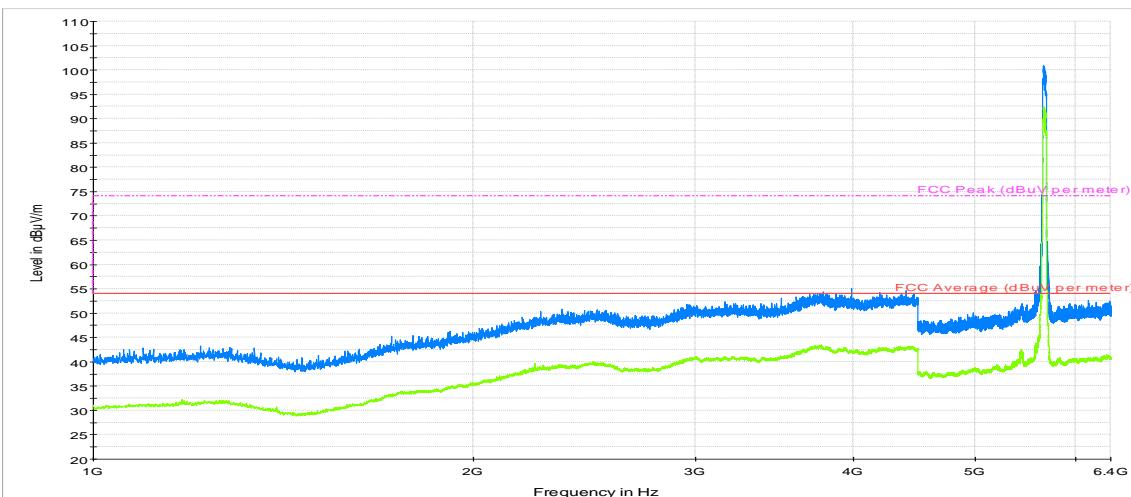


Radiated Spurious – 1GHz to 6.4GHz –CH134F

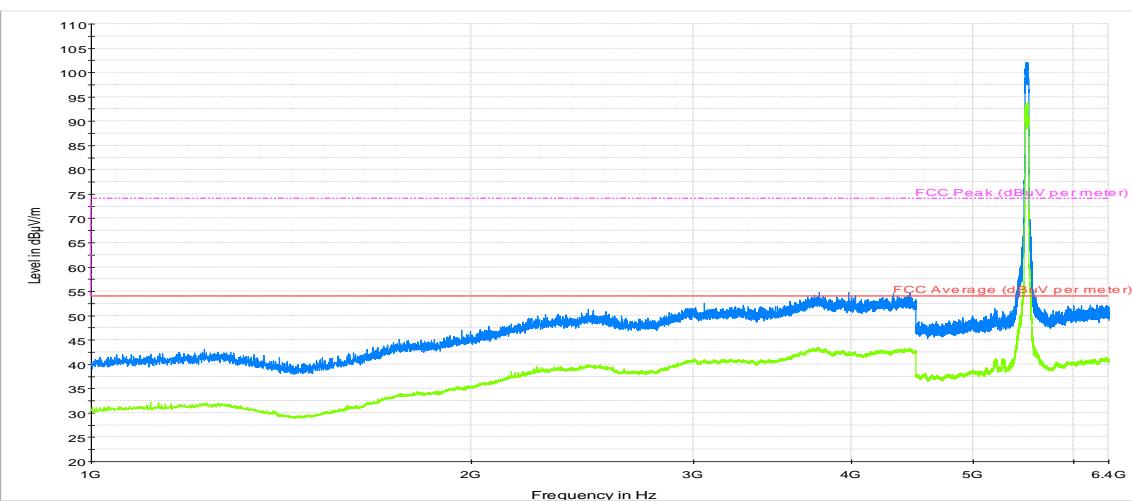


— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4441	54.8	---	74	19.2
4441	---	43.2	54	10.8

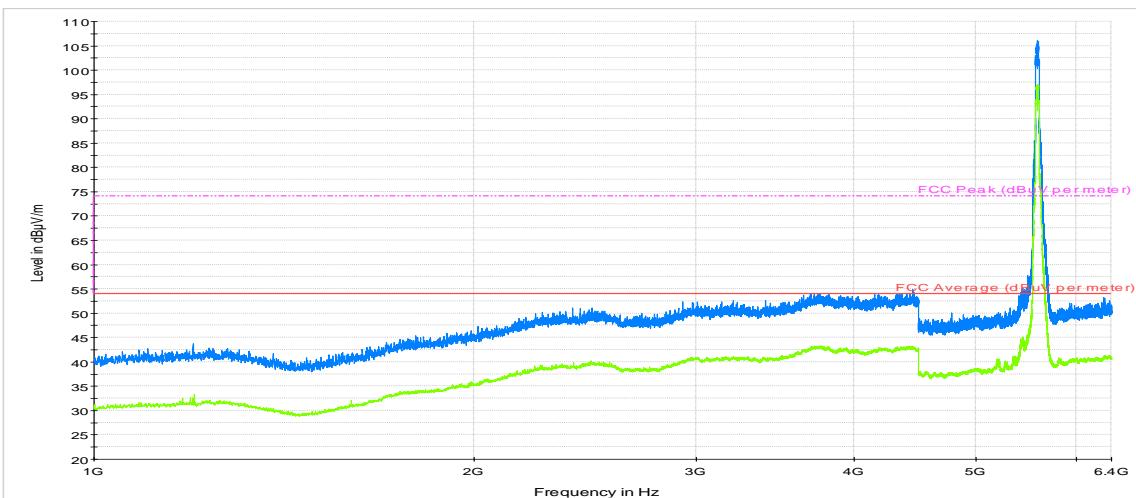
802.11n40, HT8 (MIMO), Chain A+B

Radiated Spurious – 1GHz to 6.4GHz –CH102F



— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

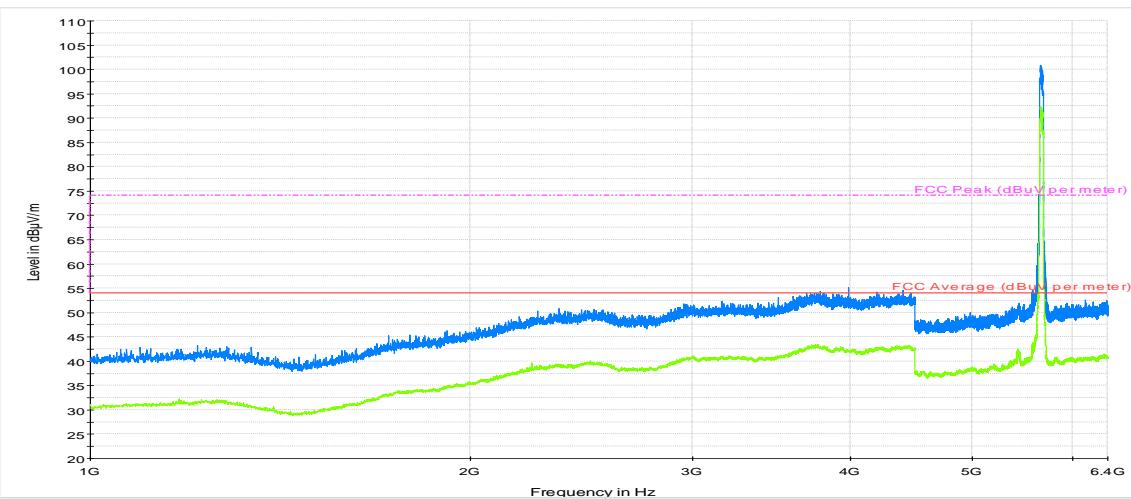
Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4449	53.6	---	74	20.4
4449	---	43.2	54	10.8

Radiated Spurious – 1GHz to 6.4GHz –CH118F

— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4432	53.8	---	74	20.2
4432	---	43.1	54	10.9

Radiated Spurious – 1GHz to 6.4GHz –CH134F

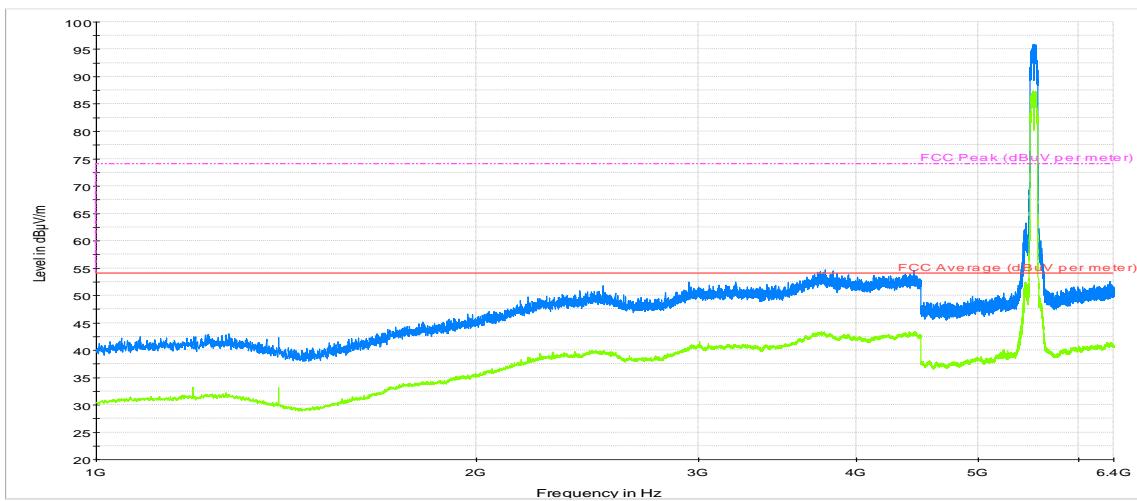


— Peak measurements — AVG measurements — Limit FCC AVG — Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4449	53.9	---	74	20.1
4449	---	43.3	54	10.7

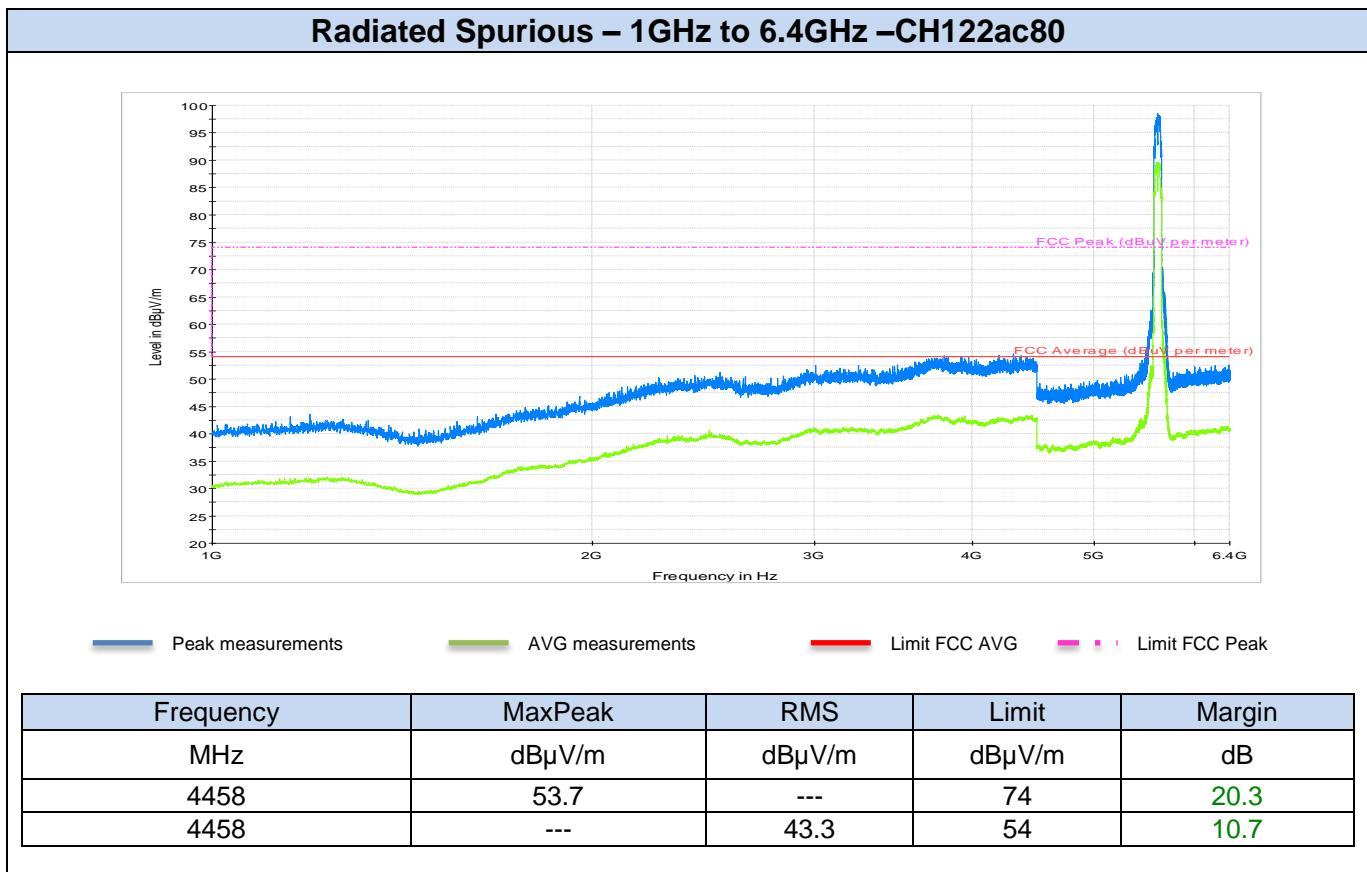
802.11ac80, VHT0 (SISO), Chain A

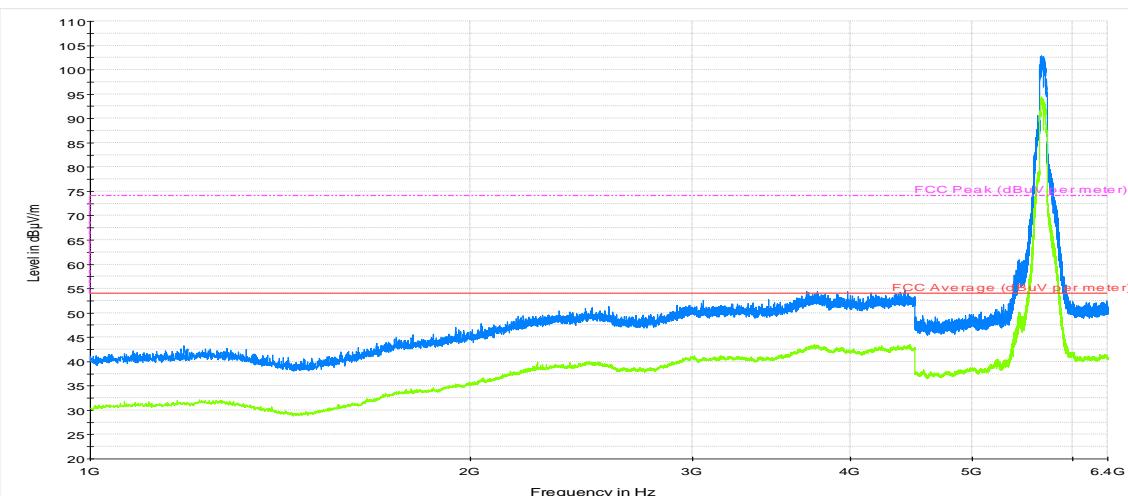
Radiated Spurious – 1GHz to 6.4GHz –CH106ac80



— Peak measurements
 — AVG measurements
 — Limit FCC AVG
 — Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dBμV/m	dBμV/m	dBμV/m	dB
4446	54.5	---	74	19.5
4446	---	43.2	54	10.8



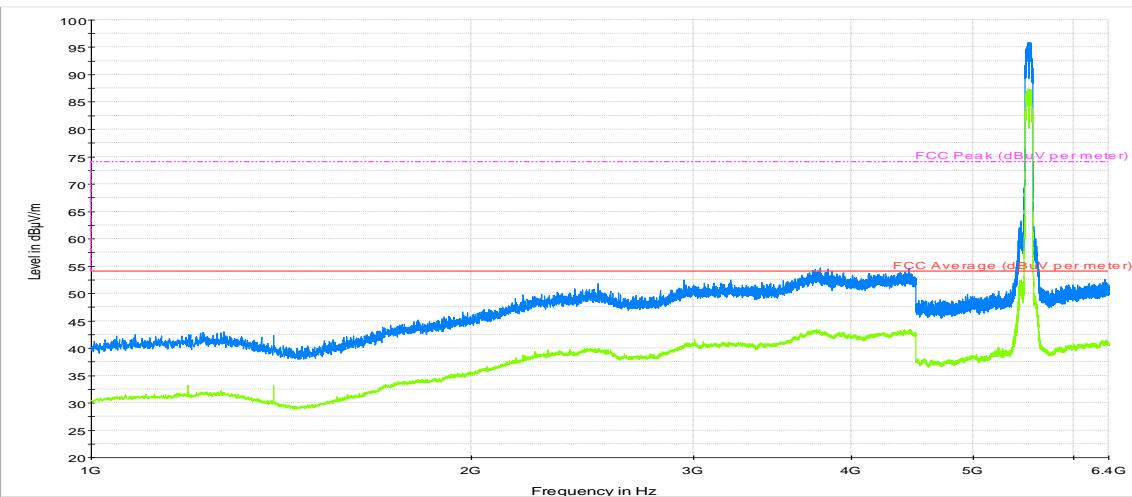
Radiated Spurious – 1GHz to 6.4GHz –CH138ac80

— Peak measurements — AVG measurements — Limit FCC AVG — Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4444	54.0	---	74	20.0
4444	---	43.4	54	10.6

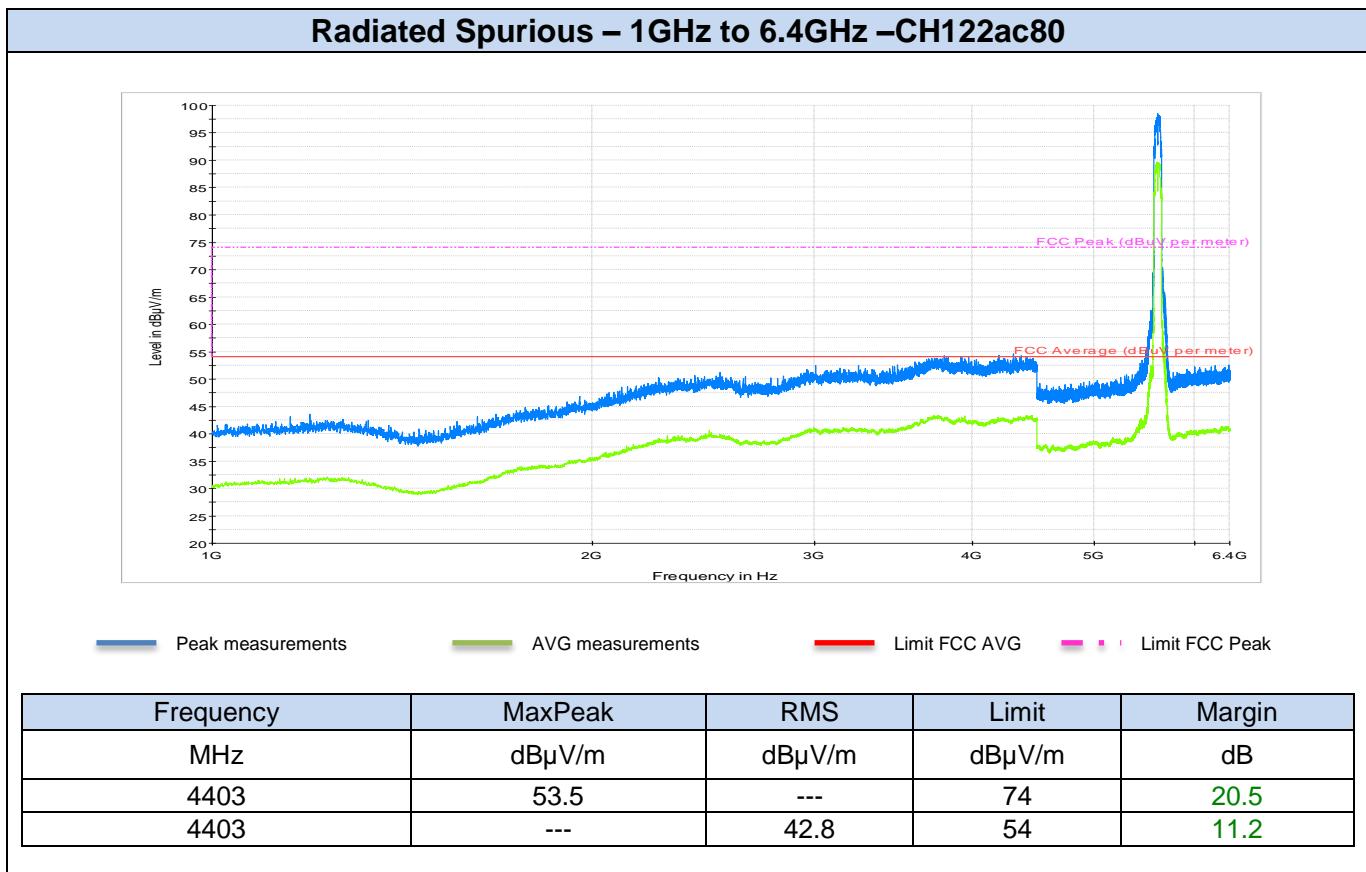
802.11ac80, VHT0 (SISO), Chain B

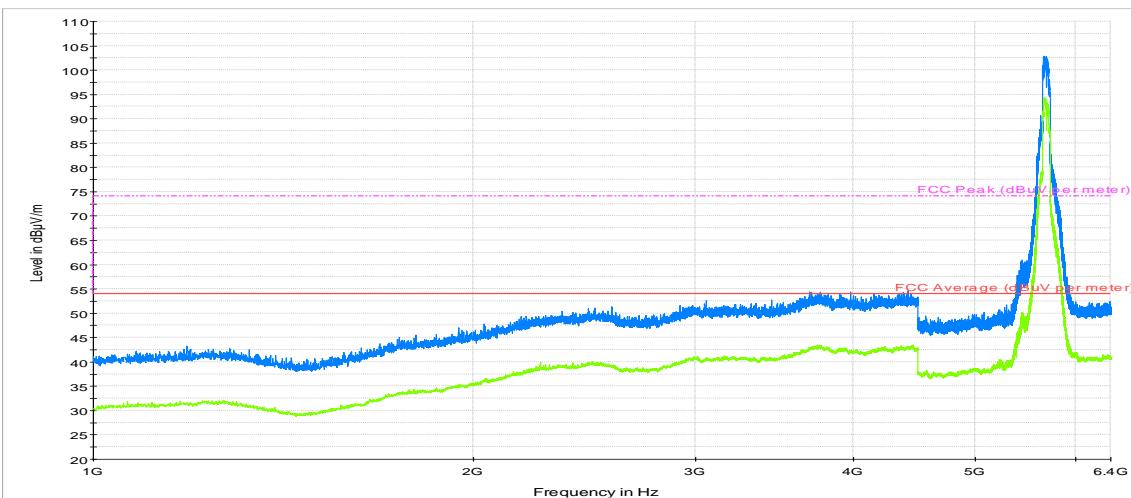
Radiated Spurious – 1GHz to 6.4GHz –CH106ac80



— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4456	55.3	---	74	18.7
4456	---	43.4	54	10.6



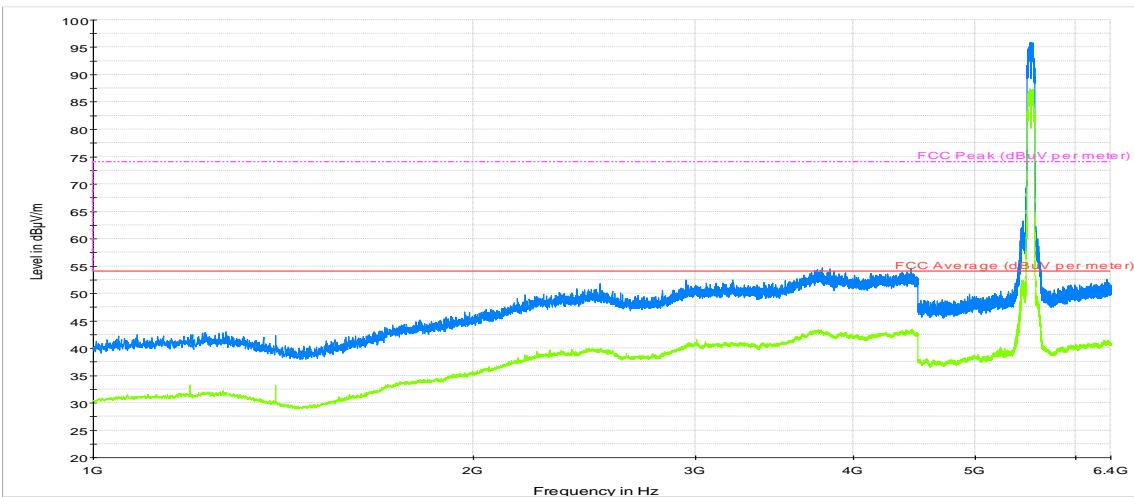
Radiated Spurious – 1GHz to 6.4GHz –CH138ac80

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4465	54.7	---	74	19.3
4465	---	43.0	54	11.0

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4465	54.7	---	74	19.3
4465	---	43.0	54	11.0

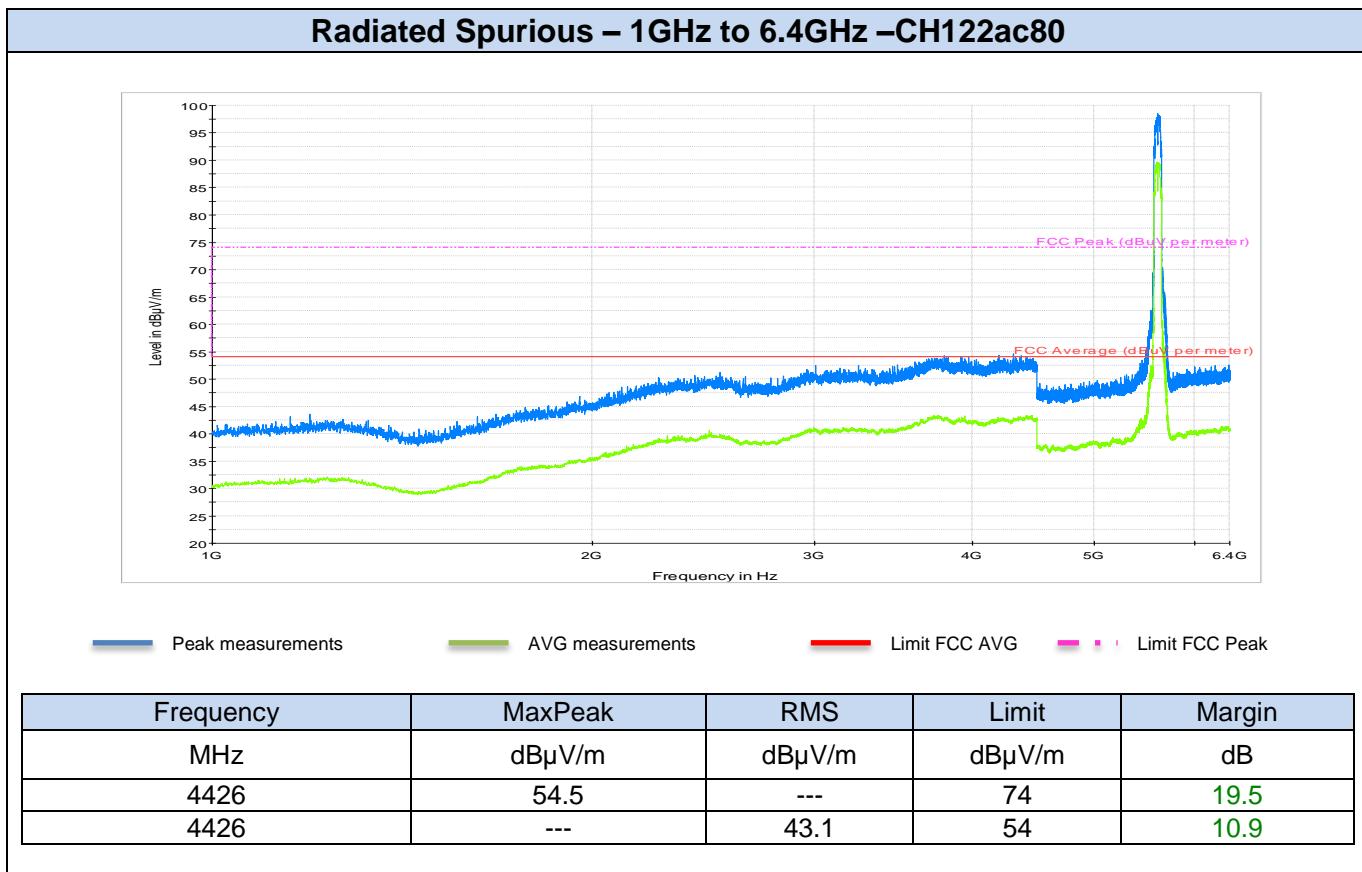
802.11ac80, VHT0 (MIMO), Chain A+B

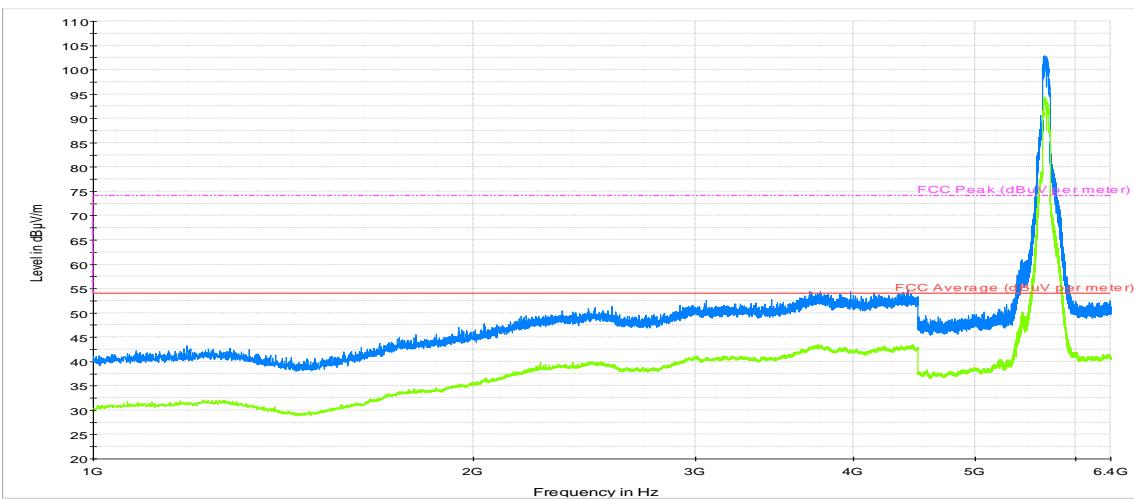
Radiated Spurious – 1GHz to 6.4GHz –CH106ac80



— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4455	53.9	---	74	20.1
4455	---	43.1	54	10.9



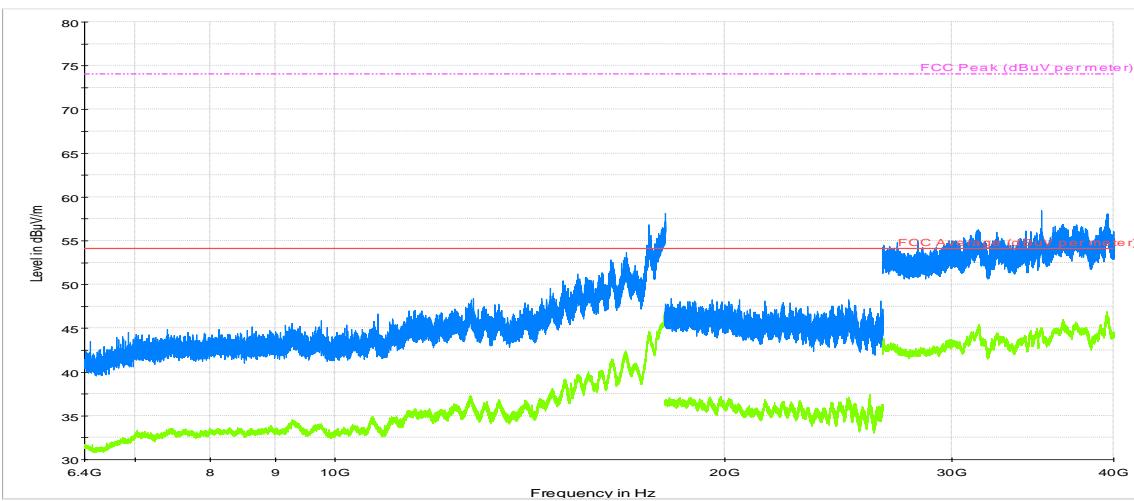
Radiated Spurious – 1GHz to 6.4GHz –CH138ac80

— Peak measurements — AVG measurements — Limit FCC AVG - - - Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dB μ V/m	dB μ V/m	dB μ V/m	dB
4446	54.2	---	74	19.8
4446	---	43.4	54	10.6

All modes

Radiated Spurious – 6.4GHz to 40GHz



Peak measurements AVG measurements Limit FCC AVG Limit FCC Peak

Frequency	MaxPeak	RMS	Limit	Margin
MHz	dBμV/m	dBμV/m	dBμV/m	dB
18000	58.4	---	74	15.6
18000	---	47.2	54	6.8
31300	56.9	--	74	17.1
31300	--	44.6	54	9.4
39500	57.7	---	74	16.3
39500	---	46.5	54	7.5

Note 1: The spurious signals detected do not depend on either the operating channel or the modulation mode.

Note 2: No spurious signals were found in all modulations and channels tested.

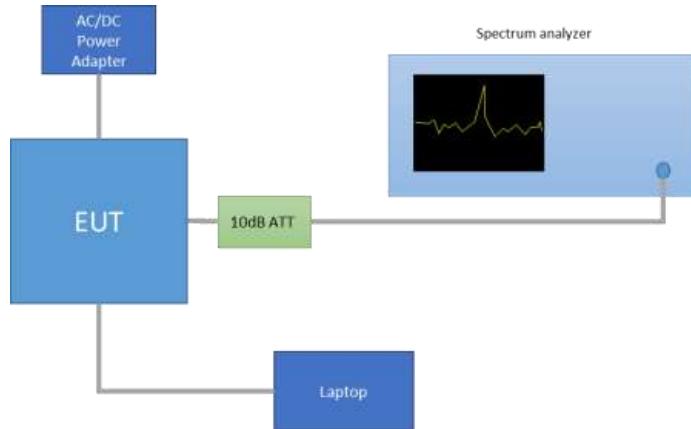
Note 3: This plot is valid for both SISO and MIMO modes.

Annex E. Test Results U-NII-3

E.1 26dB & 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.



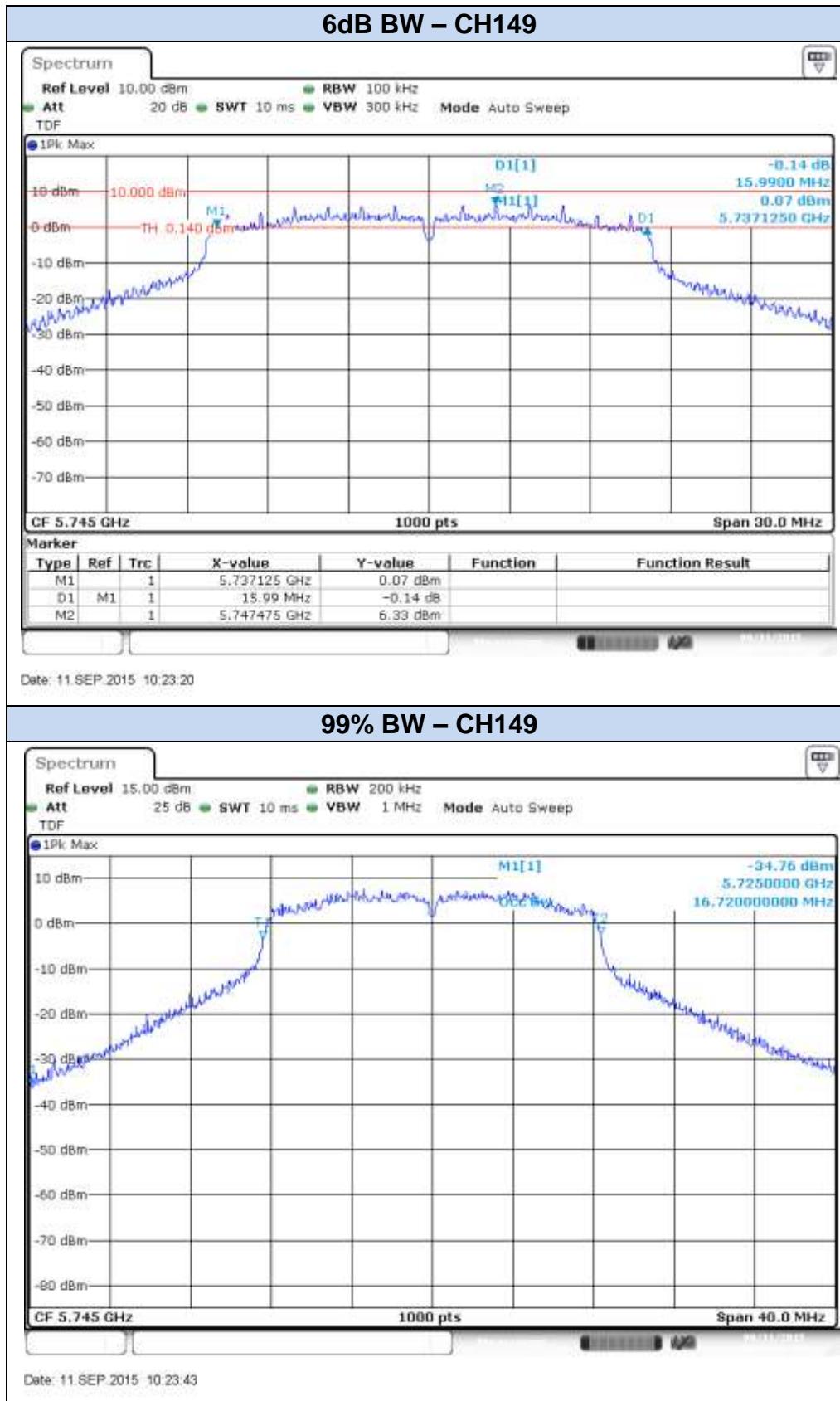
For the overlapped channels between U-NII-2C and U-NII-3, and according to FCC KDB 644545 D03, the boundary frequency between the bands is used as one edge for defining the portion of the 6dB BW that falls within a particular U-NII band. This rule is only applicable for the 6dB BW and for those channels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

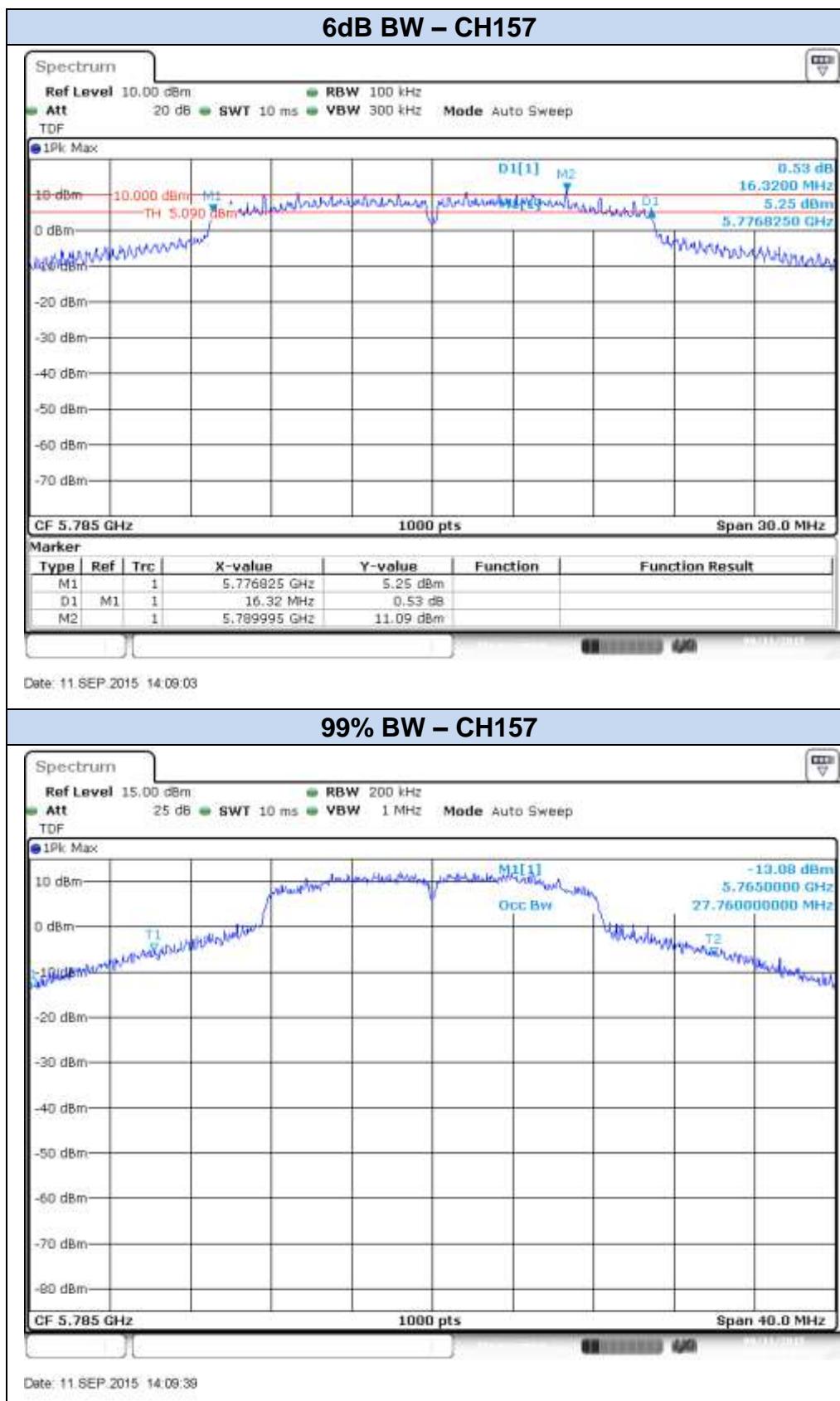
Results tables:

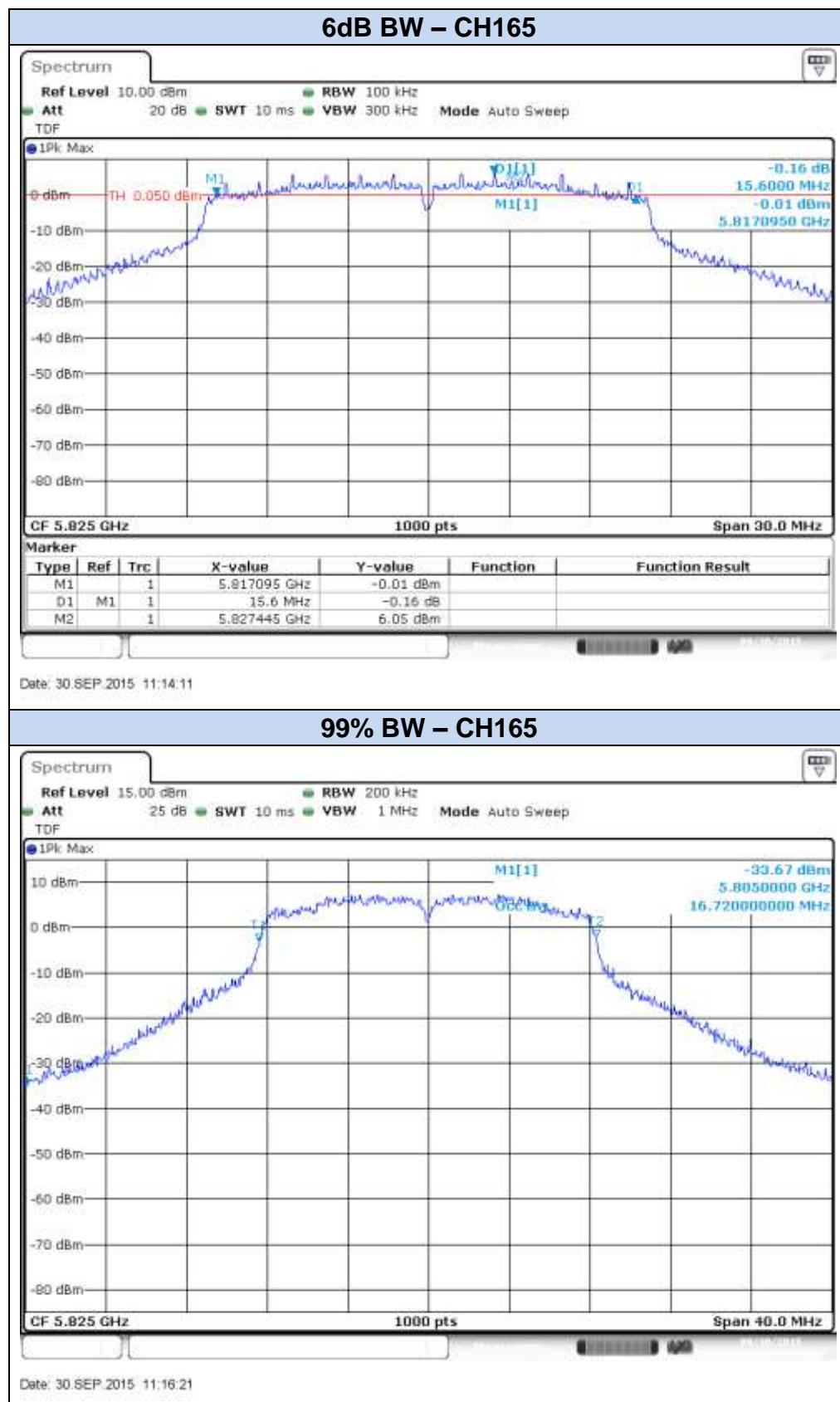
Mode	Rate	Antenna	Channel	Frequency [MHz]	6dB BW [MHz]	99% BW [MHz]
802.11a	6Mbps	SISO CHAIN A	149	5745	15.99	16.72
			157	5785	16.32	27.76
			165	5825	15.60	16.72
		SISO CHAIN B	149	5745	15.63	16.64
			157	5785	16.29	26.36
			165	5825	15.63	16.64
		SISO CHAIN A	144*	5720	3.75	29.76
			149	5745	16.98	17.72
			157	5785	17.58	29.04
			165	5825	17.10	17.76
		SISO CHAIN B	144*	5720	3.75	28.36
			149	5745	16.11	17.72
			157	5785	17.58	27.84
			165	5825	16.53	17.76

Mode	Rate	Antenna	Channel	Frequency [MHz]	6dB BW [MHz]	99% BW [MHz]
802.11n20	HT8	MIMO CHAIN A	144*	5720	3.15	18.36
			149	5745	16.86	17.80
			157	5785	15.99	18.68
			165	5825	16.26	17.80
		MIMO CHAIN B	144*	5720	3.15	18.92
			149	5745	17.49	17.72
			157	5785	17.46	18.40
			165	5825	17.49	17.68
802.11n40	HT0	SISO CHAIN A	142F*	5670	2.51	53.84
			151F	5755	35.41	36.40
			159F	5795	35.13	36.48
		SISO CHAIN B	142F*	5670	2.48	55.76
			151F	5755	35.11	36.40
			159F	5795	35.10	36.48
	HT8	MIMO CHAIN A	142F*	5670	2.51	36.64
			151F	5755	35.14	36.32
			159F	5795	34.98	36.40
		MIMO CHAIN B	142F*	5670	2.54	36.48
			151F	5755	34.99	36.16
			159F	5795	35.67	36.16
802.11ac80	VHT0	SISO CHAIN A	138ac80*	5690	2.40	113.43
			155ac80	5775	72.61	75.05
		SISO CHAIN B	138ac80*	5690	3.00	115.14
			155ac80	5775	72.58	75.05
	VHT0	MIMO CHAIN A	138ac80*	5690	2.50	75.81
			155ac80	5775	74.04	75.05
		MIMO CHAIN B	138ac80*	5690	2.40	75.62
			155ac80	5775	75.08	75.05

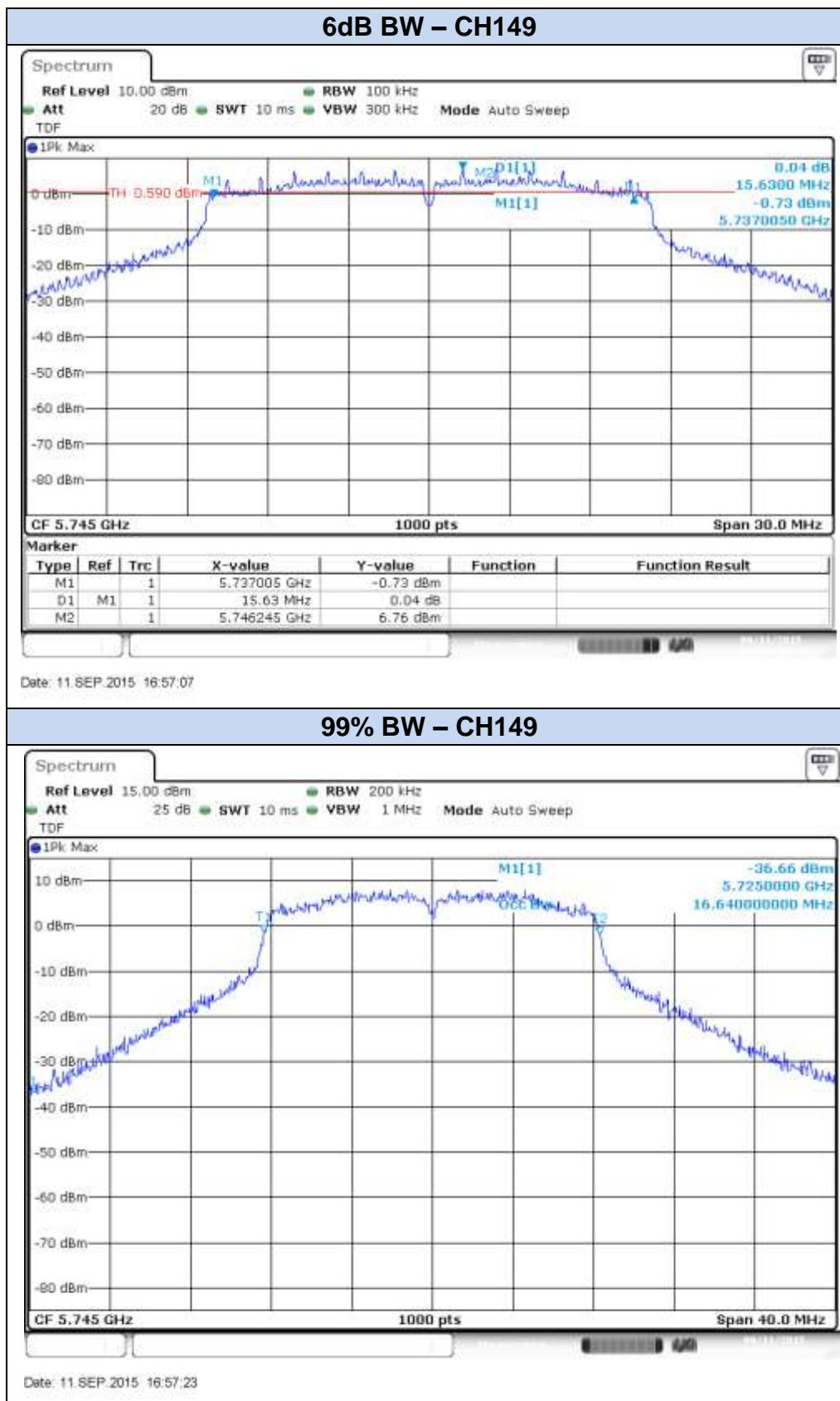
* Overlapped channels between U-NII-2C and U-NII-3

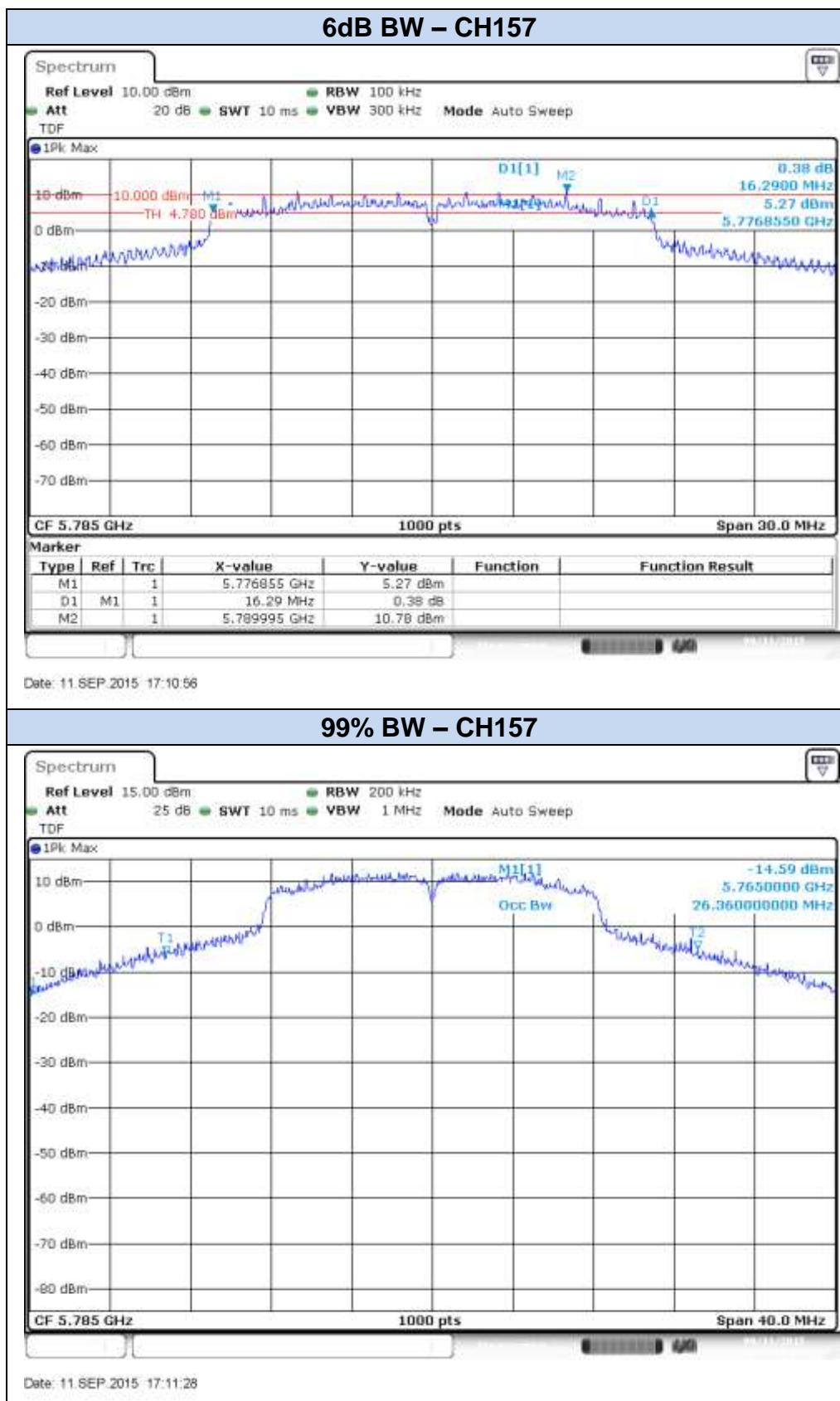
Results screenshot:
802.11a, 6Mbps – Chain A






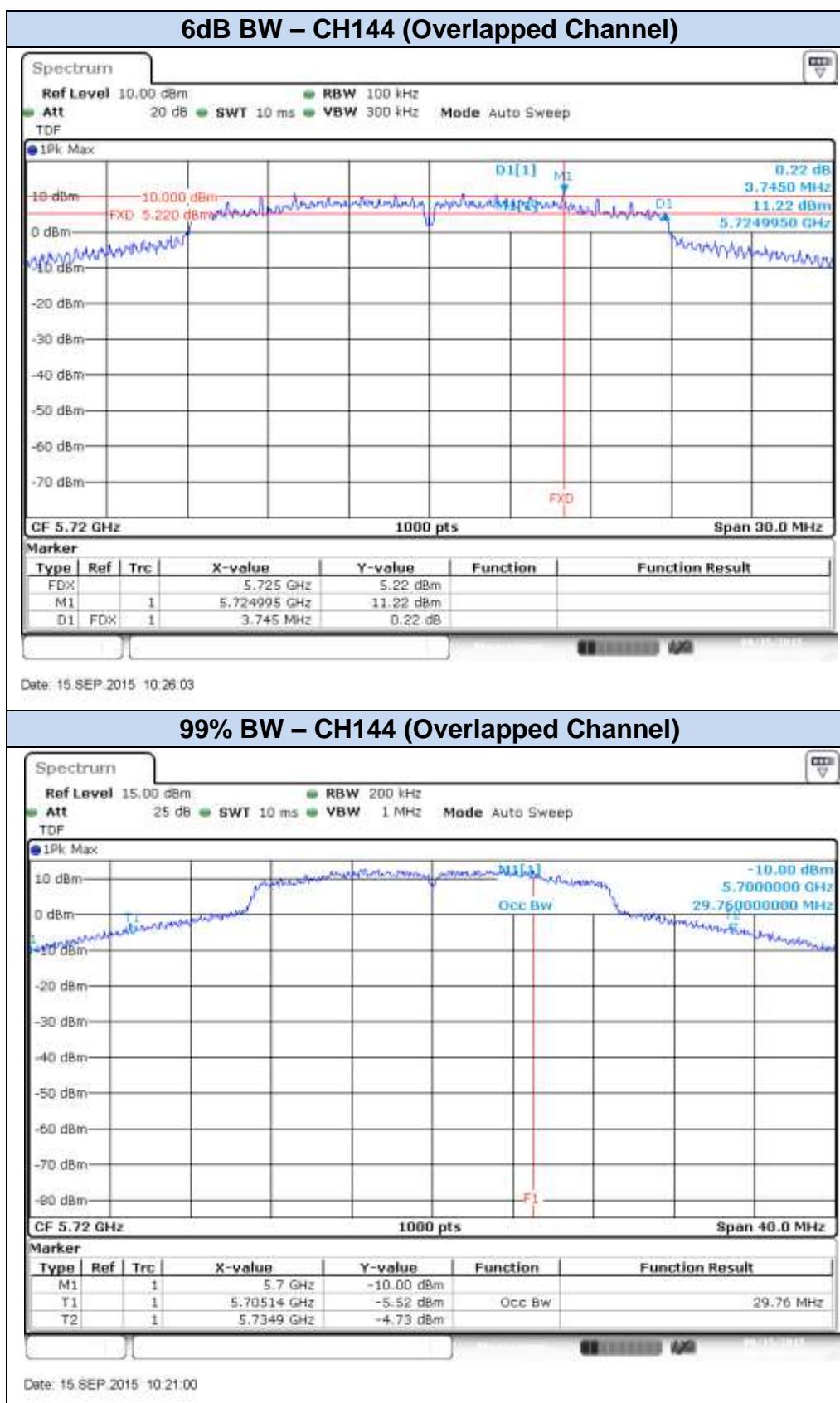
802.11a, 6Mbps – Chain B

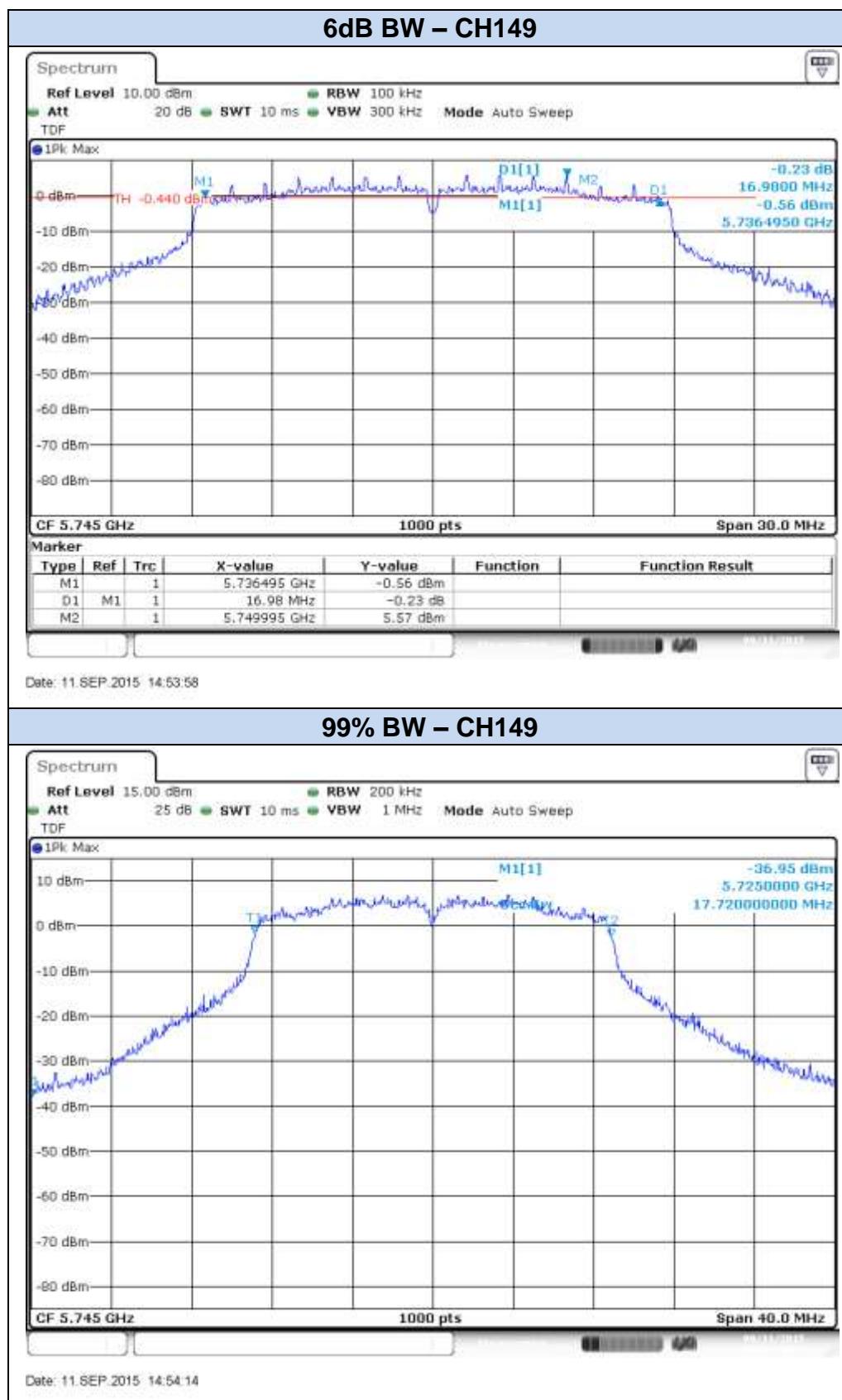


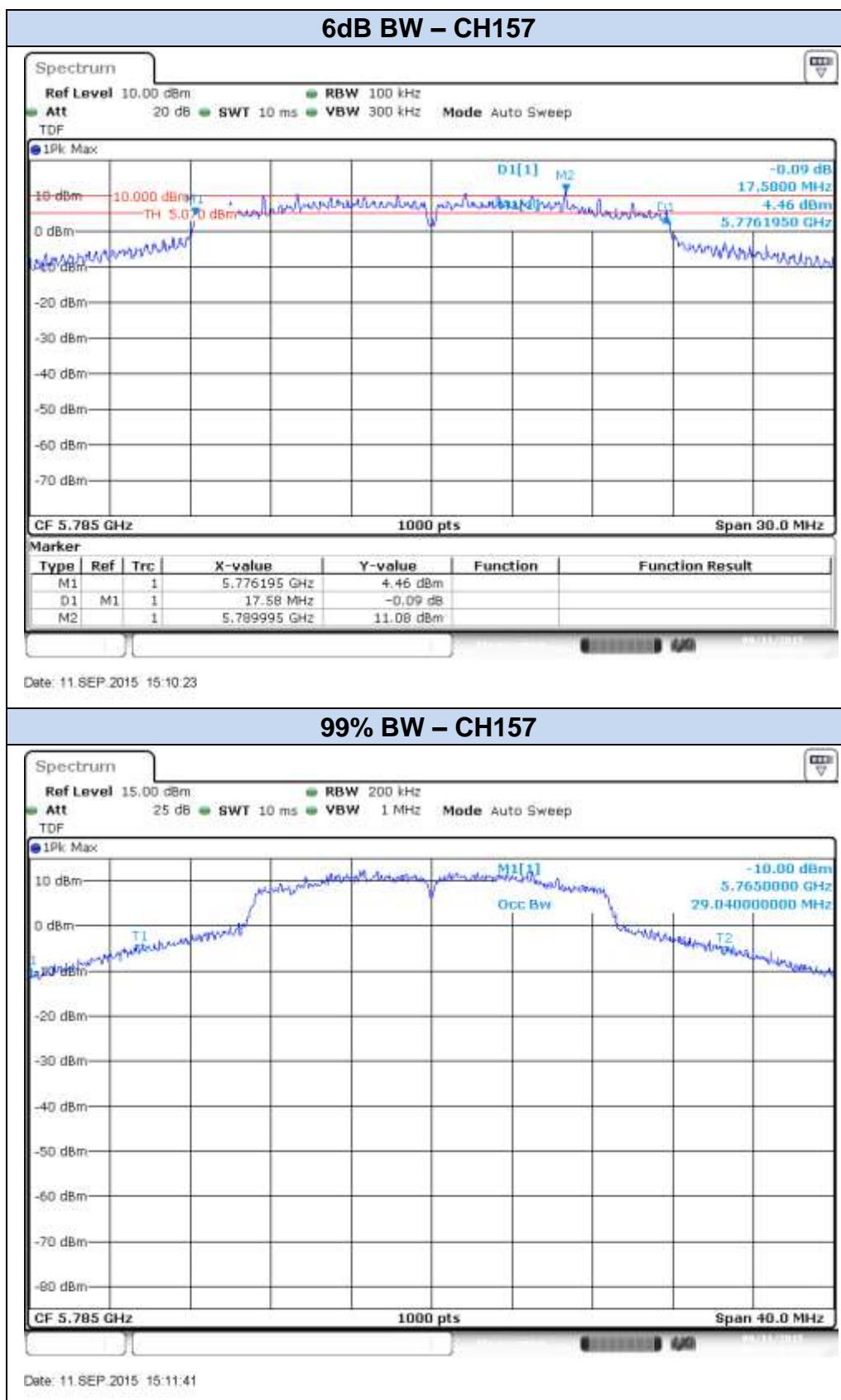


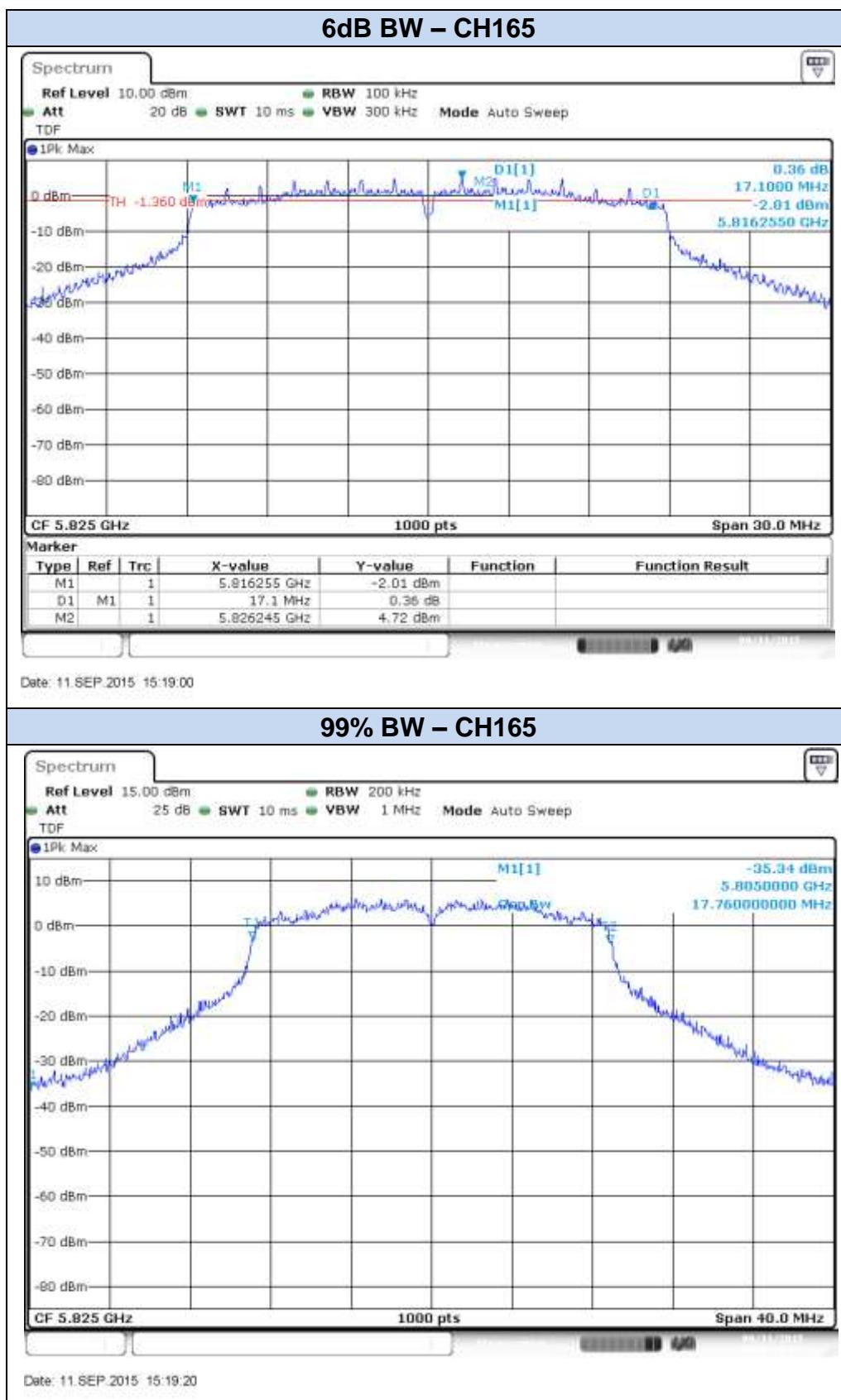


802.11n20, HT0 (SISO) – Chain A

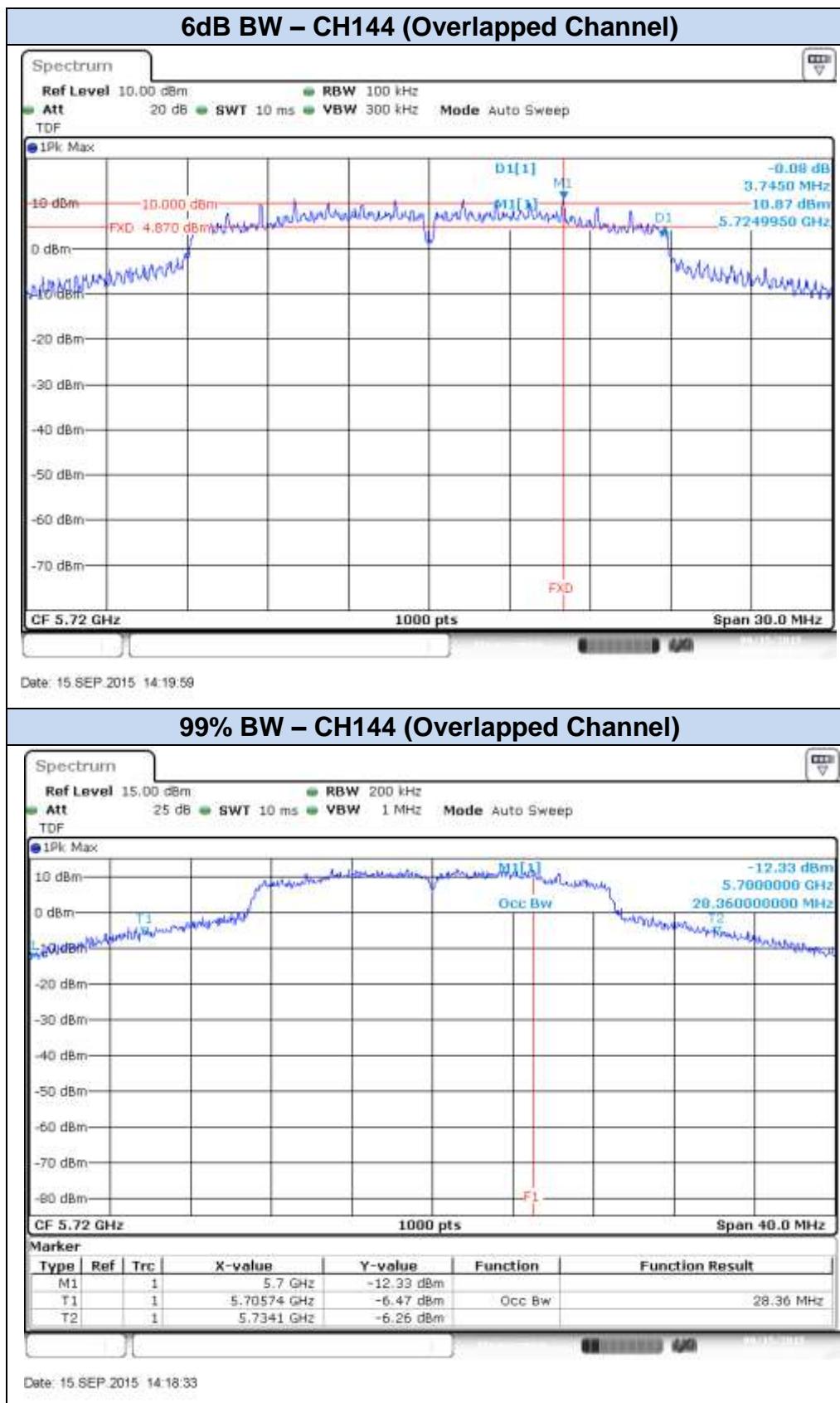


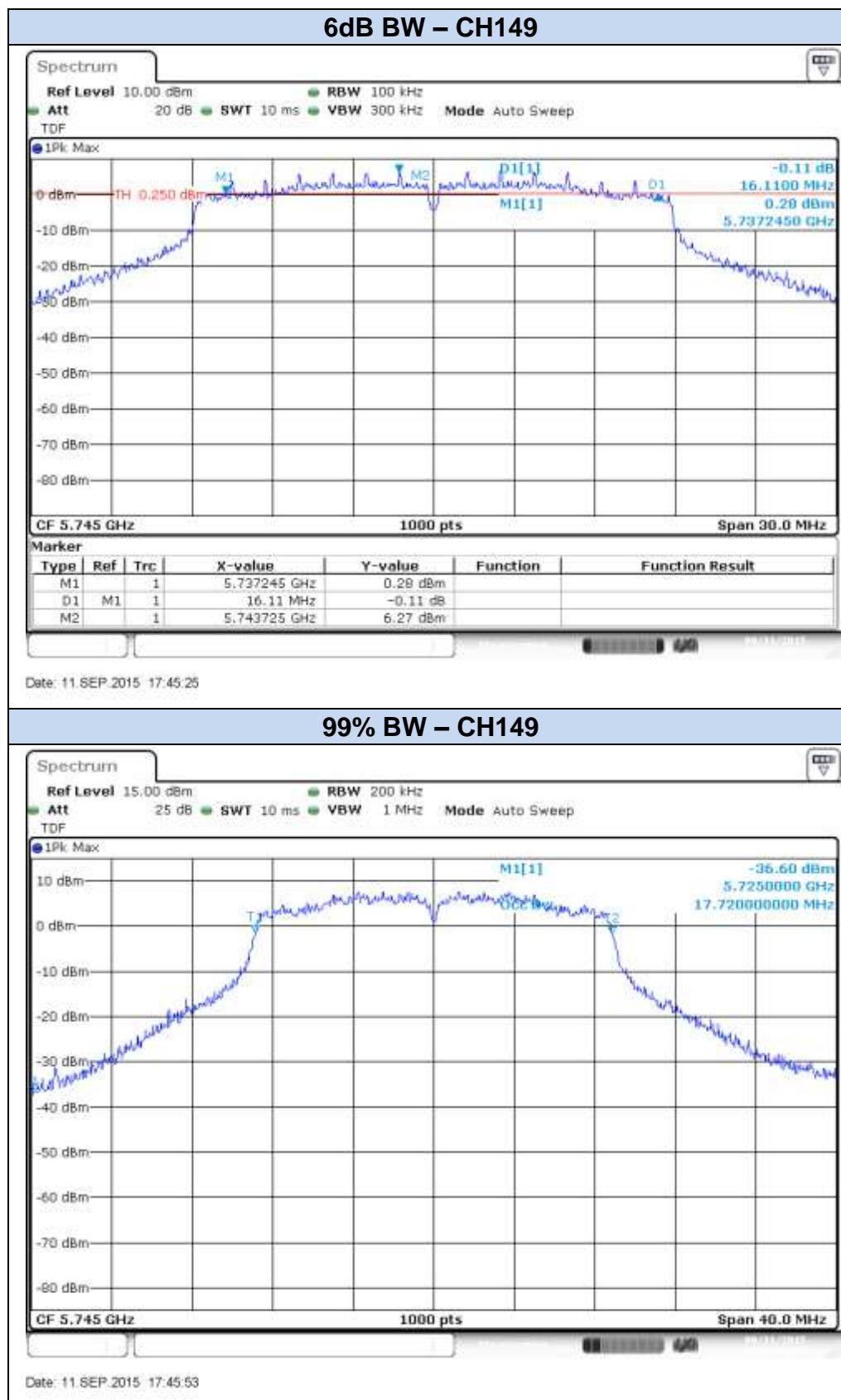






802.11n20, HT0 (SISO) – Chain B

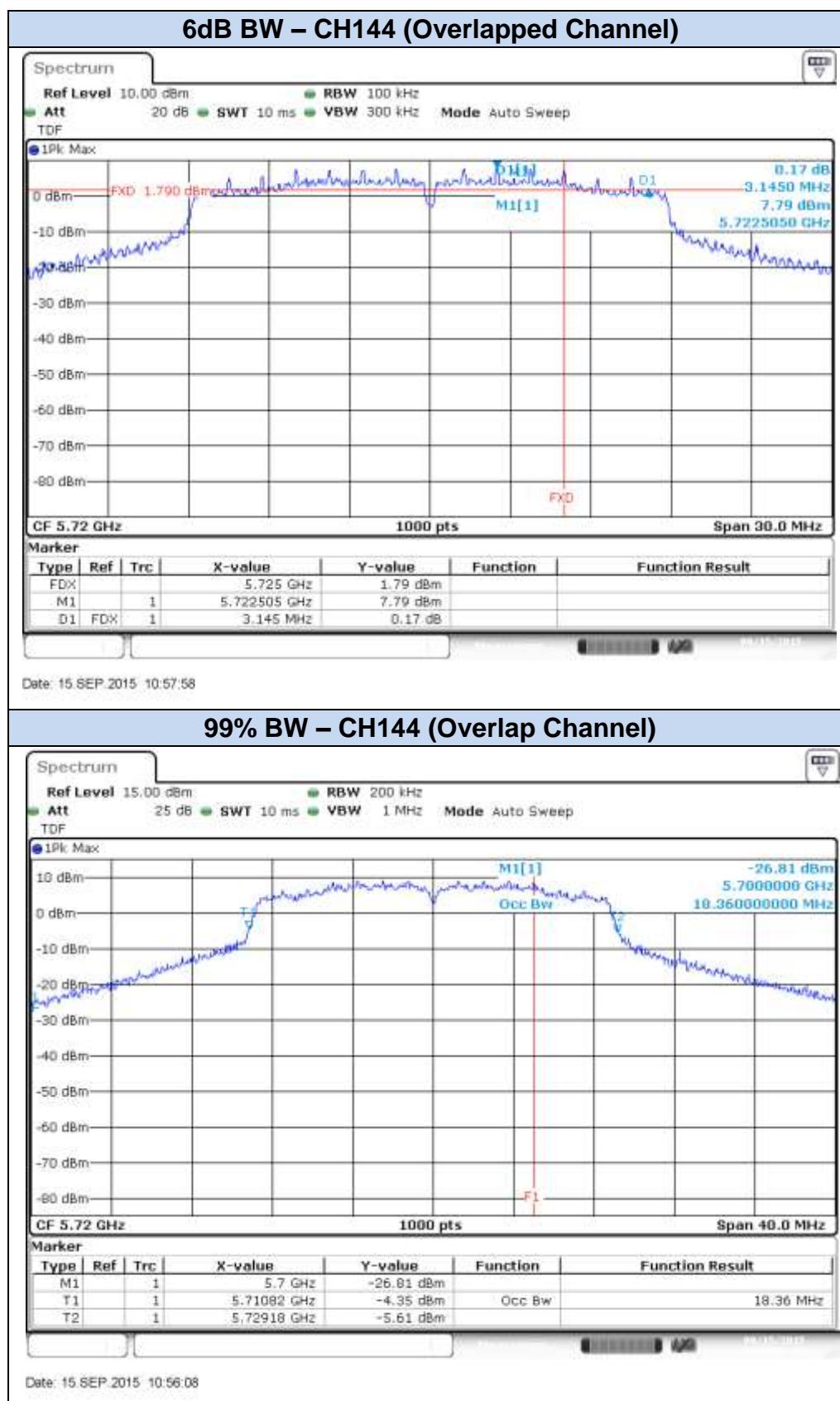


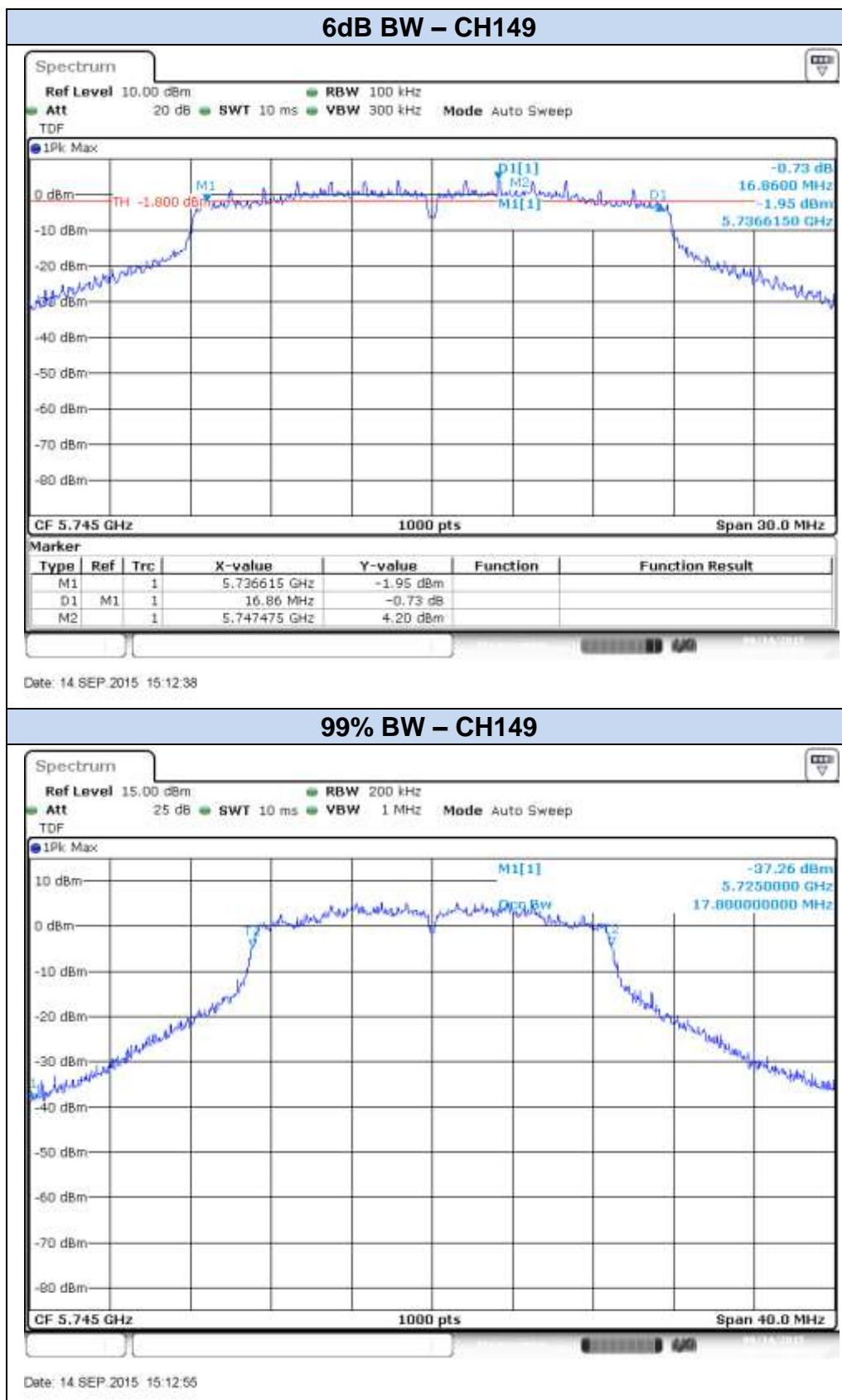


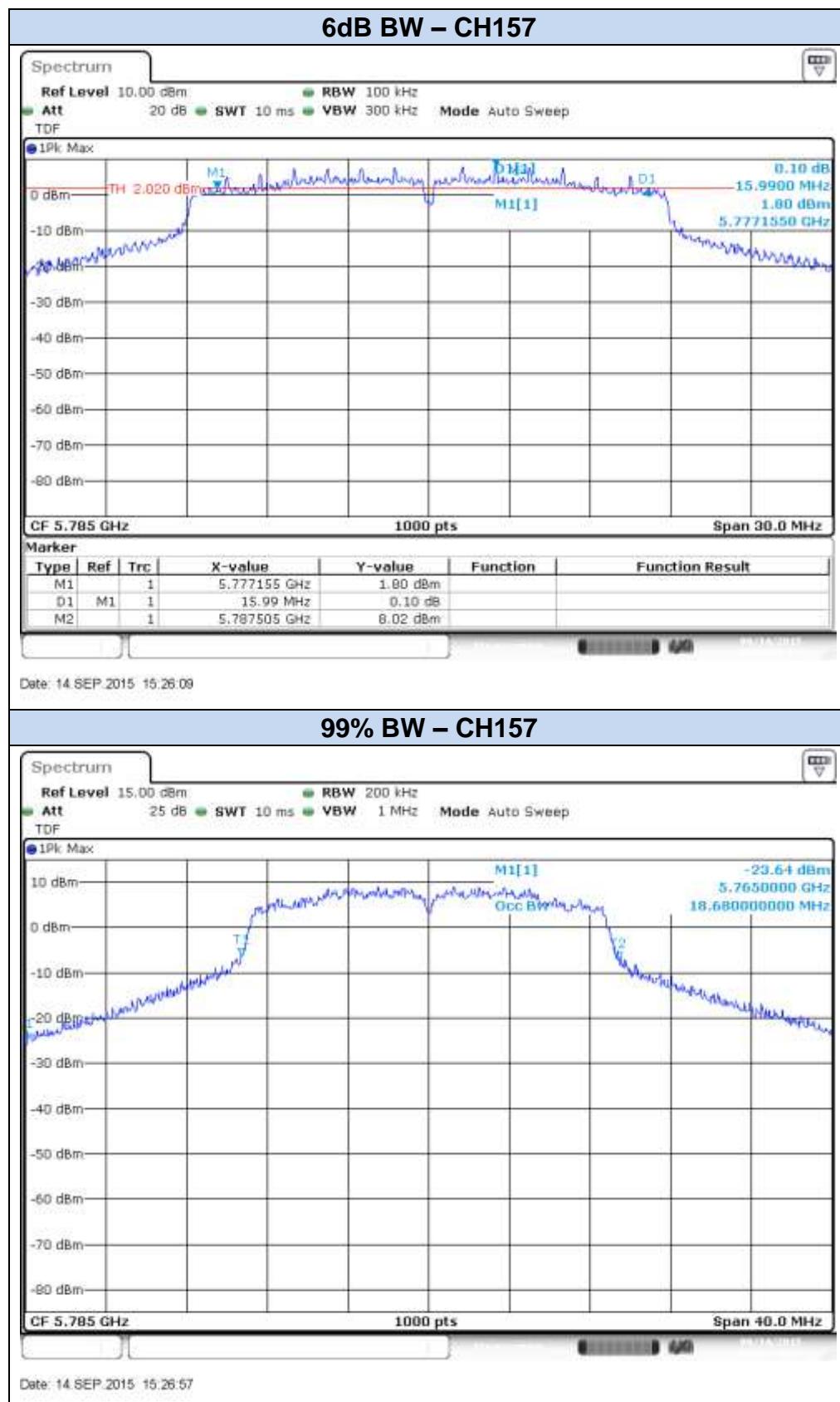




802.11n20, HT8 (MIMO) – Chain A

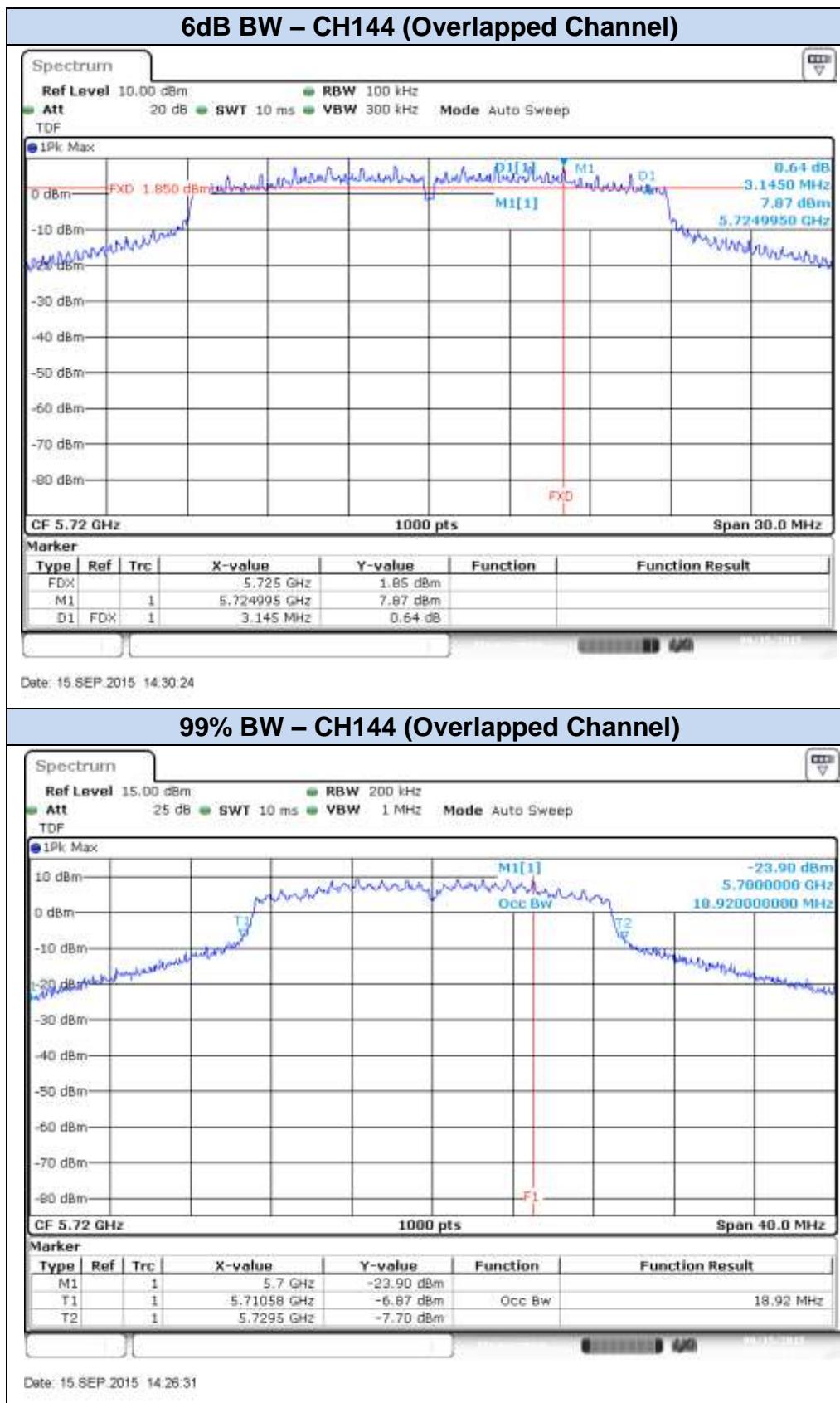


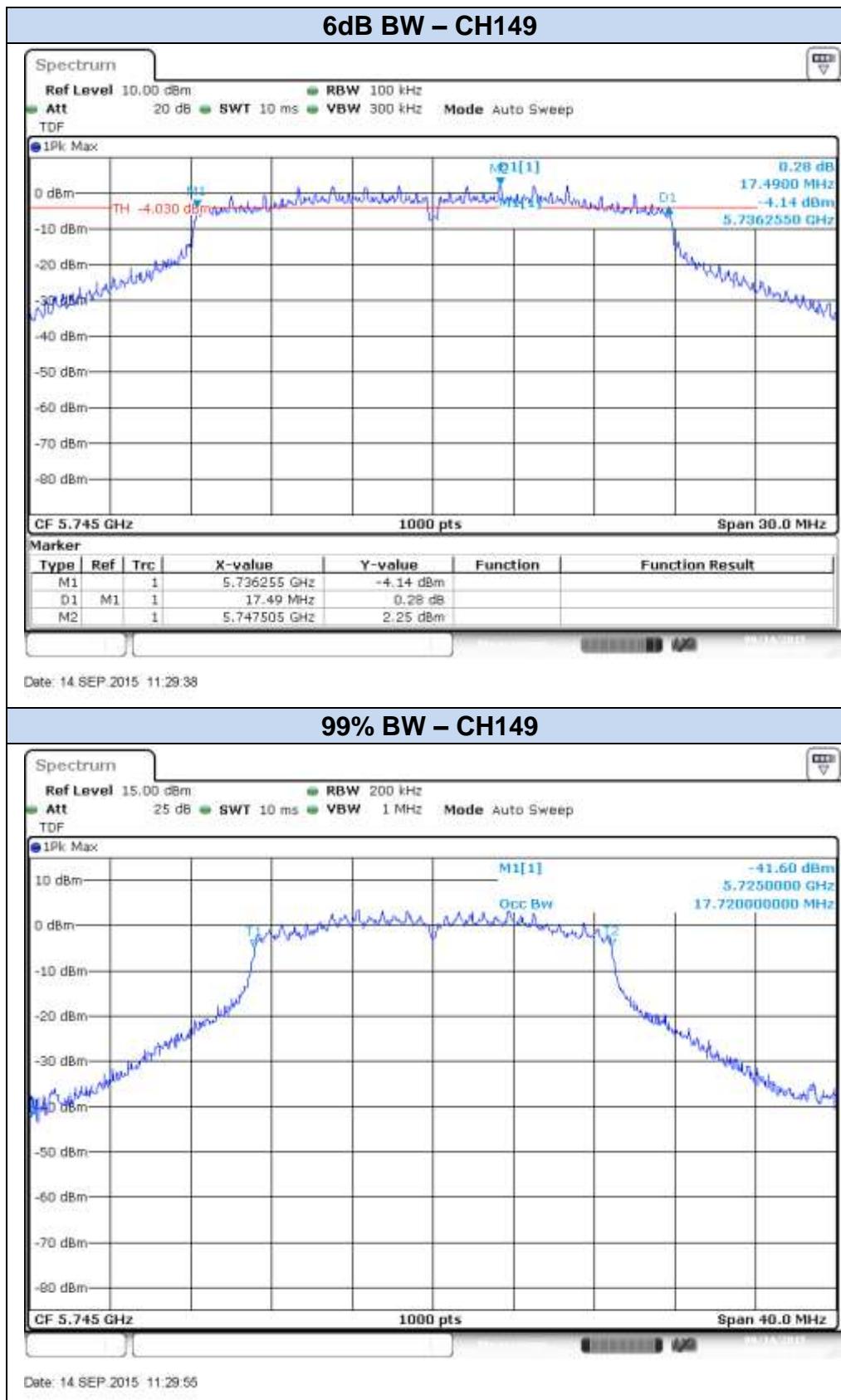


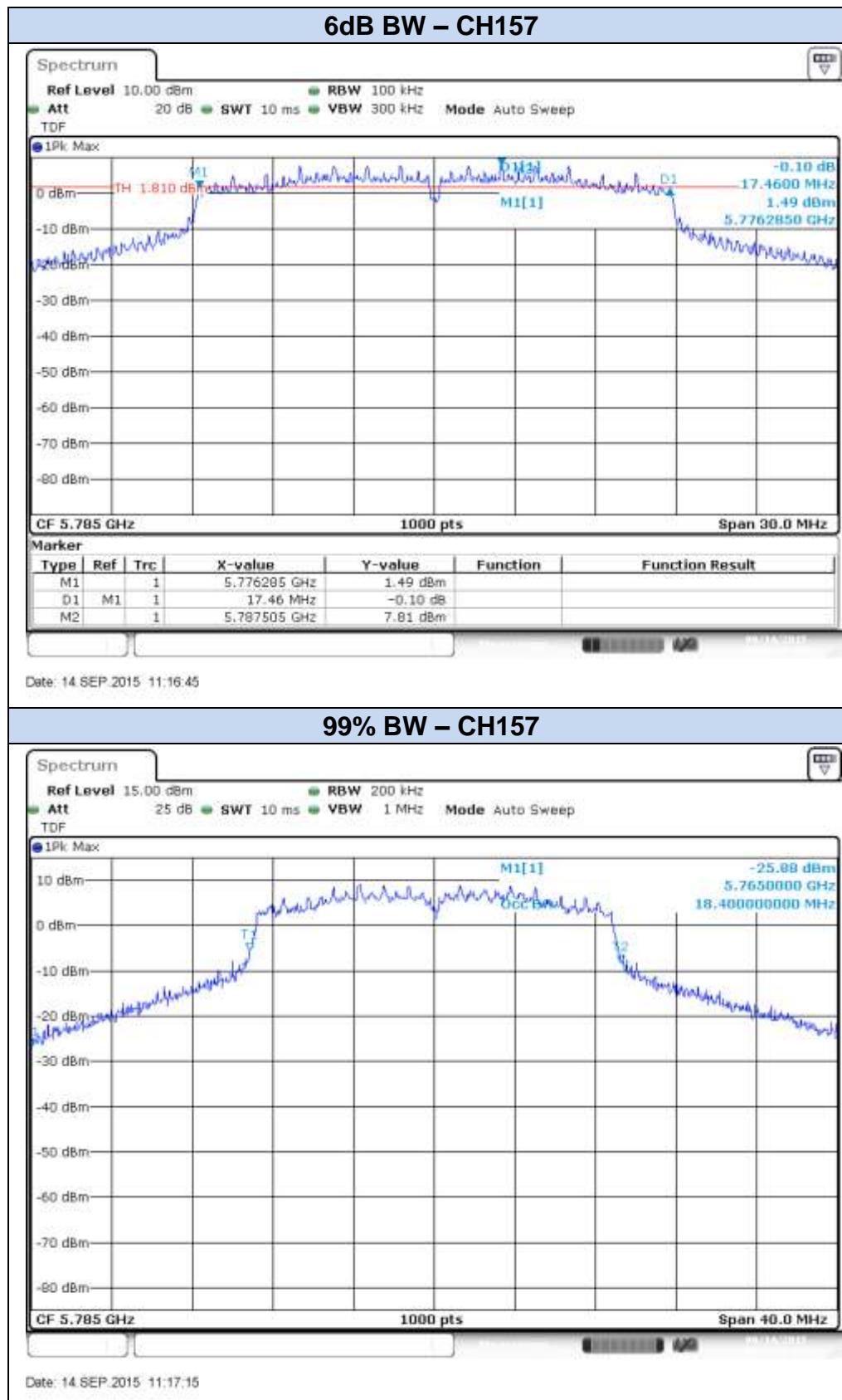


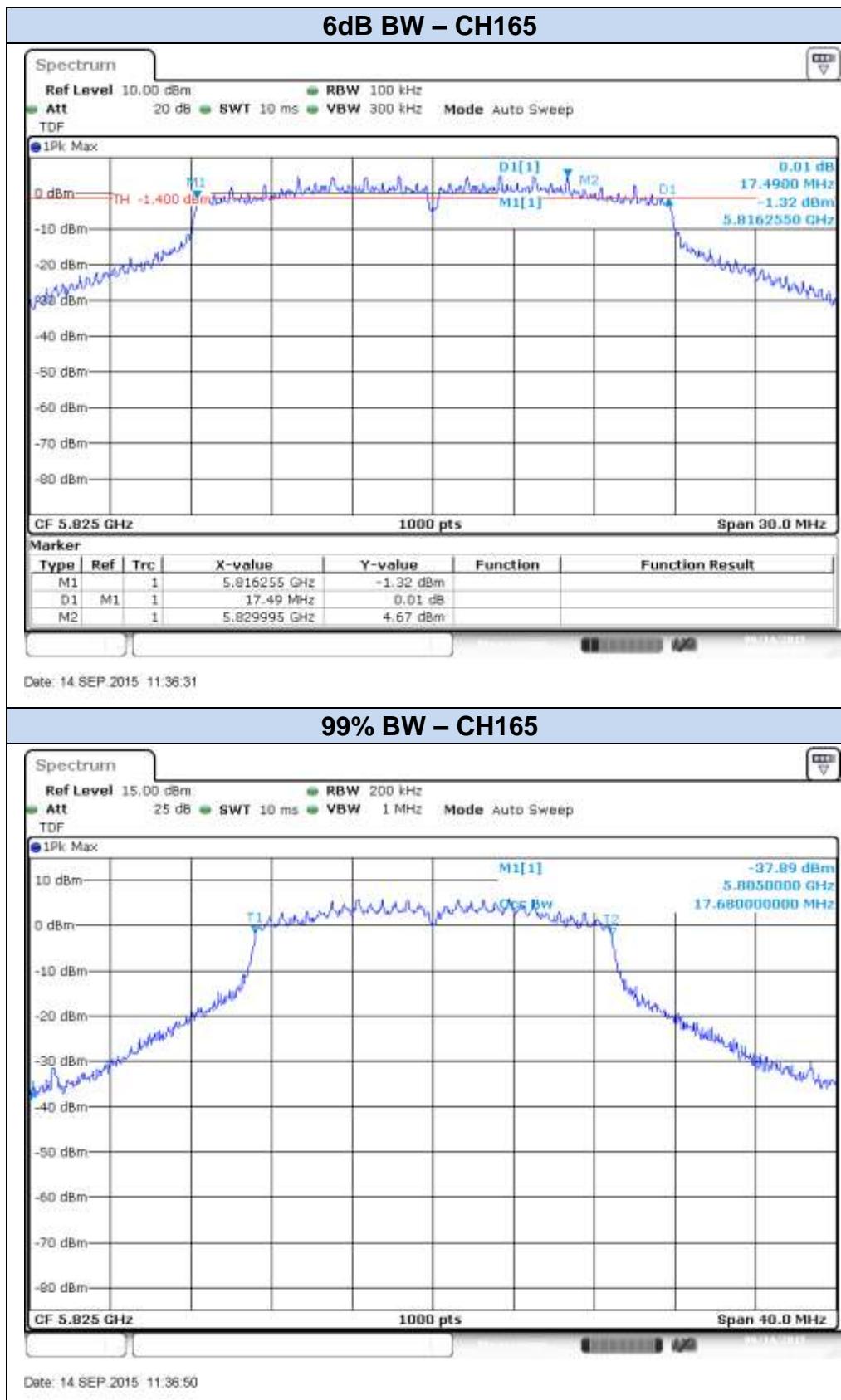


802.11n20, HT8 (MIMO) – Chain B

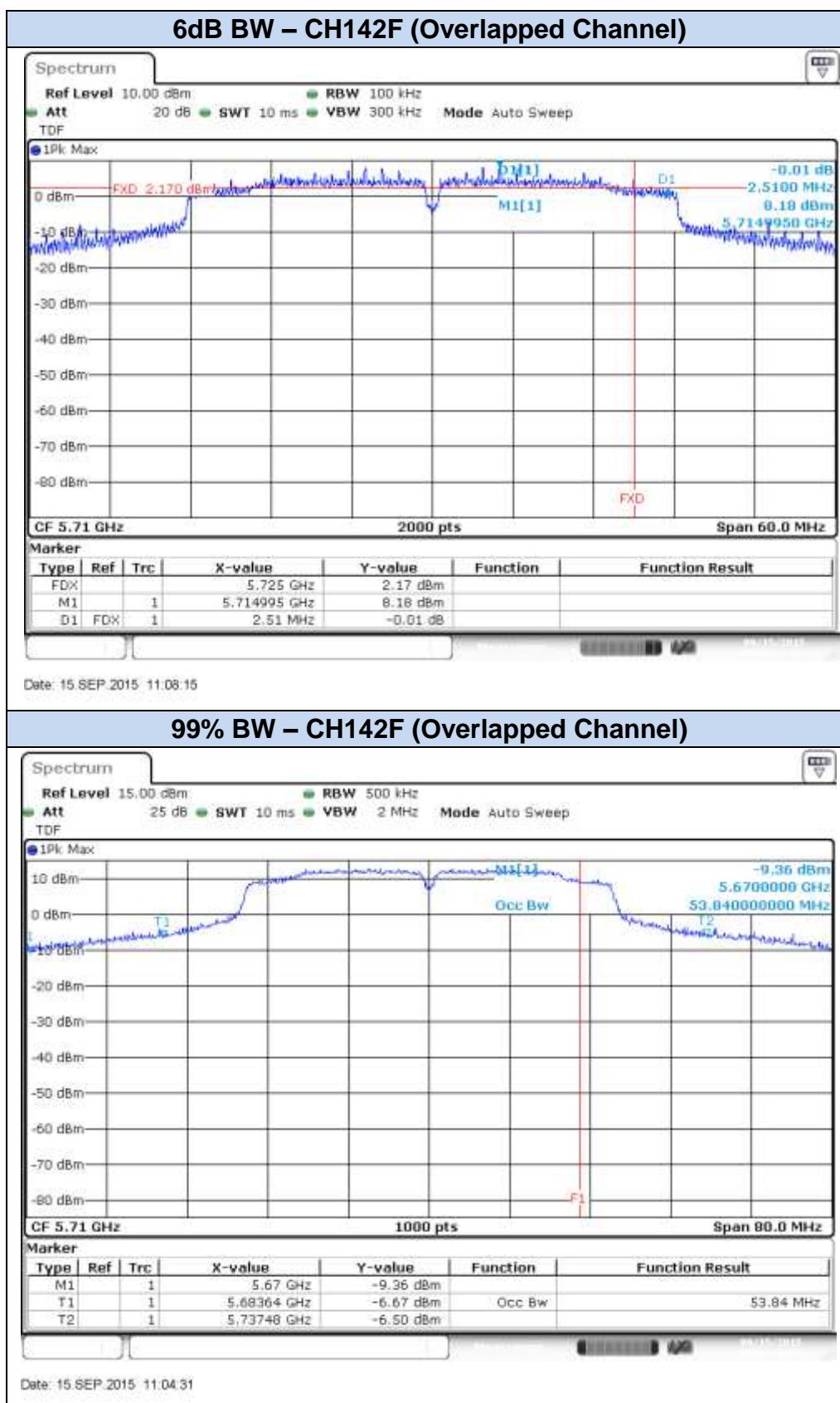


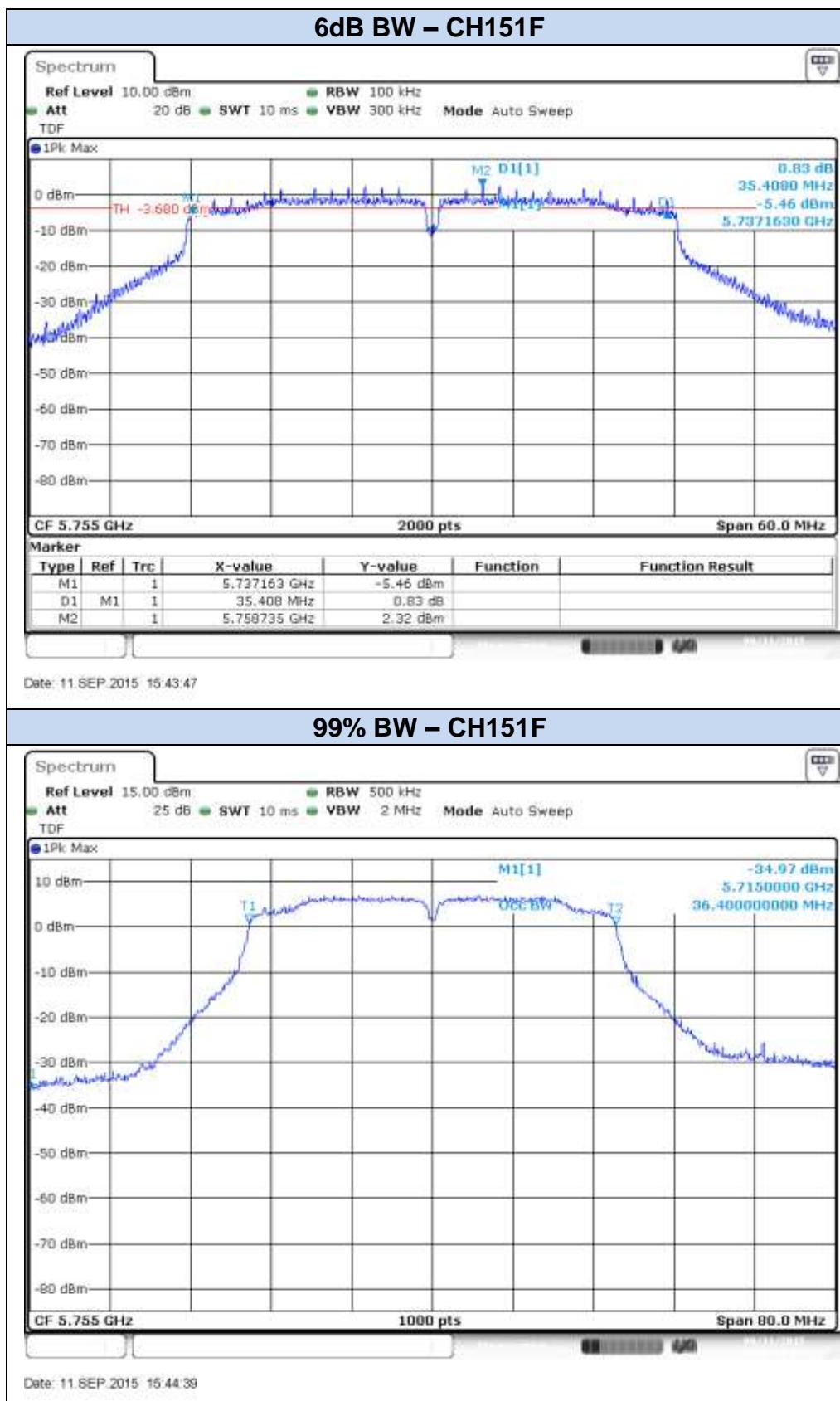


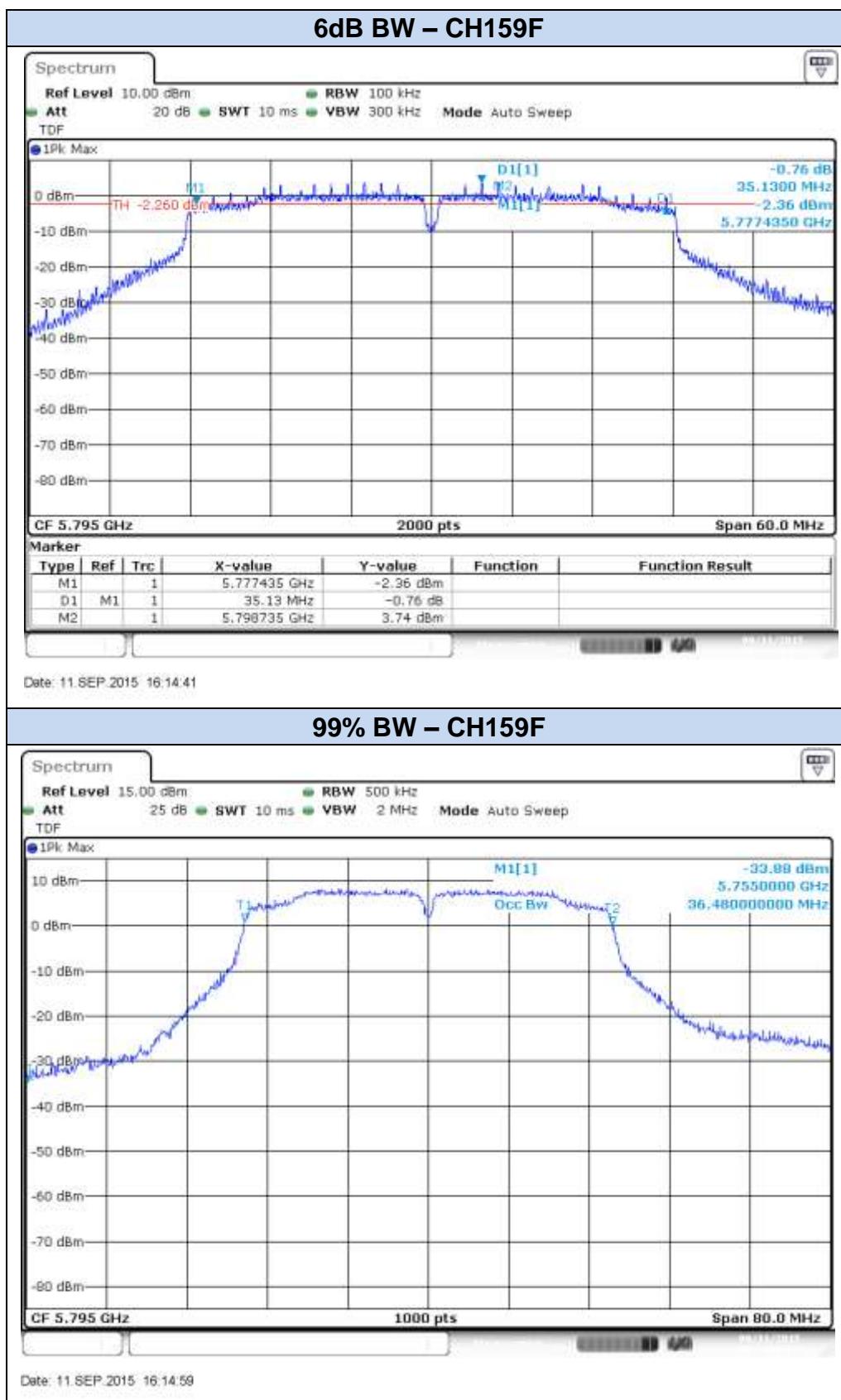




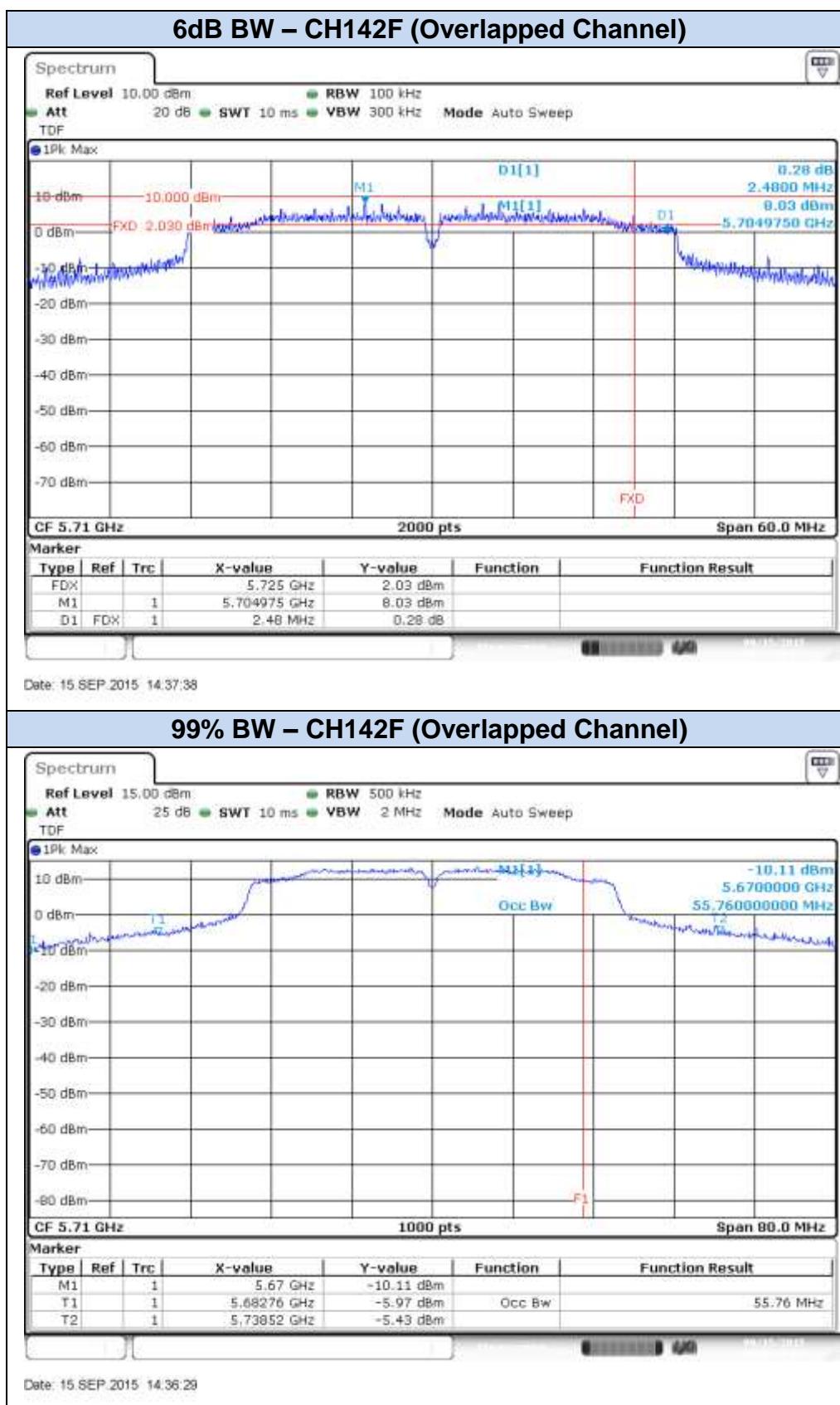
802.11n40, HT0 (SISO) – Chain A

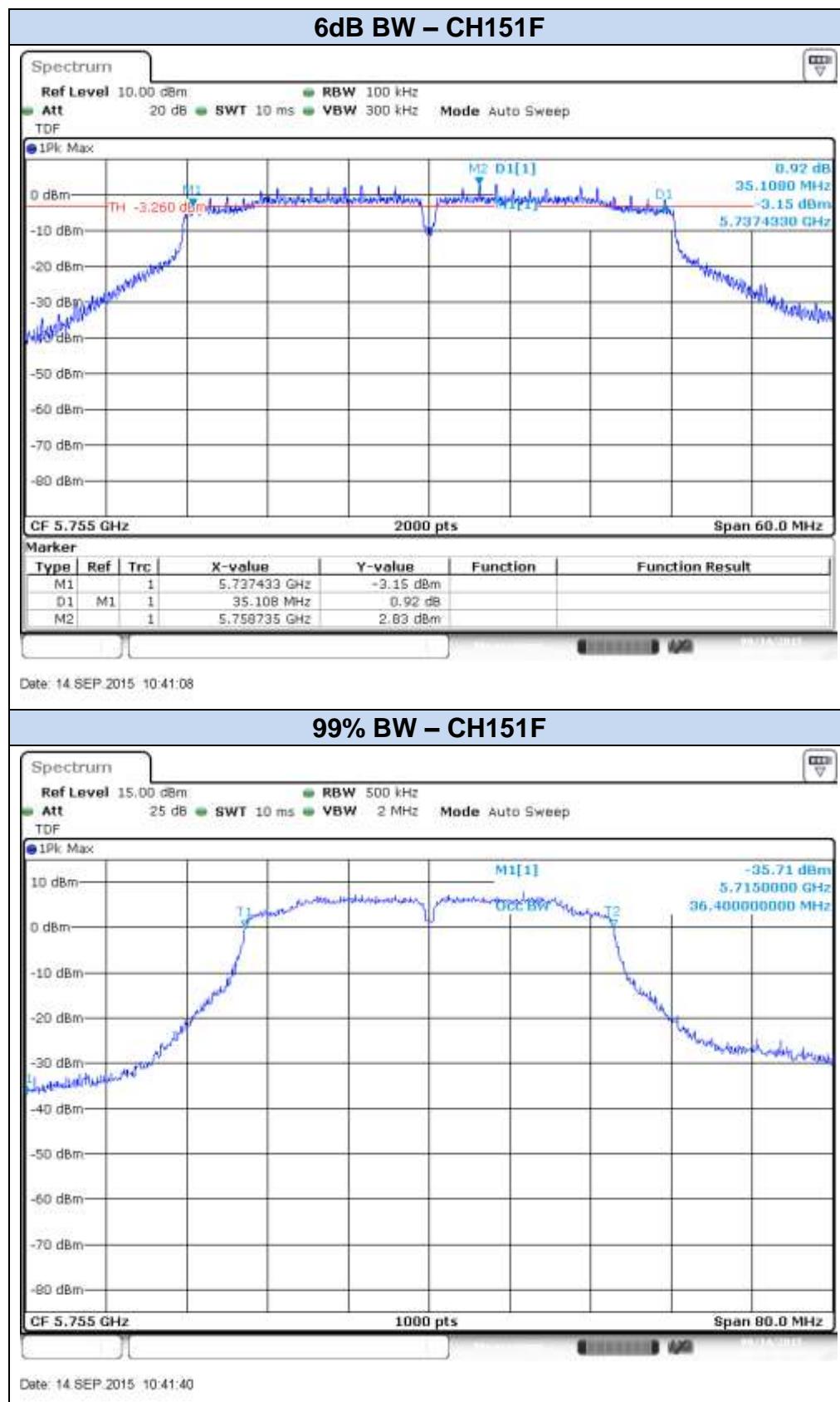


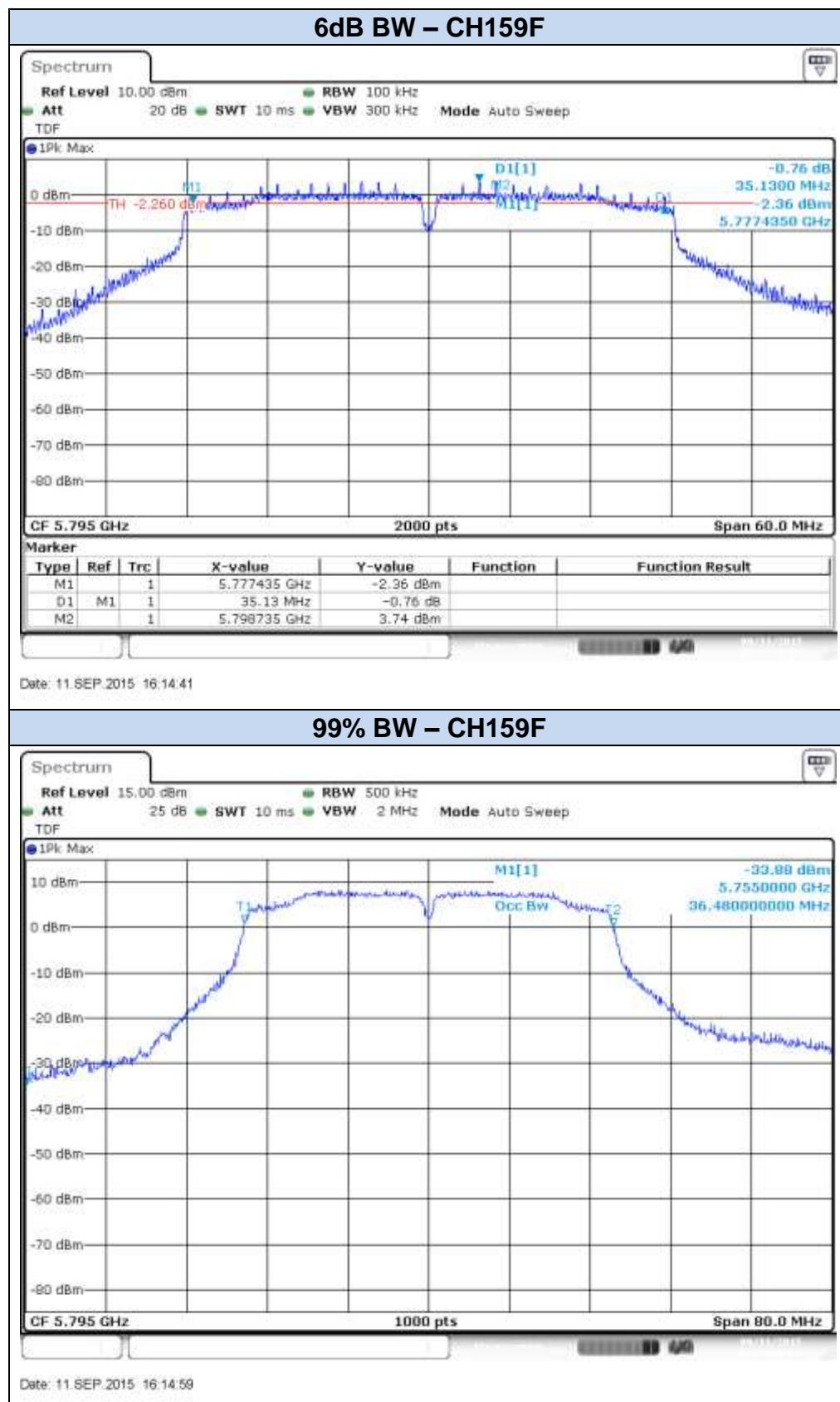




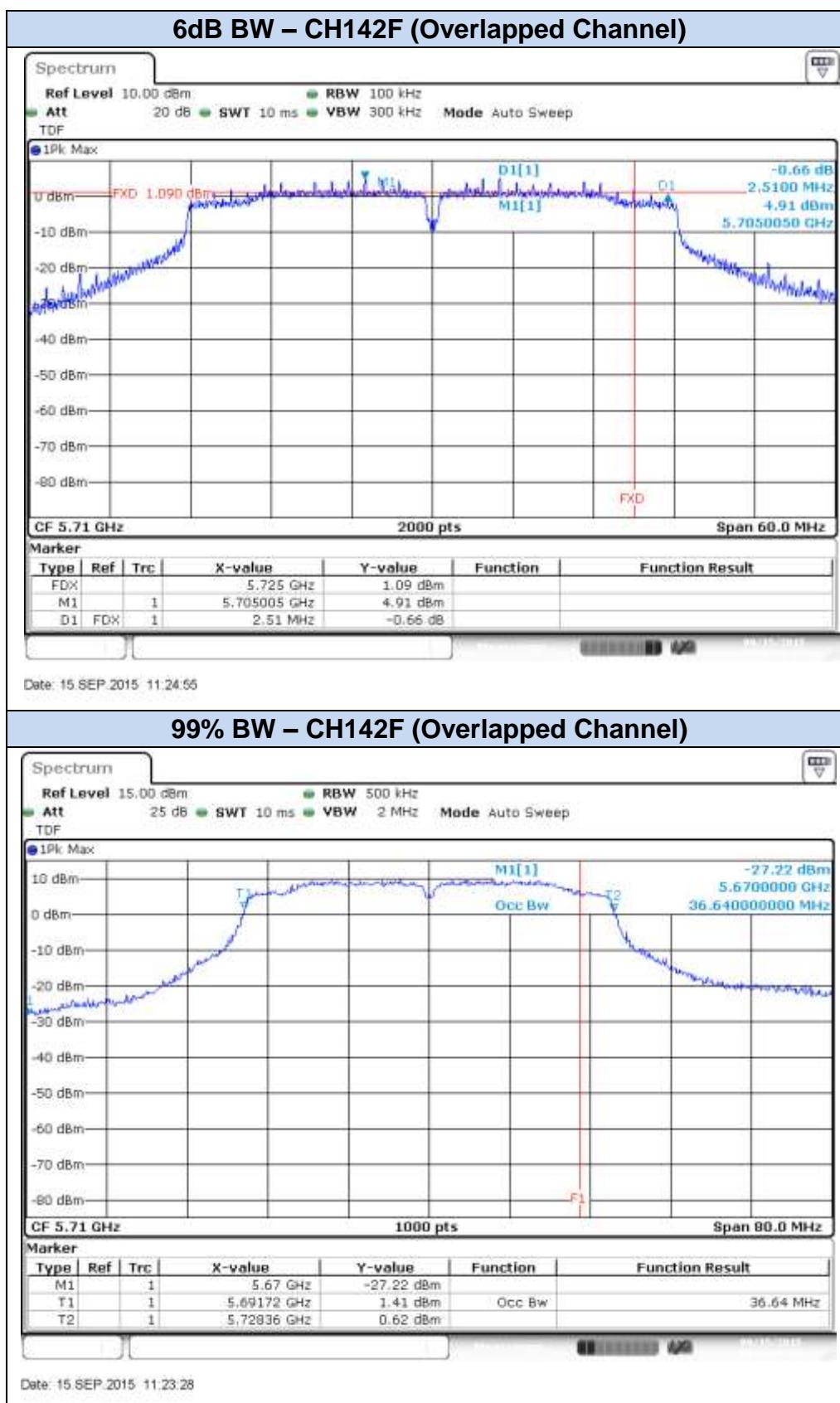
802.11n40, HT0 (SISO) – Chain B

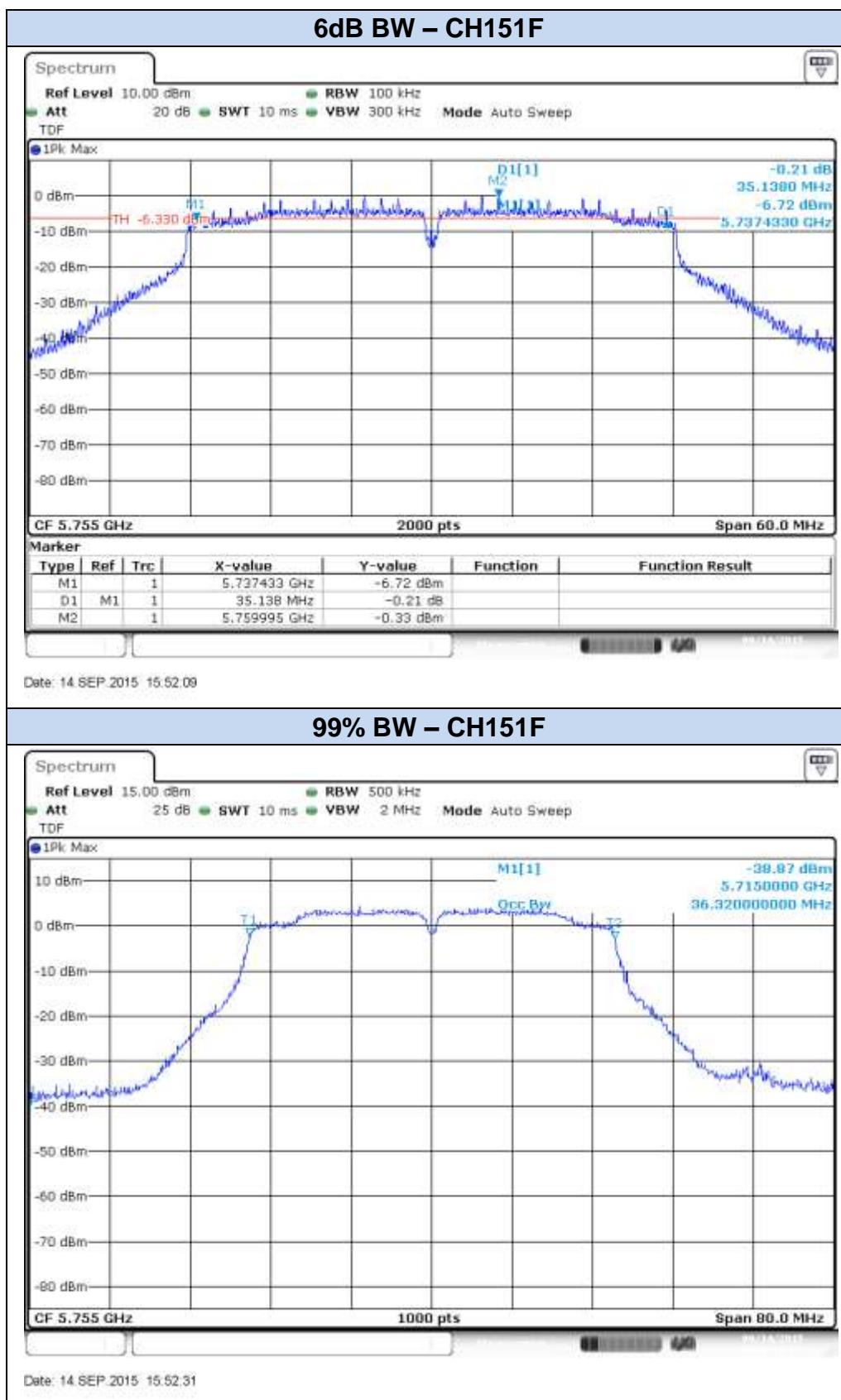


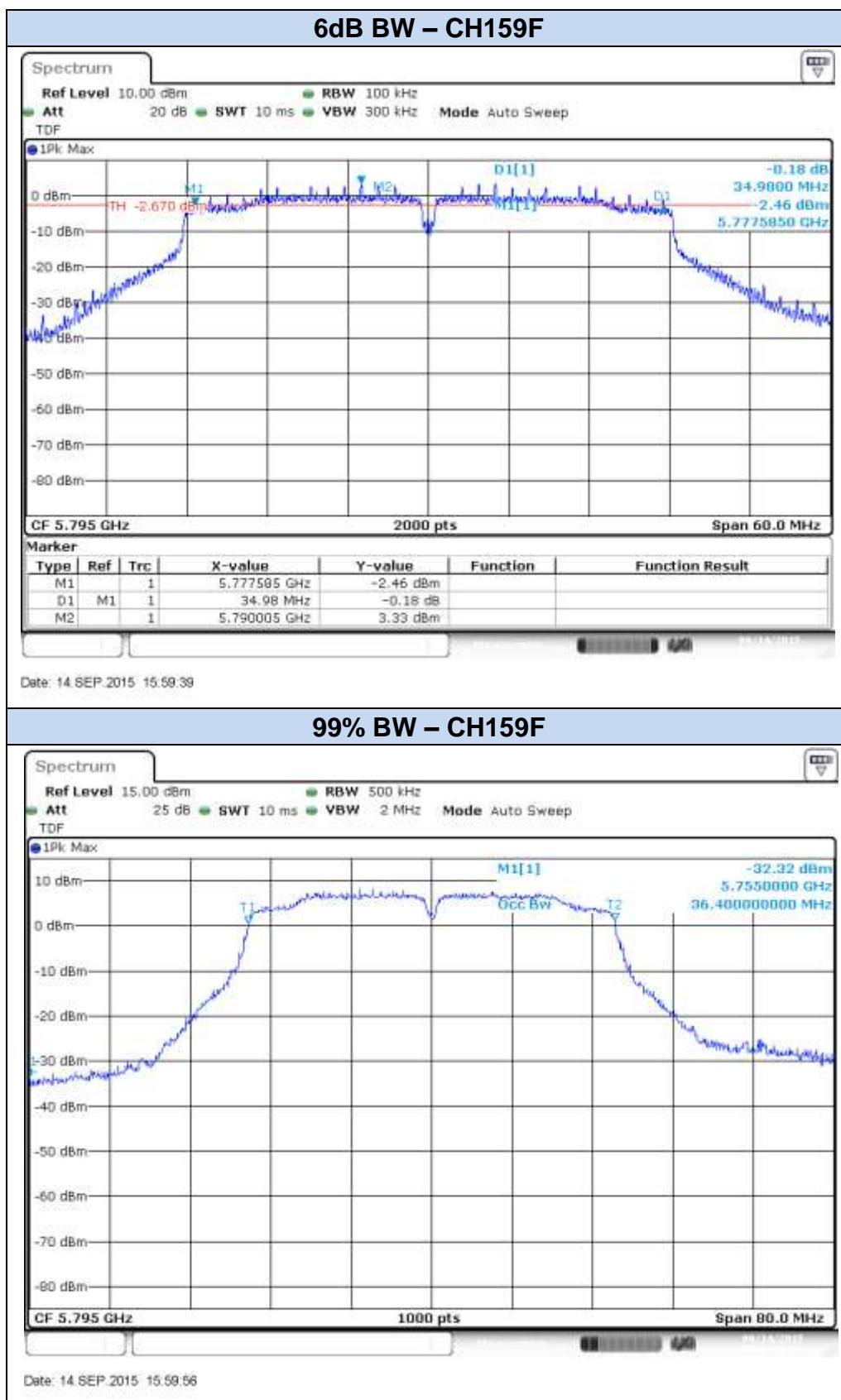




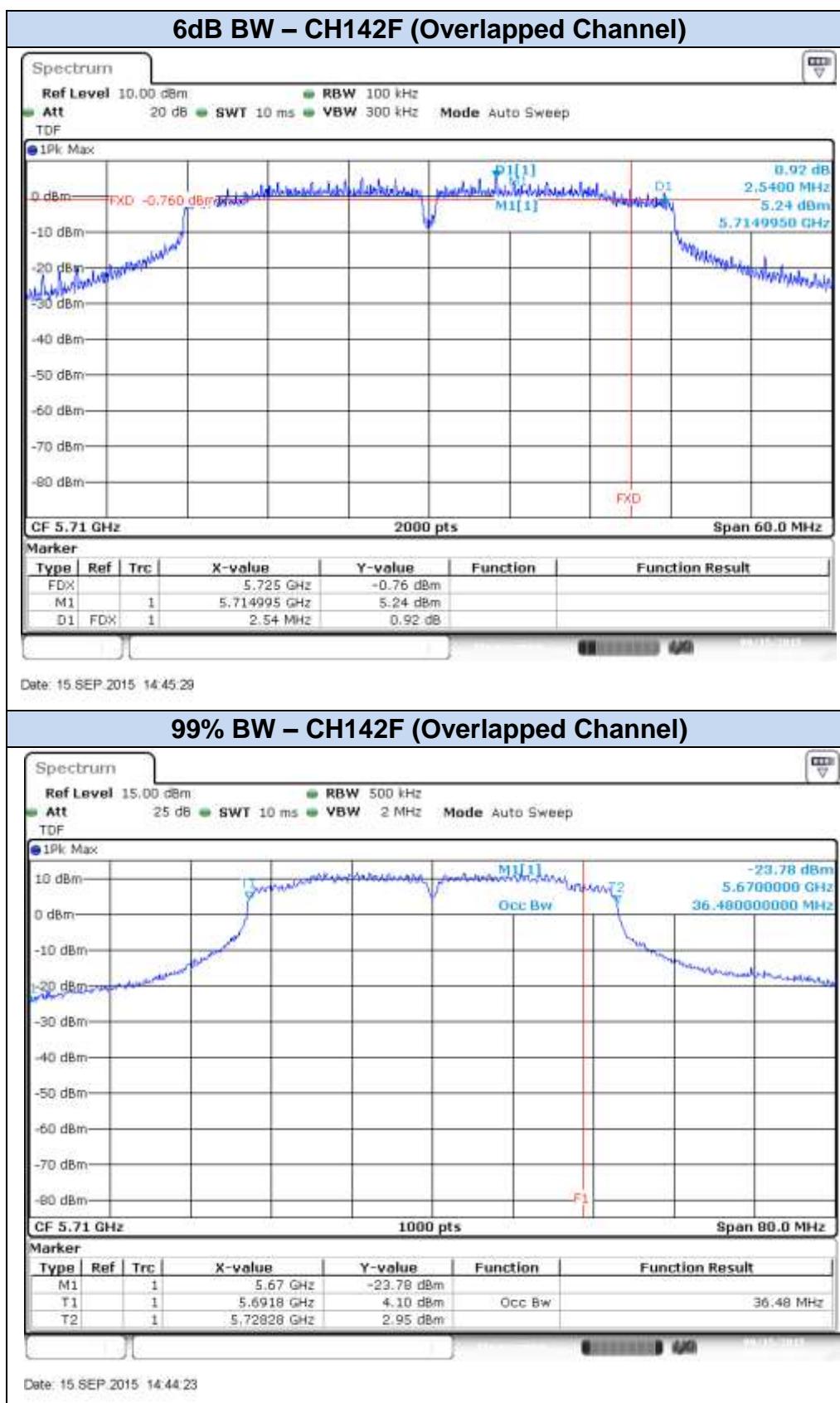
802.11n40, HT8 (MIMO) – Chain A

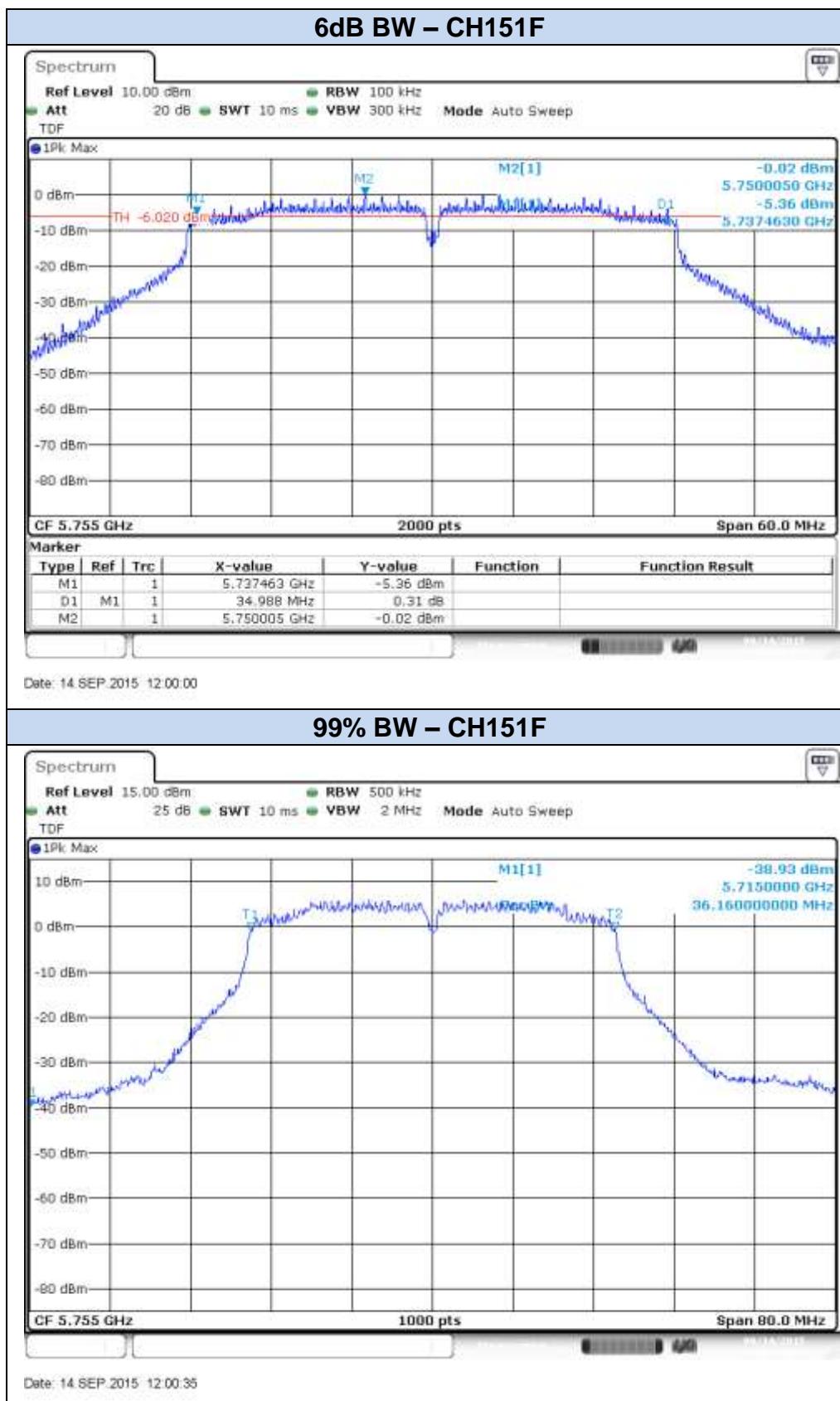


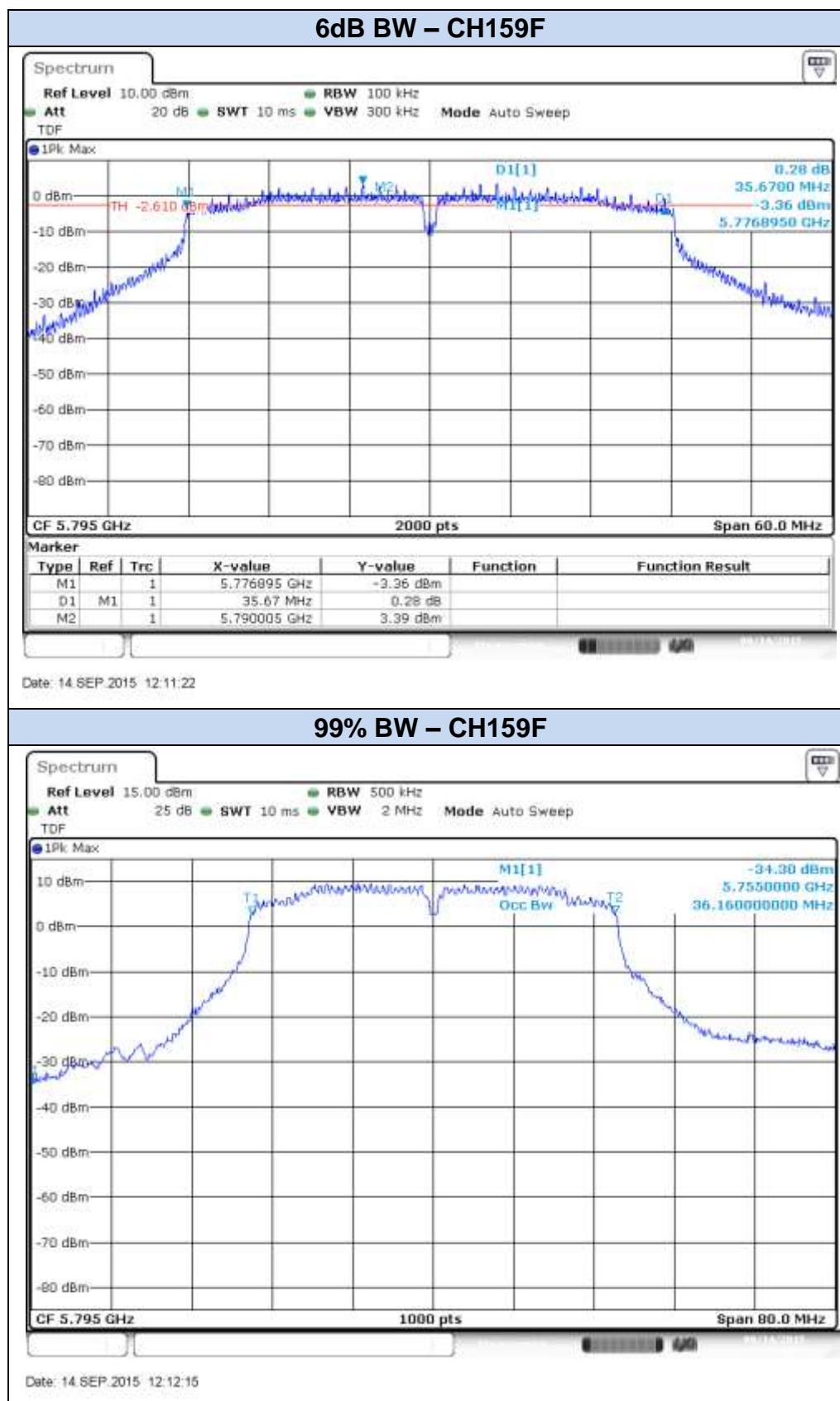




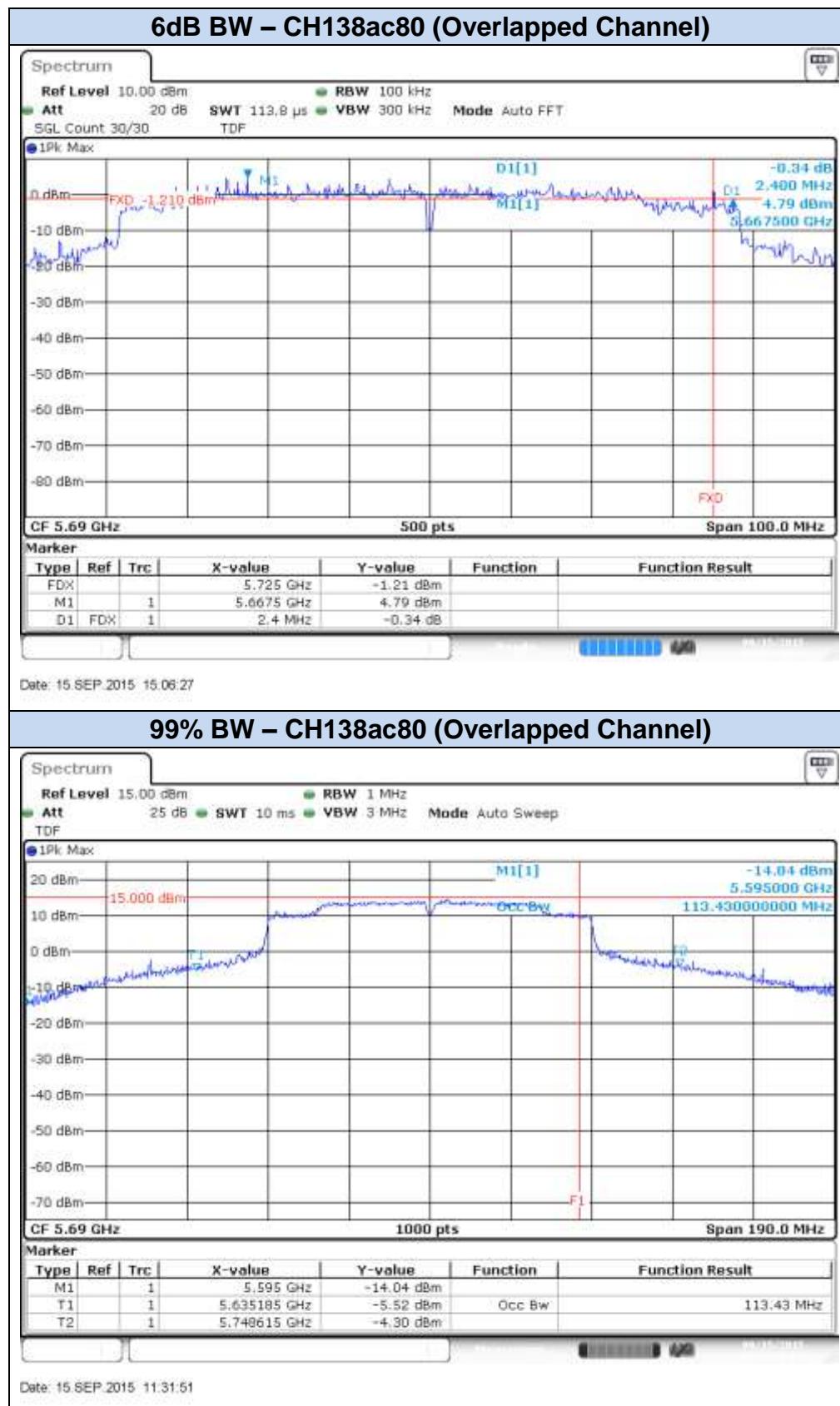
802.11n40, HT8 (MIMO) – Chain B

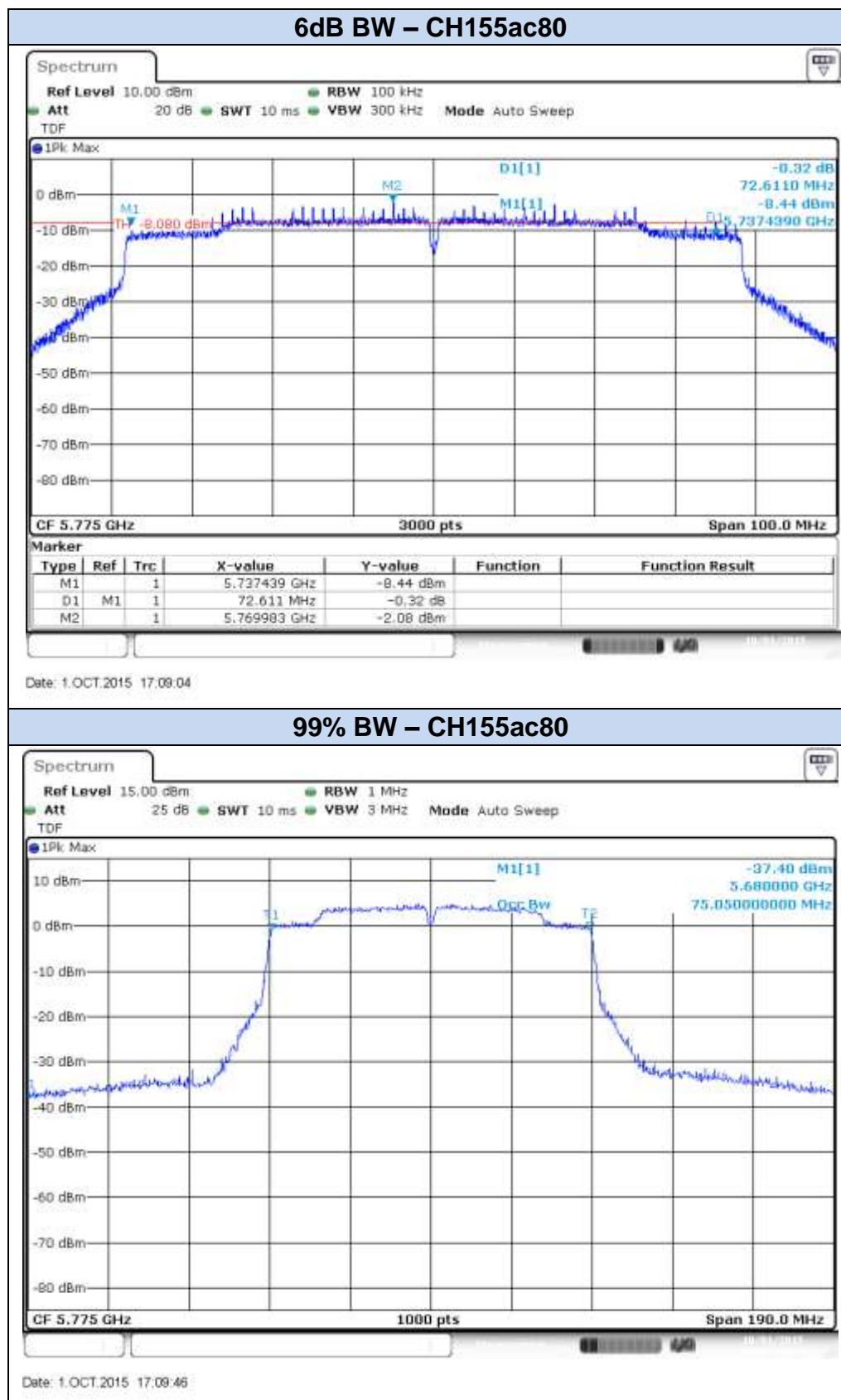




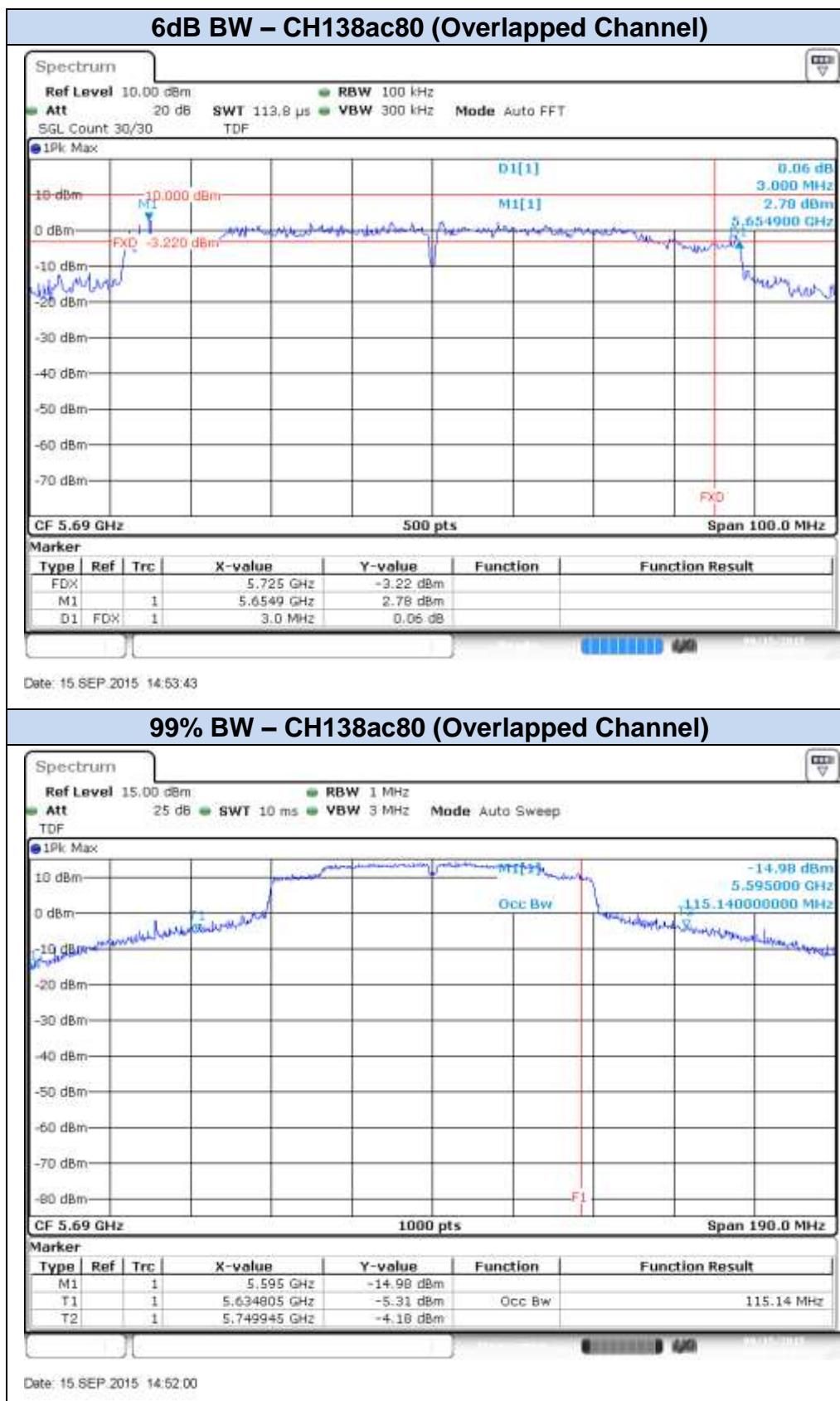


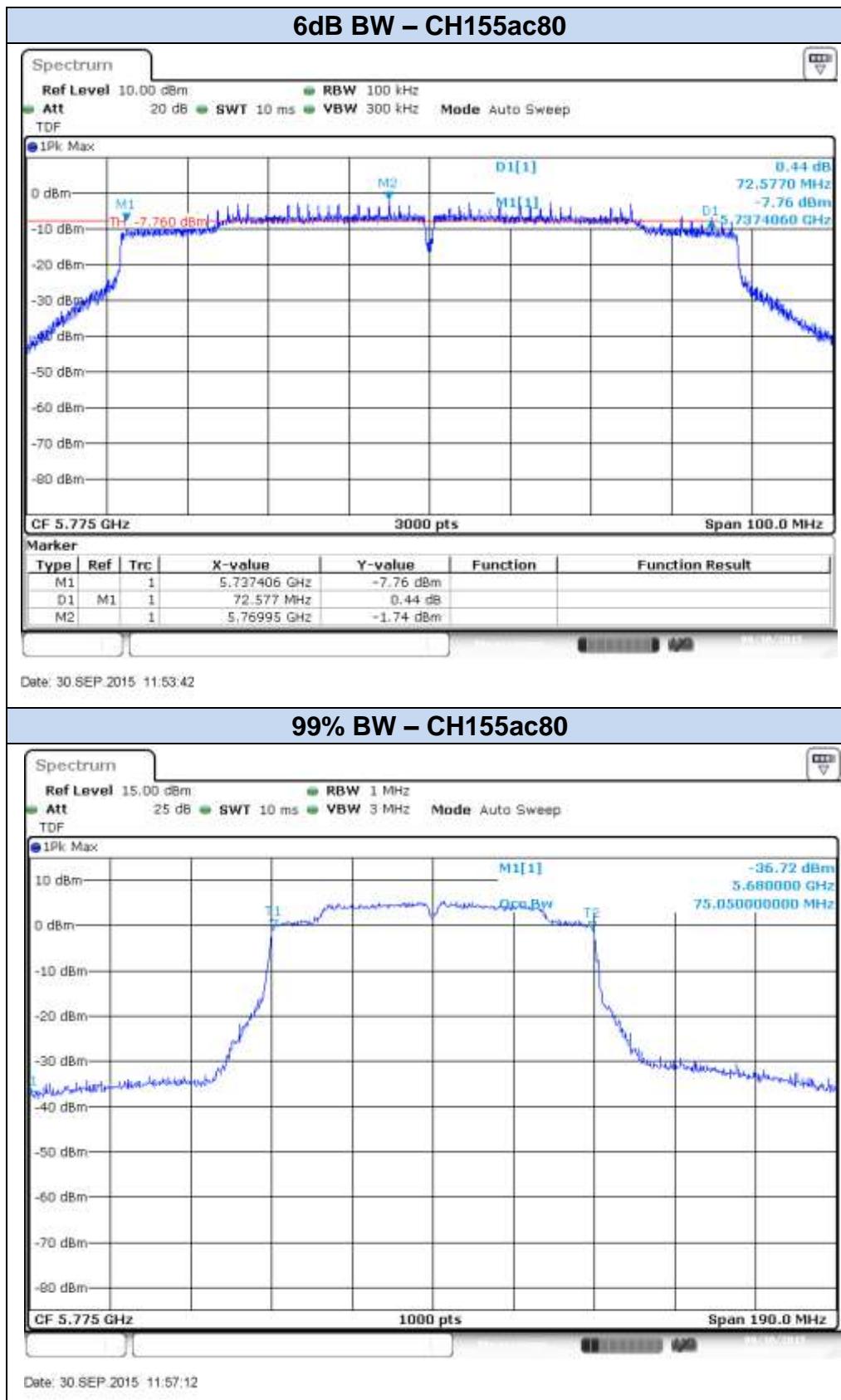
802.11ac80, VHT0 (SISO) – Chain A





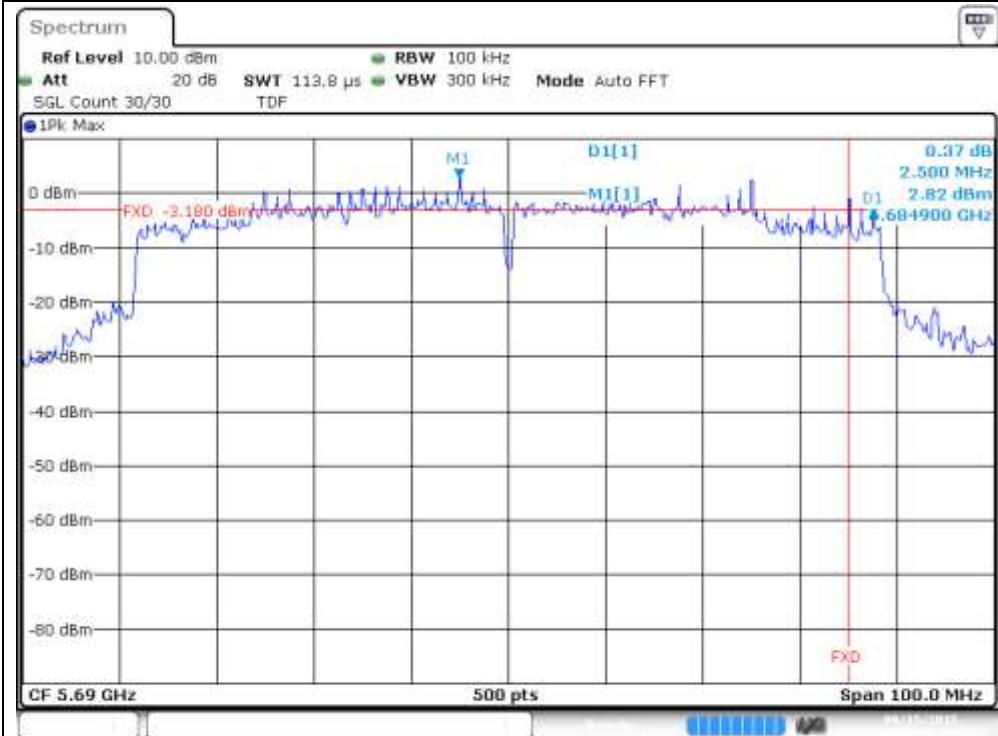
802.11ac80, VHT0 (SISO) – Chain B





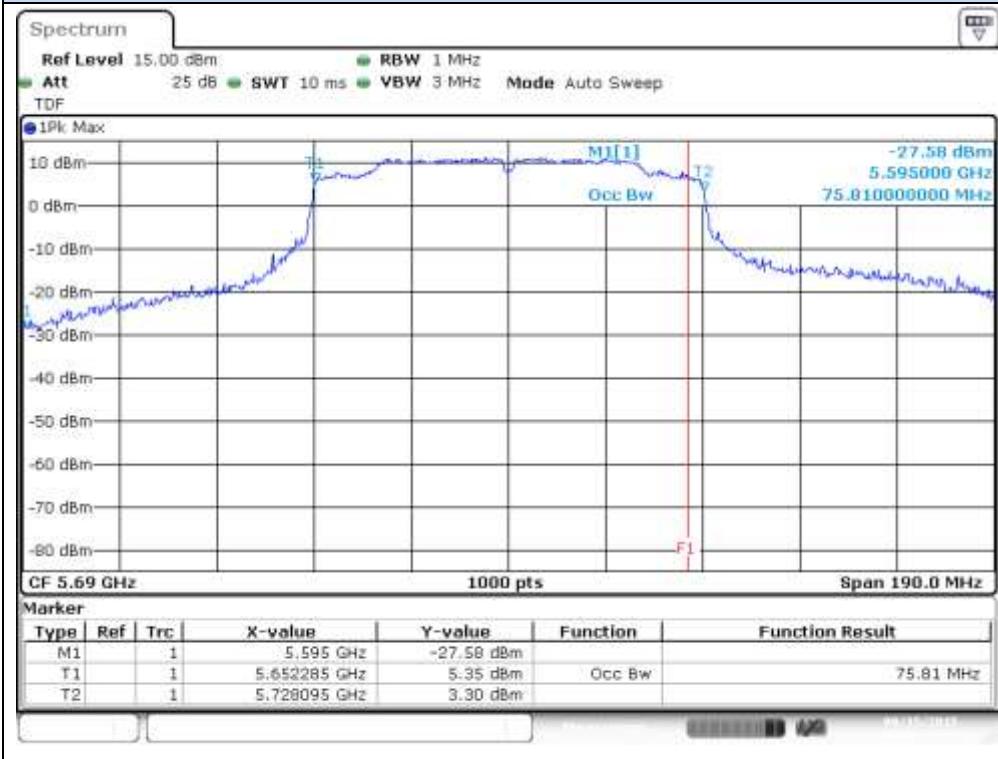
802.11ac80, VHT0 (MIMO) – Chain A

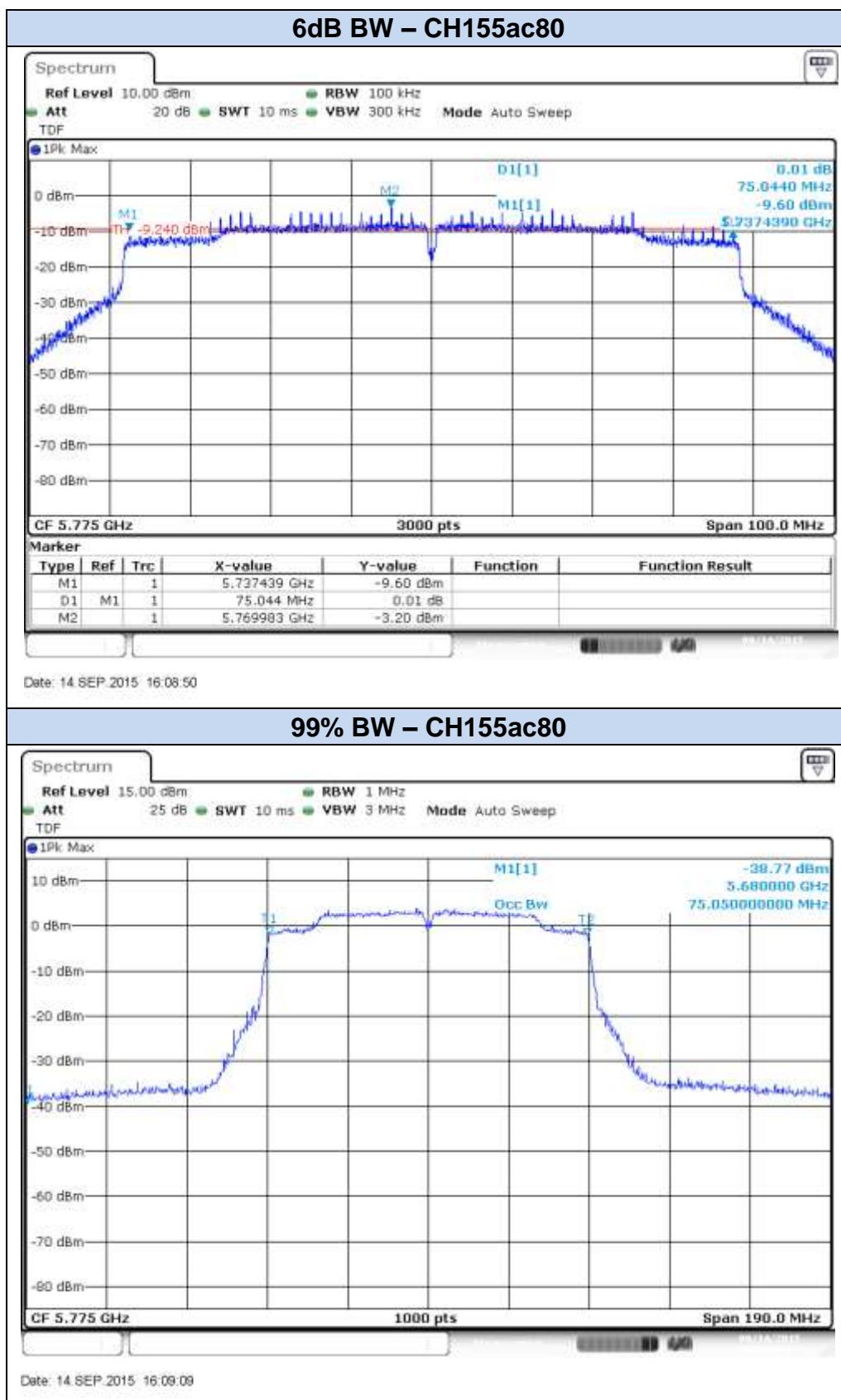
6dB BW – CH138ac80 (Overlapped Channel)



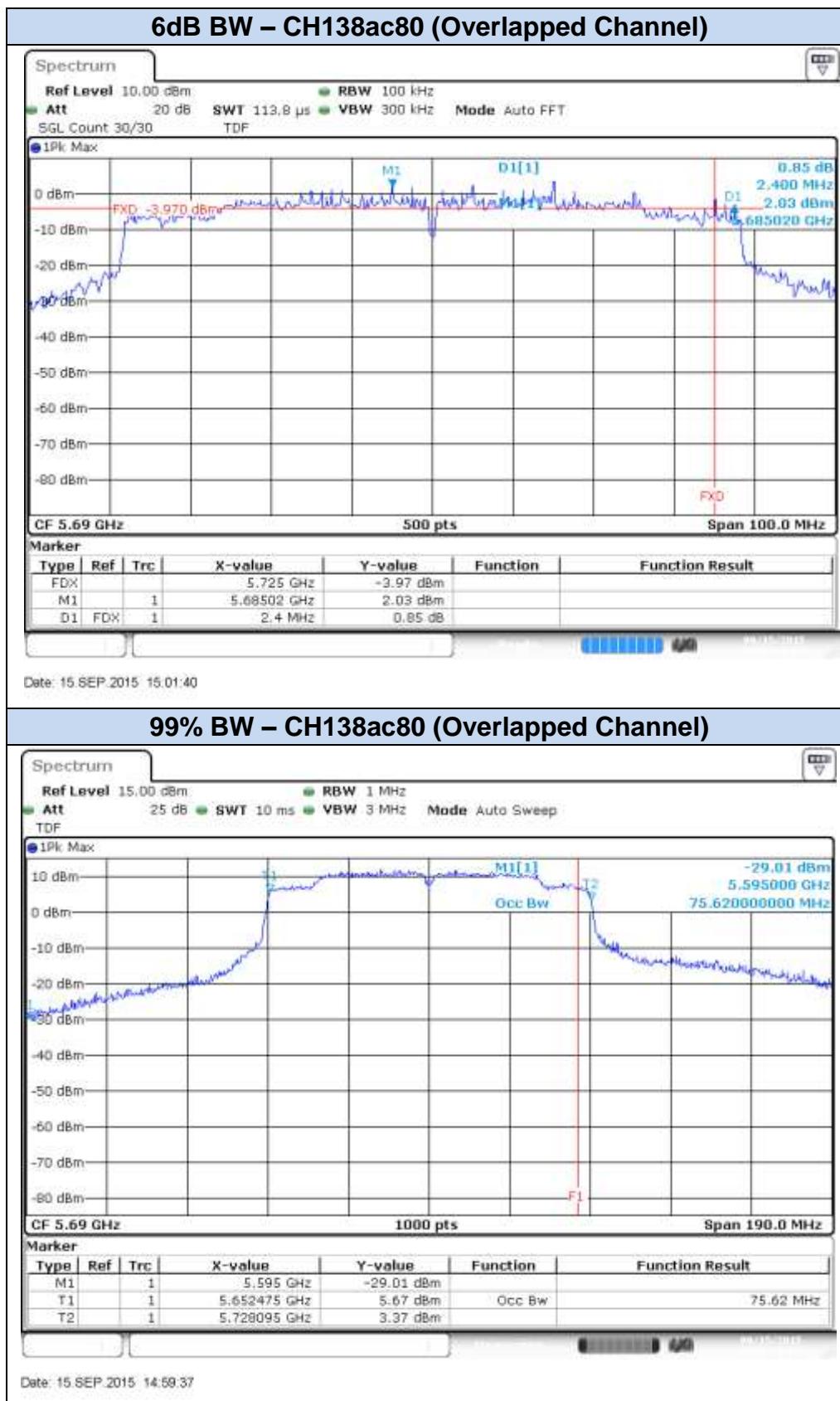
Date: 15 SEP 2015 11:58:16

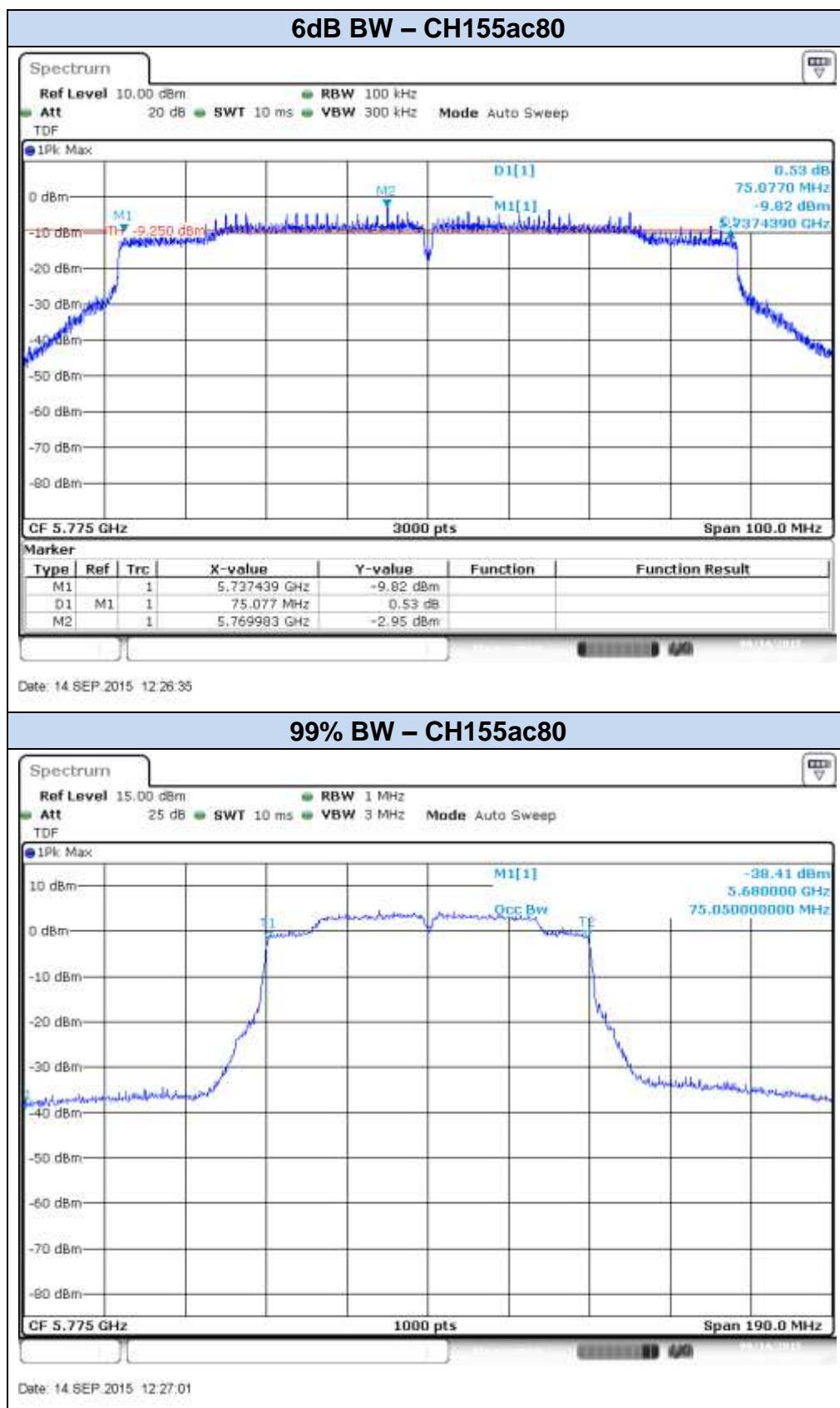
99% BW – CH138ac80 (Overlapped Channel)





802.11ac80, VHT0 (MIMO) – Chain B





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

Test limits:

FCC part	RSS part	Limits
15.407 (a) (3)	RSS-247 Clause 6.2.3 (1)	For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 dBm in any 1MHz 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 Guidance 789033 D01.

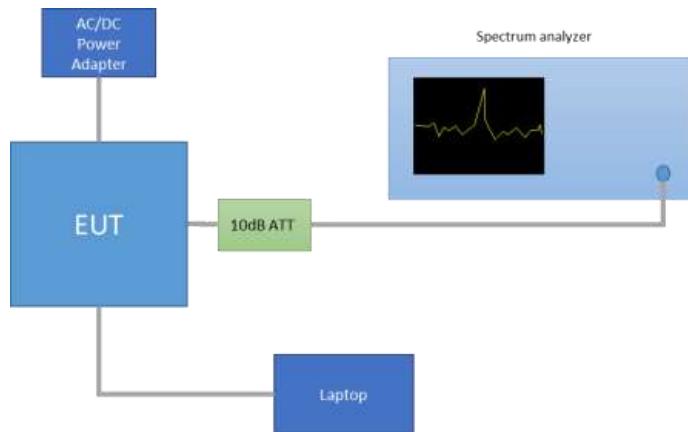
The maximum power spectral density (PSD) was measured using the method according to point F) (Method SA-2 Alternative) of Guidance 789033 D01.

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.



Results tables:

Mode	Rate	Meas. Duty Cycle [%]	CH	Freq. [MHz]	Antenna	Power [dBm]			
						Meas. Cond RMS	Duty cycle Compensated	EIRP	PSD Duty cycle Compensated
802.11a	6Mbps	97.8	149	5745	SISO CHAIN A	16.67	16.77	21.77	5.84
					SISO CHAIN B	17.04	17.14	22.14	6.52
			157	5785	SISO CHAIN A	21.16	21.26	26.26	10.22
					SISO CHAIN B	21.17	21.27	26.27	10.27
			165	5825	SISO CHAIN A	16.55	16.65	21.65	5.76
					SISO CHAIN B	16.40	16.50	21.50	5.62
	HT0	97.9	144*	5720	SISO CHAIN A	12.82	12.91	17.91	9.35
					SISO CHAIN B	12.74	12.83	17.83	9.33
			149	5745	SISO CHAIN A	16.18	16.27	21.27	5.21
					SISO CHAIN B	16.70	16.79	21.79	5.73
			157	5785	SISO CHAIN A	21.11	21.20	26.20	9.98
					SISO CHAIN B	21.06	21.15	26.15	9.95
802.11n20	HT8	96.3	144*	5720	MIMO CHAIN A	9.10	9.26	14.26	6.33
					MIMO CHAIN B	9.26	9.42	14.42	6.44
			149	5745	MIMO CHAIN A	14.43	14.59	19.59	3.51
					MIMO CHAIN B	12.42	12.58	17.58	1.54
			159	5785	MIMO CHAIN A	18.02	18.18	23.18	7.15
					MIMO CHAIN B	18.01	18.17	23.17	7.05
			165	5825	MIMO CHAIN A	14.5	14.66	19.66	3.6
					MIMO CHAIN B	15.02	15.18	20.18	4.1
802.11n40	HT0	96.1	142F*	5670	SISO CHAIN A	6.86	7.03	12.03	3.47
					SISO CHAIN B	6.92	7.09	12.09	3.58
			151F	5755	SISO CHAIN A	15.37	15.54	20.54	1.12
					SISO CHAIN B	15.86	16.03	21.03	1.58
			159F	5795	SISO CHAIN A	16.94	17.11	22.11	2.71
					SISO CHAIN B	17.14	17.31	22.31	2.89
	HT8	93.4	142F*	5670	MIMO CHAIN A	3.86	4.16	9.16	0.59
					MIMO CHAIN B	4.11	4.41	9.41	0.80
			151F	5755	MIMO CHAIN A	12.49	12.79	17.79	-1.59
					MIMO CHAIN B	12.58	12.88	17.88	-1.43
			159F	5795	MIMO CHAIN A	16.22	16.52	21.52	2.18
					MIMO CHAIN B	16.08	16.38	21.38	2.05

Mode	Rate	Meas. Duty Cycle [%]	CH	Freq. [MHz]	Antenna	Power [dBm]			
						Meas. Cond RMS	Duty cycle Compensated	EIRP	PSD Duty cycle Compensated
802.11ac80	VHT0	92.2	138ac80*	5690	SISO CHAIN A	3.08	3.43	8.43	0.12
					SISO CHAIN B	3.74	4.09	9.09	-0.11
		88.4	155ac80	5775	SISO CHAIN A	12.31	12.66	17.66	-4.45
					SISO CHAIN B	12.9	13.25	18.25	-3.84
	VHT0	88.4	138ac80*	5690	MIMO CHAIN A	0.10	0.63	5.63	-2.74
					MIMO CHAIN B	-0.11	0.42	5.42	-2.87
		88.4	155ac80	5775	MIMO CHAIN A	10.82	11.35	16.35	-5.60
					MIMO CHAIN B	10.9	11.43	16.43	-5.60

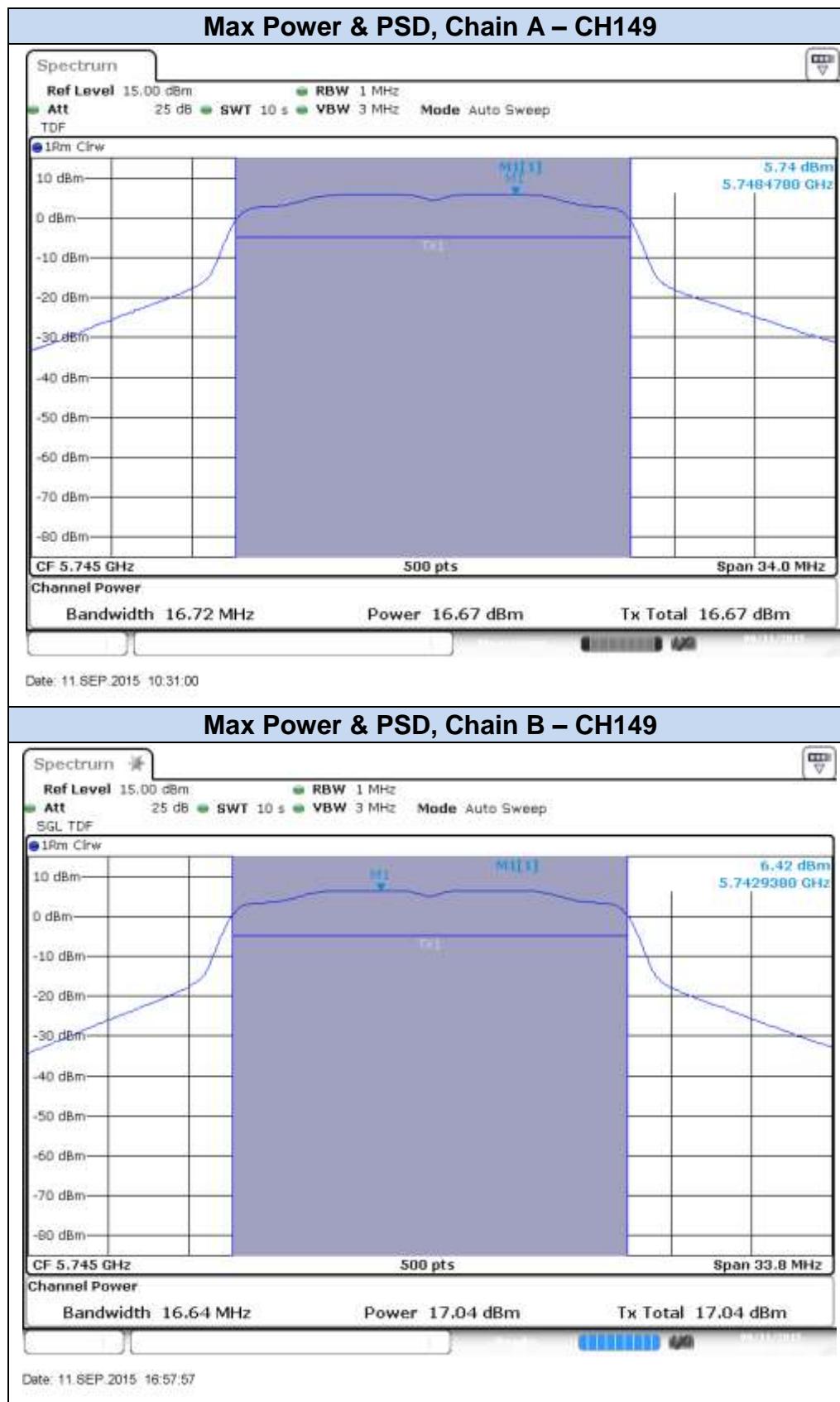
Max Value

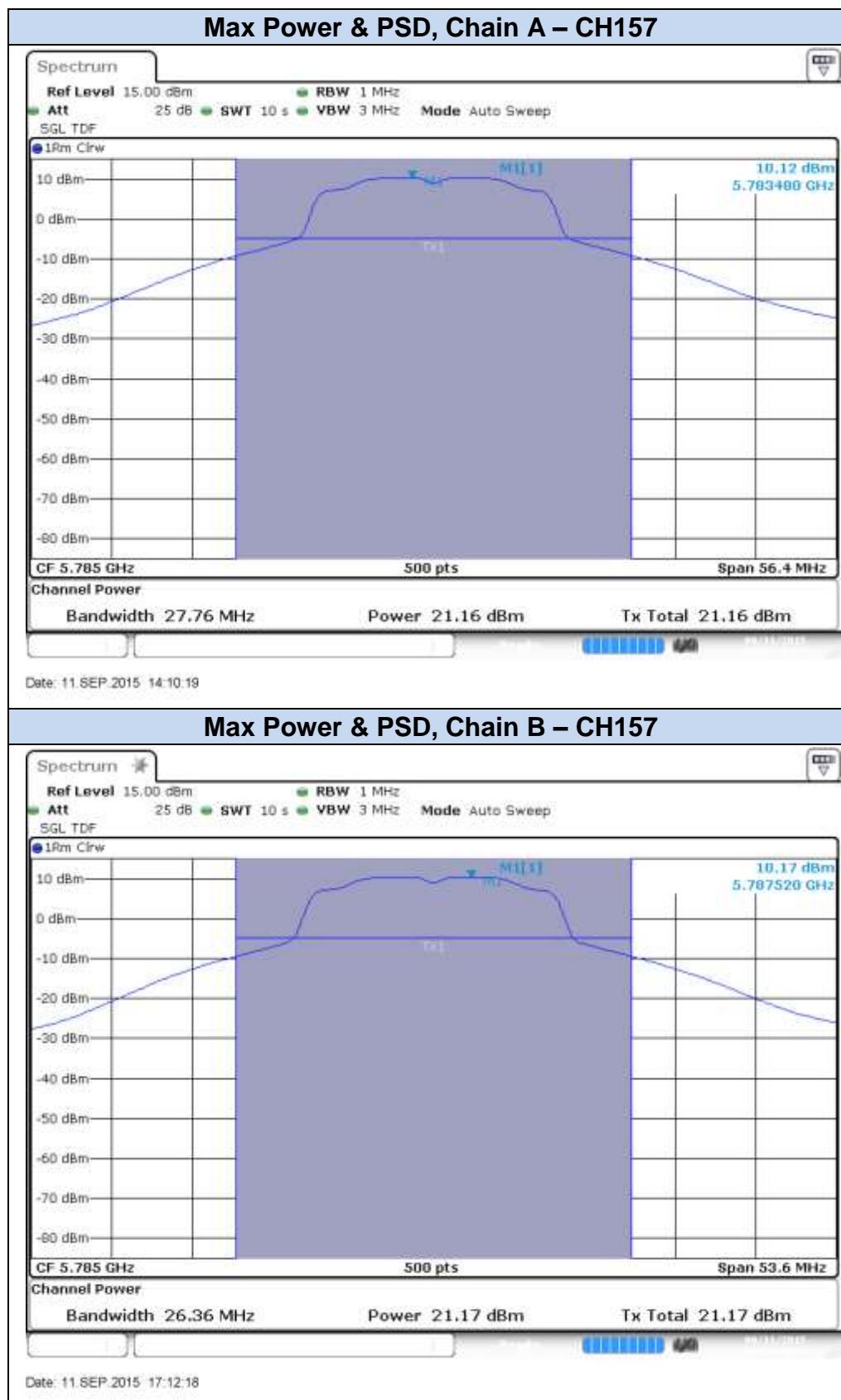
MIMO modes – Combined results

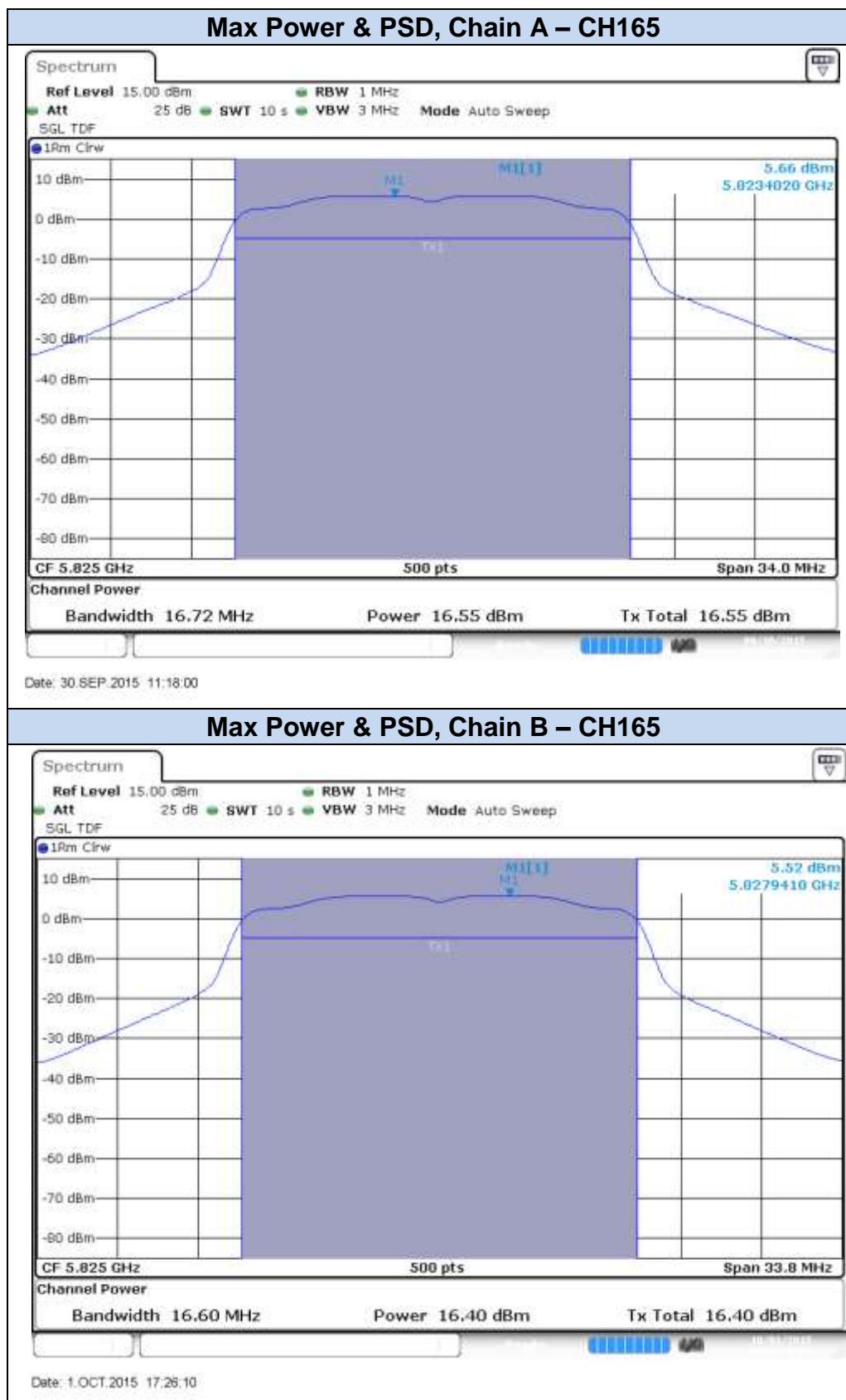
Mode	Rate	Channel	Frequency (MHz)	Antenna	Combined, Duty Cycle compensated	EIRP	Combined PSD
802.11n20	HT8	144*	5720	MIMO CHAIN A + CHAIN B	12.36	17.36	9.24
		149	5745		16.72	21.72	5.65
		157	5785		21.19	26.19	10.12
		165	5825		17.94	22.94	6.87
802.11n40	HT8	142F*	5670	MIMO CHAIN A + CHAIN B	7.29	12.29	3.41
		151F	5755		15.84	20.84	1.50
		159F	5795		19.46	24.46	5.12
		138ac80*	5690		3.54	8.54	-0.32
802.11ac80	VHT0	155ac80	5775		14.40	19.40	-2.59

Max Value

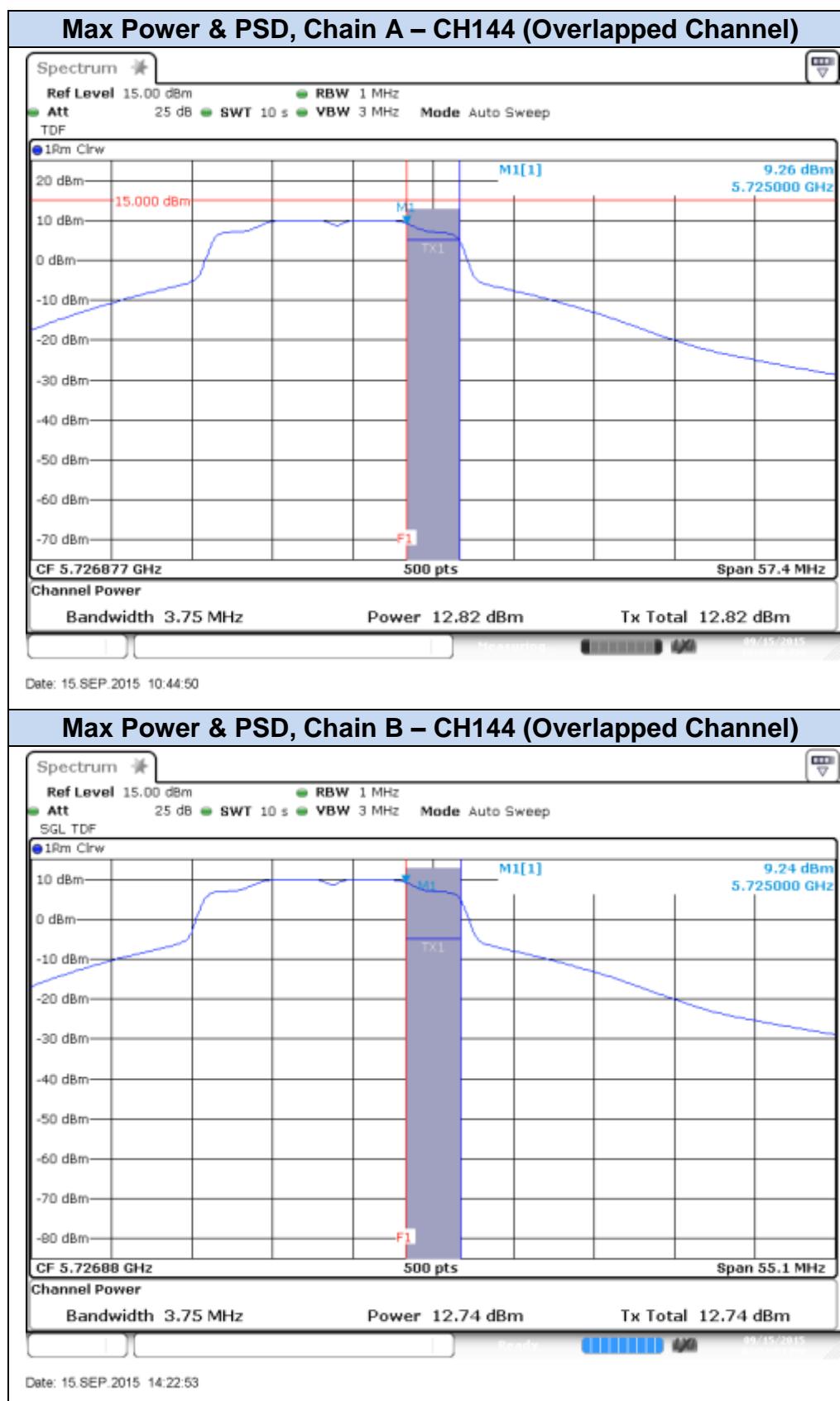
* Overlapped channels between U-NII-2C and U-NII-3

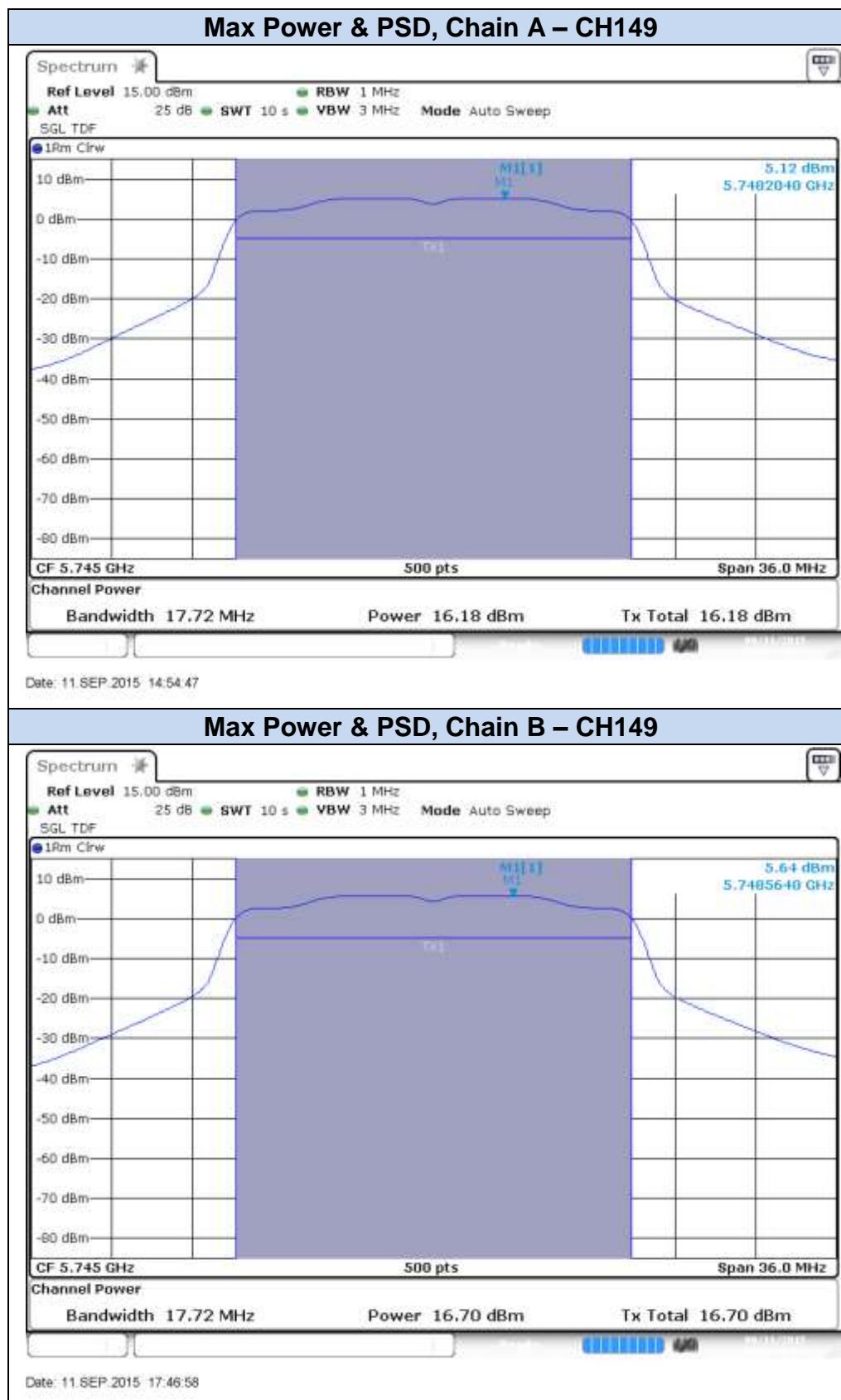
Results screenshot:**802.11a, 6Mbps**

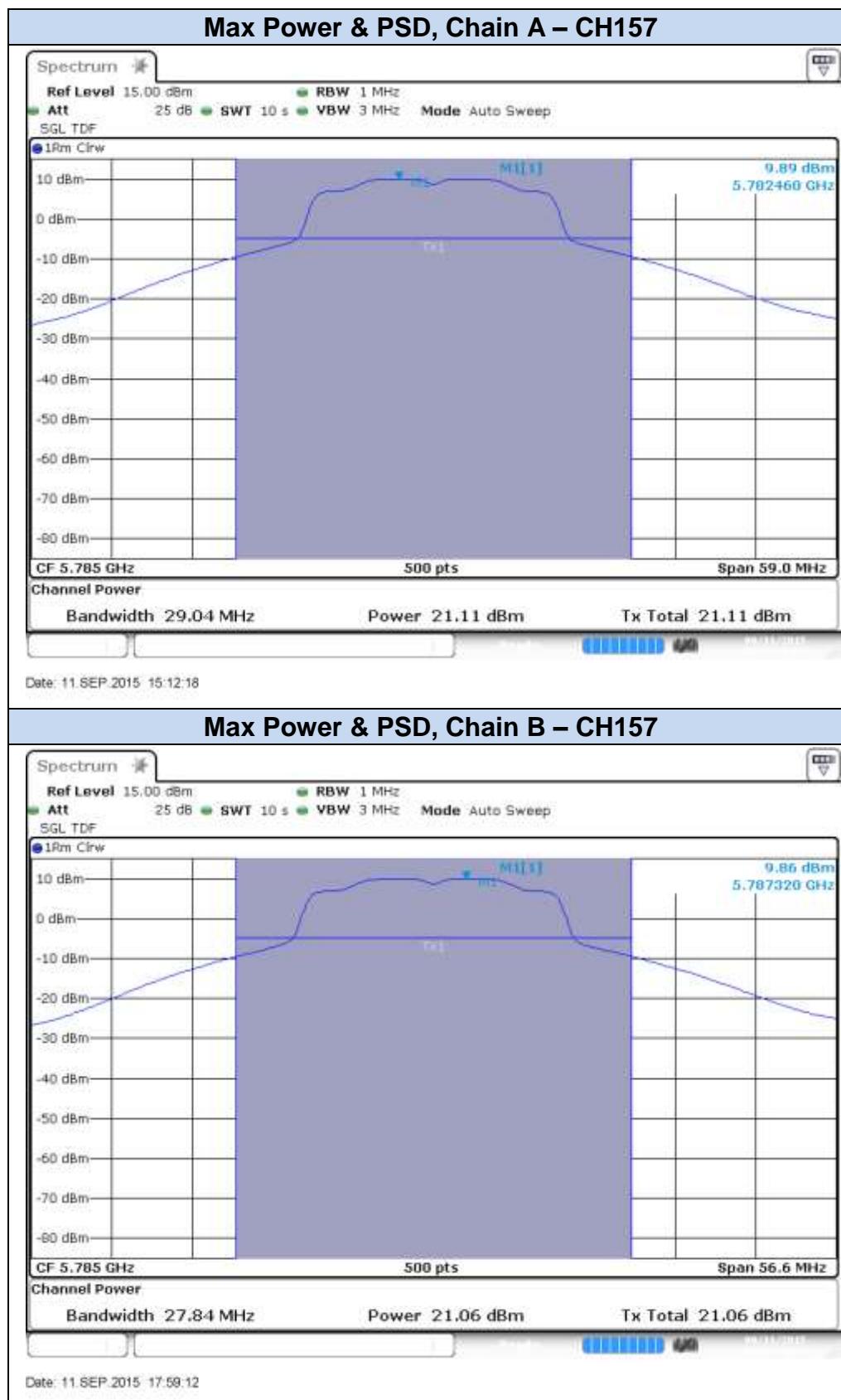


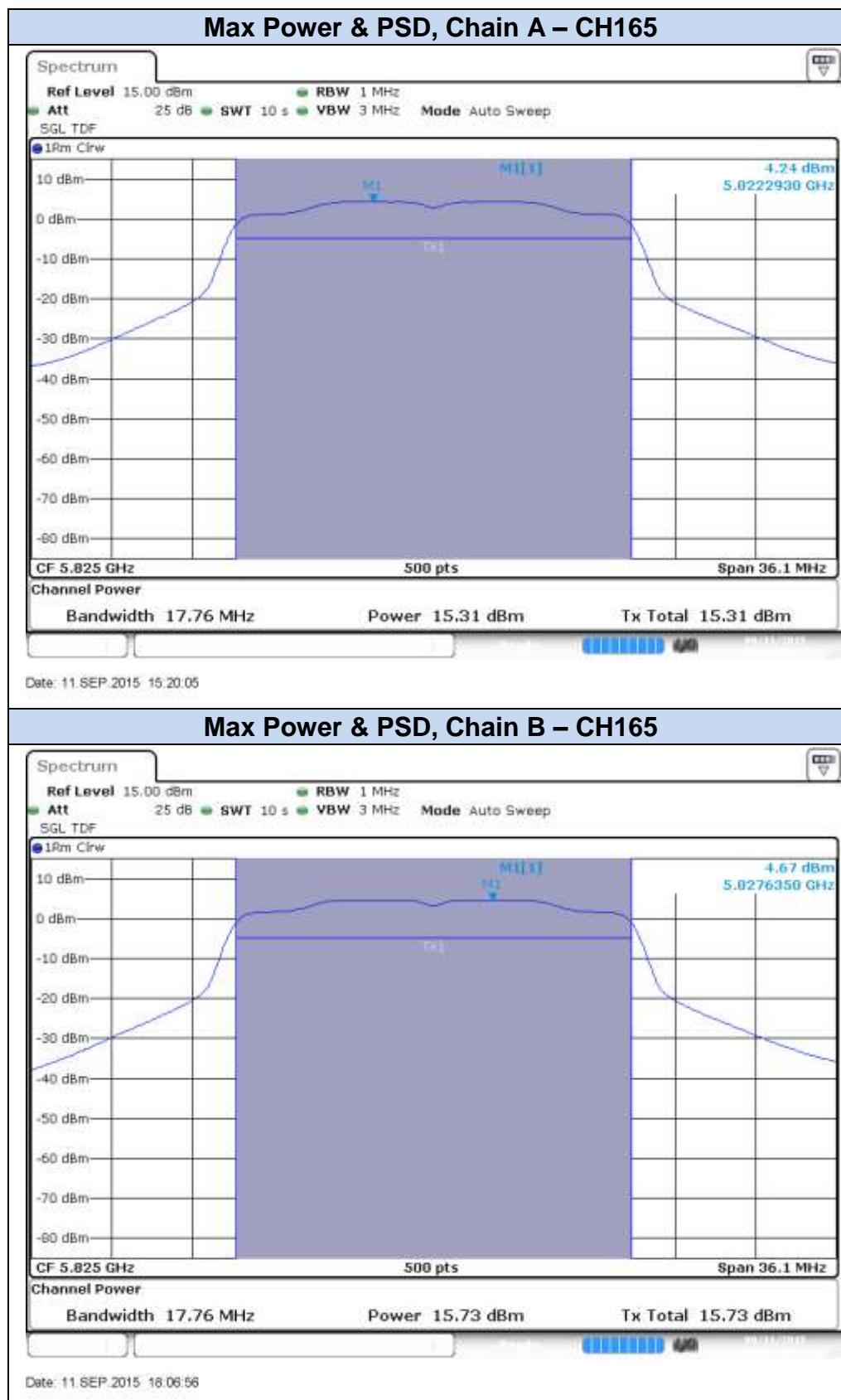


802.11n20, HT0 (SISO)

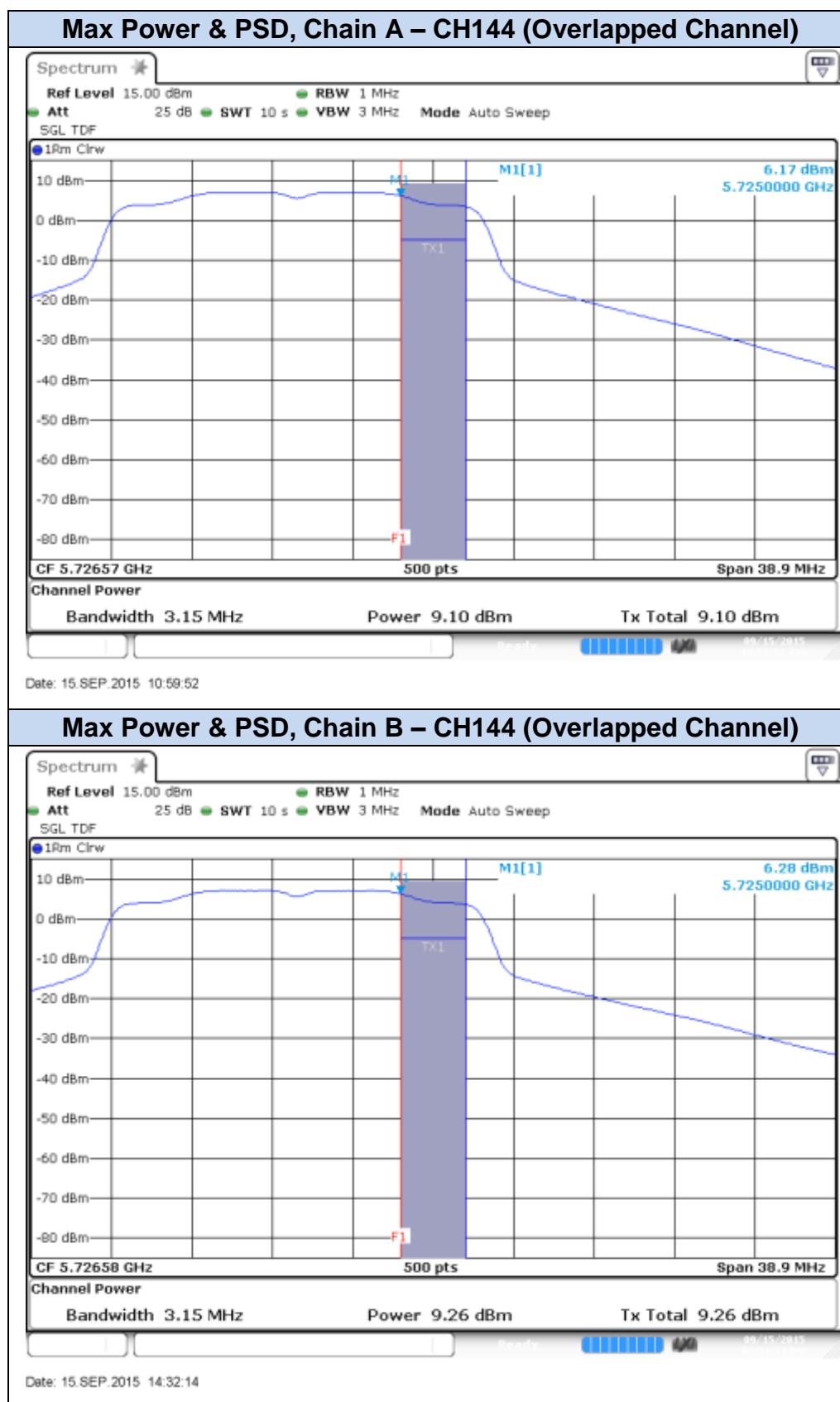


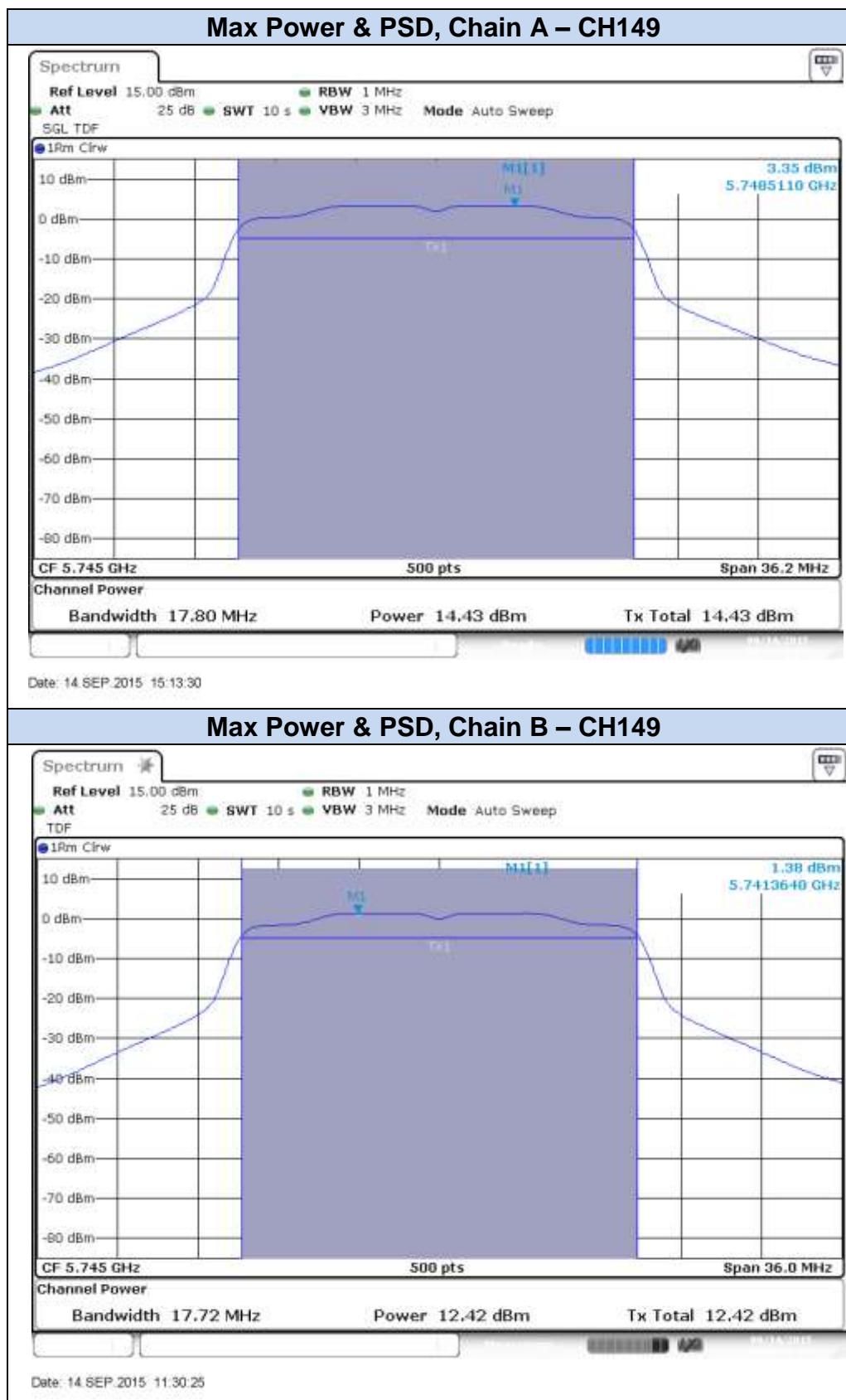


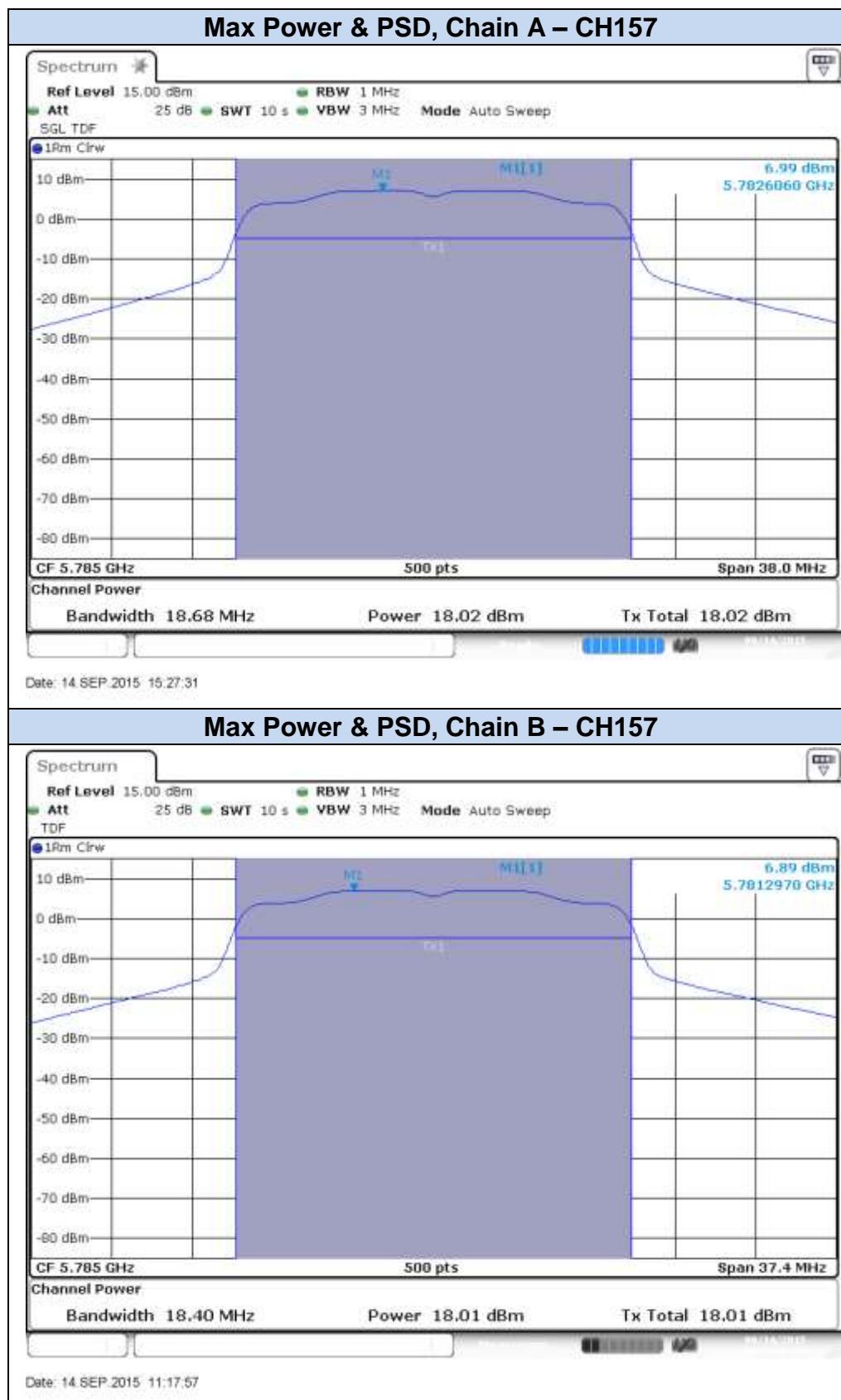


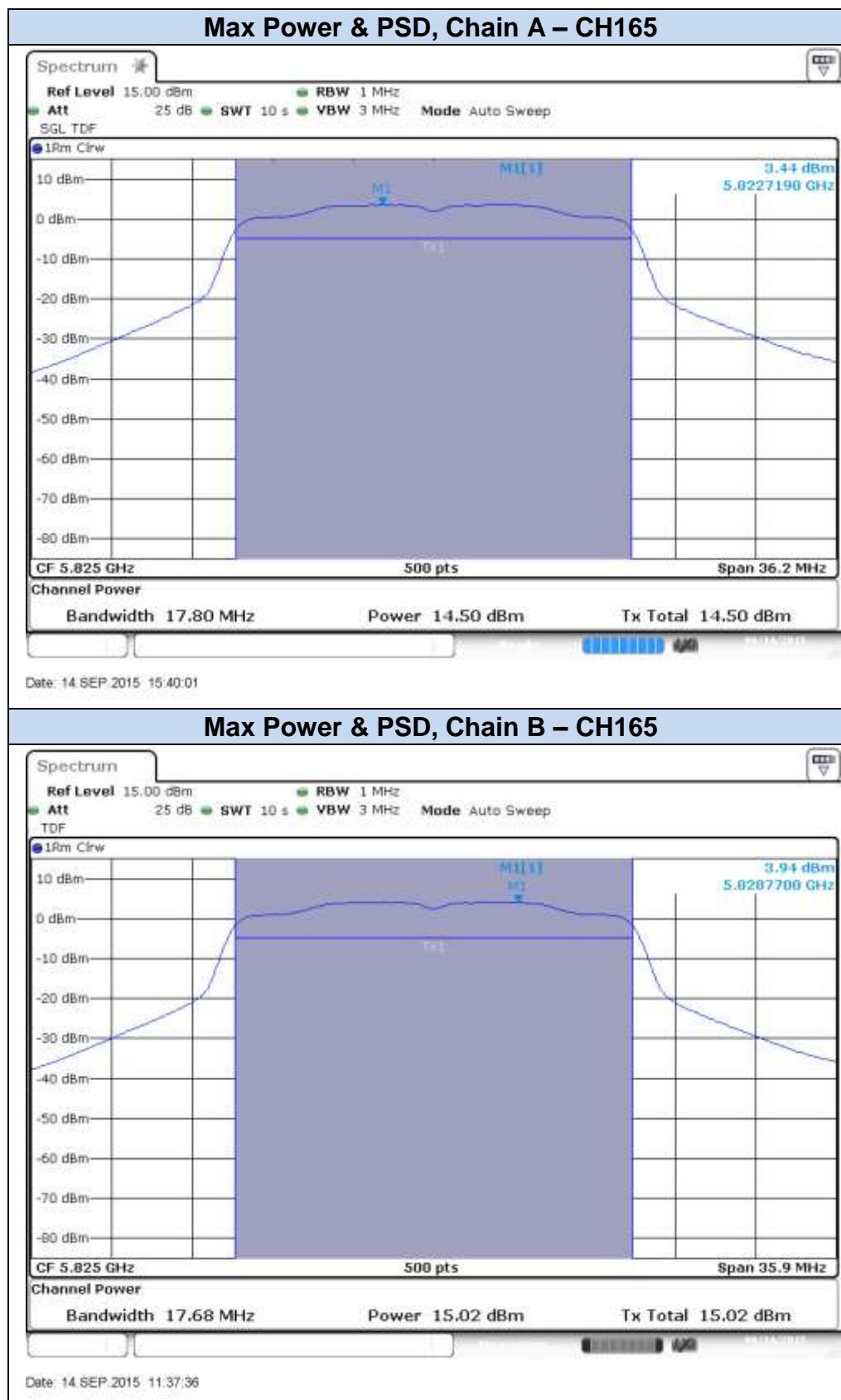


802.11n20, HT8 (MIMO)

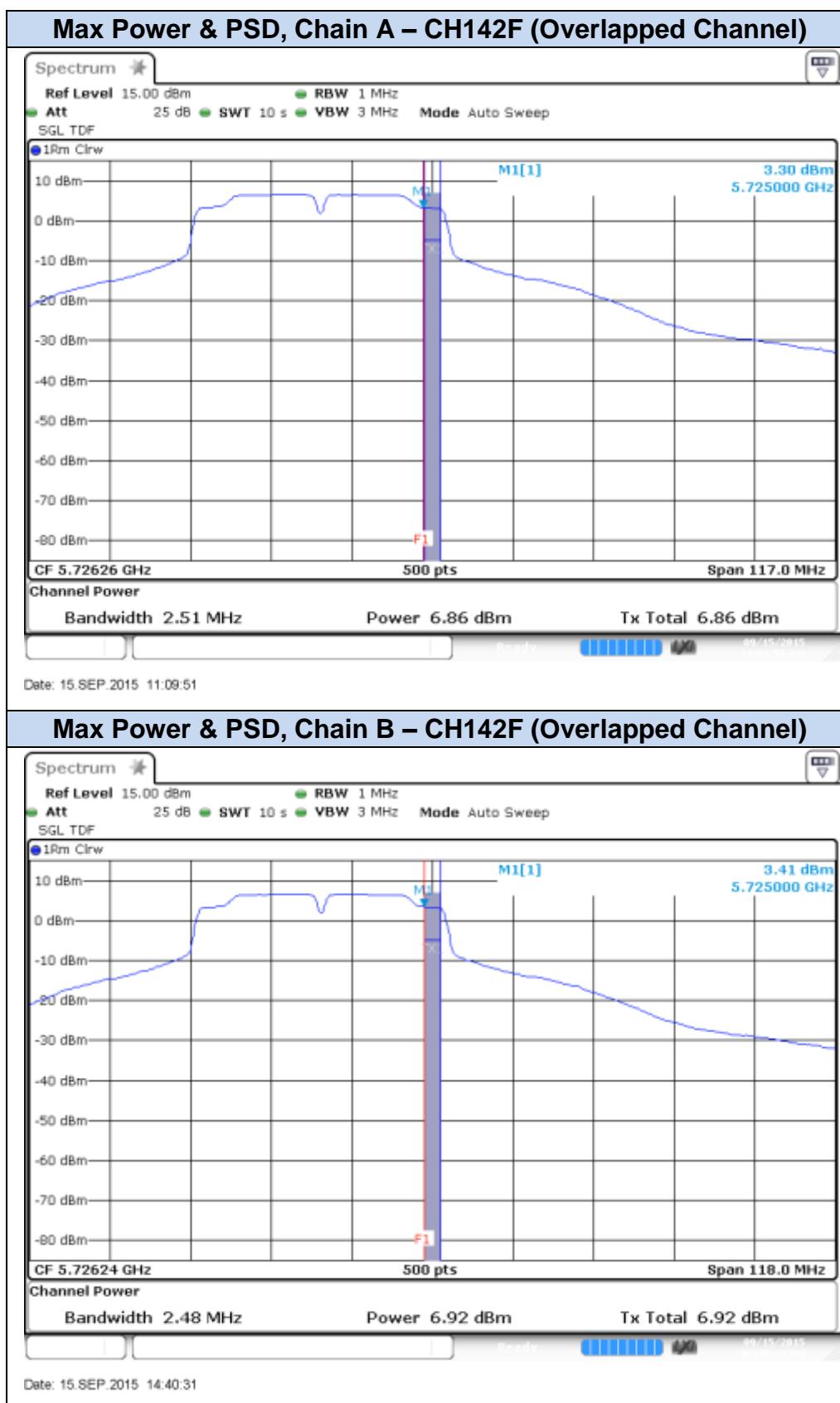


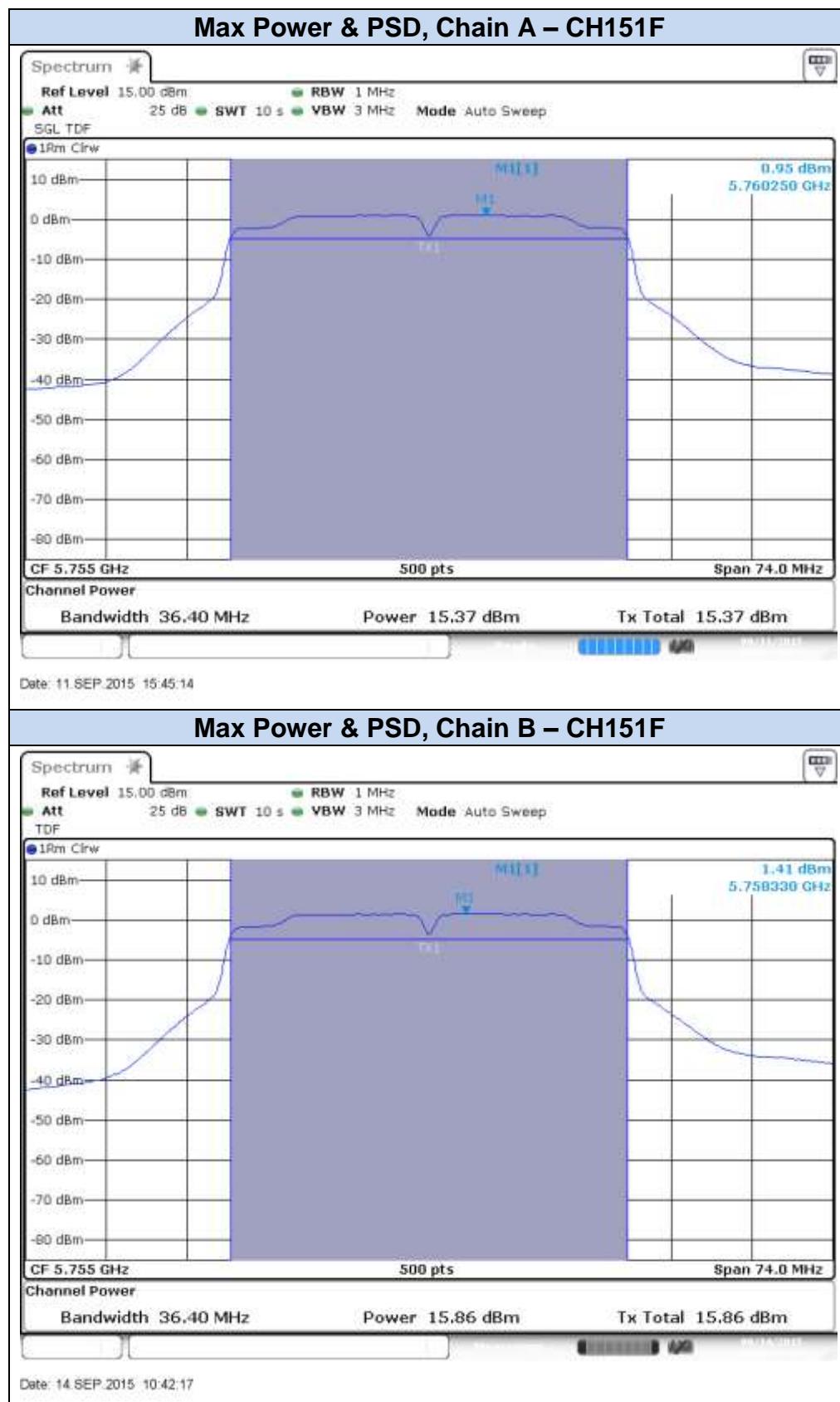






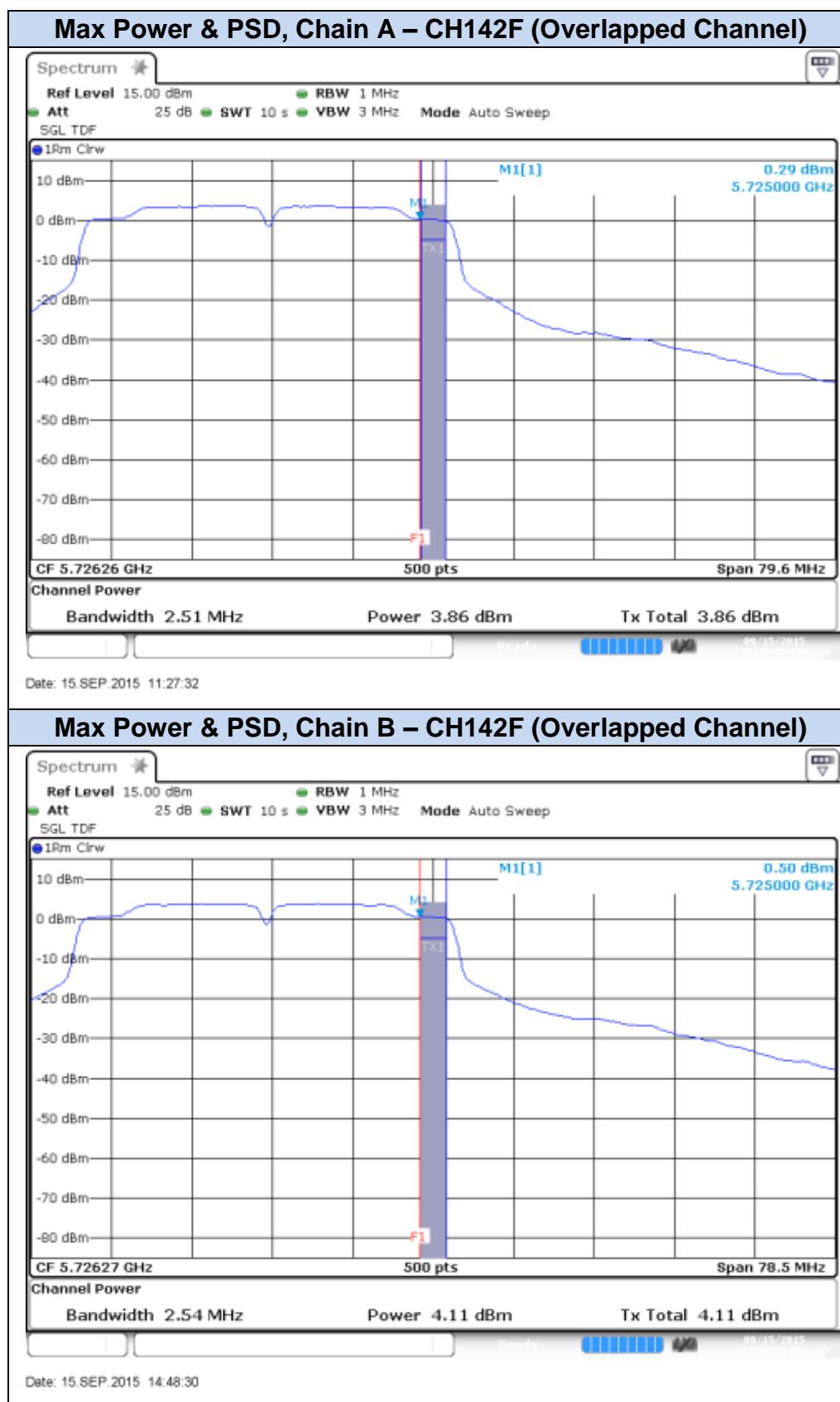
802.11n40, HT0 (SISO)

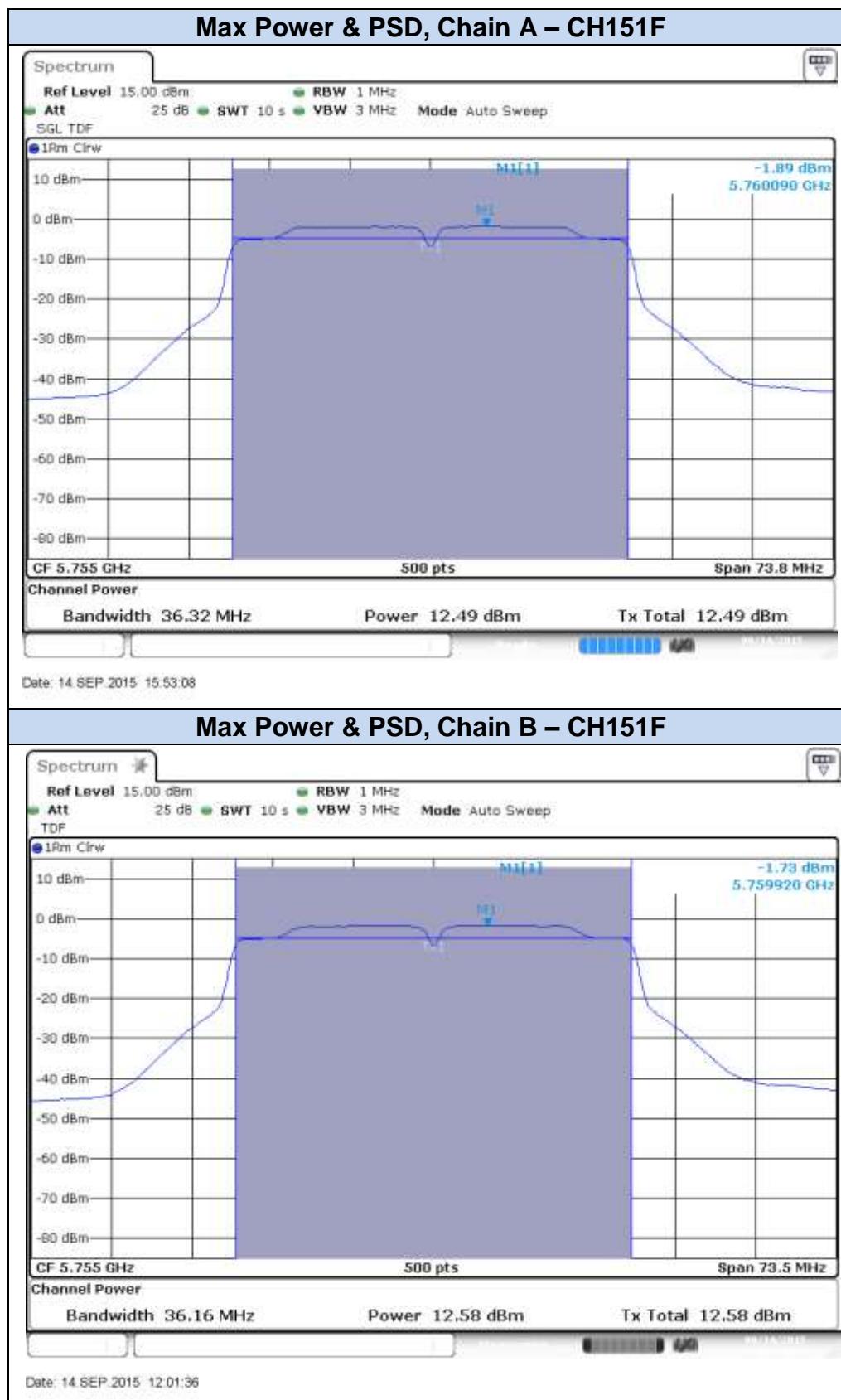






802.11n40, HT8 (MIMO)

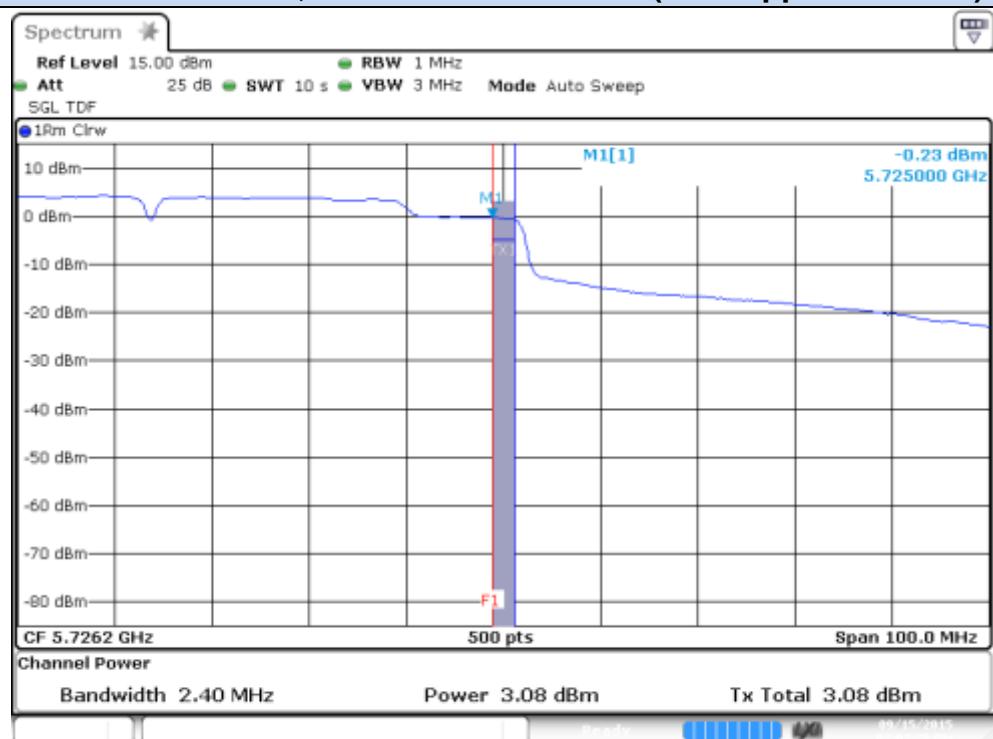




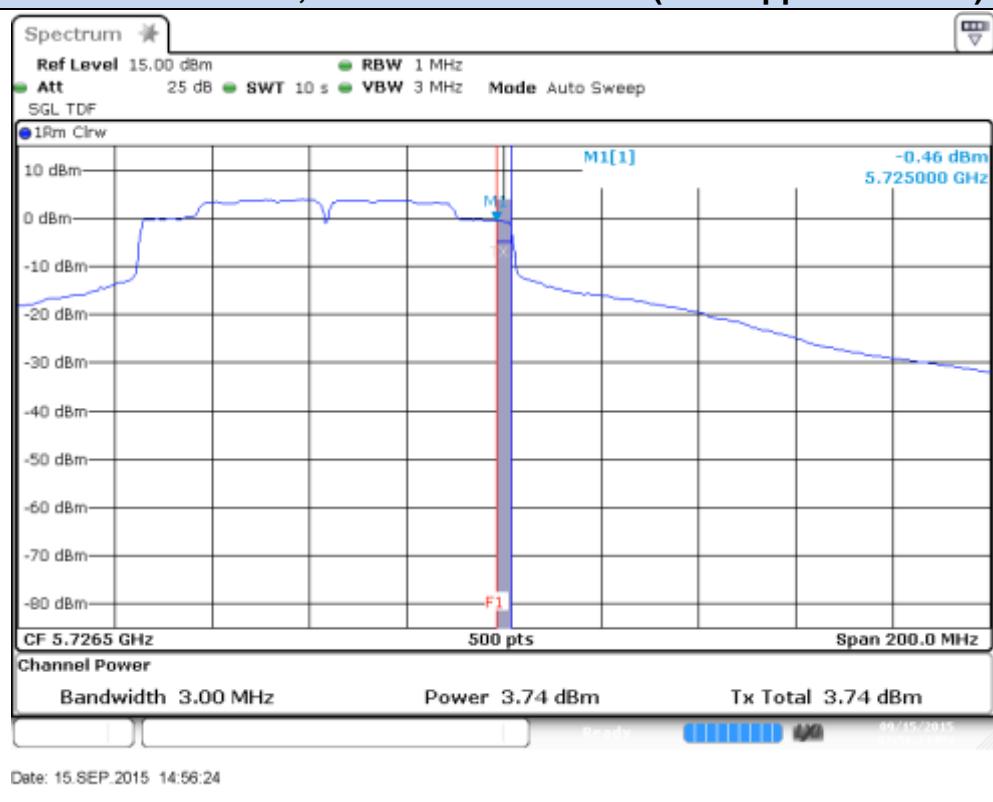


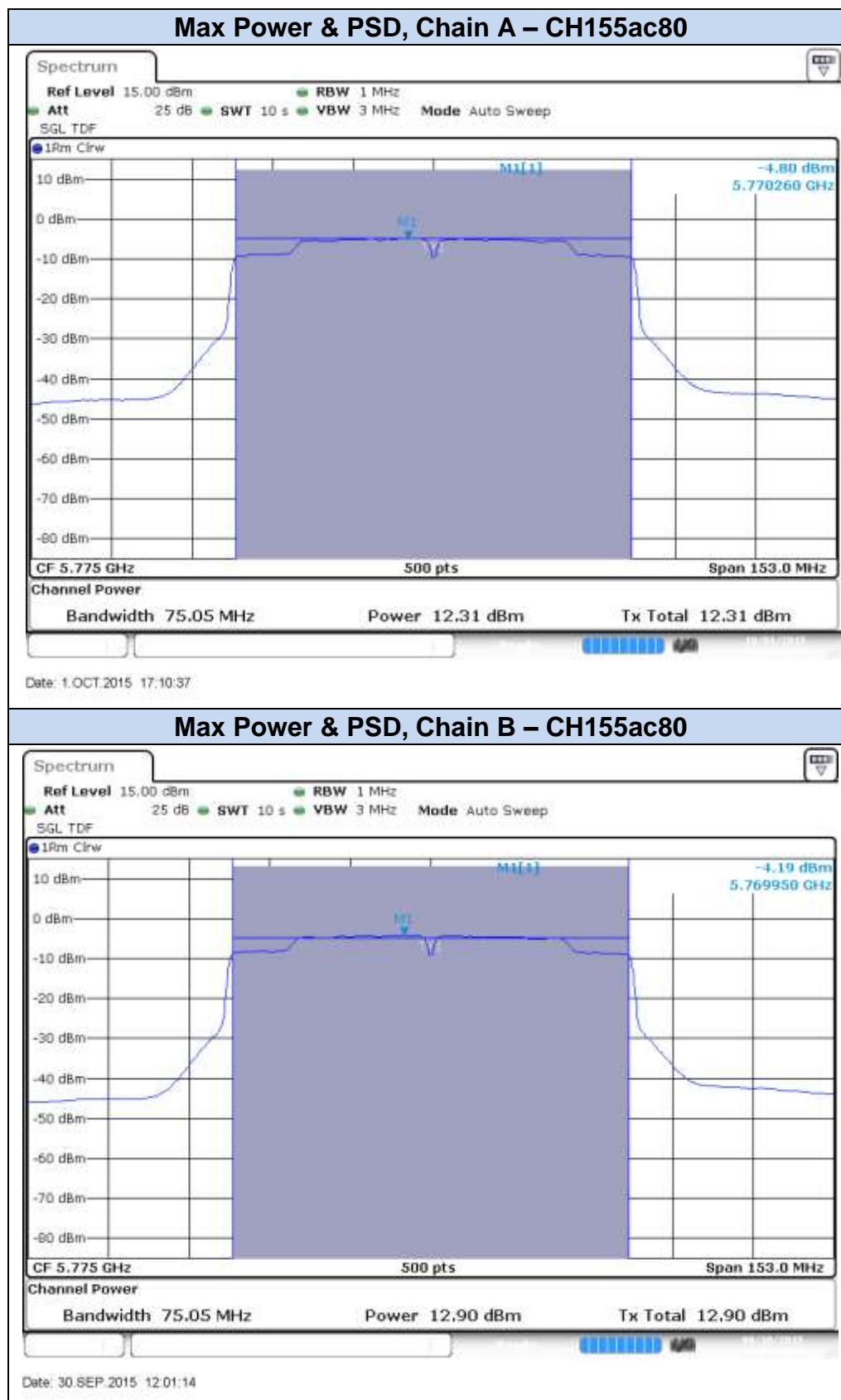
802.11ac80, VHT0 (SISO)

Max Power & PSD, Chain A – CH138ac80 (Overlapped Channel)

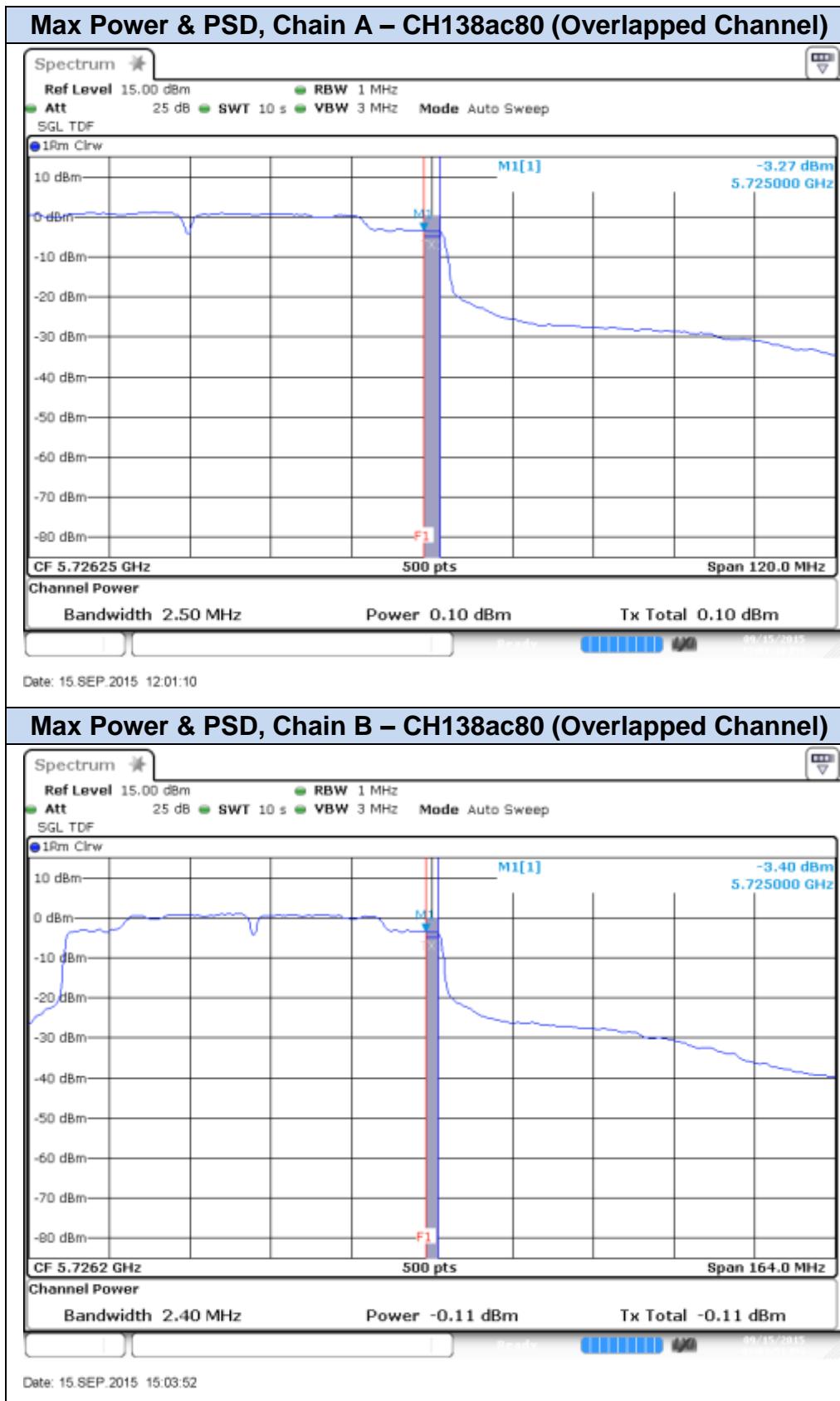


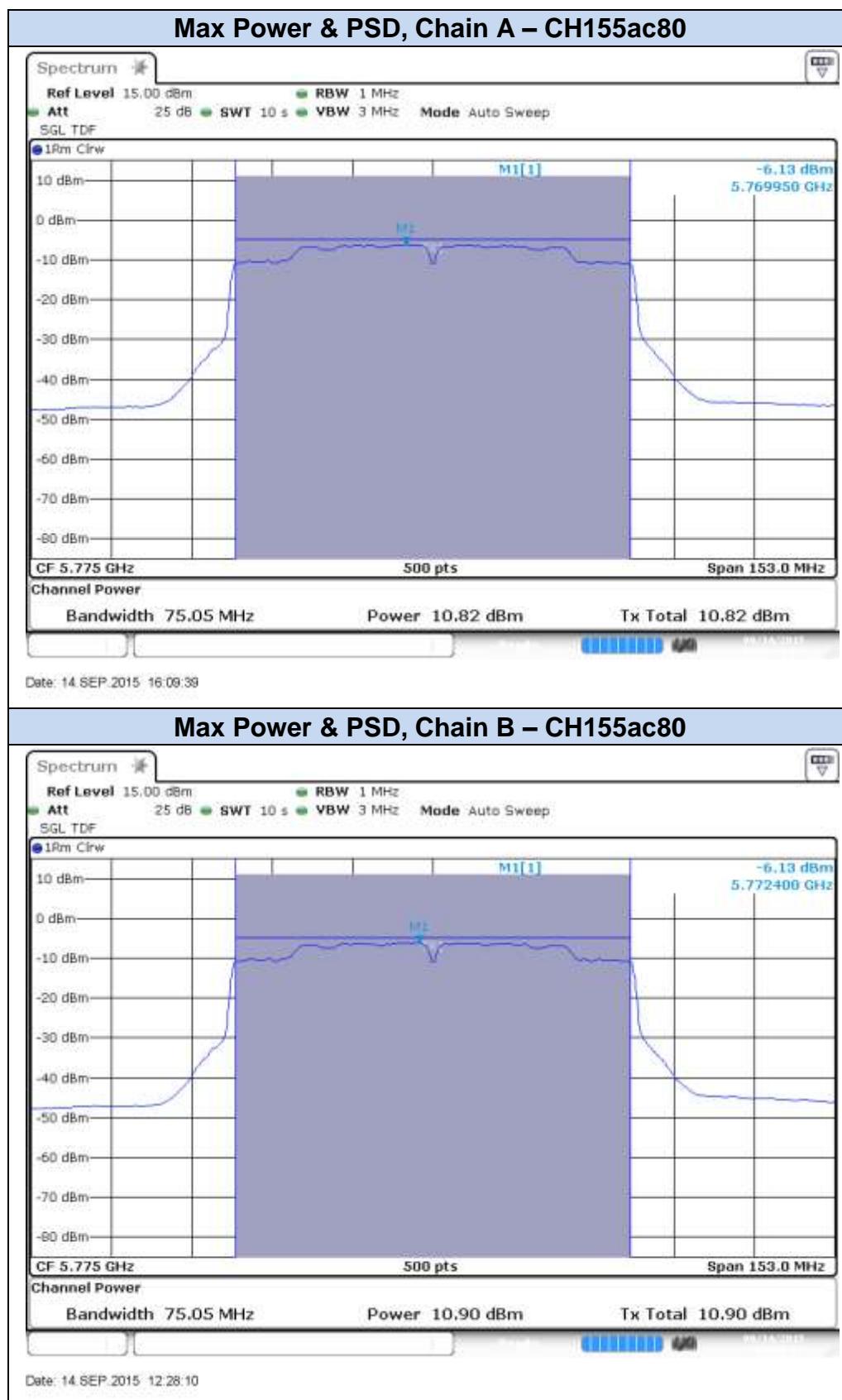
Max Power & PSD, Chain B – CH138ac80 (Overlapped Channel)





802.11ac80, VHT0 (MIMO)





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

Test limits:

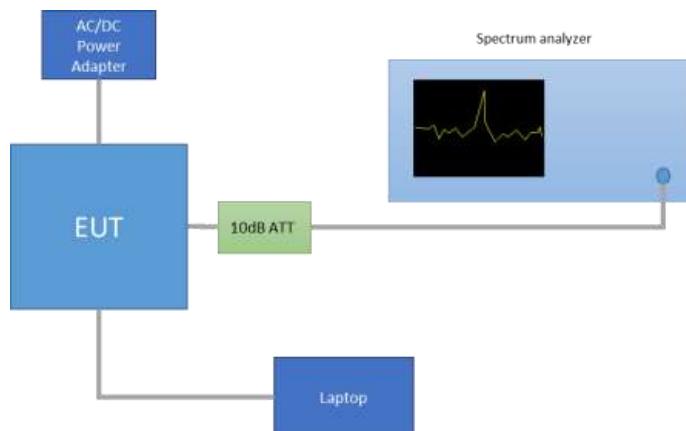
FCC part	RSS part	Limits																																			
15.407 (b) (4)	RSS-247 Clause 6.2.4 (2)	For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.																																			
15.209	RSS-247 Clause 6.2.4 (2)	<p>Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a):</p> <table border="1"> <thead> <tr> <th>Freq Range (MHz)</th> <th>Field Strength (μV/m)</th> <th>Field Strength ($\text{dB}\mu$V/m)</th> <th>Meas. Distance (m)</th> </tr> </thead> <tbody> <tr> <td>0.009-0.490</td> <td>2400/f(kHz)</td> <td>-</td> <td>300</td> </tr> <tr> <td>0.490-1.705</td> <td>24000/f(kHz)</td> <td>-</td> <td>300</td> </tr> <tr> <td>1.705-30.0</td> <td>30</td> <td>-</td> <td>30</td> </tr> <tr> <td>30-88</td> <td>100</td> <td>40</td> <td>3</td> </tr> <tr> <td>88-216</td> <td>150</td> <td>43.5</td> <td>3</td> </tr> <tr> <td>216-960</td> <td>200</td> <td>46</td> <td>3</td> </tr> <tr> <td>Above 960</td> <td>500</td> <td>54</td> <td>3</td> </tr> </tbody> </table> <p>The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p> <p>For average radiated emission measurements above 1000 MHz, there is also a limit specified when measuring with peak detector function, corresponding to 20 dB above the indicated values in the table.</p>				Freq Range (MHz)	Field Strength (μ V/m)	Field Strength ($\text{dB}\mu$ V/m)	Meas. Distance (m)	0.009-0.490	2400/f(kHz)	-	300	0.490-1.705	24000/f(kHz)	-	300	1.705-30.0	30	-	30	30-88	100	40	3	88-216	150	43.5	3	216-960	200	46	3	Above 960	500	54	3
Freq Range (MHz)	Field Strength (μ V/m)	Field Strength ($\text{dB}\mu$ V/m)	Meas. Distance (m)																																		
0.009-0.490	2400/f(kHz)	-	300																																		
0.490-1.705	24000/f(kHz)	-	300																																		
1.705-30.0	30	-	30																																		
30-88	100	40	3																																		
88-216	150	43.5	3																																		
216-960	200	46	3																																		
Above 960	500	54	3																																		

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.

In case of Band Edge measurements falling in restricted bands, the declared Antenna Gain is also compensated in the graph.

The declared maximum antenna gain is 5dBi.



The following limits in dBm were applied for the average detector after the conversion from the limits detailed above in dB μ V/m, according to FCC 47 CFR part 15 - Subpart C – §15.209(a). The limits in dBm for peak detector are 20dB above the indicated values in the table.

§15.209(a)			Converted values	
Freq Range (MHz)	Distance (m)	Field strength (microvolts/meter)	Field strength (dB microvolts/meter)	Power (dBm)
Above 960	3	500	53.98	-41.2

Results Screenshot:
802.11a, 6Mbps – Chain A
