TESTING CERT #3478.01

TEST REPORT

EUT Description	**WLAN and BT, 2x2 PCIe M.2 1216 SD adapter card**
Brand Name	**Intel® Dual Band Wireless-AC 8265**
Model Name	**8265D2W**
Serial Number	**TA#: J10070-002** **WF MAC: 34:13:E8:53:75:37 / 34:13:E8:53:75:05 / 34:13:E8:53:75:00** **BT MAC: 34:13:E8:53:75:3B / 34:13:E8:53:75:09 / 34:13:E8:53:75:04** (see section 4)
FCC ID	**FCC ID: PD98265D2**
Antenna type	**SkyCross WIMAX/WLAN Reference Antenna**
Hardware/Software Version	**HW: WsP1216 cfg15.2SD** **Test SW: DRTU 1.8.7-03036** **Op SW: 19.0.0.3**
Date of Sample Receipt	**2016-04-27**
Date of Test Start/End	**2016-05-10 / 2016-06-09**
Features	**802.11 a/b/g/n/ac Wireless LAN + BT 4.2** (see section 5)

Applicant	**Intel Mobile Communications**
Address	**100 Center Point Circle, Suite 200** **Columbia, South Carolina 29210** **USA**
Contact Person	**Steven Hackett**
Telephone/Fax/ Email	**steven.c.hackett@intel.com**

Reference Standards	**FCC CFR Title 47 Part 15E** (see section 1)

Test Report number	**160321-02.TR03**
Revision Control	**Rev.00**

The test results relate only to the samples tested.
The test report shall not be reproduced in full, without written approval of the laboratory.

Issued by

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Table of Contents

1. Standards, reference documents and applicable test methods

1. FCC 47 CFR part 15 – Subpart E – Unlicensed National Information Infrastructure Devices.
2. FCC 47 CFR part 15 - Subpart C – §15.209 Radiated emission limits; general requirements.
3. FCC OET KDB 789033 D02 General UNII Test Procedures New Rules – Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices.
4. FCC OET KDB 644545 D03 Guidance for IEEE 802.11ac v01 - GUIDANCE FOR IEEE Std 802.11ac™ DEVICES EMISSION TESTING.
5. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

2. General conditions, competences and guarantees

- ✓ Intel Mobile Communications Wireless RF Lab (Intel WRF Lab) is a testing laboratory accredited by the American Association for Laboratory Accreditation (A2LA).
- ✓ Intel Mobile Communications Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm listed by the FCC, with Designation Number FR0011.
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- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
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3. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	22ºC ± 4ºC
Humidity	50% ± 25%

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of reception	Note
#01	160321-02.S02	WiFi/BT Module	8265D2W	WF MAC: 34:13:E8:53:75:00, BT MAC: 34:13:E8:53:75:04	2016-04-27	Used for conducted tests
	160321-02.S12	Socket	D2W	8882-043	2016-04-27	
	160107-01.S13	Extender board	PCB00495	4955013-026	2016-01-07	
	15051101.S11	AC/DC Adapter	SPU60-102	07990499 1249	2015-05-12	
	15040201.S15	Laptop	DELL Latitude	9R8YN32	2015-04-30	
#02	160321-02.S03	WiFi/BT Module	8265D2W	WF MAC: 34:13:E8:53:75:05 BT MAC: 34:13:E8:53:75:09	2016-04-27	Used for radiated tests (from 30MHz to 1GHz and 26.5GHz to 40GHz)
	160321-02.S13	Socket	D2W	8882-031	2016-04-27	
	160107-01.S11	Extender board	PC00495	4955013-097	2016-01-07	
	160107-01.S28	Laptop	Latitude E5440	BJSYN32	2016-01-15	
#03	160321-02.S01	WiFi/BT Module	8265D2W	WF MAC: 34:13:E8:53:75:37 BT MAC: 34:13:E8:53:75:3B	2016-04-27	Used for radiated tests (from 1GHz to 26.5GHz)
	160321-02.S11	Socket	D2W	8880-017	2016-04-27	
	160107-01.S12	Extender board	PC00495	4955013-034	2016-01-07	
	15051101.S09	Laptop	Dell E5440	9FSYN32	2015-05-12	

NA: Not Applicable

5. EUT features

These are the detailed bands and modes supported by the Equipment Under Test:

802.11b/g/n	2.4GHz (2400.0 – 2483.5 MHz)
802.11a/n/ac	5.2GHz (5150.0 – 5250.0 MHz) 5.3GHz (5250.0 – 5350.0 MHz) 5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5850.0 MHz)
BDR/EDR/BLE 4.2	2.4GHz (2400.0 – 2483.5 MHz)

6. Remarks and comments

N/A

7. Test Verdicts summary

7.1. 802.11 a/n/ac – U-NII-3

FCC part	Test name	Verdict
15.407 (a) (2)	Power Limits. Maximum output power	P
15.407 (a) (2)	Peak power spectral density	P
15.407 (b) (3) 15.209	Undesirable emissions limits: Band Edge (conducted)	P
15.407 (b) (3) 15.209	Undesirable emissions limits (radiated)	P

P: Pass
F: Fail
NM: Not Measured
NA: Not Applicable

8. Document Revision History

Revision #	Date	Modified by	Details
Rev. 00	2016-06-14	G.Gerbaud M. Lefebvre F. Sauvan	First Issue

Annex A.Test & System Description

A.1 Test Conditions

For 802.11a mode the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, but not simultaneously.

For 802.11n20 (20 MHz channel bandwidth), 802.11n40 (40MHz channel bandwidth) and 802.11ac80 (80MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously.

The conducted RF output power at chain A was adjusted according to the client's supplied Target values (see following table) using the Intel DRTU tool and measuring the power by using a spectrum analyzer with the channel integration method according to point II) E) 2) e) (Method SA-2 Alternative) of Guidance 789033 D02.
Measured values for adjustment were within -0.25 dB/+0.25 dB from the declared Target values.

Overlapped channels between UNII-2C and UNII-3					Conducted Power, Target Value (dBm)		
Mode	**BW (MHz)**	**Data Rate**	**CH #**	**Freq. (MHz)**	**SISO Chain A**	**SISO Chain B**	**MIMO at both ports A and B**
802.11n	20	HT0 HT8*	144	5720	20.0	20.0	19.5
	40	HT0 HT8*	142F	5710	20.5	20.0	19.5
802.11ac	80	VHT0	138ac80	5690	20.0	19.5	19.0

U-NII-3					Conducted Power, Target Value (dBm)		
Mode	**BW (MHz)**	**Data Rate**	**CH #**	**Freq. (MHz)**	**SISO Chain A**	**SISO Chain B**	**MIMO at both ports A and B**
802.11a	20	6Mbps	149	5745	20.0	20.0	N/A
			157	5785	20.5	20.0	N/A
			165	5825	21.0	20.5	N/A
802.11n	20	HT0 HT8*	149	5745	20.0	20.0	20.0
			157	5785	20.5	20.0	20.0
			165	5825	21.0	20.5	20.0
	40	HT0 HT8*	151F	5755	21.0	21.0	20.0
			159F	5795	20.5	20.5	20.0
802.11ac	80	VHT0	155ac80	5775	17.5	17.5	17.0

The following data rates were selected based on preliminary testing that identified those rates as the worst cases for output power and spurious levels at the band edges:

802.11a → 6Mbps
802.11n20 and 802.11n40 (SISO) → HT0
802.11n20 and 802.11n40 (MIMO) → HT8
802.11ac80 (SISO) → VHT0
802.11ac80 (MIMO) → VHT0

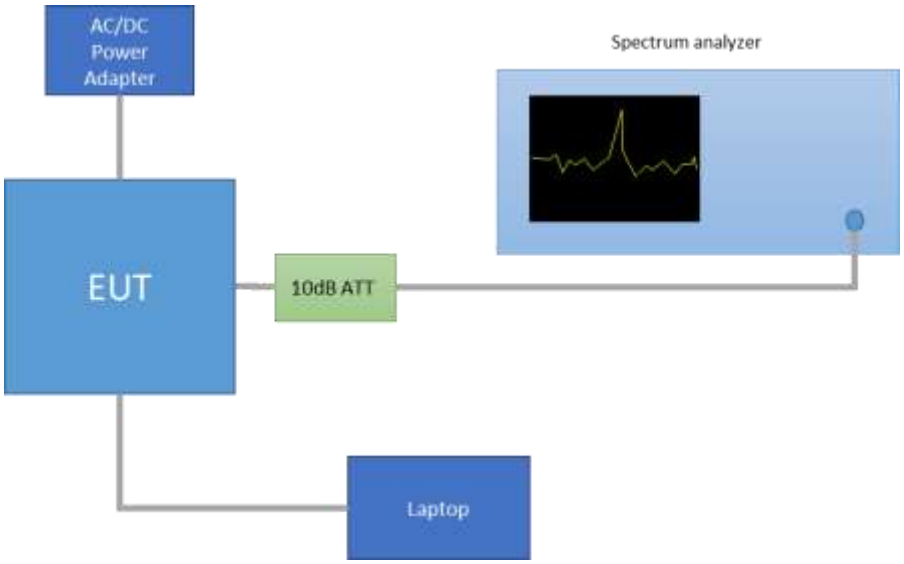
Alternative channels to the lowest and highest channels per band have been also tested for Band Edge compliance.

A.2 Measurement system

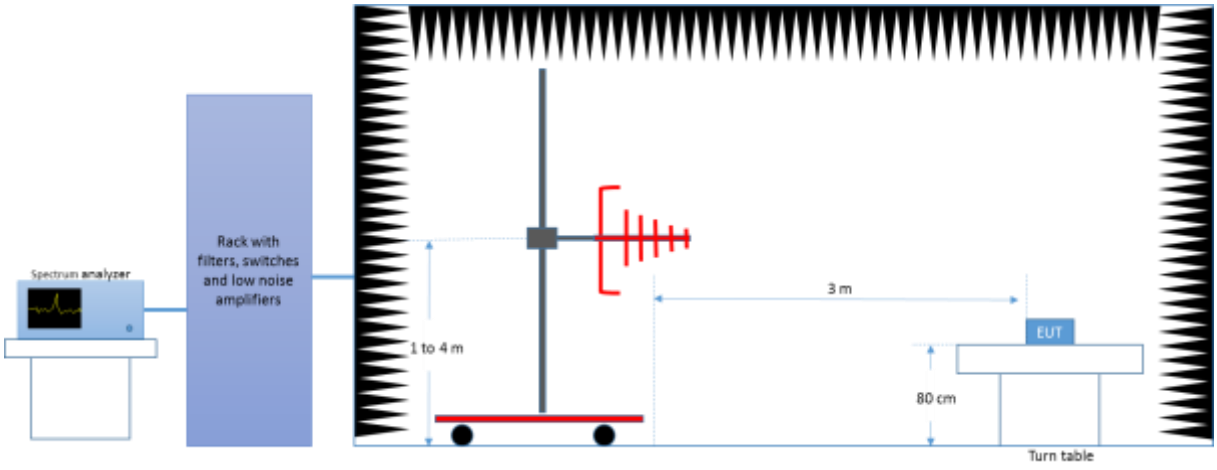
Measurements were performed using the following setups, made in accordance to the general provisions of FCC KDB 789033 D02 General UNII Test Procedures.

The DUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. The laptop computer was used to configure the EUT to continuously transmit at a specified output power using all different modes and modulation schemes, using the Intel proprietary tool DRTU.

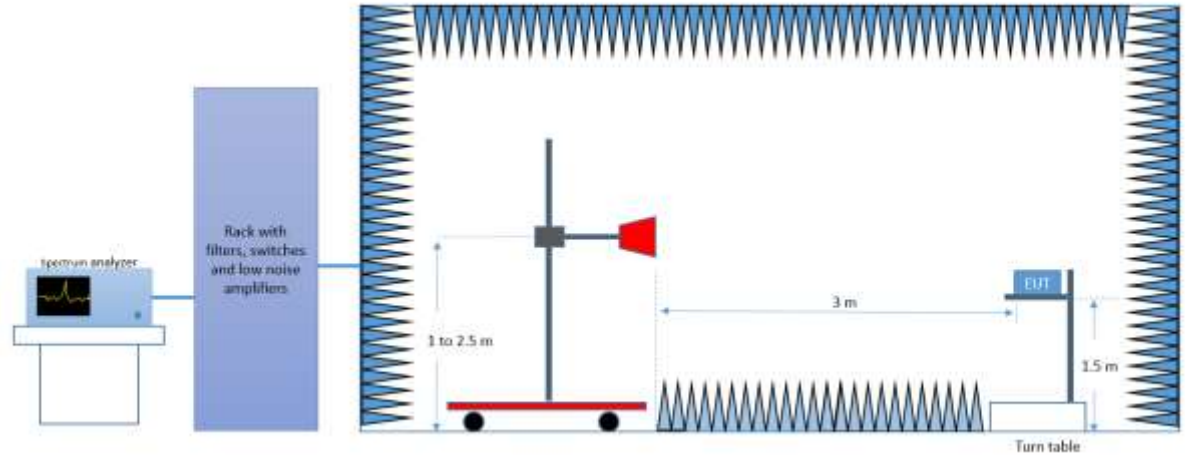
Conducted Setup



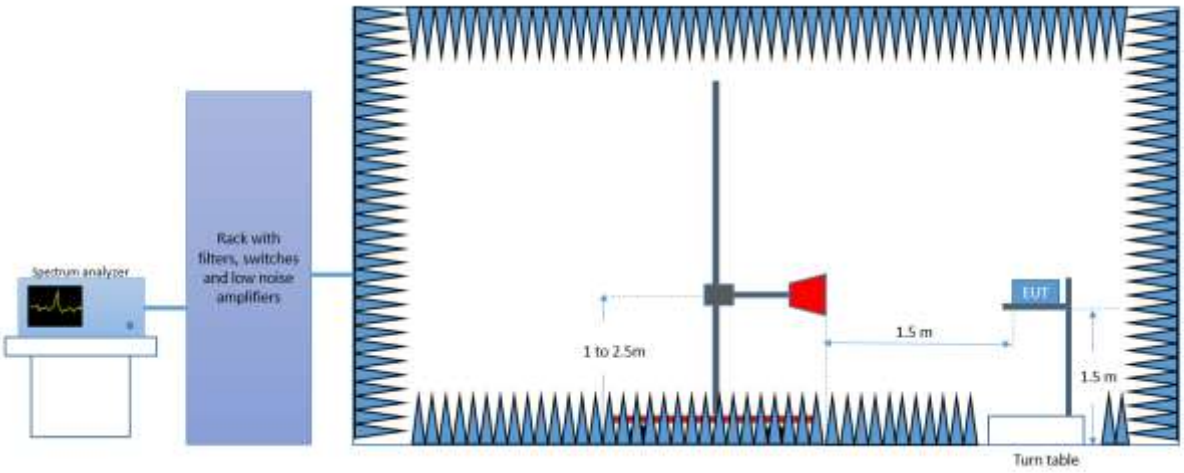
Radiated Setup < 1GHz



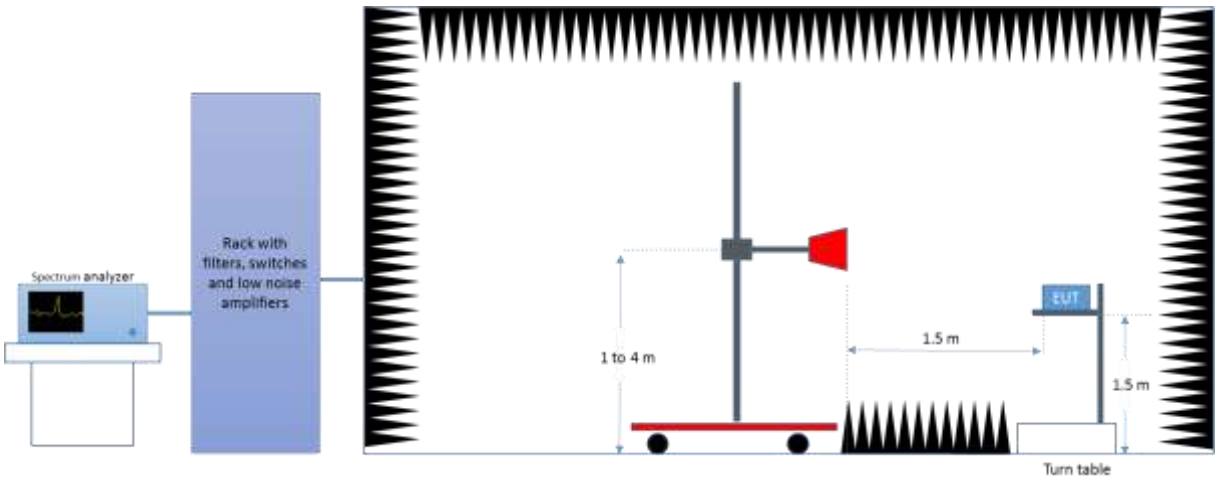
Radiated Setup 1 GHz - 18 GHz



Radiated Setup 18 GHz - 26.5 GHz



Radiated Setup > 26.5 GHz



A.3 Test Equipment List

Conducted Setup

ID#	Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
0310	Spectrum analyzer	FSV40	101425	Rohde & Schwarz	2015-03-25	2017-03-25

Radiated Setup

ID#	Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
0133	Spectrum analyzer	FSV40	101358	Rohde & Schwarz	2016-04-15	2018-04-15
0258	Spectrum analyzer	FSV30	101318	Rohde & Schwarz	2016-04-27	2018-04-27
0137	Log antenna 30 MHz – 1 GHz	3142E	00156946	ETS Lindgren	2015-12-11	2017-12-11
0138	Hors antenna 1 GHz – 6.4 GHz	3117	00157734	ETS Lindgren	2016-03-14	2018-03-14
0343	Horn Antenna 6.4 GHz – 18 GHz	3117-PA	00201542	ETS Lindgren	2015-07-16	2017-07-16
0334	Horn Antenna 10 GHz – 40 GHz	3116C	00169308	ETS Lindgren	2015-07-15	2017-07-15
0139	Horn Antenna 18 GHz - 26.5 GHz	114514	00167100	ETS Lindgren	2014-08-14	2016-08-14
0140	Horn Antenna 26.5 GHz - 40 GHz	120722	00169638	ETS Lindgren	2016-03-16	2018-03-16
0135	Semi Anechoic chamber	FACT 3	5720	ETS Lindgren	2016-04-28	2018-04-28
0337	Full Anechoic chamber	RFD_FA_100	5996	ETS Lindgren	2016-04-28	2018-04-28
0329	Measurement Software	EMC32	1300.7027.00 (100401)	Rohde & Schwarz	N/A	N/A
N/A	Measurement Software	EMC32	012109650000013B (009977)	Rohde & Schwarz	N/A	N/A

A.4 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the below table:

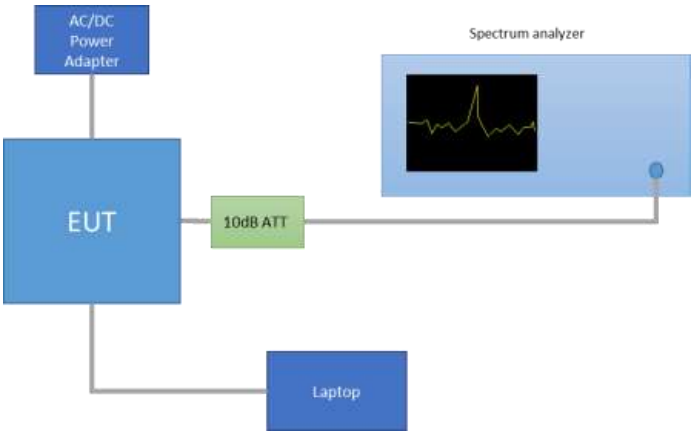
Measurement type	Uncertainty [±dB]
Conducted Power	±1.0
Conducted Spurious Emission	±2.9
Radiated tests <1GHz	±3.8
Radiated tests 1GHz - 40 GHz	±4.7

Annex B.Test Results U-NII-3

B.1 6dB & 99% Bandwidth

Test procedure:

The setup below was used to measure the 6dB & 99% Bandwidth. The antenna terminal of the EUT is connected to the spectrum through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.



For the overlapped channels between U-NII-2C and U-NII-3, and according to FCC KDB 644545 D03, the boundary frequency between the bands is used as one edge for defining the portion of the 6dB BW that falls within a particular U-NII band. This rule is only applicable for the 6dB BW and for those channels marked as overlapped.

Results tables:

U-NII-3 channels:

Mode	Rate	Antenna	Channel	Freq. [MHz]	6dB BW [MHz]	99% BW [MHz]
802.11a	6Mbps	SISO CHAIN A	149	5745	16.01	23.56
			157	5785	15.94	24.52
			165	5825	16.02	**26.20**
		SISO CHAIN B	149	5745	**16.15**	24.60
			157	5785	15.91	24.20
			165	5825	15.99	26.00
802.11n20	HT0	SISO CHAIN A	149	5745	16.87	24.68
			157	5785	16.34	26.08
			165	5825	17.27	27.68
		SISO CHAIN B	149	5745	16.99	24.80
			157	5785	16.50	25.84
			165	5825	17.18	27.40
	HT8	MIMO CHAIN A	149	5745	17.33	27.00
			157	5785	**17.54**	27.76
			165	5825	17.15	27.12
		MIMO CHAIN B	149	5745	**17.54**	26.96
			157	5785	17.53	27.24
			165	5825	**17.54**	**27.80**
802.11n40	HT0	SISO CHAIN A	151F	5755	36.00	**56.32**
			159F	5795	35.31	50.56
		SISO CHAIN B	151F	5755	**36.01**	55.36
			159F	5795	35.25	50.80
	HT8	MIMO CHAIN A	151F	5755	35.90	51.28
			159F	5795	35.90	51.04
		MIMO CHAIN B	151F	5755	35.22	47.76
			159F	5795	35.90	47.20
802.11ac80	VHT0	SISO CHAIN A	155ac80	5775	72.47	75.12
		SISO CHAIN B		5775	72.47	**75.24**
		MIMO CHAIN A		5775	**73.67**	**75.24**
		MIMO CHAIN B		5775	72.47	75.12

Max Value

Overlapped channels between U-NII-2C and U-NII-3

Mode	Rate	Antenna	Channel	Frequency (MHz)	6dB BW [MHz]	26dB BW UNII-3 [MHz]	99% BW [MHz]
802.11n20	HT0	SISO CHAIN A	144	5720	3.37	13.37	21.76
		SISO CHAIN B		5720	**3.50**	13.33	20.96
	HT8	MIMO CHAIN A		5720	3.37	**14.63**	**22.20**
		MIMO CHAIN B		5720	3.37	12.18	21.00
802.11n40	HT0	SISO CHAIN A	142F	5710	3.22	**27.58**	**46.96**
		SISO CHAIN B		5710	**3.26**	22.22	40.40
	HT8	MIMO CHAIN A		5710	3.21	18.71	37.68
		MIMO CHAIN B		5710	2.93	11.51	36.40
802.11ac80	VHT0	SISO CHAIN A	138ac80	5690	3.18	34.07	75.84
		SISO CHAIN B		5690	3.18	31.98	75.96
		MIMO CHAIN A		5690	**3.24**	**39.01**	**76.68**
		MIMO CHAIN B		5690	**3.24**	24.00	75.48

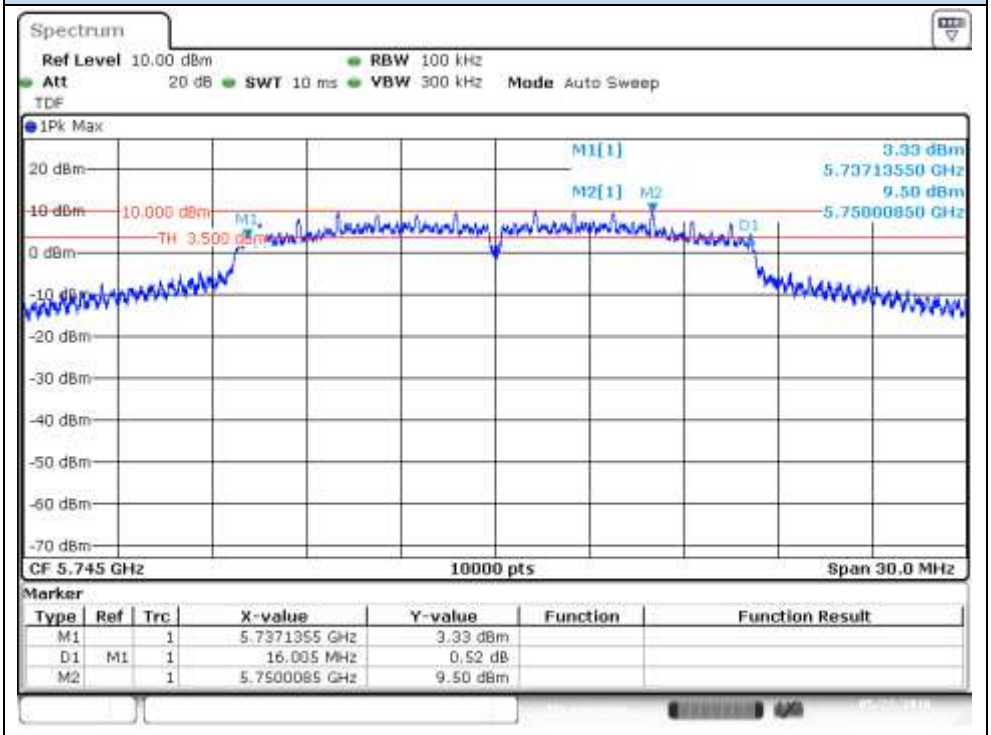
Max Value

Note, the 26dB bandwidth of the overlapped channels falling in U-NII-3 band is shown in the above table. These values were used to measure the maximum output power in the U-NII-3 band as specified in chapter E.2.

Results screenshot:

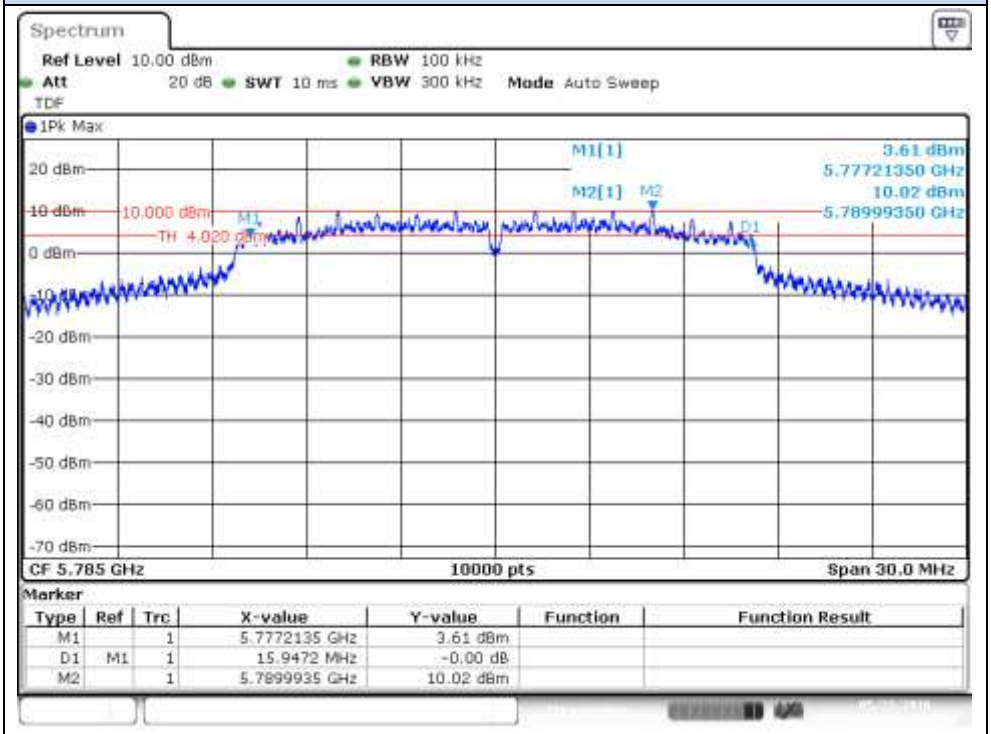
802.11a, 6Mbps – Chain A

6dB BW – CH149



99% BW – CH149

6dB BW – CH157



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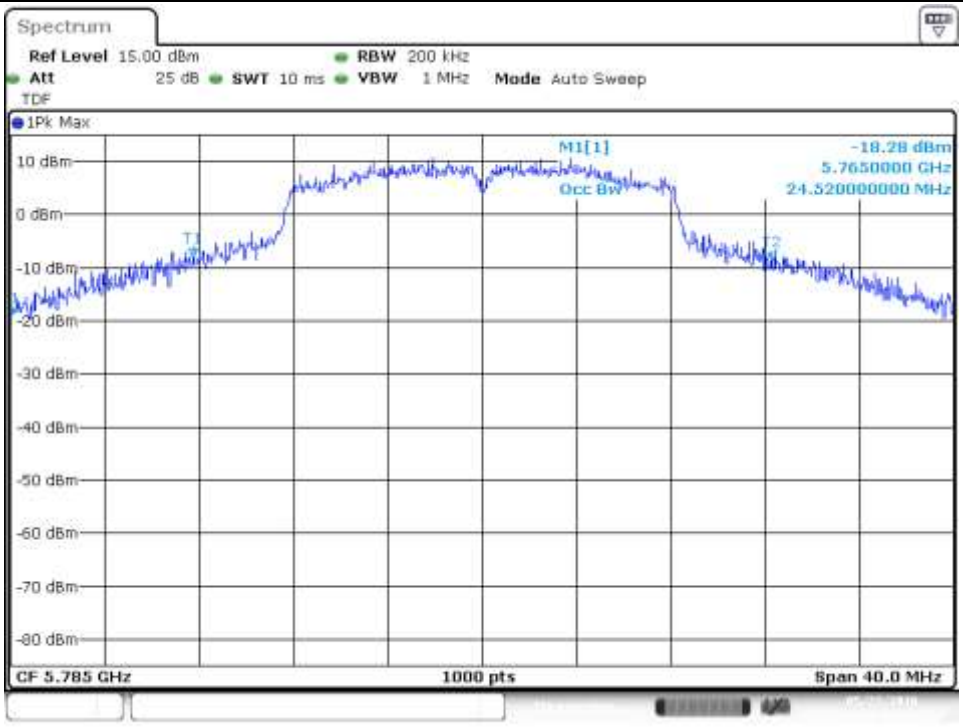
99% BW – CH157



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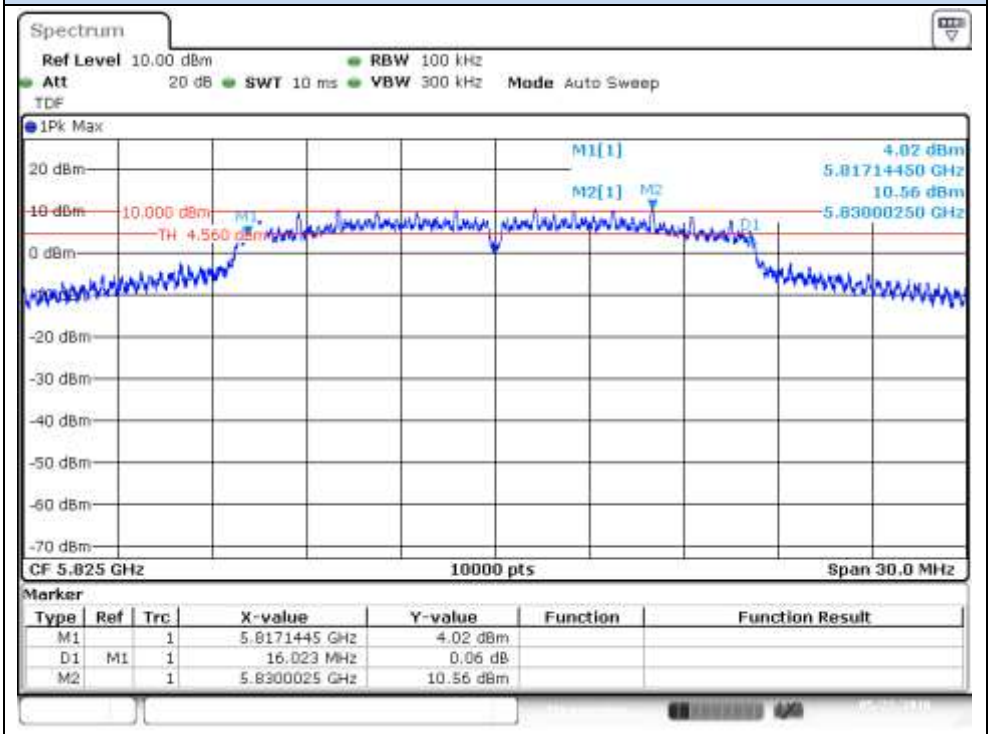
6dB BW – CH165



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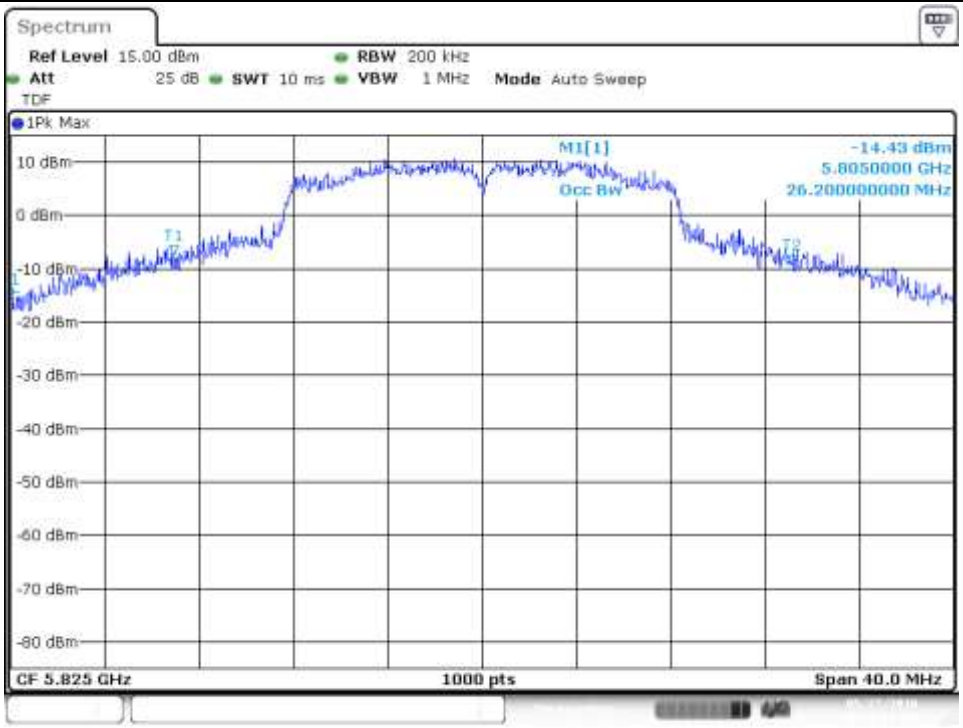
99% BW – CH165



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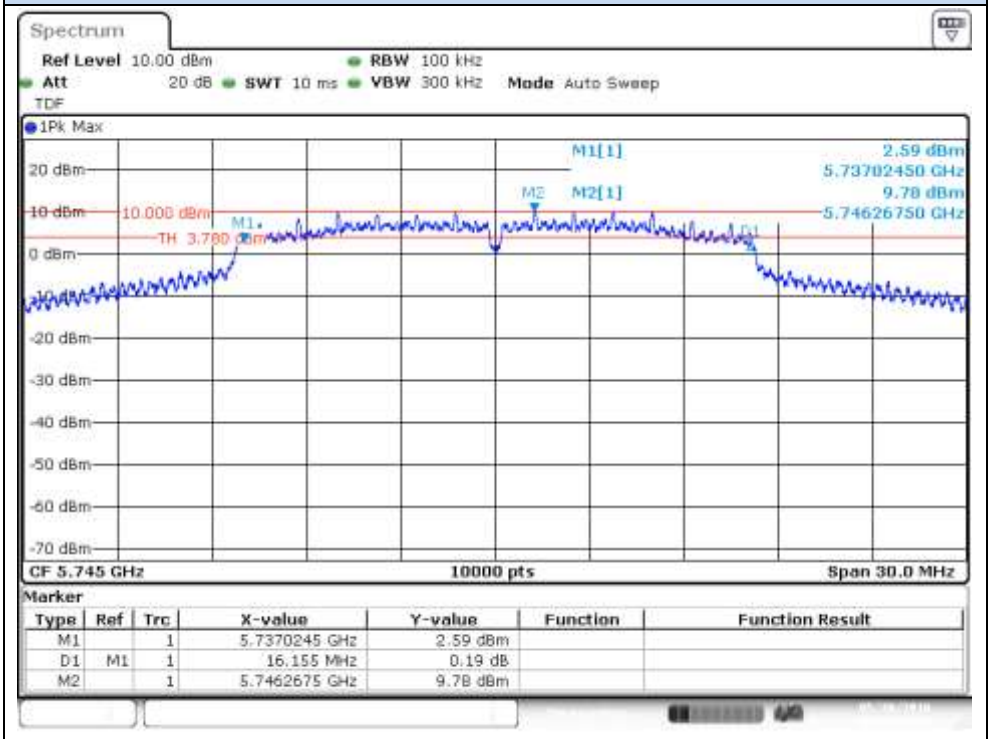
802.11a, 6Mbps – Chain B

6dB BW – CH149



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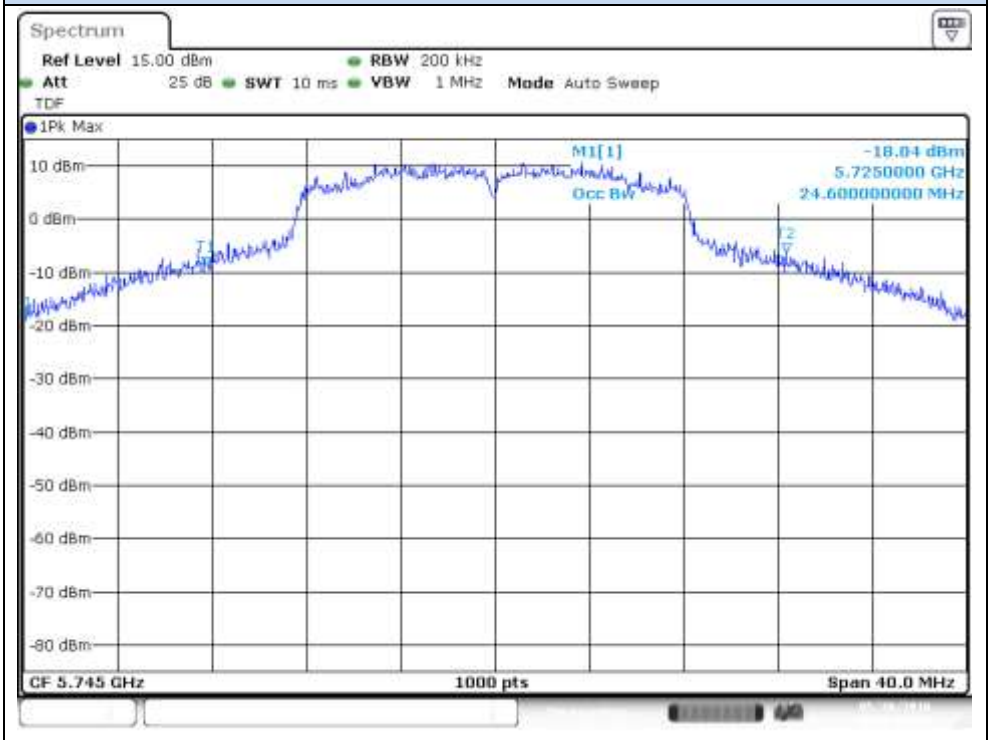
99% BW – CH149



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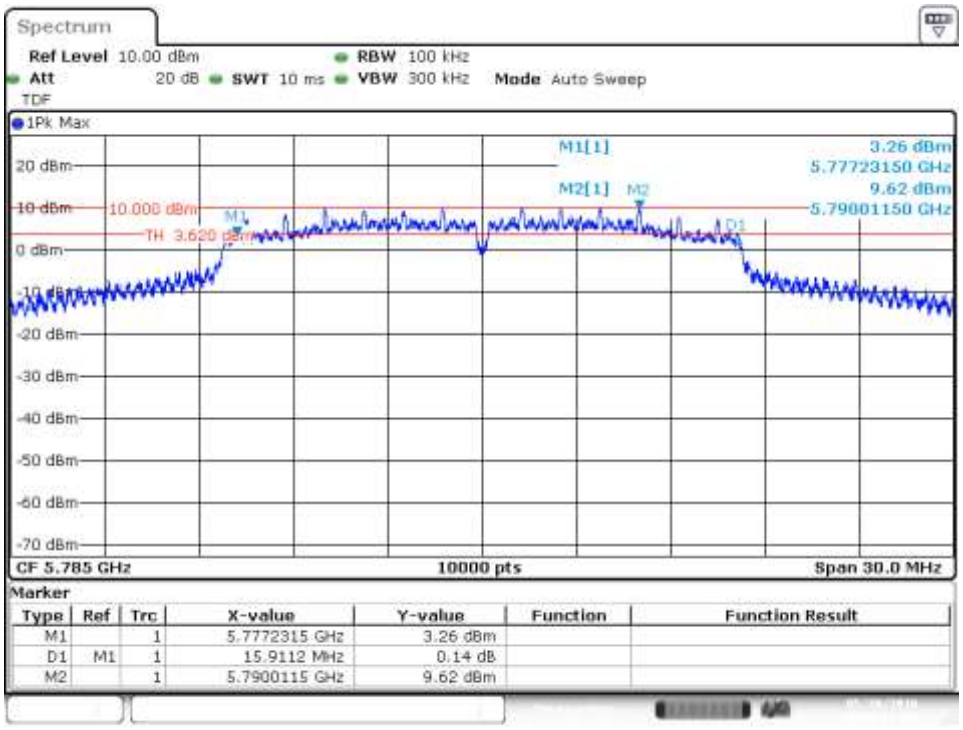
6dB BW – CH157



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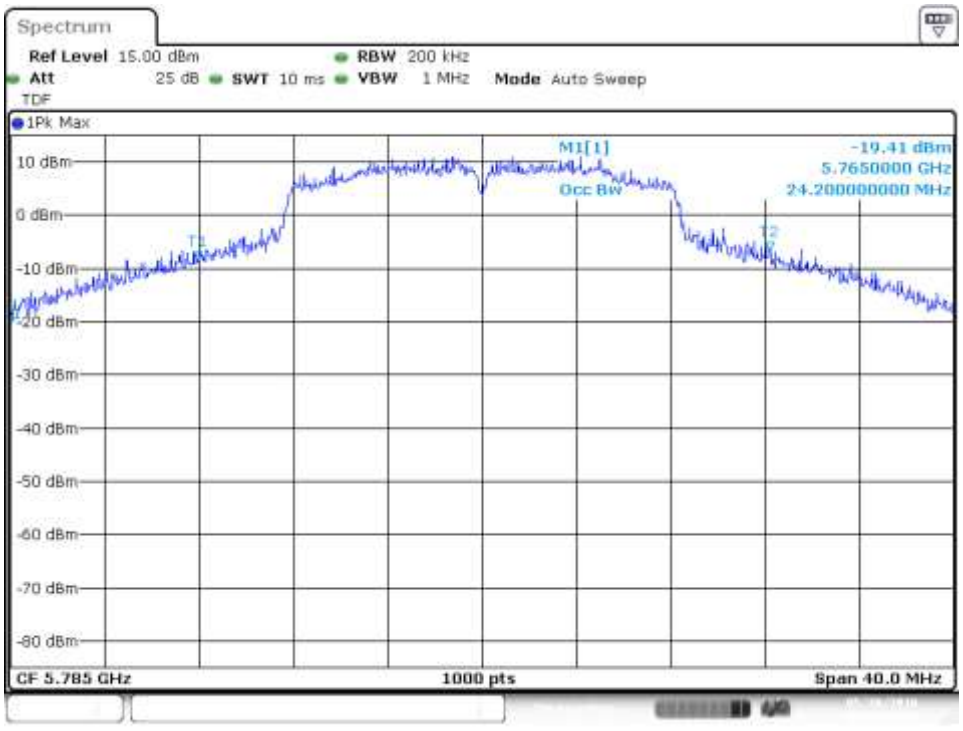
99% BW – CH157



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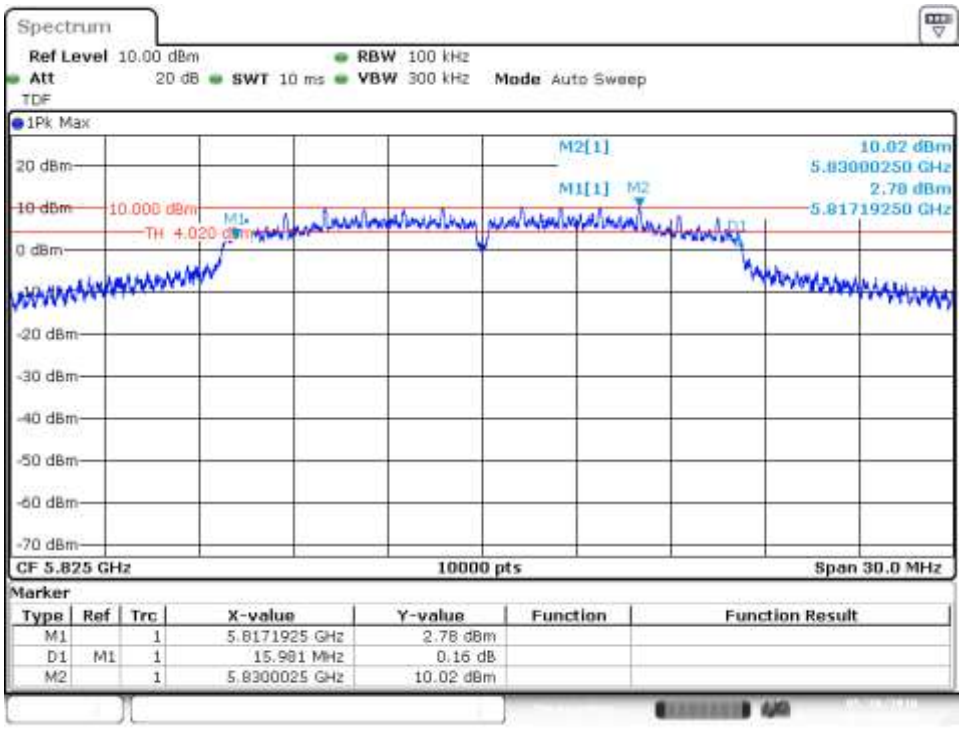
6dB BW – CH165



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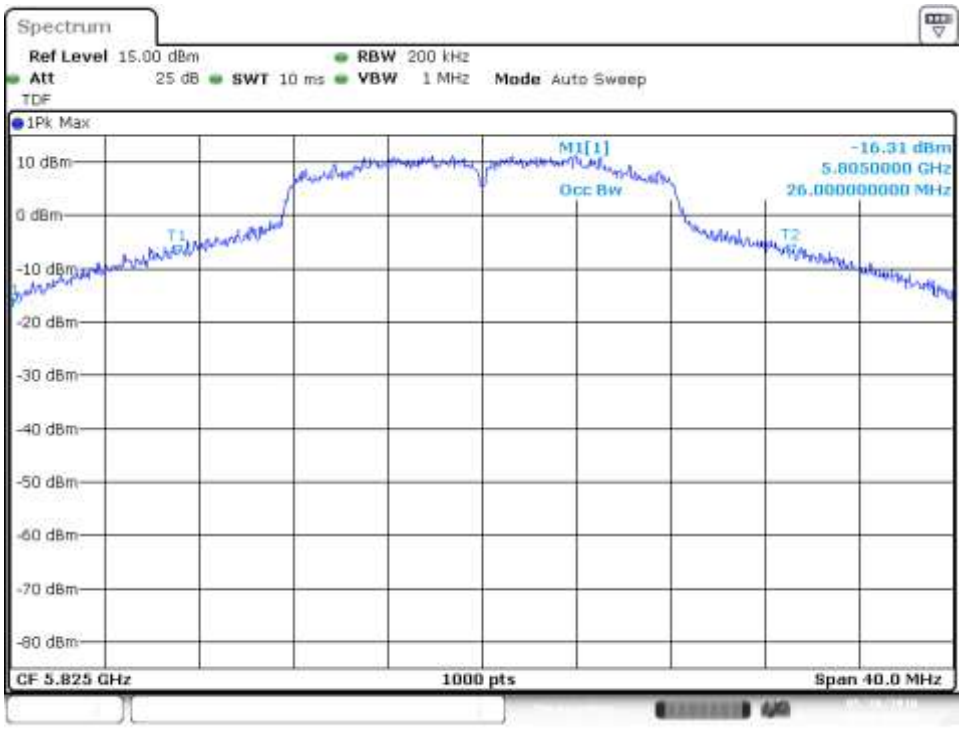
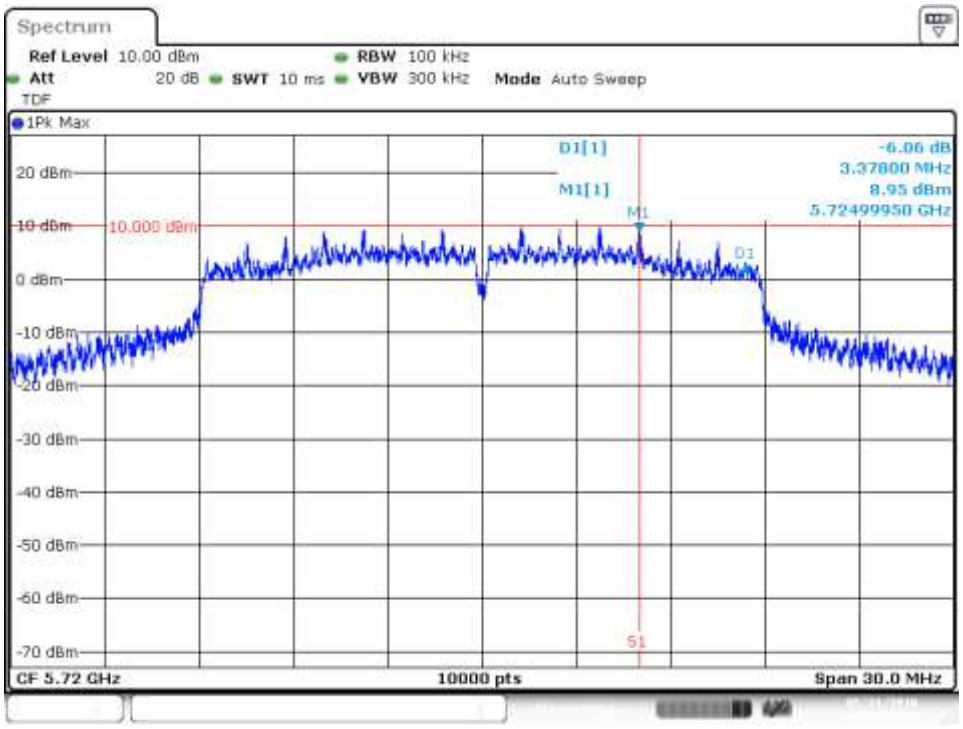
99% BW – CH165



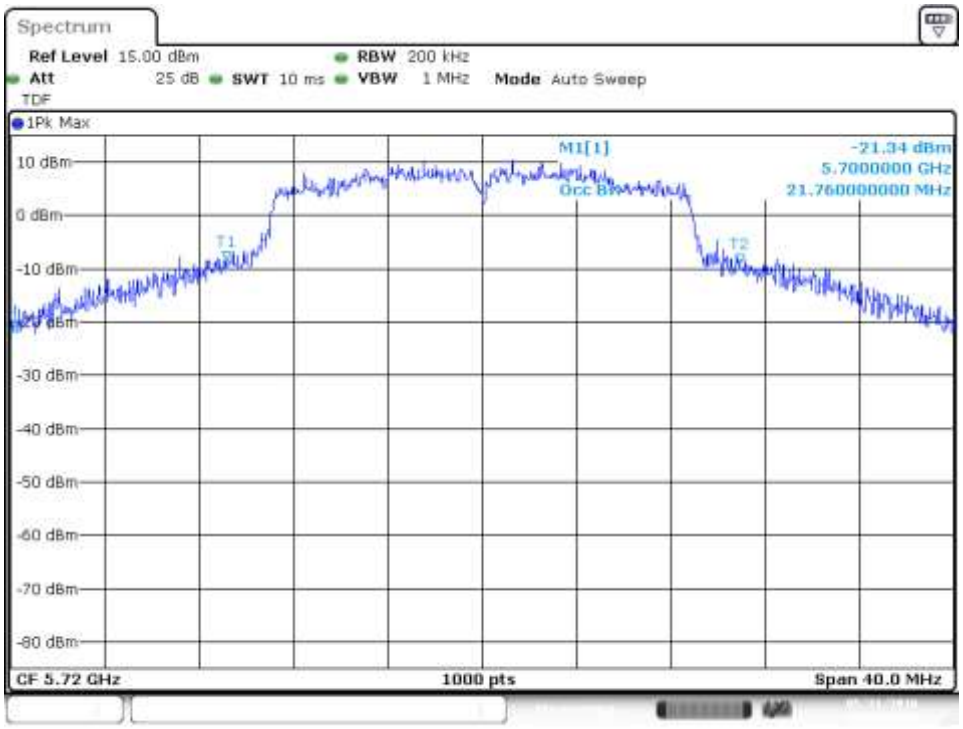
Date: 30.MAY.2016 11:10:30

802.11n20, HT0 (SISO) – Chain A

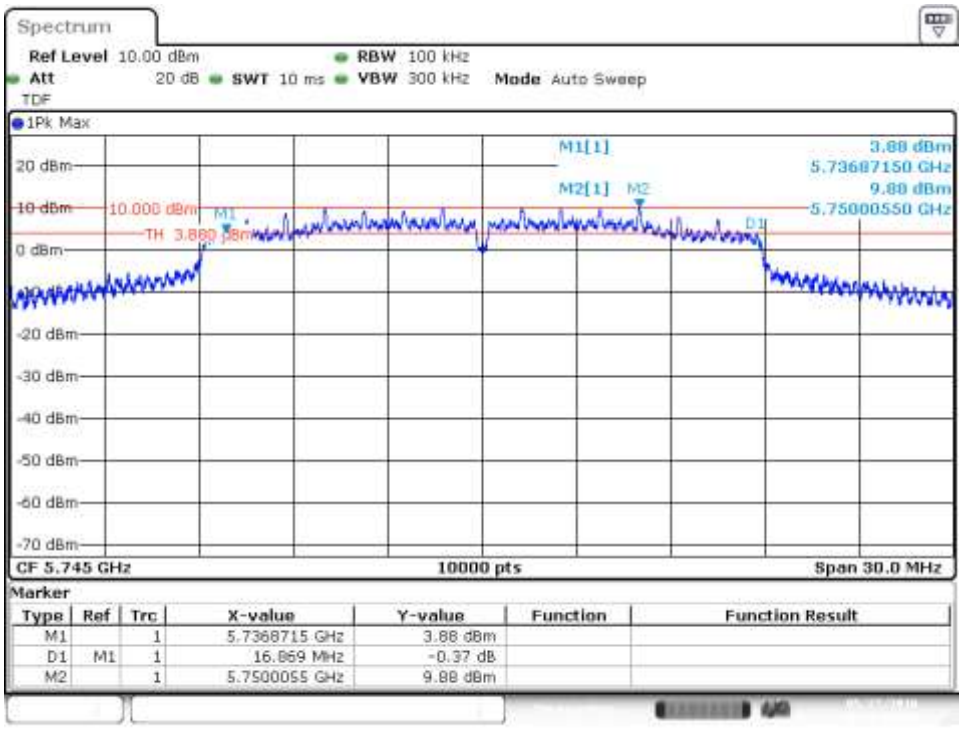
6dB BW – CH144 (Overlapped Channel)



99% BW – CH144 (Overlapped Channel)

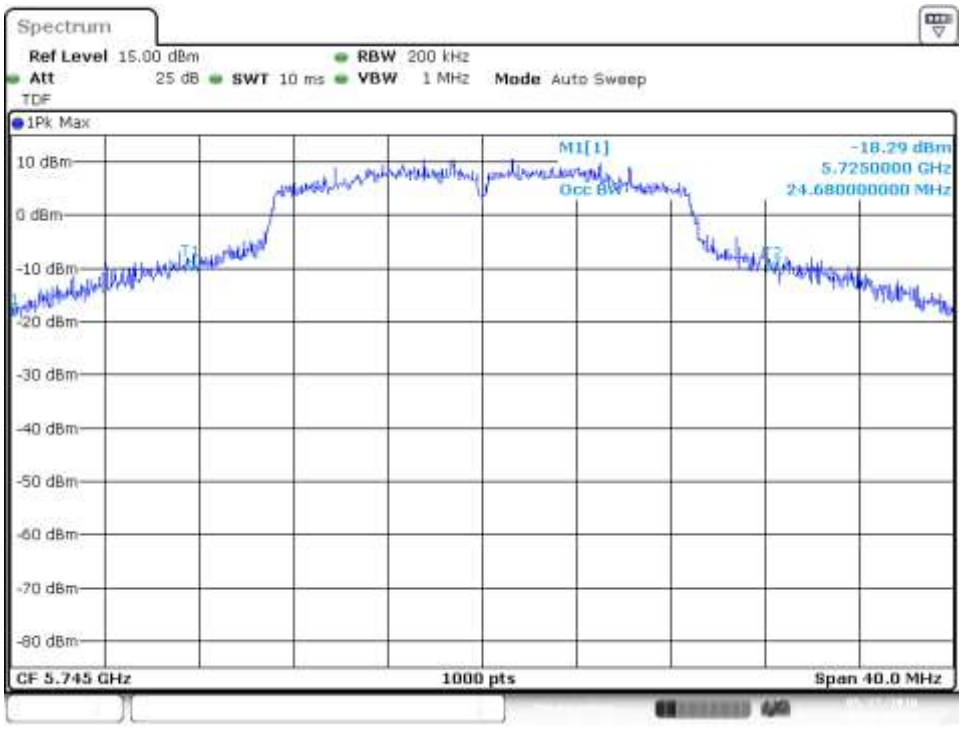


6dB BW – CH149



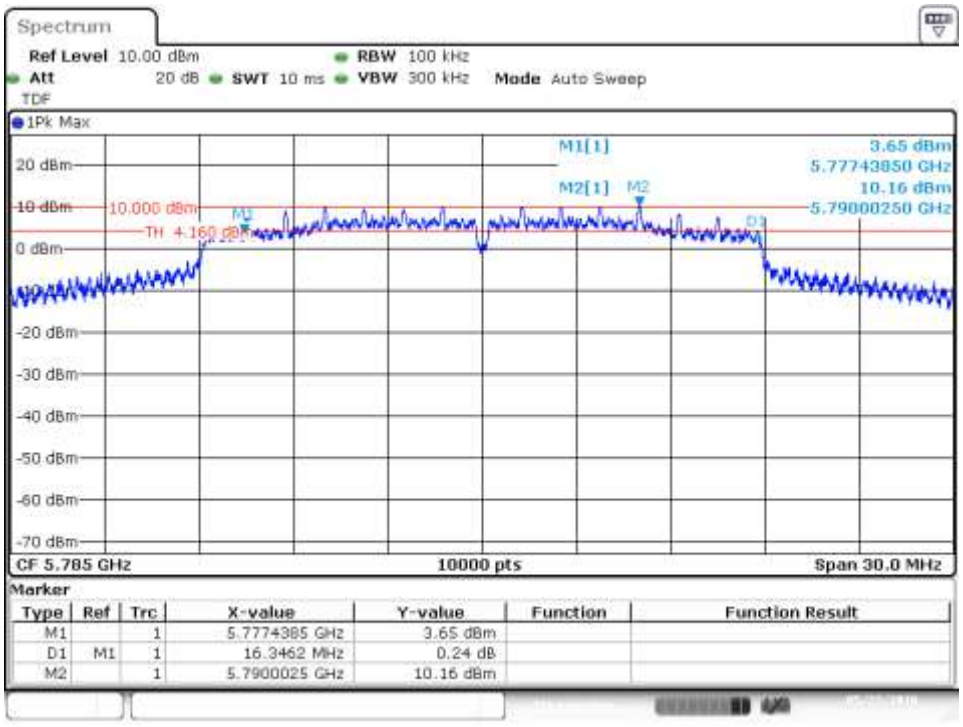
Date: 27.MAY.2016 11:21:14

99% BW – CH149



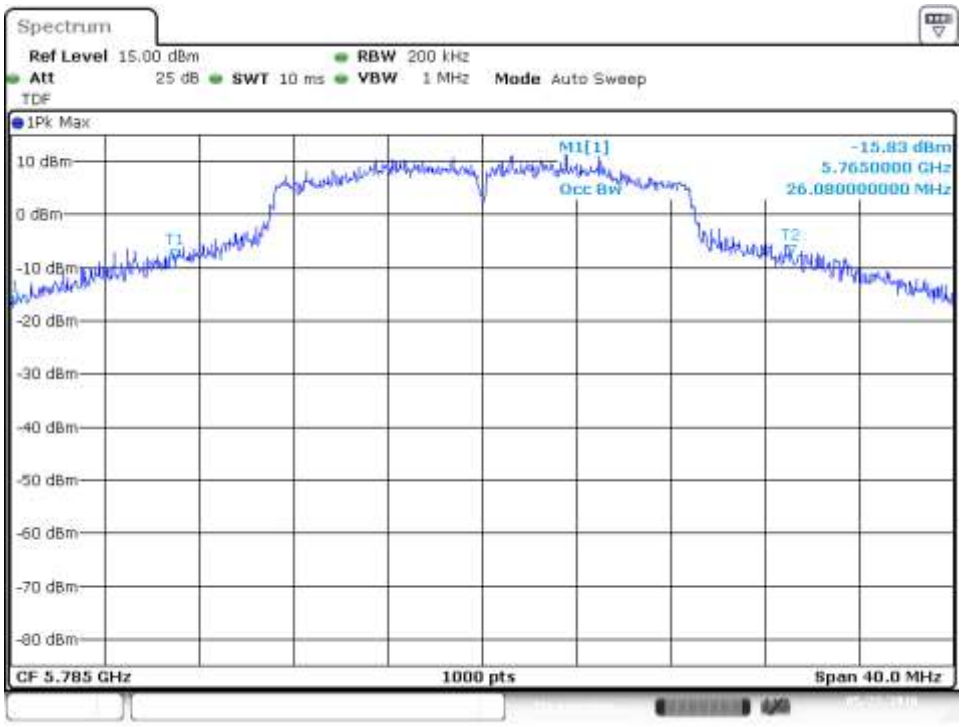
Date: 27.MAY.2016 11:16:35

6dB BW – CH157



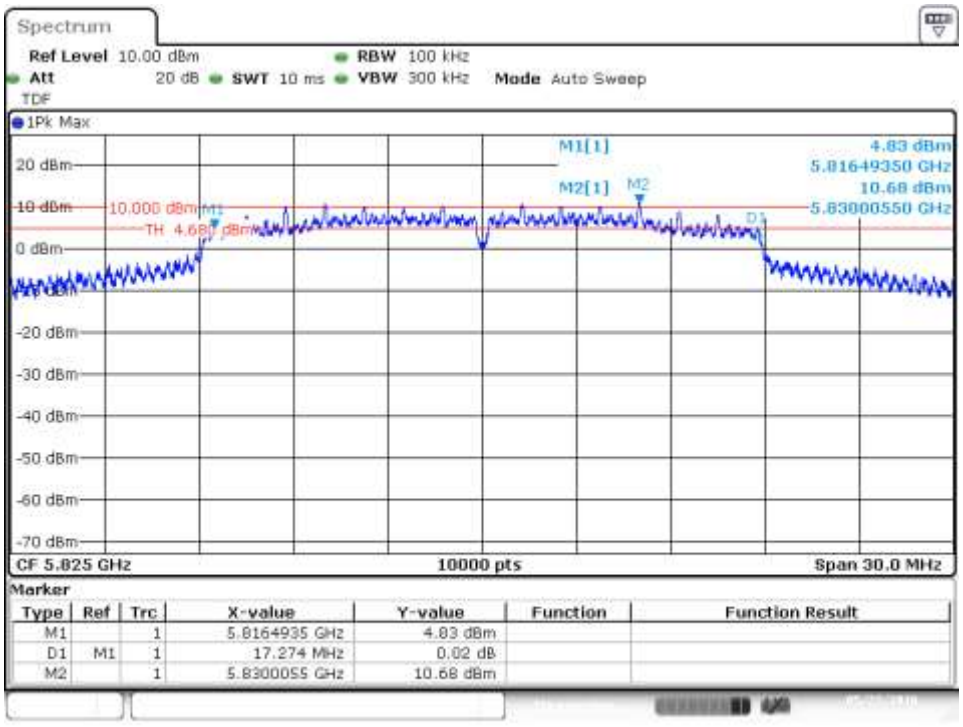
Date: 27.MAY.2016 11:24:46

99% BW – CH157



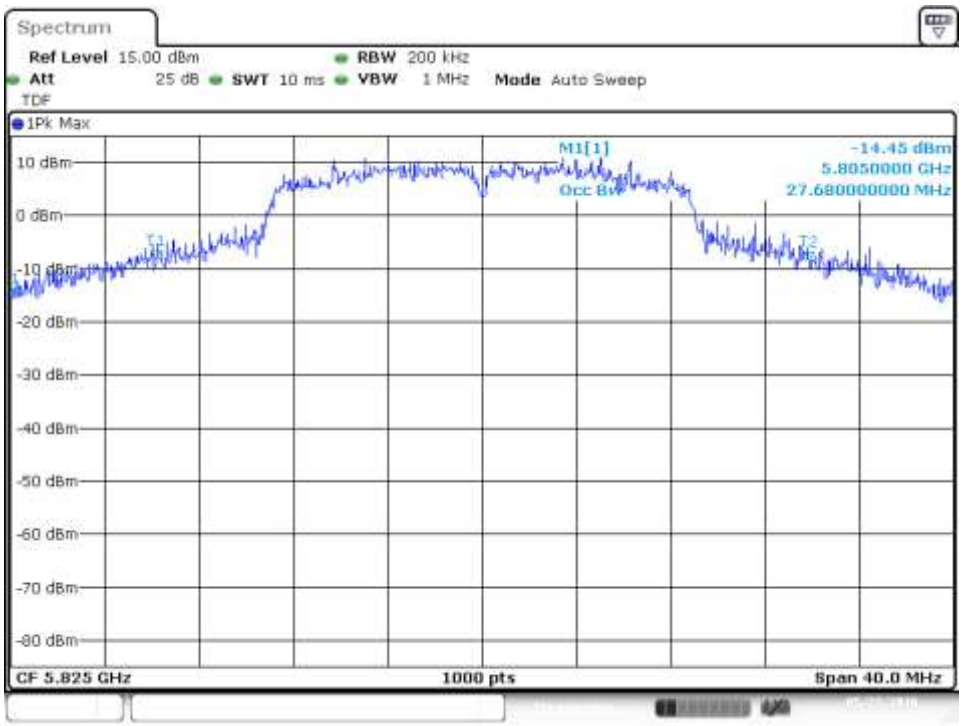
Date: 27.MAY.2016 11:22:26

6dB BW – CH165



Date: 27.MAY.2016 11:29:29

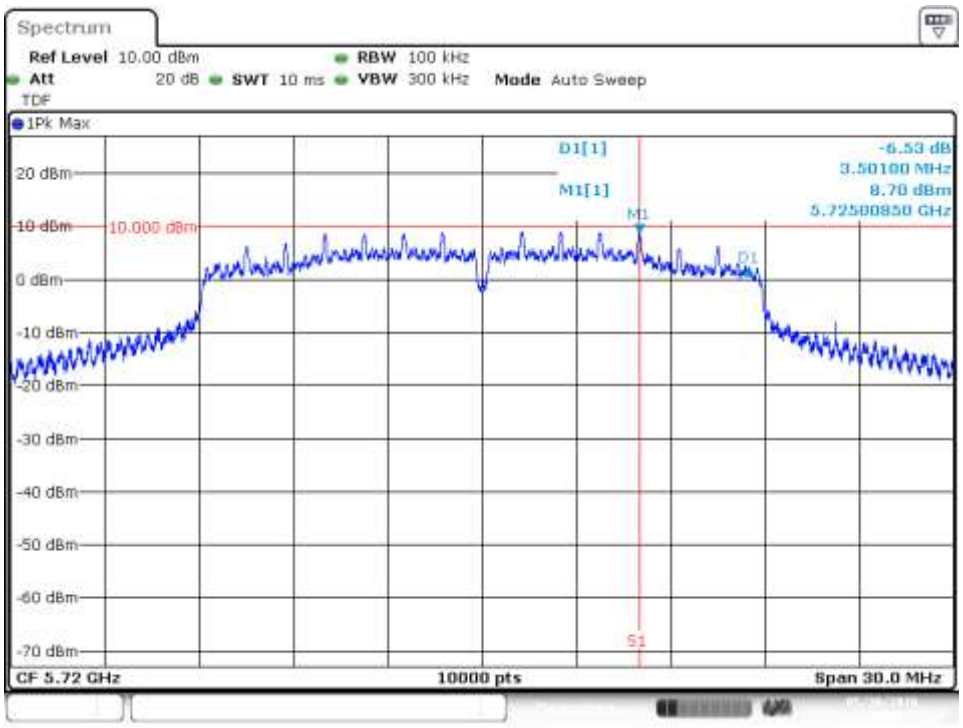
99% BW – CH165



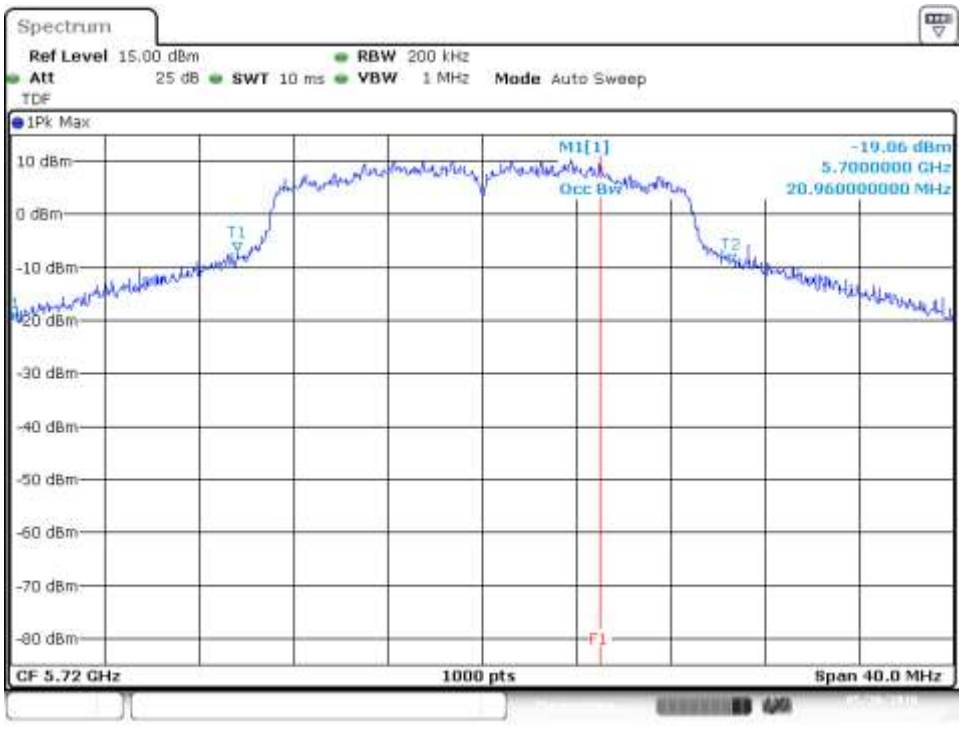
Date: 27.MAY.2016 11:26:32

802.11n20, HT0 (SISO) – Chain B

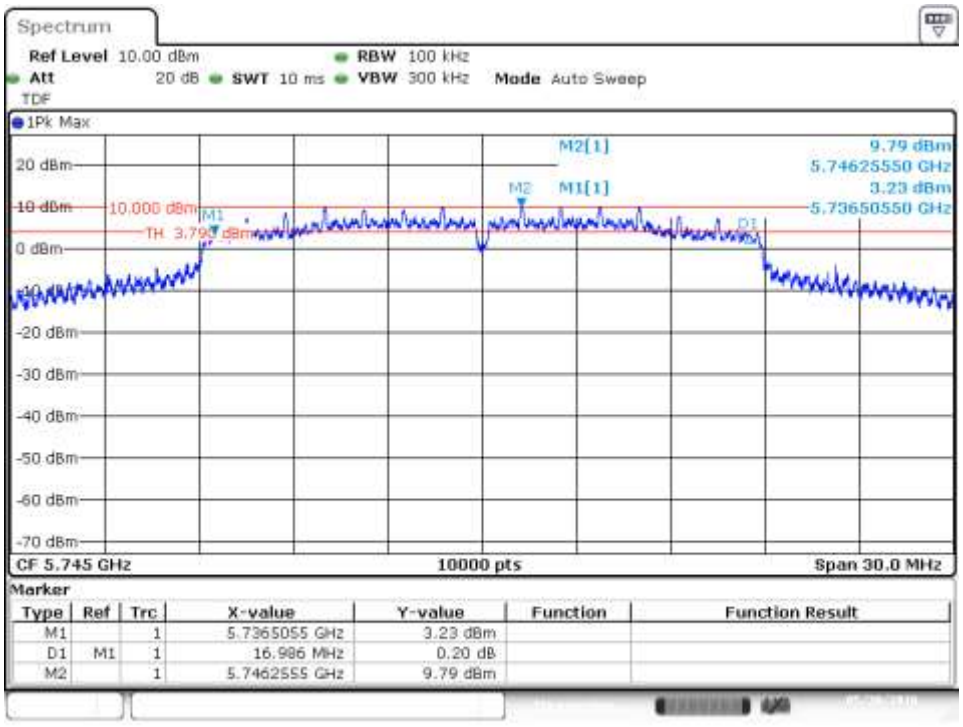
6dB BW – CH144 (Overlapped Channel)



99% BW – CH144 (Overlapped Channel)

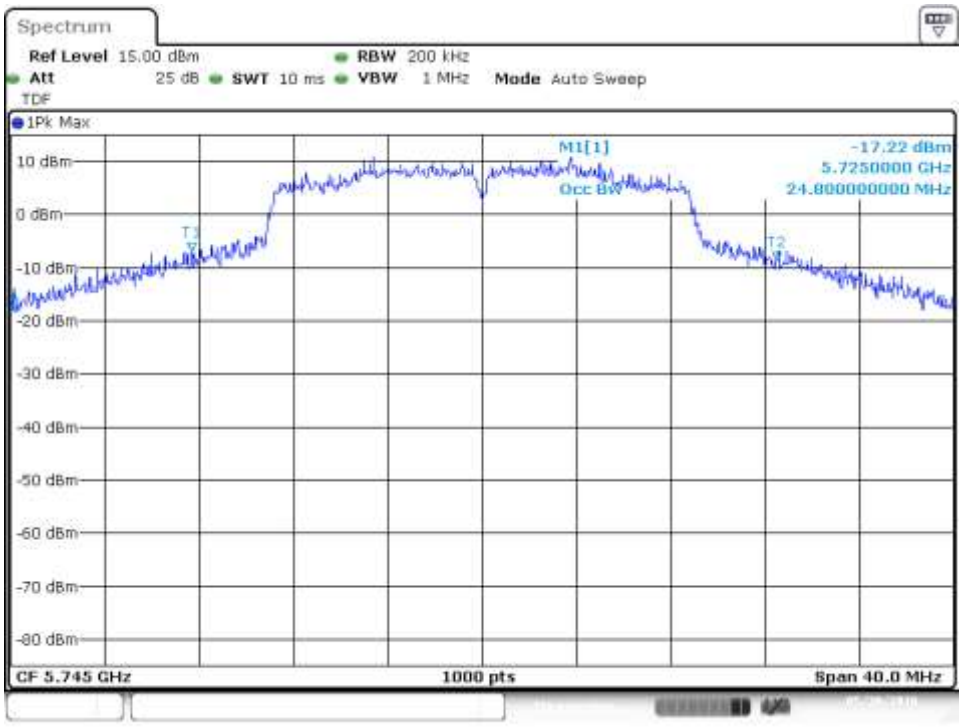


6dB BW – CH149



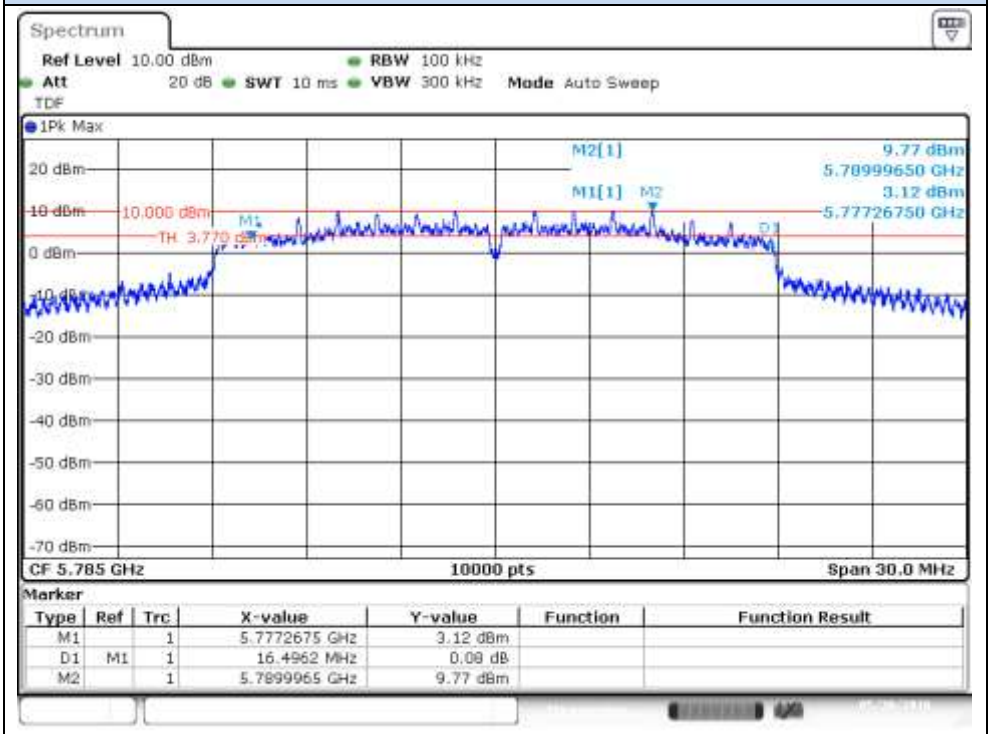
Date: 30.MAY.2016 11:30:32

99% BW – CH149



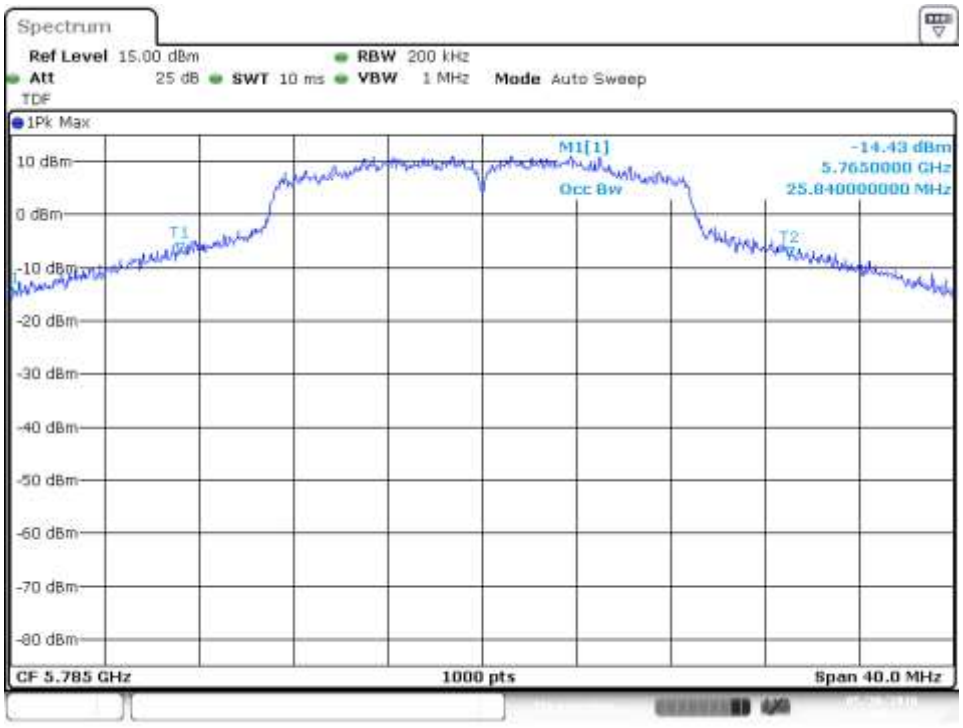
Date: 30.MAY.2016 11:14:54

6dB BW – CH157



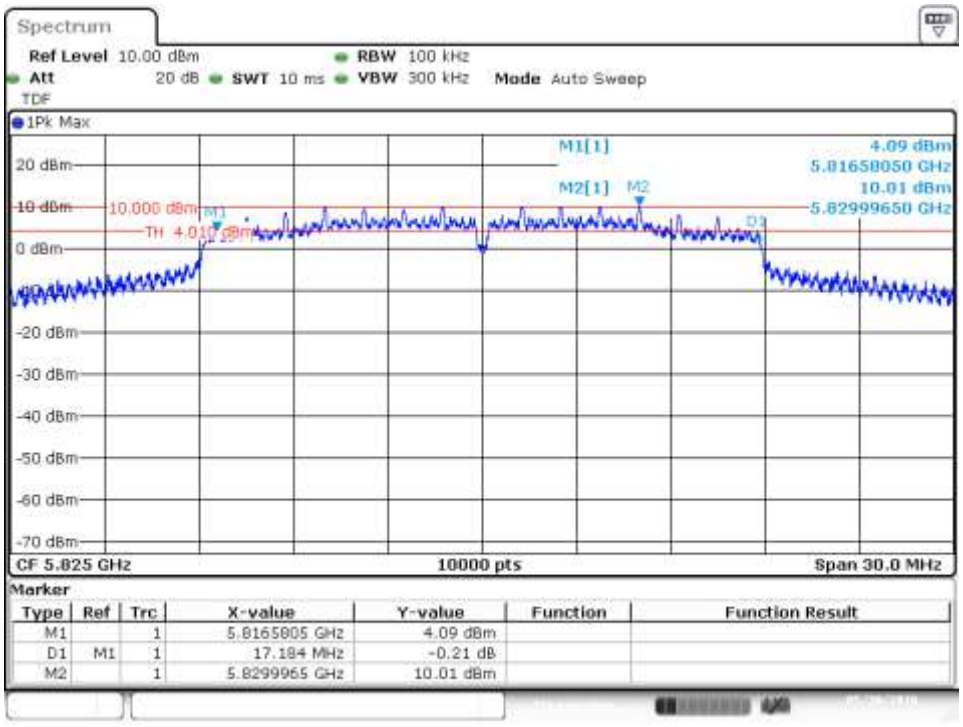
Date: 30.MAY.2016 11:27:12

99% BW – CH157



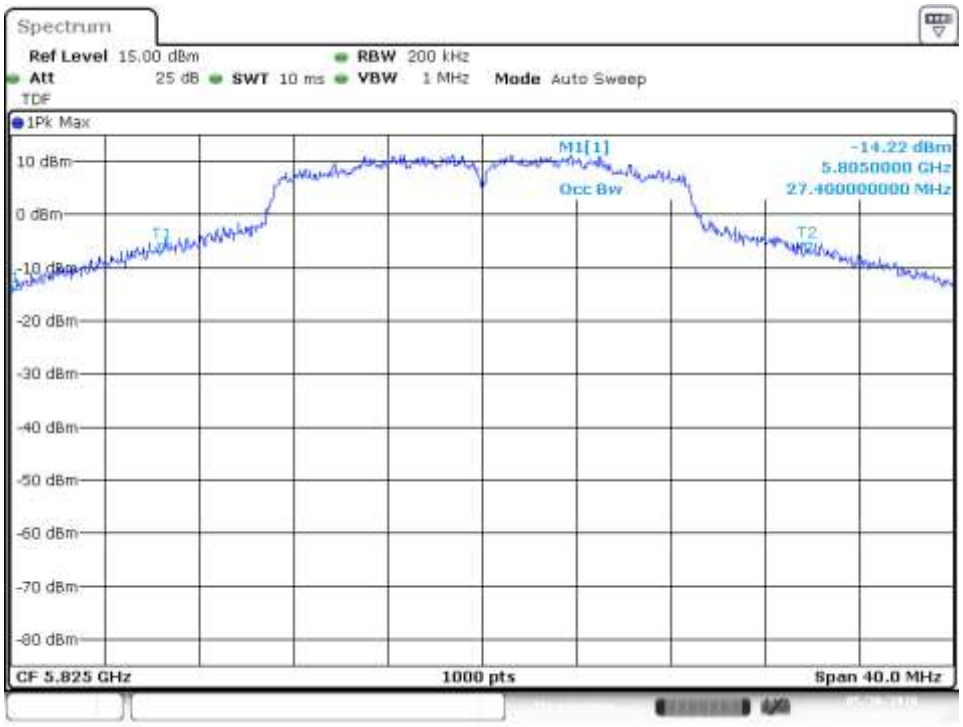
Date: 30.MAY.2016 11:25:07

6dB BW – CH165



Date: 30.MAY.2016 11:34:29

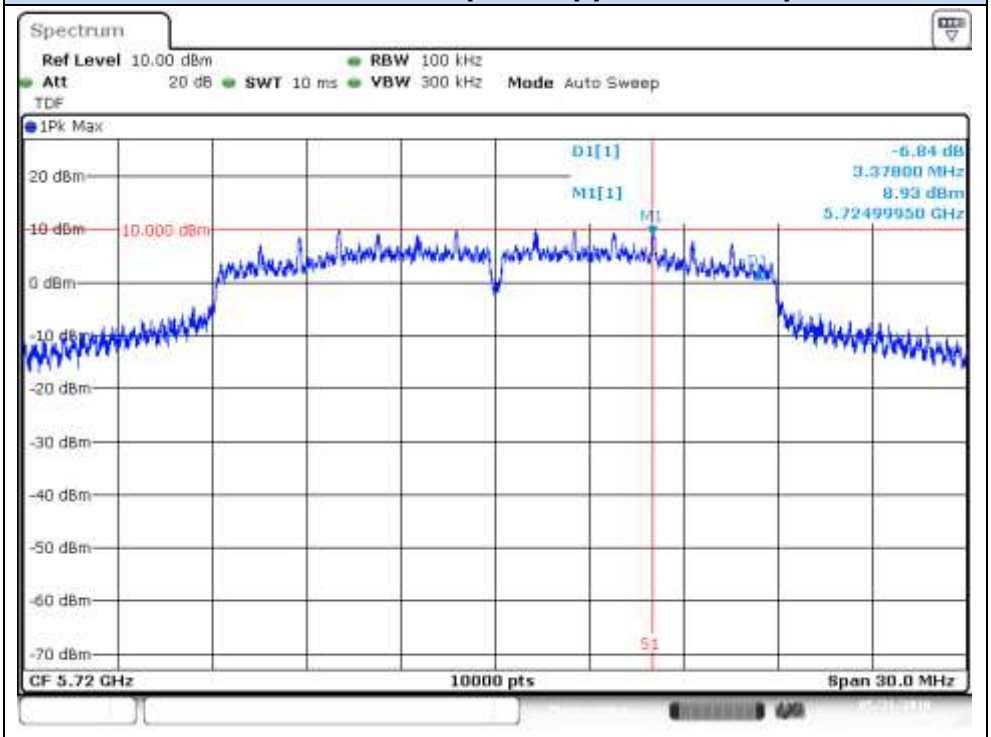
99% BW – CH165



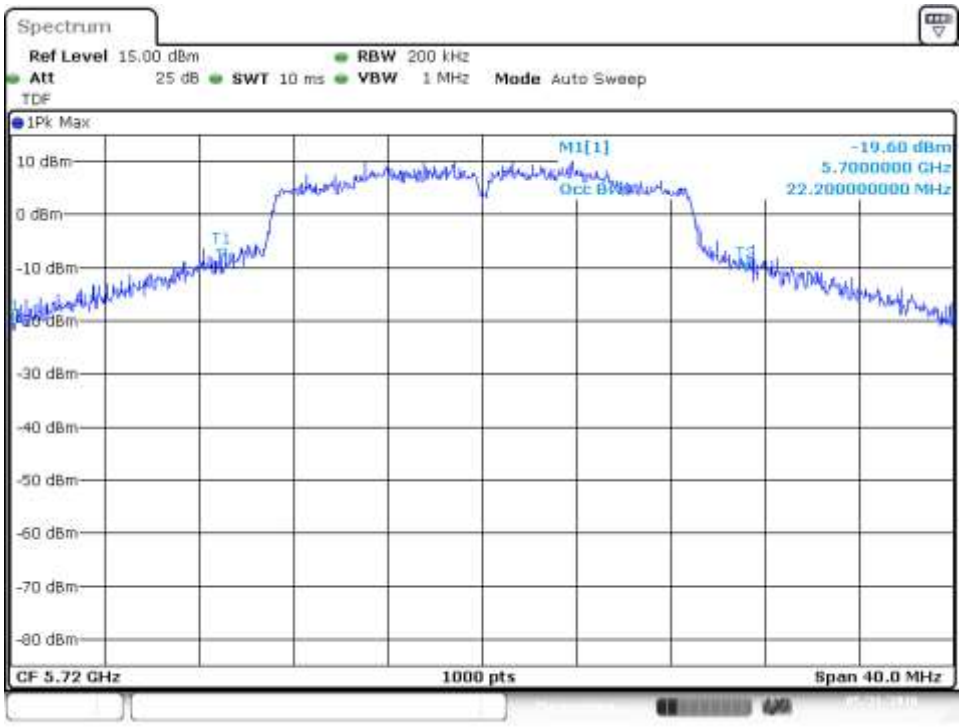
Date: 30.MAY.2016 11:32:07

802.11n20, HT8 (MIMO) – Chain A

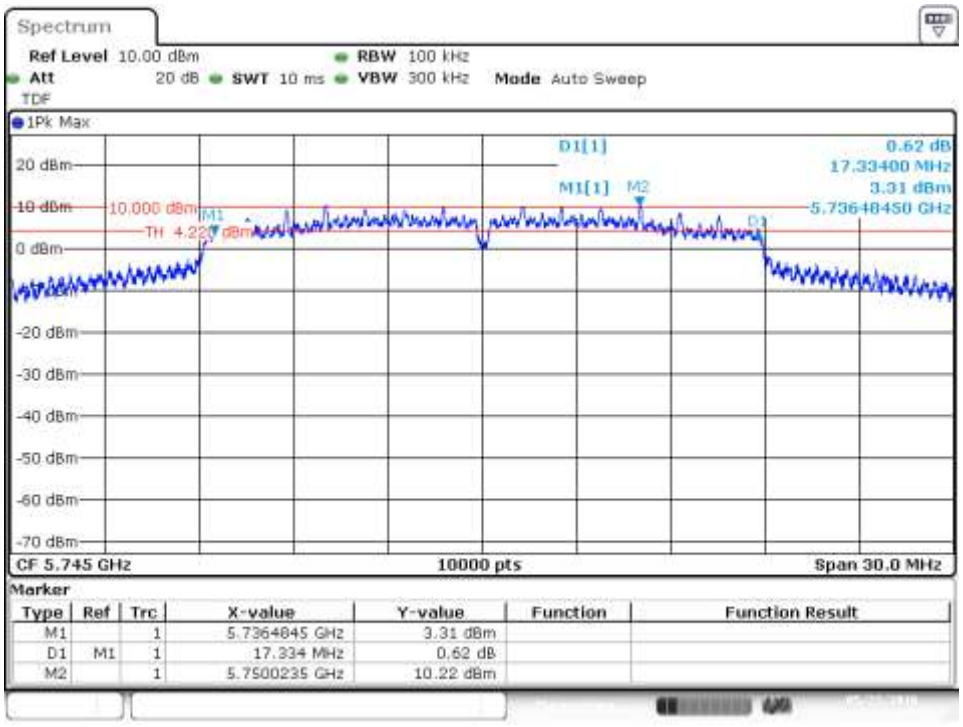
6dB BW – CH144 (Overlapped Channel)



99% BW – CH144 (Overlap Channel)

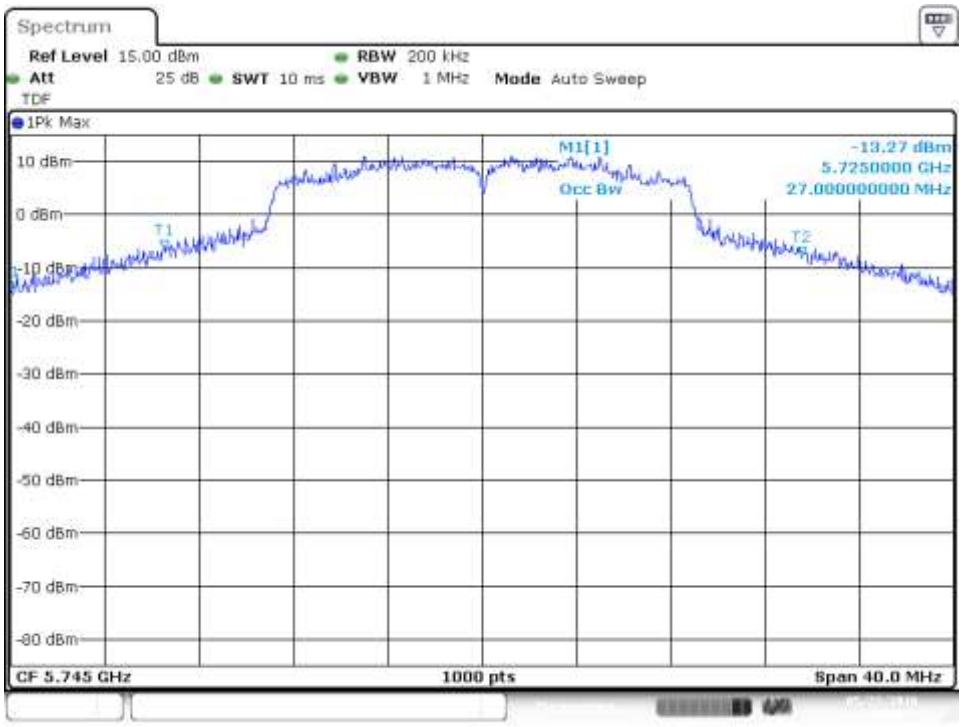


6dB BW – CH149



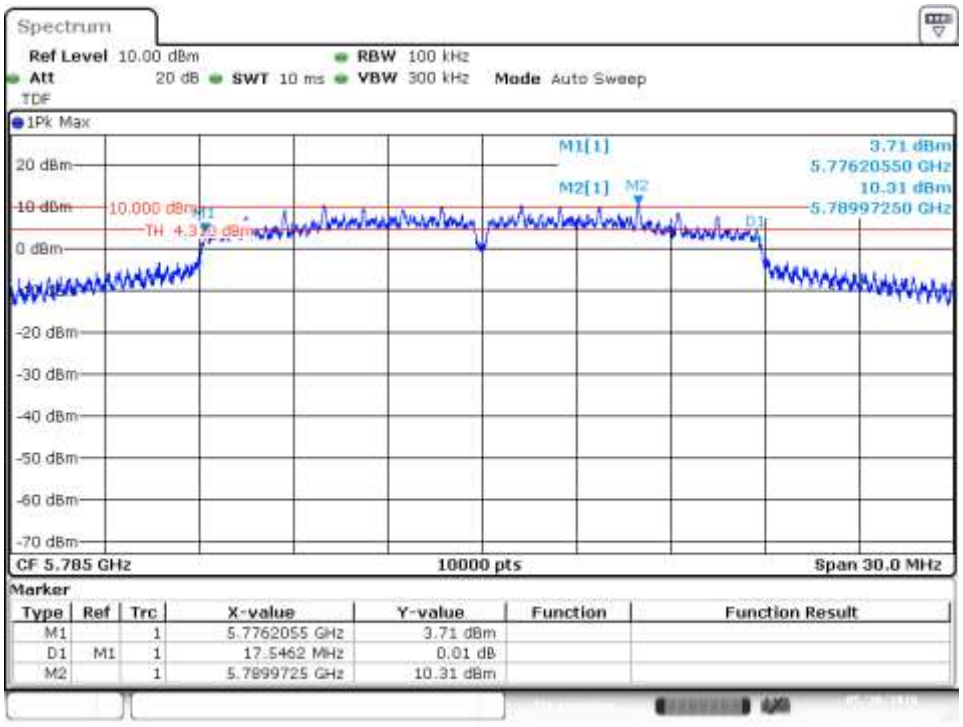
Date: 27.MAY.2016 17:31:14

99% BW – CH149



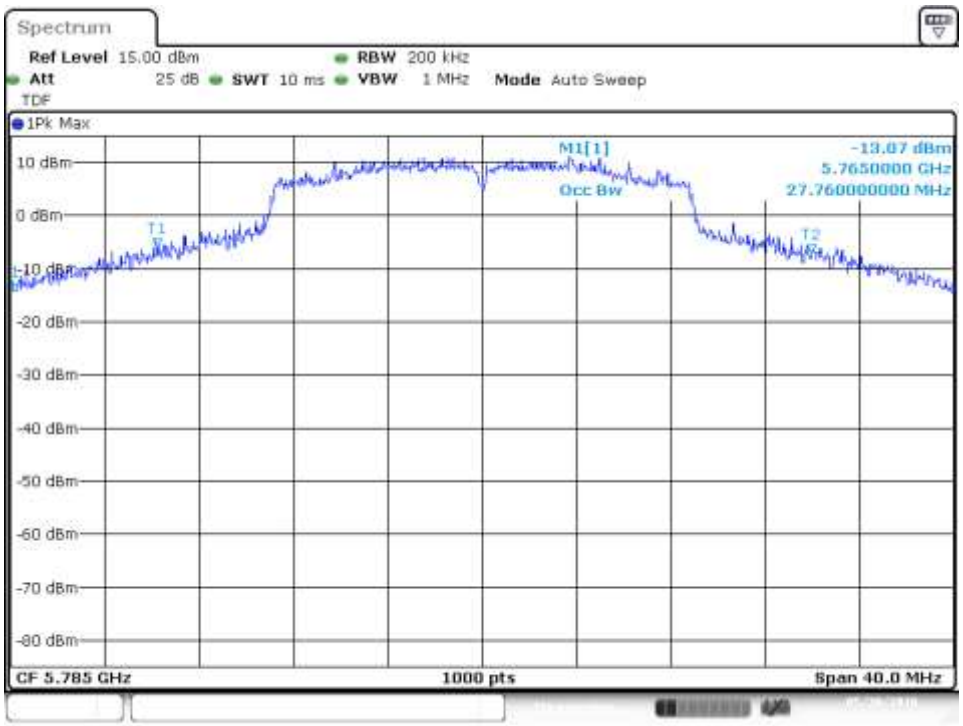
Date: 27.MAY.2016 17:28:09

6dB BW – CH157



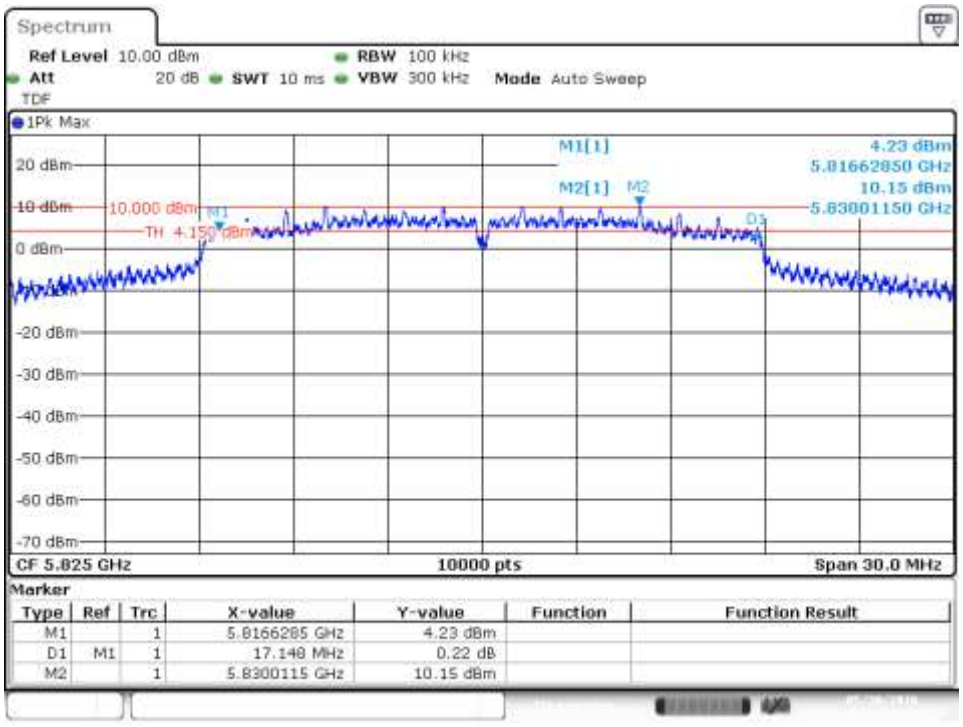
Date: 30.MAY.2016 09:59:28

99% BW – CH157



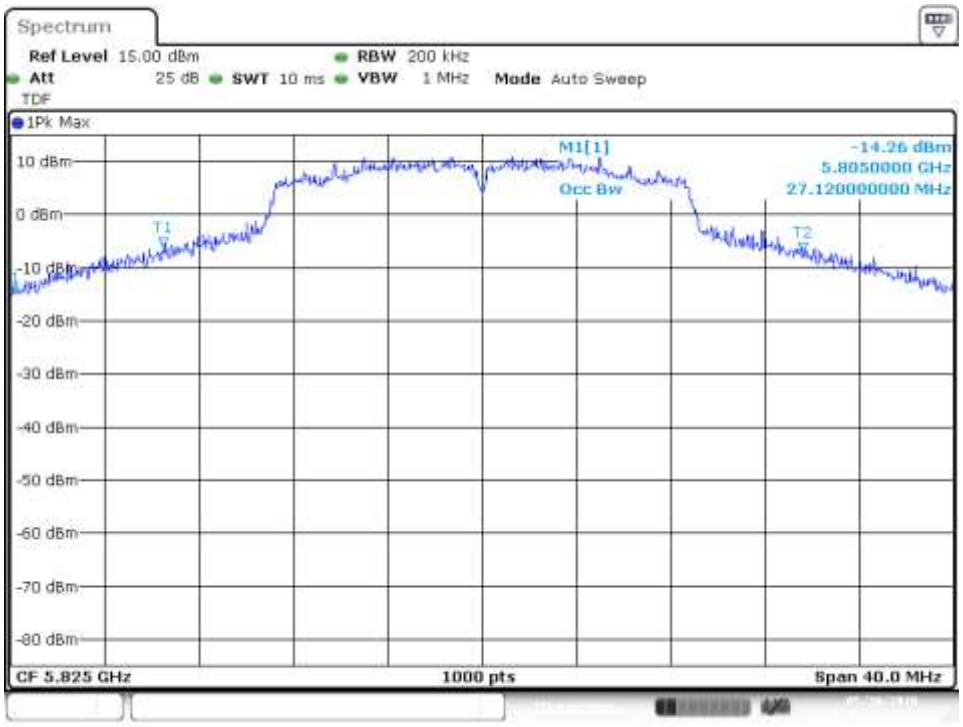
Date: 30.MAY.2016 09:56:30

6dB BW – CH165



Date: 30.MAY.2016 10:10:30

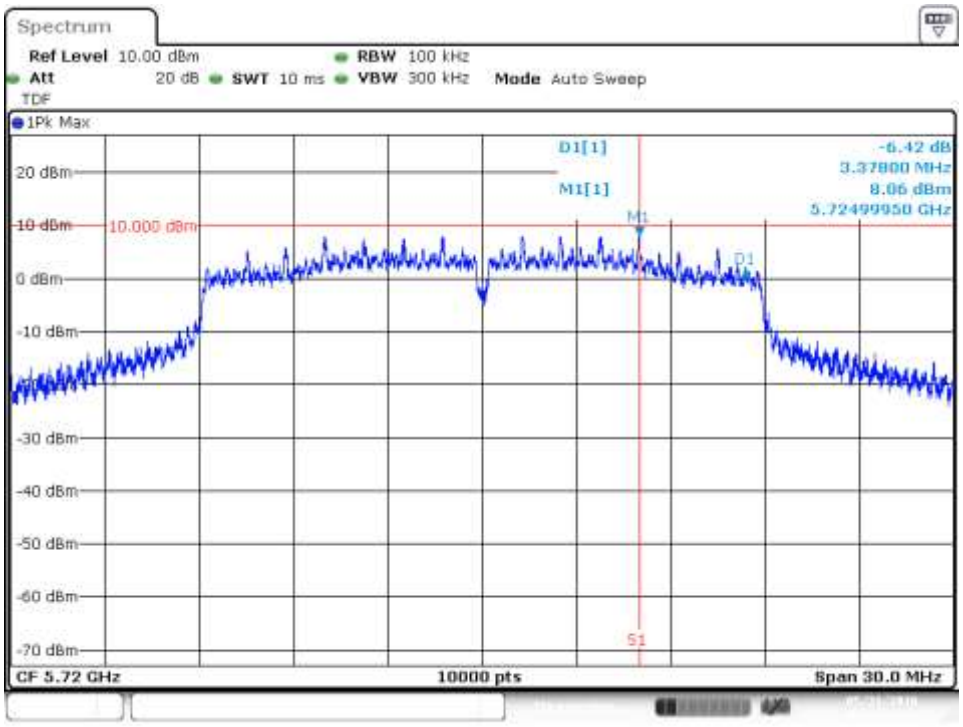
99% BW – CH165



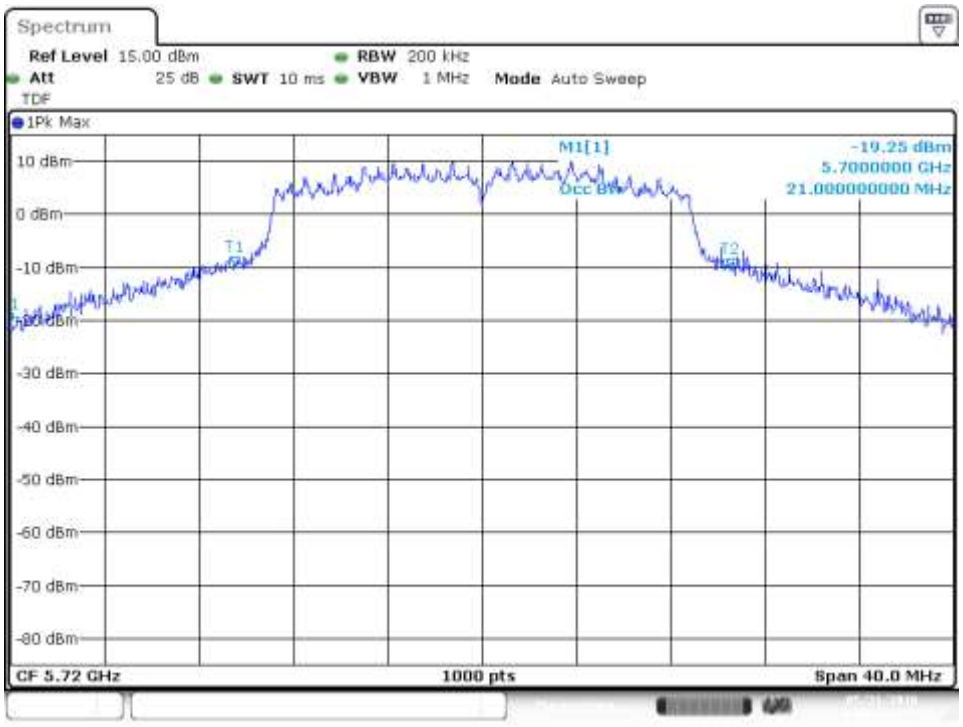
Date: 30.MAY.2016 10:07:13

802.11n20, HT8 (MIMO) – Chain B

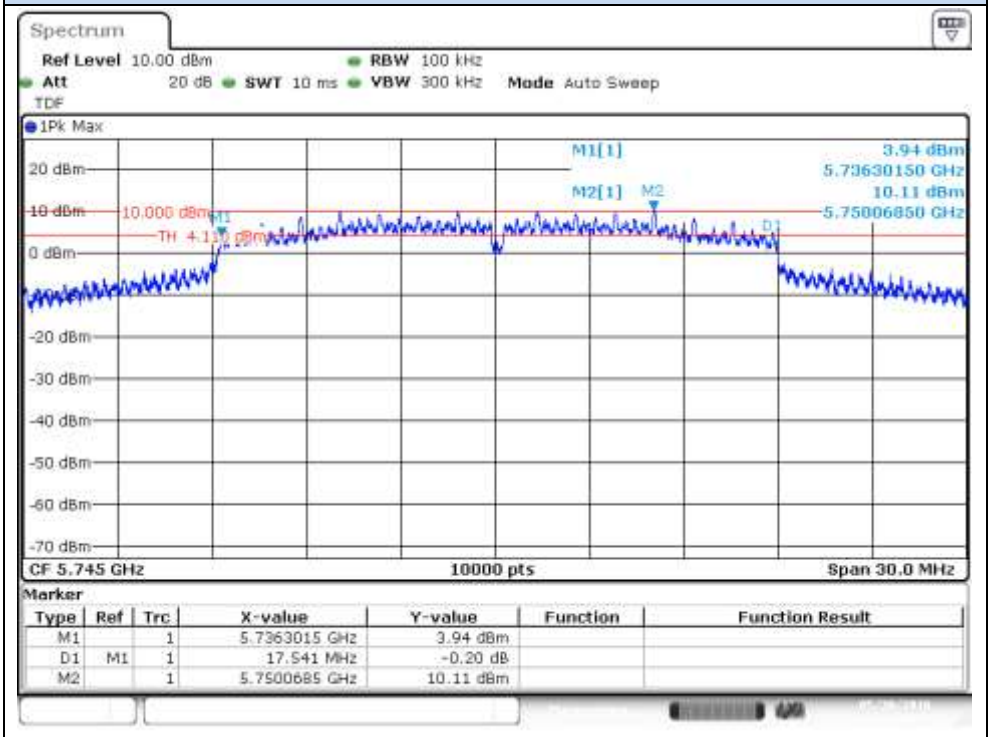
6dB BW – CH144 (Overlapped Channel)



99% BW – CH144 (Overlapped Channel)

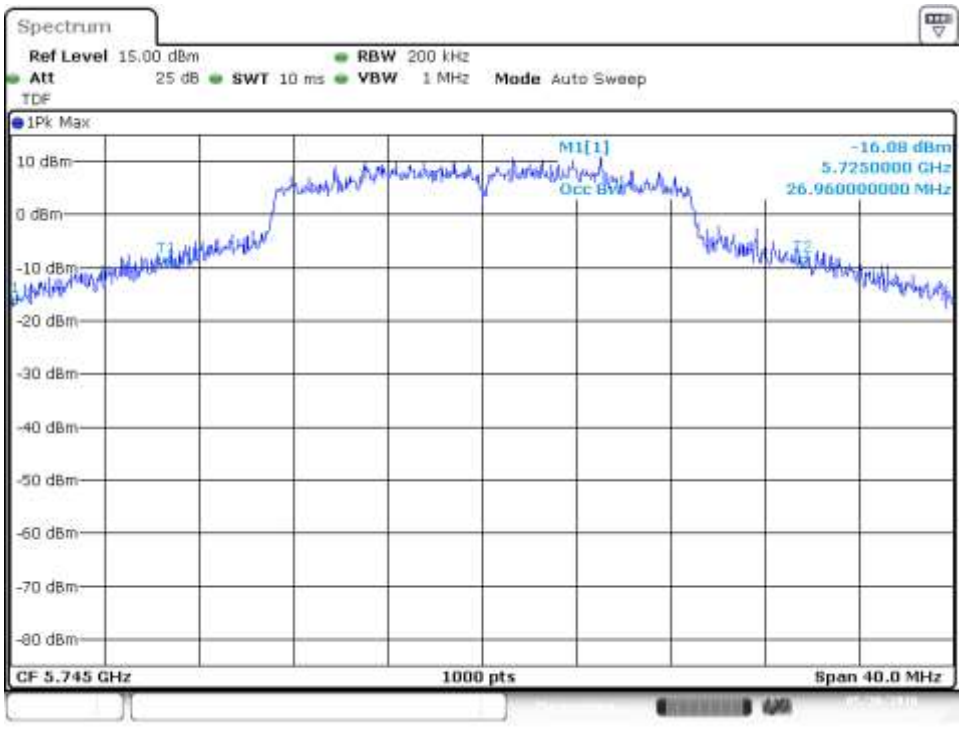


6dB BW – CH149



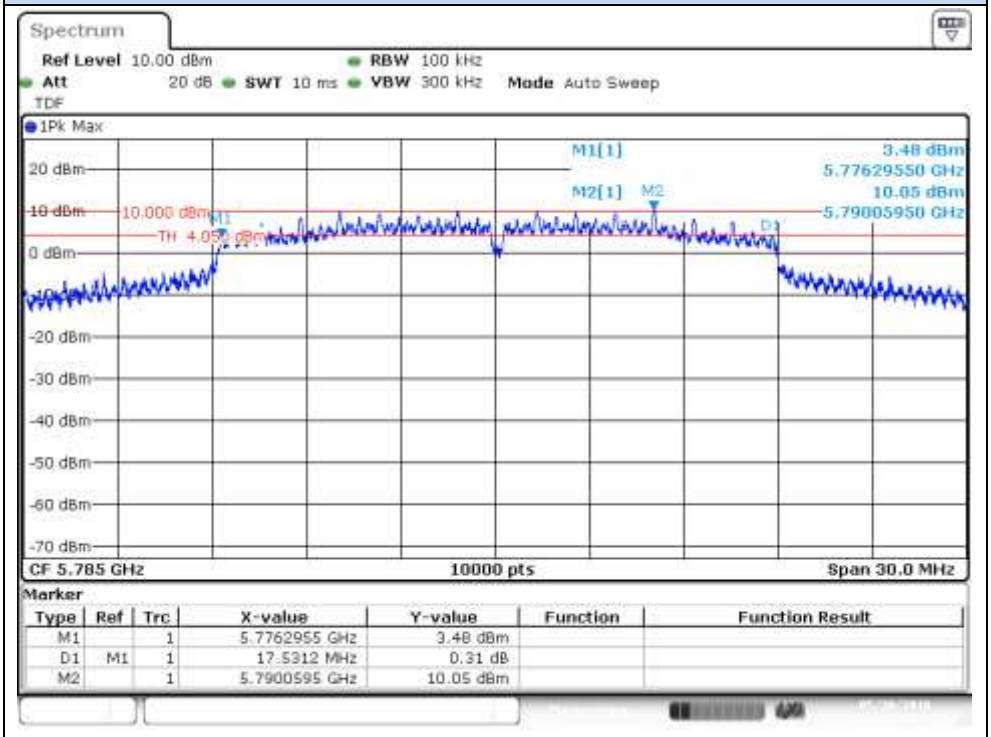
Date: 30.MAY.2016 12:09:20

99% BW – CH149



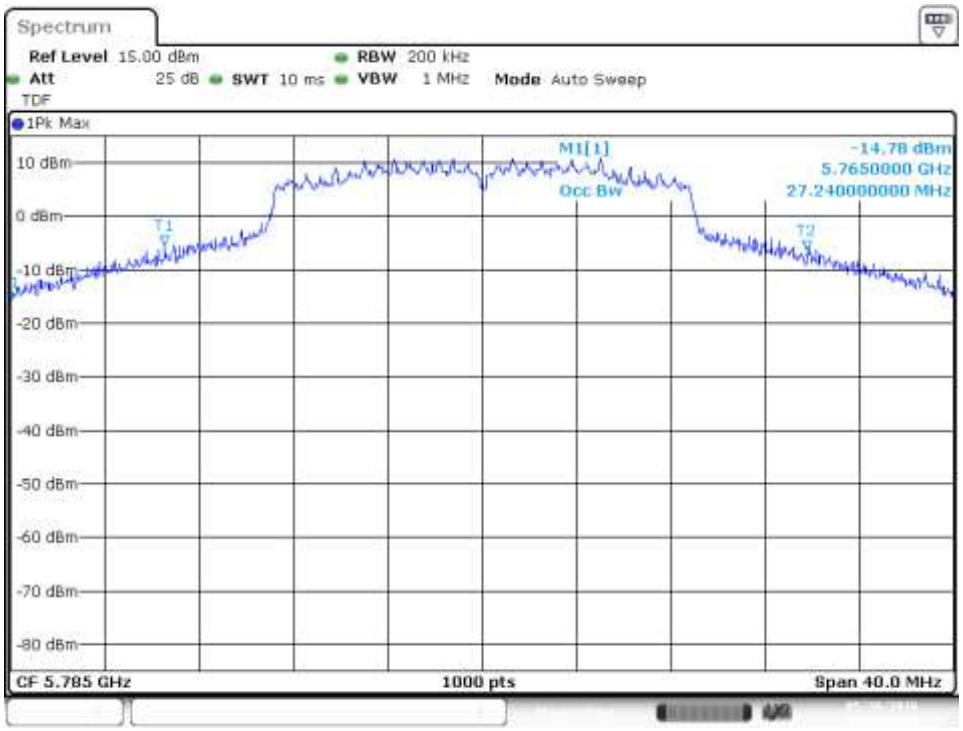
Date: 30.MAY.2016 12:07:01

6dB BW – CH157



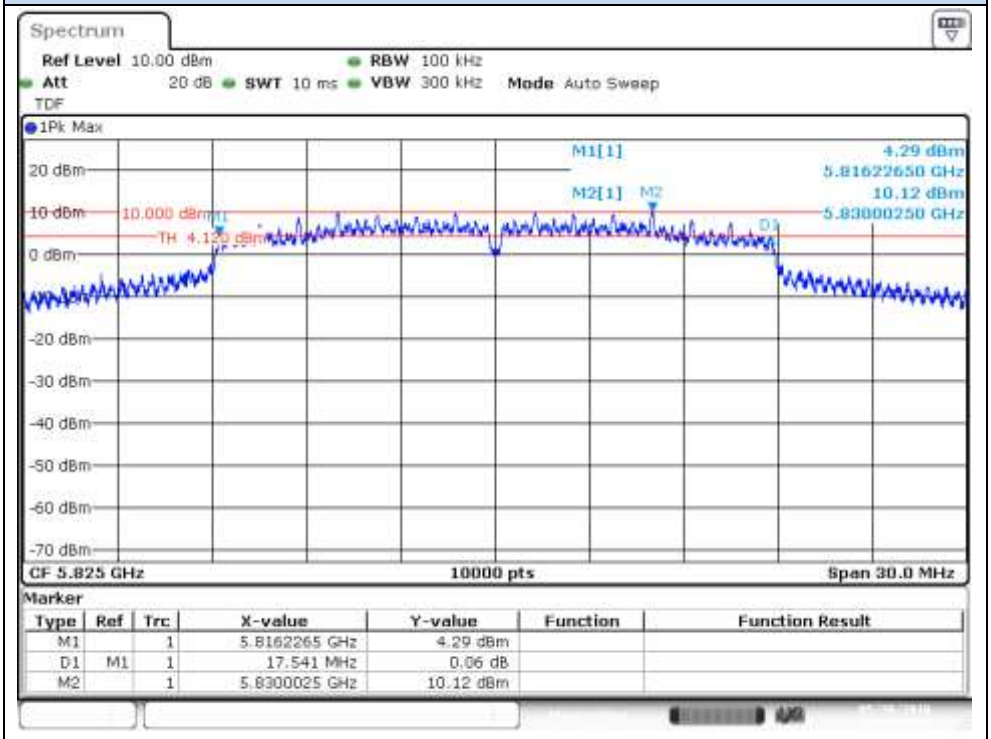
Date: 30.MAY.2016 12:14:40

99% BW – CH157



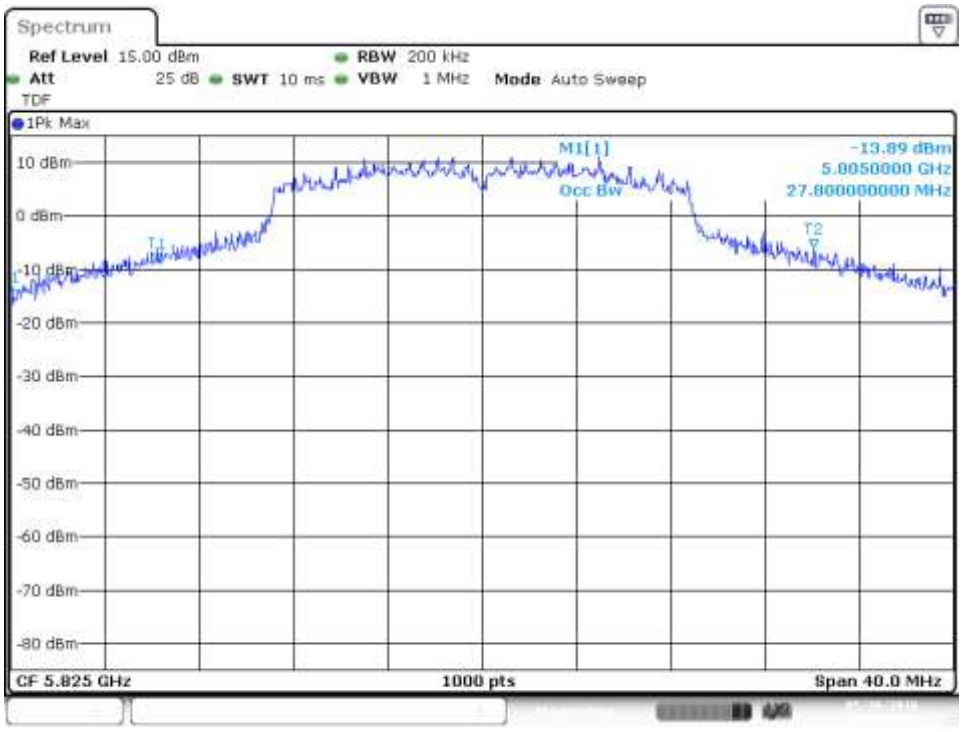
Date: 30.MAY.2016 12:12:13

6dB BW – CH165



Date: 30.MAY.2016 12:18:04

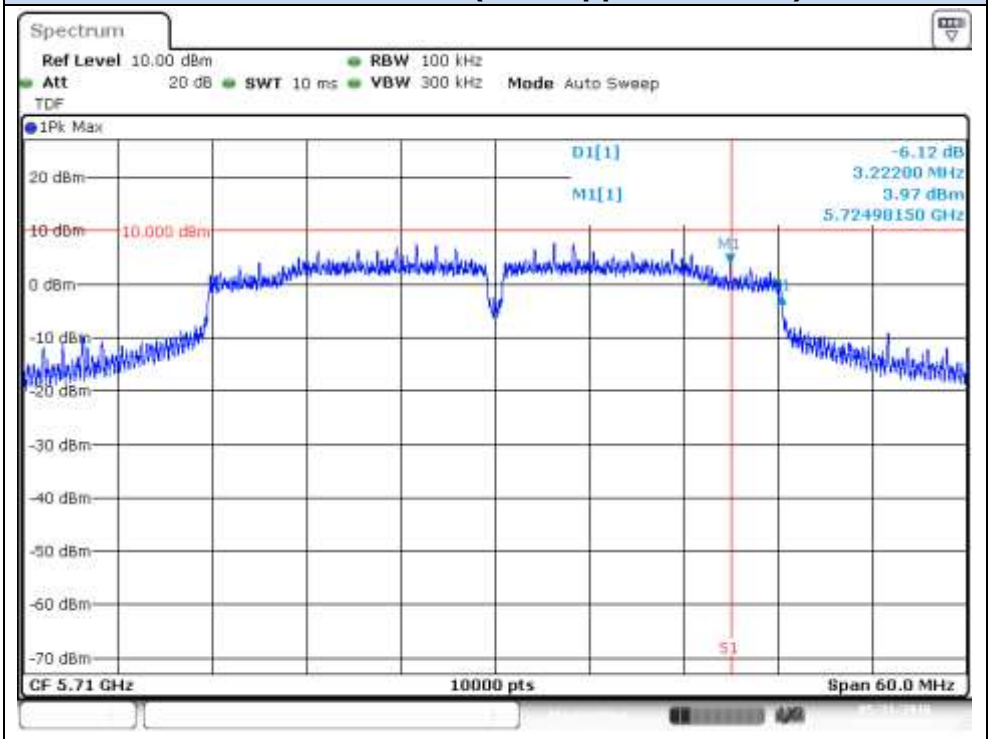
99% BW – CH165



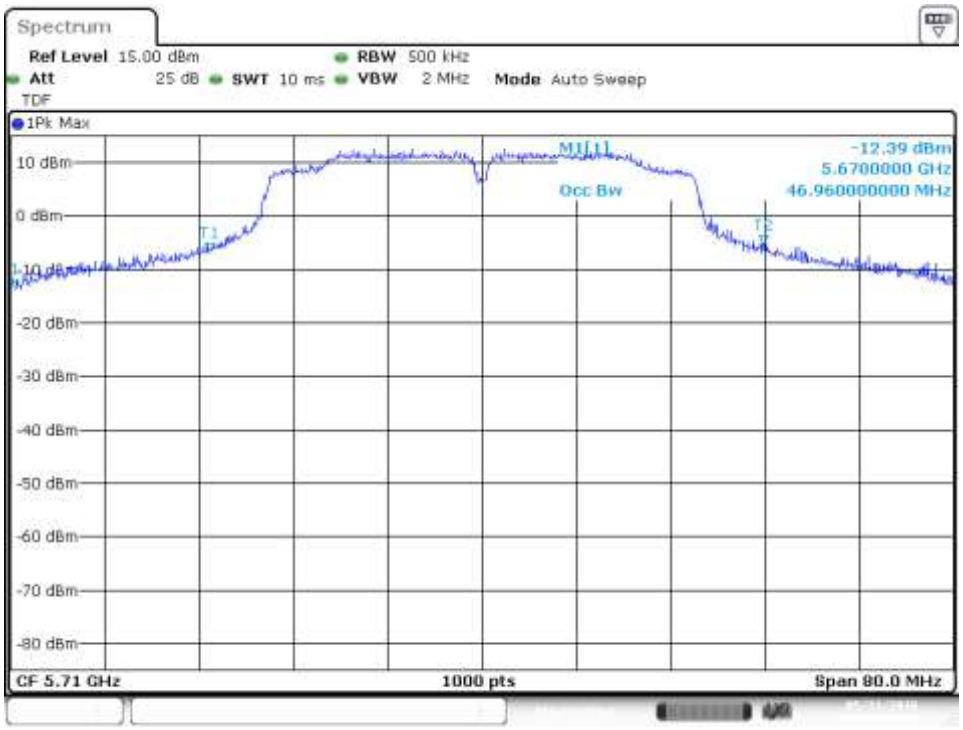
Date: 30.MAY.2016 12:15:49

802.11n40, HT0 (SISO) – Chain A

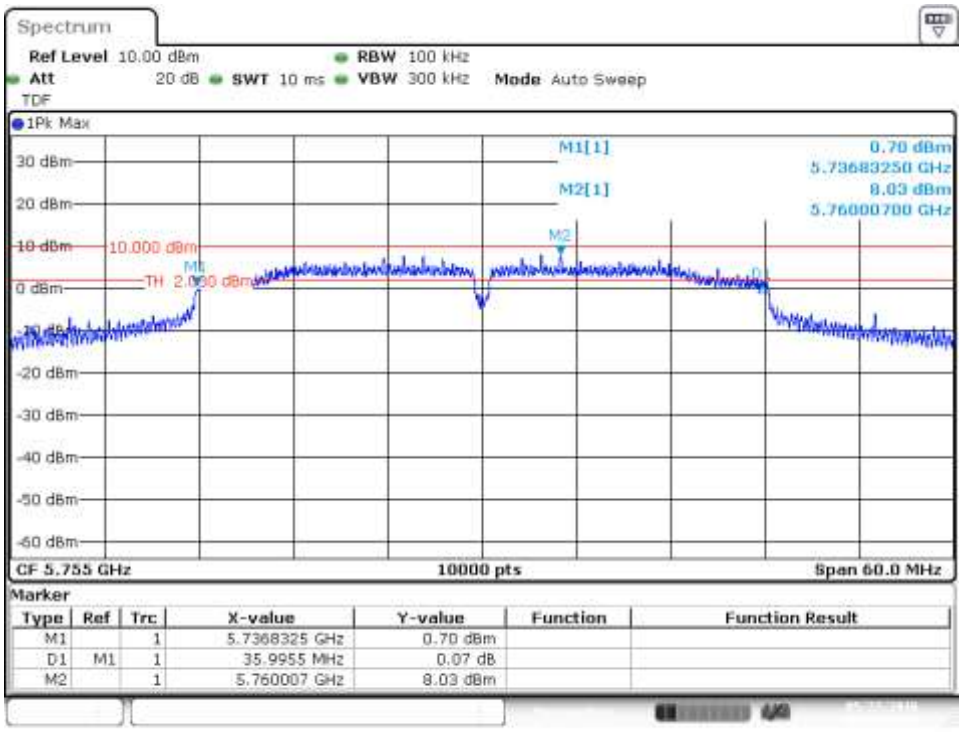
6dB BW – CH142F (Overlapped Channel)



99% BW – CH142F (Overlapped Channel)

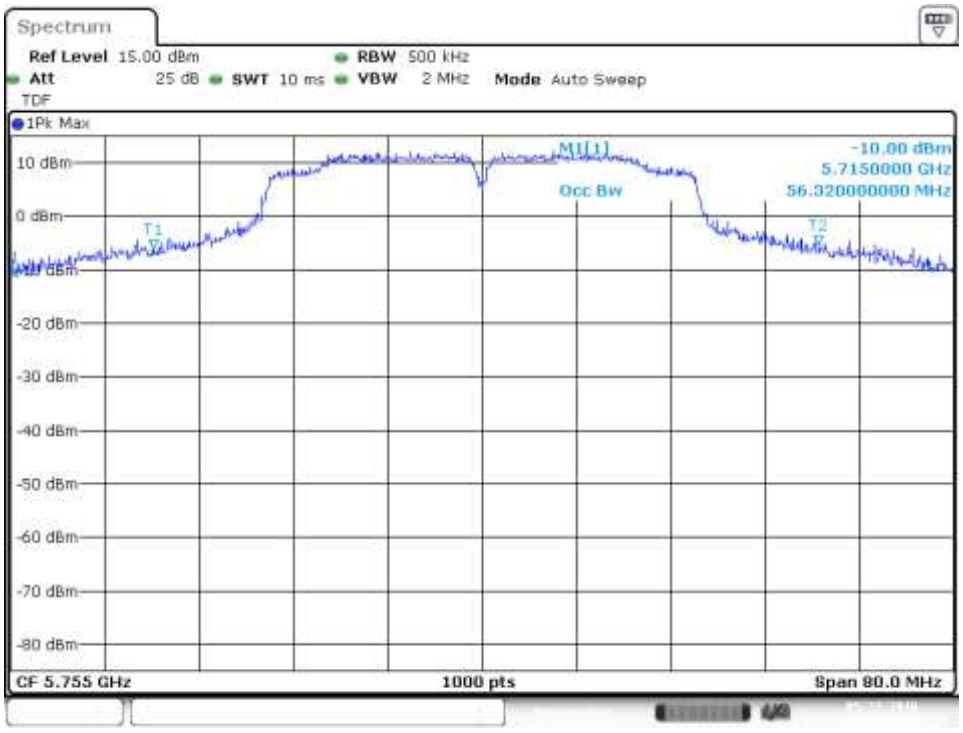


6dB BW – CH151F



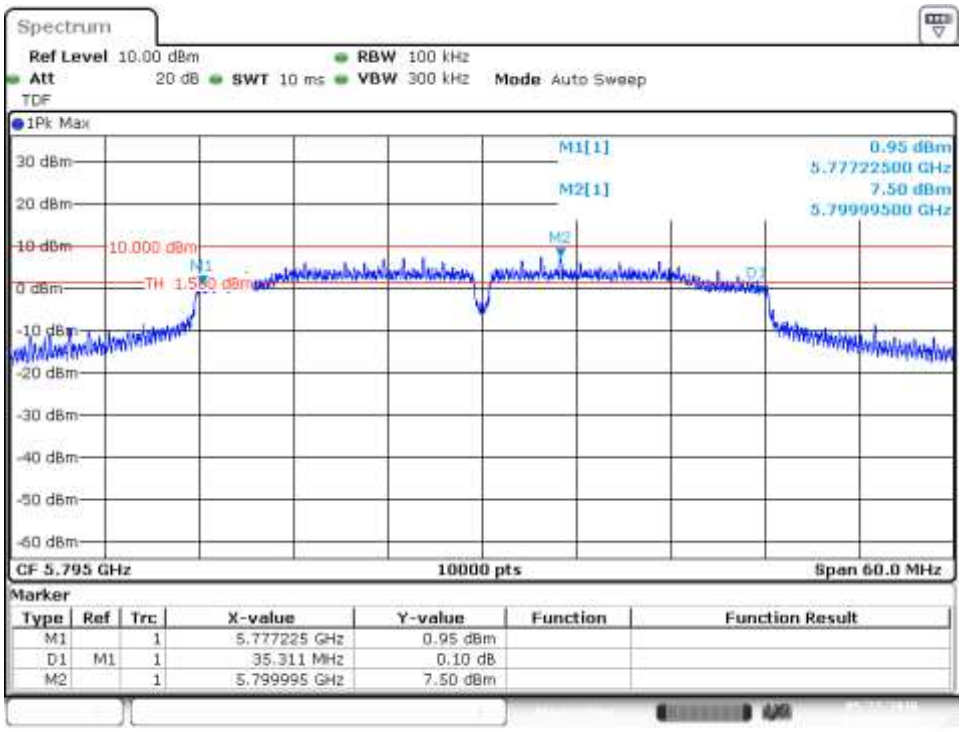
Date: 27.MAY.2016 11:45:37

99% BW – CH151F



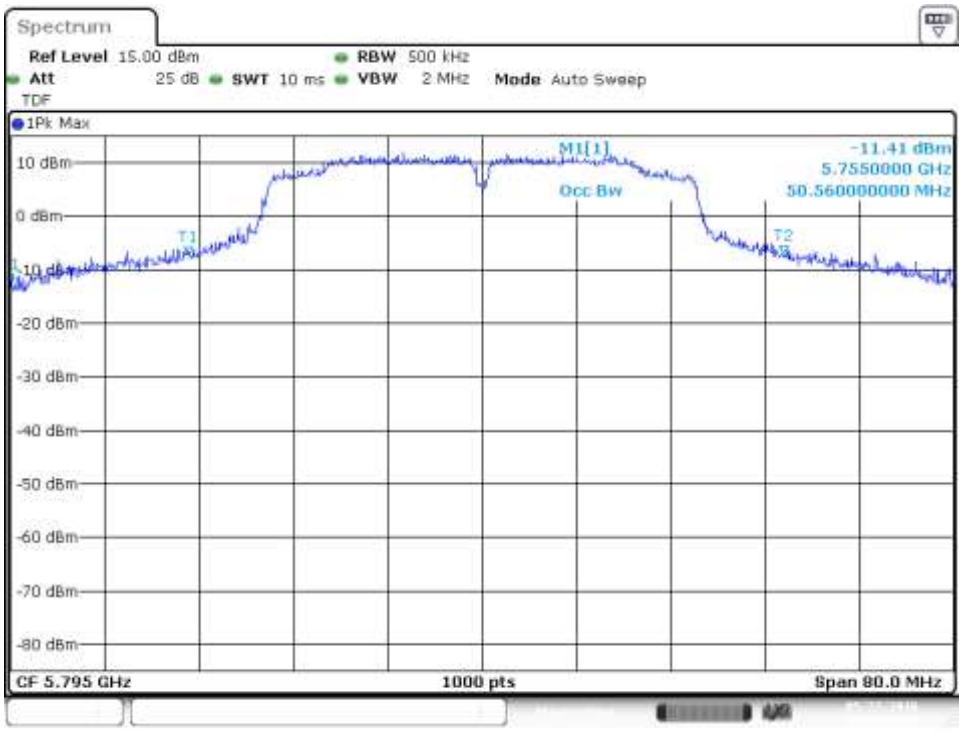
Date: 27.MAY.2016 11:32:00

6dB BW – CH159F



Date: 27.MAY.2016 15:40:34

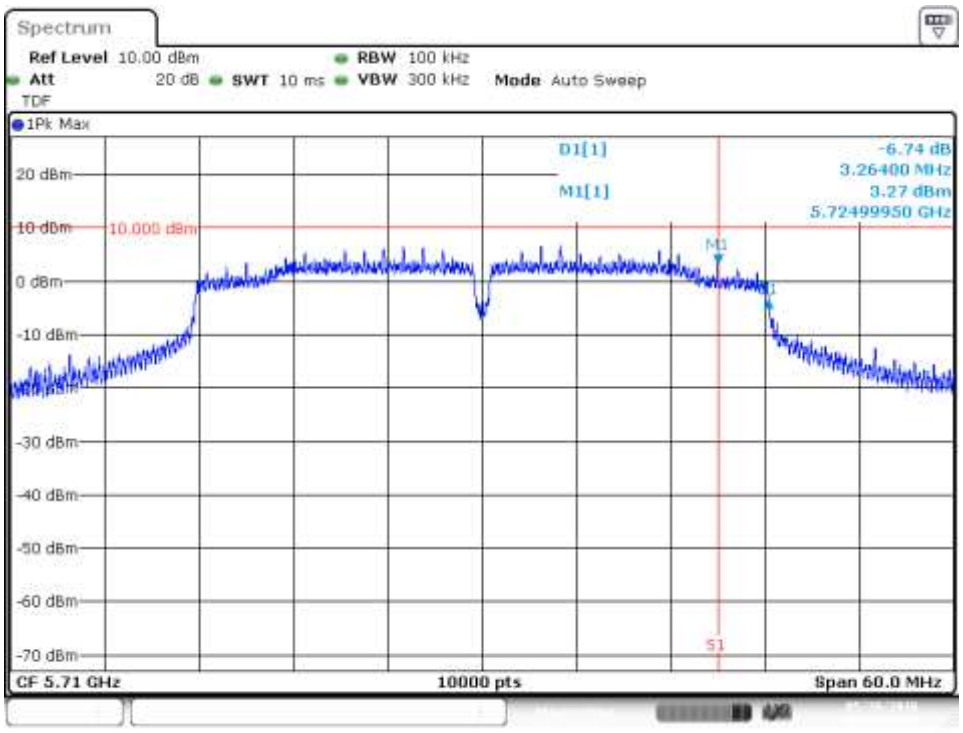
99% BW – CH159F



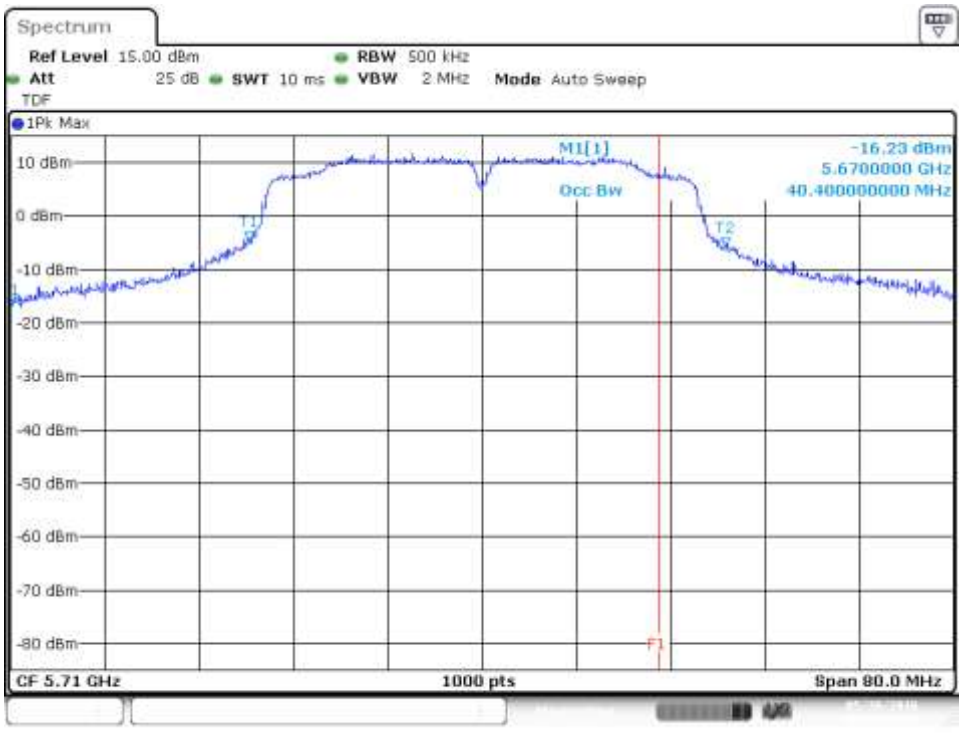
Date: 27.MAY.2016 12:07:44

802.11n40, HT0 (SISO) – Chain B

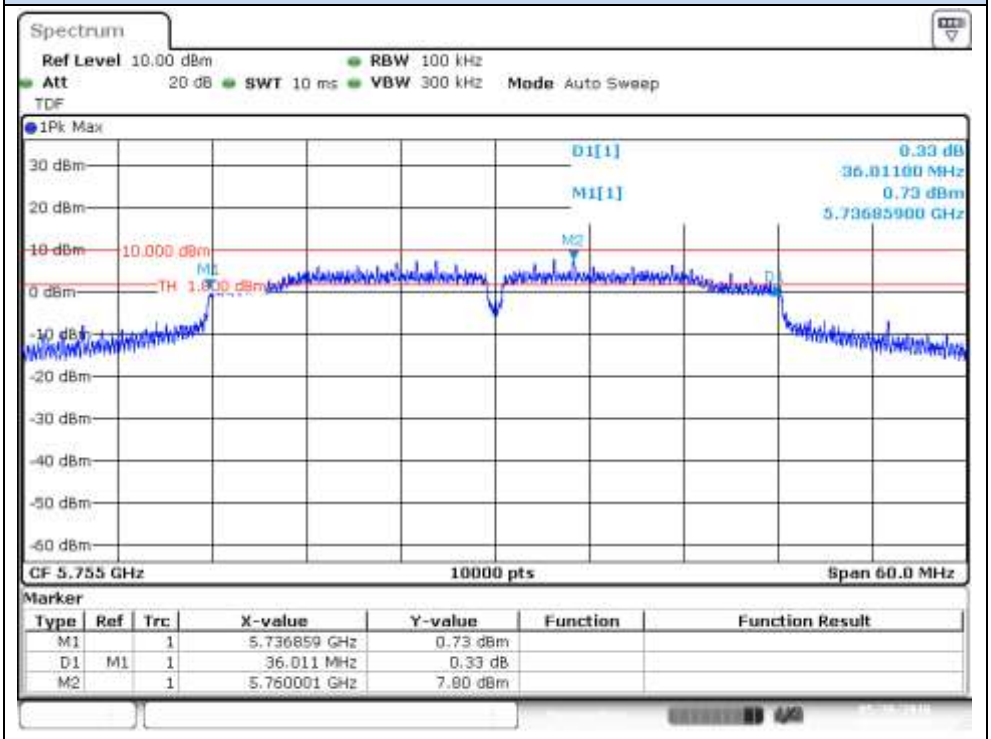
6dB BW – CH142F (Overlapped Channel)



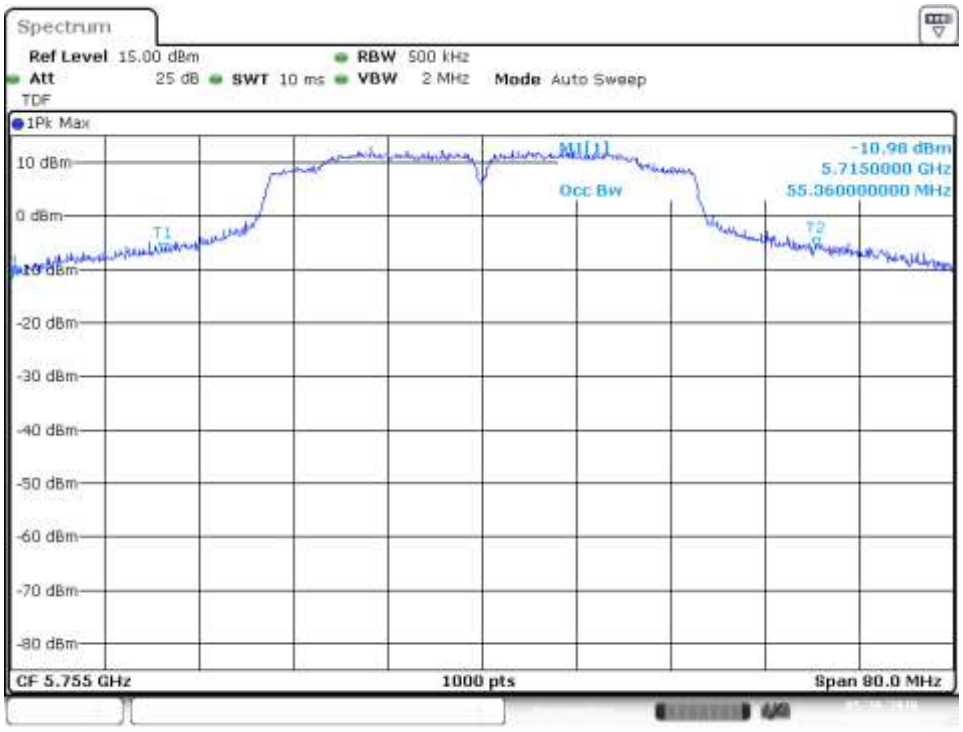
99% BW – CH142F (Overlapped Channel)



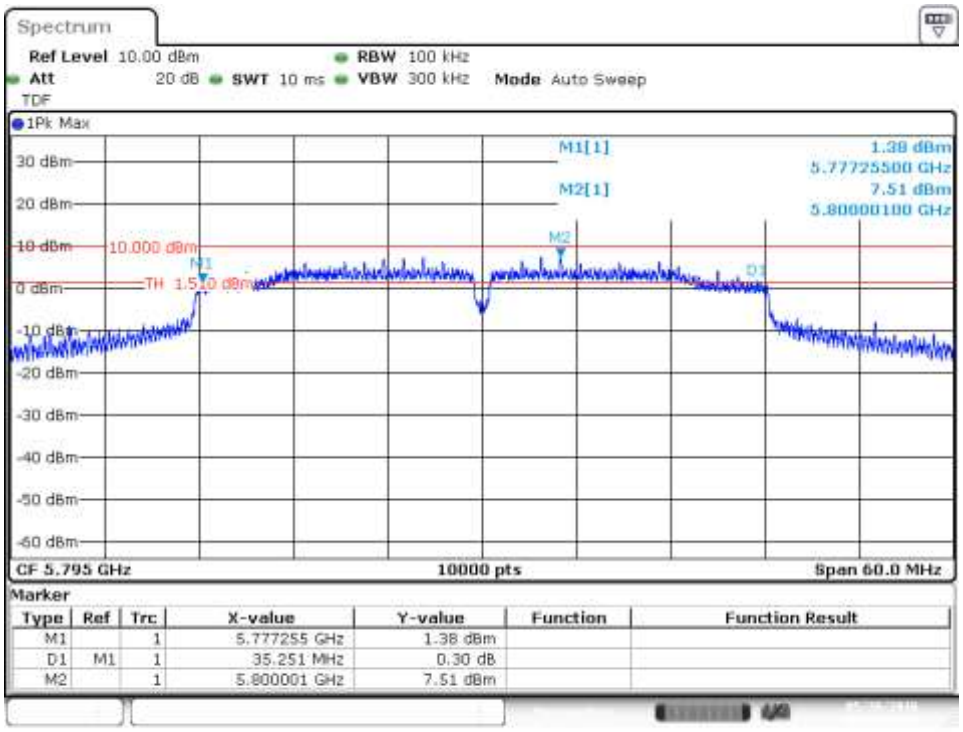
6dB BW – CH151F



99% BW – CH151F

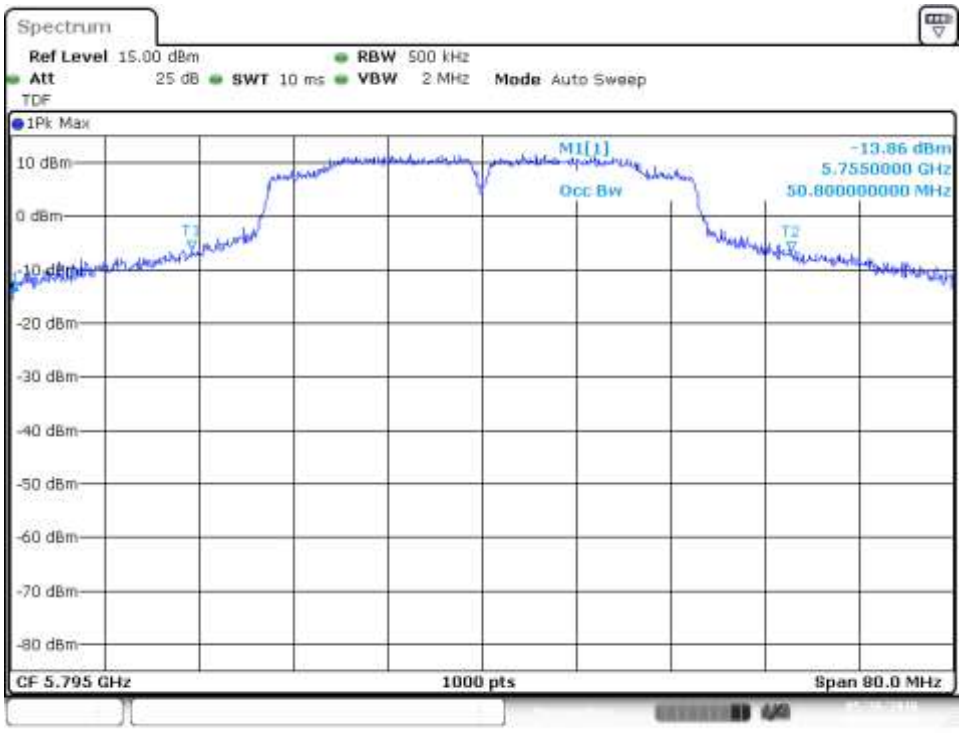


6dB BW – CH159F



Date: 30.MAY.2016 11:53:24

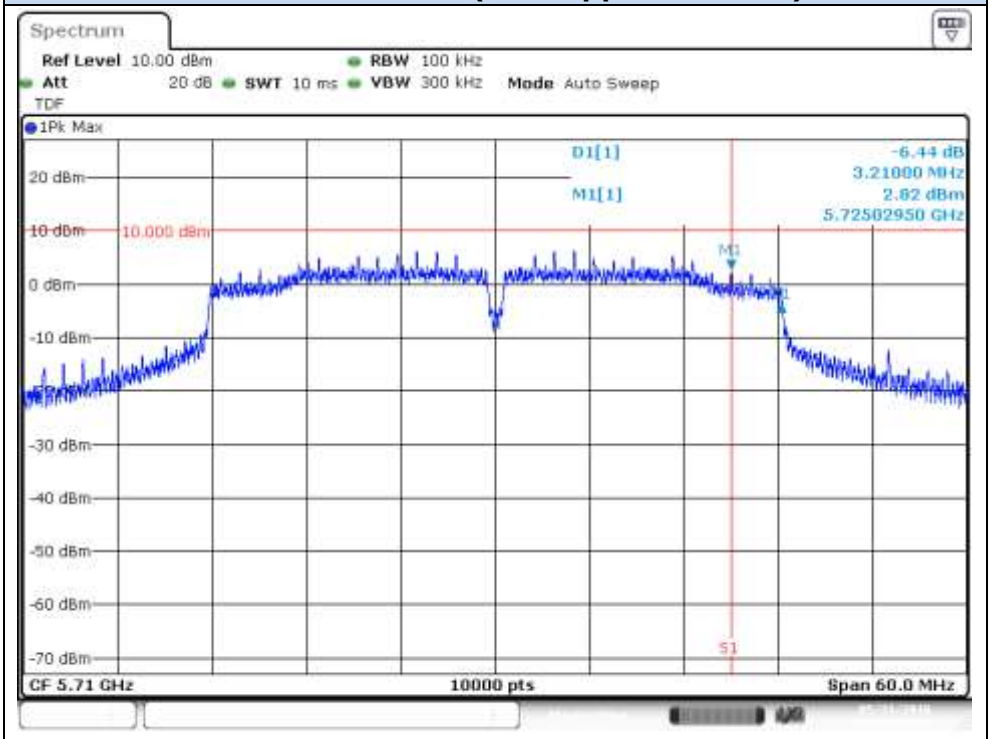
99% BW – CH159F



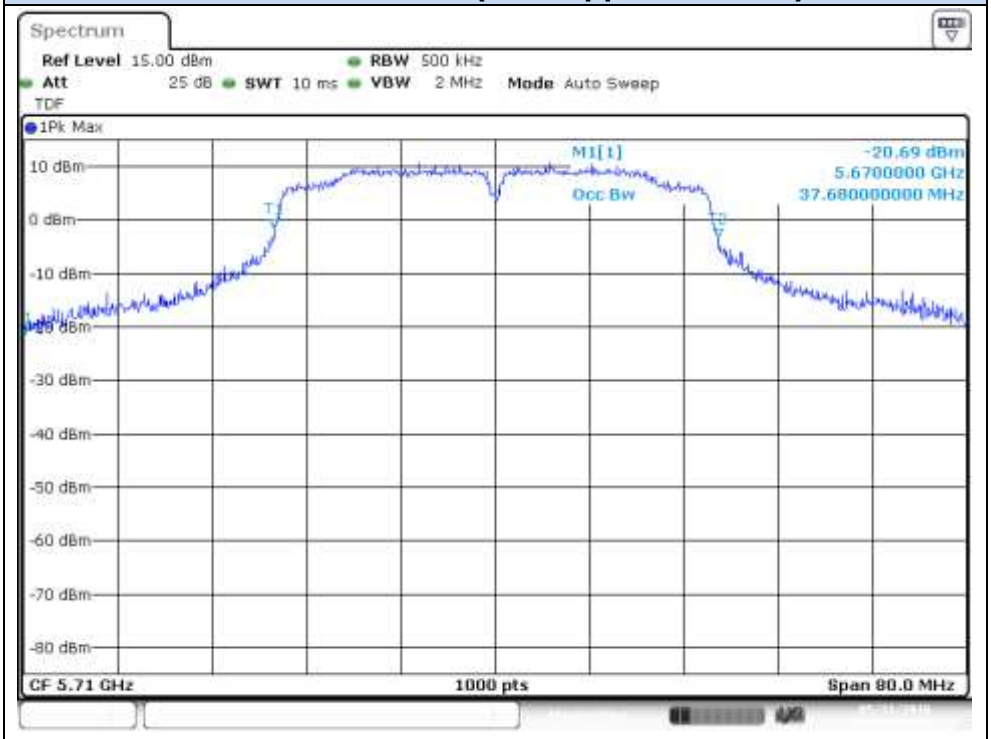
Date: 30.MAY.2016 11:50:25

802.11n40, HT8 (MIMO) – Chain A

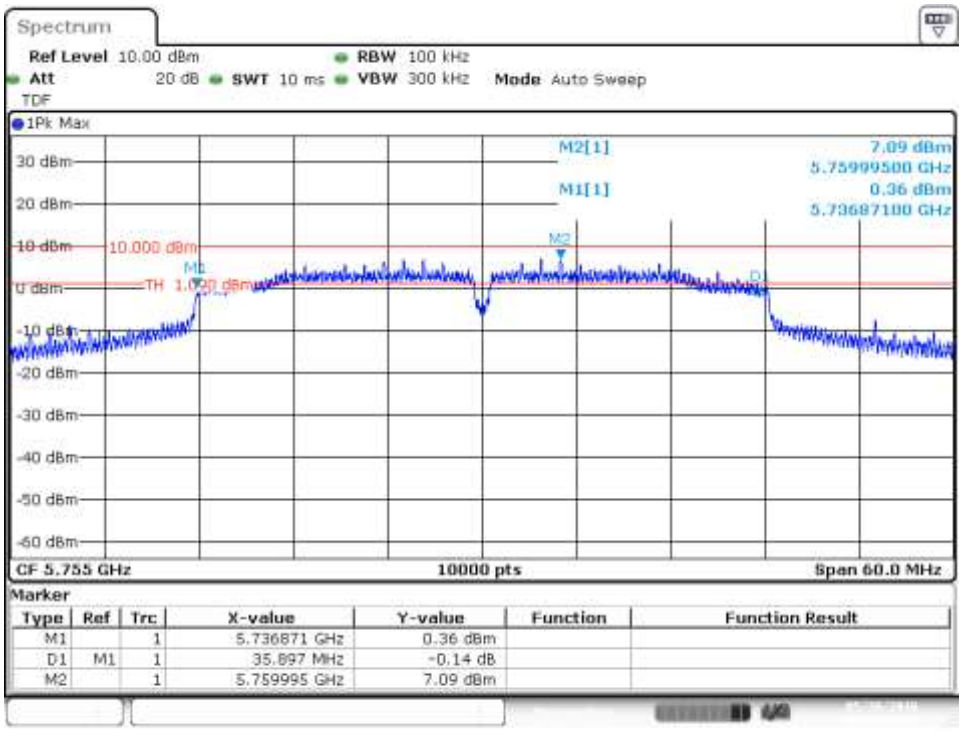
6dB BW – CH142F (Overlapped Channel)



99% BW – CH142F (Overlapped Channel)

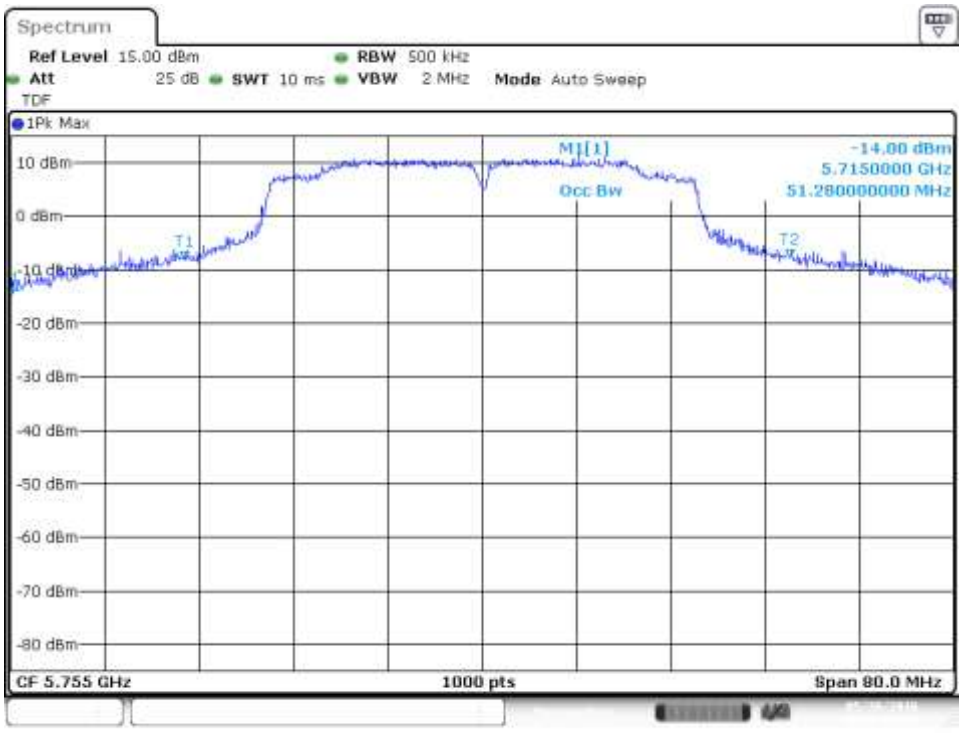


6dB BW – CH151F



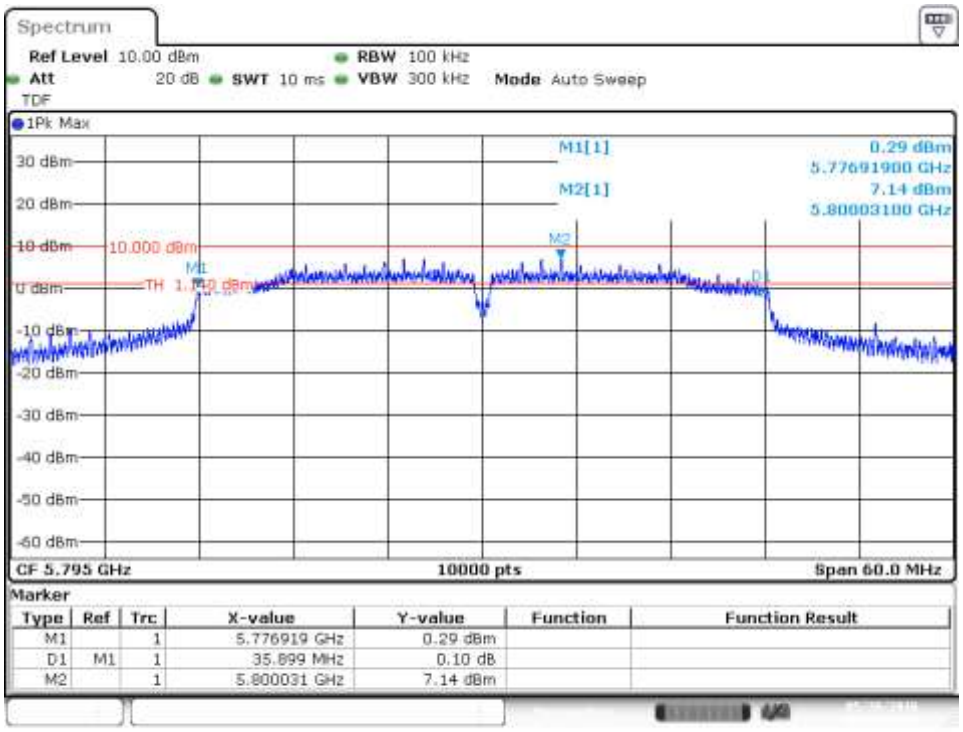
Date: 30.MAY.2016 10:16:59

99% BW – CH151F



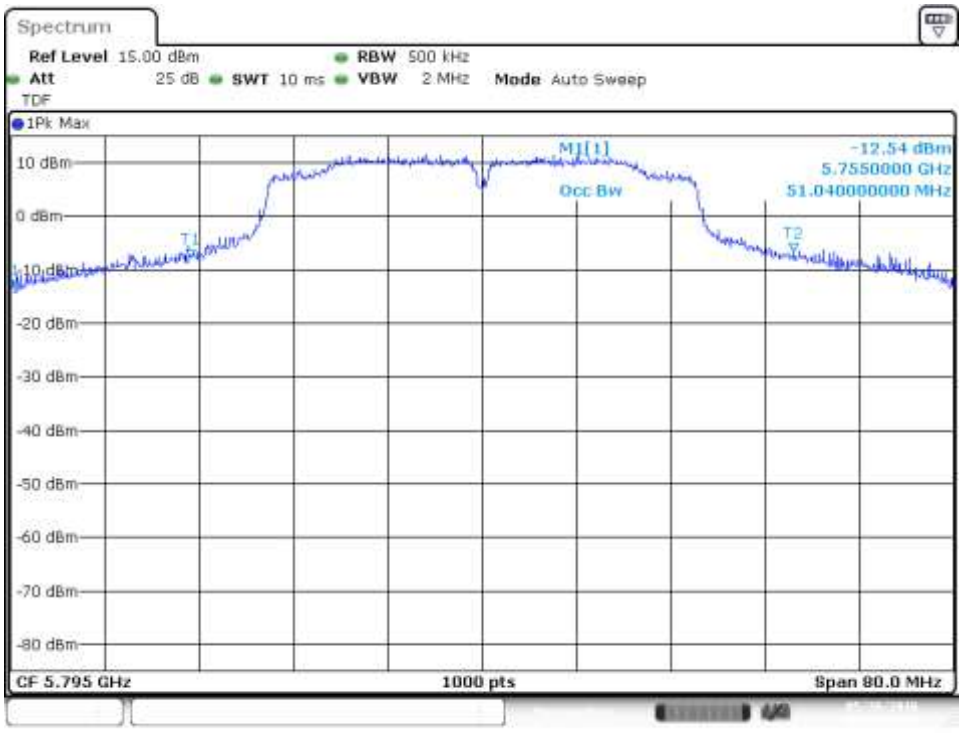
Date: 30.MAY.2016 10:13:18

6dB BW – CH159F



Date: 30.MAY.2016 10:23:39

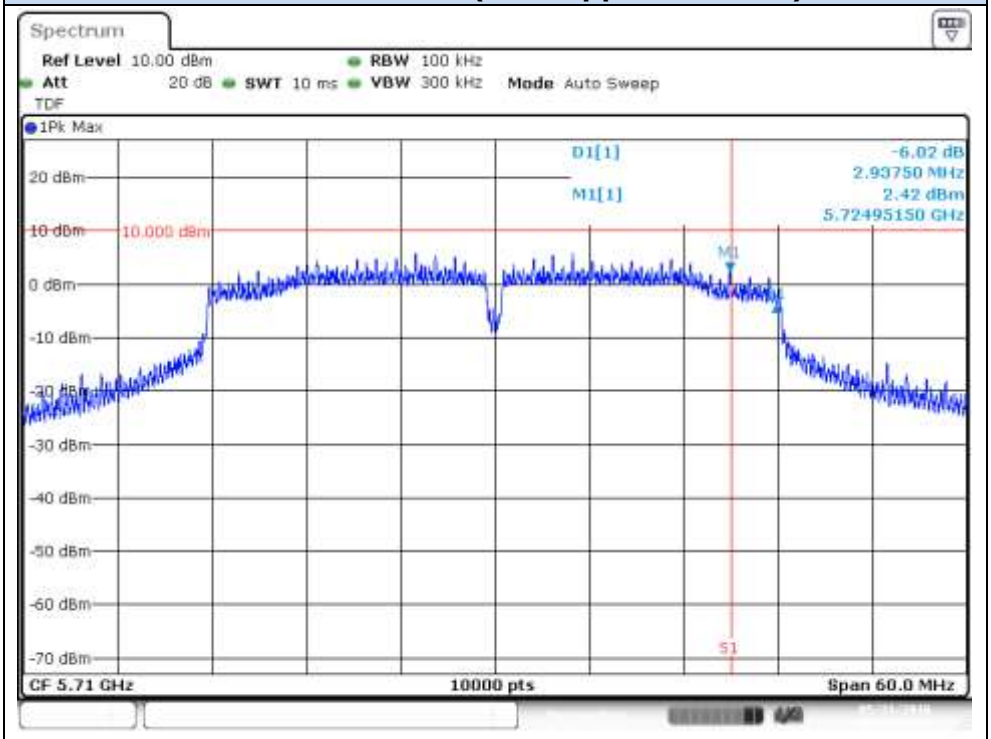
99% BW – CH159F



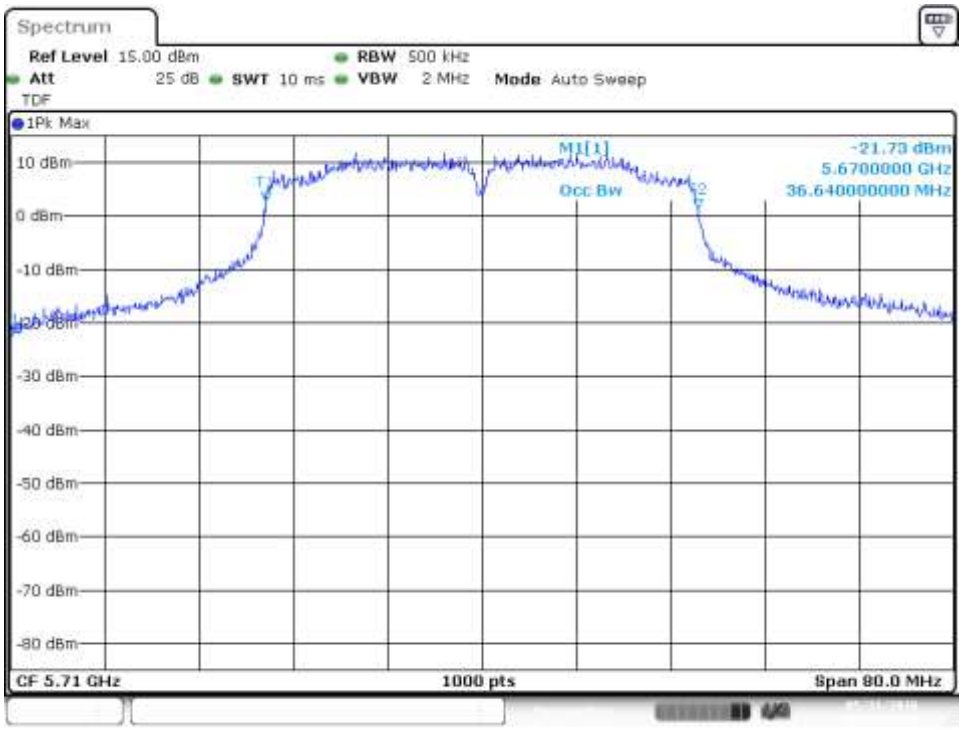
Date: 30.MAY.2016 10:19:52

802.11n40, HT8 (MIMO) – Chain B

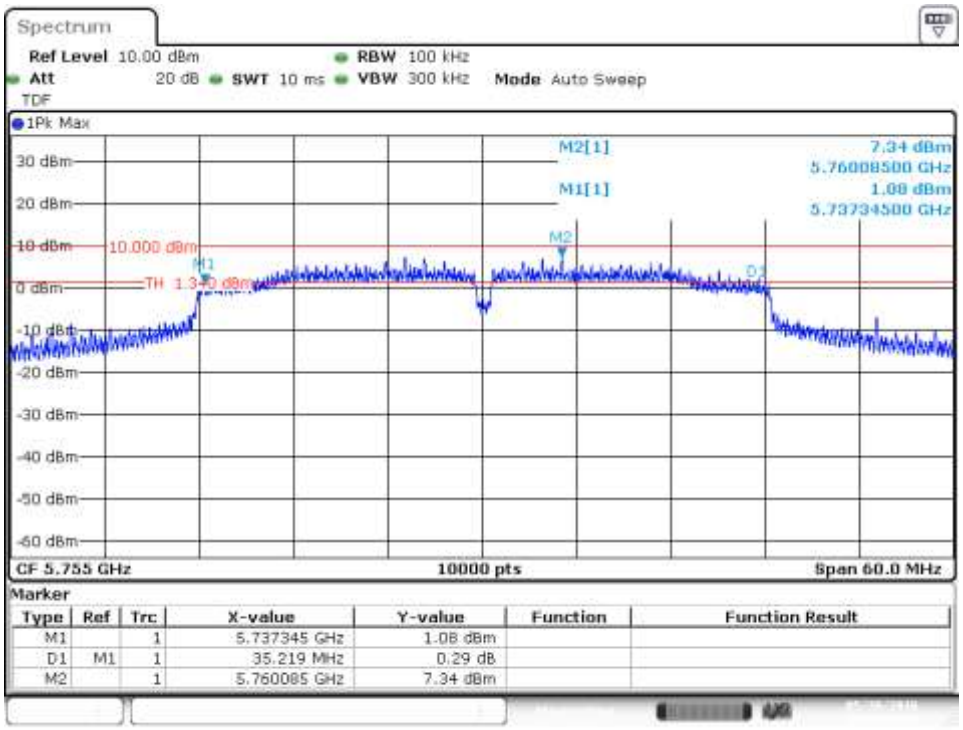
6dB BW – CH142F (Overlapped Channel)



99% BW – CH142F (Overlapped Channel)

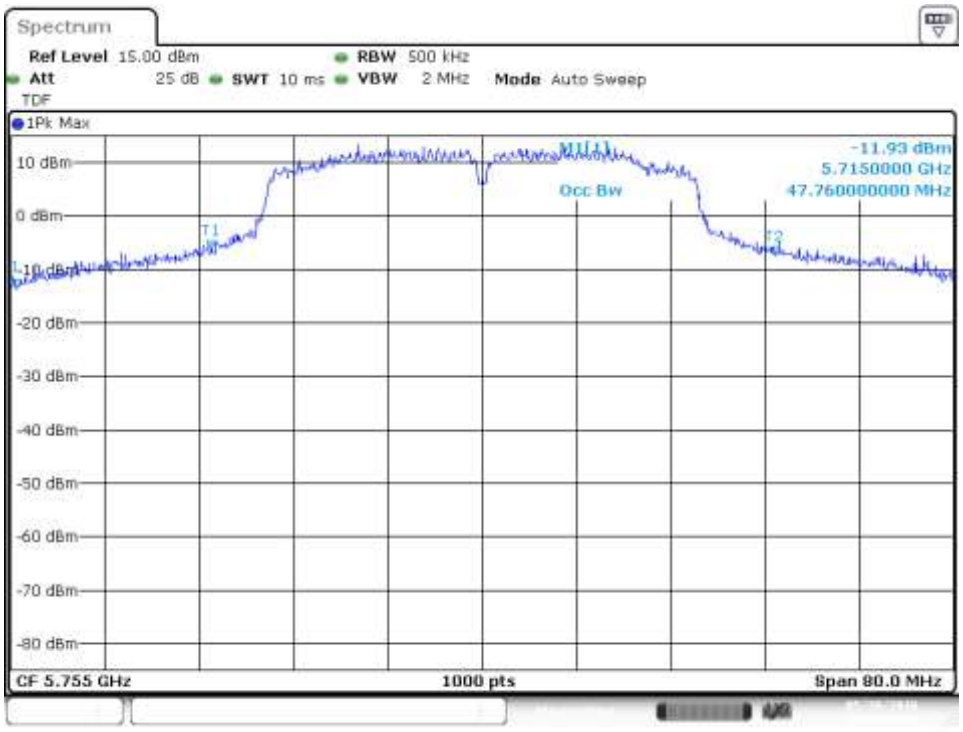


6dB BW – CH151F



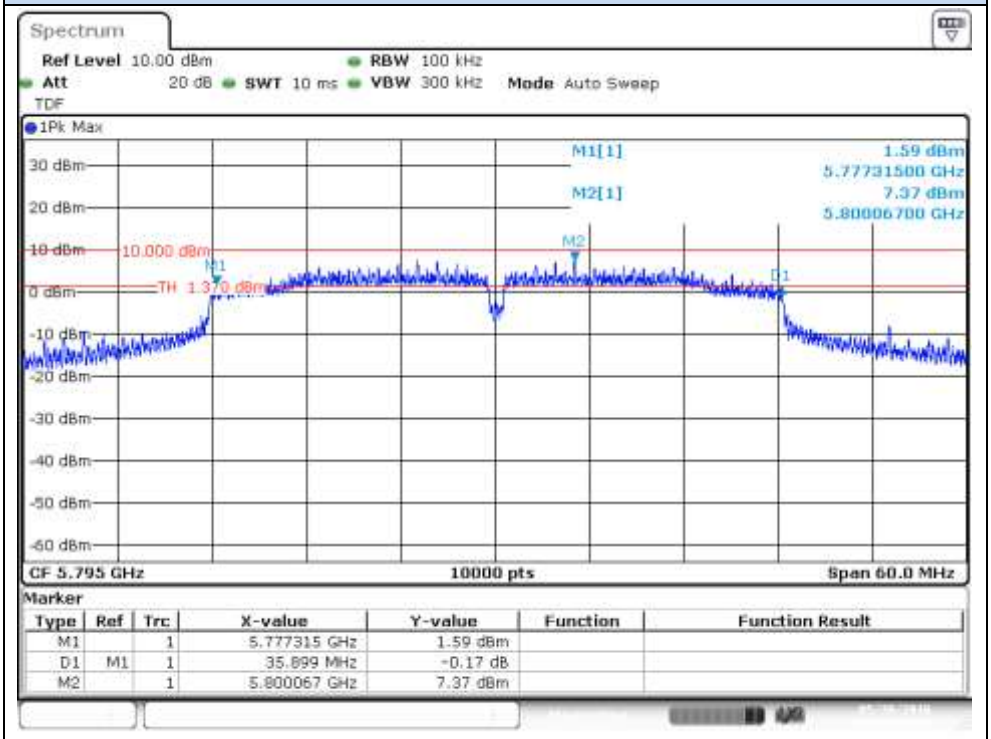
Date: 30.MAY.2016 12:24:57

99% BW – CH151F



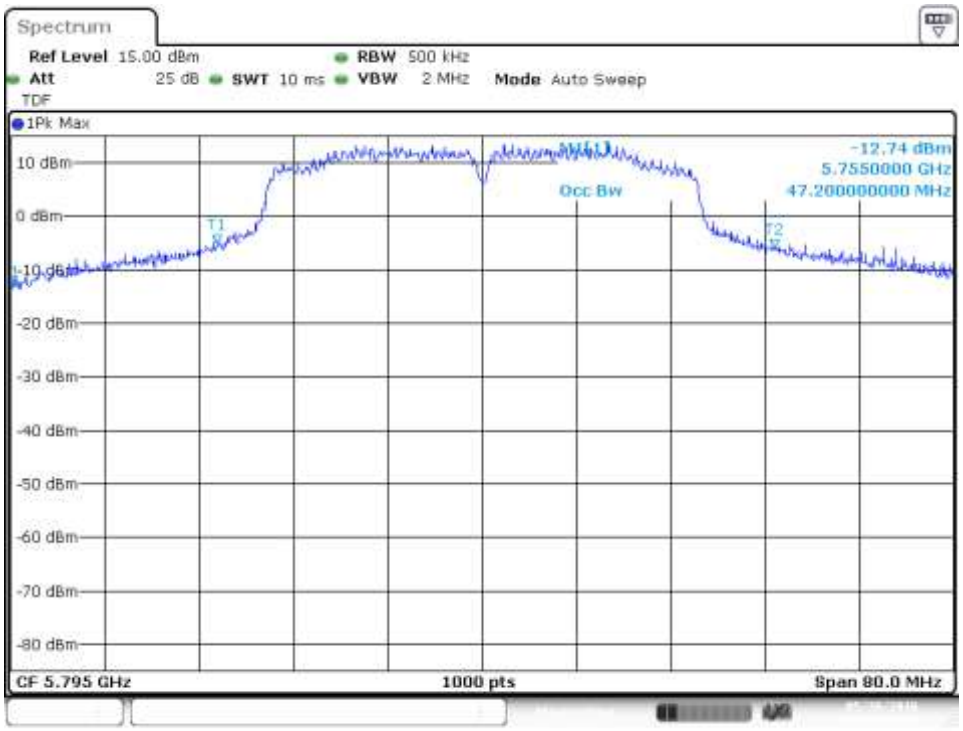
Date: 30.MAY.2016 12:21:42

6dB BW – CH159F



Date: 30.MAY.2016 14:10:41

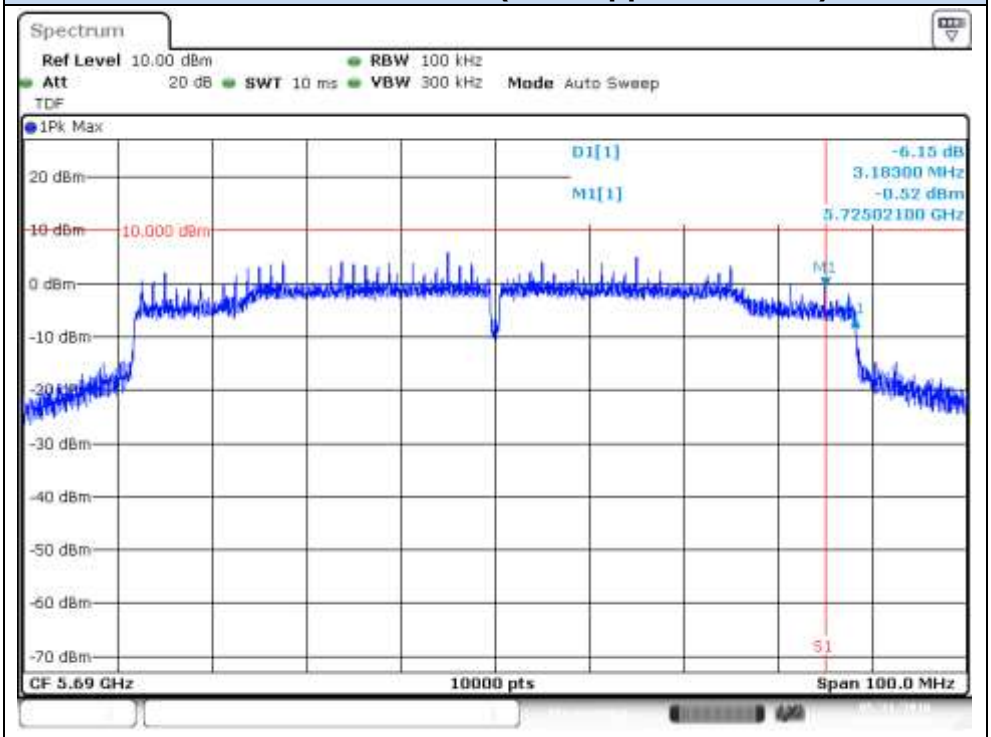
99% BW – CH159F



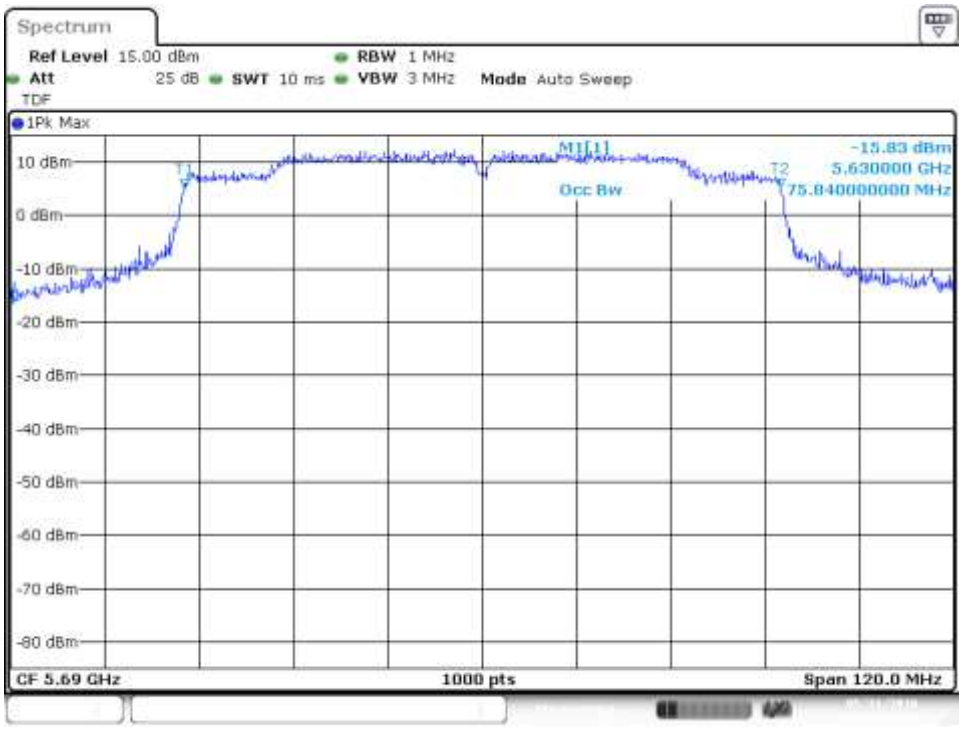
Date: 30.MAY.2016 14:07:51

802.11ac80, VHT0 (SISO) – Chain A

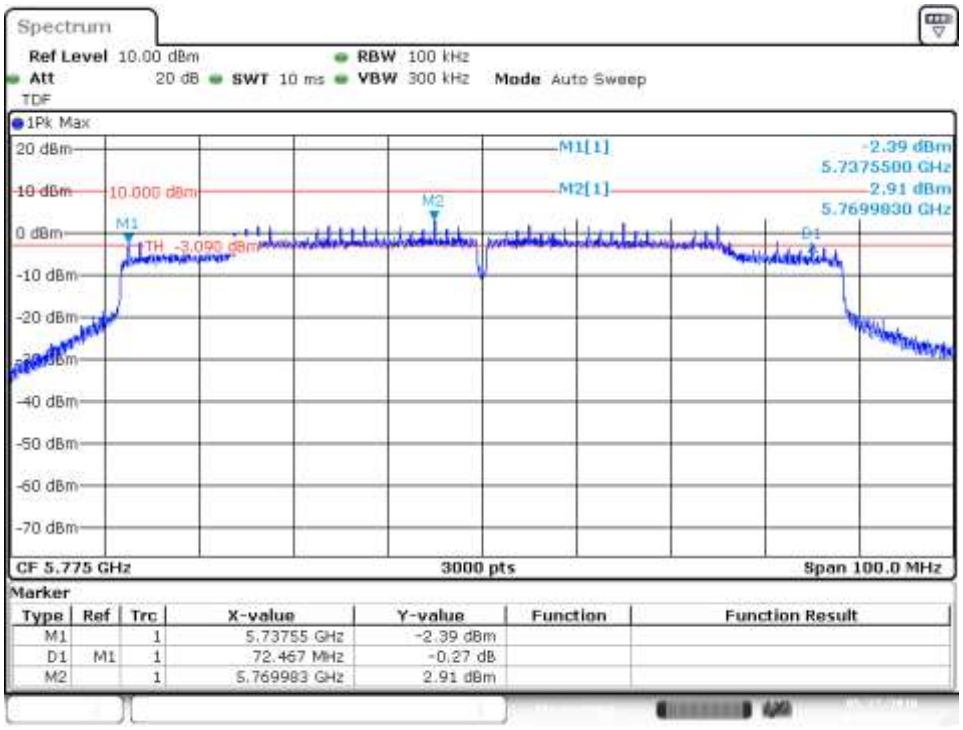
6dB BW – CH138ac80 (Overlapped Channel)



99% BW – CH138ac80 (Overlapped Channel)

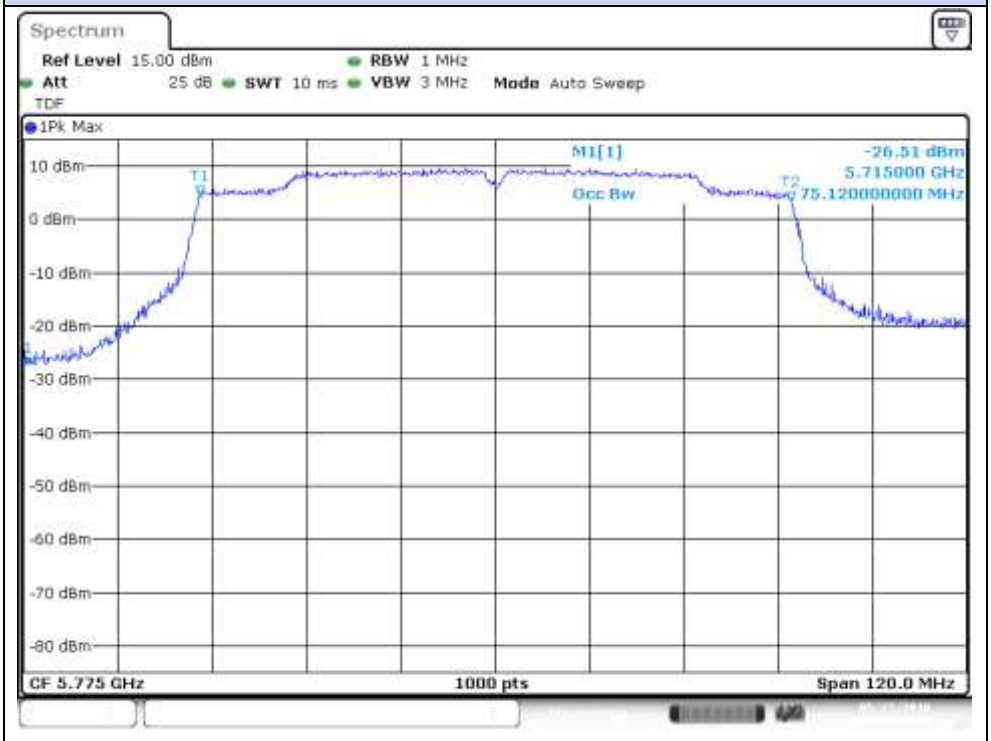


6dB BW – CH155ac80



Date: 27.MAY.2016 16:13:19

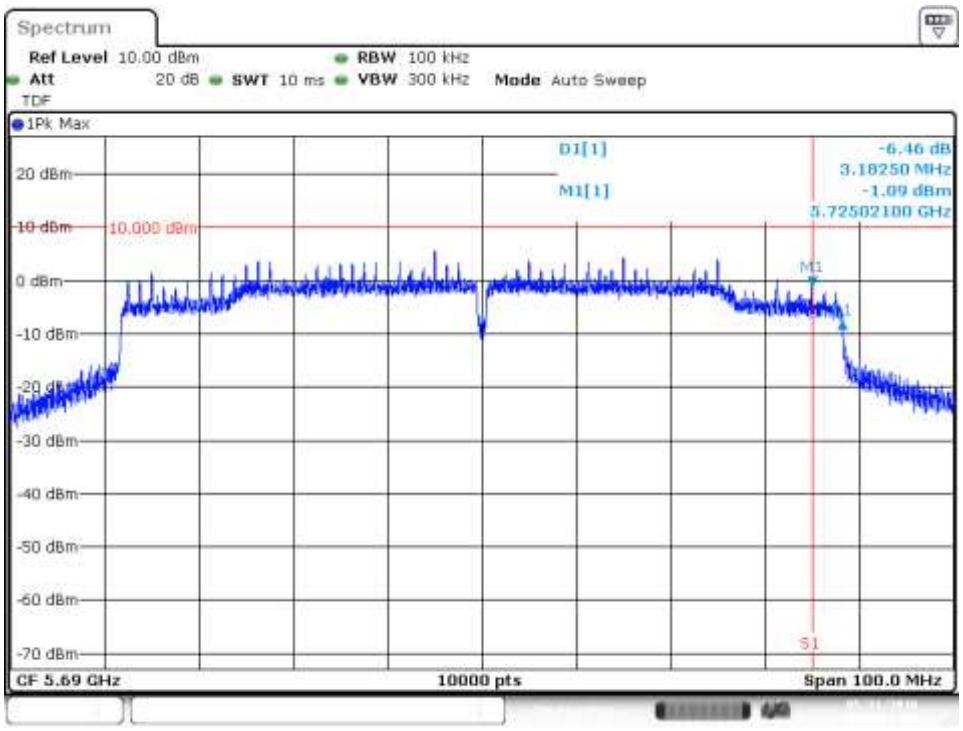
99% BW – CH155ac80



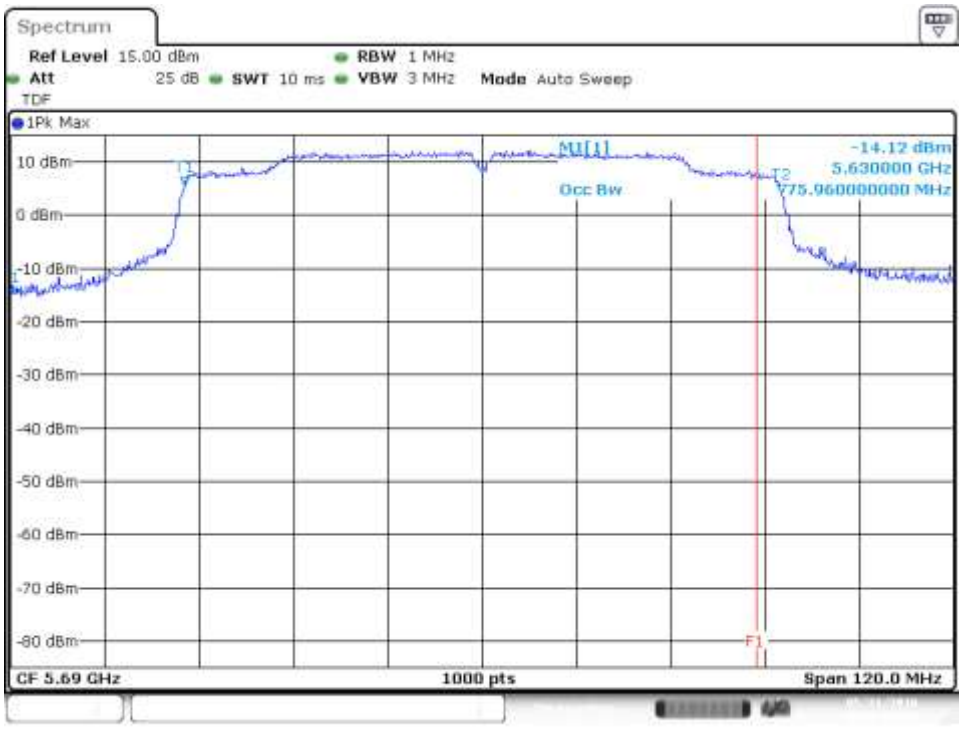
Date: 27.MAY.2016 15:46:41

802.11ac80, VHT0 (SISO) – Chain B

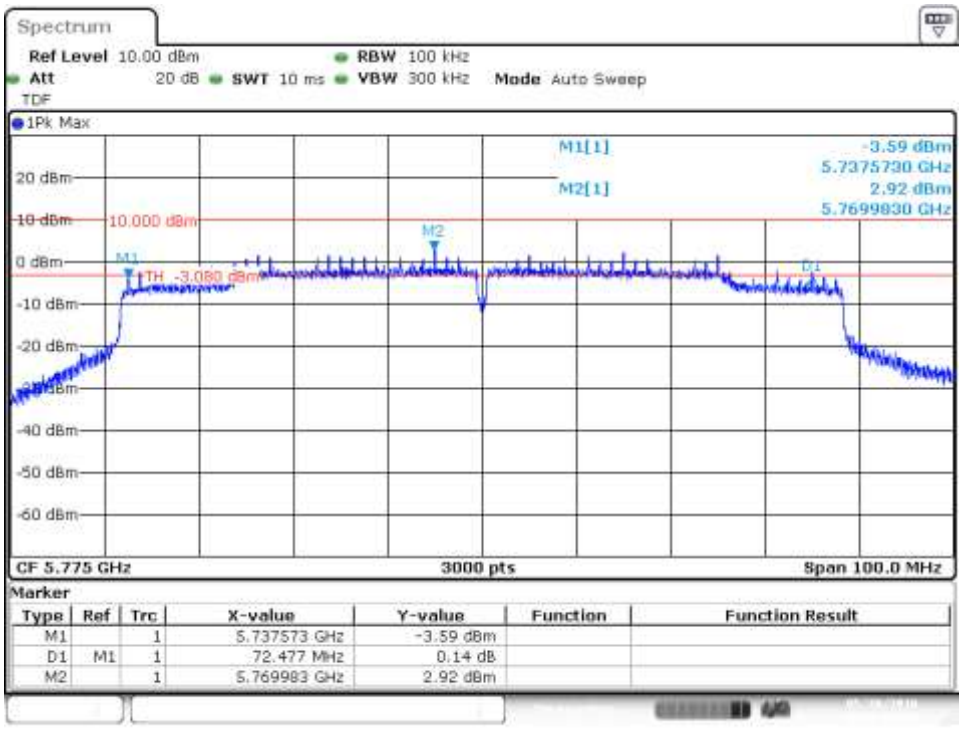
6dB BW – CH138ac80 (Overlapped Channel)



99% BW – CH138ac80 (Overlapped Channel)

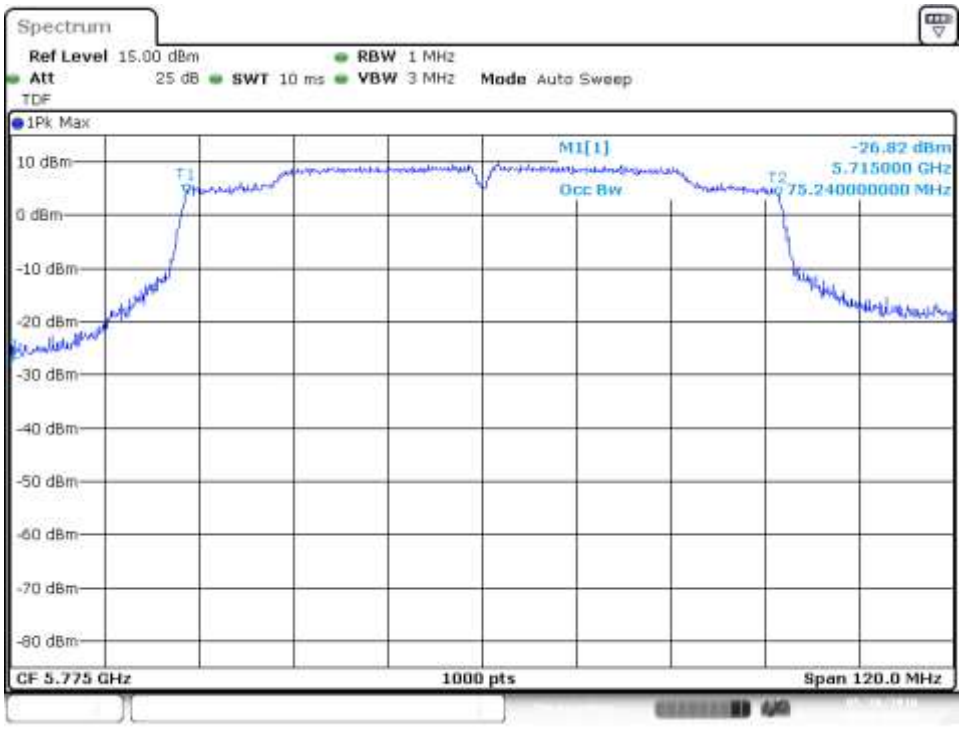


6dB BW – CH155ac80



Date: 30.MAY.2016 11:59:02

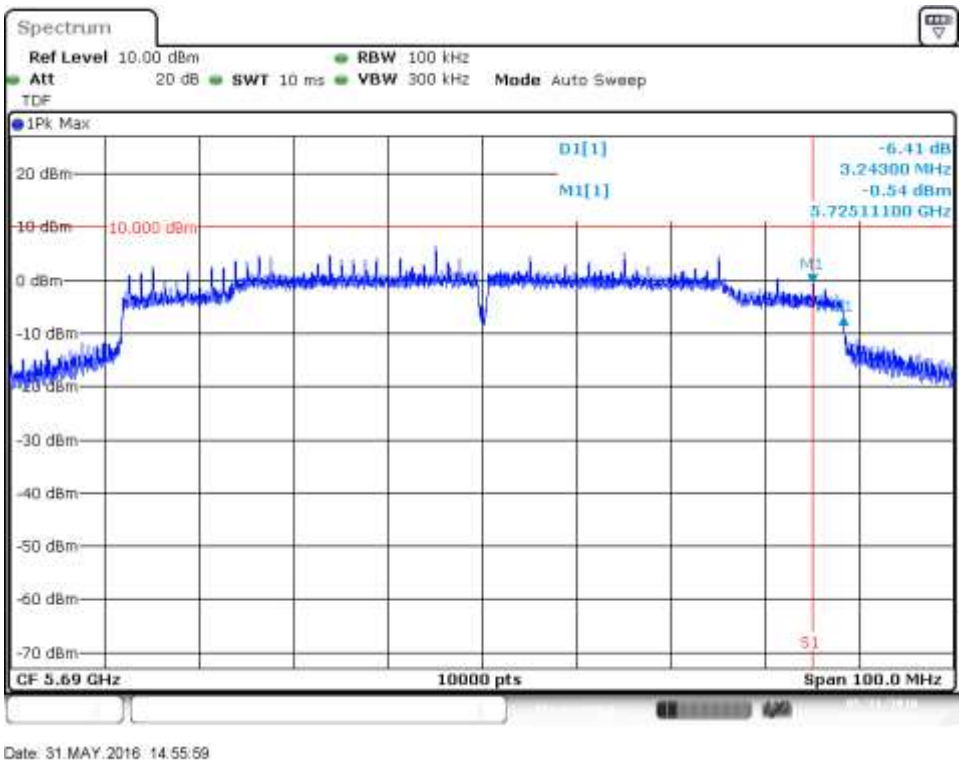
99% BW – CH155ac80



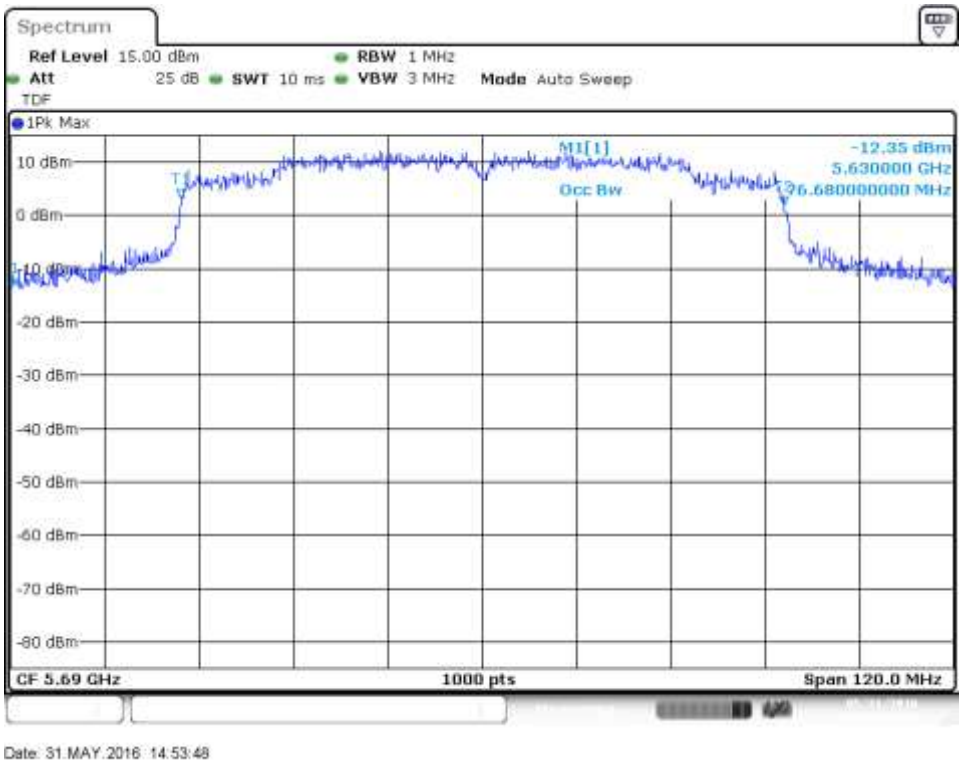
Date: 30.MAY.2016 11:56:36

802.11ac80, VHT0 (MIMO) – Chain A

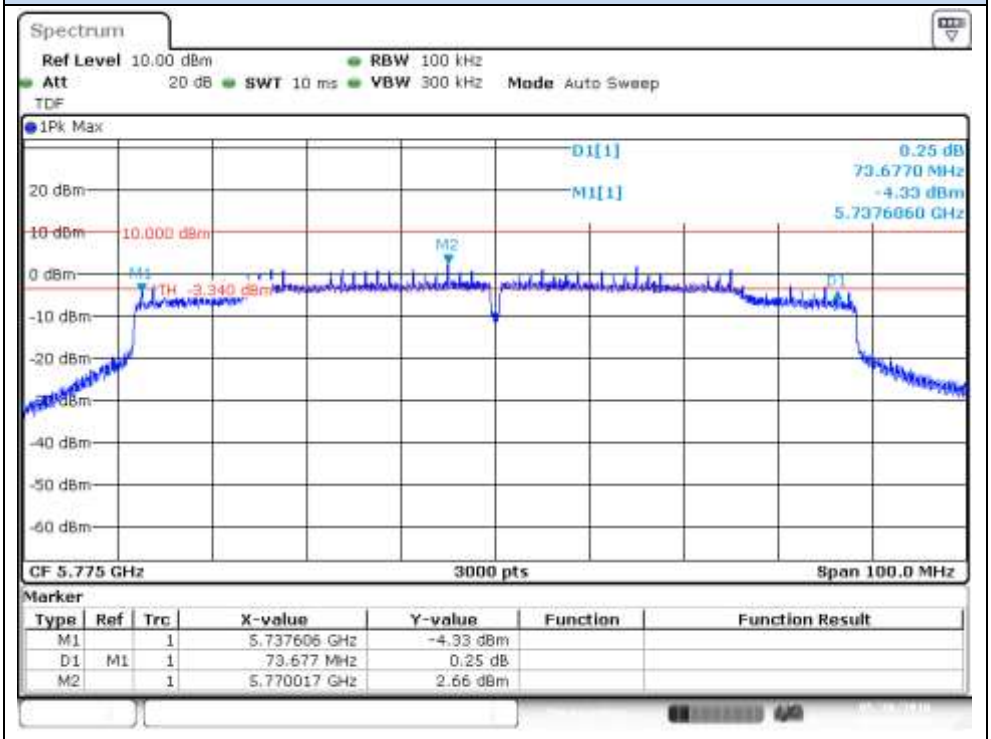
6dB BW – CH138ac80 (Overlapped Channel)



99% BW – CH138ac80 (Overlapped Channel)

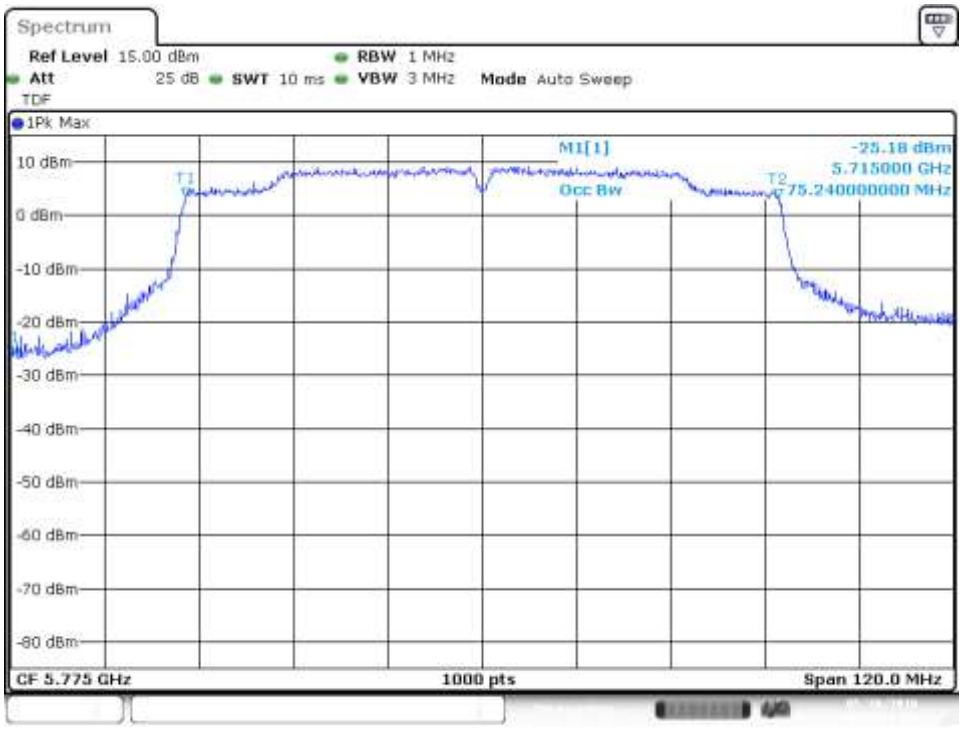


6dB BW – CH155ac80



Date: 30.MAY.2016 10:32:07

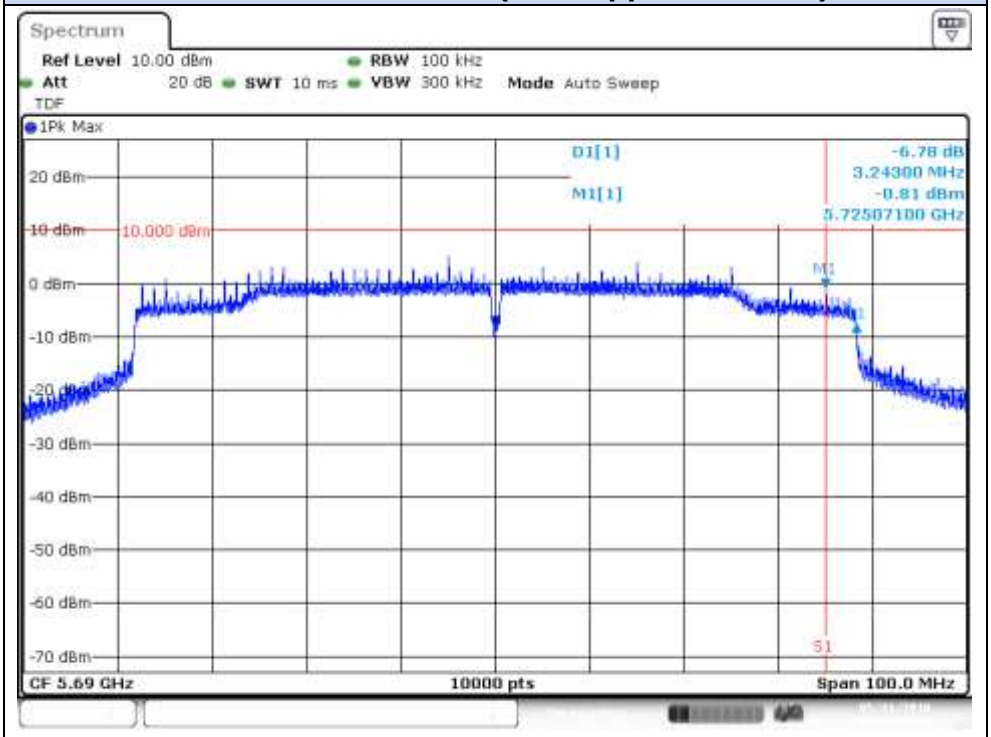
99% BW – CH155ac80



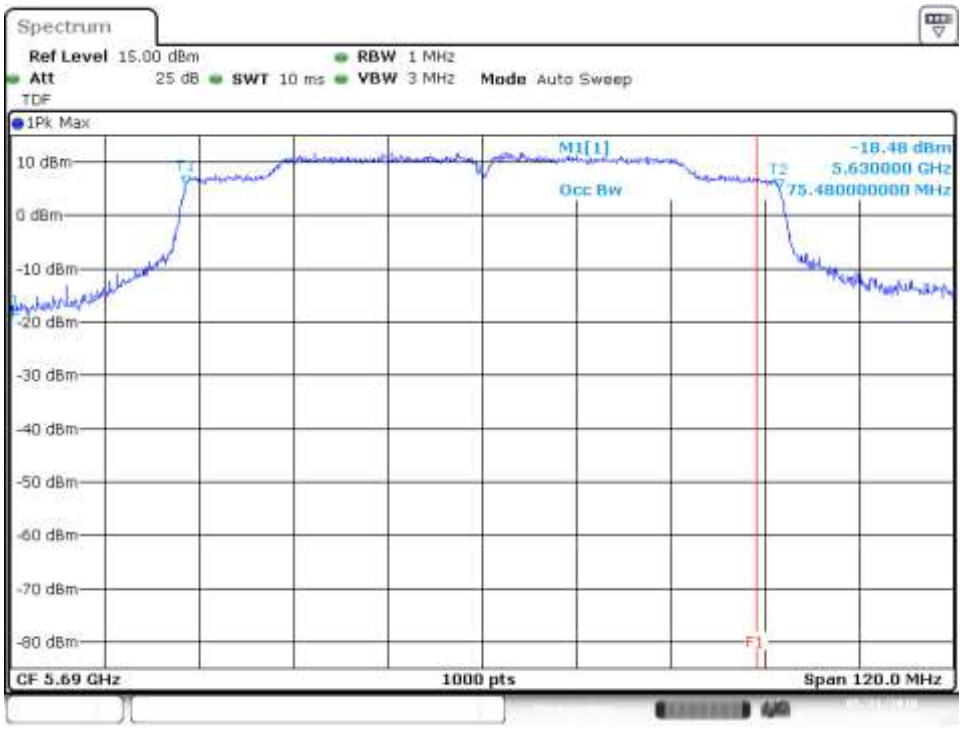
Date: 30.MAY.2016 10:27:01

802.11ac80, VHT0 (MIMO) – Chain B

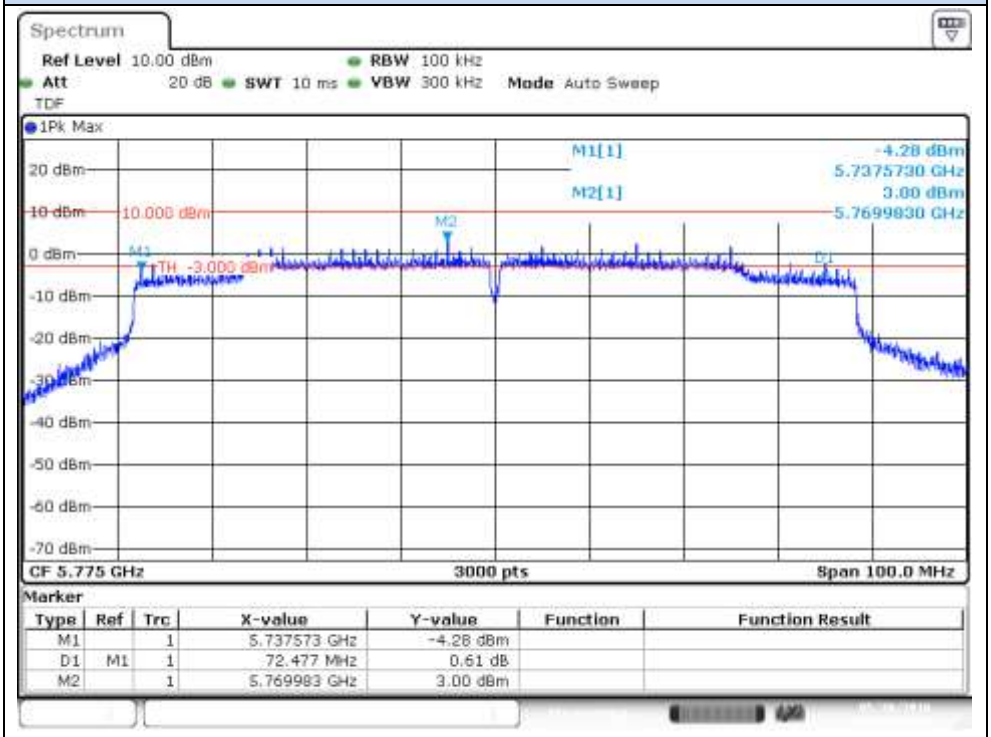
6dB BW – CH138ac80 (Overlapped Channel)



99% BW – CH138ac80 (Overlapped Channel)

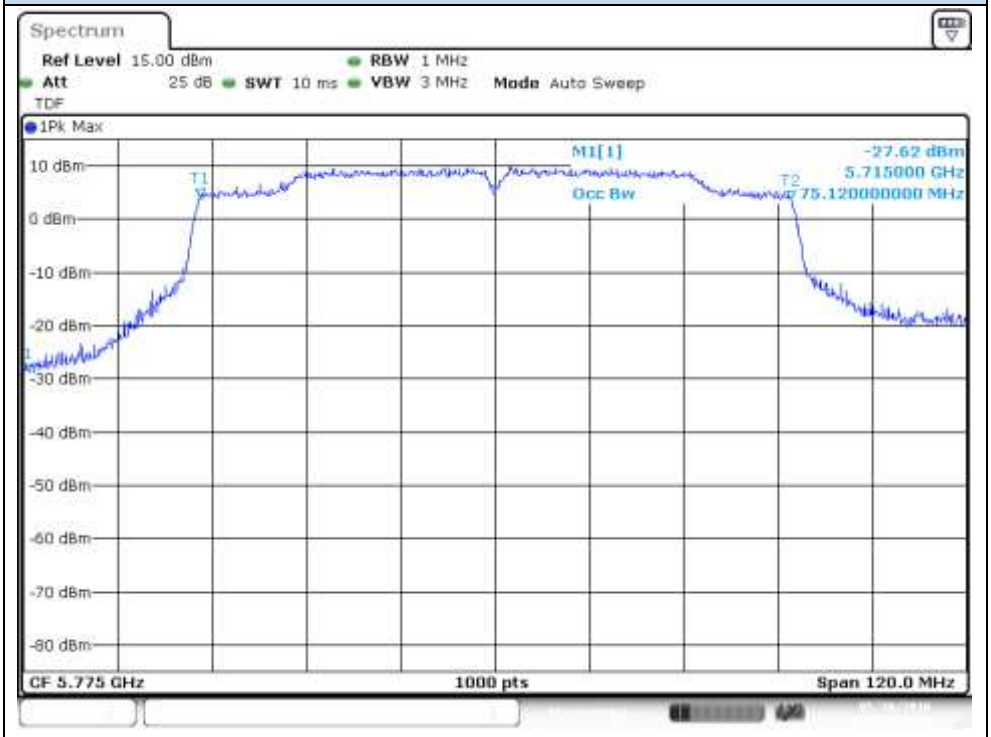


6dB BW – CH155ac80



Date: 30.MAY.2016 14:16:53

99% BW – CH155ac80



Date: 30.MAY.2016 14:14:24

B.2 Power Limits. Maximum Output power & Peak power spectral density

Test limits:

FCC part	Limits
15.407 (a) (3)	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, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band

Test procedure:

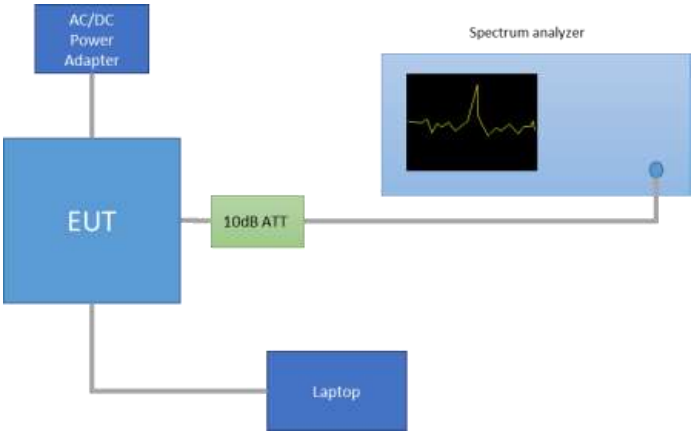
The Maximum Conducted Output Power was measured using the channel integration method according to point E) 2) e) (Method SA-2 Alternative) of KDB 789033 D02.

The maximum power spectral density (PSD) was measured using the method according to point F) (Method SA-2) of KDB 789033 D02.

In the measure-and-sum approach for MIMO mode, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically in linear power units to determine the total emission level from the device.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

The setup below was used to measure the maximum conducted output power and power spectral density. The antenna terminal of the EUT is connected to the spectrum through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.



The declared maximum antenna gain is 5dBi.

For the overlapped channels between U-NII-2C and U-NII-3, and according to FCC KDB 644545 D03, the power is computed based on the portion of the emission bandwidth (26dB down) contained within that band. This rule is only applicable for those channels marked as overlapped.

Results tables:

Duty cycle

Mode	Rate	Antenna	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
802.11a	6Mbps	SISO-A	1.45	1.48	98.2
		SISO-B	1.45	1.48	98.2
802.11n20	HT0	SISO-A	1.47	1.50	97.6
		SISO-B	1.47	1.50	97.6
	HT8	MIMO-A	1.47	1.51	97.5
		MIMO-B	1.47	1.51	97.5
802.11n40	HT0	SISO-A	1.46	1.49	98.1
		SISO-B	1.46	1.49	98.1
	HT8	MIMO-A	1.48	1.52	97.3
		MIMO-B	1.48	1.52	97.3
802.11ac80	VHT0	SISO-A	1.46	1.49	98.1
		SISO-B	1.46	1.49	98.1
		MIMO-A	1.48	1.52	97.2
		MIMO-B	1.48	1.52	97.2

Maximum output power – U-NII-3 Channels

Mode	Rate	Channel	Frequency (MHz)	Antenna	Average Cond. Output Power [dBm]	Max.* Cond. Output Power [dBm]	Max.* Cond. Output Power [mW]	Max.* EIRP [dBm]
802.11a	6Mbps	149	5745	SISO CHAIN A	20.17	20.25	105.89	25.25
				SISO CHAIN B	20.07	20.15	**103.48**	25.15
		157	5785	SISO CHAIN A	20.32	20.40	109.61	25.40
				SISO CHAIN B	20.09	20.17	103.96	25.17
		165	5825	SISO CHAIN A	20.73	20.81	**120.46**	25.81
				SISO CHAIN B	20.33	20.41	109.87	25.41
802.11n20	HT0	149	5745	SISO CHAIN A	20.10	20.20	104.81	25.20
				SISO CHAIN B	20.04	20.14	**103.38**	25.14
		157	5785	SISO CHAIN A	20.35	20.45	111.02	25.45
				SISO CHAIN B	20.08	20.18	104.33	25.18
		165	5825	SISO CHAIN A	20.84	20.94	124.28	25.94
				SISO CHAIN B	20.28	20.38	109.25	25.38
	HT8	149	5745	MIMO CHAIN A	20.38	20.49	111.92	25.49
				MIMO CHAIN B	20.00	20.11	102.54	25.11
				Combined A+B	23.20	23.31	214.46	28.31
		157	5785	MIMO CHAIN A	20.59	20.70	117.46	25.70
				MIMO CHAIN B	20.00	20.11	102.54	25.11
				Combined A+B	23.32	23.42	**220.00**	28.42
		165	5825	MIMO CHAIN A	20.25	20.36	108.62	25.36
				MIMO CHAIN B	20.09	20.20	104.69	25.20
				Combined A+B	23.18	23.29	213.31	28.29
802.11n40	HT0	151F	5755	SISO CHAIN A	20.91	20.99	125.68	25.99
				SISO CHAIN B	20.71	20.79	120.02	25.79
		159F	5795	SISO CHAIN A	20.49	20.57	**114.10**	25.57
				SISO CHAIN B	20.54	20.62	115.42	25.62
	HT8	151F	5755	MIMO CHAIN A	20.05	20.17	103.94	25.17
				MIMO CHAIN B	20.05	20.17	103.94	25.17
				Combined A+B	23.06	23.18	207.89	28.18
		159F	5795	MIMO CHAIN A	20.08	20.20	104.66	25.20
				MIMO CHAIN B	20.22	20.34	108.09	25.34
				Combined A+B	23.16	23.28	**212.76**	28.28
802.11ac80	VHT0	155ac80	5775	SISO CHAIN A	17.41	17.49	**56.14**	22.49
				SISO CHAIN B	17.44	17.52	56.53	22.52
				MIMO CHAIN A	16.94	17.06	50.87	22.06
				MIMO CHAIN B	17.19	17.31	53.89	22.31
				Combined A+B	20.08	20.20	**104.76**	25.20

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Max Value

Min Value

Maximum output power – Overlapped channels between U-NII-2C and U-NII-3

Mode	Rate	Channel	Freq. [MHz]	Antenna	Average Cond. Output Power UNII-3 [dBm]	Max.* Cond. Output Power UNII-3 [dBm]	Max.* Cond. Output Power UNII-3 [mW]	Max.* EIRP UNII3 [dBm]
802.11n20	HT0	144	5720	SISO CHAIN A	12.15	12.25	16.80	17.25
				SISO CHAIN B	11.72	11.82	**15.22**	16.82
	HT8			MIMO CHAIN A	11.67	11.78	15.06	16.78
				MIMO CHAIN B	11.60	11.71	14.82	16.71
				Combined A+B	14.65	14.75	**29.88**	19.75
802.11n40	HT0	142F	5710	SISO CHAIN A	7.84	7.92	6.20	12.92
				SISO CHAIN B	7.68	7.76	**5.97**	12.76
	HT8			MIMO CHAIN A	7.23	7.35	5.43	12.35
				MIMO CHAIN B	6.66	6.78	4.76	11.78
				Combined A+B	9.96	10.08	**10.19**	15.08
802.11ac80	VHT0	138ac80	5690	SISO CHAIN A	3.49	3.57	2.28	8.57
				SISO CHAIN B	3.13	3.21	**2.10**	8.21
				MIMO CHAIN A	3.49	3.61	2.30	8.61
				MIMO CHAIN B	2.66	2.78	1.90	7.78
				Combined A+B	6.11	6.23	**4.20**	11.23

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Max Value

Min Value

Maximum Power Spectral Density (PSD) – U-NII-3 channels

Mode	Rate	Channel	Freq. [MHz]	Antenna	Average conducted PSD [dBm/500kHz]	Max.* conducted PSD [dBm/500kHz]
802.11a	6Mbps	149	5745	SISO CHAIN A	6.30	6.38
				SISO CHAIN B	6.15	6.23
		157	5785	SISO CHAIN A	6.35	6.43
				SISO CHAIN B	6.11	6.19
		165	5825	SISO CHAIN A	6.85	6.93
				SISO CHAIN B	6.34	6.42
802.11n20	HT0	149	5745	SISO CHAIN A	6.02	6.12
				SISO CHAIN B	5.89	5.99
		157	5785	SISO CHAIN A	6.35	6.45
				SISO CHAIN B	5.93	6.03
		165	5825	SISO CHAIN A	6.73	6.83
				SISO CHAIN B	6.14	6.24
	HT8	149	5745	MIMO CHAIN A	6.23	6.34
				MIMO CHAIN B	5.87	5.98
				Combined A+B	9.06	9.17
		157	5785	MIMO CHAIN A	6.39	6.50
				MIMO CHAIN B	5.88	5.99
				Combined A+B	9.15	9.26
		165	5825	MIMO CHAIN A	6.08	6.19
				MIMO CHAIN B	5.94	6.05
				Combined A+B	9.02	9.13
802.11n40	HT0	151F	5755	SISO CHAIN A	3.55	3.63
				SISO CHAIN B	3.24	3.32
		159F	5795	SISO CHAIN A	3.20	3.28
				SISO CHAIN B	3.11	3.19
	HT8	151F	5755	MIMO CHAIN A	2.63	2.75
				MIMO CHAIN B	2.64	2.76
				Combined A+B	5.65	5.76
		159F	5795	MIMO CHAIN A	2.61	2.73
				MIMO CHAIN B	2.81	2.93
				Combined A+B	5.72	5.84
802.11ac80	VHT0	155ac80	5775	SISO CHAIN A	-2.77	-2.69
				SISO CHAIN B	-2.76	-2.68
				MIMO CHAIN A	-3.20	-3.08
				MIMO CHAIN B	-2.99	-2.87
				Combined A+B	-0.08	0.04

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Maximum Power Spectral Density (PSD) – Overlapped channels between U-NII-2C and U-NII-3

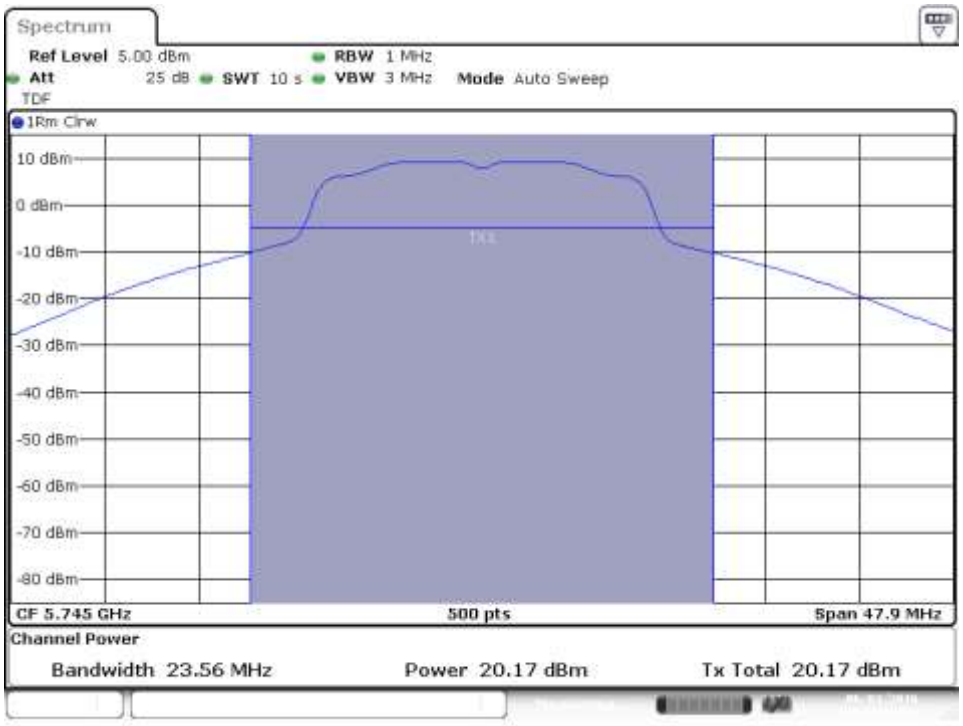
Mode	Rate	Channel	Freq. [MHz]	Antenna	Average conducted PSD UNII-3 [dBm/500kHz]	Maximum* conducted PSD UNII-3 [dBm/500kHz]
802.11n20	HT0	144	5720	SISO CHAIN A	5.10	5.20
				SISO CHAIN B	4.34	4.44
	HT8			MIMO CHAIN A	4.58	4.69
				MIMO CHAIN B	4.80	4.91
				Combined A+B	7.70	7.81
802.11n40	HT0	142F	5710	SISO CHAIN A	-0.32	-0.24
				SISO CHAIN B	-0.87	-0.79
	HT8			MIMO CHAIN A	-0.93	-0.81
				MIMO CHAIN B	-1.31	-1.19
				Combined A+B	1.89	2.01
802.11ac80	VHT0	138ac80	5690	SISO CHAIN A	-4.92	-4.84
				SISO CHAIN B	-5.22	-5.14
				MIMO CHAIN A	-5.06	-4.94
				MIMO CHAIN B	-5.61	-5.49
				Combined A+B	-2.32	-2.19

* Maximum values are the duty cycle compensated values calculated from the average (measured)

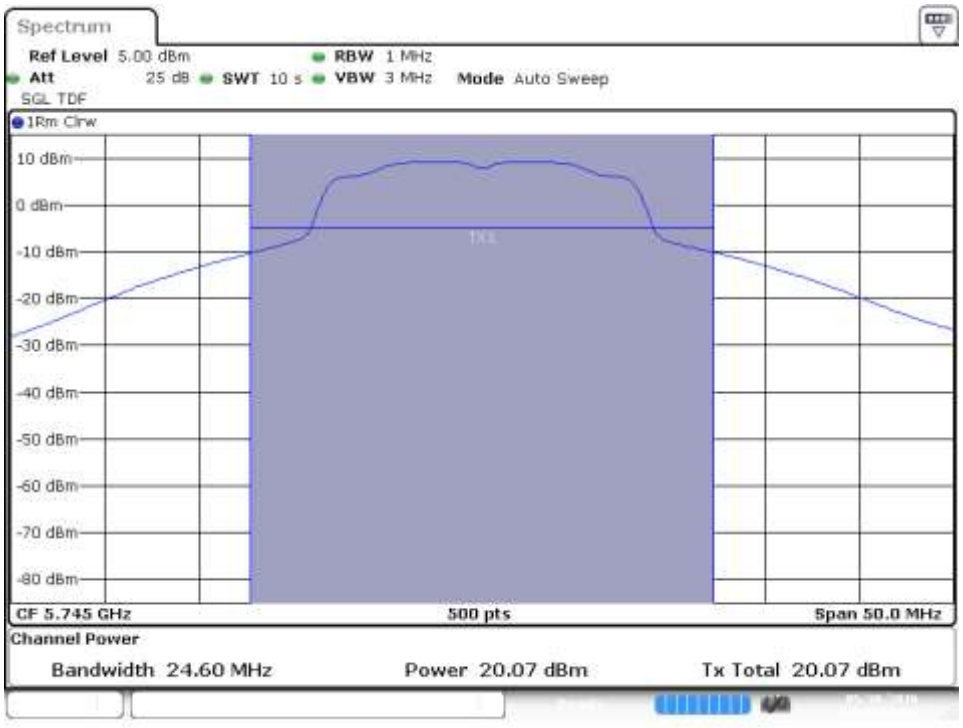
Results screenshot:

802.11a, 6Mbps

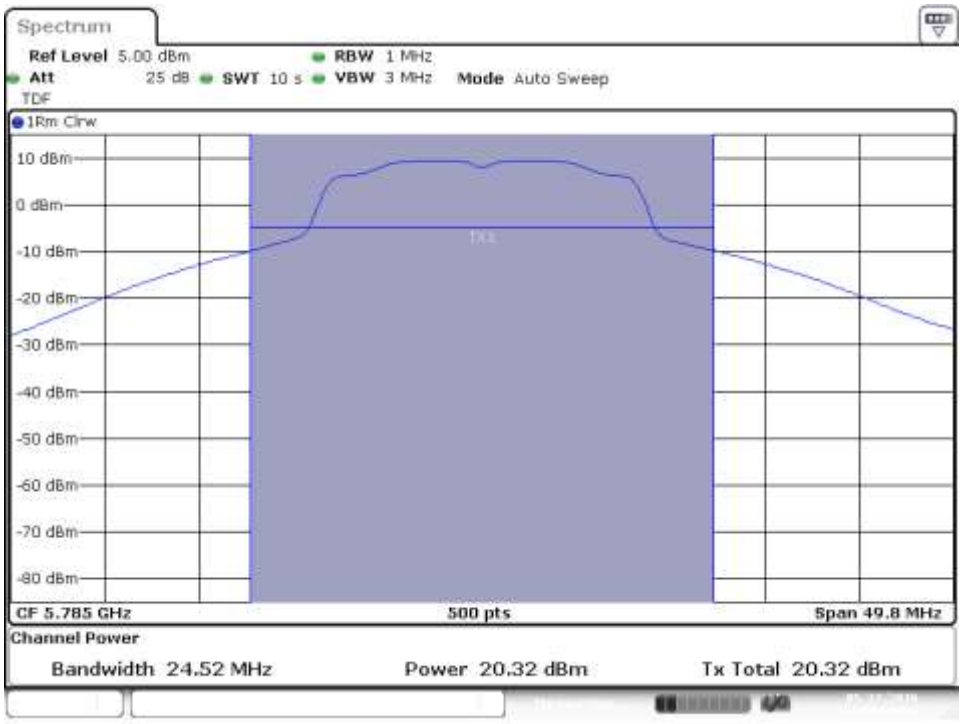
Max Power, Chain A – CH149



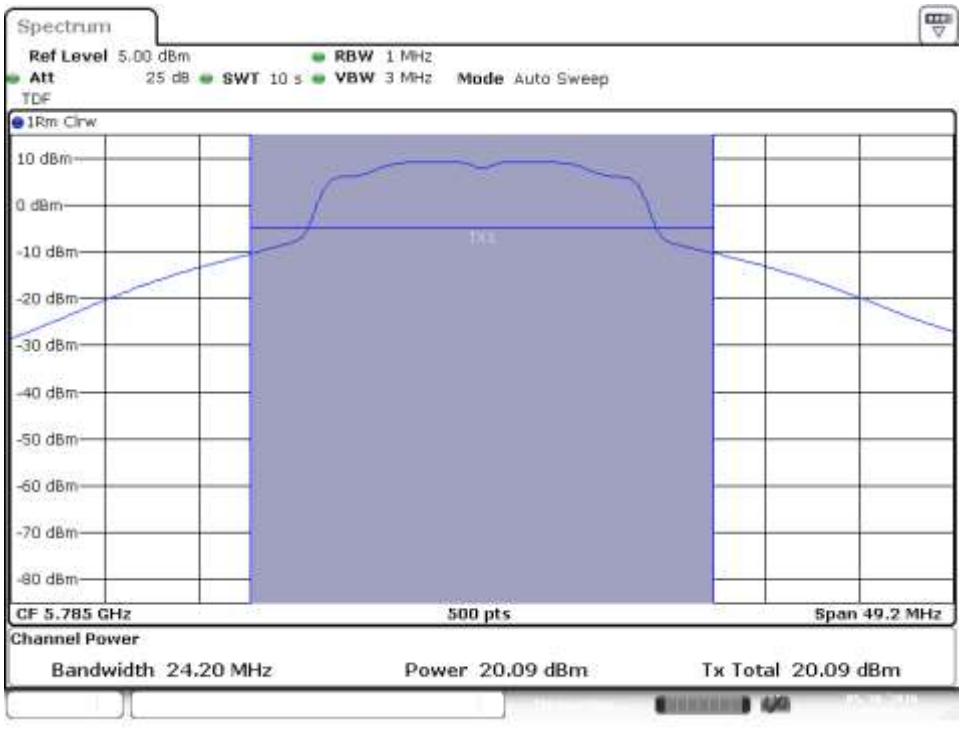
Max Power, Chain B – CH149



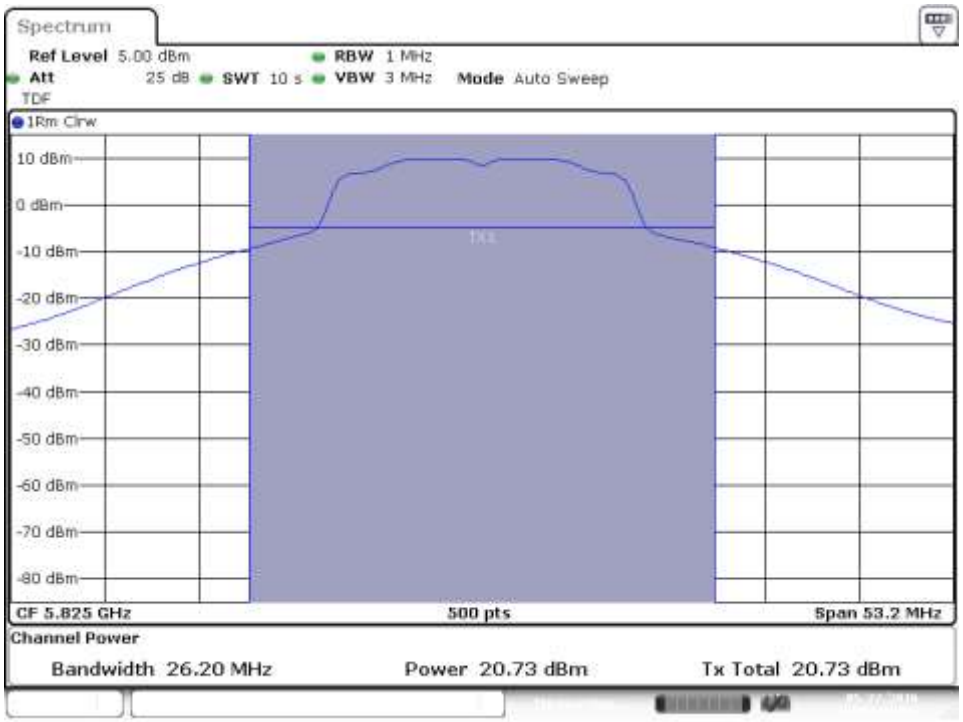
Max Power, Chain A – CH157



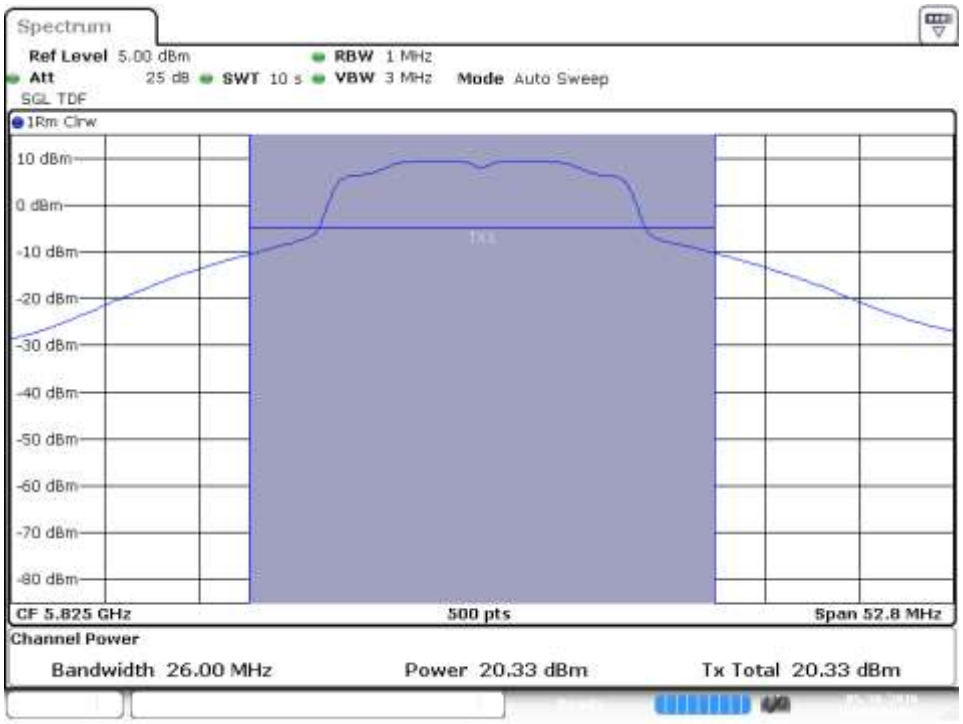
Max Power, Chain B – CH157



Max Power, Chain A – CH165

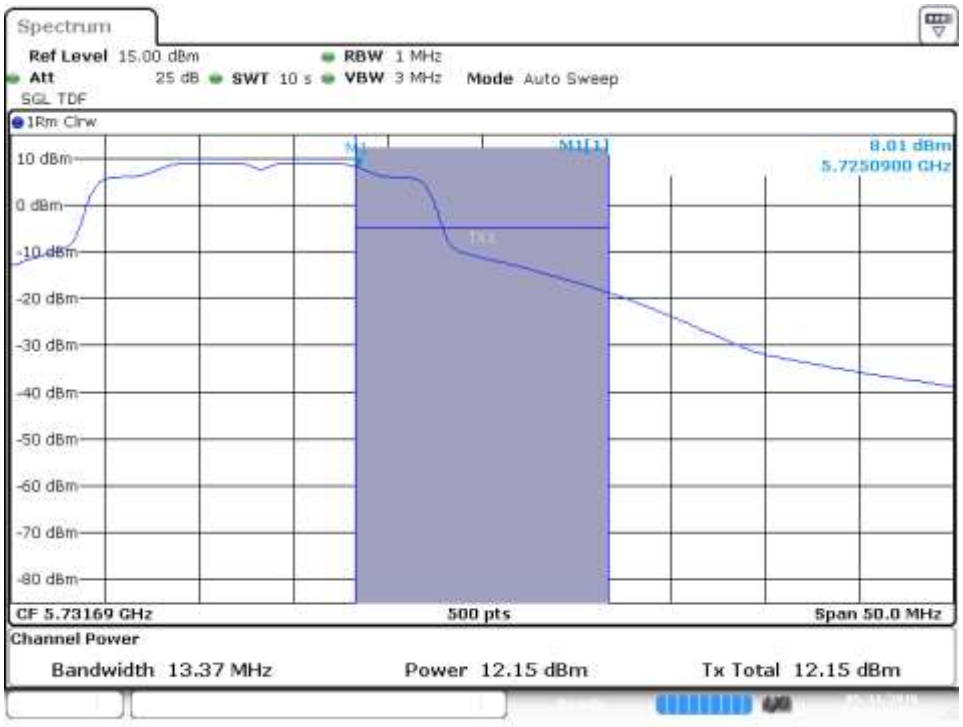


Max Power, Chain B – CH165

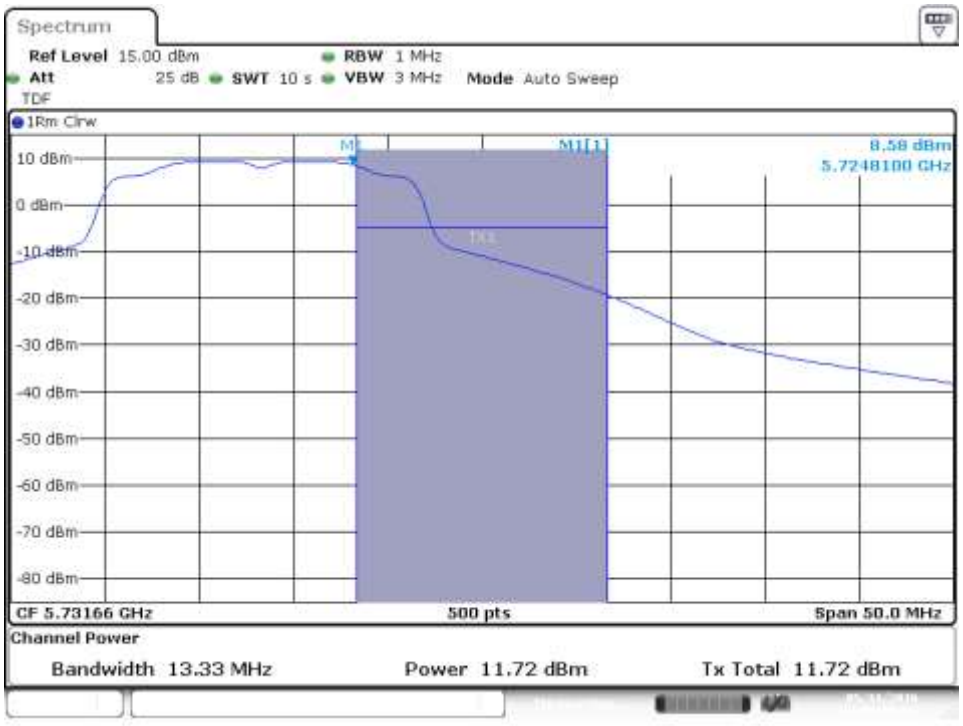


802.11n20, HT0 (SISO)

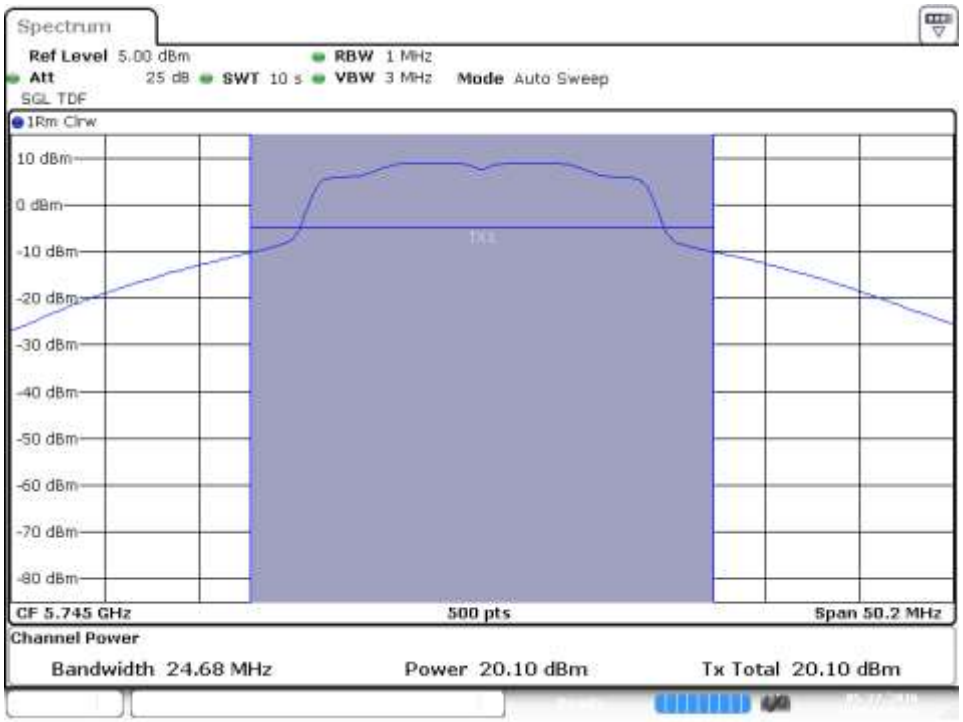
Max Power, Chain A – CH144 (Overlapped Channel)



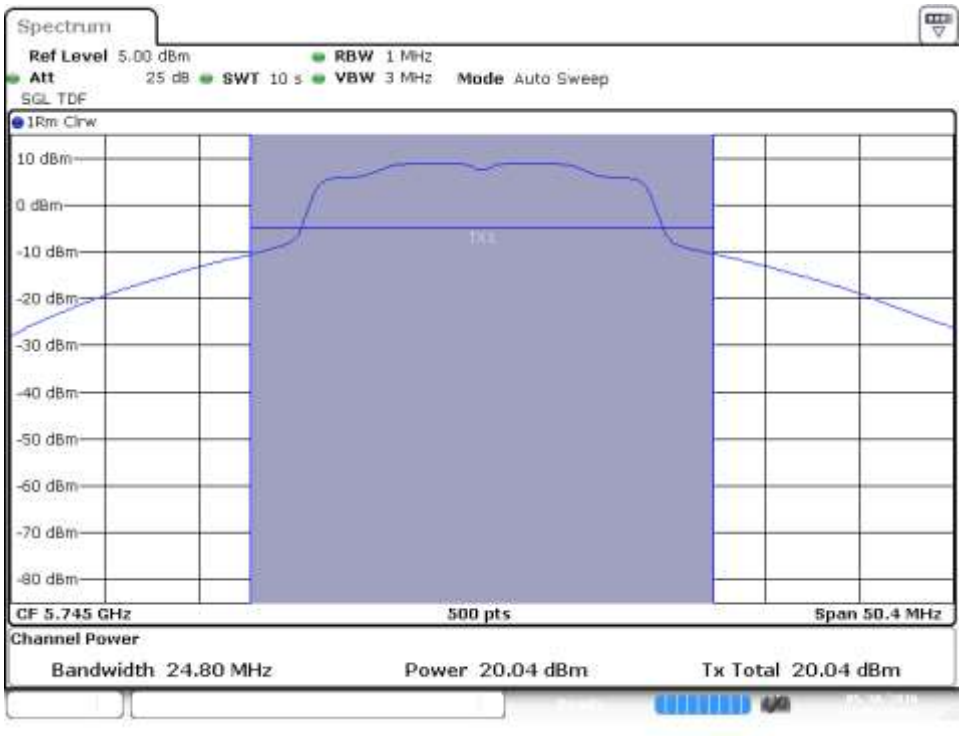
Max Power, Chain B – CH144 (Overlapped Channel)



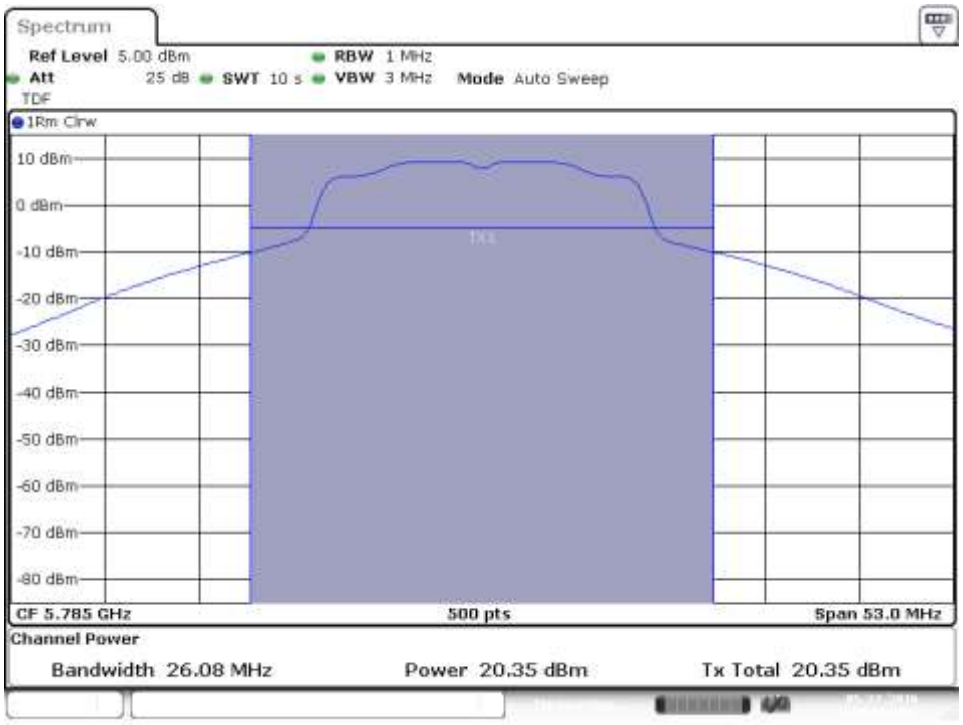
Max Power, Chain A – CH149



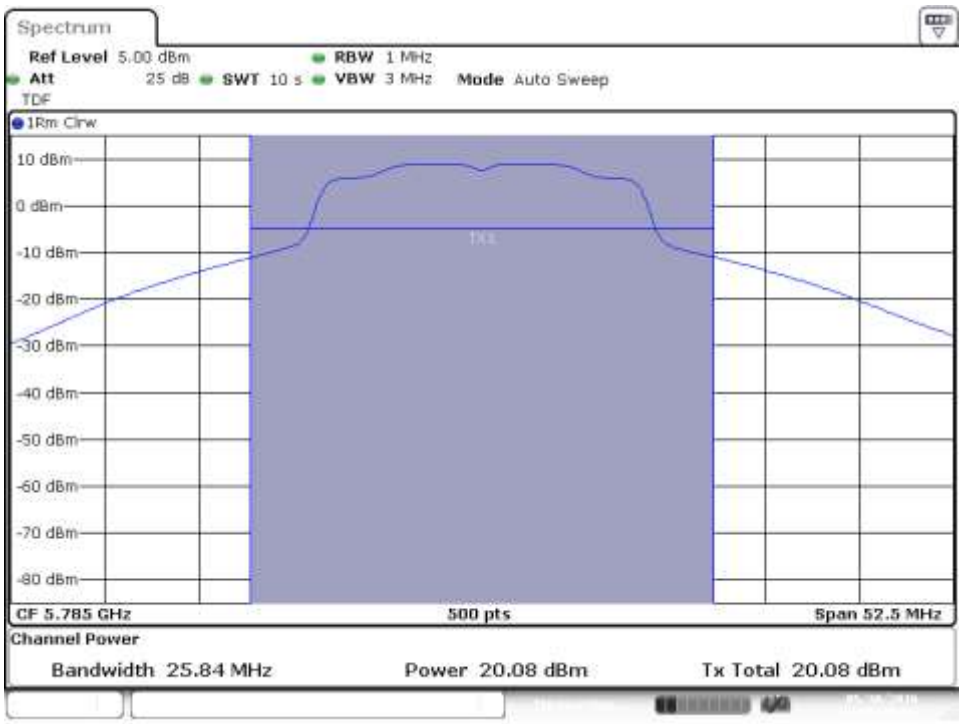
Max Power, Chain B – CH149



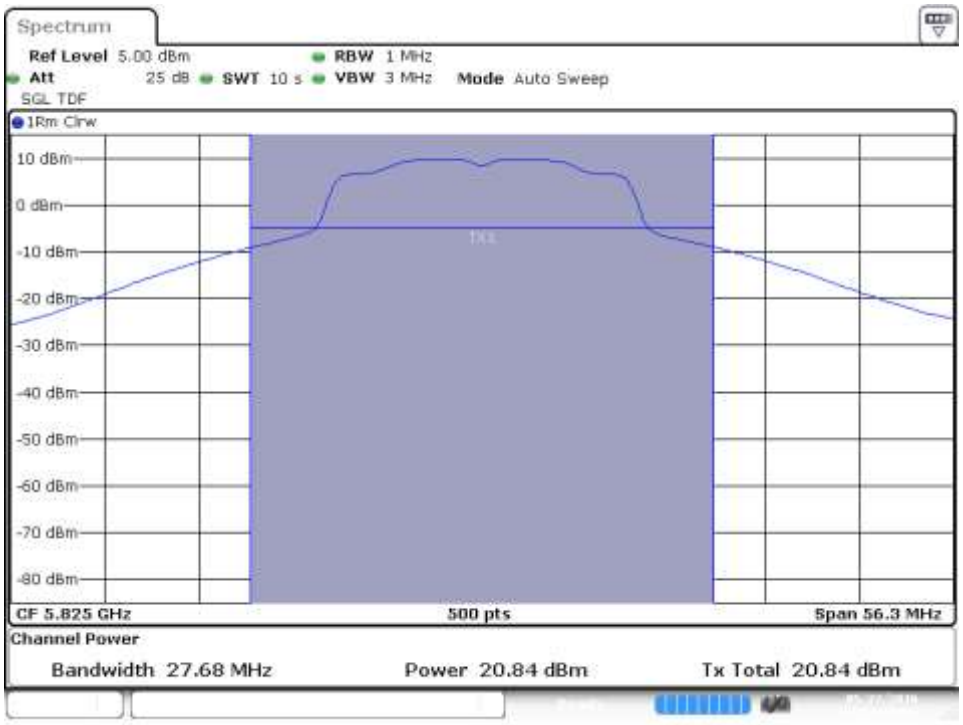
Max Power, Chain A – CH157



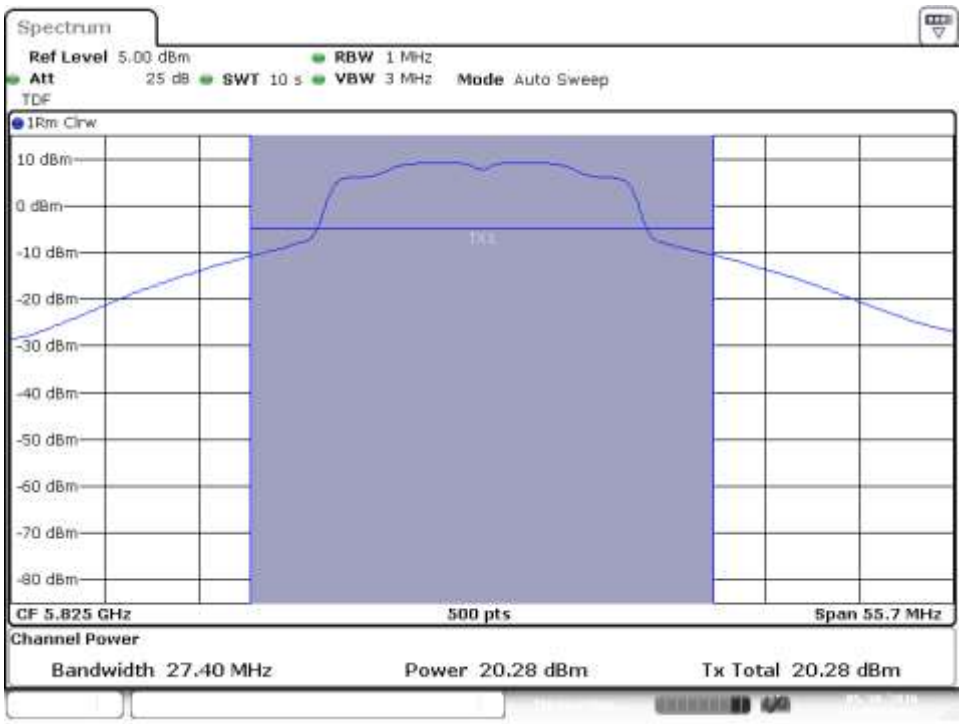
Max Power, Chain B – CH157



Max Power, Chain A – CH165



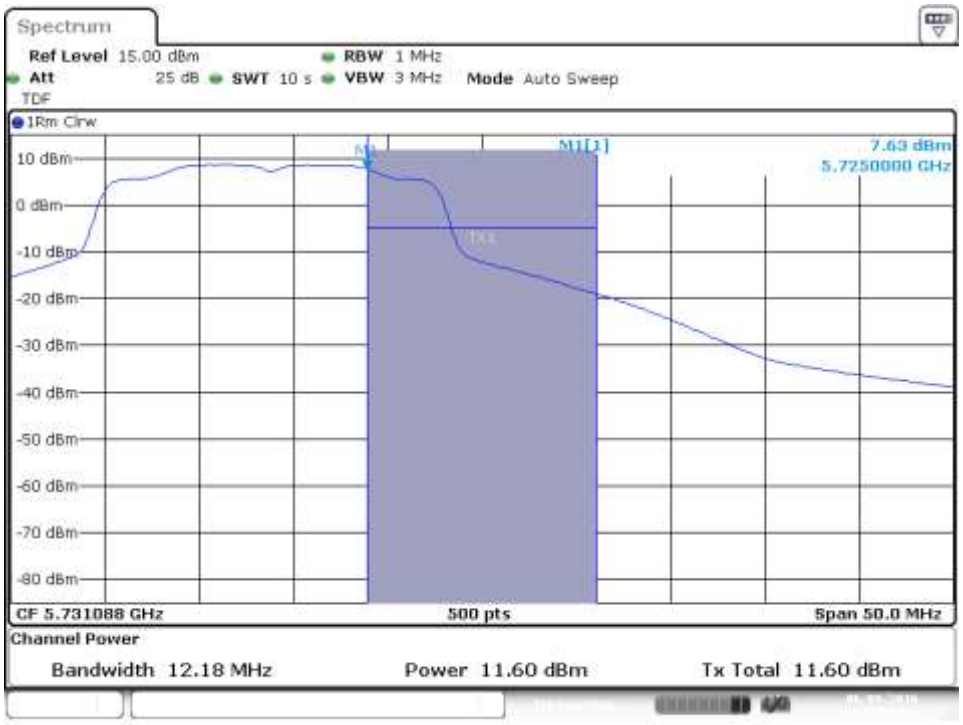
Max Power, Chain B – CH165



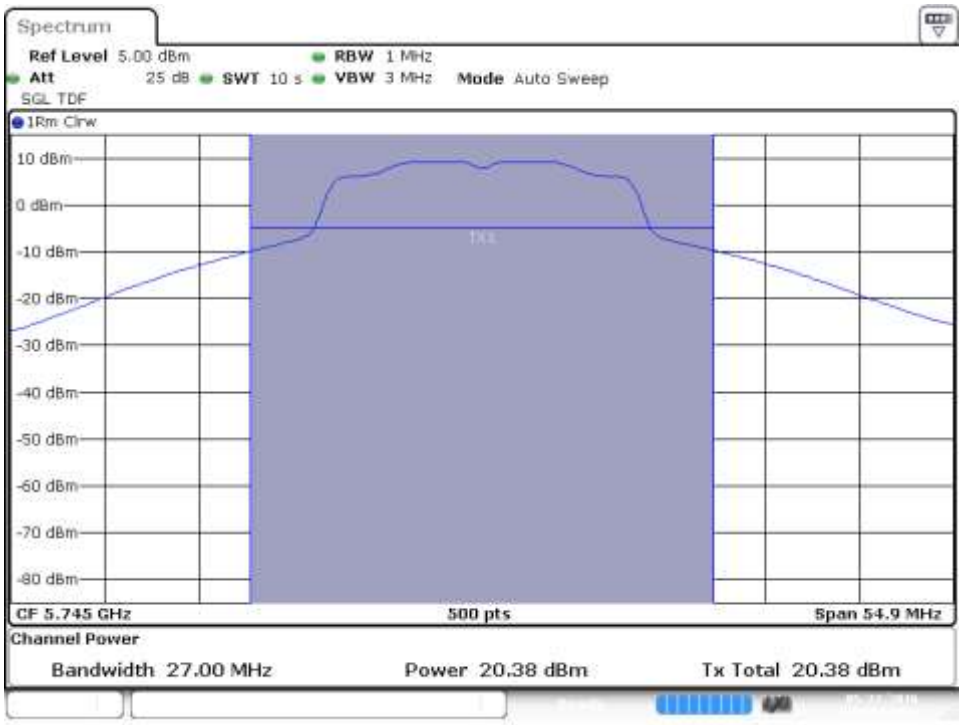
802.11n20, HT8 (MIMO)

Max Power, Chain A – CH144 (Overlapped Channel)

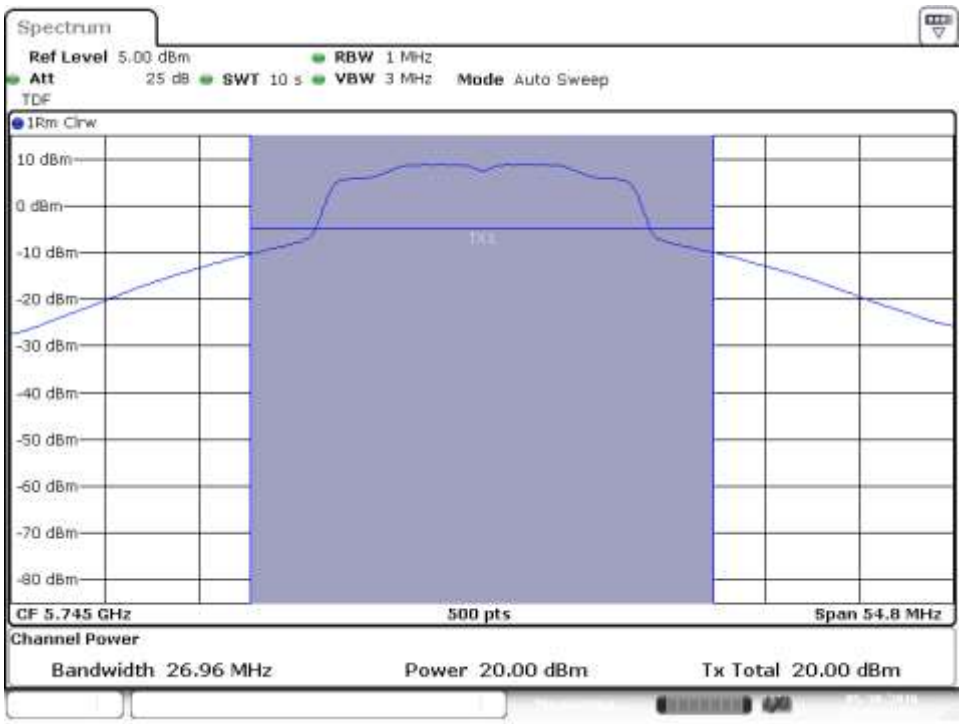
Max Power, Chain B – CH144 (Overlapped Channel)



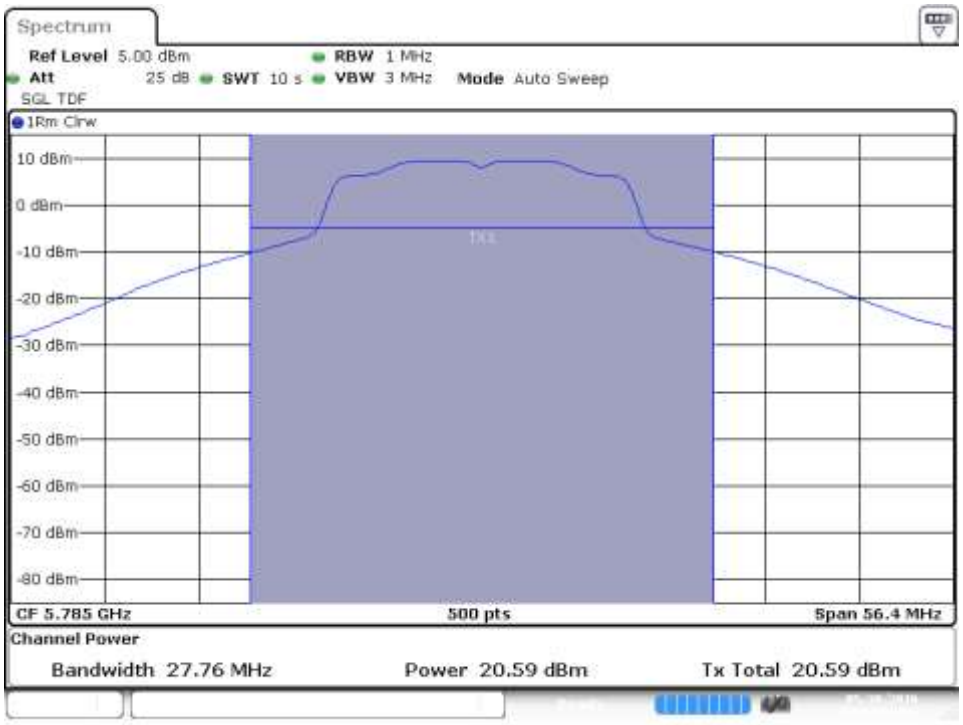
Max Power, Chain A – CH149



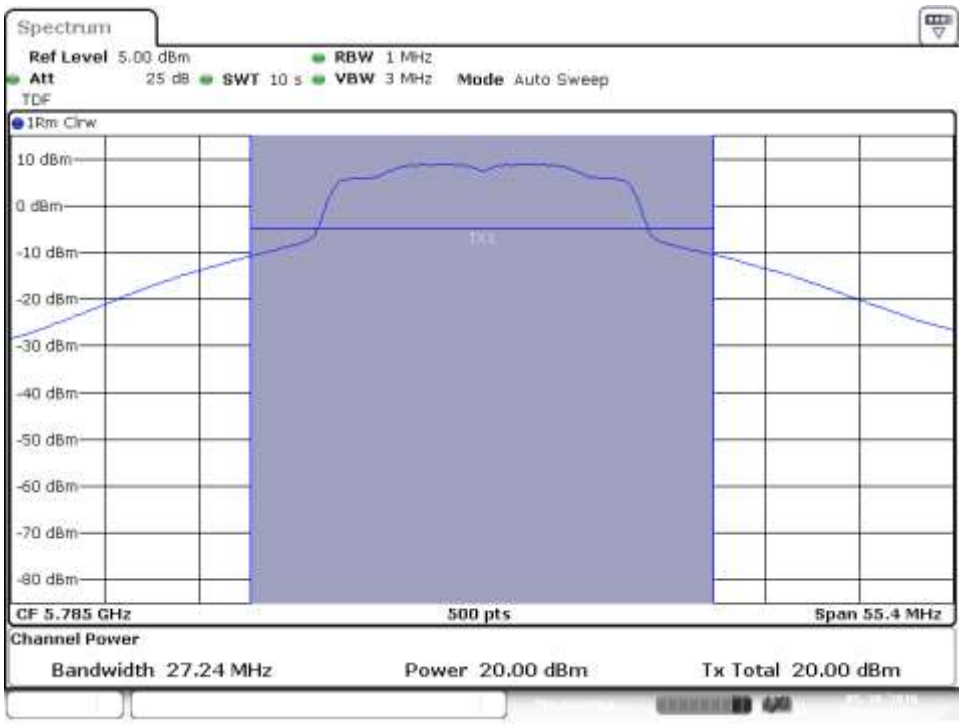
Max Power, Chain B – CH149



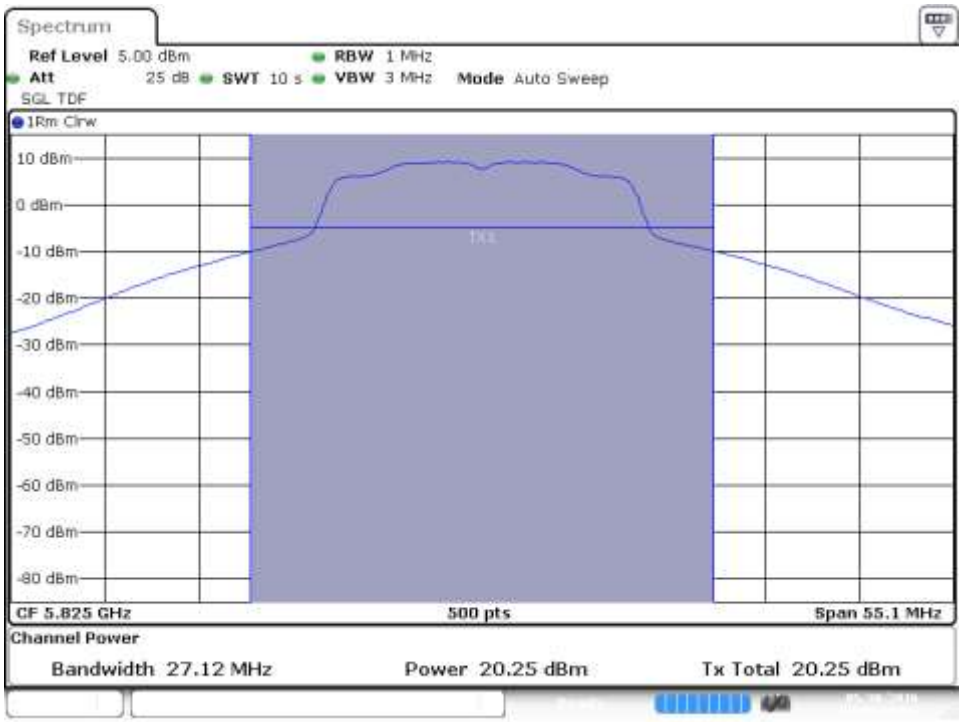
Max Power, Chain A – CH157



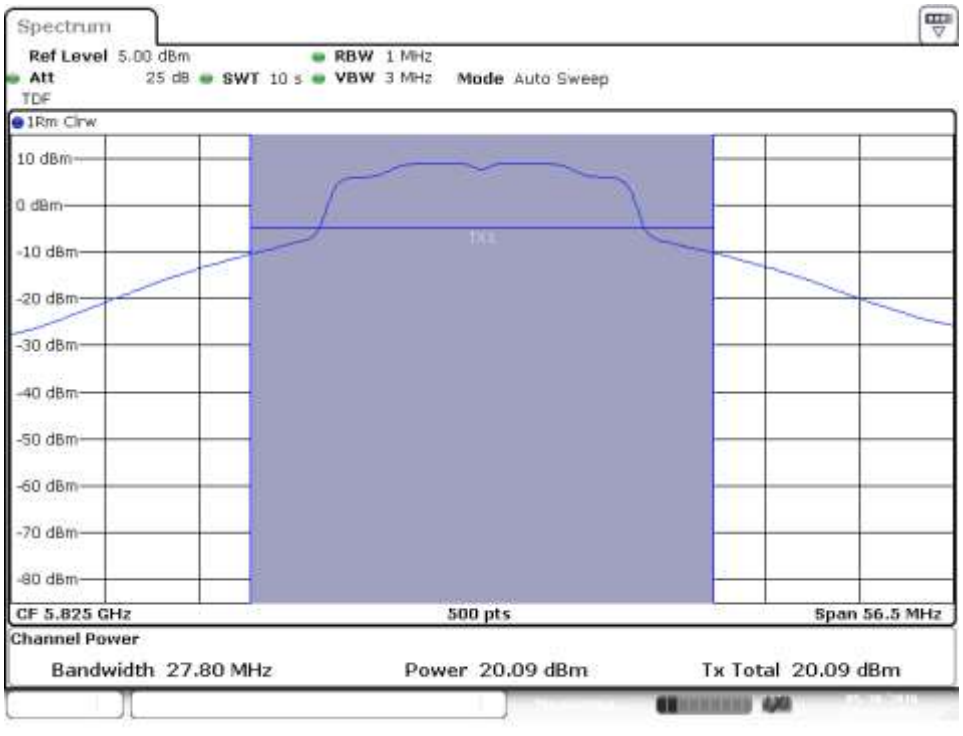
Max Power, Chain B – CH157



Max Power, Chain A – CH165

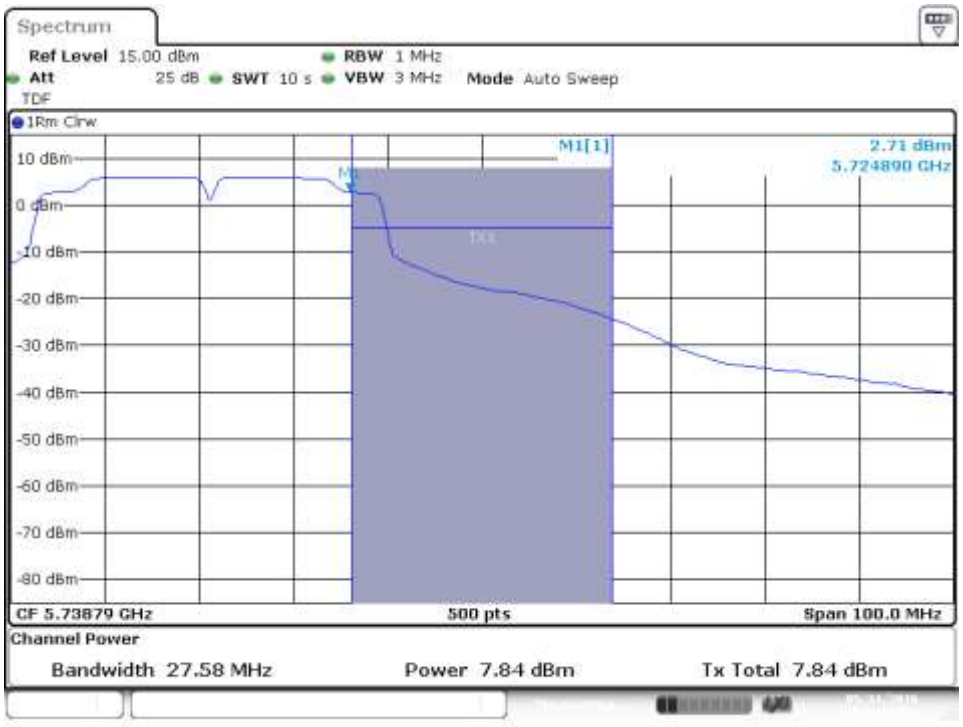


Max Power, Chain B – CH165

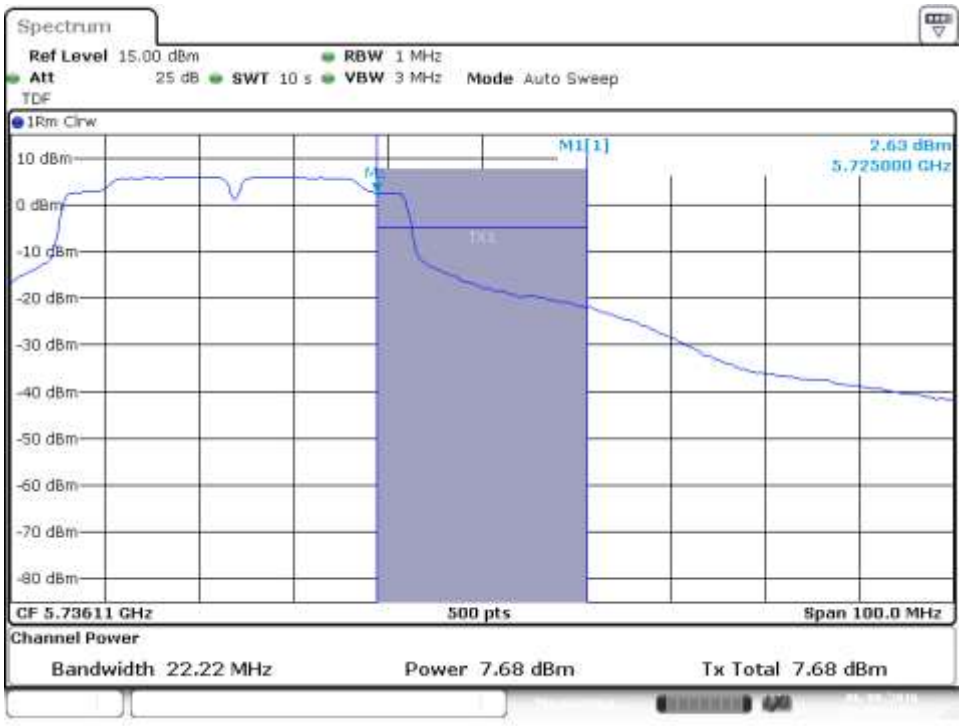


802.11n40, HT0 (SISO)

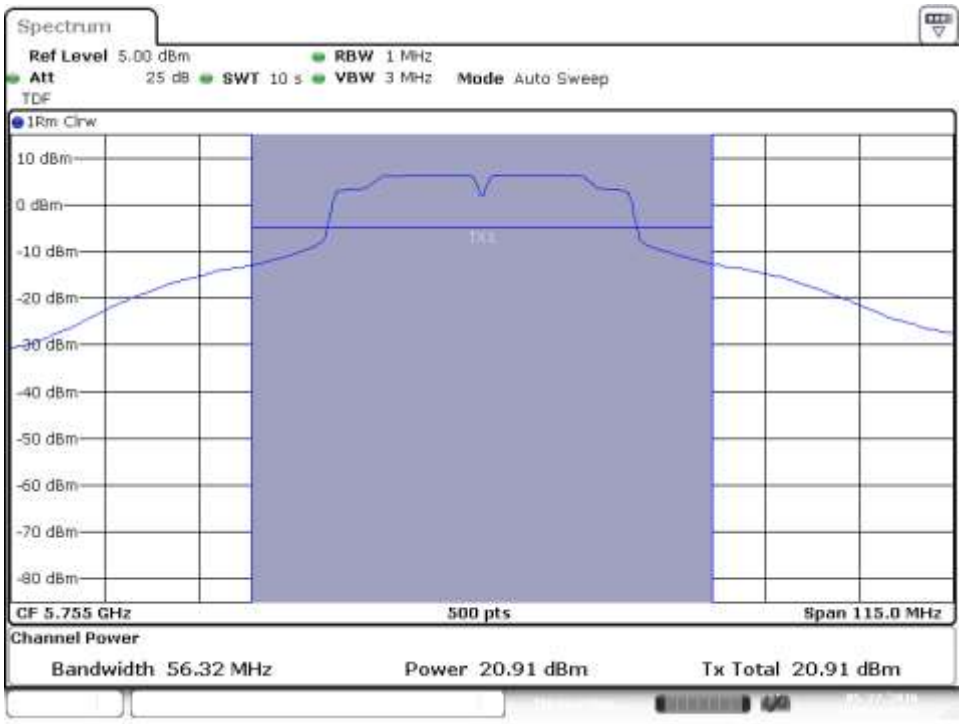
Max Power, Chain A – CH142F (Overlapped Channel)



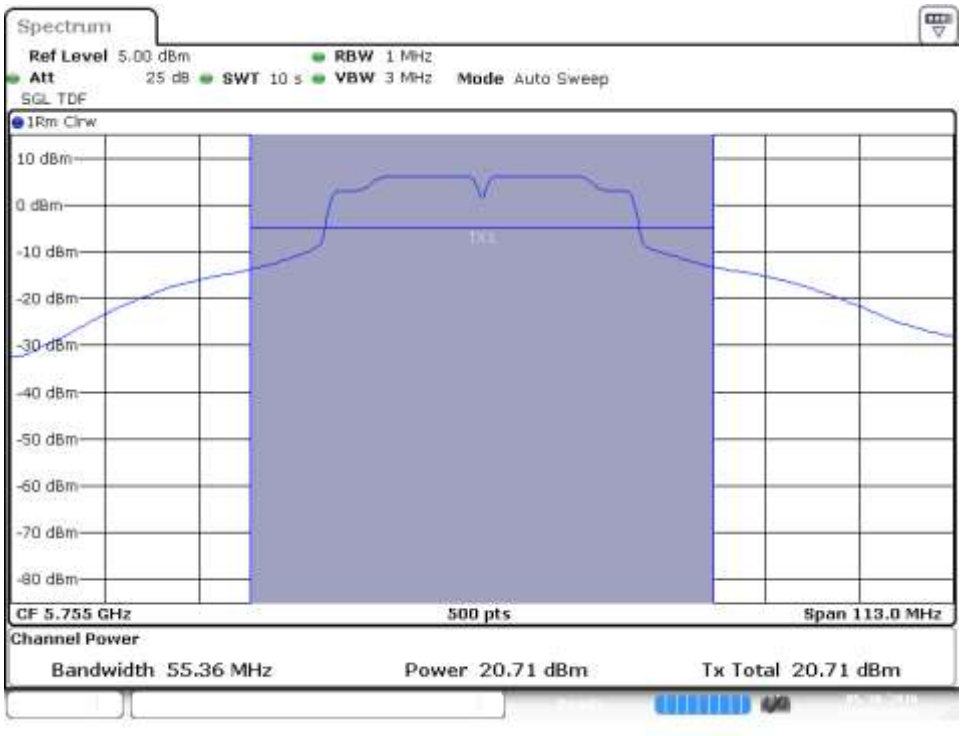
Max Power, Chain B – CH142F (Overlapped Channel)



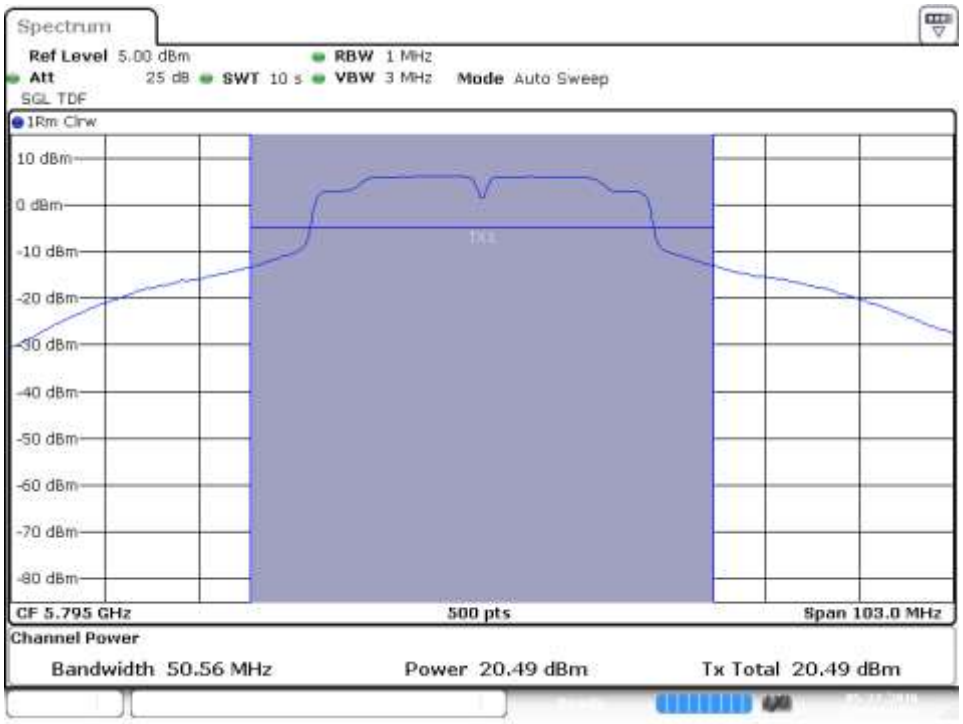
Max Power, Chain A – CH151F



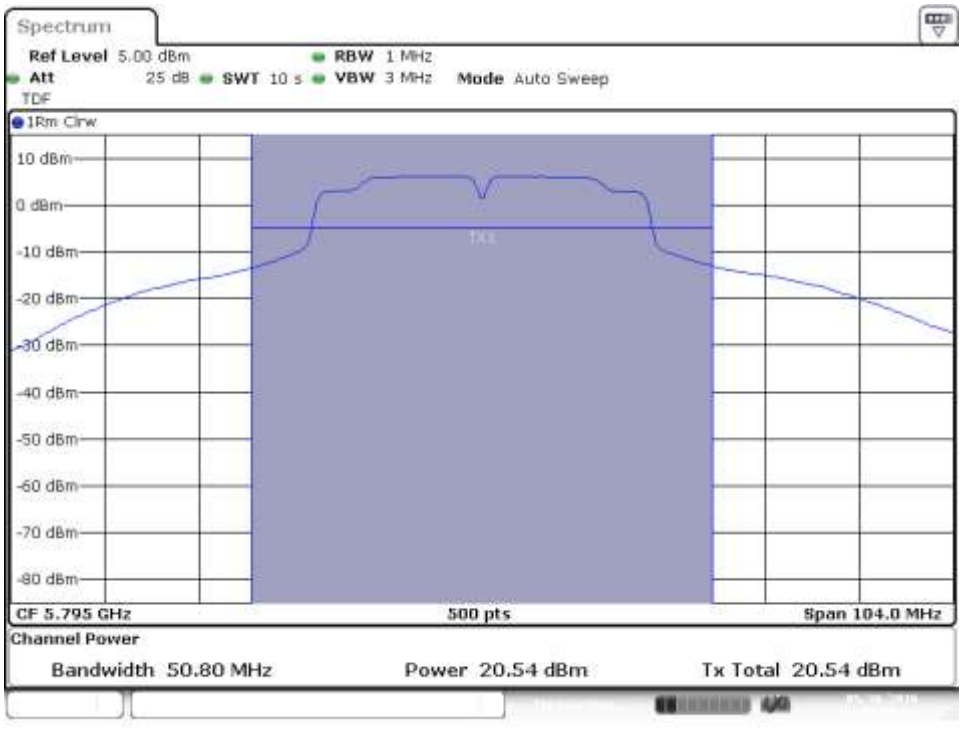
Max Power, Chain B – CH151F



Max Power, Chain A – CH159F

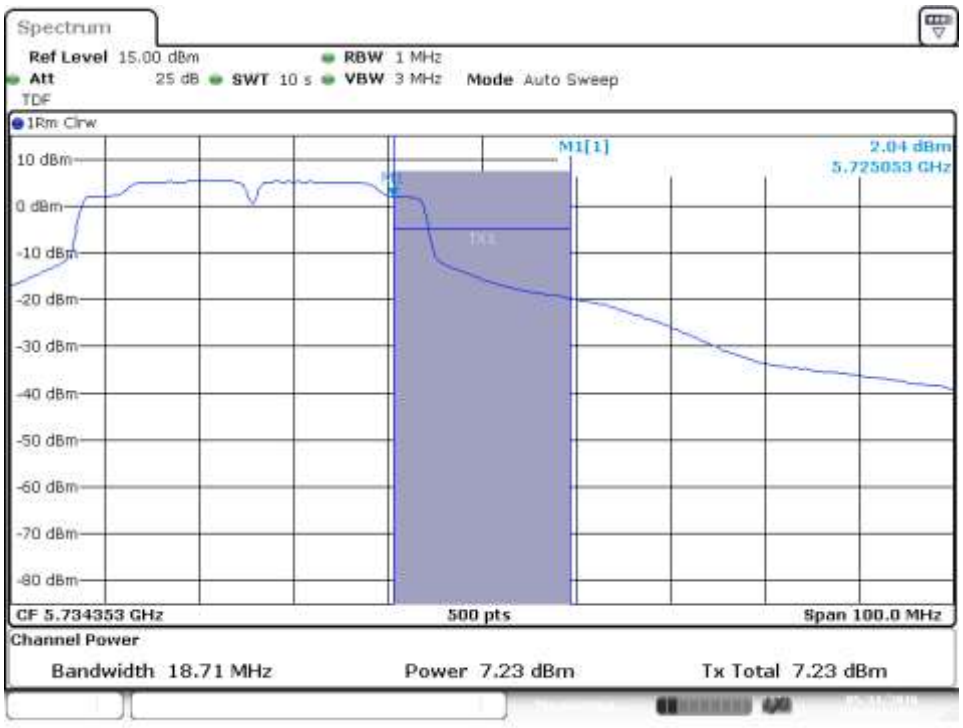


Max Power, Chain B – CH159F

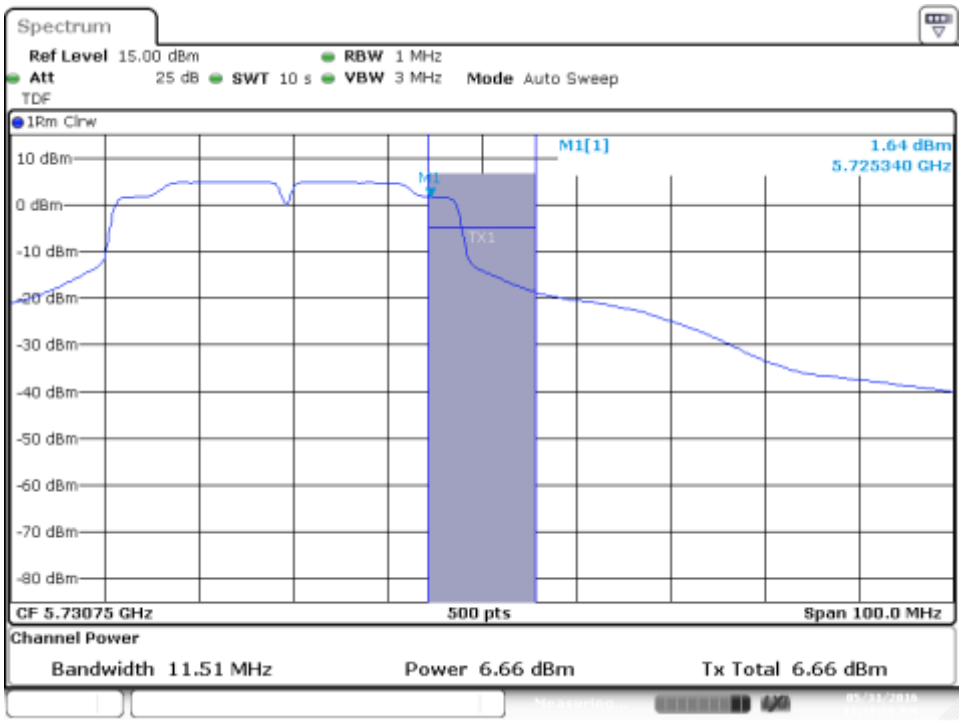


802.11n40, HT8 (MIMO)

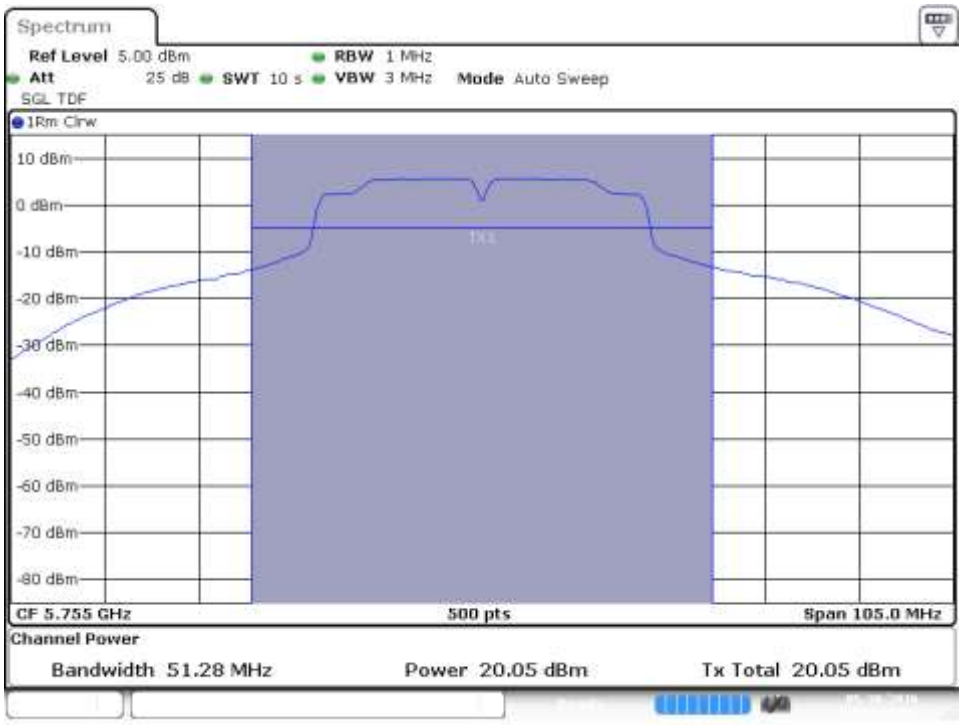
Max Power, Chain A – CH142F (Overlapped Channel)



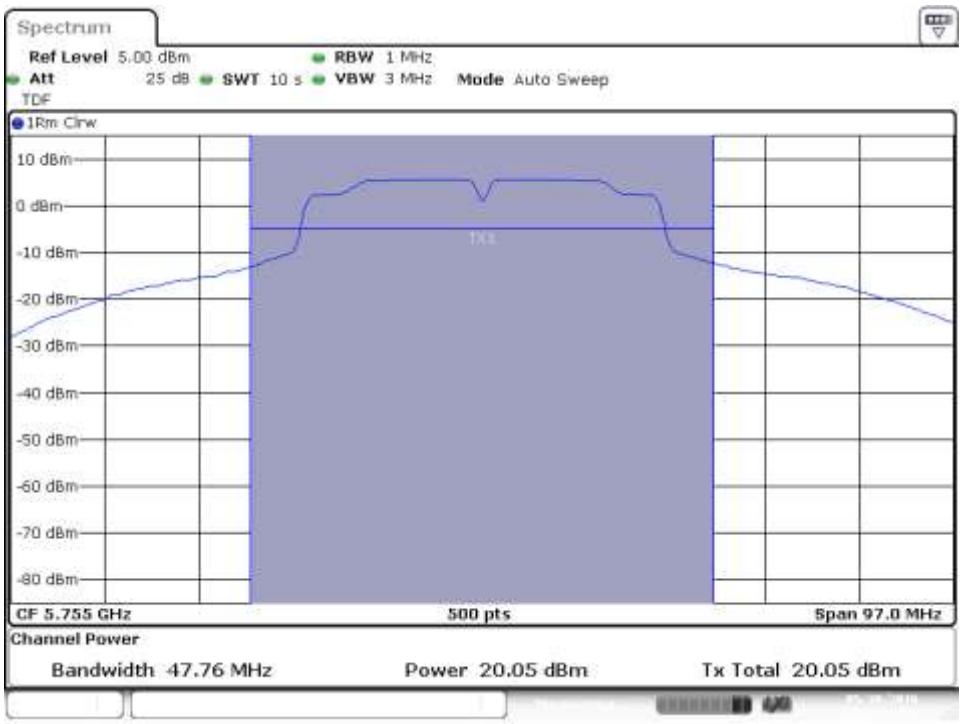
Max Power, Chain B – CH142F (Overlapped Channel)



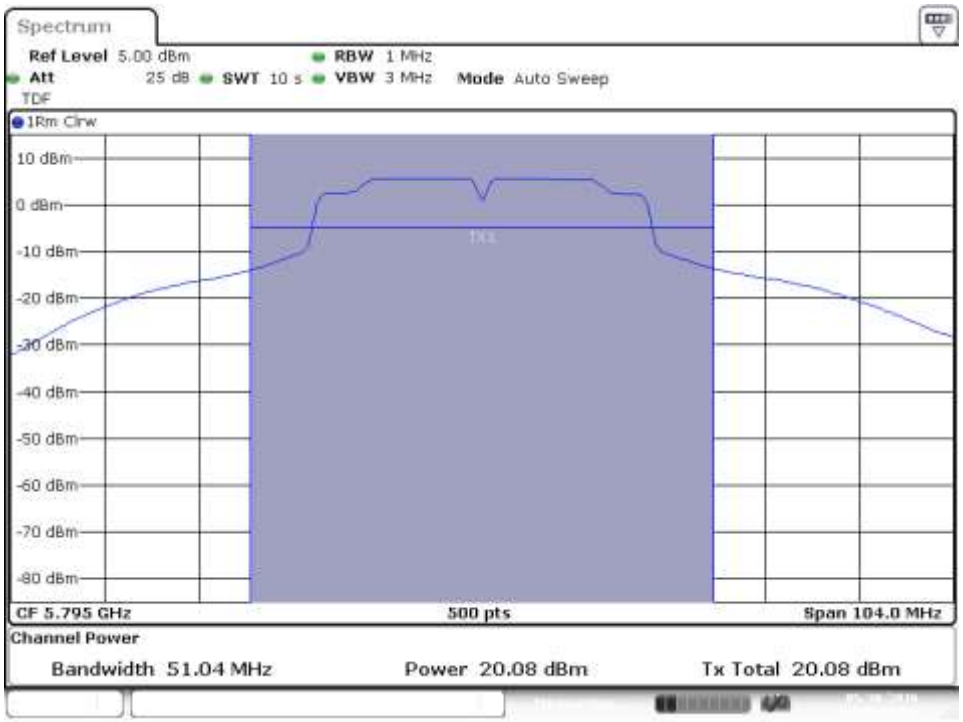
Max Power, Chain A – CH151F



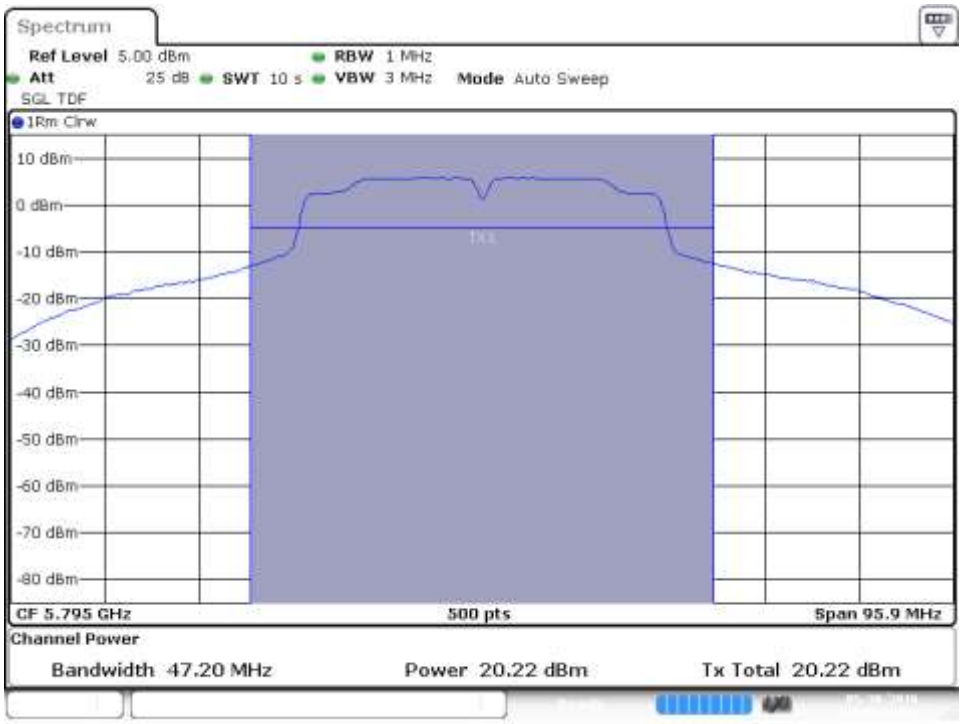
Max Power, Chain B – CH151F



Max Power, Chain A – CH159F

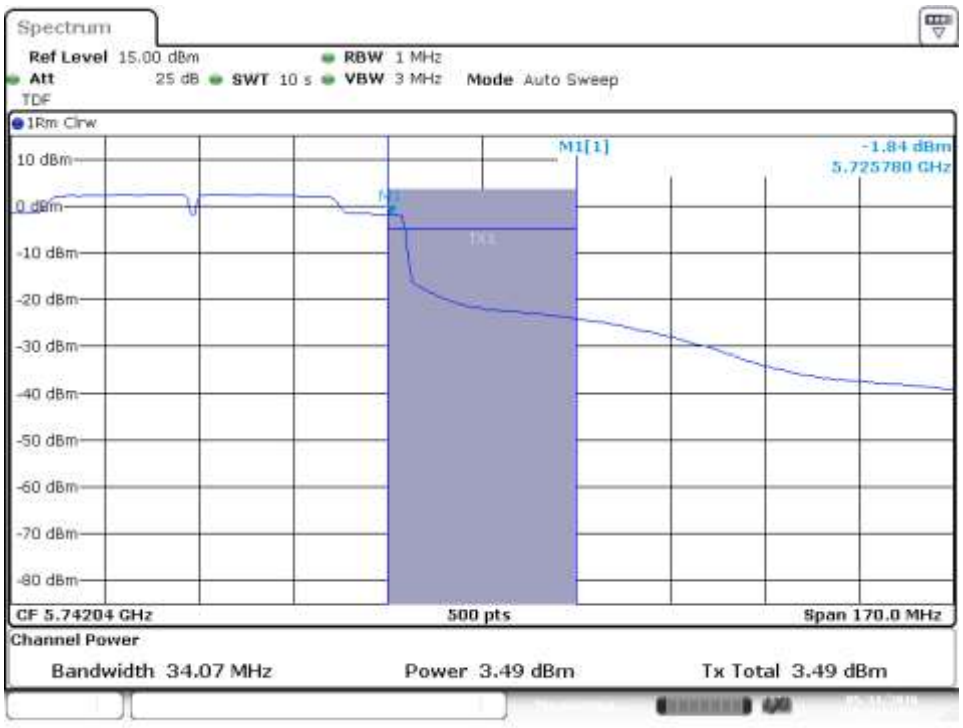


Max Power, Chain B – CH159F

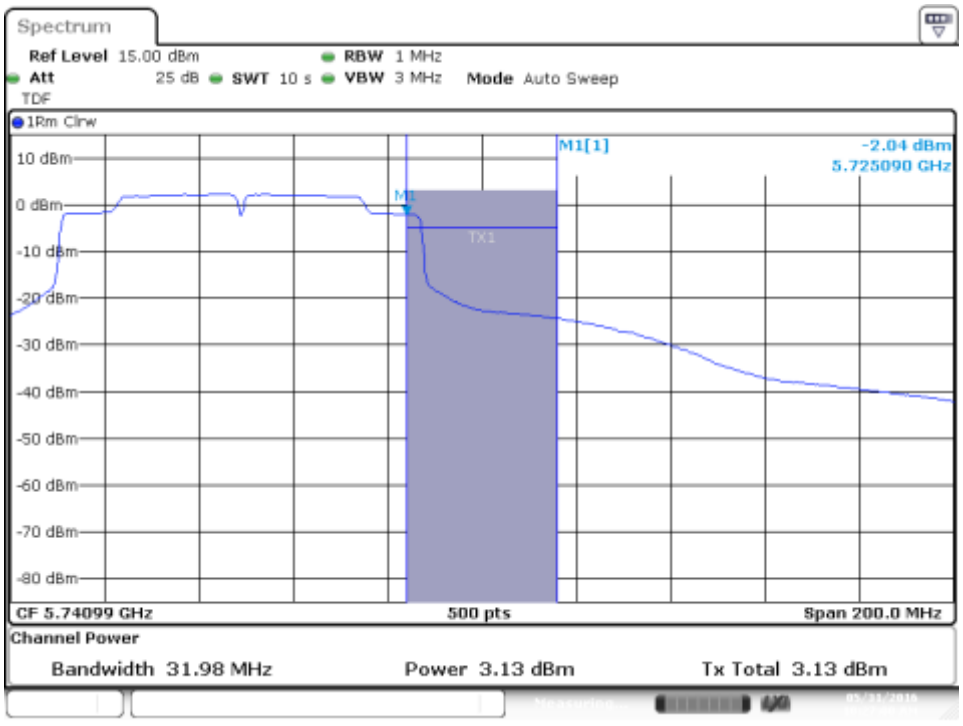


802.11ac80, VHT0 (SISO)

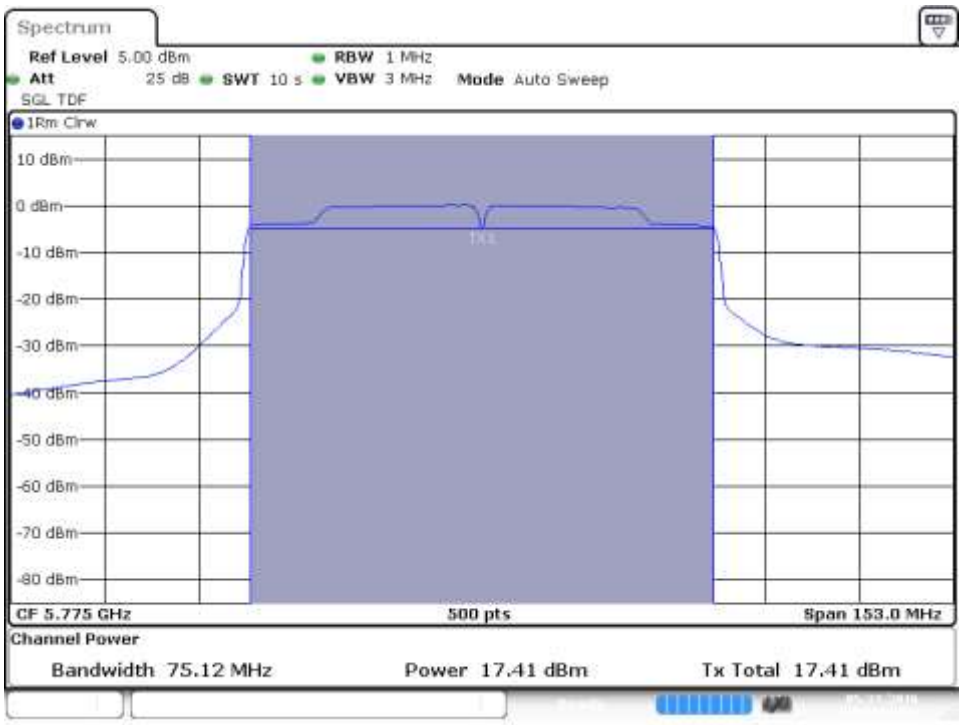
Max Power, Chain A – CH138ac80 (Overlapped Channel)



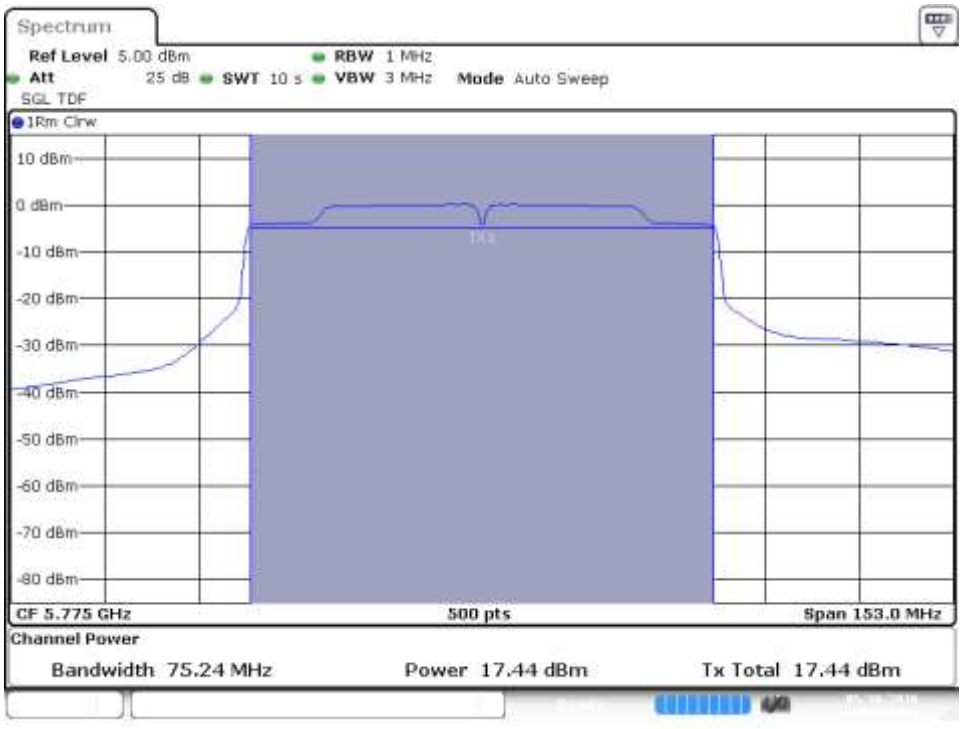
Max Power, Chain B – CH138ac80 (Overlapped Channel)



Max Power, Chain A – CH155ac80

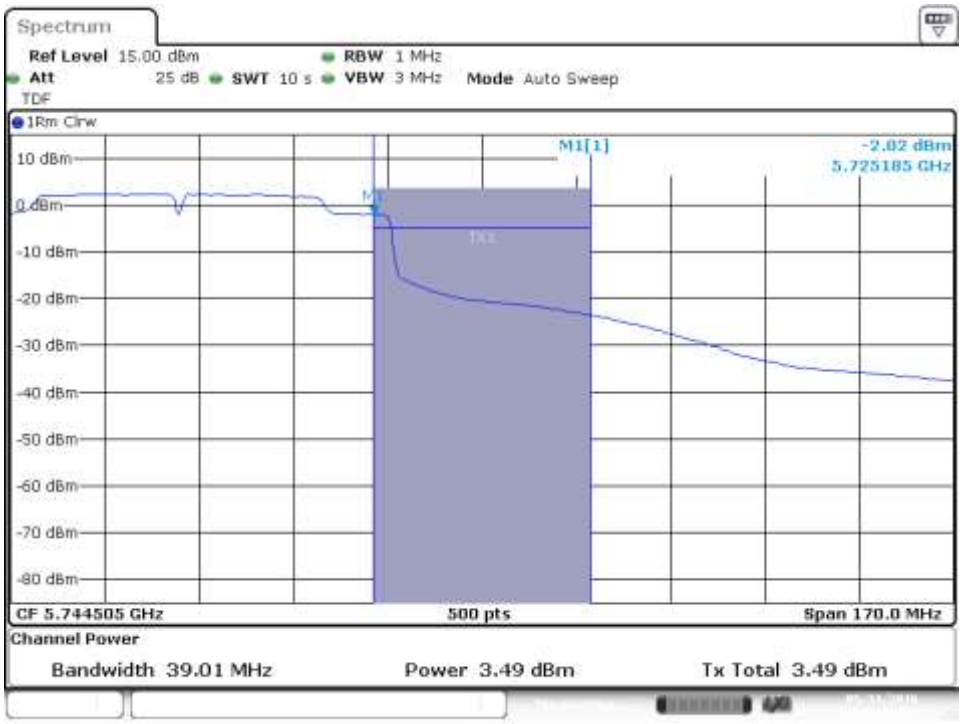


Max Power, Chain B – CH155ac80

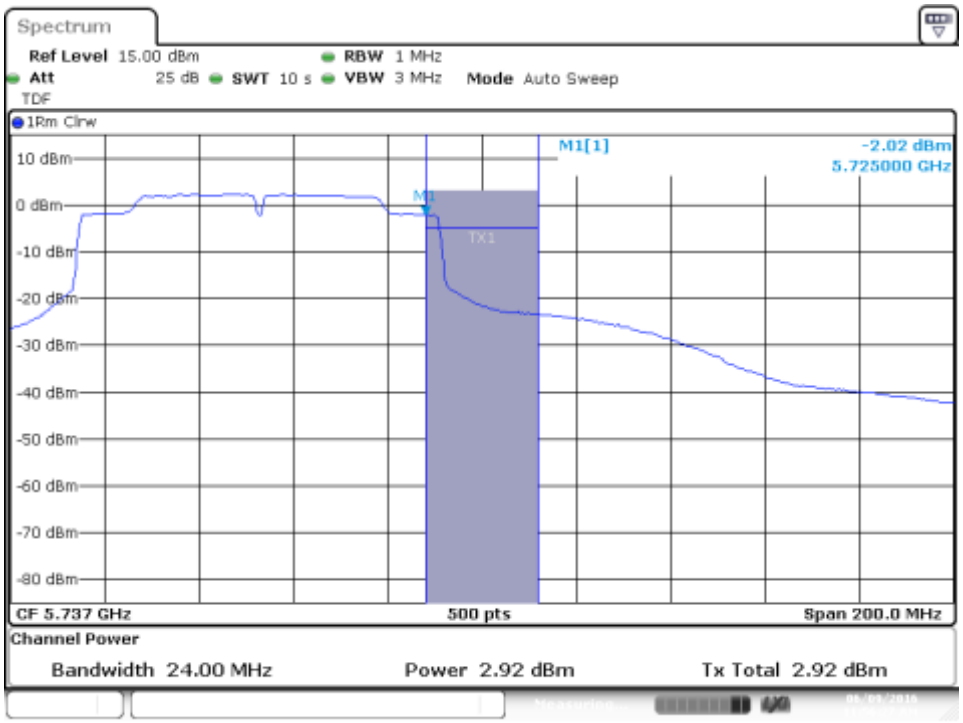


802.11ac80, VHT0 (MIMO)

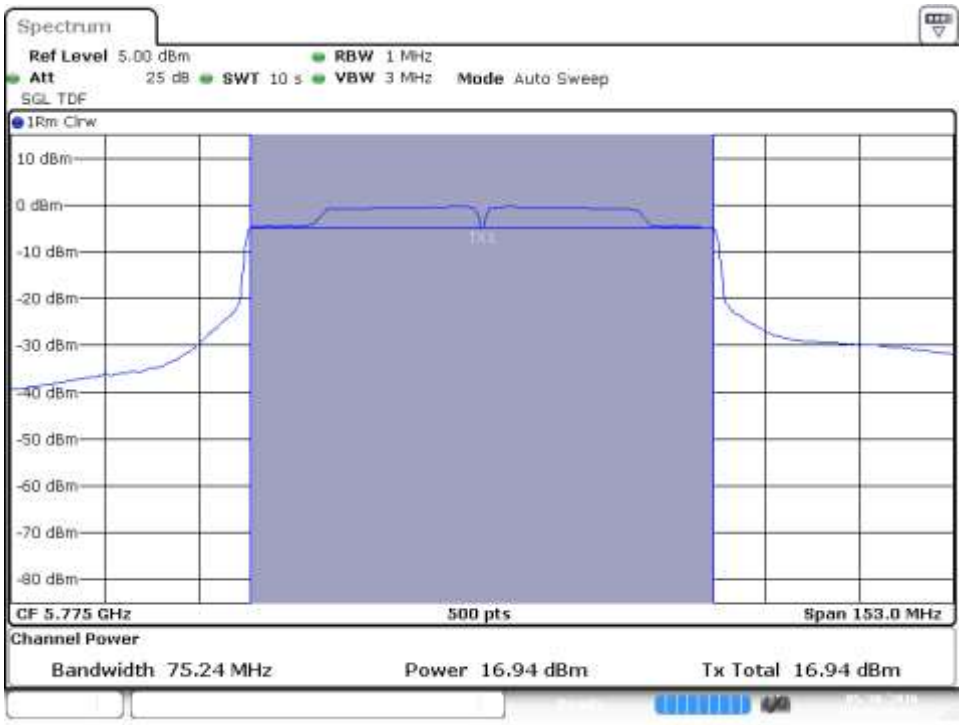
Max Power, Chain A – CH138ac80 (Overlapped Channel)



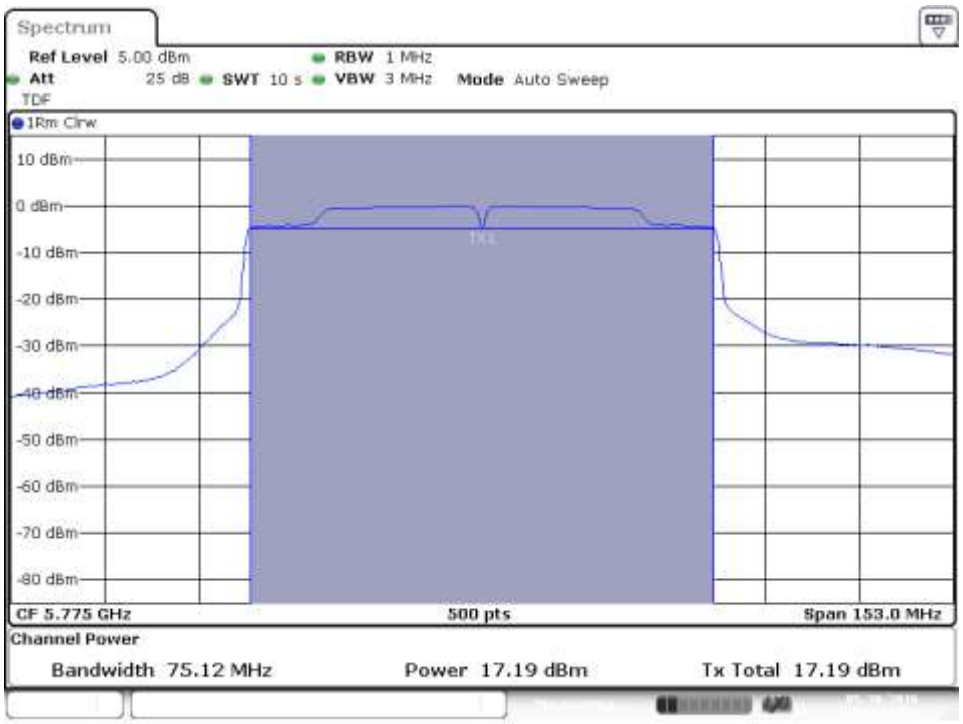
Max Power, Chain B – CH138ac80 (Overlapped Channel)



Max Power, Chain A – CH155ac80

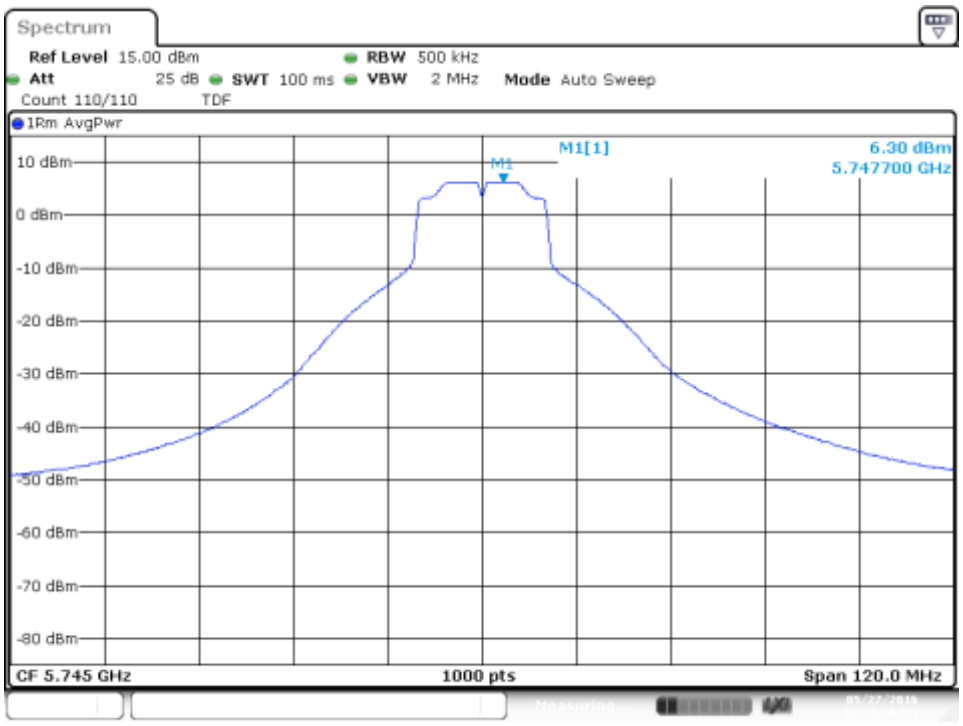


Max Power, Chain B – CH155ac80

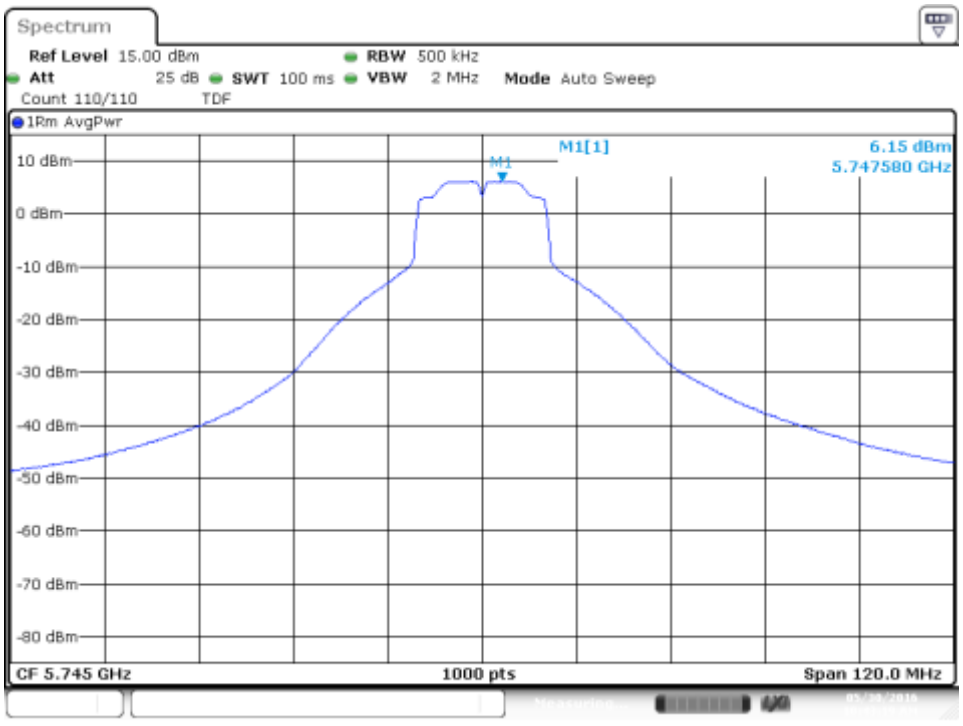


802.11a, 6Mbps

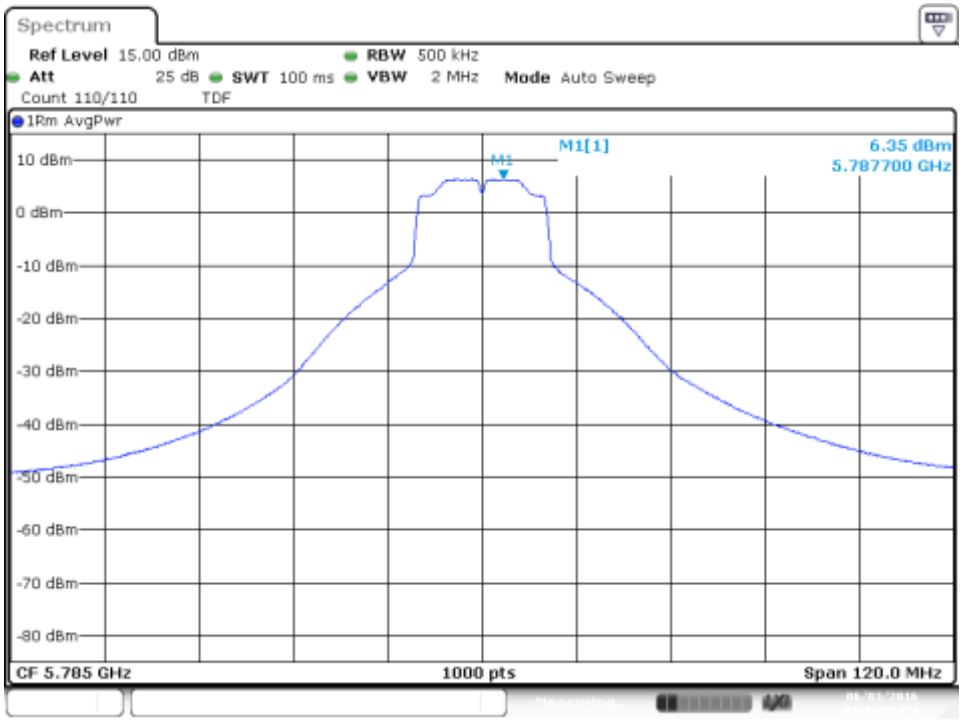
PSD, Chain A – CH149



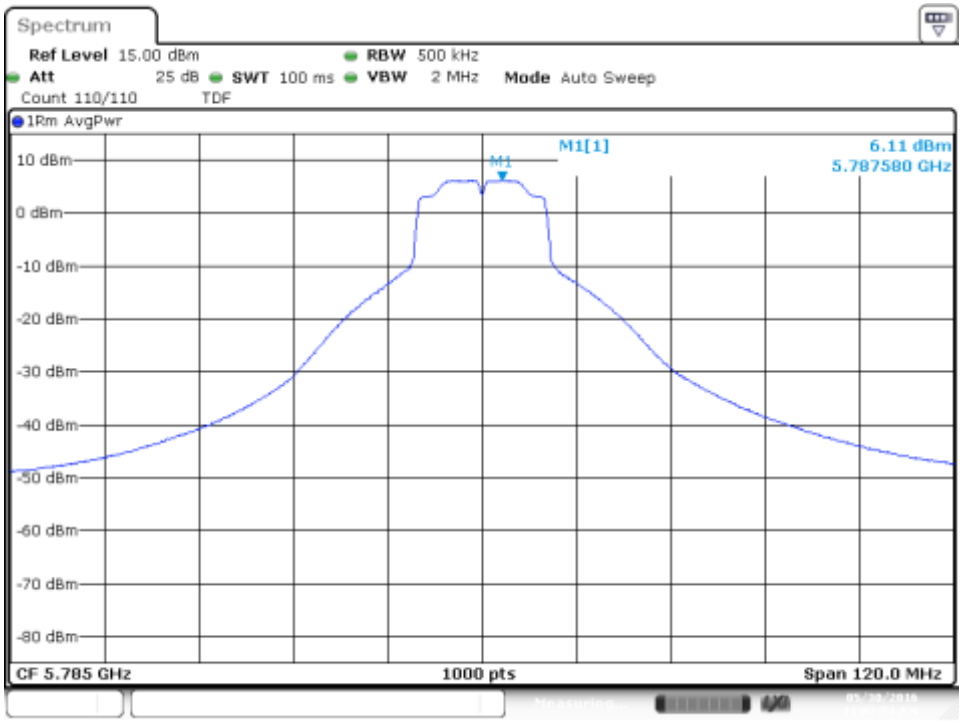
PSD, Chain B – CH149



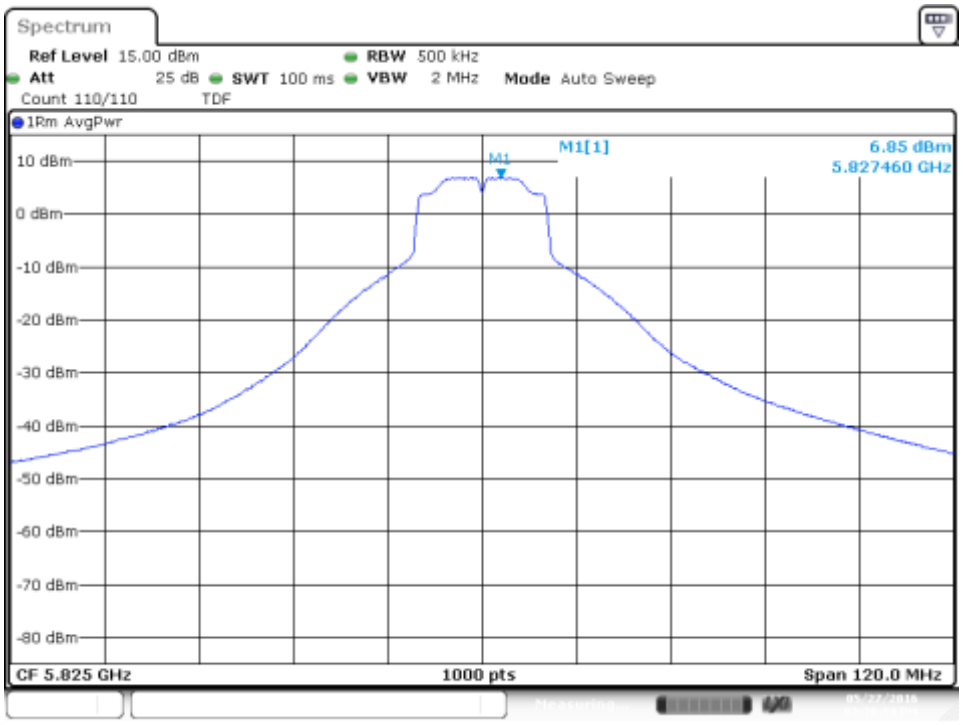
PSD, Chain A – CH157



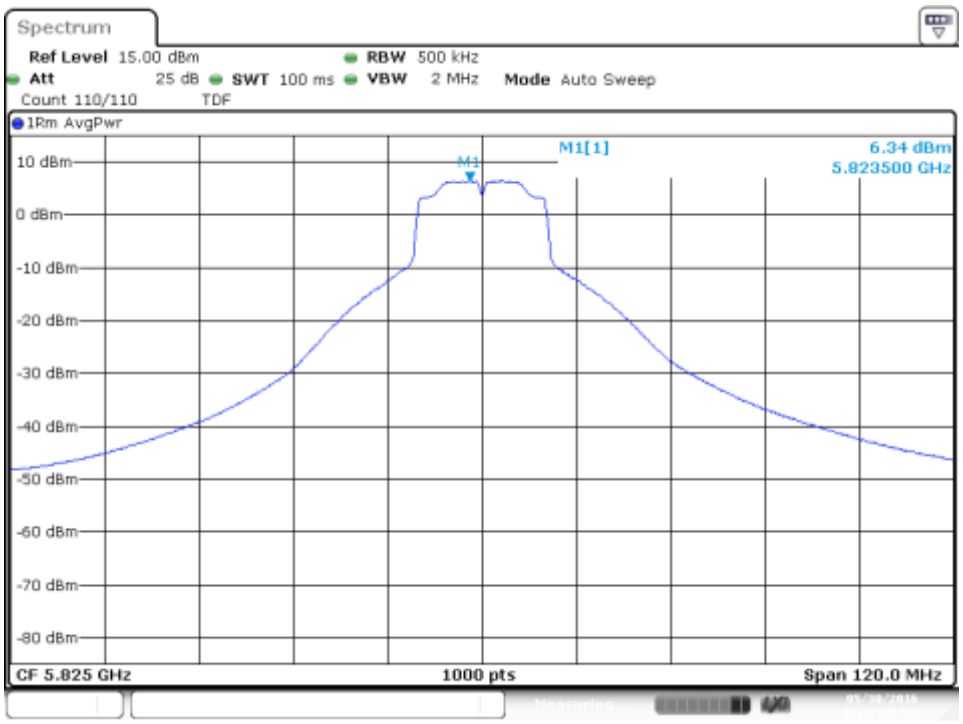
PSD, Chain B – CH157



PSD, Chain A – CH165

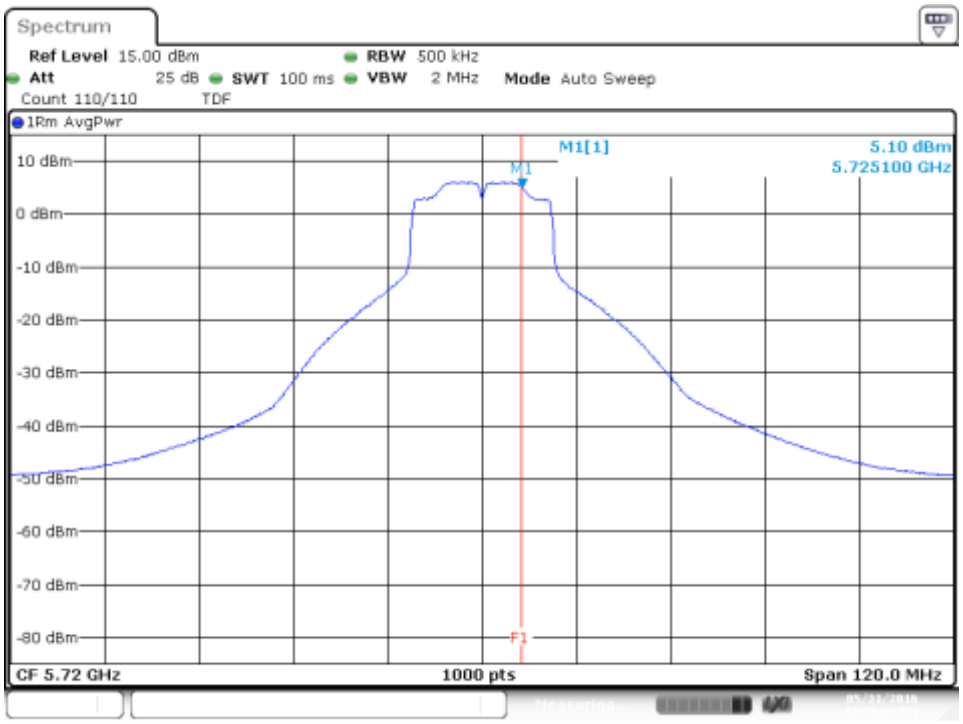


PSD, Chain B – CH165

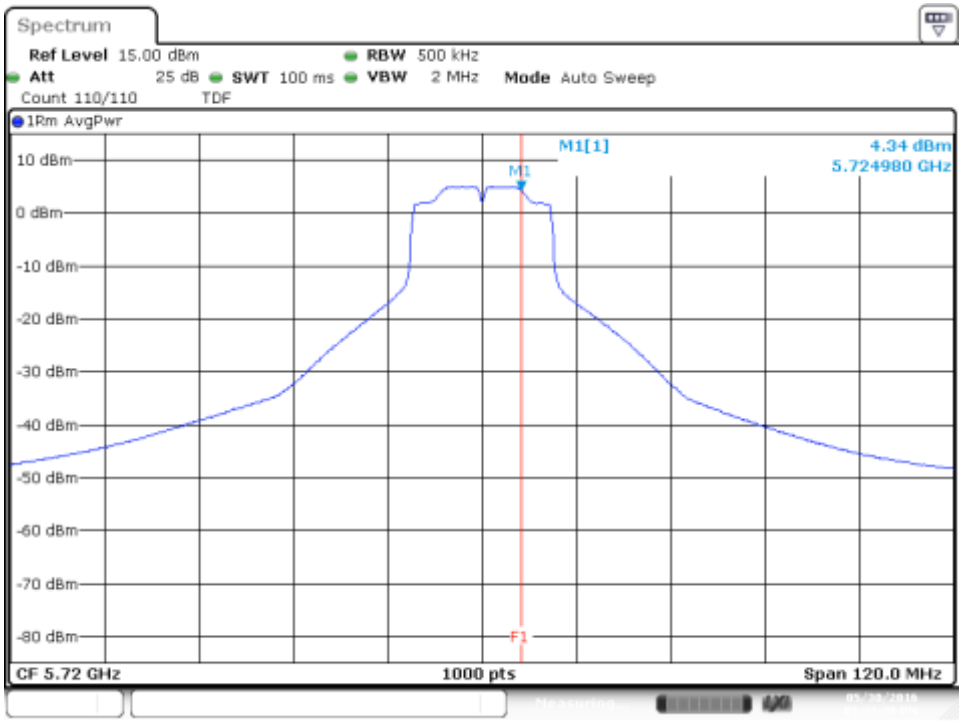


802.11n20, HT0 (SISO)

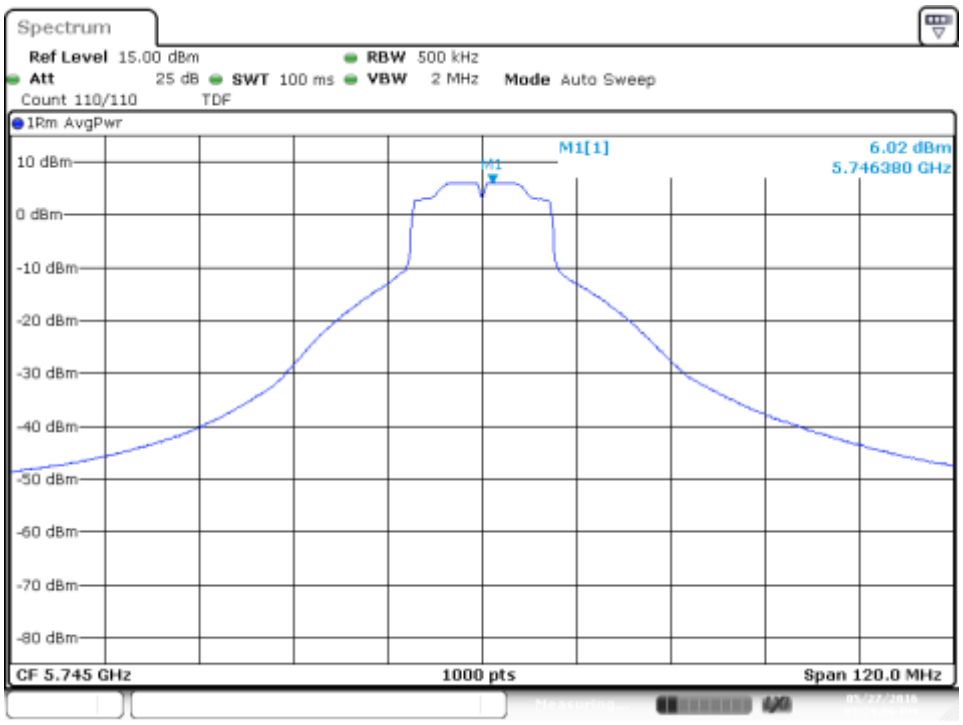
PSD, Chain A – CH144 (Overlapped Channel)



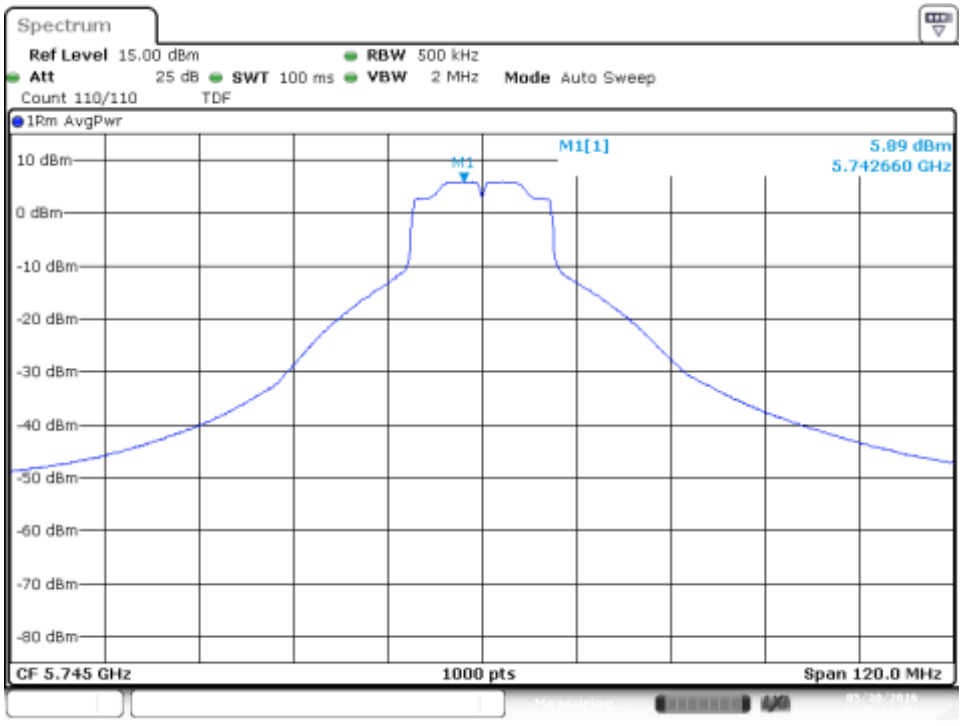
PSD, Chain B – CH144 (Overlapped Channel)



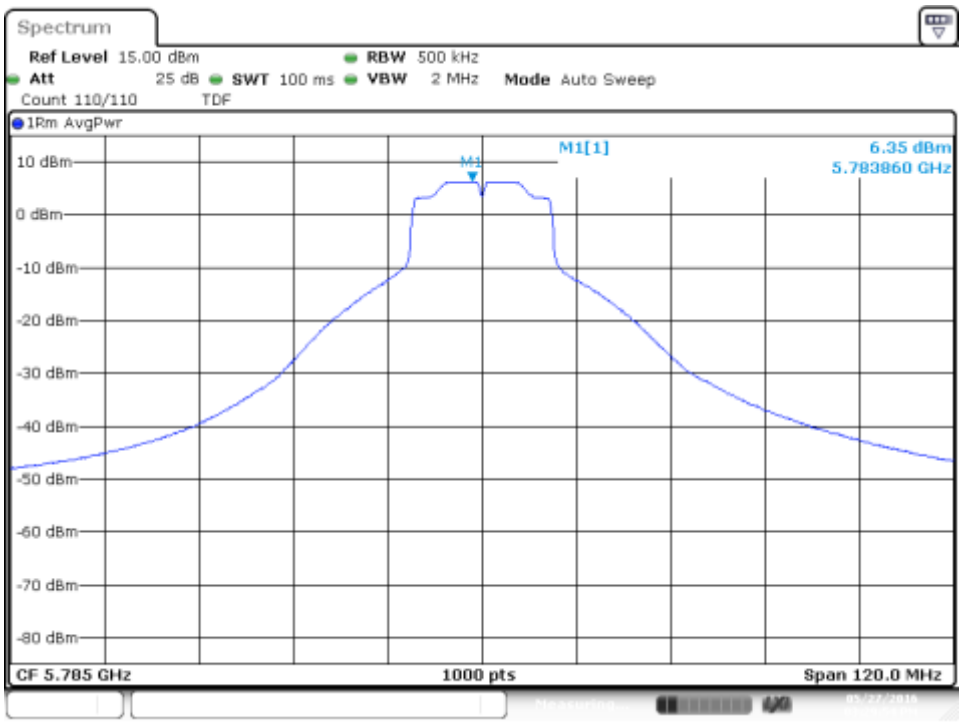
PSD, Chain A – CH149



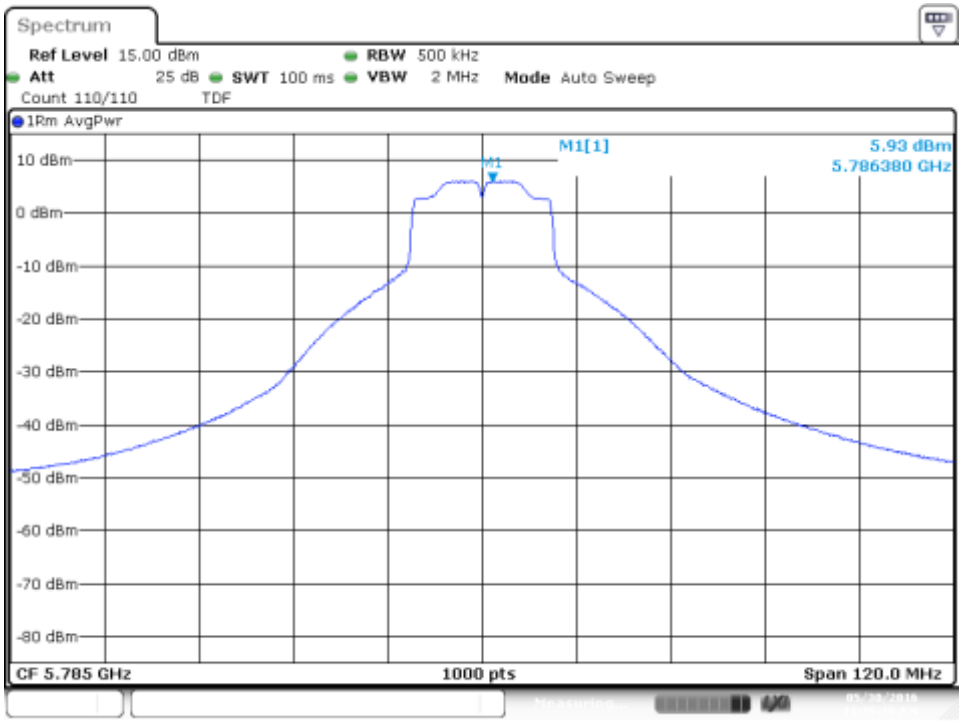
PSD, Chain B – CH149



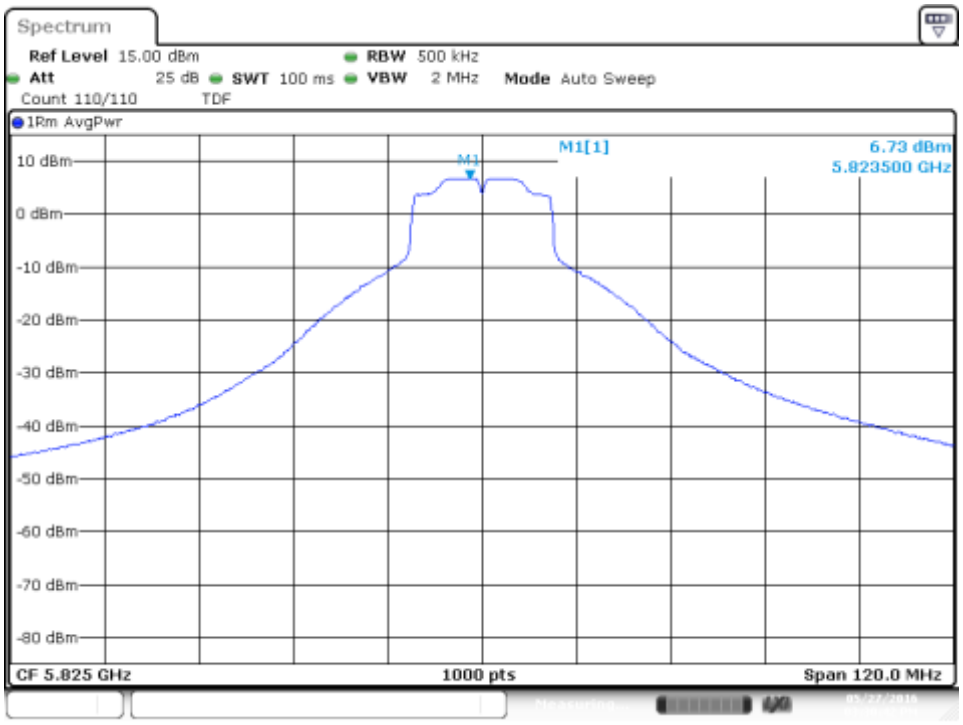
PSD, Chain A – CH157



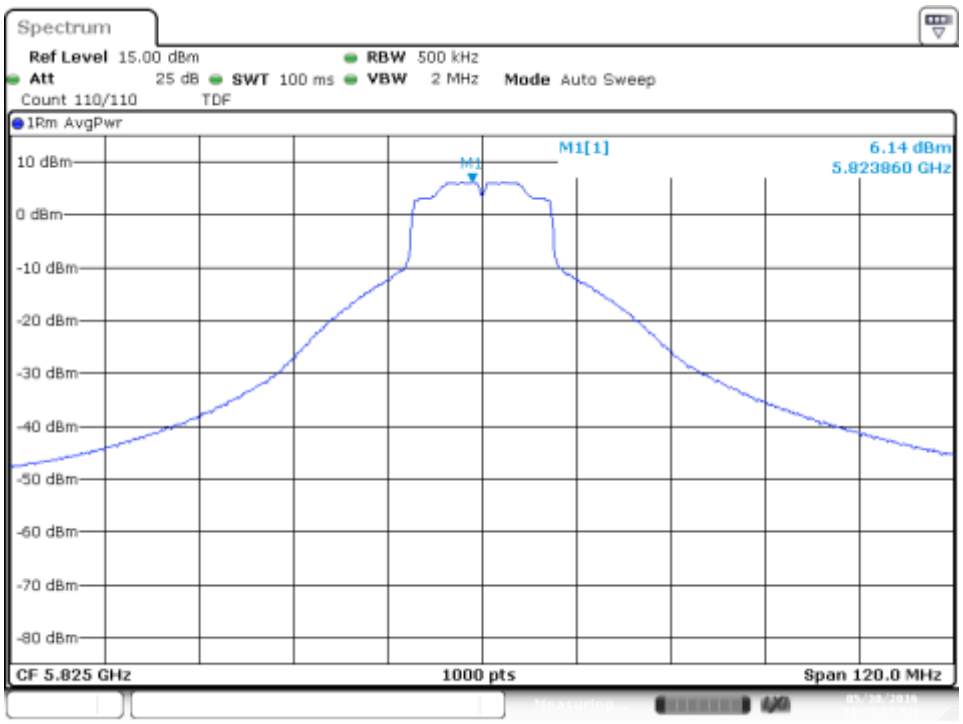
PSD, Chain B – CH157



PSD, Chain A – CH165

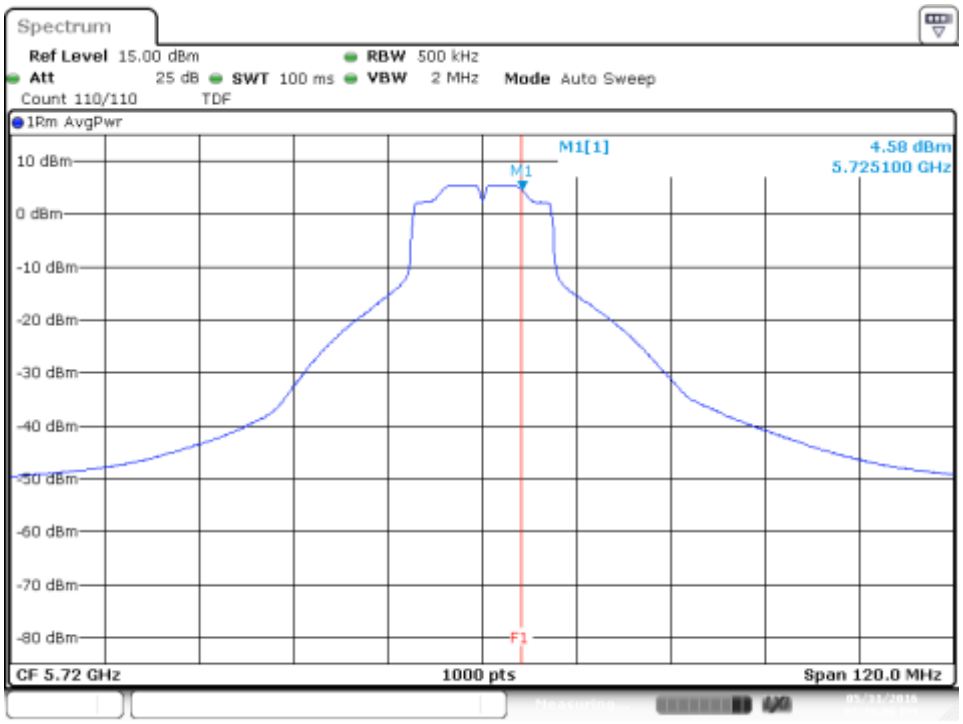


PSD, Chain B – CH165

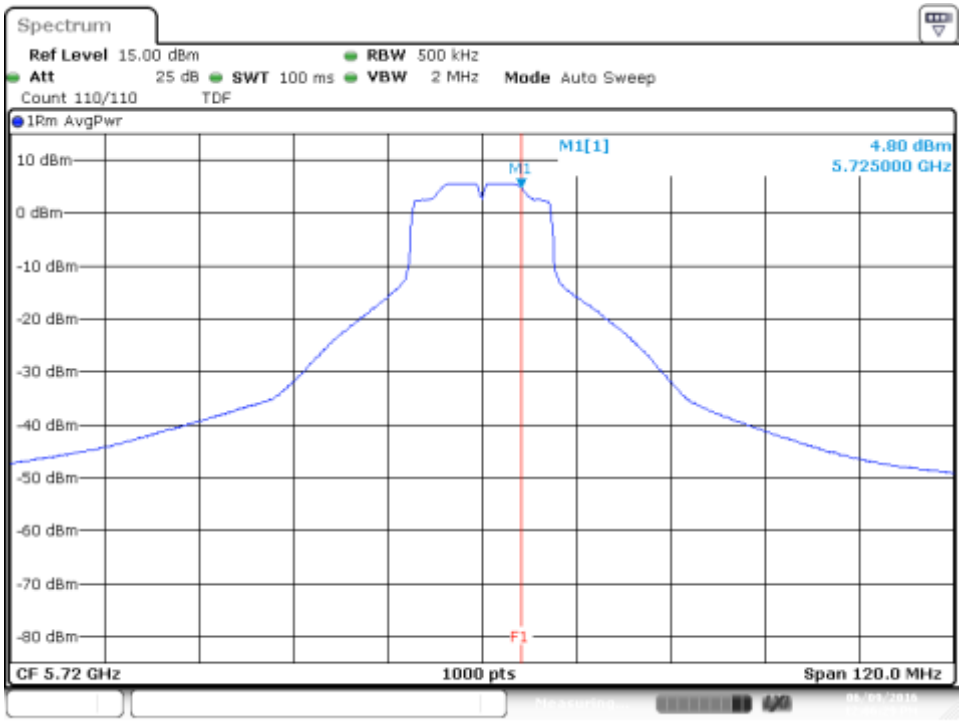


802.11n20, HT8 (MIMO)

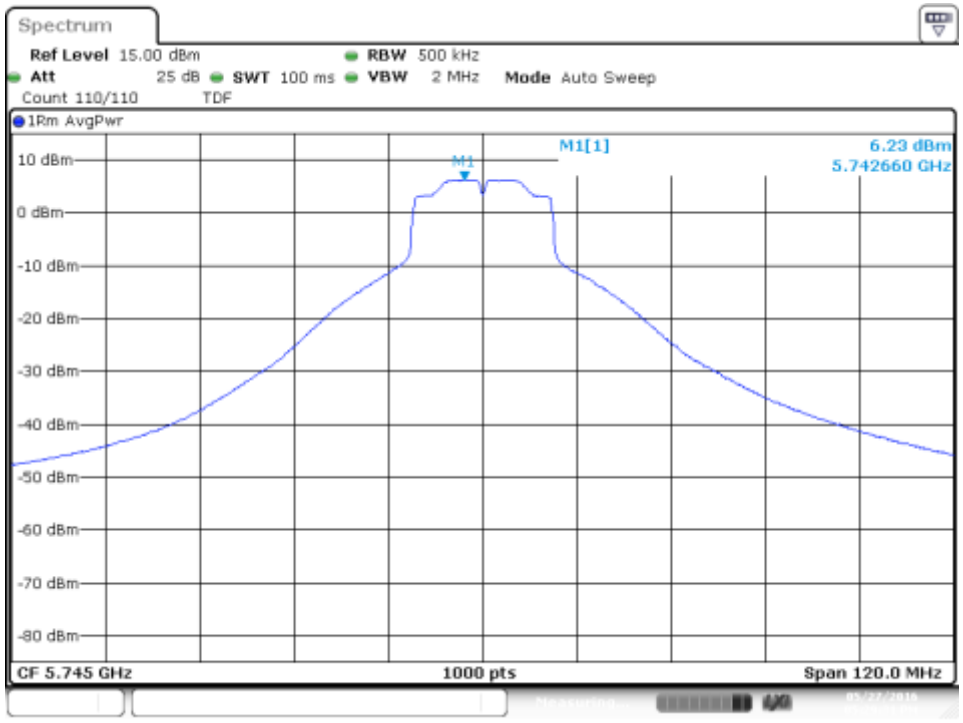
PSD, Chain A – CH144 (Overlapped Channel)



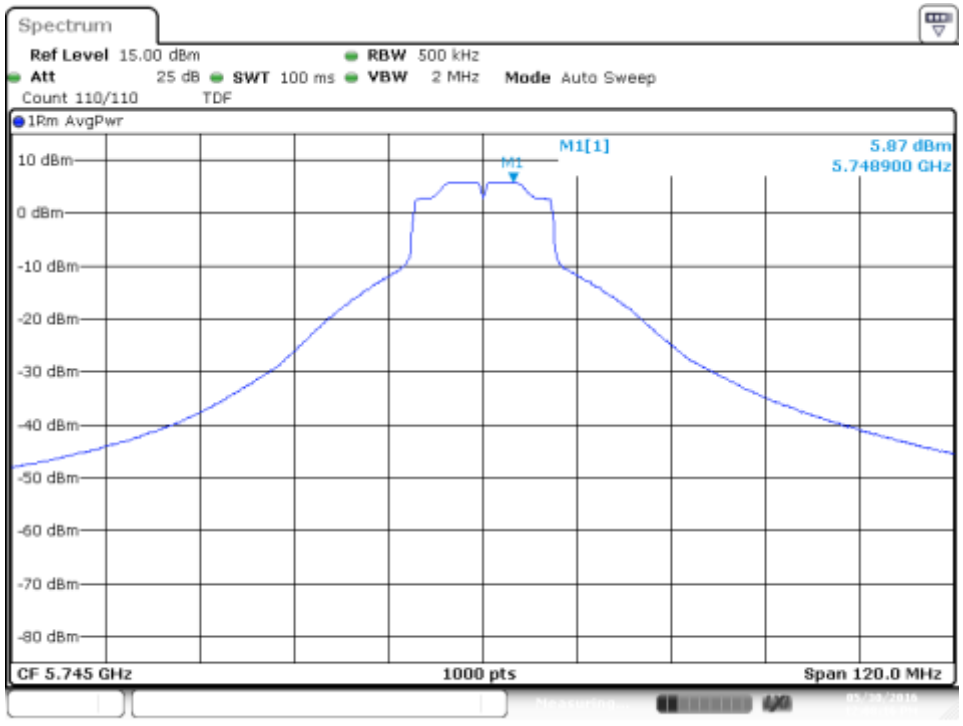
PSD, Chain B – CH144 (Overlapped Channel)



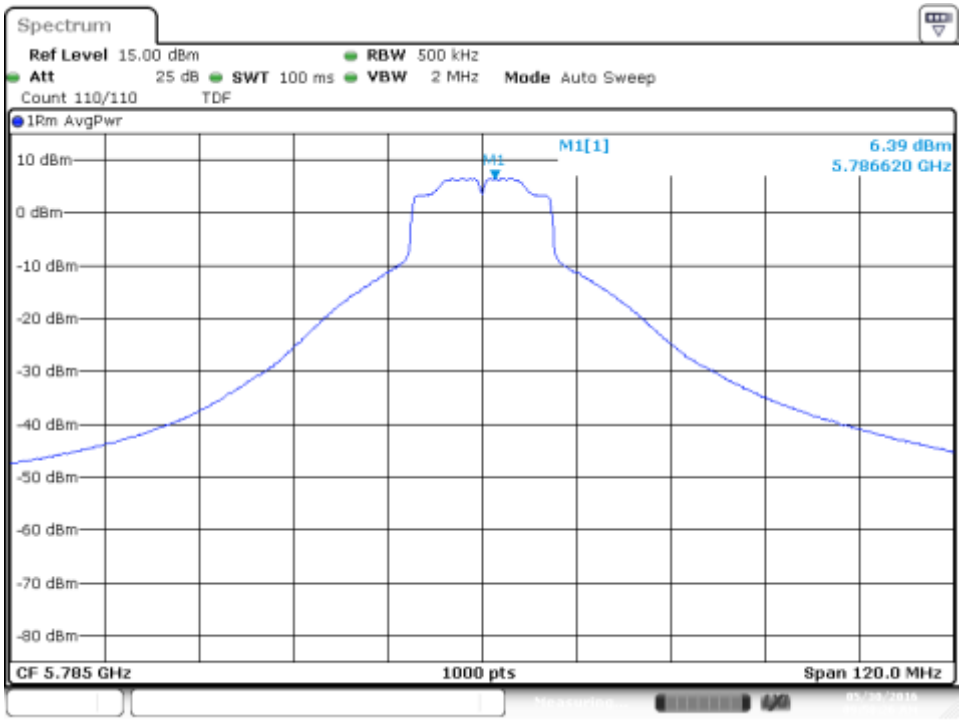
PSD, Chain A – CH149



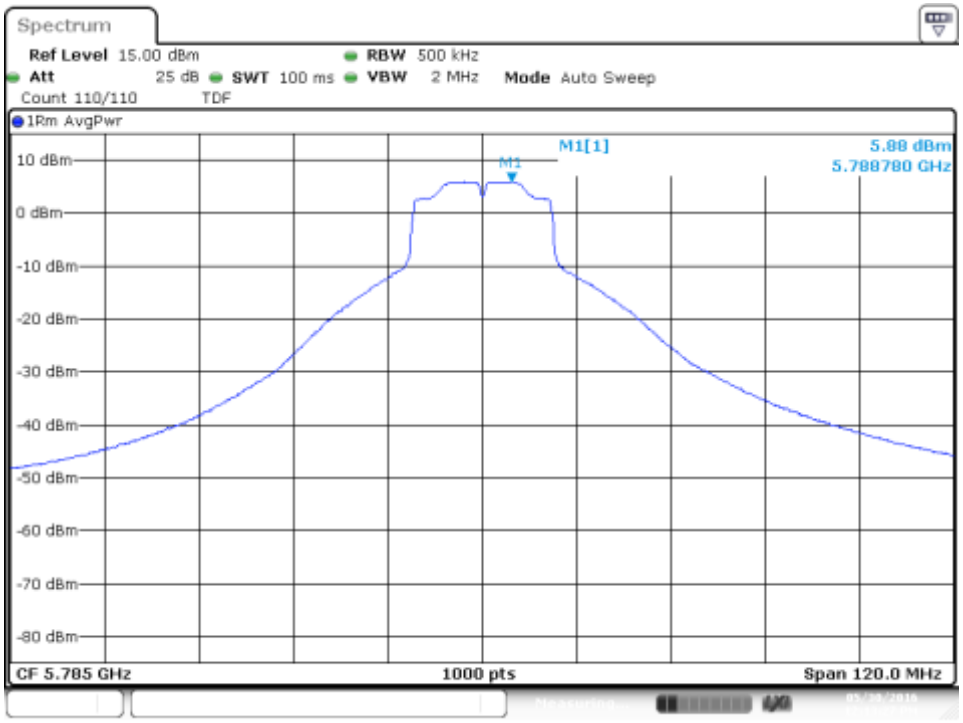
PSD, Chain B – CH149



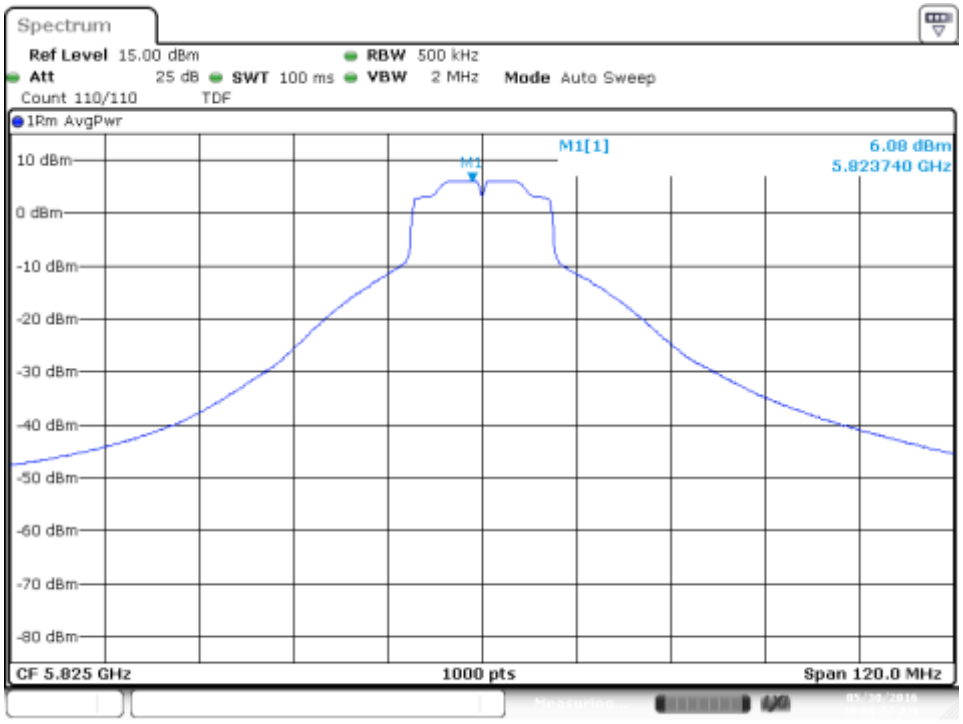
PSD, Chain A – CH157



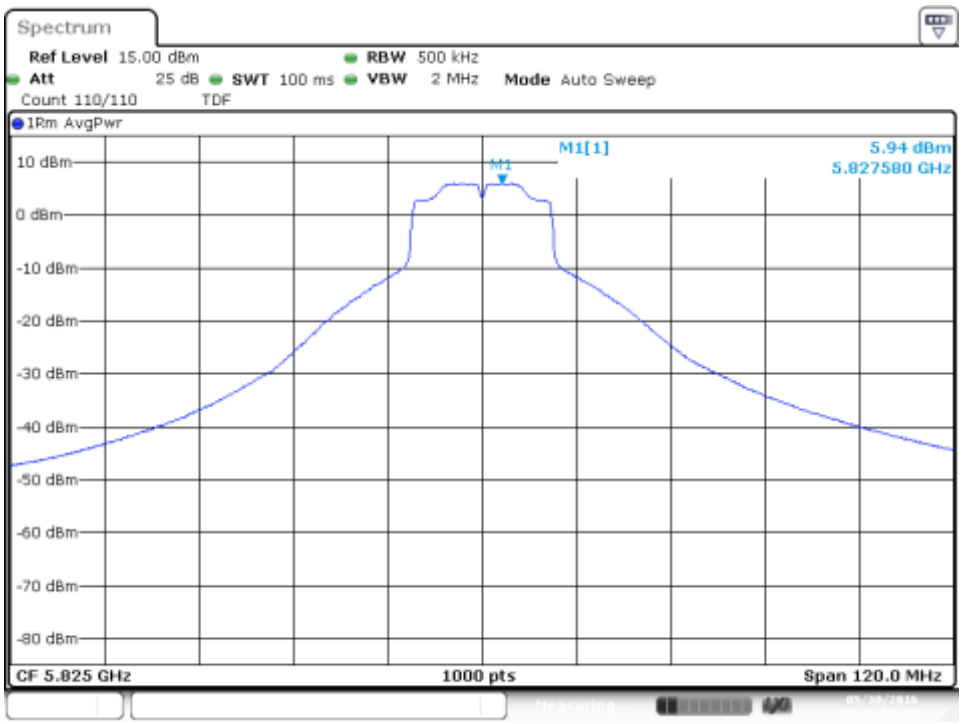
PSD, Chain B – CH157



PSD, Chain A – CH165

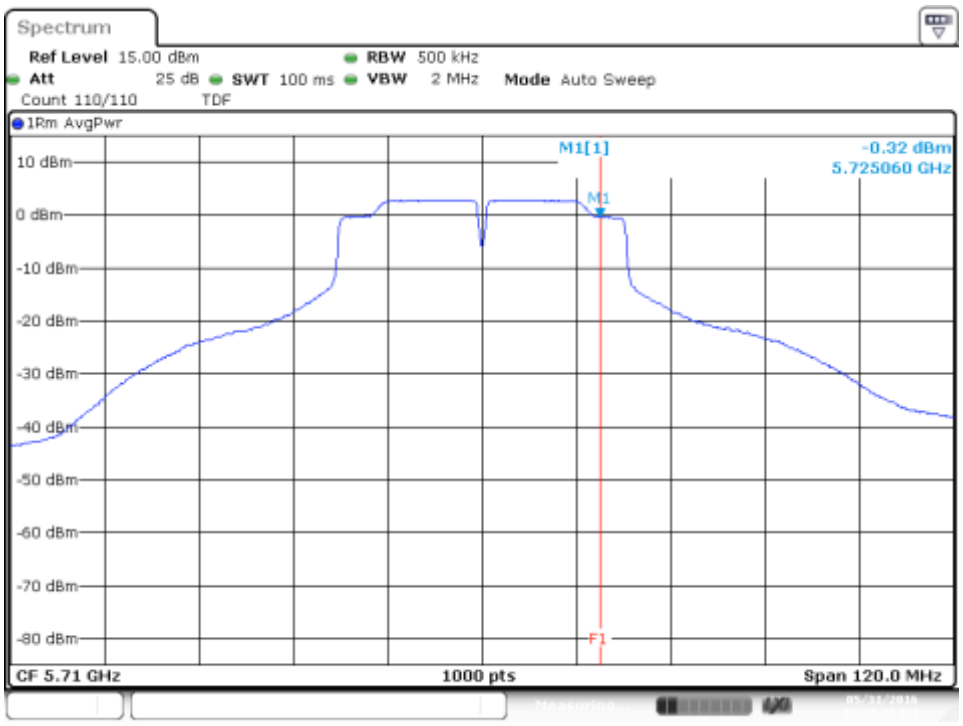


PSD, Chain B – CH165

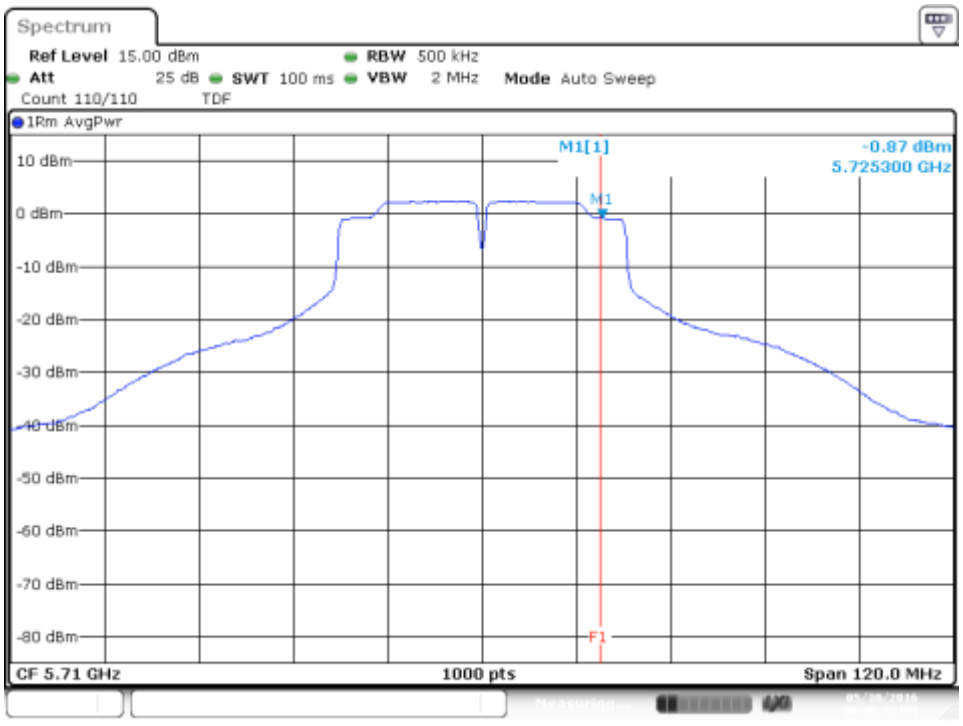


802.11n40, HT0 (SISO)

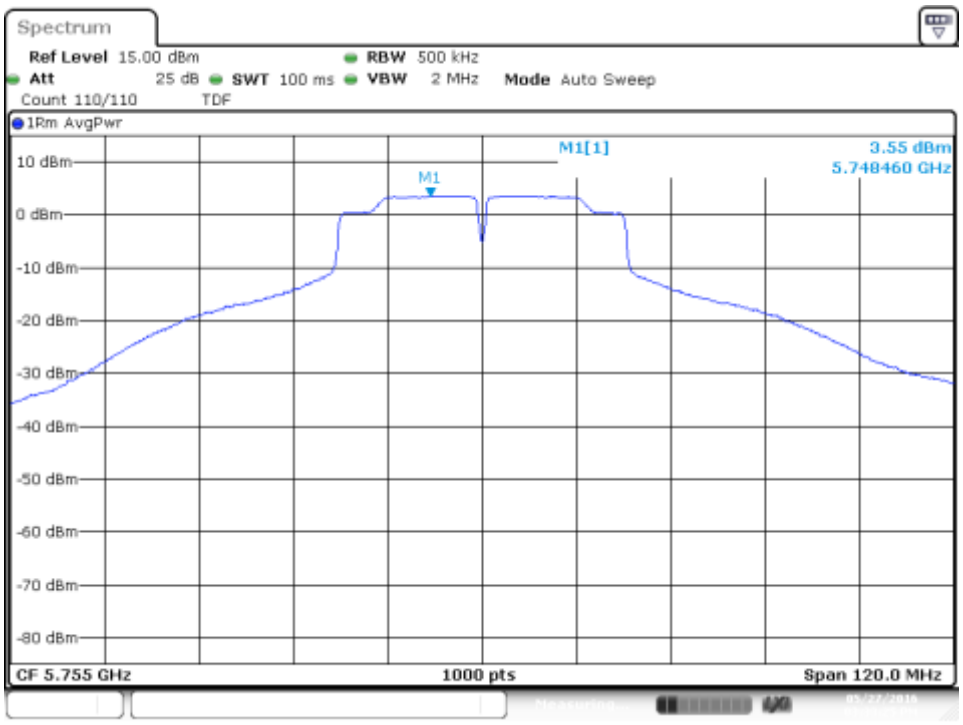
PSD, Chain A – CH142F (Overlapped Channel)



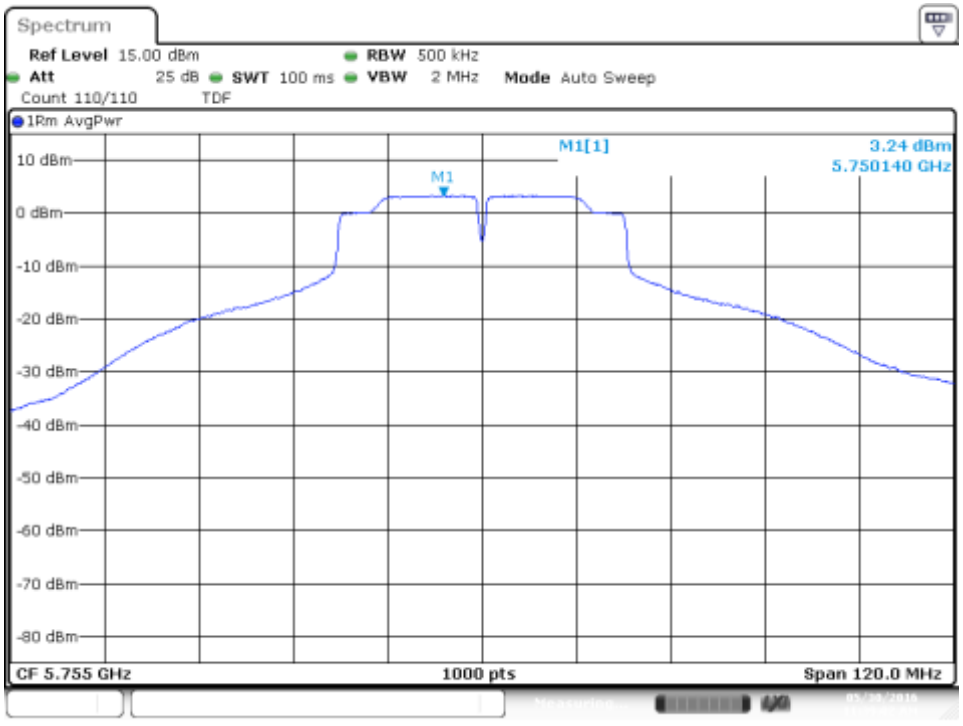
PSD, Chain B – CH142F (Overlapped Channel)



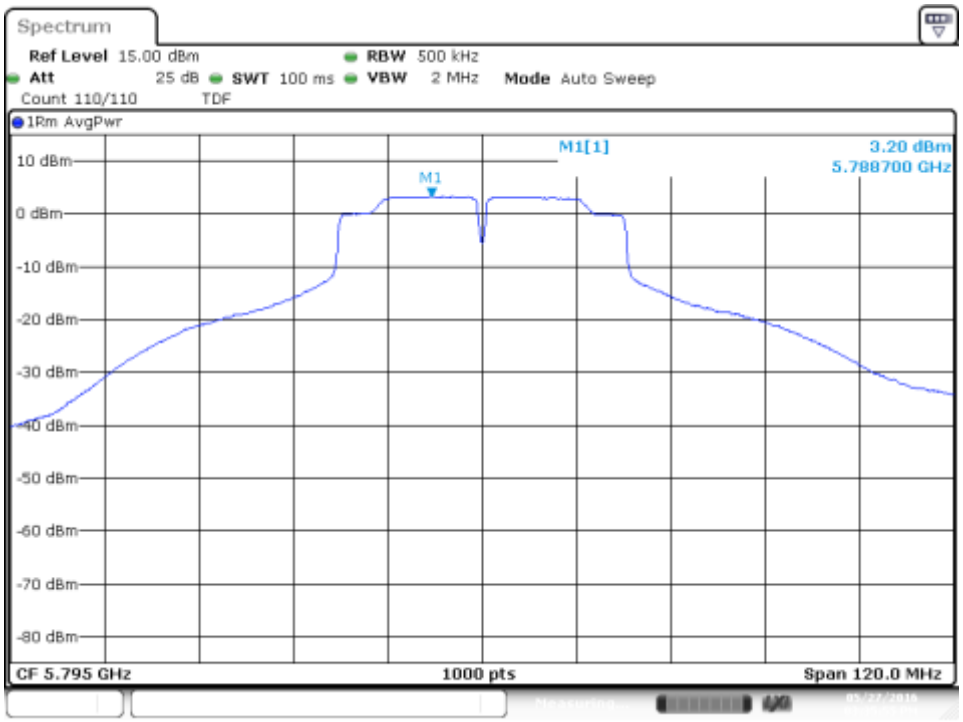
PSD, Chain A – CH151F



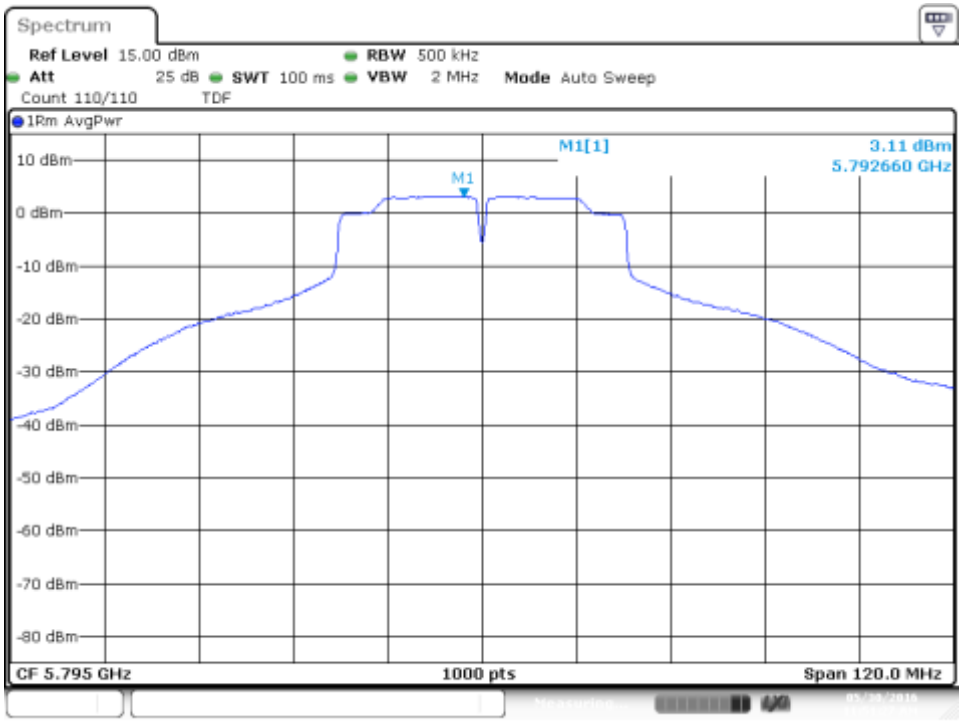
PSD, Chain B – CH151F



PSD, Chain A – CH159F

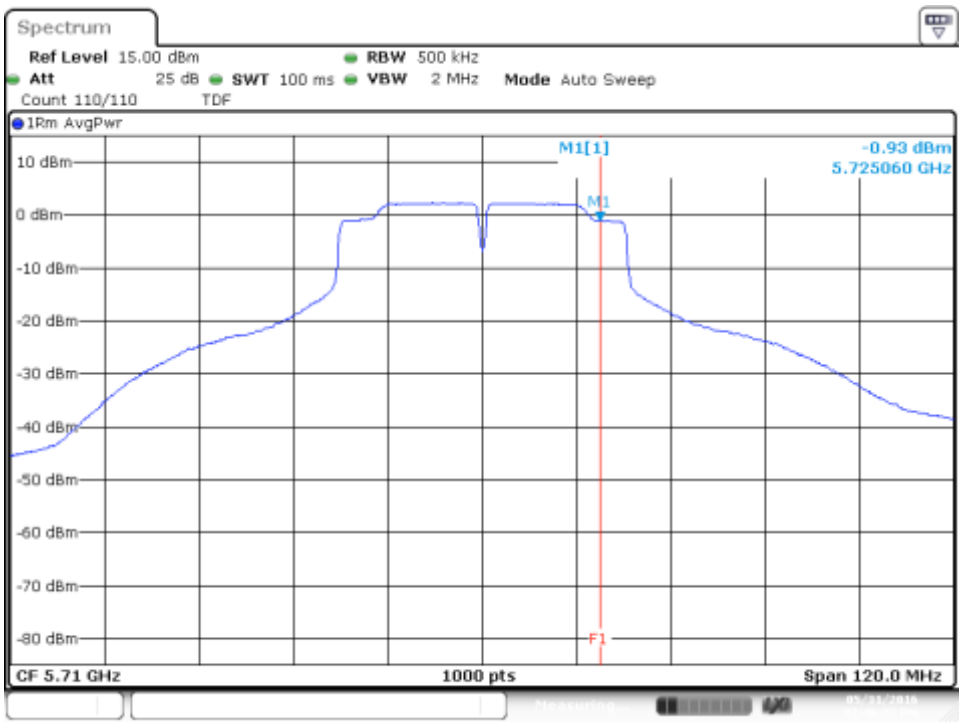


PSD, Chain B – CH159F

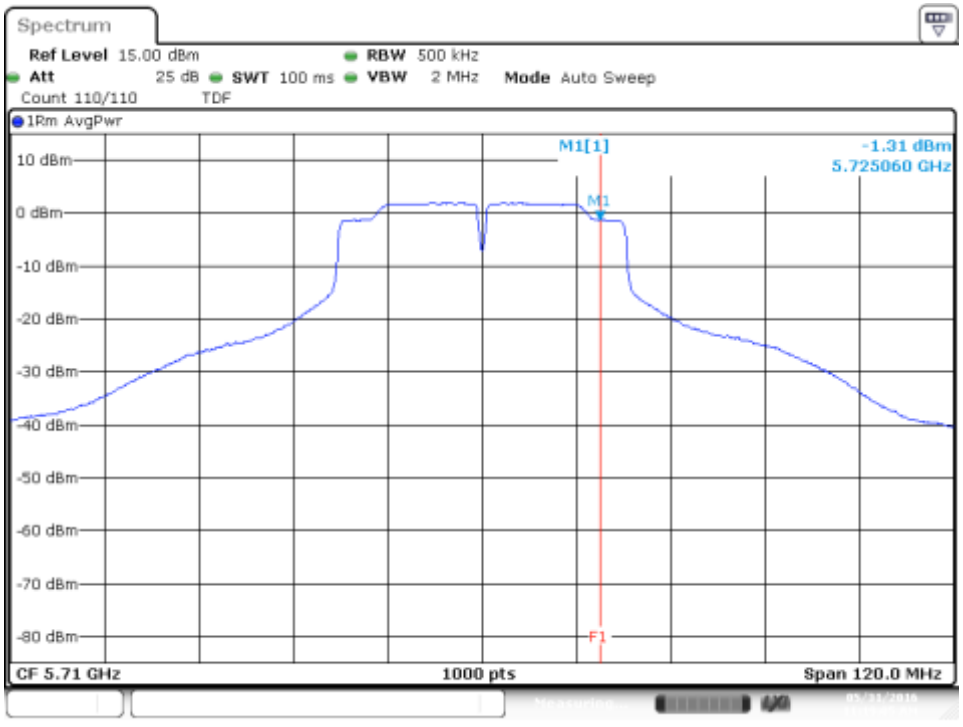


802.11n40, HT8 (MIMO)

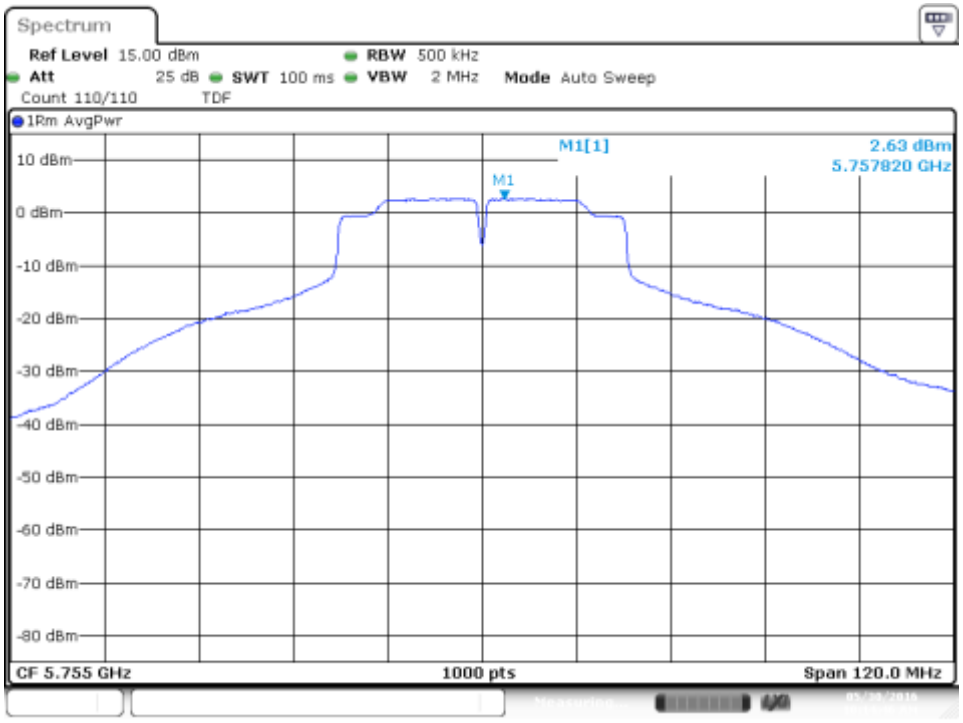
PSD, Chain A – CH142F (Overlapped Channel)



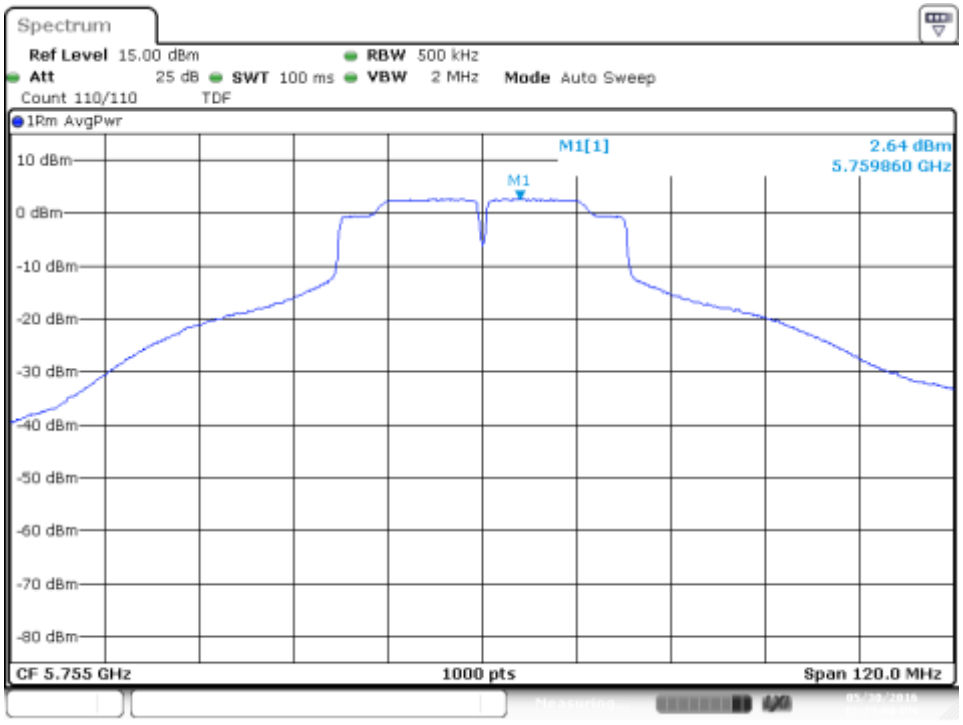
PSD, Chain B – CH142F (Overlapped Channel)



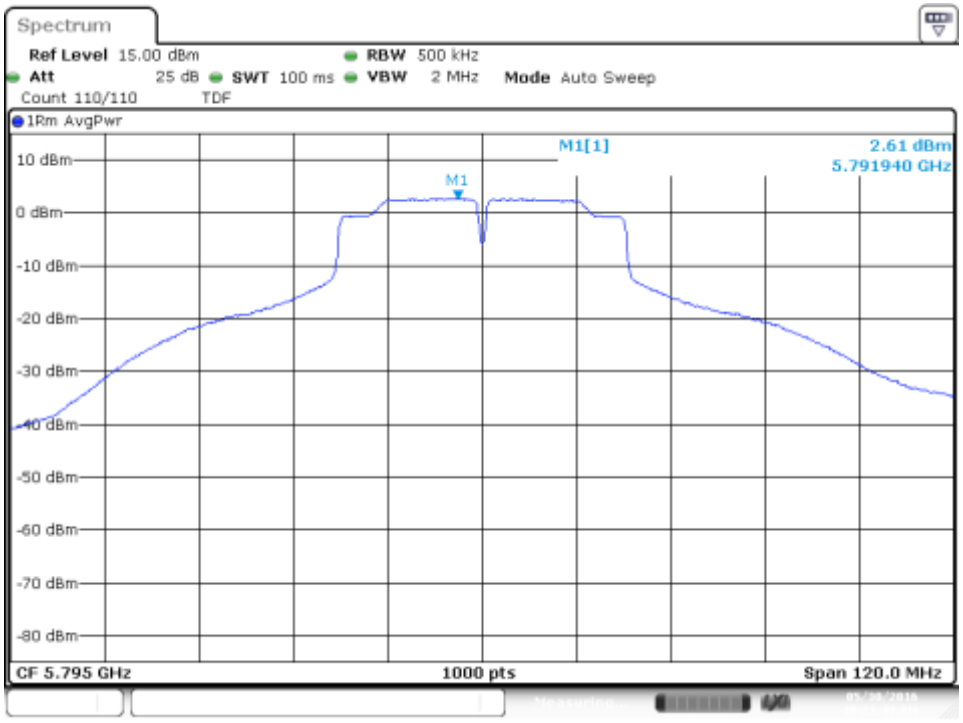
PSD, Chain A – CH151F



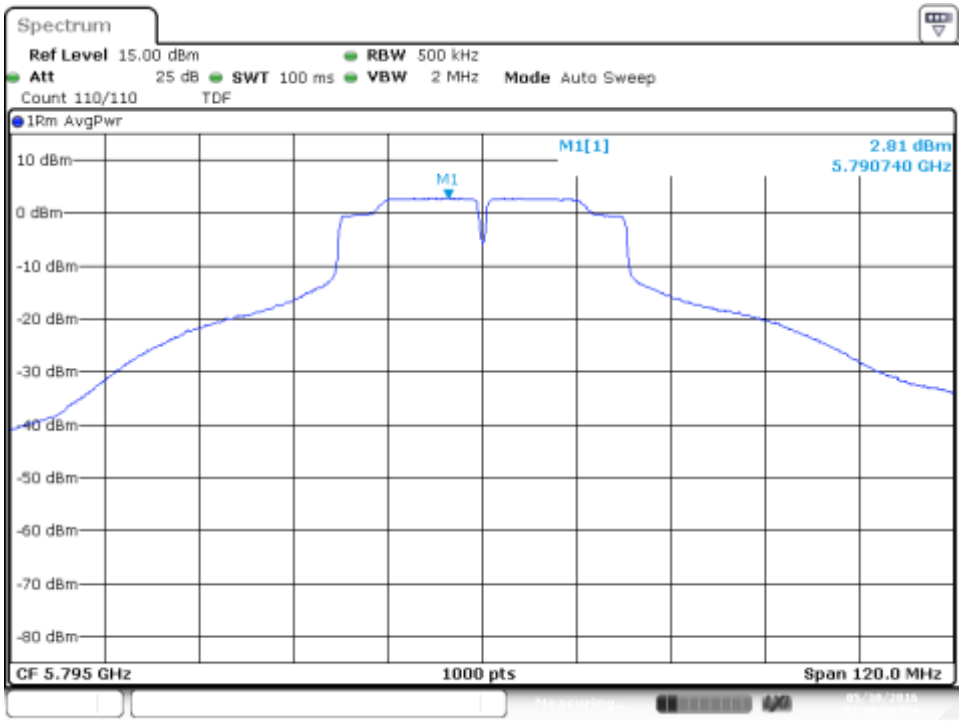
PSD, Chain B – CH151F



PSD, Chain A – CH159F

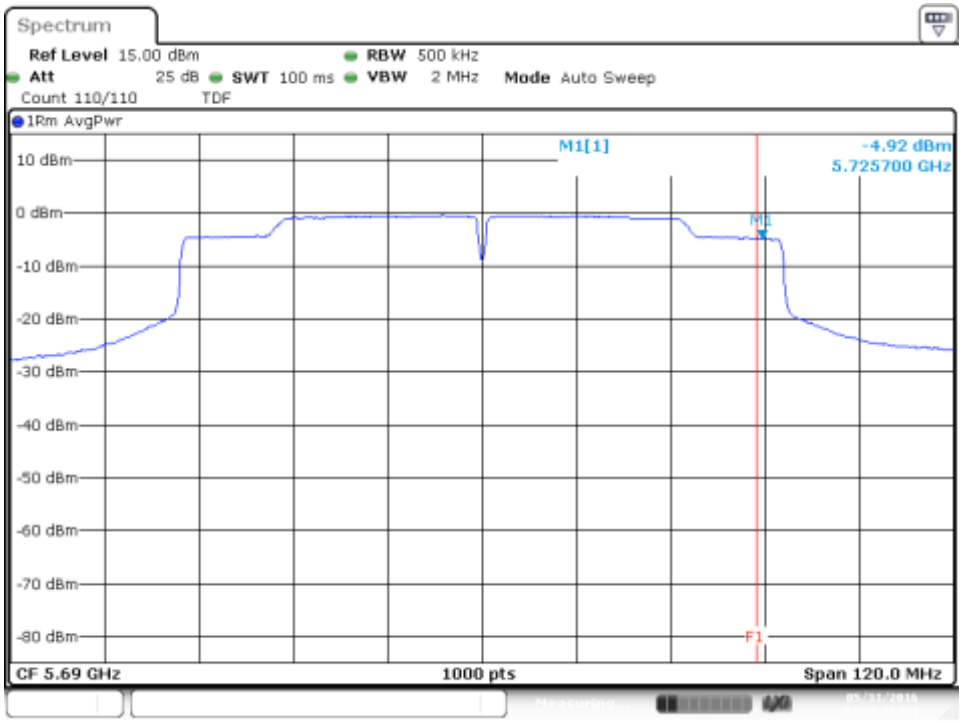


PSD, Chain B – CH159F

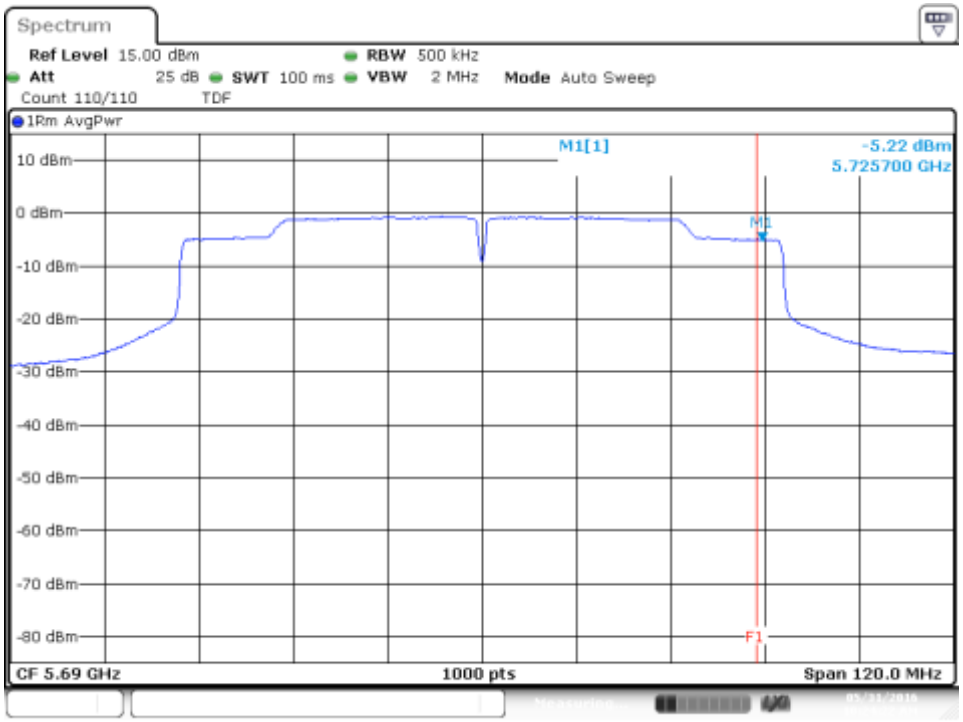


802.11ac80, VHT0 (SISO)

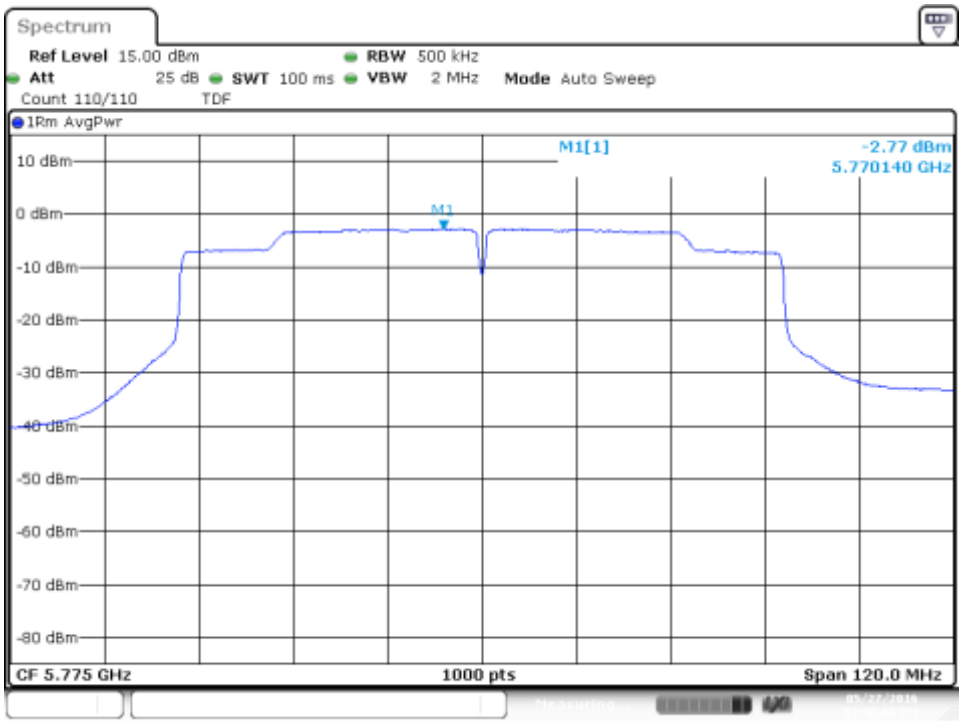
PSD, Chain A – CH138ac80 (Overlapped Channel)



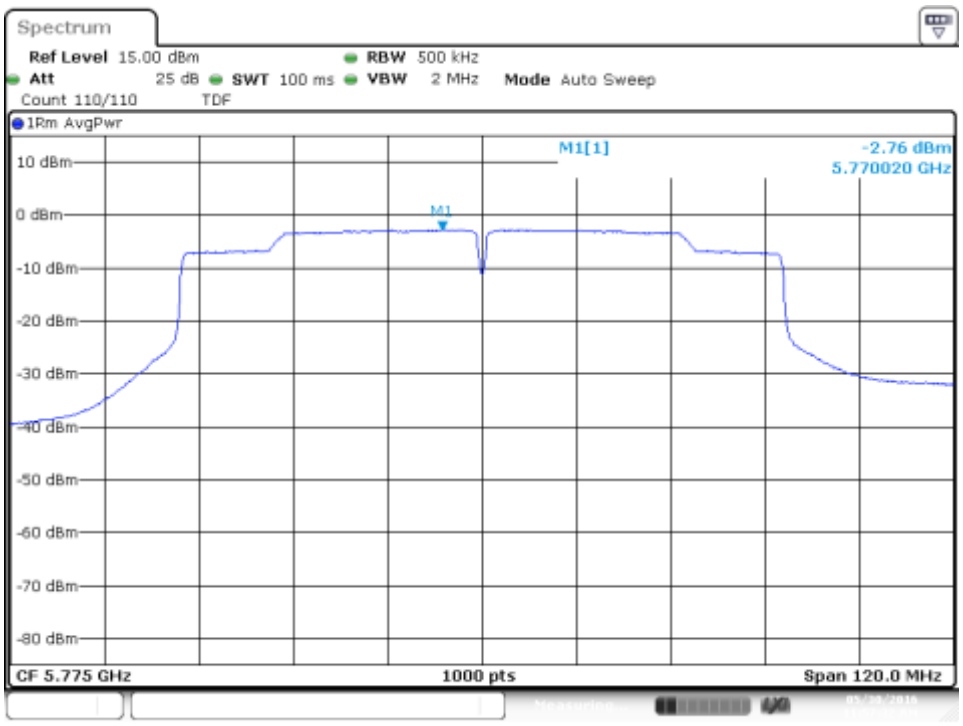
PSD, Chain B – CH138ac80 (Overlapped Channel)



PSD, Chain A – CH155ac80

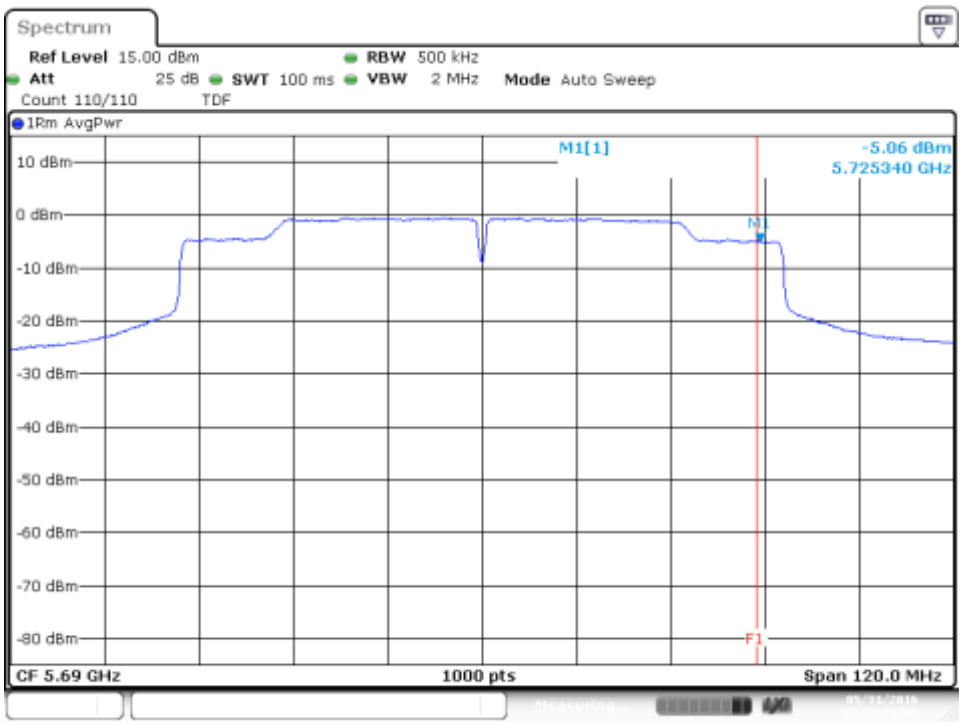


PSD, Chain B – CH155ac80

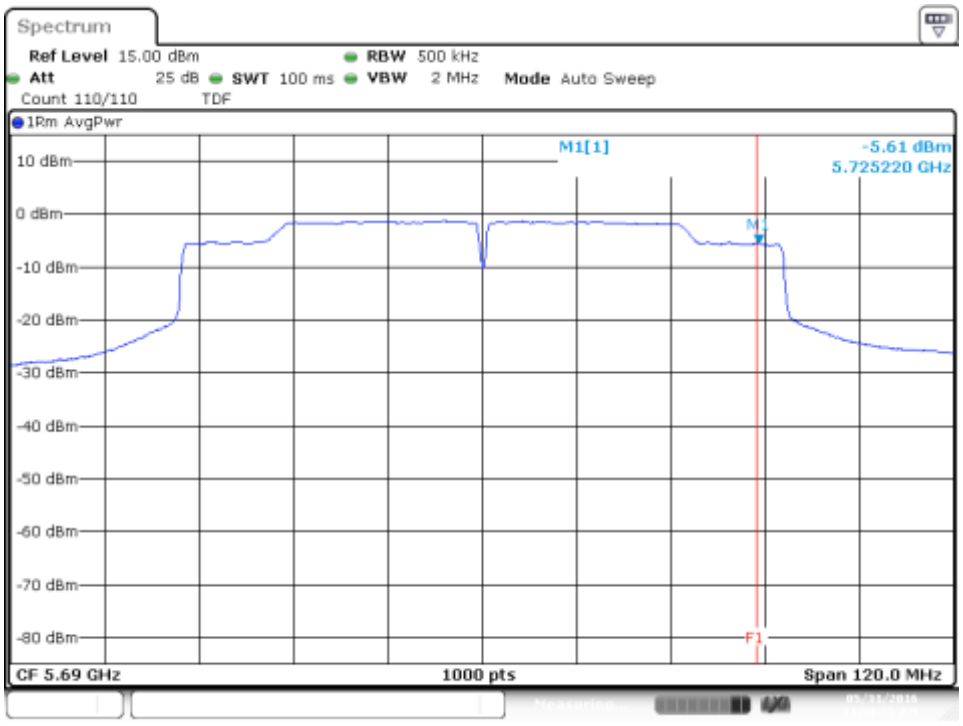


802.11ac80, VHT0 (MIMO)

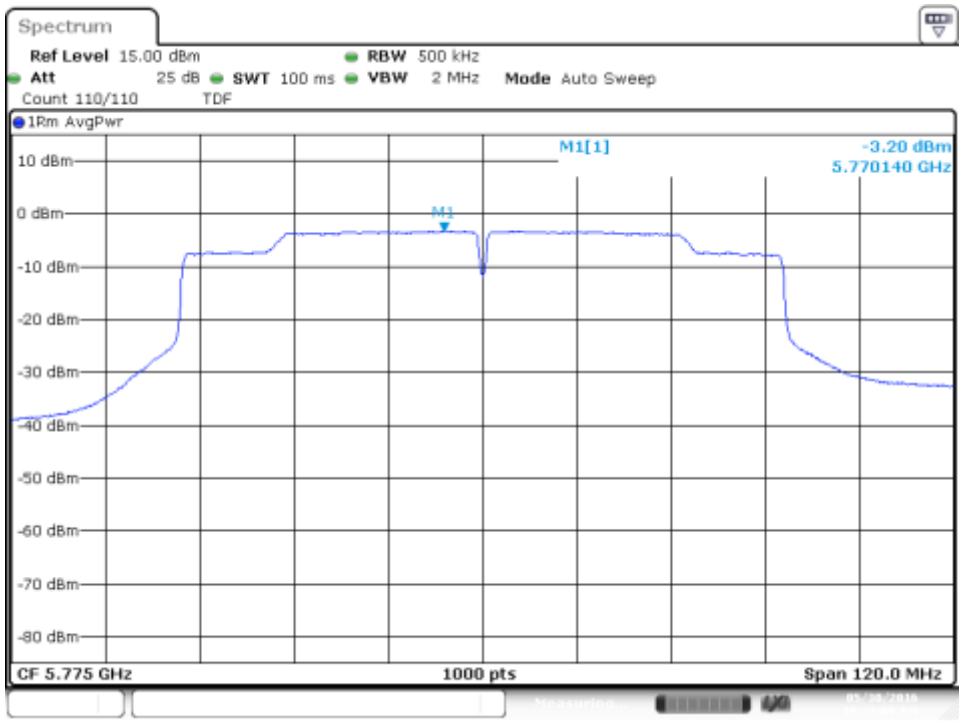
PSD, Chain A – CH138ac80 (Overlapped Channel)



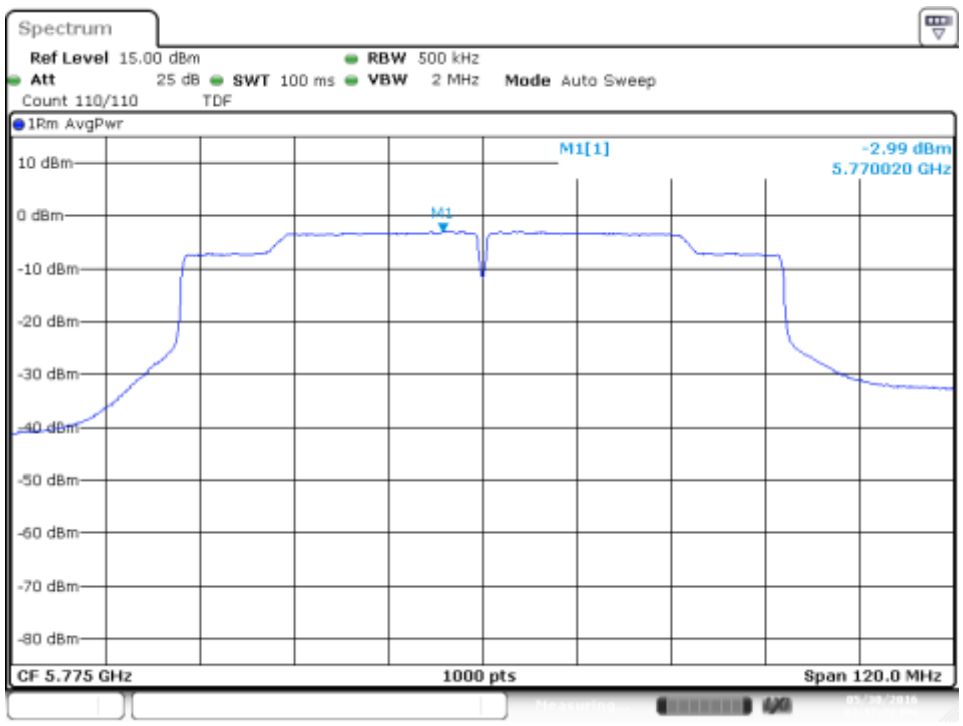
PSD, Chain B – CH138ac80 (Overlapped Channel)



PSD, Chain A – CH155ac80



PSD, Chain B – CH155ac80



B.3 Undesirable emissions limits: Band Edge (conducted)

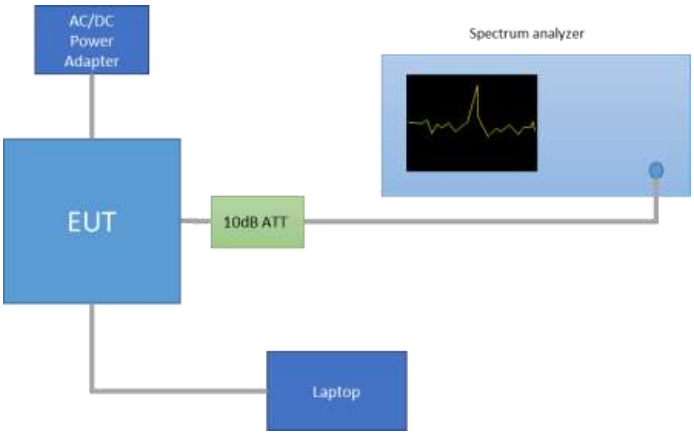
Test limits:

FCC part	Limits
15.407 (b) (4)	(4) For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Test procedure:

The setup below was used to measure undesirable emissions on the Band Edge domain. The antenna terminal of the EUT is connected to the spectrum through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss and the declared Antenna Gain.

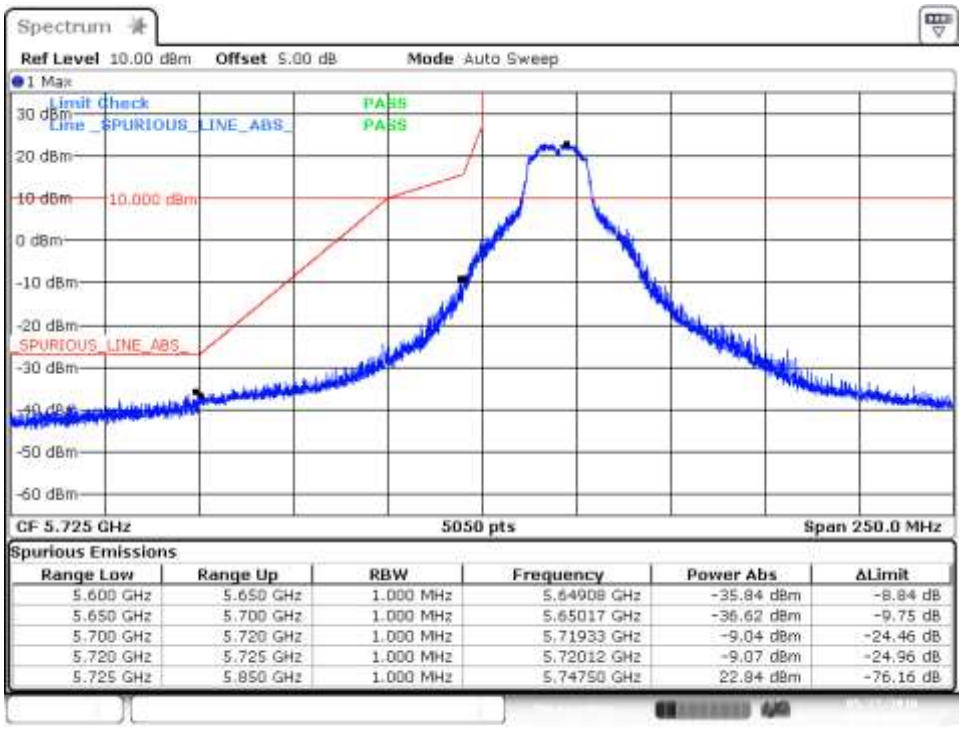
The declared maximum antenna gain is 5dBi.



Results Screenshot:

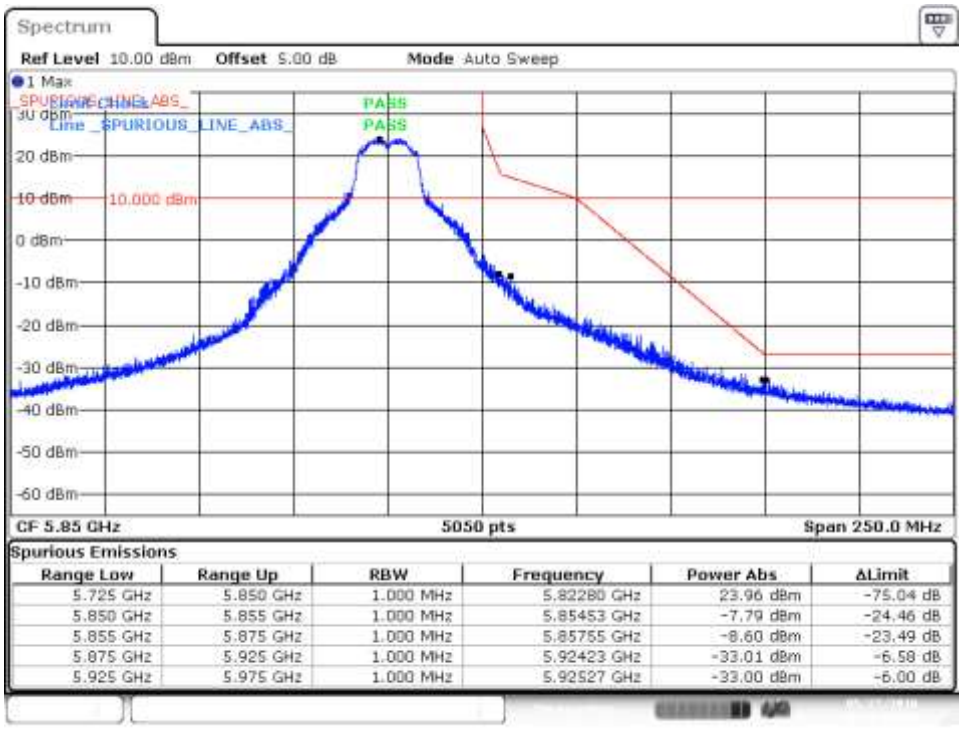
802.11a, 6Mbps – Chain A

BE Low Freq Section, Peak – CH149



Date: 27.MAY.2016 10:59:49

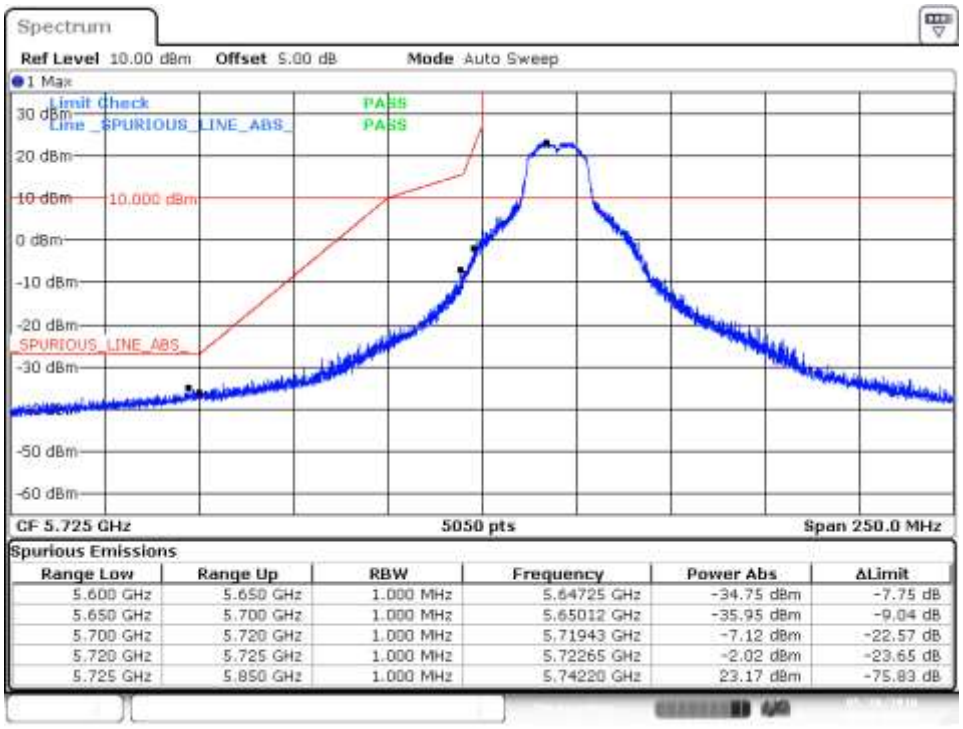
BE High Freq Section, Peak – CH165



Date: 27.MAY.2016 11:11:40

802.11a, 6Mbps – Chain B

BE Low Freq Section, Peak – CH149

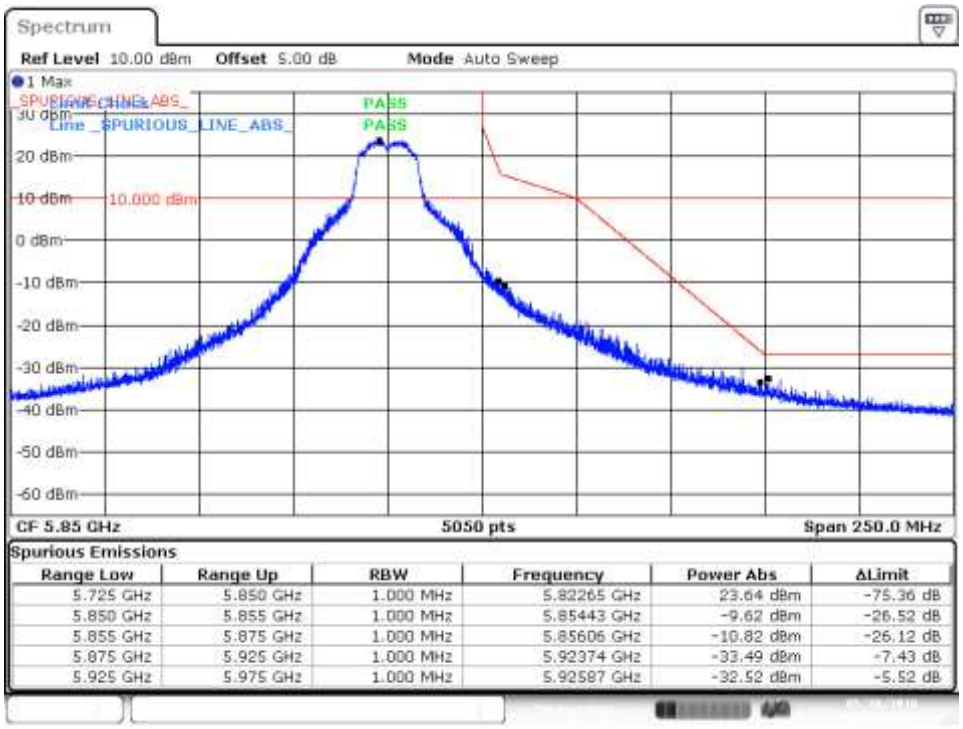


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
5.600 GHz	5.650 GHz	1.000 MHz	5.64725 GHz	-34.75 dBm	-7.75 dB
5.650 GHz	5.700 GHz	1.000 MHz	5.65012 GHz	-35.95 dBm	-9.04 dB
5.700 GHz	5.720 GHz	1.000 MHz	5.71943 GHz	-7.12 dBm	-22.57 dB
5.720 GHz	5.725 GHz	1.000 MHz	5.72265 GHz	-2.02 dBm	-23.65 dB
5.725 GHz	5.850 GHz	1.000 MHz	5.74220 GHz	23.17 dBm	-75.83 dB

Date: 30.MAY.2016 10:41:18

BE High Freq Section, Peak – CH165



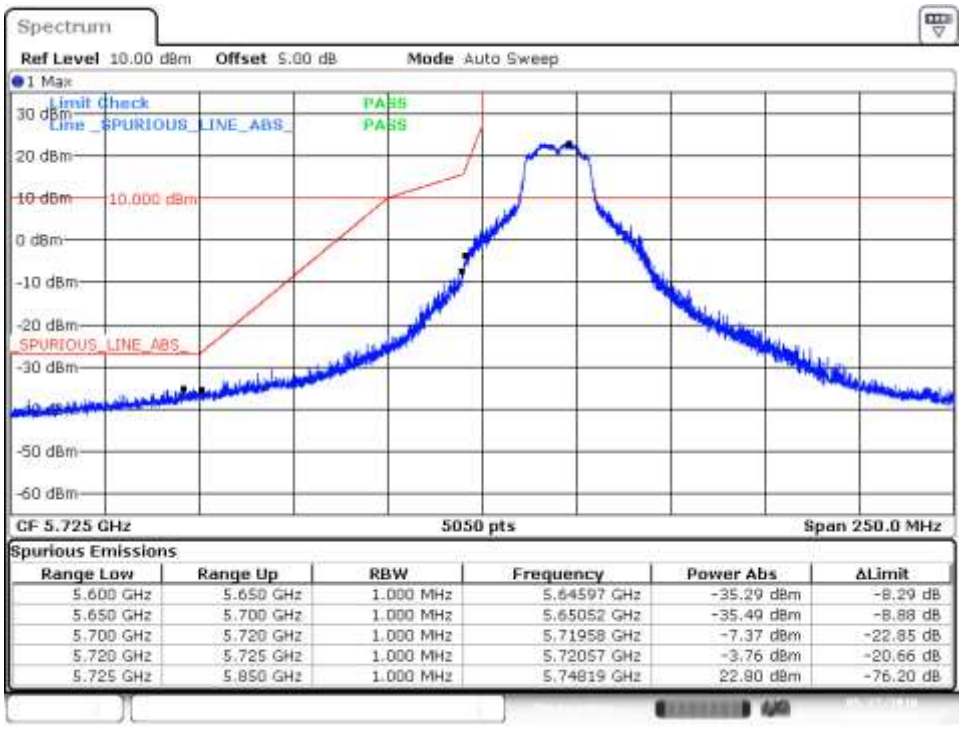
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
5.725 GHz	5.850 GHz	1.000 MHz	5.82265 GHz	23.64 dBm	-75.36 dB
5.850 GHz	5.855 GHz	1.000 MHz	5.85443 GHz	-9.62 dBm	-26.52 dB
5.855 GHz	5.875 GHz	1.000 MHz	5.85606 GHz	-10.82 dBm	-26.12 dB
5.875 GHz	5.925 GHz	1.000 MHz	5.92374 GHz	-33.49 dBm	-7.43 dB
5.925 GHz	5.975 GHz	1.000 MHz	5.92587 GHz	-32.52 dBm	-5.52 dB

Date: 30.MAY.2016 11:09:54

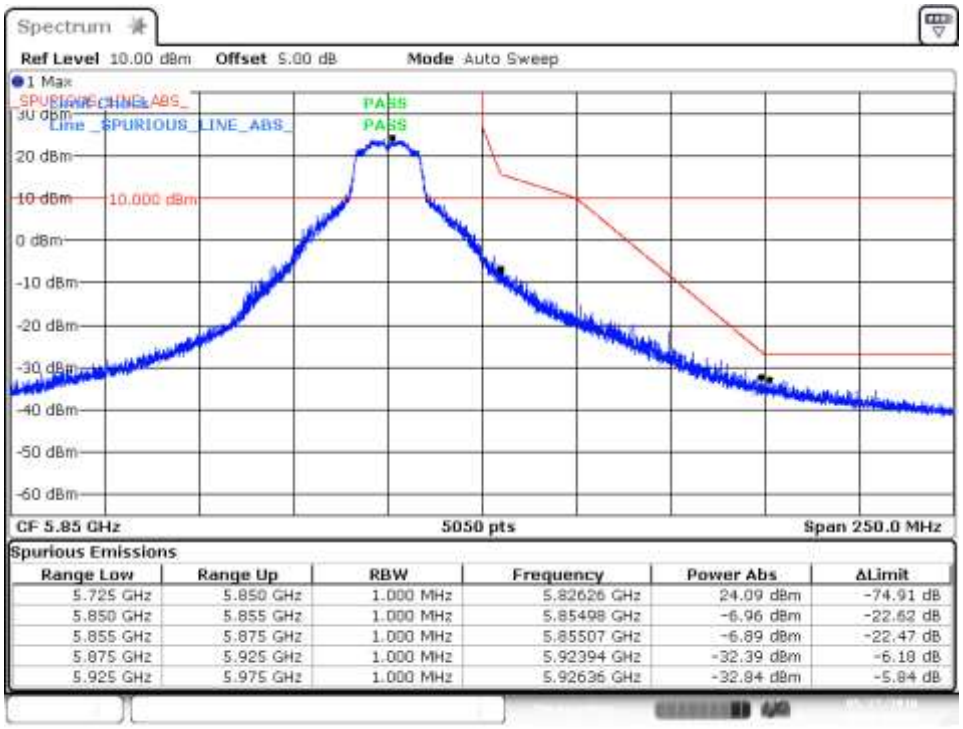
802.11n20, HT0 (SISO) – Chain A

BE Low Freq Section, Peak – CH149



Date: 27.MAY.2016 11:18:28

BE High Freq Section, Peak – CH165



Date: 27.MAY.2016 11:26:09