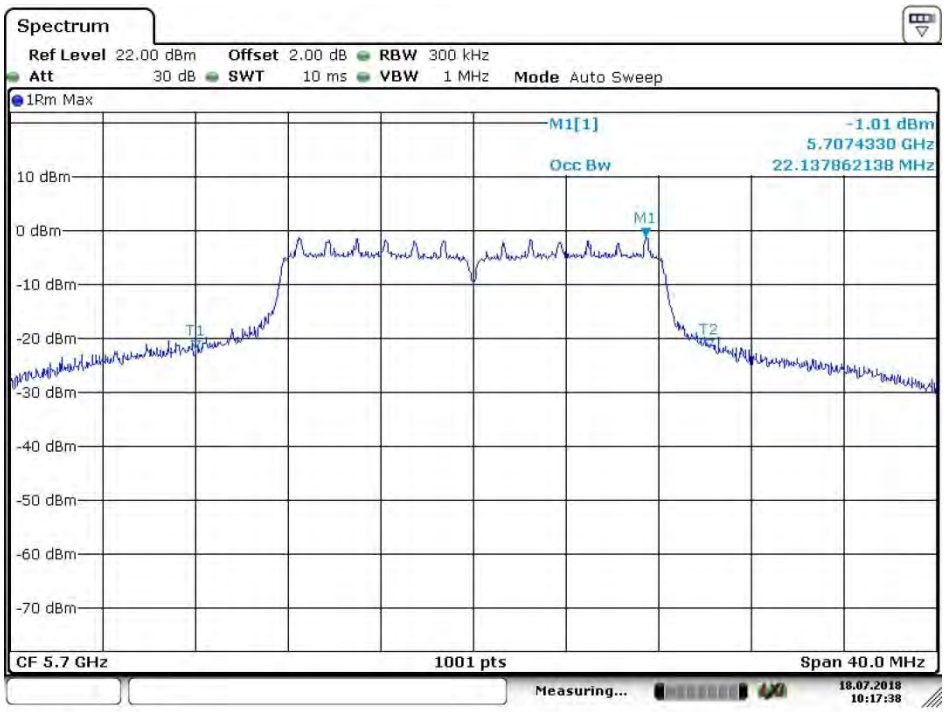


Date: 18.JUL.2018 10:16:50

5.4.2.9 11A20_140 ANT 1

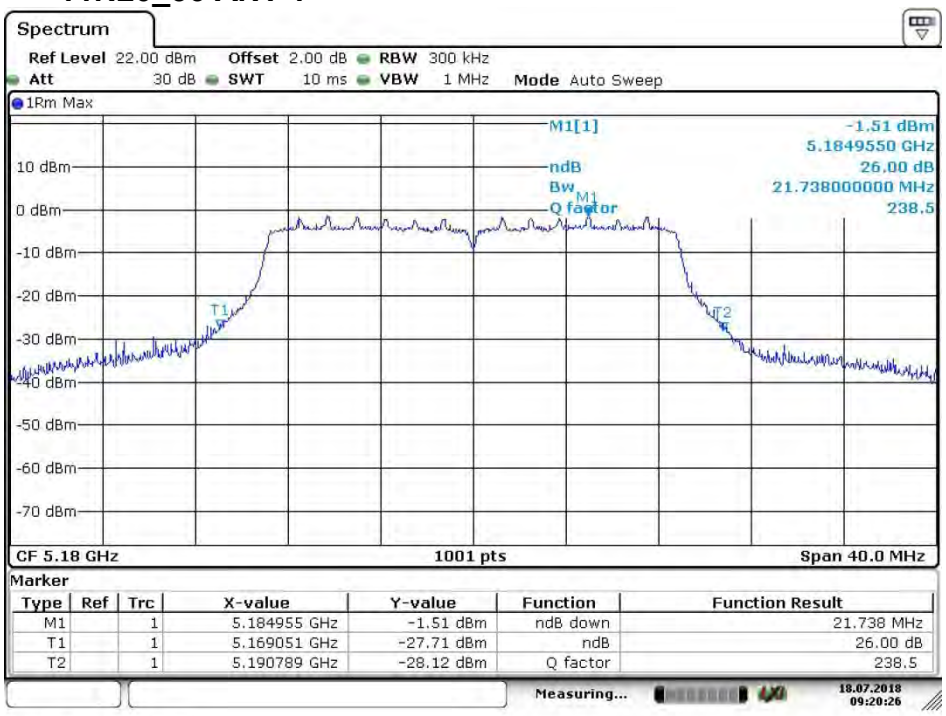


Date: 30.JUL.2018 11:28:22

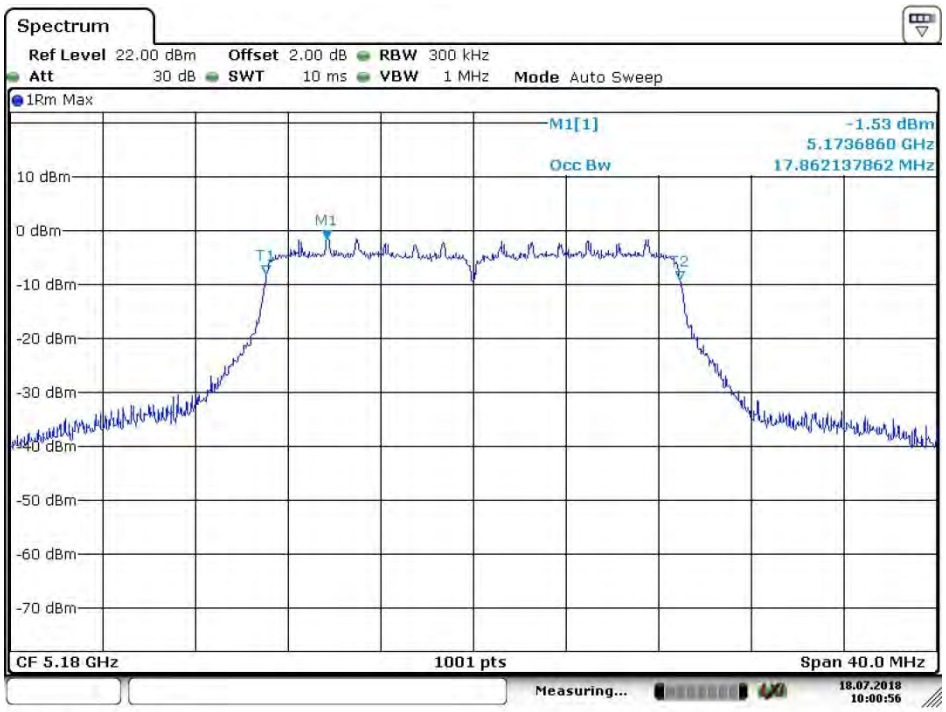


Date: 18.JUL.2018 10:17:38

5.4.2.10 11N20_36 ANT 1

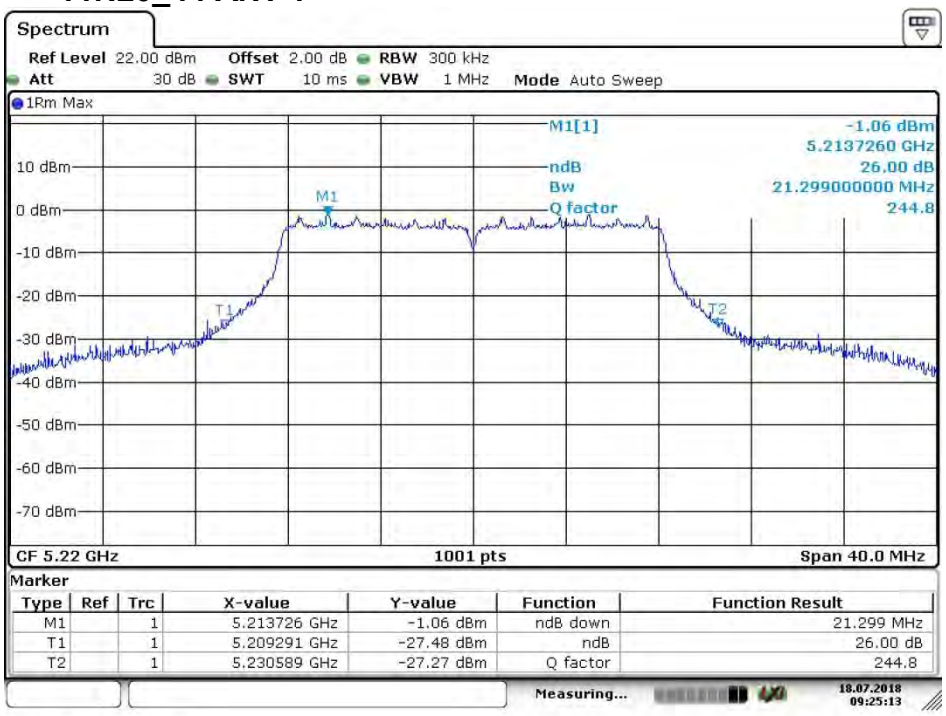


Date: 18.JUL.2018 09:20:27



Date: 18.JUL.2018 10:00:56

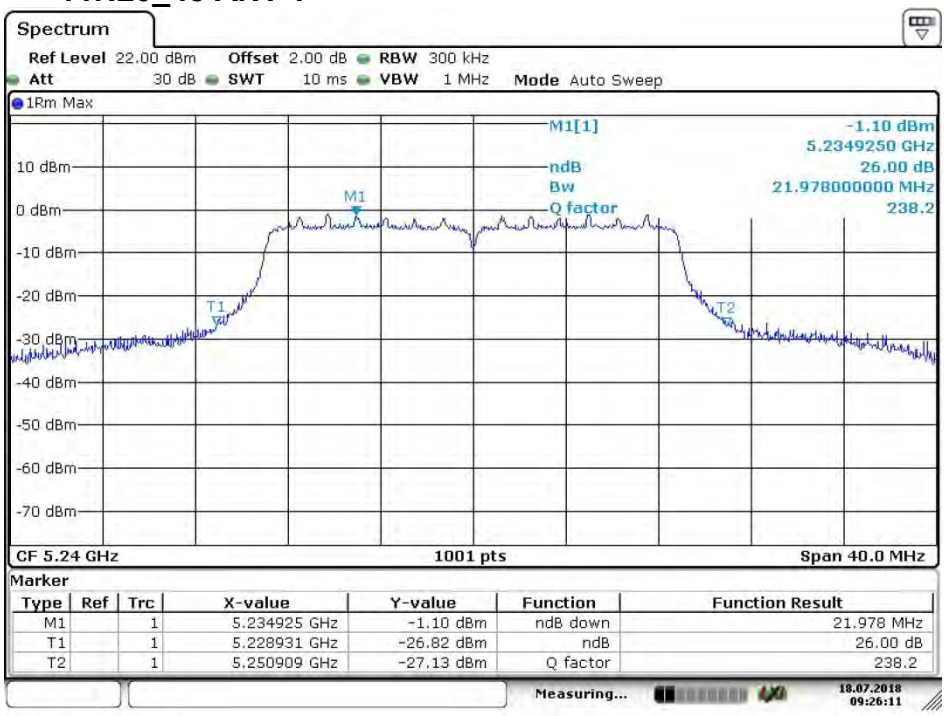
5.4.2.11 11N20_44 ANT 1



Date: 18.JUL.2018 09:25:14

Date: 18.JUL.2018 10:01:30

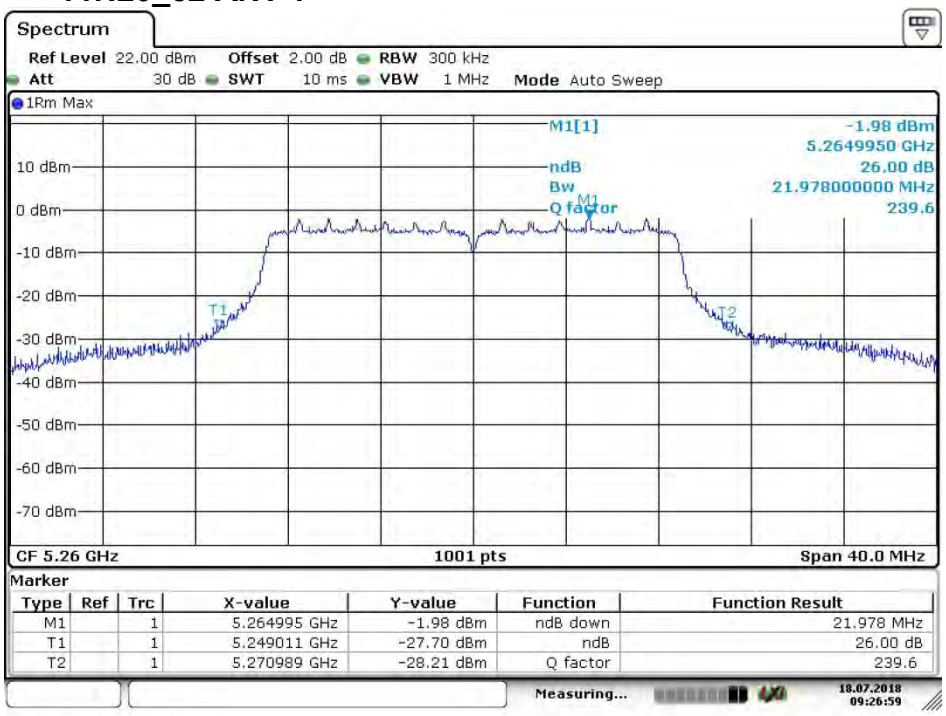
5.4.2.12 11N20_48 ANT 1



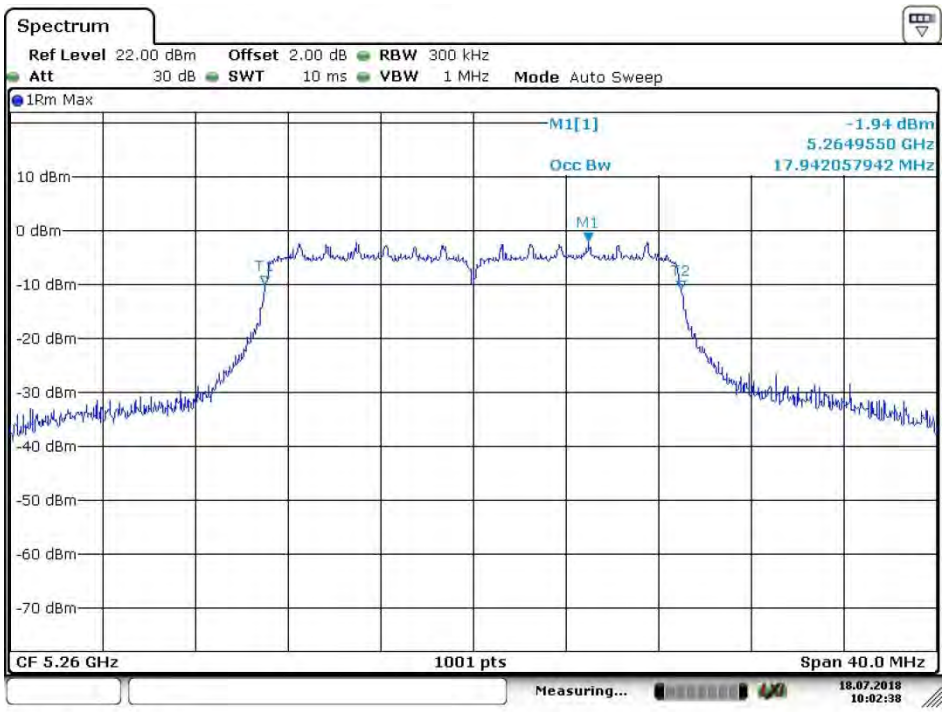
Date: 18.JUL.2018 09:26:11

Date: 18.JUL.2018 10:02:08

5.4.2.13 11N20_52 ANT 1

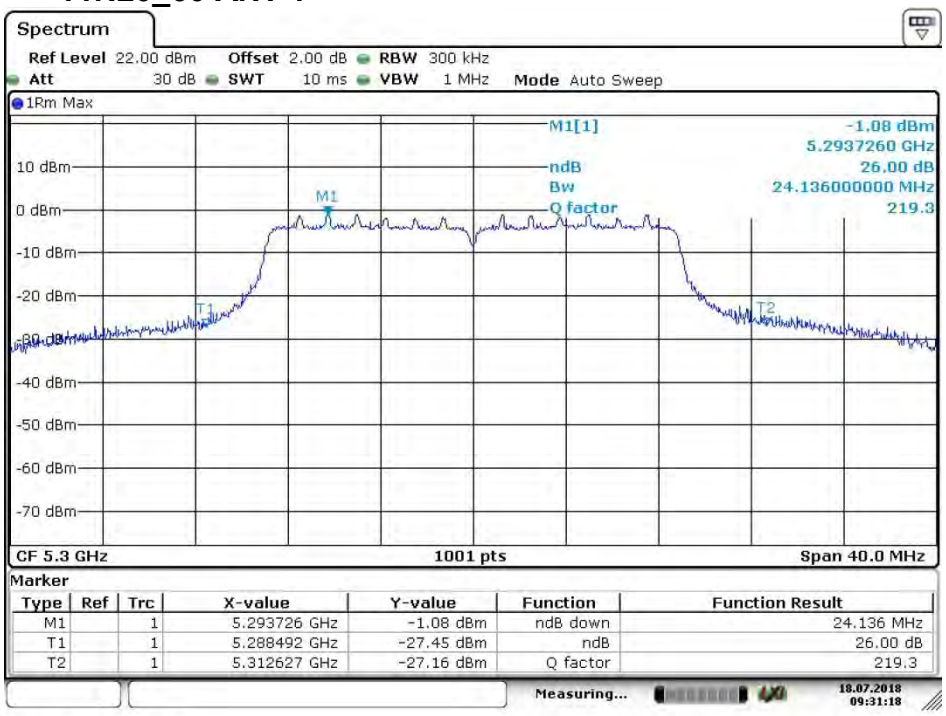


Date: 18.JUL.2018 09:26:59

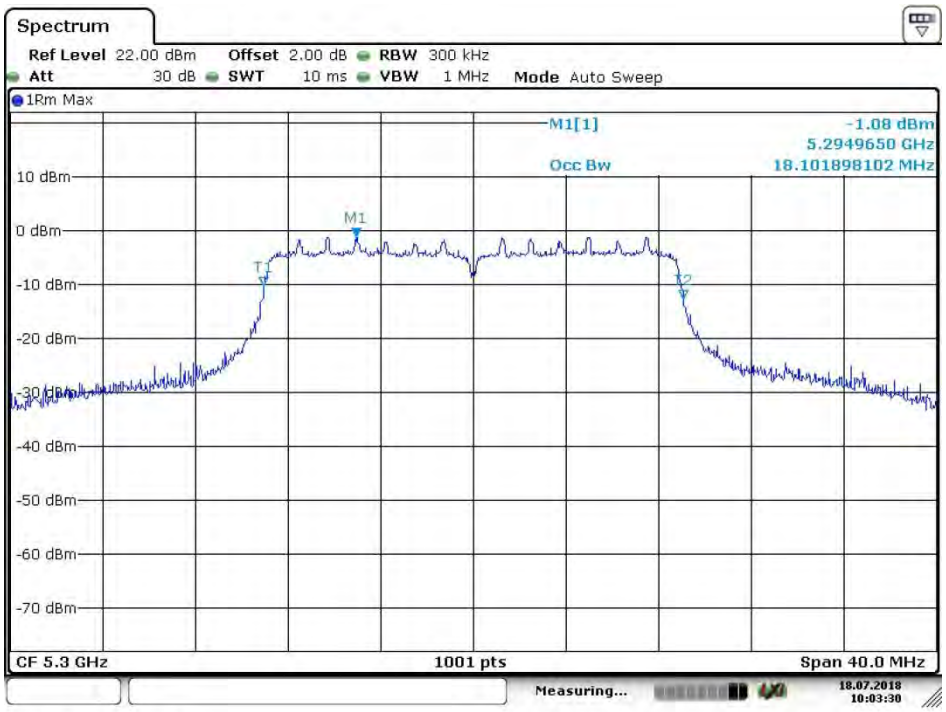


Date: 18.JUL.2018 10:02:39

5.4.2.14 11N20_60 ANT 1

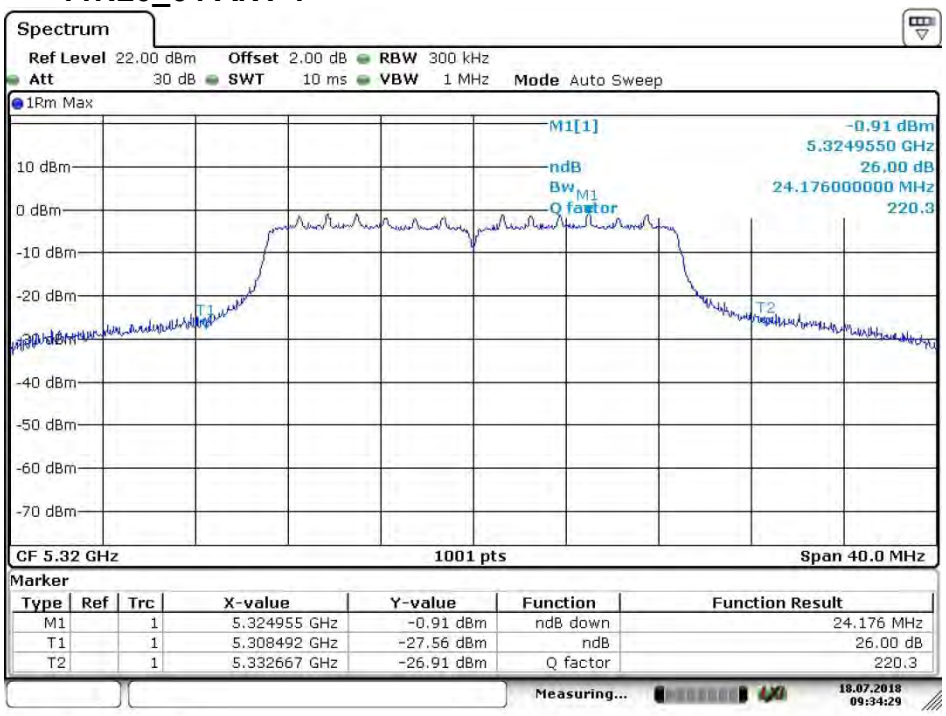


Date: 18.JUL.2018 09:31:19

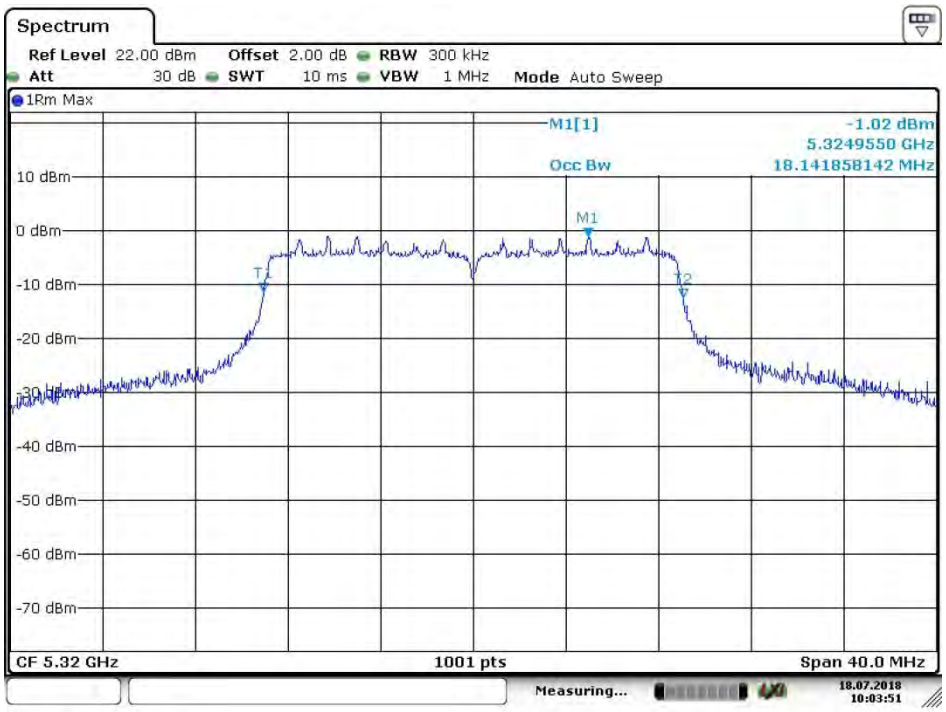


Date: 18.JUL.2018 10:03:30

5.4.2.15 11N20_64 ANT 1

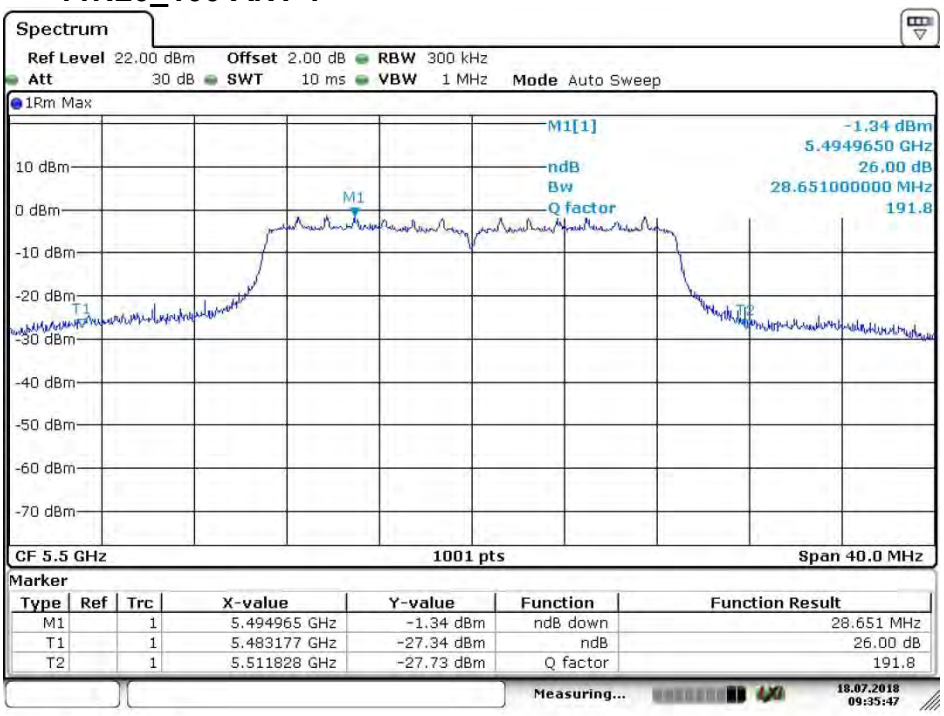


Date: 18.JUL.2018 09:34:29

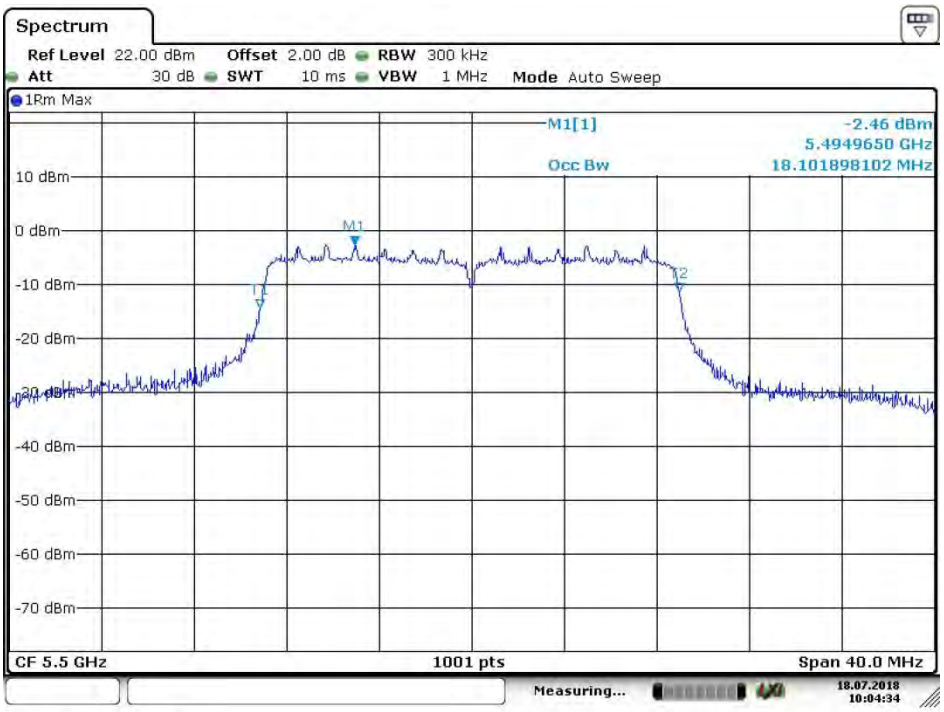


Date: 18.JUL.2018 10:03:52

5.4.2.16 11N20_100 ANT 1

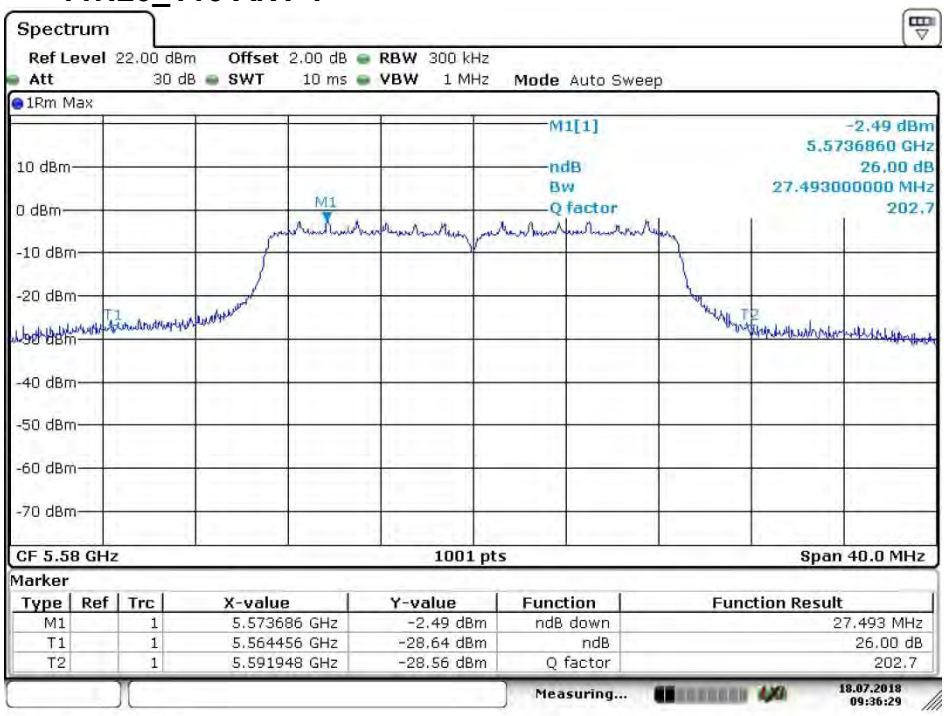


Date: 18.JUL.2018 09:35:48

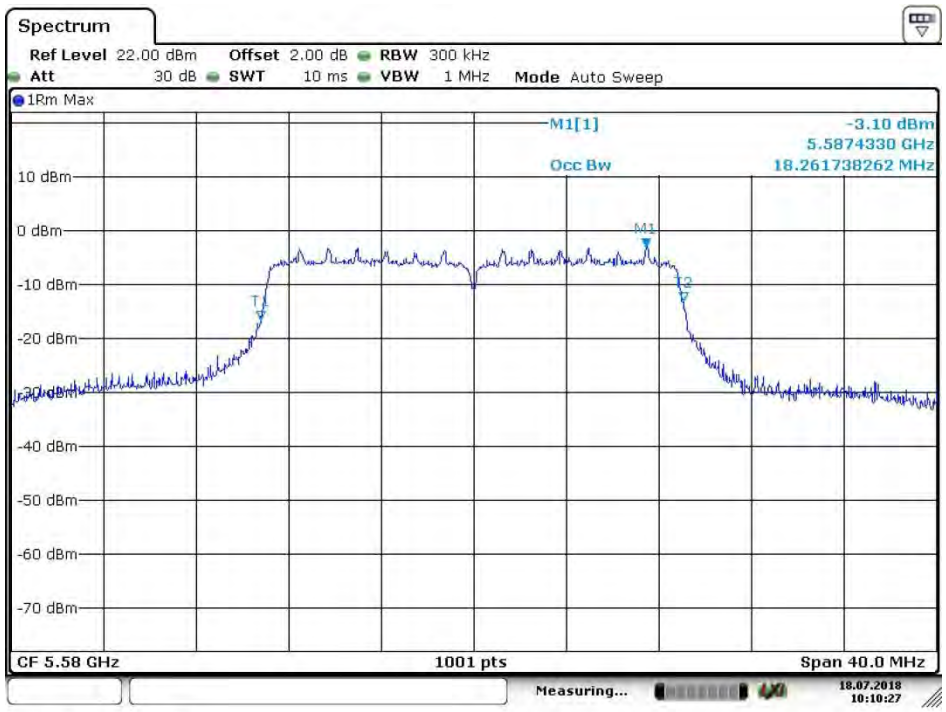


Date: 18.JUL.2018 10:04:34

5.4.2.17 11N20_116 ANT 1

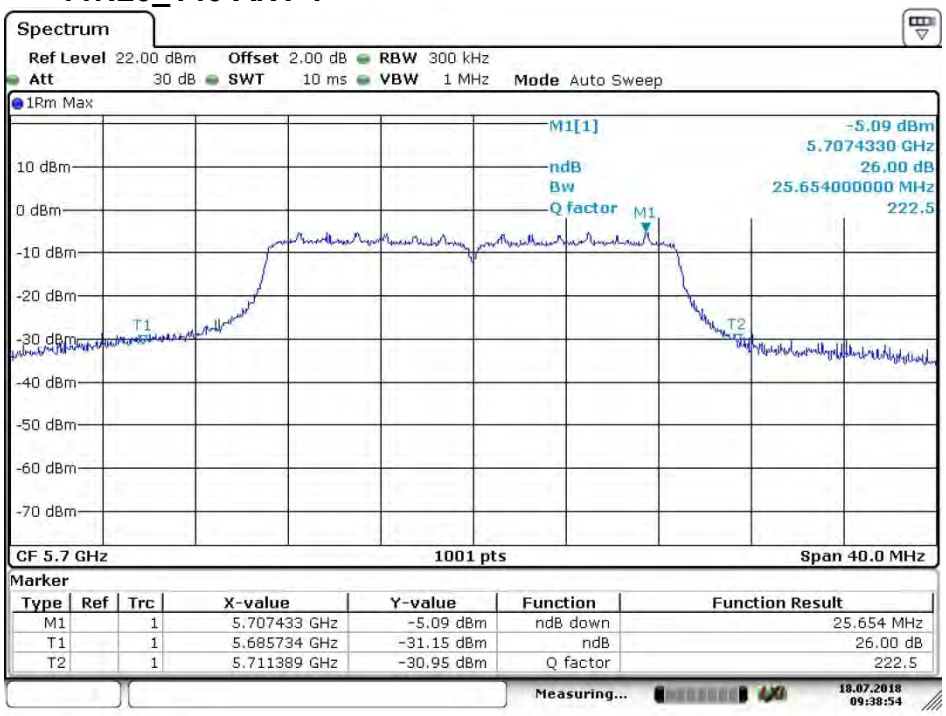


Date: 18.JUL.2018 09:36:29

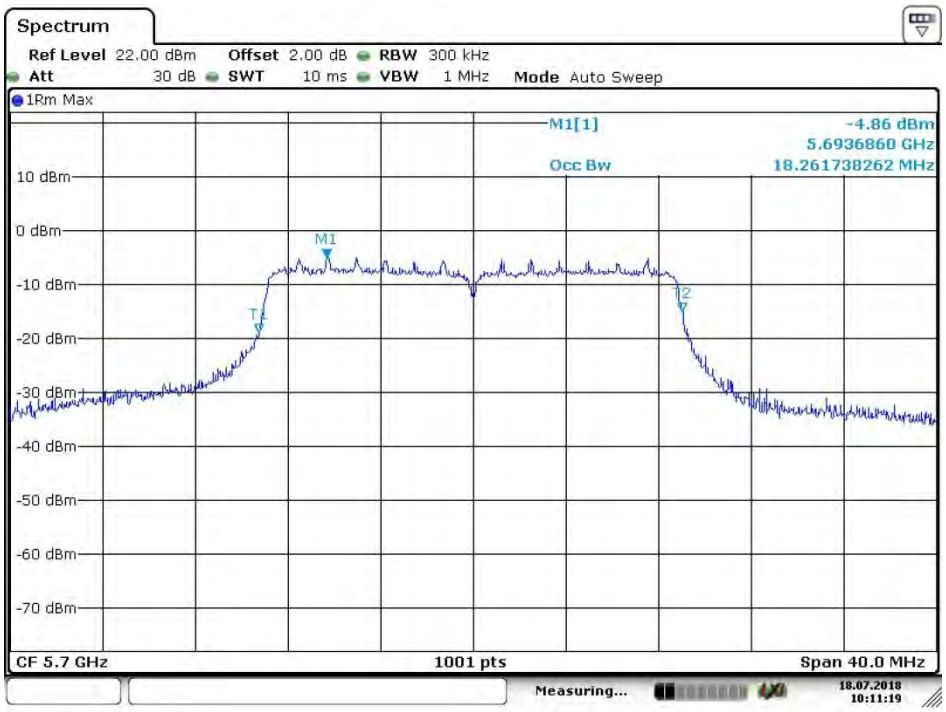


Date: 18.JUL.2018 10:10:28

5.4.2.18 11N20_140 ANT 1

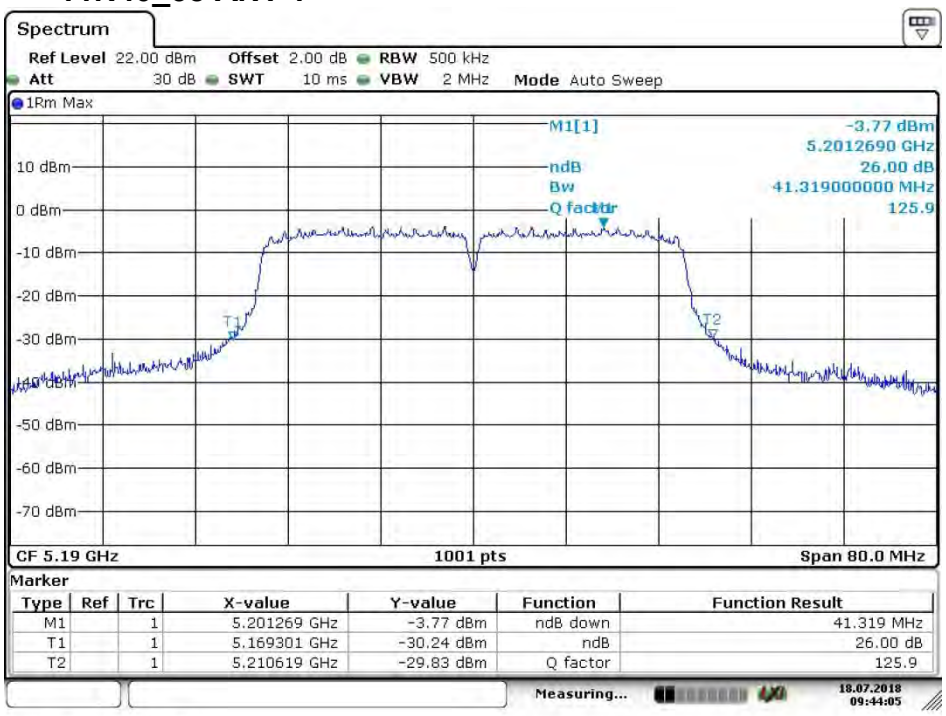


Date: 18.JUL.2018 09:38:54

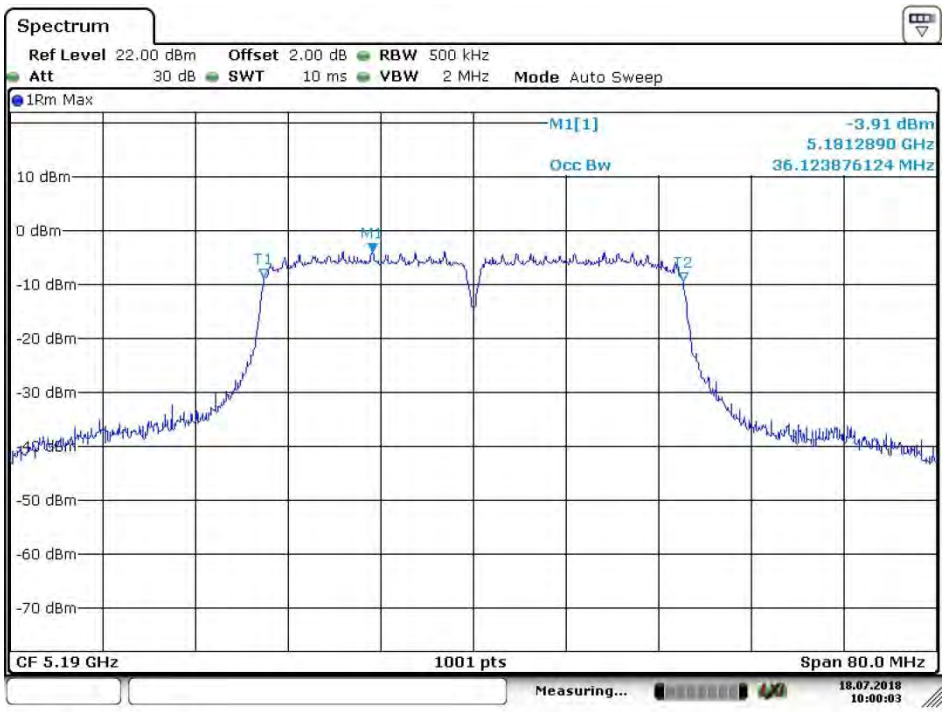


Date: 18.JUL.2018 10:11:20

5.4.2.19 11N40_38 ANT 1

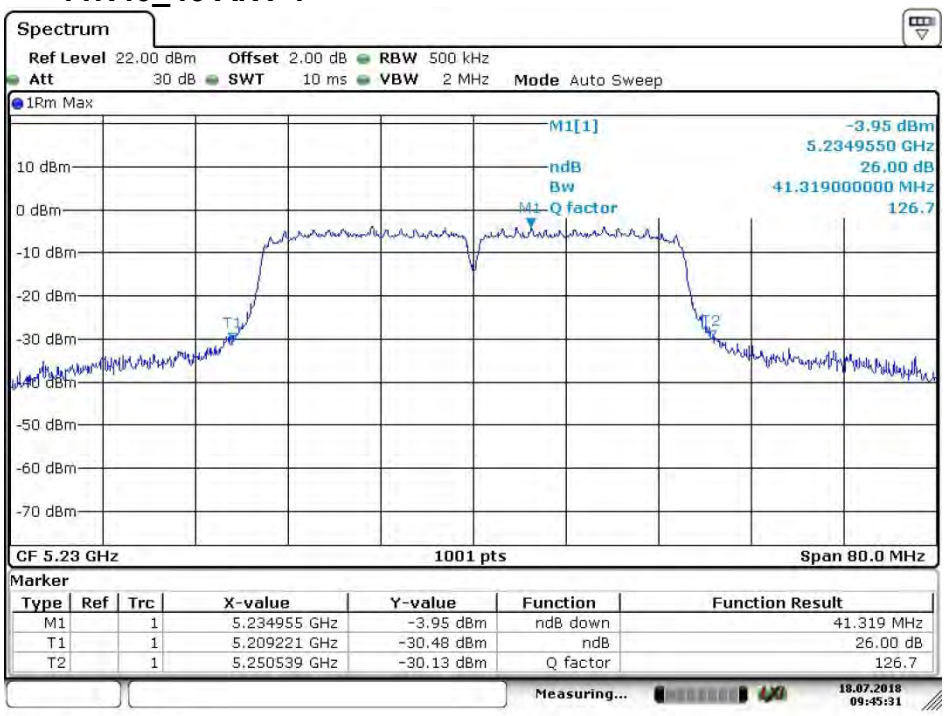


Date: 18.JUL.2018 09:44:06

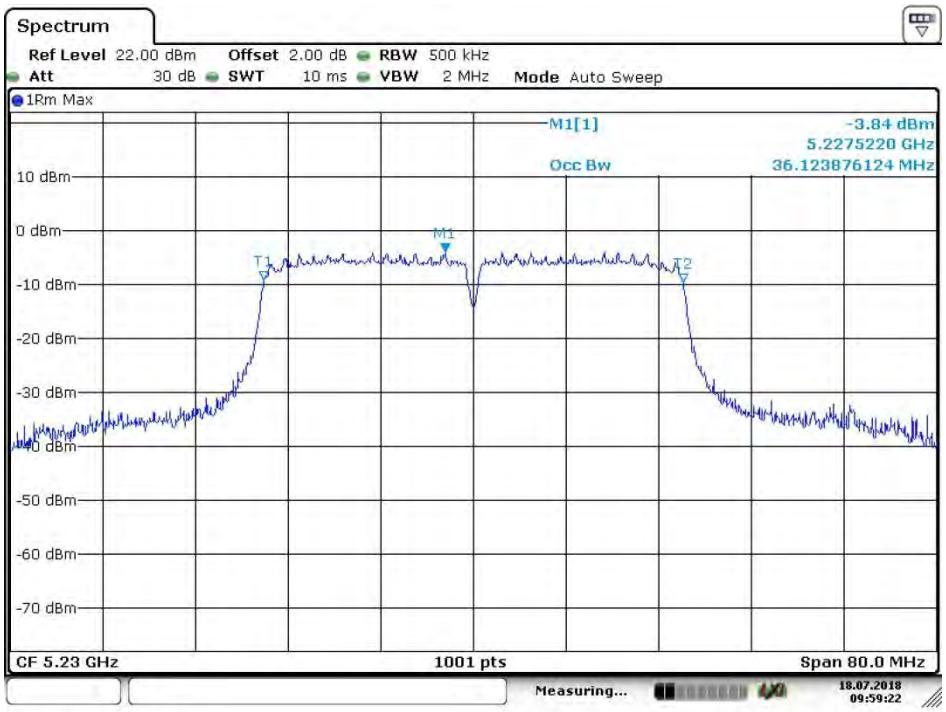


Date: 18.JUL.2018 10:00:04

5.4.2.20 11N40_46 ANT 1

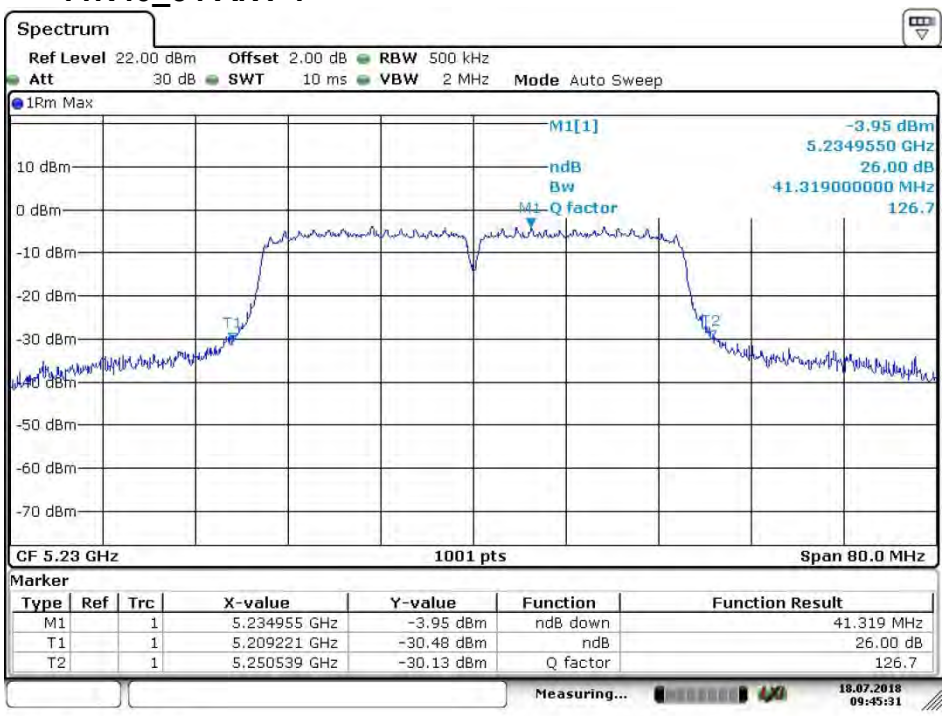


Date: 18.JUL.2018 09:45:32

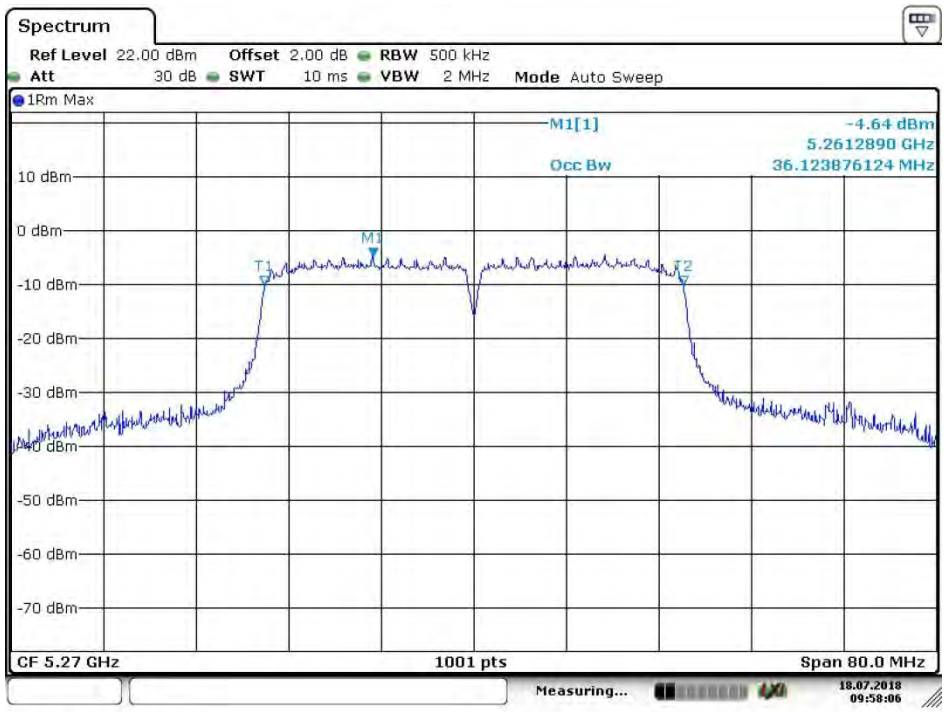


Date: 18.JUL.2018 09:59:22

5.4.2.21 11N40_54 ANT 1

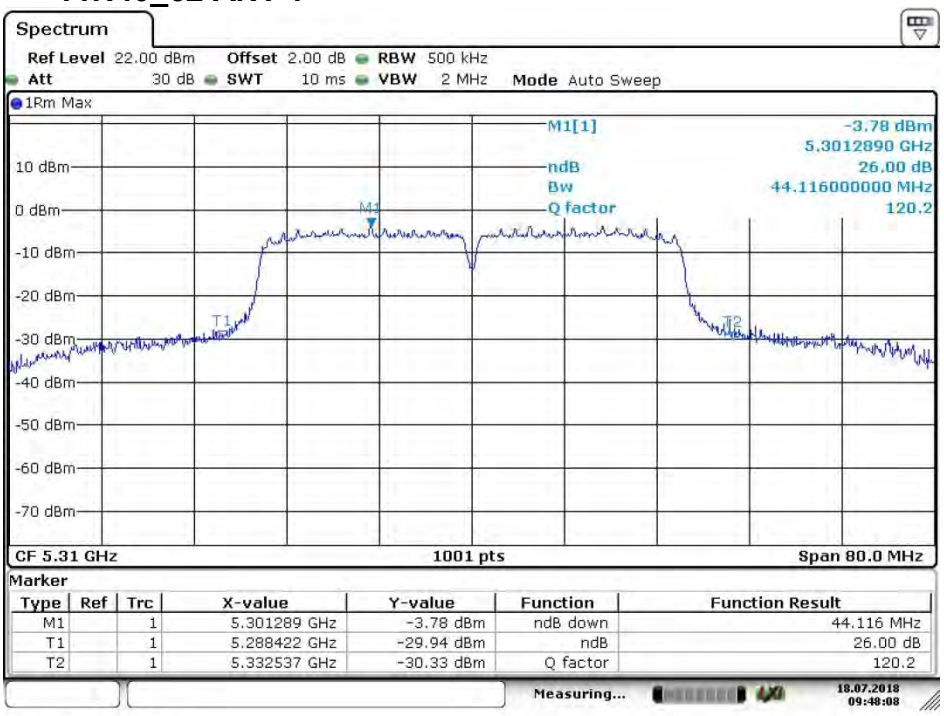


Date: 18.JUL.2018 09:45:32

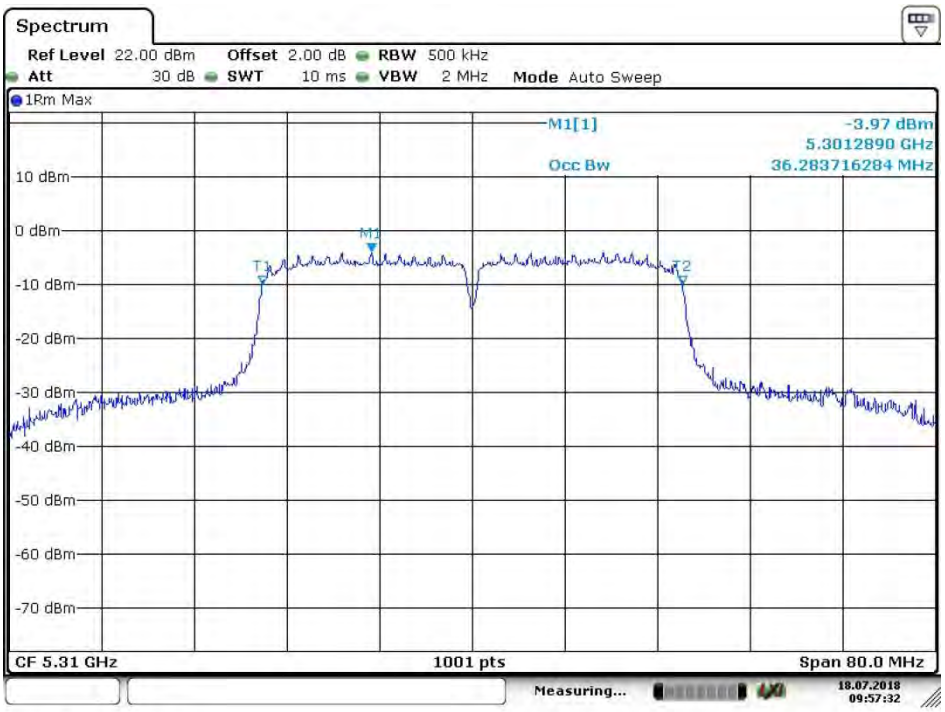


Date: 18.JUL.2018 09:58:06

5.4.2.22 11N40_62 ANT 1

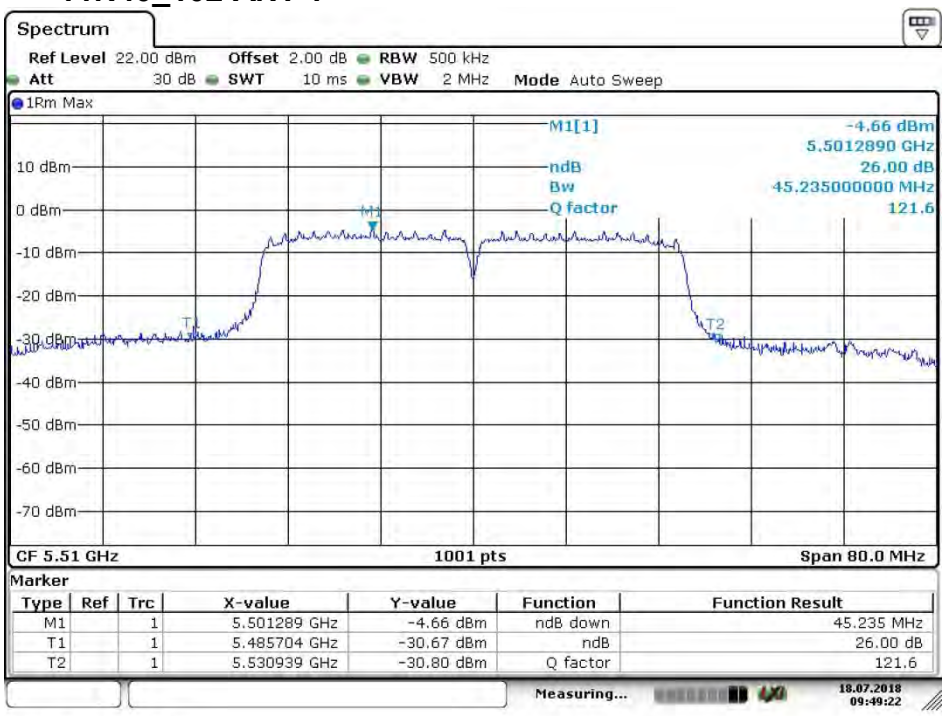


Date: 18.JUL.2018 09:48:09

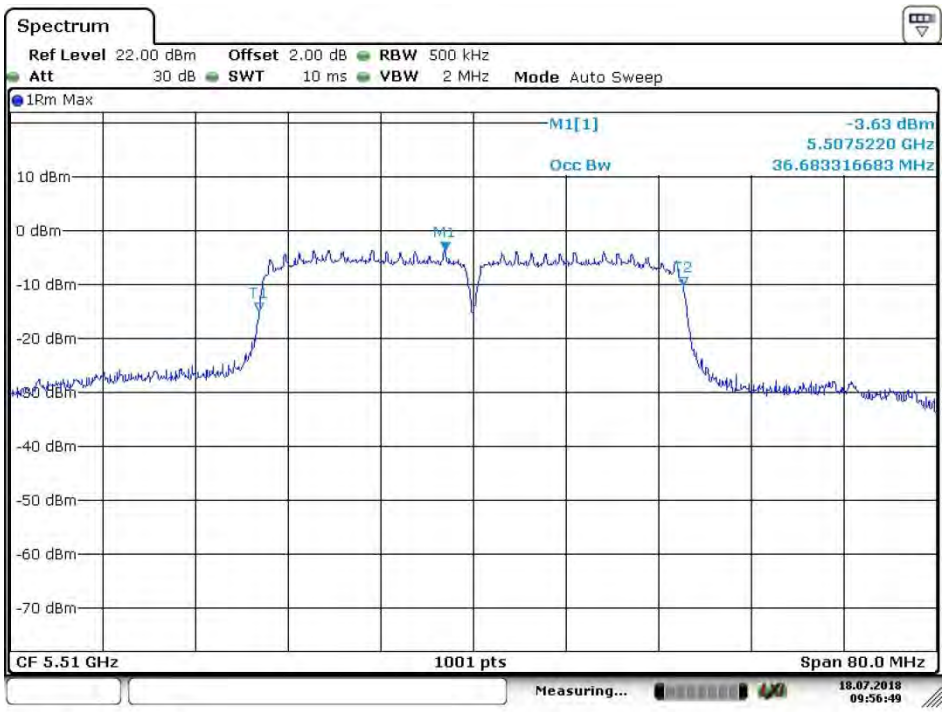


Date: 18.JUL.2018 09:57:32

5.4.2.23 11N40_102 ANT 1

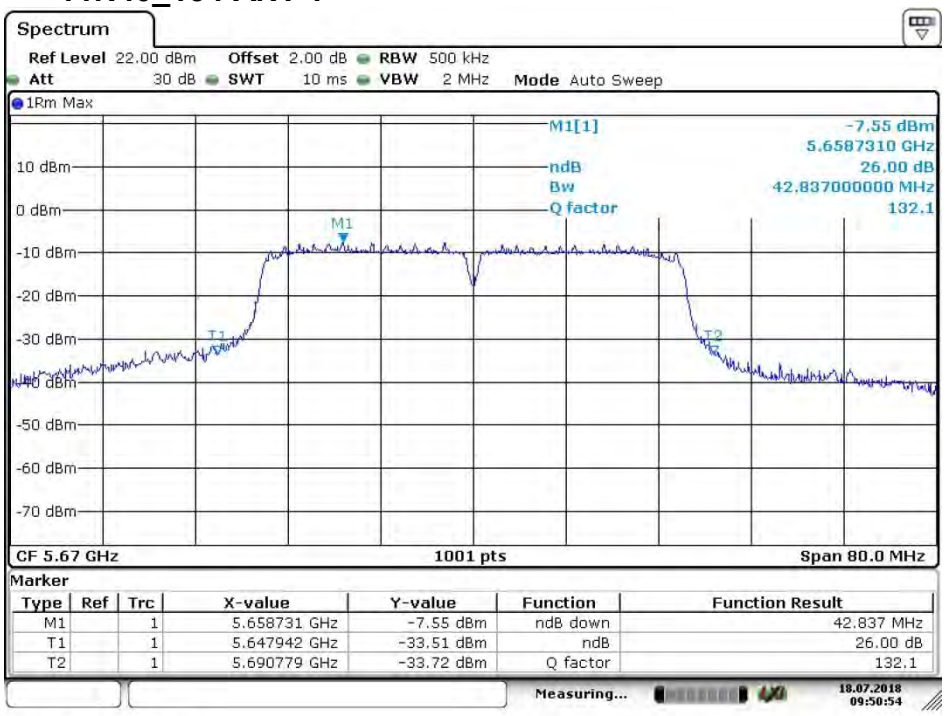


Date: 18.JUL.2018 09:49:22

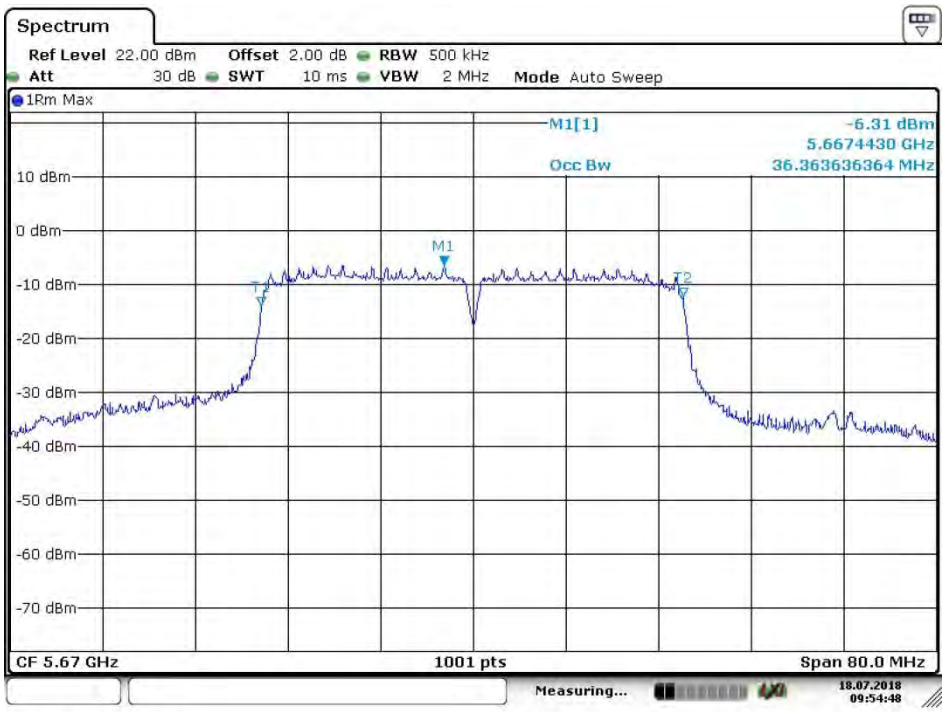


Date: 18.JUL.2018 09:56:49

5.4.2.24 11N40_134 ANT 1

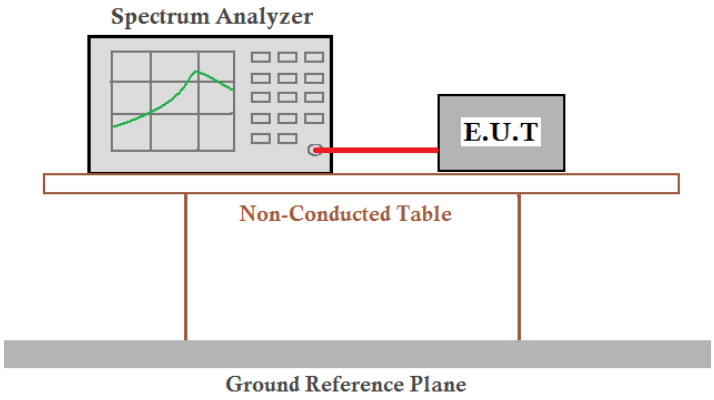


Date: 18.JUL.2018 09:50:54



Date: 18.JUL.2018 09:54:49

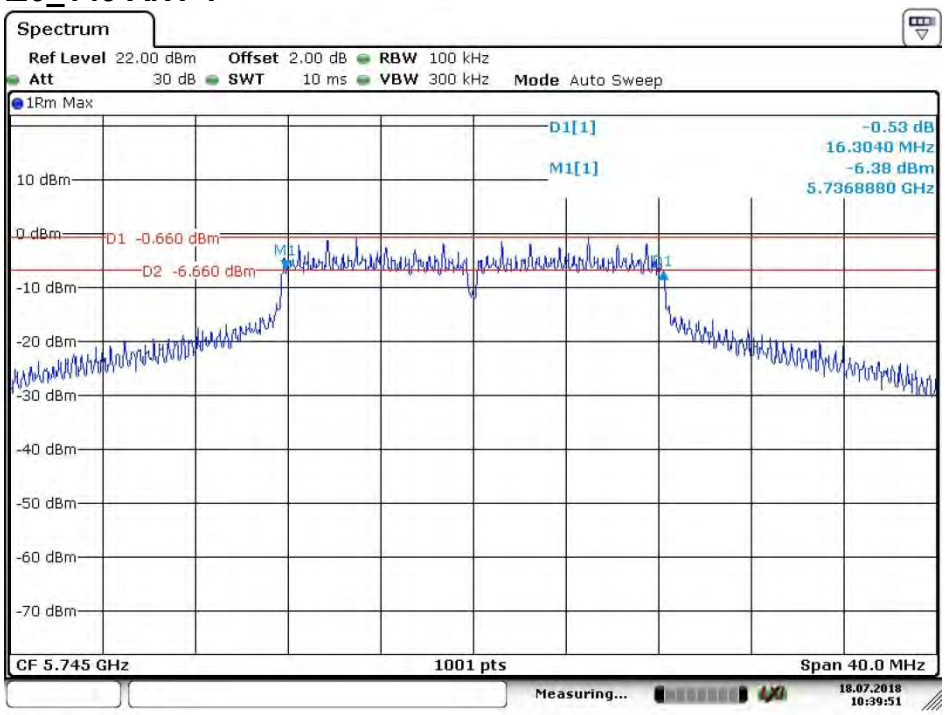
5.5 6dB Emission Bandwidth & 99% Occupied Bandwidth

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

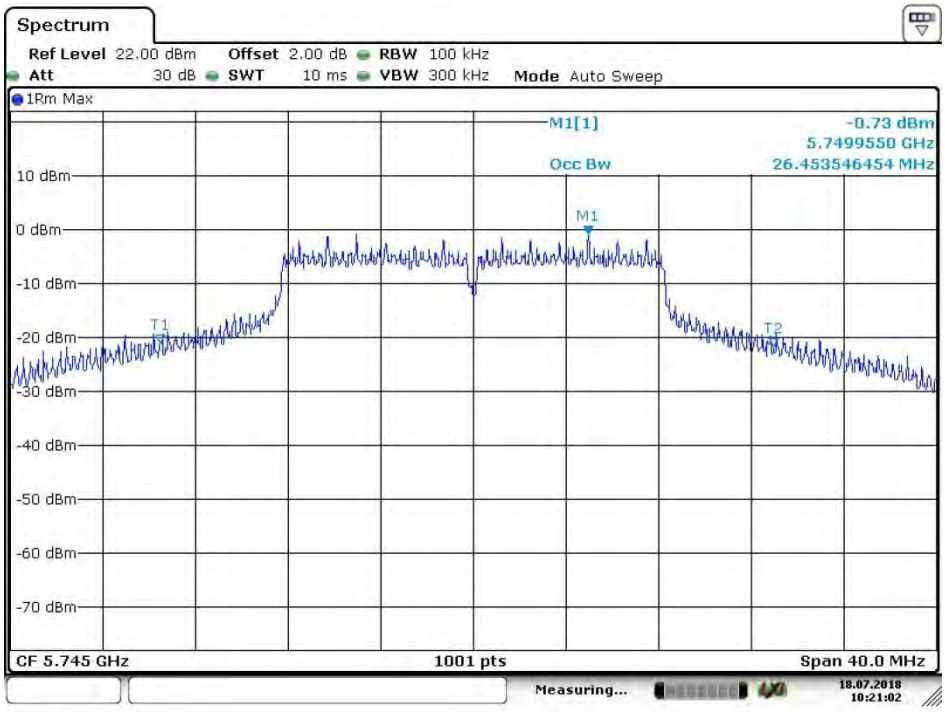
Test Mode	Test Channel	Frequency [MHz]	ANT	6dB Emission Bandwidth [MHz]	Occupied Bandwidth [MHz]	Verdict
11A20	149	5745	ANT 1	16.30	26.45	PASS
	157	5785	ANT 1	16.30	25.45	PASS
	165	5825	ANT 1	16.42	25.37	PASS
11N20	149	5745	ANT 1	17.62	18.42	PASS
	157	5785	ANT 1	17.62	18.10	PASS
	165	5825	ANT 1	17.62	18.30	PASS
11N40	151	5755	ANT 1	35.80	36.36	PASS
	159	5795	ANT 1	35.49	36.36	PASS

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

5.5.1.1 11A20_149 ANT 1

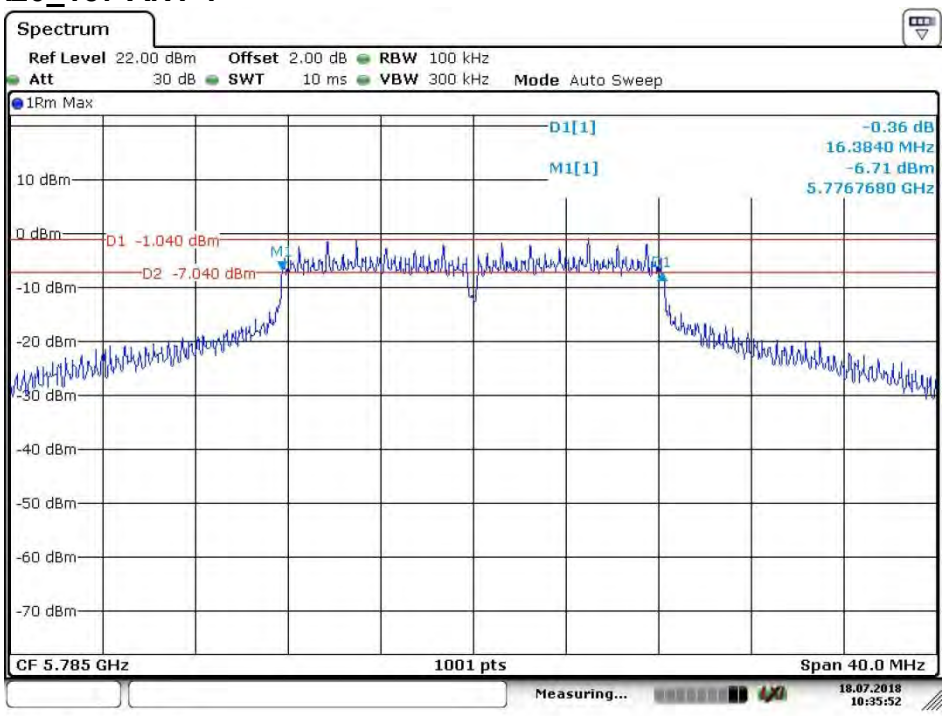


Date: 18.JUL.2018 10:39:52

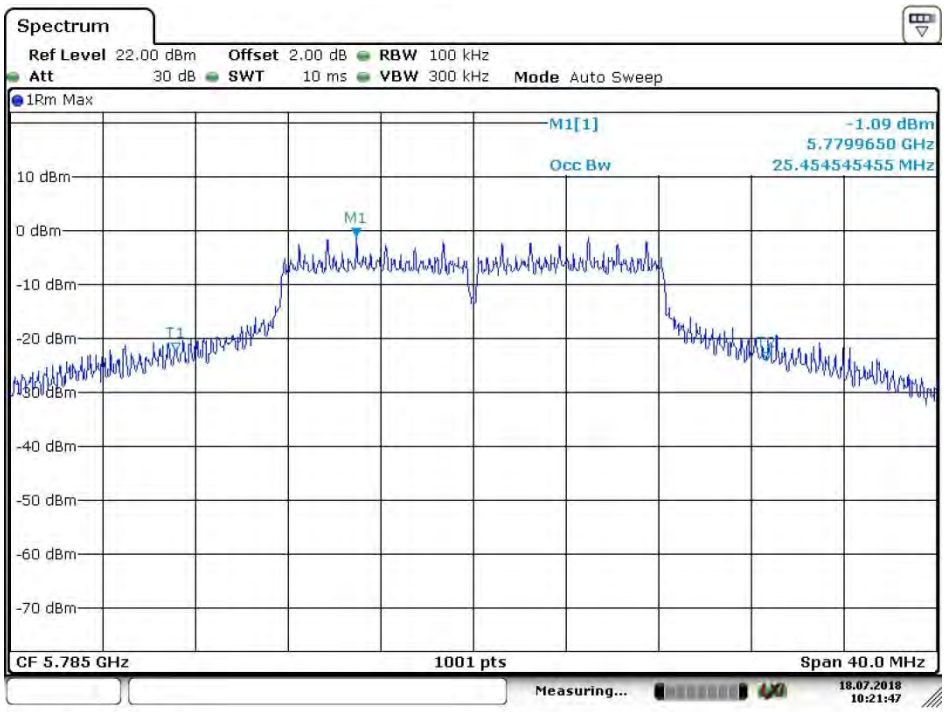


Date: 18.JUL.2018 10:21:02

5.5.1.2 11A20_157 ANT 1

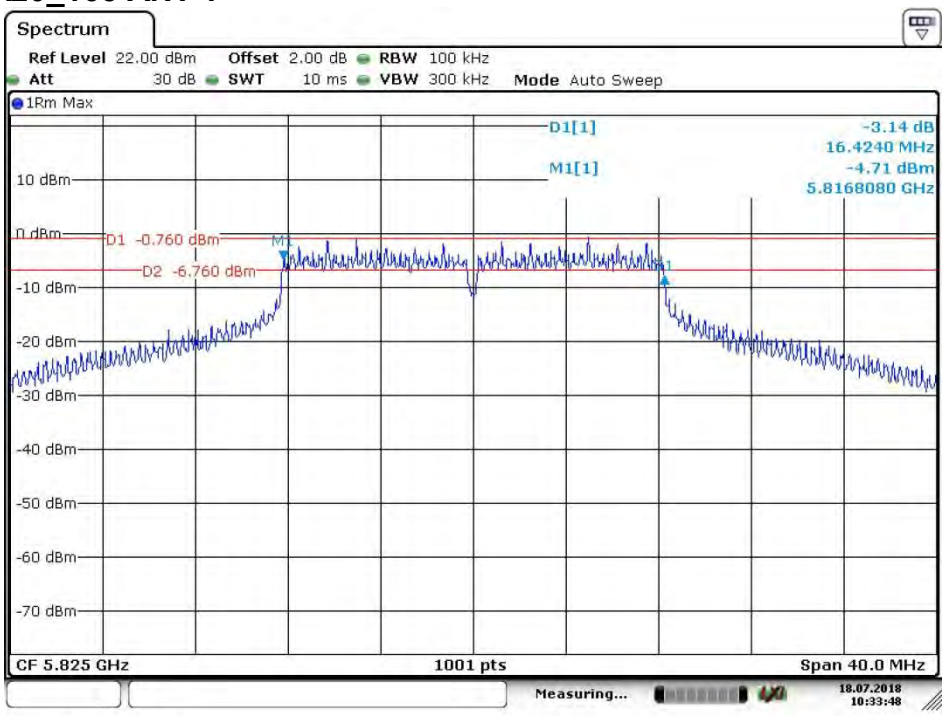


Date: 18.JUL.2018 10:35:52

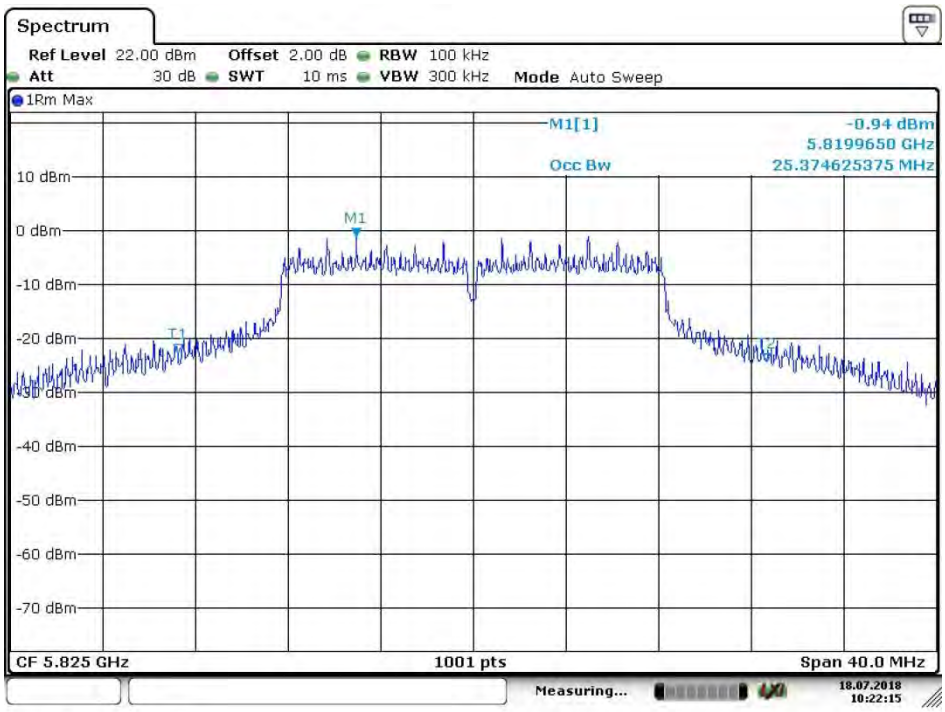


Date: 18.JUL.2018 10:21:47

5.5.1.3 11A20_165 ANT 1

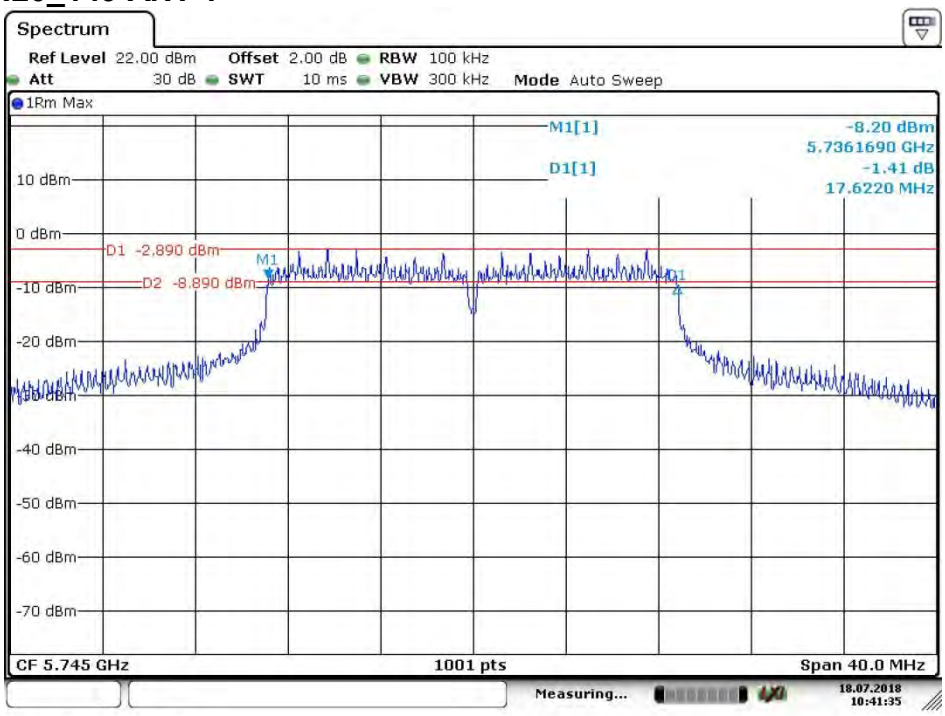


Date: 18.JUL.2018 10:33:49

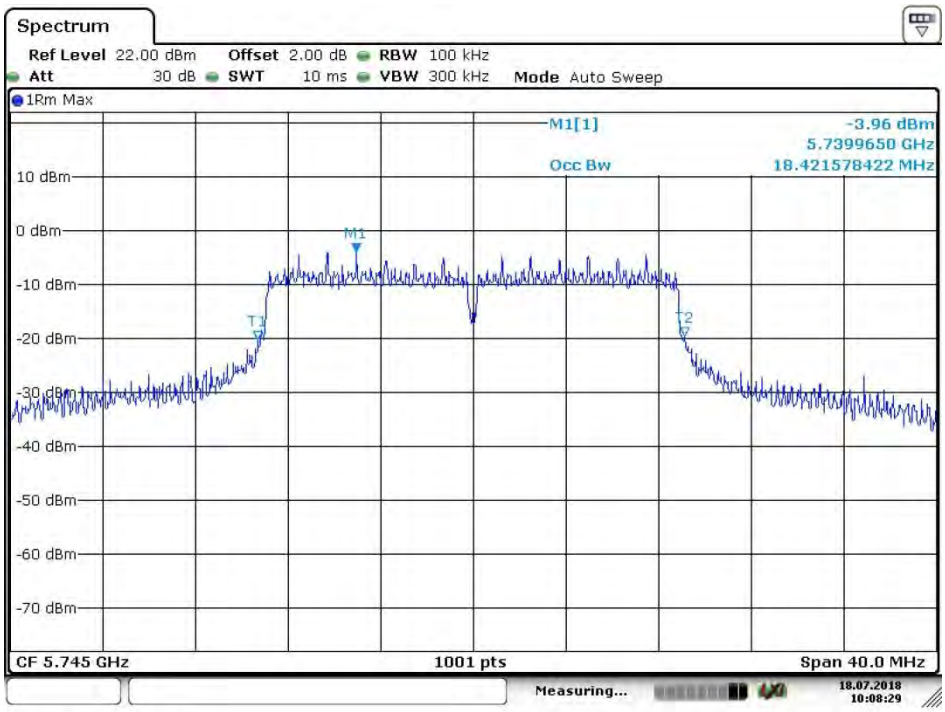


Date: 18.JUL.2018 10:22:15

5.5.1.4 11N20_149 ANT 1

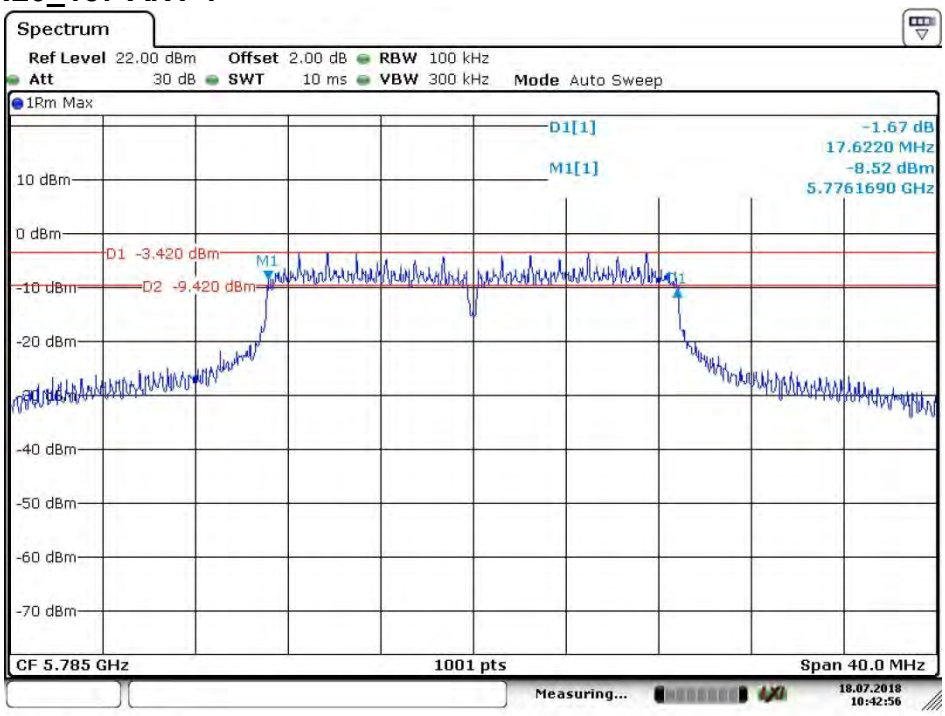


Date: 18.JUL.2018 10:41:35

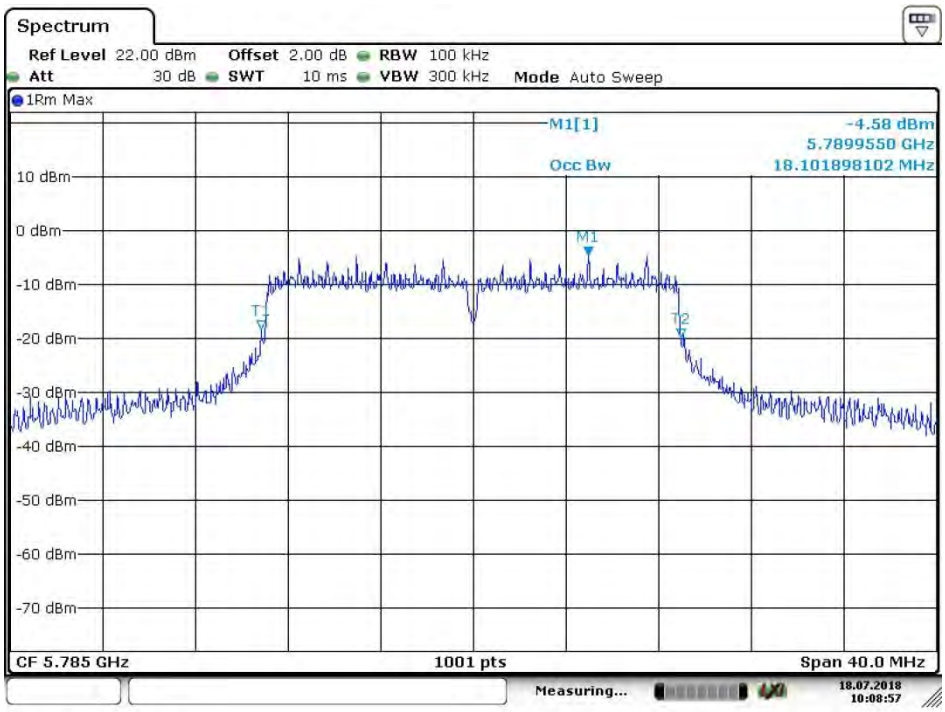


Date: 18.JUL.2018 10:08:29

5.5.1.5 11N20_157 ANT 1

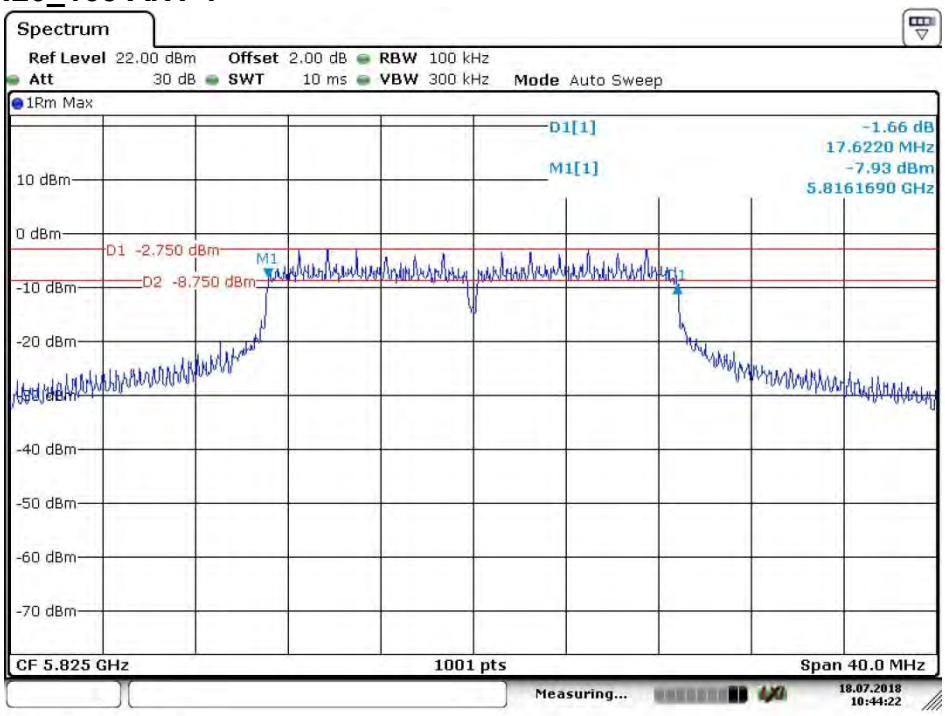


Date: 18.JUL.2018 10:42:56

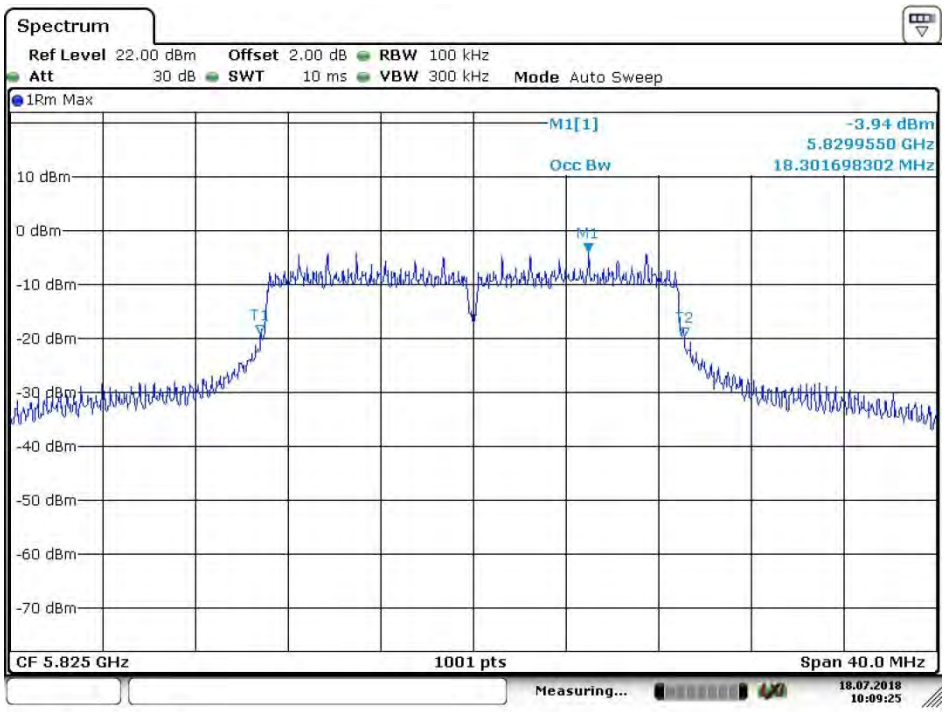


Date: 18.JUL.2018 10:08:57

5.5.1.6 11N20_165 ANT 1

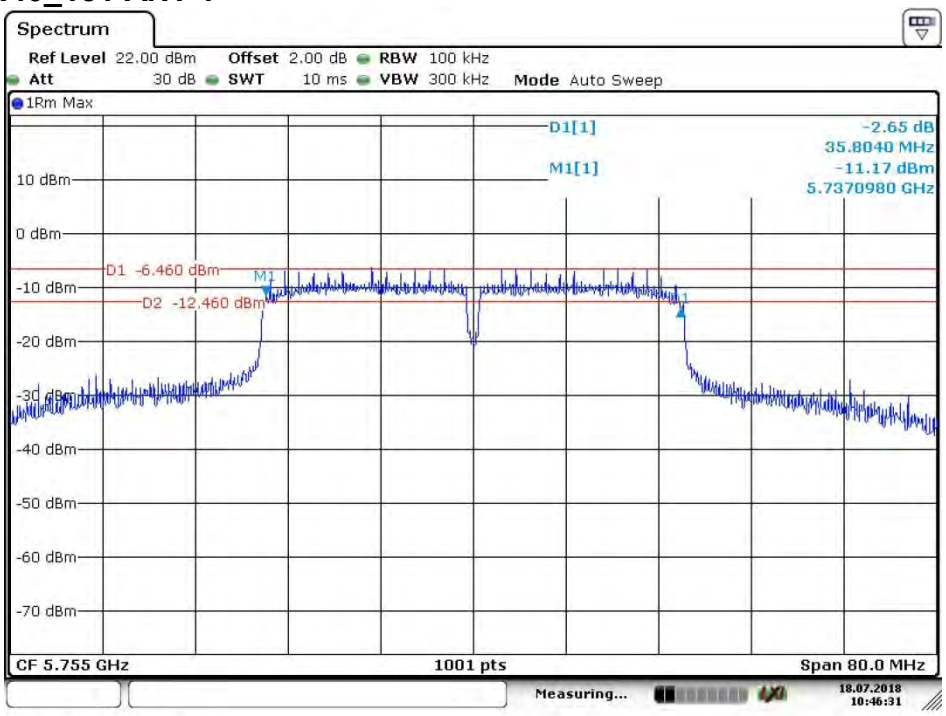


Date: 18.JUL.2018 10:44:22

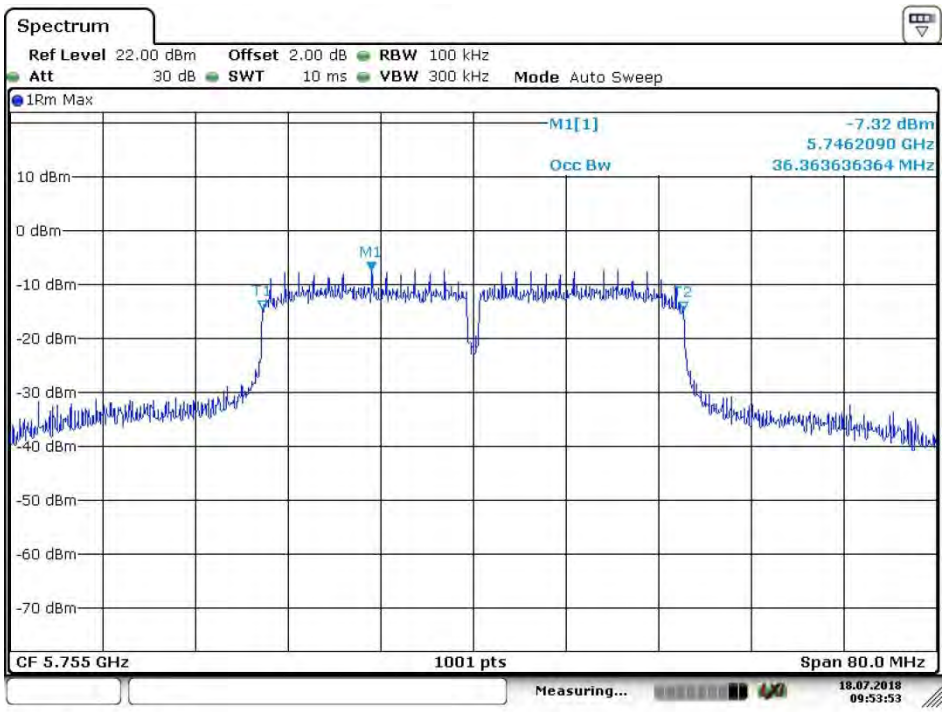


Date: 18.JUL.2018 10:09:25

5.5.1.7 11N40_151 ANT 1

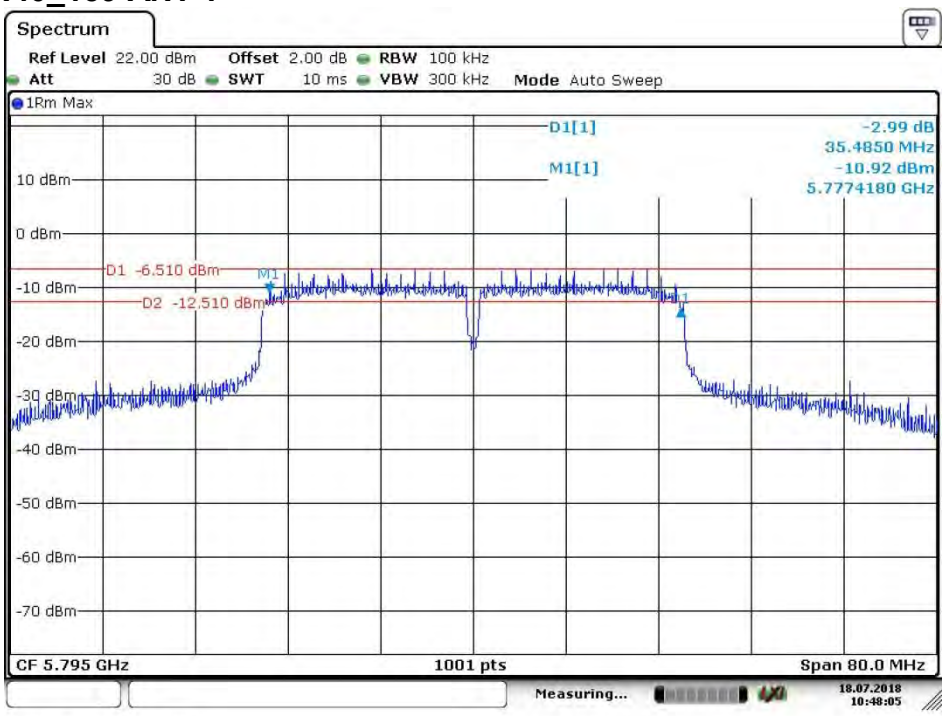


Date: 18.JUL.2018 10:46:31

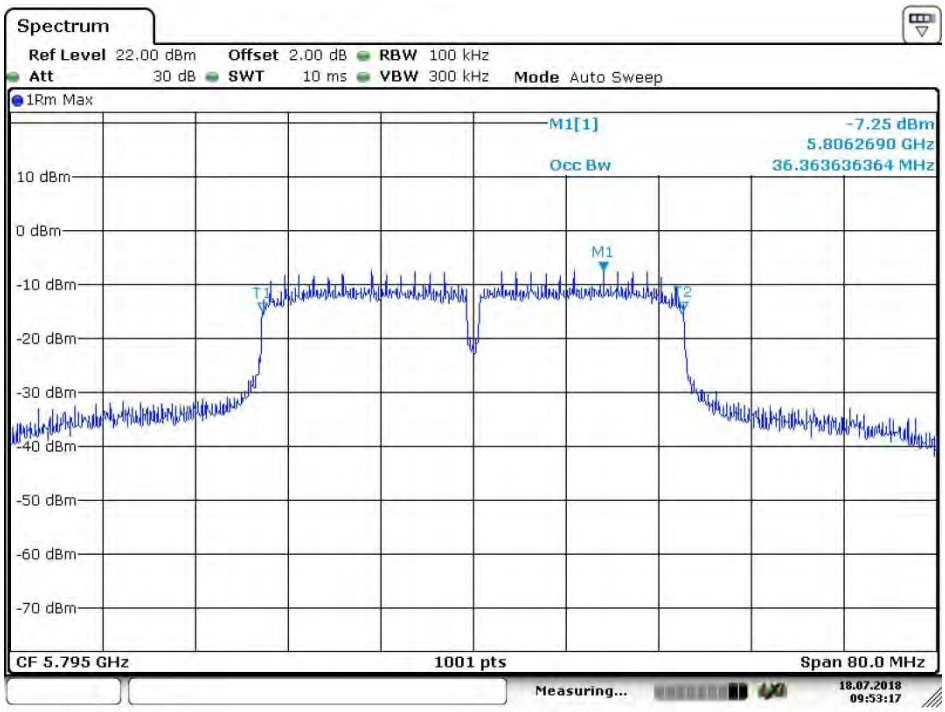


Date: 18.JUL.2018 09:53:54

5.5.1.8 11N40_159 ANT 1

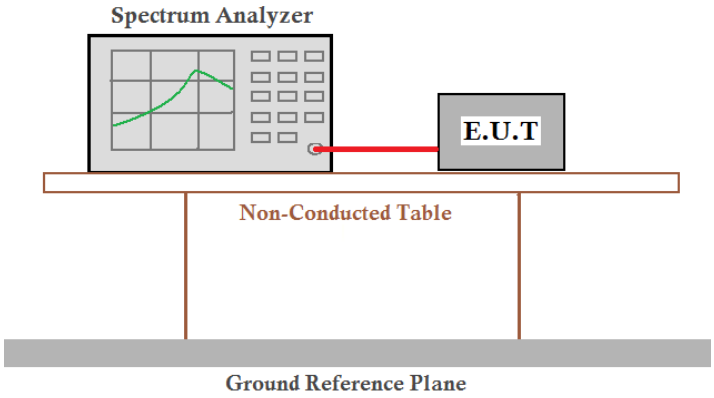


Date: 18.JUL.2018 10:48:05



Date: 18.JUL.2018 09:53:17

5.6 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:	 *Remark:*	
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); MCSO of rate is the worst case of 802.11n(HT40); 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	

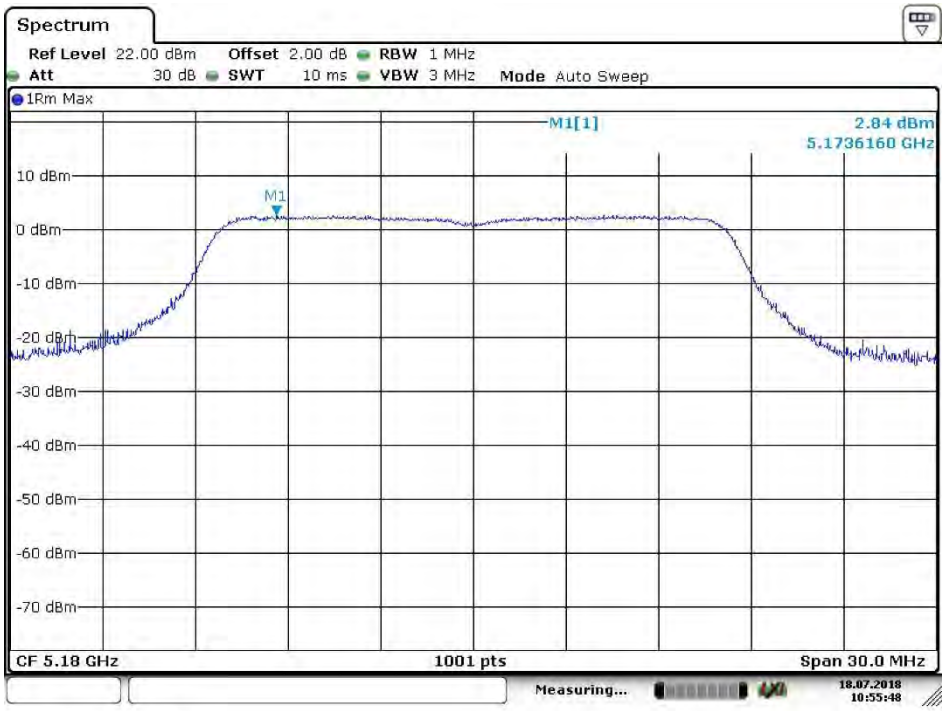
Measurement Data:

Test Mode	Test Channel	Frequency [MHz]	Meas. Level (Cond.) [dBm/MHz]	Verdict
11A20	36	5180	2.84	PASS
	40	5200	2.88	PASS
	48	5240	2.61	PASS
	52	5260	2.88	PASS
	60	5300	3.18	PASS
	64	5320	3.30	PASS
	100	5500	3.27	PASS
	116	5580	2.22	PASS
	140	5700	1.84	PASS
	149	5745	1.36	PASS
	157	5785	1.16	PASS
	165	5825	1.04	PASS
11N20	36	5180	0.24	PASS
	40	5200	4.66	PASS
	48	5240	0.71	PASS
	52	5260	0.08	PASS
	60	5300	0.47	PASS
	64	5320	0.74	PASS
	100	5500	0.85	PASS
	116	5580	0.28	PASS
	140	5700	1.17	PASS
	149	5745	-0.02	PASS
	157	5785	-0.16	PASS
	165	5825	0.09	PASS
11N40	38	5190	-2.17	PASS
	46	5230	-2.62	PASS
	54	5270	-3.43	PASS
	62	5310	-2.63	PASS
	102	5510	-2.46	PASS
	118	5590	-3.88	PASS

	134	5670	-2.29	PASS
	151	5755	-4.06	PASS
	159	5795	-4.16	PASS

Test plot as follows:

Test mode:	802.11a	Frequency(MHz):	5180

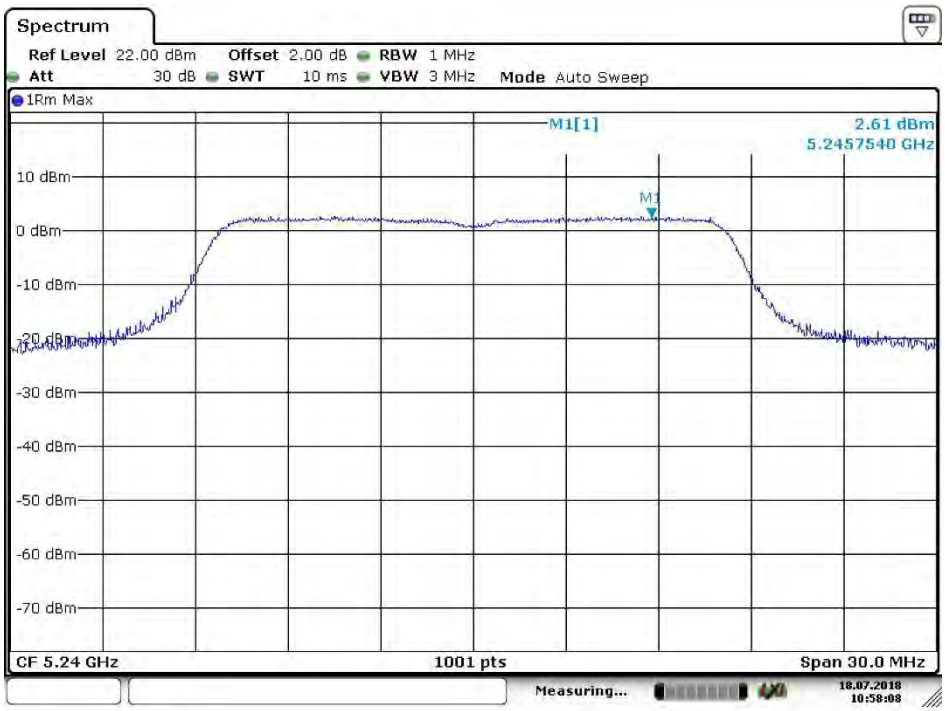


Date: 18.JUL.2018 10:55:49

Test mode:	802.11a	Frequency(MHz):	5220

Date: 18.JUL.2018 10:57:29

Test mode:	802.11a	Frequency(MHz):	5240



Date: 18.JUL.2018 10:58:09

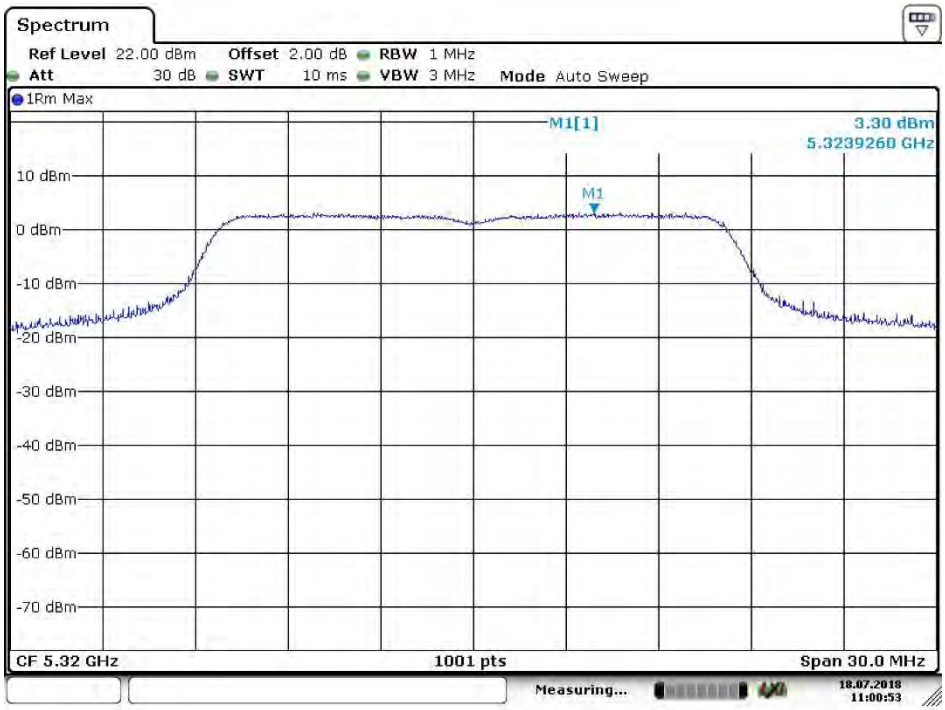
Test mode:	802.11a	Frequency(MHz):	5260

Date: 18.JUL.2018 10:59:15

Test mode:	802.11a	Frequency(MHz):	5300

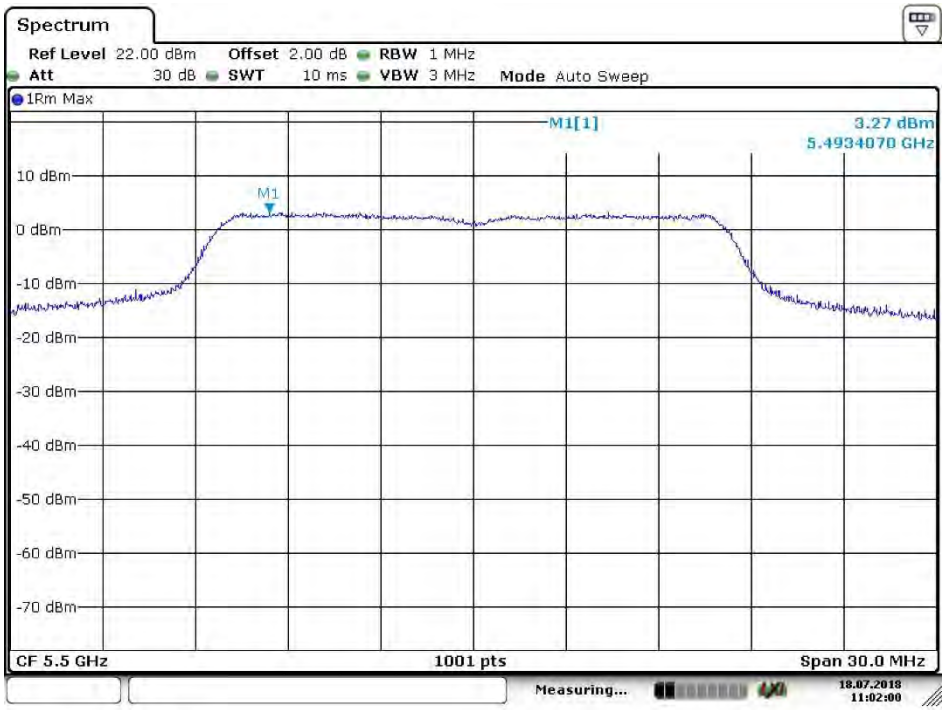
Date: 18.JUL.2018 10:59:52

Test mode:	802.11a	Frequency(MHz):	5320



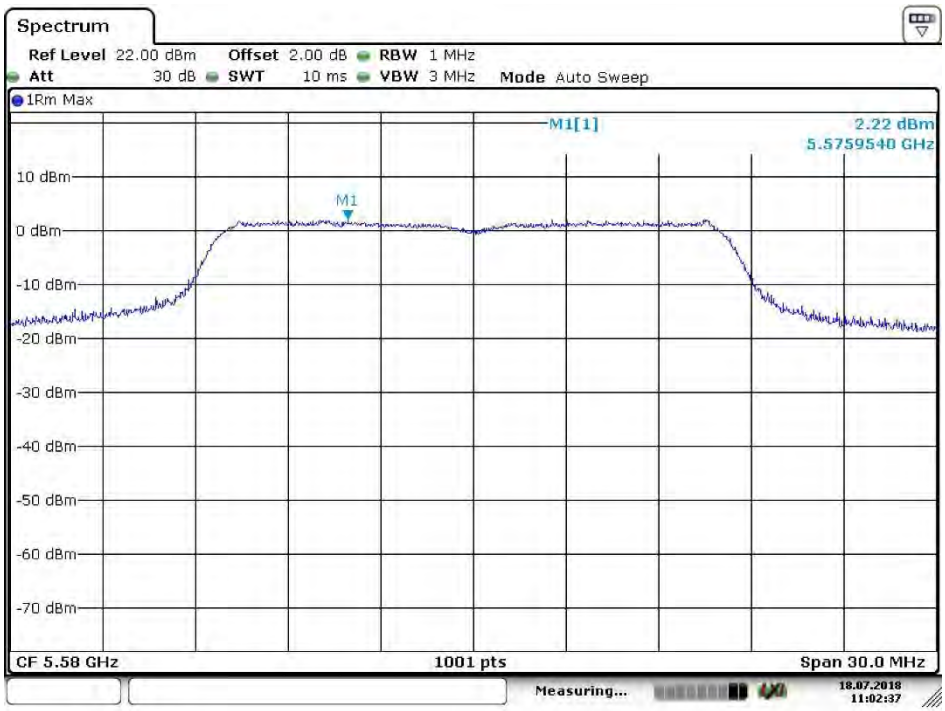
Date: 18.JUL.2018 11:00:53

Test mode:	802.11a	Frequency(MHz):	5500



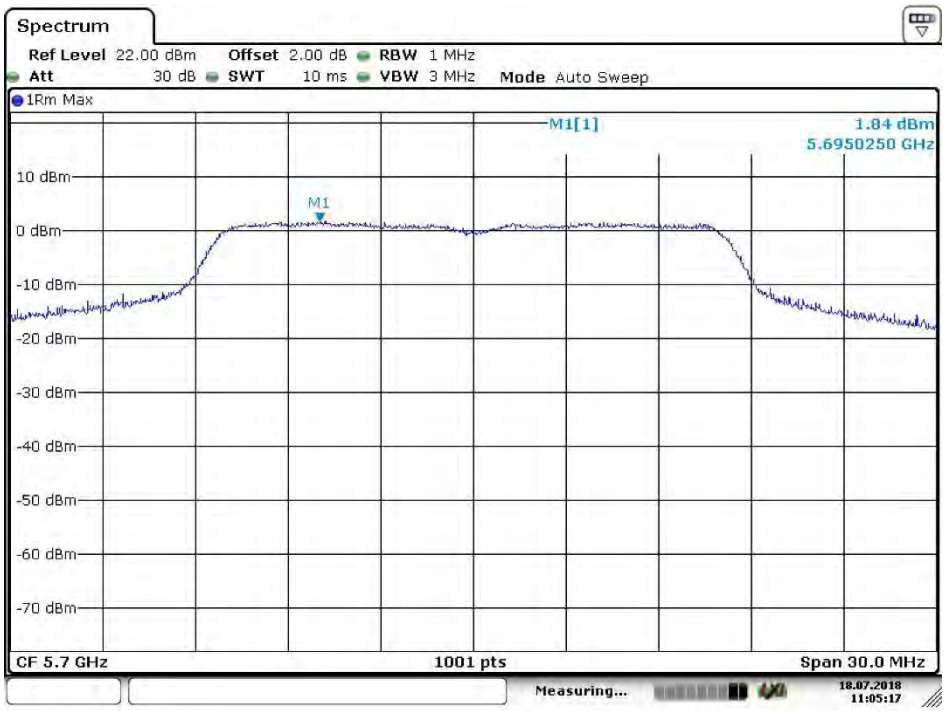
Date: 18.JUL.2018 11:01:59

Test mode:	802.11a	Frequency(MHz):	5580



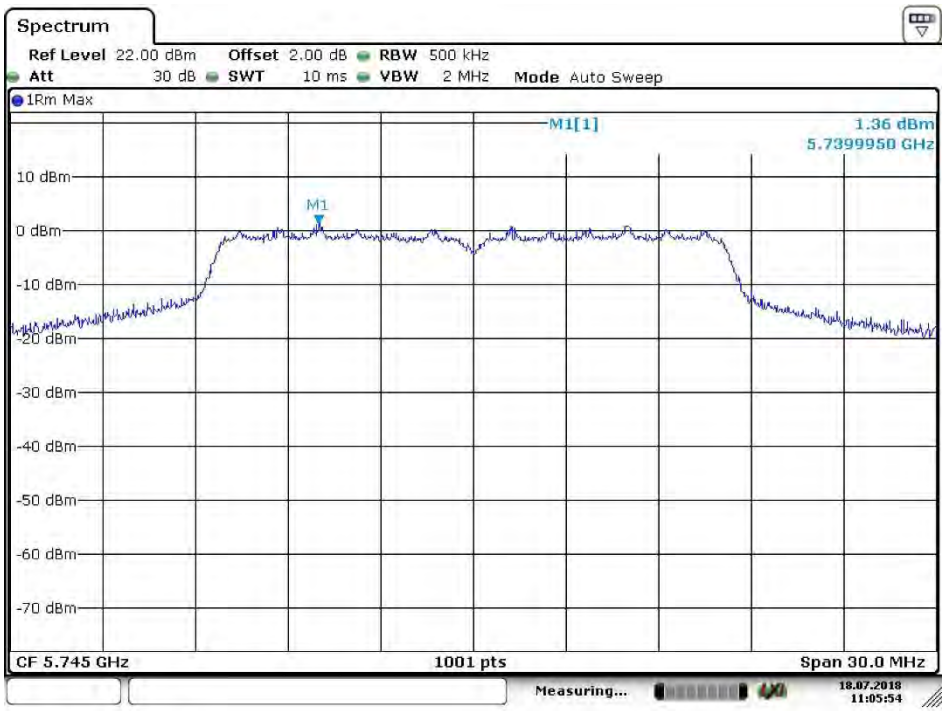
Date: 18.JUL.2018 11:02:37

Test mode:	802.11a	Frequency(MHz):	5700



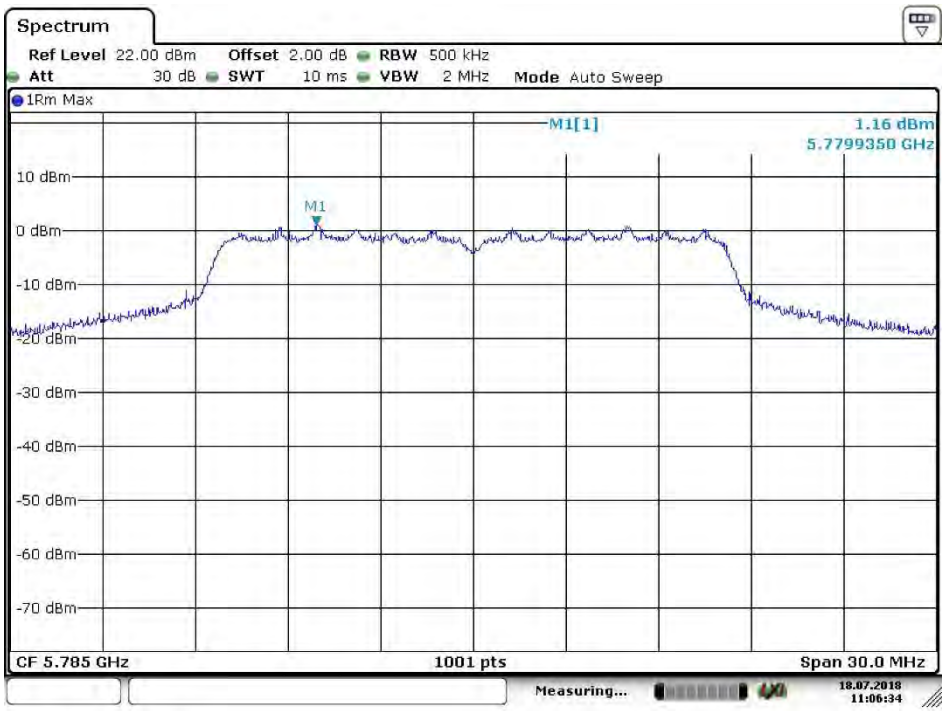
Date: 18.JUL.2018 11:05:18

Test mode:	802.11a	Frequency(MHz):	5745



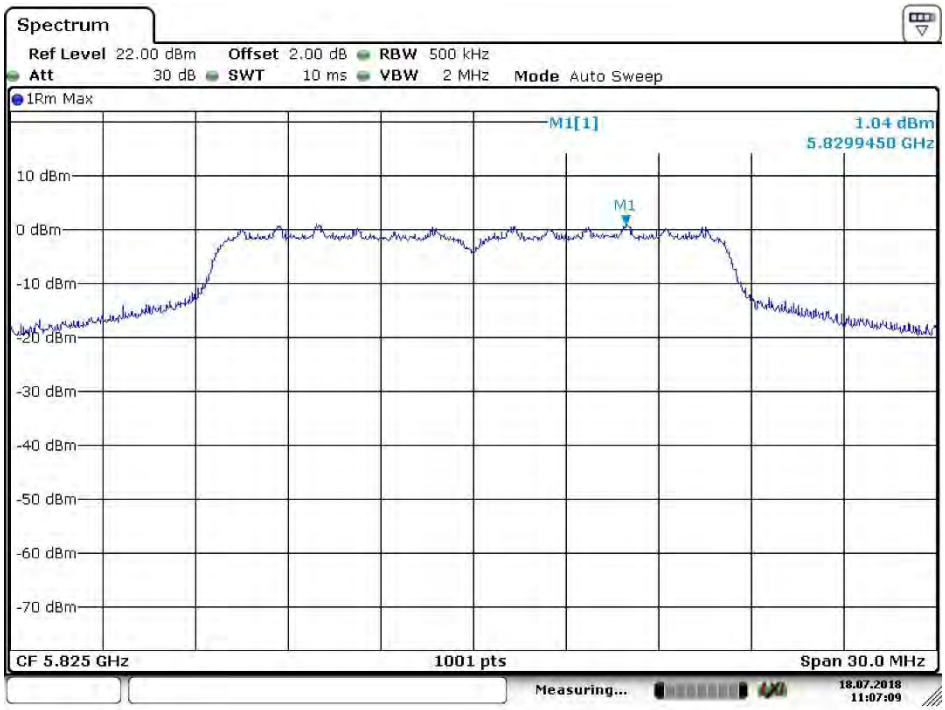
Date: 18.JUL.2018 11:05:54

Test mode:	802.11a	Frequency(MHz):	5785



Date: 18.JUL.2018 11:06:35

Test mode:	802.11a	Frequency(MHz):	5825



Date: 18.JUL.2018 11:07:10

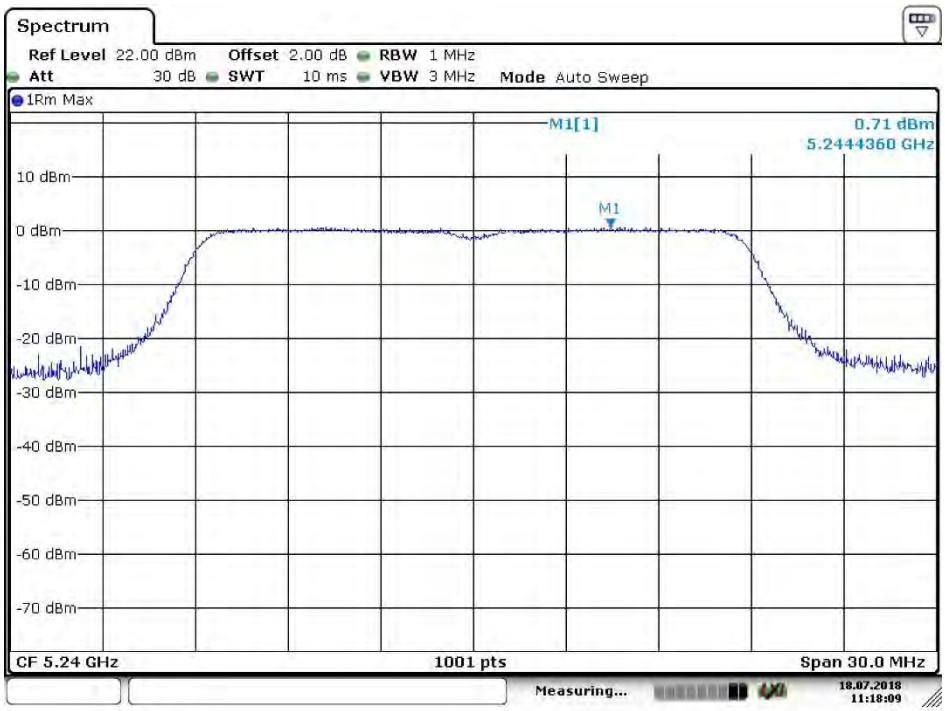
Test mode:	802.11n(HT20)	Frequency(MHz):	5180

Date: 18.JUL.2018 11:16:42

Test mode:	802.11n(HT20)	Frequency(MHz):	5220

Date: 30.JUL.2018 11:29:22

Test mode:	802.11n(HT20)	Frequency(MHz):	5240



Date: 18.JUL.2018 11:18:09

Test mode:	802.11n(HT20)	Frequency(MHz):	5260

Date: 18.JUL.2018 11:14:06

Test mode:	802.11n(HT20)	Frequency(MHz):	5300

Date: 18.JUL.2018 11:14:45

Test mode:	802.11n(HT20)	Frequency(MHz):	5320

Date: 18.JUL.2018 11:15:40

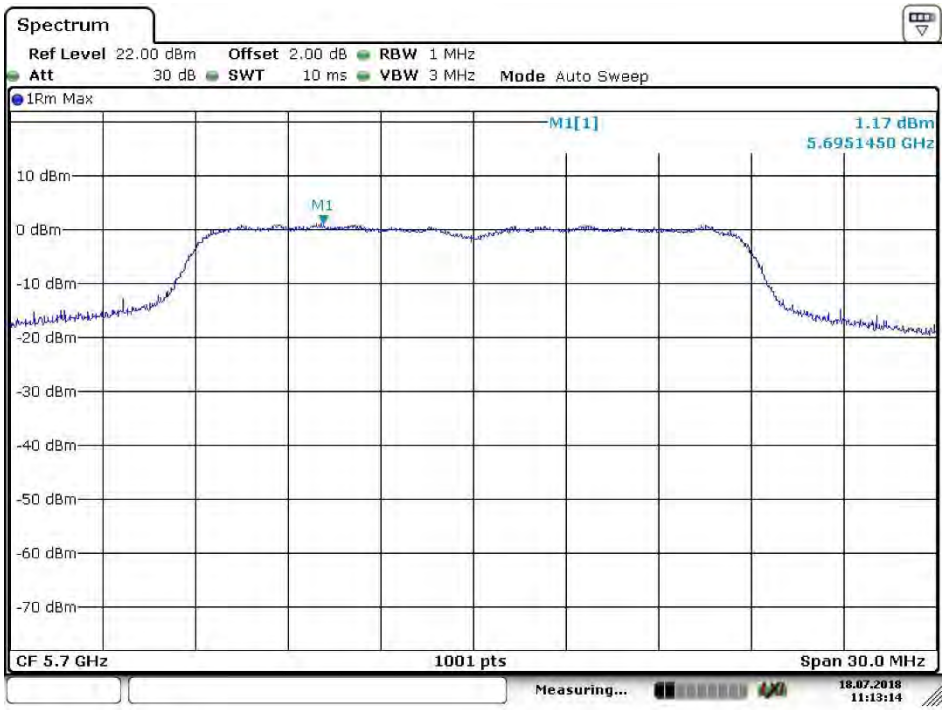
Test mode:	802.11n(HT20)	Frequency(MHz):	5500

Date: 18.JUL.2018 11:11:11

Test mode:	802.11n(HT20)	Frequency(MHz):	5580

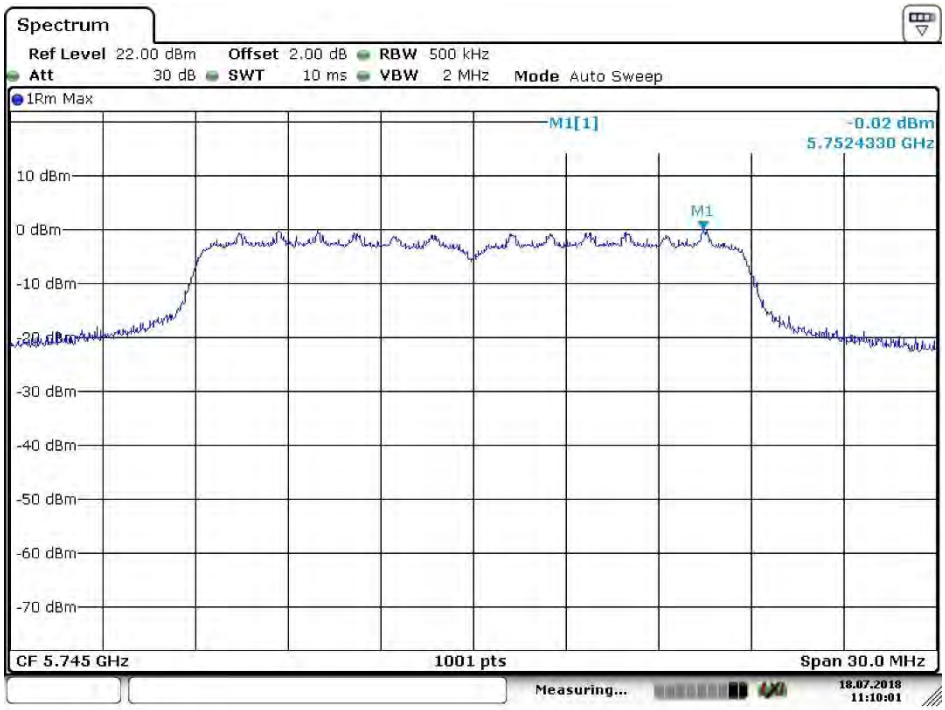
Date: 18.JUL.2018 11:12:41

Test mode:	802.11n(HT20)	Frequency(MHz):	5700



Date: 18.JUL.2018 11:13:14

Test mode:	802.11 n(HT20)	Frequency(MHz):	5745

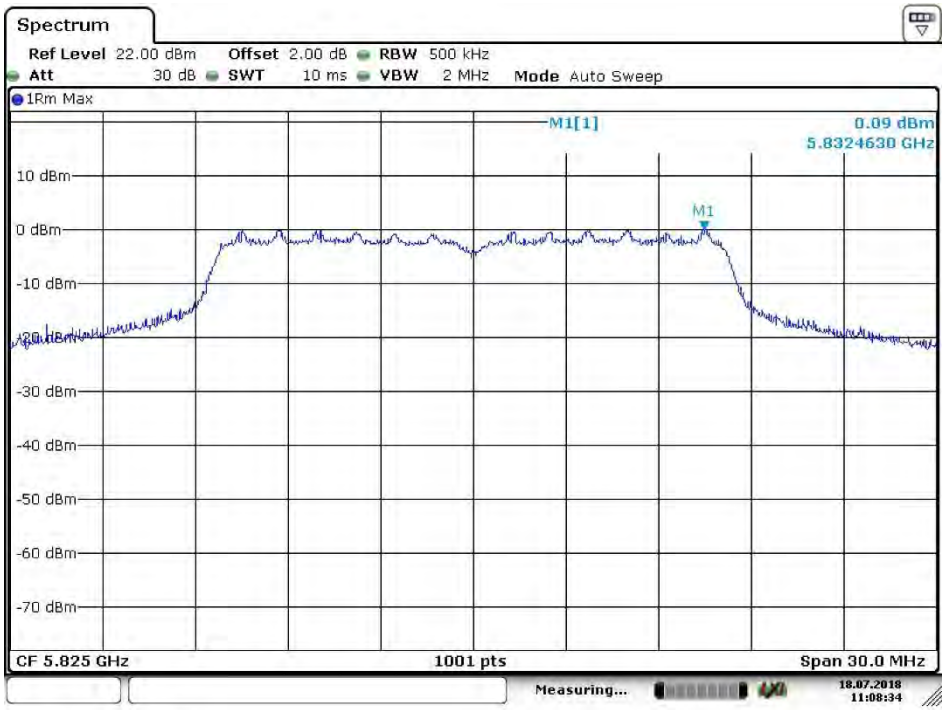


Date: 18.JUL.2018 11:10:01

Test mode:	802.11 n(HT20)	Frequency(MHz):	5785

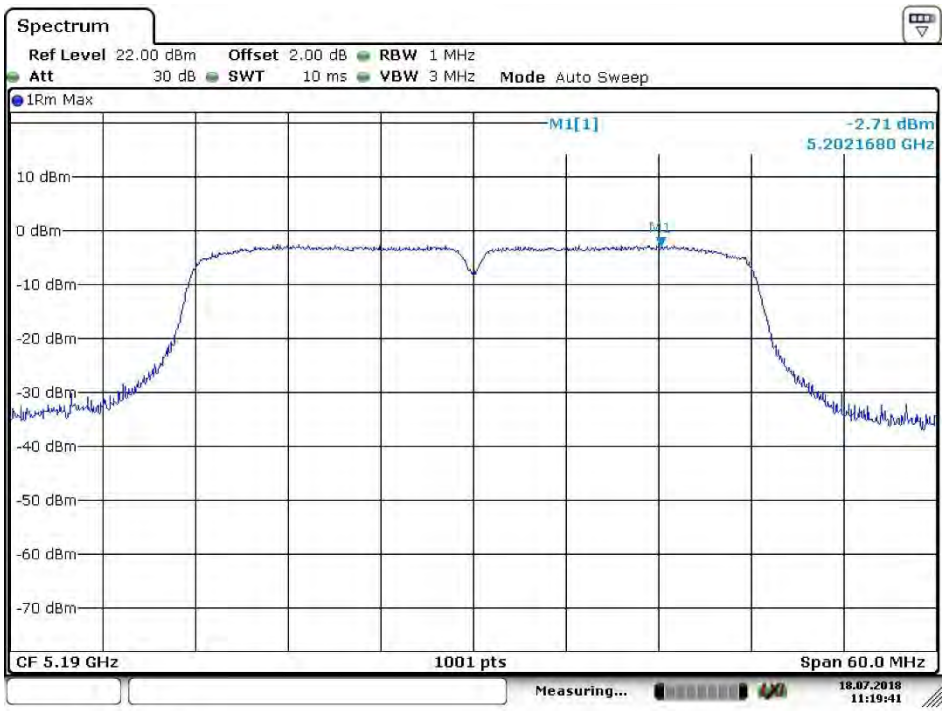
Date: 18.JUL.2018 11:09:20

Test mode:	802.11 n(HT20)	Frequency(MHz):	5825



Date: 18.JUL.2018 11:08:35

Test mode:	802.11n(HT40)	Frequency(MHz):	5190



Date: 18.JUL.2018 11:19:42

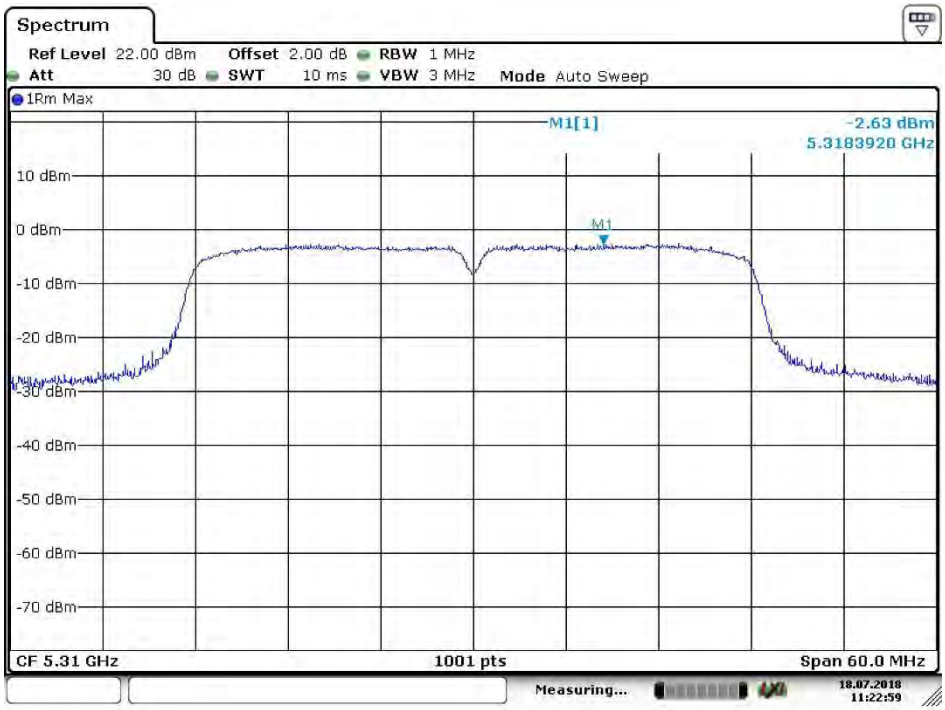
Test mode:	802.11n(HT40)	Frequency(MHz):	5230

Date: 18.JUL.2018 11:20:23

Test mode:	802.11n(HT40)	Frequency(MHz):	5270

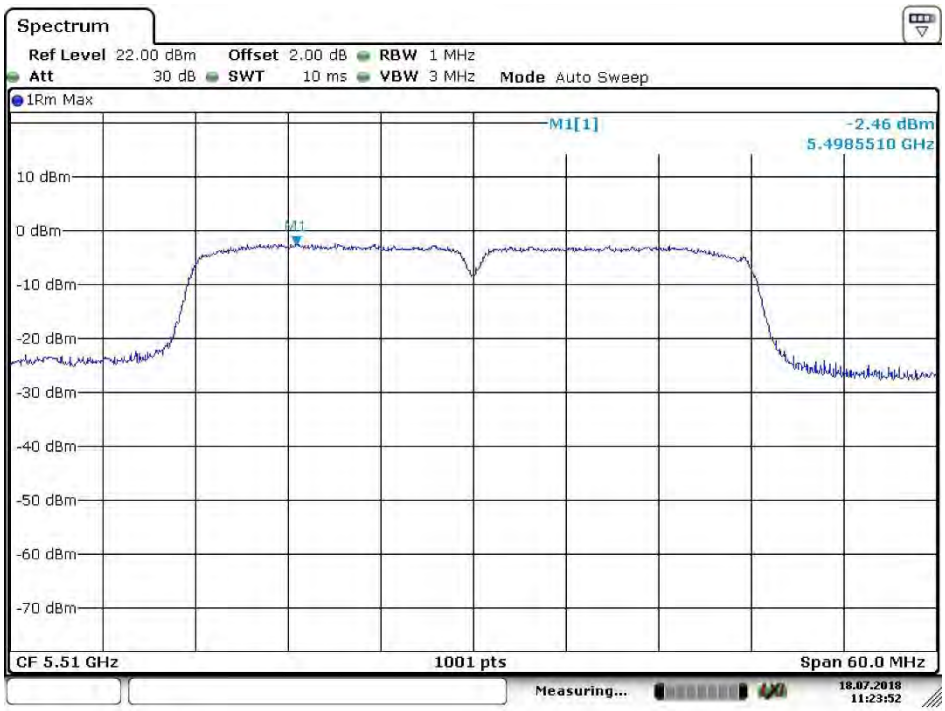
Date: 18.JUL.2018 11:22:08

Test mode:	802.11n(HT40)	Frequency(MHz):	5310



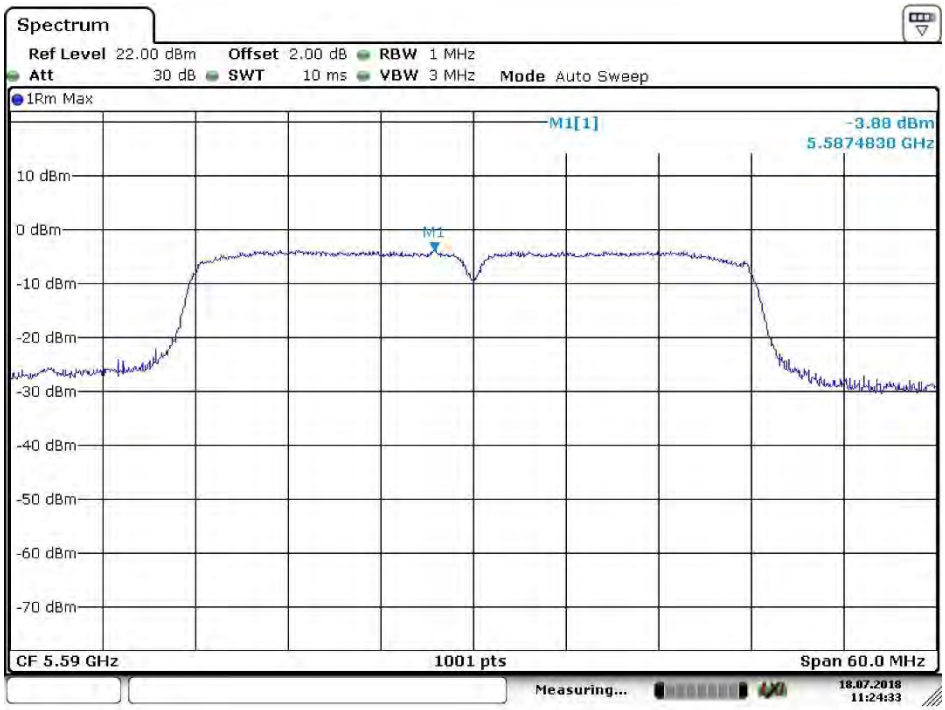
Date: 18.JUL.2018 11:22:59

Test mode:	802.11n(HT40)	Frequency(MHz):	5510



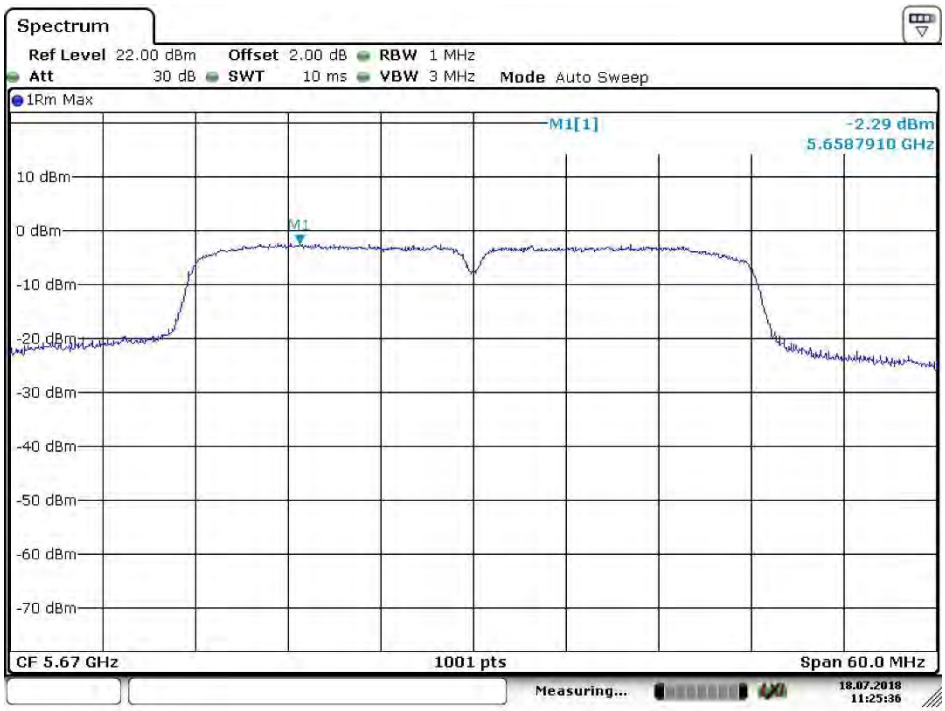
Date: 18.JUL.2018 11:23:52

Test mode:	802.11n(HT40)	Frequency(MHz):	5590



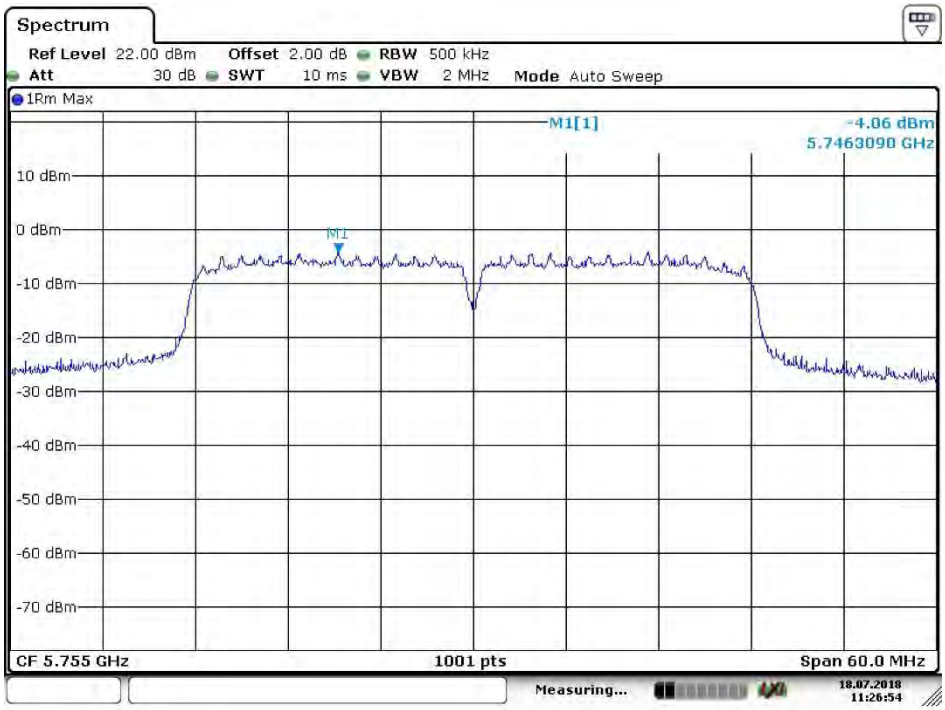
Date: 18.JUL.2018 11:24:33

Test mode:	802.11n(HT40)	Frequency(MHz):	5670



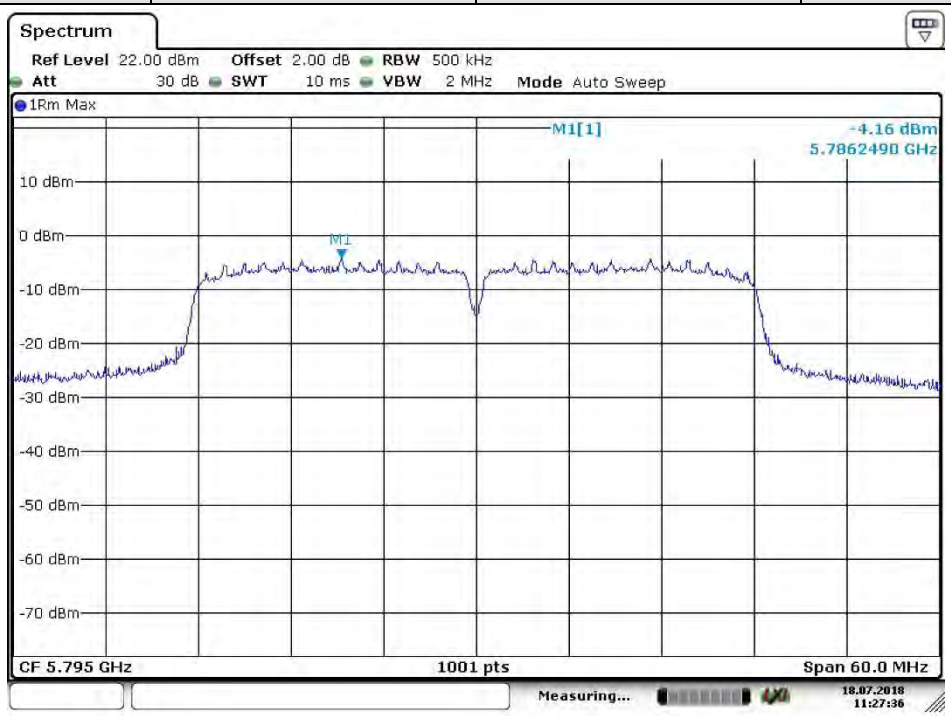
Date: 18.JUL.2018 11:25:36

Test mode:	802.11 n(HT40)	Frequency(MHz):	5755



Date: 18.JUL.2018 11:26:54

Test mode:	802.11 n(HT40)	Frequency(MHz):	5795



Date: 18.JUL.2018 11:27:36

5.7 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)
Test Method:	ANSI C63.10: 2013
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Test Setup:	

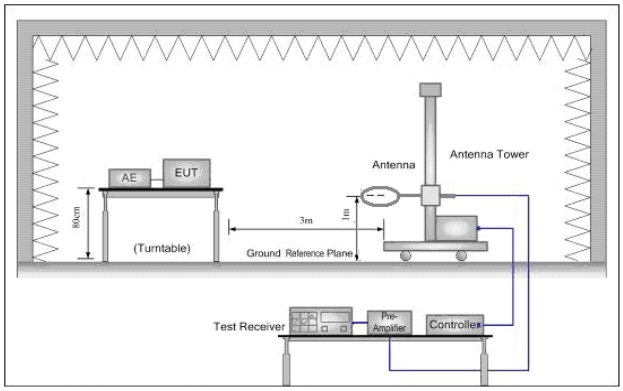


Figure 1. 30MHz to 1GHz

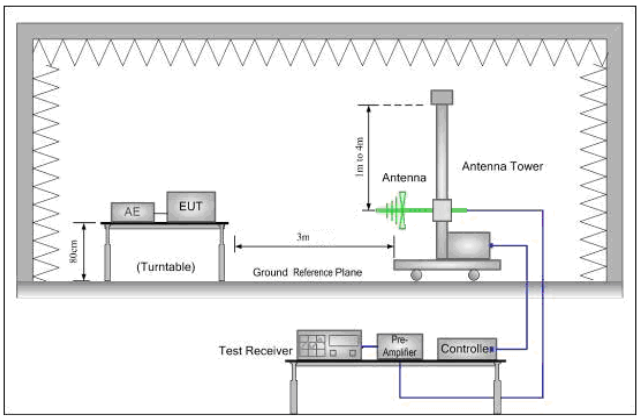


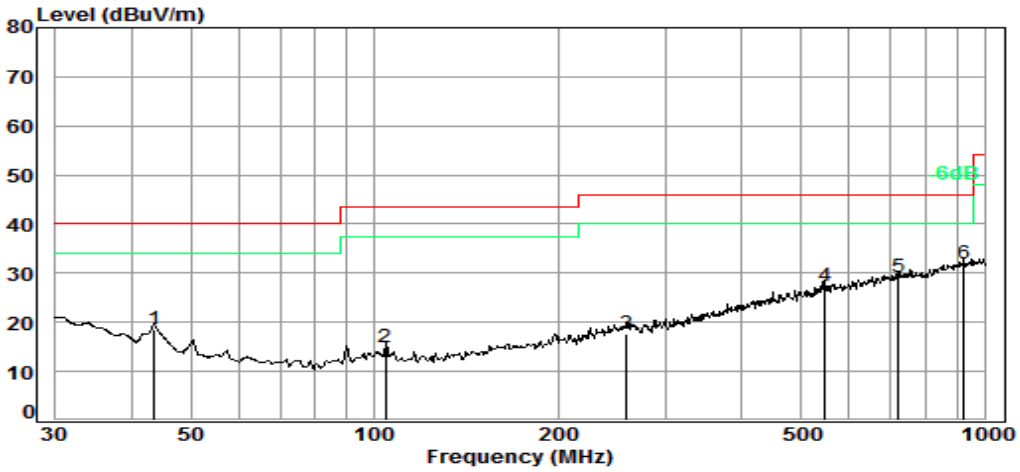
Figure 2. Above 1 GHz

Test Procedure:	a. For below 1GHz test, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz test, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Test the EUT in the outermost channels. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. i. Repeat above procedures until all frequencies measured was complete.
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; MCSO of rate is the worst case of 802.11n(HT20); MCSO of rate is the worst case of 802.11n(HT40); For below 1GHz, through Pre-scan, find the 1Mbps 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

5.7.1 Radiated emission below 1GHz

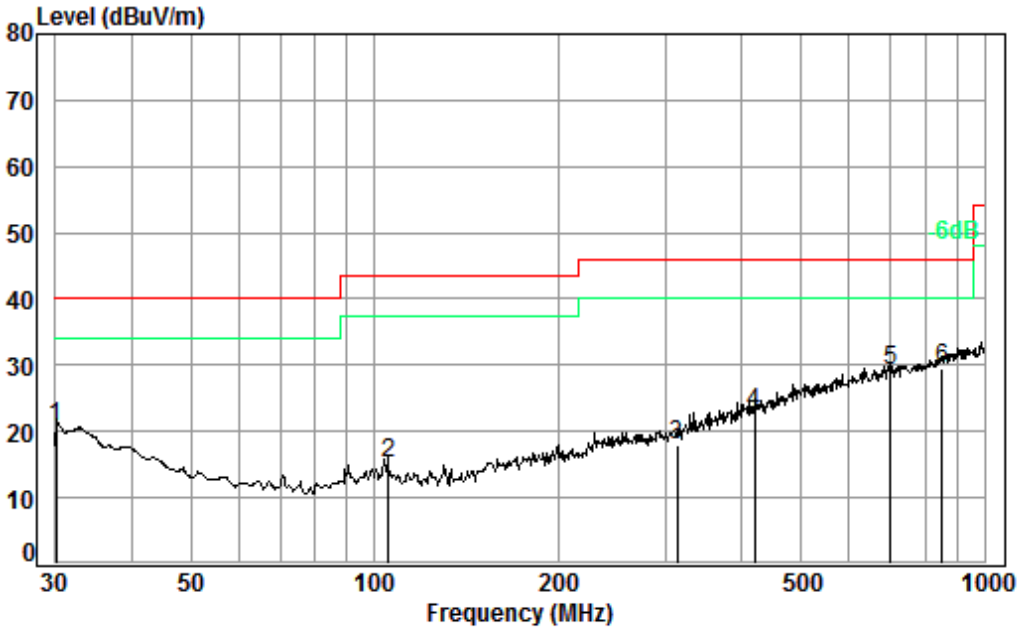
30MHz~1GHz（QP）		
Test mode:	Transmitting	Vertical



Condition: 3m VERTICAL
Job No. : 04850RG
Test mode: e

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	43.51	0.68	16.26	27.42	29.14	18.66	40.00	-21.34
2	104.17	1.21	13.80	27.32	27.28	14.97	43.50	-28.53
3	259.23	1.72	19.09	26.73	23.66	17.74	46.00	-28.26
4	547.10	2.65	25.59	27.78	27.06	27.52	46.00	-18.48
5	721.73	2.97	28.04	27.75	26.05	29.31	46.00	-16.69
6 pp	925.76	3.63	29.93	26.91	25.24	31.89	46.00	-14.11

Test mode:	Transmitting	Horizontal



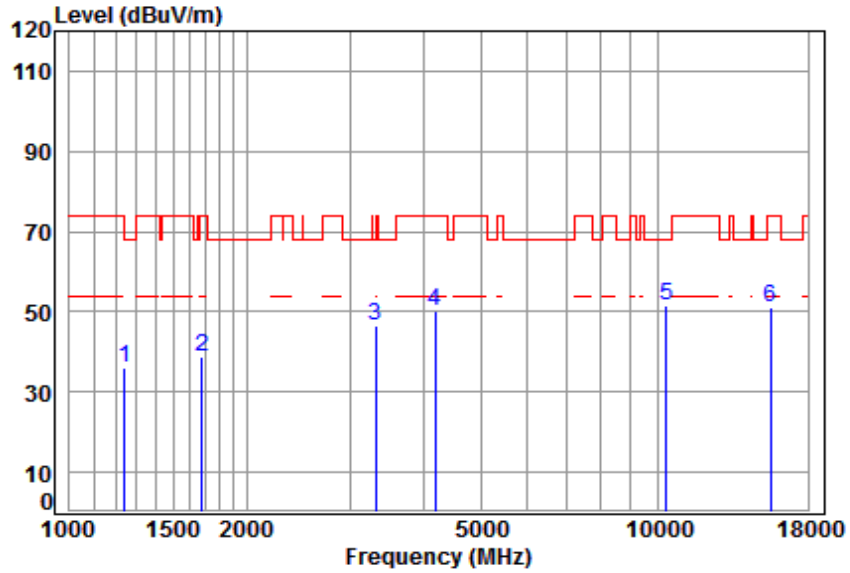
Condition: 3m HORIZONTAL
Job No. : 04850RG
Test mode: e

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.11	0.60	22.44	27.45	25.18	20.77	40.00	-19.23
2	105.27	1.22	13.75	27.32	27.54	15.19	43.50	-28.31
3	313.28	1.94	20.02	26.72	22.85	18.09	46.00	-27.91
4	420.58	2.29	22.89	27.28	24.89	22.79	46.00	-23.21
5	701.76	2.91	27.91	27.78	26.27	29.31	46.00	-16.69
6 pp	851.04	3.41	29.18	27.33	24.20	29.46	46.00	-16.54

5.7.2 Transmitter emission above 1GHz

Test plot as follows:

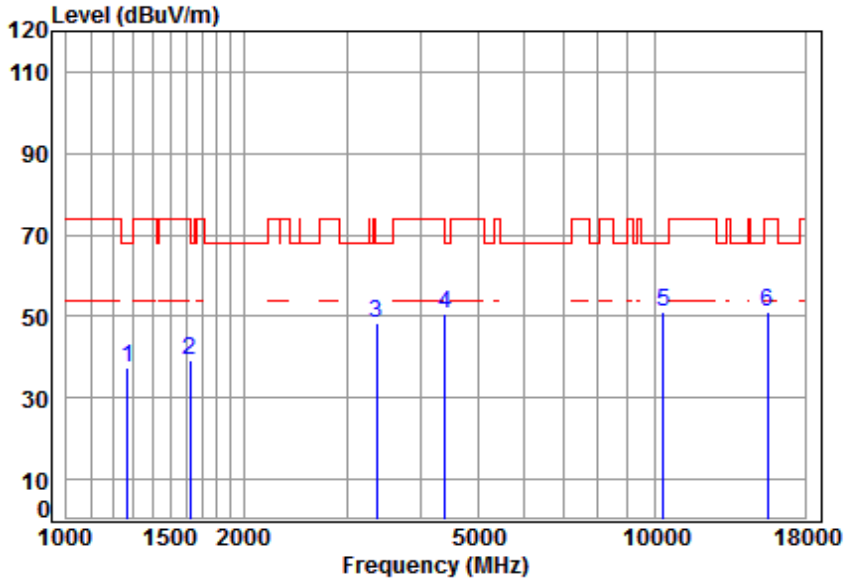
Test mode:	802.11a	Frequency(MHz):	5180	Peak	Vertical



Condition: 3m VERTICAL
Job No : 4850RG
Mode : 5180 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1242.068	4.58	24.68	38.07	45.07	36.26	68.20	-31.94	peak
2	1677.621	5.25	26.58	38.03	45.08	38.88	74.00	-35.12	peak
3	3318.471	6.29	31.89	37.94	46.49	46.73	68.20	-21.47	peak
4	4181.768	7.20	33.60	38.10	47.33	50.03	74.00	-23.97	peak
5	pp10360.000	11.19	37.24	35.09	38.04	51.38	68.20	-16.82	peak
6	15540.000	14.30	41.38	38.30	33.69	51.07	74.00	-22.93	peak

Test mode:	802.11a	Frequency(MHz):	5180	Peak	Horizontal



Condition: 3m HORIZONTAL
Job No : 4850RG
Mode : 5180 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1271.123	4.69	24.82	38.07	46.11	37.55	68.20	-30.65	peak
2	1620.431	5.32	26.34	38.03	45.46	39.09	74.00	-34.91	peak
3	3366.778	6.34	31.97	37.94	48.21	48.58	68.20	-19.62	peak
4	4405.090	7.46	33.60	38.22	47.70	50.54	68.20	-17.66	peak
5	pp10360.000	11.19	37.24	35.09	37.87	51.21	68.20	-16.99	peak
6	15540.000	14.30	41.38	38.30	33.80	51.18	74.00	-22.82	peak