FCC Test Report

Product Name	Network Appliance
Model No	BNHW030
FCC ID	2AHVQ-BNHW030

Applicant	Barracuda Networks Inc.
Address	5710 Fontanoso Way, San Jose, CA 95138,United States

Date of Receipt	Dec. 01, 2017
Issued Date	Feb. 08, 2018
Report No.	17C0009R-RFUSP49V00
Report Version	V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

Test Report

Issued Date: Feb. 08, 2018
Report No.: 17C0009R-RFUSP49V00

Product Name	Network Appliance
Applicant	Barracuda Networks Inc.
Address	5710 Fontanoso Way, San Jose, CA 95138,United States
Manufacturer	Barracuda Networks Inc.
Model No.	BNHW030
FCC ID.	2AHVQ-BNHW030
EUT Rated Voltage	DC 12V
EUT Test Voltage	DC 12V
Trade Name	Barracuda
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2016 ANSI C63.4: 2014, ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v02
Test Result	Complied

Documented By : Jinn Chen

(Senior Adm. Specialist / Jinn Chen)

Tested By : Ivan Chuang

(Senior Engineer / Ivan Chuang)

Approved By :

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Network Appliance
Trade Name	Barracuda
FCC ID.	2AHVQ-BNHW030
Model No.	BNHW030
Frequency Range	802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5670MHz, 5755-5795MHz 802.11ac-20MHz: 5720, 802.11ac-40MHz: 5710 802.11ac-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz
Number of Channels	802.11a/n-20MHz: 24; 802.11n-40MHz: 11 802.11ac-20MHz: 1, 802.11ac-40MHz: 1, 802.11ac-80MHz: 6
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 300Mbps 802.11ac-80MHz: up to 866.7MHz
Channel Control	Auto
Type of Modulation	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	Dipole Antenna
Antenna Gain	Refer to the table “Antenna List”
Contain Module	AMPAK/AP6354

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	HSIEN JINN	KO-EX-2450-D-006-RSM	Dipole Antenna	2.03 dBi For 5.15~5.25GHz 2.03 dBi For 5.25~5.35GHz 2.03 dBi For 5.47~5.725GHz 1.70 dBi For 5.725~5.825GHz

Note: 1. The antenna of EUT is conform to FCC 15.203.

2. Only the higher gain antenna was tested and recorded in this report

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz	Channel 149:	5745 MHz
Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz	Channel 165:	5825 MHz

802.11n-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz		

802.11ac-20MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 144:	5720 MHz

802.11ac-40MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 142:	5710 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 42:	5210 MHz	Channel 58:	5290 MHz	Channel 106:	5530 MHz	Channel 122:	5610 MHz
Channel 138:	5690 MHz	Channel 155:	5775 MHz				

Note:

1. This device is a Network Appliance with a built-in 802.11a/b/g/n/ac WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW 7.2Mbps) Mode 3: Transmit (802.11n-40BW 15Mbps) Mode 4: Transmit (802.11ac-20BW-7.2Mbps) Mode 5: Transmit (802.11ac-40BW-15Mbps) Mode 6: Transmit (802.11ac-80BW-32.5Mbps)

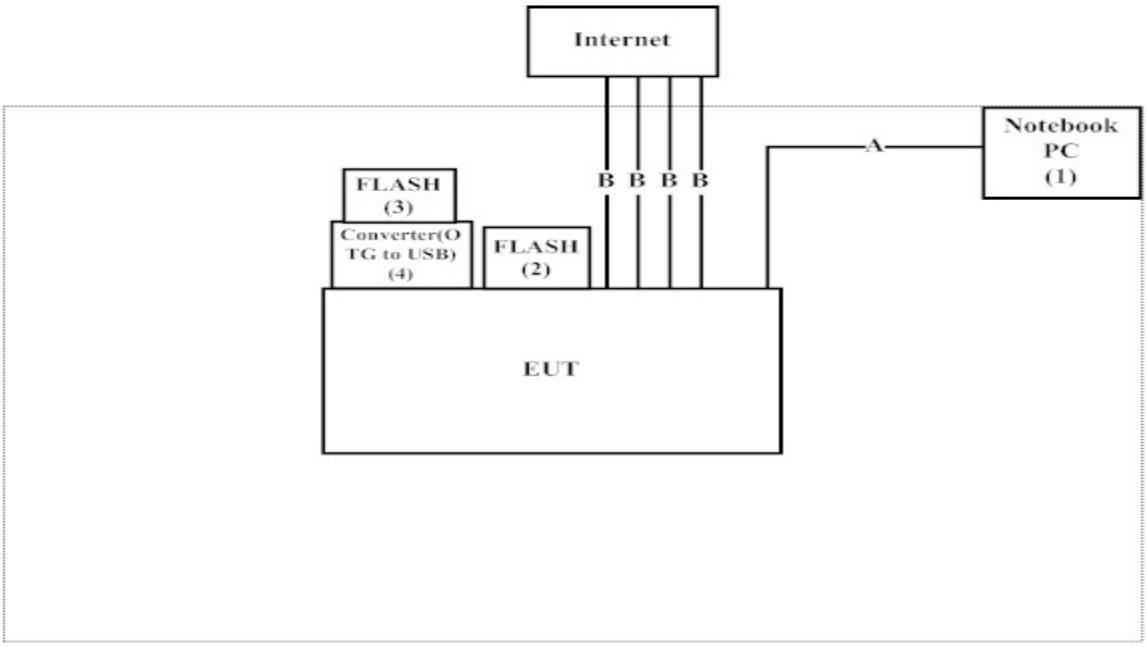
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Inspiron 15 3000	GT5JPJ2	N/A
2	FLASH	Transcend	USB 3.0 16GB	N/A	N/A
3	FLASH	Transcend	USB 3.0 16GB	N/A	N/A
4	Converter(OTG to USB)	L-CUBIC	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Signal Cable	Non-shielded, 0.98m
B	LAN Cable	Non-shielded, 1.8m, four PCS.

1.4. Configuration of tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “PuTTV 0.63” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd.
Site Address: No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,
New Taipei City 24457, Taiwan.
TEL: 886-2-2602-7968 / FAX : 866-2-2602-3286
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Equipment

For Conducted measurements /ASR4

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSV30	103464	2018.01.23	2019.01.22
X	Power Meter	Anritsu	ML2496A	1548003	2017.12.11	2018.12.10
X	Power Sensor	Anritsu	MA2411B	1531024	2017.12.11	2018.12.10
X	Power Sensor	Anritsu	MA2411B	1531025	2017.12.11	2018.12.10
	Bluetooth Tester	R&S	CBT	101238	2018.01.18	2019.01.17

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek Conduction Test System V8.0.110

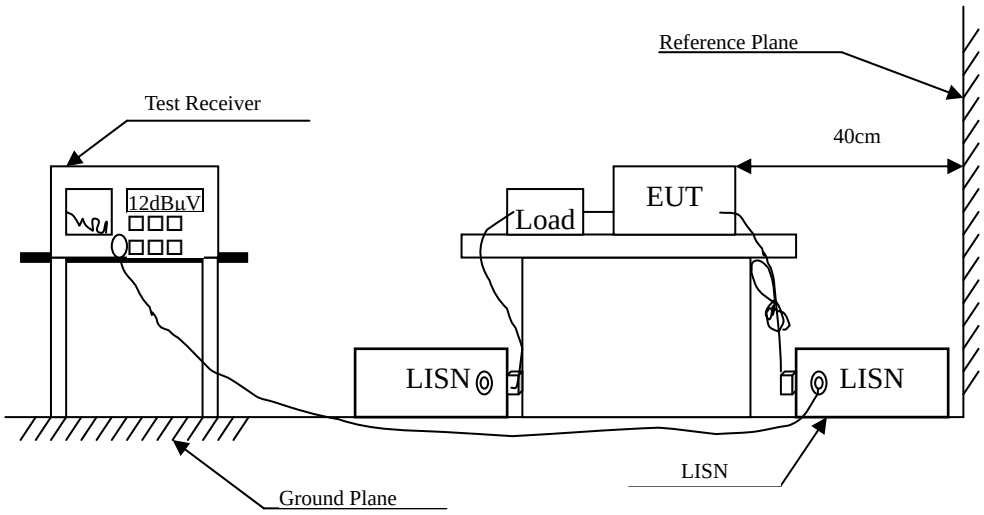
For Radiated measurements /ACB1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	TESEQ	HLA6121	37133	2016.03.18	2018.03.17
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2017.02.13	2018.02.12
X	Horn Antenna	ETS-Lindgren	3117	00203800	2017.11.10	2018.11.09
X	Horn Antenna	Com-Power	AH-840	101087	2017.05.24	2018.05.23
X	Pre-Amplifier	EMCI	EMC001330	980316	2017.05.16	2018.05.15
X	Pre-Amplifier	EMCI	EMC051835SE	980311	2017.05.17	2018.05.16
X	Pre-Amplifier	EMCI	EMC05820SE	980310	2017.05.17	2018.05.16
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2017.05.17	2018.05.16
	Filter	MICRO TRONICS	BRM50702	G251	2017.08.30	2018.08.29
X	Filter	MICRO TRONICS	BRM50716	G188	2017.08.30	2018.08.29
X	EMI Test Receiver	R&S	ESR7	101602	2017.12.11	2018.12.10
X	Spectrum Analyzer	R&S	FSV40	101147	2018.01.11	2019.01.10
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2017.05.25	2018.05.24
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2017.08.11	2018.08.10

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:2014 on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.
The EUT was setup to ANSI C63.4, 2014; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.4. Uncertainty

±2.35dB

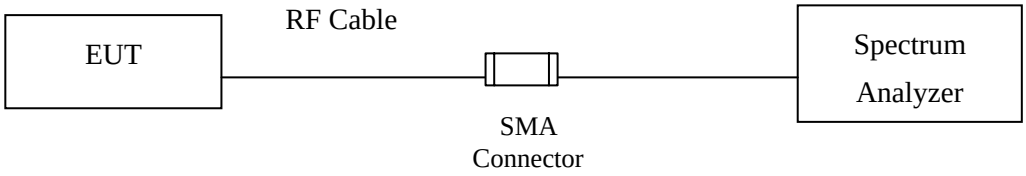
2.5. Test Result of Conducted Emission

Owing to the EUT use DC supply voltage, this test item is not performed.

3. Maximun conducted output power

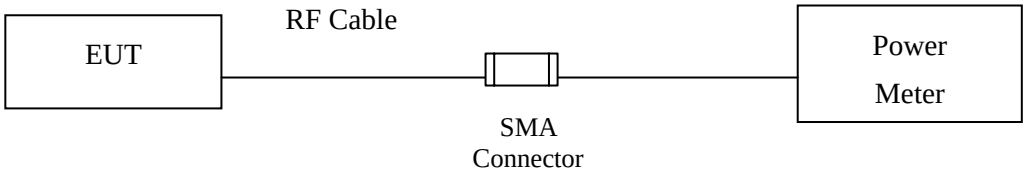
3.1. Test Setup

99% Occupied Bandwidth

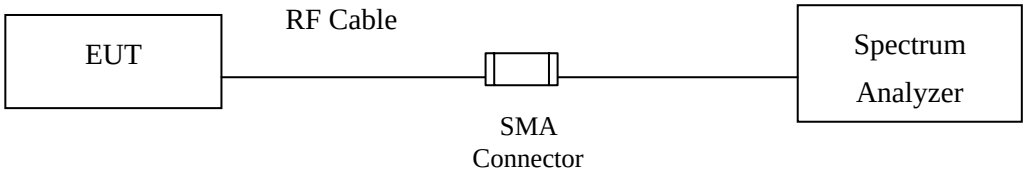


Conduction Power Measurement

Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 99% emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW≦40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter)
Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

3.4. Uncertainty

Power Meter: ±0.95dB
Spectrum Analyzer: ±1.30dB

3.5. Test Result of Maximum conducted output power

Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 1: Transmit (802.11a-6Mbps)
Test Date : 2018/01/11

Chain A

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
		Measurement Level (dBm)							
36	5180	13.54	--	--	--	--	--	--	--
44	5220	13.48	13.42	13.39	13.35	13.1	12.98	12.94	12.91
48	5240	13.46	--	--	--	--	--	--	--
52	5260	13.39	--	--	--	--	--	--	--
60	5300	13.46	13.41	13.38	13.36	13.32	12.99	12.94	12.92
64	5320	13.35	--	--	--	--	--	--	--
100	5500	12.46	--	--	--	--	--	--	--
116	5580	11.47	11.43	11.37	11.33	11.31	10.97	10.96	10.93
140	5700	10.85	--	--	--	--	--	--	--
149	5745	10.97	--	--	--	--	--	--	--
157	5785	10.85	10.83	10.79	10.75	10.72	10.69	10.66	10.62
165	5825	10.87	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
		Measurement Level (dBm)							
36	5180	12.81	--	--	--	--	--	--	--
44	5220	12.32	12.31	12.28	12.26	12.22	12.19	12.14	12.13
48	5240	12.01	--	--	--	--	--	--	--
52	5260	11.98	--	--	--	--	--	--	--
60	5300	11.52	11.49	11.47	11.43	11.38	11.35	11.31	11.29
64	5320	11.87	--	--	--	--	--	--	--
100	5500	11.54	--	--	--	--	--	--	--
116	5580	11.46	11.43	11.37	11.35	11.32	11.28	11.24	11.21
140	5700	10.47	--	--	--	--	--	--	--
149	5745	10.56	--	--	--	--	--	--	--
157	5785	9.97	9.93	9.91	9.87	9.84	9.83	9.79	9.74
165	5825	9.54	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

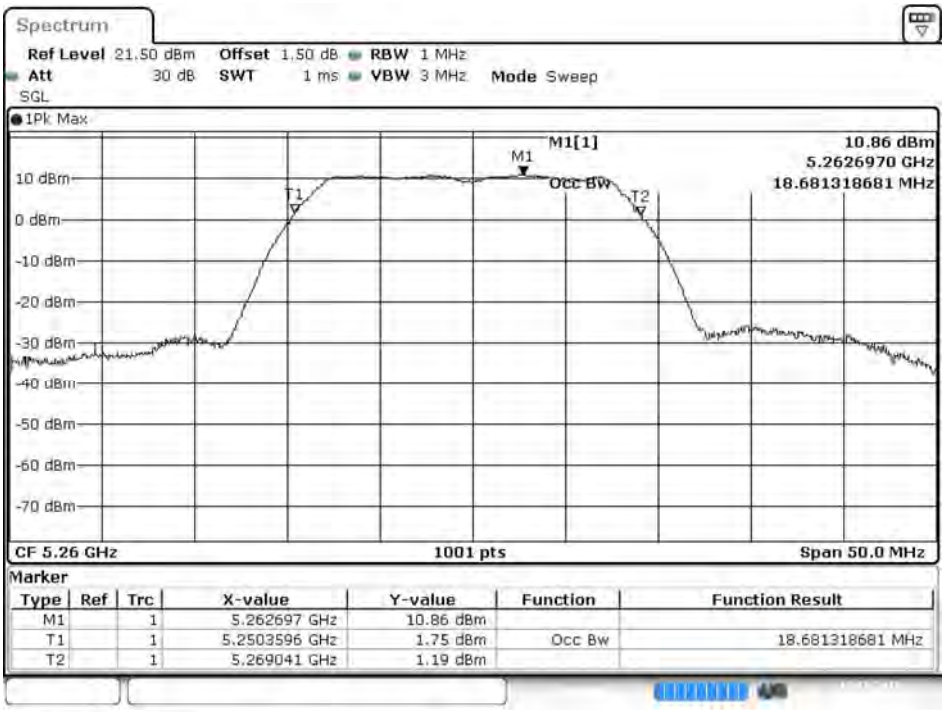
(**Chain A+ B)**

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	11dBm+10log(B)
36	5180	--	13.54	12.81	16.20	24	--
44	5220	--	13.48	12.32	15.95	24	--
48	5240	--	13.46	12.01	15.81	24	--
52	5260	18.681	13.39	11.98	15.75	24	23.71
60	5300	18.681	13.46	11.52	15.61	24	23.71
64	5320	18.731	13.35	11.87	15.68	24	23.73
100	5500	18.731	12.46	11.54	15.03	24	23.73
116	5580	18.781	11.47	11.46	14.48	24	23.74
140	5700	18.731	10.85	10.47	13.67	24	23.73
149	5745	--	10.97	10.56	13.78	30	--
157	5785	--	10.85	9.97	13.44	30	--
165	5825	--	10.87	9.54	13.27	30	--

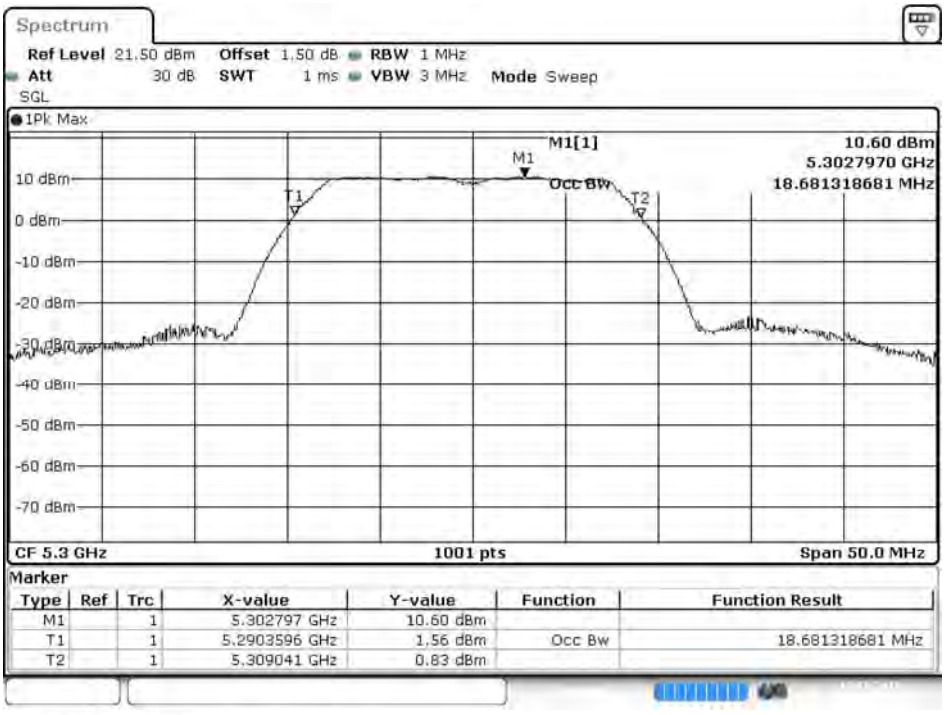
Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))
3. 99% Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

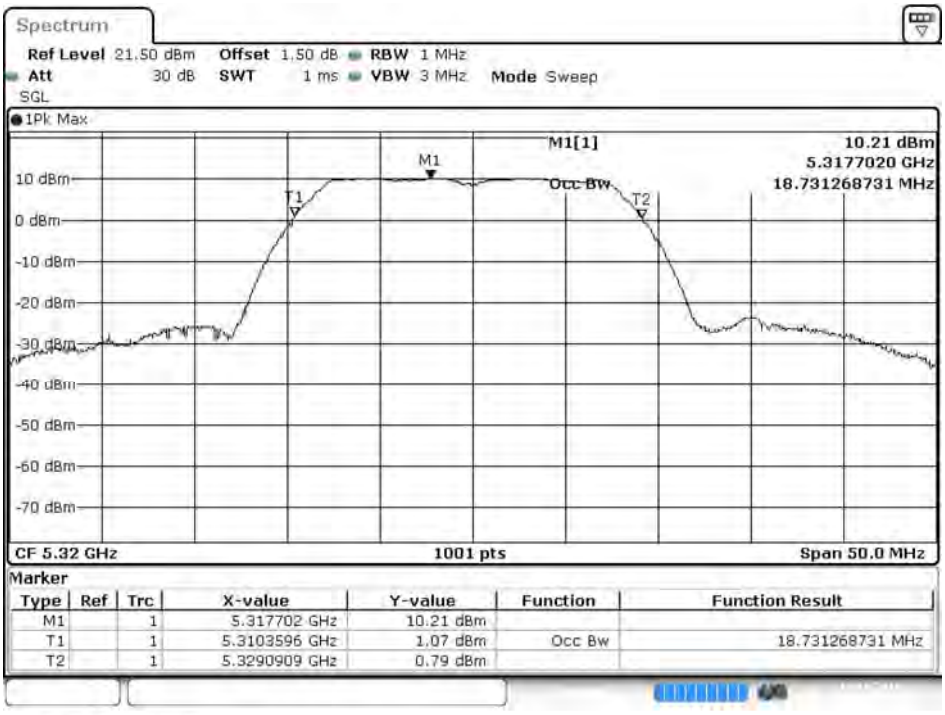
99% Occupied Bandwidth:
Channel 52 - Chain A



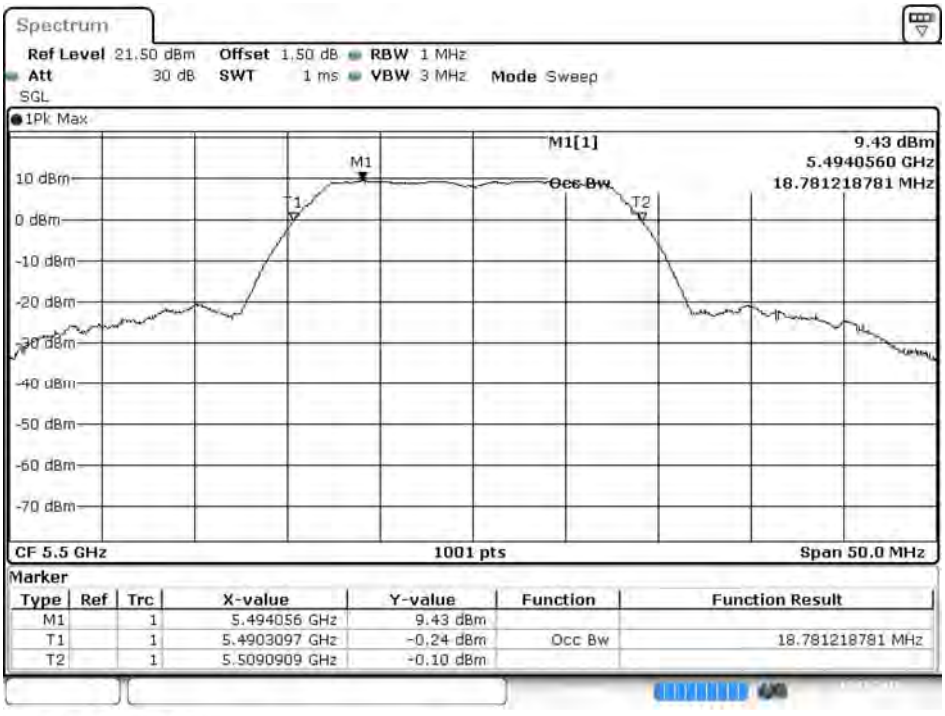
Channel 60 - Chain A



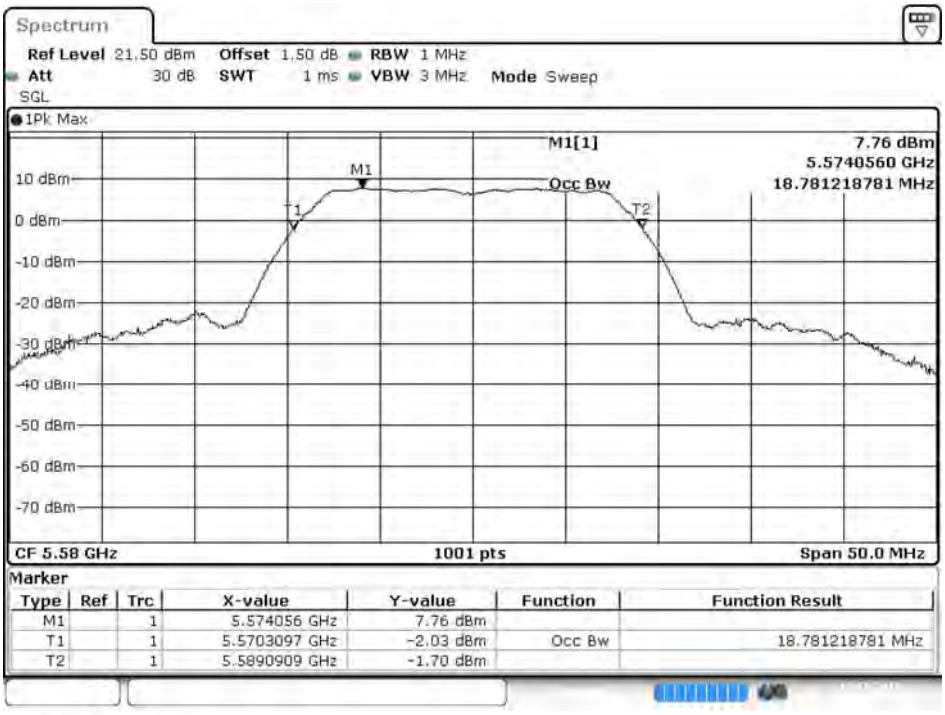
Channel 64 - Chain A



Channel 100 - Chain A



Channel 116 - Chain A



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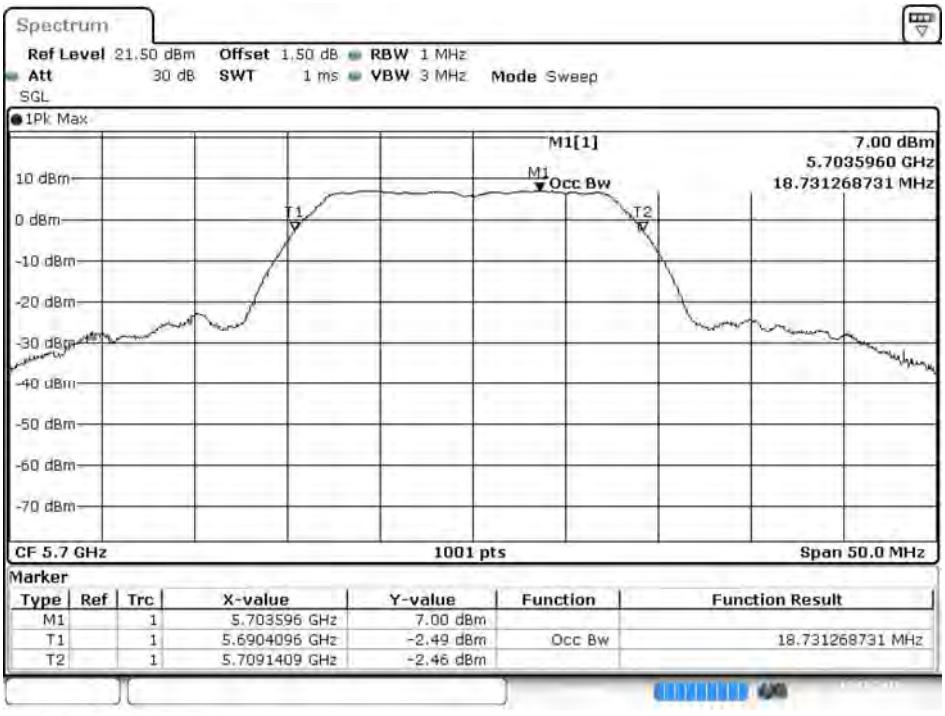
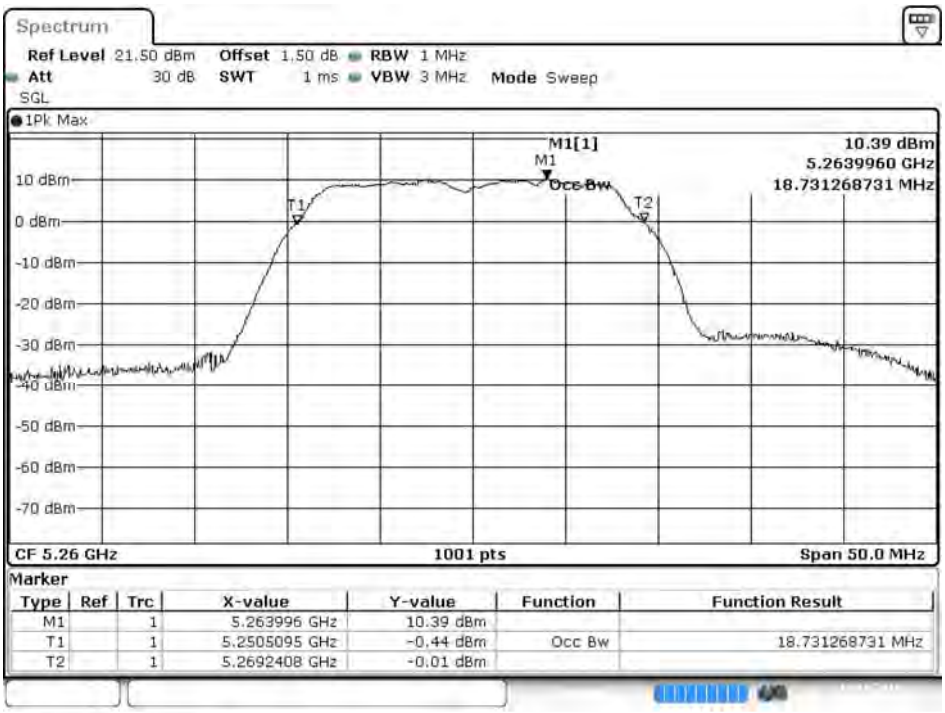
Channel 140 - Chain A



Date: 11.JAN.2018 02:58:22

99% Occupied Bandwidth:
Channel 52 - Chain B



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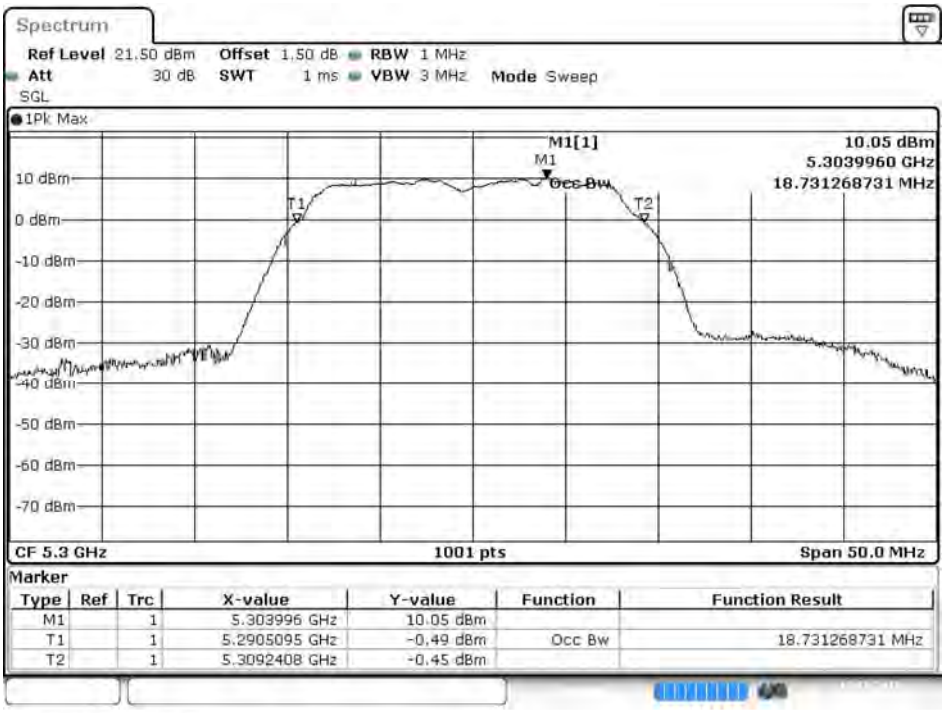
Channel 60 - Chain B



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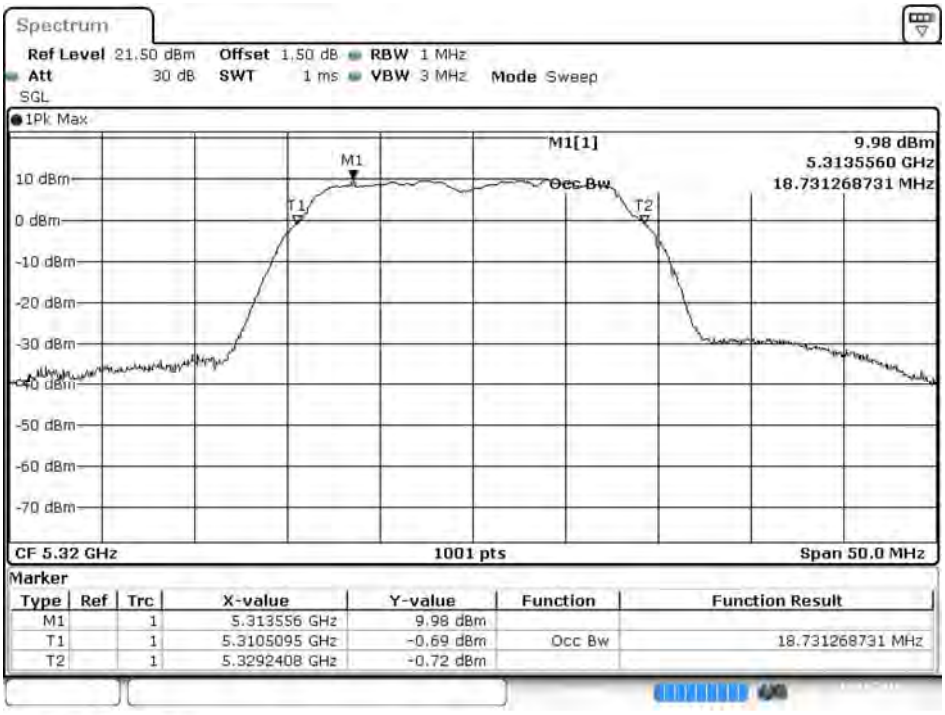
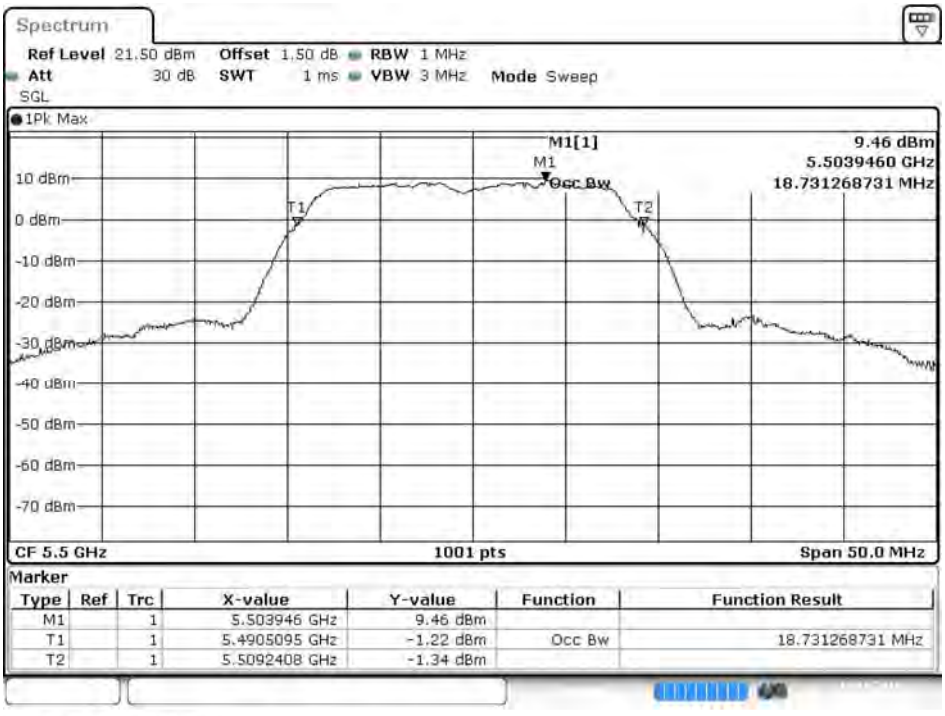
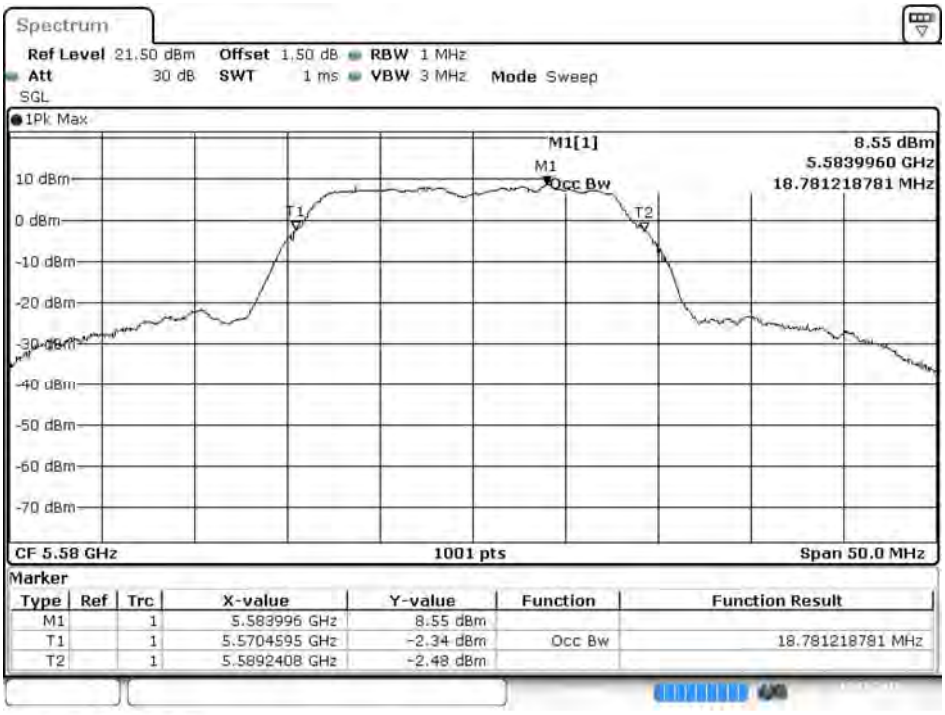
Channel 64 - Chain B



Channel 100 - Chain B

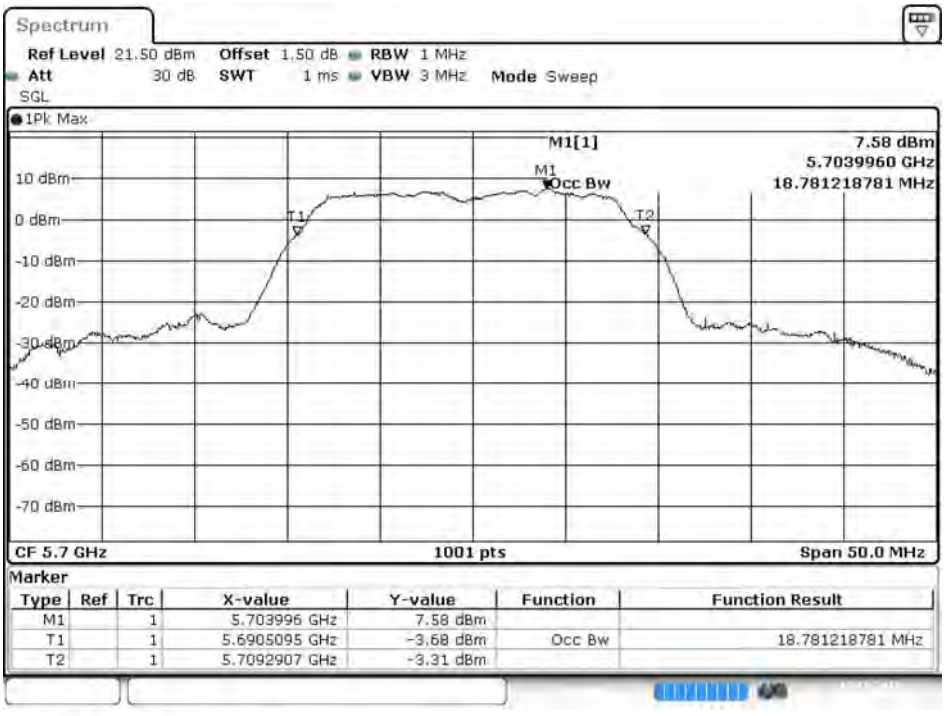


Channel 116 - Chain B



Date: 11.JAN.2018 03:36:18

Channel 140 - Chain B



Date: 11.JAN.2018 03:38:12

Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)
Test Date : 2018/01/11

Chain A

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4
		Measurement Level (dBm)							
36	5180	13.34	--	--	--	--	--	--	--
44	5220	13.28	13.23	12.21	12.19	12.16	12.11	12.08	12.01
48	5240	13.24	--	--	--	--	--	--	--
52	5260	13.23	--	--	--	--	--	--	--
60	5300	13.18	13.16	13.11	13.08	13.04	12.99	12.93	12.91
64	5320	13.32	--	--	--	--	--	--	--
100	5500	12.34	--	--	--	--	--	--	--
116	5580	11.41	11.39	11.35	11.31	11.27	11.26	11.21	11.18
140	5700	10.72	--	--	--	--	--	--	--
149	5745	10.78	--	--	--	--	--	--	--
157	5785	10.76	10.73	10.69	10.64	10.61	10.59	10.54	10.52
165	5825	10.86	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power							
Channel No.	Frequency (MHz)	Data Rate (Mbps)							
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4
		Measurement Level (dBm)							
36	5180	12.03	--	--	--	--	--	--	--
44	5220	12.04	12.01	11.96	11.94	11.92	11.87	11.83	11.81
48	5240	11.82	--	--	--	--	--	--	--
52	5260	11.72	--	--	--	--	--	--	--
60	5300	11.73	11.71	11.69	11.64	11.61	11.58	11.55	11.52
64	5320	11.51	--	--	--	--	--	--	--
100	5500	11.22	--	--	--	--	--	--	--
116	5580	11.35	11.32	11.29	11.27	11.24	11.17	11.14	11.11
140	5700	10.27	--	--	--	--	--	--	--
149	5745	10.03	--	--	--	--	--	--	--
157	5785	9.98	9.96	9.92	9.87	9.81	9.79	9.75	9.74
165	5825	9.76	--	--	--	--	--	--	--

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

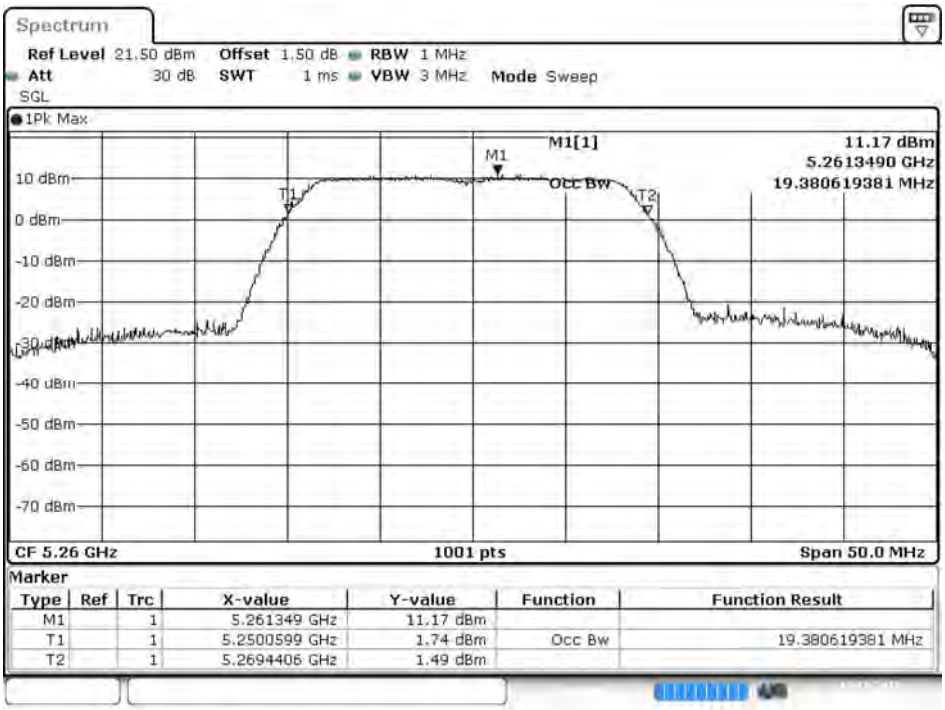
(**Chain A+ B)**

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	11dBm+10log(B)
36	5180	--	13.34	12.03	15.74	24	--
44	5220	--	13.28	12.04	15.71	24	--
48	5240	--	13.24	11.82	15.60	24	--
52	5260	19.130	13.23	11.72	15.55	24	23.82
60	5300	19.130	13.18	11.73	15.53	24	23.82
64	5320	19.080	13.32	11.51	15.52	24	23.81
100	5500	19.180	12.34	11.22	14.83	24	23.83
116	5580	19.180	11.41	11.35	14.39	24	23.83
140	5700	19.180	10.72	10.27	13.51	24	23.83
149	5745	--	10.78	10.03	13.43	30	--
157	5785	--	10.76	9.98	13.40	30	--
165	5825	--	10.86	9.76	13.36	30	--

Note:

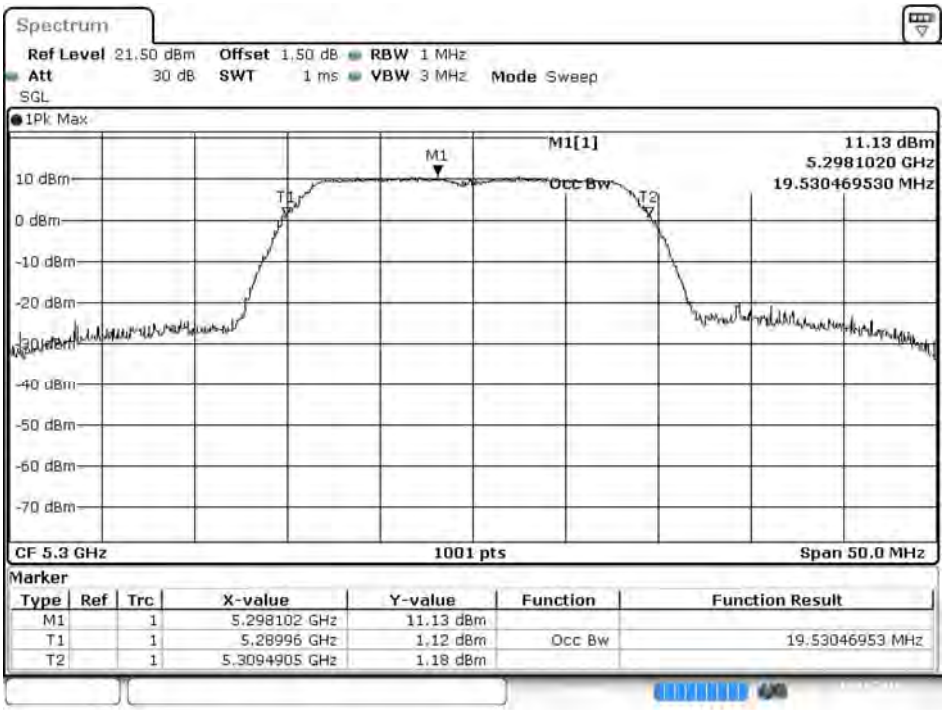
1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))
3. 99% Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

99% Occupied Bandwidth:
Channel 52 - Chain A



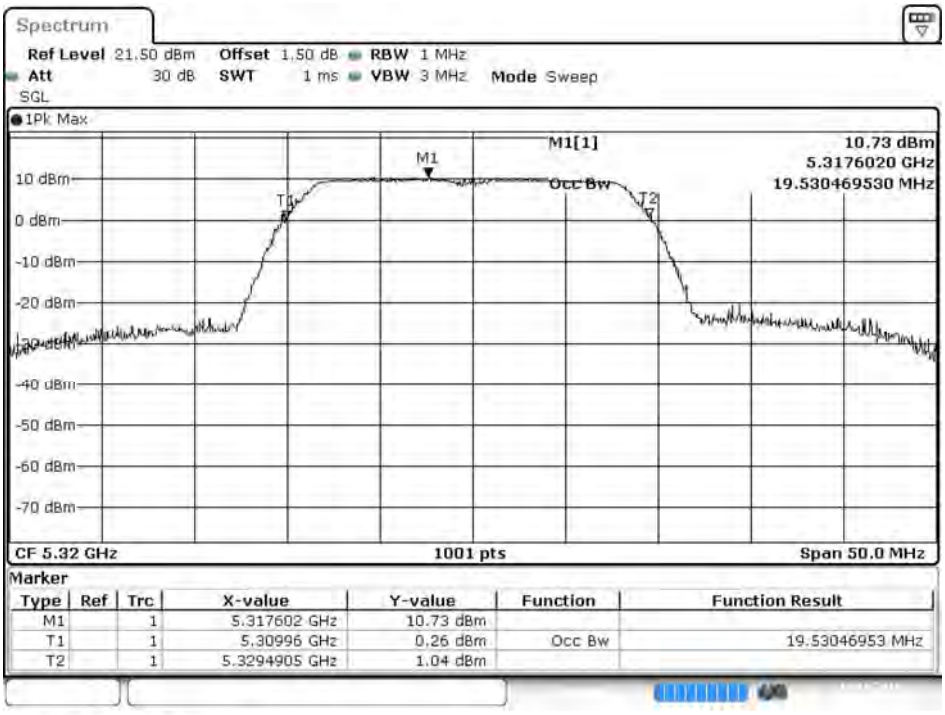
Date: 11.JAN.2018 03:02:16

Channel 60 - Chain A

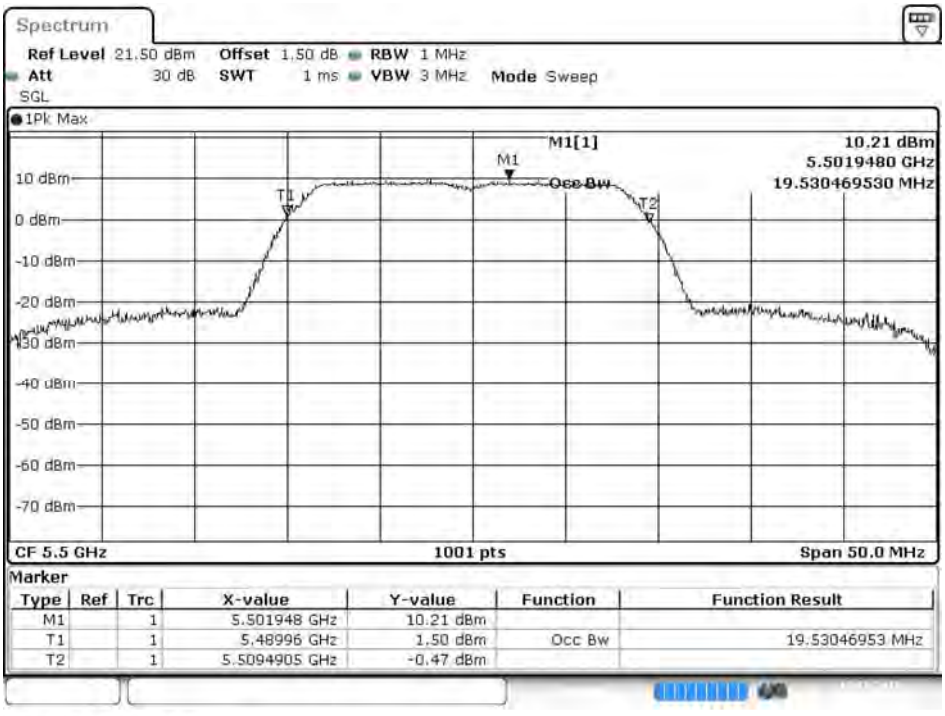


Date: 11.JAN.2018 03:03:25

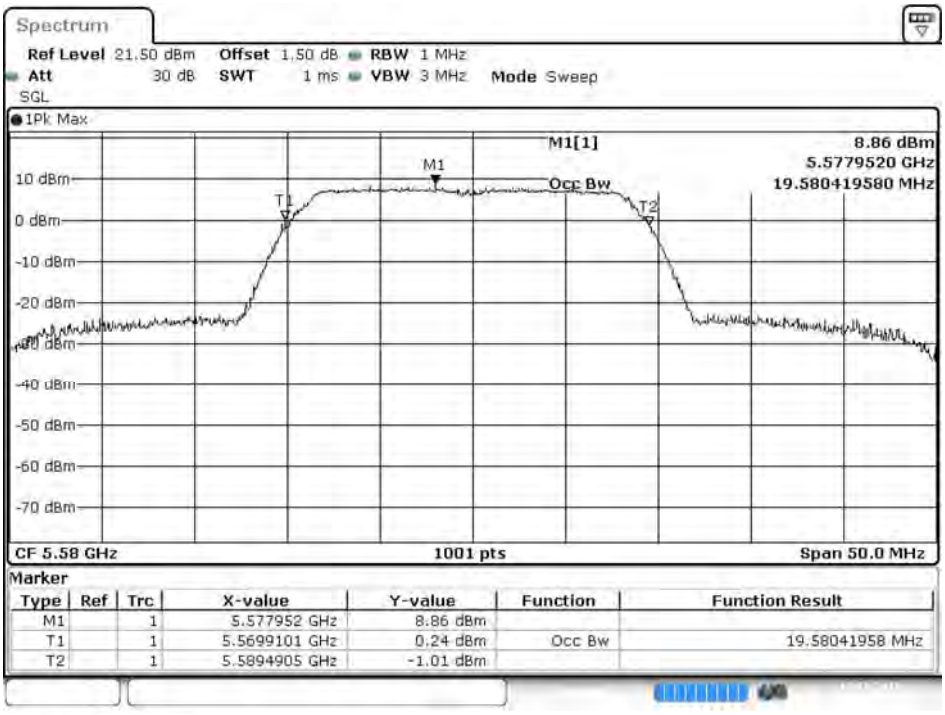
Channel 64 - Chain A



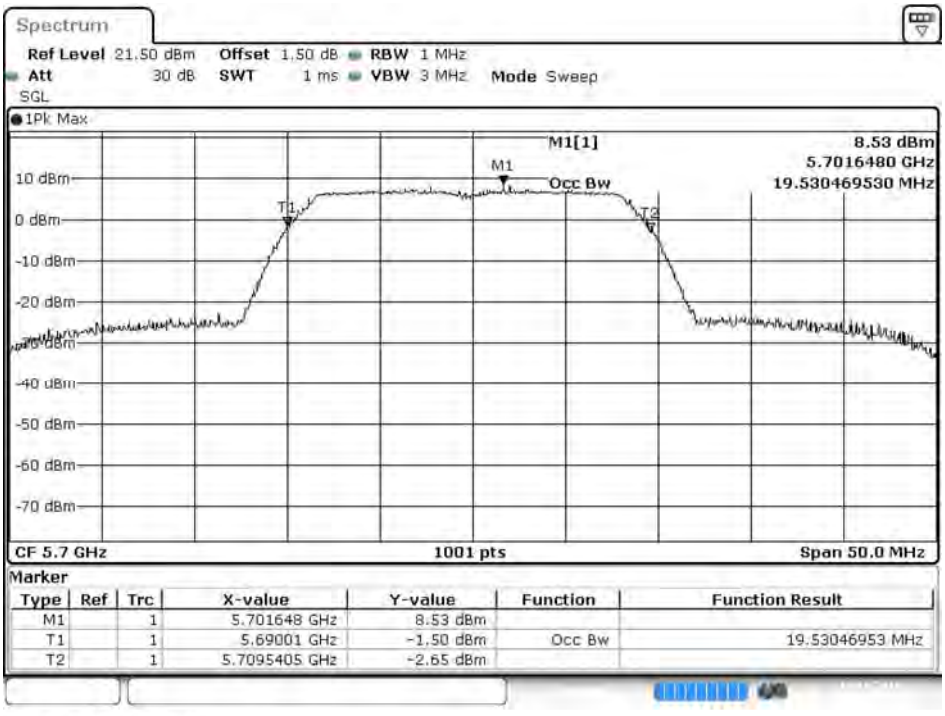
Channel 100 - Chain A



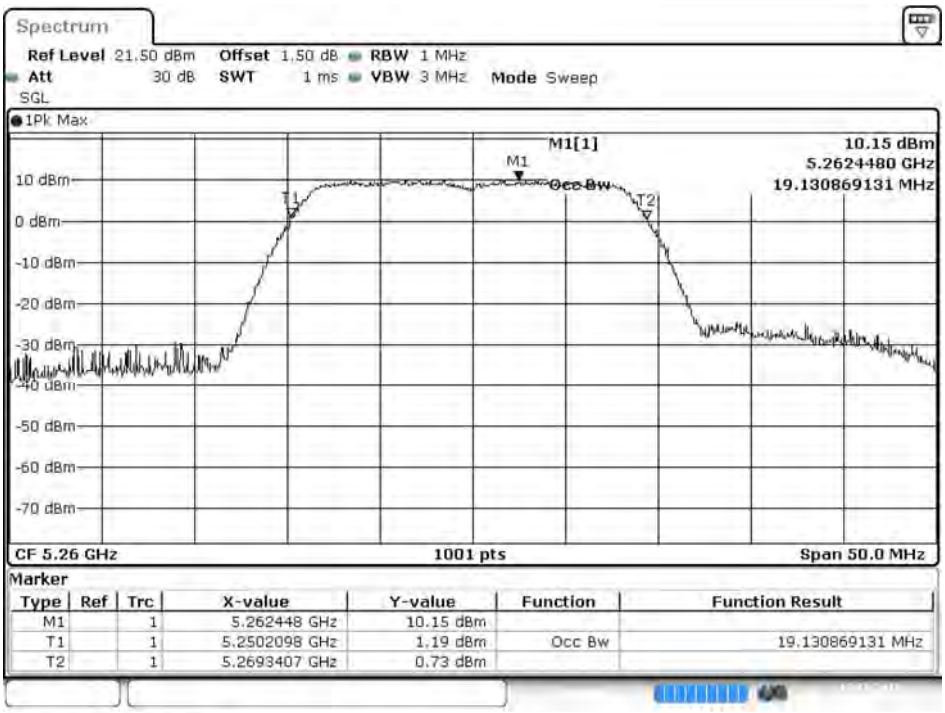
Channel 116 - Chain A



Channel 140 - Chain A

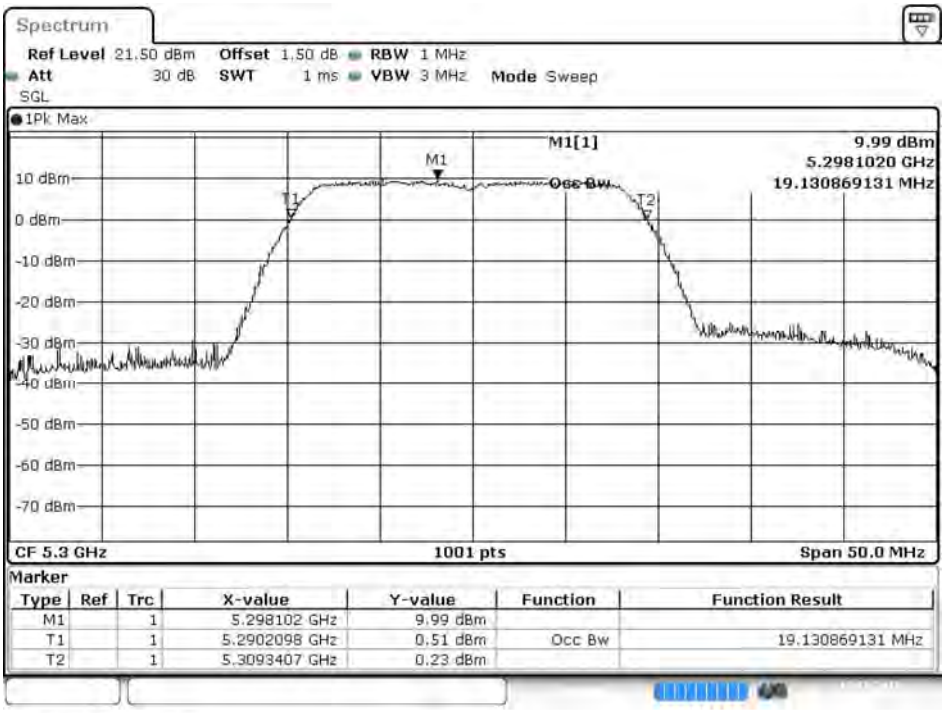


99% Occupied Bandwidth:
Channel 52 - Chain B



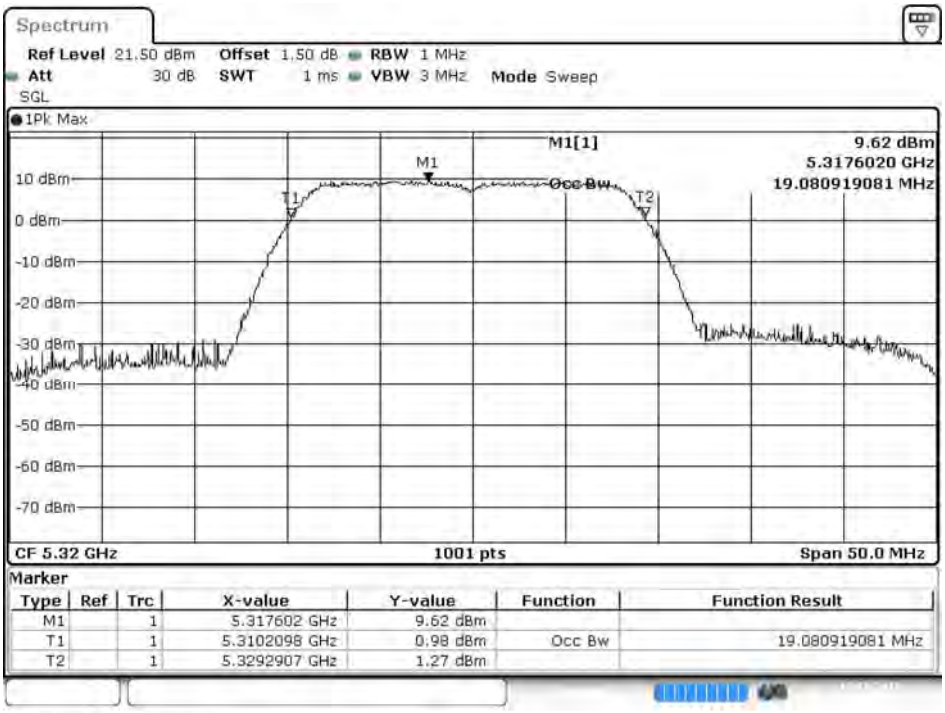
Date: 11.JAN.2018 03:41:39

Channel 60 - Chain B



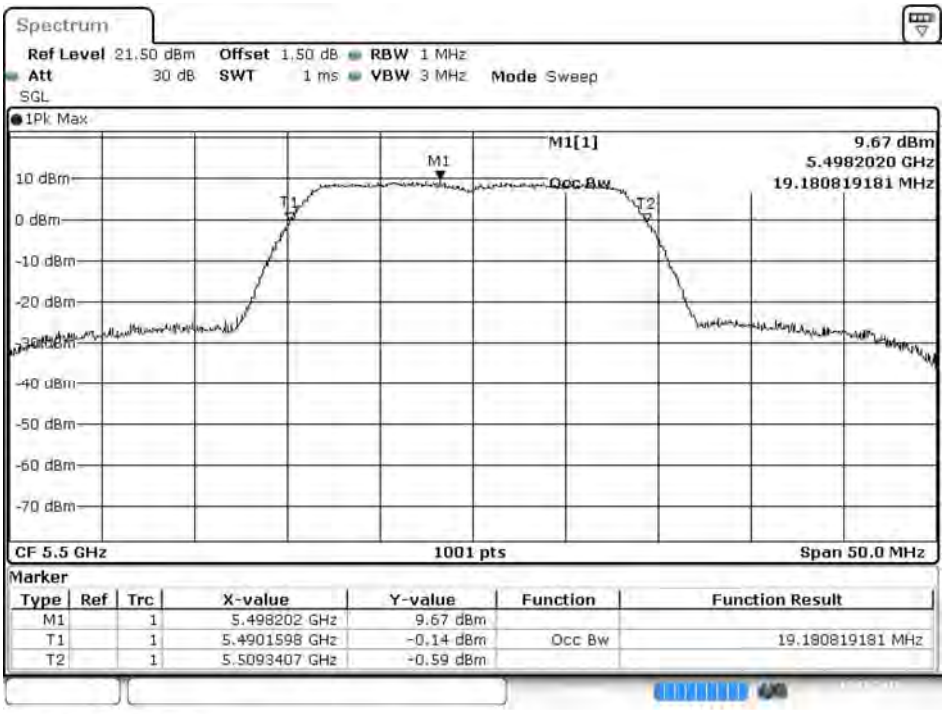
Date: 11.JAN.2018 03:42:30

Channel 64 - Chain B



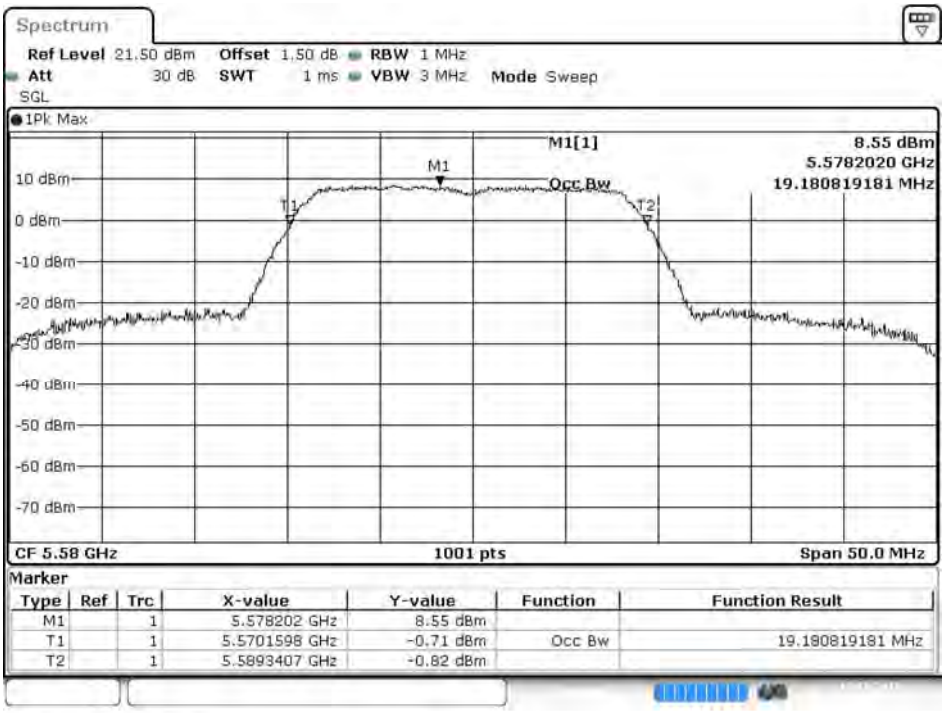
Date: 11.JAN.2018 03:43:19

Channel 100 - Chain B



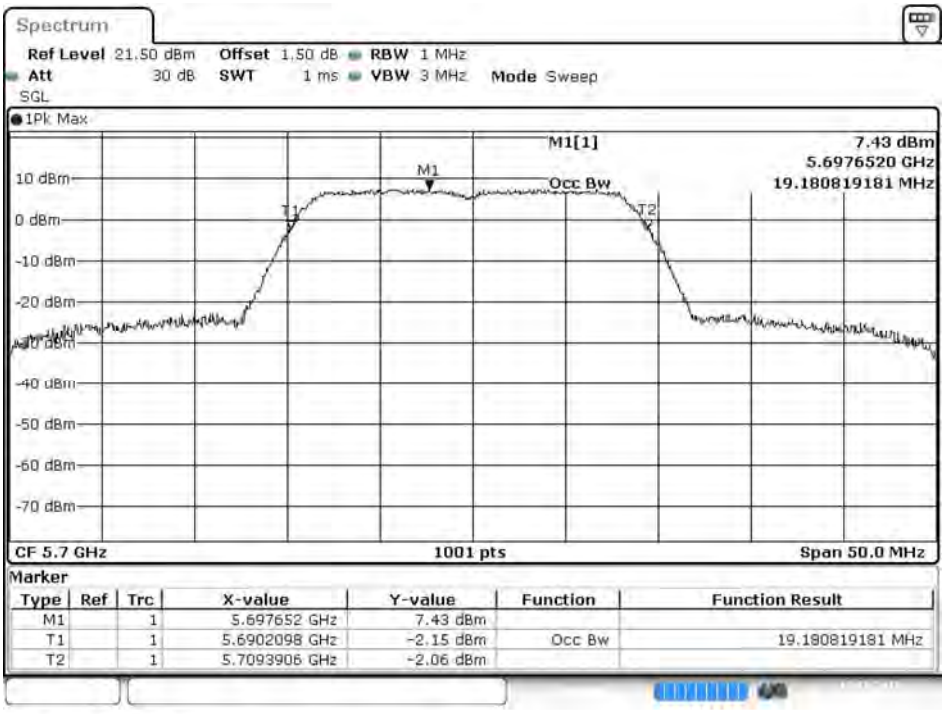
Date: 11.JAN.2018 03:44:09

Channel 116 - Chain B



Date: 11.JAN.2018 03:44:59

Channel 140 - Chain B



Date: 11.JAN.2018 03:46:38

Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps)
Test Date : 2018/01/11

Chain A

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	9.98	--	--	--	--	--	--	--	<30dBm
46	5230	13.94	13.91	13.88	13.86	13.82	13.78	13.74	13.72	<30dBm
54	5270	13.87	--	--	--	--	--	--	--	<24dBm
62	5310	10.82	10.77	10.75	10.71	10.68	10.66	10.62	10.55	<24dBm
102	5510	9.93	--	--	--	--	--	--	--	<24dBm
110	5550	11.86	11.84	11.81	11.76	11.74	11.71	11.69	11.65	<24dBm
134	5670	10.72	--	--	--	--	--	--	--	<24dBm
151	5755	10.97	--	--	--	--	--	--	--	<30dBm
159	5795	10.51	10.48	10.46	10.41	10.39	10.35	10.33	10.27	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	9.05	--	--	--	--	--	--	--	<30dBm
46	5230	12.82	12.78	12.75	12.69	12.65	12.62	12.57	12.52	<30dBm
54	5270	12.51	--	--	--	--	--	--	--	<24dBm
62	5310	9.25	9.22	9.18	9.15	9.11	9.08	9.05	9.01	<24dBm
102	5510	9.31	--	--	--	--	--	--	--	<24dBm
110	5550	11.71	11.76	11.72	11.67	11.63	11.61	11.58	11.52	<24dBm
134	5670	9.84	--	--	--	--	--	--	--	<24dBm
151	5755	9.85	--	--	--	--	--	--	--	<30dBm
159	5795	9.17	9.13	9.09	9.05	9	8.88	8.84	8.81	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

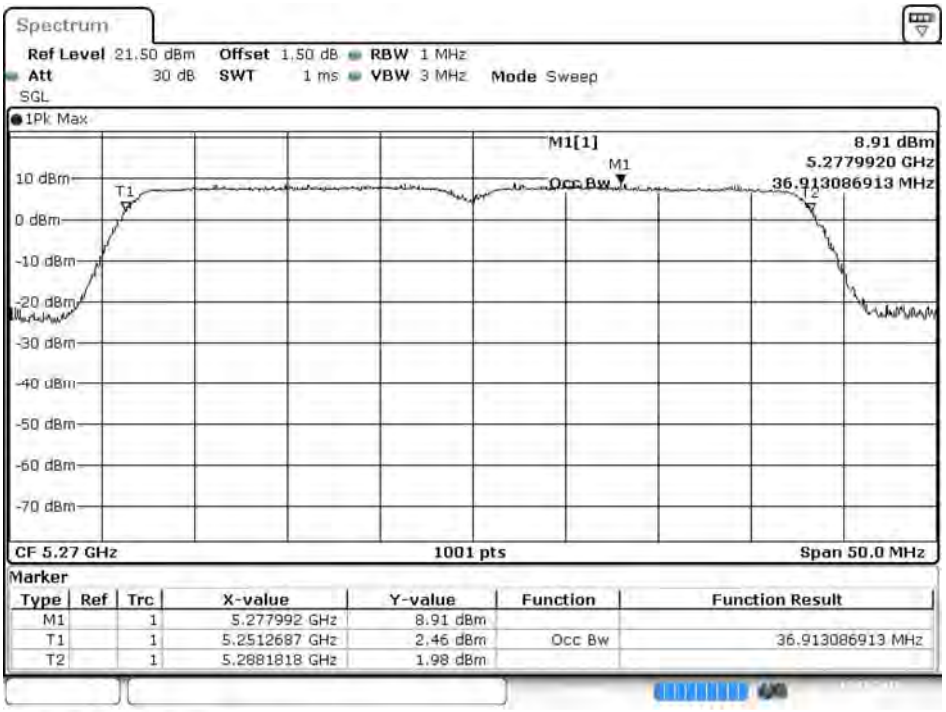
(**Chain A+ B)**

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	11dBm+10log(B)
38	5190	--	9.98	9.05	12.55	24	--
46	5230	--	13.94	12.82	16.43	24	--
54	5270	36.763	13.87	12.51	16.25	24	26.65
62	5310	36.713	10.82	9.25	13.12	24	26.65
102	5510	36.863	9.93	9.31	12.64	24	26.67
110	5550	36.863	11.86	11.76	14.82	24	26.67
134	5670	36.863	10.72	9.84	13.31	24	26.67
151	5755	--	10.97	9.85	13.46	30	--
159	5795	--	10.51	9.17	12.90	30	--

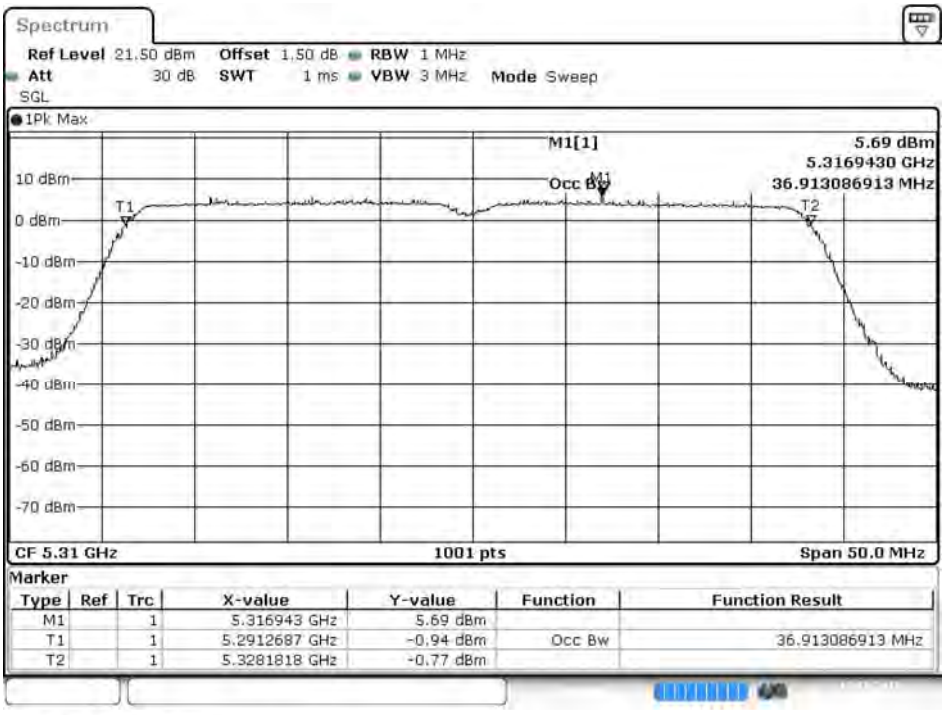
Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))
3. 99% Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

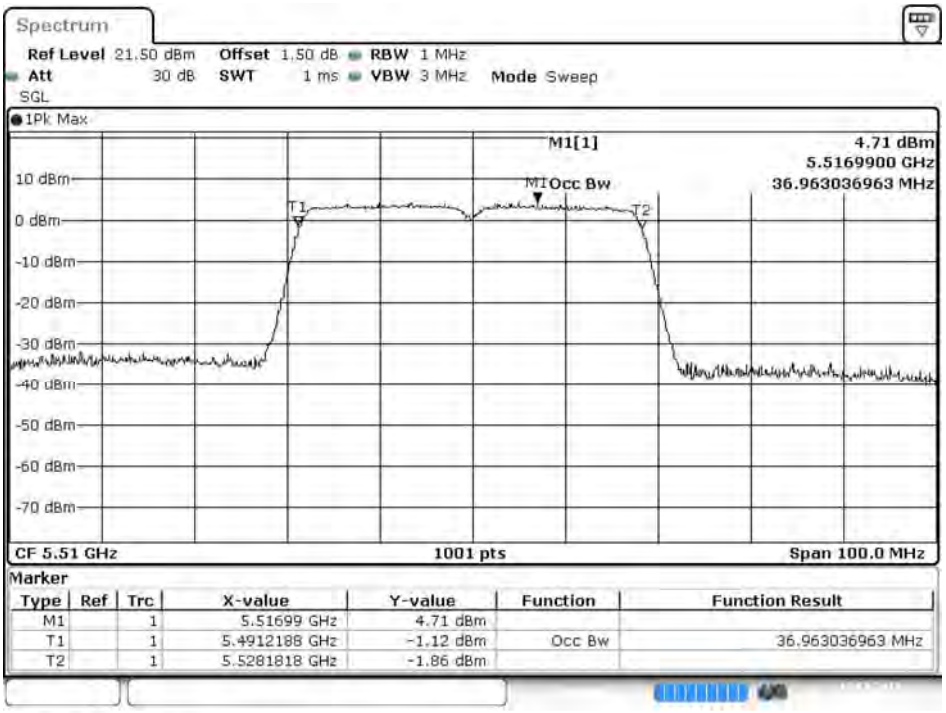
99% Occupied Bandwidth:
Channel 54 – Chain A



Channel 62 – Chain A

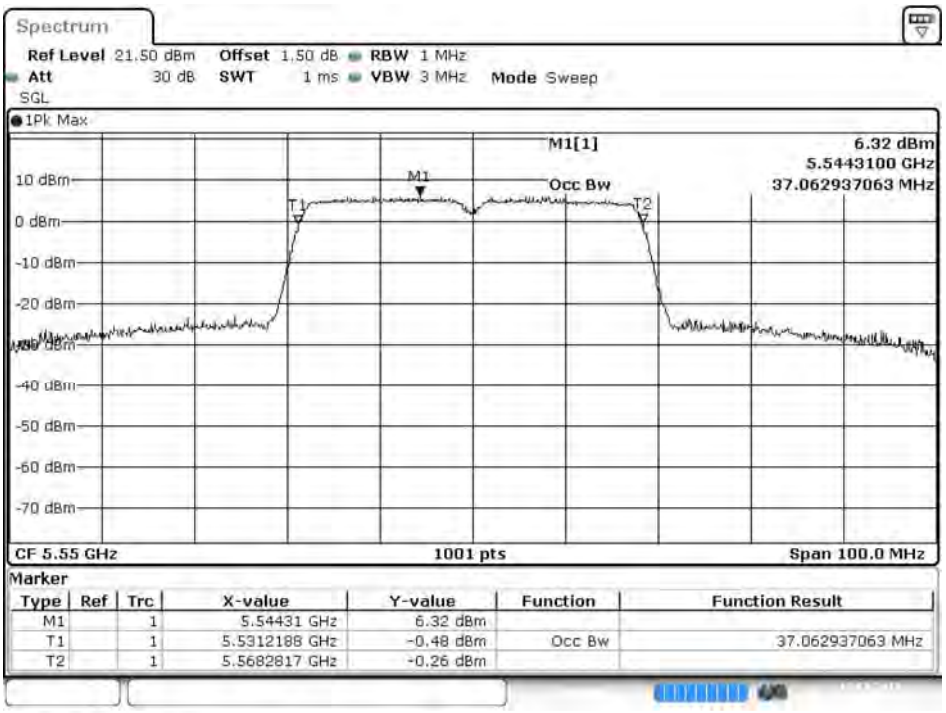


Channel 102 – Chain A



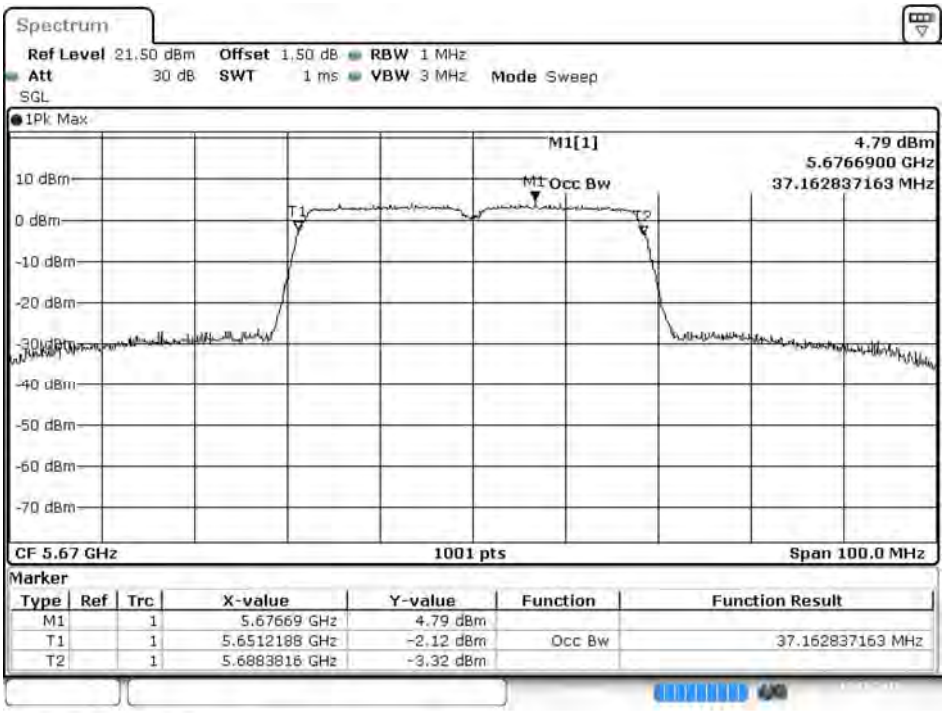
Date: 11.JAN.2018 03:12:00

Channel 110 – Chain A

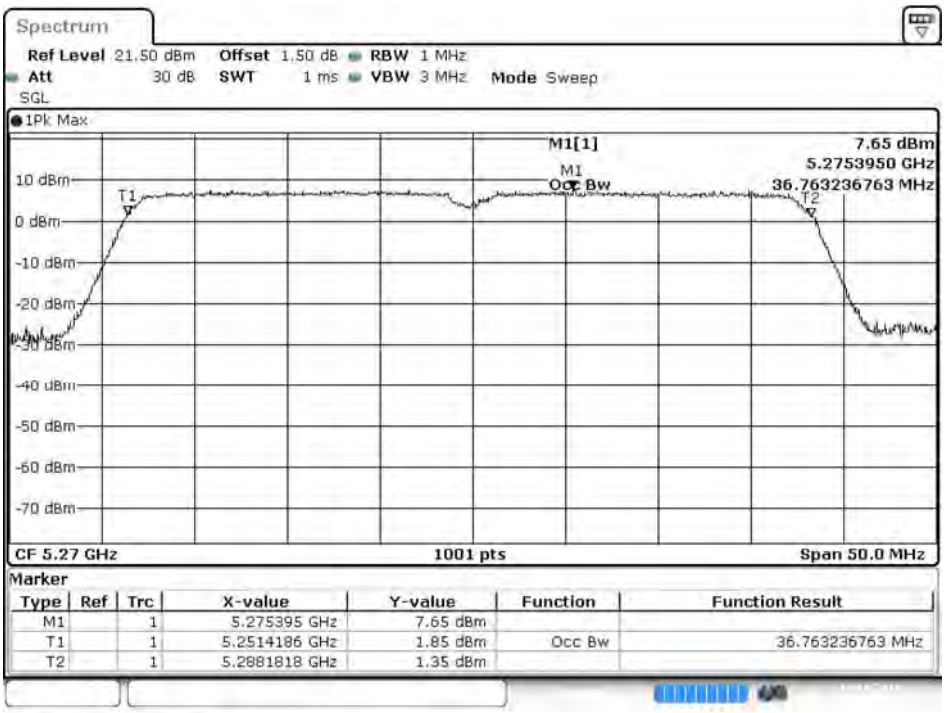


Date: 11.JAN.2018 03:12:50

Channel 134 – Chain A

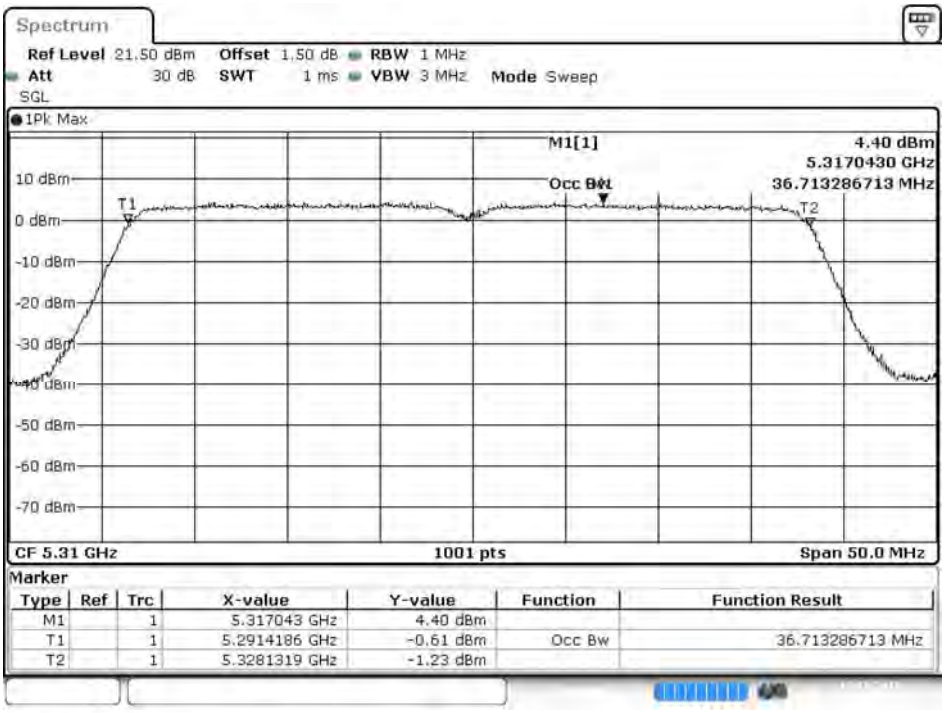


99% Occupied Bandwidth:
Channel 54 – Chain B



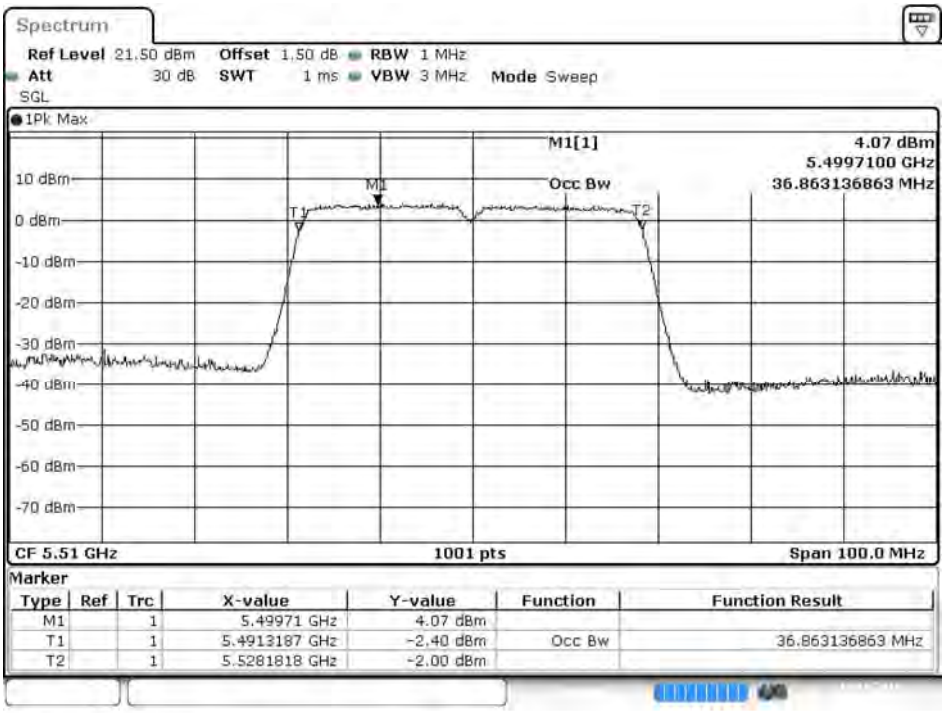
Date: 11.JAN.2018 03:49:10

Channel 62 – Chain B



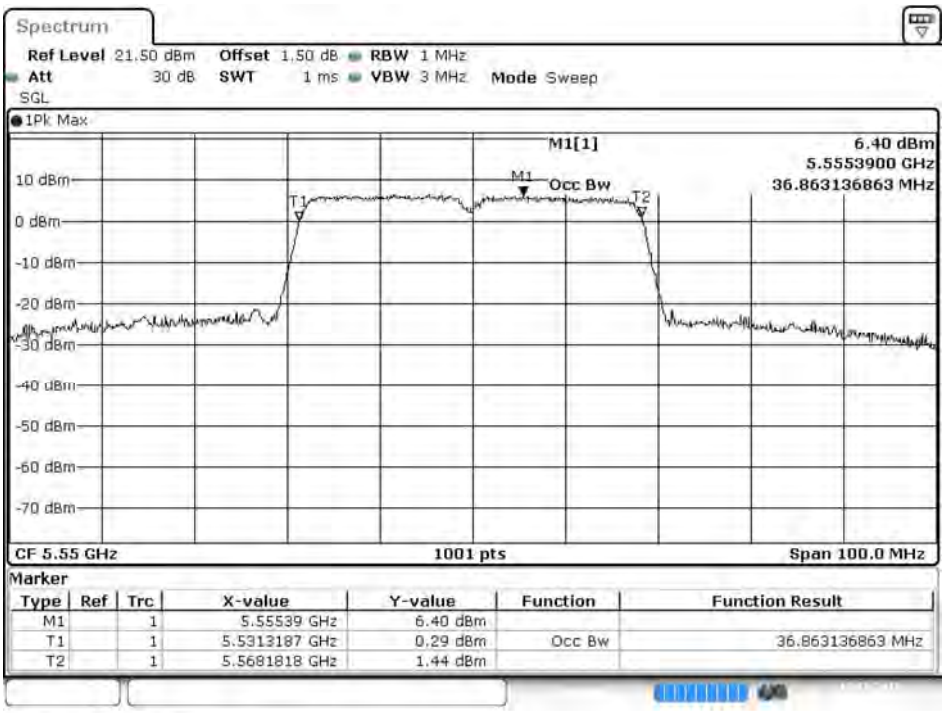
Date: 11.JAN.2018 03:50:00

Channel 102 – Chain B



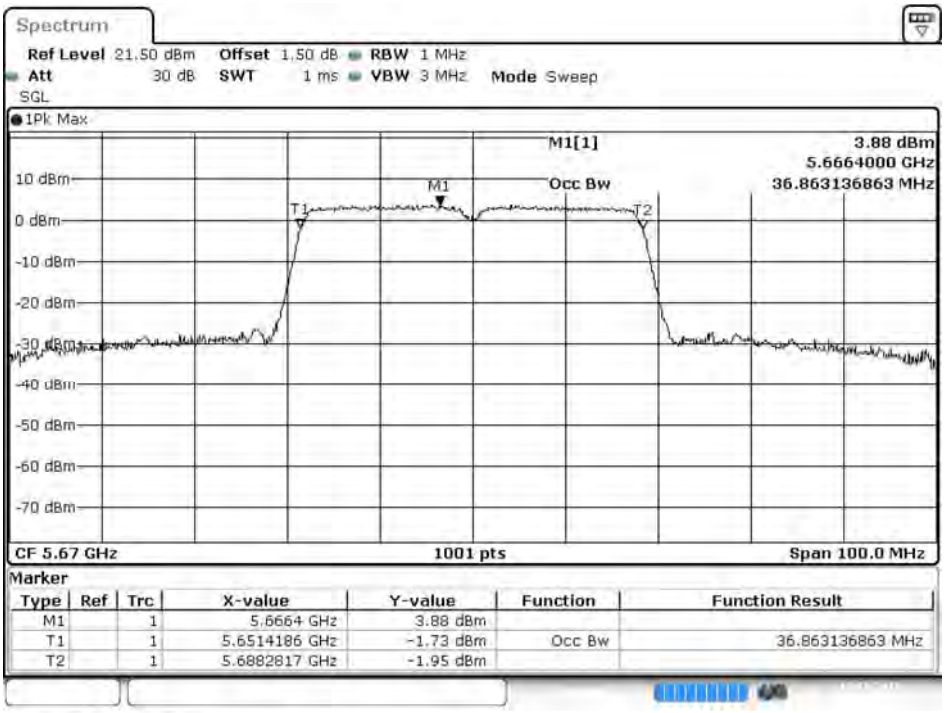
Date: 11.JAN.2018 03:50:50

Channel 110 – Chain B



Date: 11.JAN.2018 03:51:39

Channel 134 – Chain B



Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 4: Transmit (802.11ac-20BW-7.2Mbps)
Test Date : 2018/01/11

Chain A

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8
		Measurement Level (dBm)								
144 (Band3)	5720	7.94	7.91	7.89	7.85	7.77	7.76	7.68	7.66	7.61
144 (Band4)	5720	2.1	1.98	1.95	1.89	1.86	1.74	1.71	1.67	1.62

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8
		Measurement Level (dBm)								
144 (Band3)	5720	9.62	9.59	9.52	9.48	9.43	9.37	9.32	9.28	9.21
144 (Band4)	5720	3.46	3.44	3.38	3.36	3.29	3.24	3.18	3.16	3.05

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

(Chain A+ B)

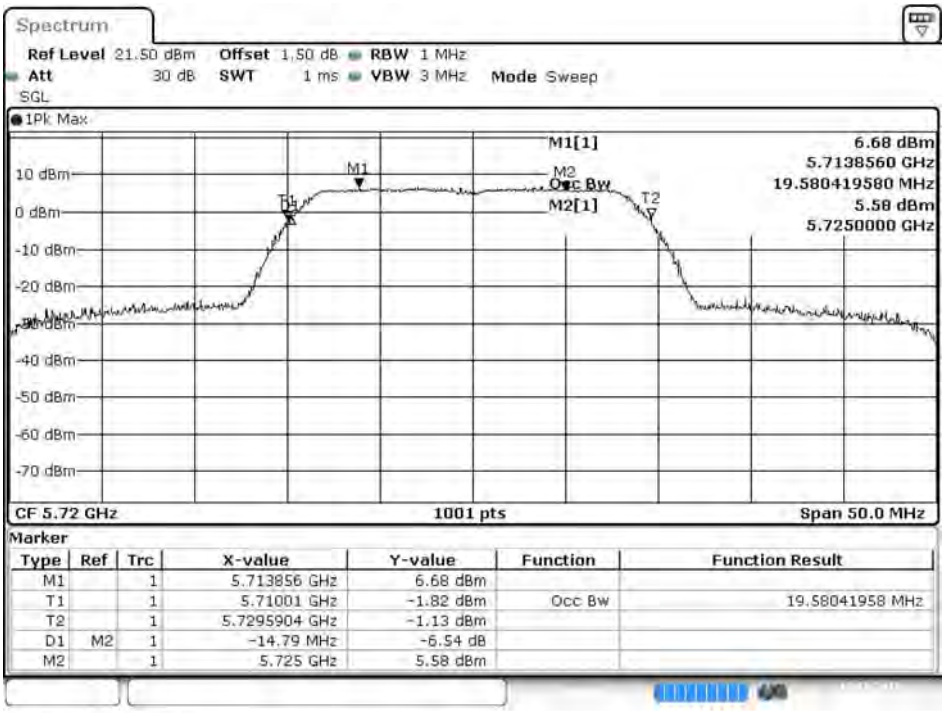
Channel Number	Frequency	26dB Bandwidth	Chain A Power	Chain B Power	Output Power	Output Power Limit	
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	dBm+10log(BW)
144 (Band3)	5720	14.565	7.940	9.620	11.87	24	22.63
144 (Band4)	5720	--	2.100	3.460	5.84	30	--

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW) + Chain B Power (mW))
3. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

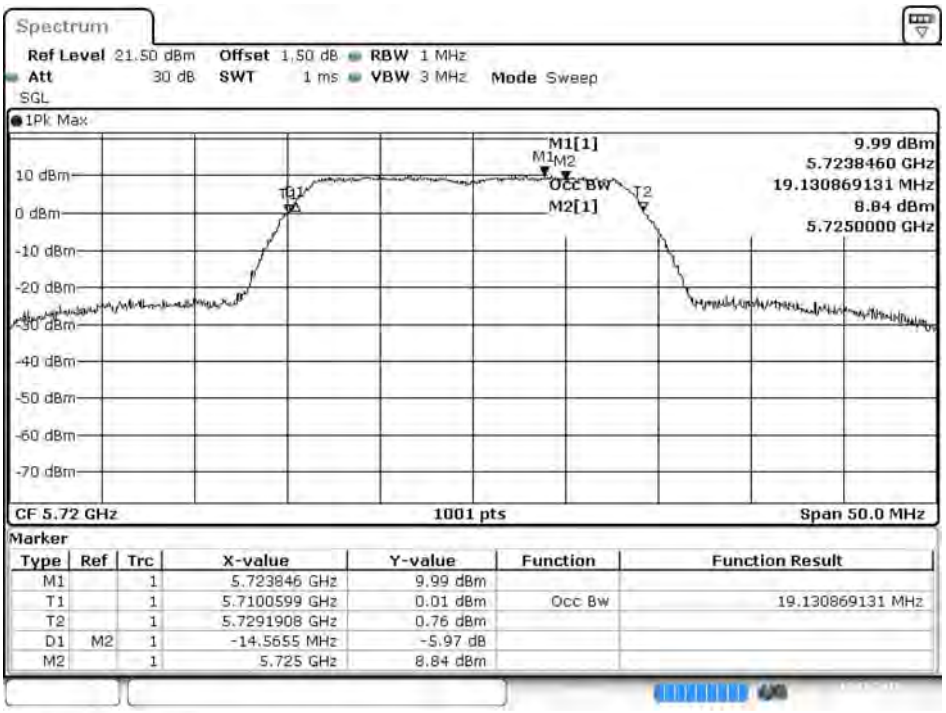
99% Occupied Bandwidth:

Channel 144: Chain A



Date: 11.JAN.2018 04:38:40

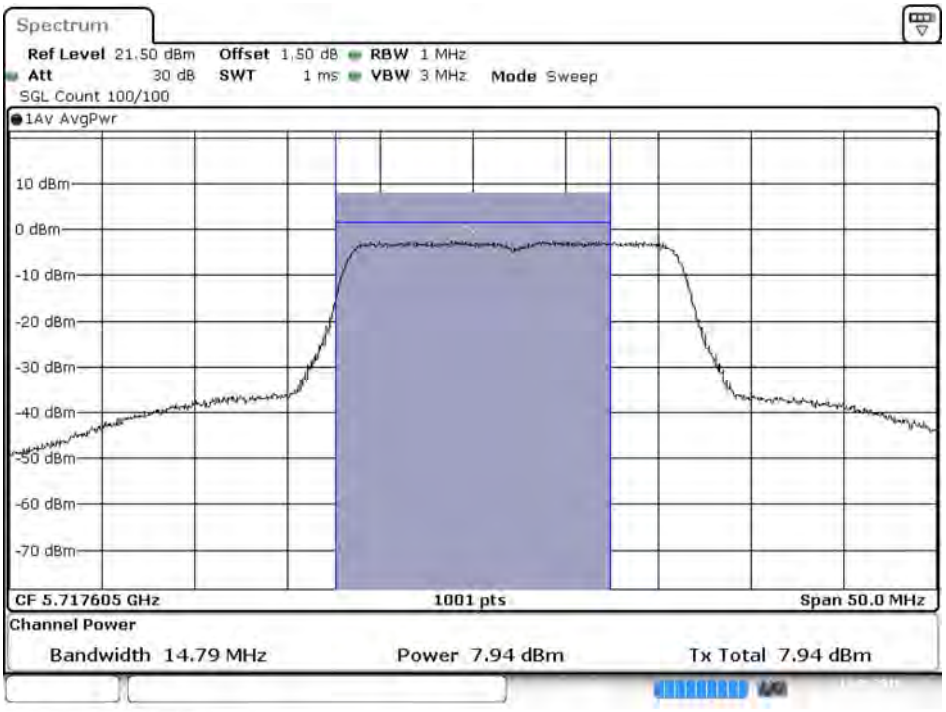
Channel 144: Chain B



Date: 11.JAN.2018 04:16:28

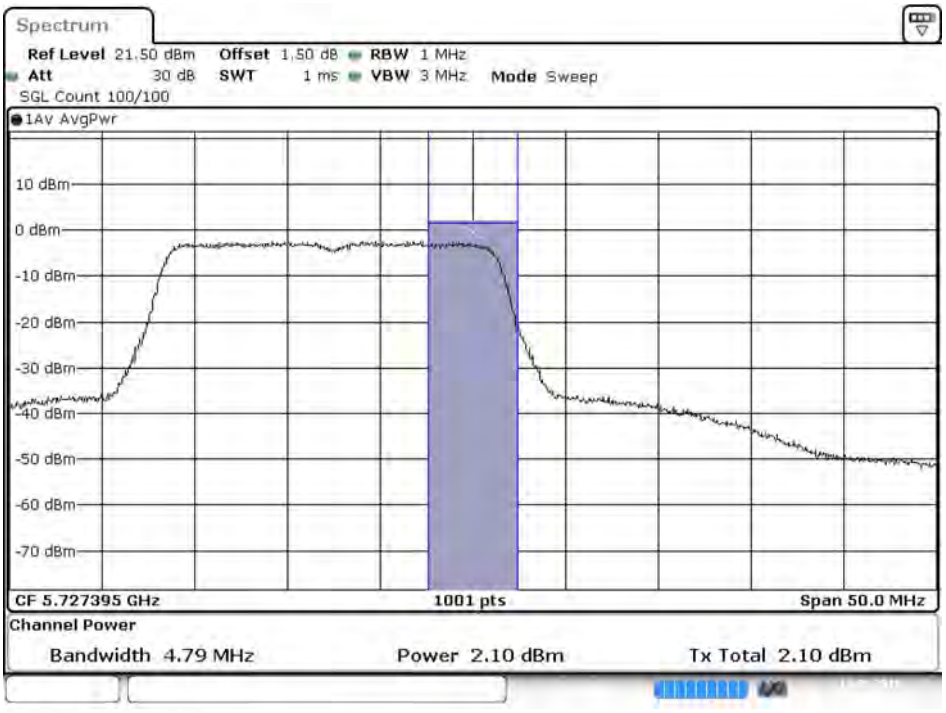
Maximum conducted output power:

Channel 144: Chain A



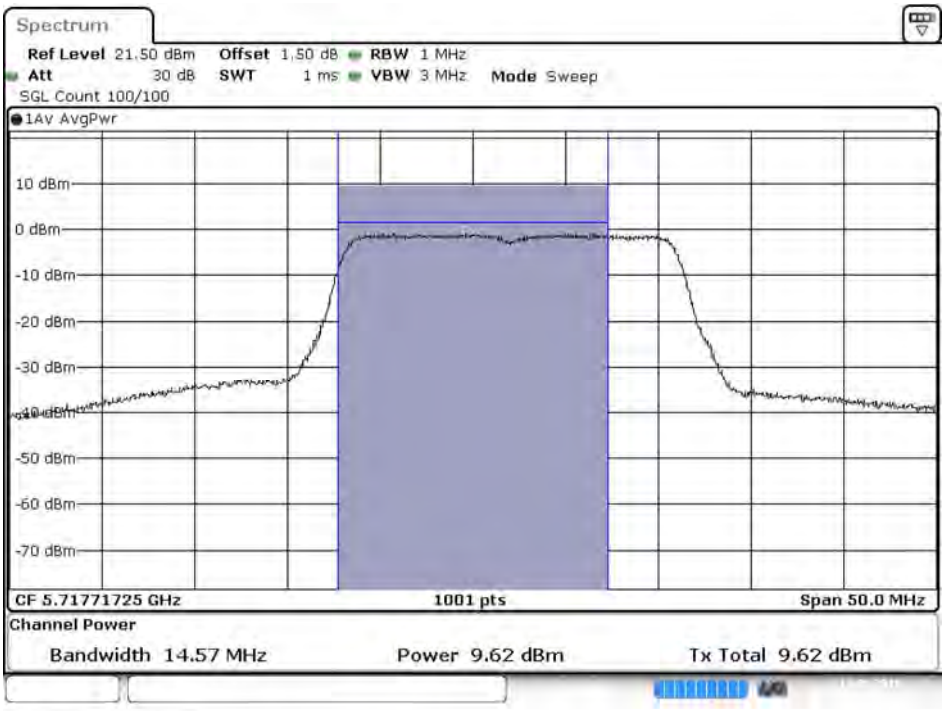
Date: 11.JAN.2018 04:39:41

Channel 144: Chain A



Date: 11.JAN.2018 04:40:04

Channel 144: Chain B



Date: 11.JAN.2018 04:17:30

Channel 144: Chain B

Date: 11.JAN.2018 04:17:52

Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 5: Transmit (802.11ac-40BW-15Mbps)
Test Date : 2018/01/11

Chain A

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
142(Band3)	5710	8.77	8.73	8.66	8.62	8.58	8.51	8.43	8.42	8.37	8.32
142(Band4)	5710	-1.71	-1.82	-1.86	-1.93	-1.95	-2.03	-2.09	-2.12	-2.18	-2.26

Note: 1.Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
142(Band3)	5710	8.4	8.38	8.36	8.32	8.29	8.24	8.18	8.13	8.08	8.01
142(Band4)	5710	-2.3	-2.38	-2.42	-2.47	-2.53	-2.59	-2.61	-2.66	-2.75	-2.79

Note: 1.Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

(Chain A+ B)

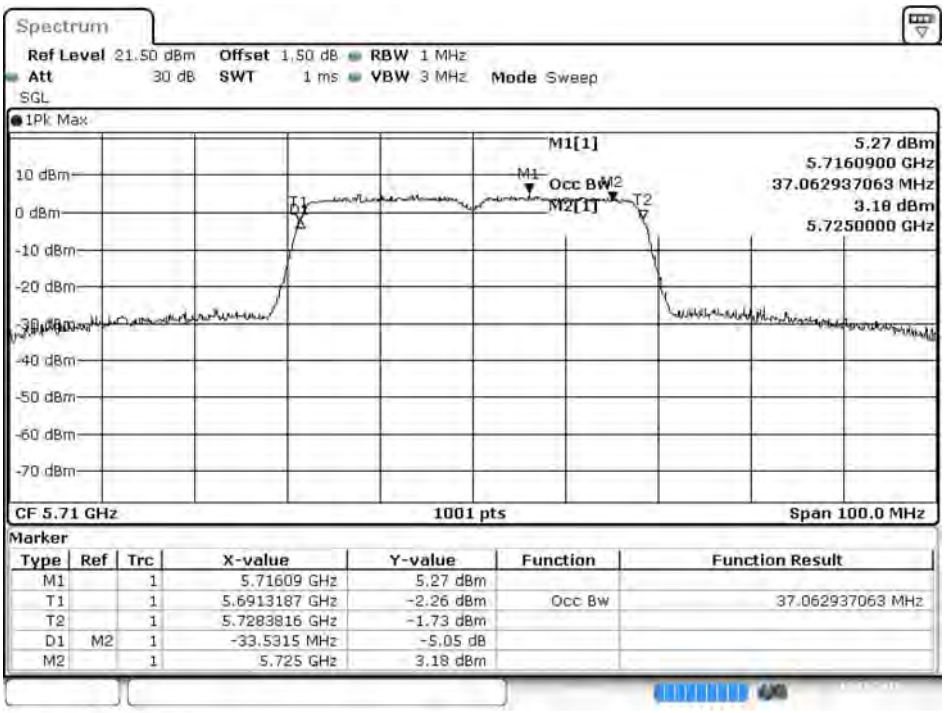
Channel Number	Frequency	26dB Bandwidth	Chain A Power	Chain B Power	Output Power	Output Power Limit	
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	dBm+10log(BW)
142(Band3)	5710	33.481	8.770	8.400	11.60	24	26.25
142(Band4)	5710	--	-1.710	-2.300	1.02	30	--

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW) + Chain B Power (mW))
3. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

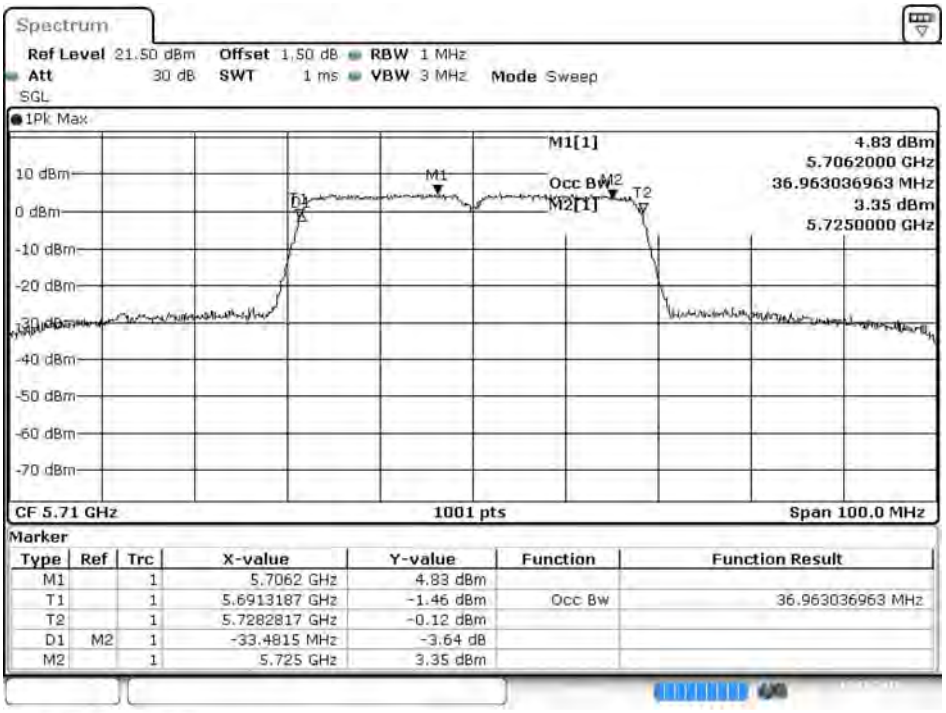
99% Occupied Bandwidth:

Channel 142: Chain A



Date: 11.JAN.2018 04:40:56

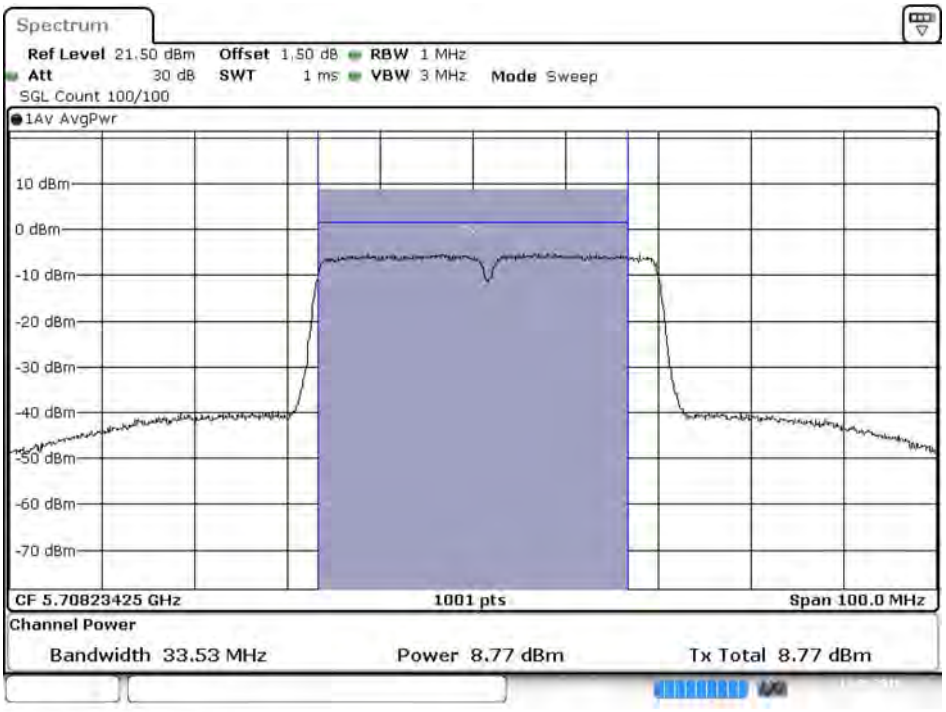
Channel 142: Chain B



Date: 11.JAN.2018 04:18:54

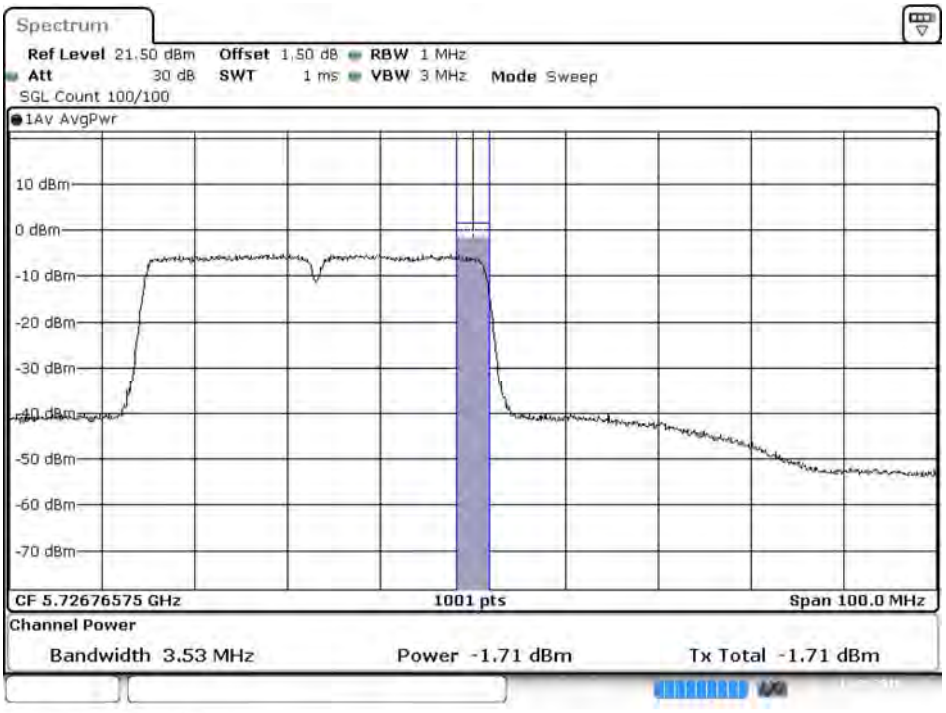
Maximum conducted output power:

Channel 142: Chain A



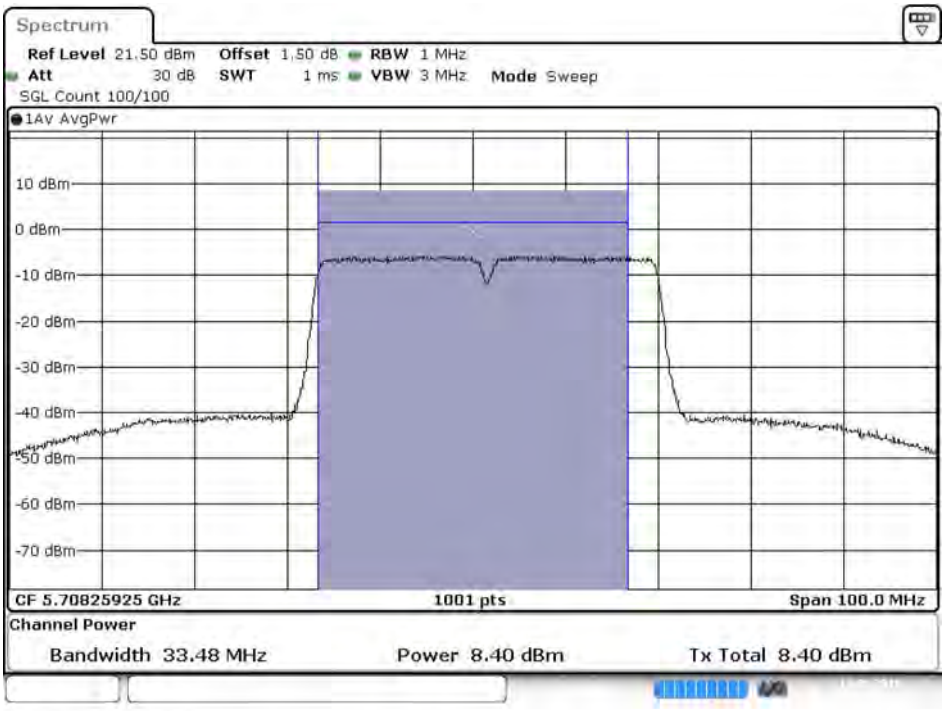
Date: 11.JAN.2018 04:41:58

Channel 142: Chain A



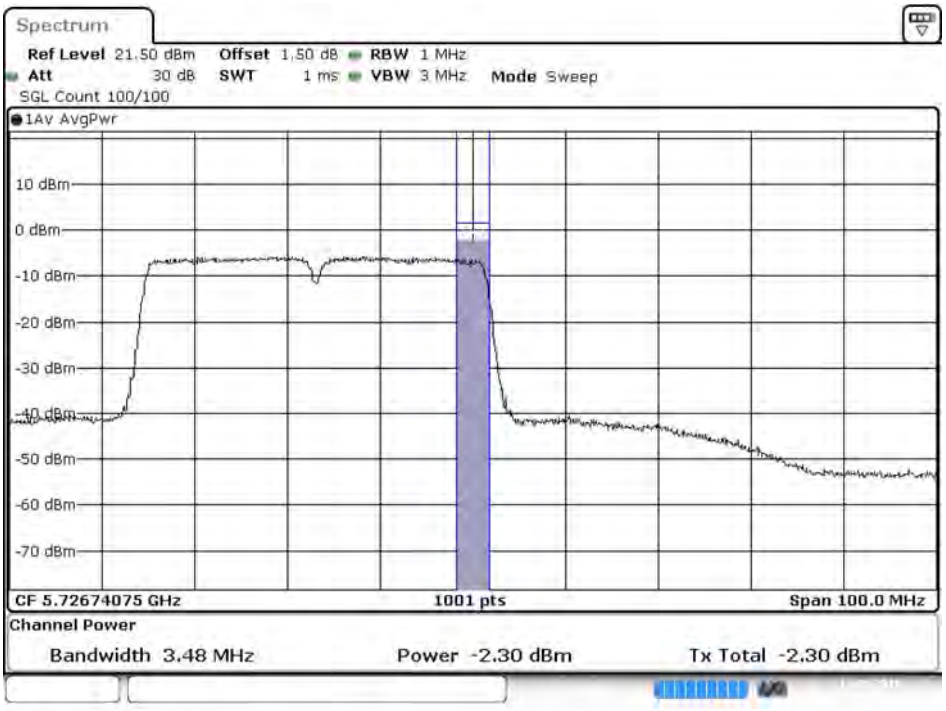
Date: 11.JAN.2018 04:42:20

Channel 142: Chain B



Date: 11.JAN.2018 04:19:56

Channel 142: Chain B



Date: 11.JAN.2018 04:20:19

Product : Network Appliance
Test Item : Maximum conducted output power
Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps)
Test Date : 2018/01/12

Chain A

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	8.71	8.69	8.65	8.57	8.53	8.48	8.42	8.39	8.32	8.28
58	5290	10.54	10.51	10.49	10.43	10.37	10.32	10.27	10.21	10.19	10.13
106	5530	5.9	--	--	--	--	--	--	--	--	--
122	5610	7.96	7.92	7.87	7.82	7.76	7.71	7.69	7.62	7.58	7.52
138(Band3)	5690	7.75	--	--	--	--	--	--	--	--	--
138(Band4)	5690	-6.82	--	--	--	--	--	--	--	--	--
155	5775	8.46	8.41	8.39	8.35	8.27	8.25	8.16	8.11	8.08	8.04

Note: 1.Maximum conducted output power Value =Reading value on average power meter + cable loss

Chain B

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	7.69	7.62	7.59	7.53	7.48	7.44	7.37	7.36	7.28	7.21
58	5290	9.14	9.11	9.09	9.05	8.97	8.93	8.84	8.81	8.76	8.72
106	5530	5.81	--	--	--	--	--	--	--	--	--
122	5610	8.01	7.99	7.95	7.89	7.82	7.76	7.71	7.68	7.62	7.57
138(Band3)	5690	7.35	--	--	--	--	--	--	--	--	--
138(Band4)	5690	-7.04	--	--	--	--	--	--	--	--	--
155	5775	7.33	7.31	7.29	7.26	7.15	7.11	7.09	7.05	6.97	6.95

Note: 1.Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

(**Chain A+ B)**

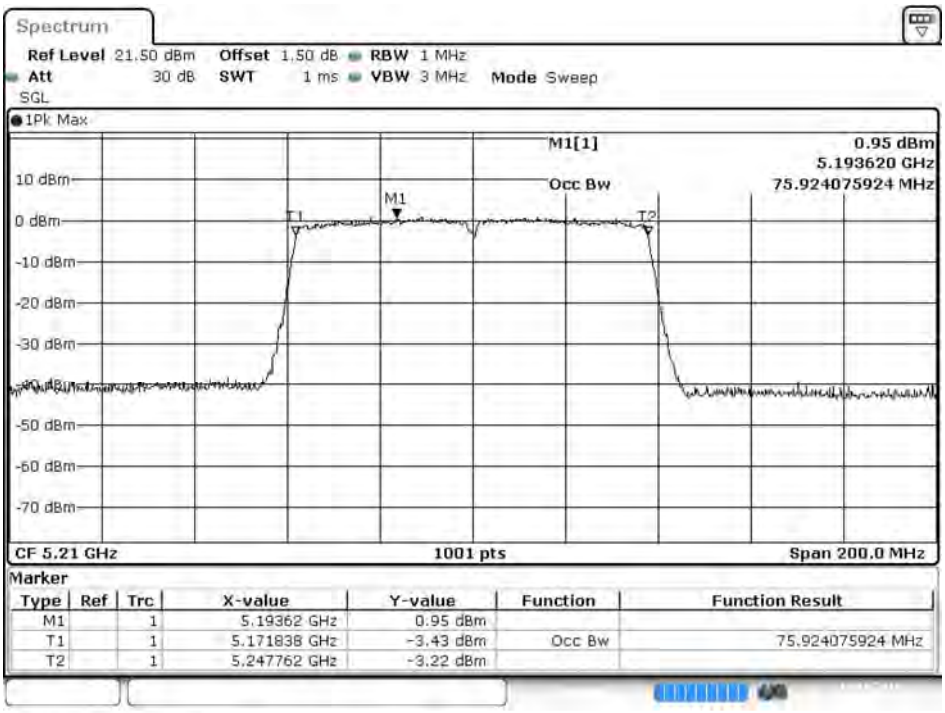
Channel Number	Frequency	26dB Bandwidth	Chain A Power	Chain B Power	Output Power	Output Power Limit	
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	dBm+10log(BW)
42	5210	--	8.710	7.690	11.24	24	--
58	5290	75.724	10.540	9.140	12.91	24	29.79
106	5530	75.724	5.900	5.810	8.87	24	29.79
122	5610	75.924	7.960	8.010	11.00	24	29.80
138(Band3)	5690	72.862	7.750	7.350	10.56	24	29.63
138(Band4)	5690	--	-6.820	-7.040	-3.92	30	--
155	5775	--	8.460	7.330	10.94	30	--

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW) + Chain B Power (mW))
3. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

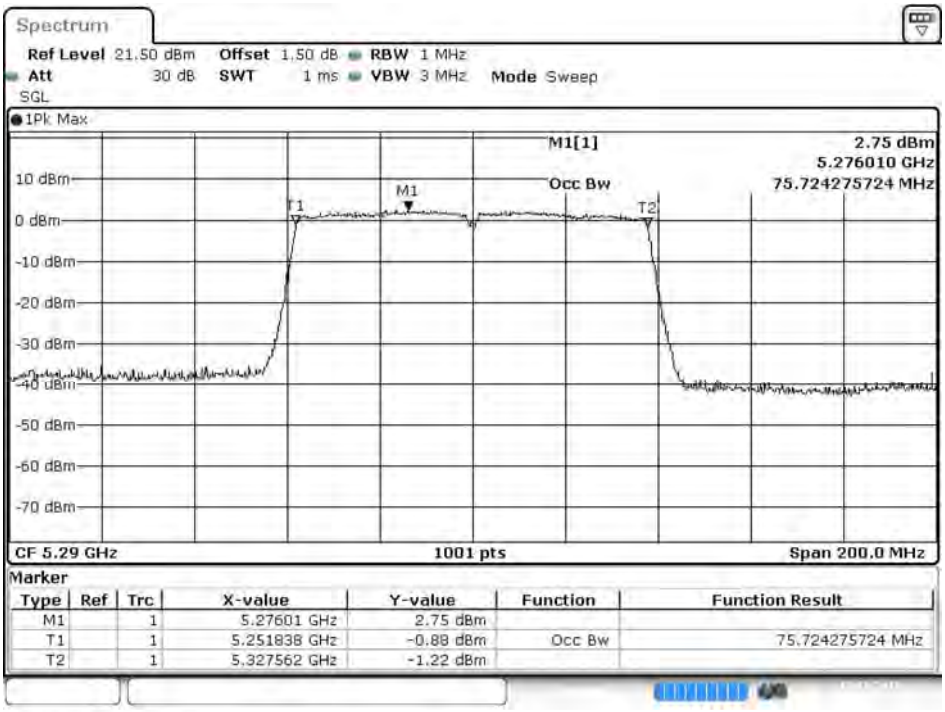
99% Occupied Bandwidth:

Channel 42: Chain A



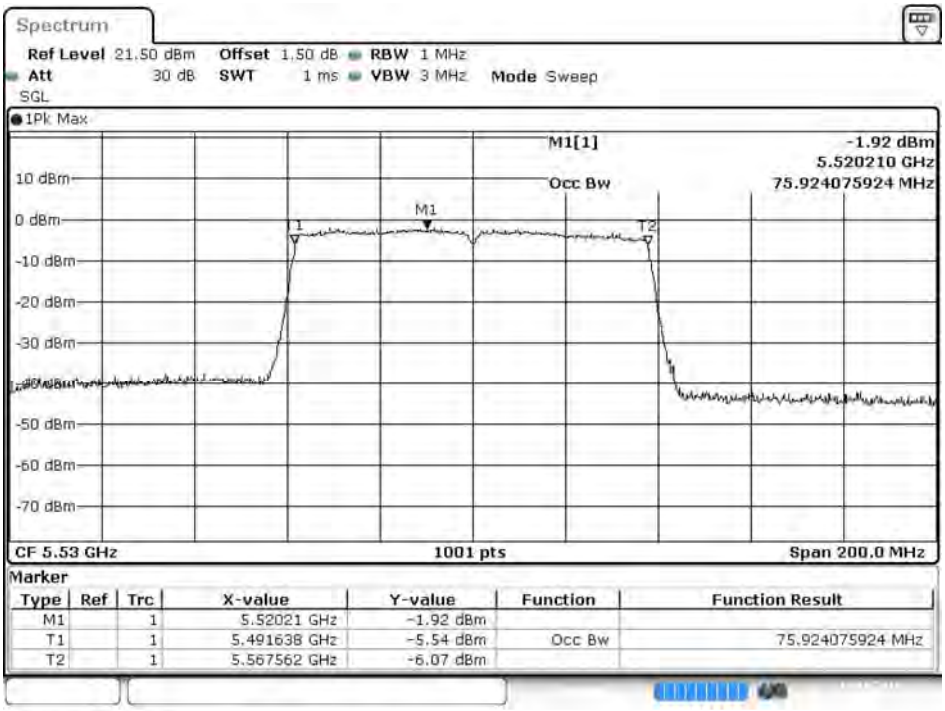
Date: 12.JAN.2018 10:32:20

Channel 58: Chain A



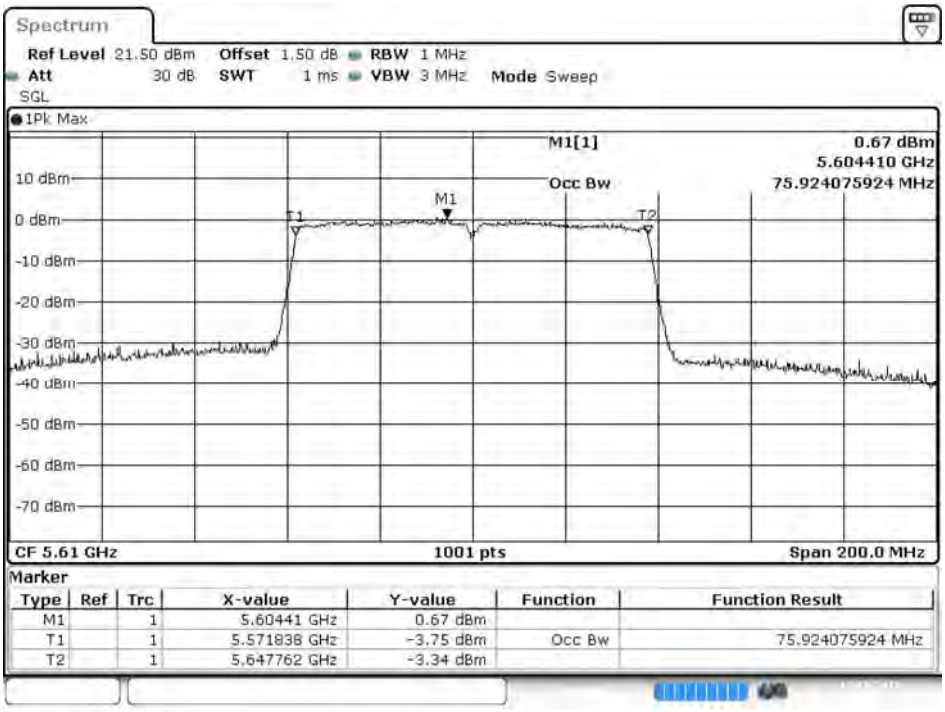
Date: 12.JAN.2018 10:33:45

Channel 106: Chain A



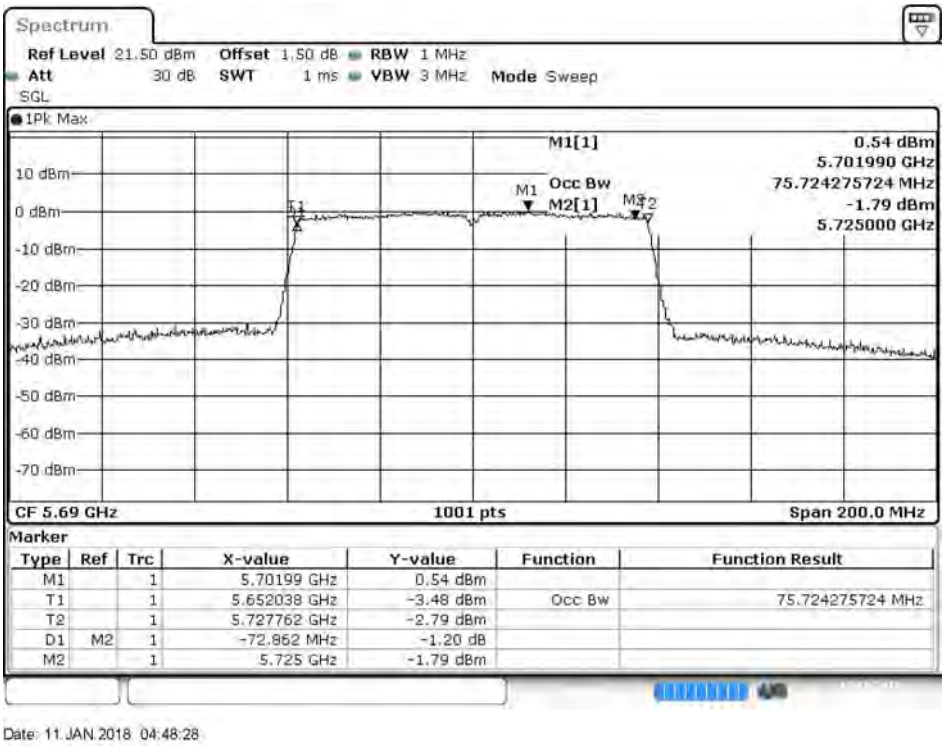
Date: 12.JAN.2018 10:35:07

Channel 122: Chain A



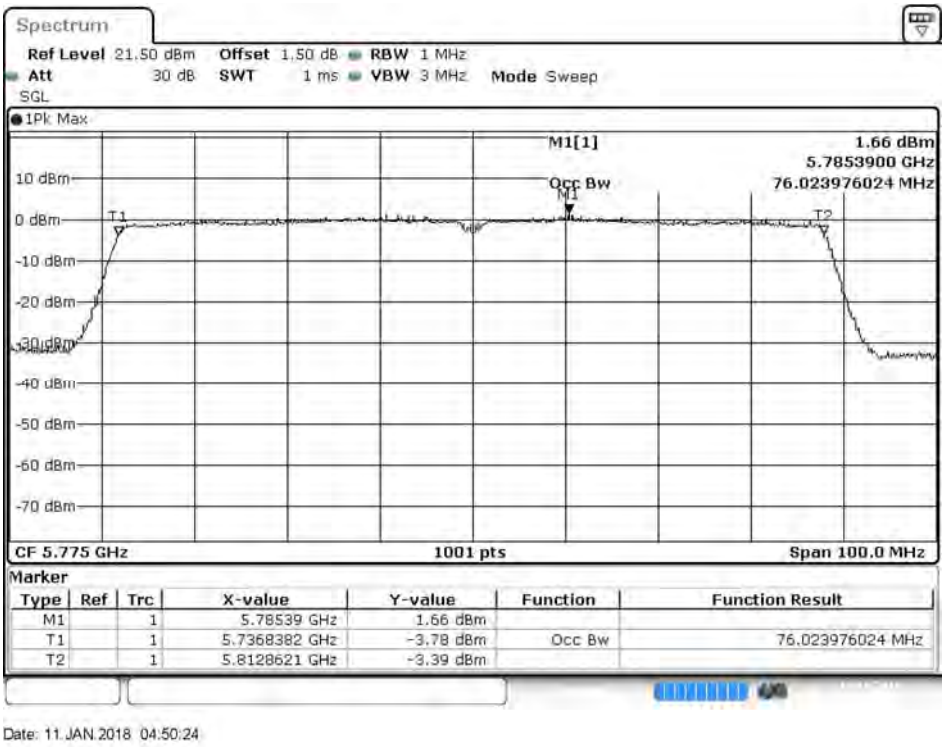
Date: 11.JAN.2018 04:47:07

Channel 138: Chain A



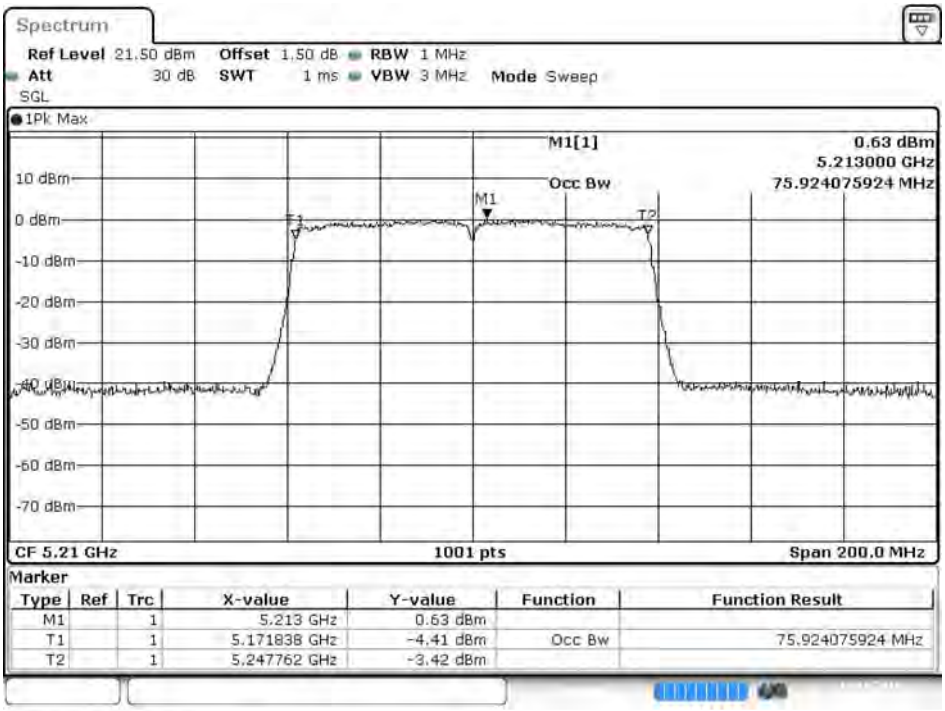
Date: 11.JAN.2018 04:48:28

Channel 155: Chain A



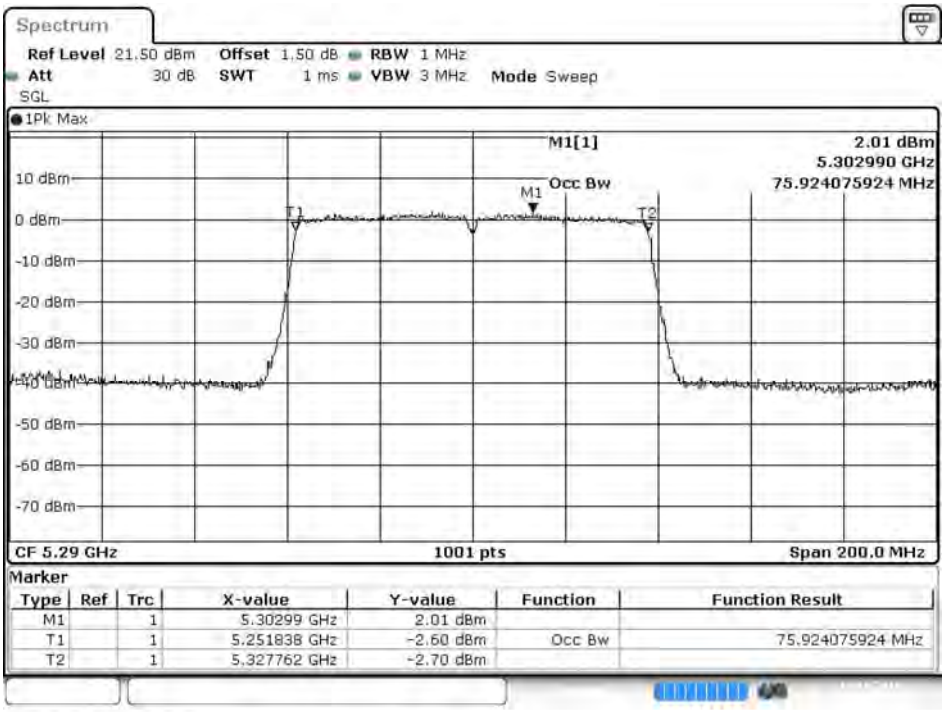
Date: 11.JAN.2018 04:50:24

Channel 42: Chain B



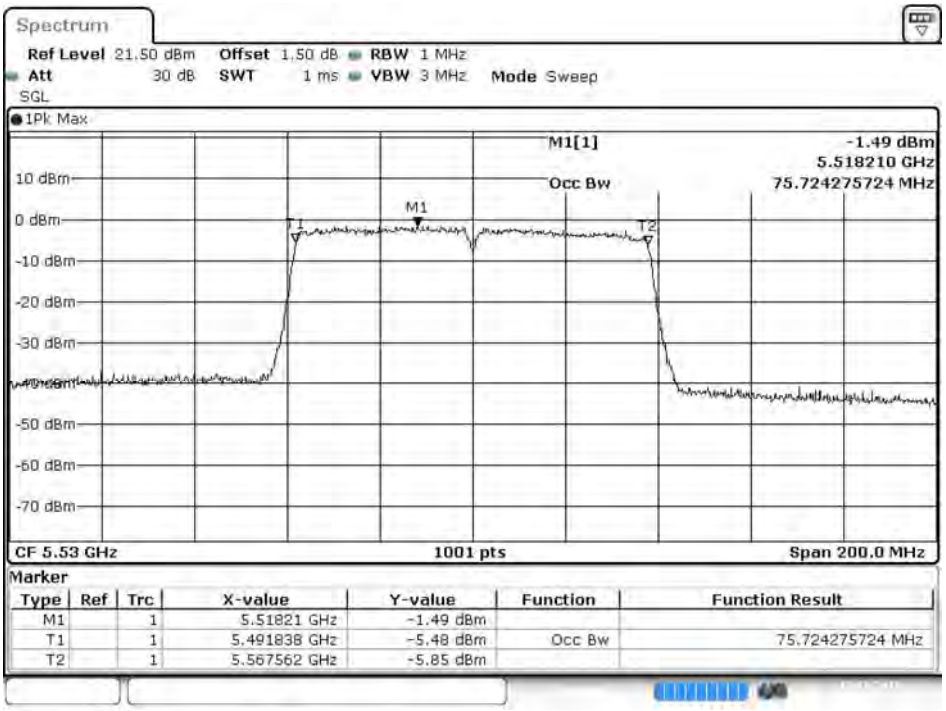
Date: 12.JAN.2018 10:38:03

Channel 58: Chain B

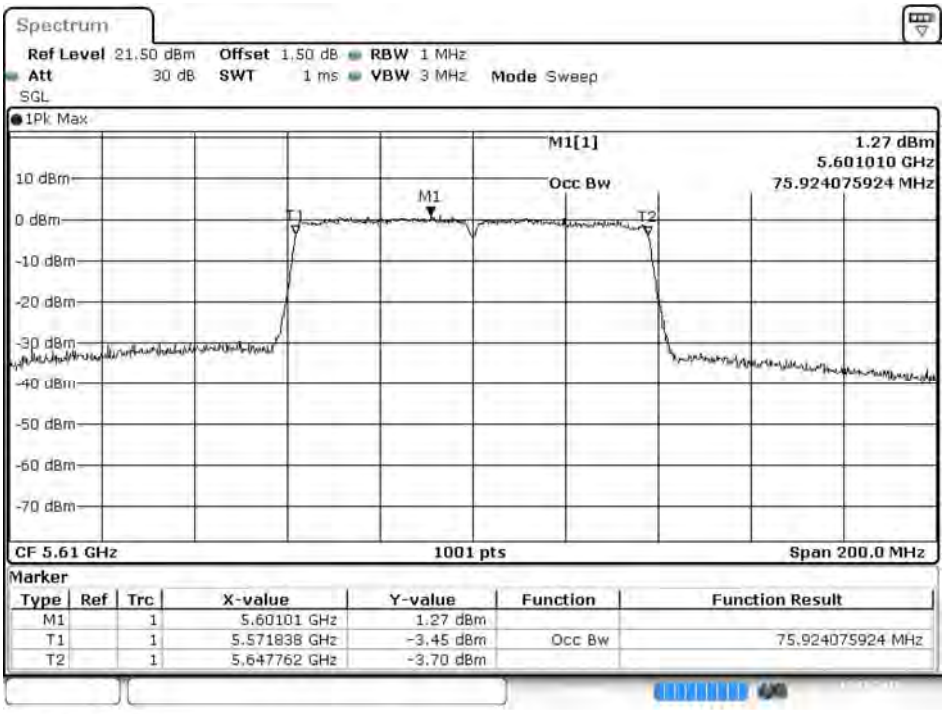


Date: 12.JAN.2018 10:39:23

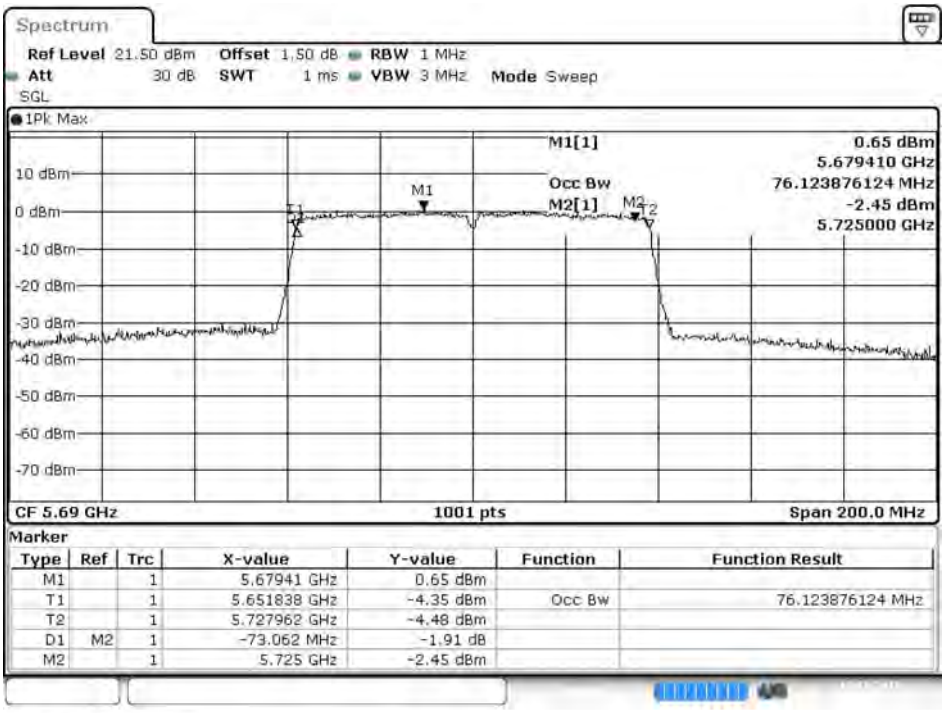
Channel 106: Chain B



Channel 122: Chain B

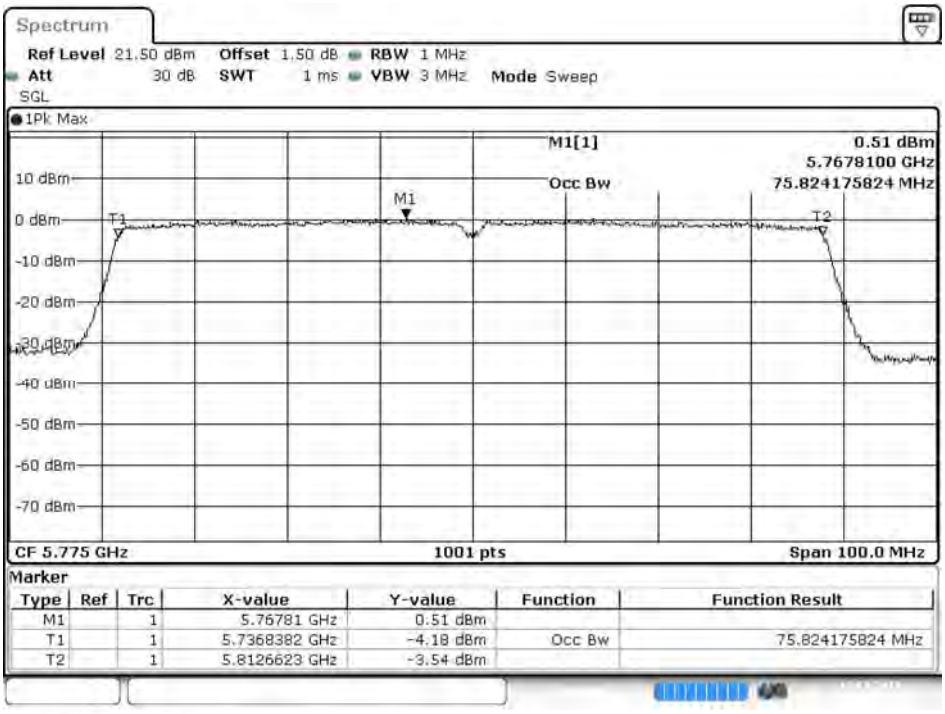


Channel 138: Chain B



Date: 11.JAN.2018 04:29:03

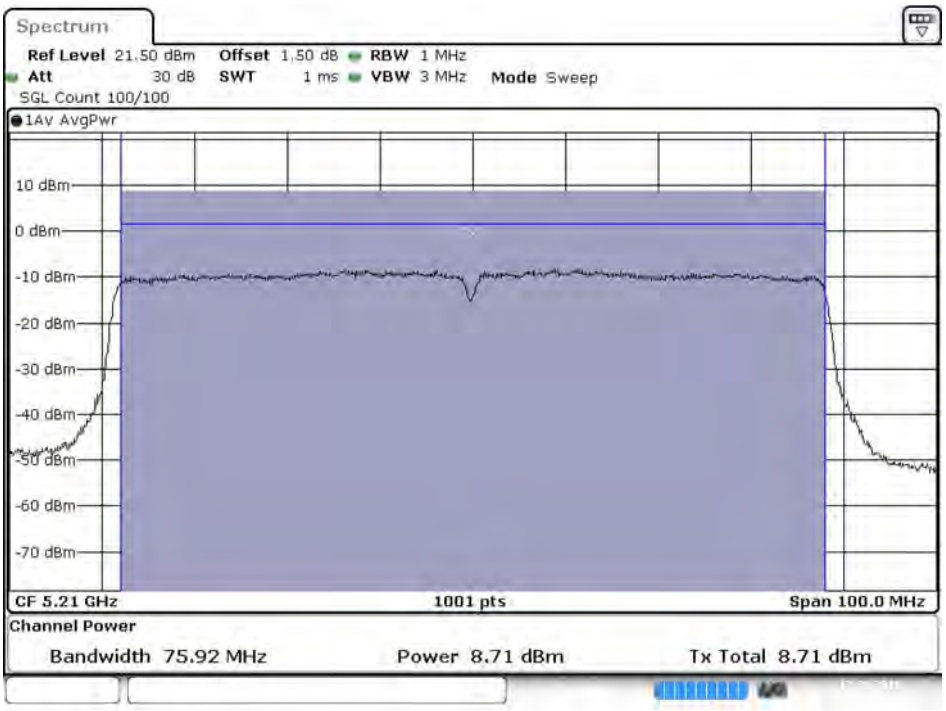
Channel 155: Chain B



Date: 11.JAN.2018 04:33:46

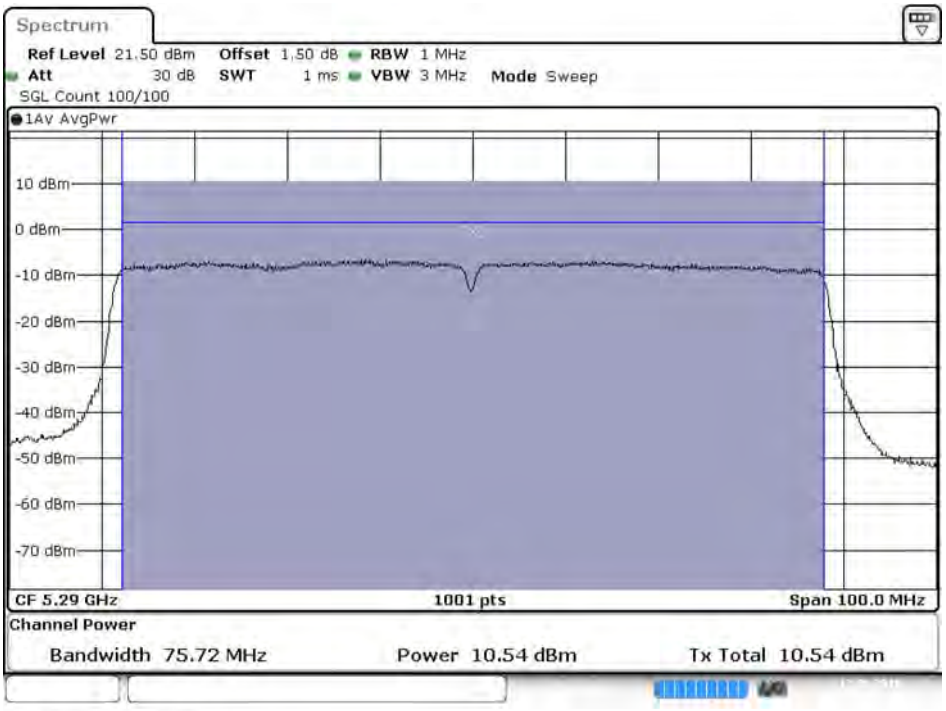
Maximum conducted output power:

Channel 42: Chain A



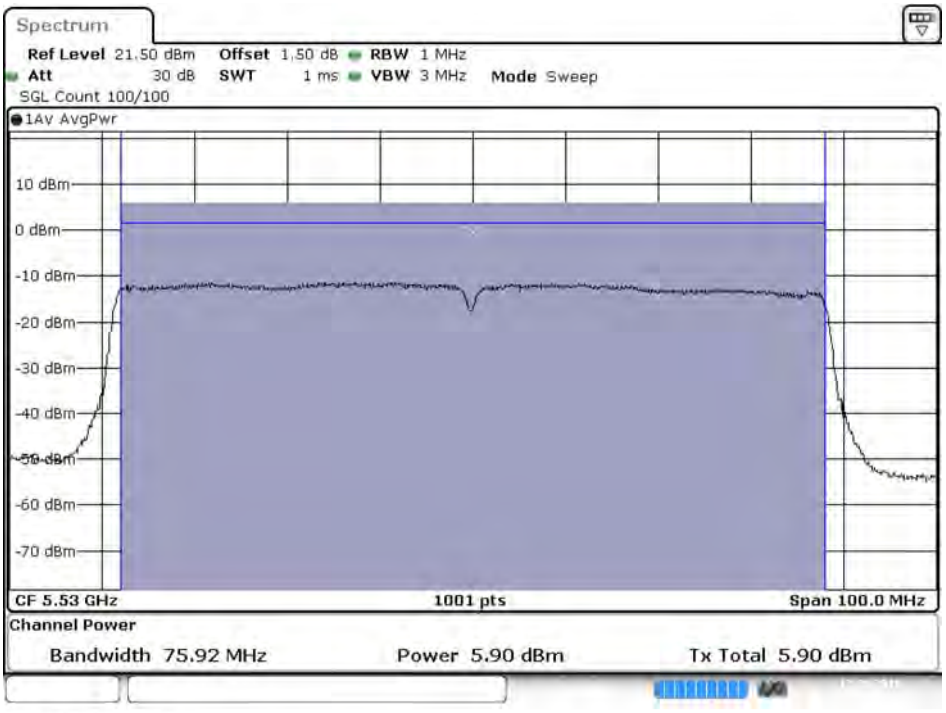
Date: 12.JAN.2018 10:33:04

Channel 58: Chain A



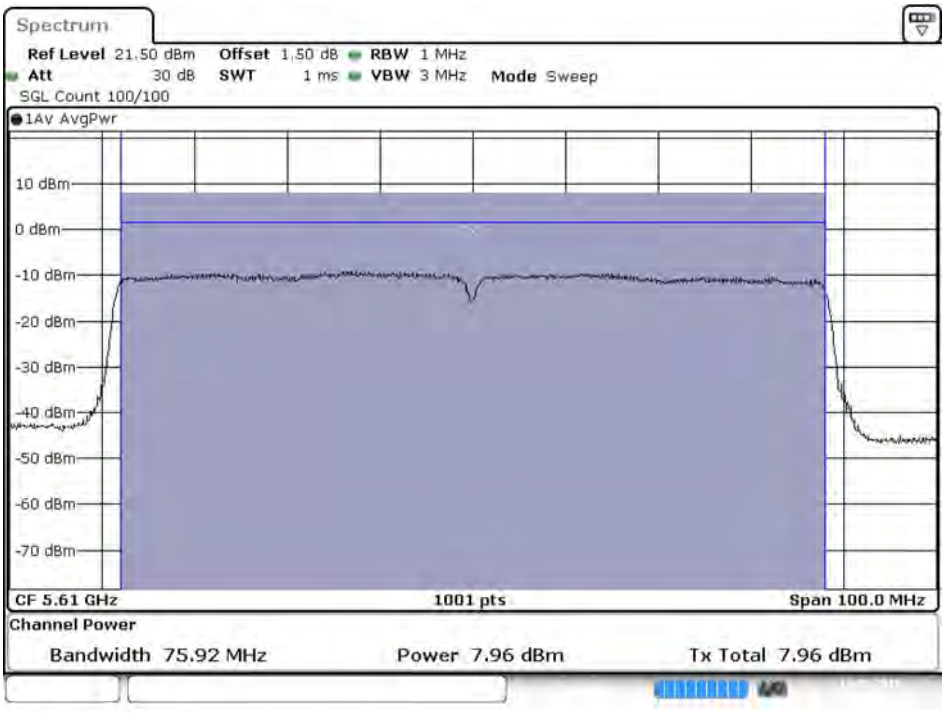
Date: 12.JAN.2018 10:34:29

Channel 106: Chain A



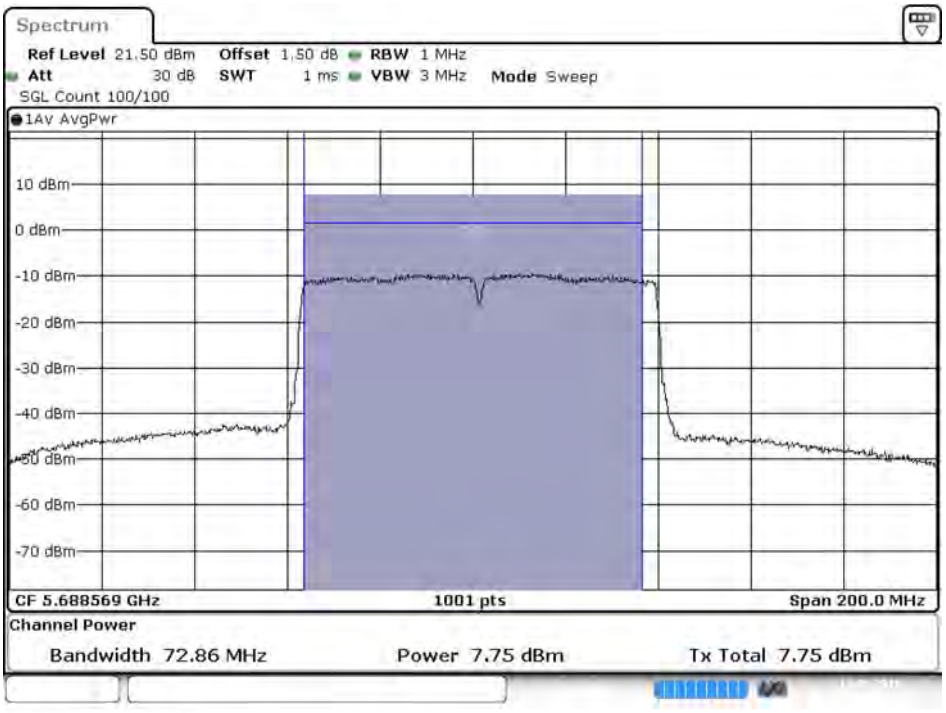
Date: 12.JAN.2018 10:35:51

Channel 122: Chain A



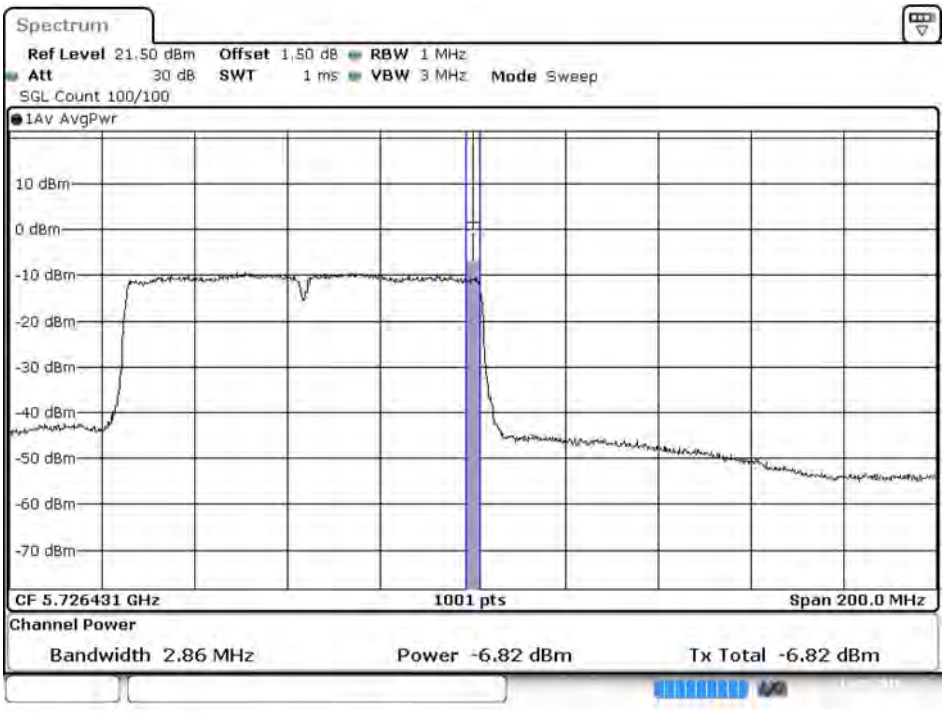
Date: 11.JAN.2018 04:47:51

Channel 138 : Chain A



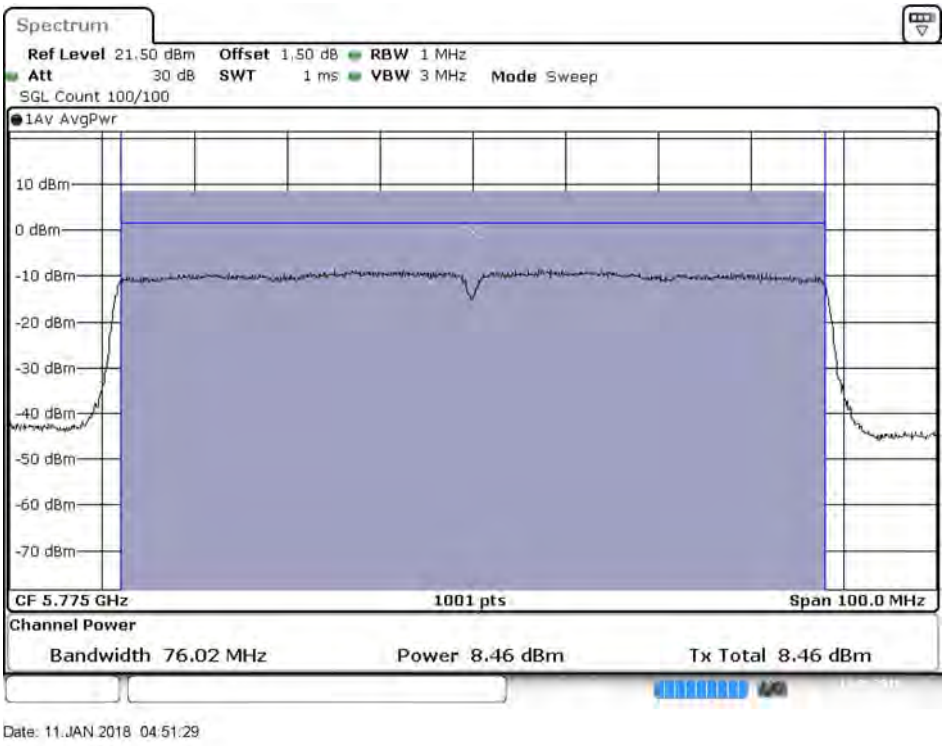
Date: 11.JAN.2018 04:49:30

Channel 138 : Chain A

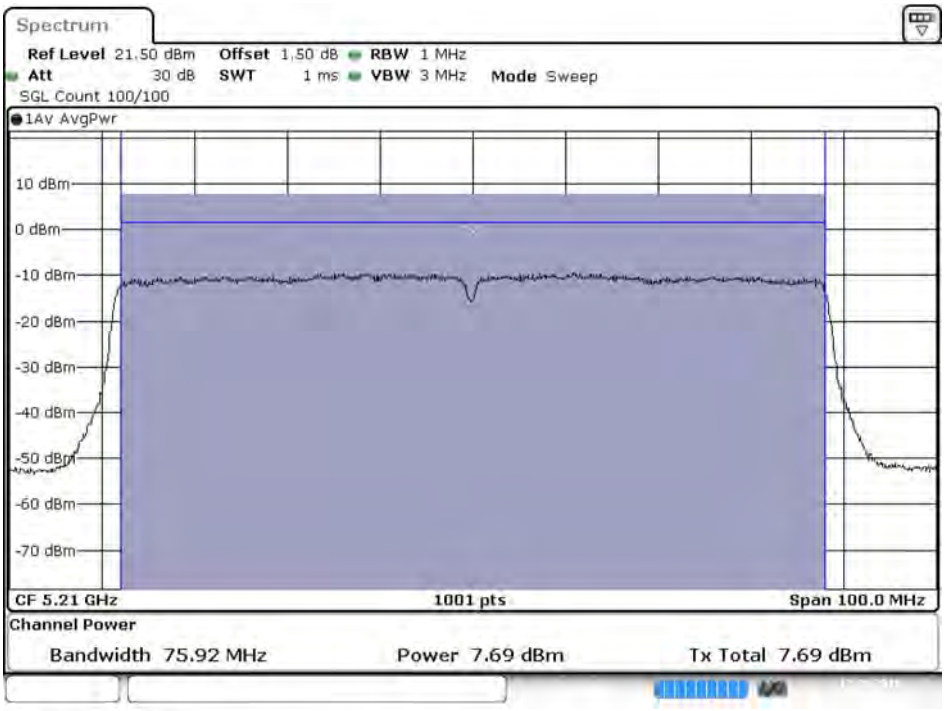


Date: 11.JAN.2018 04:49:53

Channel 155: Chain A

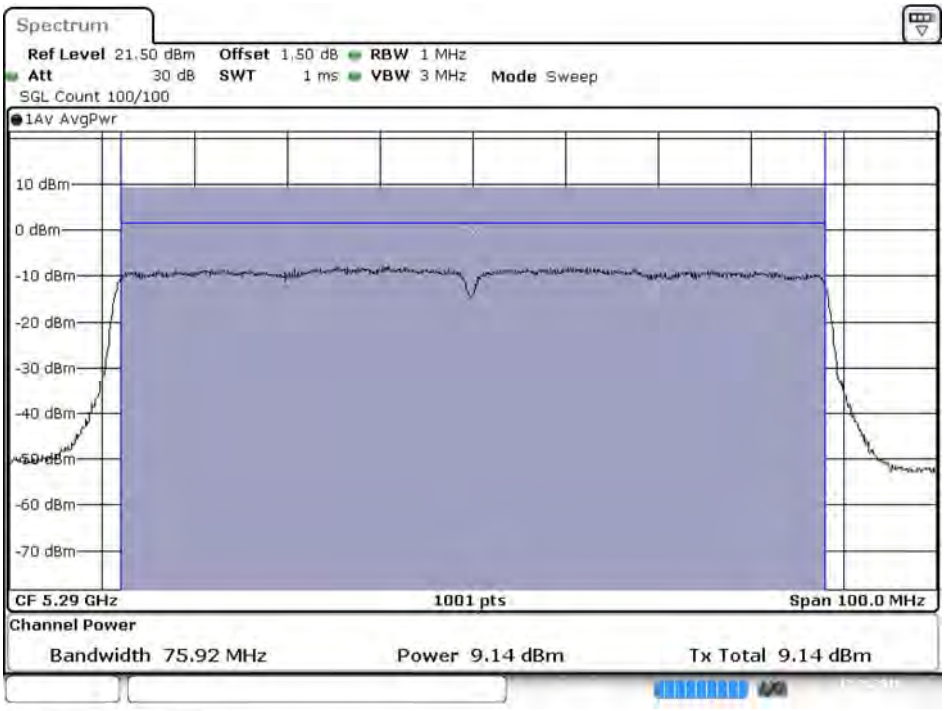


Channel 42: Chain B



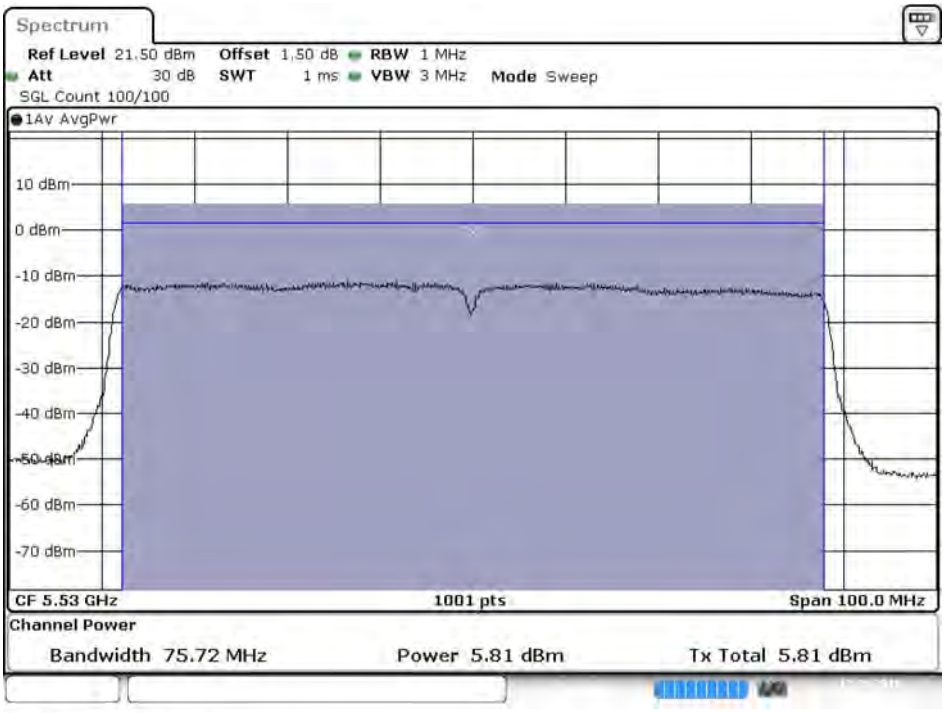
Date: 12.JAN.2018 10:38:46

Channel 58: Chain B



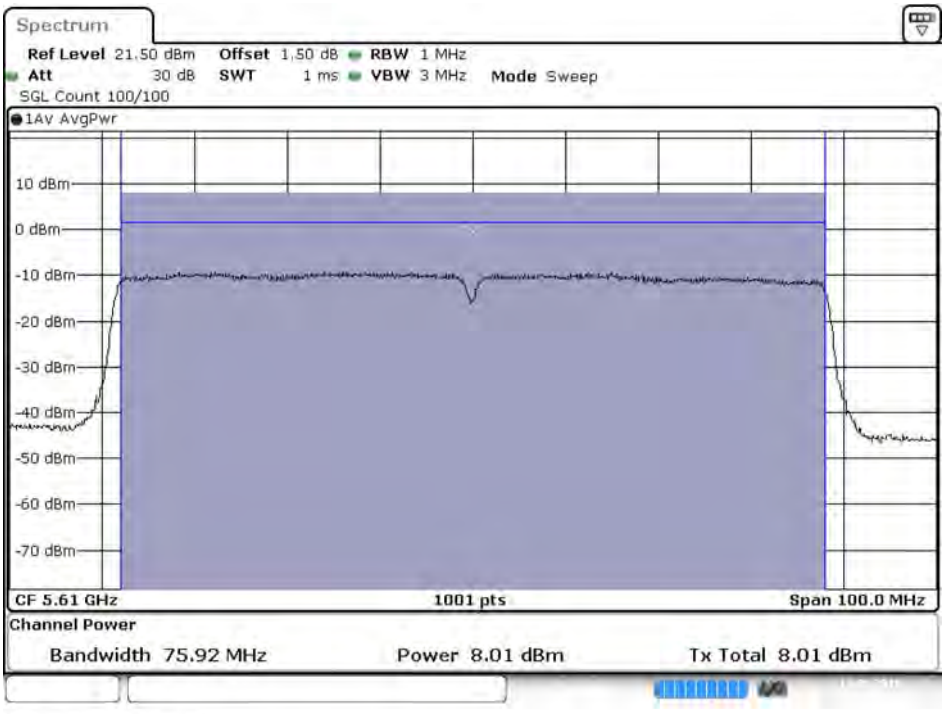
Date: 12.JAN.2018 10:40:06

Channel 106: Chain B



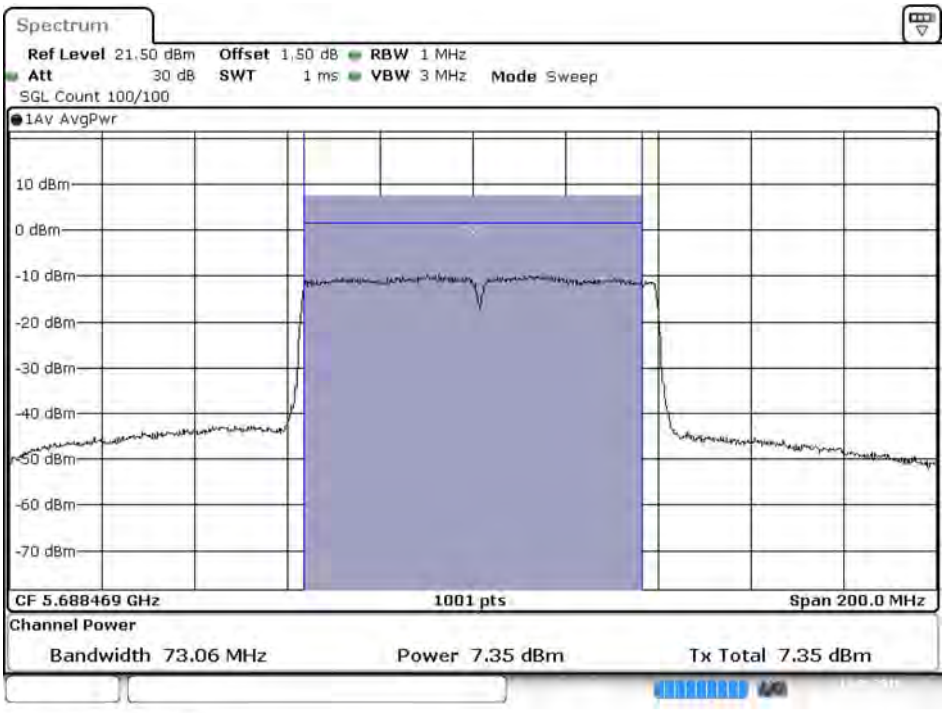
Date: 12.JAN.2018 10:41:29

Channel 122: Chain B



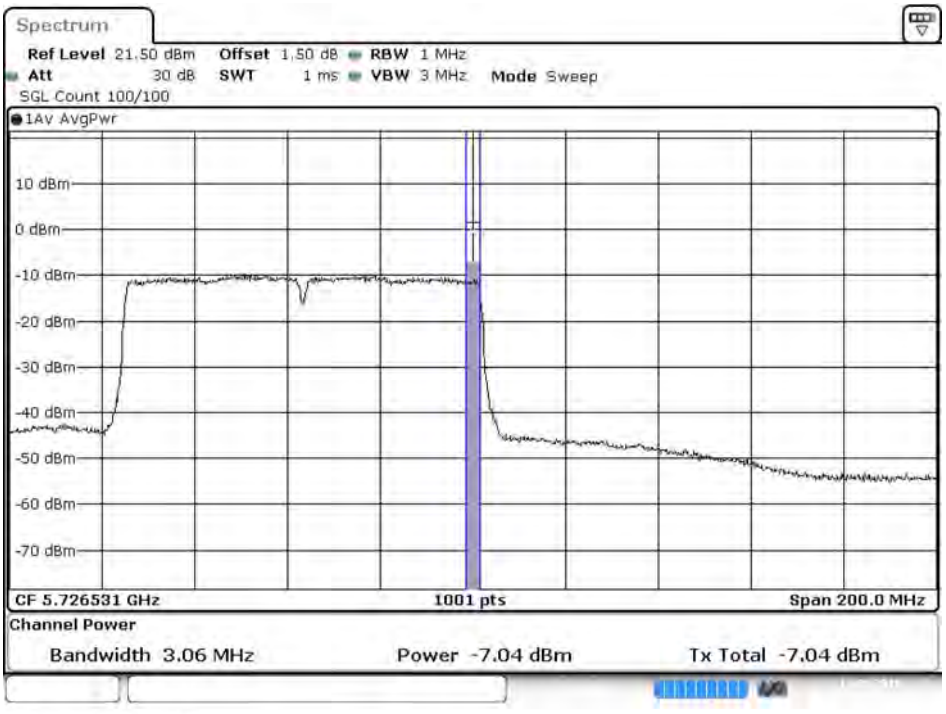
Date: 11.JAN.2018 04:27:17

Channel 138 : Chain B



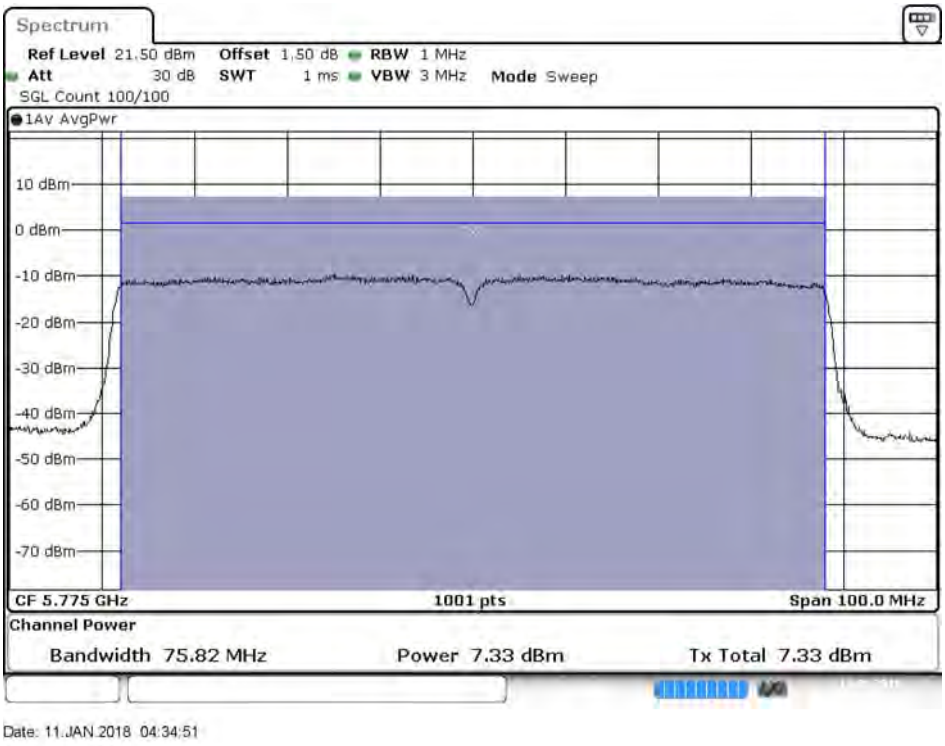
Date: 11.JAN.2018 04:30:05

Channel 138 : Chain B



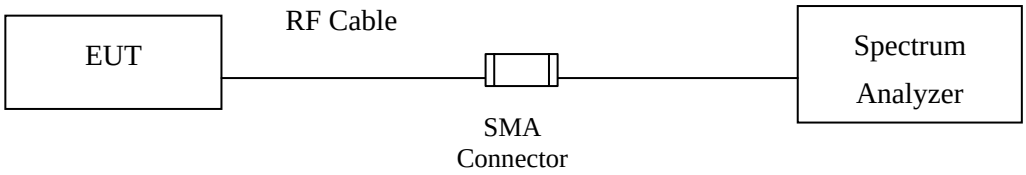
Date: 11.JAN.2018 04:30:27

Channel 155: Chain B



4. Peak Power Spectral Density

4.1. Test Setup



4.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (500 kHz/100 kHz) = 6.98 dB.

4.4. Uncertainty

±1.30dB

4.5. Test Result of Peak Power Spectral Density

Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 1: Transmit (802.11a-6Mbps)
Test Date : 2016/08/26

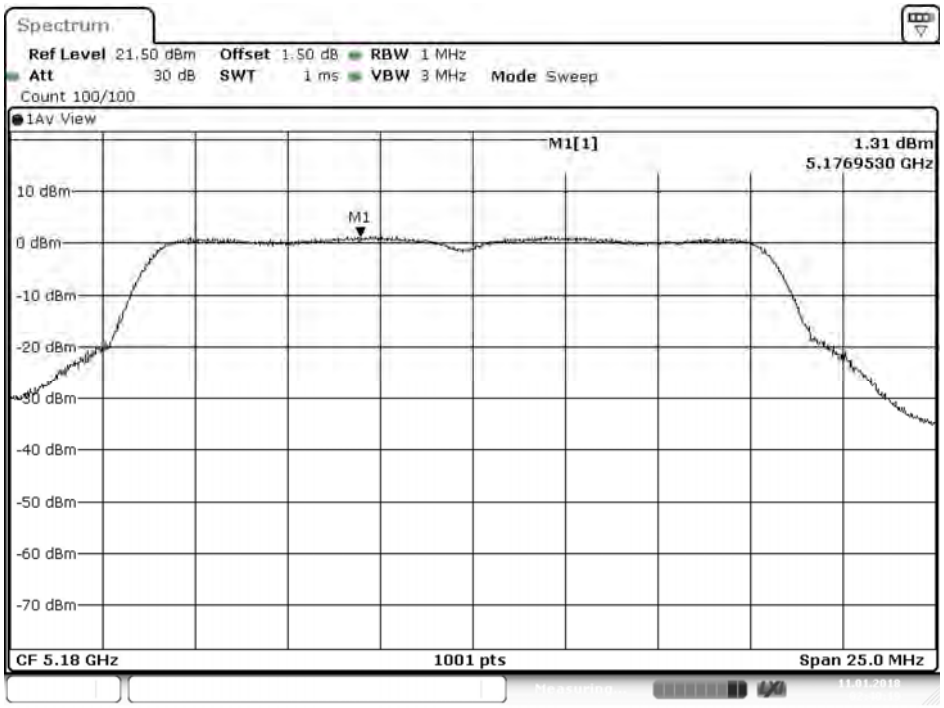
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)	Required Limit (dBm)	Result
36	5180	A	1.310	4.320	11	Pass
		B	0.150	3.160	11	Pass
44	5220	A	1.990	5.000	11	Pass
		B	0.970	3.980	11	Pass
48	5240	A	2.320	5.330	11	Pass
		B	0.670	3.680	11	Pass
52	5260	A	2.150	5.160	11	Pass
		B	0.560	3.570	11	Pass
60	5300	A	1.860	4.870	11	Pass
		B	0.280	3.290	11	Pass
64	5320	A	1.660	4.670	11	Pass
		B	0.130	3.140	11	Pass
100	5500	A	0.580	3.590	11	Pass
		B	-0.440	2.570	11	Pass
116	5580	A	-1.030	1.980	11	Pass
		B	-1.520	1.490	11	Pass
140	5700	A	-1.710	1.300	11	Pass
		B	-2.630	0.380	11	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)[1]	Required Limit (dBm)	Result
149	5745	A	-10.280	6.980	-0.290	30	Pass
		B	-11.070	6.980	-1.080	30	Pass
157	5785	A	-9.850	6.980	0.140	30	Pass
		B	-11.150	6.980	-1.160	30	Pass
165	5825	A	-10.110	6.980	-0.120	30	Pass
		B	-11.000	6.980	-1.010	30	Pass

Note:

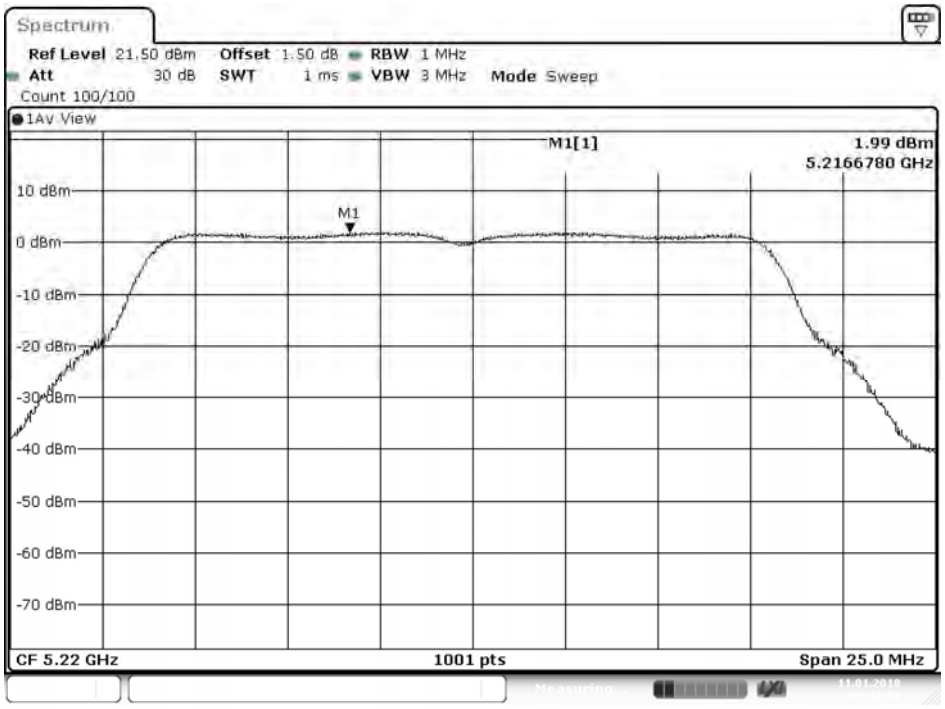
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 – Chain A



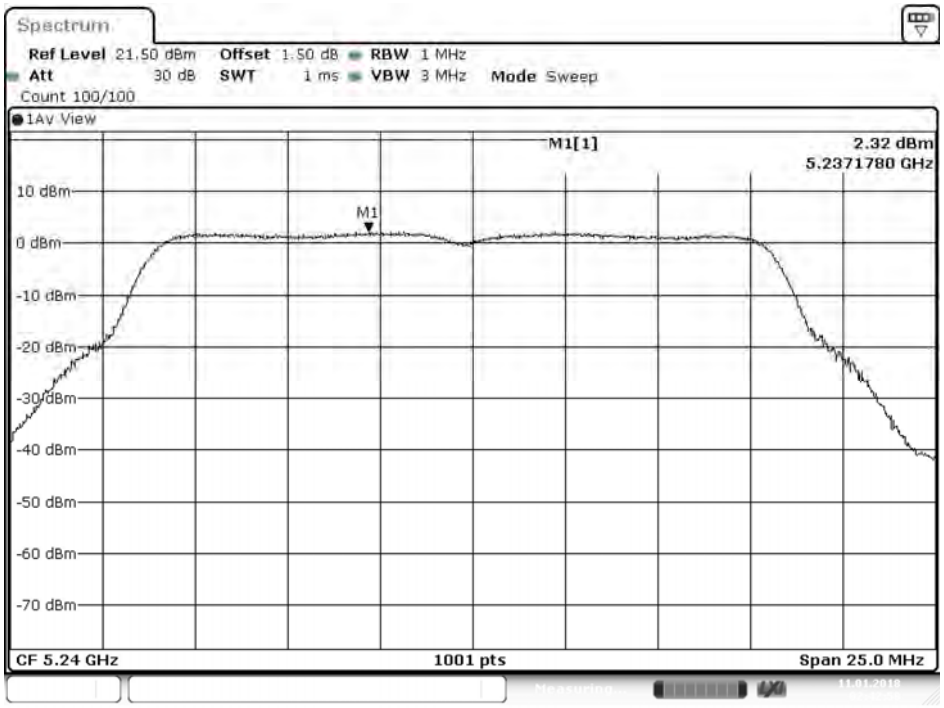
Date: 11.JAN.2018 02:40:19

Channel 44 – Chain A



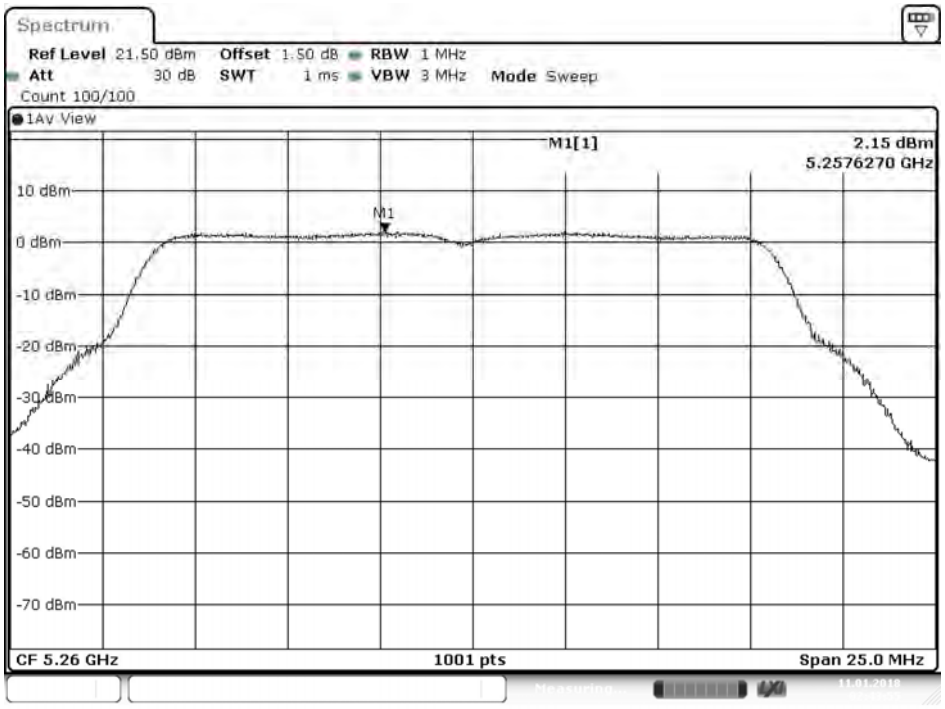
Date: 11.JAN.2018 02:42:02

Channel 48 – Chain A



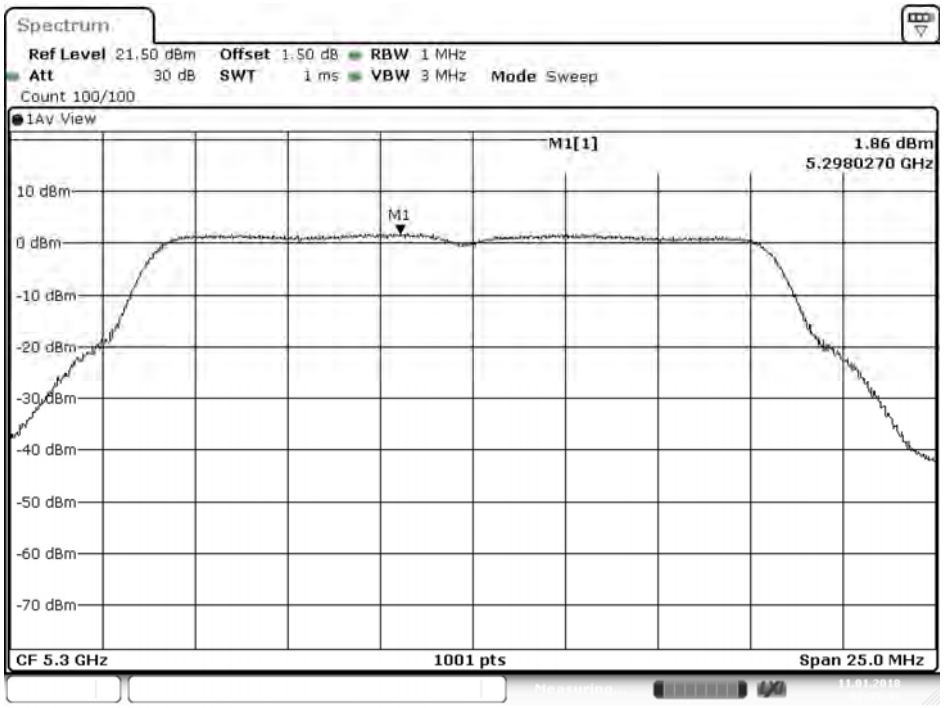
Date: 11.JAN.2018 02:42:59

Channel 52 – Chain A



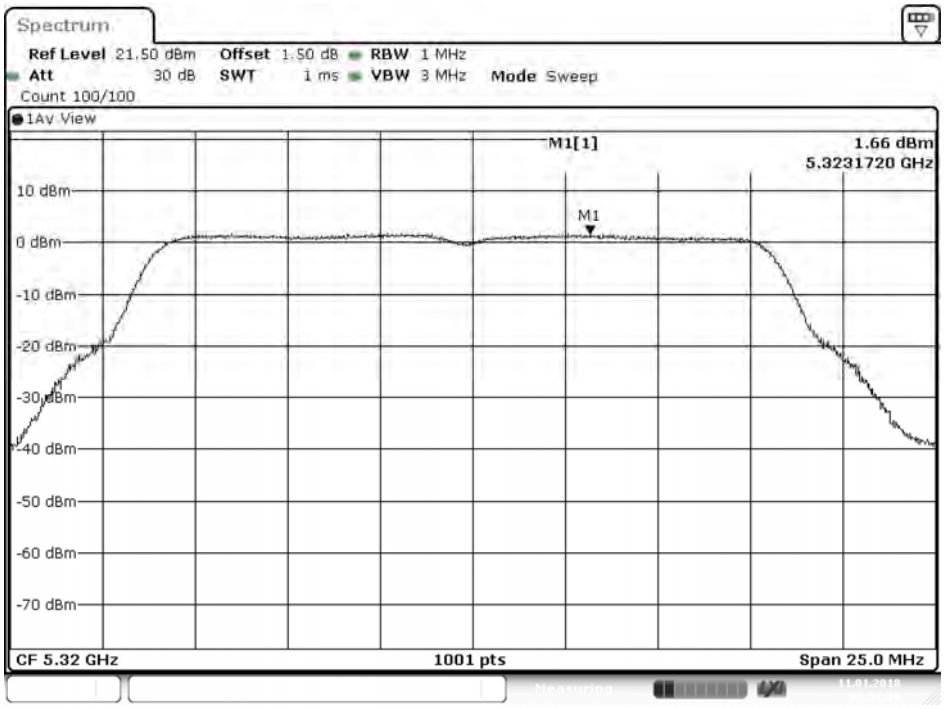
Date: 11.JAN.2018 02:43:55

Channel 60 – Chain A



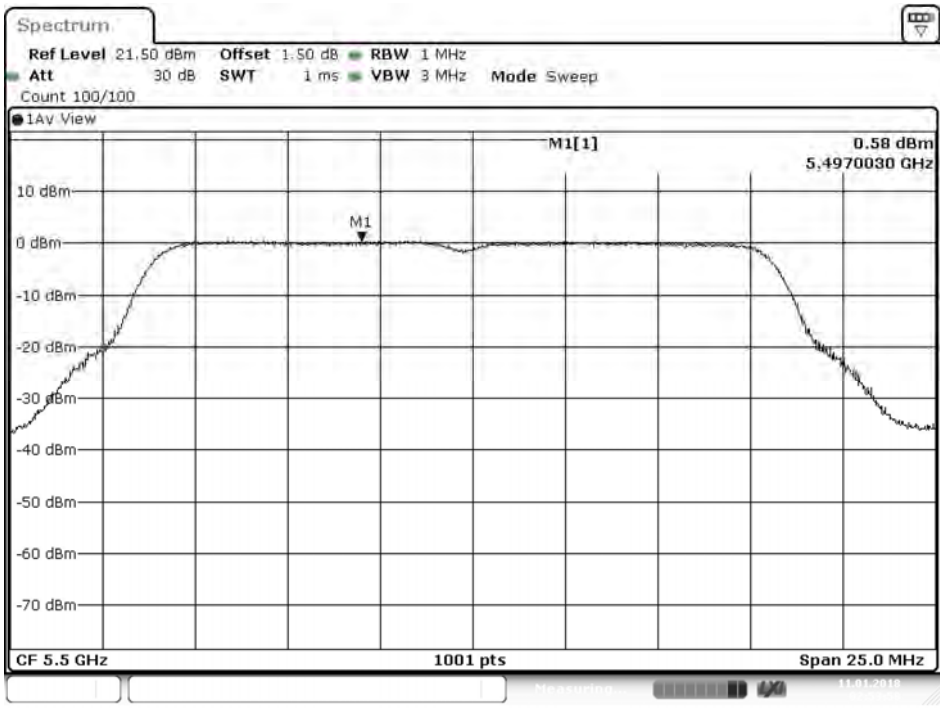
Date: 11.JAN.2018 02:45:44

Channel 64 – Chain A



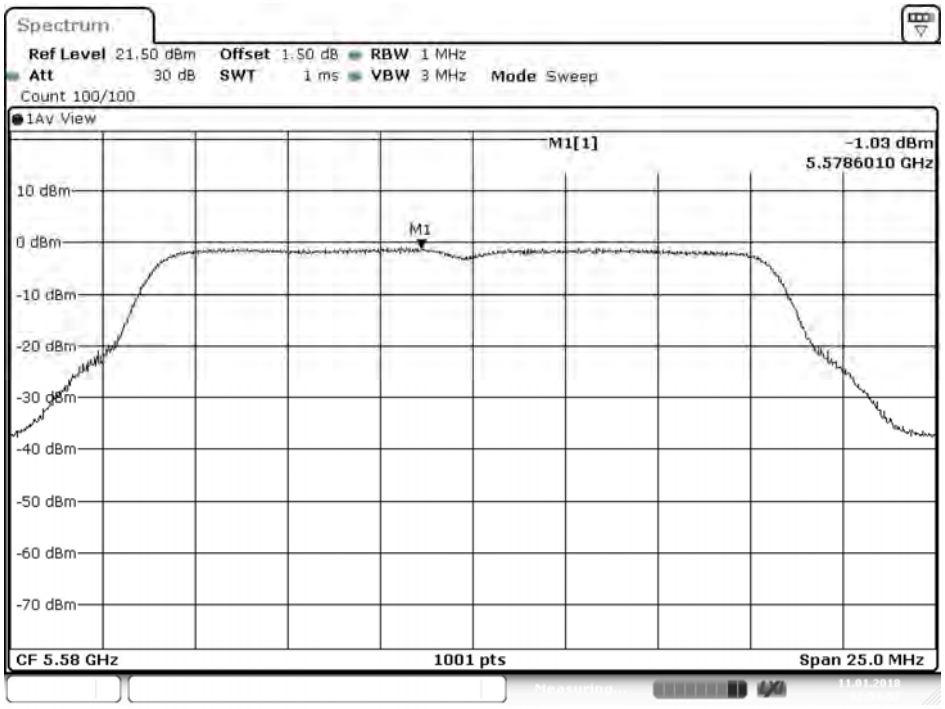
Date: 11.JAN.2018 02:52:59

Channel 100 – Chain A



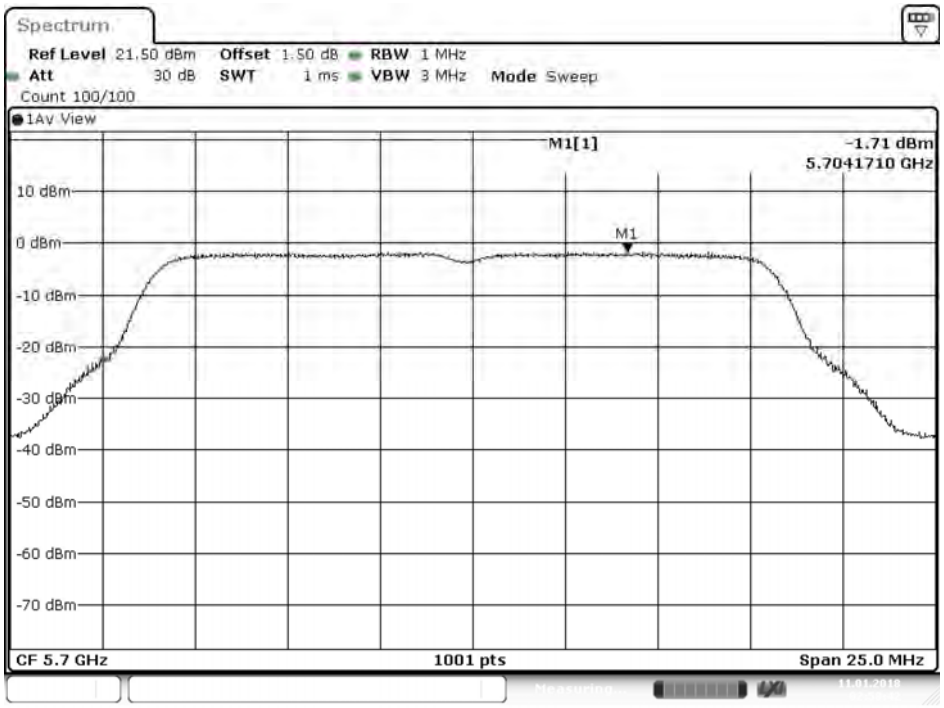
Date: 11.JAN.2018 02:53:59

Channel 116 – Chain A



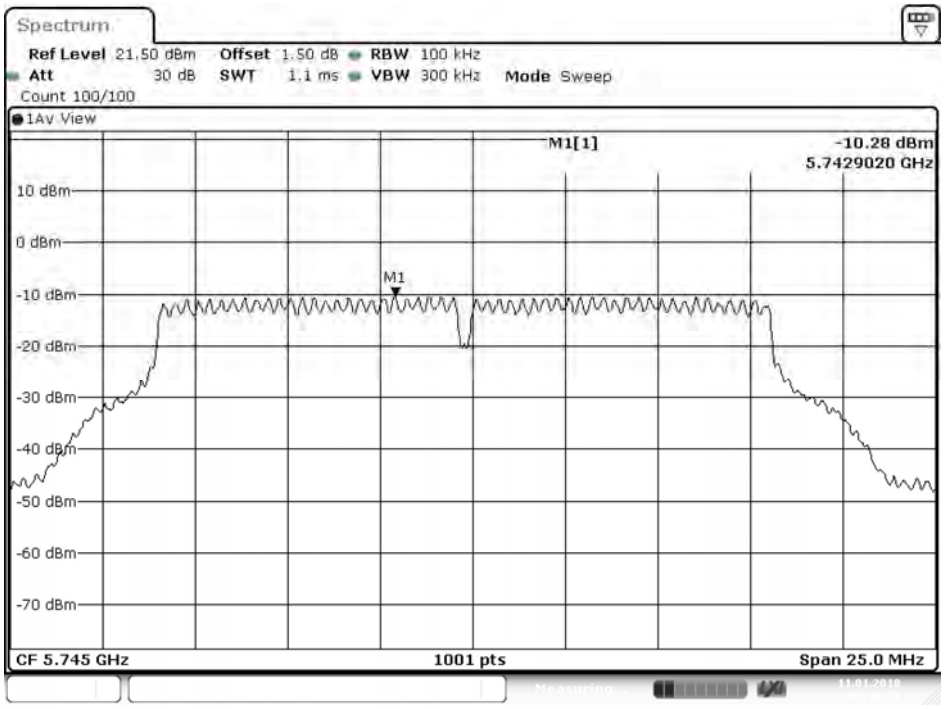
Date: 11.JAN.2018 02:54:58

Channel 140 – Chain A



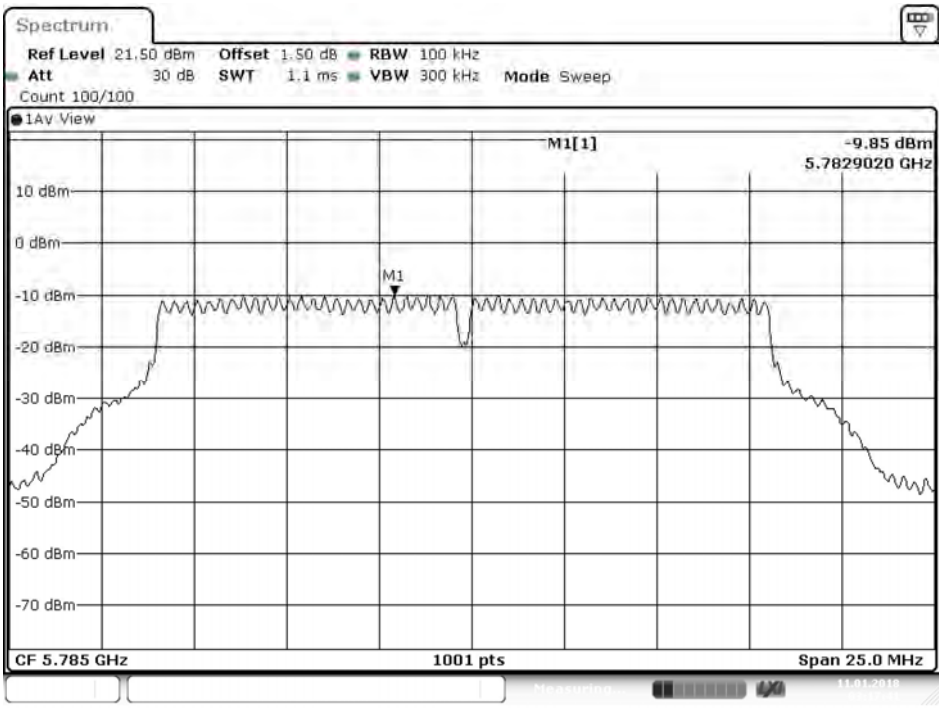
Date: 11.JAN.2018 02:58:43

Channel 149 – Chain A



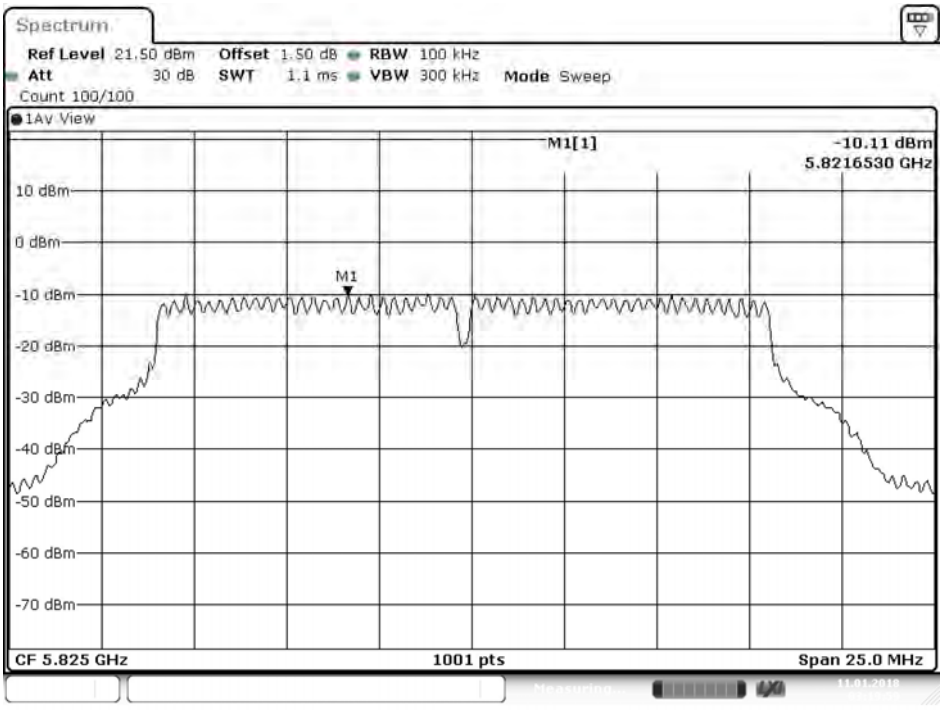
Date: 11.JAN.2018 03:16:31

Channel 157 – Chain A



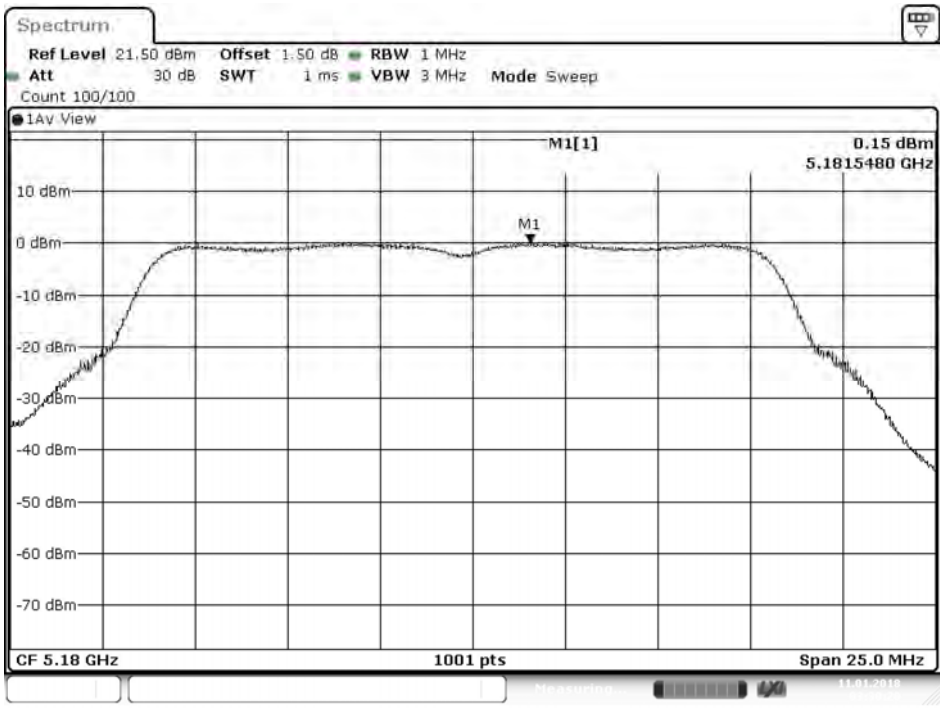
Date: 11.JAN.2018 03:17:41

Channel 165 – Chain A



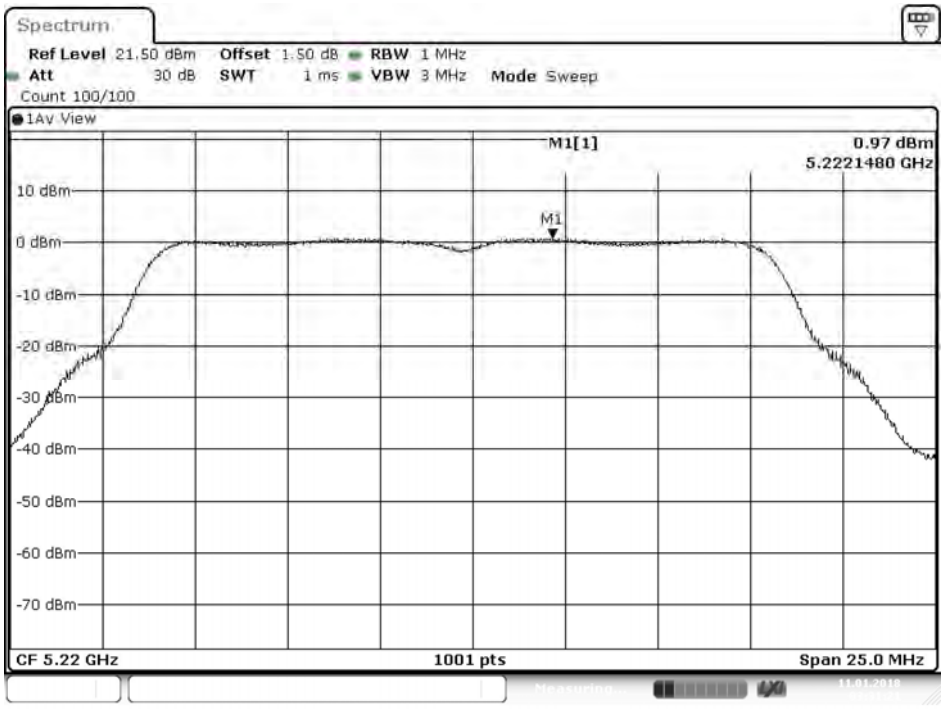
Date: 11.JAN.2018 03:19:59

Channel 36 – Chain B



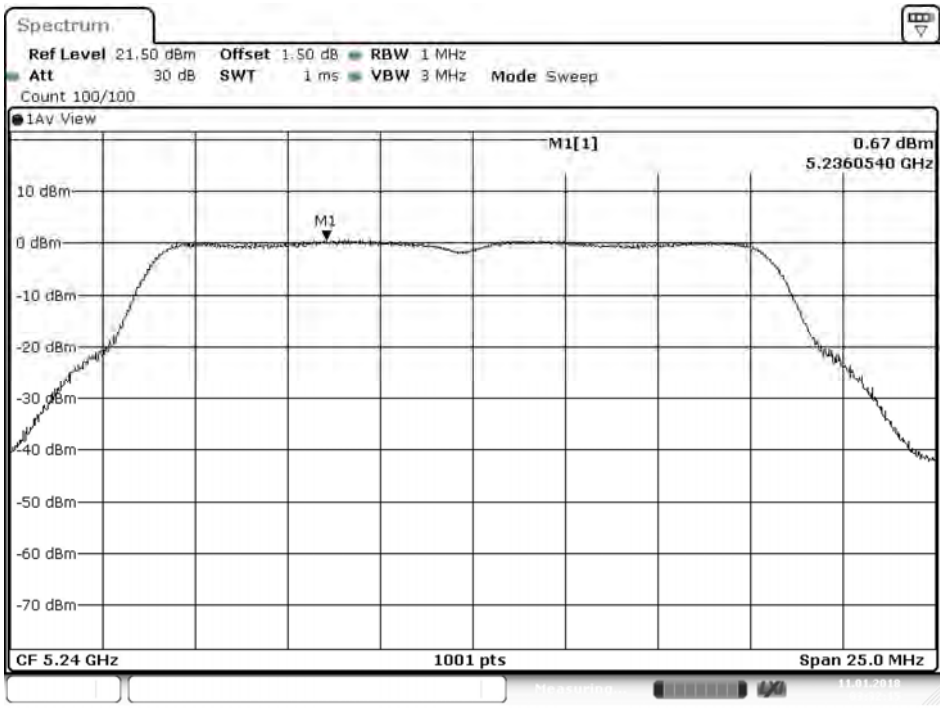
Date: 11.JAN.2018 03:30:20

Channel 44 – Chain B



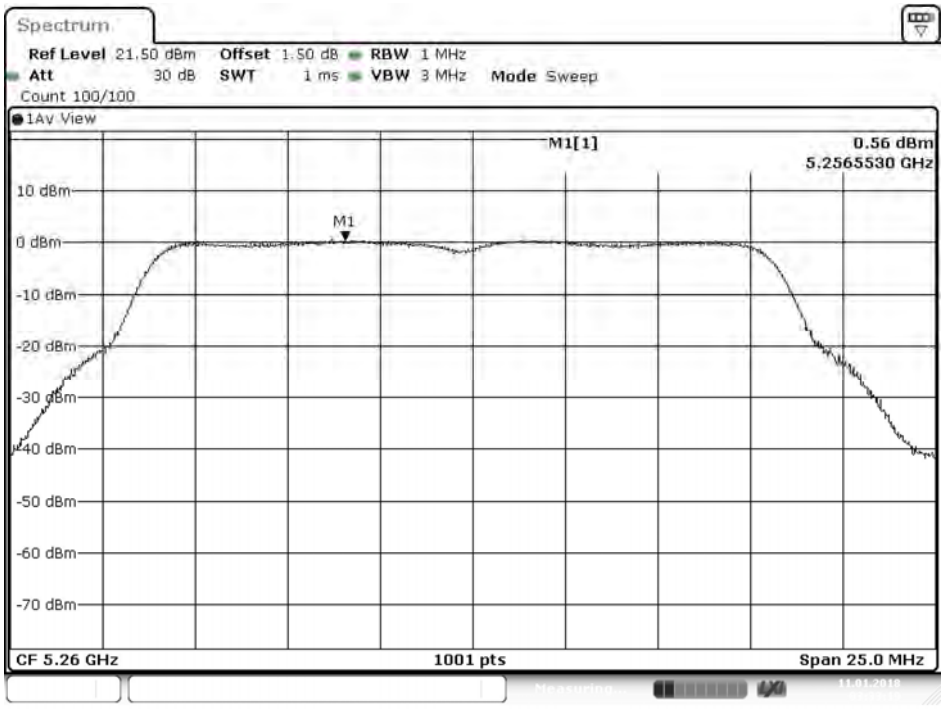
Date: 11.JAN.2018 03:31:22

Channel 48 – Chain B



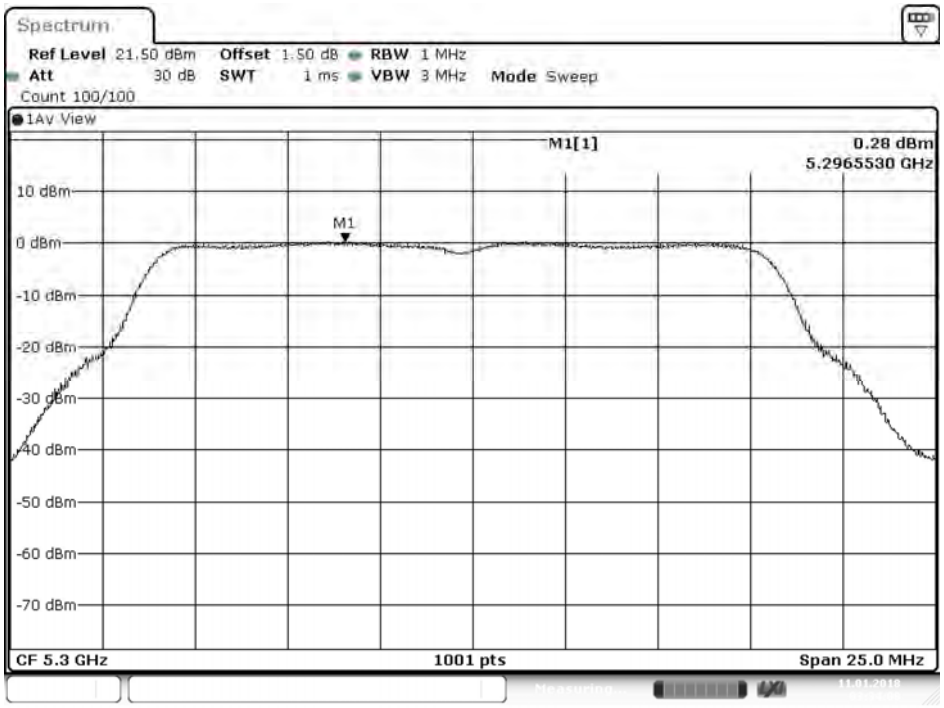
Date: 11.JAN.2018 03:32:15

Channel 52 – Chain B



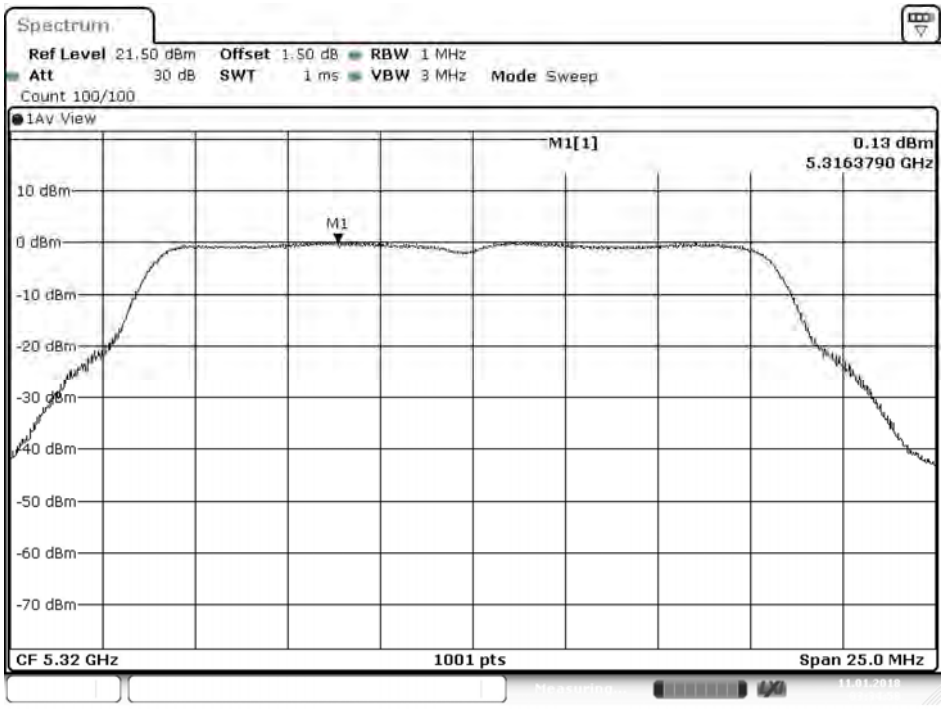
Date: 11.JAN.2018 03:33:19

Channel 60 – Chain B



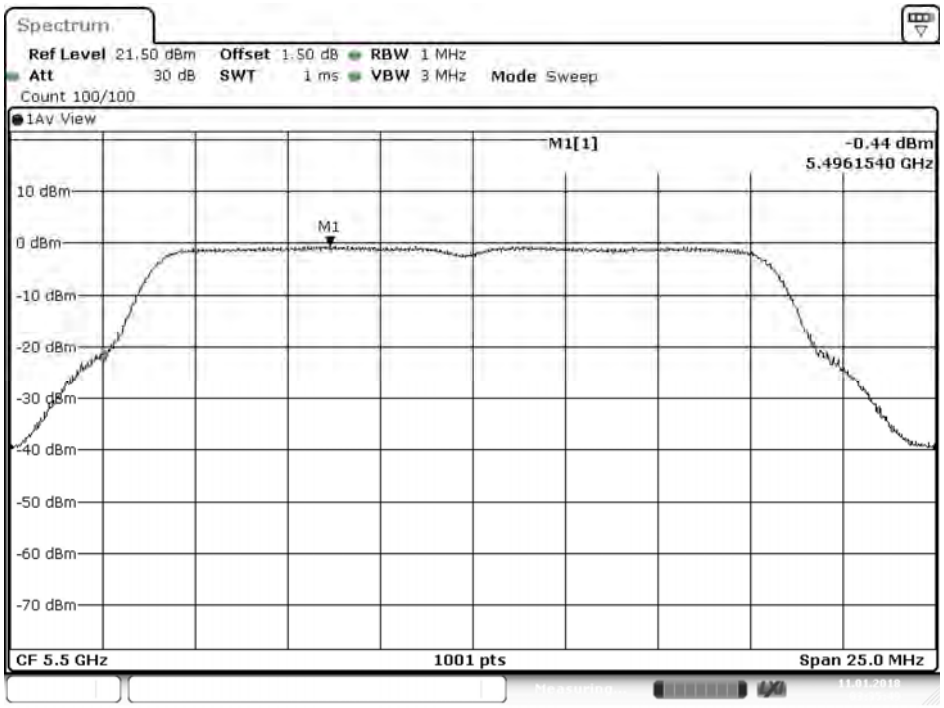
Date: 11.JAN.2018 03:34:09

Channel 64 – Chain B



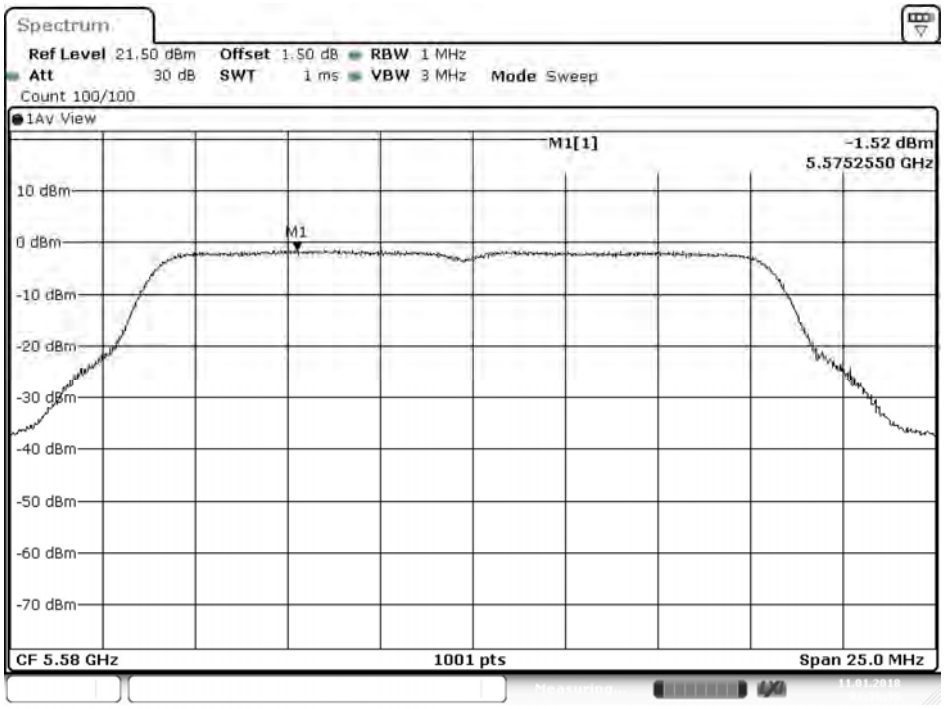
Date: 11.JAN.2018 03:34:58

Channel 100 – Chain B



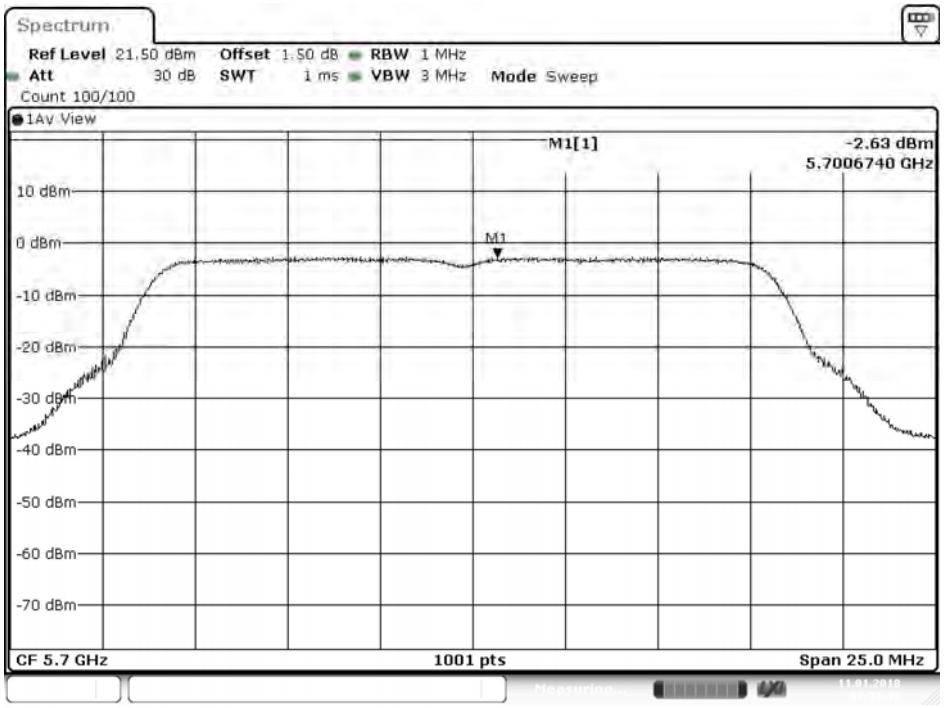
Date: 11.JAN.2018 03:35:49

Channel 116 – Chain B



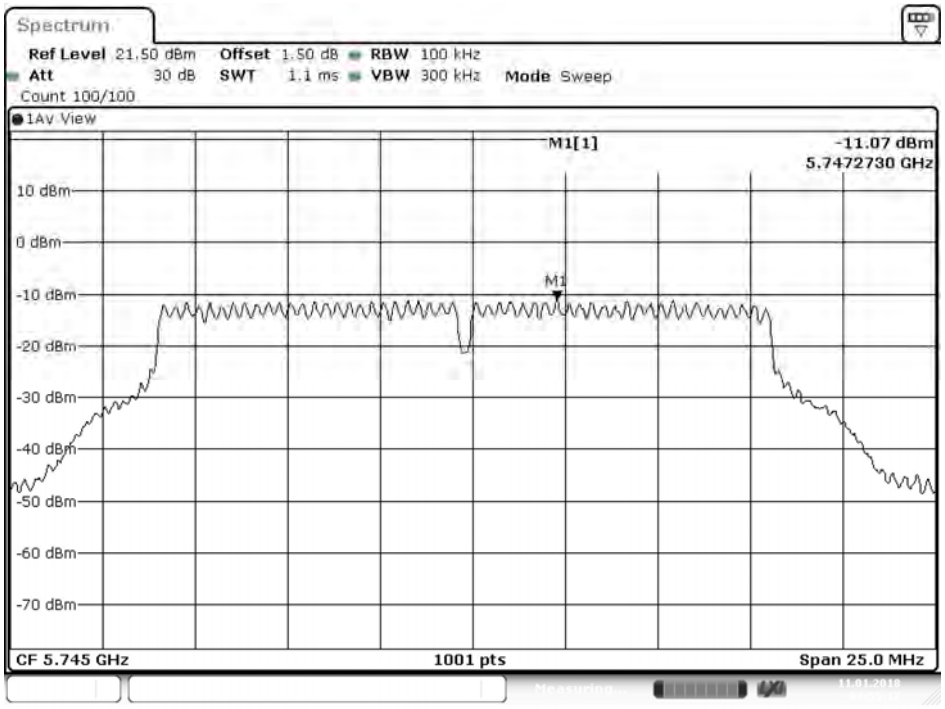
Date: 11.JAN.2018 03:36:39

Channel 140 – Chain B



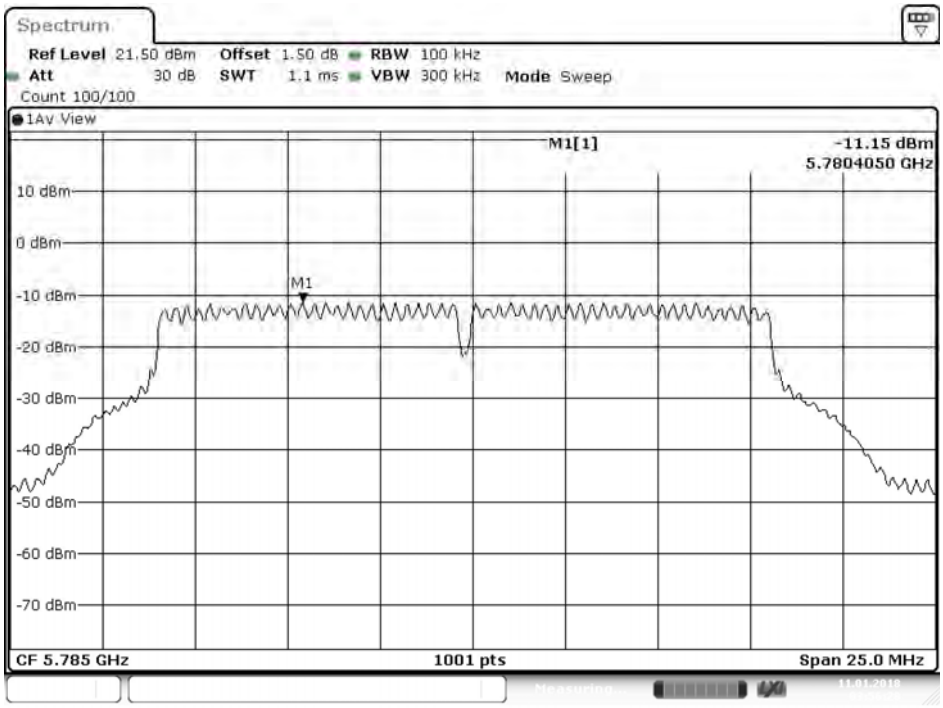
Date: 11.JAN.2018 03:38:34

Channel 149 – Chain B



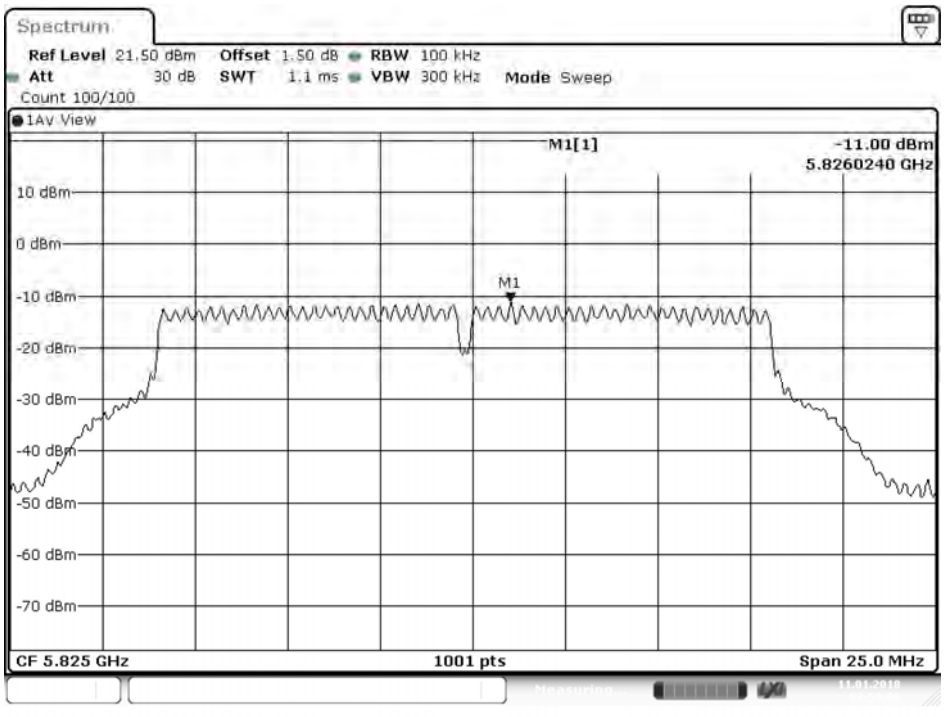
Date: 11.JAN.2018 03:55:17

Channel 157 – Chain B



Date: 11.JAN.2018 03:56:28

Channel 165 – Chain B



Date: 11.JAN.2018 03:59:08

Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)
Test Date : 2016/08/26

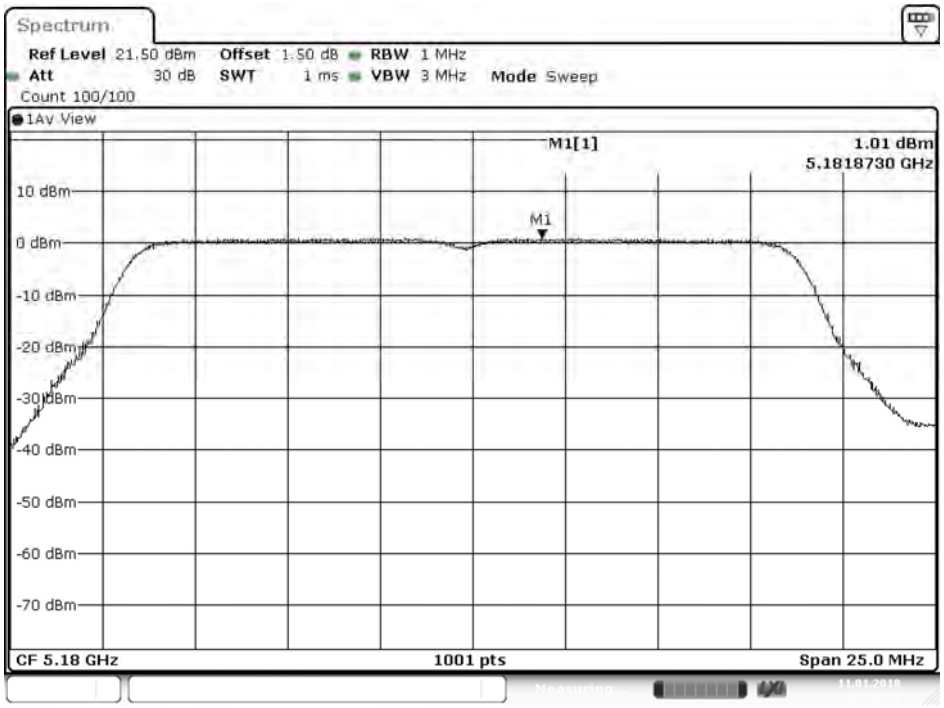
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
36	5180	A	1.010	4.020	11	Pass
		B	-0.190	2.820	11	Pass
44	5220	A	1.310	4.320	11	Pass
		B	-0.080	2.930	11	Pass
48	5240	A	1.190	4.200	11	Pass
		B	0.020	3.030	11	Pass
52	5260	A	1.240	4.250	11	Pass
		B	-0.300	2.710	11	Pass
60	5300	A	1.120	4.130	11	Pass
		B	-0.290	2.720	11	Pass
64	5320	A	1.100	4.110	11	Pass
		B	-0.480	2.530	11	Pass
100	5500	A	0.060	3.070	11	Pass
		B	-0.810	2.200	11	Pass
116	5580	A	-1.530	1.480	11	Pass
		B	-1.670	1.340	11	Pass
140	5700	A	-2.030	0.980	11	Pass
		B	-2.450	0.560	11	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)[1]	Required Limit (dBm)	Result
149	5745	A	-10.390	6.980	-0.400	30	Pass
		B	-11.240	6.980	-1.250	30	Pass
157	5785	A	-10.340	6.980	-0.350	30	Pass
		B	-11.180	6.980	-1.190	30	Pass
165	5825	A	-10.550	6.980	-0.560	30	Pass
		B	-11.340	6.980	-1.350	30	Pass

Note:

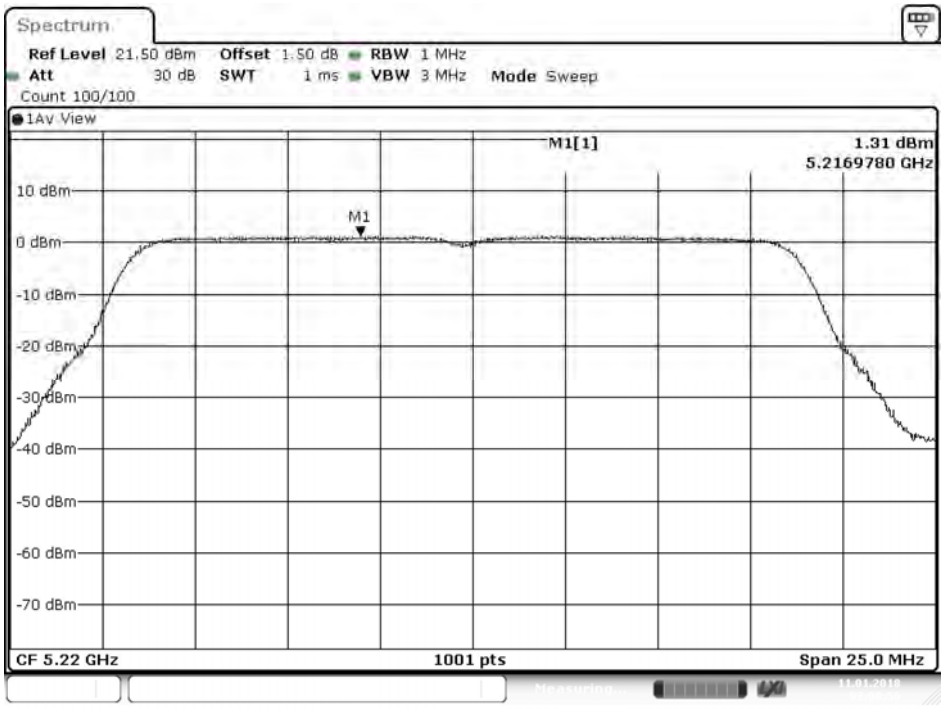
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 – Chain A



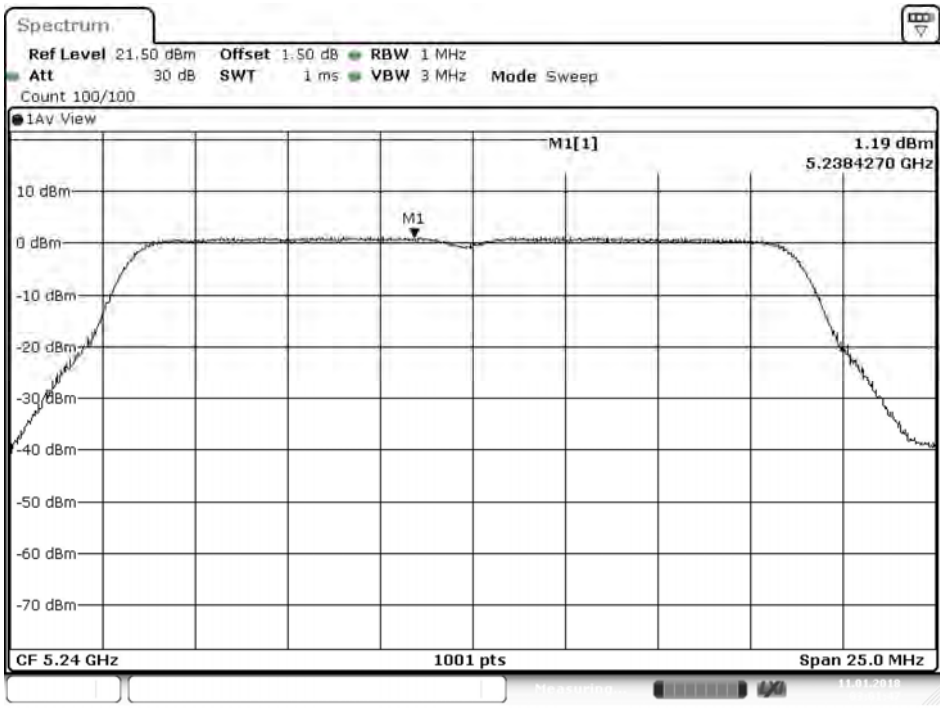
Date: 11.JAN.2018 02:59:59

Channel 44 – Chain A



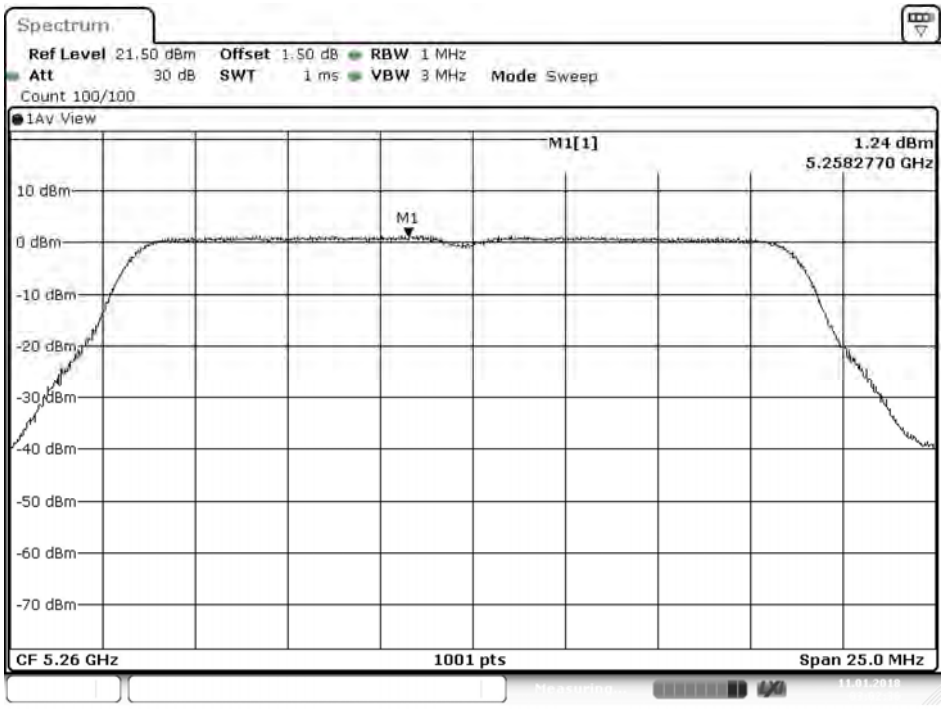
Date: 11.JAN.2018 03:00:57

Channel 48 – Chain A



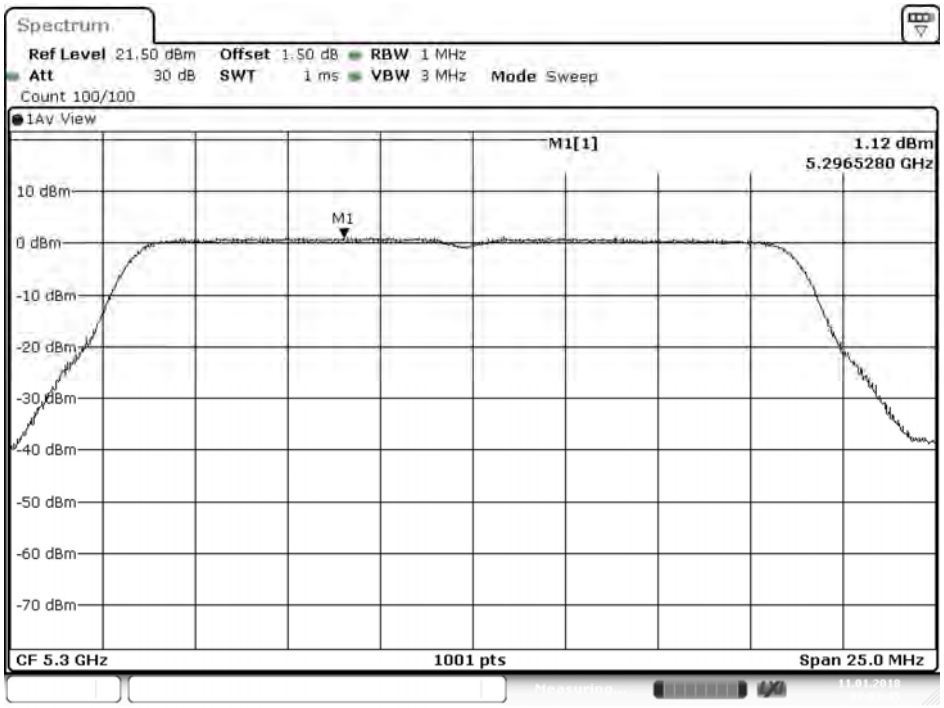
Date: 11.JAN.2018 03:01:47

Channel 52 – Chain A



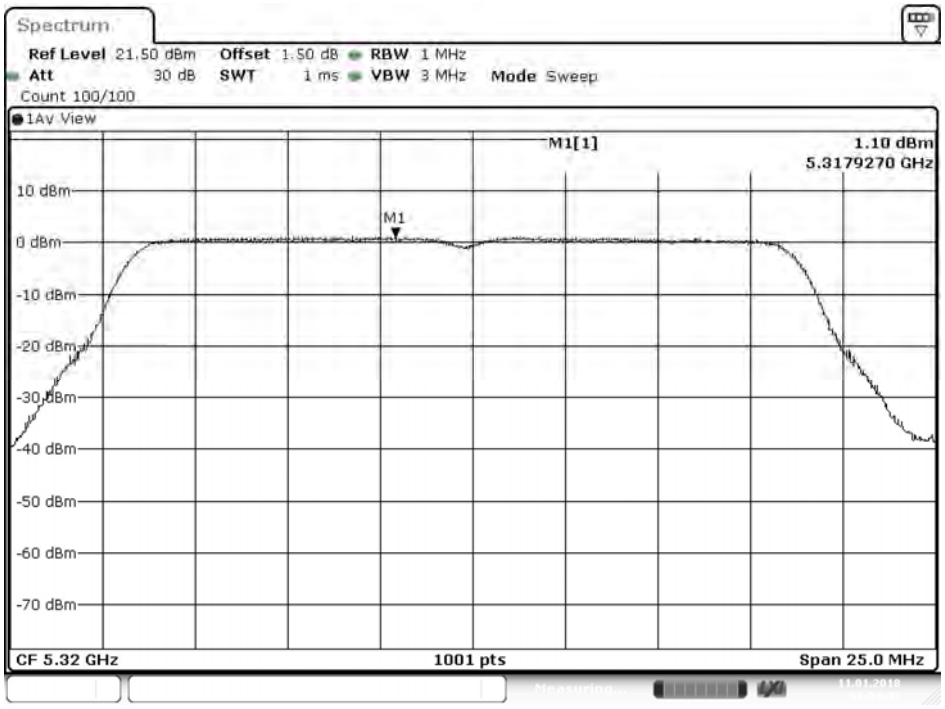
Date: 11.JAN.2018 03:02:37

Channel 60 – Chain A



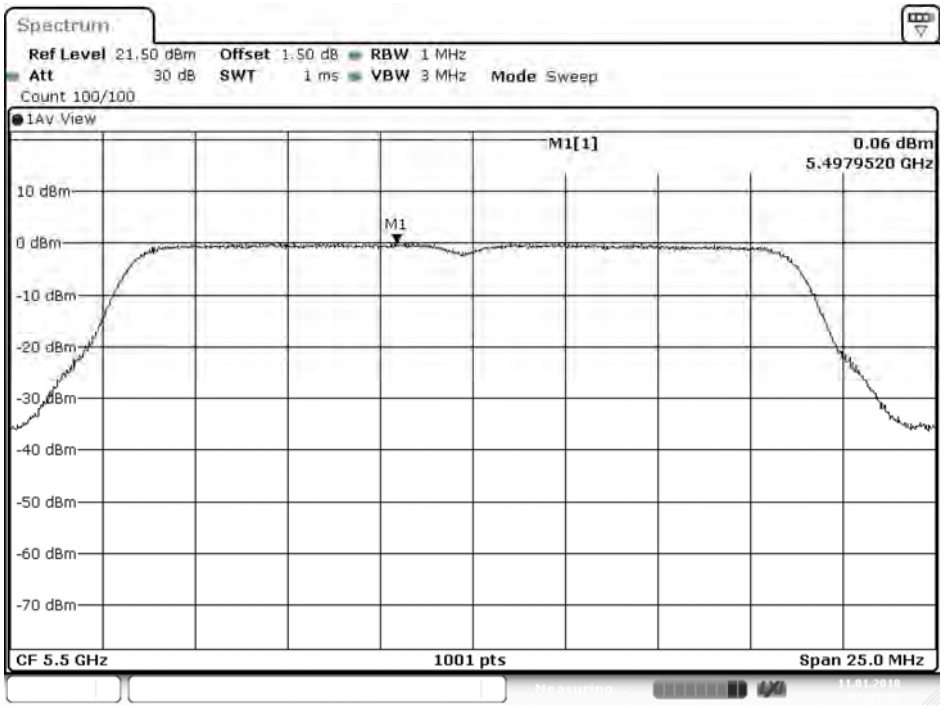
Date: 11.JAN.2018 03:03:46

Channel 64 – Chain A



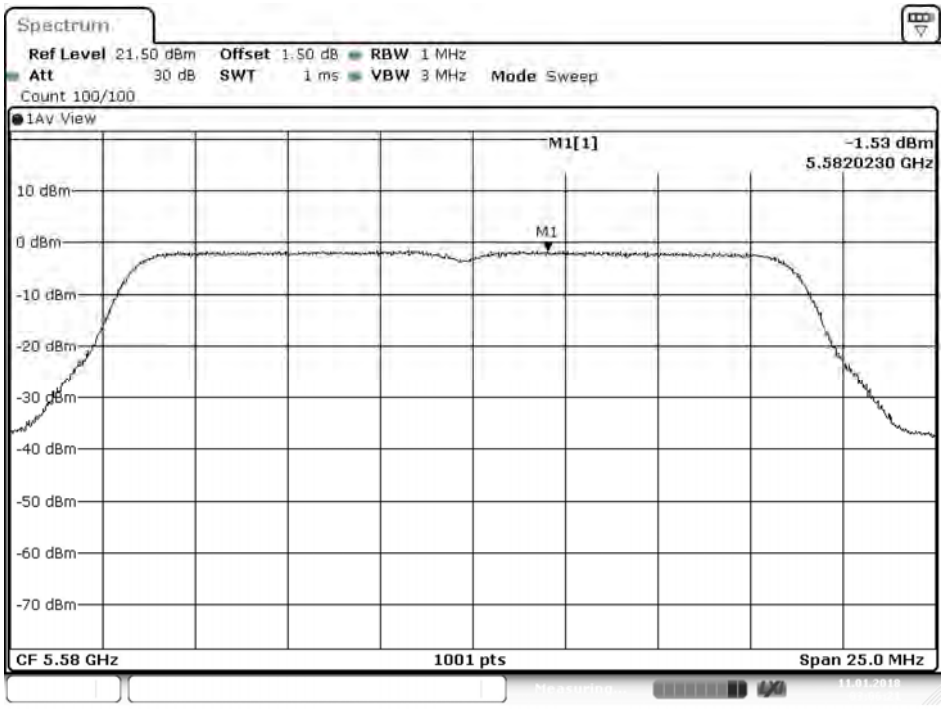
Date: 11.JAN.2018 03:04:43

Channel 100 – Chain A



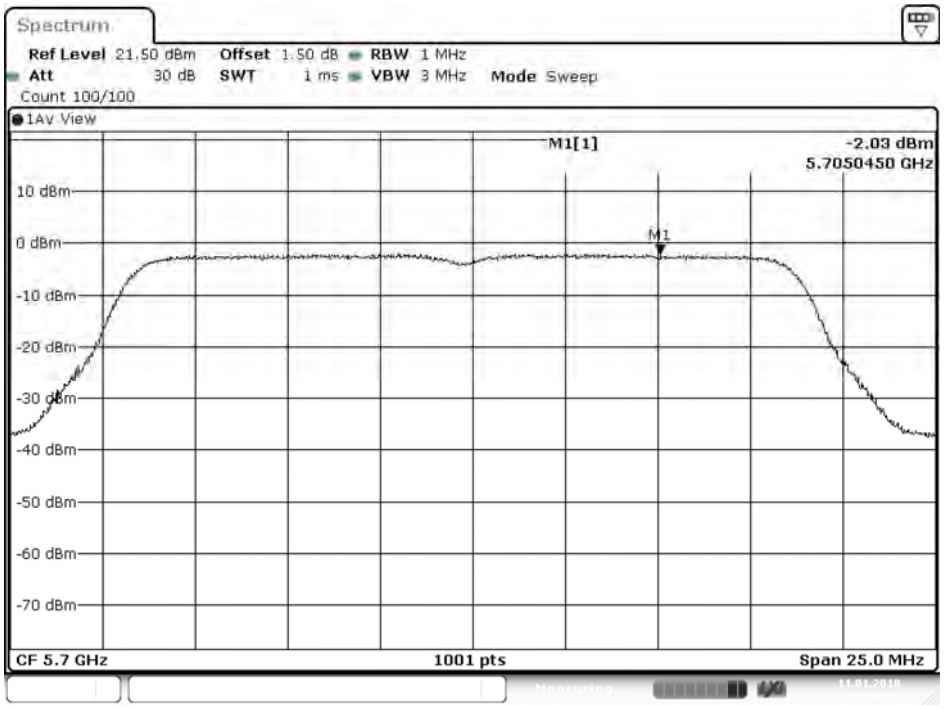
Date: 11.JAN.2018 03:05:33

Channel 116 – Chain A



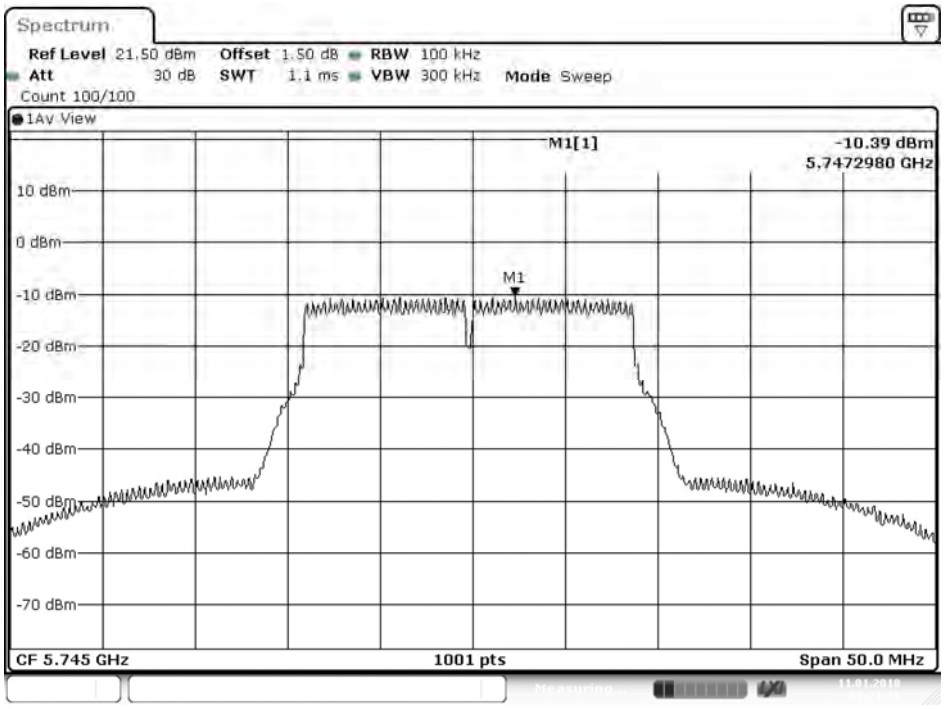
Date: 11.JAN.2018 03:06:22

Channel 140 – Chain A



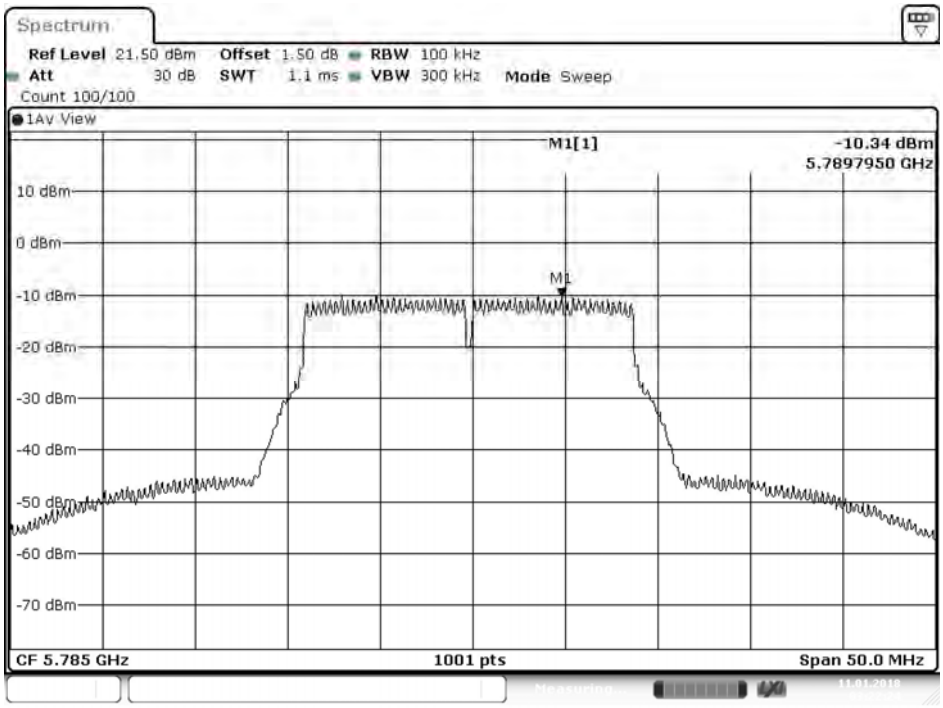
Date: 11.JAN.2018 03:08:03

Channel 149 – Chain A



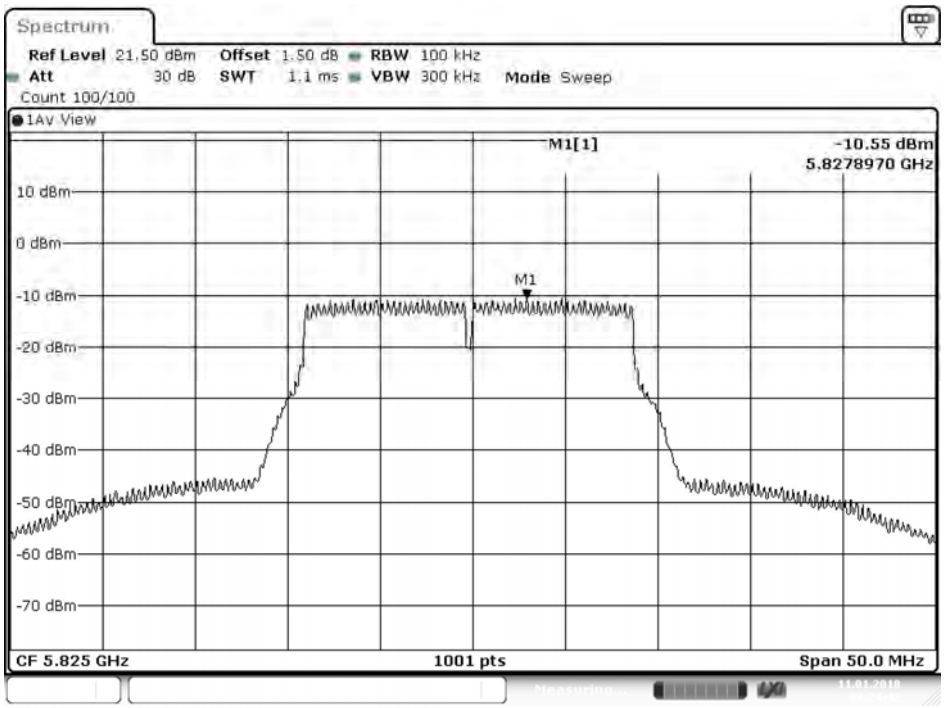
Date: 11.JAN.2018 03:21:12

Channel 157 – Chain A



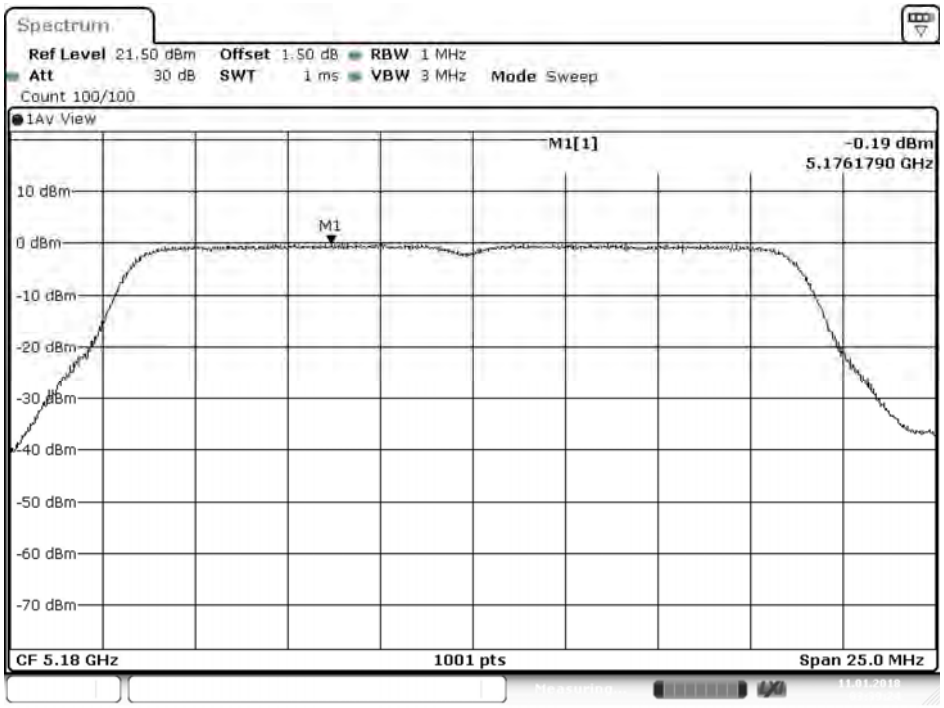
Date: 11.JAN.2018 03:22:24

Channel 165 – Chain A



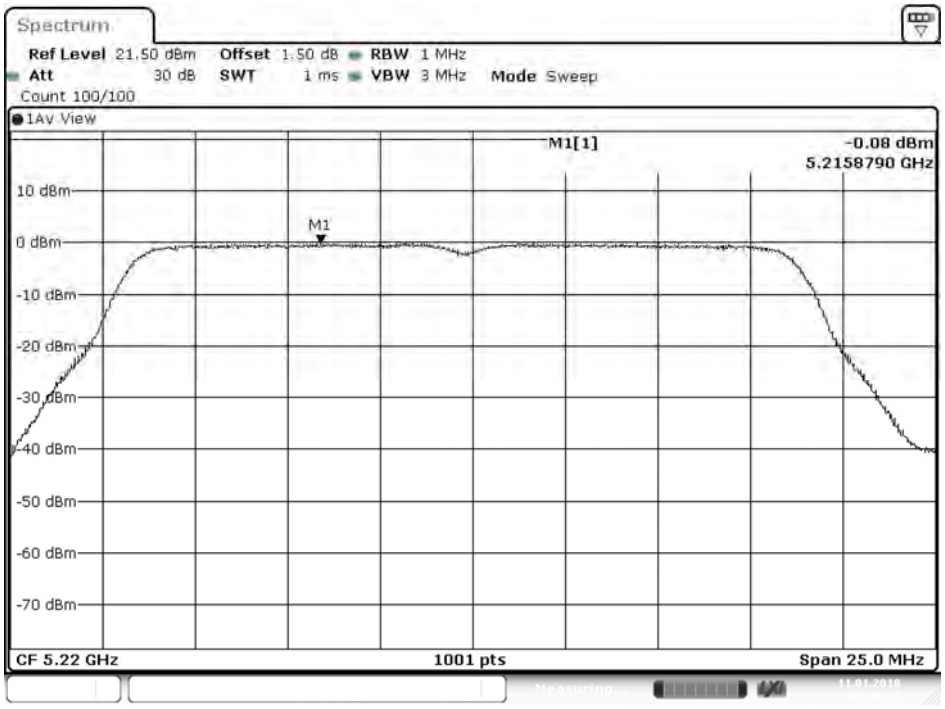
Date: 11.JAN.2018 03:24:42

Channel 36 – Chain B



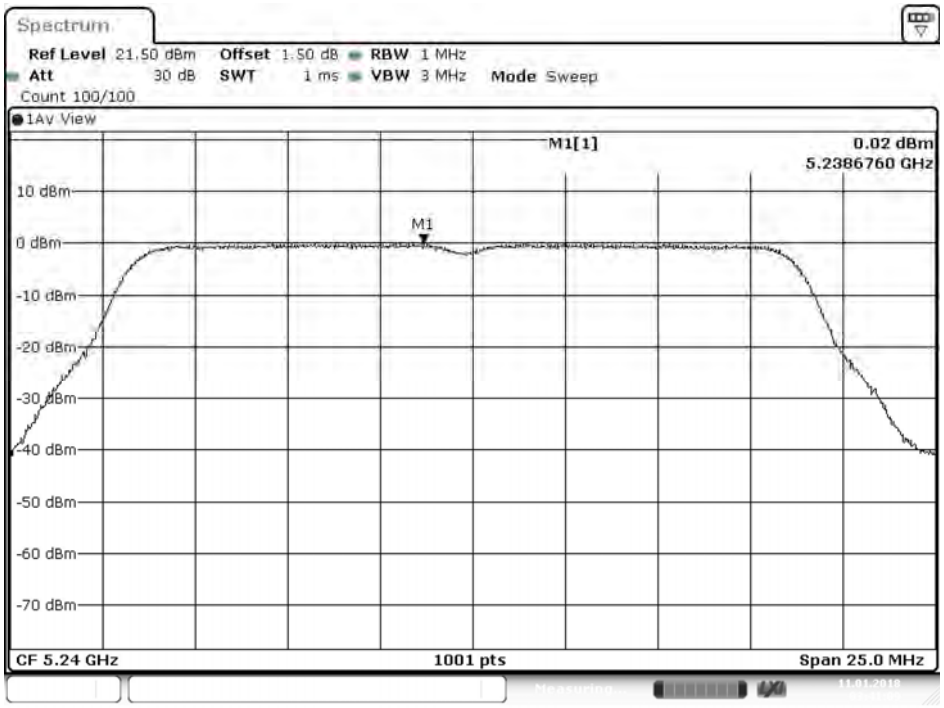
Date: 11.JAN.2018 03:39:24

Channel 44 – Chain B



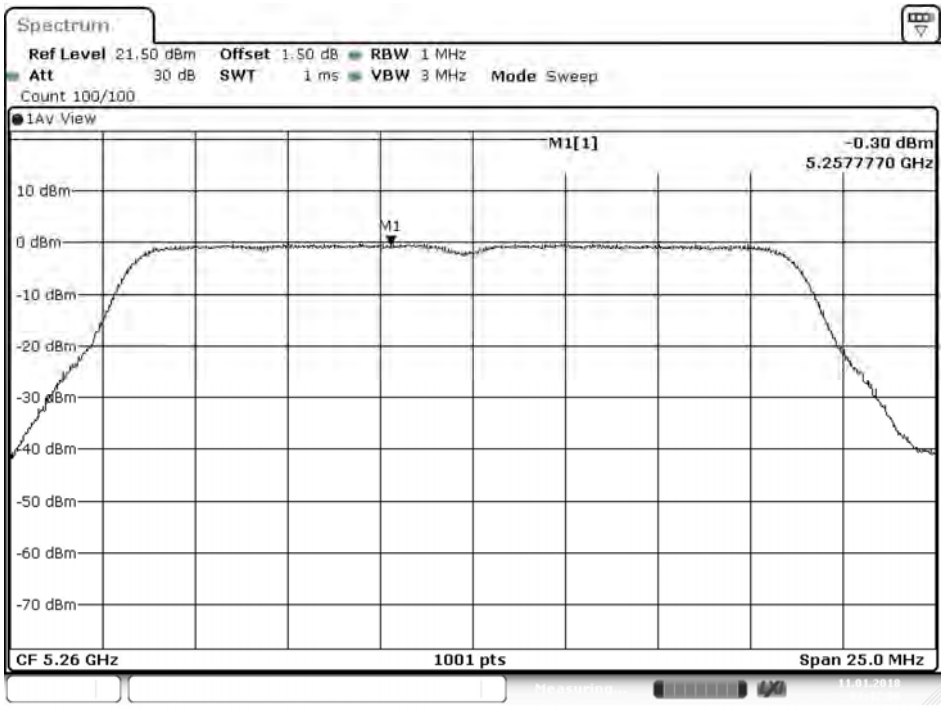
Date: 11.JAN.2018 03:40:17

Channel 48 – Chain B



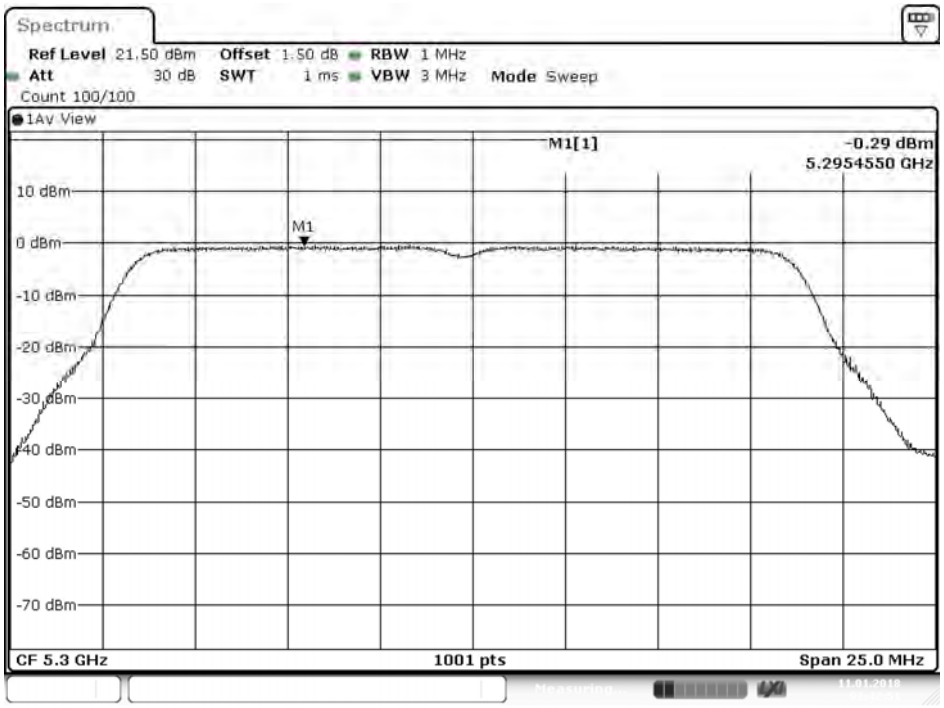
Date: 11.JAN.2018 03:41:09

Channel 52 – Chain B



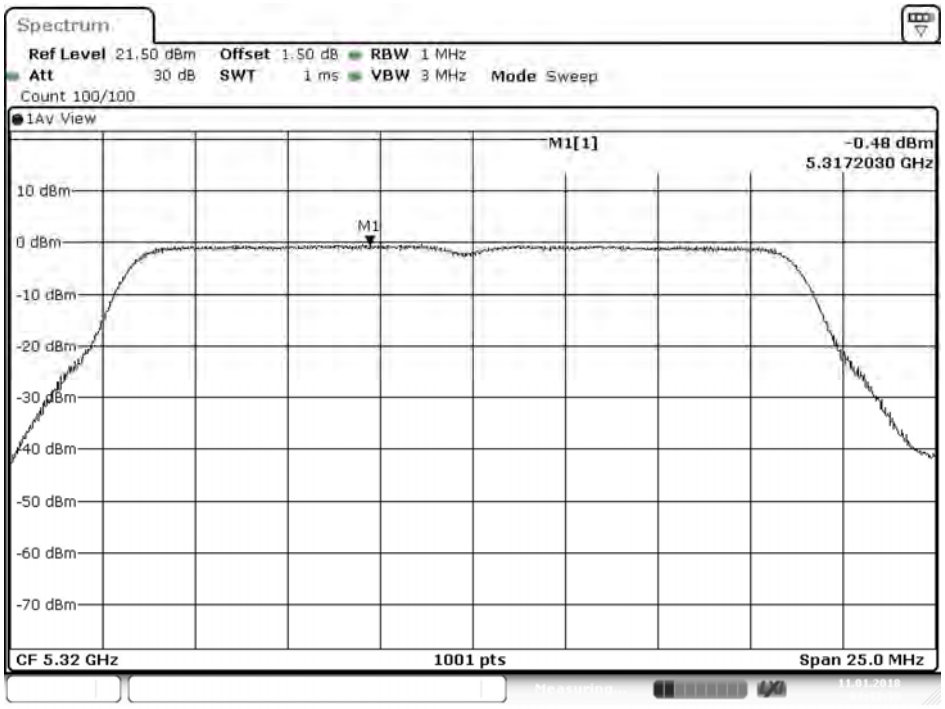
Date: 11.JAN.2018 03:42:00

Channel 60 – Chain B



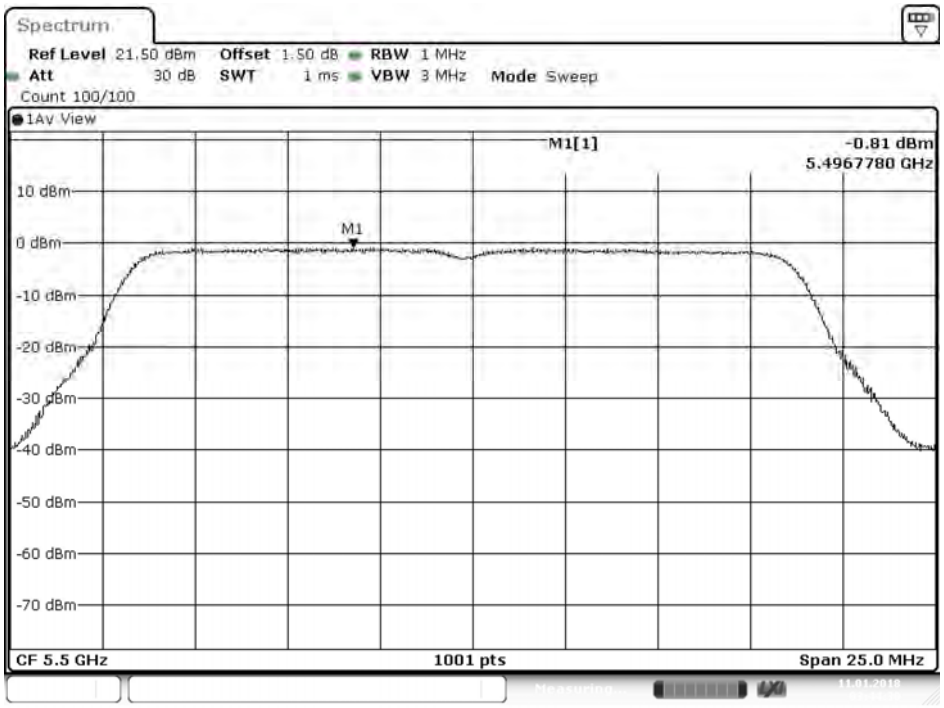
Date: 11.JAN.2018 03:42:52

Channel 64 – Chain B



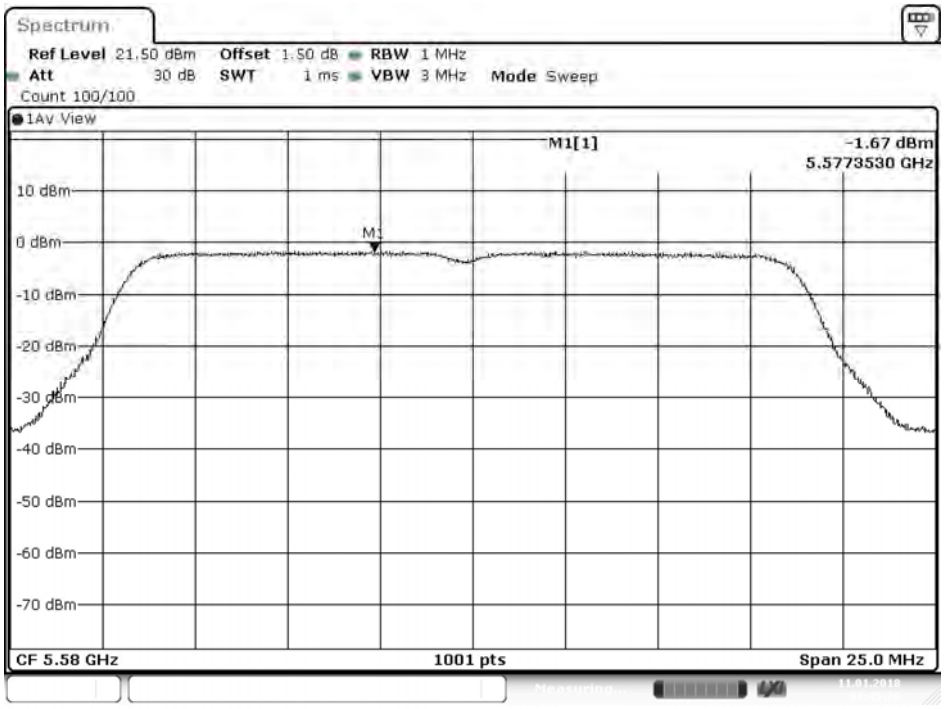
Date: 11.JAN.2018 03:43:40

Channel 100 – Chain B



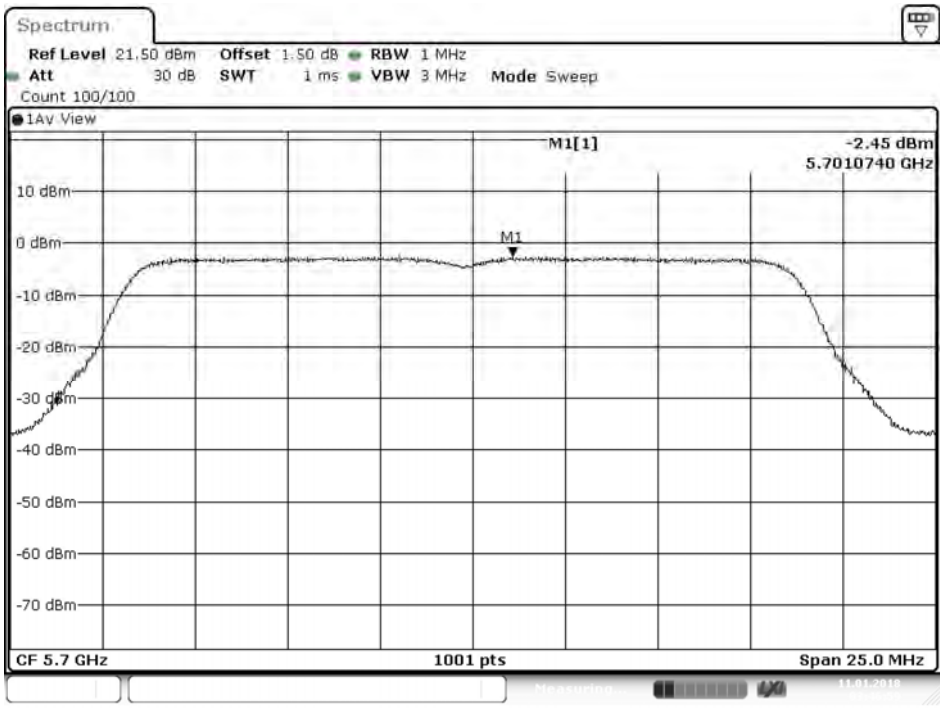
Date: 11.JAN.2018 03:44:30

Channel 116 – Chain B



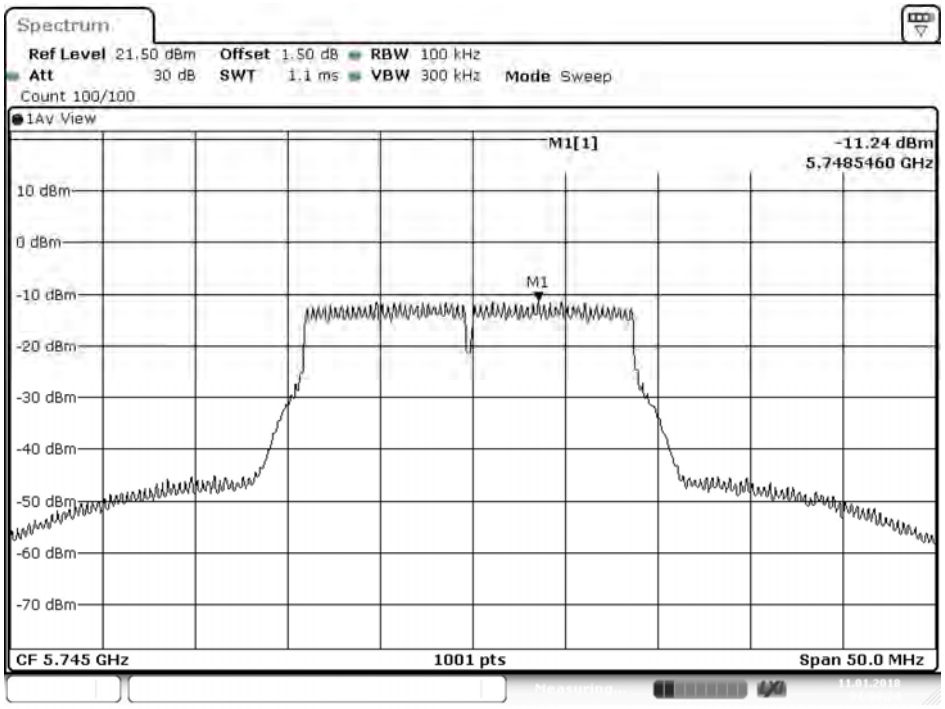
Date: 11.JAN.2018 03:45:21

Channel 140 – Chain B



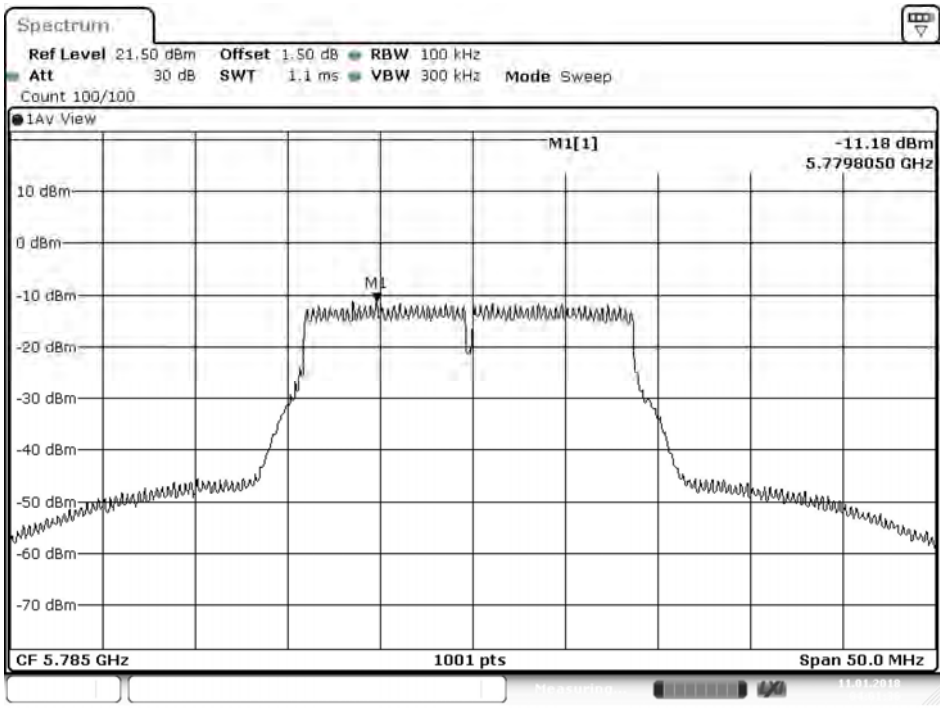
Date: 11.JAN.2018 03:46:59

Channel 149 – Chain B



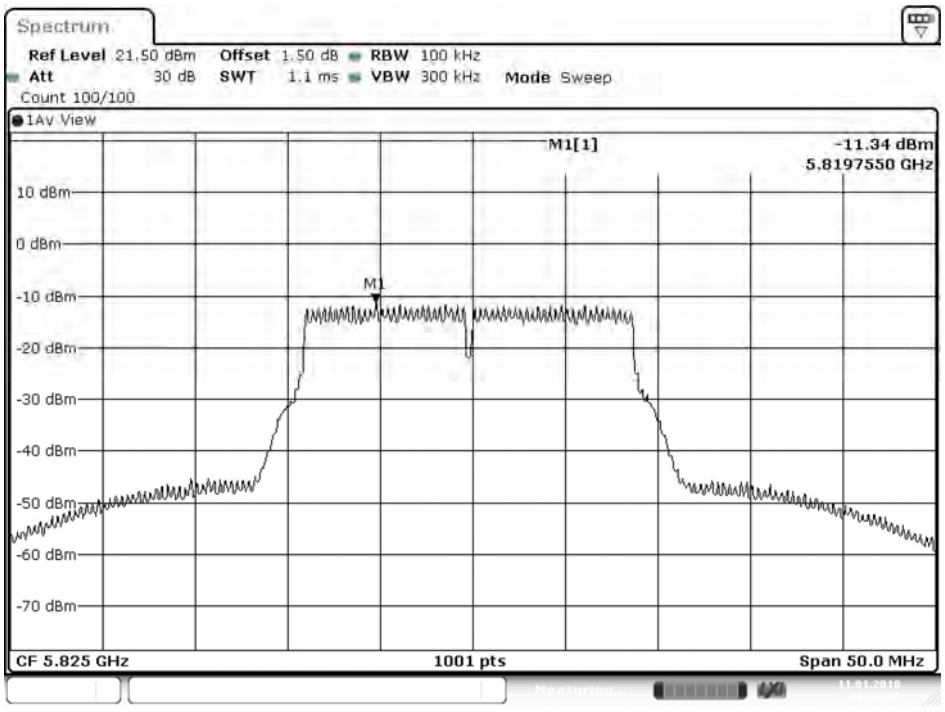
Date: 11.JAN.2018 04:00:24

Channel 157 – Chain B



Date: 11.JAN.2018 04:01:37

Channel 165 – Chain B



Date: 11.JAN.2018 04:04:19

Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 3: Transmit (802.11n-40BW 15Mbps)
Test Date : 2016/08/26

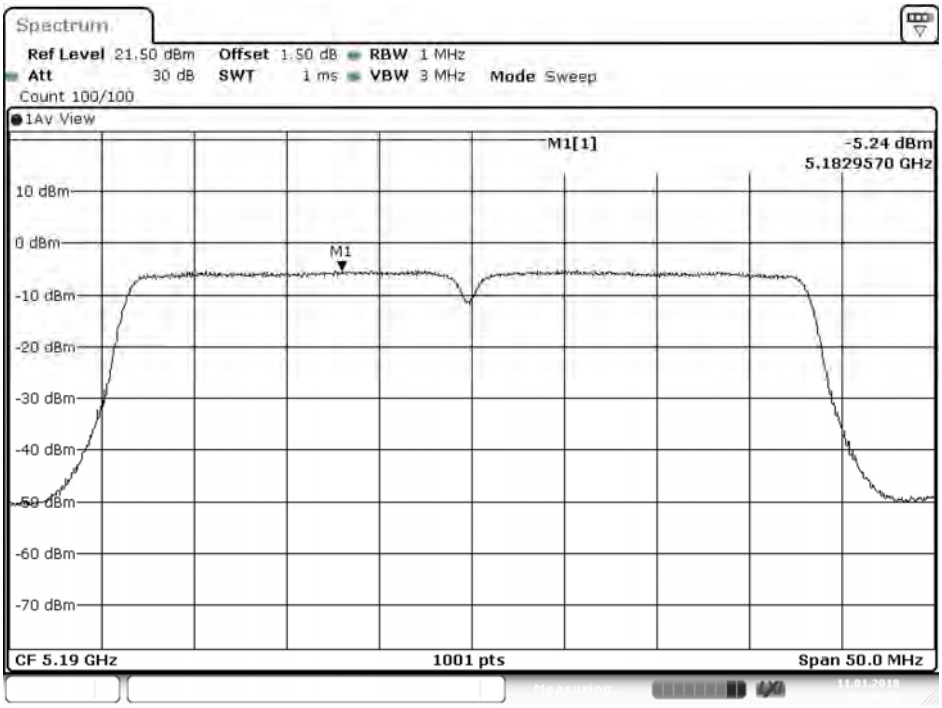
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
38	5190	A	-5.240	-2.230	11	Pass
		B	-6.340	-3.330	11	Pass
46	5230	A	-1.050	1.960	11	Pass
		B	-2.400	0.610	11	Pass
54	5270	A	-1.260	1.750	11	Pass
		B	-2.520	0.490	11	Pass
62	5310	A	-4.460	-1.450	11	Pass
		B	-5.870	-2.860	11	Pass
102	5510	A	-5.240	-2.230	11	Pass
		B	-5.930	-2.920	11	Pass
110	5550	A	-3.910	-0.900	11	Pass
		B	-3.870	-0.860	11	Pass
134	5670	A	-5.370	-2.360	11	Pass
		B	-6.040	-3.030	11	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)[1]	Required Limit (dBm)	Result
151	5755	A	-13.050	6.980	-3.060	30	Pass
		B	-13.340	6.980	-3.350	30	Pass
159	5795	A	-13.050	6.980	-3.060	30	Pass
		B	-13.650	6.980	-3.660	30	Pass

Note:

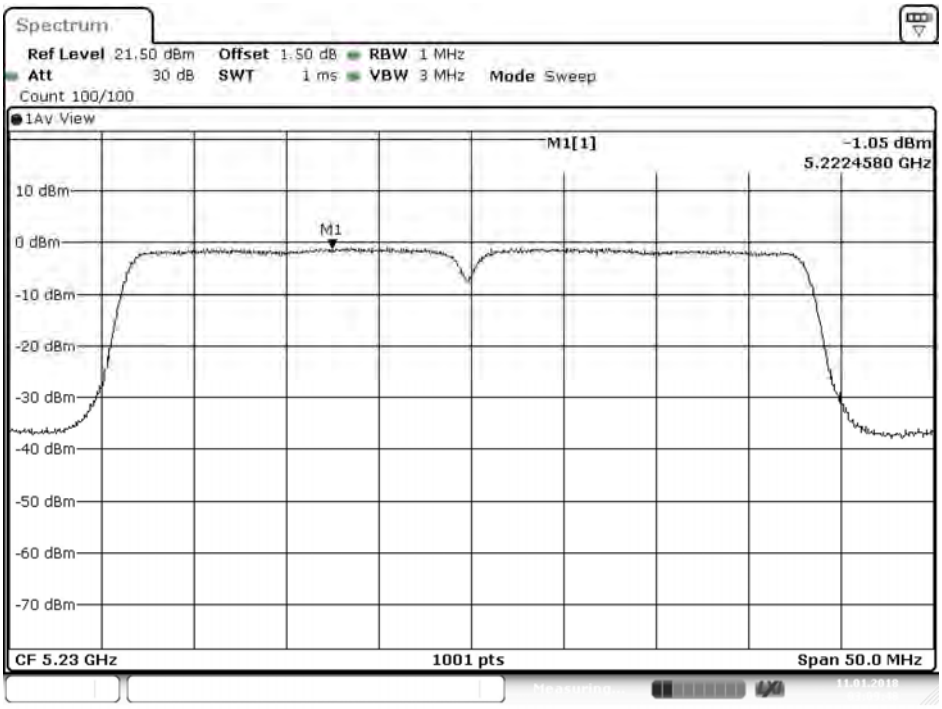
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 38 – Chain A



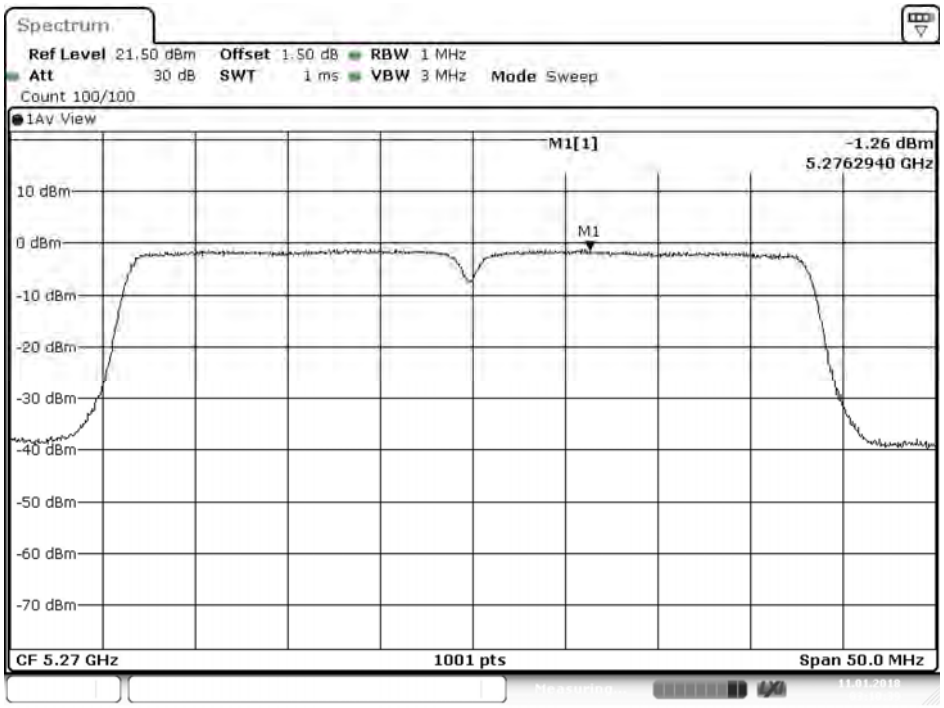
Date: 11.JAN.2018 03:08:55

Channel 46 – Chain A



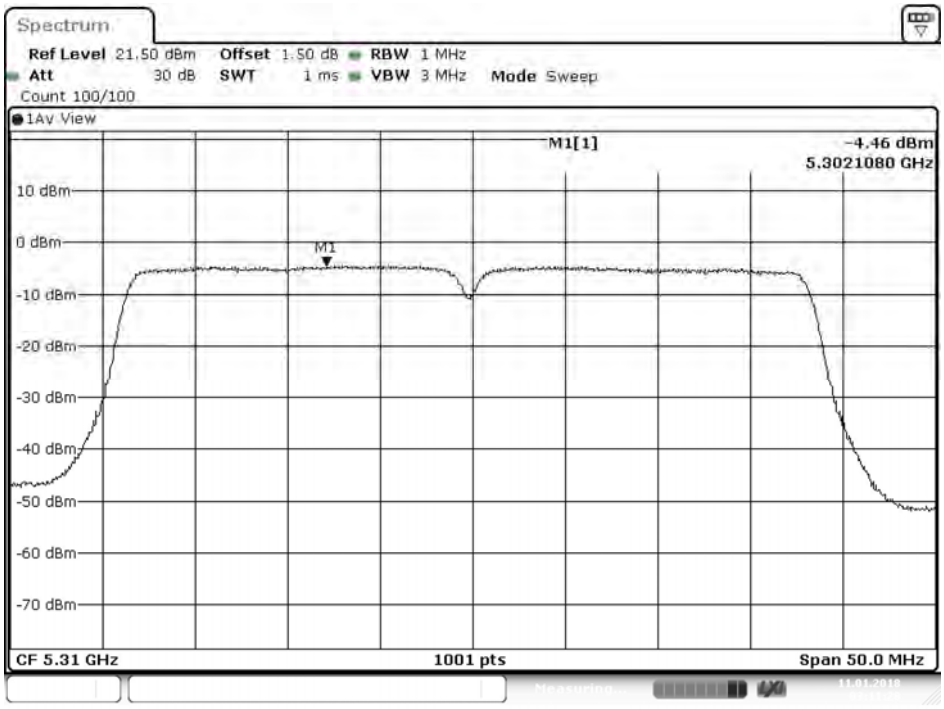
Date: 11.JAN.2018 03:09:49

Channel 54 – Chain A



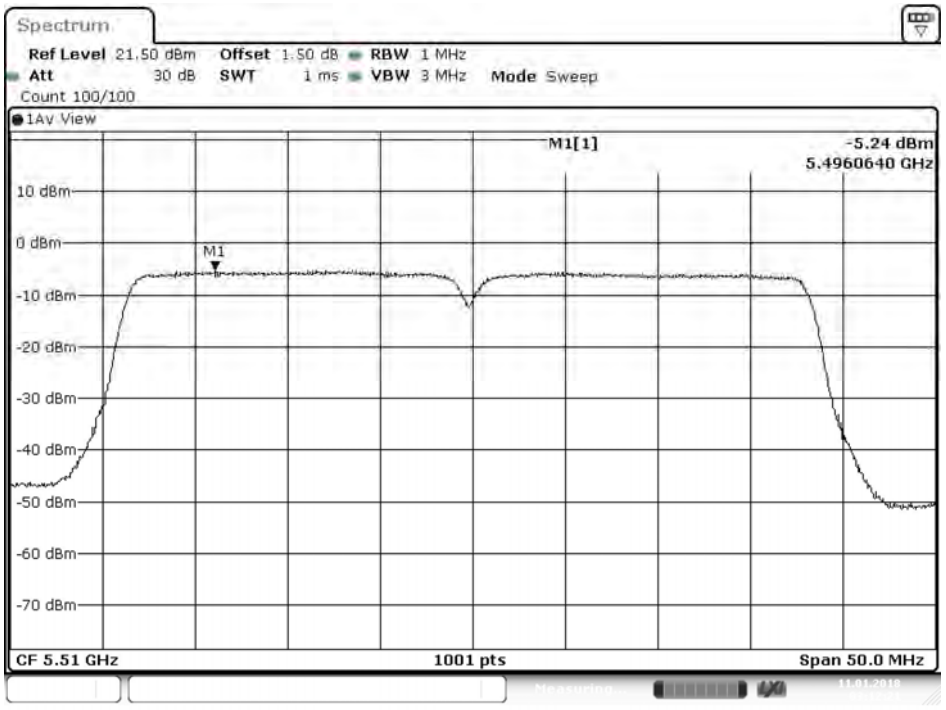
Date: 11.JAN.2018 03:10:39

Channel 62 – Chain A



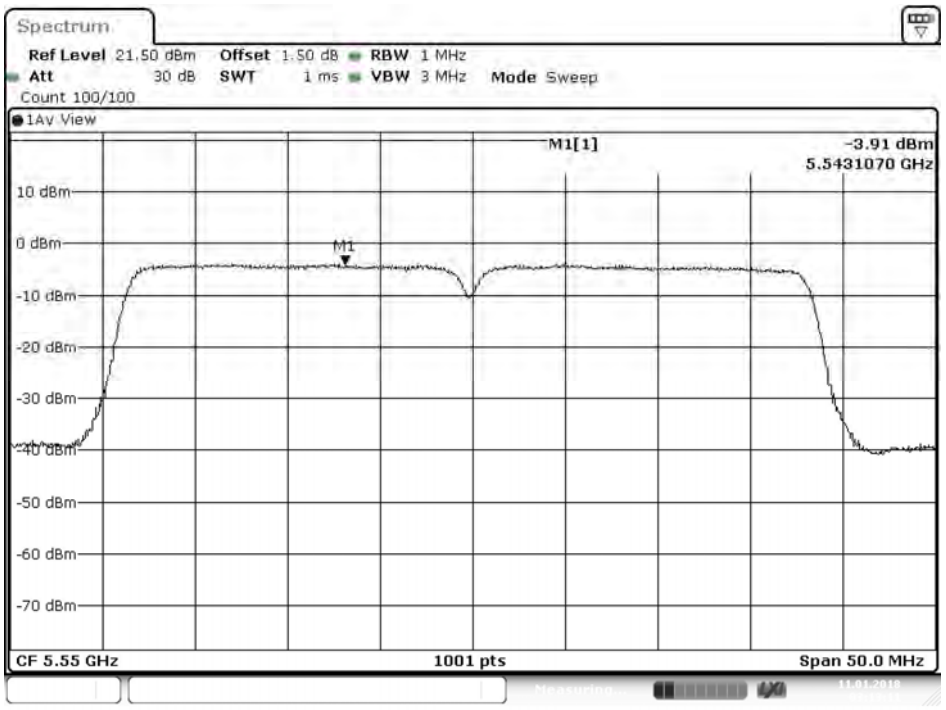
Date: 11.JAN.2018 03:11:28

Channel 102 – Chain A



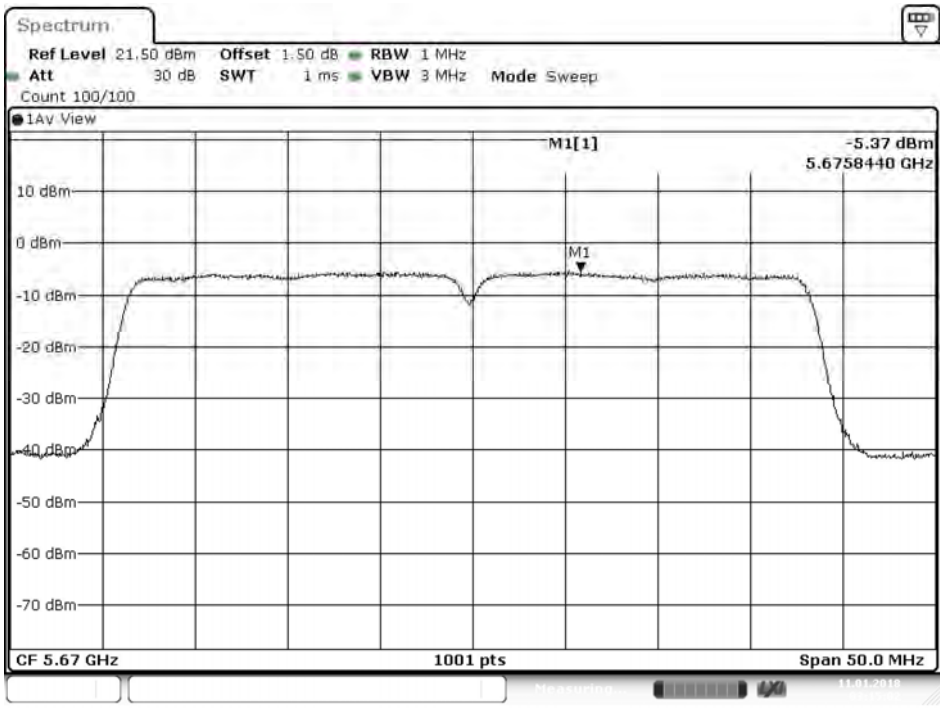
Date: 11.JAN.2018 03:12:22

Channel 110 – Chain A



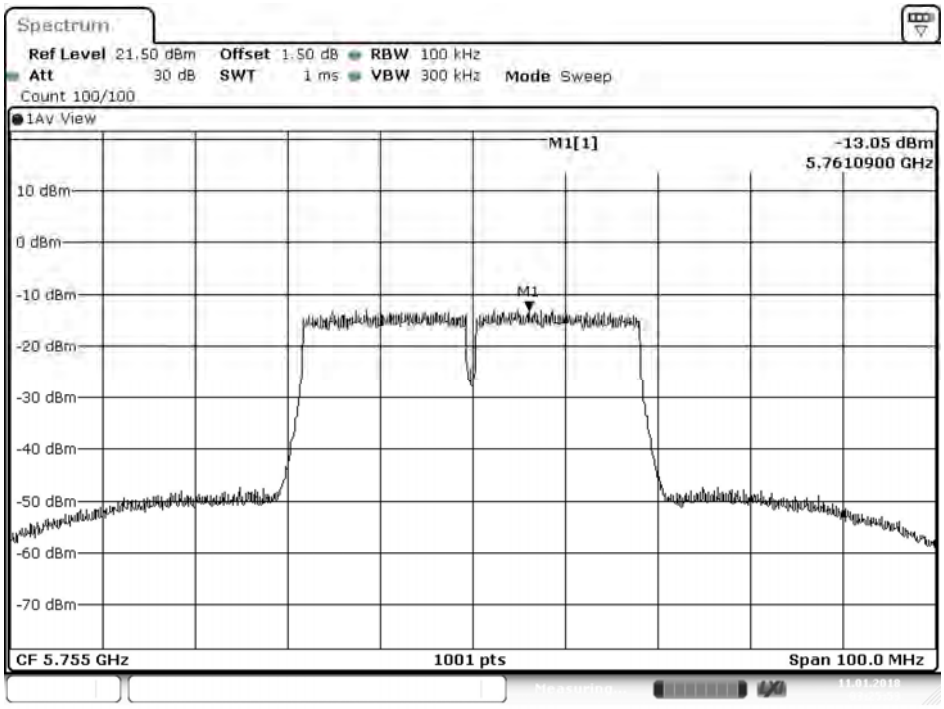
Date: 11.JAN.2018 03:13:11

Channel 134 – Chain A



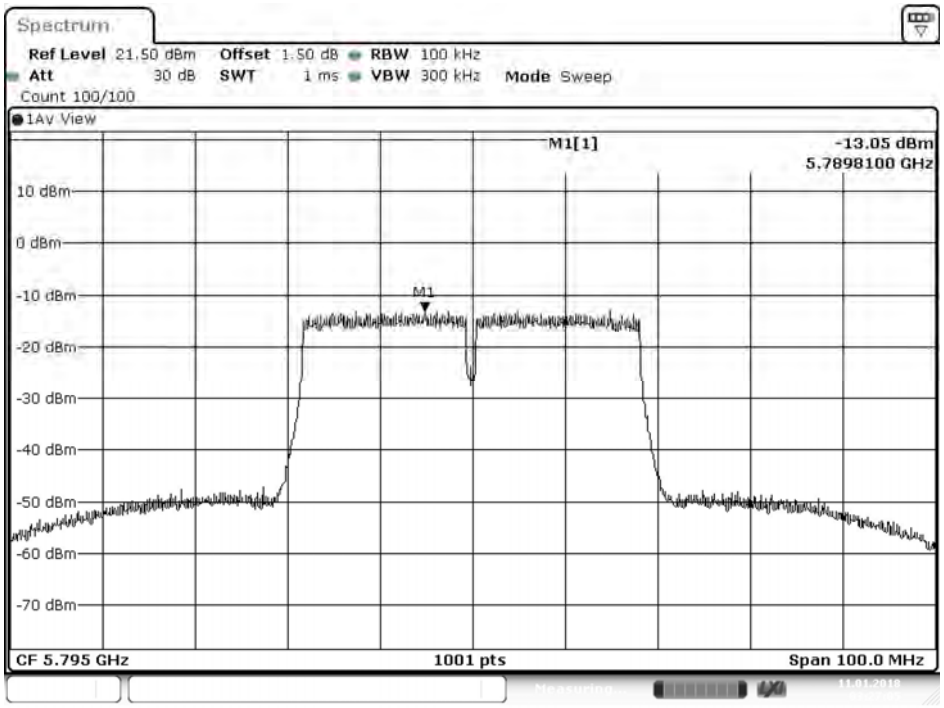
Date: 11.JAN.2018 03:15:02

Channel 151 – Chain A



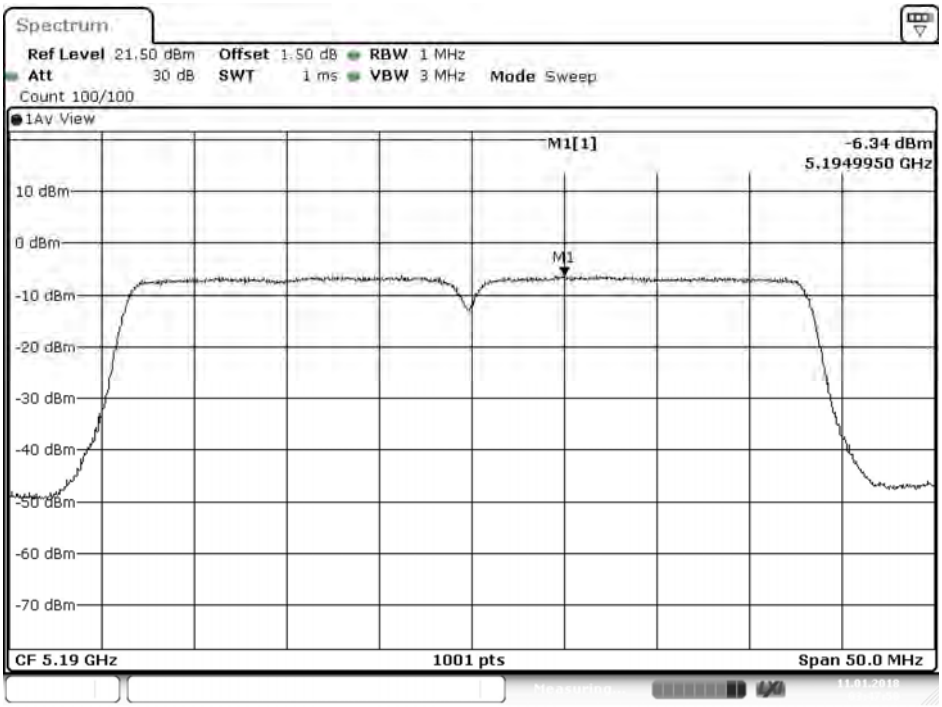
Date: 11.JAN.2018 03:25:53

Channel 159 – Chain A



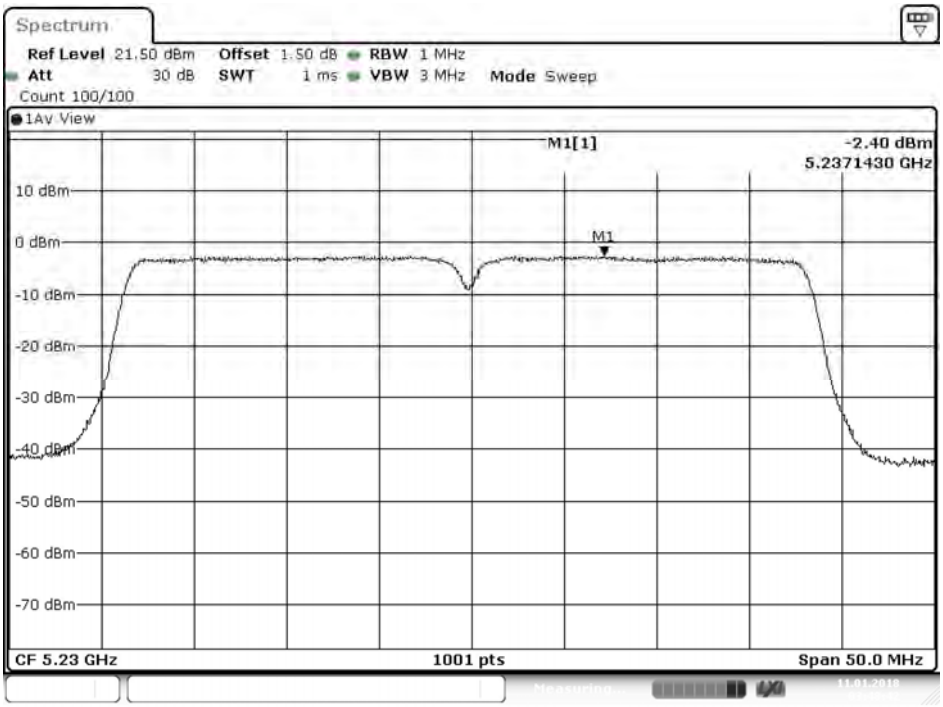
Date: 11.JAN.2018 03:27:06

Channel 38 – Chain B



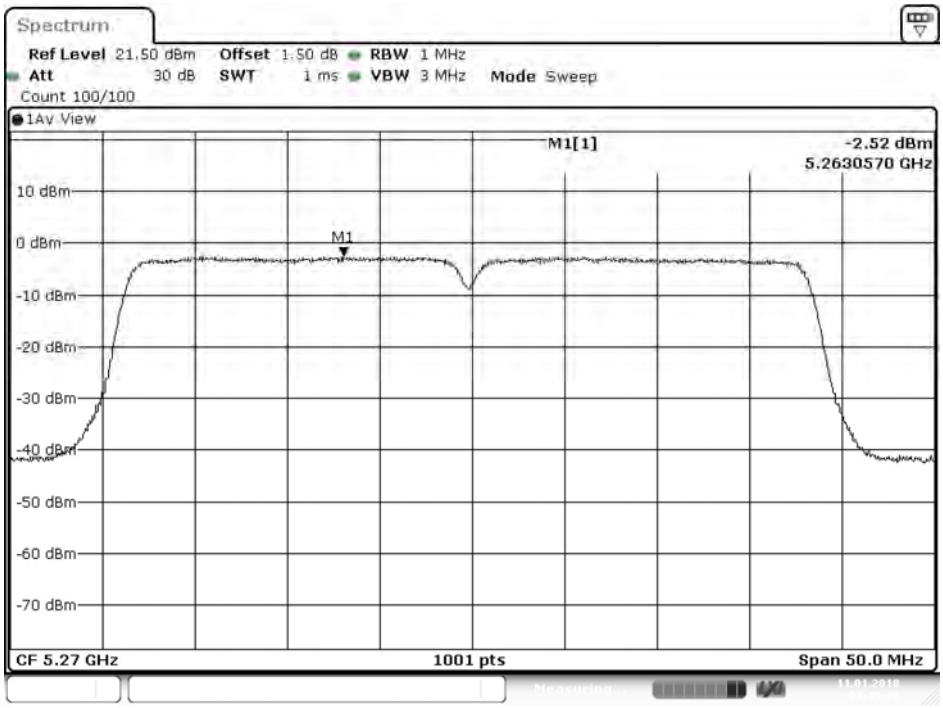
Date: 11.JAN.2018 03:47:50

Channel 46 – Chain B



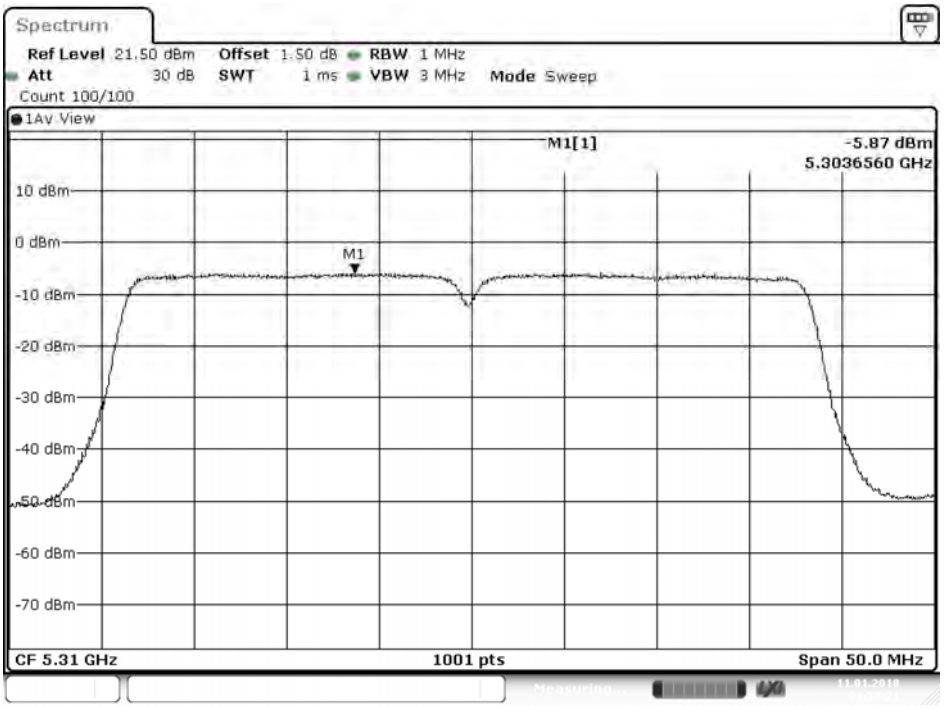
Date: 11.JAN.2018 03:48:42

Channel 54 – Chain B



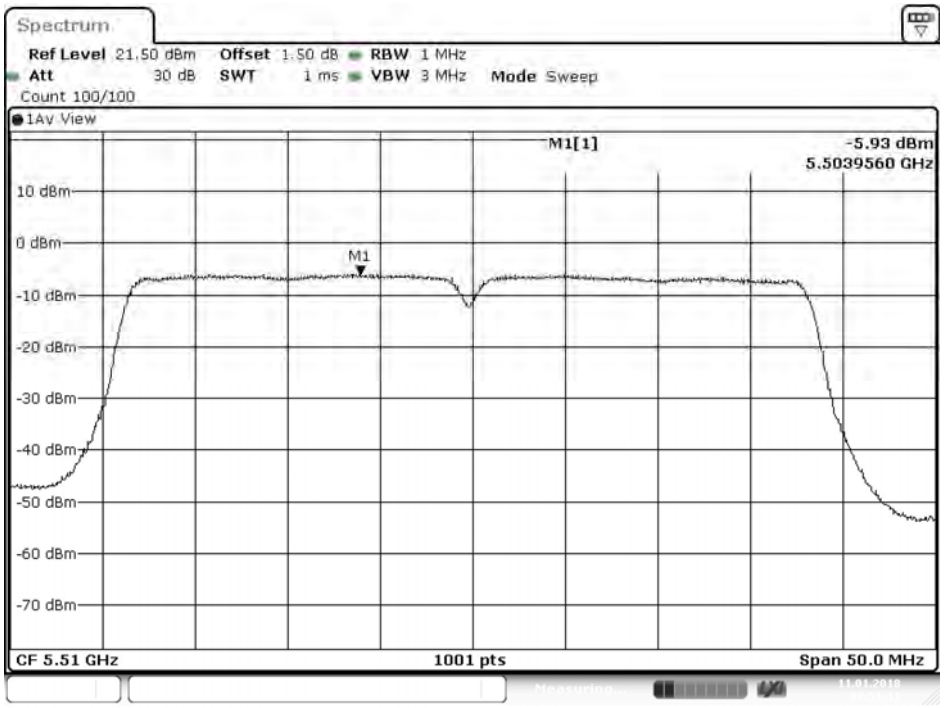
Date: 11.JAN.2018 03:49:31

Channel 62 – Chain B



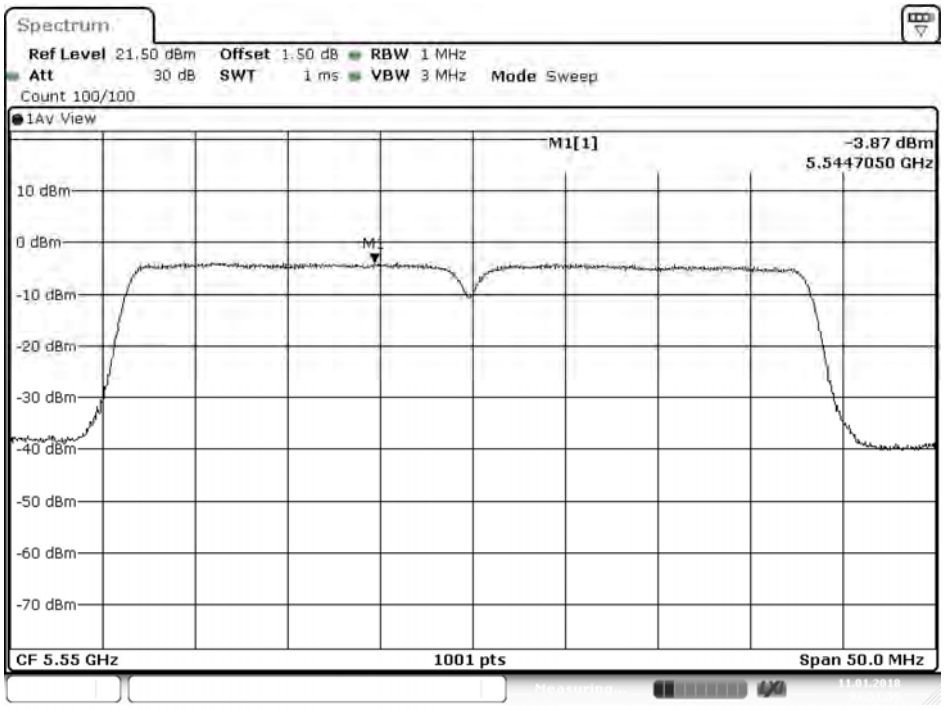
Date: 11.JAN.2018 03:50:21

Channel 102 – Chain B



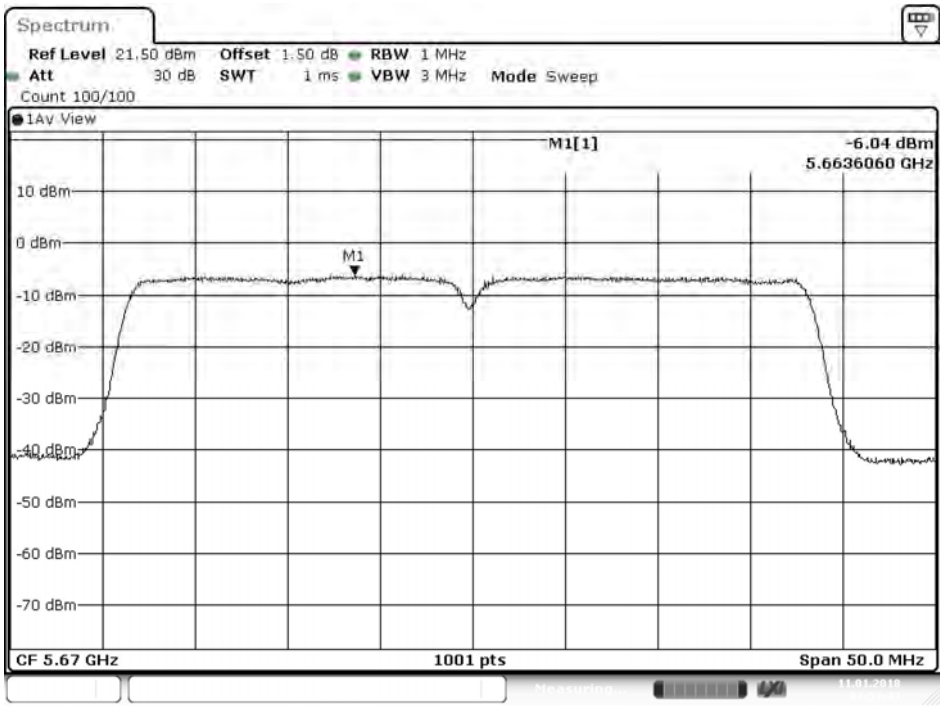
Date: 11.JAN.2018 03:51:11

Channel 110 – Chain B



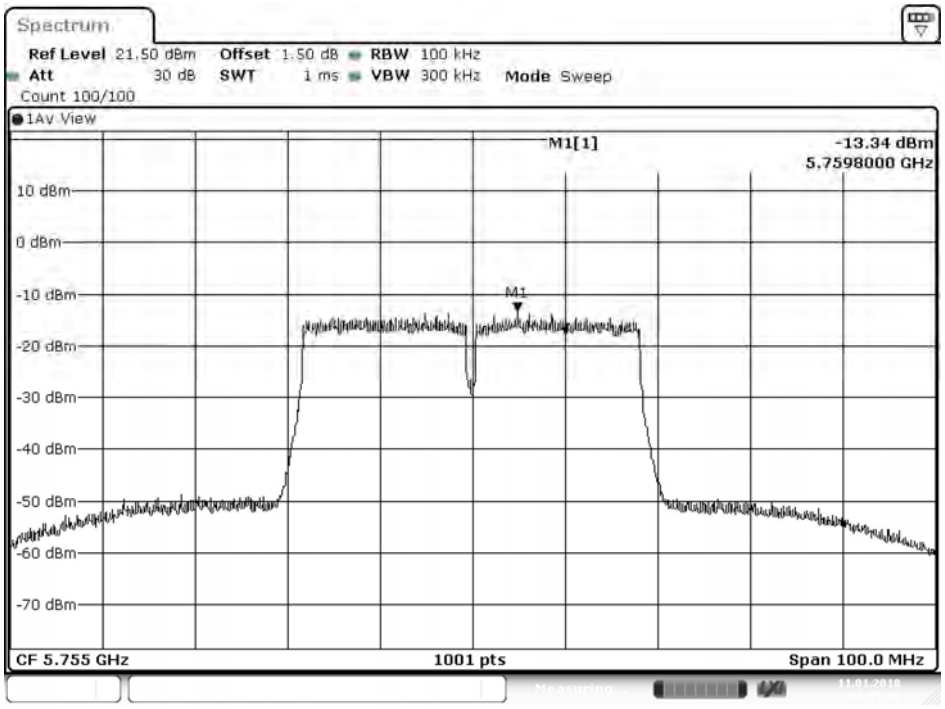
Date: 11.JAN.2018 03:52:00

Channel 134 – Chain B



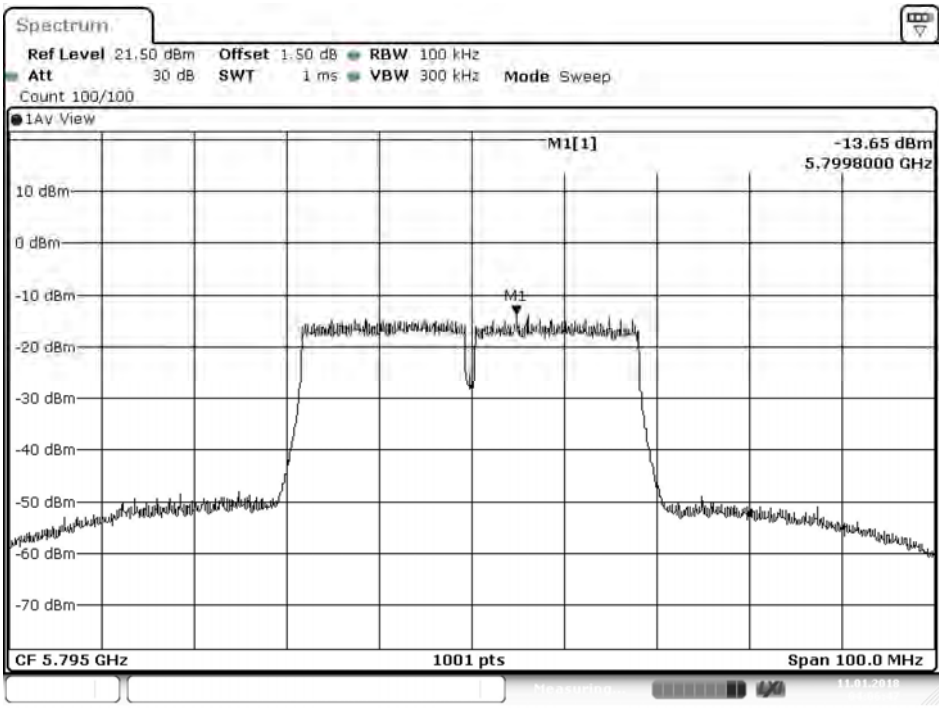
Date: 11.JAN.2018 03:53:44

Channel 151 – Chain B



Date: 11.JAN.2018 04:05:36

Channel 159 – Chain B



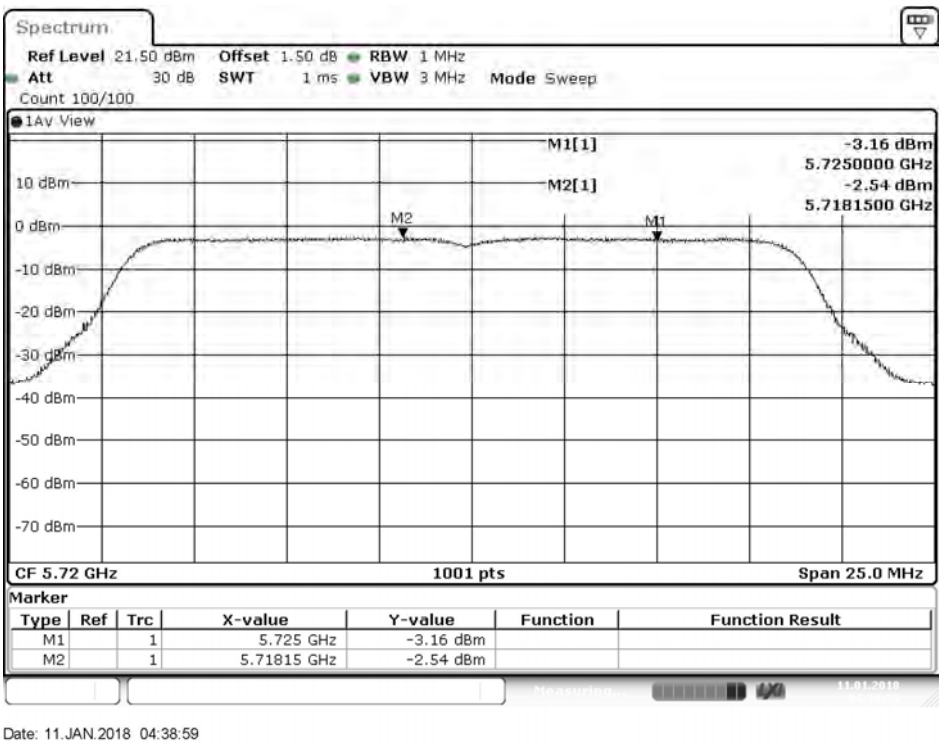
Date: 11.JAN.2018 04:06:47

Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 4: Transmit (802.11ac-20BW-7.2Mbps)
Test Date : 2016/08/26

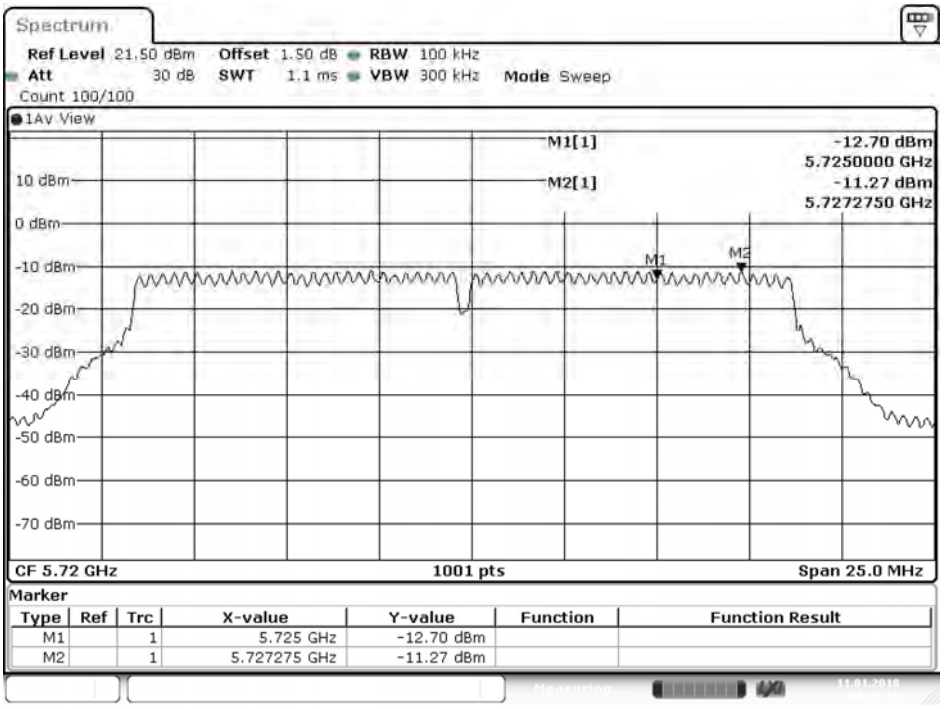
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
144	5720(Band3)	A	-2.540	--	0.470	<11	Pass
		B	-0.290	--	2.720	<11	Pass
144	5720(Band4)	A	-11.270	6.98	-1.280	<30	Pass
		B	-9.090	6.98	0.900	<30	Pass

Note:
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 144(Band3) – Chain A

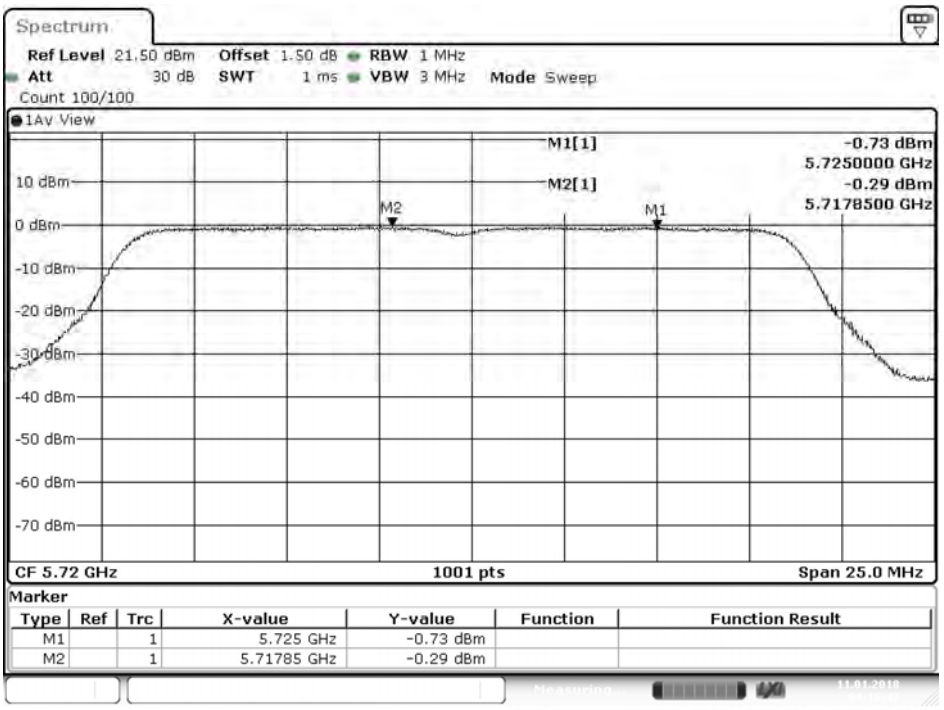


Channel 144 (Band4)– Chain A



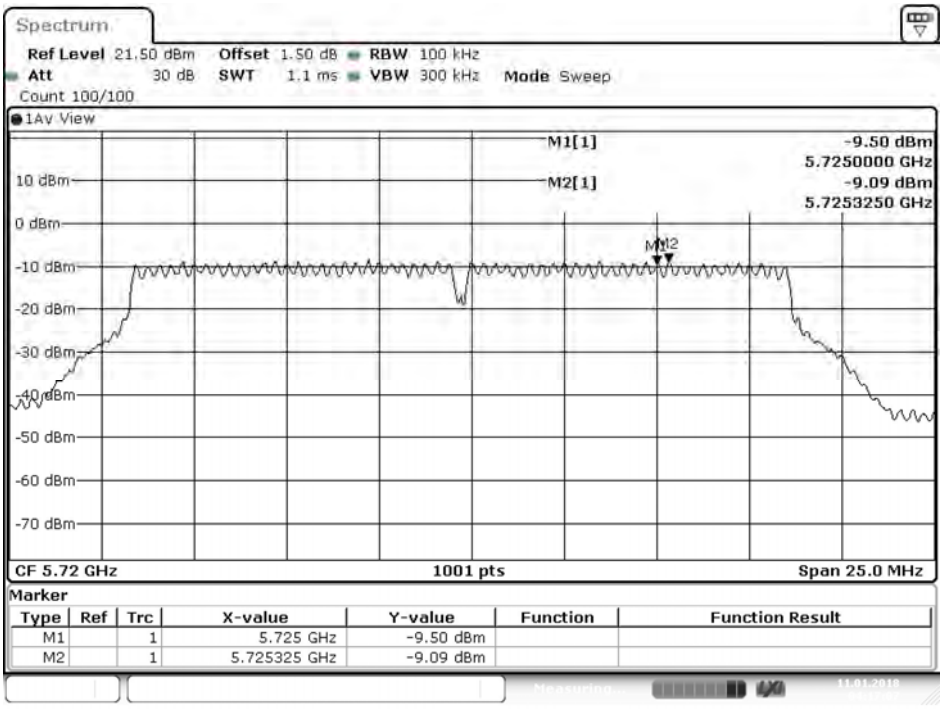
Date: 11.JAN.2018 04:39:19

Channel 144(Band3) – Chain B



Date: 11.JAN.2018 04:16:47

Channel 144 (Band4)– Chain B



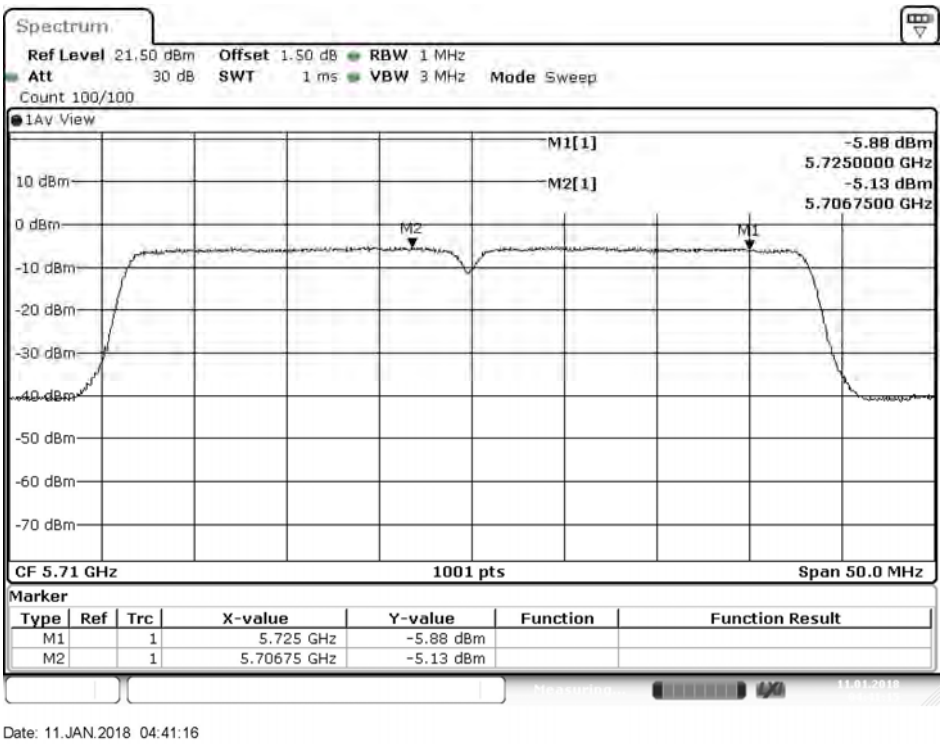
Date: 11.JAN.2018 04:17:07

Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 5: Transmit (802.11ac-40BW-15Mbps)
Test Date : 2016/08/26

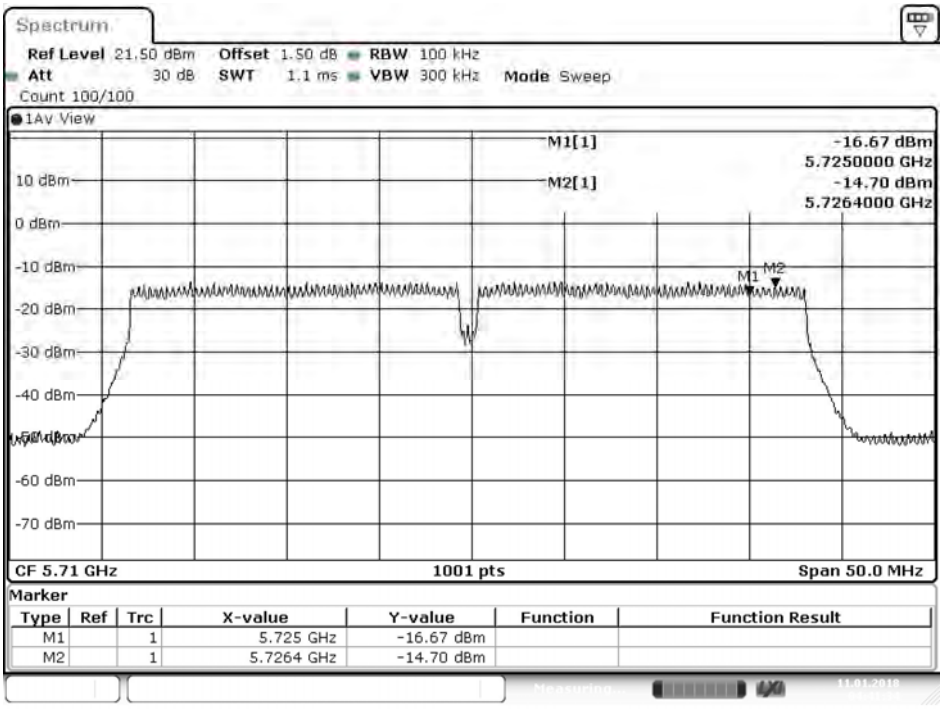
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
142	5710(Band3)	A	-5.130	--	-2.120	<11	Pass
		B	-5.330	--	-2.320	<11	Pass
142	5710(Band4)	A	-14.700	6.98	-4.710	<30	Pass
		B	-14.080	6.98	-4.090	<30	Pass

Note:
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 142(Band3) – Chain A

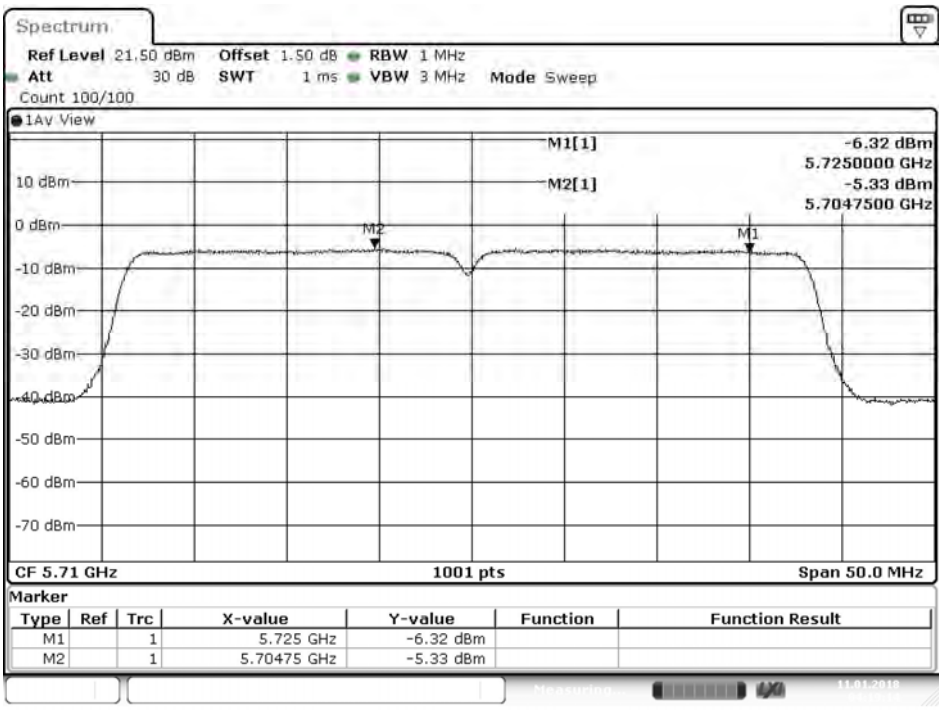


Channel 142(Band4) – Chain A



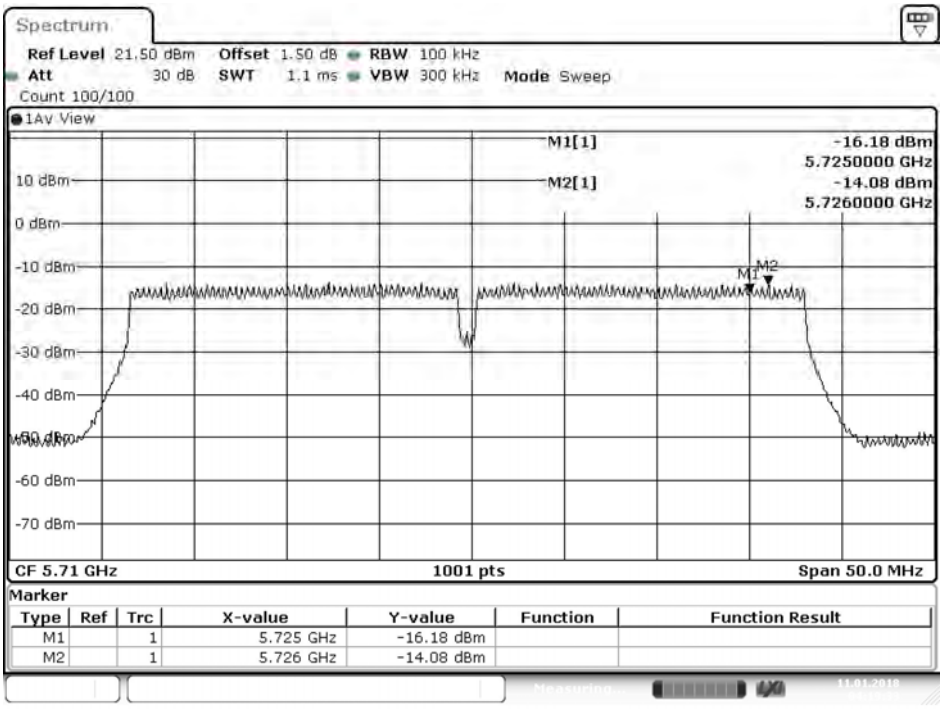
Date: 11.JAN.2018 04:41:35

Channel 142(Band3) – Chain B



Date: 11.JAN.2018 04:19:14

Channel 142(Band4) – Chain B



Product : Network Appliance
Test Item : Peak Power Spectral Density
Test Mode : Mode 6: Transmit (802.11ac-80BW-32.5Mbps)
Test Date : 2016/08/26

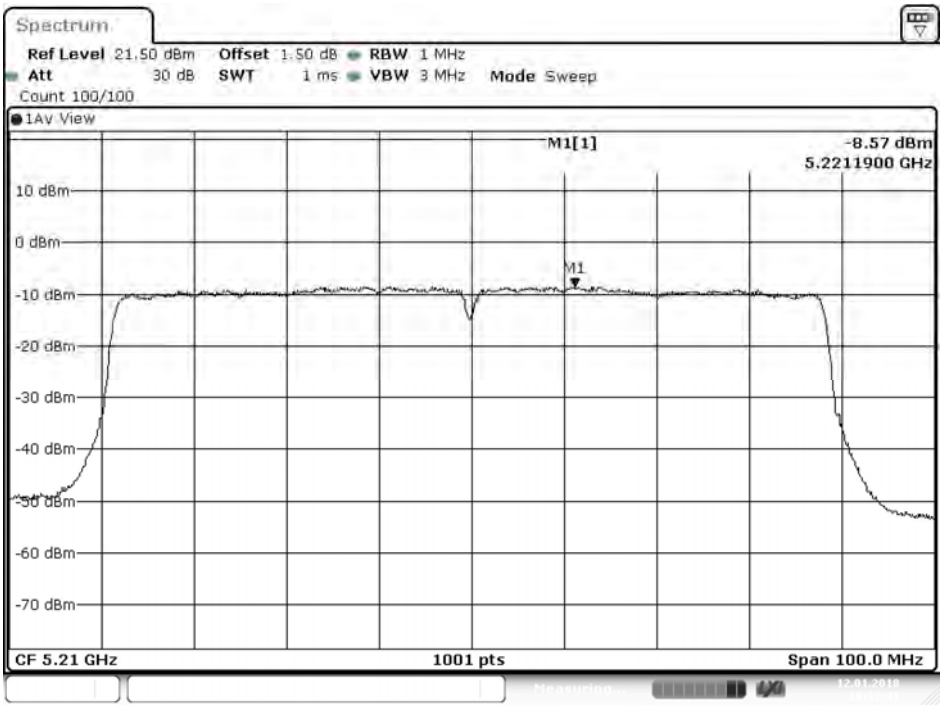
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
42	5210	A	-8.570	--	-5.560	17	Pass
		B	-9.710	--	-6.700	17	Pass
58	5290	A	-6.700	--	-3.690	17	Pass
		B	-8.300	--	-5.290	17	Pass
106	5530	A	-11.510	--	-8.500	11	Pass
		B	-11.330	--	-8.320	11	Pass
122	5610	A	-9.380	--	-6.370	11	Pass
		B	-9.300	--	-6.290	11	Pass
138	5690 (Band3)	A	-9.410	--	-6.400	11	Pass
		B	-9.860	--	-6.850	11	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD $(dBm)_1$	Required Limit (dBm)	Result
138	5690 (Band4)	A	-18.400	6.98	-8.410	<30	Pass
		B	-19.480	6.98	-9.490	<30	Pass
155	5775	A	-17.060	6.98	-7.070	<30	Pass
		B	-17.650	6.98	-7.660	<30	Pass

Note:

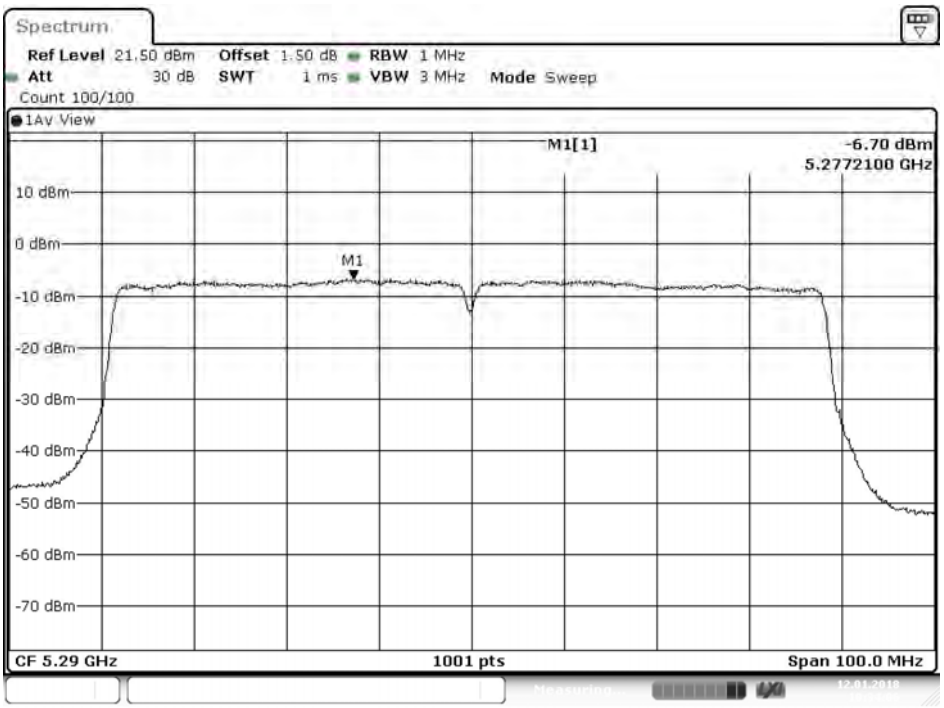
1. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.
2. The maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 42 – Chain A



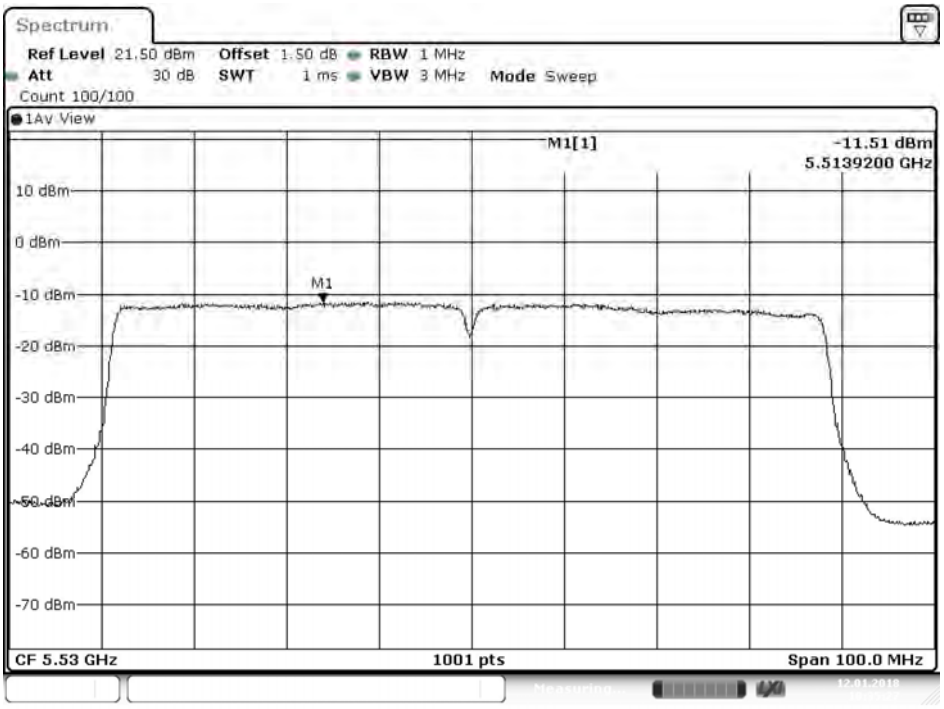
Date: 12.JAN.2018 10:32:41

Channel 58 – Chain A



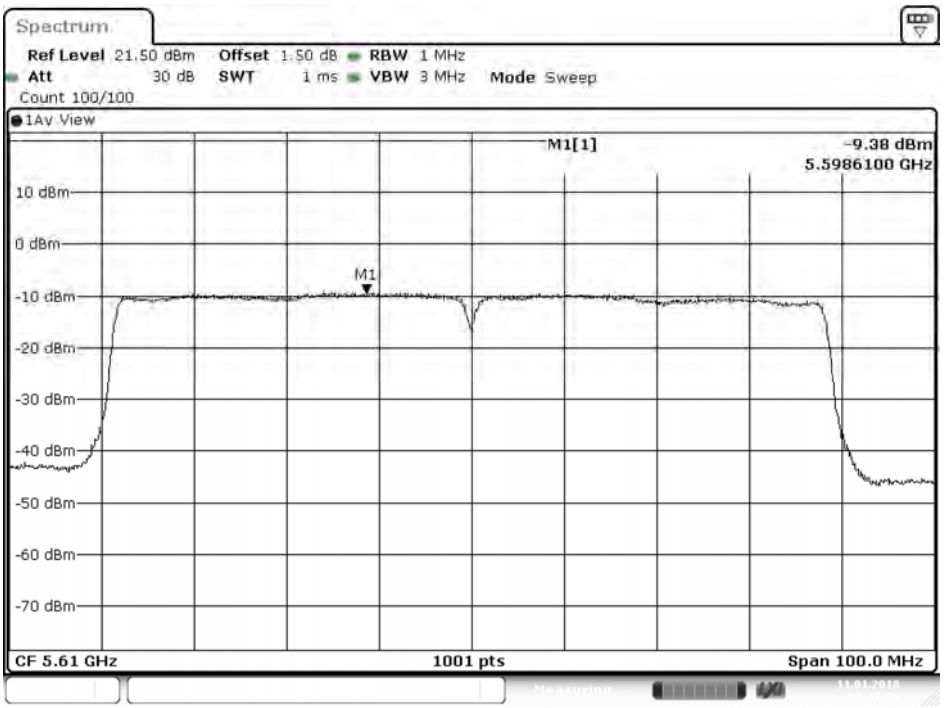
Date: 12.JAN.2018 10:34:06

Channel 106 – Chain A



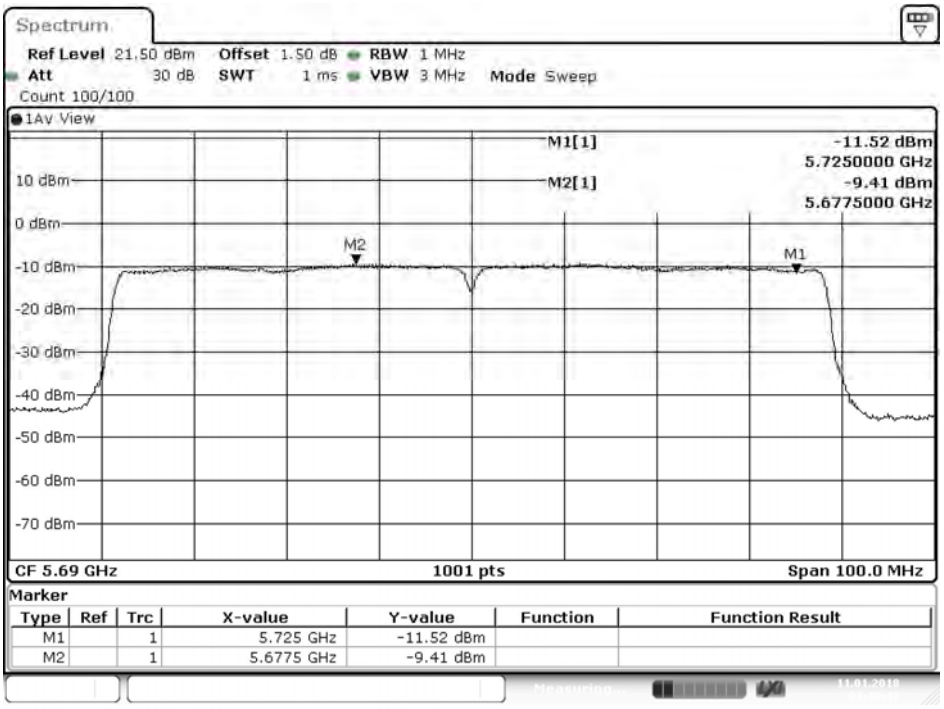
Date: 12.JAN.2018 10:35:28

Channel 122 – Chain A



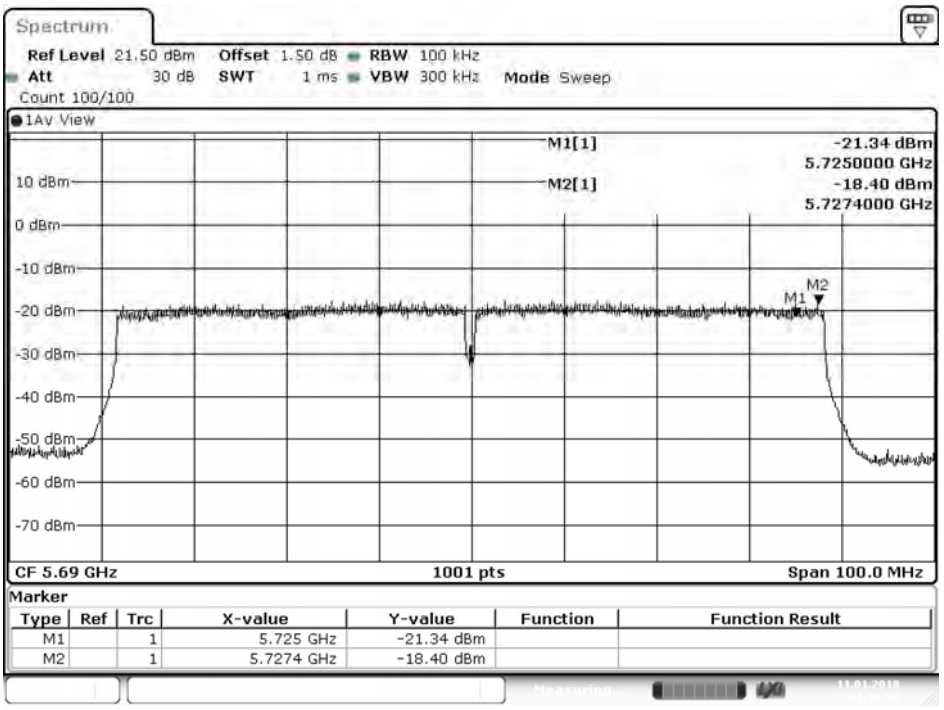
Date: 11.JAN.2018 04:47:28

Channel 138 (Band3) – Chain A



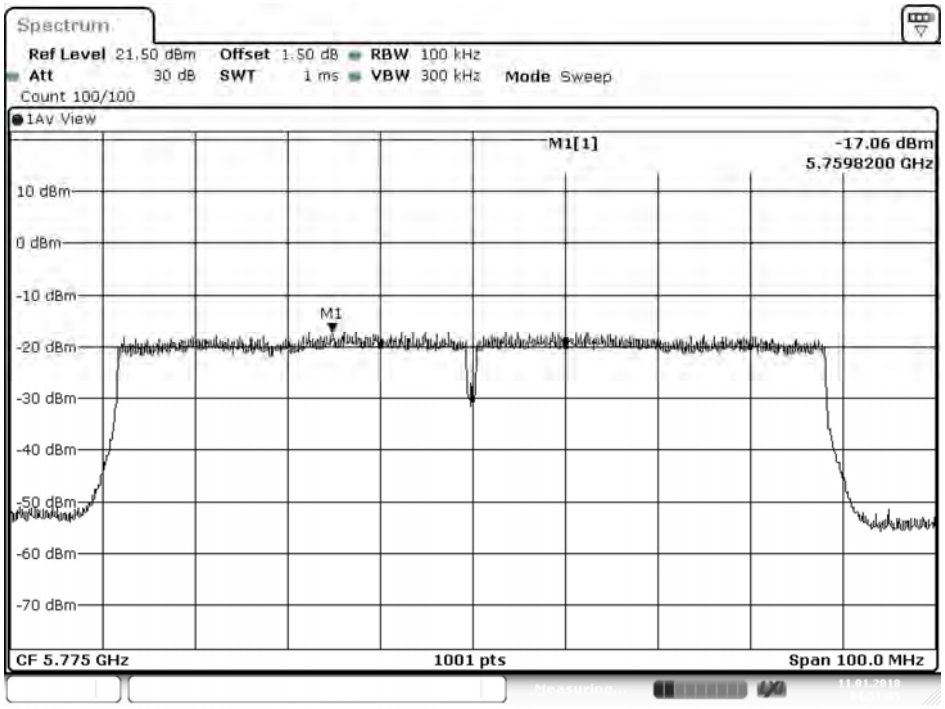
Date: 11.JAN.2018 04:48:48

Channel 138 (Band4) – Chain A



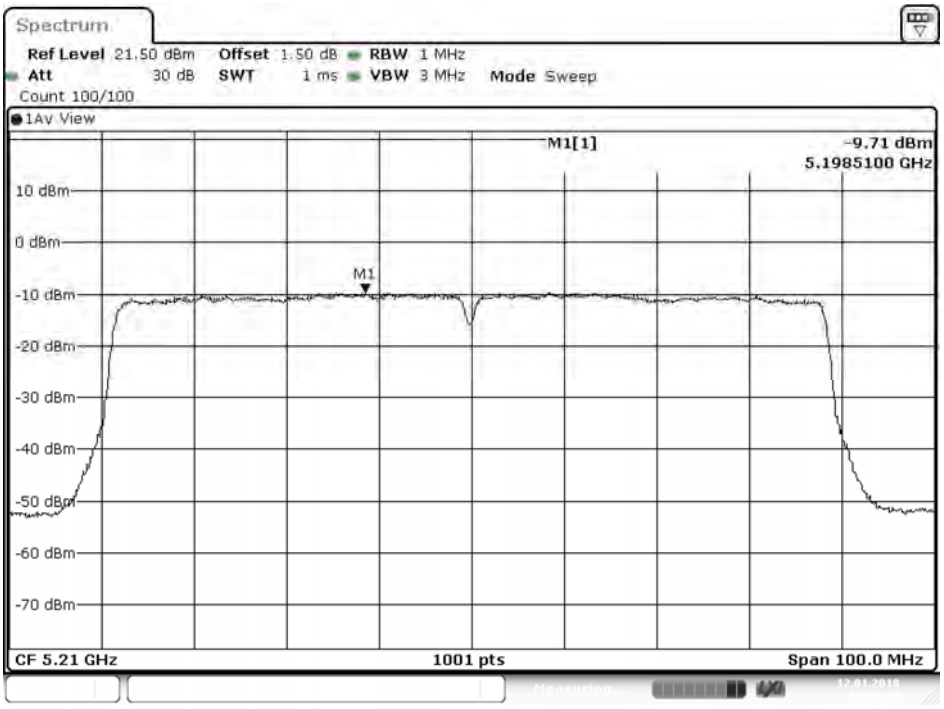
Date: 11.JAN.2018 04:49:08

Channel 155 – Chain A



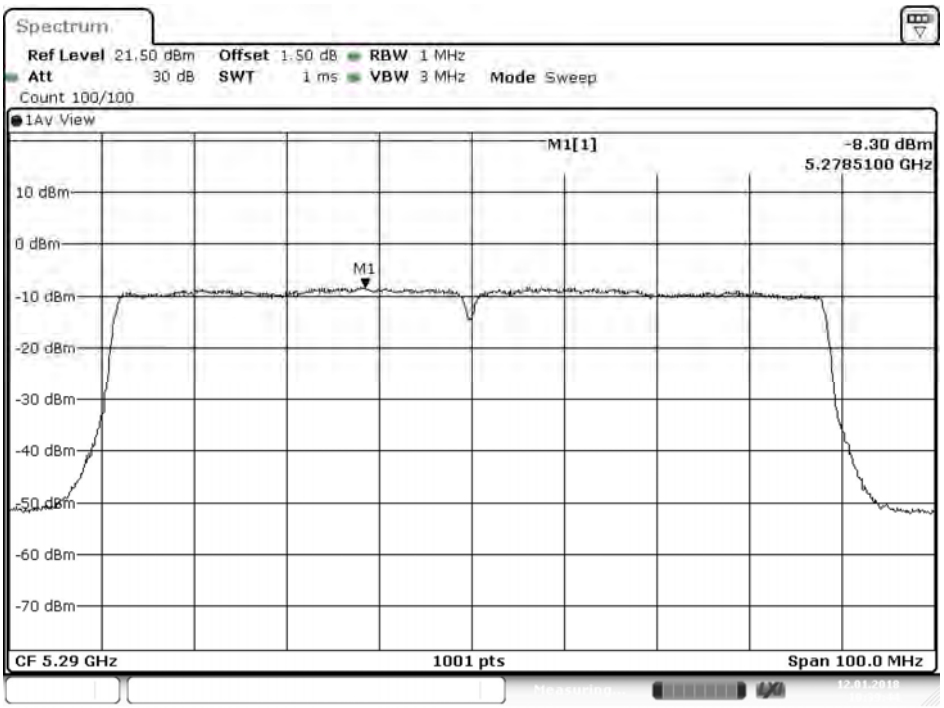
Date: 11.JAN.2018 04:51:06

Channel 42 – Chain B



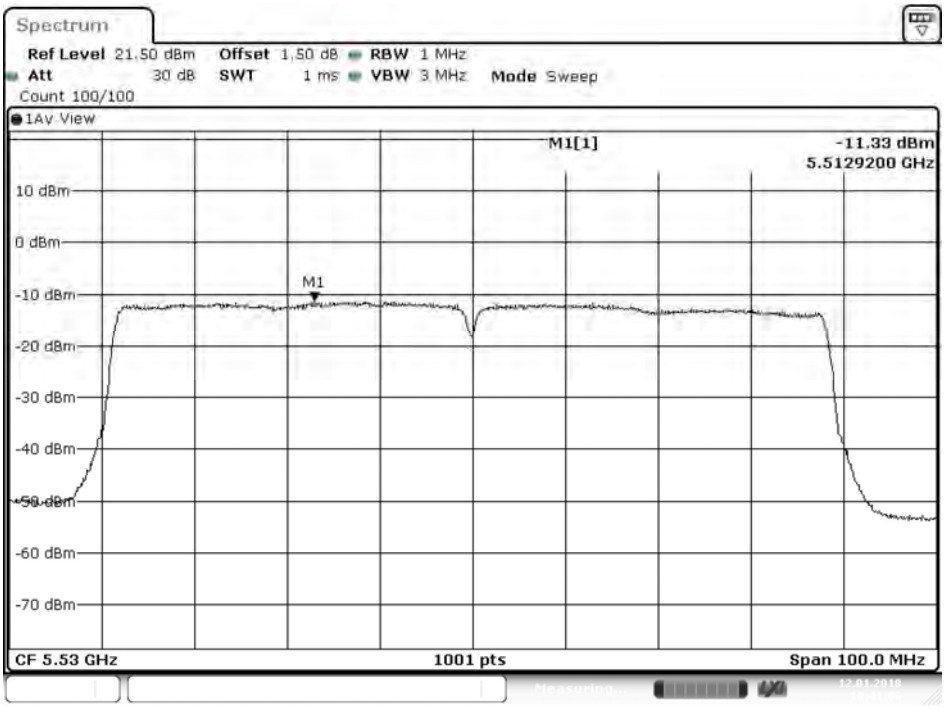
Date: 12.JAN.2018 10:38:24

Channel 58 – Chain B



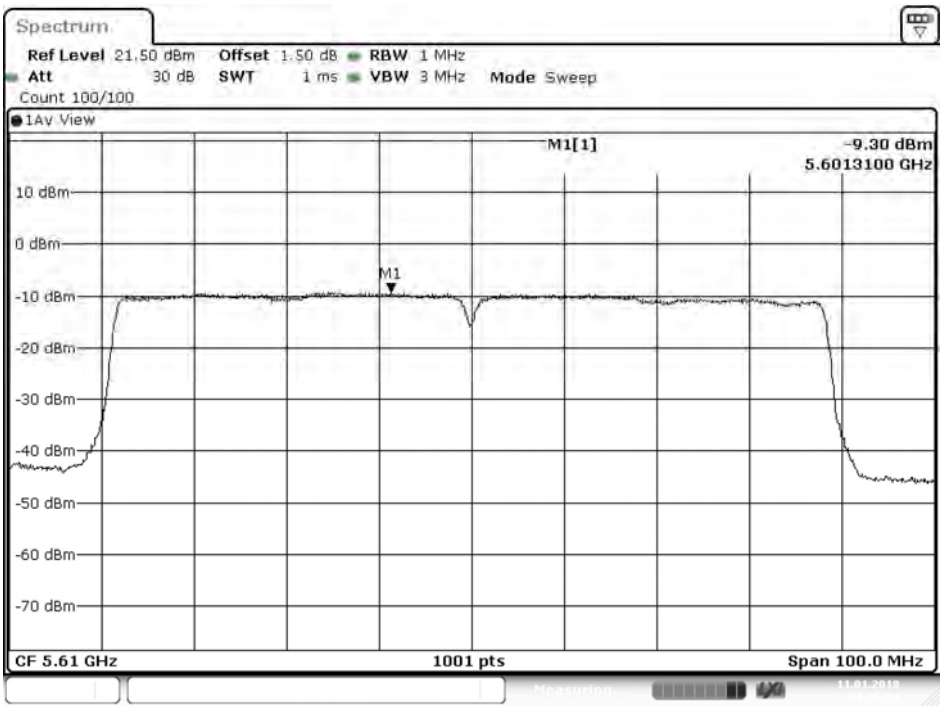
Date: 12.JAN.2018 10:39:44

Channel 106 – Chain B



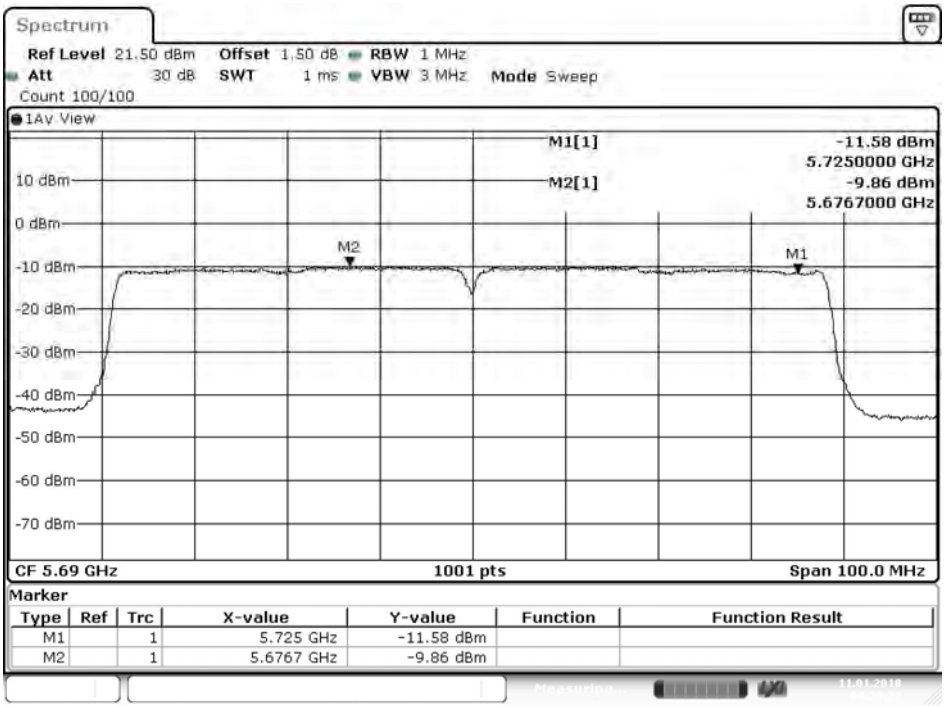
Date: 12.JAN.2018 10:41:06

Channel 122 – Chain B



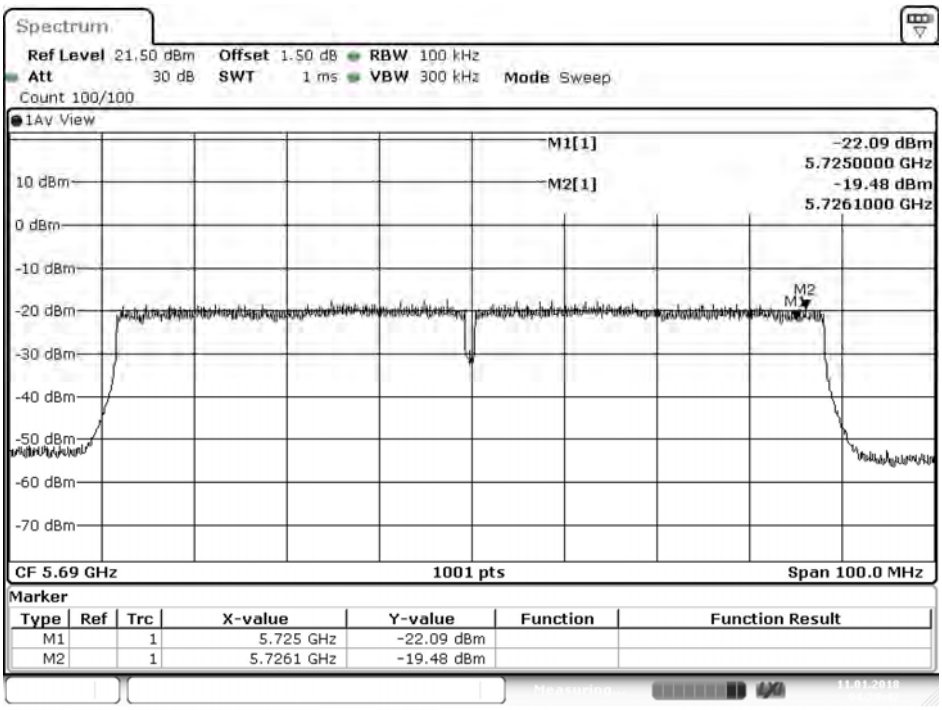
Date: 11.JAN.2018 04:26:54

Channel 138 (Band3) – Chain B



Date: 11.JAN.2018 04:29:22

Channel 138 (Band4) – Chain B



Date: 11.JAN.2018 04:29:42