4.3.2 **Results**

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 5: Peak Excursion – Test Results

Test Conditions: Conducted Measurement				**Test Date:** April 21, 2014			
Antenna Type: Integrated				**Power Setting:** See test plan			
Directional Antenna Gain: + 8.08 dBi				**Signal State:** Modulated.			
Ambient Temp.: 23 °C				**Relative Humidity:**34%			
802.11a Mode							
Freq. [MHz]	**Limit [dB]**	**Peak Excursion [dB]**				**Max. Excursion [dB]**	**Margin [dB]**
		0	**1**	**2**	**3**		
5500	13.0	-6.67	-7.02	-7.46	-6.97	-7.46	-5.54
5580	13.0	-5.93	-7.16	-7.49	-7.54	-7.54	-5.46
5700	13.0	-6.21	-7.23	-7.20	-7.87	-7.87	-5.13
Note: The peak excursion was observed at 802.11a 6 Mbps per Data Stream.							
802.11n (HT20) Mode							
Freq. [MHz]	**Limit [dB]**	**Peak Excursion [dB]**				**Max. Excursion [dB]**	**Margin [dB]**
		0	**1**	**2**	**3**		
5500	13.0	-7.40	-7.74	-7.19	-7.66	-7.74	-5.26
5580	13.0	-6.88	-7.64	-7.38	-7.68	-7.68	-5.32
5700	13.0	-7.05	-7.60	-7.20	-7.40	-7.60	-5.40
Note: The peak excursion was observed at 802.11n HT20 MCS0.							
802.11n (HT40) Mode							
Freq. [MHz]	**Limit [dB]**	**Peak Excursion [dB]**				**Max. Excursion [dB]**	**Margin [dB]**
		0	**1**	**2**	**3**		
5510	-13.00	-8.25	-8.12	-8.13	-8.16	-8.25	-4.75
5550	-13.00	-8.37	-8.29	-7.79	-8.11	-8.37	-4.63
5670	-13.00	-8.07	-8.19	-8.07	-7.88	-8.19	-4.81
Note: The peak excursion was observed at 802.11n HT40 MCS0.							

802.11ac (VHT20) Mode							
Freq. [MHz]	Limit [dB]	Peak Excursion [dB]				Max. Excursion [dB]	Margin [dB]
		0	1	2	3		
5500	-13.00	-7.22	-7.66	-7.72	-7.61	-7.72	-5.28
5580	-13.00	-7.81	-7.26	-7.63	-7.68	-7.81	-5.19
5720	-13.00	-7.63	-7.59	-7.71	-7.77	-7.77	-5.23
Note: 1.The peak excursion was observed at 802.11ac VHT20 MCS0. 2. Band crossing channel 5720 MHz is used as a highest channel. The channel worst peak excursion is documented.							
802.11ac (VHT40) Mode							
Freq. [MHz]	Limit [dB]	Peak Excursion [dB]				Max. Excursion [dB]	Margin [dB]
		0	1	2	3		
5510	-13.00	-8.71	-7.97	-8.38	-8.09	-8.71	-4.29
5550	-13.00	-8.25	-8.50	-7.93	-7.84	-8.50	-4.50
5710	-13.00	-8.02	-8.02	-8.11	-7.89	-8.11	-4.89
Note: 1. The peak excursion was observed at 802.11ac VHT40 MCS0. 2. Band crossing channel 5710 MHz is used as a highest channel. The channel worst peak excursion is documented.							
802.11ac (VHT80) Mode							
Freq. [MHz]	Limit [dB]	Peak Excursion [dB]				Max. Excursion [dB]	Margin [dB]
		0	1	2	3		
5530	-13.00	-7.05	-7.65	-7.32	-7.91	-7.91	-5.09
5690	-13.00	-7.41	-7.41	-7.44	-7.26	-7.44	-5.56
Note: 1. The peak excursion was observed at 802.11ac VHT80 MCS0. 2. Band crossing channel 5690 MHz is used as a highest channel. The channel worst peak excursion is documented.							

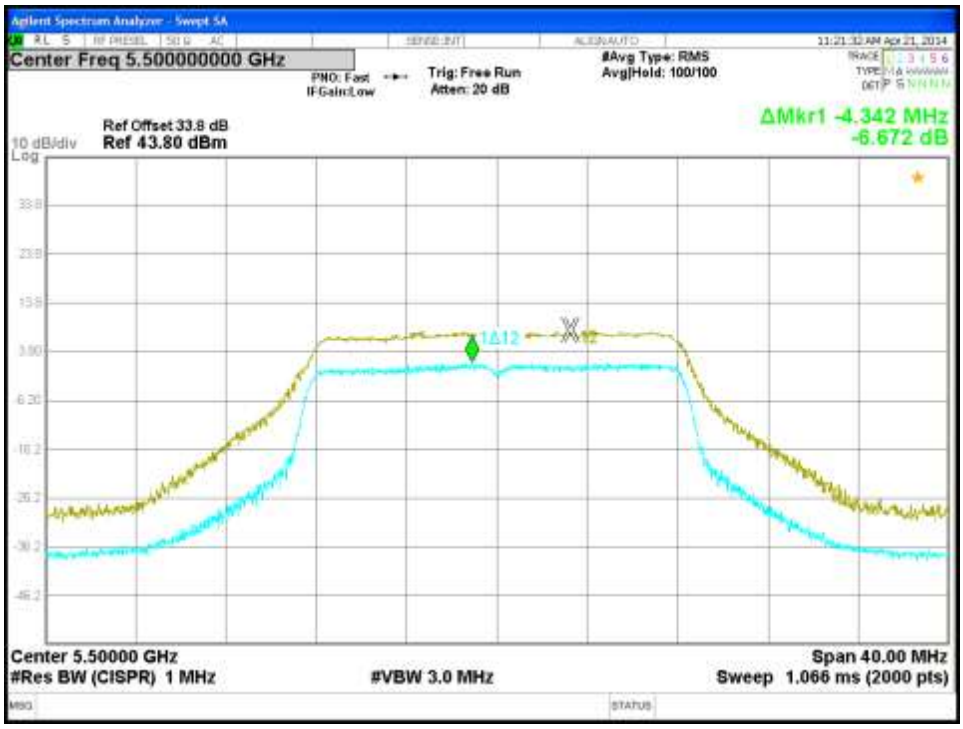


Figure 169: Peak Excursion-5500MHz-11a-6Mbps-Ch0

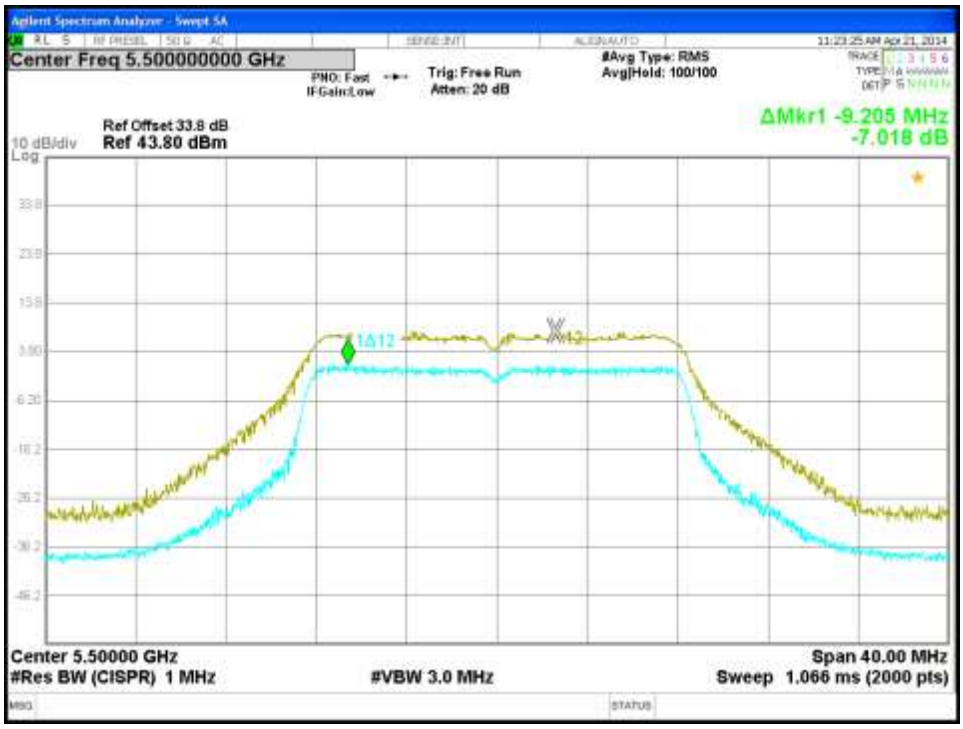


Figure 170: Peak Excursion-5500MHz-11a-6Mbps-Ch1

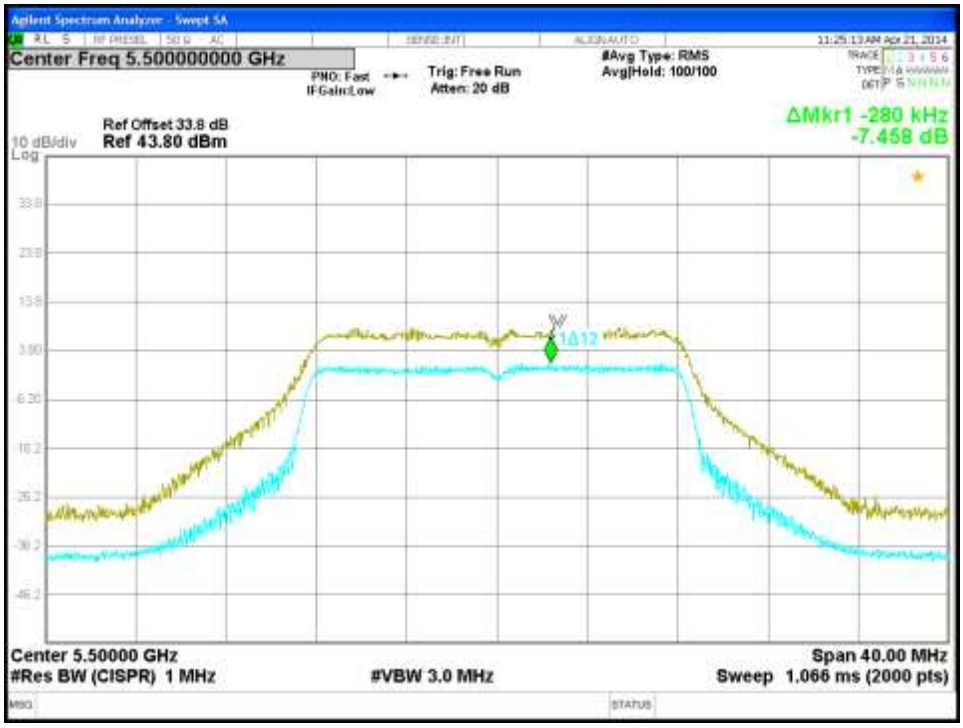


Figure 171: Peak Excursion-5500MHz-11a-6Mbps-Ch2

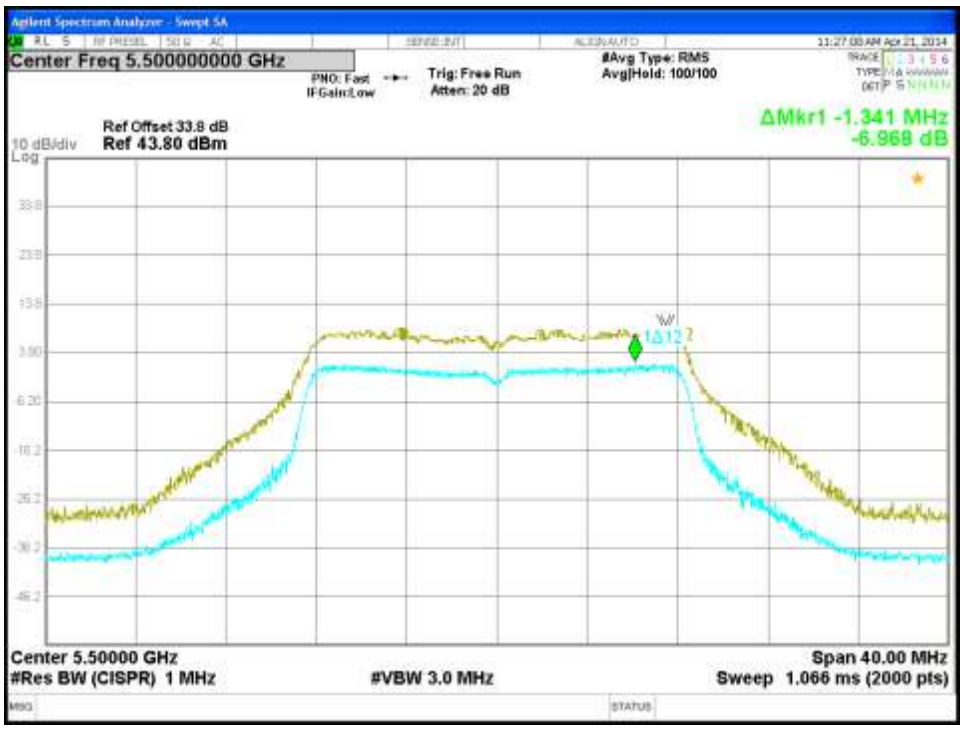


Figure 172: Peak Excursion-5500MHz-11a-6Mbps-Ch3

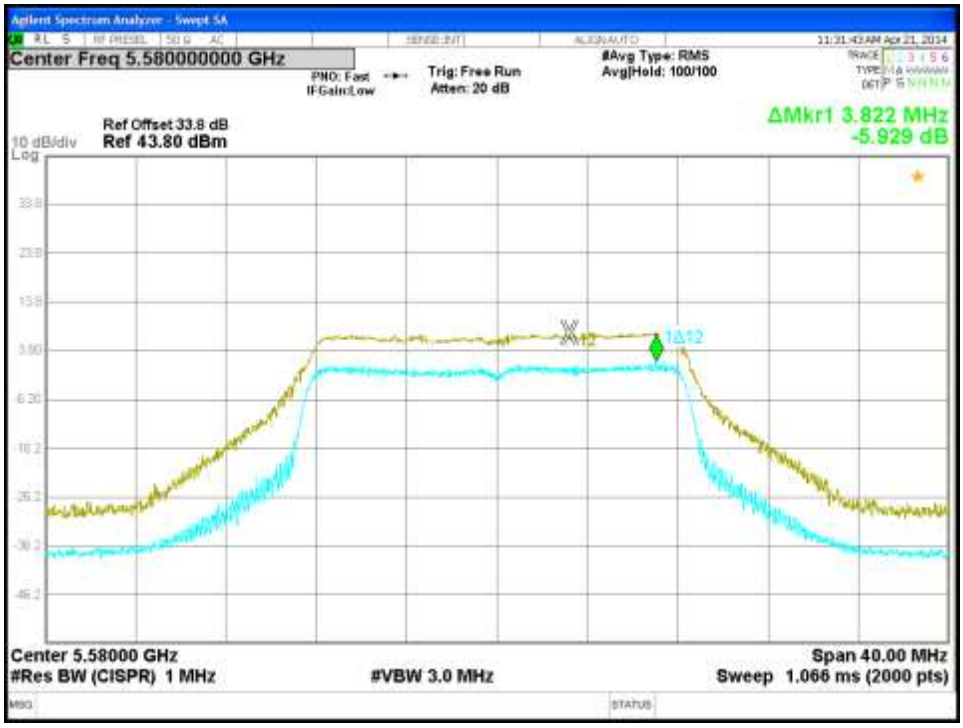


Figure 173: Peak Excursion-5580MHz-11a-6Mbps-Ch0

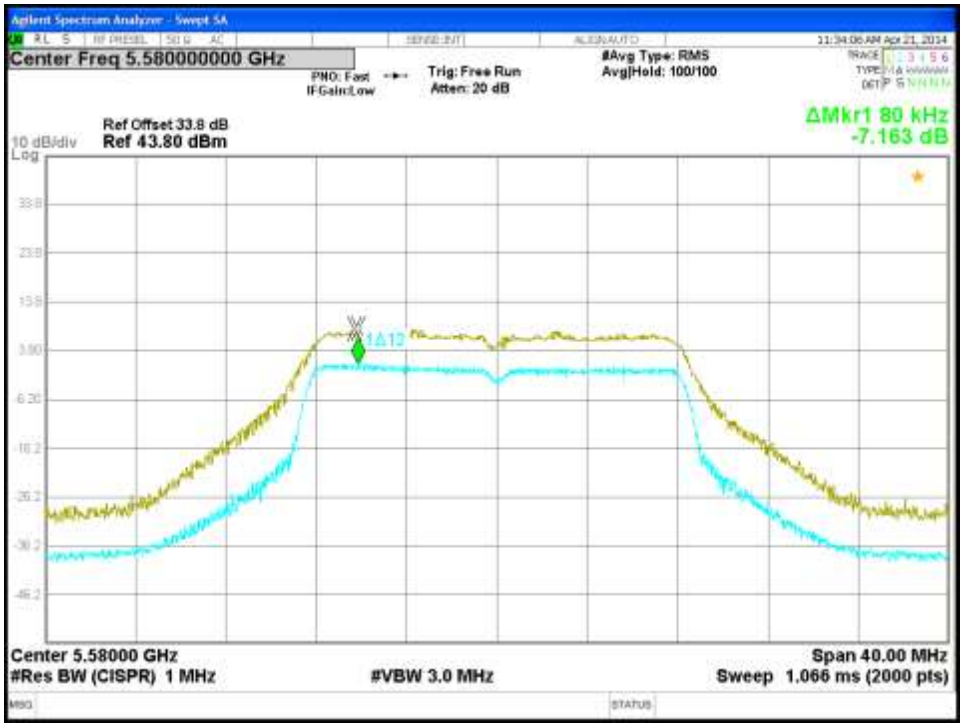


Figure 174: Peak Excursion-5580MHz-11a-6Mbps-Ch1

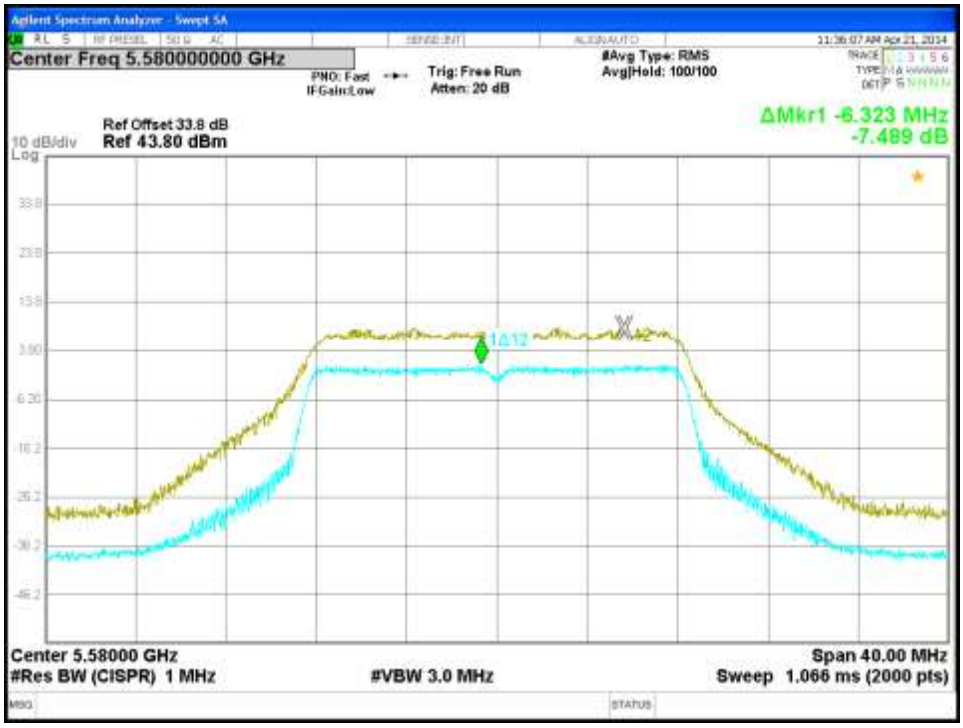


Figure 175: Peak Excursion-5580MHz-11a-6Mbps-Ch2

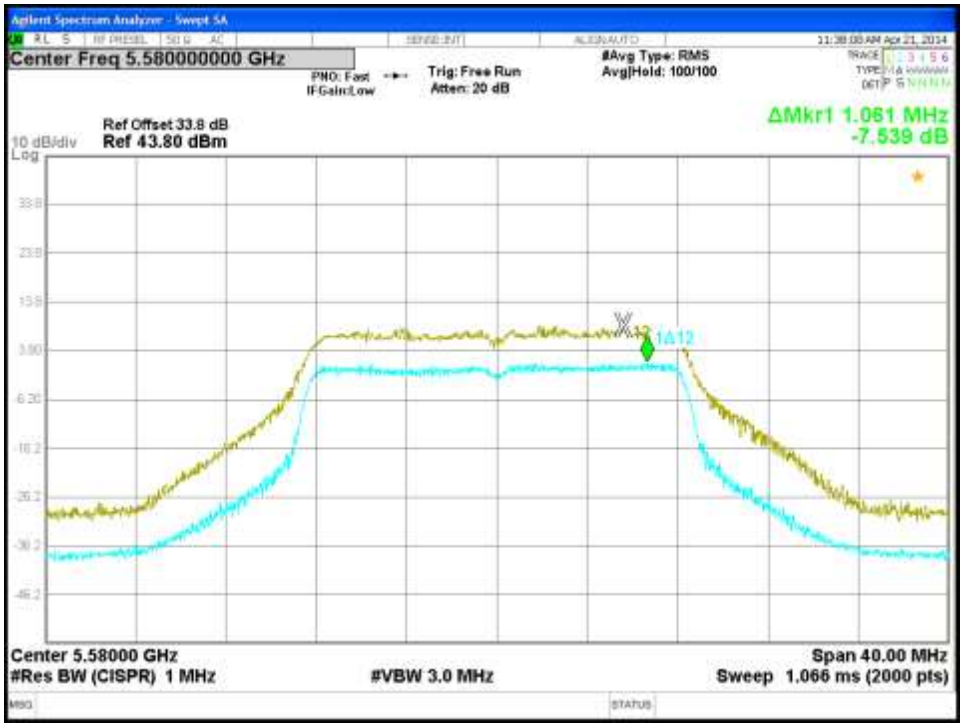


Figure 176: Peak Excursion-5580MHz-11a-6Mbps-Ch3

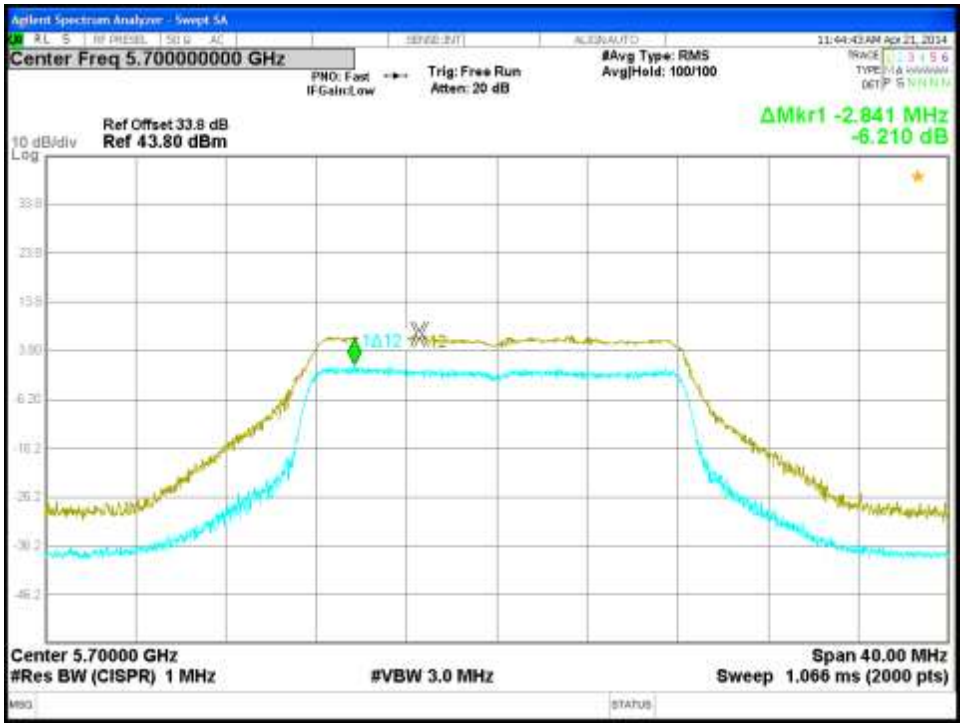


Figure 177: Peak Excursion-5700MHz-11a-6Mbps-Ch0

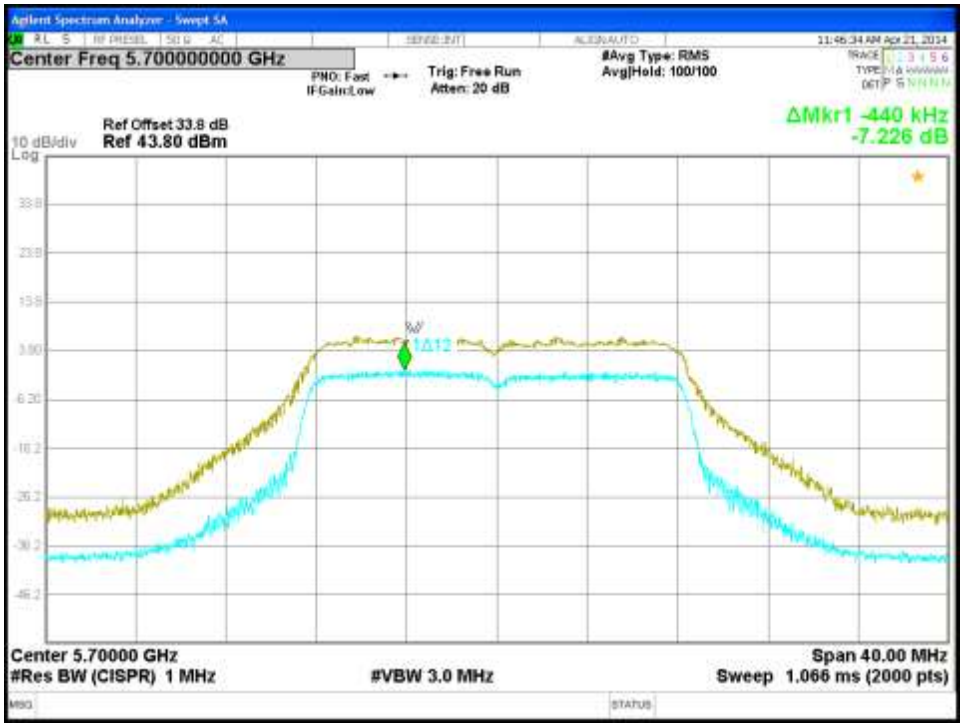


Figure 178: Peak Excursion-5700MHz-11a-6Mbps-Ch1

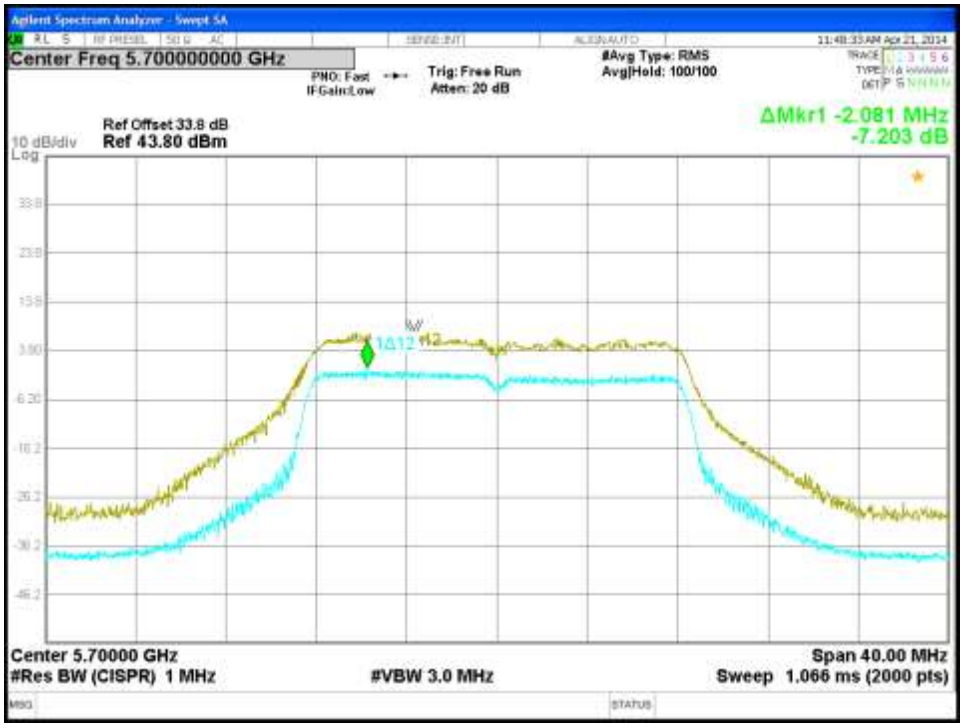


Figure 179: Peak Excursion-5700MHz-11a-6Mbps-Ch2

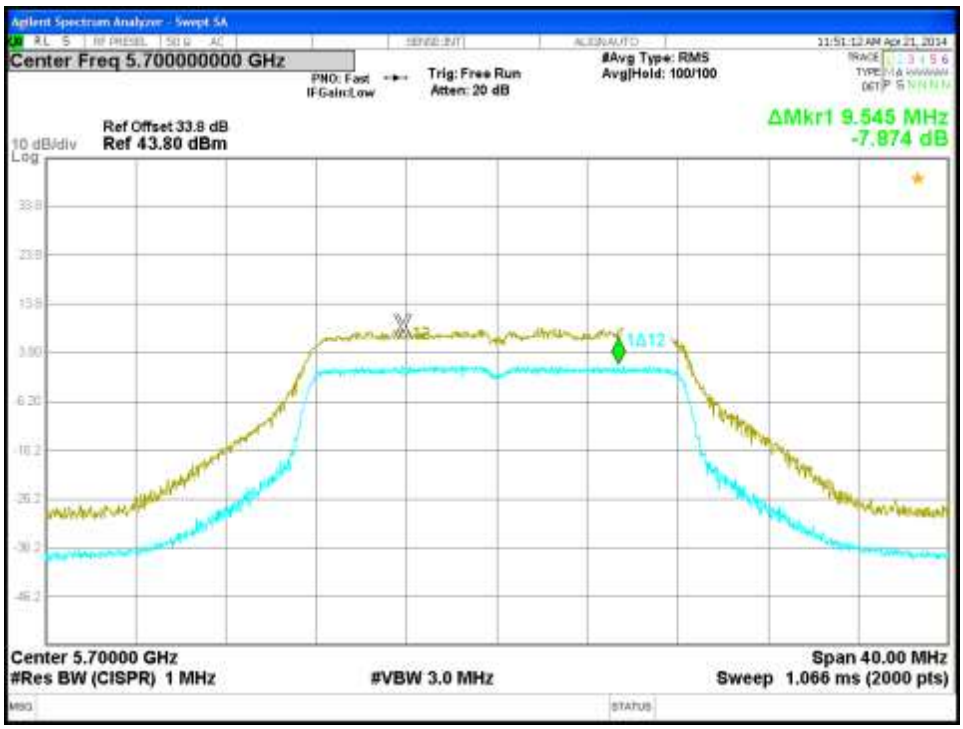


Figure 180: Peak Excursion-5700MHz-11a-6Mbps-Ch3

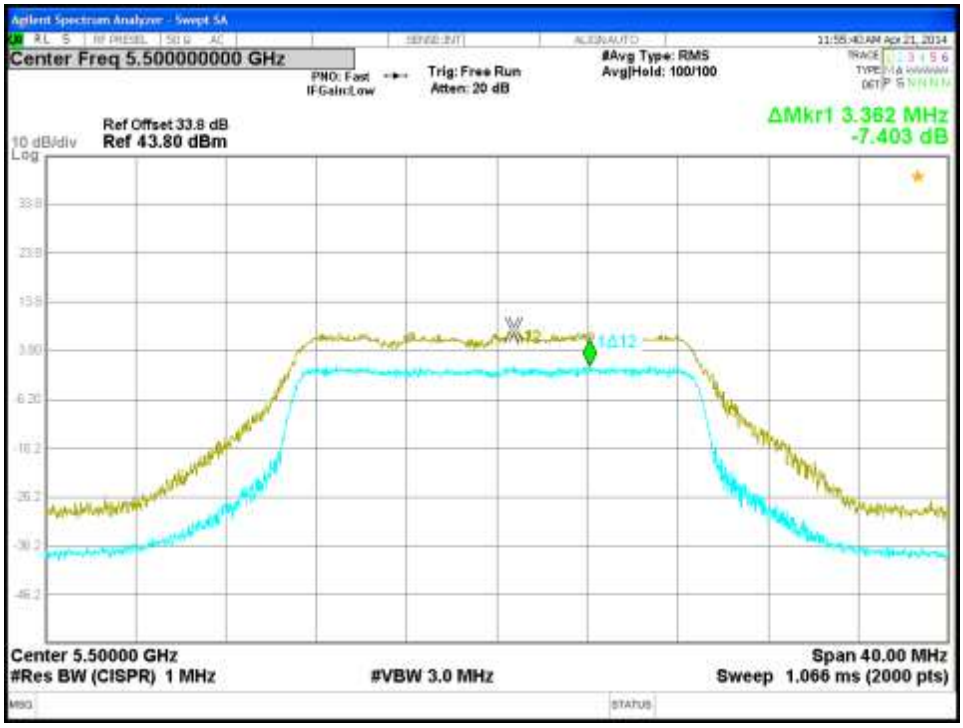


Figure 181: Peak Excursion-5500MHz-HT20-MCS0-Ch0

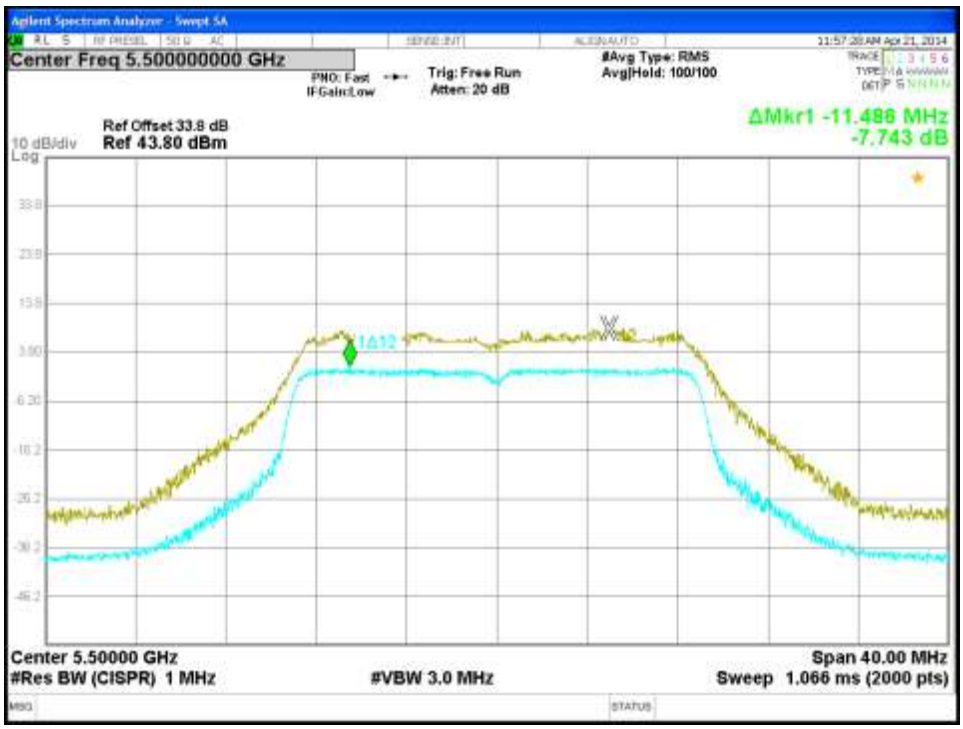


Figure 182: Peak Excursion-5500MHz-HT20-MCS0-Ch1

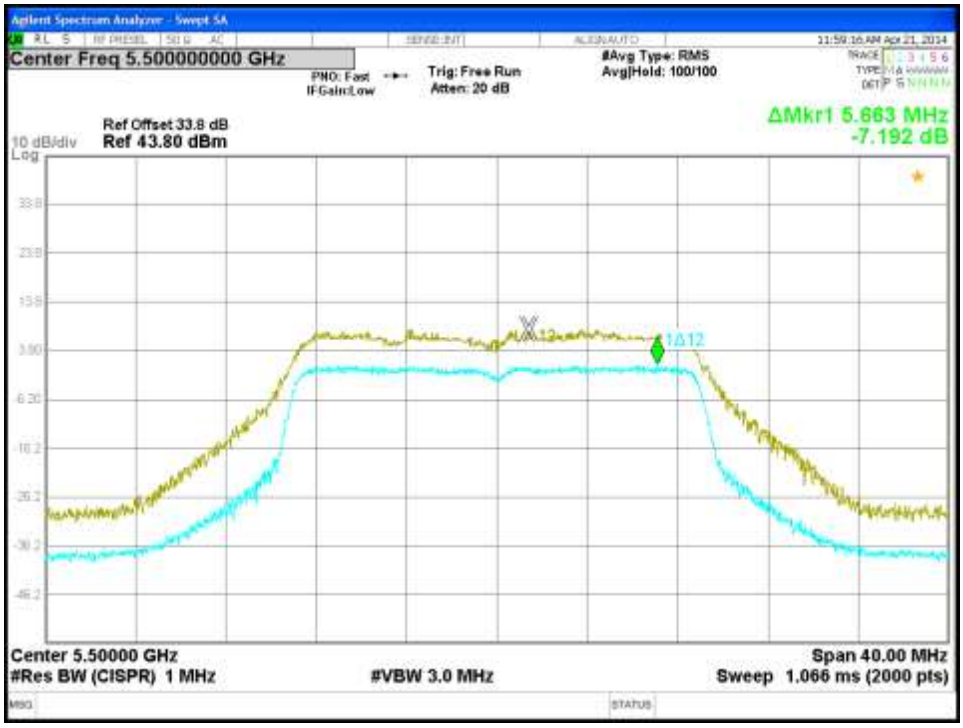


Figure 183: Peak Excursion-5500MHz-HT20-MCS0-Ch2

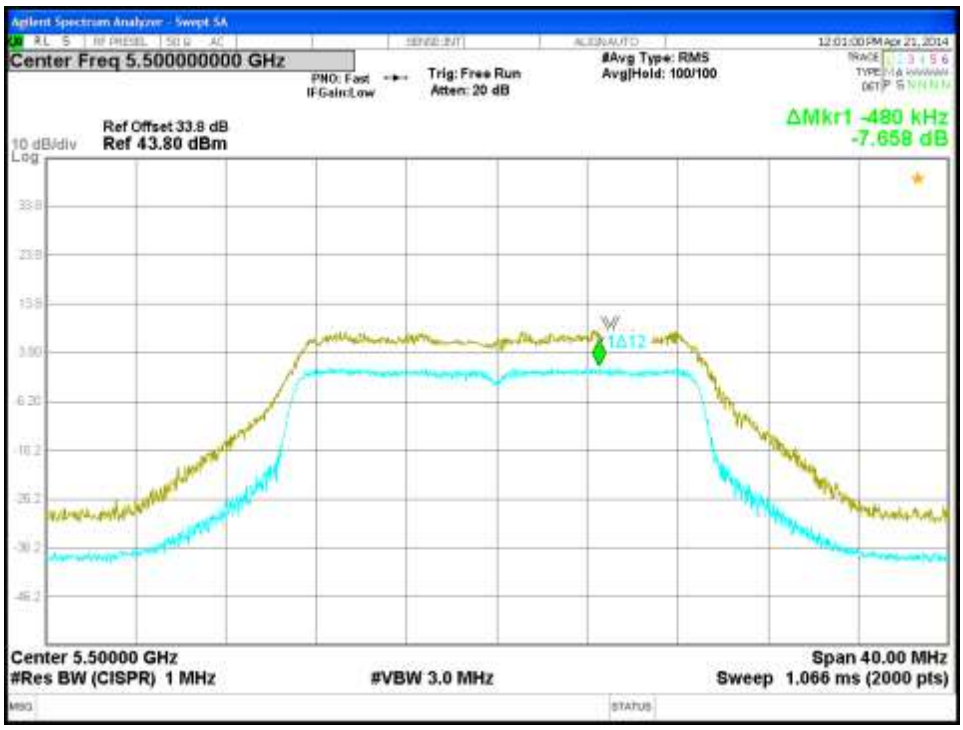


Figure 184: Peak Excursion-5500MHz-HT20-MCS0-Ch3

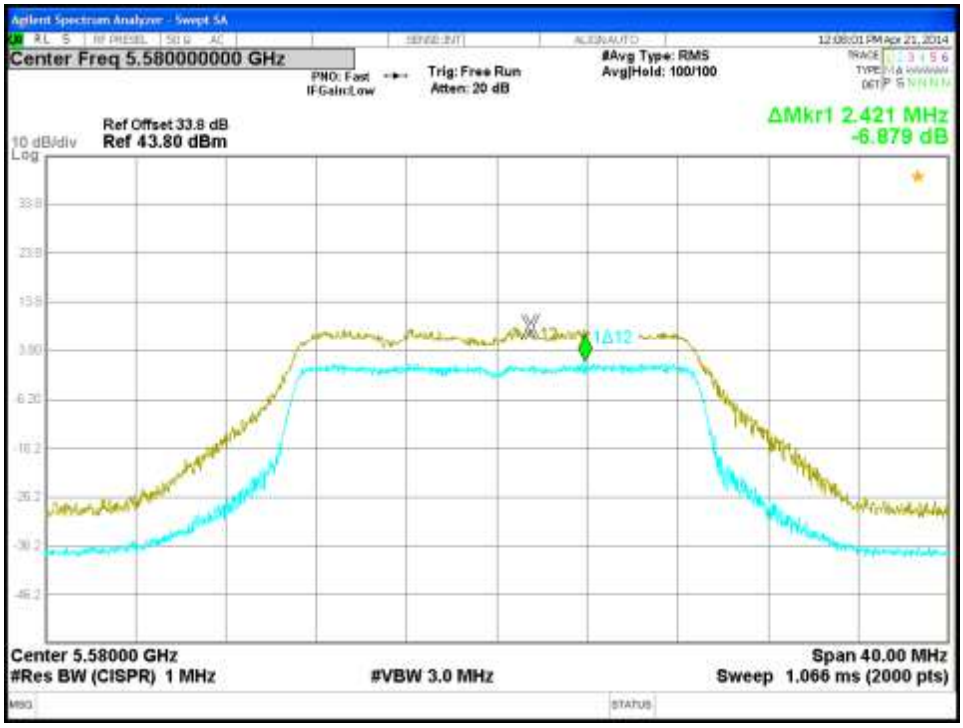


Figure 185: Peak Excursion-5580MHz-HT20-MCS0-Ch0

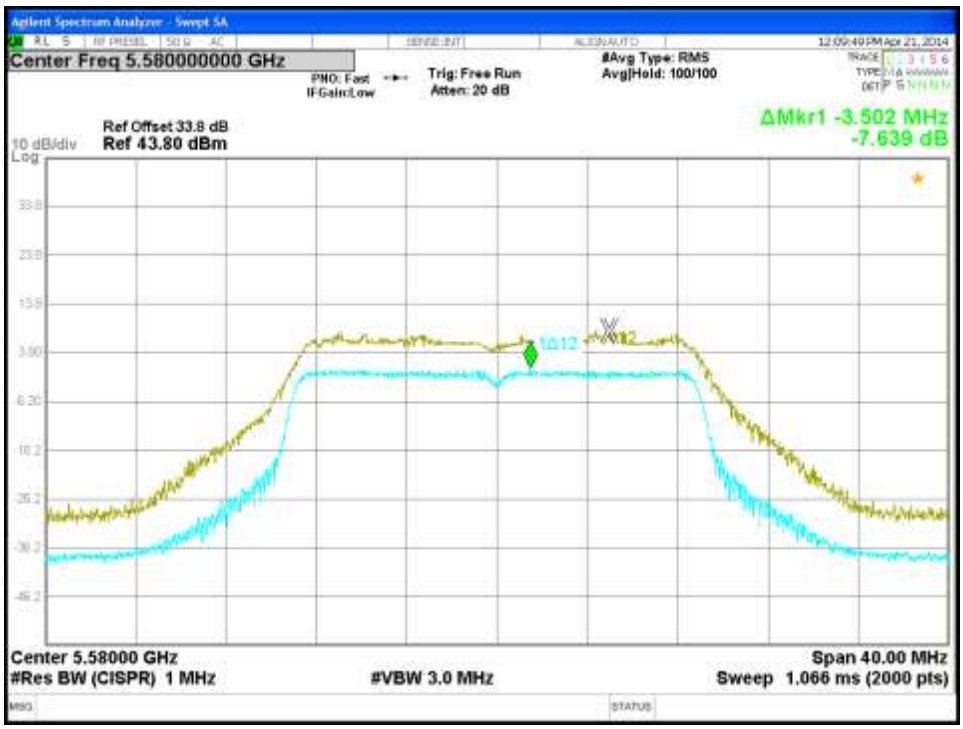


Figure 186: Peak Excursion-5580MHz-HT20-MCS0-Ch1

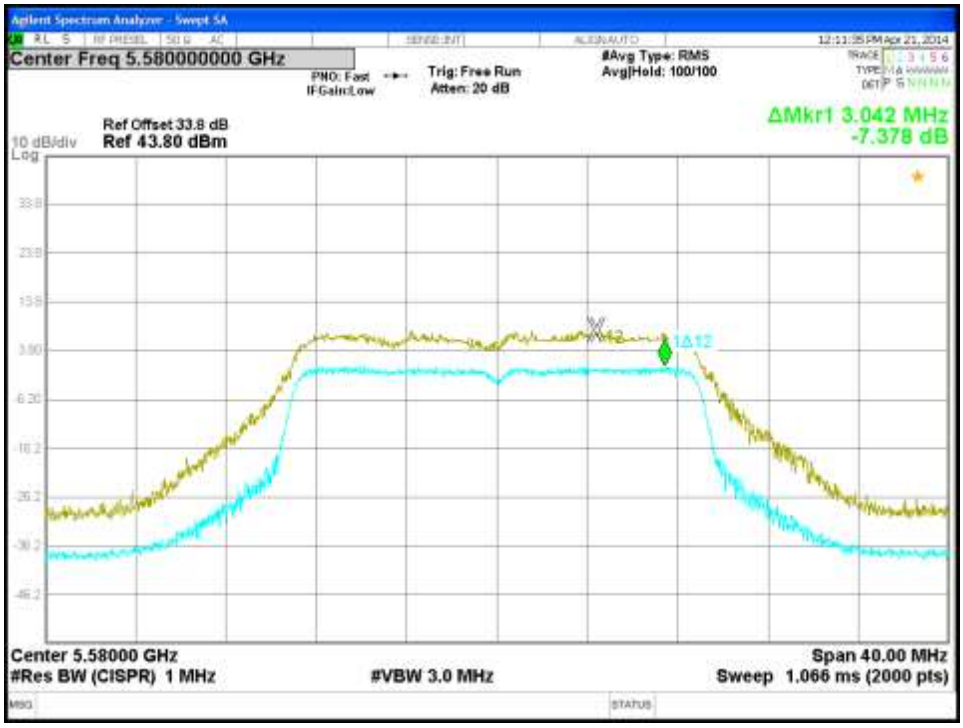


Figure 187: Peak Excursion-5580MHz-HT20-MCS0-Ch2

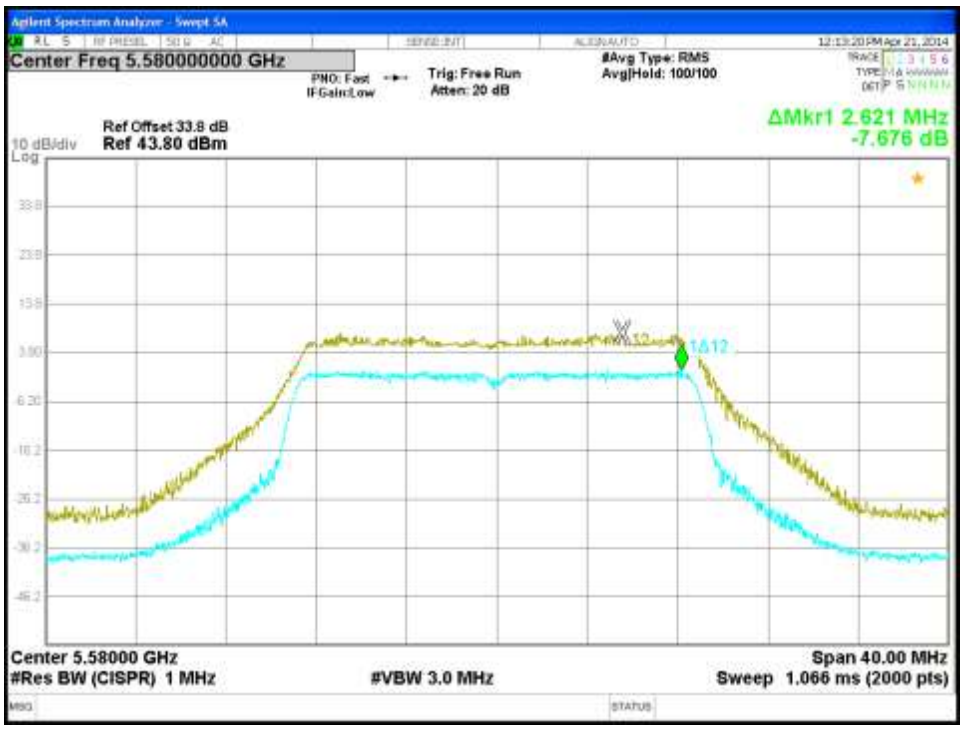


Figure 188: Peak Excursion-5580MHz-HT20-MCS0-Ch3

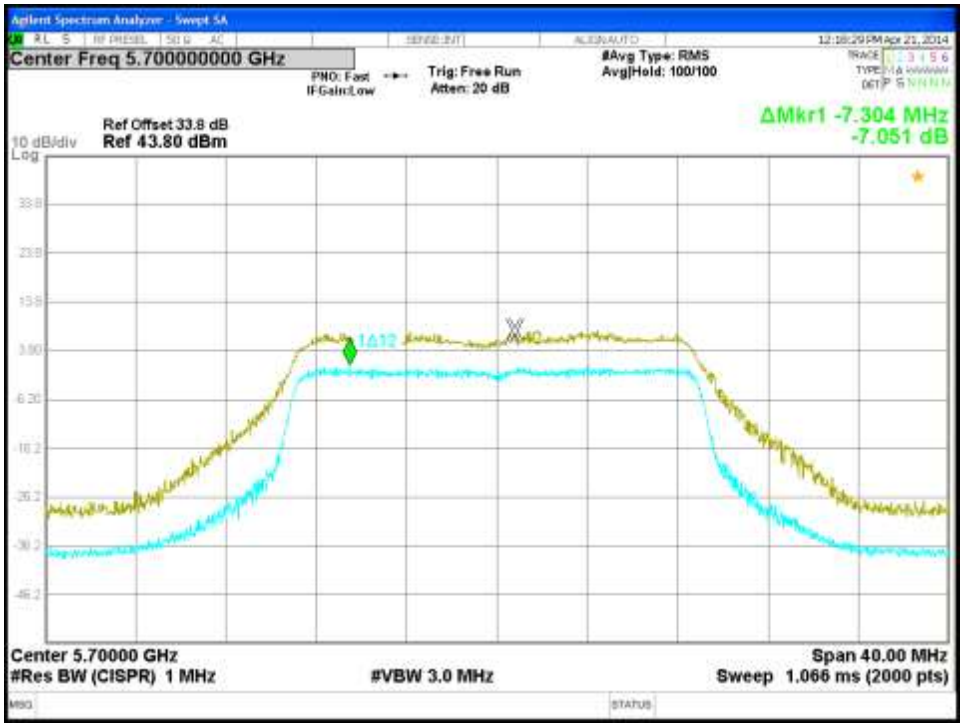


Figure 189: Peak Excursion-5700MHz-HT20-MCS0-Ch0

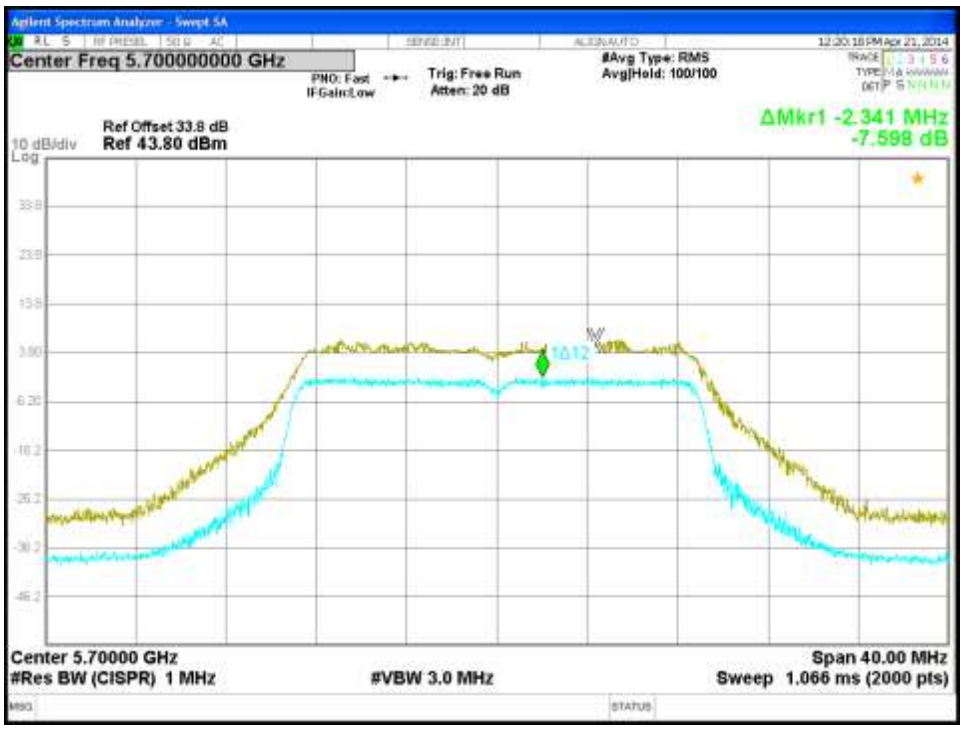


Figure 190: Peak Excursion-5700MHz-HT20-MCS0-Ch1

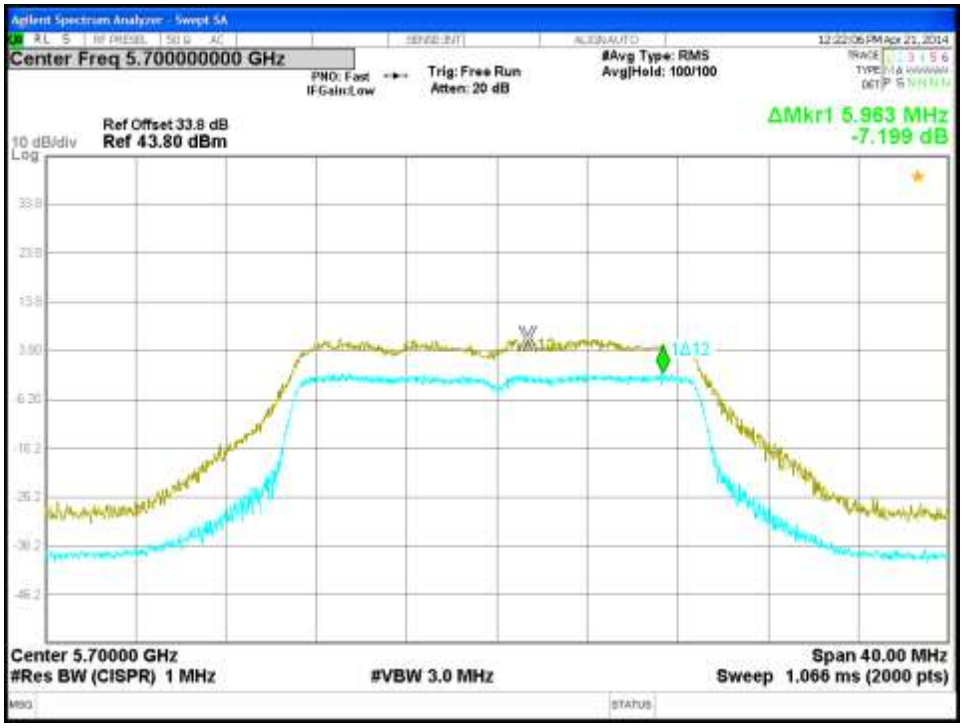


Figure 191: Peak Excursion-5700MHz-HT20-MCS0-Ch2

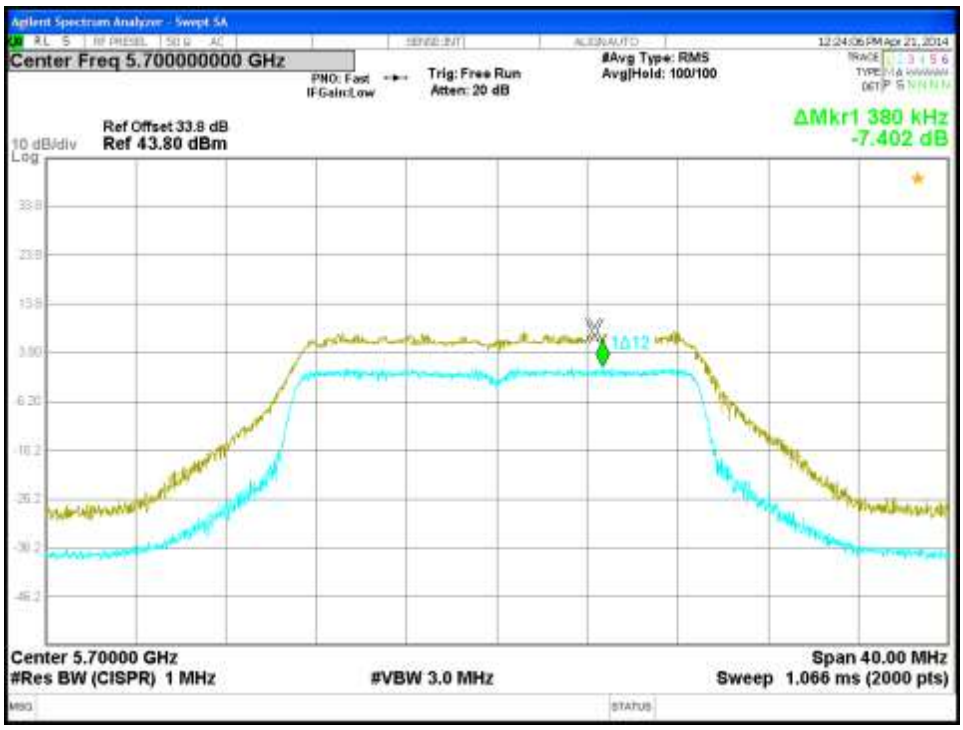


Figure 192: Peak Excursion-5700MHz-HT20-MCS0-Ch3

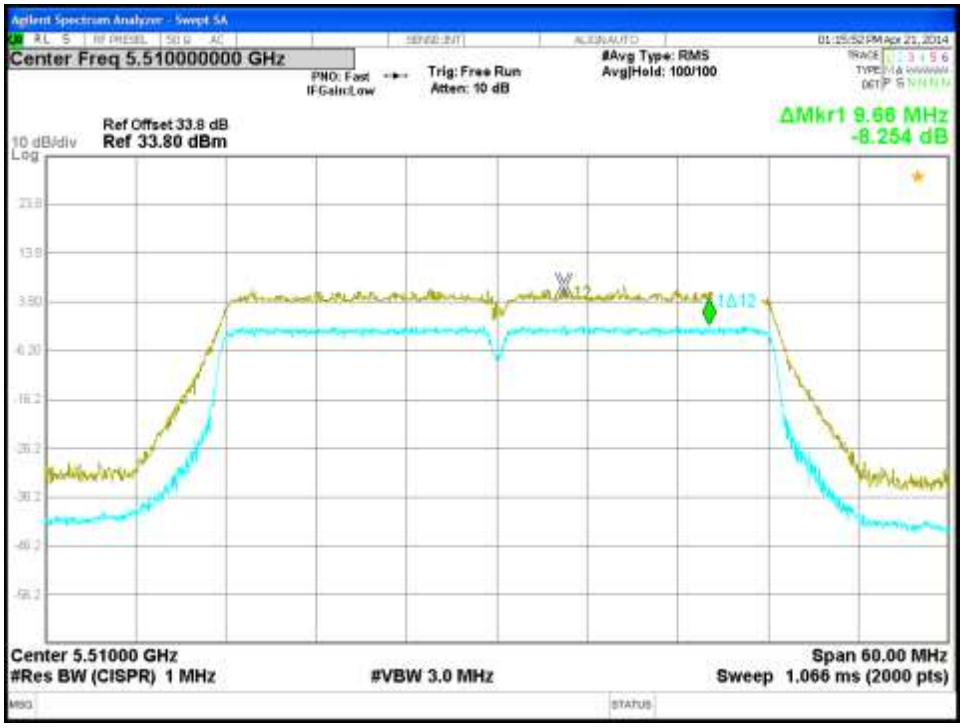


Figure 193: Peak Excursion-5510MHz-HT40-MCS0-Ch0

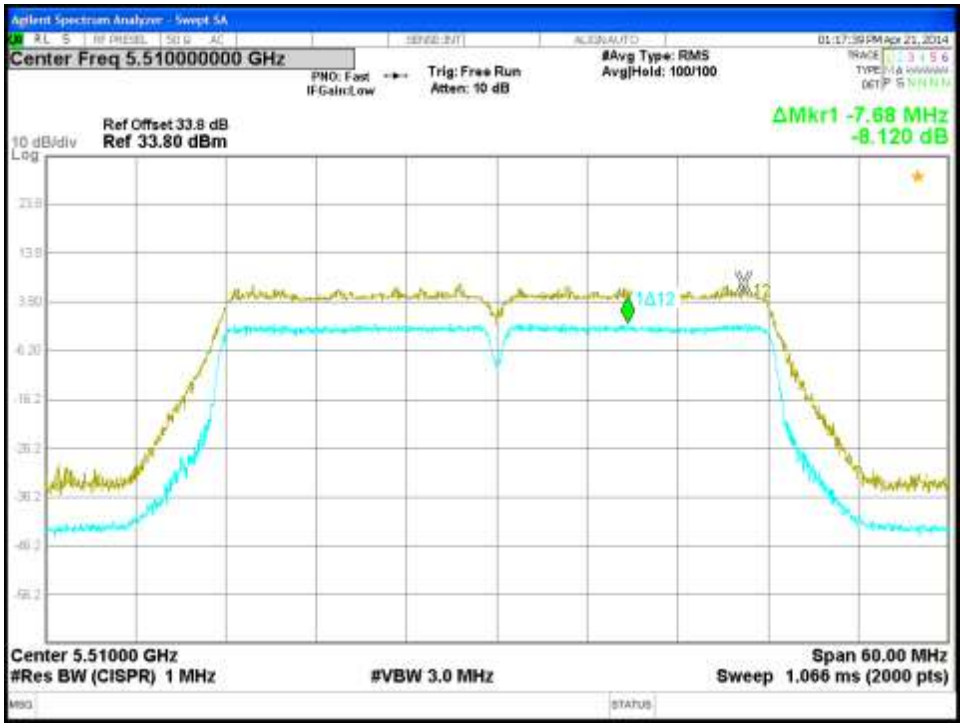


Figure 194: Peak Excursion-5510MHz-HT40-MCS0-Ch1

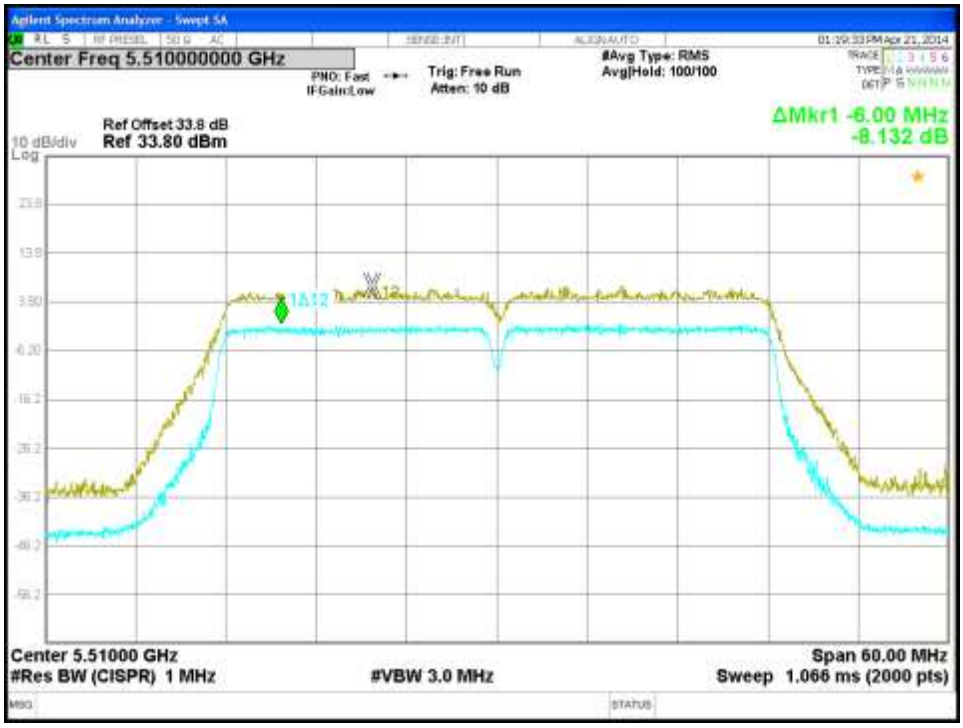


Figure 195: Peak Excursion-5510MHz-HT40-MCS0-Ch2

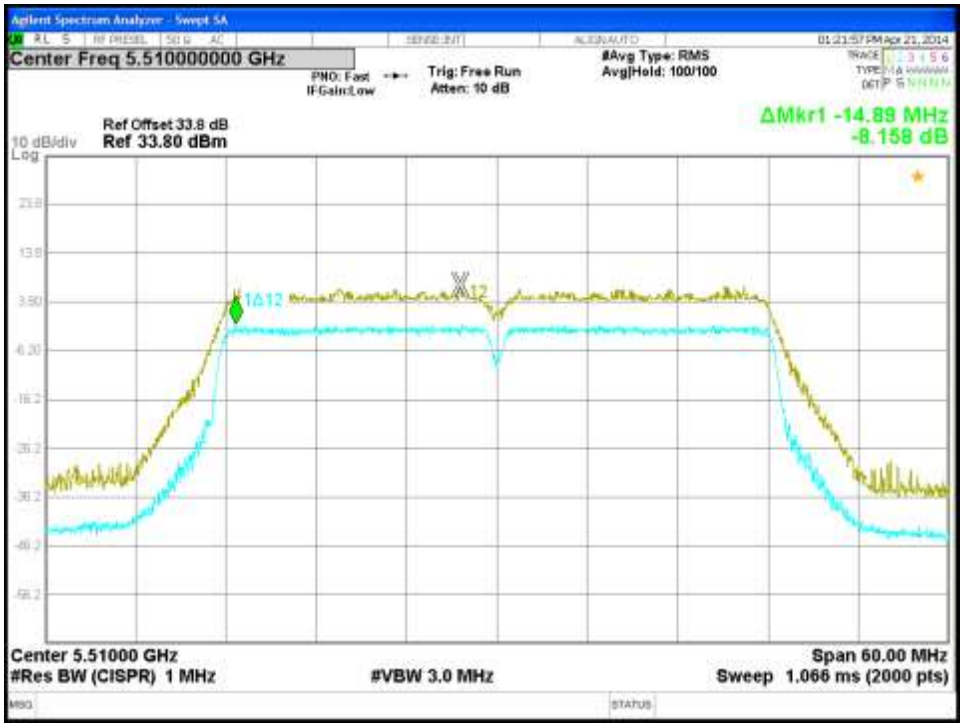


Figure 196: Peak Excursion-5510MHz-HT40-MCS0-Ch3

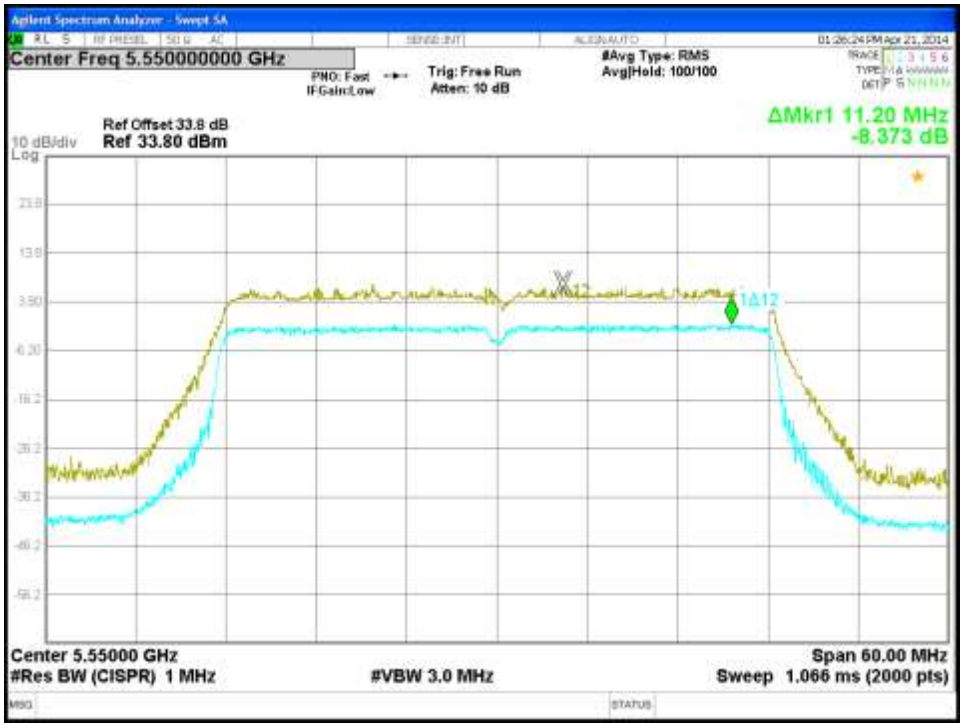


Figure 197: Peak Excursion-5550MHz-HT40-MCS0-Ch0

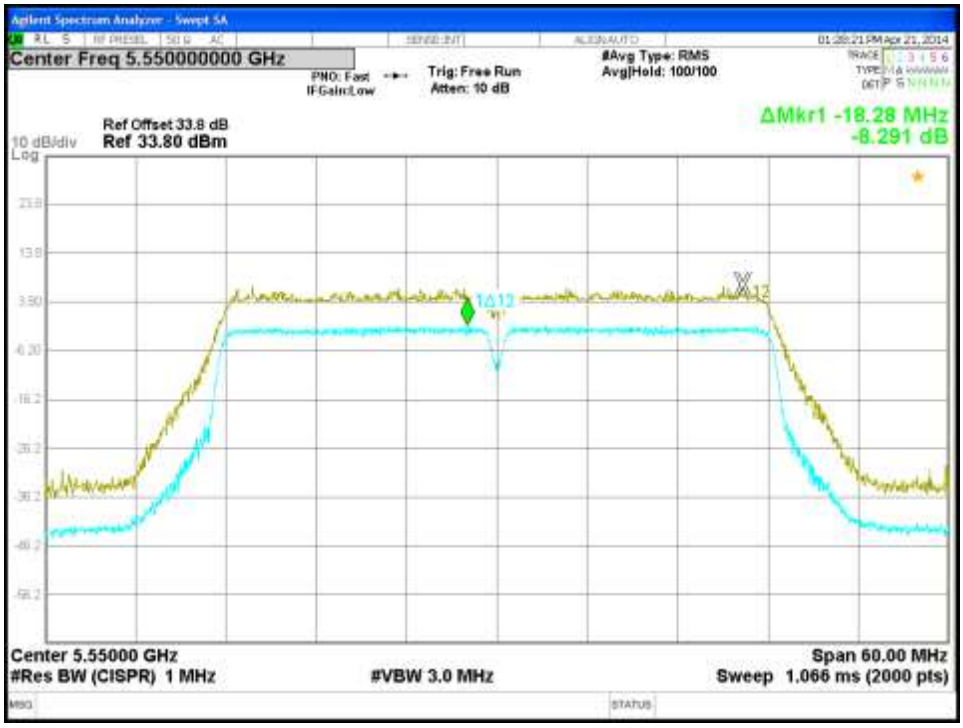


Figure 198: Peak Excursion-5550MHz-HT40-MCS0-Ch1

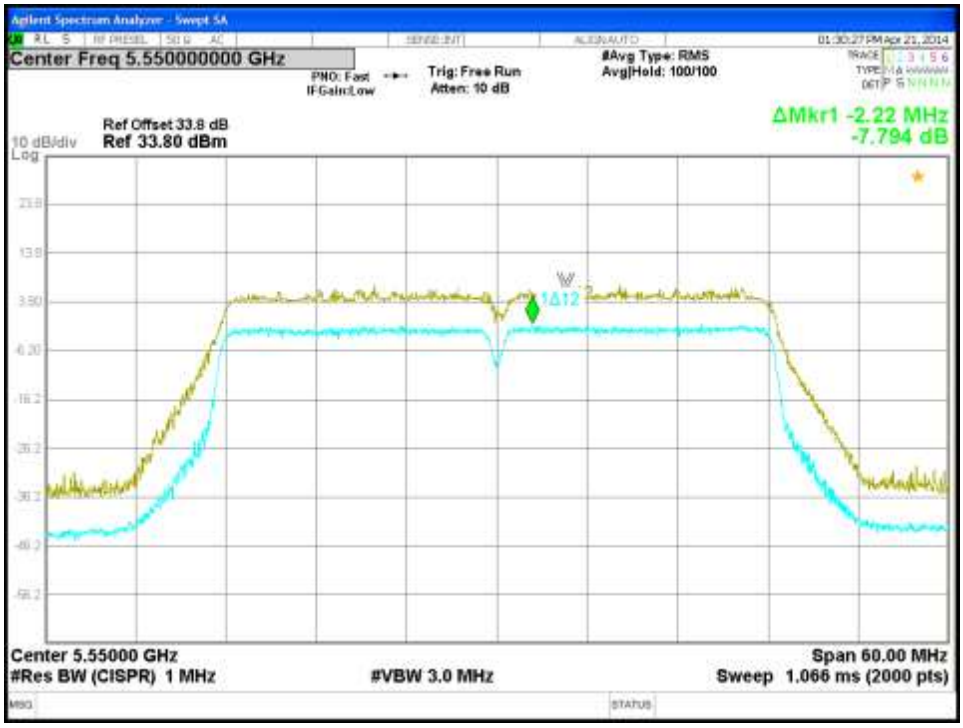


Figure 199: Peak Excursion-5550MHz-HT40-MCS0-Ch2

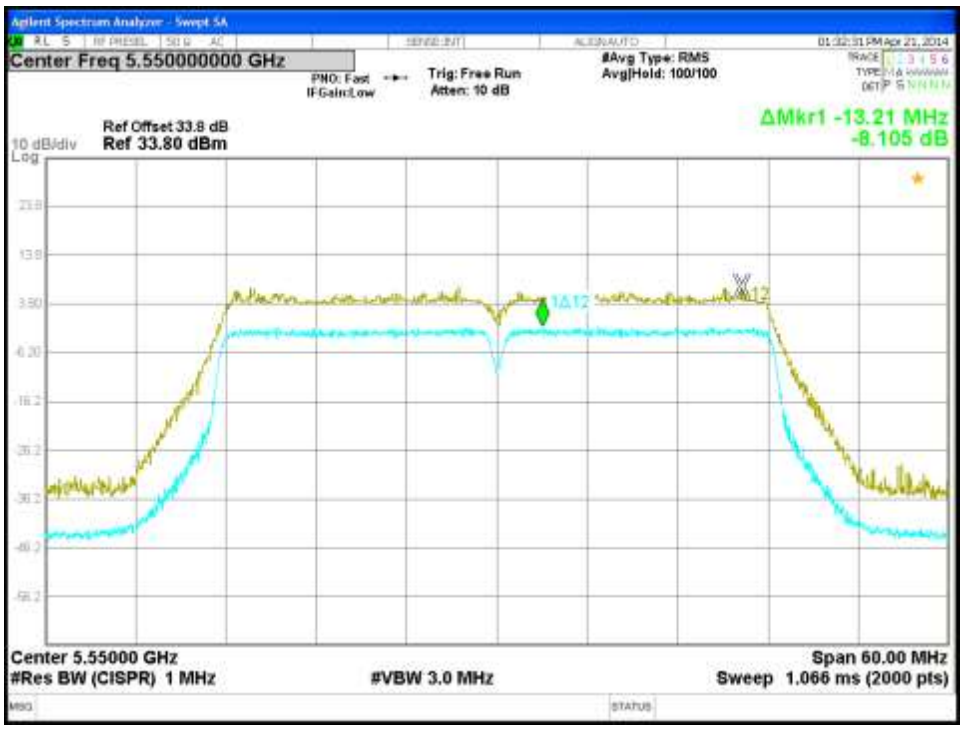


Figure 200: Peak Excursion-5550MHz-HT40-MCS0-Ch3

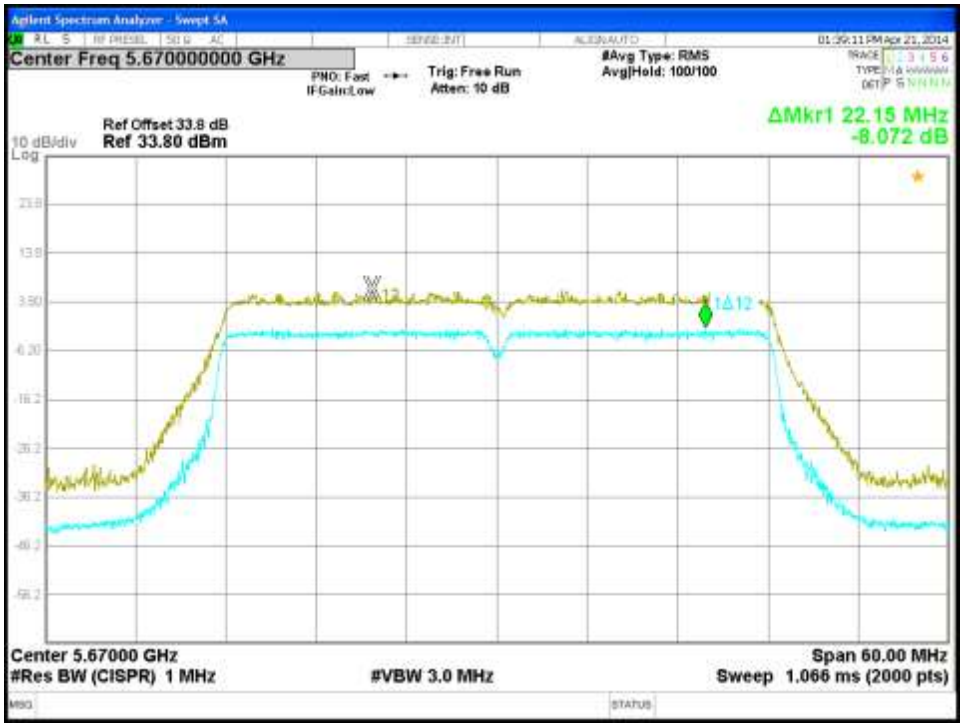


Figure 201: Peak Excursion-5670MHz-HT40-MCS0-Ch0

Figure 202: Peak Excursion-5670MHz-HT40-MCS0-Ch1

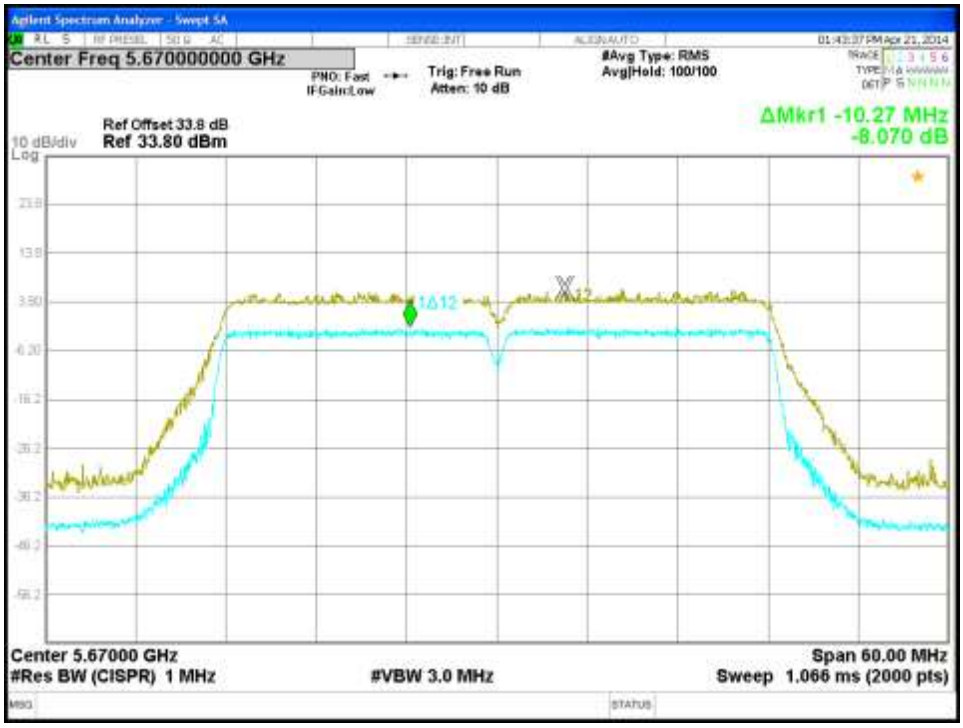


Figure 203: Peak Excursion-5670MHz-HT40-MCS0-Ch2

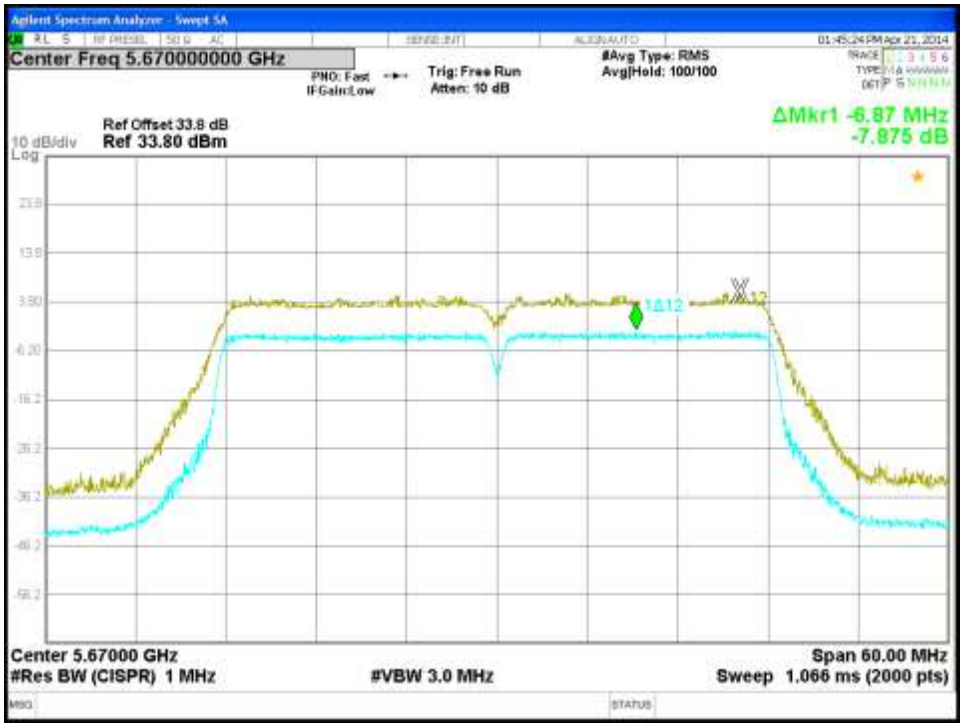


Figure 204: Peak Excursion-5670MHz-HT40-MCS0-Ch3

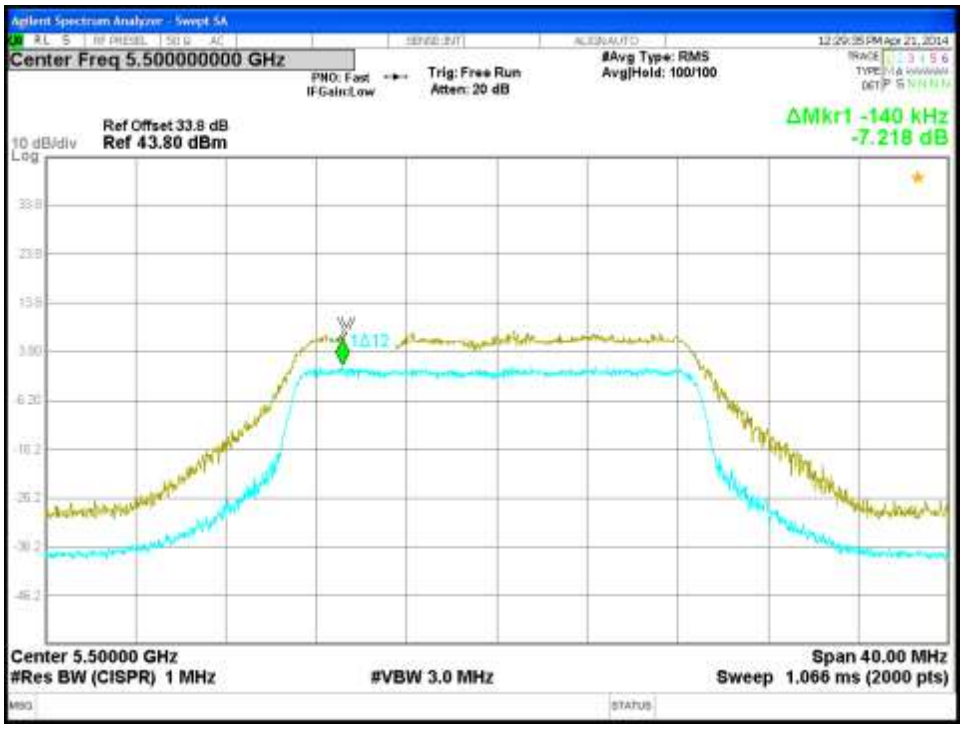


Figure 205: Peak Excursion-5500MHz-VHT20-MCS0-Ch0

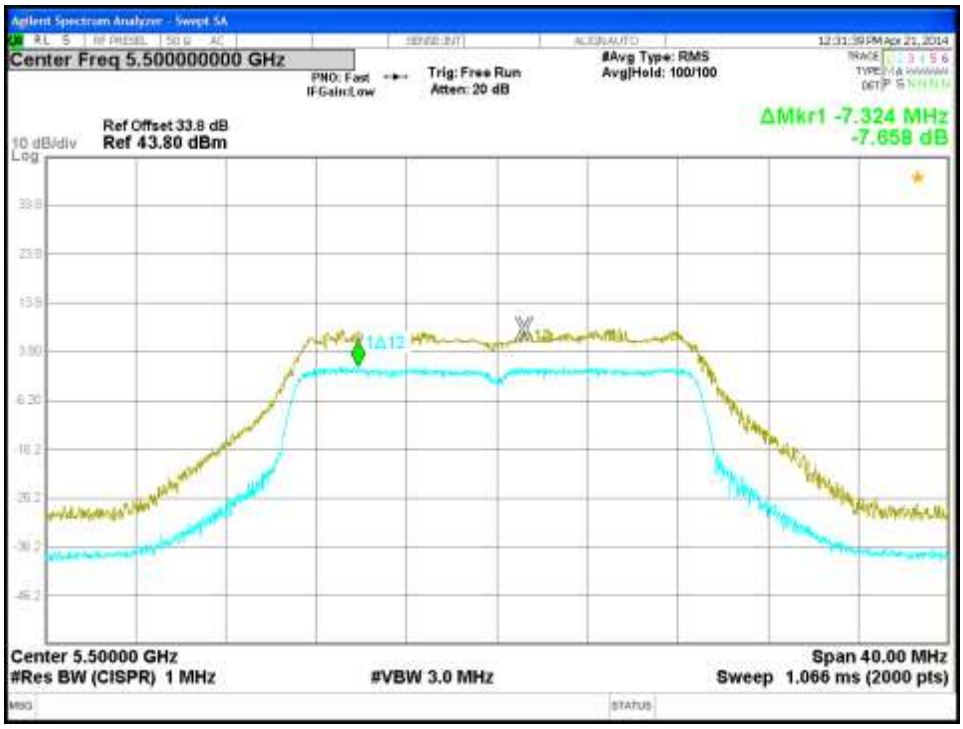


Figure 206: Peak Excursion-5500MHz-VHT20-MCS0-Ch1

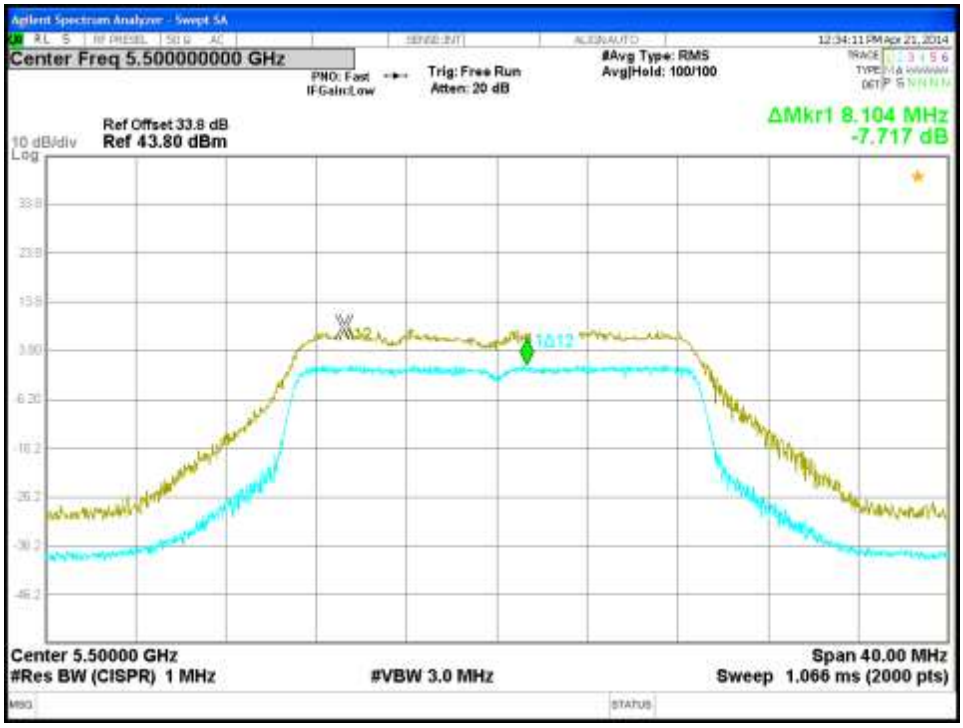


Figure 207: Peak Excursion-5500MHz-VHT20-MCS0-Ch2

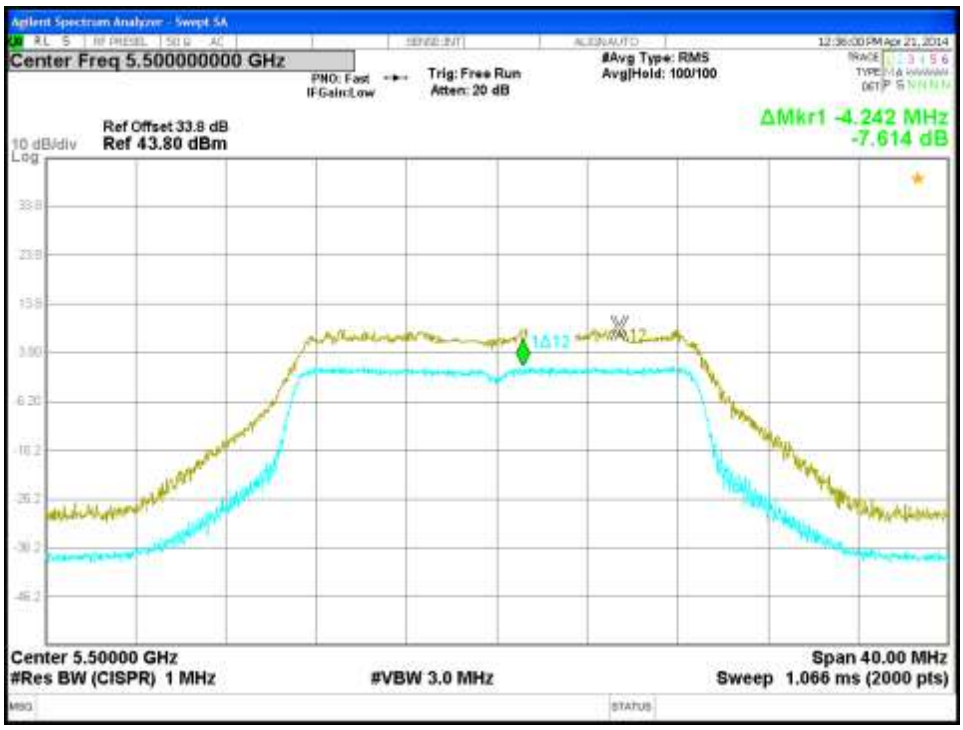


Figure 208: Peak Excursion-5500MHz-VHT20-MCS0-Ch3

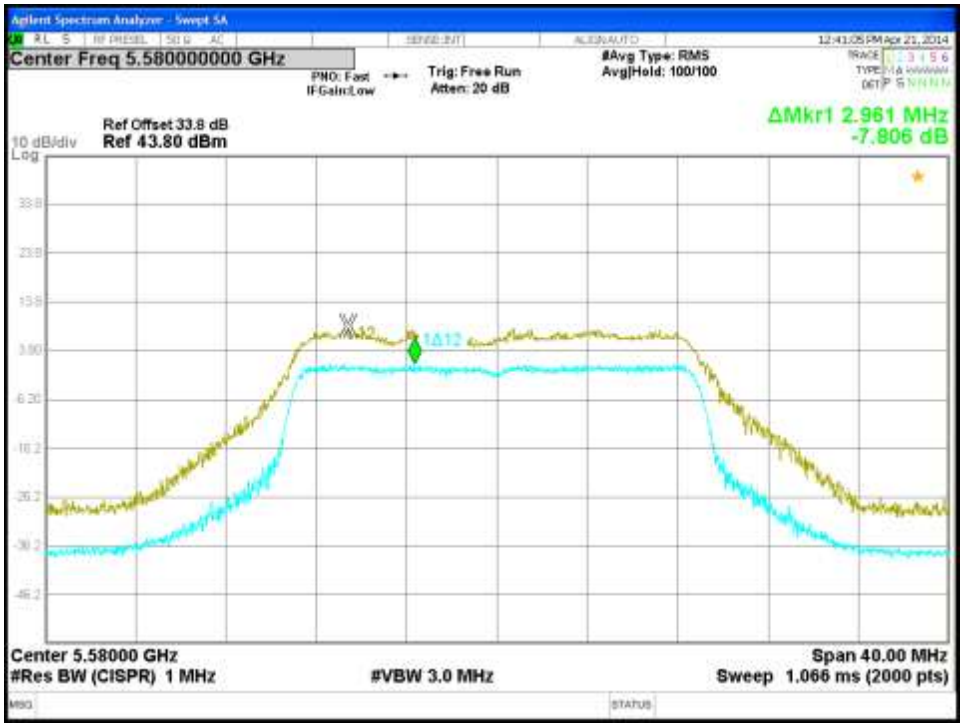


Figure 209: Peak Excursion-5580MHz-VHT20-MCS0-Ch0

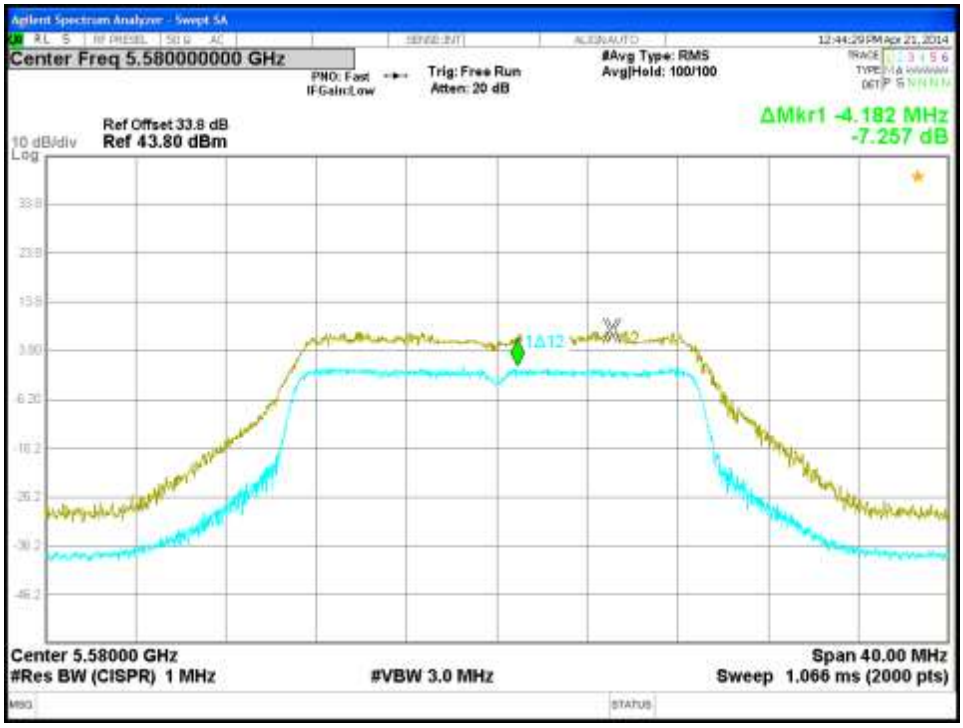


Figure 210: Peak Excursion-5580MHz-VHT20-MCS0-Ch1

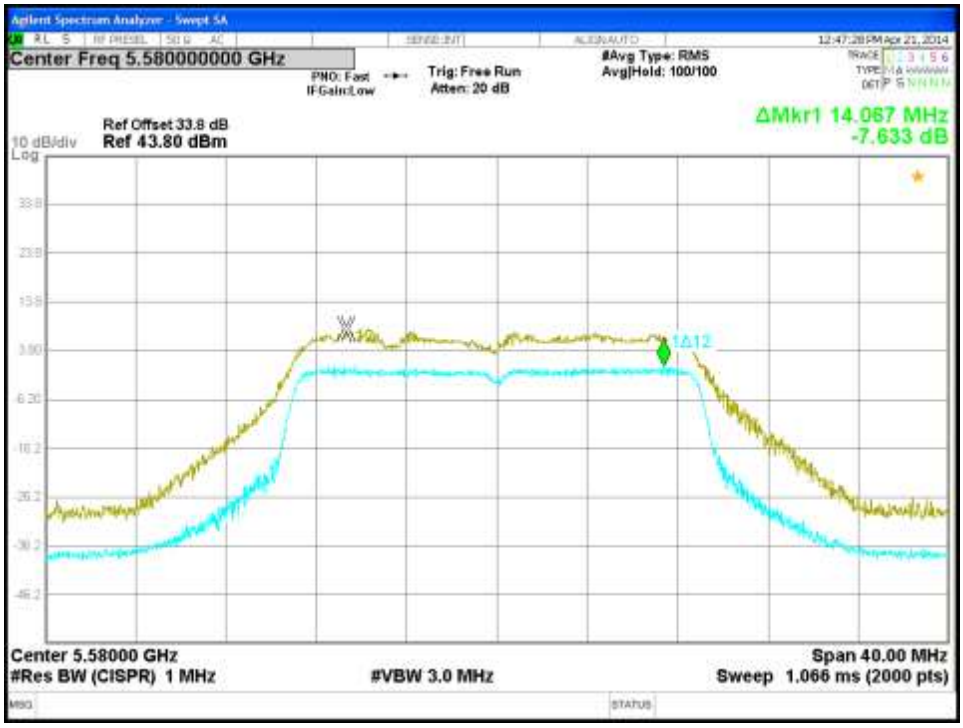


Figure 211: Peak Excursion-5580MHz-VHT20-MCS0-Ch2

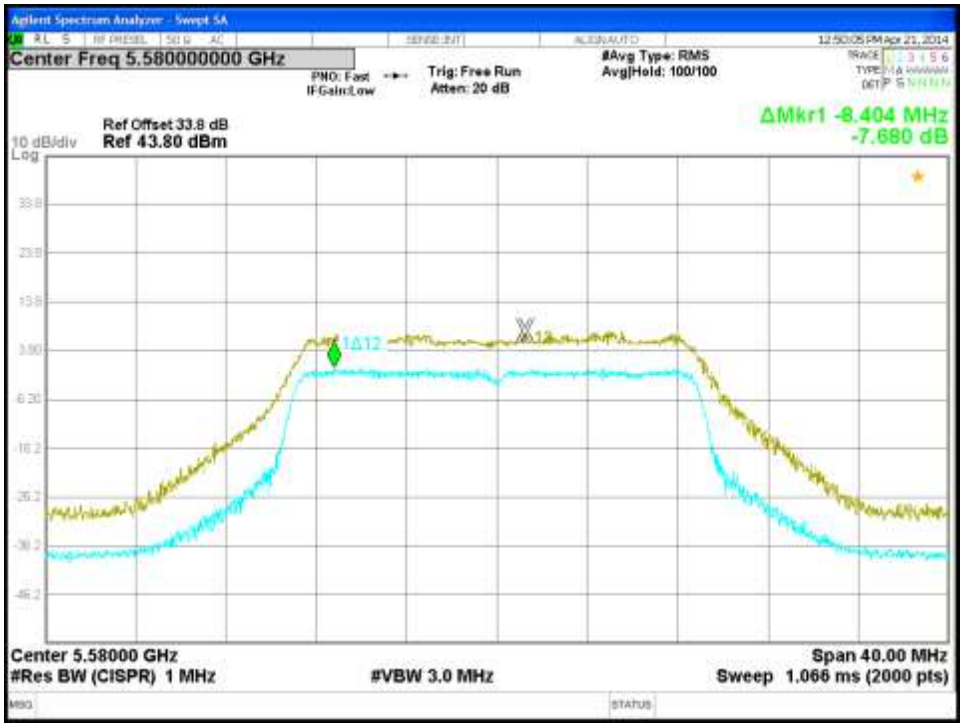


Figure 212: Peak Excursion-5580MHz-VHT20-MCS0-Ch3

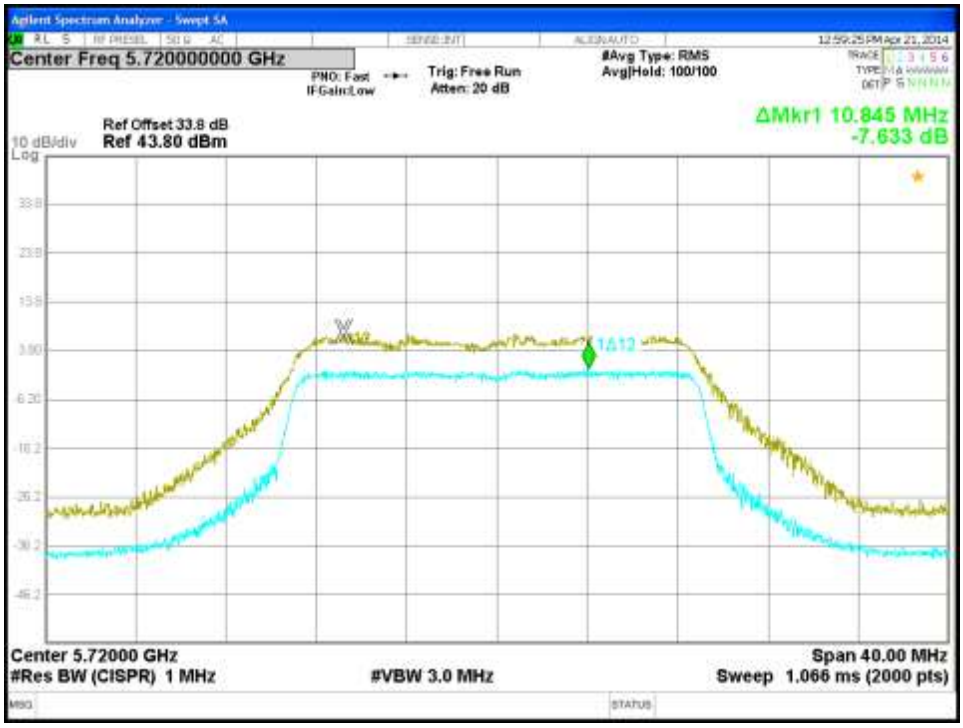


Figure 213: Peak Excursion-5720MHz-VHT20-MCS0-Ch0

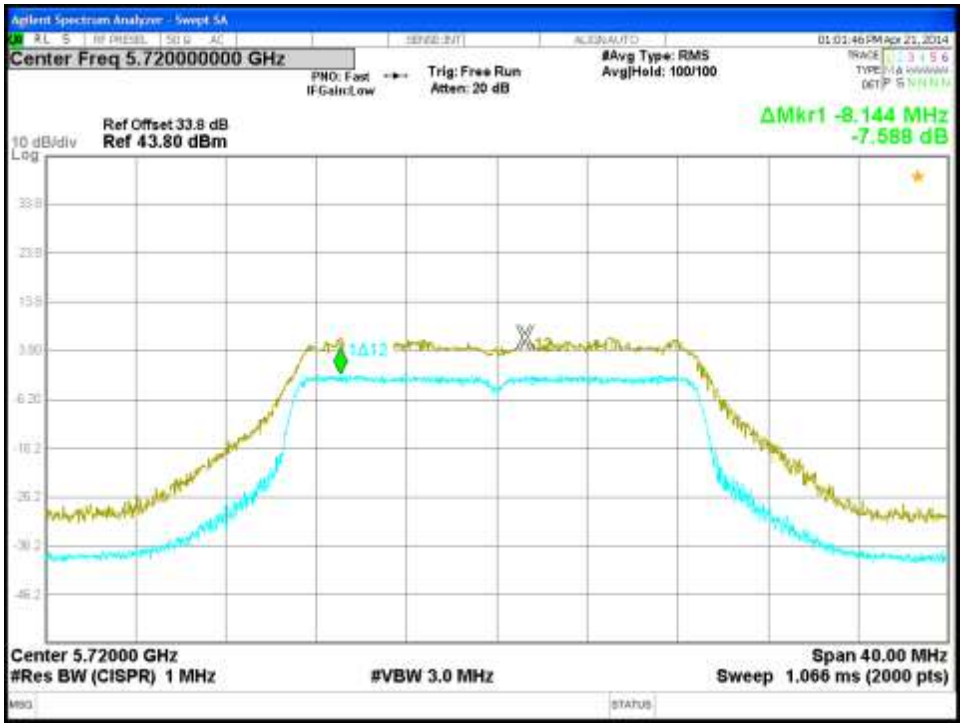


Figure 214: Peak Excursion-5720MHz-VHT20-MCS0-Ch1

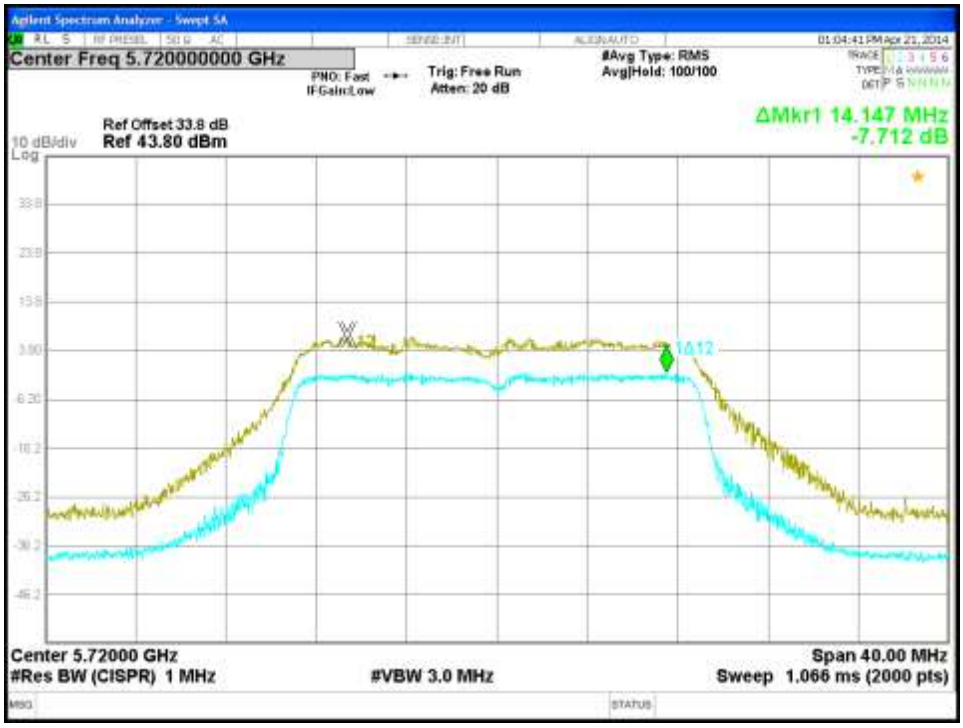


Figure 215: Peak Excursion-5720MHz-VHT20-MCS0-Ch2

Figure 216: Peak Excursion-5720MHz-VHT20-MCS0-Ch3

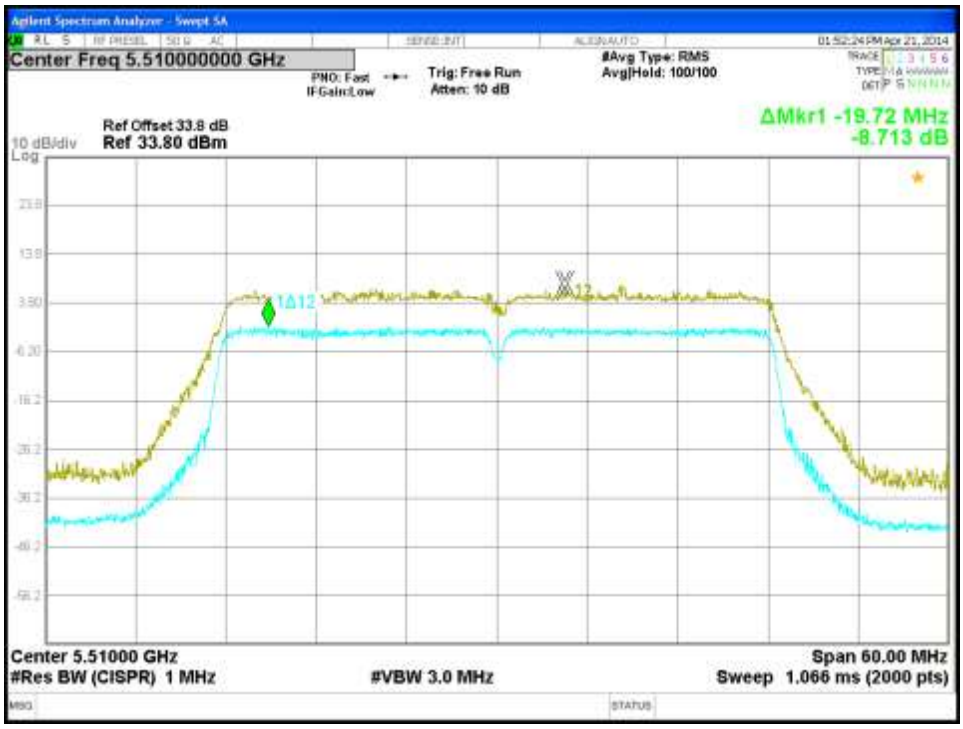


Figure 217: Peak Excursion-5510MHz-VHT40-MCS0-Ch0

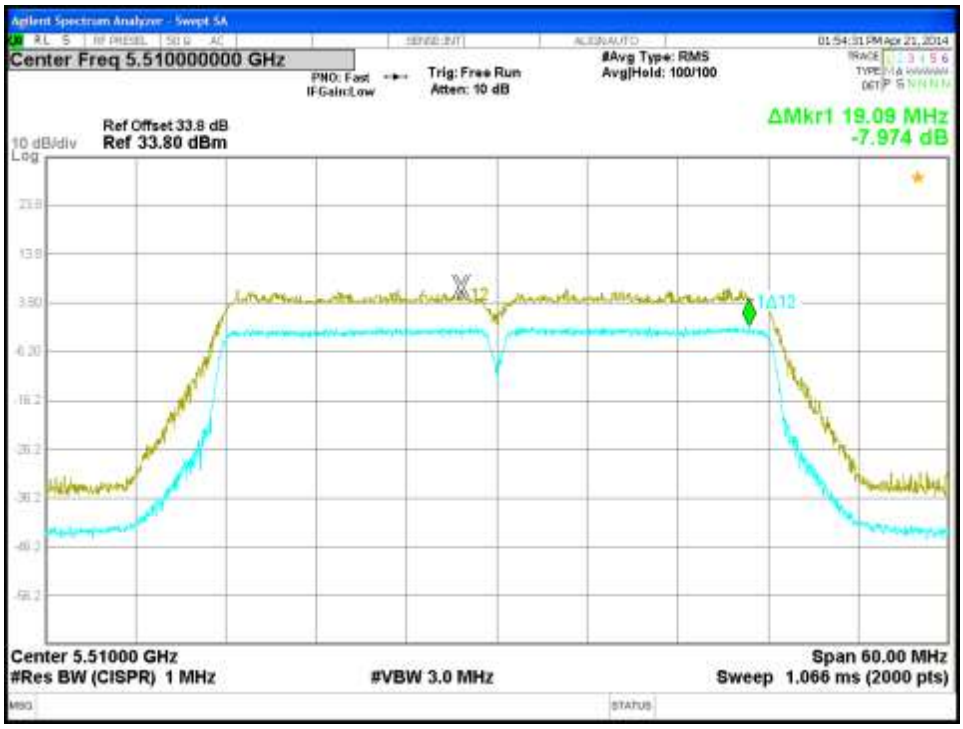


Figure 218: Peak Excursion-5510MHz-VHT40-MCS0-Ch1

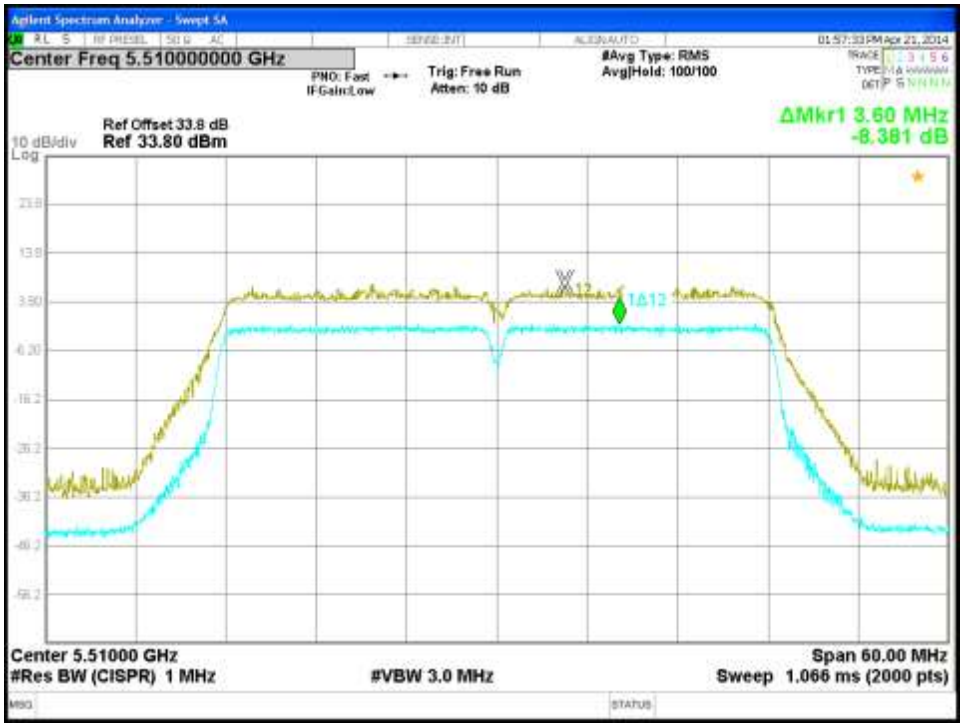


Figure 219: Peak Excursion-5510MHz-VHT40-MCS0-Ch2

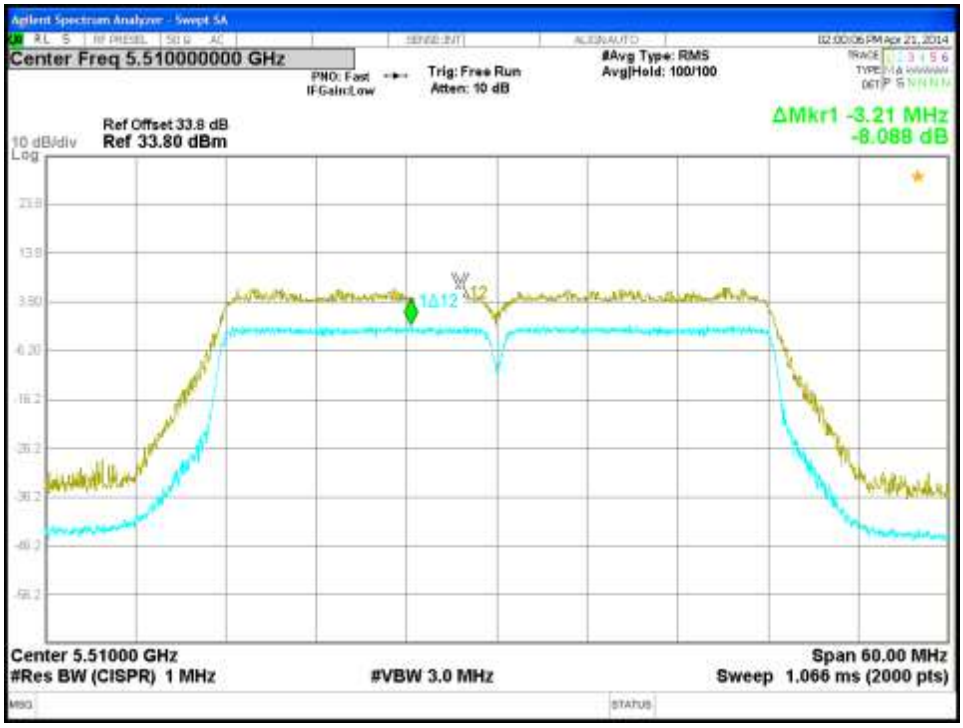


Figure 220: Peak Excursion-5510MHz-VHT40-MCS0-Ch3

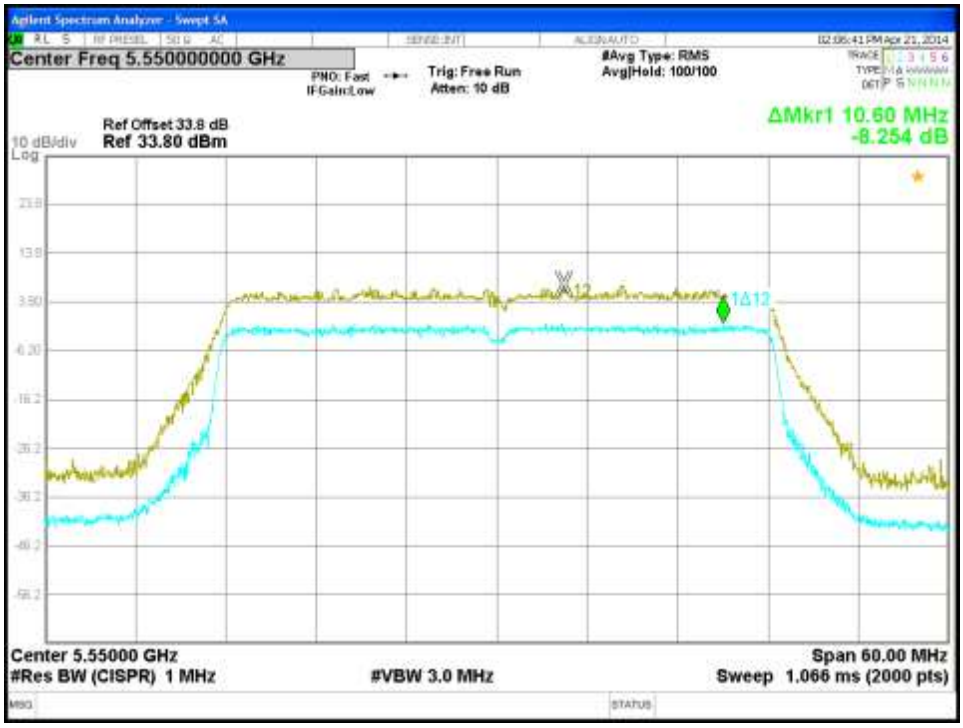


Figure 221: Peak Excursion-5550MHz-VHT40-MCS0-Ch0

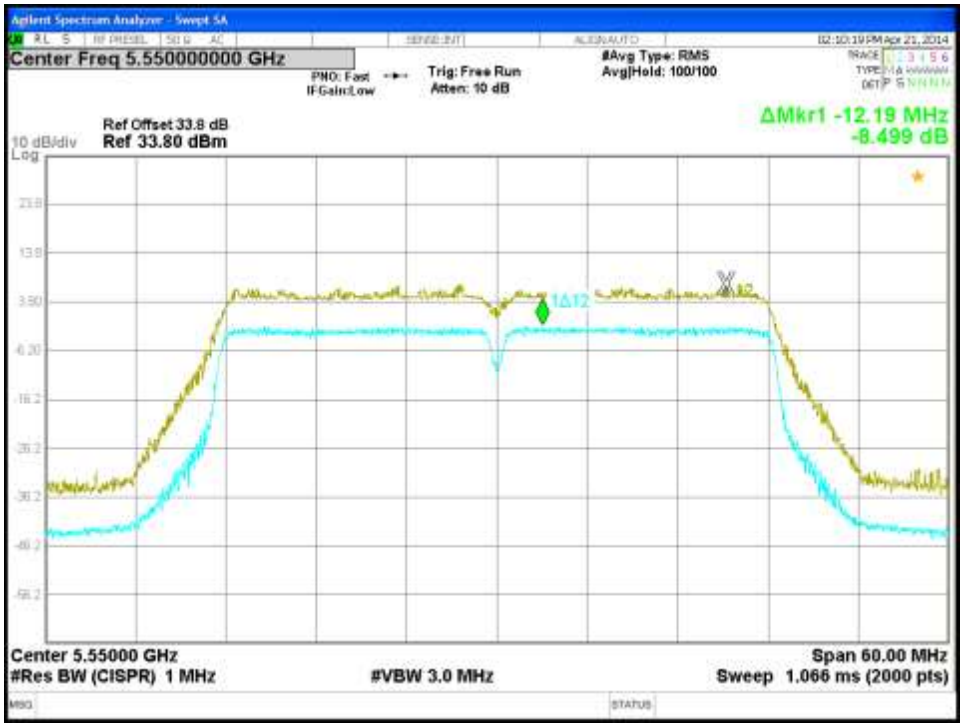


Figure 222: Peak Excursion-5550MHz-VHT40-MCS0-Ch1

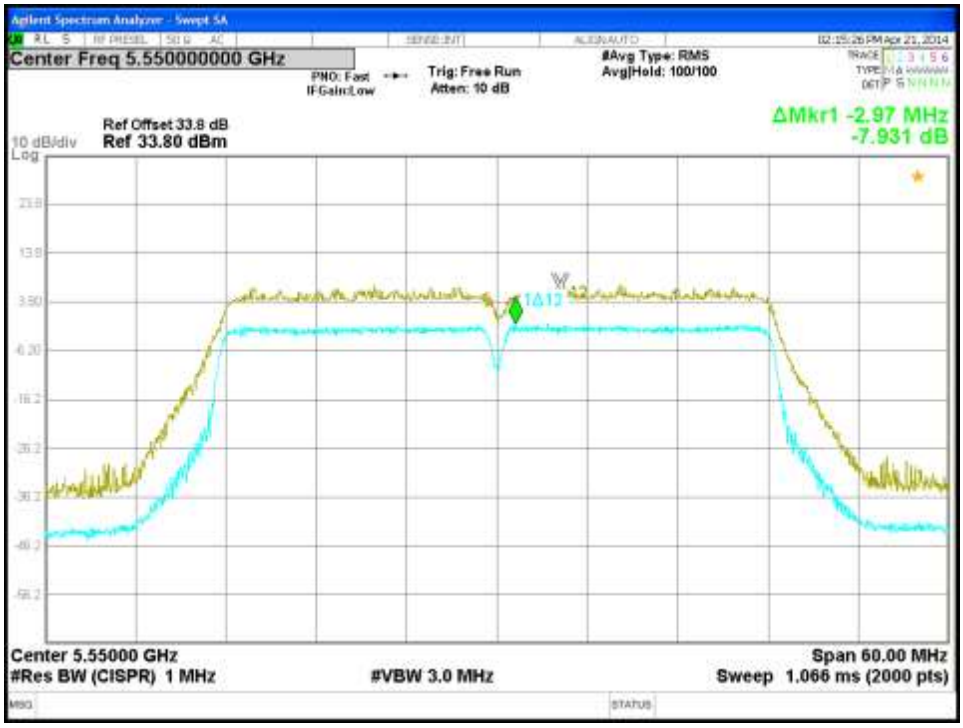


Figure 223: Peak Excursion-5550MHz-VHT40-MCS0-Ch2

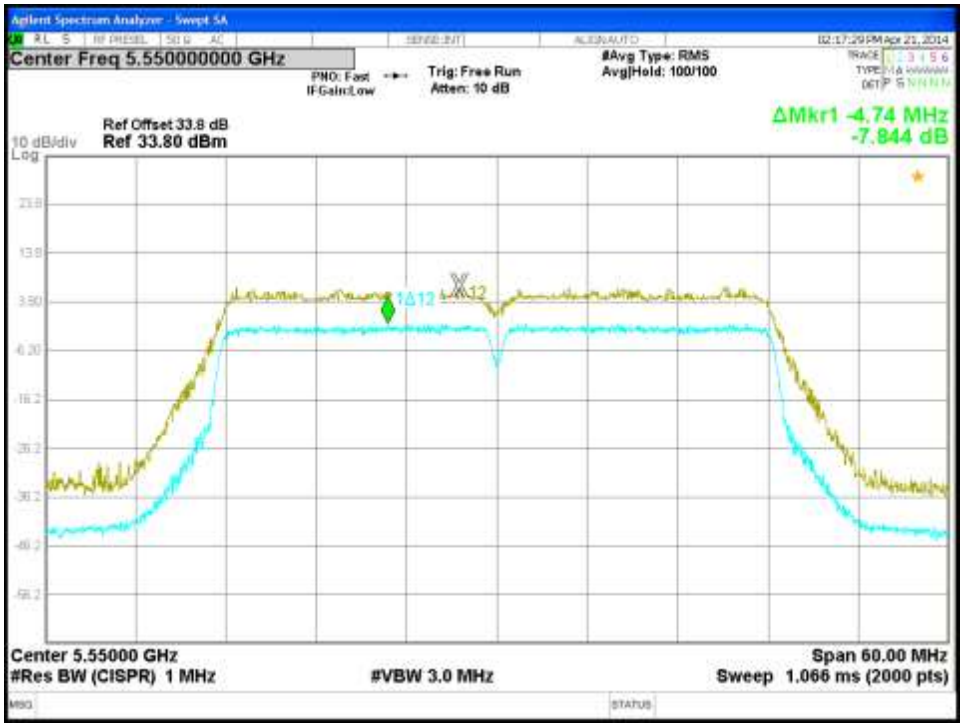


Figure 224: Peak Excursion-5550MHz-VHT40-MCS0-Ch3

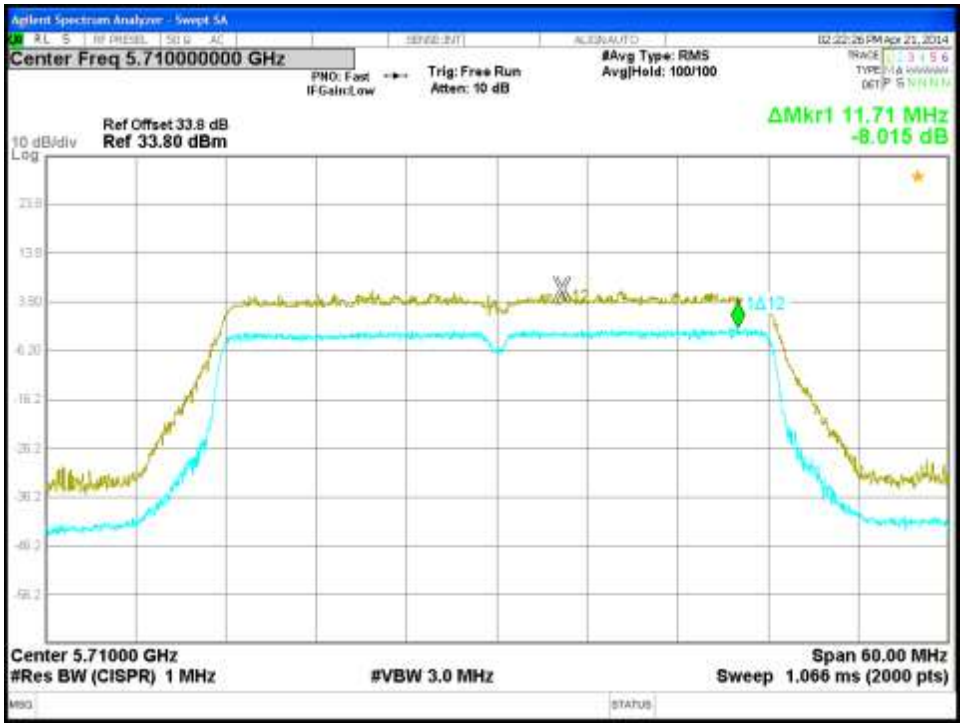


Figure 225: Peak Excursion-5710MHz-VHT40-MCS0-Ch0

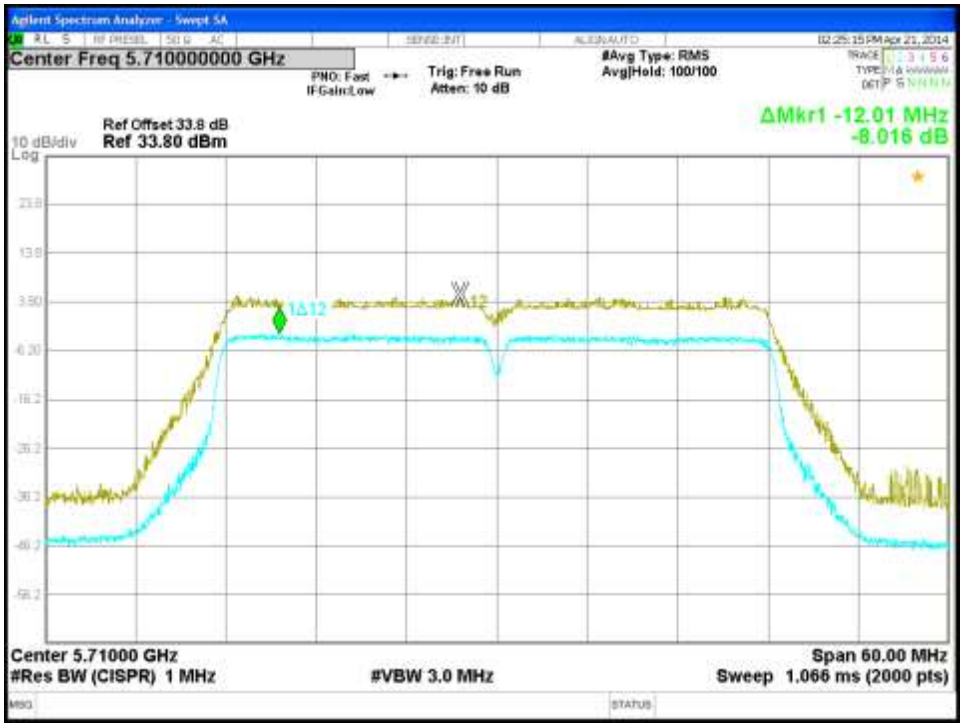


Figure 226: Peak Excursion-5710MHz-VHT40-MCS0-Ch1

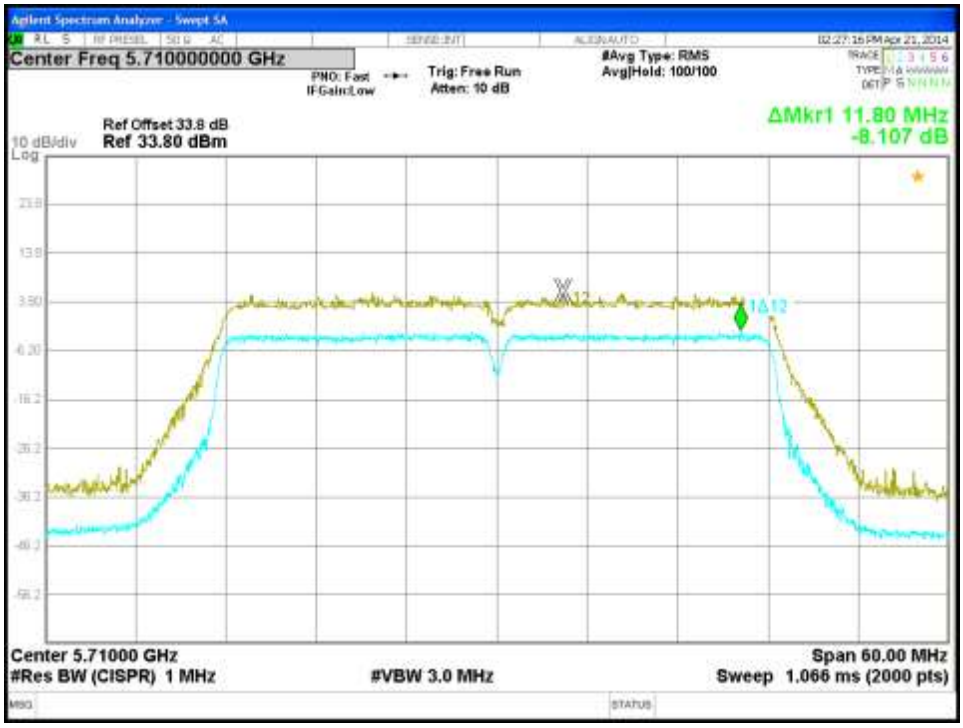


Figure 227: Peak Excursion-5710MHz-VHT40-MCS0-Ch2

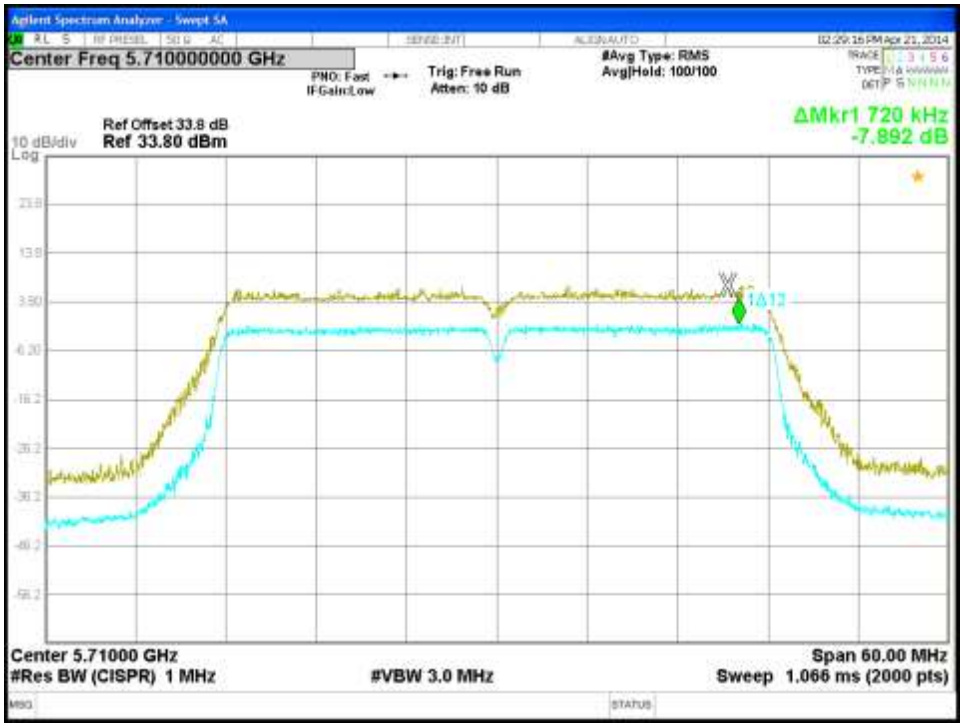


Figure 228: Peak Excursion-5710MHz-VHT40-MCS0-Ch3

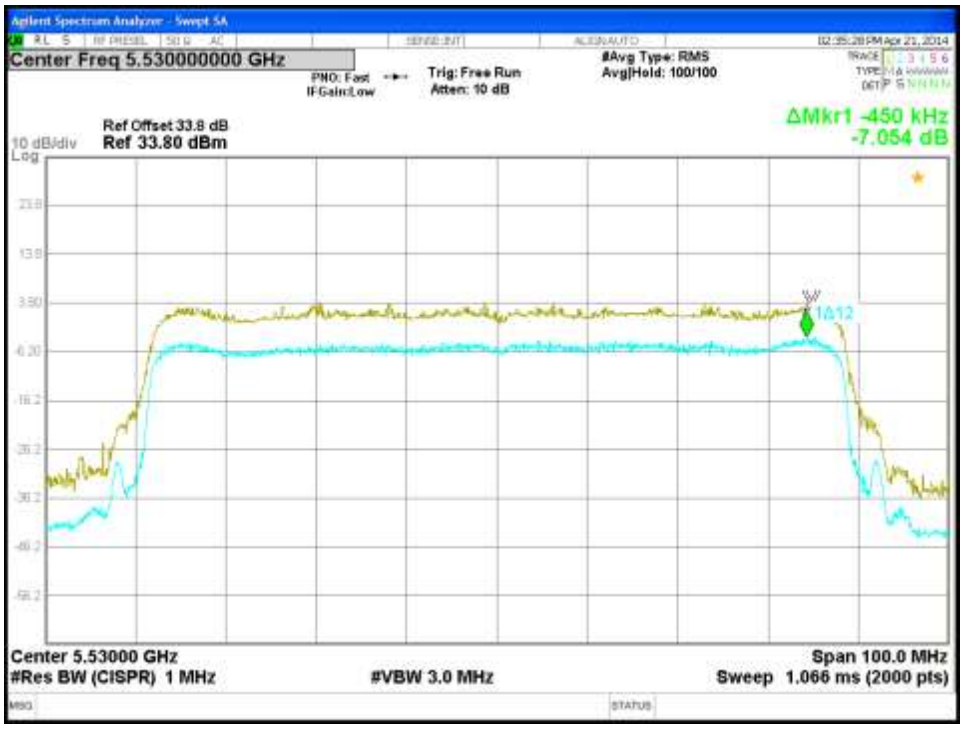


Figure 229: Peak Excursion-5530MHz-VHT80-MCS0-Ch0

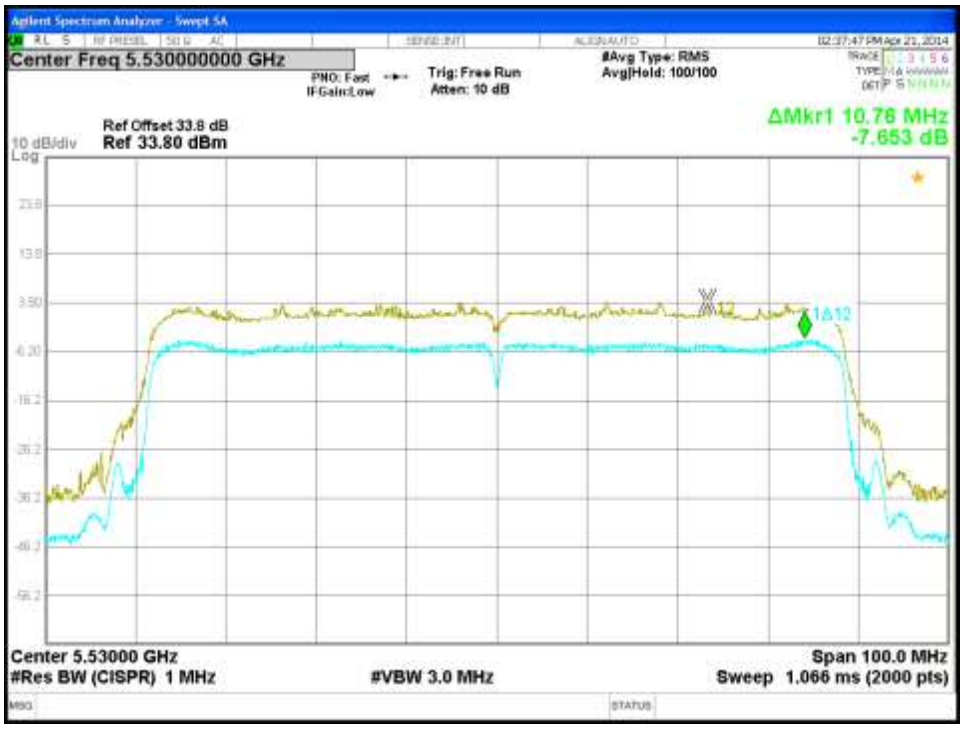


Figure 230: Peak Excursion-5530MHz-VHT80-MCS0-Ch1

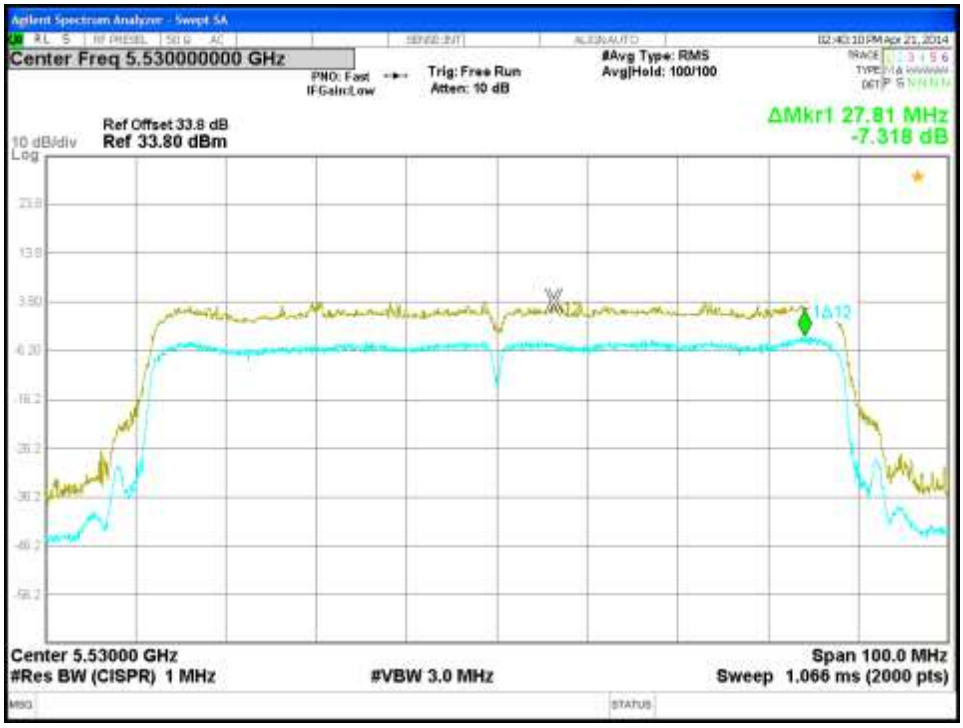


Figure 231: Peak Excursion-5530MHz-VHT80-MCS0-Ch2

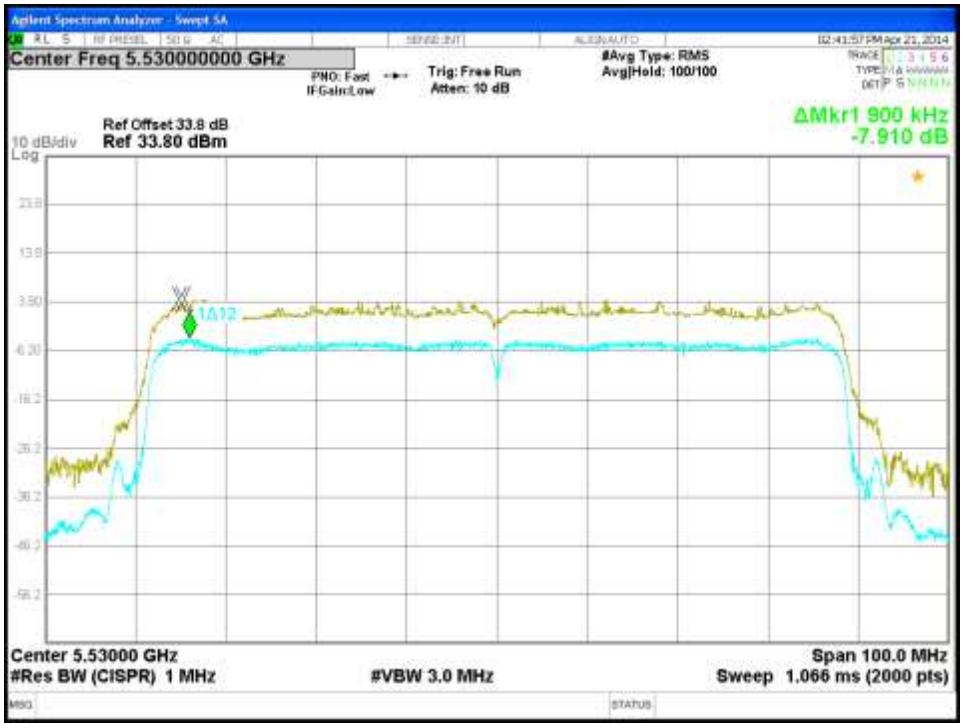


Figure 232: Peak Excursion-5530MHz-VHT80-MCS0-Ch3

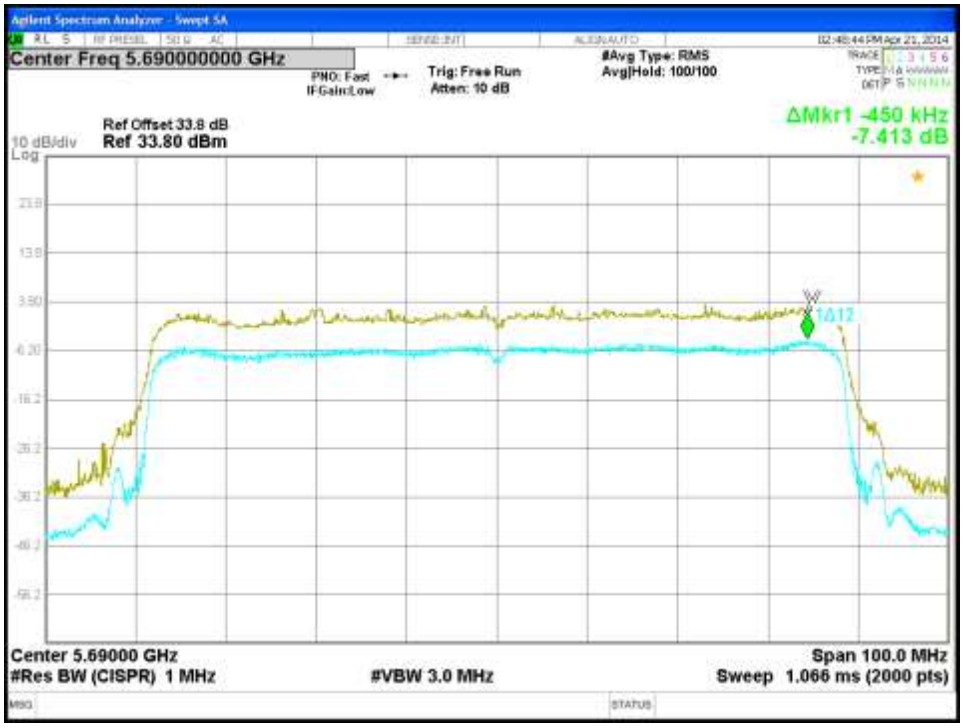


Figure 233: Peak Excursion-5690MHz-VHT80-MCS0-Ch0

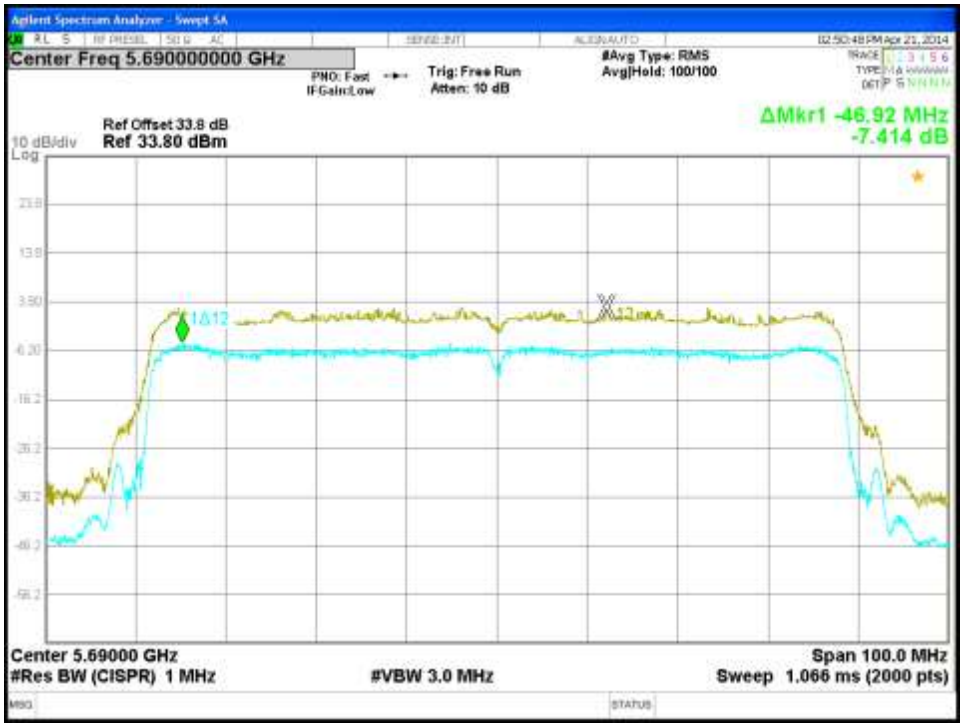


Figure 234: Peak Excursion-5690MHz-VHT80-MCS0-Ch1

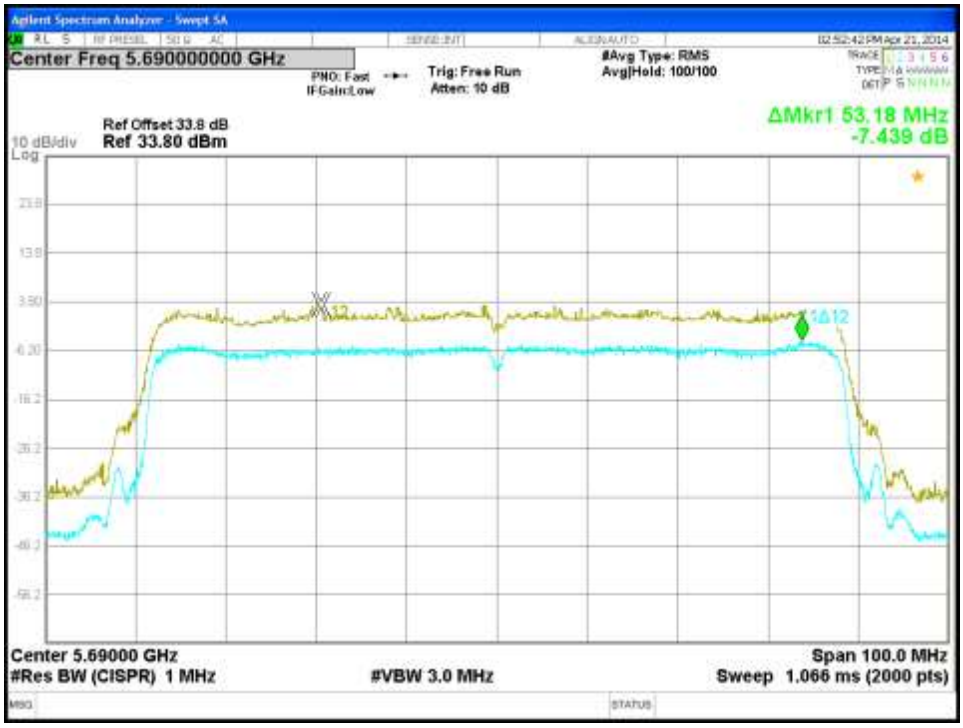


Figure 235: Peak Excursion-5690MHz-VHT80-MCS0-Ch2

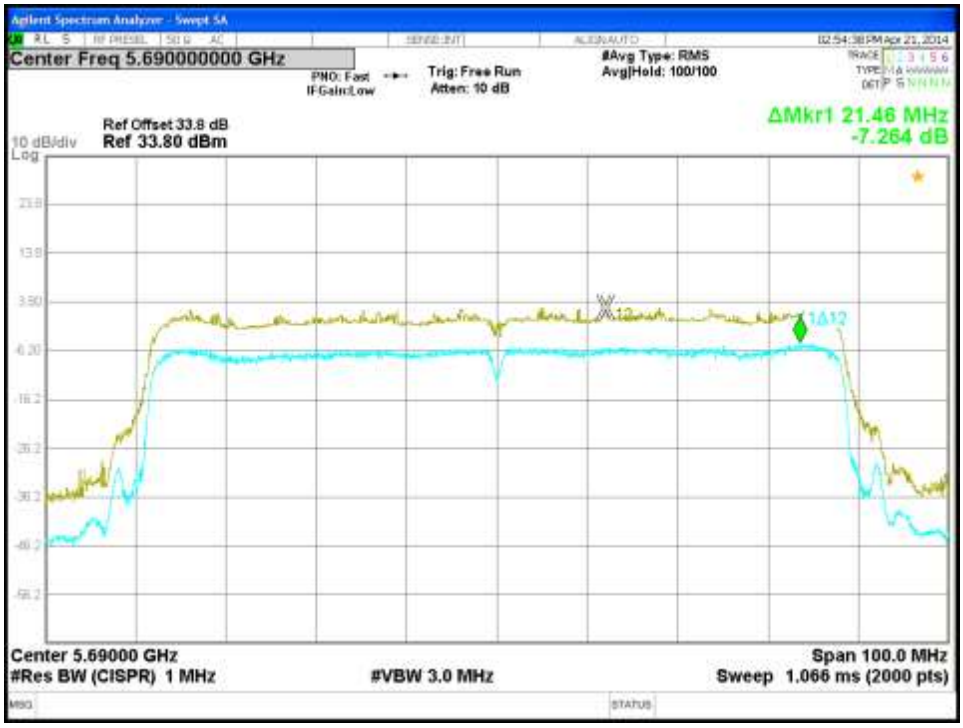


Figure 236: Peak Excursion-5690MHz-VHT80-MCS0-Ch3

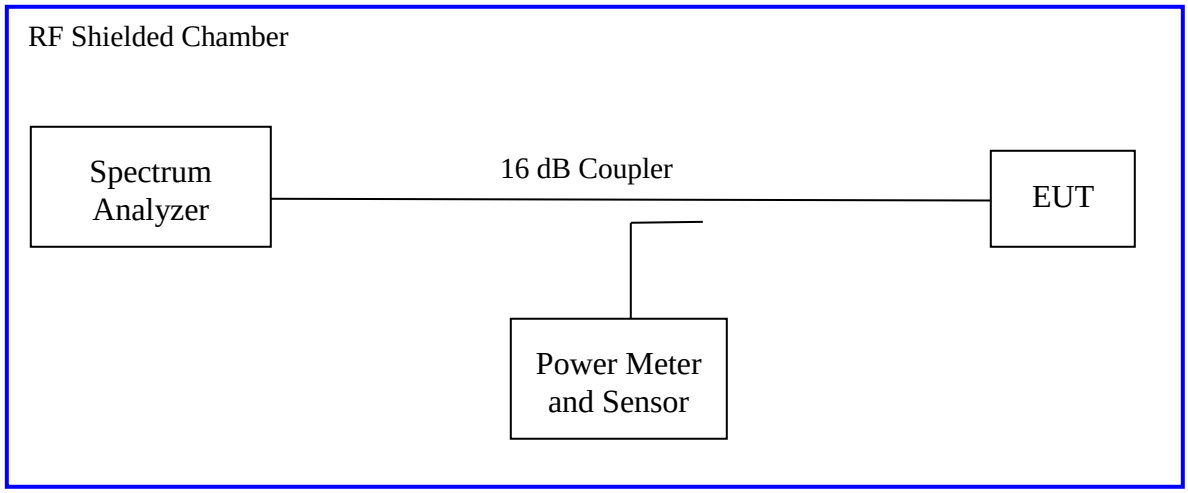
4.4 Power Spectral Density

According to the CFR47 Part 15.407 (a) and RSS 210 (A9.2), the spectral power density output of the antenna port shall be less than 11 dBm in any 1 MHz band during any time interval of continuous transmission.

4.4.1 **Test Method**

The conducted method was used to measure the power spectral density per ANSI C63.10-2009 Section 6.11.2. The measurement was performed with modulation per CFR47 Part 15.407 (a) and RSS 210 (A9.2). The pre-evaluation was performed to find the worst modes. The worst findings were conducted on 3 channels in frequency range of 5470 MHz to 5725 MHz for the test sample, S/N 121404000111. The result indicated below.

Test Setup:



KDB 789033 D01 v01r03 Section F, Method SA-2 was applies since the EUT continuously transmit with duty cycle less 100%. The duty cycle, CF = 10Log(1/duty cycle), was applied.

The crossing band channels for VHT20, VHT40, and VHT80 measured using the KDB 644545 D01 Guidance for IEEE802.11ac v01r02 Section F (2).

Amplitude bins of all chains were sum together to determine the highest power spectral density er KDB 662911.

The total directional gain would be 8.08 dBi. The limit is reduced for every dBi gain exceeding 6 dBi. The limit would be 8.92 dBm.

4.4.2 **Results**

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 6: Power Spectral Density – Test Results

Test Conditions: Conducted Measurement		**Test Date:** April 29, 2014	
Antenna Type: Integrated		**Power Setting:** See test plan	
Directional Antenna Gain: + 8.08 dBi		**Signal State:** Modulated.	
Ambient Temp.: 23 °C		**Relative Humidity:**31%	
Power Spectral Density			
802.11a Mode			
Freq. (MHz)	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
5500	8.647	8.92	-0.27
5580	8.260	8.92	-0.66
5700	7.631	8.92	-1.29
Note: The highest power spectral density was observed at 802.11a 6Mbps per data stream.			
802.11n (HT20) Mode			
Freq. (MHz)	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
5500	8.226	8.92	-0.69
5580	8.054	8.92	-0.87
5700	7.170	8.92	-1.75
Note: The highest power spectral density was observed at 802.11n HT20 MCS0 per data stream.			
802.11n (HT40) Mode			
Freq. (MHz)	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**

5510	6.557	8.92	-2.36
5550	6.365	8.92	-2.56
5670	5.521	8.92	-3.40
Note: The highest peak output power was observed at 802.11n HT40 MCS0 per data stream.			

802.11ac (VHT20) Mode

Freq. (MHz)	Total PSD [dBm]	Limit [dBm]	Margin [dB]
5500	8.290	8.92	-0.63
5580	8.004	8.92	-0.92
5700	7.316	8.92	-1.60
Note: The highest power spectral density was observed at 802.11ac VHT20 MCS0 per data stream.			

802.11ac (VHT40) Mode

Freq. (MHz)	Total PSD [dBm]	Limit [dBm]	Margin [dB]
5510	6.696	8.92	-2.22
5550	6.557	8.92	-2.36
5670	5.517	8.92	-3.40
Note: The highest peak output power was observed at 802.11ac VHT40 MCS0 per data stream.			

802.11ac (VHT80) Mode

Freq. (MHz)	Total PSD [dBm]	Limit [dBm]	Margin [dB]
5530	3.776	8.92	-5.14
Note: The highest peak output power was observed at 802.11ac VHT80 MCS0 per data stream.			

Band Crossing Channel per KDB 644545 D01			
802.11ac (VHT20) Mode at 5720 MHz			
Band	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
UNII2c	7.082	8.92	-1.84
UNII3	7.136	14.92	-7.78
Note: The highest power spectral density was observed at 802.11ac VHT20 MCS0 per data stream.			
802.11ac (VHT40) Mode at 5710 MHz			
Band	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
UNII2c	5.312	8.92	-3.61
UNII3	5.495	14.92	-9.43
Note: The highest peak output power was observed at 802.11ac VHT40 MCS0 per data stream.			
802.11ac (VHT80) Mode at 5690 MHz			
Freq. (MHz)	**Total PSD [dBm]**	**Limit [dBm]**	**Margin [dB]**
UNII2c	2.976	8.92	-5.94
UNII3	2.602	14.92	-12.32
Note: The highest peak output power was observed at 802.11ac VHT80 MCS0 per data stream.			

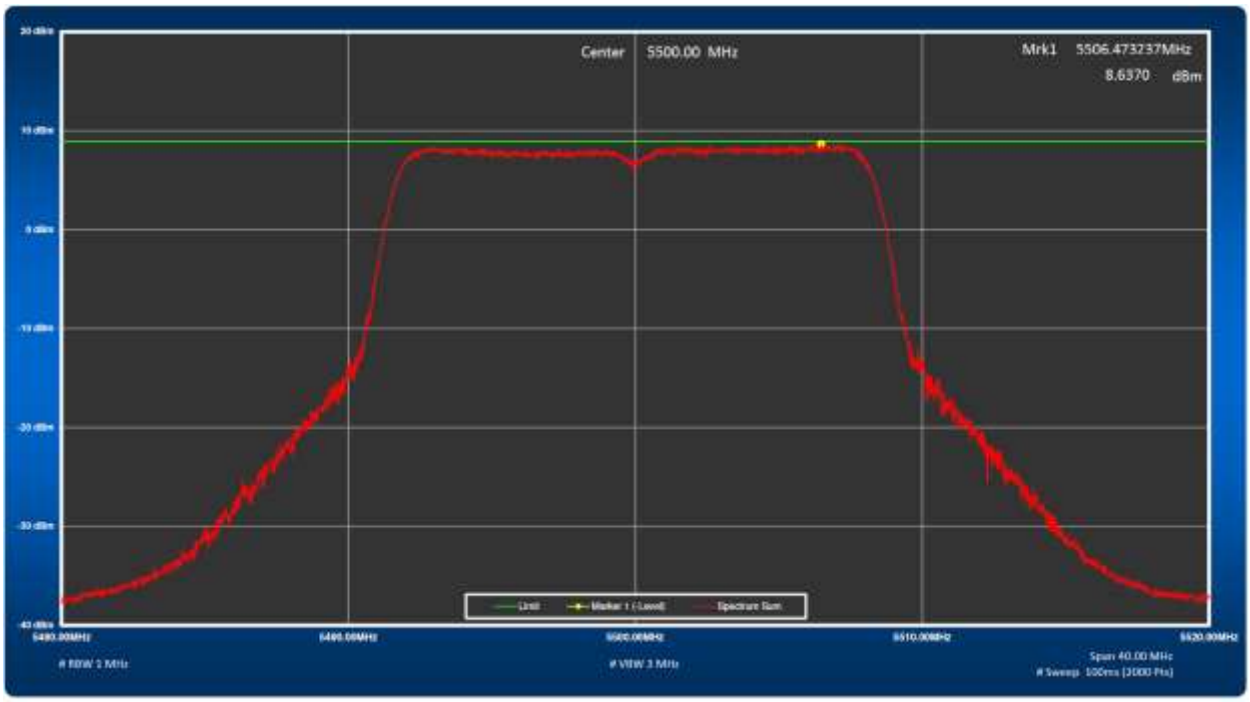


Figure 237: Total Sum of Power Spectral Density, 5500 MHz at 802.11a, 6 Mbps

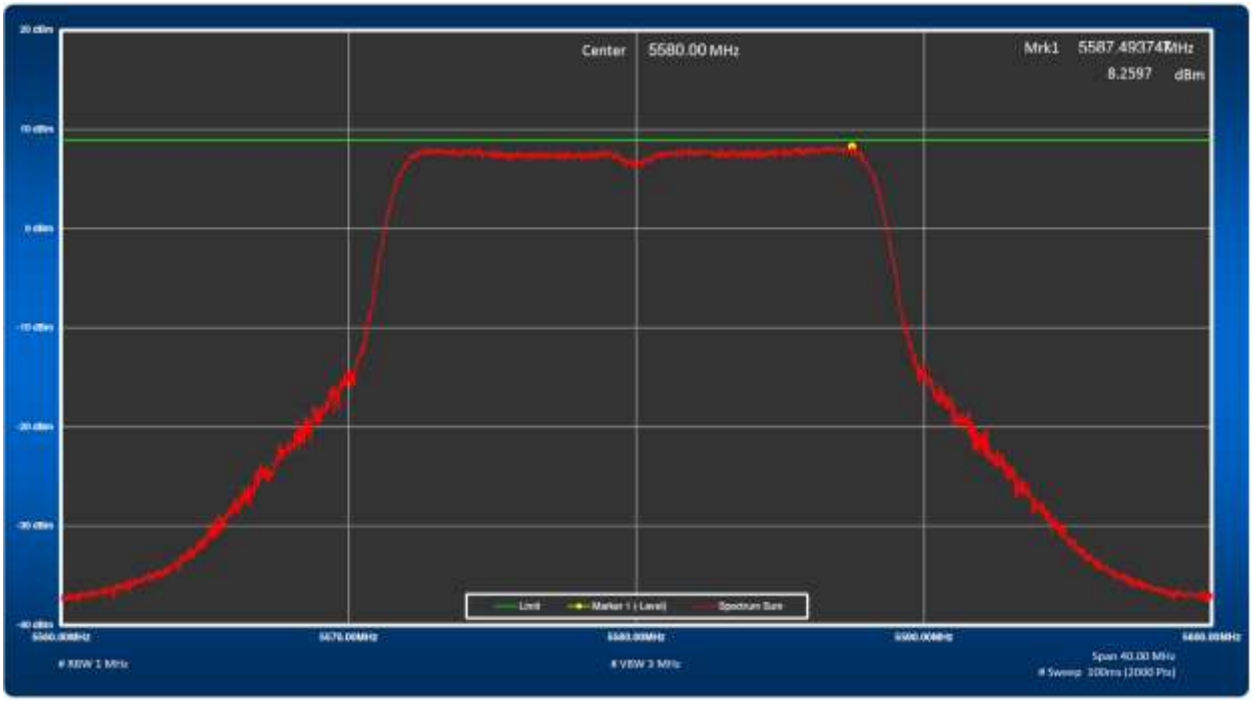


Figure 238: Total Sum of Power Spectral Density, 5580 MHz at 802.11a, 6 Mbps

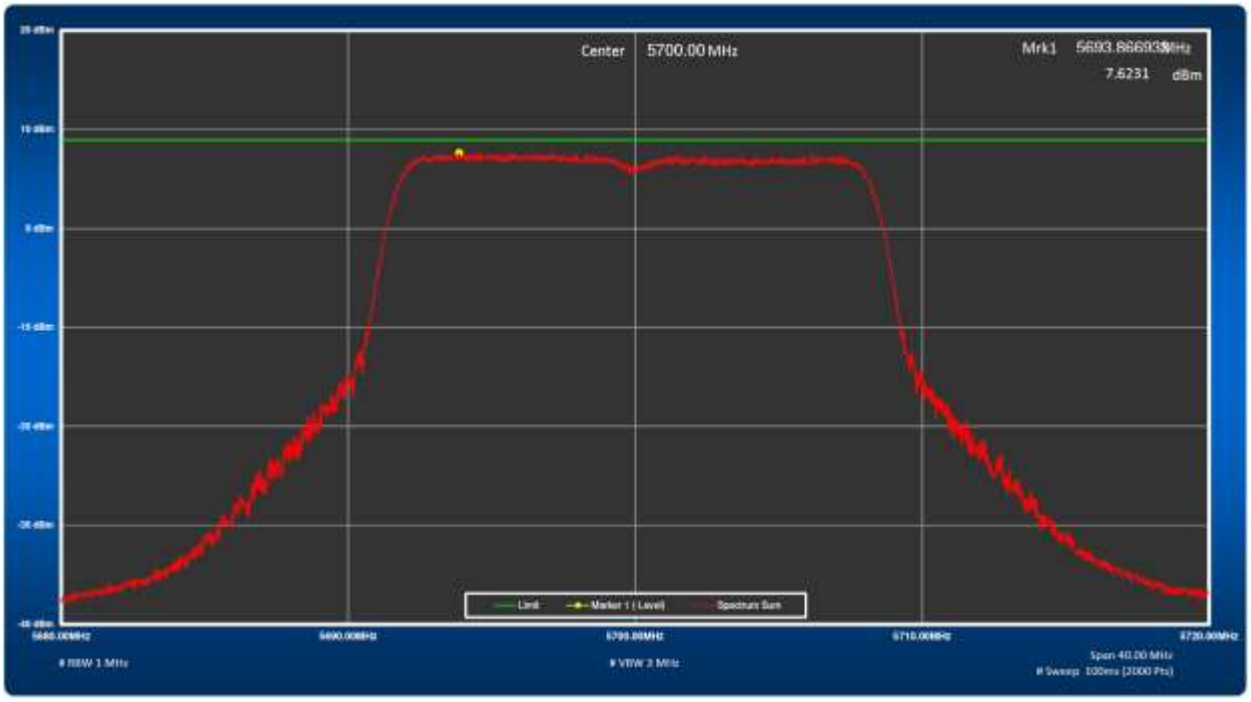


Figure 239: Total Sum of Power Spectral Density, 5700 MHz at 802.11a, 6 Mbps

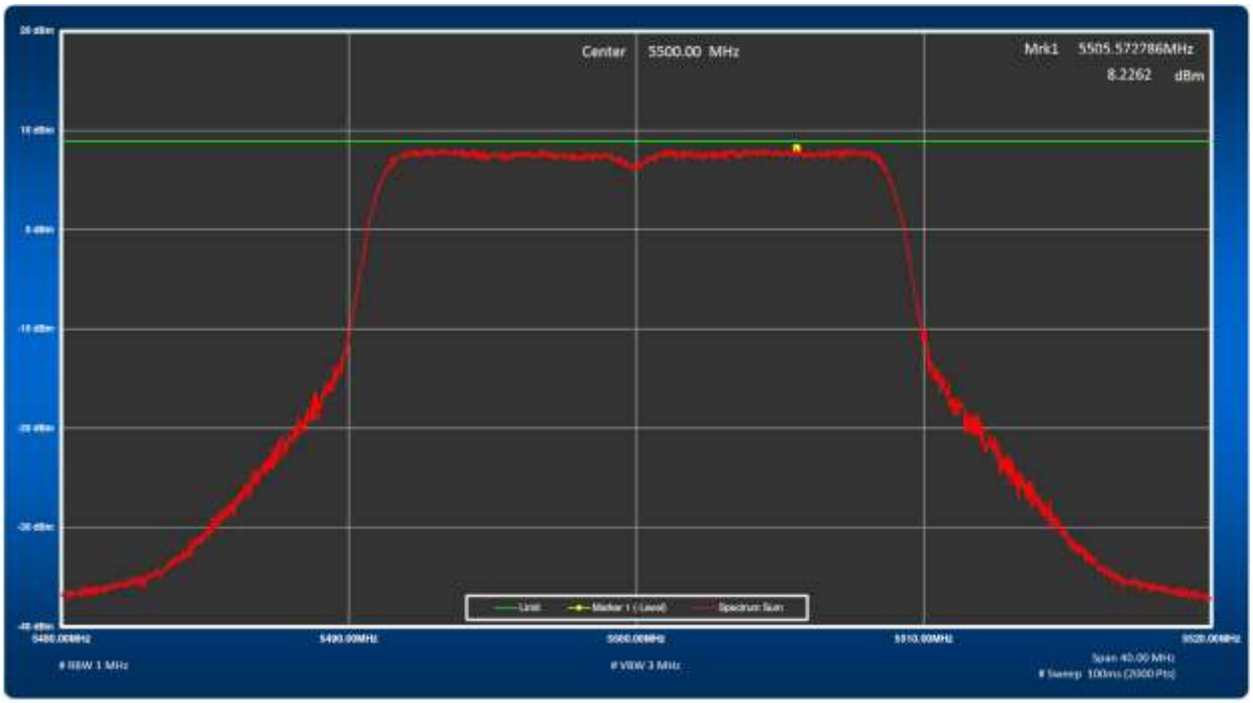


Figure 240: Total Sum of Power Spectral Density, 5500 MHz at 802.11n HT20 MCS0

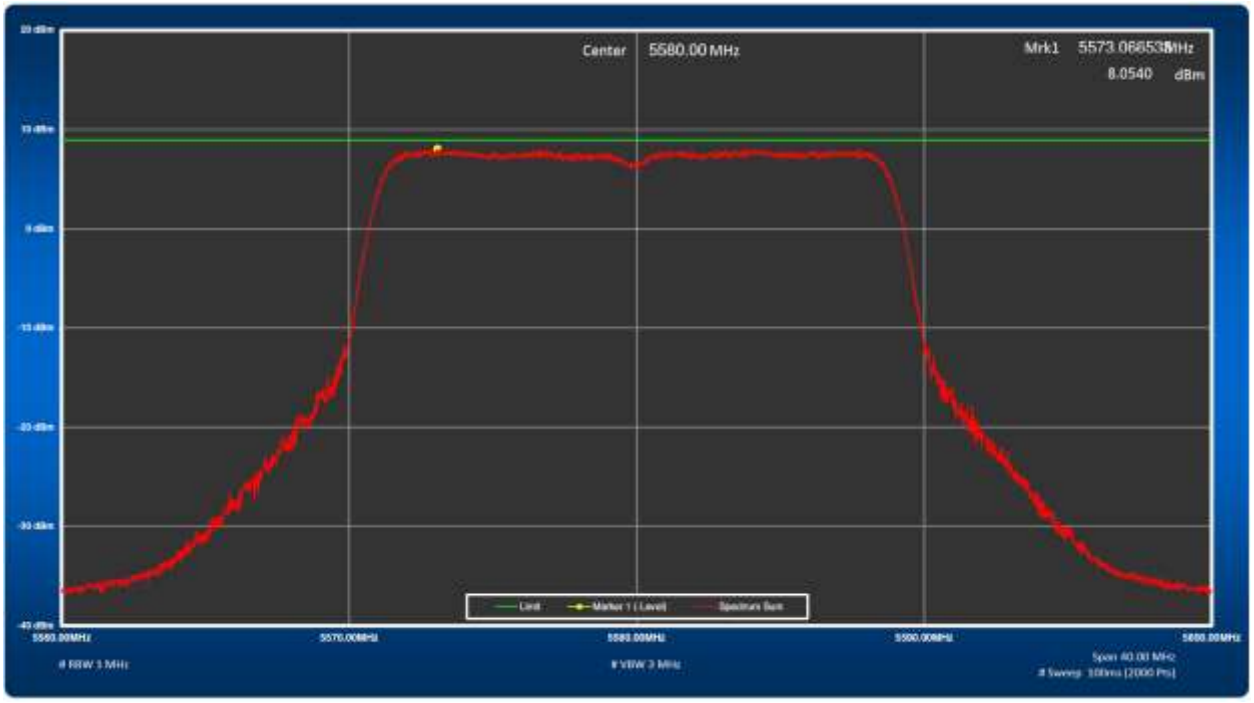


Figure 241: Total Sum of Power Spectral Density, 5580 MHz at 802.11n HT20 MCS0

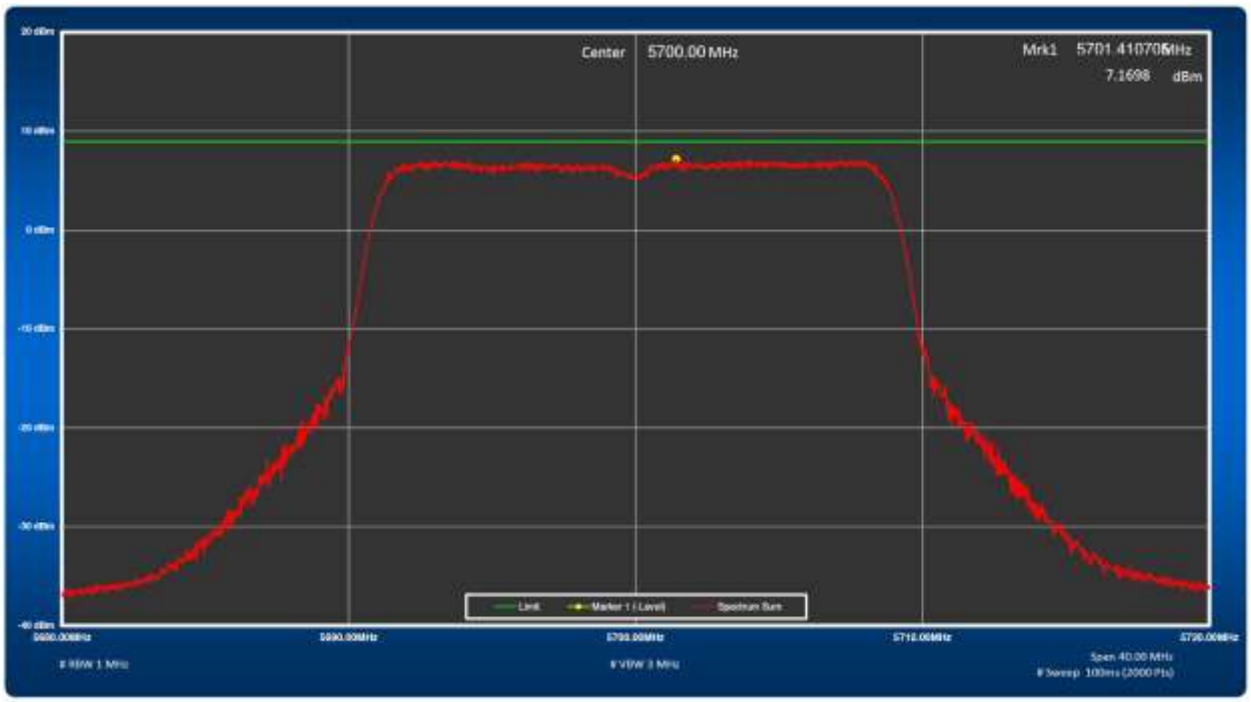


Figure 242: Total Sum of Power Spectral Density, 5700 MHz at 802.11n HT20 MCS0

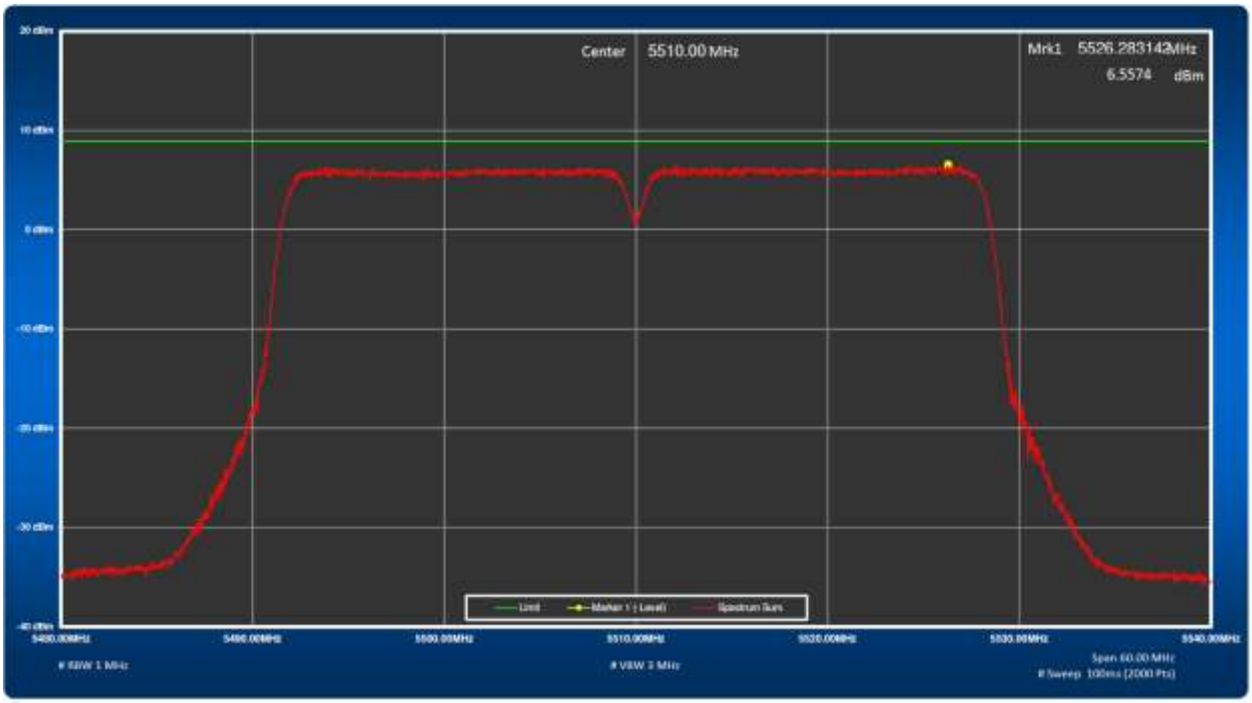


Figure 243: Total Sum of Power Spectral Density, 5510 MHz at 802.11n HT40 MCS0

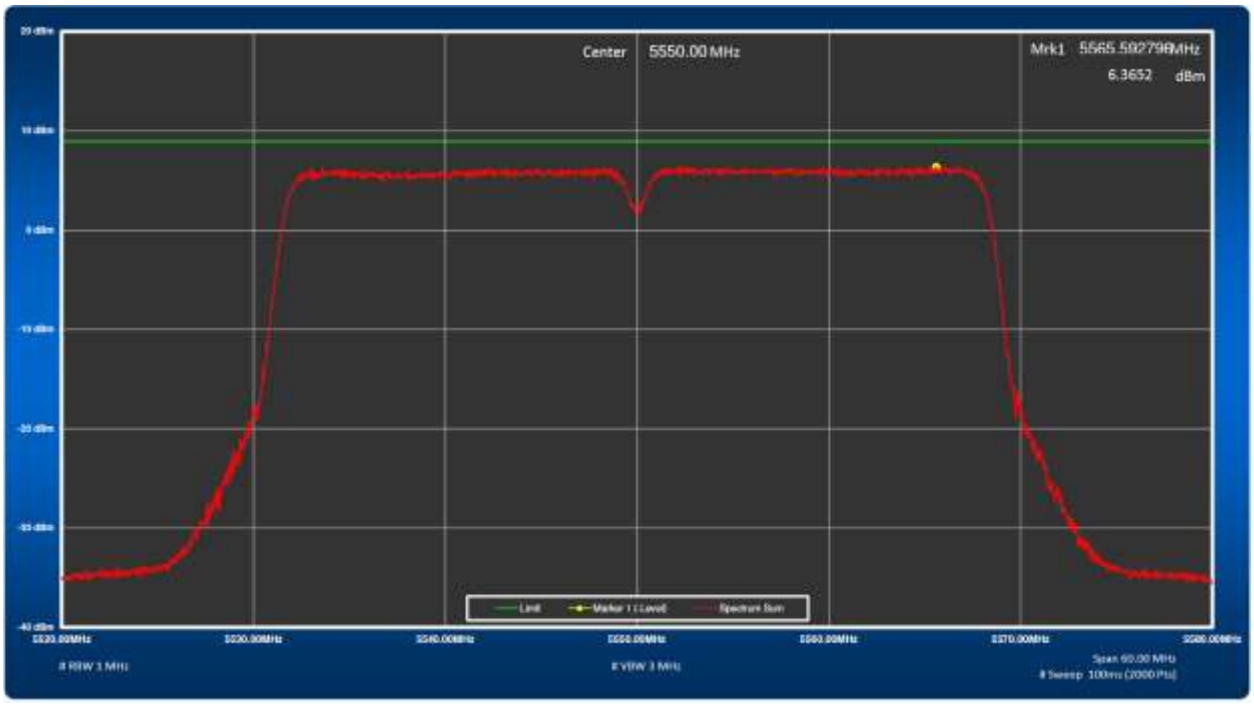


Figure 244: Total Sum of Power Spectral Density, 5550 MHz at 802.11n HT40 MCS0

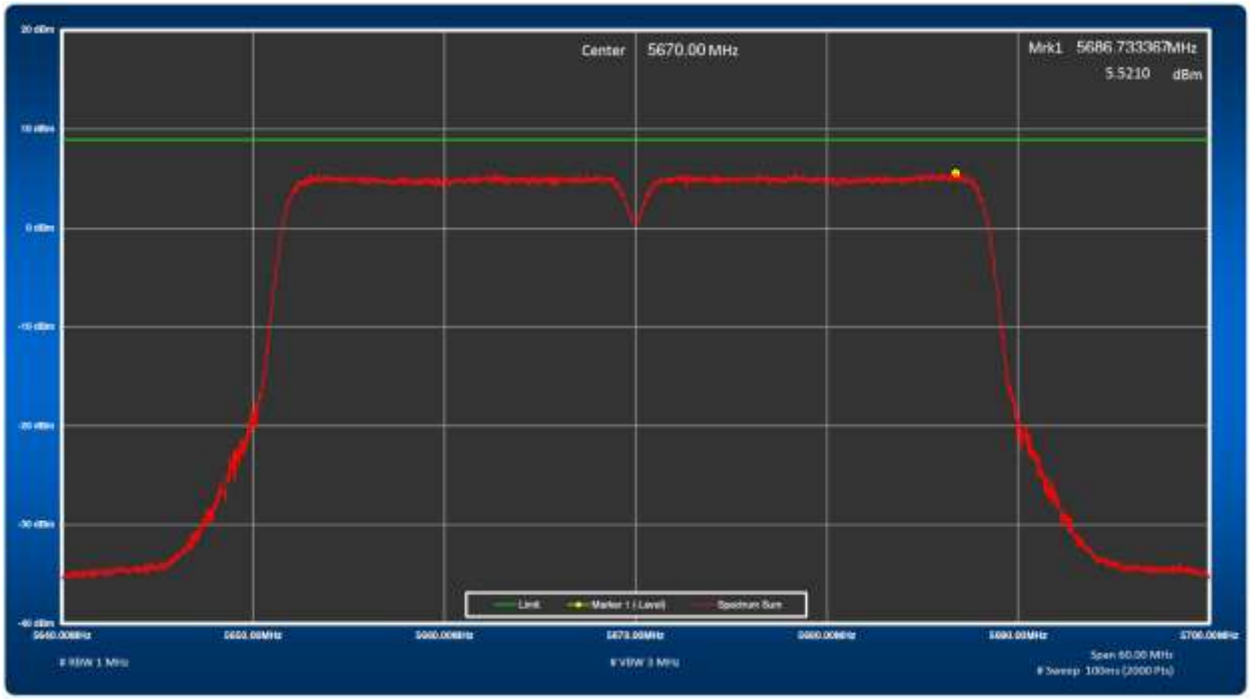


Figure 245: Total Sum of Power Spectral Density, 5670 MHz at 802.11n HT40 MCS0

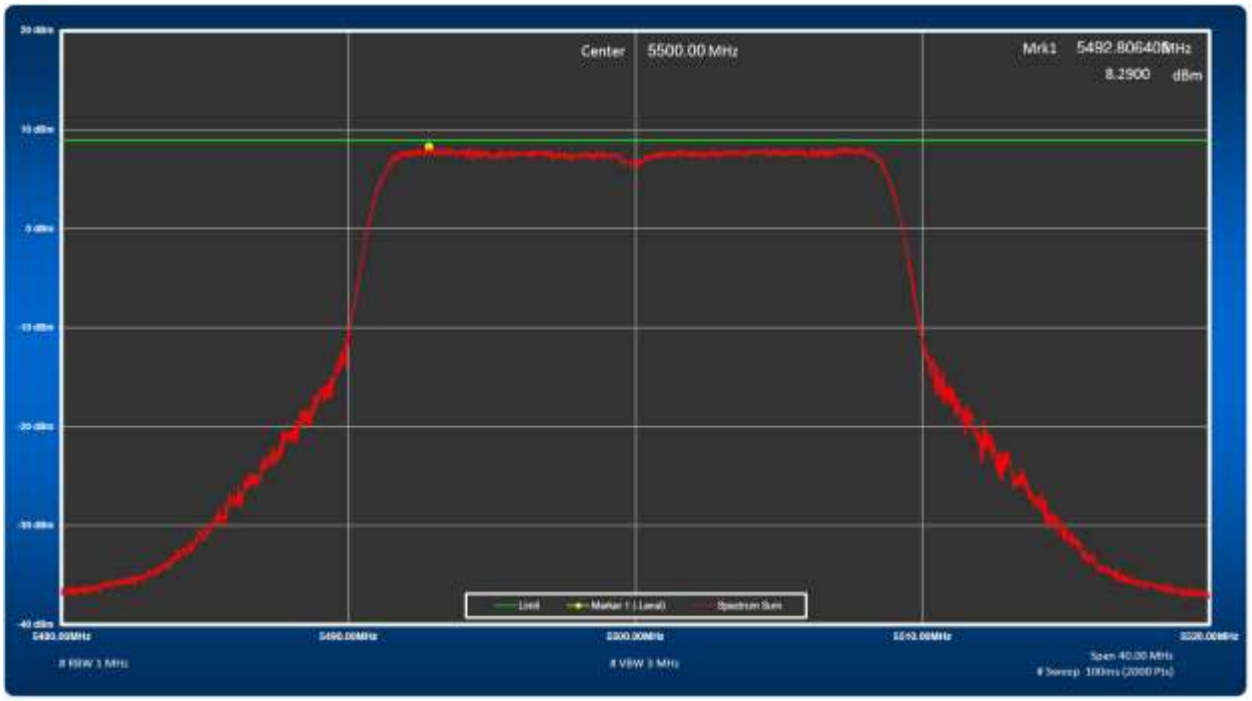


Figure 246: Total Sum of Power Spectral Density, 5500 MHz at 802.11ac VHT20 MCS0

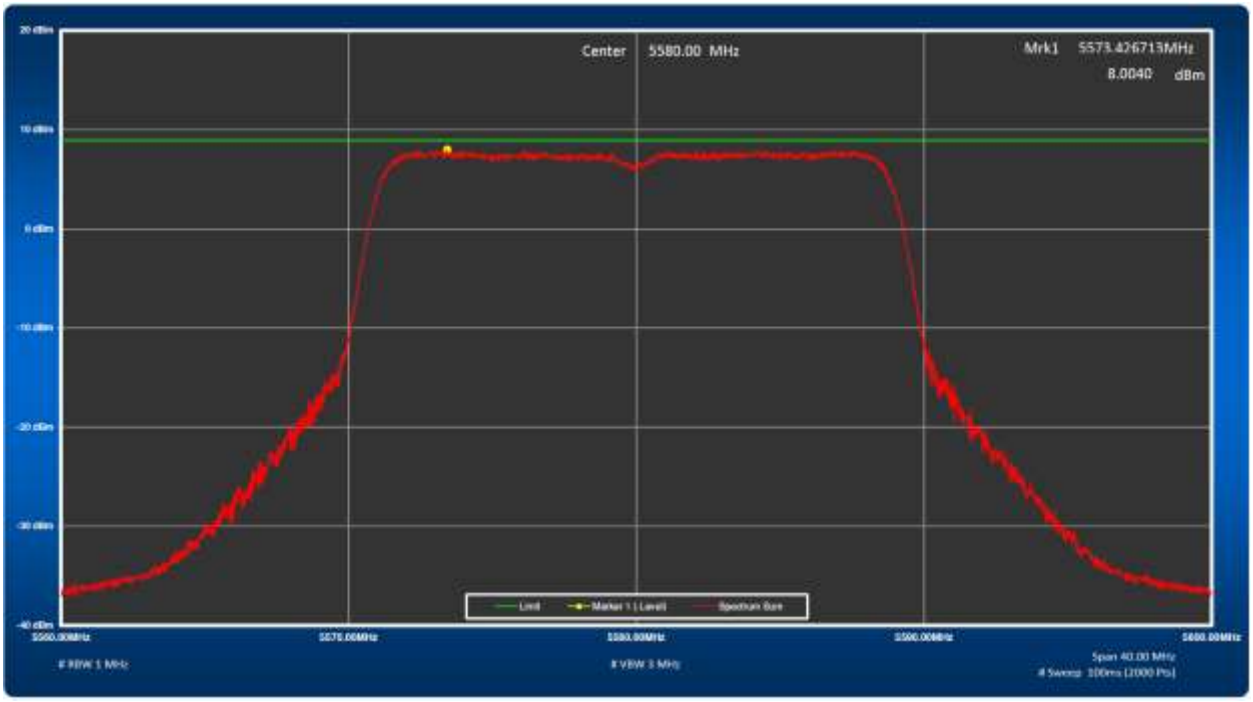


Figure 247: Total Sum of Power Spectral Density, 5580 MHz at 802.11ac VHT20 MCS0

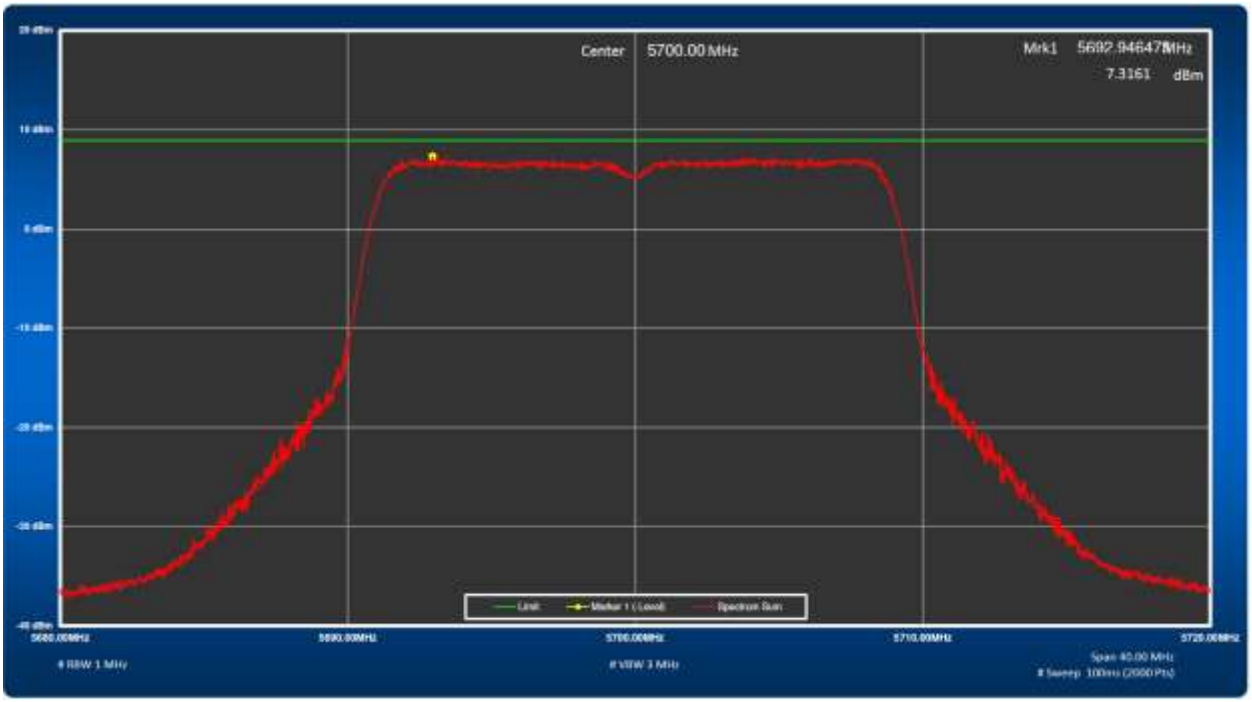


Figure 248: Total Sum of Power Spectral Density, 5700 MHz at 802.11ac VHT20 MCS0

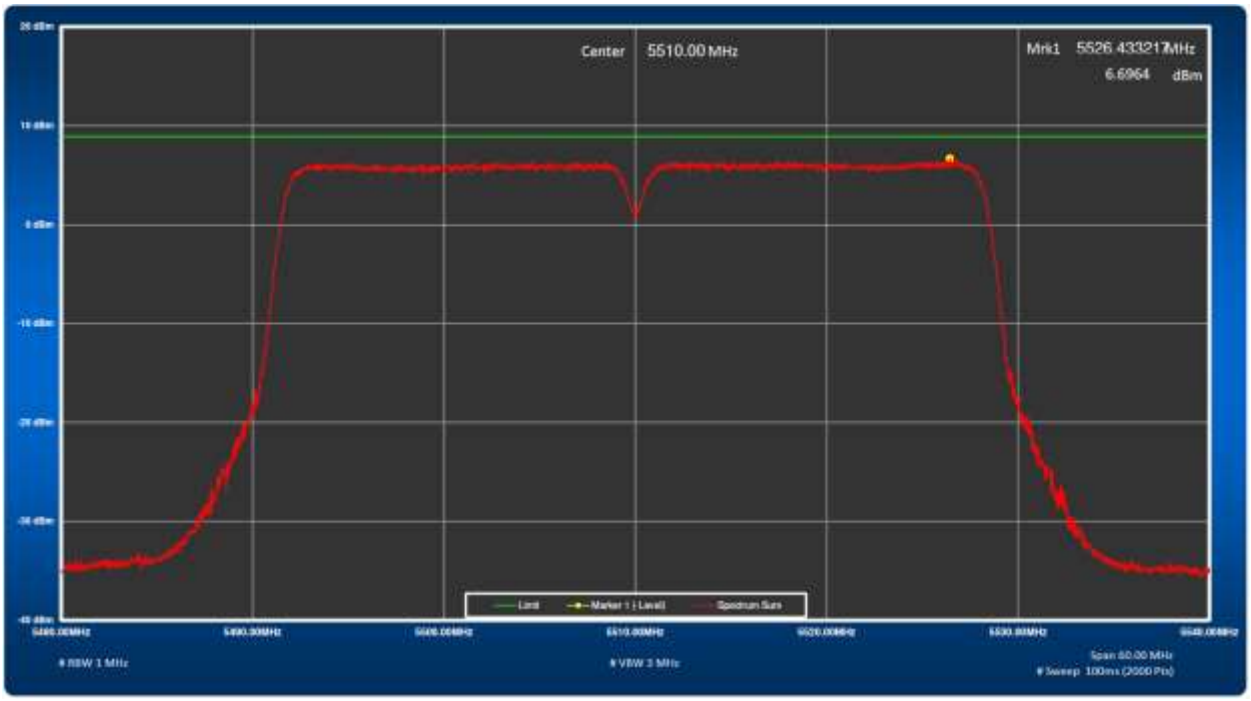


Figure 249: Total Sum of Power Spectral Density, 5510 MHz at 802.11ac VHT40 MCS0

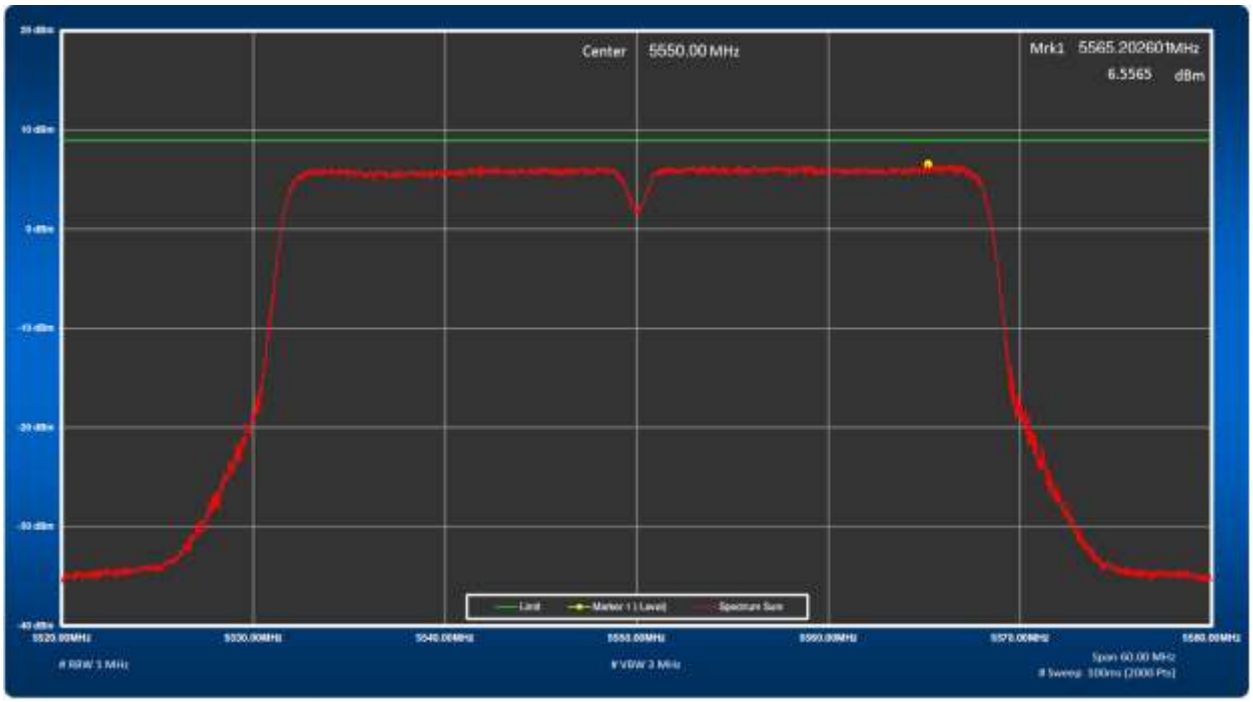


Figure 250: Total Sum of Power Spectral Density, 5550 MHz at 802.11ac VHT40 MCS0

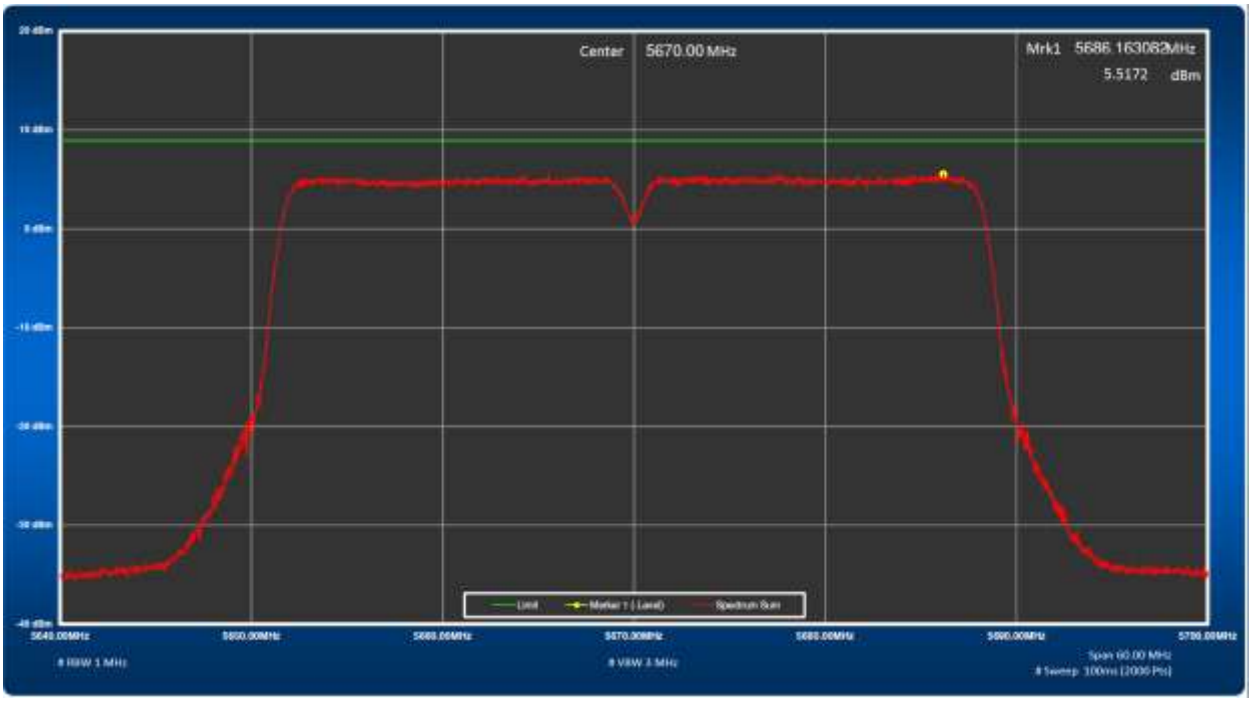


Figure 251: Total Sum of Power Spectral Density, 5670 MHz at 802.11ac VHT40 MCS0

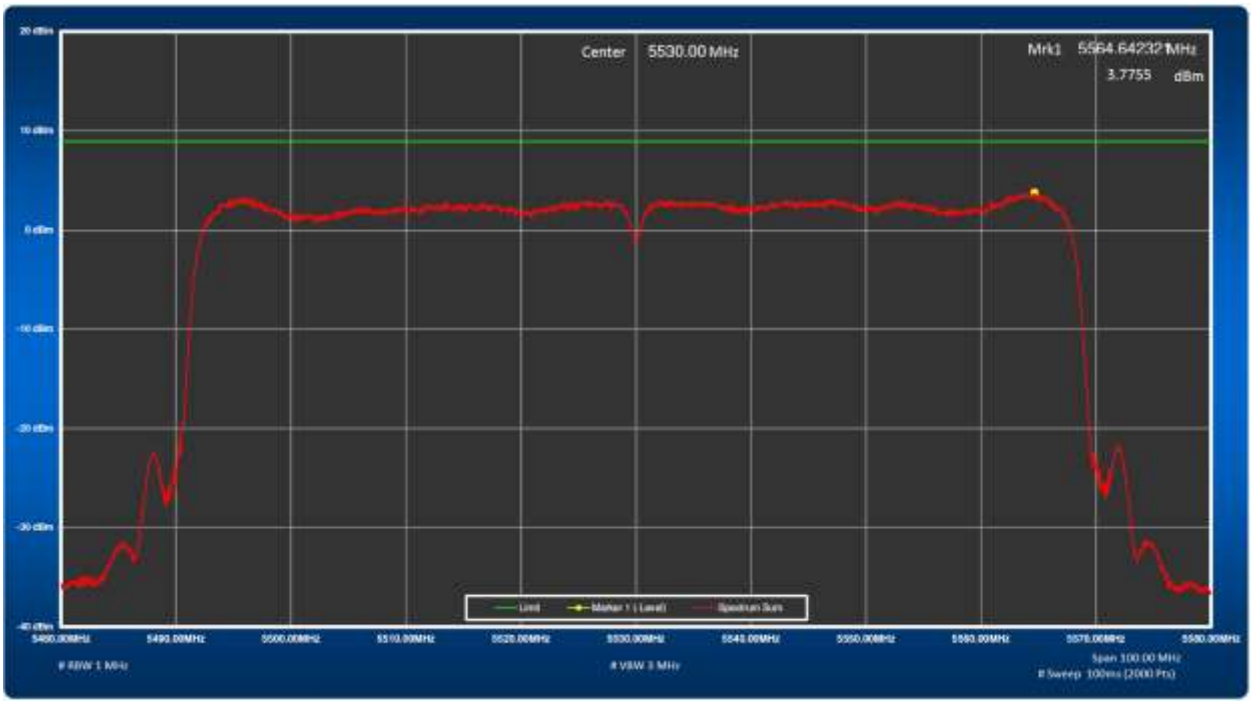


Figure 252: Total Sum of Power Spectral Density, 5530 MHz at 802.11ac VHT80 MCS0

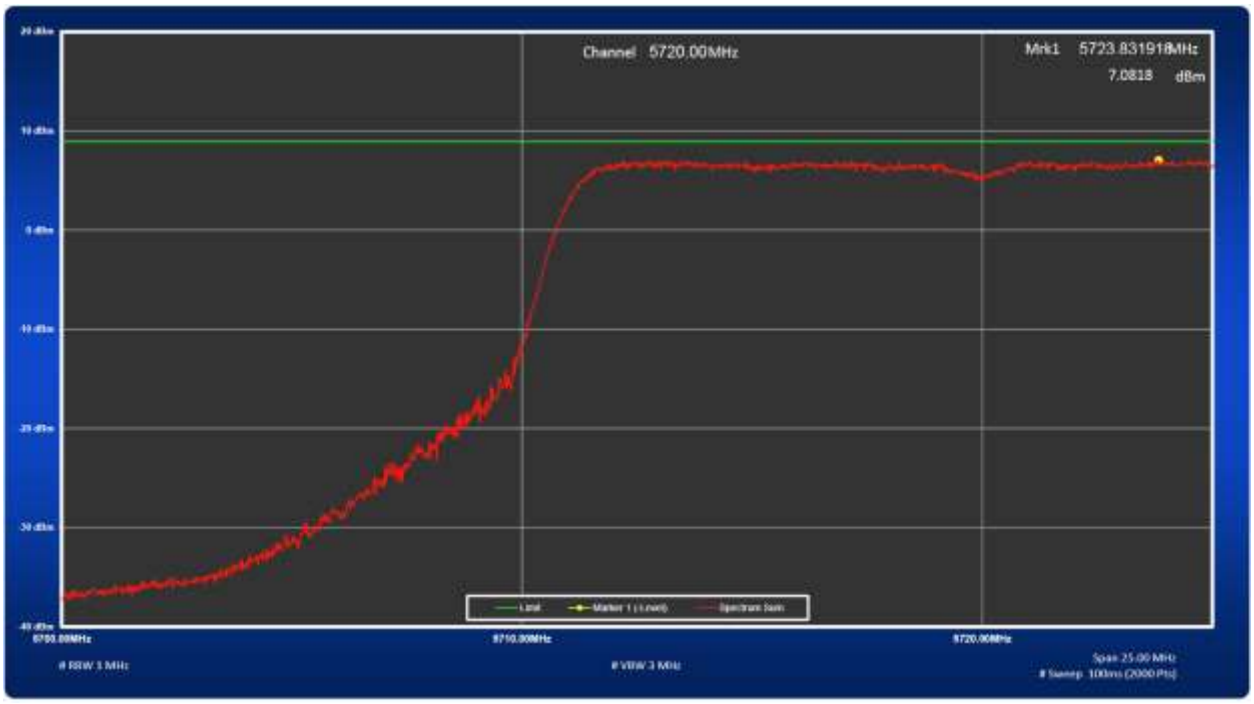


Figure 253: Total Sum of Power Spectral Density, 5720 MHz at 802.11ac VHT20 MCS0 – 1

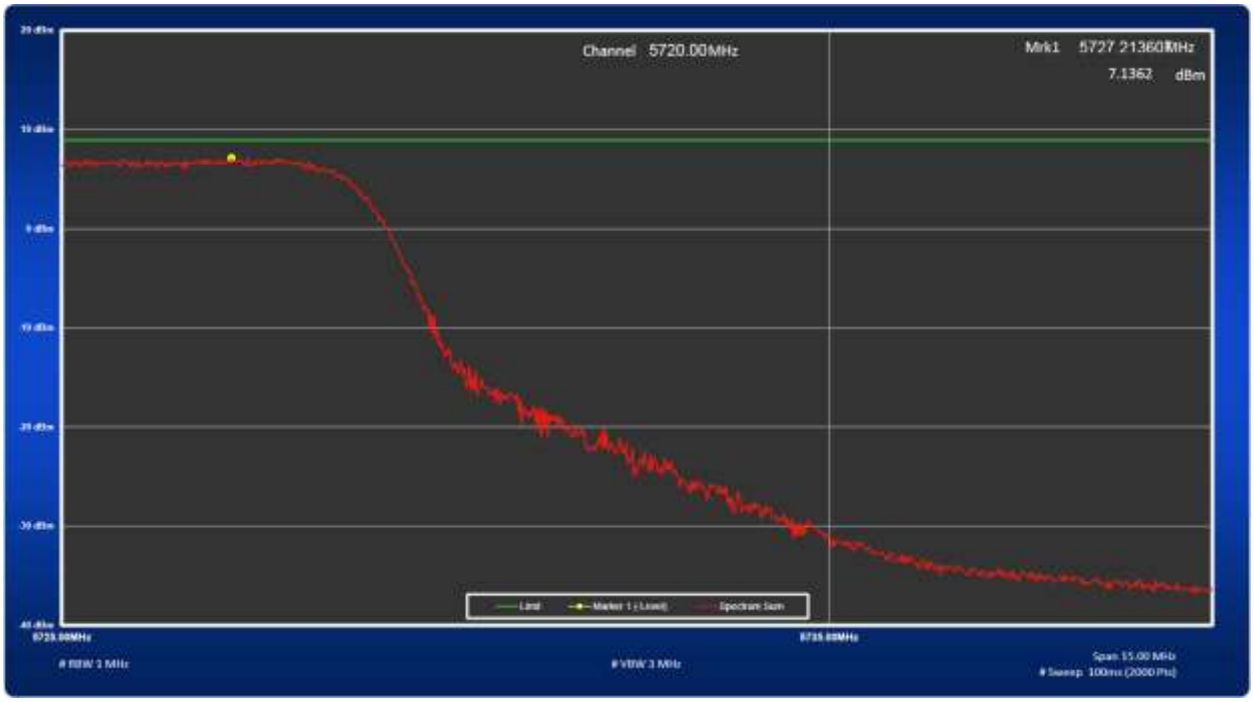


Figure 254: Total Sum of Power Spectral Density, 5720 MHz at 802.11ac VHT20 MCS0 – 2

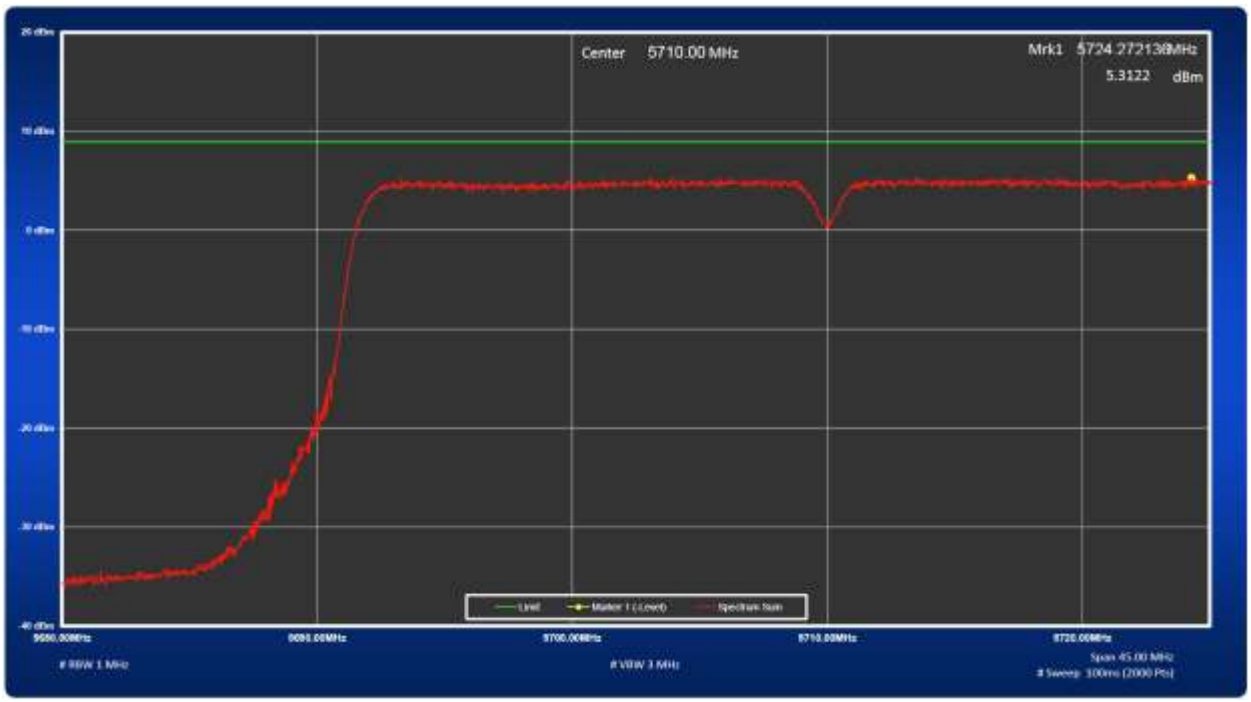


Figure 255: Total Sum of Power Spectral Density, 5710 MHz at 802.11ac VHT40 MCS0 – 1

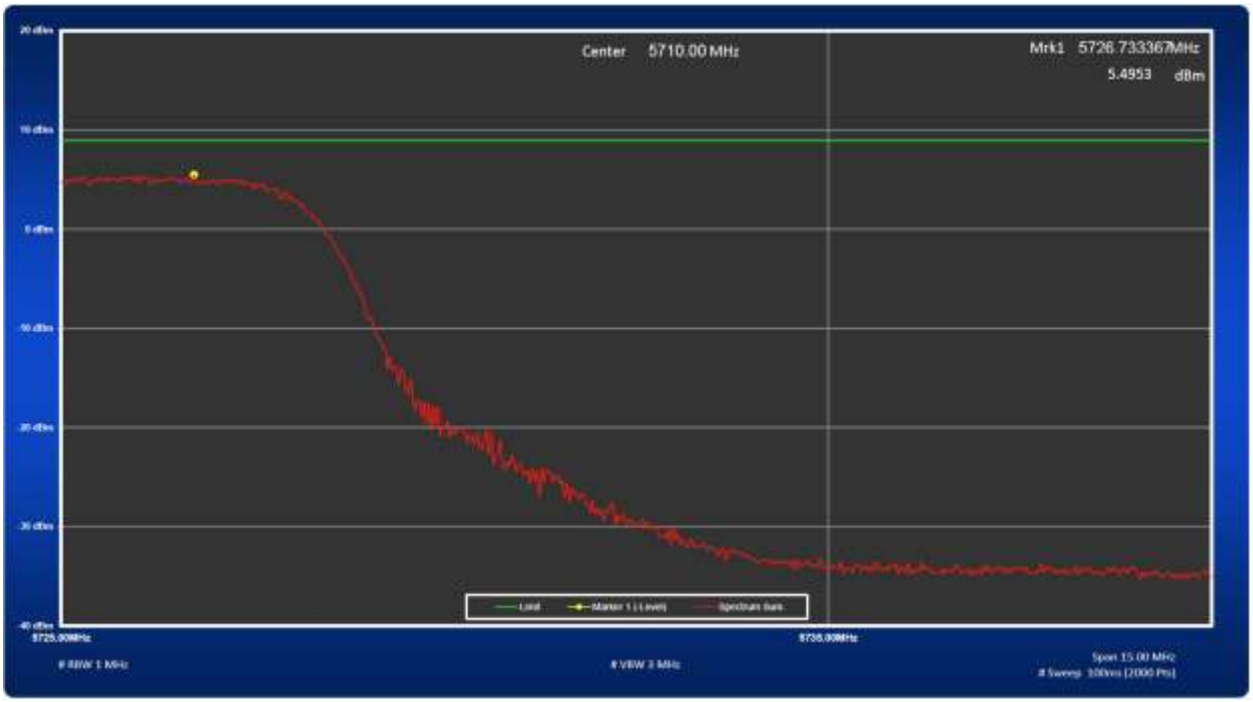


Figure 256: Total Sum of Power Spectral Density, 5710 MHz at 802.11ac VHT40 MCS0 – 2

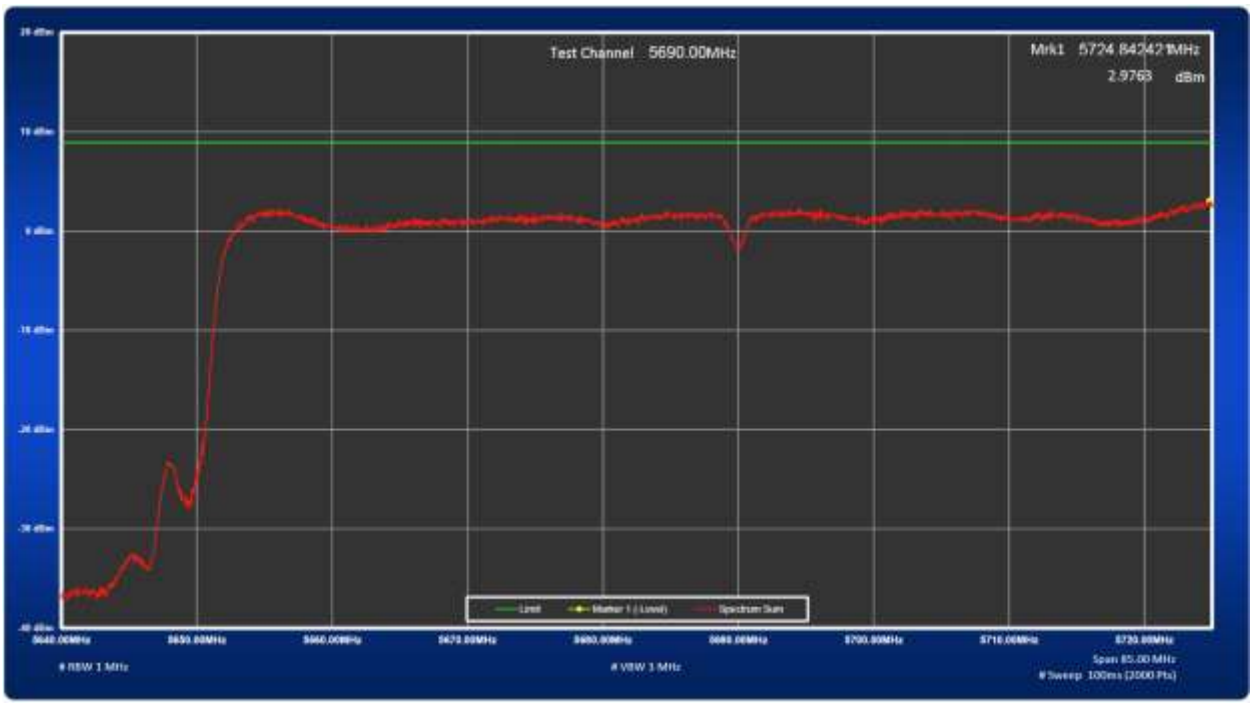


Figure 257: Total Sum of Power Spectral Density, 5690 MHz at 802.11ac VHT80 MCS0 – 1

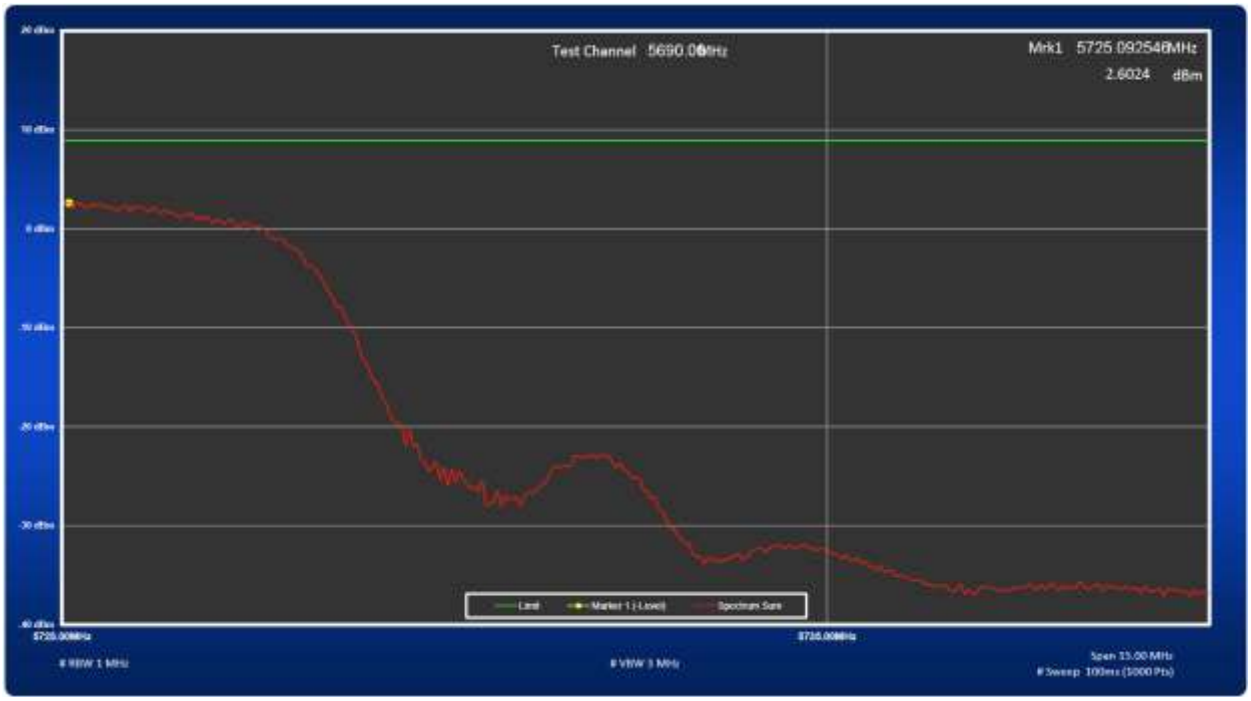


Figure 258: Total Sum of Power Spectral Density, 5690 MHz at 802.11ac VHT80 MCS0 – 2

4.5 Transmitter Spurious Emissions

Transmitter spurious emissions are emissions outside the frequency range of the equipment when the equipment is in transmit mode; per requirement of CFR47 15.205, 15.209, 15.407(b), RSS 210 Sect. A.9.2

4.5.1 Test Methodology

4.5.1.1 Preliminary Test

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges to yield a frequency resolution of approximately 120 kHz and provide a reading at each frequency for no more than 12° of turntable rotation. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's.

Preliminary emission profile testing was performed inside the anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the floor. The EUT was positioned as shown in the setup photographs. The receiving antenna was placed at a distance of 3m at a fixed height of 1m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

Pres-scans were performed to determine the worst axis, data rate/ chains.

4.5.1.2 Final Test

For each frequency measured, the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.

Final testing was performed on an NSA compliant test site. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane. The placement of EUT and cables were the same as for preliminary testing and is shown in the setup photographs.

The final scans performed on the worst axis, Y-Axis, for three operating channels;

6 Mbps for 802.11a Mode: 5500 MHz, 5580 MHz, 5700 MHz

MCS0 for 802.11n HT20 Mode: 5500 MHz, 5580 MHz, 5700 MHz

MCS0 for 802.11n HT40 Mode: 5510 MHz, 5550 MHz, 5670 MHz

MCS0 for 802.11ac VHT20 Mode: 5500 MHz, 5700 MHz and 5720 MHz (band-crossing)

MCS0 for 802.11ac VHT40 Mode: 5510 MHz, 5670 MHz, and 5710 MHz (band-crossing)

MCS0 for 802.11ac VHT80 Mode: 5530 MHz, 5690 MHz (band-crossing)

4.5.1.3 Deviations

None.

4.5.2 **Transmitter Spurious Emission Limit**

The spurious emissions of the transmitter shall not exceed the values in CFR47 Part 15.205, 15.209: 2012 and RSS 210 A1.1.2 2010.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490.....	2400/F(kHz)	300
0.490-1.705.....	24000/F(kHz)	30
1.705-30.0.....	30	30
30-88.....	100 **	3
88-216.....	150 **	3
216-960.....	200 **	3
Above 960.....	500	3

According to CFR47 15.407 (b), all harmonics and spurious emissions which are outside the 5150 MHz - 5250 MHz, 5250 MHz – 5350 MHz, or 5470 MHz – 5725MHz shall not exceed -27 dBm/MHz. This is equivalent to 68.2 dBuV/m at 3 meter distance.

4.5.3 **Test Results**

The final measurement data was taken under the worst case operating modes, configurations, and/or cable positions. It also reflects the results including any modifications and/or special accessories listed in Sections 1.4 and test plan.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 7: Transmit Spurious Emission at Band-Edge Requirements

Test Conditions: Radiated Measurement, Normal Temperature and Voltage only								
Antenna Type: Integrated				**Power Setting:** See test plan				
Max. Directional Gain: +8.0 dBi				**Signal State:** Modulated at 100%				
Ambient Temp.: 23 °C				**Relative Humidity:**31%				
Band-Edge Results								
Freq. (MHz)	Level (dBuV/m)	Polarity (H/V)	Limit (dBuV/m)	Margin (dB)	Det.	Table Deg.	Tower (cm)	Note
5470.00	68.85	H	74.00	-5.15	Pk	208	117	11a-6Mbps-5500 MHz
5470.00	50.84	H	54.00	-3.16	Ave	208	117	11a-6Mbps-5500 MHz
5470.00	65.08	V	74.00	-8.92	Pk	190	206	11a-6Mbps-5500 MHz
5470.00	50.55	V	54.00	-3.45	Ave	190	206	11a-6Mbps-5500 MHz
5725.00	66.81	H	74.00	-7.19	Pk	209	213	11a-6Mbps-5700 MHz
5725.00	57.07	H	54.00	3.07 (4)	Ave	209	213	11a-6Mbps-5700 MHz
5725.00	62.69	V	74.00	-11.31	Pk	188	227	11a-6Mbps-5700 MHz
5725.00	53.93	V	54.00	-0.07	Ave	188	227	11a-6Mbps-5700 MHz
5470.00	66.53	H	74.00	-7.47	Pk	57	212	HT20-MCS0-5500MHz
5470.00	53.20	H	54.00	-0.80	Ave	57	212	HT20-MCS0-5500MHz
5470.00	60.39	V	74.00	-13.61	Pk	206	241	HT20-MCS0-5500MHz
5470.00	50.84	V	54.00	-3.16	Ave	206	241	HT20-MCS0-5500MHz
5725.00	65.14	H	74.00	-8.86	Pk	115	119	HT20-MCS0-5700 MHz
5725.00	52.98	H	54.00	-1.02	Ave	115	119	HT20-MCS0-5700 MHz
5725.00	64.40	V	74.00	-9.60	Pk	186	227	HT20-MCS0-5700 MHz
5725.00	54.50	V	54.00	0.50 (5)	Ave	186	227	HT20-MCS0-5700 MHz
5470.00	67.21	H	74.00	-6.79	Pk	95	221	HT40-MCS0-5510 MHz
5460.00	52.75	H	54.00	-1.25	Ave	95	221	HT40-MCS0-5510 MHz
5470.00	65.78	V	74.00	-8.22	Pk	192	238	HT40-MCS0-5510 MHz
5460.00	52.65	V	54.00	-1.35	Ave	192	238	HT40-MCS0-5510 MHz
5725.00	61.33	H	74.00	-12.67	Pk	296	260	HT40-MCS0-5670 MHz
5725.00	51.53	H	54.00	-2.47	Ave	296	260	HT40-MCS0-5670 MHz
5725.00	61.96	V	74.00	-12.04	Pk	194	179	HT40-MCS0-5670 MHz
5725.00	51.66	V	54.00	-2.34	Ave	194	179	HT40-MCS0-5670 MHz
5470.00	66.33	H	74.00	-7.67	Pk	57	210	VHT20-MCS0-5500 MHz
5470.00	53.30	H	54.00	-0.70	Ave	57	210	VHT20-MCS0-5500 MHz
5470.00	64.20	V	74.00	-9.80	Pk	292	192	VHT20-MCS0-5500 MHz
5470.00	49.62	V	54.00	-4.38	Ave	292	192	VHT20-MCS0-5500 MHz
5850.00	55.53	H	74.00	-18.47	Pk	113	108	VHT20-MCS0-5720 MHz
5850.00	46.26	H	54.00	-7.74	Ave	113	108	VHT20-MCS0-5720 MHz
5850.00	55.65	V	74.00	-18.35	Pk	190	260	VHT20-MCS0-5720 MHz

5850.00	46.50	V	54.00	−7.50	Ave	190	260	VHT20−MCS0−5720 MHz
5470.00	66.03	H	74.00	−7.97	Pk	297	181	VHT40−MCS0−5510 MHz
5460.00	52.28	H	54.00	−1.72	Ave	297	181	VHT40−MCS0−5510 MHz
5470.00	63.84	V	74.00	−10.16	Pk	96	181	VHT40−MCS0−5510 MHz
5460.00	52.64	V	54.00	−1.36	Ave	96	181	VHT40−MCS0−5510 MHz
5825.00	57.02	H	74.00	−16.98	Pk	115	135	VHT40−MCS0−5710 MHz
5825.00	47.39	H	54.00	−6.61	Ave	115	135	VHT40−MCS0−5710 MHz
5825.00	56.40	V	74.00	−17.60	Pk	191	241	VHT40−MCS0−5710 MHz
5825.00	47.18	V	54.00	−6.82	Ave	191	241	VHT40−MCS0−5710 MHz
5470.00	64.49	H	74.00	−9.51	Pk	300	182	VHT80−MCS0−5530 MHz
5460.00	53.09	H	54.00	−0.91	Ave	300	182	VHT80−MCS0−5530 MHz
5470.00	60.78	V	74.00	−13.22	Pk	97	147	VHT80−MCS0−5530 MHz
5470.00	50.55	V	54.00	−3.45	Ave	97	147	VHT80−MCS0−5530 MHz
5825.00	57.33	H	74.00	−16.67	Pk	118	133	VHT80−MCS0−5690 MHz
5825.00	48.76	H	54.00	−5.24	Ave	118	133	VHT80−MCS0−5690 MHz
5825.00	59.58	V	74.00	−14.42	Pk	201	148	VHT80−MCS0−5690 MHz
5825.00	47.39	V	54.00	−6.61	Ave	201	148	VHT80−MCS0−5690 MHz

Note: 1. Band-edge frequency at 5460 MHz is at the restricted band.

2. All the band-edge measurements met the restricted band requirements of CFR47 15.205.

3. Out of band emission also complied with the -27 dBm/MHz (68.2 dBuV/m at 3m) requirements as stated in CFR47 15.407 (b) (1) to 15.407 (b) (3), or it met both peak and average limit per CFR47 15.205.

4. 5725 MHz is not a restricted and the emission at the bandedge met 68.2dBuV/m. See Fig. # 264.

5. 5725 MHz is not a restricted and the emission at the bandedge met 68.2dBuV/m. See Fig. # 273.

6. VHT20 and VHT40 at the high end of the UNIIC2c was only tested at band crossing channel since they are similar to HT20 and HT40 modes.

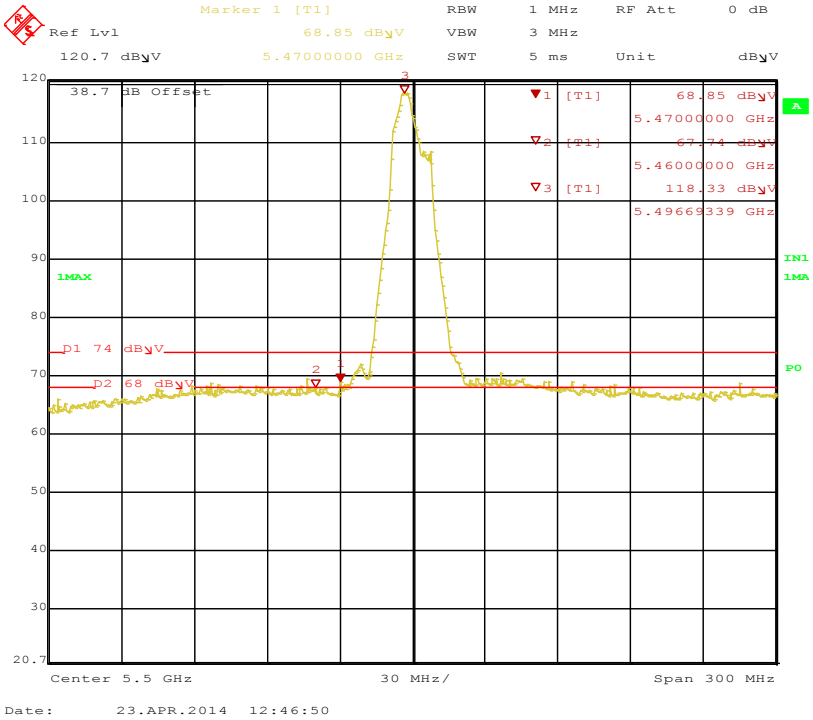


Figure 259: Bandedge-11a-6Mbps-5500 MHz-H-Pk

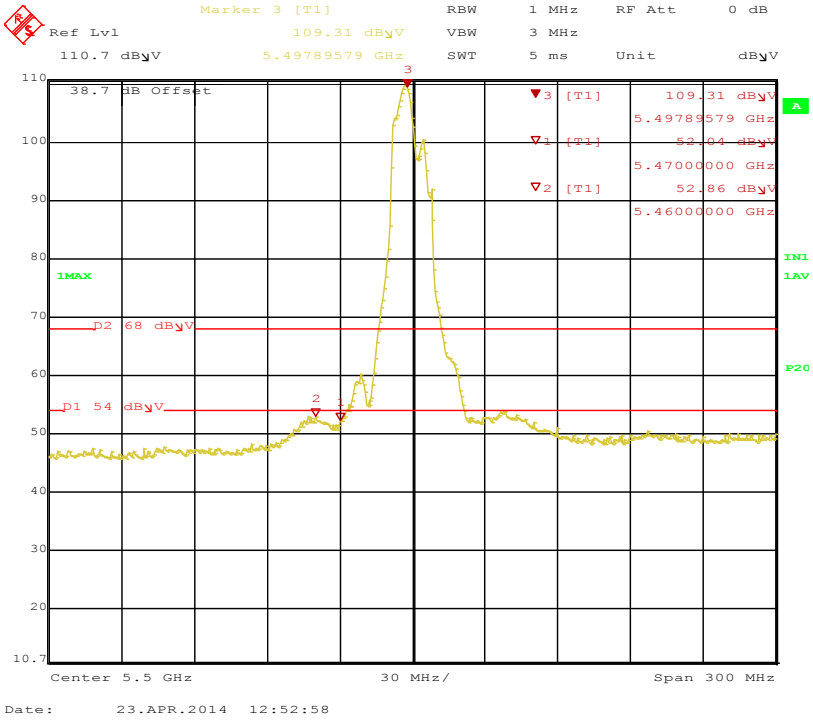


Figure 260: Bandedge-11a-6Mbps-5500 MHz-H-Ave

Note: All out of band emission met restricted band limits.

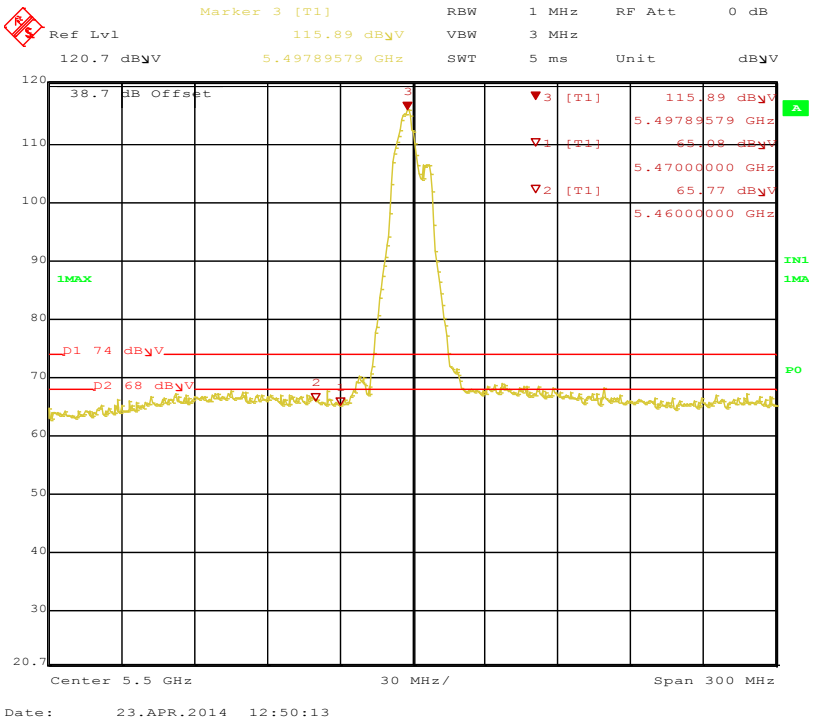


Figure 261: Bandedge-11a-6Mbps-5500 MHz-V-Pk

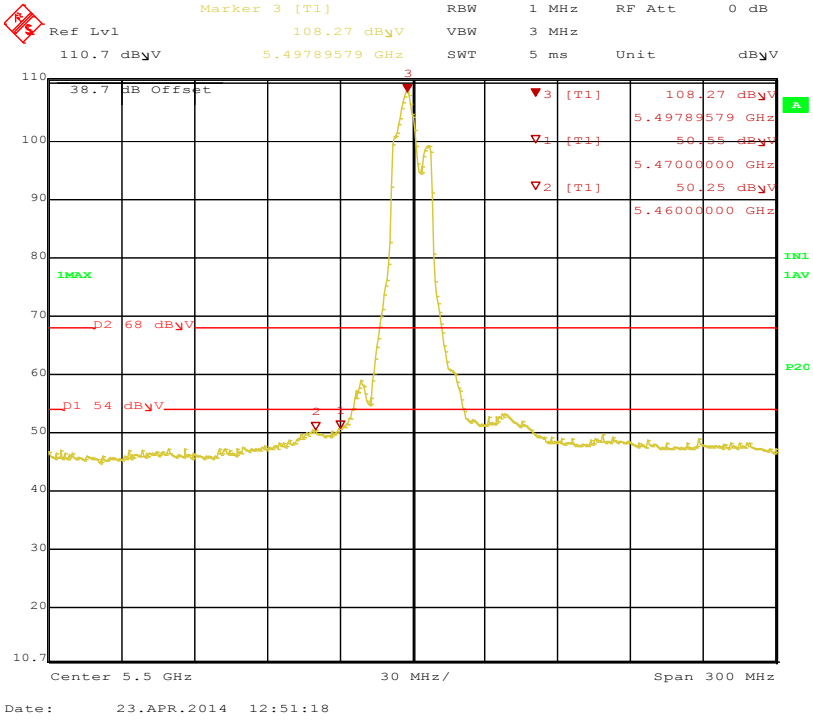


Figure 262: Bandedge-11a-6Mbps-5500 MHz-V-Ave

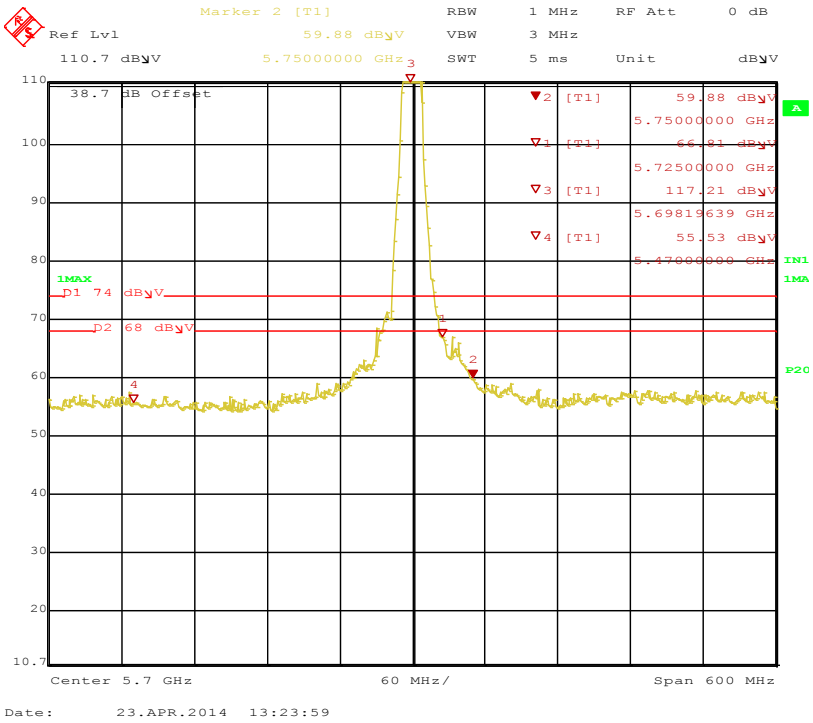


Figure 263: Bandedge-11a-6Mbps-5700 MHz-H-Pk

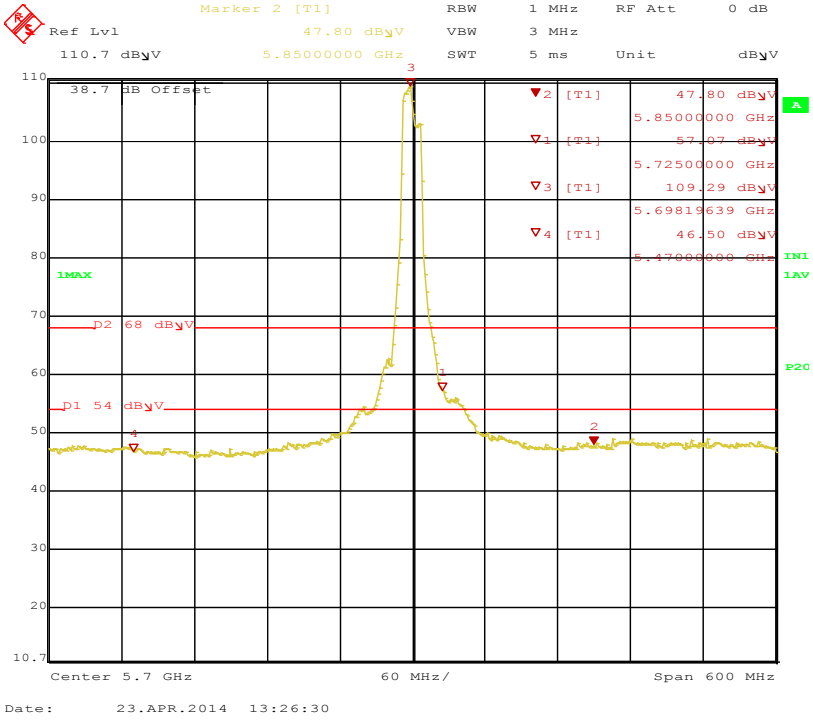


Figure 264: Bandedge-11a-6Mbps-5700 MHz-H-Ave

Note: 5725MHz bandedge is not in the restricted band. It met 68.2 dBuV/m limit.

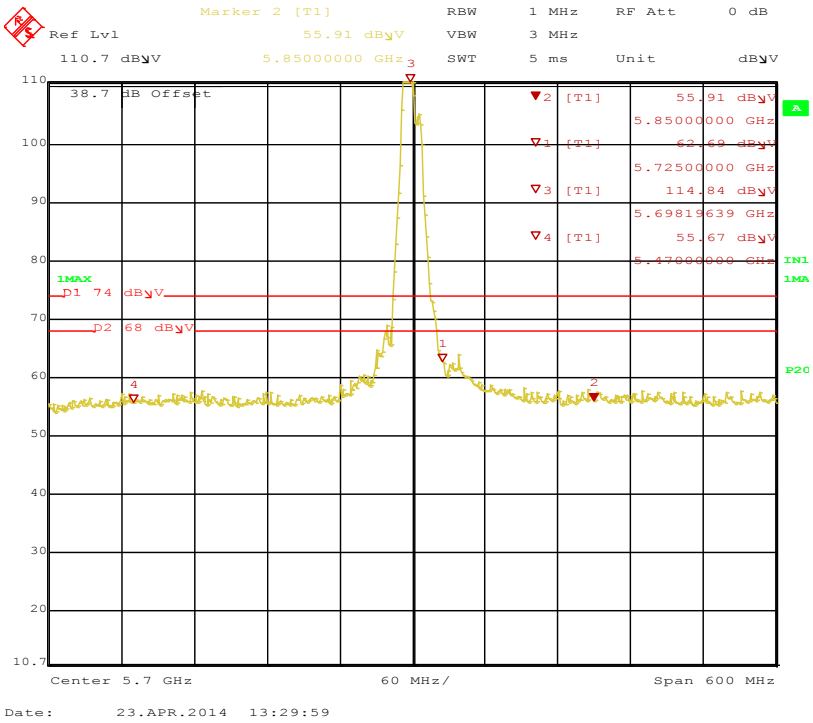


Figure 265: Bandedge-11a-6Mbps-5700 MHz-V-Pk

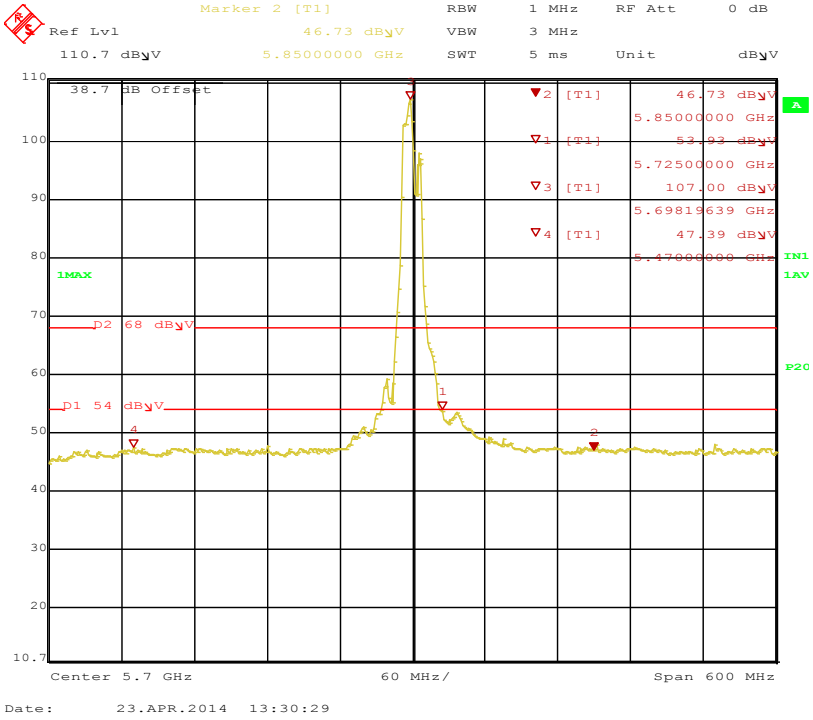


Figure 266: Bandedge-11a-6Mbps-5700 MHz-V-Ave

Note: 5725MHz bandedge is not in the restricted band. It met 68.2 dBuV/m limit.

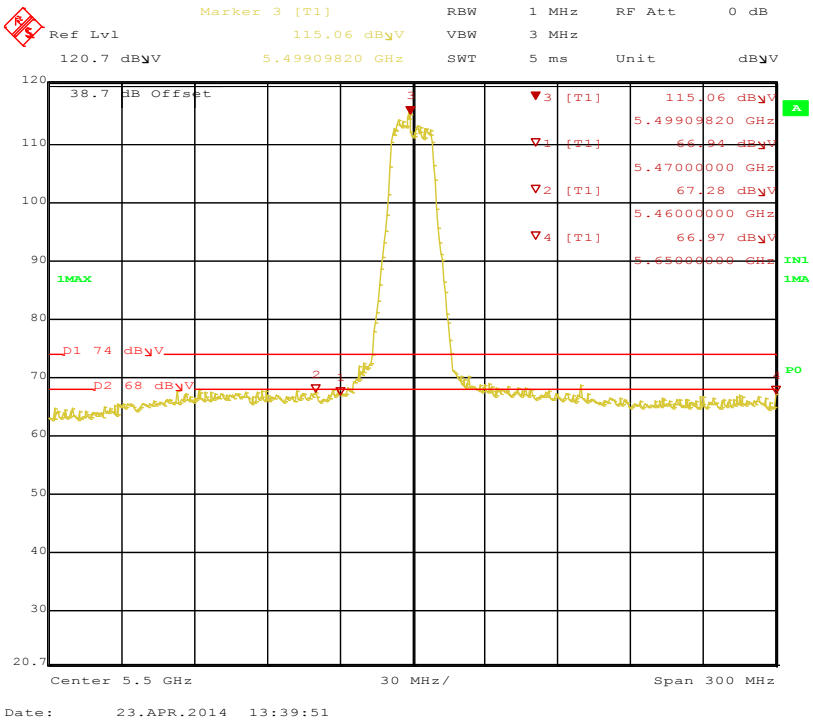


Figure 267: Bandedge-HT20-MCS0-5500 MHz-H-Pk

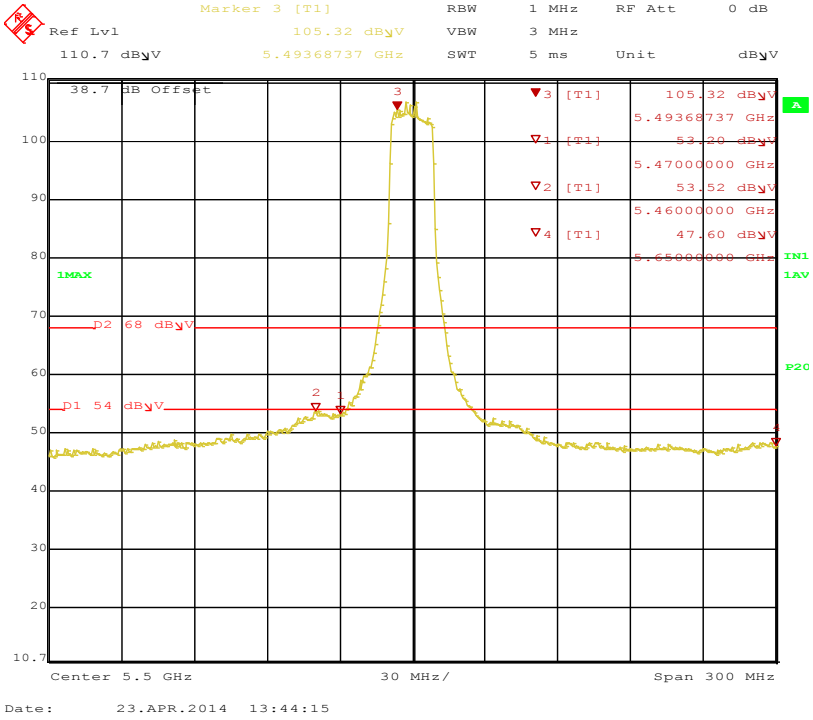


Figure 268: Bandedge-HT20-MCS0-5500 MHz-H-Ave

Note: All out of band emissions and band-edge met restricted band limits.

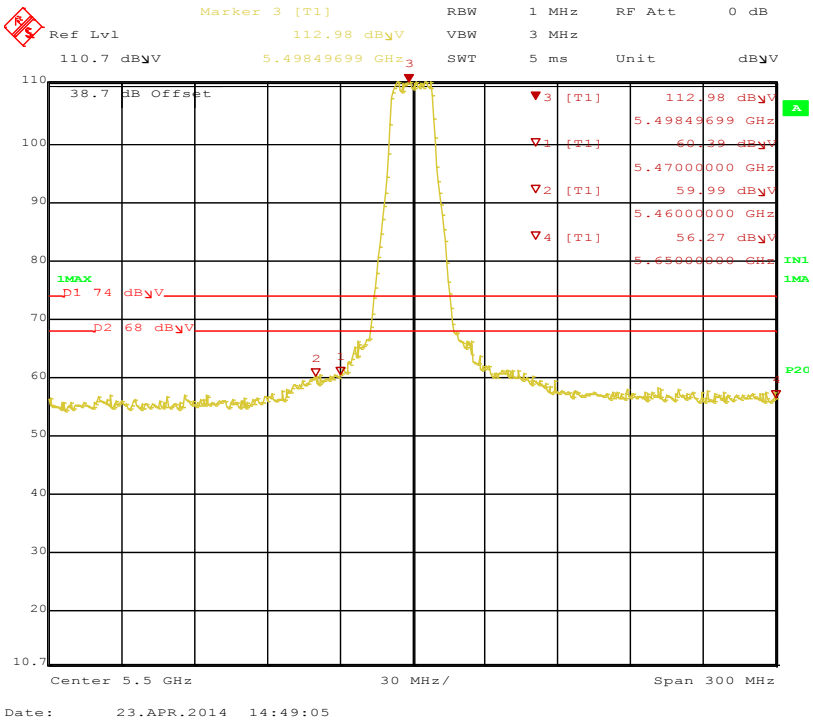


Figure 269: Bandedge-HT20-MCS0-5500 MHz-V-Pk

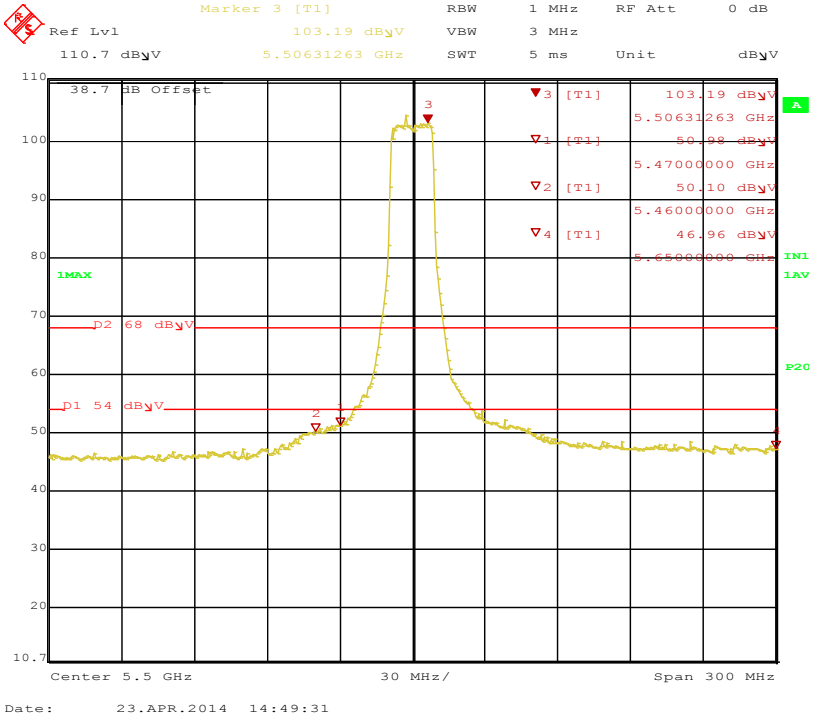


Figure 270: Bandedge-HT20-MCS0-5500 MHz-V-Ave

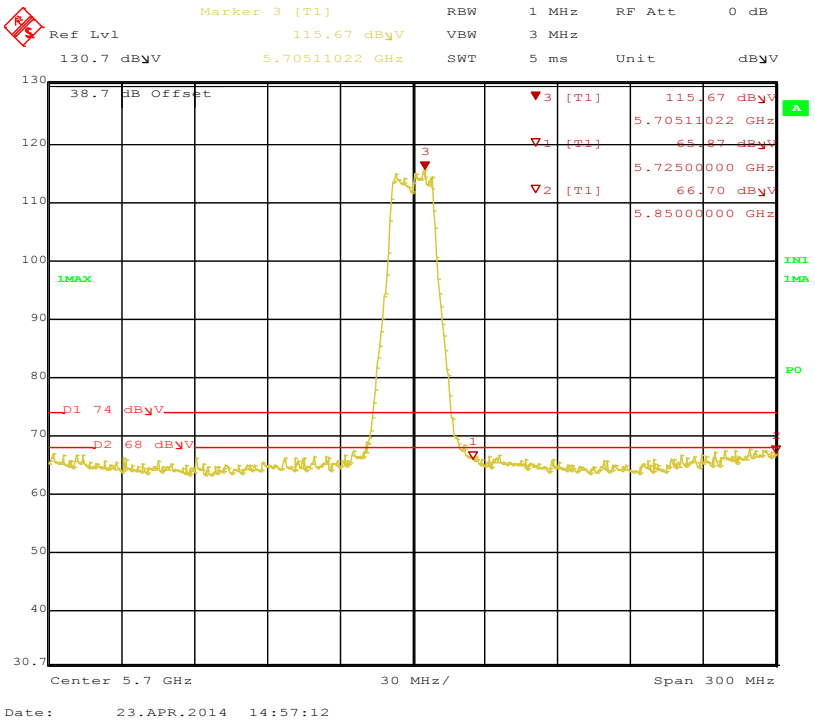


Figure 271: Bandedge-HT20-MCS0-5700 MHz-H-Pk

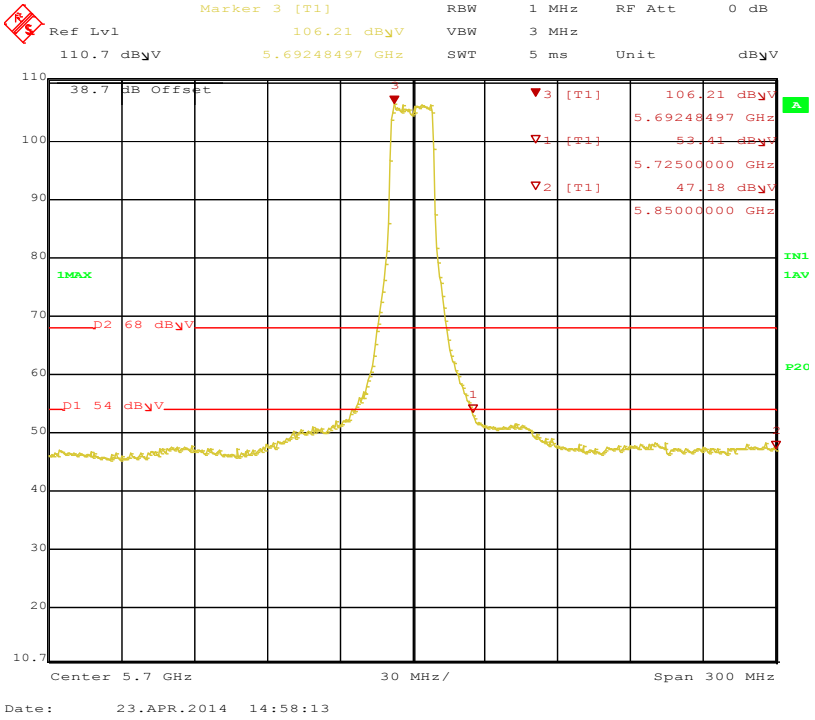


Figure 272: Bandedge-HT20-MCS0-5700 MHz-H-Ave

Note: 5725 MHz bandedge is not in a restricted band.

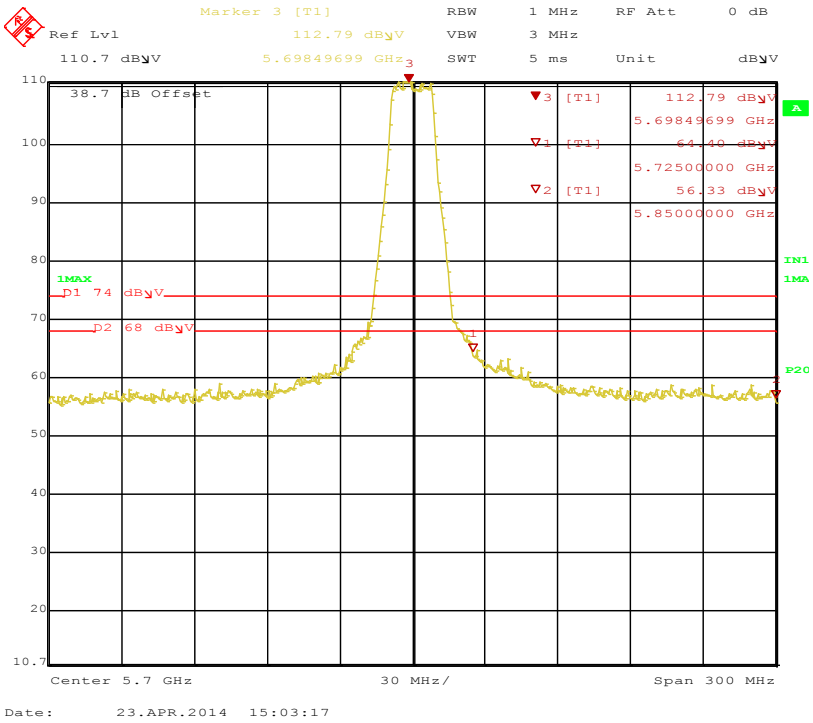


Figure 273: Bandedge-HT20-MCS0-5700 MHz-V-Pk

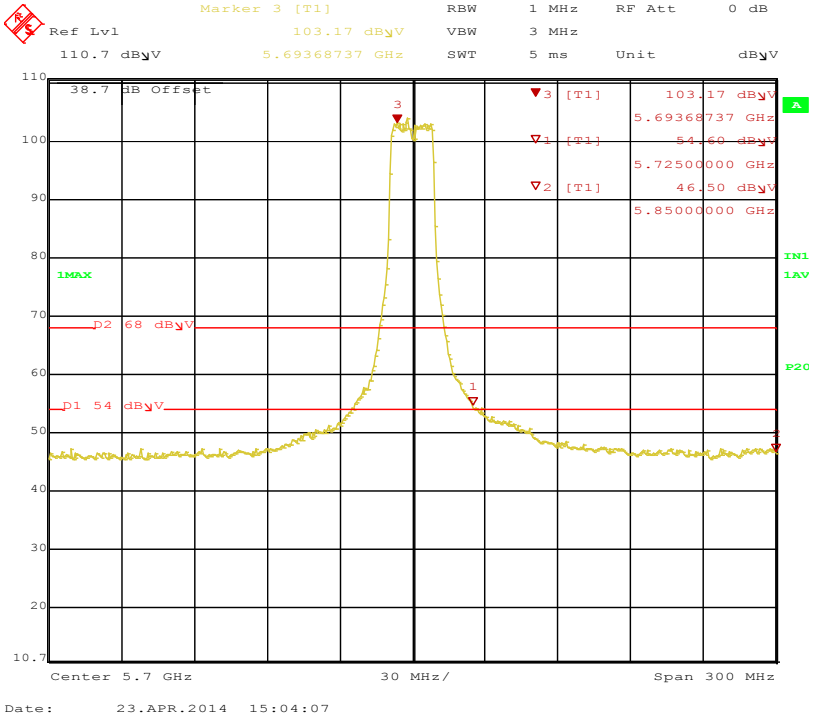


Figure 274: Bandedge-HT20-MCS0-5700 MHz-V-Ave

Note: 5725 MHz bandedge is not in a restricted band. Emission at 5725 MHz met 68.2dBuV/m per Fig. 273.

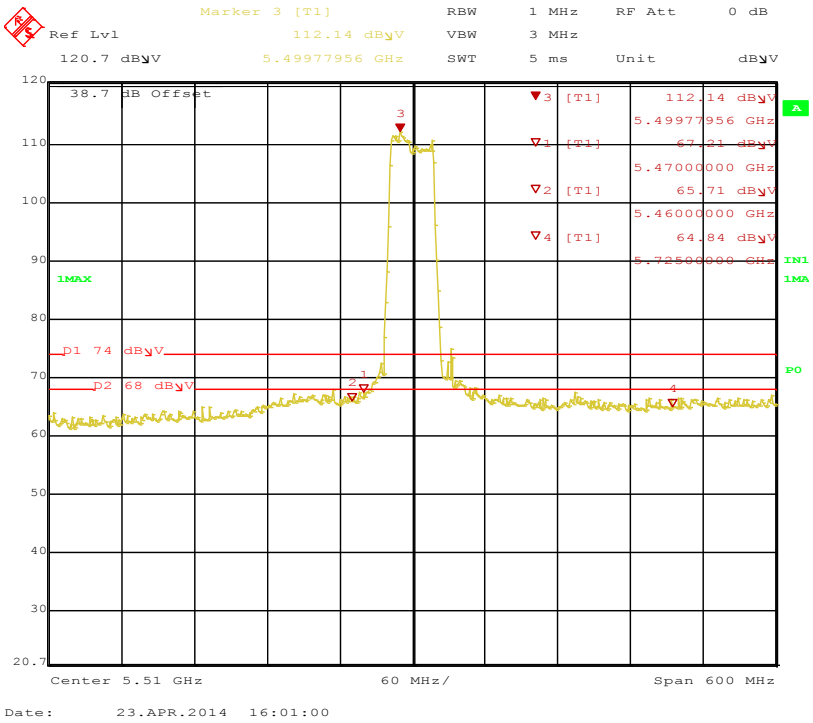


Figure 275: Bandedge-HT40-MCS0-5510 MHz-H-Pk

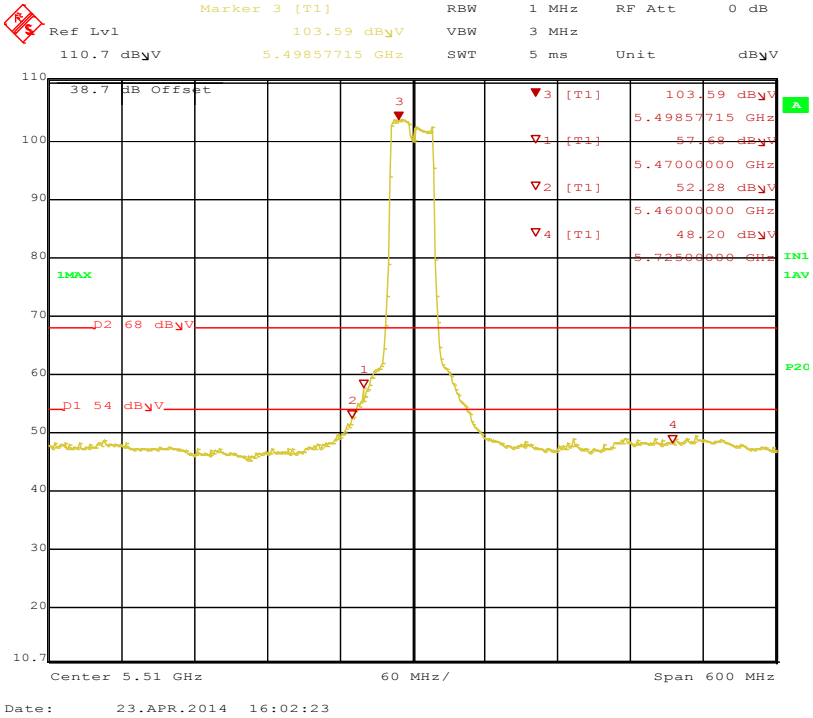


Figure 276: Bandedge-HT40-MCS0-5510 MHz-H-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

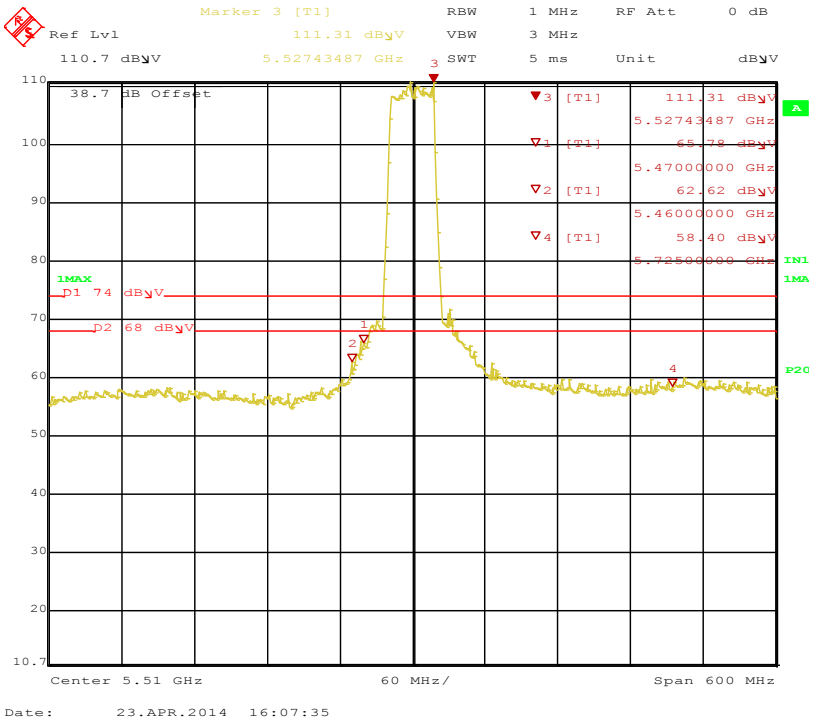


Figure 277: Bandedge-HT40-MCS0-5510 MHz-V-Pk

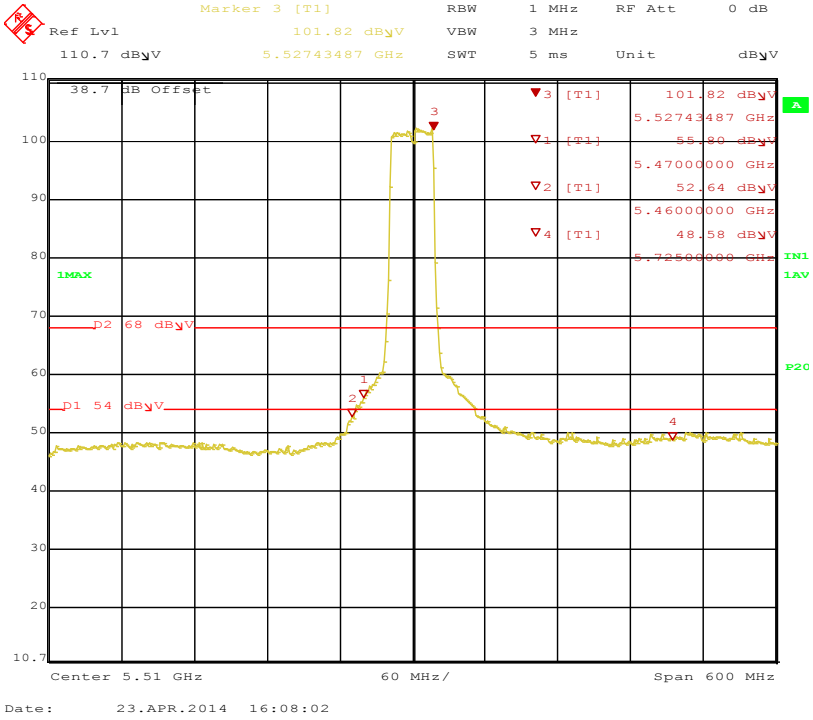


Figure 278: Bandedge-HT40-MCS0-5510 MHz-V-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

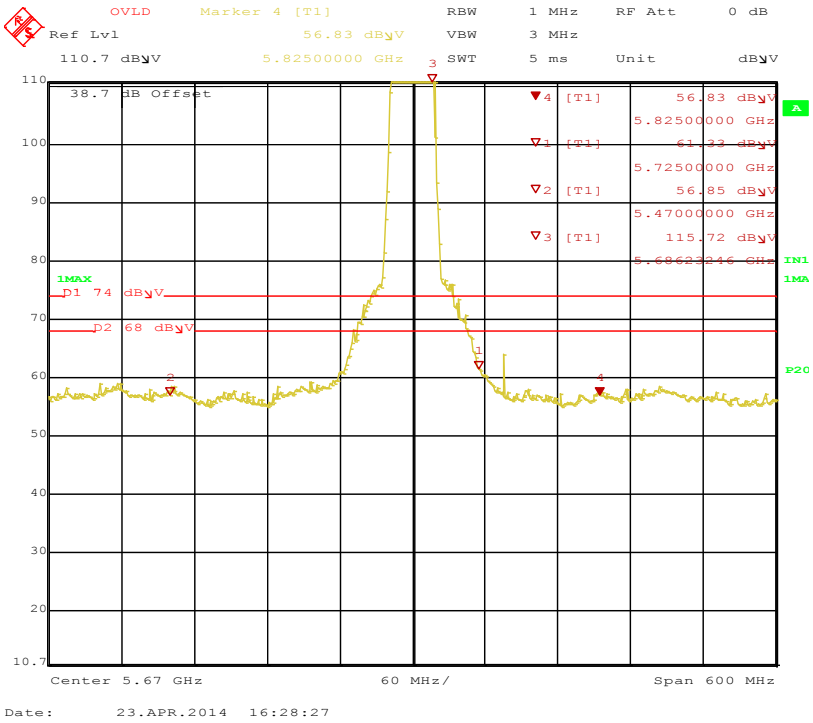


Figure 279: Bandedge-HT40-MCS0-5670 MHz-H-Pk

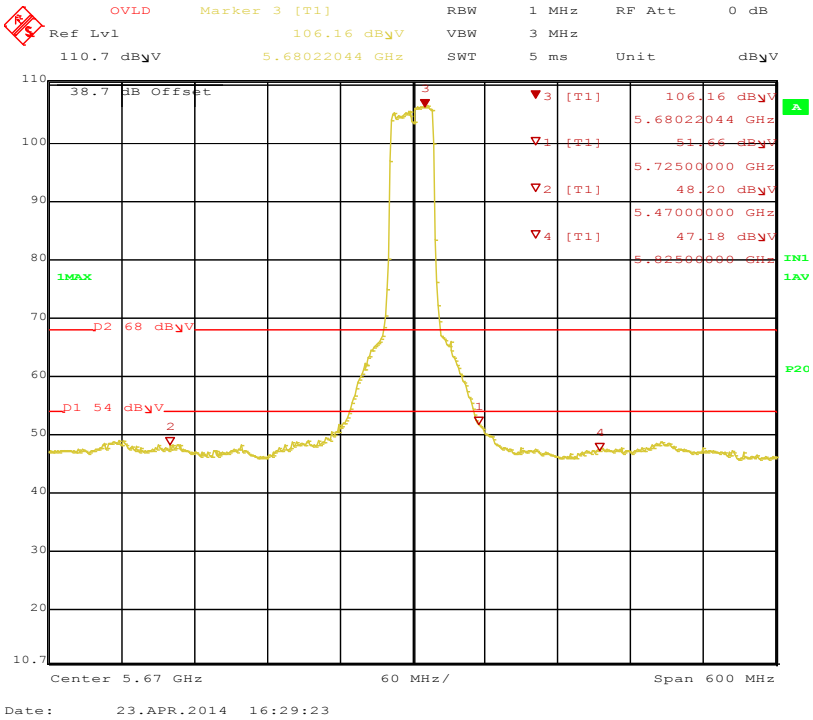


Figure 280: Bandedge-HT40-MCS0-5670 MHz-H-Ave

Note: The out of band starting at 5725 MHz met 68.2 dBuV/m limit.

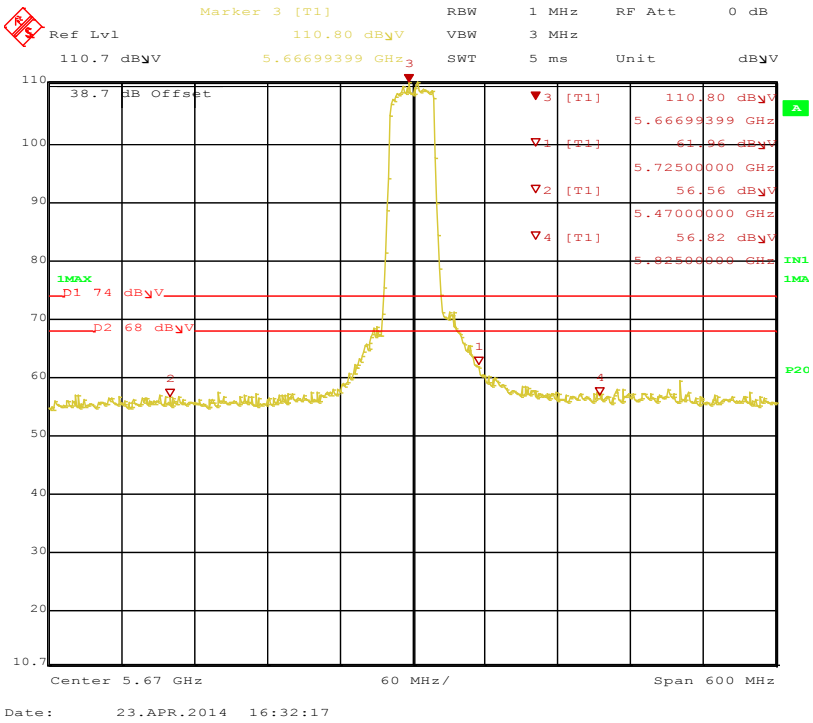


Figure 281: Bandedge-HT40-MCS0-5670 MHz-V-Pk

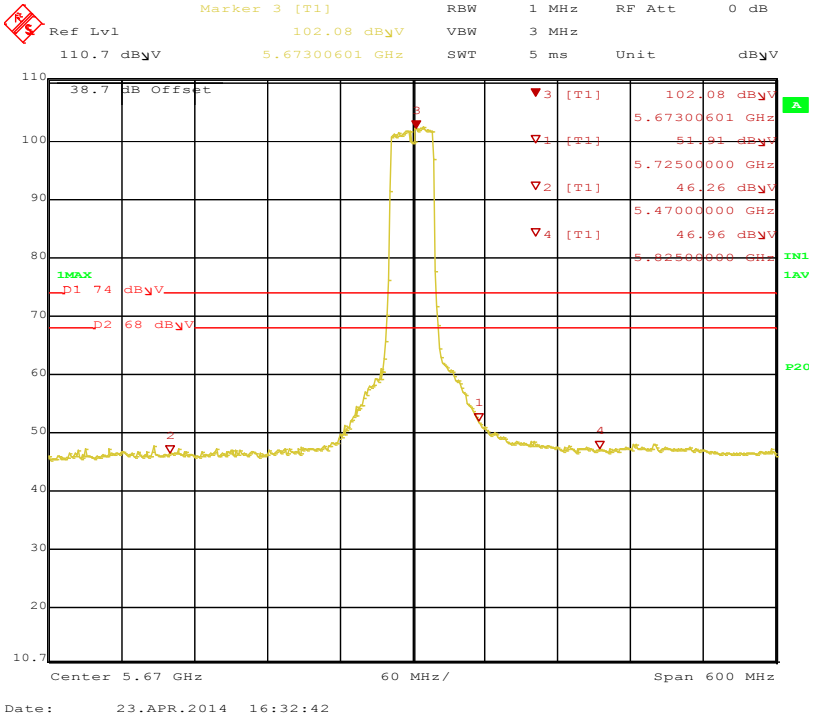


Figure 282: Bandedge-HT40-MCS0-5670 MHz-V-Ave

Note: The out of band starting at 5725 MHz met 68.2 dBuV/m limit.

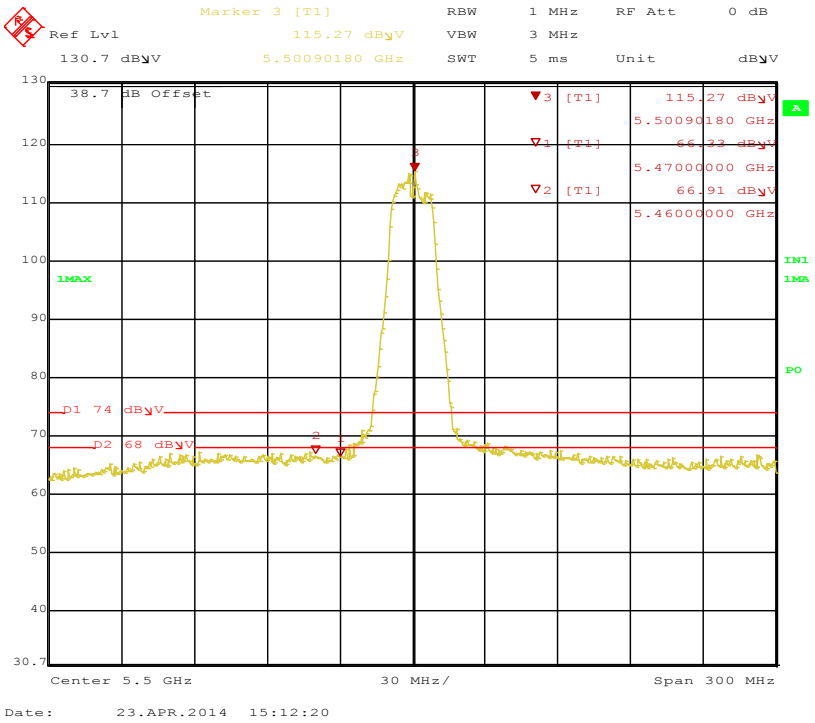


Figure 283: Bandedge-VHT20-MCS0-5500 MHz-H-Pk

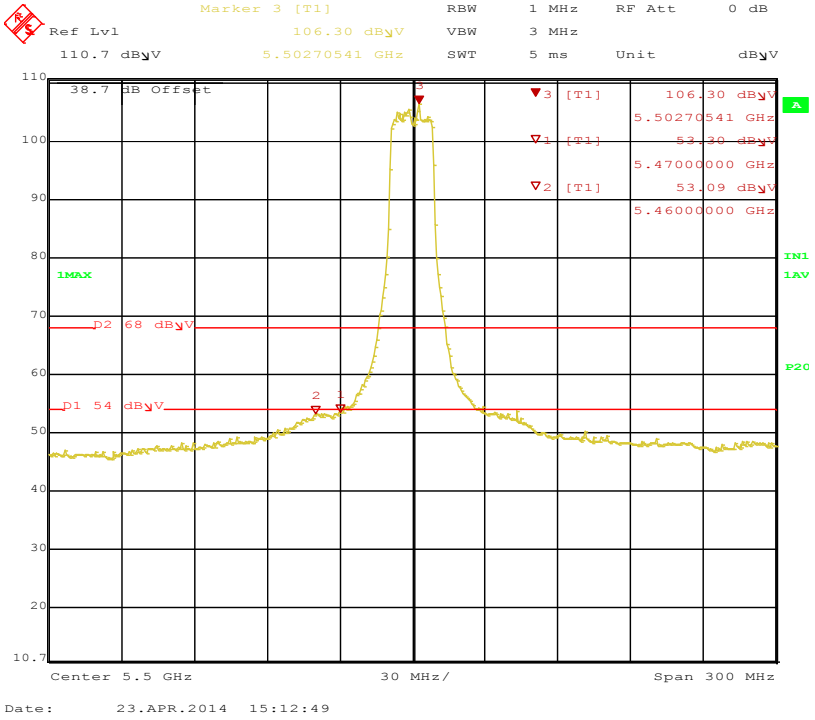


Figure 284: Bandedge-VHT20-MCS0-5500 MHz-H-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

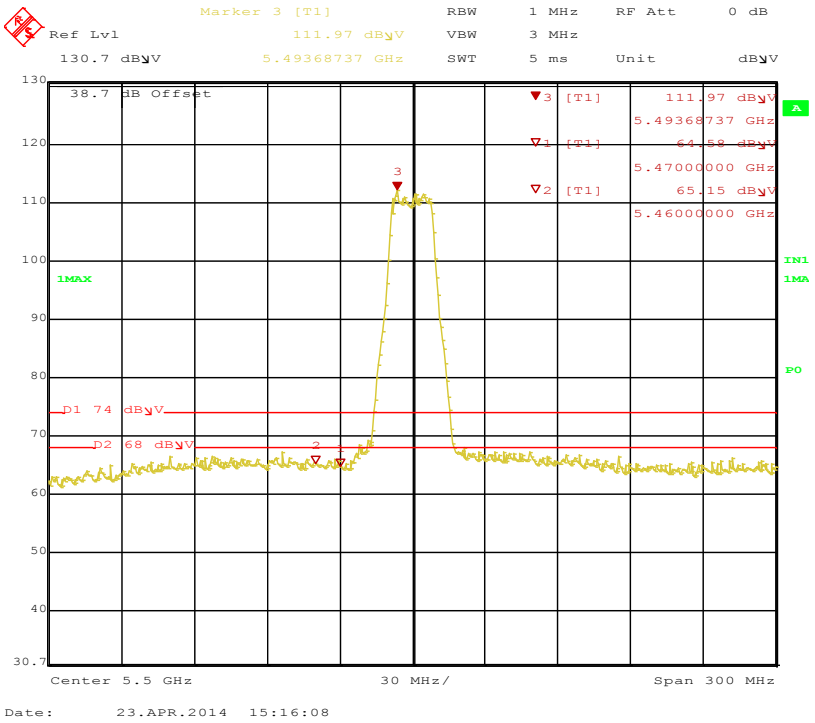


Figure 285: Bandedge-VHT20-MCS0-5500 MHz-V-Pk

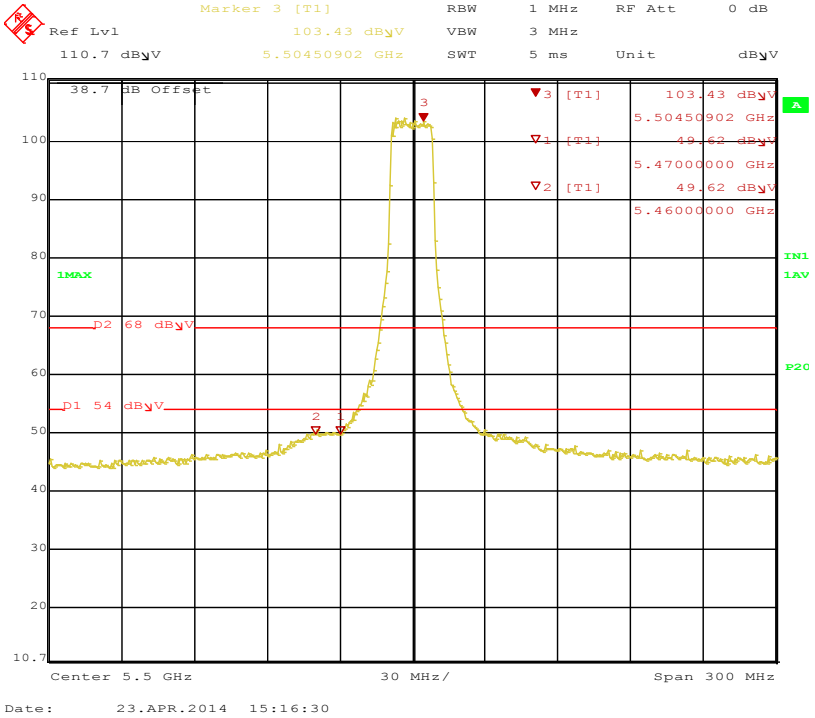


Figure 286: Bandedge-VHT20-MCS0-5500 MHz-V-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

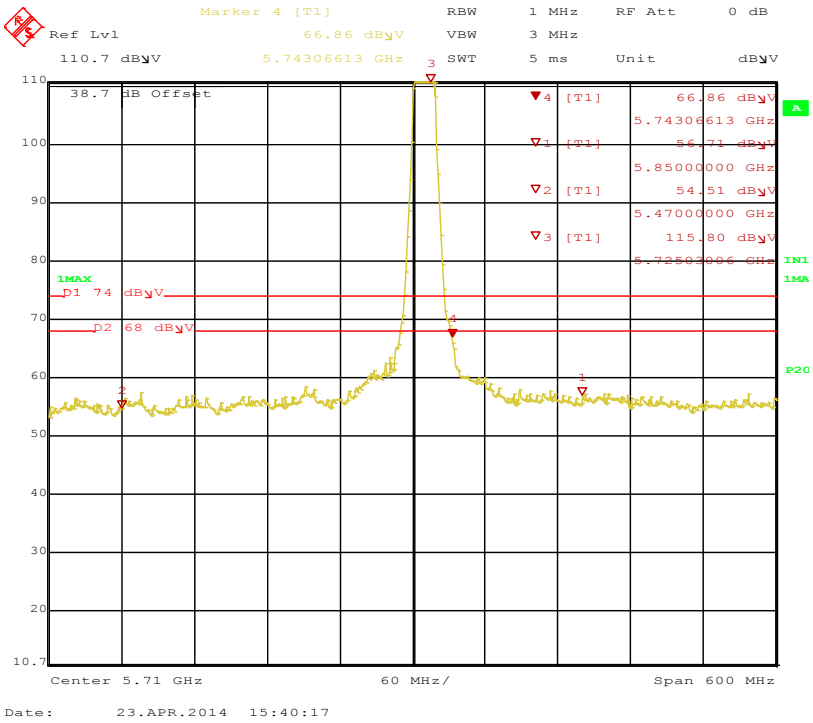


Figure 287: Bandedge-VHT20-MCS0-5720 MHz-H-Pk

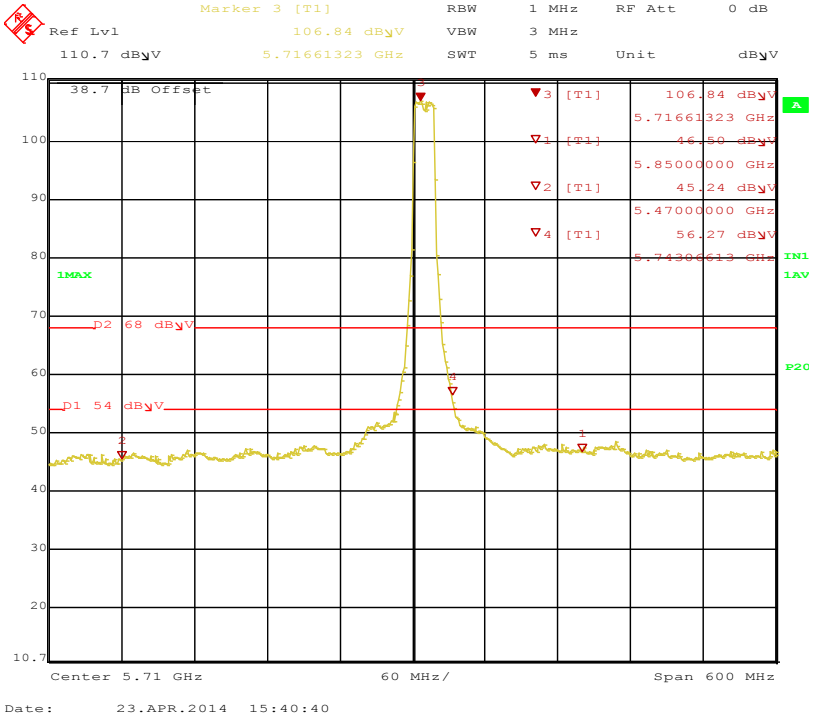


Figure 288: Bandedge-VHT20-MCS0-5720 MHz-H-Ave

Note: 5720MHz channel at VHT20 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

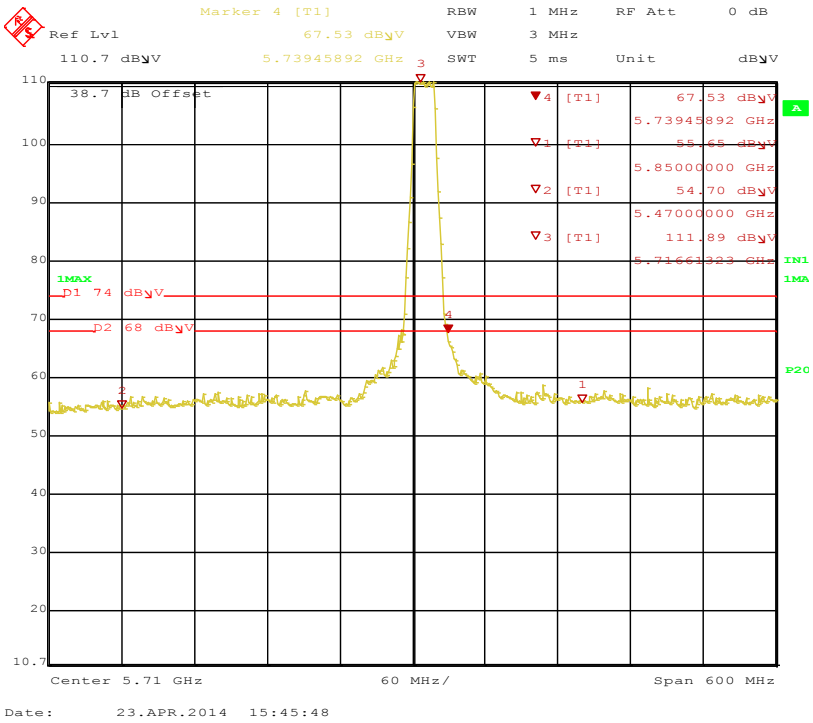


Figure 289: Bandedge-VHT20-MCS0-5720 MHz-V-Pk

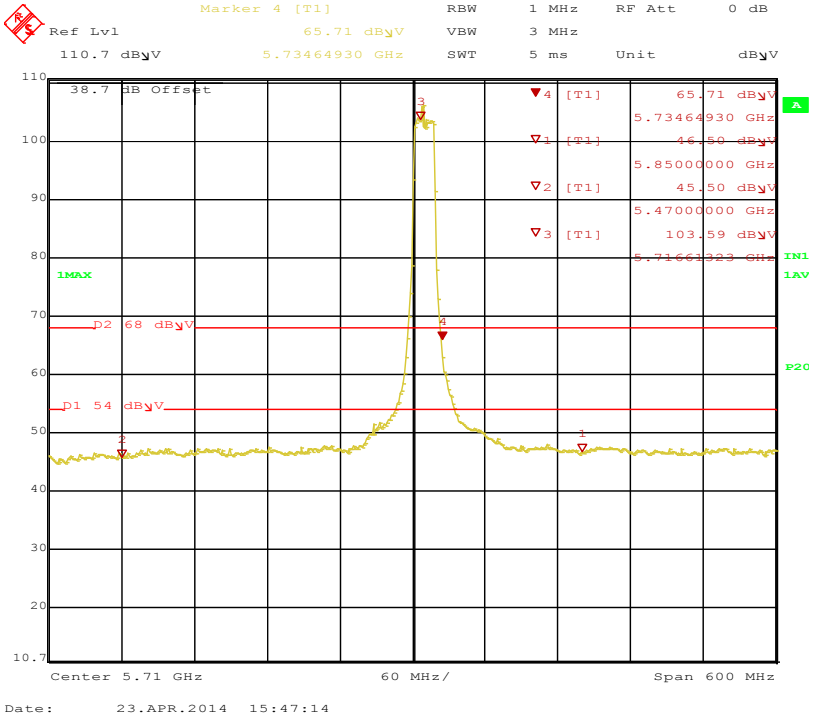


Figure 290: Bandedge-VHT20-MCS0-5720 MHz-V-Ave

Note: 5720MHz channel at VHT20 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

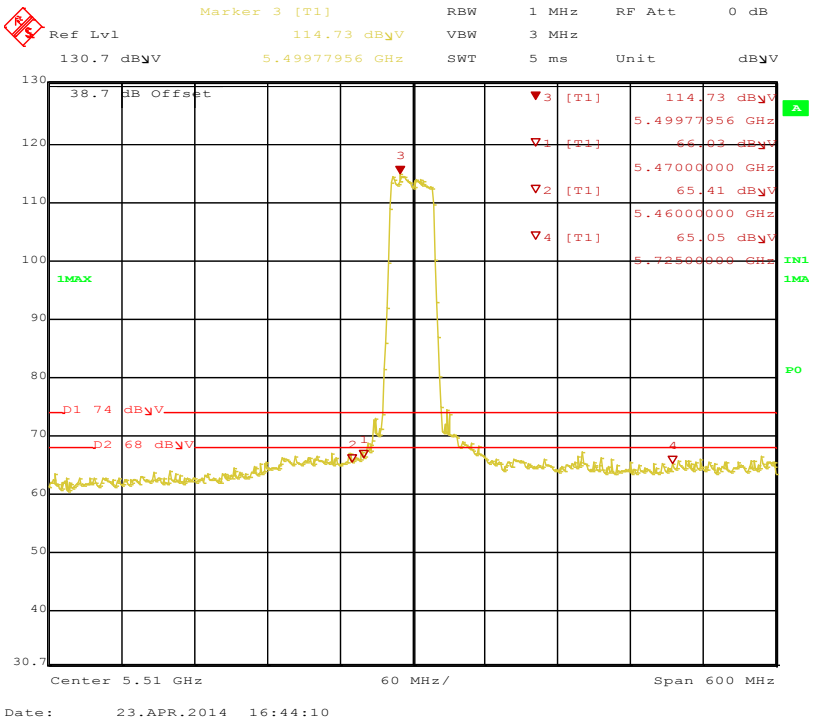


Figure 291: Bandedge-VHT40-MCS0-5510 MHz-H-Pk

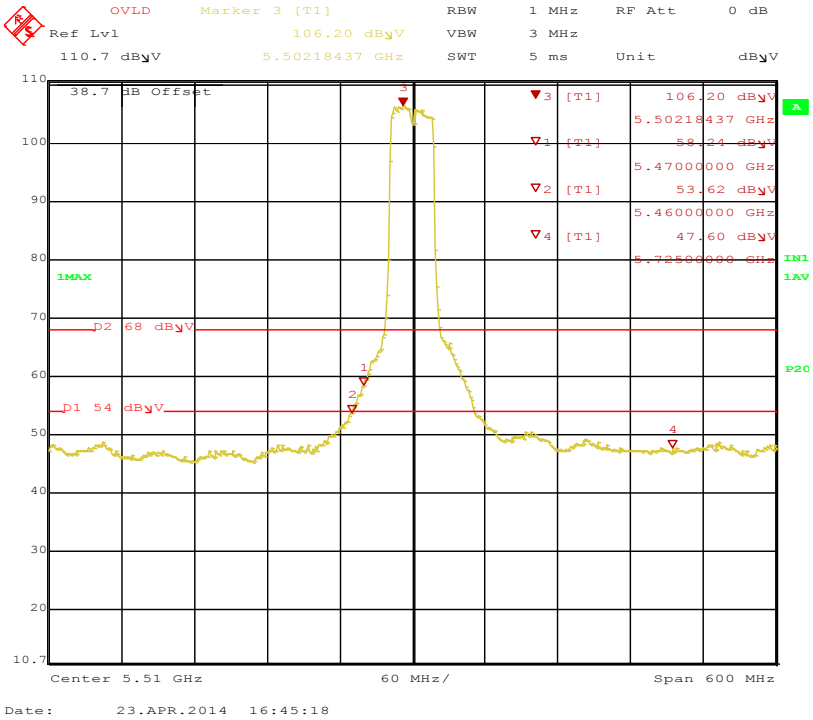


Figure 292: Bandedge-VHT40-MCS0-5510 MHz-H-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

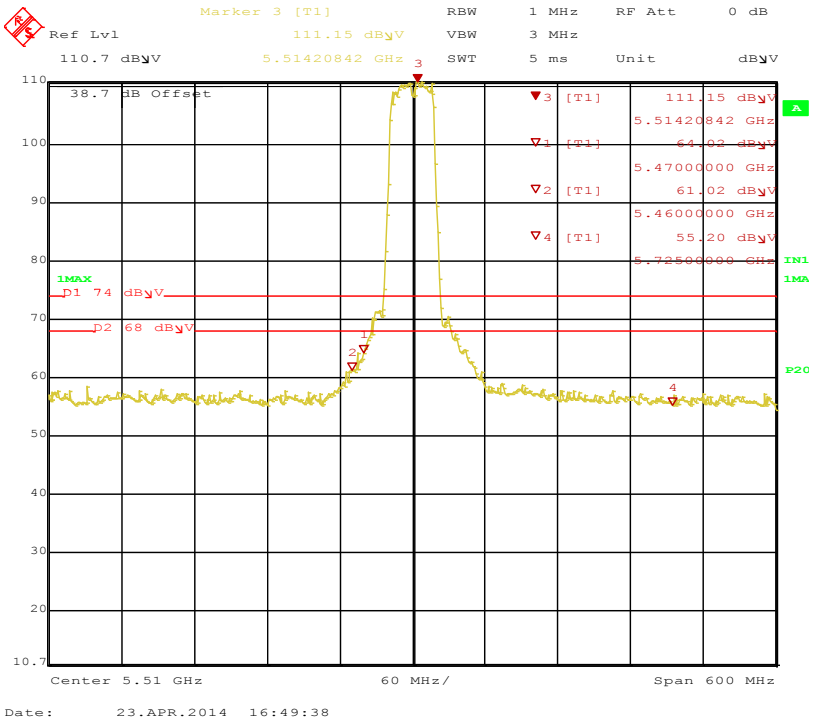


Figure 293: Bandedge-VHT40-MCS0-5510 MHz-V-Pk

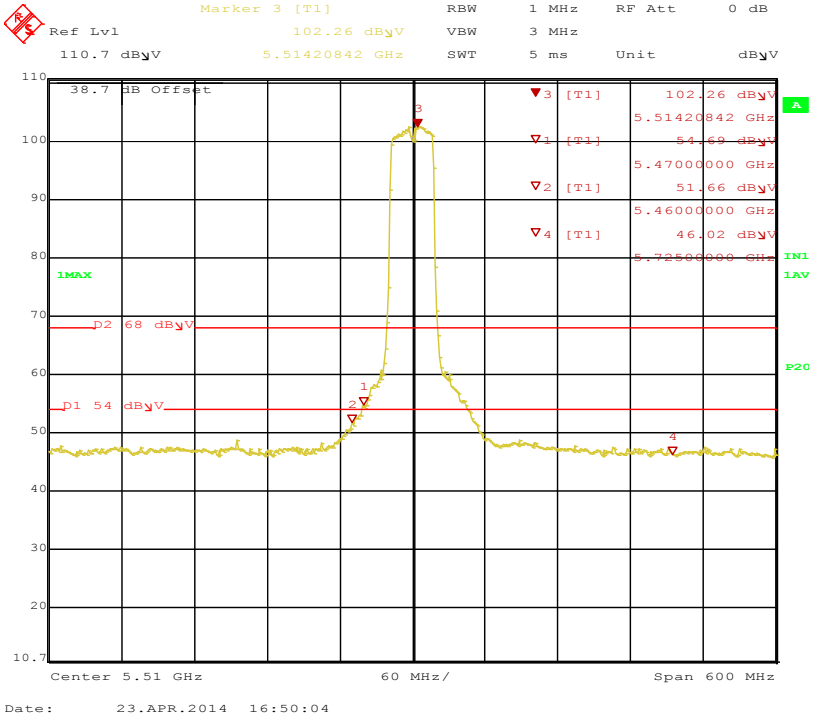


Figure 294: Bandedge-VHT40-MCS0-5510 MHz-V-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

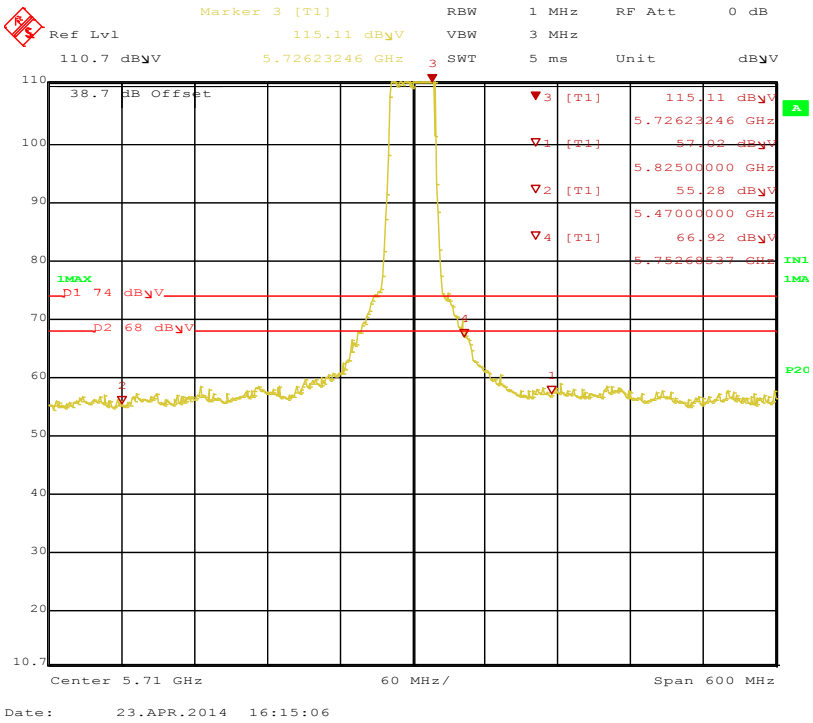


Figure 295: Bandedge-VHT40-MCS0-5710 MHz-H-Pk

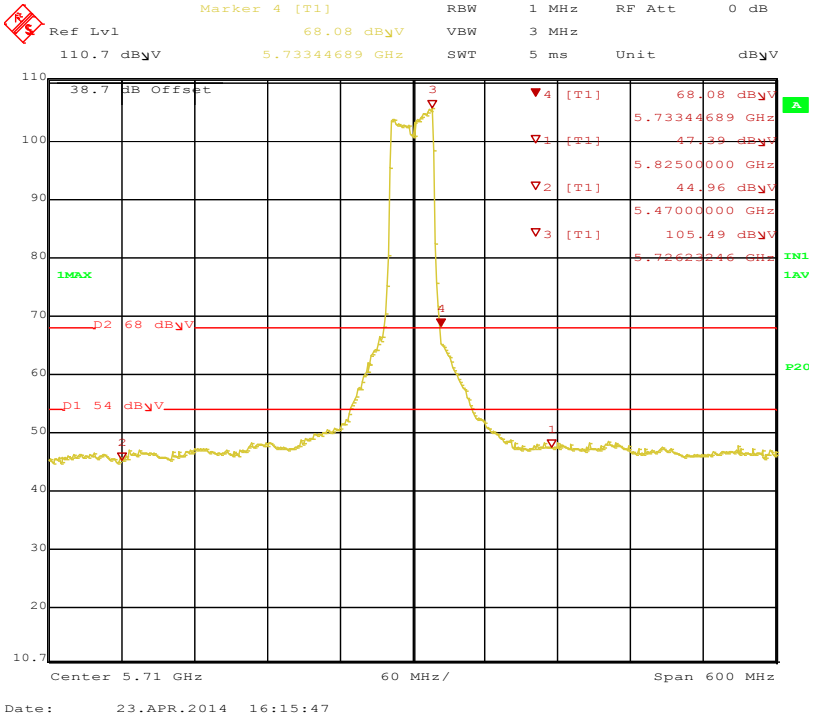


Figure 296: Bandedge-VHT40-MCS0-5710 MHz-H-Ave

Note: 5710MHz channel at VHT40 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

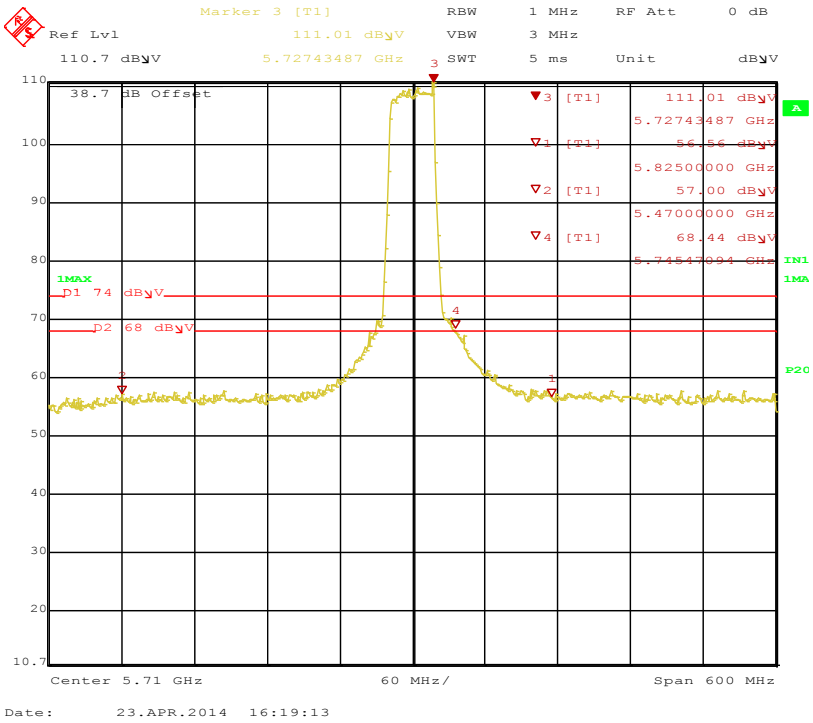


Figure 297: Bandedge-VHT40-MCS0-5710 MHz-V-Pk

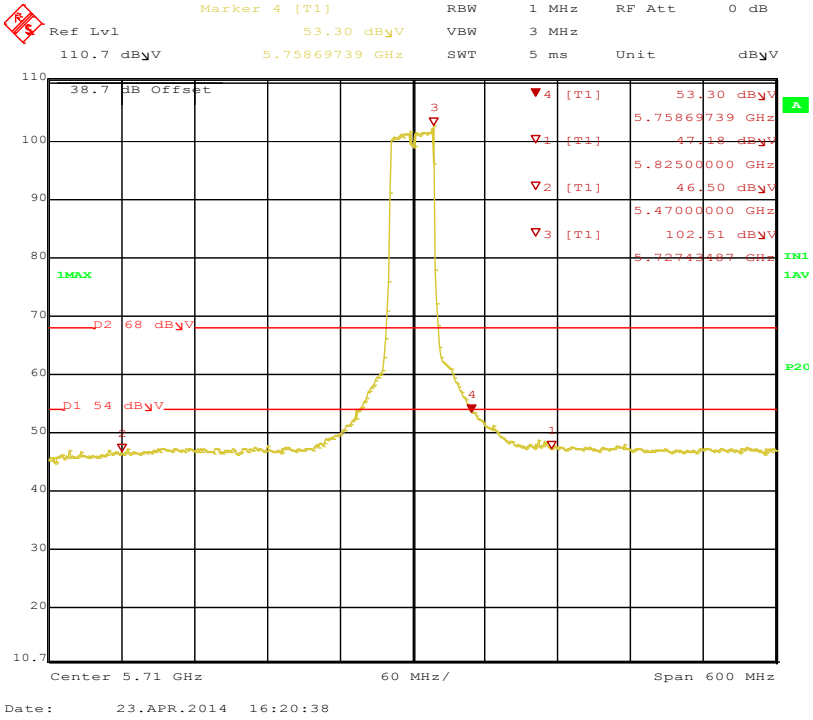


Figure 298: Bandedge-VHT40-MCS0-5710 MHz-V-Ave

Note: 5710MHz channel at VHT40 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

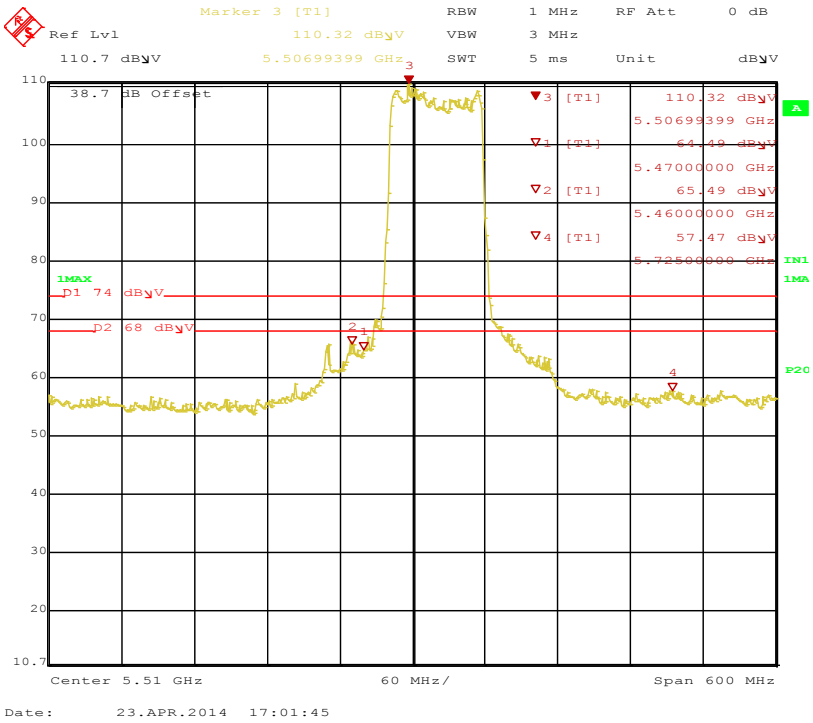


Figure 299: Bandedge-VHT80-MCS0-5530 MHz-H-Pk

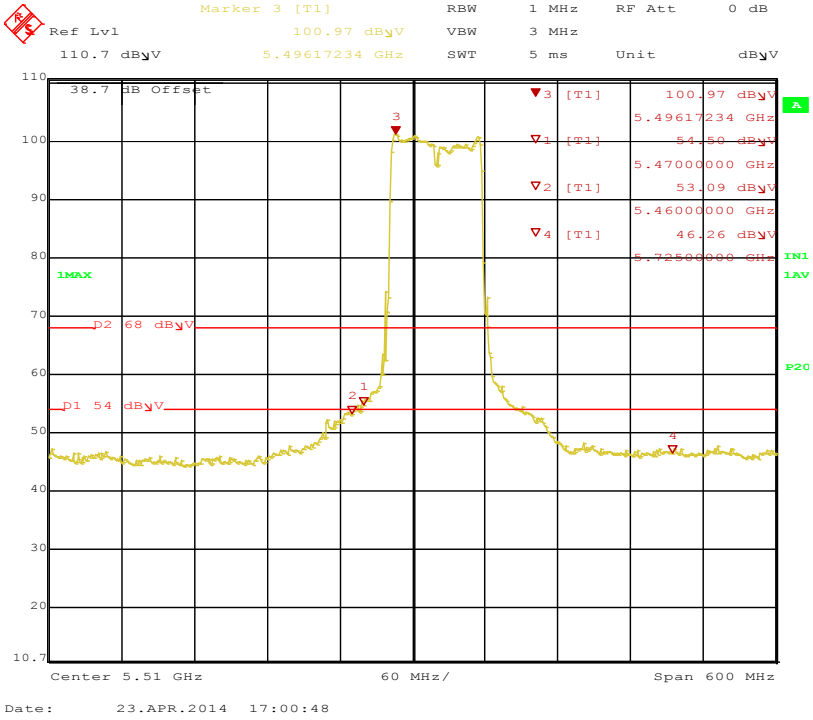


Figure 300: Bandedge-VHT80-MCS0-5530 MHz-H-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

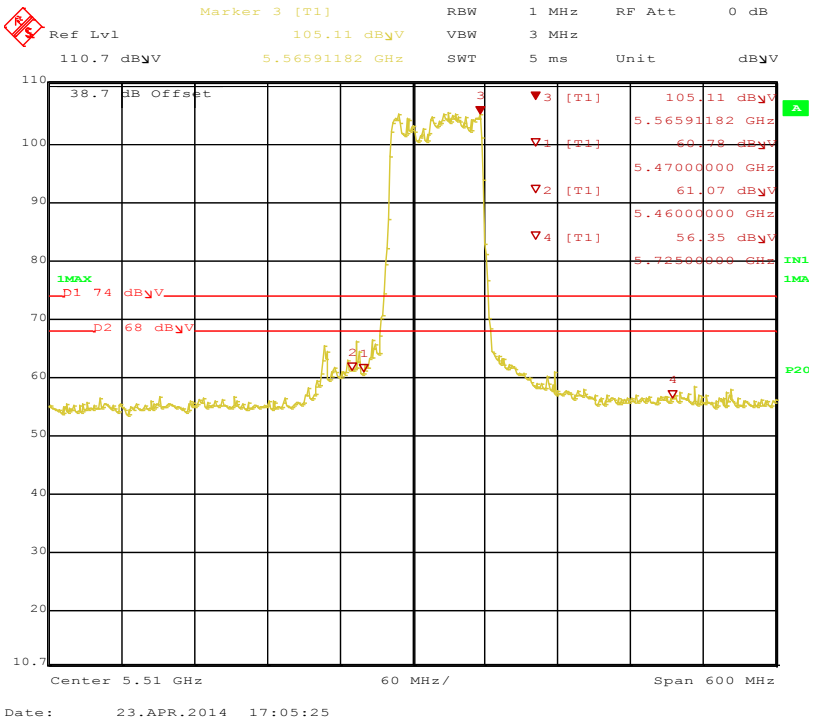


Figure 301: Bandedge-VHT80-MCS0-5530 MHz-V-Pk

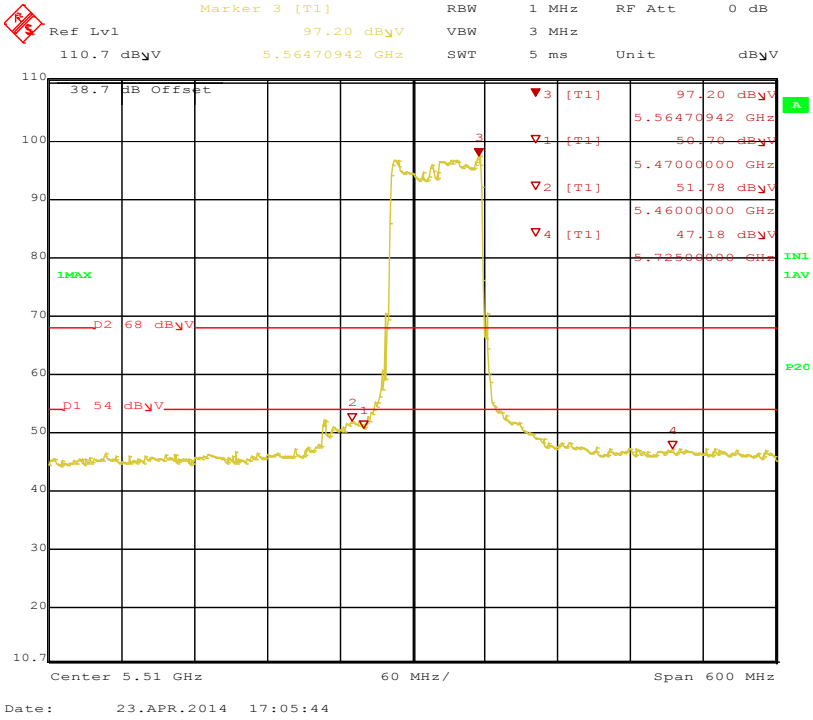


Figure 302: Bandedge-VHT80-MCS0-5530 MHz-V-Ave

Note: The restricted band at 5460 MHz met the limit per CFR47 15.205, and out of band starting at 5470 MHz met 68.2 dBuV/m limit.

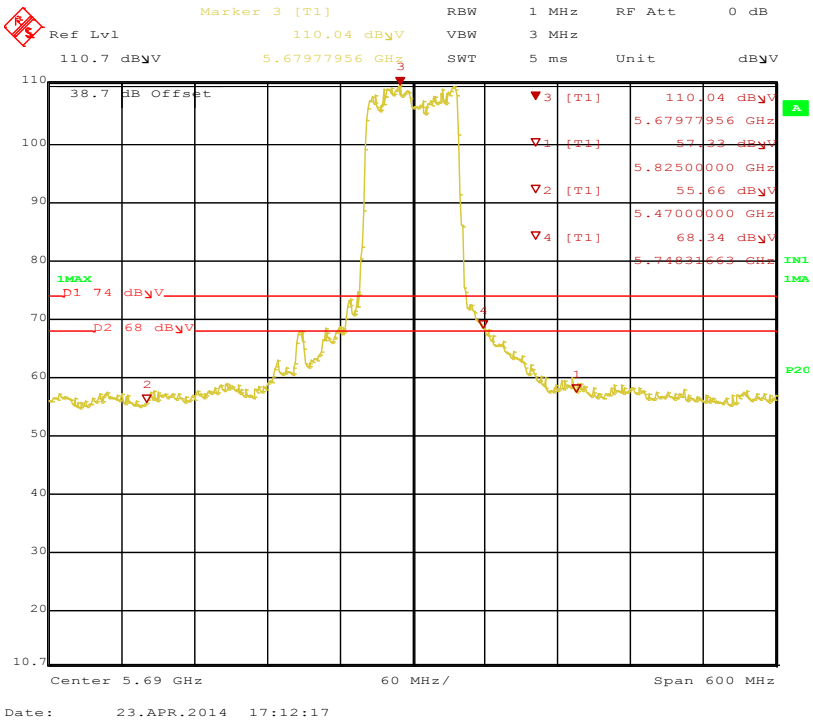


Figure 303: Bandedge-VHT80-MCS0-5690 MHz-H-Pk

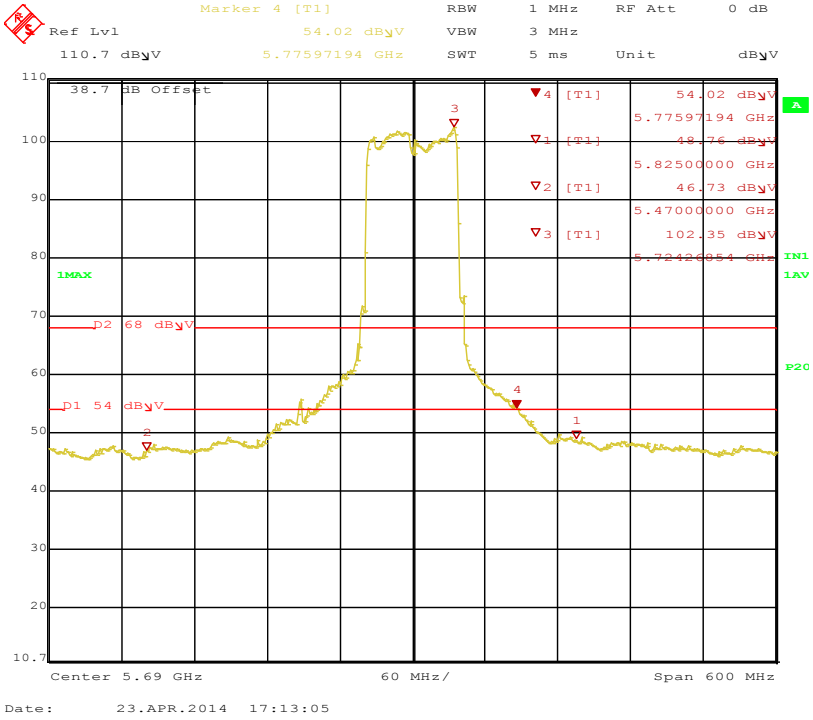


Figure 304: Bandedge-VHT80-MCS0-5690 MHz-H-Ave

Note: 5690MHz channel at VHT80 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

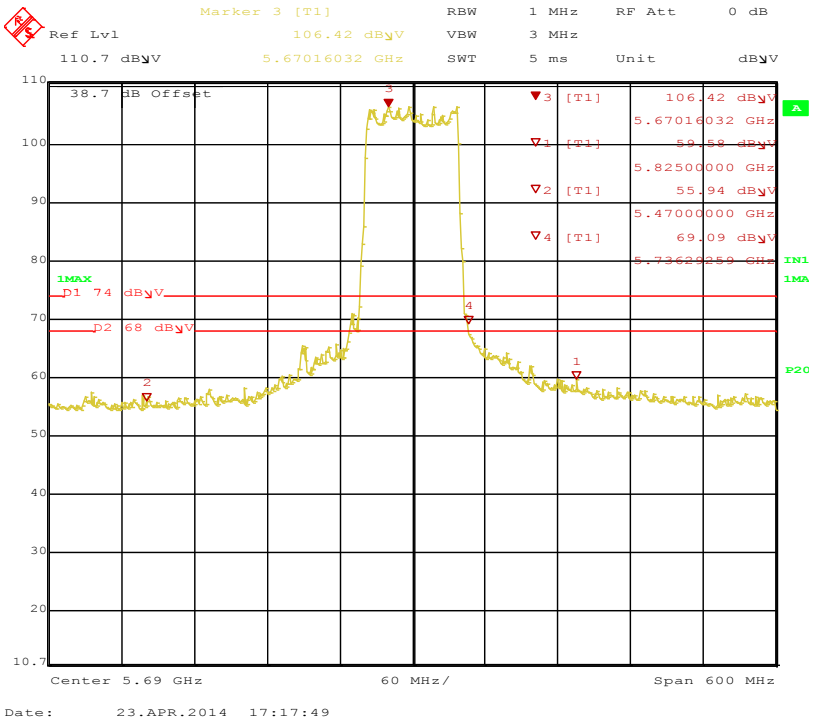


Figure 305: Bandedge-VHT80-MCS0-5690 MHz-V-Pk

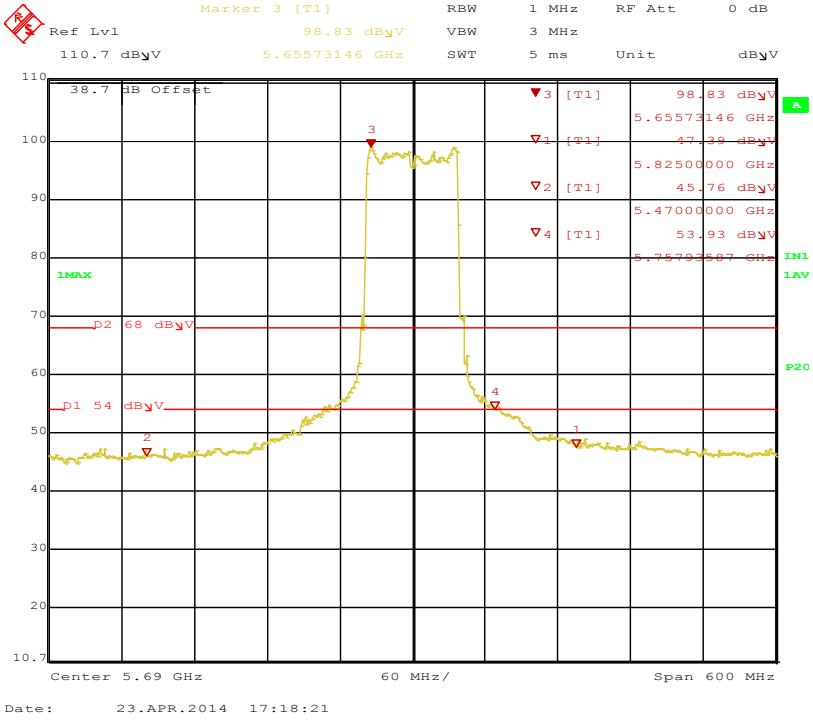


Figure 306: Bandedge-VHT80-MCS0-5690 MHz-V-Ave

Note: 5710MHz channel at VHT40 is band crossing channel; therefore, the band-edge for out of band emission is starting at 5825MHz, and it is met 68.2 dBuV/m limit.

SOP 1 Radiated Emissions		Tracking # 31153119.004 Page 1 of 44	
EUT Name	Wireless Residential Gateway	**Date**	March 31, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 40%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	802.11n HT40 at Y-Axis (30 MHz-1GHz)	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120 kHz/ 300 kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

Freq.	Raw	Cbl	AF	Level	Det.	Pol.	Hght.	Azt	Limit	Margin	Result
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 802.11n HT40, 5550 MHz											
624.95	46.58	3.00	-18.67	30.91	QP	H	107	82	37.00	-6.09	Pass
749.96	39.87	3.32	-16.99	26.20	QP	H	104	88	37.00	-10.80	Pass
874.84	41.40	3.62	-15.36	29.66	QP	H	133	68	37.00	-7.34	Pass
45.25	45.34	0.73	-27.38	18.69	QP	V	109	190	30.00	-11.31	Pass
58.73	49.14	0.84	-30.31	19.67	QP	V	118	30	30.00	-10.33	Pass
100.00	51.26	1.11	-27.28	25.09	QP	V	100	306	30.00	-4.91	Pass

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.52 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Note: The worst case was observed at 802.11n, HT40, 5550 MHz.
All other emissions passed Class B limit.

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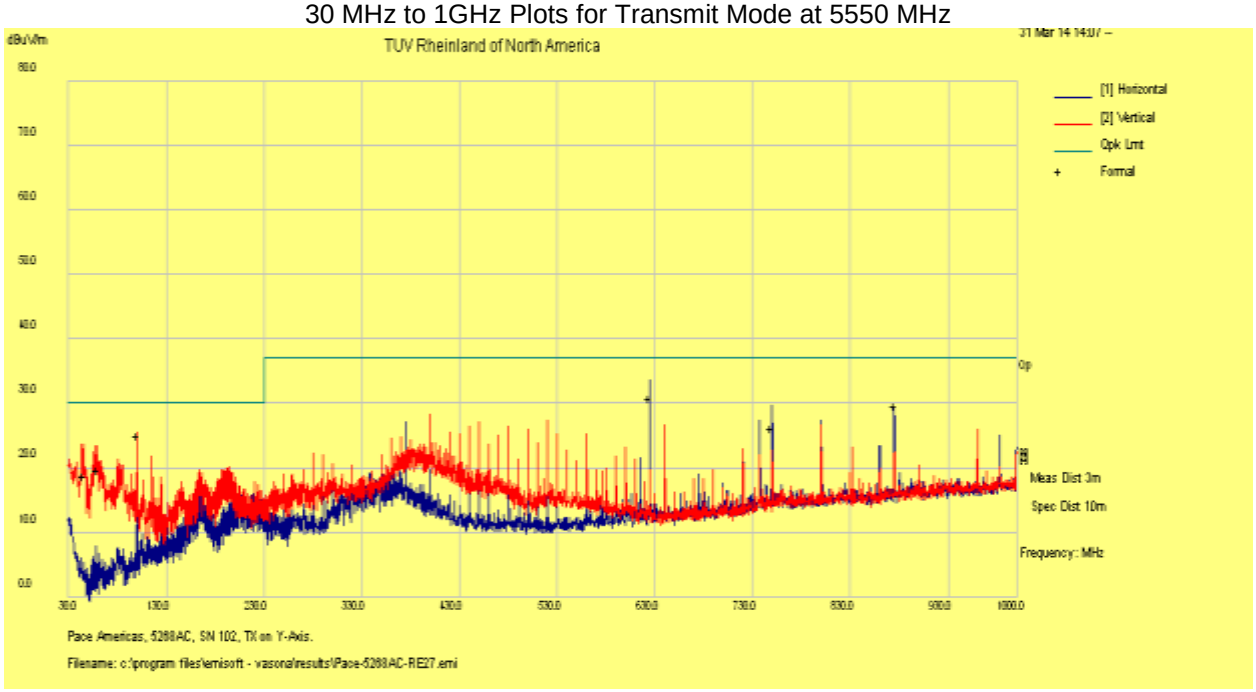
EUT Name	Wireless Residential Gateway	**Date**	March 31, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 40%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	802.11n HT40 at Y-Axis (30 MHz-1GHz)	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120 kHz/ 300 kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

30 MHz to 1GHz Plots for Transmit Mode at 5550 MHz



Notes: FCC Class B Limit.

SOP 1 Radiated Emissions

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6Mbps	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5500 MHz at 802.11a, 6Mbit/s											
16493.97	39.50	8.11	-8.24	39.38	Ave	H	113	50	54.00	-14.62	Harmonics
10996.17	42.06	6.37	-10.72	37.70	Ave	V	105	68	54.00	-16.30	Harmonics
21999.90	43.72	5.45	3.55	52.72	Ave	V	139	114	63.98	-11.26	Harmonics
Transmitted Data at 5580 MHz at 802.11a, 6Mbit/s											
16746.33	40.79	8.15	-8.01	40.93	Ave	H	134	74	54.00	-13.07	Harmonics
11157.56	45.01	6.39	-11.18	40.23	Ave	V	276	86	54.00	-13.77	Harmonics
22326.50	40.35	5.49	3.45	49.30	Ave	V	137	133	63.98	-14.68	Harmonics
Transmitted Data at 5700 MHz at 802.11a, 6Mbit/s											
17099.30	41.28	8.29	-6.62	42.95	Ave	H	114	70	54.00	-11.05	Harmonics
11397.39	45.09	6.49	-11.90	39.68	Ave	V	157	96	54.00	-14.32	Harmonics
22797.60	43.87	5.56	3.13	52.56	Ave	V	135	101	63.98	-11.42	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5500 MHz at 802.11n HT20 at MCS0											
11000.24	42.06	6.37	-10.70	37.73	Ave	H	199	360	54.00	-16.27	Harmonics
16495.39	35.81	8.11	-8.23	35.69	Ave	H	99	32	54.00	-18.31	Harmonics
22000.00	42.45	5.45	3.55	51.45	Ave	V	128	149	63.98	-12.53	Harmonics
Transmitted Data at 5580 MHz at 802.11n HT20 at MCS0											
11159.96	37.44	6.40	-11.17	32.66	Ave	H	199	74	54.00	-21.34	Harmonics
16740.01	41.10	8.15	-8.01	41.24	Ave	H	103	122	54.00	-12.76	Harmonics
22320.20	38.75	5.49	3.46	47.70	Ave	V	138	134	63.98	-16.28	Harmonics
Transmitted Data at 5700 MHz at 802.11n HT20 at MCS0											
11402.20	42.38	6.48	-11.90	36.95	Ave	H	137	48	54.00	-17.05	Harmonics
17099.04	39.78	8.29	-6.62	41.45	Ave	H	102	54	54.00	-12.55	Harmonics
22803.20	43.15	5.56	3.14	51.85	Ave	V	137	423	63.98	-12.13	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT40 at MCS0	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5510 MHz at 802.11n HT40 at MCS0											
11020.17	45.02	6.38	-10.88	40.52	Ave	V	109	122	54.00	-13.48	Harmonics
16515.30	34.80	8.10	-8.20	34.70	Ave	V	211	46	54.00	-19.30	Harmonics
22040.00	41.47	5.45	3.55	50.48	Ave	V	127	118	63.98	-13.50	Harmonics
Transmitted Data at 5550 MHz at 802.11n HT40 at MCS0											
16541.93	33.99	8.13	-7.94	34.18	Ave	H	142	98	54.00	-19.82	Harmonics
11107.88	40.32	6.35	-11.07	35.60	Ave	V	111	65	54.00	-18.40	Harmonics
22199.80	41.44	5.47	3.56	50.48	Ave	V	138	134	63.98	-13.50	Harmonics
Transmitted Data at 5670 MHz at 802.11n HT40 at MCS0											
11338.80	45.52	6.45	-11.85	40.13	Ave	H	180	320	54.00	-13.87	Harmonics
16995.95	38.11	8.25	-7.61	38.75	Ave	H	124	74	54.00	-15.25	Harmonics
22679.90	39.87	5.55	3.11	48.52	Ave	H	142	133	63.98	-15.46	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102 and 111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5500 MHz at 802.11ac VHT20 at MCS0											
16491.91	33.19	8.10	-8.24	33.05	Ave	H	173	60	60.00	-26.95	Harmonics
10999.90	44.10	6.37	-10.70	39.77	Ave	V	151	120	60.00	-20.23	Harmonics
21999.80	42.98	5.45	3.55	51.98	Ave	V	139	118	63.98	-12.00	Harmonics
Transmitted Data at 5580 MHz at 802.11ac VHT20 at MCS0											
11156.31	38.20	6.39	-11.18	33.41	Ave	H	276	40	54.00	-20.59	Harmonics
16747.40	39.23	8.15	-8.00	39.37	Ave	H	130	76	54.00	-14.63	Harmonics
22319.90	42.21	5.49	3.46	51.16	Ave	V	138	172	63.98	-12.82	Harmonics
Transmitted Data at 5700 MHz at 802.11ac VHT20 at MCS0											
11408.04	45.40	6.50	-11.90	40.00	Ave	H	161	96	54.00	-14.00	Harmonics
17107.35	35.46	8.29	-6.52	37.23	Ave	H	108	142	54.00	-16.77	Harmonics
11408.00	48.90	6.50	-11.90	43.50	Ave	V	206	88	54.00	-10.50	Harmonics
22799.80	43.65	5.56	3.13	52.34	Ave	V	137	100	63.98	-11.64	Harmonics
Transmitted Data at 5720 MHz at 802.11ac VHT20 at MCS0 (Band Crossing Channel)											
17147.35	39.36	8.29	-6.61	41.04	Ave	H	137	48	54.00	-12.96	Harmonics
11437.00	44.94	6.47	-11.91	39.51	Ave	V	101	66	54.00	-14.49	Harmonics
22880.00	43.83	5.57	3.23	52.63	Ave	H	125	97	63.98	-11.35	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5510 MHz at 802.11ac VHT40 at MCS0											
11018.20	42.86	6.38	-10.87	38.37	Ave	H	146	340	54.00	-15.63	Harmonics
16504.96	32.52	8.12	-8.21	32.43	Ave	H	132	38	54.00	-21.57	Harmonics
22039.80	41.42	5.45	3.55	50.43	Ave	V	139	118	63.98	-13.55	Harmonics
Transmitted Data at 5670 MHz at 802.11ac VHT40 at MCS0											
11340.85	42.30	6.50	-11.90	36.90	Ave	H	109	64	54.00	-17.10	Harmonics
17001.64	37.70	8.30	-7.60	38.40	Ave	H	138	58	54.00	-15.60	Harmonics
11340.11	46.10	6.50	-11.90	40.70	Ave	V	143	82	54.00	-13.30	Harmonics
17004.42	34.60	8.30	-7.50	35.30	Ave	V	135	228	54.00	-18.70	Harmonics
22670.00	40.76	5.55	3.11	49.42	Ave	V	135	131	63.98	-14.56	Harmonics
Transmitted Data at 5710 MHz at 802.11ac VHT40 at MCS0 (Band Crossing Channel)											
17135.80	34.17	8.30	-6.20	36.27	Ave	H	223	134	54.00	-17.73	Harmonics
11419.76	45.14	6.46	-11.91	39.69	Ave	V	100	66	54.00	-14.31	Harmonics
22840.00	43.43	5.56	3.18	52.17	Ave	V	130	100	63.98	-11.81	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT80 at MCS0	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m / EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Freq	Raw	Cbl	AF	Level	Det	Pol	Hght	Azt	Limit	Margin	Comment
MHz	dBuV/m	dB	dB	dBuV/m		H/V	cm	deg	dBuV/m	dB	
Transmitted Data at 5530 MHz at 802.11ac VHT80 at MCS0											
16563.86	34.35	8.11	-8.17	34.29	Ave	H	103	88	54.00	-19.72	Harmonics
16623.83	31.79	8.13	-8.12	31.80	Ave	H	114	186	54.00	-22.20	Harmonics
16653.77	32.36	8.12	-8.03	32.46	Ave	H	176	72	54.00	-21.54	Harmonics
16643.20	33.07	8.12	-8.07	33.13	Ave	V	140	56	54.00	-20.87	Harmonics
22119.90	41.73	5.46	3.56	50.75	Ave	V	136	93	63.98	-13.23	Harmonics
Transmitted Data at 5690 MHz at 802.11ac VHT80 at MCS0 (Band Crossing Channel)											
17044.86	34.30	8.26	-7.14	35.42	Ave	H	127	158	54.00	-18.58	Harmonics
11398.64	38.10	6.48	-11.90	32.68	Ave	V	209	62	54.00	-21.32	Harmonics
22760.00	40.67	5.56	3.08	49.31	Ave	H	126	74	63.98	-14.67	Harmonics

Spec Margin = Level - Limit, Level = Raw+ Cbl+ CF ± Uncertainty
CF= Amp Gain + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 4.93dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: All emissions passed the spurious emission limit.

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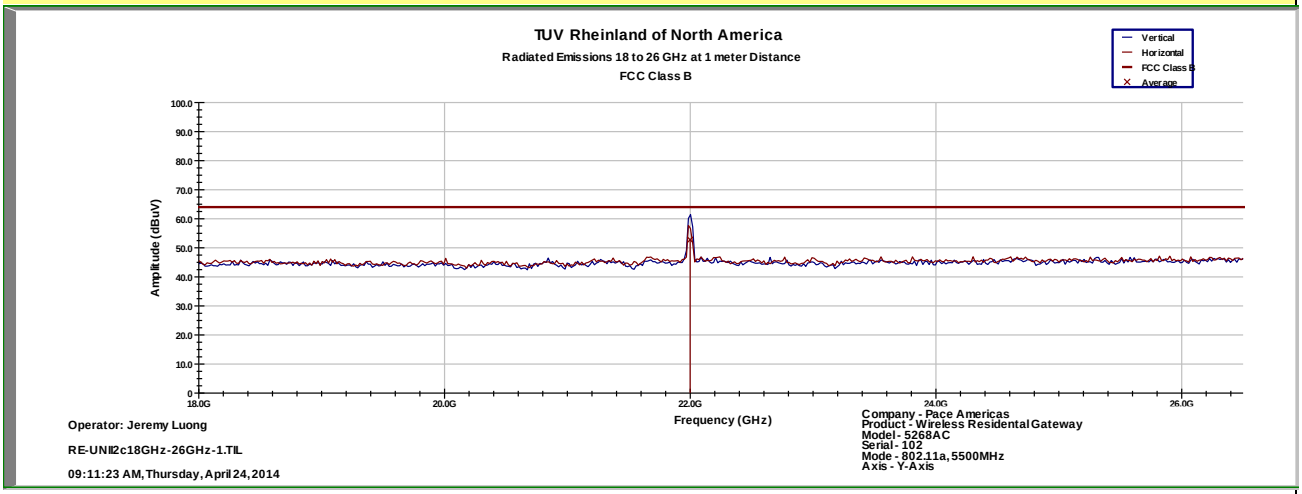
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102 and 111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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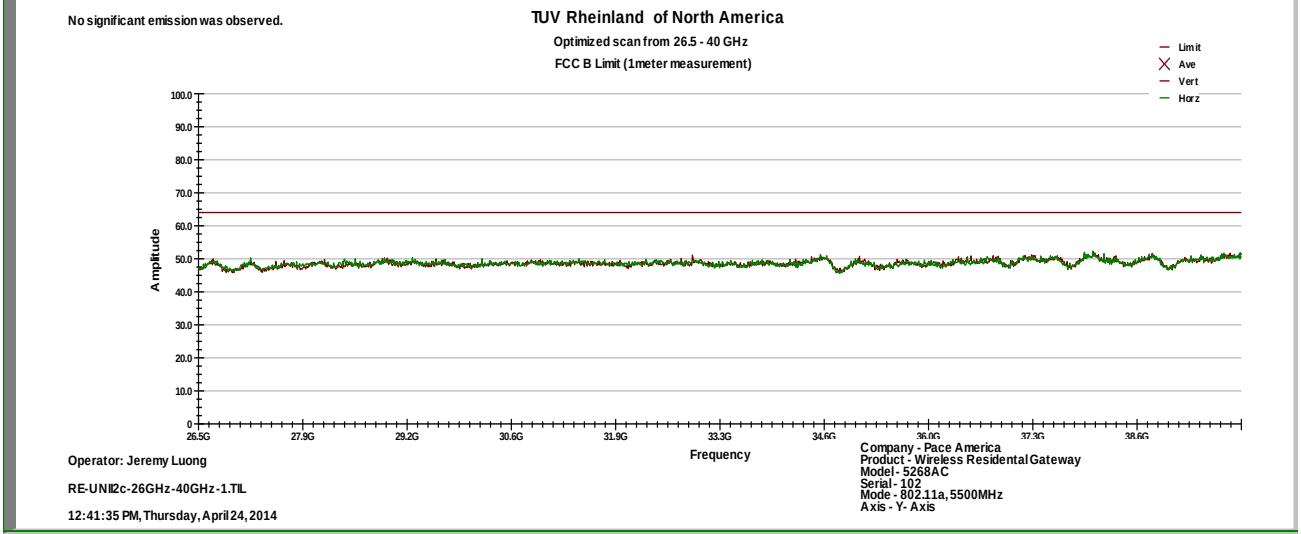
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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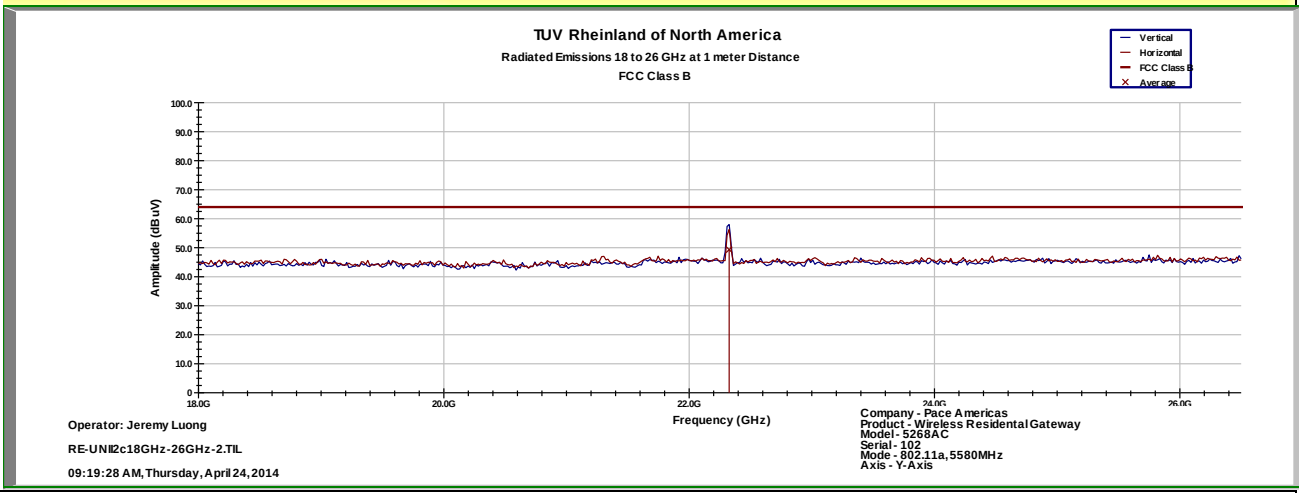
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102 and 111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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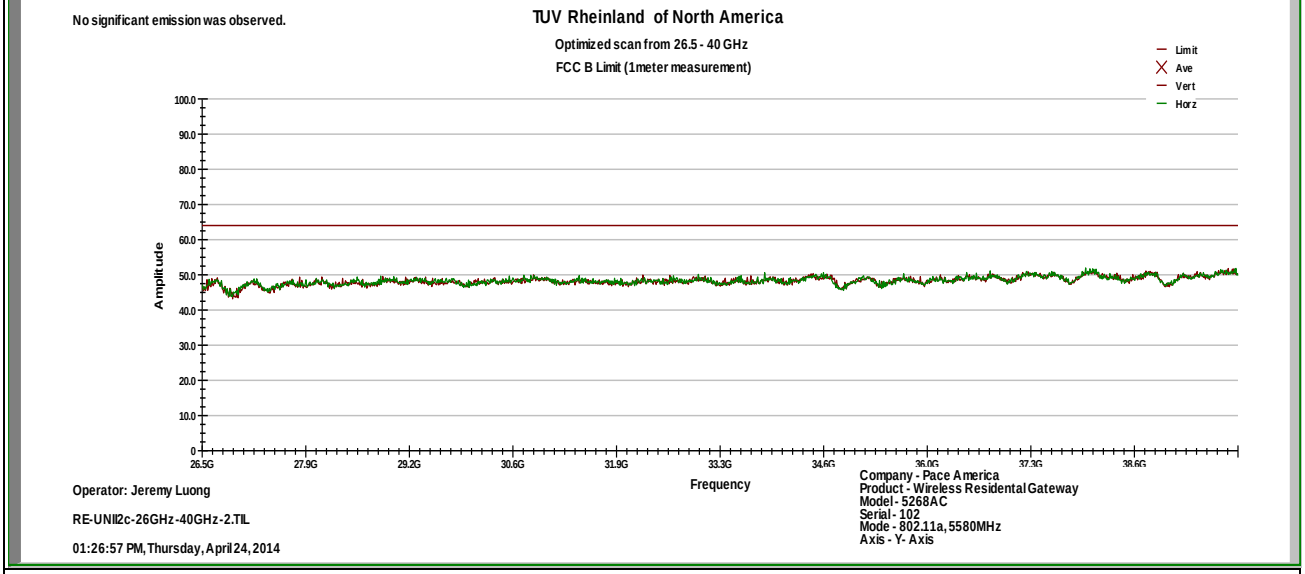
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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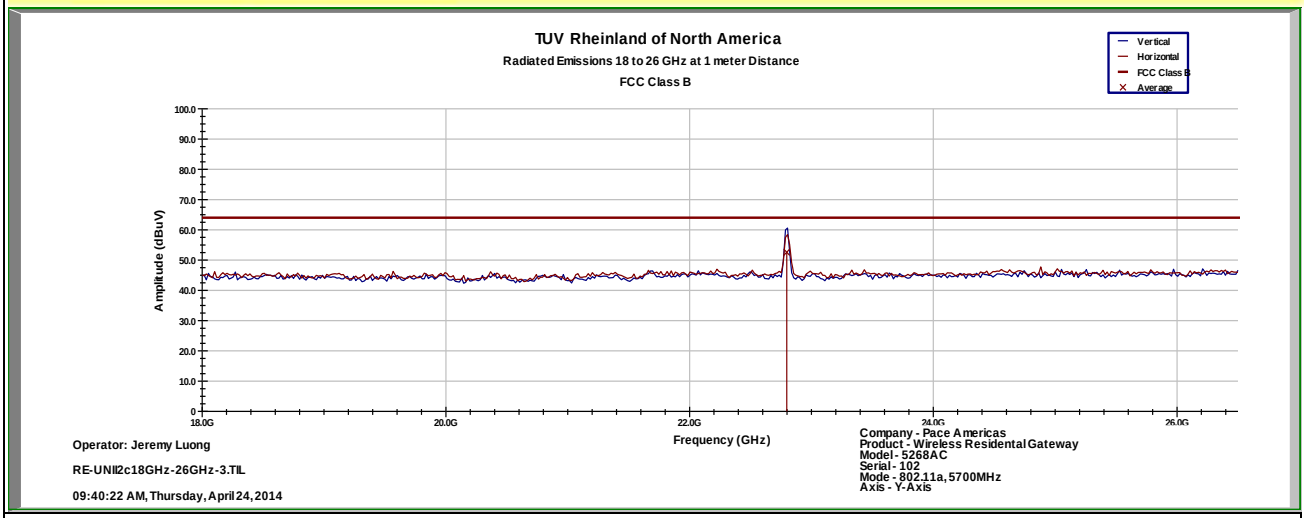
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102 and 111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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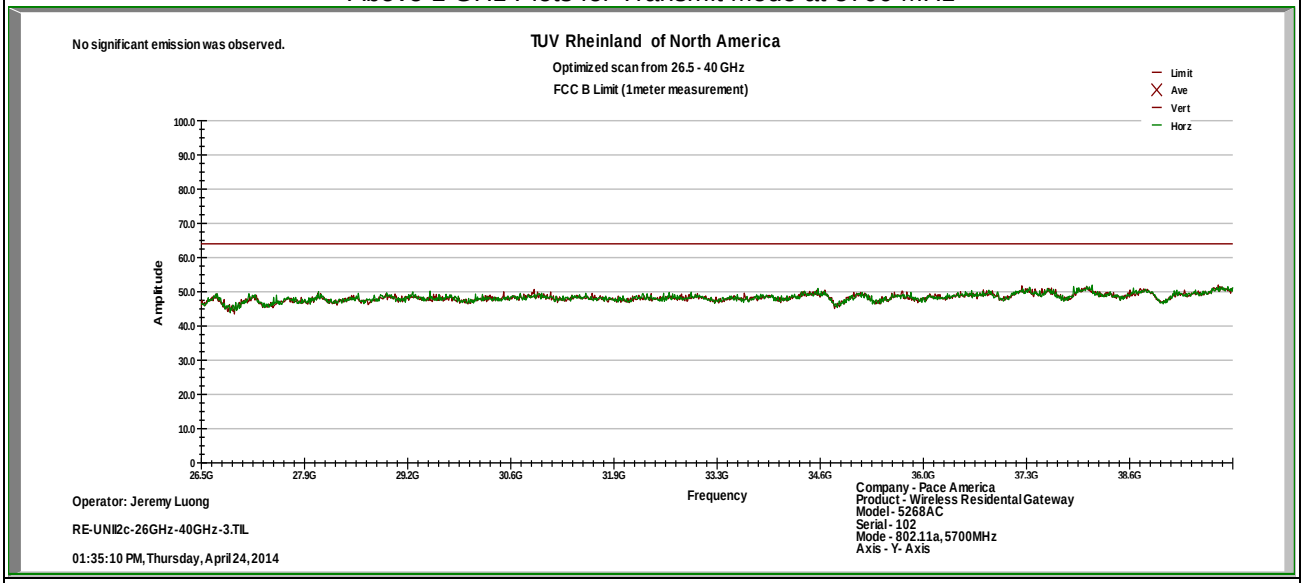
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11a at 6 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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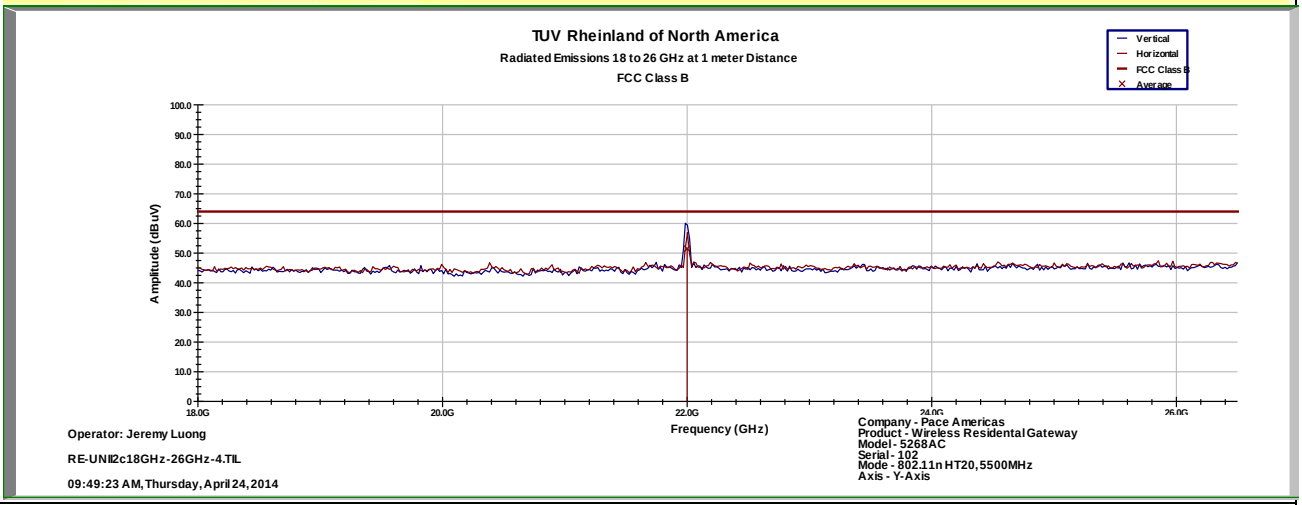
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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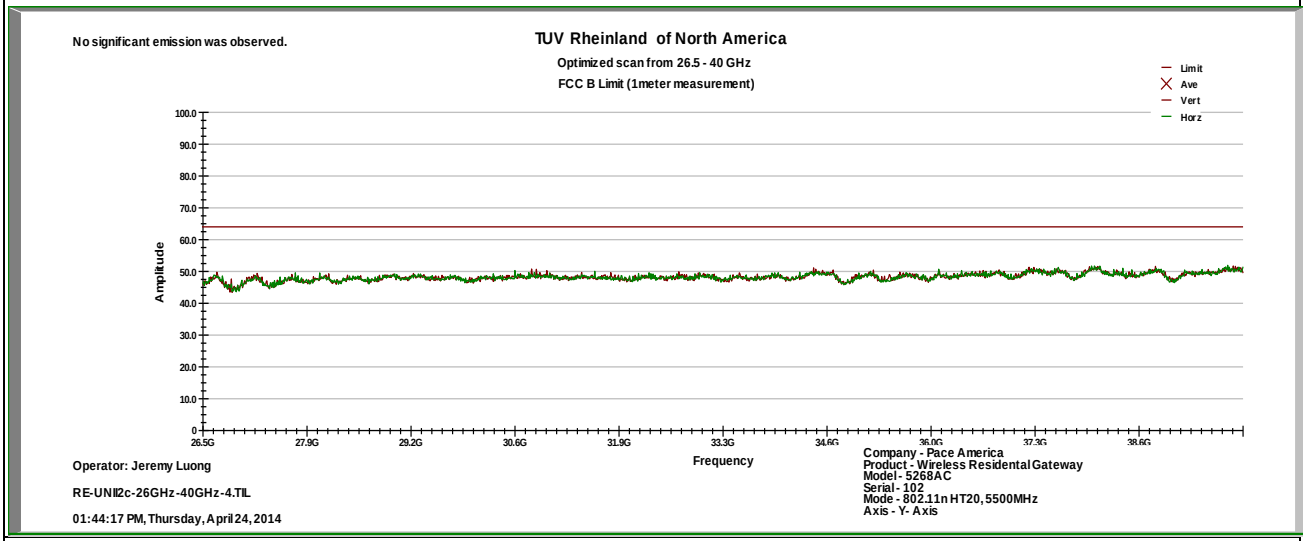
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz

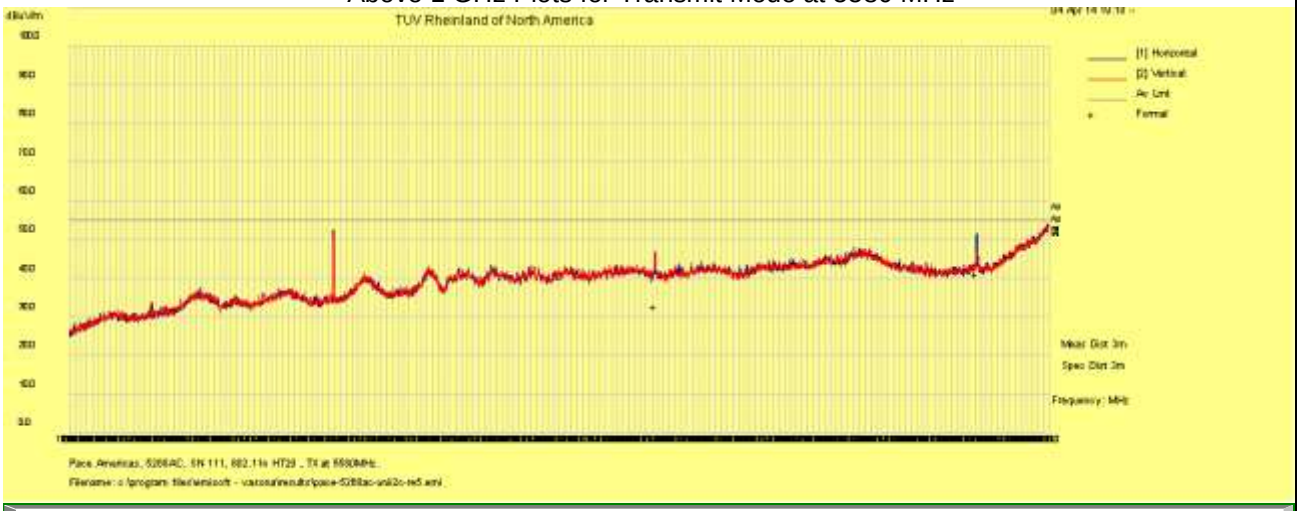


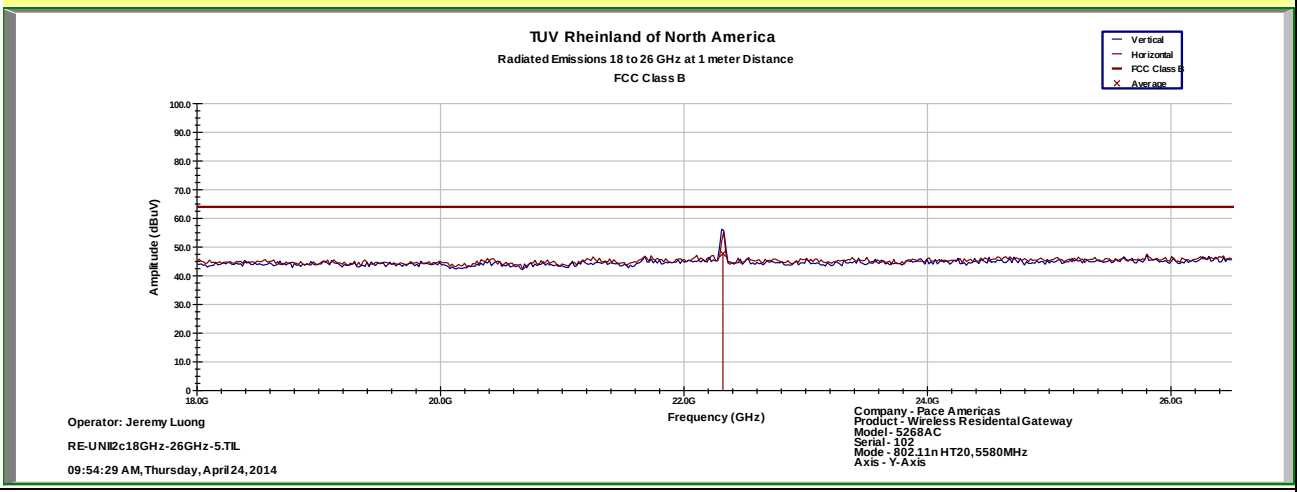
Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

SOP 1 Radiated Emissions

EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz





Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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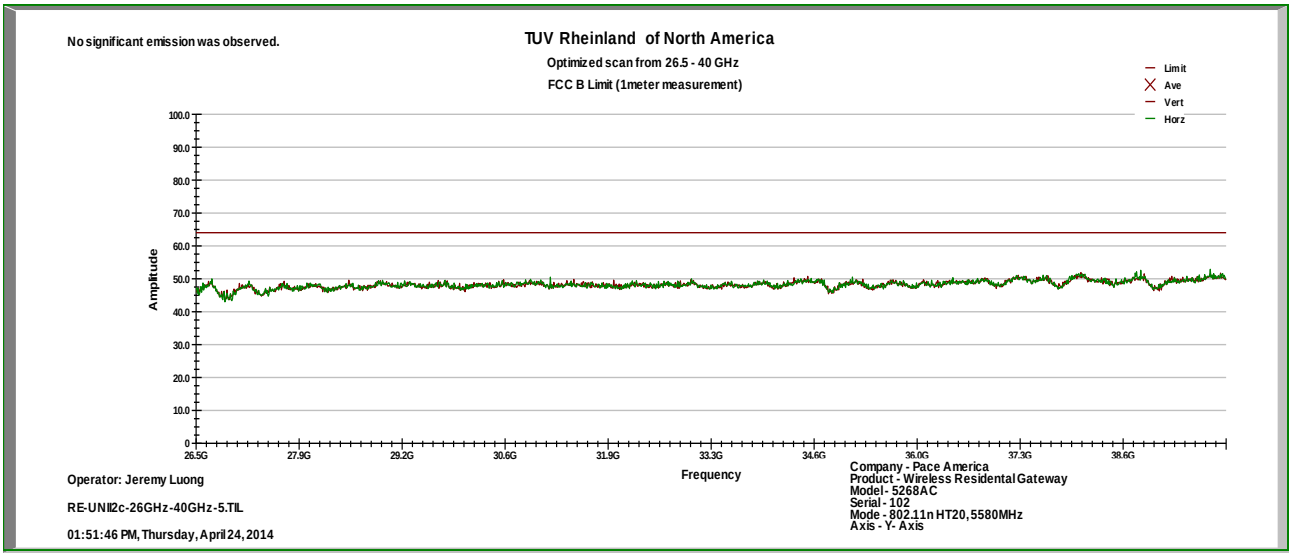
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz

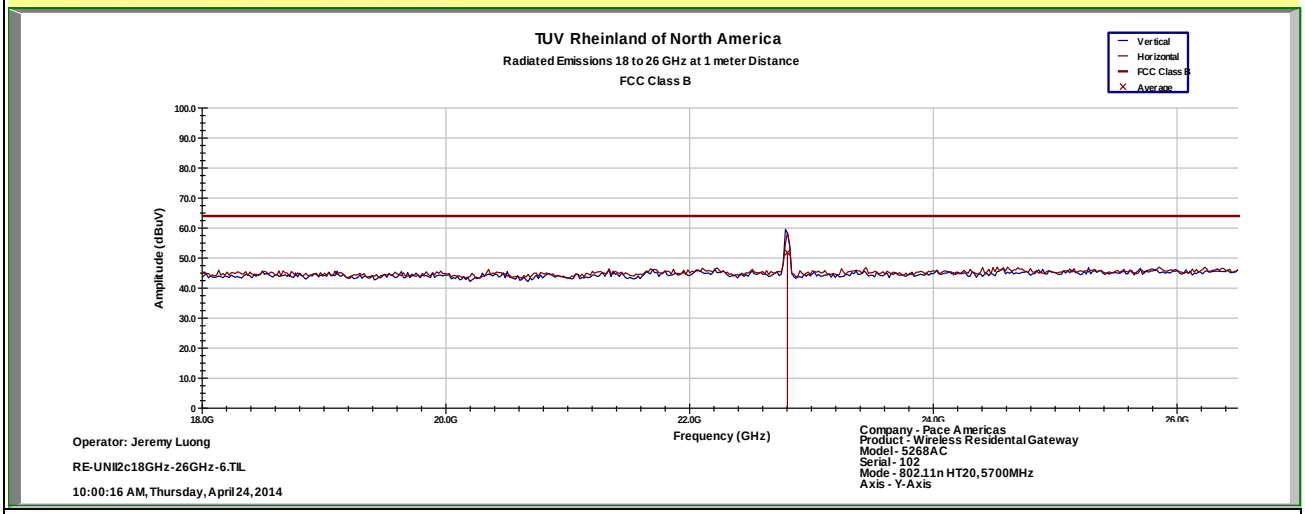


Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

SOP 1 Radiated Emissions

EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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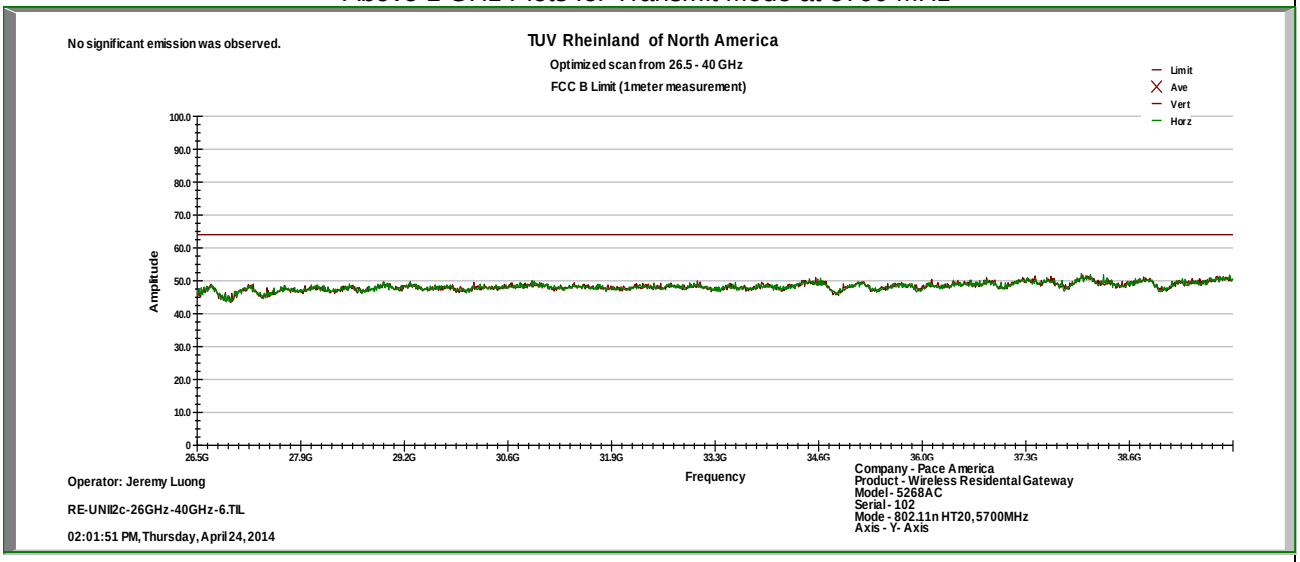
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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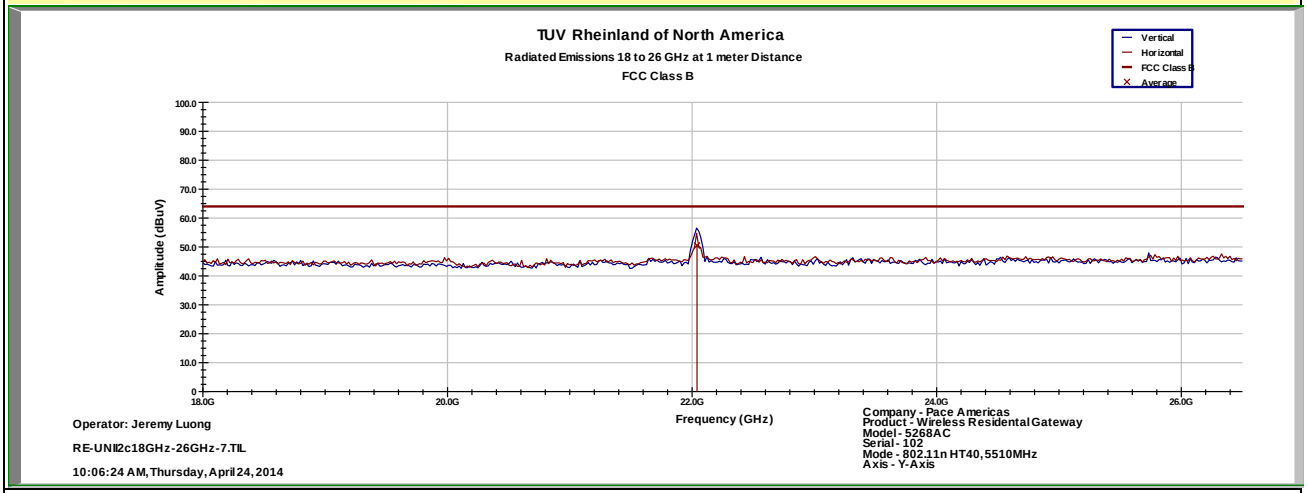
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11 HT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5510 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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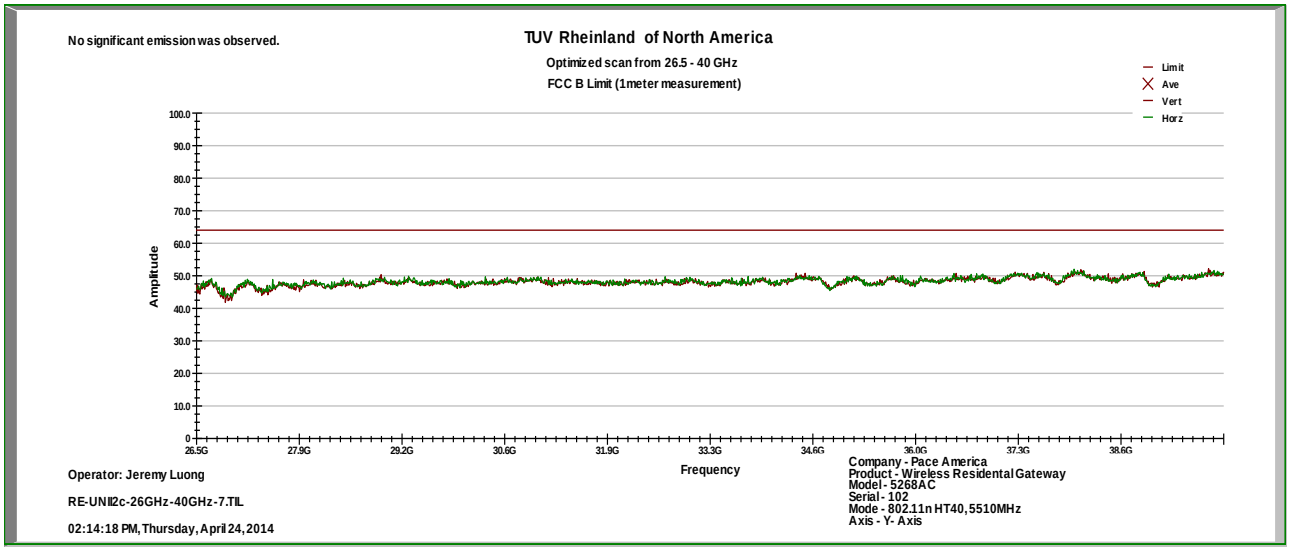
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11 HT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5510 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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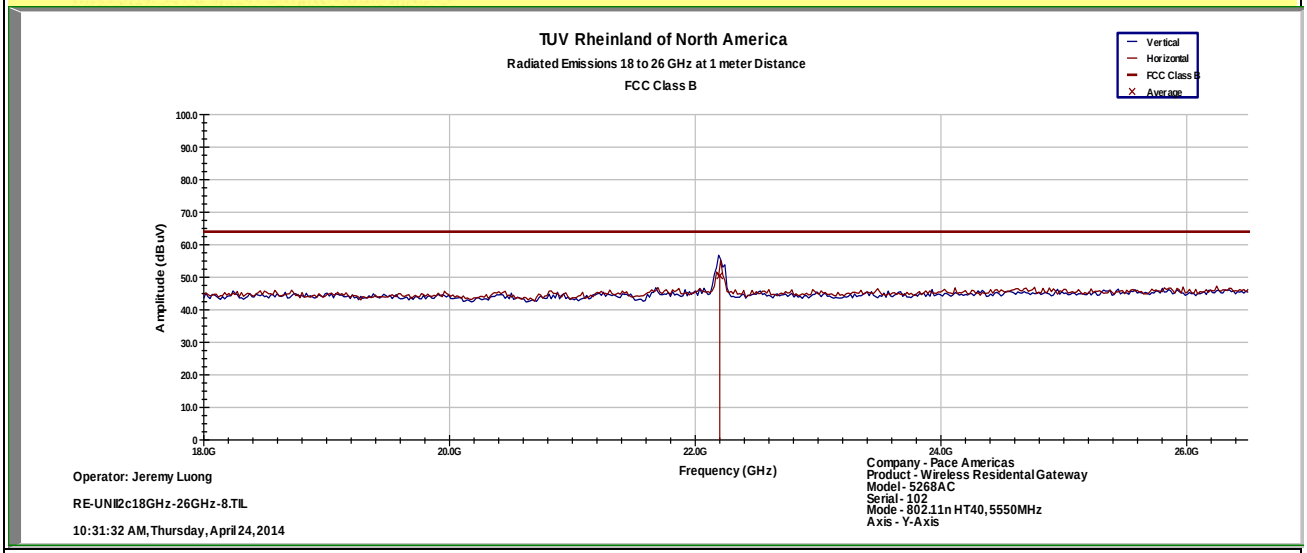
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11 HT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5550 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

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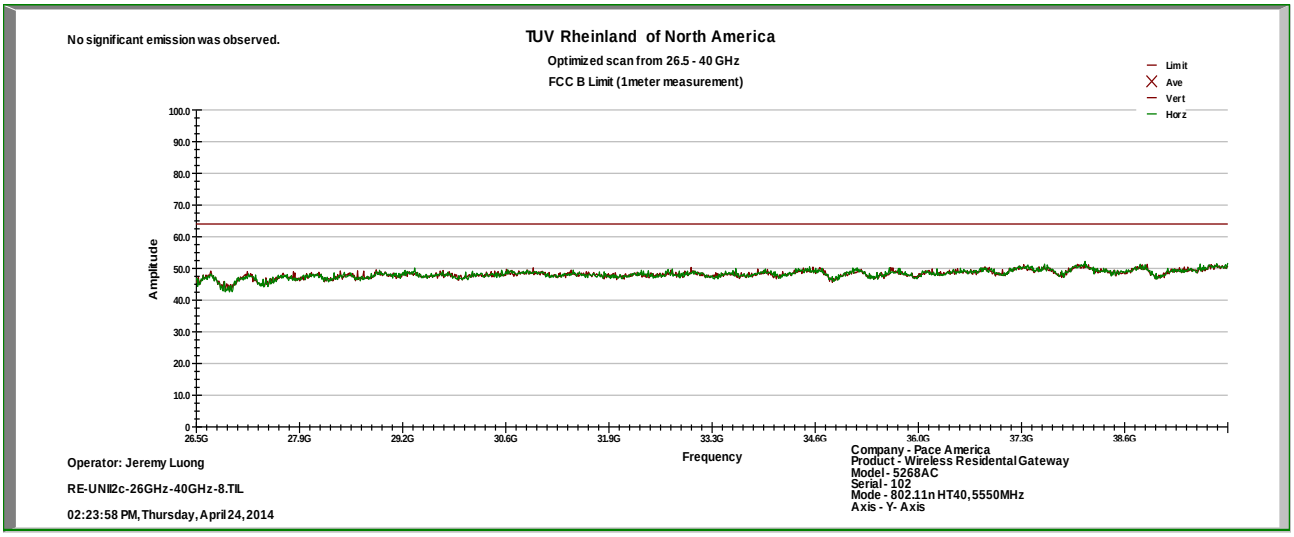
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5550 MHz

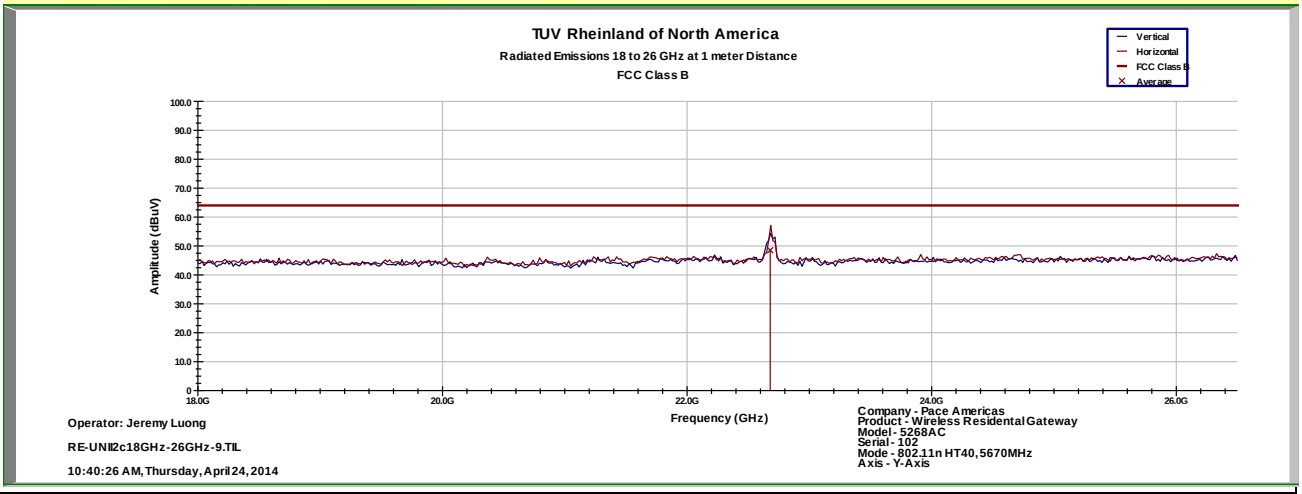


Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

SOP 1 Radiated Emissions

EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT40 at 13.5 Mbps	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5670 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

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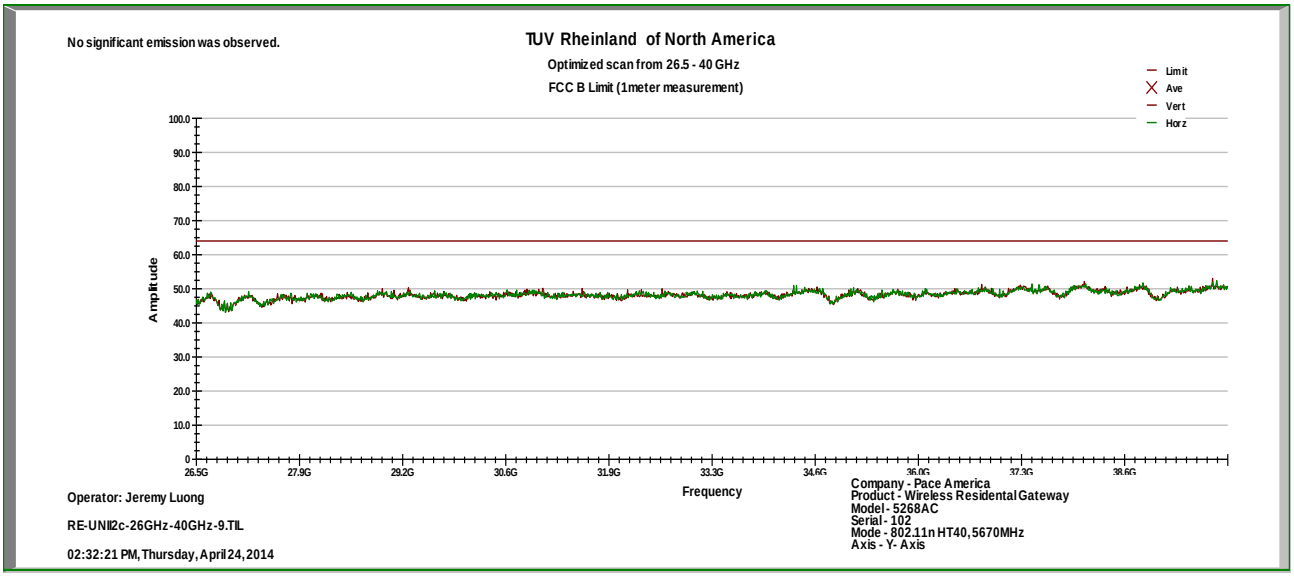
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11n HT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5670 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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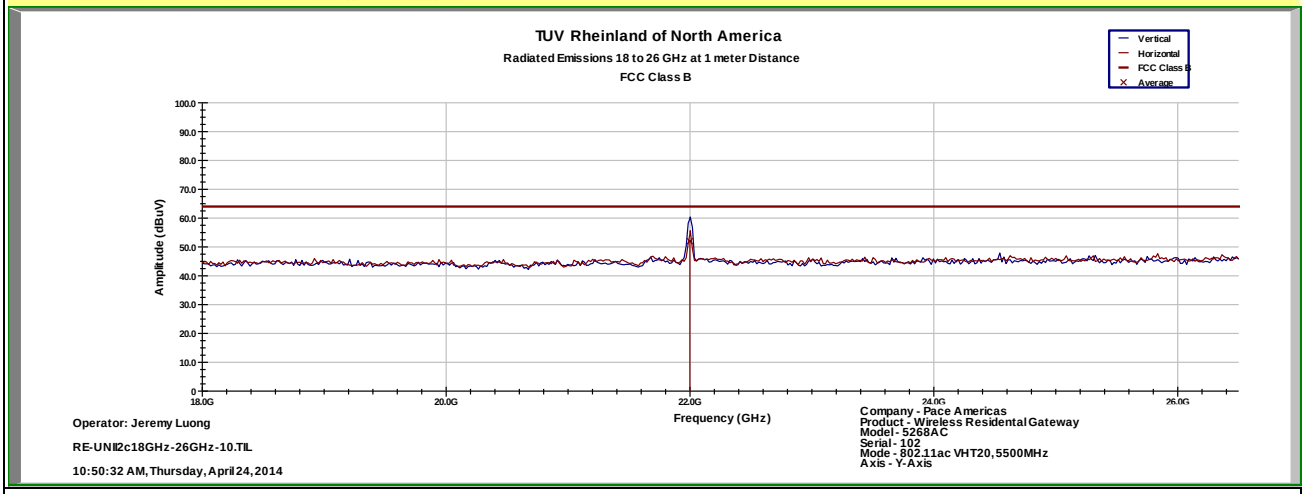
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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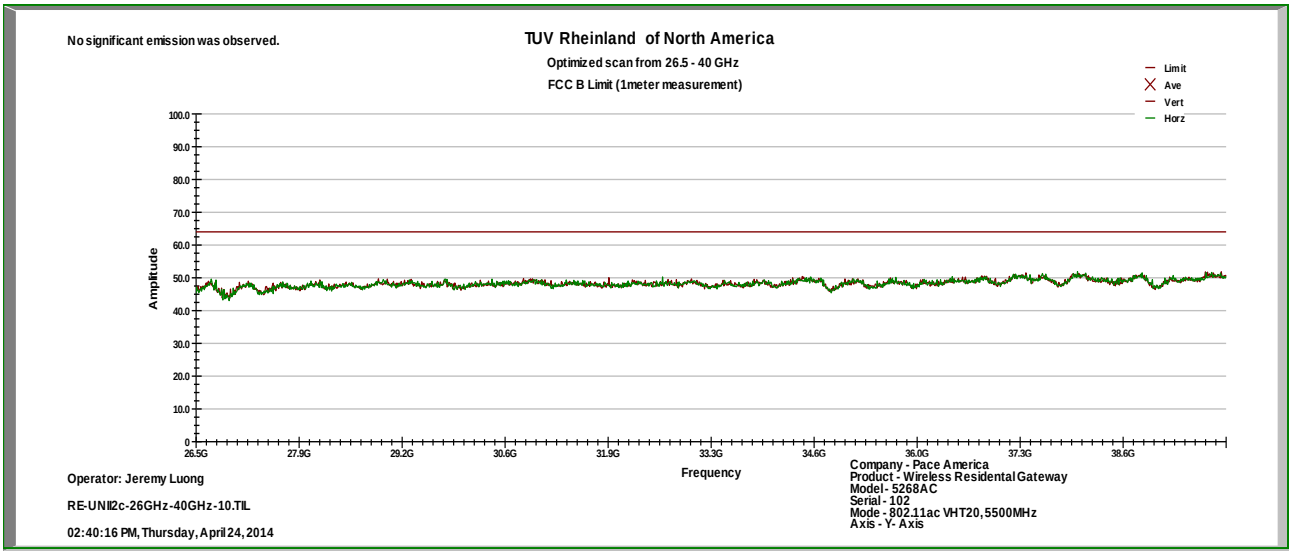
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5500 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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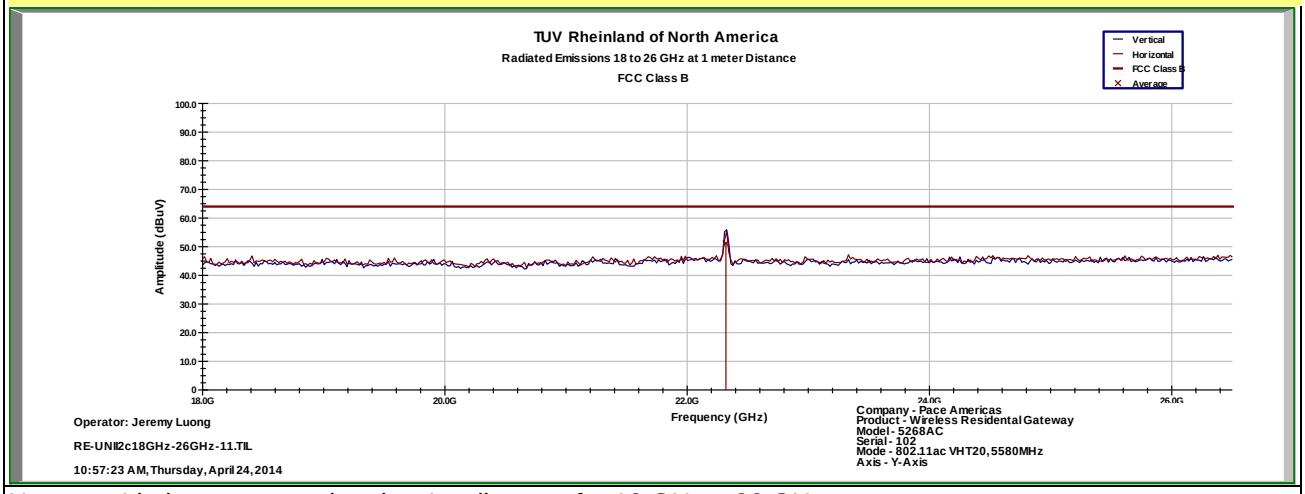
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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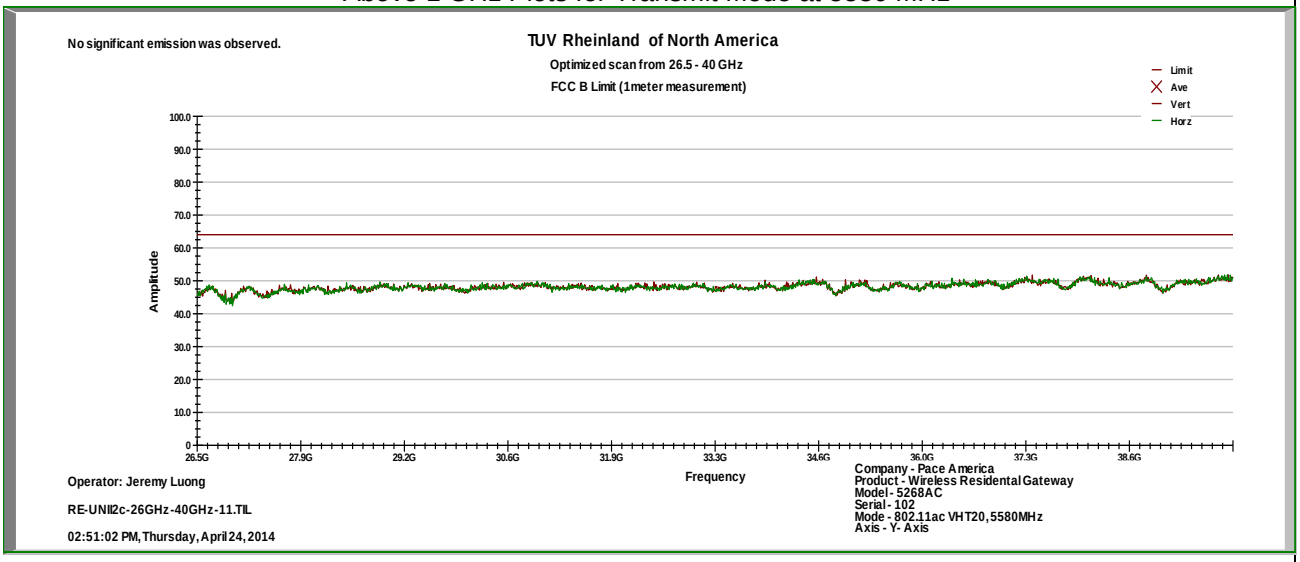
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5580 MHz

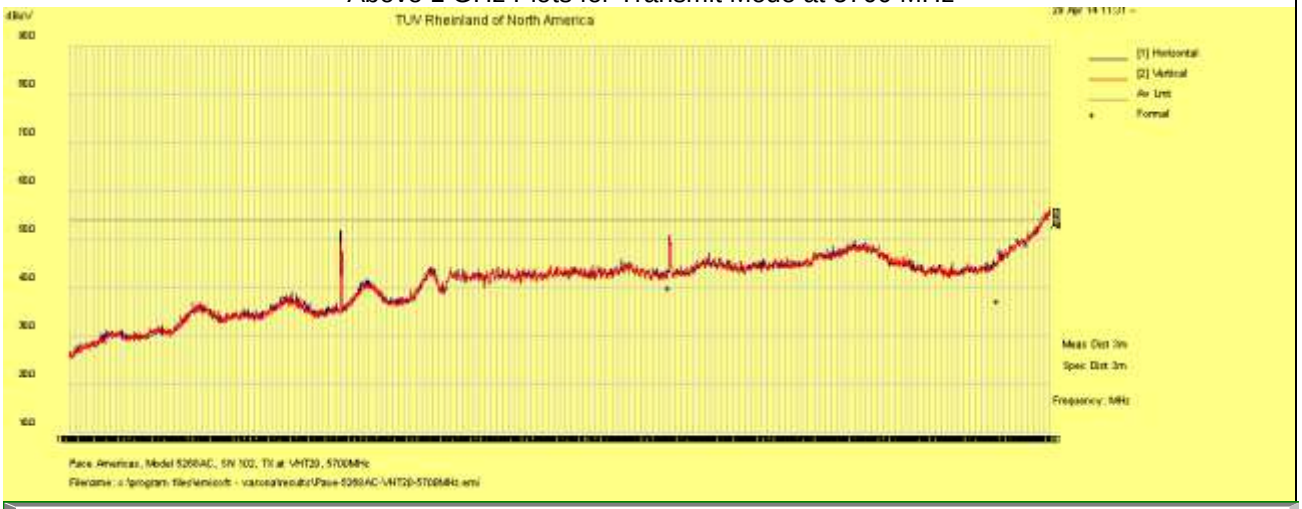


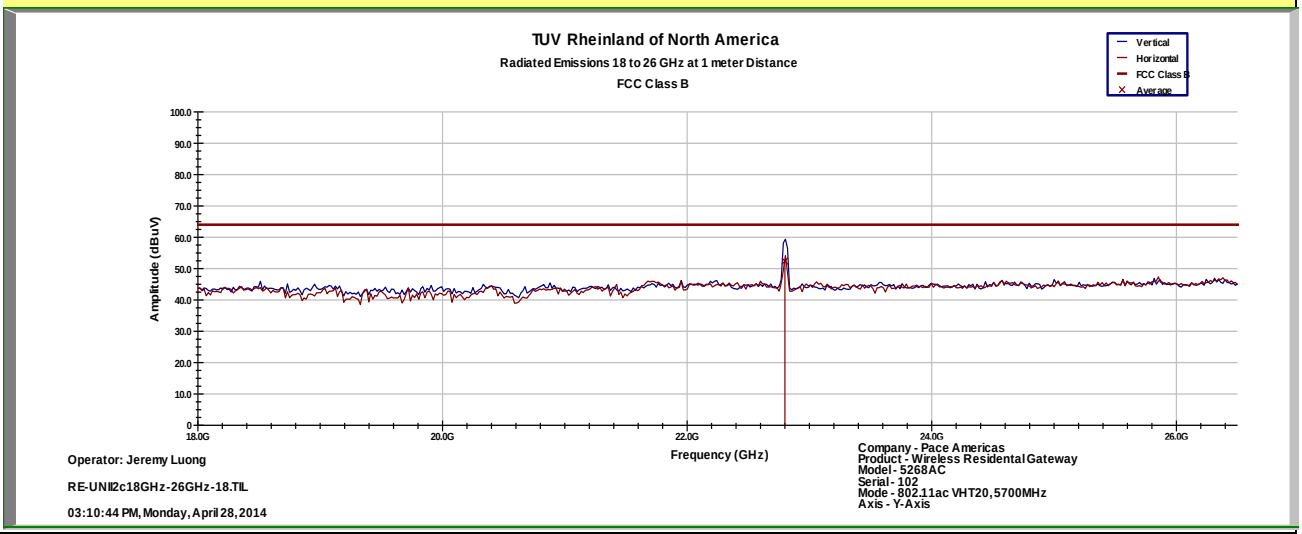
Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

SOP 1 Radiated Emissions

EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz





Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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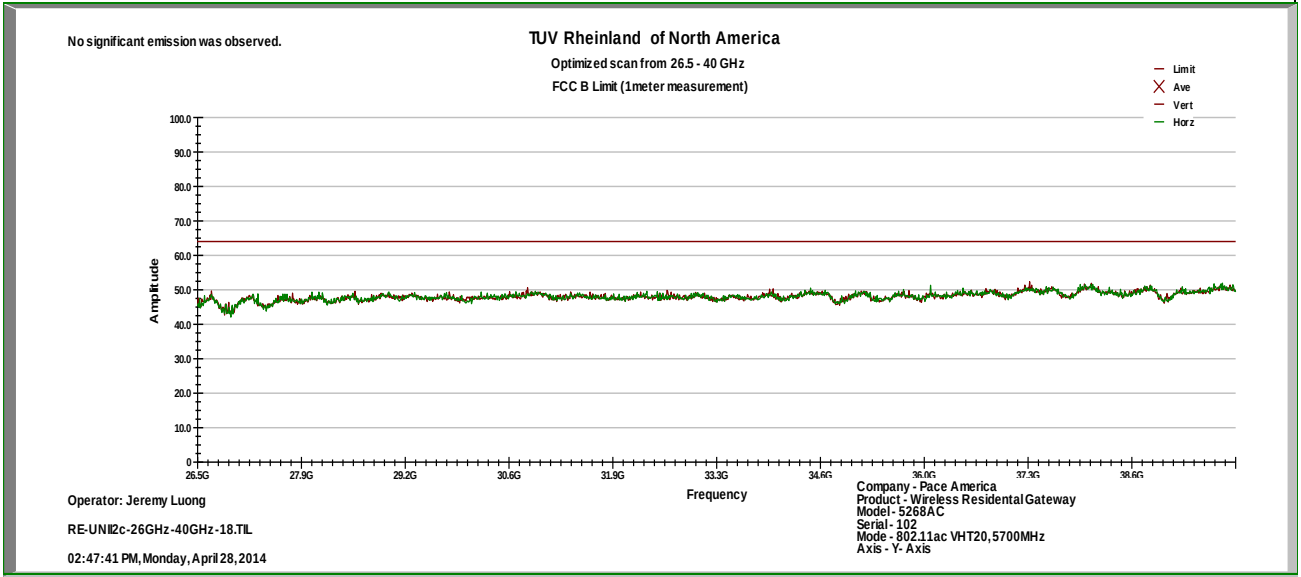
EUT Name	Wireless Residential Gateway	**Date**	April 28, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 32%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5700 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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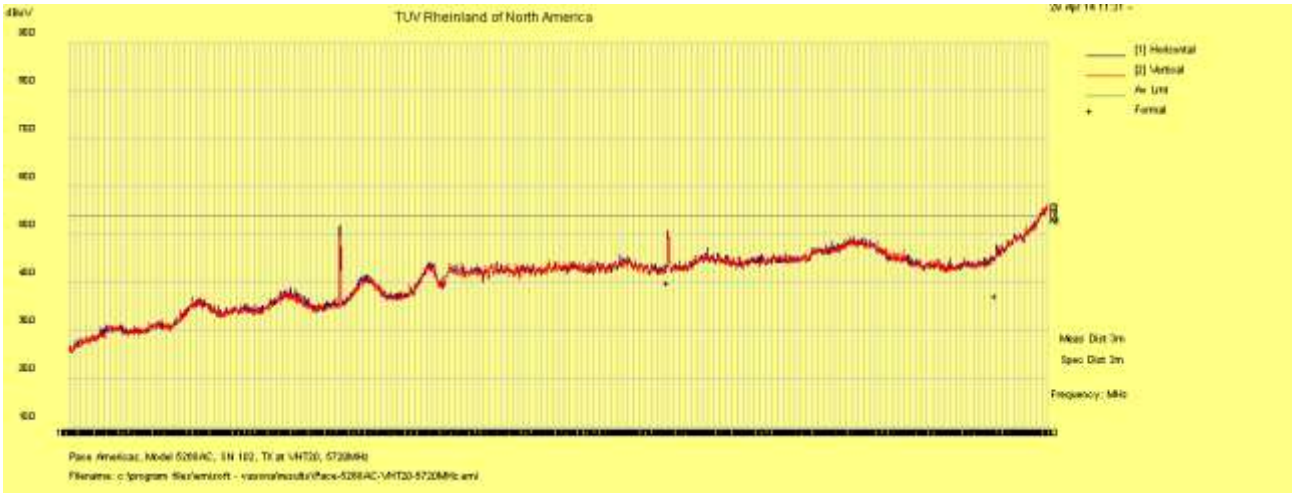
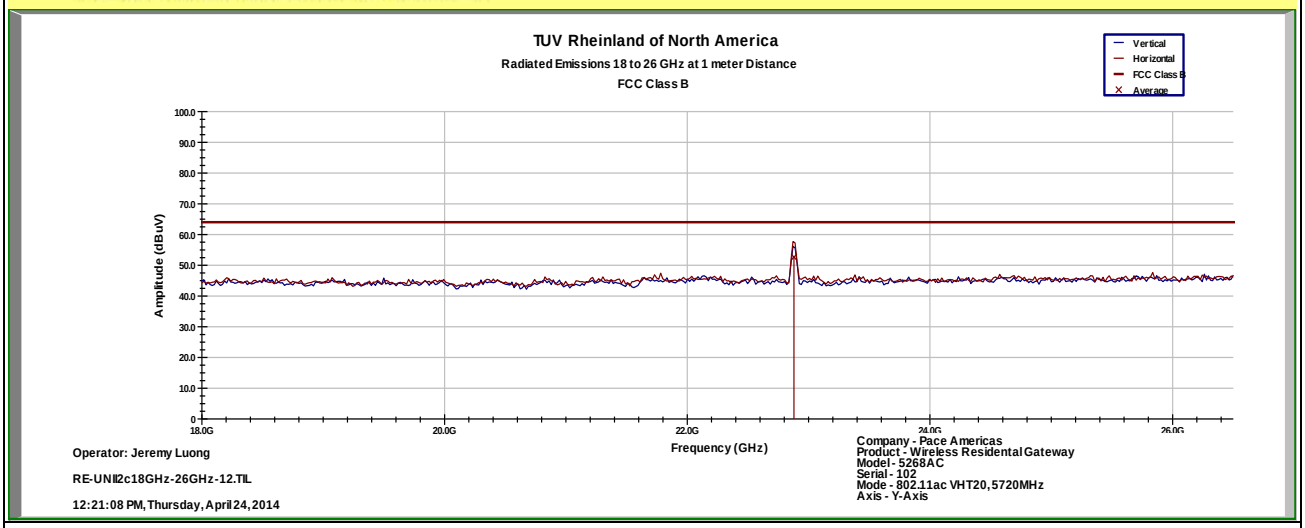
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5720 MHz





Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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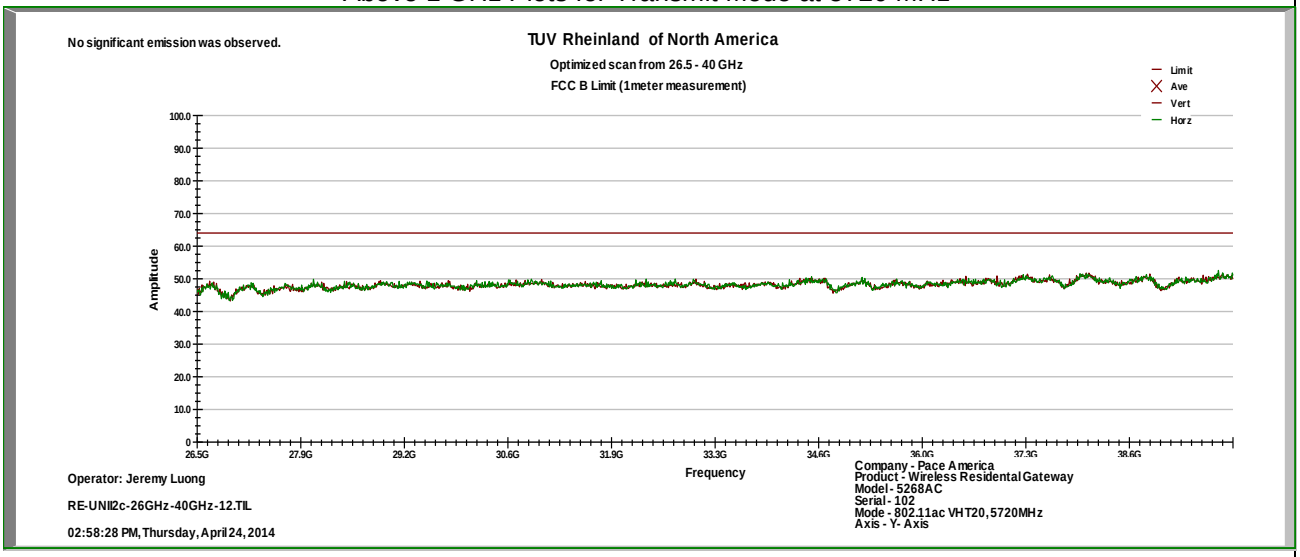
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT20 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5720 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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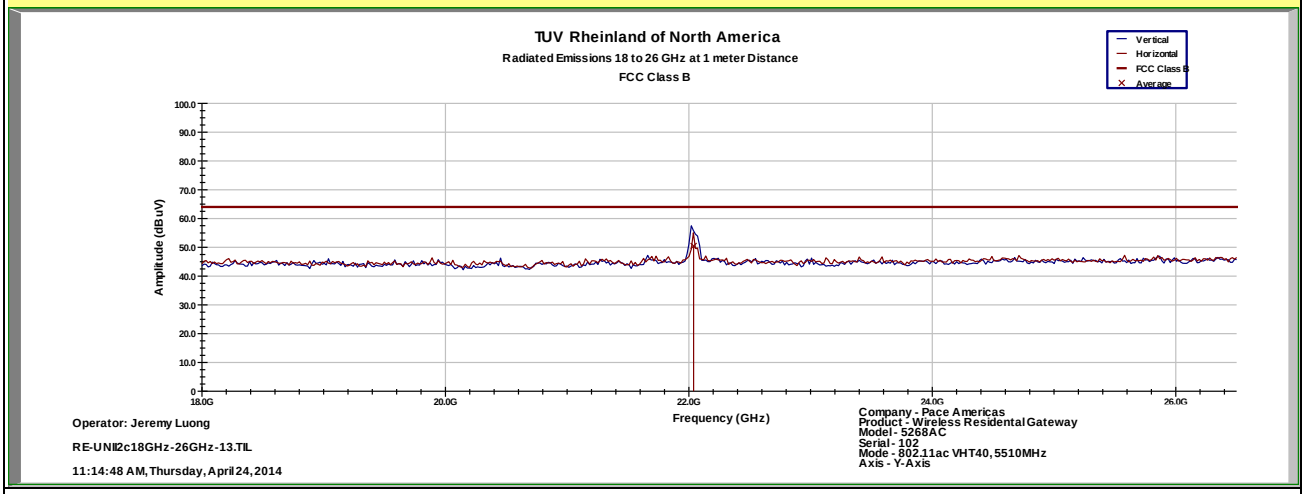
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5510 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.

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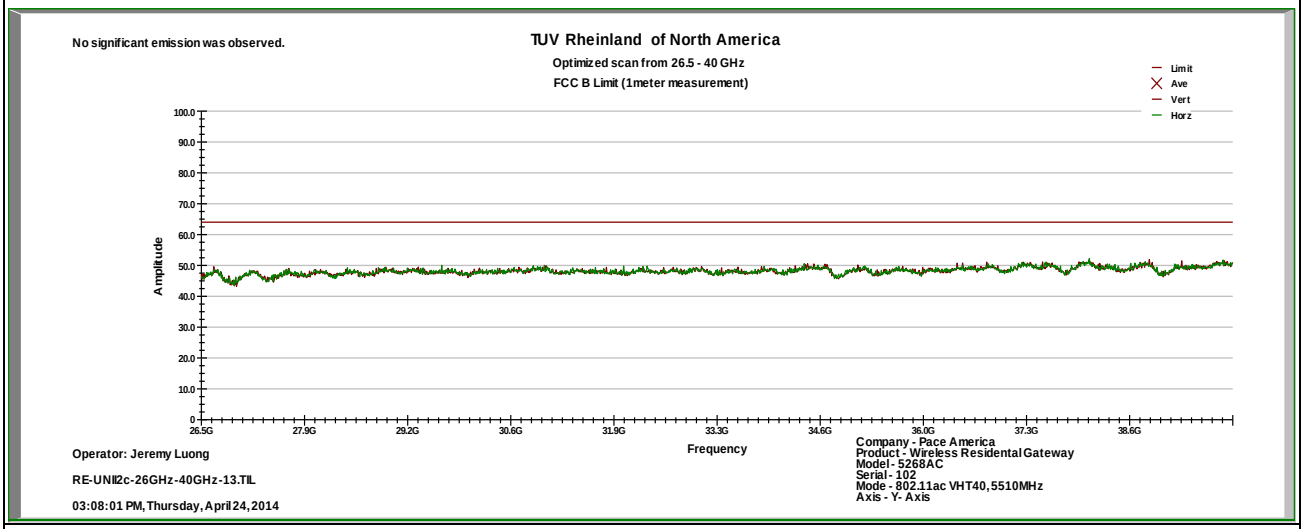
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5510 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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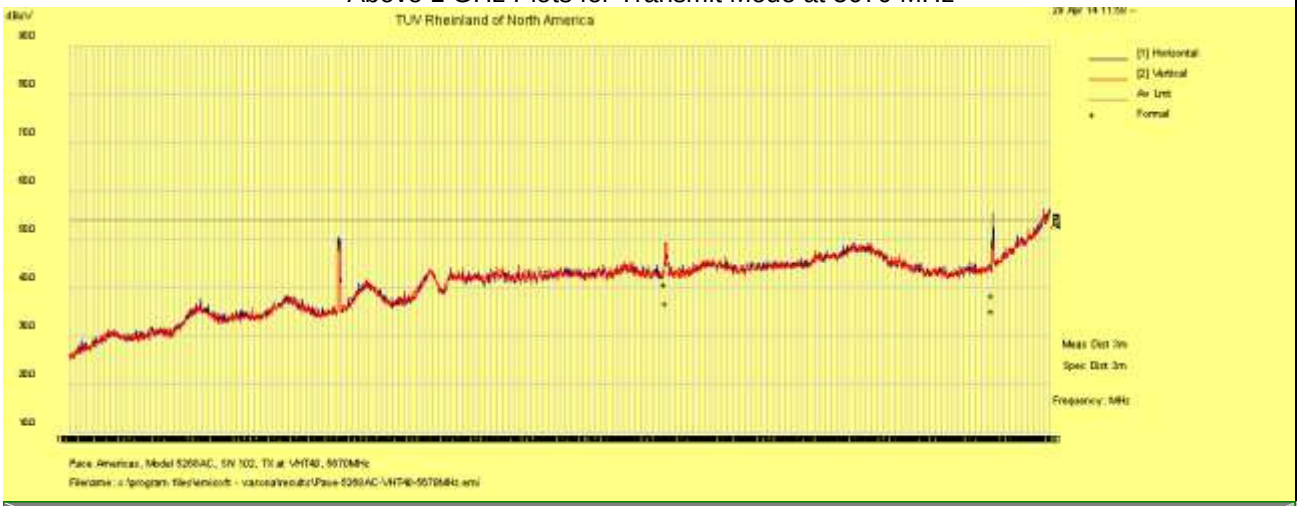
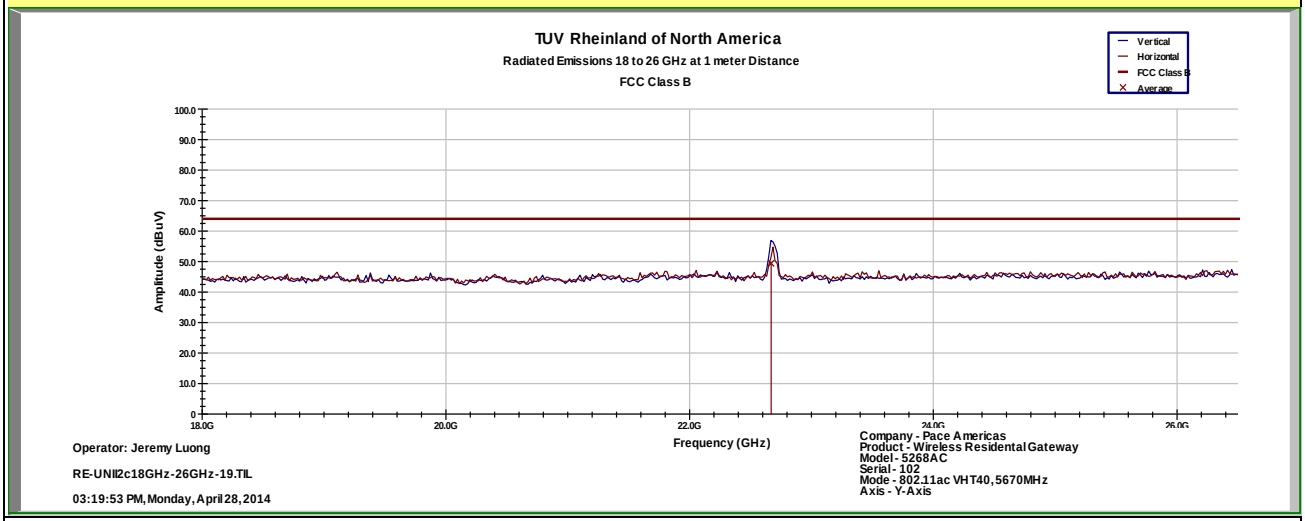
EUT Name	Wireless Residential Gateway	**Date**	April 29, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 33%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5670 MHz





Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

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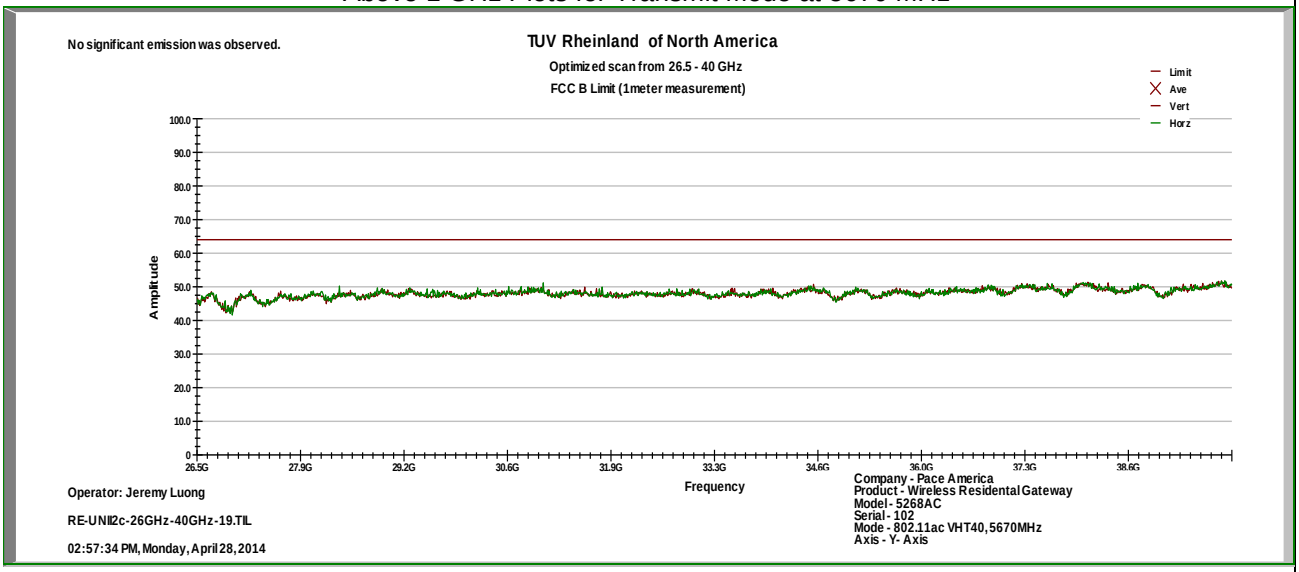
EUT Name	Wireless Residential Gateway	**Date**	April 20, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5670 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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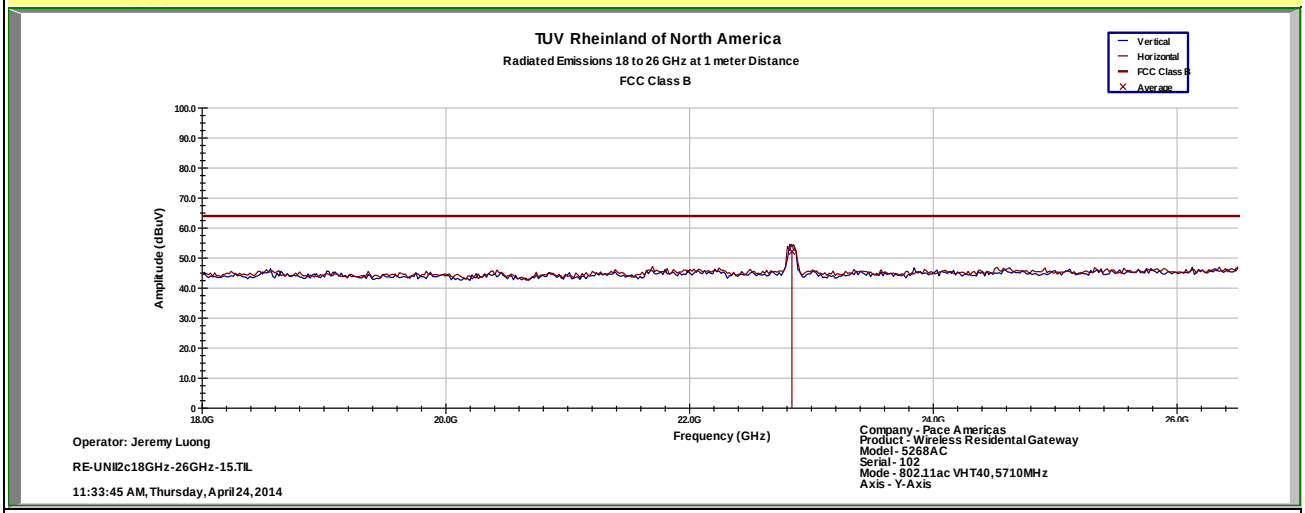
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5710 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

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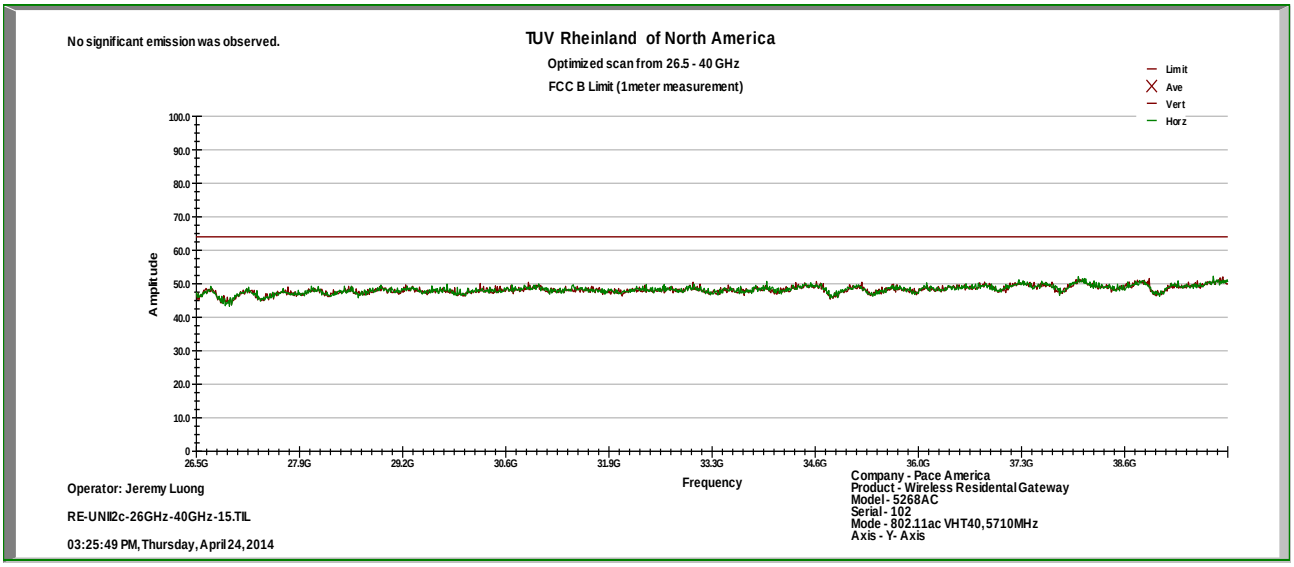
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT40 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5710 MHz

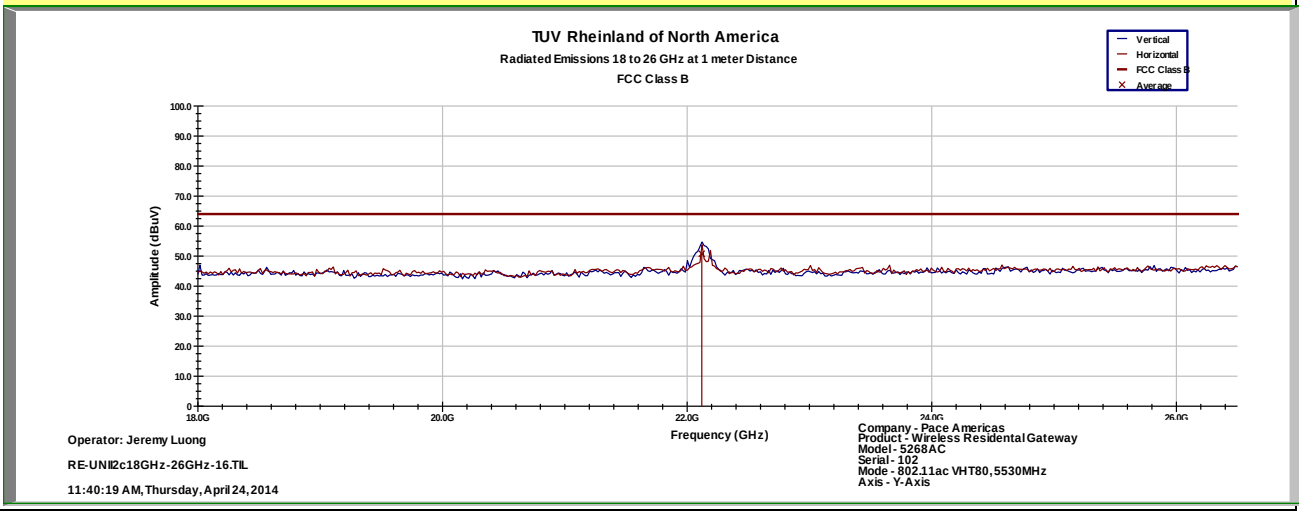


Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

SOP 1 Radiated Emissions

EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT80 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5530 MHz



Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

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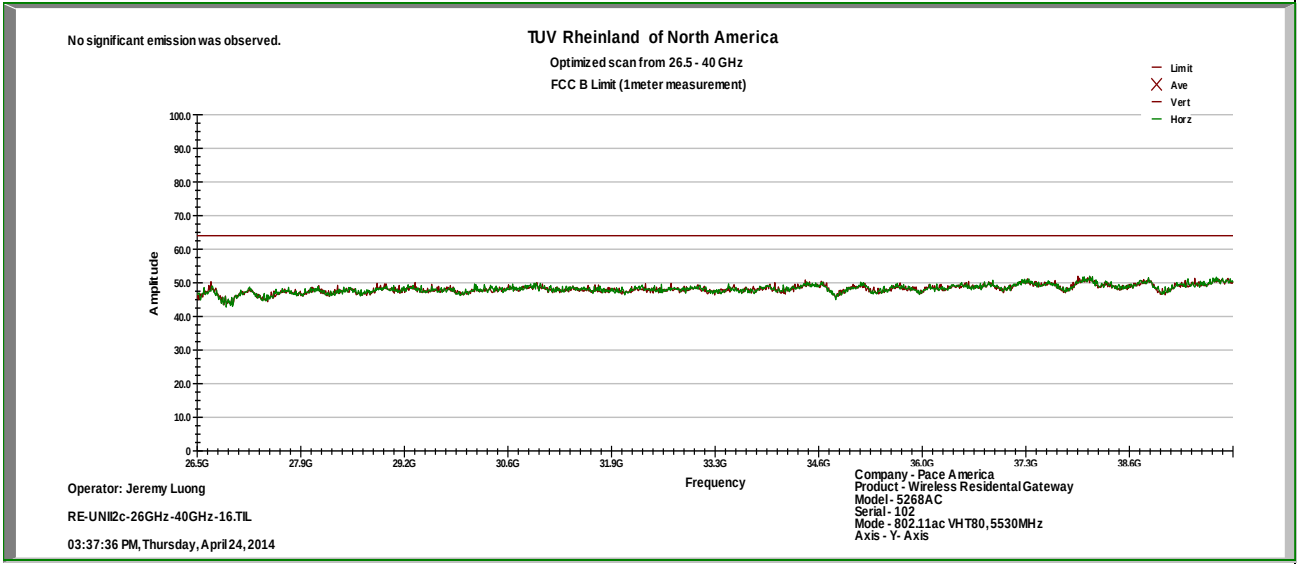
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT80 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5530 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

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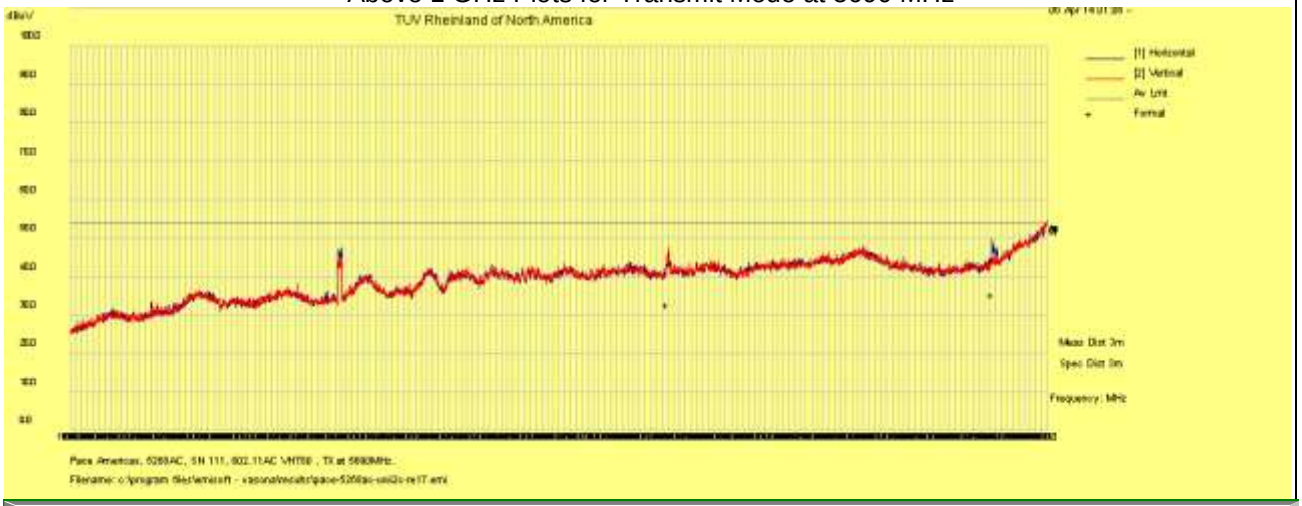
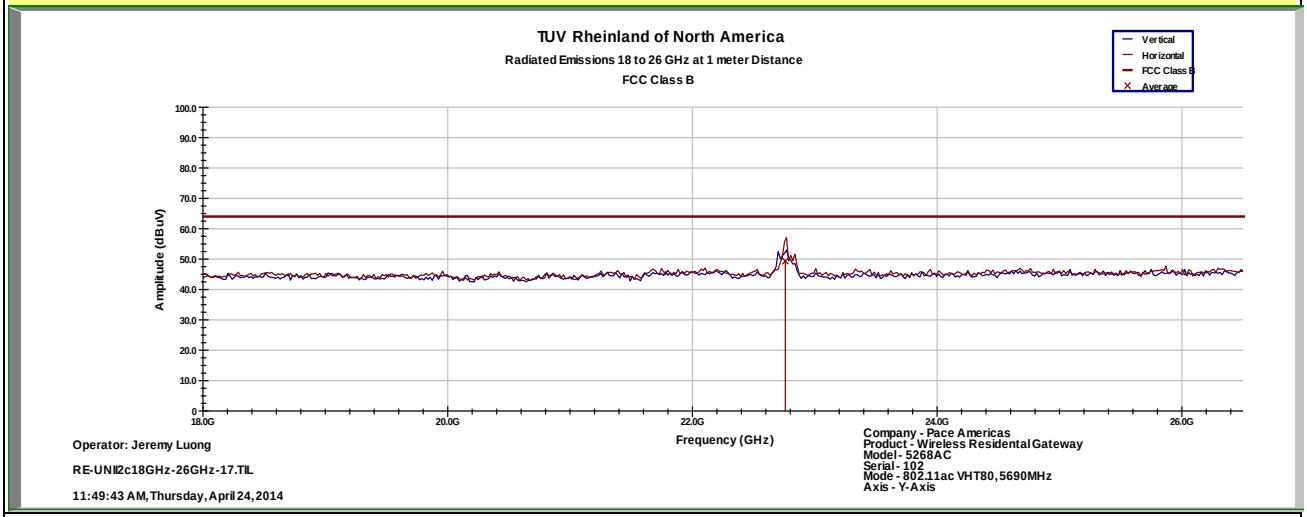
EUT Name	Wireless Residential Gateway	**Date**	April 4, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 31%rh
EUT Serial	111 and 102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT80 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5690 MHz

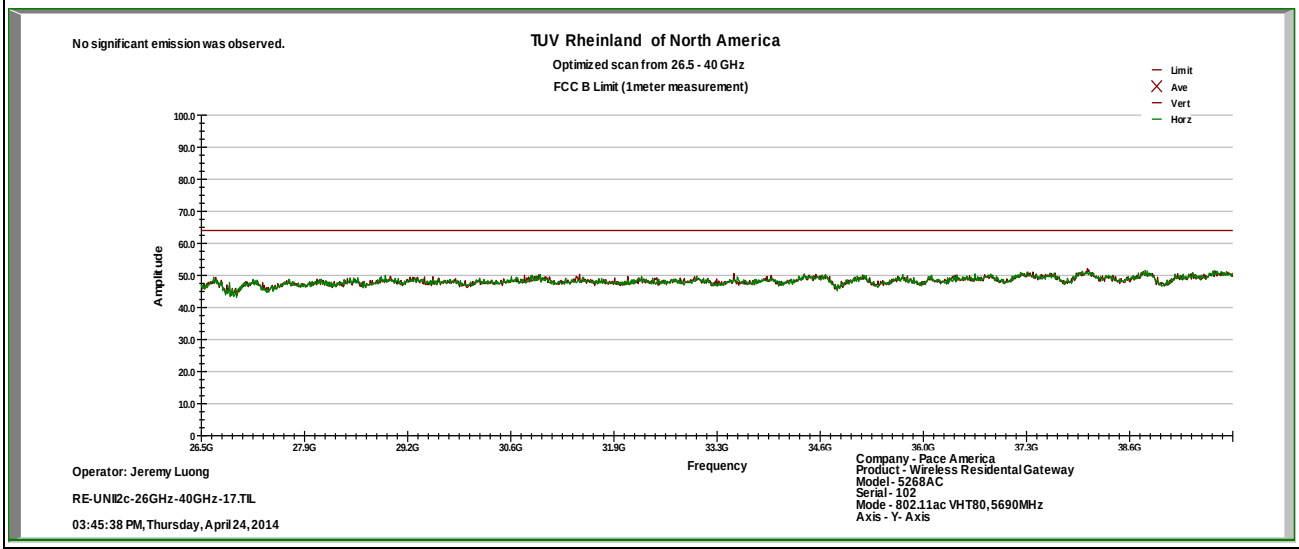




Notes: Limit was extrapolated to 1m distance for 18 GHz – 26 GHz range.
1 GHz – 26 GHz Setting: RBW = 1 MHz/ VBW = 3 MHz

SOP 1 Radiated Emissions		Tracking # 31153119.004 Page 44 of 44	
EUT Name	Wireless Residential Gateway	**Date**	April 24, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 28%rh
EUT Serial	102	**Temp / Hum out**	N/A
EUT Config.	Y-Axis, 802.11ac VHT80 at MCS0	**Line AC**	120Vac/60Hz
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1 MHz/ 3 MHz
Dist/Ant Used	3m - EMCO3115 / 1m - RA42-K-F-4B-C	**Performed by**	Jeremy Luong

Above 1 GHz Plots for Transmit Mode at 5690 MHz



Notes: Limit was extrapolated to 1m distance for 26.5 GHz – 40 GHz range.

4.5.4 **Sample Calculation**

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = FIM - AMP + CBL + ACF

Where: FIM = Field Intensity Meter (dBμV)
AMP = Amplifier Gain (dB)
CBL = Cable Loss (dB)
ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

4.6 AC Conducted Emissions

Testing was performed in accordance with ANSI C63.4: 2010. These test methods are listed under the laboratory's A2LA Scope of Accreditation.

This test measures the levels emanating from the EUT's AC input port, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

The AC conducted emissions of equipment under test shall not exceed the values in CFR47 Part 15.207: 2012 and RSS 210: 2010.

4.6.1 **Test Methodology**

A test program that controls instrumentation and data logging was used to automate the AC Power Line Conducted emission test procedure. The frequency range of interest was divided into sub-ranges such as to yield a frequency resolution of 9 kHz. Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a set of 50μH / 50Ω LISNs.

Testing is performed in Lab 5. The setup photographs clearly identify which site was used. The vertical ground plane used in the semi-anechoic chamber is a 2m x 2m solid aluminum frame and panel, and it is bonded to the horizontal ground plane.

In the case of tabletop equipment, the EUT is placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane and 40cm from a vertical ground reference plane. The rear of the EUT was positioned flush with the backside of the table and directly over the LISNs. The power and I/O cables were routed over the edge of the table and bundled approximately 40cm from the ground plane. Support equipment was powered from a separate LISN.

4.6.1.1 Deviations

There were no deviations from this test methodology.

4.6.2 **Test Results**

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 8: AC Conducted Emissions – Test Results

Test Conditions: AC Conducted Measurement		**Test Date:** April 10, 2014
Antenna Type: Attached		**Power Level:** See Test Plan
AC Power: 110 Vac/60 Hz		**Configuration:** Tabletop
Ambient Temperature: 23° C		**Relative Humidity:** 35% RH
Configuration	**Frequency Range**	**Test Result**
Line 1 (Hot)	0.15 to 30 MHz	Pass
Line 2 (Neutral)	0.15 to 30 MHz	Pass

SOP 2 Conducted Emissions

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EUT Name	Wireless Residential Gateway	**Date**	April 10, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 35% rh
EUT Serial	121404000111	**Temp / Hum out**	N/A
EUT Config.	Attached Antenna	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15.207	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #2 /Com-Power, Line 1	**Performed by**	Jeremy Luong

Frequency	Raw	Cable Loss	Ins. Loss	Level	Detector	Line	Limit	Margin	Result
MHz	dBuV	dB	dB	dBuV			dBuV	dB	
0.150	38.44	10.15	-0.72	47.87	QP	Live	65.99	-18.12	Pass
0.150	28.31	10.15	-0.72	37.74	Ave	Live	55.99	-18.25	Pass
0.495	19.25	10.18	-0.31	29.12	QP	Live	56.08	-26.96	Pass
0.495	3.98	10.18	-0.31	13.85	Ave	Live	46.08	-32.23	Pass
0.562	26.24	10.19	-0.29	36.14	QP	Live	56.00	-19.86	Pass
0.562	19.27	10.19	-0.29	29.17	Ave	Live	46.00	-16.83	Pass
1.637	22.03	10.28	-0.18	32.13	QP	Live	56.00	-23.87	Pass
1.637	14.32	10.28	-0.18	24.42	Ave	Live	46.00	-21.58	Pass
4.328	25.60	10.42	-0.14	35.88	QP	Live	56.00	-20.12	Pass
4.328	14.34	10.42	-0.14	24.62	Ave	Live	46.00	-21.38	Pass
4.664	27.73	10.43	-0.14	38.02	QP	Live	56.00	-17.98	Pass
4.664	18.99	10.43	-0.14	29.28	Ave	Live	46.00	-16.72	Pass
4.795	24.91	10.43	-0.13	35.21	QP	Live	56.00	-20.79	Pass
4.795	15.89	10.43	-0.13	26.19	Ave	Live	46.00	-19.81	Pass

Spec Margin = QP./Ave. - Limit, ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 2.18 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: EUT was setup as table top equipment and transmitted at 5580 MHz in 802.11a at 6 Mbps

SOP 2 Conducted Emissions

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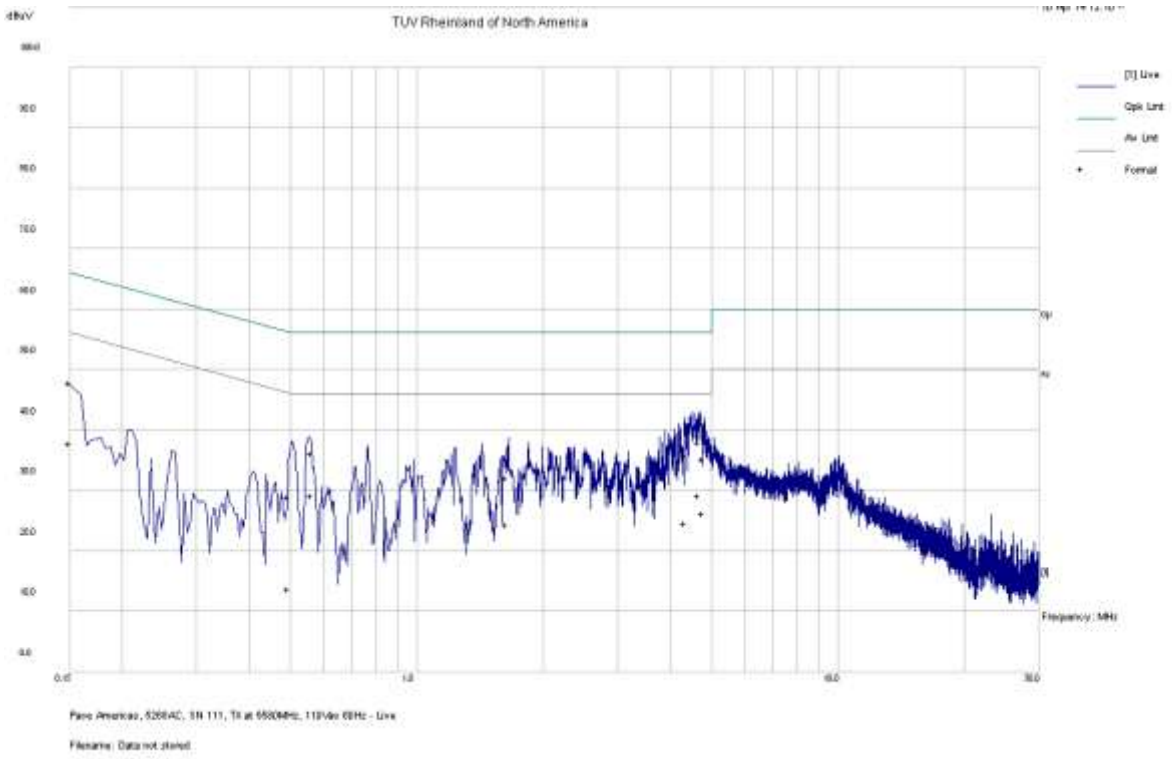
EUT Name	Wireless Residential Gateway	**Date**	April 10, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 35% rh
EUT Serial	121404000111	**Temp / Hum out**	N/A
EUT Config.	Attached Antenna	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15.207	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #2 /Com-Power, Line 1	**Performed by**	Jeremy Luong

150 kHz to 30 MHz Plot for Line 1 (Hot)



Notes: Meet FCC Class B limit.

SOP 2 Conducted Emissions

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EUT Name	Wireless Residential Gateway	**Date**	April 10, 2014
EUT Model	5268AC	**Temp / Hum in**	23° C / 35% rh
EUT Serial	121404000111	**Temp / Hum out**	N/A
EUT Config.	Attached Antenna	**Line AC / Freq**	120Vac/60Hz
Standard	CFR47 Part 15.207	**RBW / VBW**	9 kHz / 30 kHz
Lab/LISN	Lab #2 /Com-Power, Line 2	**Performed by**	Jeremy Luong

Frequency	Raw	Cable Loss	Ins. Loss	Level	Detector	Line	Limit	Margin	Result
MHz	dBuV	dB	dB	dBuV			dBuV	dB	
0.150	40.53	10.15	-0.72	49.96	QP	Neutral	66.00	-16.04	Pass
0.150	27.50	10.15	-0.72	36.93	Ave	Neutral	56.00	-19.07	Pass
0.507	24.59	10.18	-0.31	34.46	QP	Neutral	56.00	-21.54	Pass
0.507	18.25	10.18	-0.31	28.12	Ave	Neutral	46.00	-17.88	Pass
0.562	25.93	10.19	-0.29	35.83	QP	Neutral	56.00	-20.17	Pass
0.562	18.35	10.19	-0.29	28.25	Ave	Neutral	46.00	-17.75	Pass
1.696	20.24	10.28	-0.17	30.35	QP	Neutral	56.00	-25.65	Pass
1.696	8.10	10.28	-0.17	18.21	Ave	Neutral	46.00	-27.79	Pass
4.411	23.02	10.42	-0.14	33.30	QP	Neutral	56.00	-22.70	Pass
4.411	12.25	10.42	-0.14	22.53	Ave	Neutral	46.00	-23.47	Pass
4.473	23.46	10.43	-0.14	33.75	QP	Neutral	56.00	-22.25	Pass
4.473	14.29	10.43	-0.14	24.58	Ave	Neutral	46.00	-21.42	Pass
4.649	23.53	10.43	-0.14	33.82	QP	Neutral	56.00	-22.18	Pass
4.649	15.89	10.43	-0.14	26.18	Ave	Neutral	46.00	-19.82	Pass

Spec Margin = QP./Ave. - Limit, ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 2.18 dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

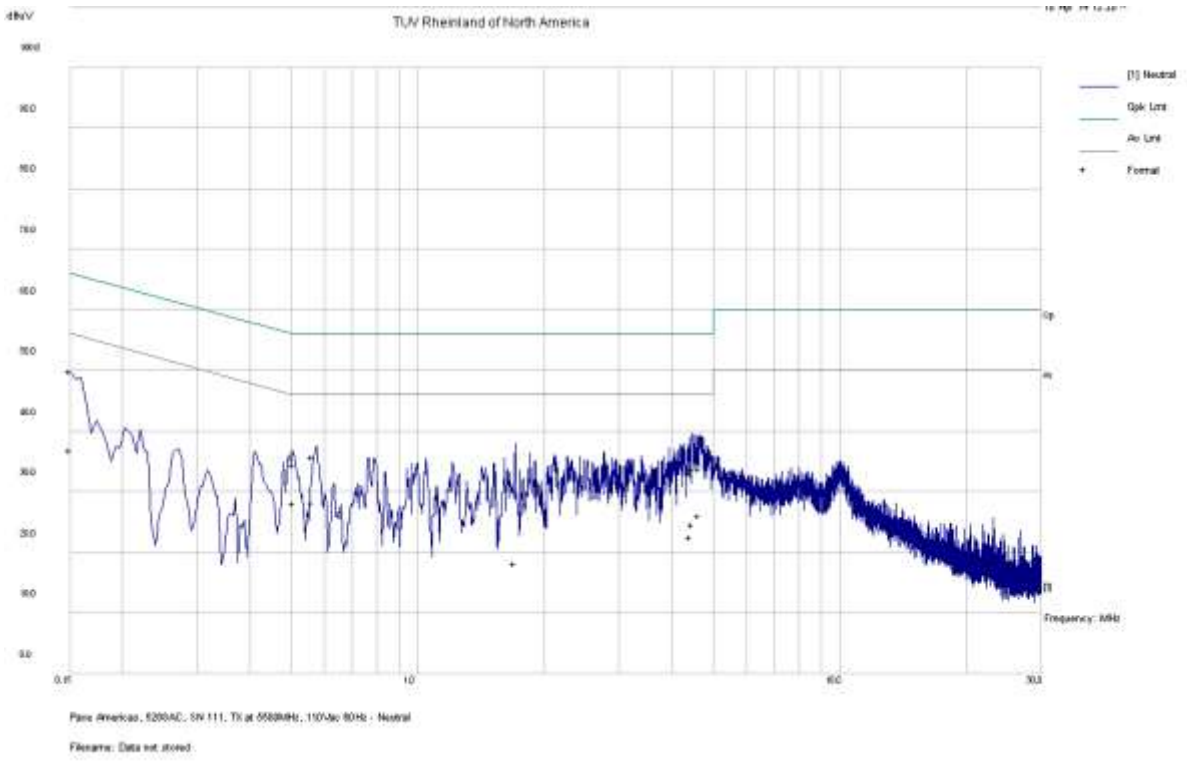
Notes: EUT was setup as table top equipment and transmitted at 5580 MHz in 802.11a at 6 Mbps

SOP 2 Conducted Emissions

Tracking # 31153119.004 Page 4 of 4

EUT Name	Wireless Residential Gateway	**Date**	May 16, 2013
EUT Model	5268AC	**Temp / Hum in**	23°C / 32%rh
EUT Serial	09130M000104	**Temp / Hum out**	N/A
EUT Config.	Attached Antenna	**Line AC**	120 Vac/60 Hz
Standard	CFR47 Part 15.107	**RBW / VBW**	9kHz / 30 kHz
Lab/LISN	Lab #2 /Com-Power, Line 2	**Performed by**	Jeremy Luong

150 kHz to 30 MHz Plot for Line 2 (Neutral)



Note: Meet FCC Class B Limit.

4.7 Frequency Stability

In accordance with 47 CFR Part 15.407(g) the frequency stability of U-NII devices must be such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual. The Manufacturer calls out operating temperature ranges of +0º to +40º C

4.7.1 **Test Methodology**

The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions. This test performs according to ANSI C63.10-2009 Section 6.8

4.7.2 **Manufacturer Declaration**

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore all of the RF signal should have ±20ppm stability.

This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

Worst case:
5.500 GHz - ±20ppm/104 kHz

±20ppm at 5 GHz translates to a maximum frequency shift of ±103 kHz. As the edge of the channels are at least one MHz from either of the band edges, ±103 kHz is more than sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the radio.

4.7.3 **Limit**

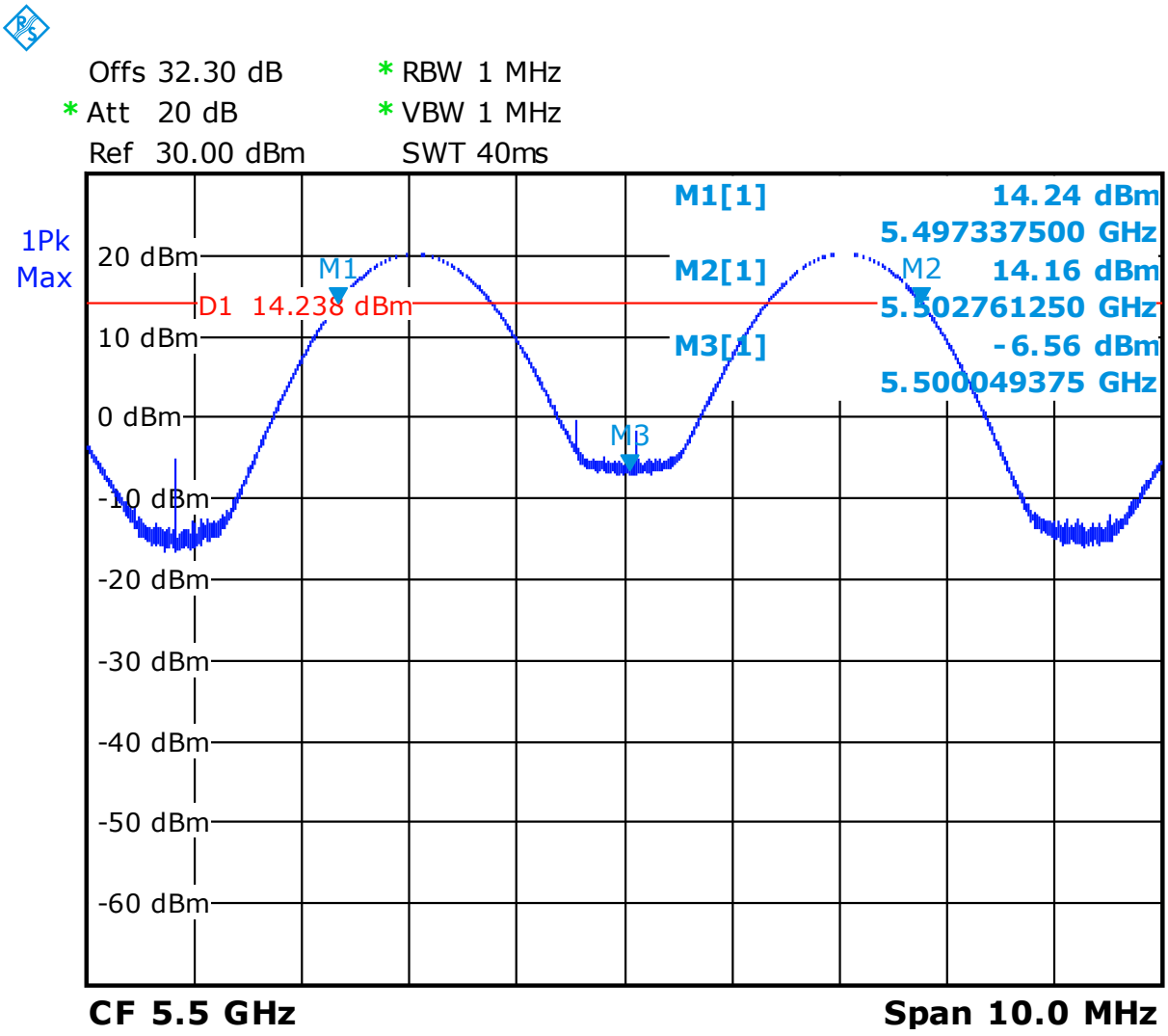
CFR47 Part 407(g) - Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

4.7.4 **Test results**

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s) since the maximum frequency drift was 8.977 ppm.

Table 9: Frequency Stability – Test Results

Temperature	Time	PPM
0° C	Start	8.977
	2 Min.	7.500
	5 Min	7.045
	10 min	8.409
10° C	Start	7.500
	2 Min.	4.318
	5 Min	3.750
	10 min	3.636
20° C	Start	5.341
	2 Min.	2.273
	5 Min	1.477
	10 min	1.591
30° C	Start	2.159
	2 Min.	0.341
	5 Min	0.114
	10 min	0.114
40° C	Start	0.455
	2 Min.	0.000
	5 Min	0.000
	10 min	0.114



Date: 27.MAR.2014 12:10:51

Figure 307: Frequency Stability – Worst Case

4.8 Voltage Variation

In accordance with 47 CFR Part 15.31 (e) intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.8.1 **Test Methodology**

The ac supply voltage was varied between 85% and 115% of the nominal rated supply voltage. The fundamental frequency was observed during the variation. The access point was powered 120 V/60 Hz by programmable power supply. The voltage was varied from 102 Vac to 138 Vac mean while the fundamental frequencies were observed and record for the maximum drift in ppm; part per millions.

4.8.2 **Test results**

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s). The fundamental frequencies drifted less than ±20 ppm.

Table 10: Voltage Variation – Test Results

Frequency MHz	**Nominal** (120Vac) ppm	**Lo Voltage** (102Vac) ppm	**Hi Voltage** (138Vac) ppm	**Max Drift** ppm
5500	0.568	0.227	0.341	0.568

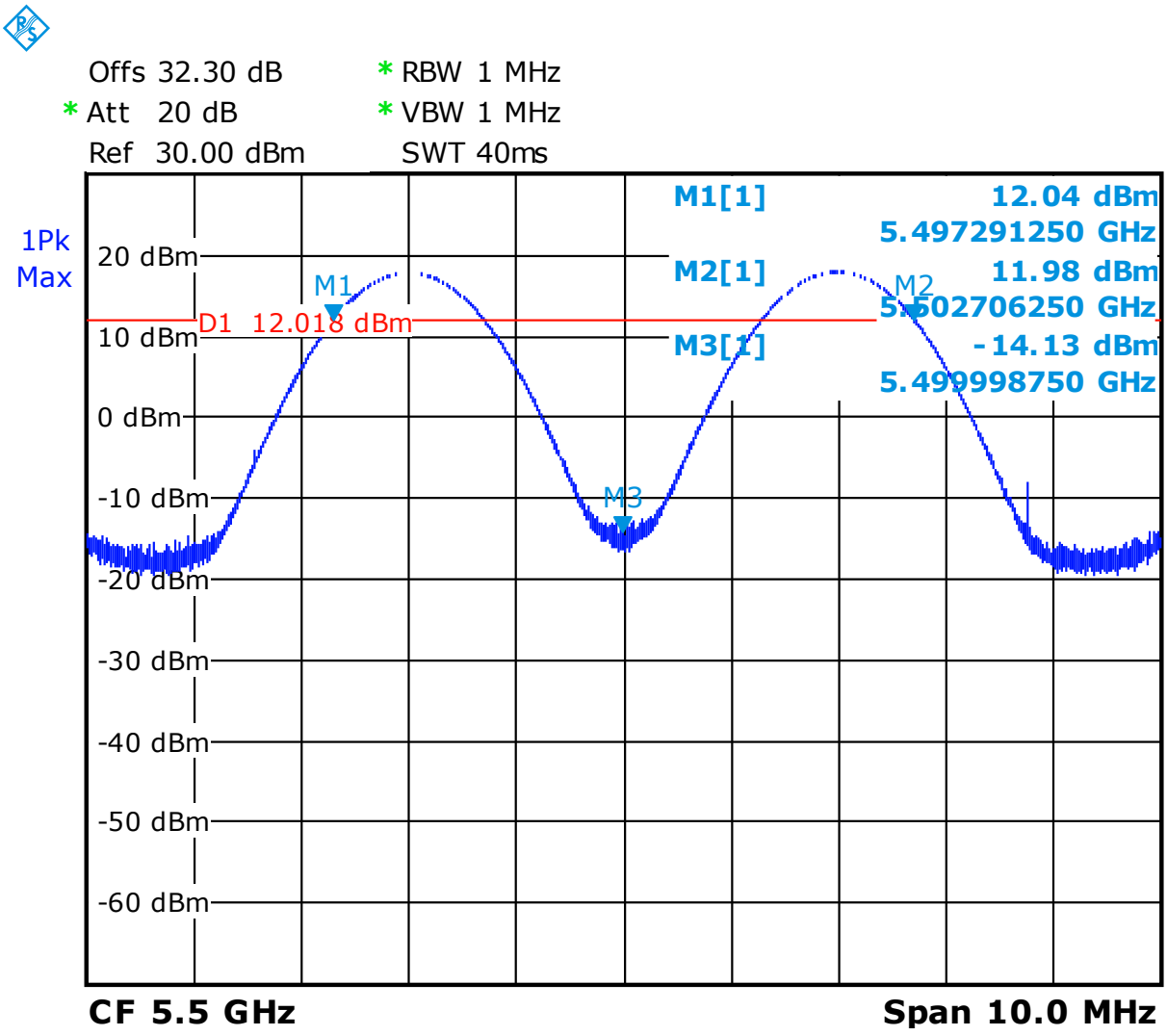


Figure 308: Voltage Variation – Worst Case

4.9 Maximum Permissible Exposure

4.9.1 Test Methodology

In this document, we try to prove the safety of radiation harmfulness to the human body for our product. The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The Gain of the antenna used in this calculation is declared by the manufacturer, and the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis transmission formula is a far field assumption, the calculated result of that is an over-prediction for near field power density. We will take that as the worst case to specify the safety range.

4.9.2 RF Exposure Limit

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
(A)Limits For Occupational / Control Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*($900/f^2$)	6
30–300	…	…	1.0	6
300 - 1500	…	…	f/300	6
1500 - 100,000	…	…	5	6
(B)Limits For General Population / Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/ f^2$)	30
30–300	27.5	0.037	0.2	30
300 - 1500	…	…	f/1500	30
1500 - 100,000	…	…	1.0	30

F = Frequency in MHz
* = Plane-wave equivalent power density

4.9.3 EUT Operating Condition

The software provided by Manufacturer enabled the EUT to transmit data at lowest, middle and highest channel individually.

4.9.4 Classification

The antenna of the product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance with the antenna should be included in user's manual. So, this device is classified as a **Mobile Device**.

4.9.5 Test Results

4.9.5.1 Antenna Gain

The transmitting antenna was integrated. The directional antenna gain was +8.08 dBi or 6.43 (numeric).

4.9.5.2 Output Power into Antenna & RF Exposure value at distance 20cm:

Calculations for this report are based on highest power measurement.

Limit for MPE (from FCC part 1.1310 table1) is 1.0 mW/cm^2

The highest measured total power is +22.23 dBm or 167.109mW

Using the Friss transmission formula, the EIRP is Pout*G, and R is 20cm.

Pd = (167.109*6.43) / (1600π) = 0.21388 mW/cm2, which is 0.78612 mW/cm2 below to the limit.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

4.9.6 Sample Calculation

The Friss transmission formula: $Pd = (Pout*G) / (4*\pi*R^2)$

Where;

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

$\pi \approx 3.1416$

R = distance between observation point and center of the radiator in cm

Ref. : David K. Cheng, *Field and Wave Electromagnetics*, Second Edition, Page 640, Eq. (11-133).

5 Test Equipment Use List

5.1 Equipment List

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal mm/dd/yy	Next Cal mm/dd/yy
Bilog Antenna	Sunol Sciences	JB3	A102606	05/15/2012	05/15/2014
Horn Antenna	Sunol Sciences	DRH-118	A040806	11/05/2012	11/05/2014
Antenna (18-26GHz)	CMT	RA42-K-F-4B-C	020131-004	06/19/2013	06/19/2014
Antenna (26-40 GHz)	CMT	RA28-K-F-4B-C	011469R-003	12/01/2013	12/01/2014
EMI Receiver	Hewlett Packard	8546A	3325A00168	11/14/2013	11/14/2014
Preselector	Hewlett Packard	85460A	3330A00174	11/14/2013	11/14/2014
Amplifier	Hewlett Packard	8447D	2944A07996	01/07/2014	02/07/2015
Spectrum Analyzer	Rohde & Schwarz	ESIB40	832427/002	01/08/2014	02/08/2015
Amplifier	Miteq	TTA1800-30-4G	1842452	01/08/2014	02/08/2015
Amplifier	Rohde & Schwarz	TS-PR26	100011	06/19/2013	06/19/2014
Amplifier	Rohde & Schwarz	TS-PR40	100012	12/01/2013	12/01/2014
Signal Generator	Anritsu	MG3694A	42803	01/07/2013	02/07/2015
Notch Filter	Micro-Tronics	BRM50702	9	01/16/2014	02/16/2016
Notch Filter	Micro-Tronics	BRC50703	1	01/16/2014	02/16/2016
Notch Filter	Micro-Tronics	BRC50704	8	01/16/2013	01/16/2015
Notch Filter	Micro-Tronics	BRC50705	9	01/16/2013	01/16/2015
High Pass Filter (3.5 GHz)	Hewlett Packard	84300-80038	820004	01/16/2013	01/16/2015
High Pass Filter (8.5 GHz)	Micro-Tronics	HPM50107	4	01/16/2013	01/16/2015
Power Supplier	California Instruments	1001P-232	L06329	VBU	VBU
Digital Multimeter	Fluke	83 III	84590116	01/07/2014	02/07/2015
Power Meter	Agilent	E4418B	MY45103902	01/09/2014	02/09/2015
Power Sensor	Hewlett Packard	8481A	US37295801	04/25/2014	04/25/2015
LISN	Com-Power	LI-215	12111	01/07/2014	02/07/2015
Transient Limiter	Com-Power	LIT-930	531582	01/08/2014	02/08/2015
Thermometer	Fluke	52II	96480032	08/07/2013	08/07/2014
Thermo Chamber	Espec	BTZ-133	0613436	03/17/2014	03/17/2015
Spectrum Analyzer	Rohde & Schwarz	FSL6	100169	01/08/2014	02/08/2015
Spectrum Analyzer	Agilent	N9038A	MY52260210	01/08/2014	02/08/2015
Spectrum Analyzer	Agilent	E4446A	MY46180348	03/24/2014	03/24/2016
Vector Signal Generator	Rohde & Schwarz	SMU 200A	1141.2005.02	06/13/2013	06/13/2015
Amplifier	Hewlett Packard	8449B	30008A01014	01/06/2014	02/06/2015

* Calibration of equipment past due for re-calibration will be performed expeditiously. If any equipment is found to be out of tolerance at that time, affected customers will be notified accordingly.

6 EMC Test Plan

6.1 Introduction

This section provides a description of the Equipment Under Test (EUT), configurations, operating conditions, and performance acceptance criteria. It is an overview of information provided by the manufacturer so that the test laboratory may perform the requested testing.

6.2 Customer

Table 11: Customer Information

Company Name	Pace Americas
Address	310 Providence Mine Road, Ste. 200
City, State, Zip	Nevada City, CA 95959
Country	USA
Phone	(530) 274-5440
Fax	(530) 273-6340

Table 12: Technical Contact Information

Name	Mark Rieger
E-mail	Mark.Rieger@pace.com
Phone	(530) 274-5440
Fax	(530) 273-6340

6.3 Equipment Under Test (EUT)

Table 13: EUT Specifications

EUT Specifications	
Dimensions	239mm (9.41") x 177mm (6.97") x 67mm (2.64")
AC Adapter (M/N:EADP-36FB A)	Input Voltage: 120 Vac 50-60 Hz Input Current: 680 mA Output Voltage: 12 dc Output Current: 1.5 A
Environment	Indoor and Outdoor
Operating Temperature Range:	0 to 40 degrees C
Multiple Feeds:	☐ Yes and how many ☒ No
Hardware Version	4.0.8
Part Number	186-2173101
RF Software Version	Busy Box V1.10.3
802.11-radio modules	
Operating Mode	802.11a, b, g, n, and ac
Transmitter Frequency Band	2.412 GHz – 2.462 GHz 5.15 GHz to 5.25 GHz (Indoor Use) 5.25 GHz to 5.35 GHz 5.47 GHz to 5.725 GHz (with band crossing channels) 5.725 GHz to 5.85 GHz
Max. Rated Power Output	See Channel Planning Table.
Power Setting @ Operating Channel	See Channel Planning Table.
Antenna Type	4 integrated metal stamped Antenna and 1 integrated PCB antenna (one metal stamped antenna used for both 2.4GHz and 5Ghz ranges)
Antenna Gain	Ant1 = 1.95 dBi, Ant2 = 2.27 dBi, Ant3 = 1.83 dBi, Ant4 = 2.03 dBi, Ant5 = 3.7 dBi, Ant6 = 1.9 dBi.
Modulation Type	☐ AM ☐ FM ☒ DSSS ☒ OFDM ☐ Other describe:

EUT Specifications	
Data Rate	*2.4 GHz Range:* 802.11b: 1, 2, 5.5, 11 Mbps at 1 Spatial Stream 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps at 1 Spatial Stream 802.11n HT20: 1 Spatial Stream: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps 2 Spatial Streams: 13, 26, 39, 58, 78, 104, 117, 130 Mbps 802.11n HT40: 1 Spatial Stream: 13.5, 27, 40.5, 54, 81, 108, 121.5, 135 Mbps 2 Spatial Streams: 27, 54, 81, 108, 162, 216, 243, 270 Mbps *5 GHz Range:* 802.11a: 4 Spatial Streams: 6, 9,12, 18, 24, 36, 48, 54 Mbps 802.11n HT20: 4 Spatial Streams: 26, 52, 78, 104, 156, 208, 234, 260 Mbps 802.11n HT40: 4 Spatial Streams: 54, 108, 162, 216, 324, 432, 486, 540 Mbps 802.11ac VHT20: 4 Spatial Streams: 26, 52, 78, 104, 156, 208, 234, 260, 312 Mbps 802.11ac VHT40: 4 Spatial Streams: 54, 108, 162, 216, 324, 432, 486, 540, 648, 720 Mbps 802.11ac VHT80: 4 Spatial Streams: 117, 234, 351, 468, 702, 936, 1053, 1170, 1404, 1560 Mbps
TX/RX Chain (s)	2x2 at 2.4GHz Range 4x4 at 5 GHz Ranges
Directional Gain Type	☒ Correlated ☒ Beam-Forming ☐ Other describe:
Type of Equipment	☒ Table Top ☐ Wall-mount ☐ Floor standing cabinet ☐ Other
Note: 1. All four chains will be on / transmitted at all time. 2. This report only documents the radio characteristics for 5500 – 5825 MHz bands, this includes the band crossing channels for 802.11ac VHT20, VHT40, VHT80.	

Table 14: EUT Channel Power Specifications

No.	Frequency (MHz)	Target Power Value for					
		802.11a	HT20	HT40	VHT20	VHT40	VHT80
36	5180	9	9	11	9	11	
40	5200	9	9		9		11
44	5220	9	9	11	9	11	
48	5240	9	9		9		
52	5260	16	16	16	16	16	
56	5280	16	16		16		16
60	5300	16	16	14	16	14	
64	5320	16	16		16		
100	5500	15	15	16	15	16	
104	5520	15	15		15		14
108	5540	15	15	16	15	16	
112	5560	15	15		15		
116	5580	15	15		15		
120	5600						
124	5620						
128	5640						
132	5660	15	15	16	15	16	
136	5680	15	15		15		16
140	5700	15	15		15	16	
144	5720				15		
149	5745	22	22	22	22	22	
153	5765	22	22		22		21
157	5785	22	22	22	22	22	
161	5805	22	22		22		
165	5825	22	22		22		
Note: The center operating frequency is shifted upward by 10 MHz for HT40, VHT40, and VHT80							

Table 15: Interface Specifications

Interface Type	Cabled with what type of cable?	Is the cable shielded?	Maximum potential length of the cable?	Metallic (M), Coax (C), Fiber (F), or Not Applicable?
RJ45	CAT-5 Ethernet	☐ No	☒ Metric: 10 m	☒ M

Table 16: Supported Equipment

Laptop	Dell	M4500	18681427369	Configure EUT (Master)
Laptop	Dell	M4500	42626033065	Stream the video (Client)
Station	Pace Americas	405	34131M000021	Slave device.
Note: None.				

Table 17: Description of Sample used for Testing

Device	Serial	RF Connection	CFR47 Part 15.407
5268AC	121404000102 121404000111	Integrated Antenna	TX Emission, AC Conducted Emission
		Direct via Murada Connection	Transmitted Output Power, Power Spectral Density, Peak Excursion Ratio Occupied Bandwidth Frequency Stability Voltage Variation

Table 18: Description of Test Configuration used for Radiated Measurement.

Device	Antenna	Mode	Setup Photo (X-Axis)	Setup Photo (Y-Axis)	Setup Photo (Z-Axis)
5268AC	Integrated	Transmit	EUT laid flat.	EUT stood upright	Na.
Note: Pre-scans were performed in 2 supporting axis, and Y-axis was worst.					

Table 19: Final Test Mode for 5470 - 5725 Band include Band Crossing Channels

Test	802.11a	HT20	HT40	VHT20	VHT40	VHT80
Occupied Bandwidth FCC Part 15.407(a)	5500, 5580, 5700 MHz 4 Streams, 6Mbps	5500, 5580, 5700 MHz 4 Streams, MCS0	5510, 5550, 5670 MHz 4 Streams, MCS0	5500, 5580, 5700, 5720MHz 4 Streams, MCS0	5510, 5550, 5670, 5710 MHz 4 Streams, MCS0	5530, 5690MHz 4 Streams, MCS0
Output Power FCC Part 15.407(a)(1-2)	5500, 5580, 5700 MHz 4 Streams, 6Mbps	5500, 5580, 5700 MHz 4 Streams, MCS0	5510, 5550, 5670 MHz 4 Streams, MCS0	5500, 5580, 5700, 5720MHz 4 Streams, MCS0	5510, 5550, 5670, 5710 MHz 4 Streams, MCS0	5530, 5690MHz 4 Streams, MCS0
Peak Excursion Ratio FCC Part 15.407(a)(6)	5500, 5580, 5700 MHz 4 Streams, 6Mbps	5500, 5580, 5700 MHz 4 Streams, MCS0	5510, 5550, 5670 MHz 4 Streams, MCS0	5500, 5580, 5720 MHz 4 Streams, MCS0	5510, 5550, 5710 MHz 4 Streams, MCS0	5530, 5690MHz 4 Streams, MCS0

Peak Power Spectral Density FCC Part 15.407(a)	5500, 5580, 5700 MHz 4 Streams, 6Mbps	5500, 5580, 5700 MHz 4 Streams, MCS0	5510, 5550, 5670 MHz 4 Streams, MCS0	5500, 5580, 5700, 5720MHz 4 Streams, MCS0	5510, 5550, 5670, 5710 MHz 4 Streams, MCS0	5530, 5690MHz 4 Streams, MCS0
Band-Edge (Radiated) FCC Part 15.205, 15.209, 15.407(b)	5500, 5700 MHz 4 Streams, 6Mbps	5500, 5700 MHz 4 Streams, MCS0	5510, 5670 MHz 4 Streams, MCS0	5510, 5720 MHz 4 Streams, MCS0	5510, 5710 MHz 4 Streams, MCS0	5530, 5690 MHz 4 Streams, MCS0
Transmitted Spurious Emission (30 MHz – 1GHz) FCC Part 15.205, 15.209, 15.407(b)		Worst Case: 5550 MHz at 802.11n HT40 4 Streams – MCS0 (Y-Axis)				
Transmitted Spurious Emission (Above 1GHz) FCC Part 15.205, 15.209, 15.407(b)	5500, 5580, 5700 MHz 4 Streams, 6Mbps	5500, 5580, 5700 MHz 4 Streams, MCS0	5510, 5550, 5670 MHz 4 Streams, MCS0	5500, 5580, 5700, 5720MHz 4 Streams, MCS0	5510, 5670, 5710 MHz 4 Streams, MCS0	5530, 5690 MHz 4 Streams, MCS0
Conducted Spurious Emission (antenna port). FCC Part 15.407 (b)	According to CFR47 15.407 (b) EIPR shall not exceed -27 dBm/MHz. This is equivalent to the field strength of 68.2dBuV/m at 3 meter distance. The EUT is satisfied the requirement by meeting the limit under CFR47 Part 15.209.					
AC Conducted Emission FCC Part 15.207		5580 MHz at 802.11a 4 Data Stream: 6Mbps				
Frequency Stability FCC Part 15.407 (g)	CW Tone at 5500 MHz, (Send_cw_signal 40 0 0 3 1 0).					
Voltage Variation FCC Part 15.31 (e)	CW Tone at 5500 MHz, (Send_cw_signal 40 0 0 3 1 0).					
Dynamic Frequency Selection FCC Part 15.407 (h)	EUT support DFS for operational band 5250-5350MHz and 5470-5725MHz. See DFS test report for details.					

Note: 1. This report documented the UNII2c band with band crossing channel for 802.11ac.
2. All radiated emission performed on Y-Axis.
3. All four chains will be on at all time.
4. All tests were pre-scanned for worst case before final testing.
5. Since HT20characteristics is same as VHT20 and HT40 is same as VHT40, the band crossing channels tested as the highest channels.

6.4 Test Specifications

Testing requirements

Table 20: Test Specifications

Emissions and Immunity	
Standard	Requirement
CFR 47 Part 15.407: 2013	All
RSS 210 Issue 8, 2010	All

END OF REPORT