8.3 Maximum Conducted Output Power

▣ Test Requirements

Part. 15.407(a)

(1) For the band 5.15 - 5.25 GHz.

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

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

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

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

(2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

- Output power Limit Calculation

Bands	Mode	Power Limit [mW]	Calculated Limit [dBm]	Antenna Gain (Worst case)	Determined Limit [dBm]
U-NII 1	802.11a	250	**23.97**	**0.70**	**23.97**
	802.11n(HT20)				
	802.11n(HT40)				

Bands	Mode	Power Limit [mW]	Calculated Limit [dBm]	Antenna Gain (Worst case)	Determined Limit [dBm]
U-NII 3	802.11a	1000	**30.00**	**0.50**	**30.00**
	802.11n(HT20)				
	802.11n(HT40)				

▣ **Test Results: Comply**

Mode	CH	Freq. [MHz]	Test Result [dBm]		
			ANT 1	ANT 2	SUM
802.11a (Single Transmit)	36	5180	13.04	12.69	-
	40	5200	12.71	12.52	-
	48	5240	12.47	12.39	-
	149	5745	9.87	9.67	-
	157	5785	9.61	9.26	-
	165	5825	8.37	7.98	-

Mode	CH	Freq. [MHz]	Test Result [dBm]		
			ANT 1	ANT 2	SUM
802.11n(HT20) (Multiple Transmit)	36	5180	9.61	8.41	12.06
	40	5200	9.87	9.04	12.49
	48	5240	9.71	8.37	12.10
	149	5745	12.47	12.46	15.48
	157	5785	8.22	9.64	12.00
	165	5825	8.76	8.47	11.63

Mode	CH	Freq. [MHz]	Test Result [dBm]		
			ANT 1	ANT 2	SUM
802.11n(HT40) (Multiple Transmit)	38	5190	12.13	12.87	15.53
	46	5230	11.53	11.57	14.56
	151	5755	9.94	10.03	13.00
	159	5795	9.51	9.14	12.34

8.4 Maximum Power Spectral Density

▣ Test requirements

Part. 15.407(a)

(1) For the band 5.15 - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. **note1**

(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. note1

(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. note1

(2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. note1

(3) For the band 5.725 - 5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.note1,note2

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2: Fixed point - to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

- Peak Power Spectral Density Limit Calculation

Band	Limit [dBm]	Antenna Gain (Worst case)	Determined Limit [dBm]
U-NII 1	11	0.70	11
U-NII 3	30	0.50	30

▣ Test Configuration

Refer to the APPENDIX I.

▣ **Test procedure**

Maximum Power Spectral Density is measured using Measurement Procedure **of KDB789033 D02**

1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA - 1, SA - 2, SA - 3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”. (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

2) Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3) Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA - 2 or SA - 2 Alternative was used, add 10 log(1 / x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA - 3 Alternative was used and the linear mode was used in step II.E.2.g (viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

4) The result is the Maximum PSD over 1 MHz reference bandwidth.

5) For devices operating in the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, and 5.47 - 5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in §15.407(a)(5). For devices operating in the band 5.725 - 5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1 / T, where T is defined in section II.B.1.a). (Refer to Appendix II)

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log(500 kHz / RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log(1 MHz / RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since RBW = 100 kHz is available on nearly all spectrum analyzers.

▣ **Test results: Comply**

Multiple Transmit

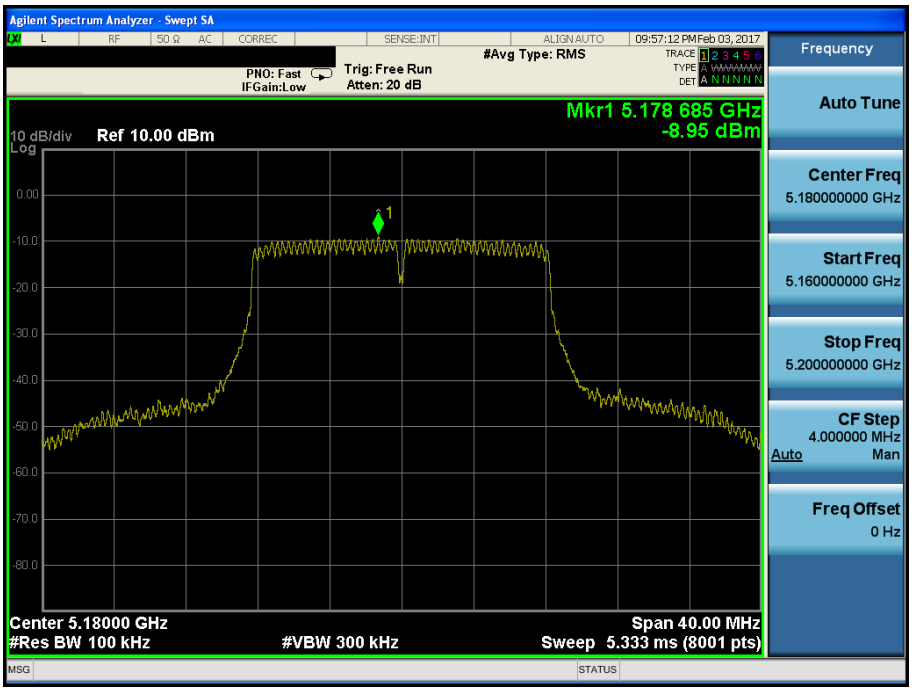
Mode	Channel	Frequency [MHz]	Reading [dBm]			T.F [dB] Note 1	Test Result [dBm]		
			ANT 1	ANT 2	SUM		ANT 1	ANT 2	SUM
802.11a	36	5180	-8.950	-9.150	-	10.61	1.660	1.460	-
	40	5200	-9.030	-8.160	-		1.580	2.450	-
	48	5240	-8.110	-7.930	-		2.500	2.680	-
	149	5745	-11.140	-11.570	-	7.60	-3.540	-3.970	-
	157	5785	-11.440	-10.920	-		-3.840	-3.320	-
	165	5825	-12.220	-12.870	-		-4.620	-5.270	-
802.11n HT20	36	5180	-10.560	-13.870	-8.897	11.14	0.580	-2.730	2.243
	40	5200	-11.010	-13.000	-8.882		0.130	-1.860	2.258
	48	5240	-11.490	-12.420	-8.920		-0.350	-1.280	2.220
	149	5745	-8.740	-7.820	-5.245	8.13	-0.610	0.310	2.884
	157	5785	-12.680	-11.680	-9.141		-4.550	-3.550	-1.011
	165	5825	-12.040	-12.190	-9.104		-3.910	-4.060	-0.974
802.11n HT40	38	5190	-11.990	-10.510	-8.177	12.01	0.020	1.500	3.833
	46	5230	-12.160	-12.120	-9.130		-0.150	-0.110	2.880
	151	5755	-13.650	-13.020	-10.313	9.00	-4.650	-4.020	-1.314
	159	5795	-13.620	-13.510	-10.554		-4.620	-4.510	-1.555

Note 1: "Band 1, 2A, 2C [T.F] = 10*LOG(1000/100) + D.C.F"
"Band 3 [T.F] = 10*LOG(500/100) + D.C.F"
For D.C.F., please refer to appendix II.
Note 2: Test Result = Measurement Data + T.F

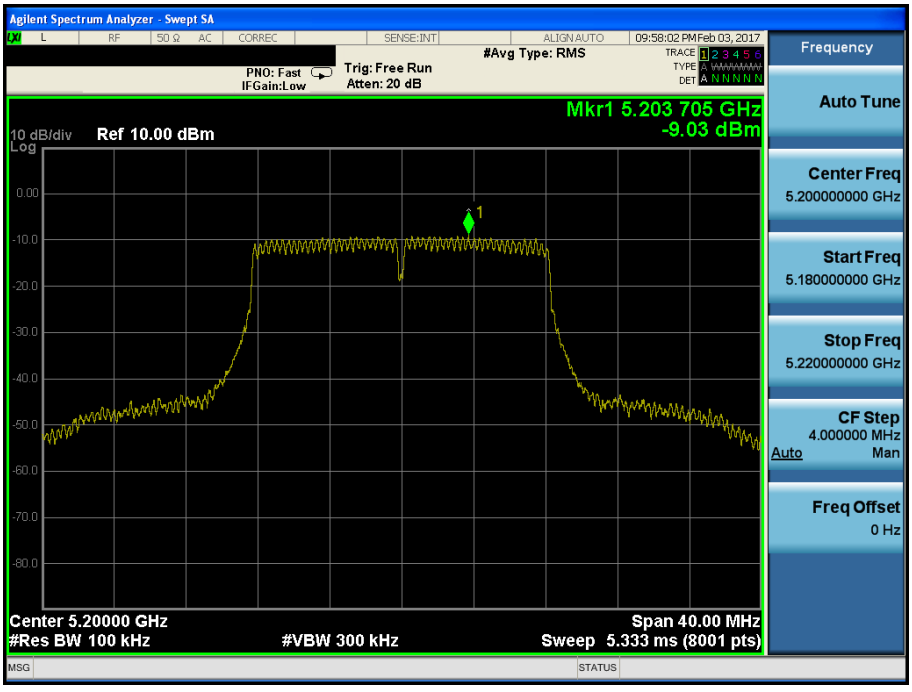
▣ RESULT PLOTS

Multiple Transmit

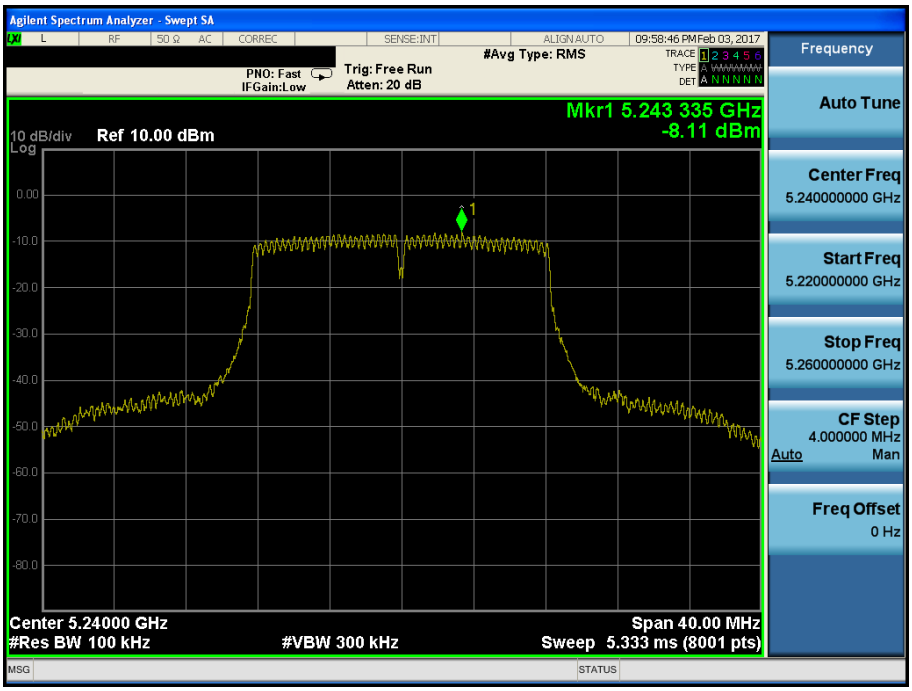
Maximum Power Spectral Density Test Mode: 802.11a & ANT 1 & Ch.36



Maximum Power Spectral Density Test Mode: 802.11a & ANT 1 & Ch.40



Maximum Power Spectral Density Test Mode: 802.11a & ANT 1 & Ch.48



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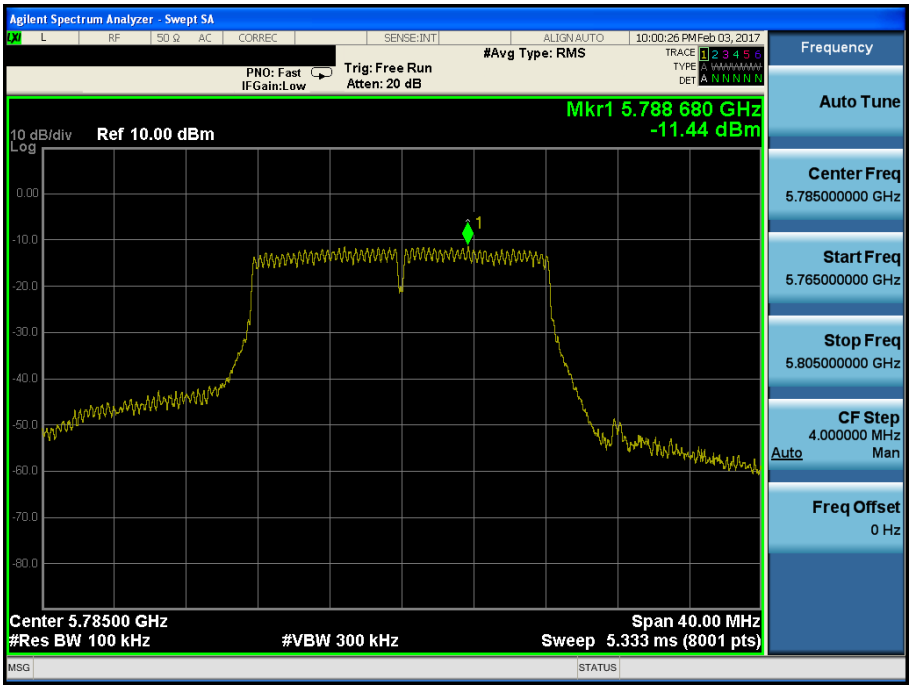
Maximum Power Spectral Density Test Mode: 802.11a & ANT 1 & Ch.157



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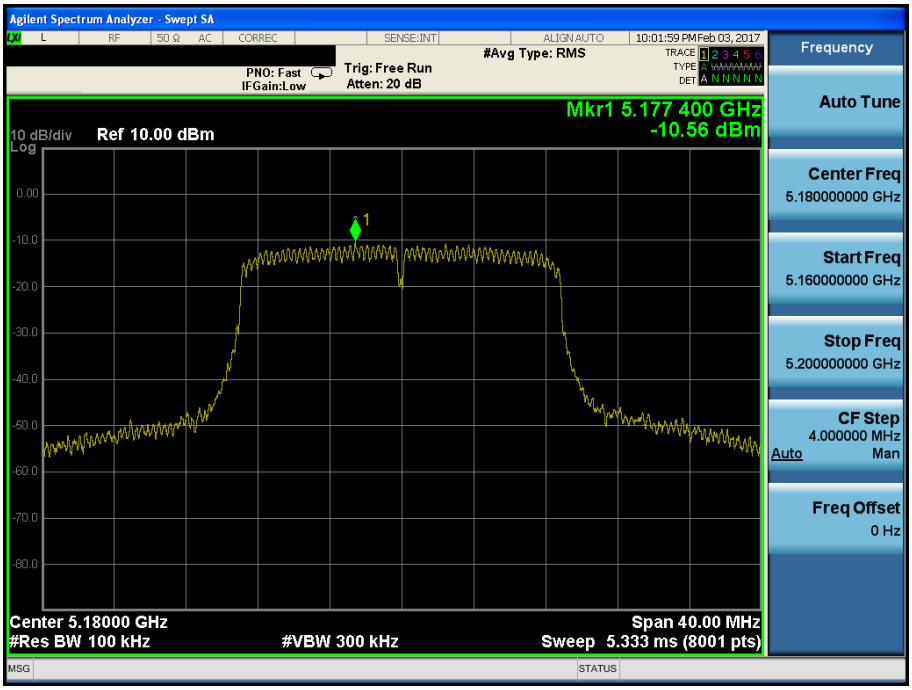
Maximum Power Spectral Density Test Mode: 802.11n HT20 & ANT 1 & Ch.36



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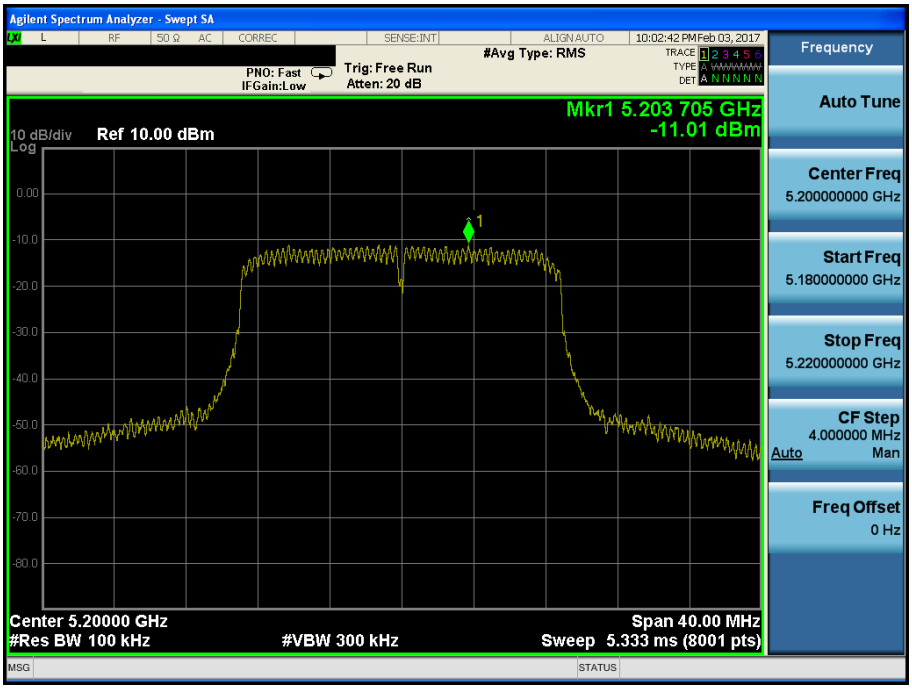

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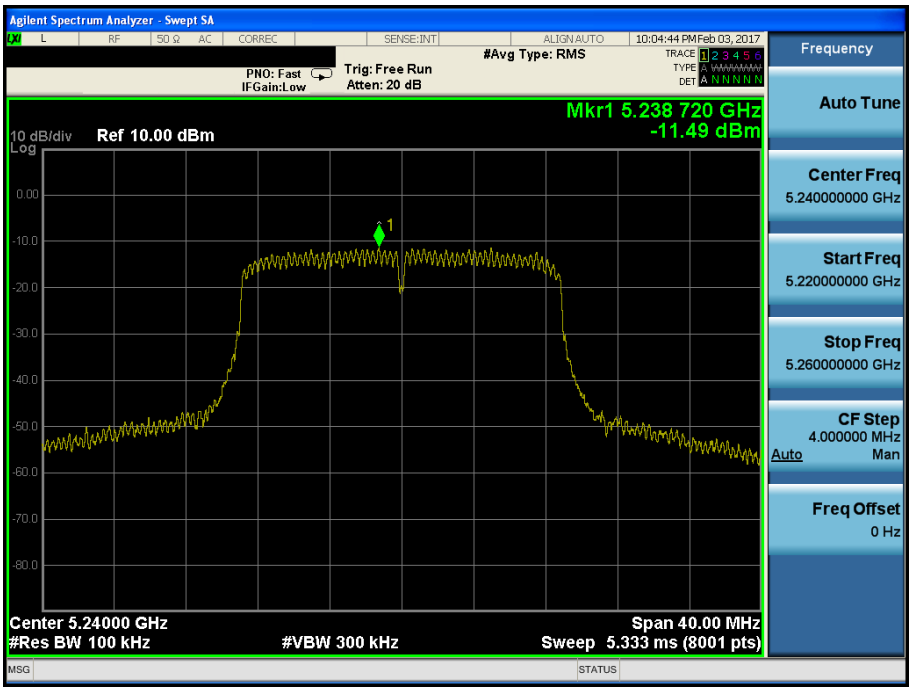

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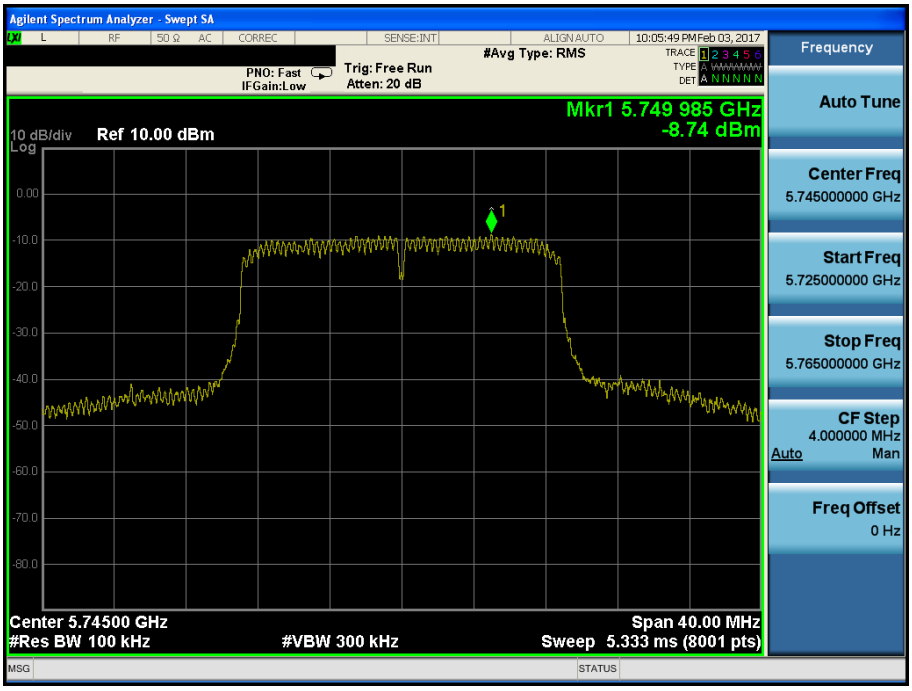

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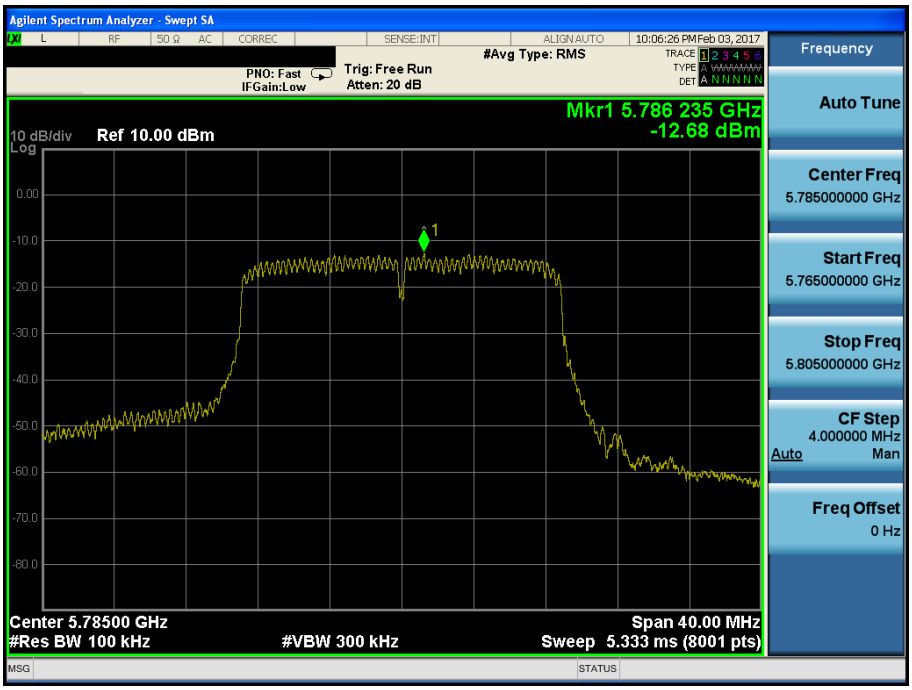

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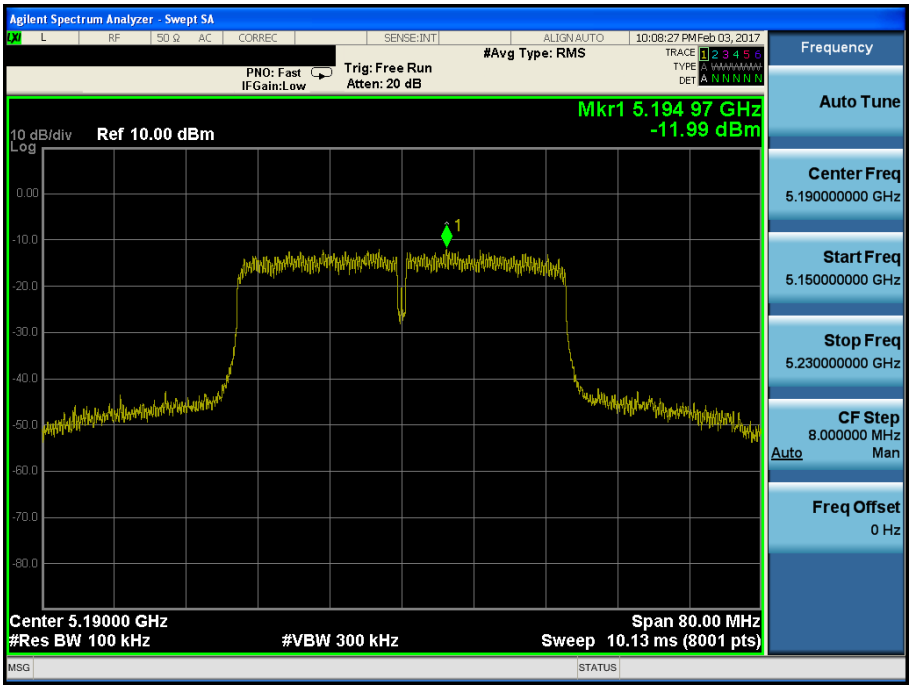
Maximum Power Spectral Density Test Mode: 802.11n HT40 & ANT 1 & Ch.38



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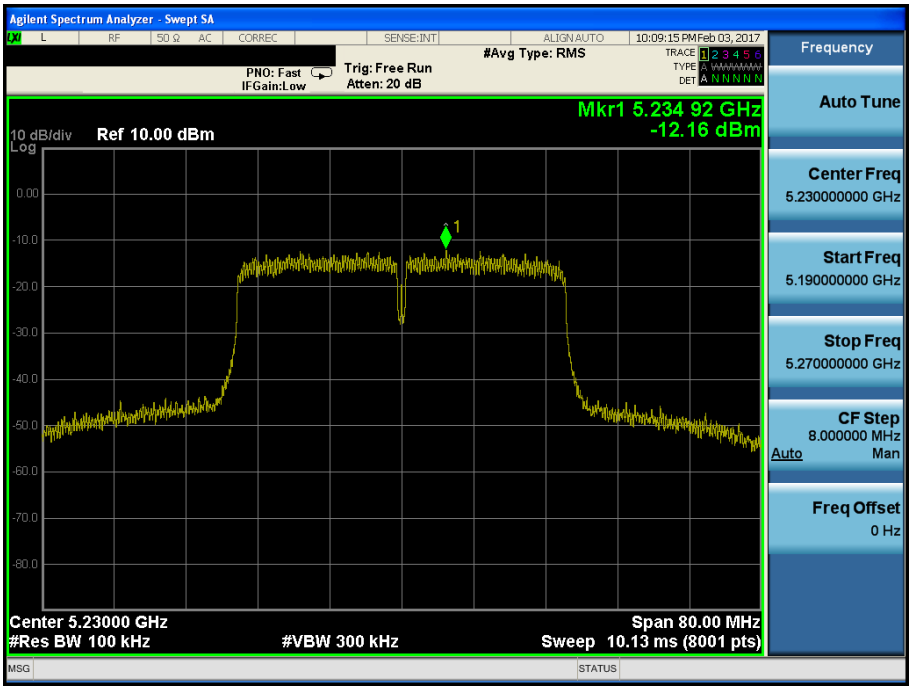

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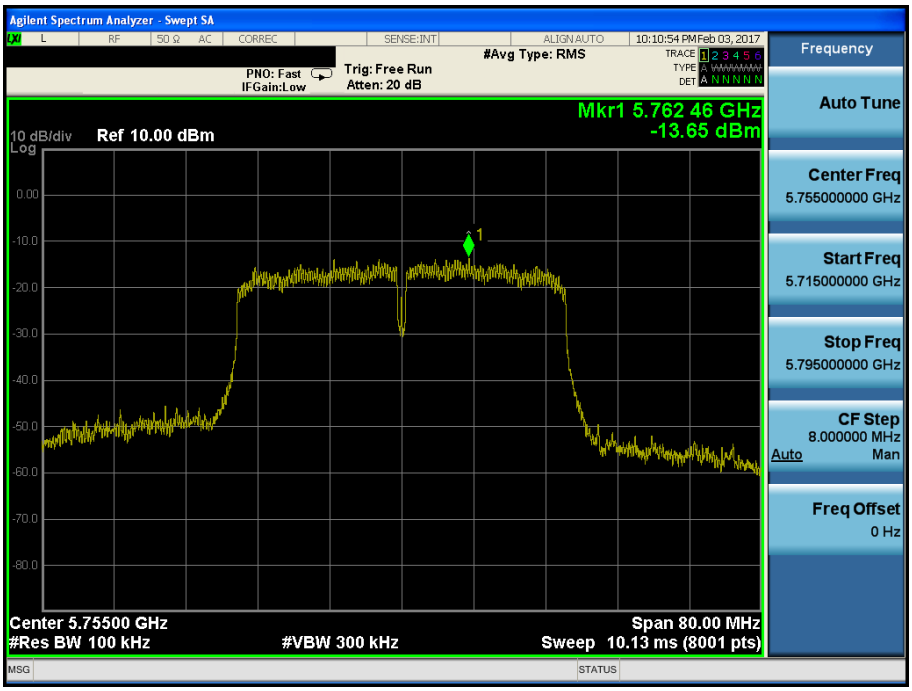
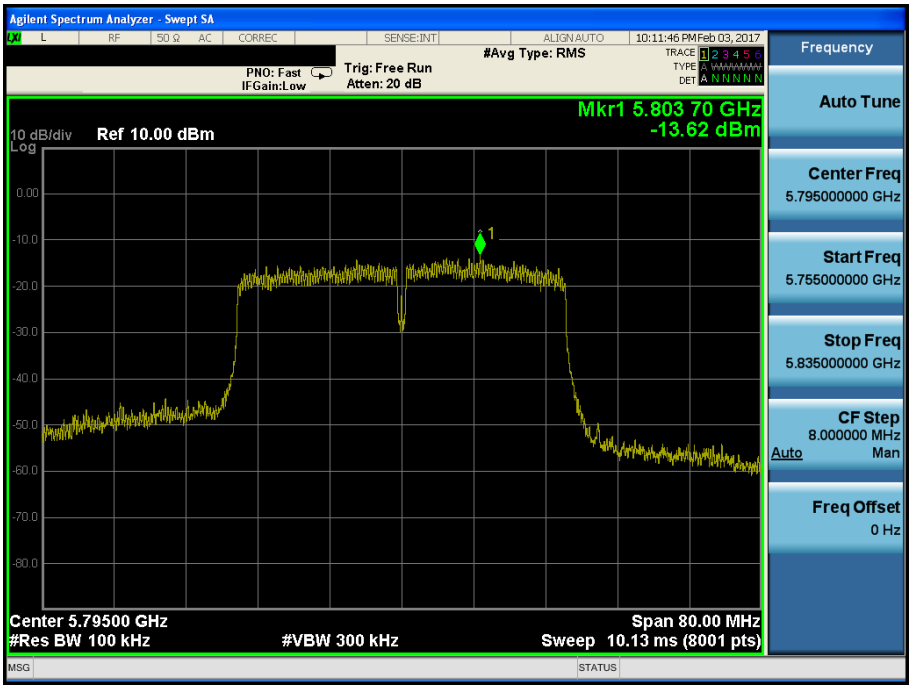


Maximum Power Spectral Density Test Mode: 802.11n HT40 & ANT 1 & Ch.159



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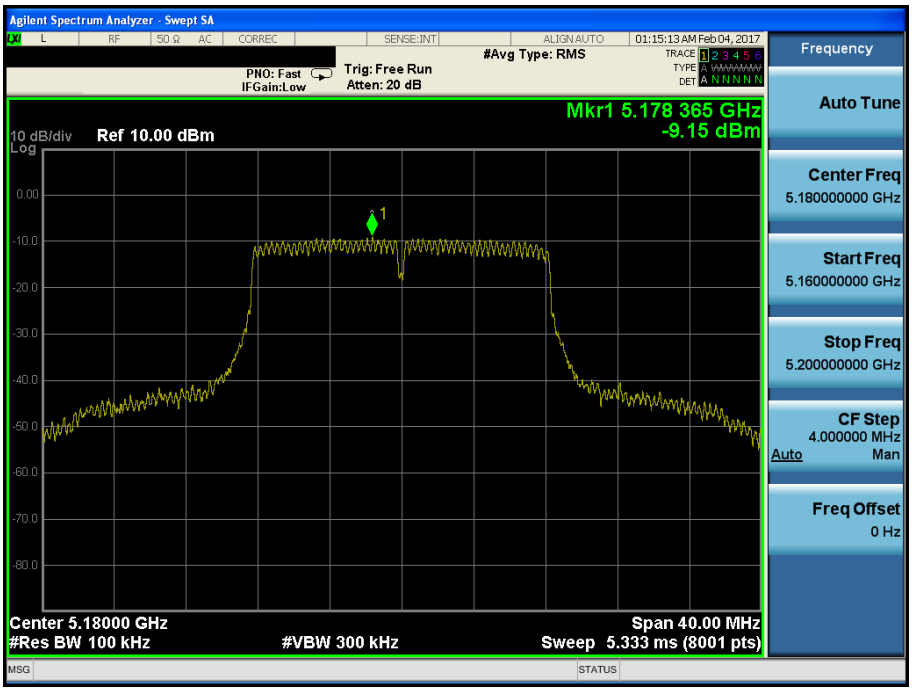
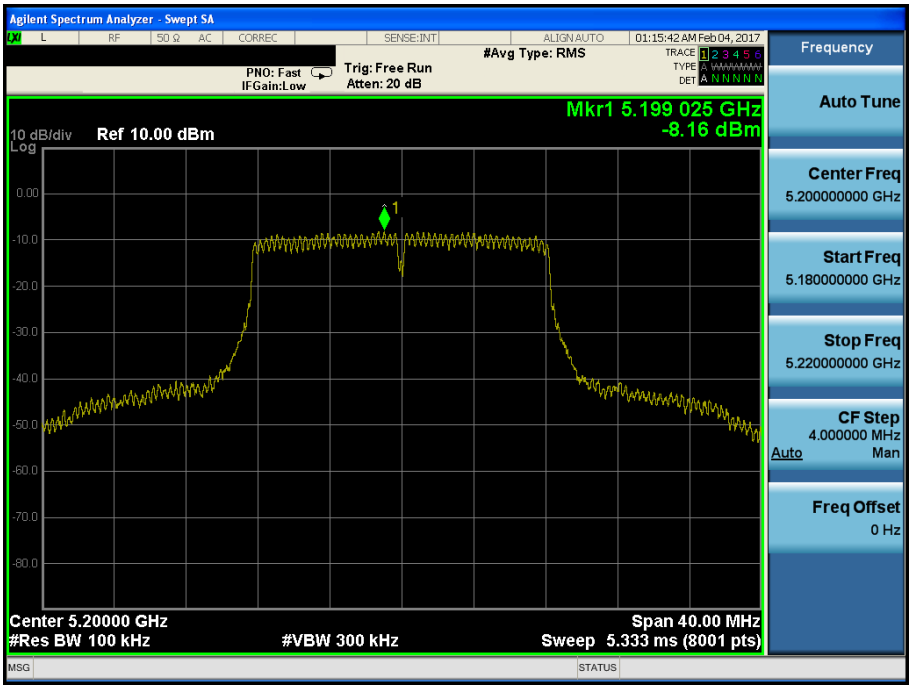


Maximum Power Spectral Density Test Mode: 802.11a & ANT 2 & Ch.40



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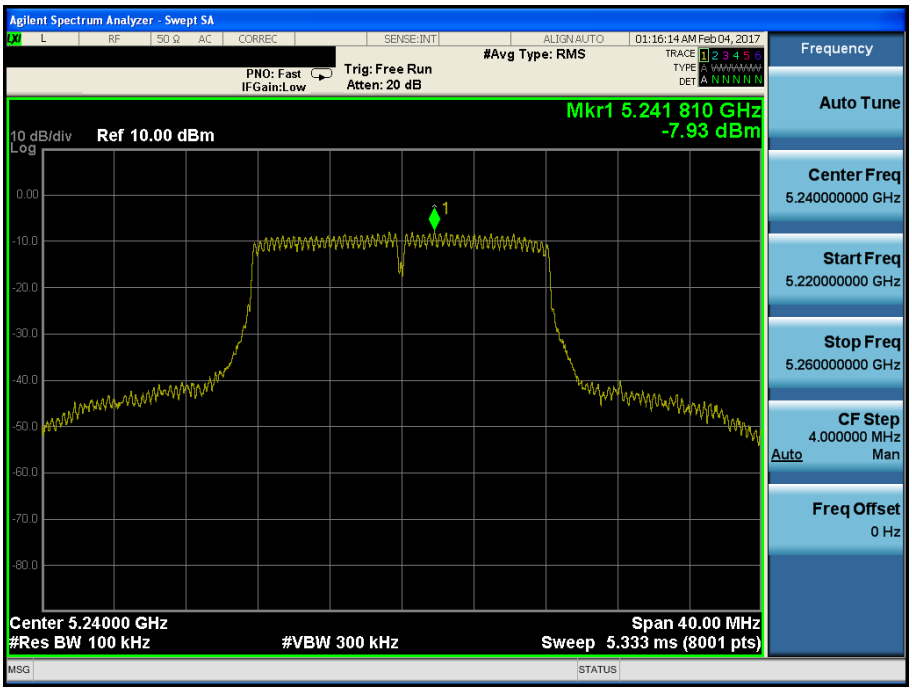

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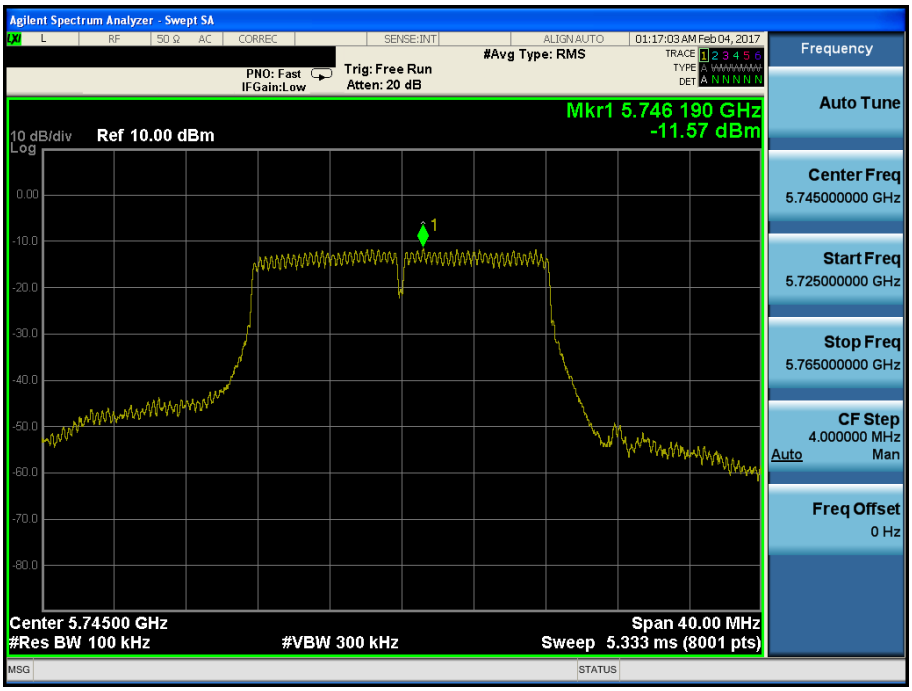

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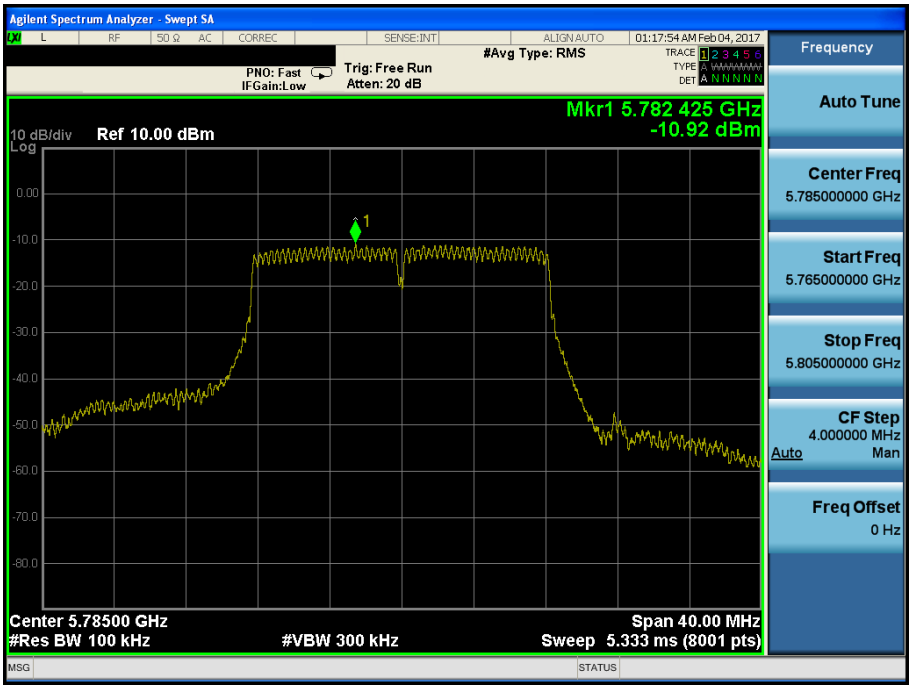

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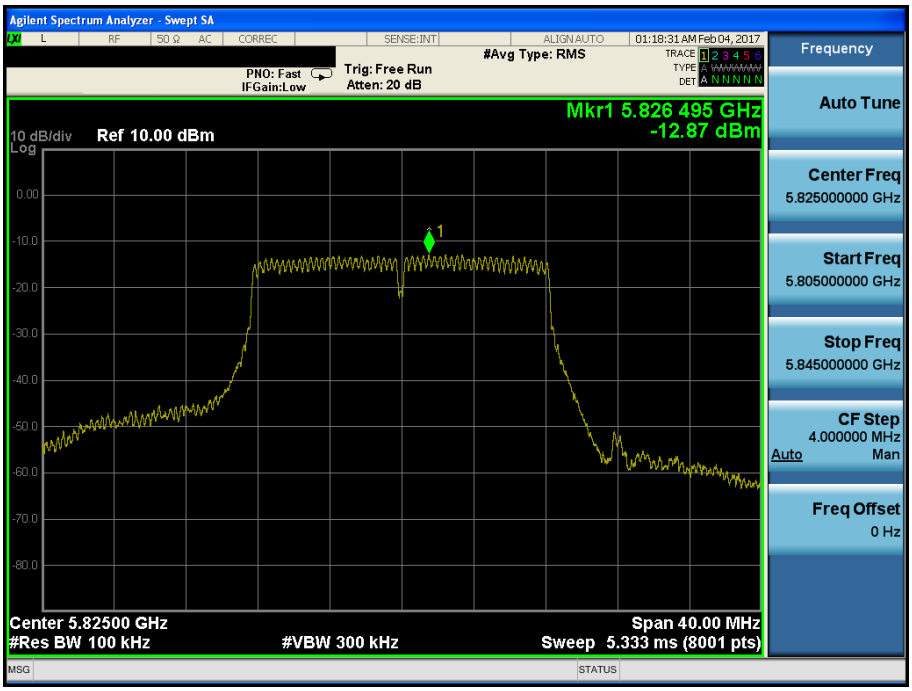

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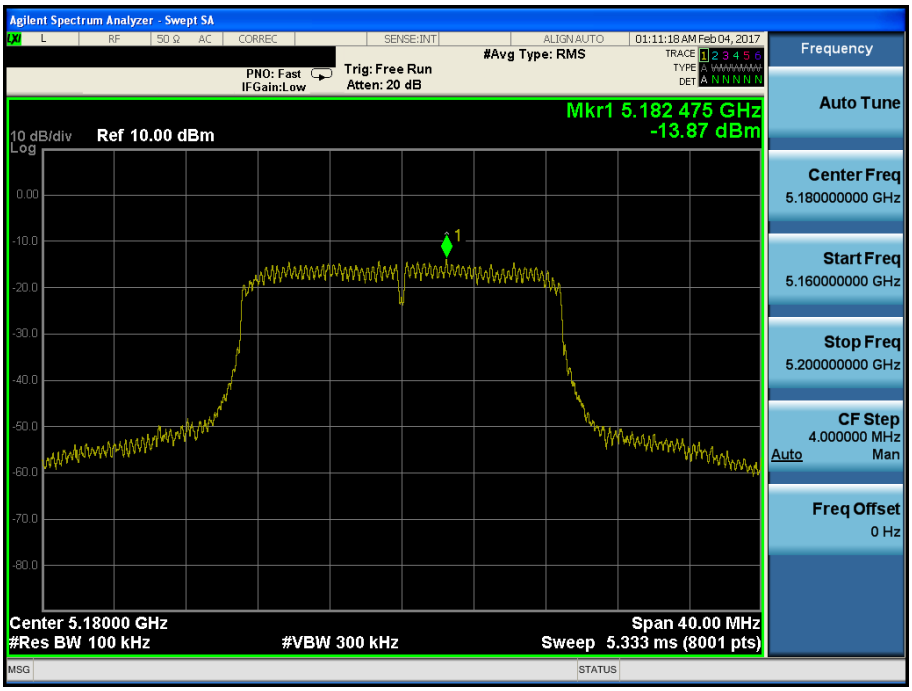
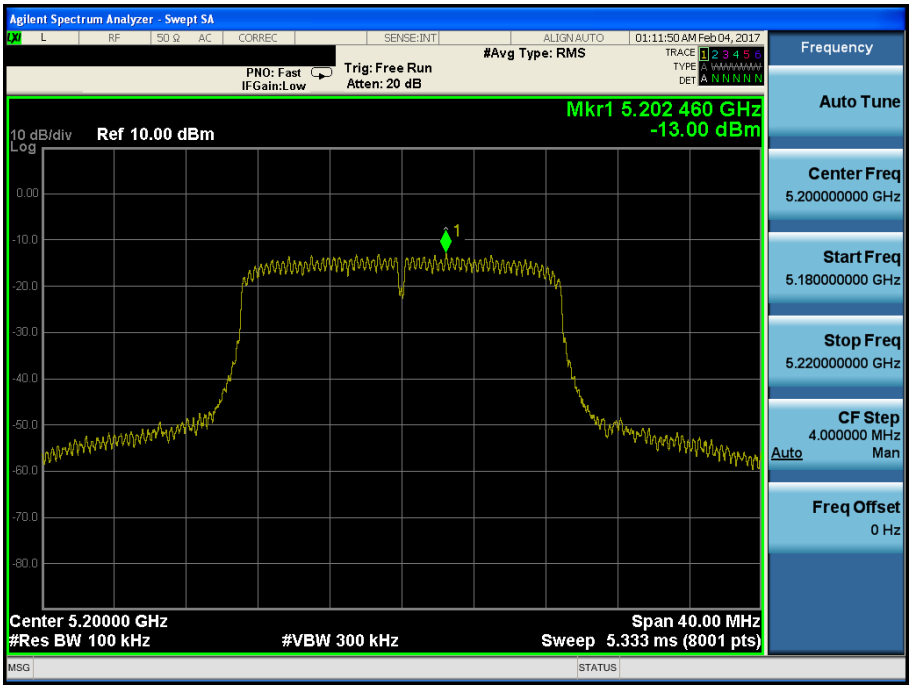


Maximum Power Spectral Density Test Mode: 802.11n HT20 & ANT 2 & Ch.40



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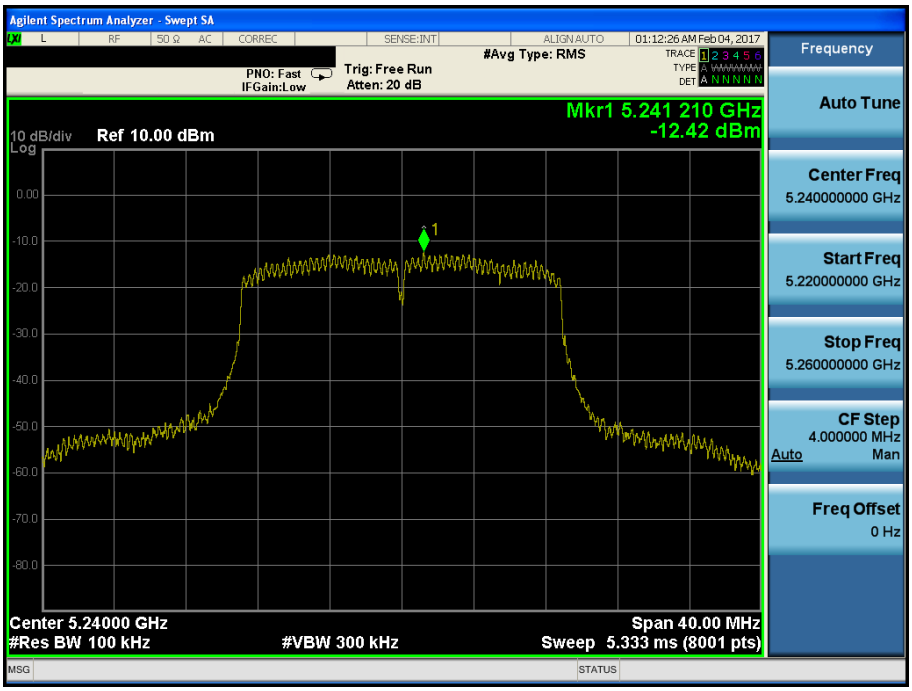

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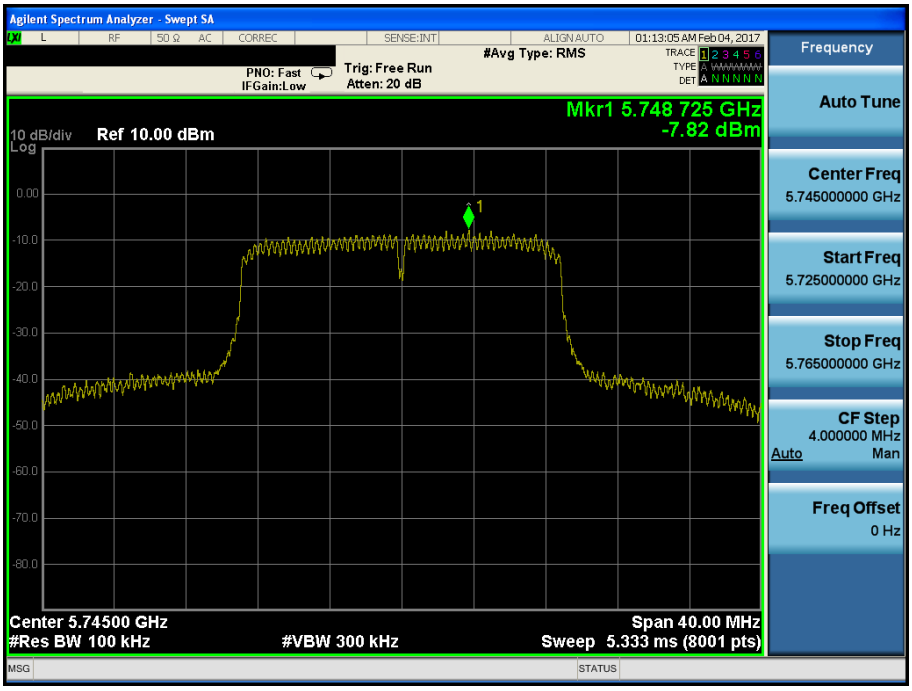
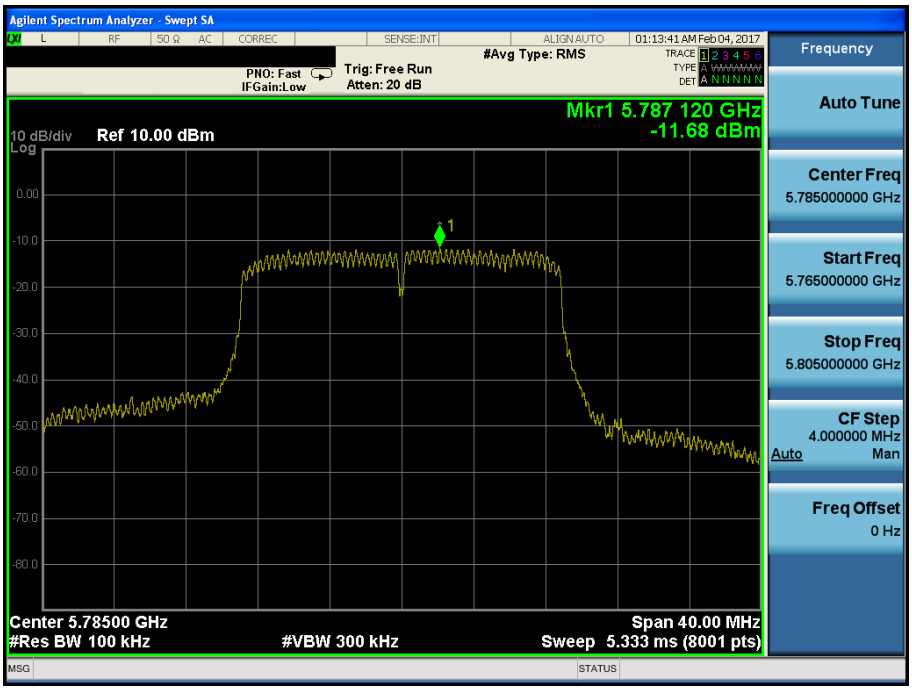
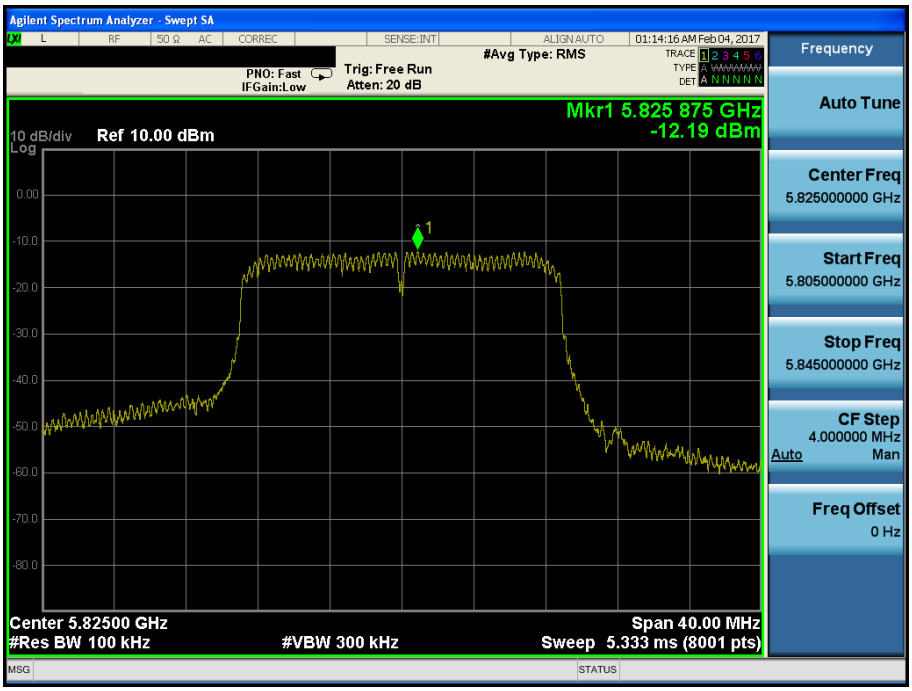


Maximum Power Spectral Density Test Mode: 802.11n HT20 & ANT 2 & Ch.157



Maximum Power Spectral Density Test Mode: 802.11n HT20 & ANT 2 & Ch.165



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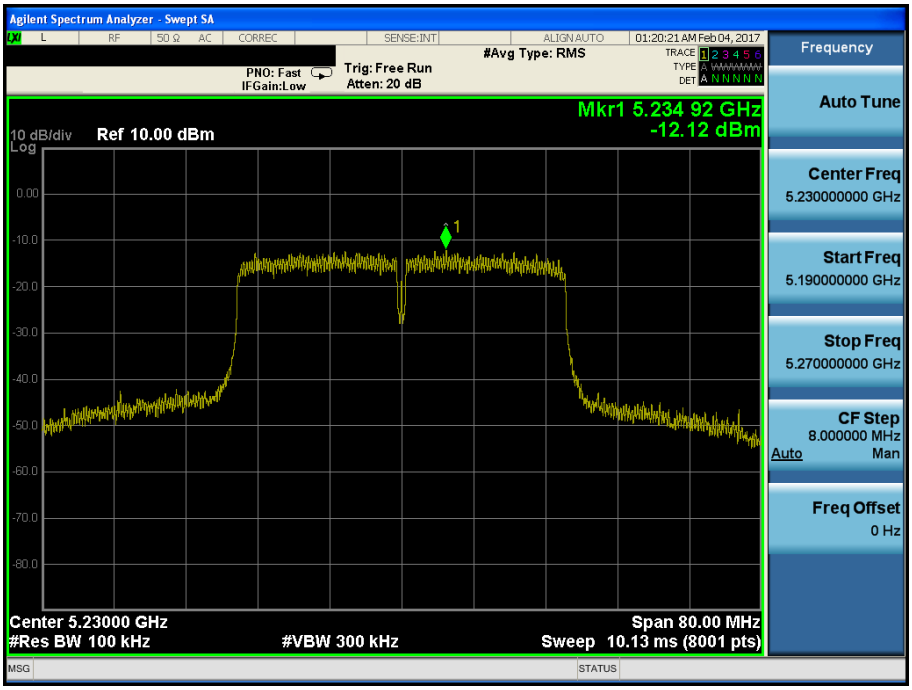
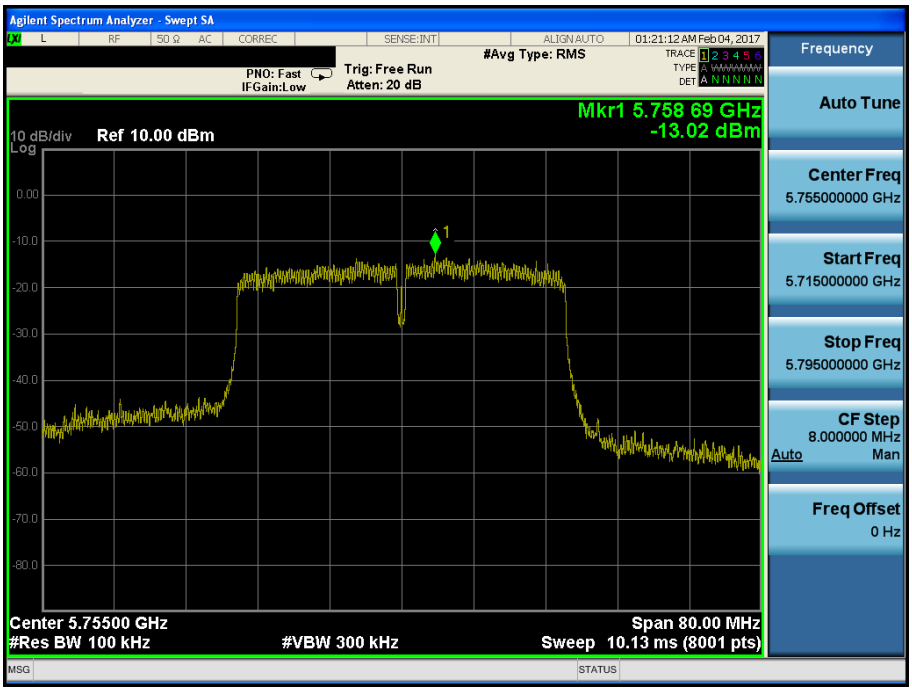
Maximum Power Spectral Density Test Mode: 802.11n HT40 & ANT 2 & Ch.46



Maximum Power Spectral Density Test Mode: 802.11n HT40 & ANT 2 & Ch.151



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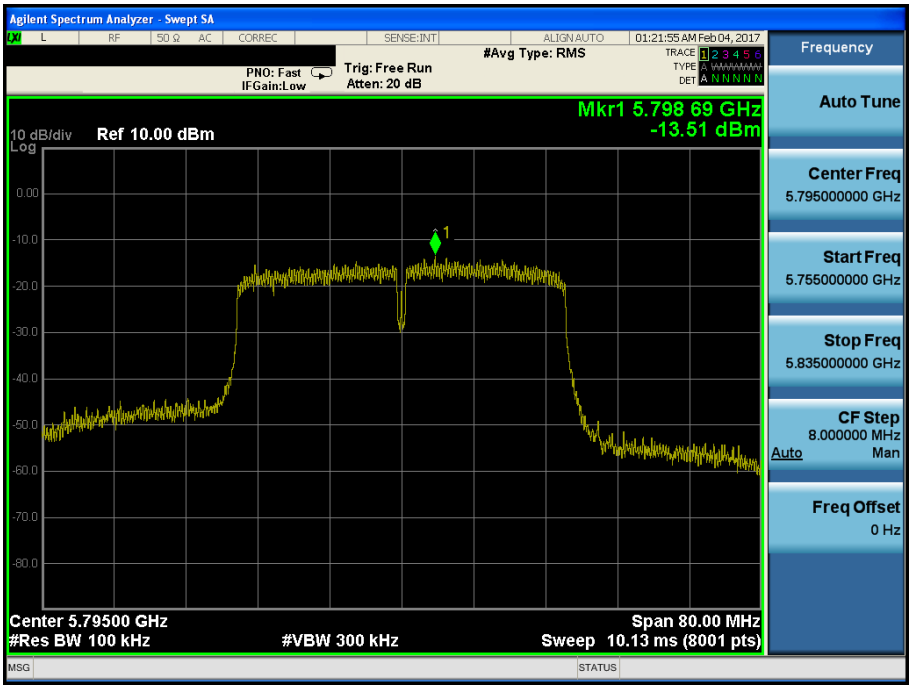


8.5 Frequency Stability

▣ Test requirements

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.

▣ Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 0 ℃ and +60 ℃. The temperature was incremented by 10 ℃ intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

▣ Test Results: Comply

U-NII-1 : (5150 MHz ~ 5250 MHz)_ANT 1

26 dB Bandwidth Reference	
Low edge(MHz)	**High edge(MHz)**
5170.268750	5249.350000

Supply Voltage (V DC)	TEMP (℃)	Operating Frequency					
		5180 MHz			5240 MHz -		
		Measured Frequency (Hz)	Deviation (%)	26dBc low edge Note 1 (Hz)	Measured Frequency (Hz)	Deviation (%)	26dBc low edge Note 1 (Hz)
7.400	+25(Ref)	5,179,933,312	-0.001287	5,170,202,062	5,239,939,207	-0.001160	5,249,289,207
	+60	5,179,926,080	-0.001427	5,170,194,830	5,239,931,258	-0.001312	5,249,281,258
	+50	5,179,926,843	-0.001412	5,170,195,593	5,239,932,506	-0.001288	5,249,282,506
	+40	5,179,929,308	-0.001365	5,170,198,058	5,239,935,003	-0.001240	5,249,285,003
	+30	5,179,930,549	-0.001341	5,170,199,299	5,239,938,636	-0.001171	5,249,288,636
	+20	5,179,948,355	-0.000997	5,170,217,105	5,239,943,202	-0.001084	5,249,293,202
	+10	5,179,951,846	-0.000930	5,170,220,596	5,239,944,963	-0.001050	5,249,294,963
	0	5,179,954,315	-0.000882	5,170,223,065	5,239,949,034	-0.000973	5,249,299,034
	-	-	-	-	-	-	-
6.290	+25	5,179,932,945	-0.001295	5,170,201,695	5,239,398,685	-0.011477	5,248,748,685
8.510	+25	5,179,933,547	-0.001283	5,170,202,297	5,239,939,361	-0.001157	5,249,289,361

Note 1: **26 dB Bandwidth Reference Low edge (Hz)** + (**Measured Frequency (Hz)** - **Operating Frequency (Hz)**) = **26dBc low edge (Hz)**

Note 2: **ANT1 is worst case in U-NII-1 band**

U-NII-3 : (5725 MHz ~ 5850 MHz)_ANT 1

6 dB Bandwidth Reference	
Low edge	**High edge**
5736.800000	5833.093750

Supply Voltage (V DC)	TEMP (℃)	Operating Frequency					
		5745 MHz			5825 MHz		
		Measured Frequency (Hz)	Deviation (%)	26dBc low edge Note 1 (Hz)	Measured Frequency (Hz)	Deviation (%)	26dBc High edge Note 2 (Hz)
7.400	+25(Ref)	5,744,926,886	-0.001273	5,736,726,886	5,824,927,272	-0.001249	5,833,021,022
	+60	5,744,922,048	-0.001357	5,736,722,048	5,824,920,845	-0.001359	5,833,014,595
	+50	5,744,923,148	-0.001338	5,736,723,148	5,824,922,236	-0.001335	5,833,015,986
	+40	5,744,924,854	-0.001308	5,736,724,854	5,824,925,316	-0.001282	5,833,019,066
	+30	5,744,925,316	-0.001300	5,736,725,316	5,824,926,120	-0.001268	5,833,019,870
	+20	5,744,926,648	-0.001277	5,736,726,648	5,824,928,037	-0.001235	5,833,021,787
	+10	5,744,928,348	-0.001247	5,736,728,348	5,824,934,365	-0.001127	5,833,028,115
	0	5,744,940,541	-0.001035	5,736,740,541	5,824,942,365	-0.000989	5,833,036,115
	-	-	-	-	-	-	-
6.290	+25	5,744,927,052	-0.001270	5,736,727,052	5,824,927,955	-0.001237	5,833,021,705
8.510	+25	5,744,926,514	-0.001279	5,736,726,514	5,824,928,032	-0.001236	5,833,021,782

Note 1: **6 dB Bandwidth Reference Low edge (Hz)** + (**Measured Frequency (Hz)** - **Operating Frequency (Hz)**) = **6dBc low edge (Hz)**

Note 2: **26 dB Bandwidth Reference High edge (Hz)** + (**Measured Frequency (Hz)** - **Operating Frequency (Hz)**) = **26dBc High edge (Hz)**

Note 2**: ANT1 is worst case in U-NII-3 band**

8.6 Radiated Spurious Emission Measurements

▣ Test Procedure

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
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

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

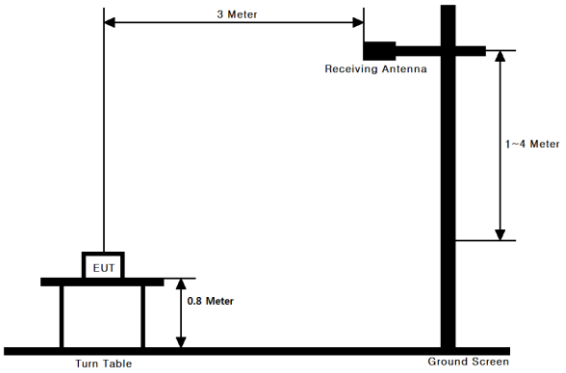
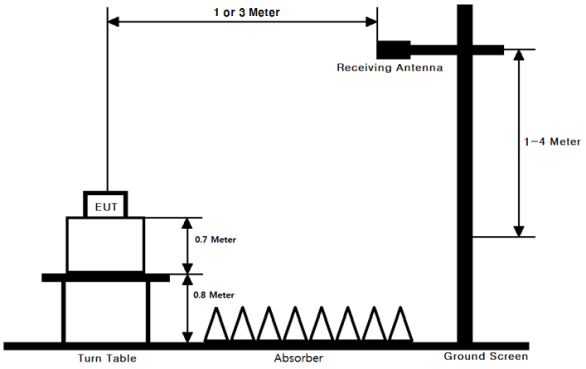
MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	160.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	160.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	160.7 ~ 160.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240	3600 ~ 4000		
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

▪ **FCC Part 15.407 (b):** Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the **5.15-5.25 GHz band**: all emissions outside of the **5.15-5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
(2) For transmitters operating in the **5.25-5.35 GHz band**: all emissions outside of the **5.15-5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
(3) For transmitters operating in the **5.47-5.725 GHz band**: all emissions outside of the **5.47-5.725 GHz band** shall not exceed an **EIRP of -27 dBm/MHz.**
(4) For transmitters operating in the **5.725-5.85 GHz band**: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
(6) Unwanted emissions **below 1 GHz** must comply with the general field strength limits set forth in **Section 15.209**. Further, any U-NII devices using an **AC power line** are required to comply also with the conducted limits set forth in **Section 15.207**.
(7) The provisions of §15.205 apply to intentional radiators operating under this section
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

▣ Test Procedure

Below 1GHz	Above 1GHz
	

▣ Test Procedure

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m.
2. The turn table shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1m or 3 m away from the receiving antenna, which is varied from 1m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiated spurious emission measured using following Measurement Procedure **of KDB789033 D02**

► **General Requirements for Unwanted Emissions Measurements**

The following requirements apply to all unwanted emissions measurements, both in and outside of the restricted bands:

- EUT Duty Cycle

(1) The EUT shall be configured or modified to **transmit continuously** except as stated in (ii), below. The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (**to no lower than 98 percent**) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

(2) If **continuous transmission (or at least 98 percent duty cycle) cannot be achieved** due to hardware limitations of the EUT (e.g., overheating), the following additions to the measurement and reporting procedures are required:

- The EUT shall be configured to operate at the maximum achievable duty cycle.
- Measure the duty cycle, x, of the transmitter output signal.
- Adjustments to measurement procedures (e.g., increasing test time and number of traces averaged) shall be performed as described in the procedures below.
- The test report shall include the following additional information:
  - The reason for the duty cycle limitation.
  - The duty cycle achieved for testing and the associated transmit duration and interval between transmissions.
  - The sweep time and the amount of time used for trace stabilization during max-hold measurements for peak emission measurements.

(3) **Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.**

► **Measurements below 1000 MHz**

a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.

b) Compliance shall be demonstrated using **CISPR quasi-peak detection**; however, **peak detection** is permitted as an alternative to quasi-peak detection.

► **Measurements Above 1000 MHz (Peak)**

a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.
b) Peak emission levels are measured by setting the analyzer as follows:
(i) **RBW = 1 MHz.**
(ii) **VBW ≥ 3 MHz.**
(iii) **Detector = Peak.**
(iv) Sweep time = Auto.
(v) Trace mode = Max hold.
(vi) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

► **Measurements Above 1000 MHz (Method AD)**

(i) **RBW = 1 MHz.**
(ii) **VBW ≥ 3 MHz.**
(iii) **Detector = RMS**, if span / (# of points in sweep) ≤ RBW / 2. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, the detector mode shall be set to peak.
(iv) Averaging type = power (i.e., RMS)
• As an alternative, the detector and averaging type may be set for linear voltage averaging. Some analyzers require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
(v) Sweep time = Auto.
(vi) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle. For example, with 50 percent duty cycle, at least 200 traces shall be averaged.
(vii) If tests are performed with the EUT transmitting at a duty cycle less than 98 percent, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
• **If power averaging (RMS) mode was used in step (iv) above, the correction factor is 10 log(1/x), where x is the duty cycle.** For example, if the transmit duty cycle was 50 percent, then 3 dB must be added to the measured emission levels.
• If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50 percent, then 6 dB must be added to the measured emission levels.
• If a specific emission is demonstrated to be continuous (100 percent duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

Please refer to Appendix II for the duty correction factor

▣ Measurement Data:

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : *802.11a*

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5126.930	H	Z	PK	46.55	7.82	N/A	N/A	54.37	74.00	19.63
		5127.600	H	Z	AV	37.77	7.82	0.61	N/A	46.20	54.00	7.80
		10359.383	V	Z	PK	49.40	12.18	N/A	-9.54	52.04	68.20	16.16
		-	-	-	-	-	-	-	-	-	-	-
	40 (5200 MHz)	10399.733	V	Z	PK	48.90	12.35	N/A	-9.54	51.71	68.20	16.49
		-	-	-	-	-	-	-	-	-	-	-
	48 (5240 MHz)	5350.800	H	Z	PK	42.52	7.88	N/A	N/A	50.40	74.00	23.60
		5351.040	H	Z	AV	33.73	7.88	0.61	N/A	42.22	54.00	11.78
		10479.467	V	Z	PK	49.60	12.69	N/A	-9.54	52.75	68.20	15.45
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	149 (5745 MHz)	5651.490	H	Z	PK	45.27	8.98	N/A	N/A	54.25	69.33	15.08
		11491.667	V	Z	PK	51.91	14.18	N/A	-9.54	56.55	74.00	17.45
		11491.433	V	Z	AV	40.24	14.18	0.61	-9.54	45.49	54.00	8.51
		-	-	-	-	-	-	-	-	-	-	-
	157 (5785 MHz)	11571.517	V	Z	PK	53.81	14.24	N/A	-9.54	58.51	74.00	15.49
		11572.283	V	Z	AV	42.86	14.24	0.61	-9.54	48.17	54.00	5.83
		-	-	-	-	-	-	-	-	-	-	-
	165 (5825 MHz)	5935.060	H	Z	PK	45.16	9.61	N/A	N/A	54.77	68.20	13.43
		11649.333	V	Z	PK	52.96	14.29	N/A	-9.54	57.71	74.00	16.29
		11649.683	V	Z	AV	41.52	14.29	0.61	-9.54	46.88	54.00	7.12
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)
4. The limit is converted to field strength.
   E[dBuV/m] = EIRP[dBm] + 95.2 dB = -27 dBm + 95.2 = 68.2 dBuV/m

▣ Measurement Data:

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : *802.11n(HT20)*

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5127.800	H	Z	PK	45.79	7.82	N/A	N/A	53.61	74.00	20.39
		5127.930	H	Z	AV	34.93	7.82	1.14	N/A	43.89	54.00	10.11
		10362.383	V	Z	PK	47.33	12.18	N/A	-9.54	49.97	68.20	18.23
		-	-	-	-	-	-	-	-	-	-	-
	40 (5200 MHz)	10400.400	V	Z	PK	46.89	12.35	N/A	-9.54	49.70	68.20	18.50
		-	-	-	-	-	-	-	-	-	-	-
	48 (5240 MHz)	5351.040	H	Z	PK	43.47	7.88	N/A	N/A	51.35	74.00	22.65
		5350.480	H	Z	AV	33.55	7.88	1.14	N/A	42.57	54.00	11.43
		10481.950	V	Z	PK	45.58	12.69	N/A	-9.54	48.73	68.20	19.47
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	149 (5745 MHz)	5650.640	H	Z	PK	44.75	8.98	N/A	N/A	53.73	68.70	14.97
		11488.933	V	Z	PK	48.51	14.18	N/A	-9.54	53.15	74.00	20.85
		11488.783	V	Z	AV	38.08	14.18	1.14	-9.54	43.86	54.00	10.14
		-	-	-	-	-	-	-	-	-	-	-
	157 (5785 MHz)	11568.700	V	Z	PK	46.78	14.24	N/A	-9.54	51.48	74.00	22.52
		11568.150	V	Z	AV	35.92	14.24	1.14	-9.54	41.76	54.00	12.24
		-	-	-	-	-	-	-	-	-	-	-
	165 (5825 MHz)	5934.030	H	Z	PK	45.29	9.61	N/A	N/A	54.90	68.20	13.30
		11649.267	V	Z	PK	47.76	14.29	N/A	-9.54	52.51	74.00	21.49
		11648.583	V	Z	AV	37.00	14.29	1.14	-9.54	42.89	54.00	11.11
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)
4. The limit is converted to field strength.
   E[dBuV/m] = EIRP[dBm] + 95.2 dB = -27 dBm + 95.2 = 68.2 dBuV/m

▣ **Measurement Data:**

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : *802.11n(HT40)*

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	38 (5190 MHz)	5149.070	H	Z	PK	50.85	7.82	N/A	N/A	58.67	74.00	15.33
		5149.470	H	Z	AV	39.55	7.82	2.01	N/A	49.38	54.00	4.62
		10380.830	V	Z	PK	51.00	12.27	N/A	-9.54	53.73	68.20	14.47
		-	-	-	-	-	-	-	-	-	-	-
	46 (5230 MHz)	5350.800	H	Z	PK	42.51	7.88	N/A	N/A	50.39	74.00	23.61
		5351.280	H	Z	AV	33.46	7.88	2.01	N/A	43.35	54.00	10.65
		10458.930	V	Z	PK	46.95	12.60	N/A	-9.54	50.01	68.20	18.19
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	151 (5755 MHz)	5649.170	H	Z	PK	45.74	8.98	N/A	N/A	54.72	68.20	13.48
		11510.200	V	Z	PK	45.85	14.20	N/A	-9.54	50.51	74.00	23.49
		11511.170	V	Z	AV	34.61	14.20	2.01	-9.54	41.28	54.00	12.72
		-	-	-	-	-	-	-	-	-	-	-
	159 (5795 MHz)	5947.850	H	Z	PK	44.41	9.55	N/A	N/A	53.96	68.20	14.24
		11597.330	V	Z	PK	45.19	14.25	N/A	-9.54	49.90	74.00	24.10
		11597.770	V	Z	AV	35.11	14.25	2.01	-9.54	41.83	54.00	12.17
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)
4. The limit is converted to field strength.
   E[dBuV/m] = EIRP[dBm] + 95.2 dB = -27 dBm + 95.2 = 68.2 dBuV/m

8.7 AC Conducted Emissions

▣ Test Procedure

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

▣ Measurement Data: Comply

Note 1: See next pages for actual measured spectrum plots and data for worst case result.

▣ Minimum Standard: FCC Part 15.207(a)

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 1 & 802.11n(HT40) & MIMO & 5190 MHz

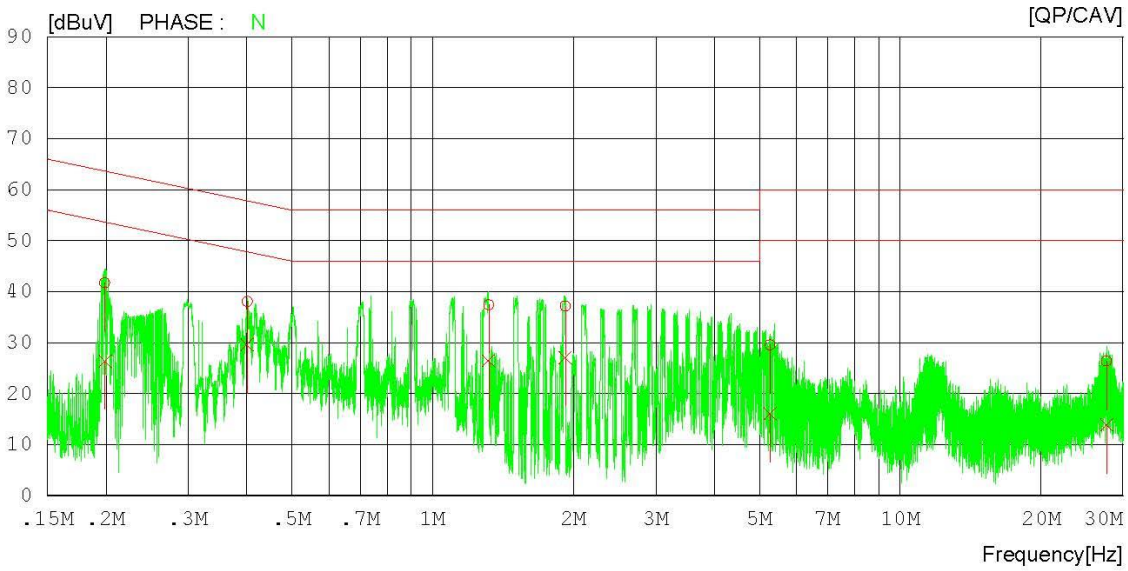
Results of Conducted Emission

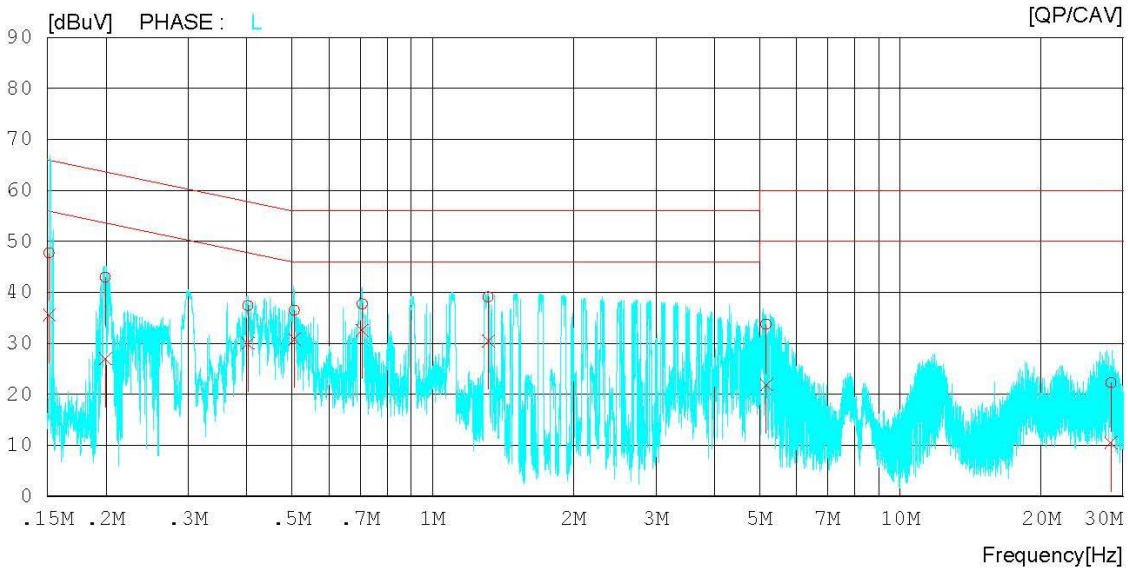
DT&C Date 2017-02-10

Model	EVS 2430W	Temp/Humi.	23 'C 48 %
Function	5.1GHz_WLAN	Power Supply	AC 120 V 60 Hz
Mode	802.11n(HT40)	Operator	J.W.Kim
Test condition			

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (Data List)

Test Mode: U-NII 1 & 802.11n(HT40) & MIMO & 5190 MHz

Results of Conducted Emission

DT&C Date 2017-02-10

Model	EVS 2430W	Temp/Humi.	23 'C 48 %
Function	5.1GHz_WLAN	Power Supply	AC 120 V 60 Hz
Mode	802.11n(HT40)	Operator	J.W.Kim
Test condition			

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.19923	39.62	24.33	2.07	41.69	26.40	63.64	53.64	21.95	27.24	N
2	0.40171	37.18	28.76	0.87	38.05	29.63	57.82	47.82	19.77	18.19	N
3	1.31820	36.98	26.11	0.36	37.34	26.47	56.00	46.00	18.66	19.53	N
4	1.92060	36.87	26.74	0.33	37.20	27.07	56.00	46.00	18.80	18.93	N
5	5.27500	29.24	15.70	0.34	29.58	16.04	60.00	50.00	30.42	33.96	N
6	27.63360	25.77	13.32	0.57	26.34	13.89	60.00	50.00	33.66	36.11	N
7	0.15127	44.36	32.18	3.35	47.71	35.53	65.93	55.93	18.22	20.40	L
8	0.19971	40.79	24.89	2.09	42.88	26.98	63.62	53.62	20.74	26.64	L
9	0.40282	36.46	29.07	0.89	37.35	29.96	57.80	47.80	20.45	17.84	L
10	0.50650	35.75	30.10	0.70	36.45	30.80	56.00	46.00	19.55	15.20	L
11	0.70633	37.19	31.99	0.53	37.72	32.52	56.00	46.00	18.28	13.48	L
12	1.31580	38.65	30.12	0.39	39.04	30.51	56.00	46.00	16.96	15.49	L
13	5.17020	33.28	21.41	0.38	33.66	21.79	60.00	50.00	26.34	28.21	L
14	28.23160	21.44	9.71	0.75	22.19	10.46	60.00	50.00	37.81	39.54	L

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 3 & 802.11n(HT20) & MIMO & 5745 MHz

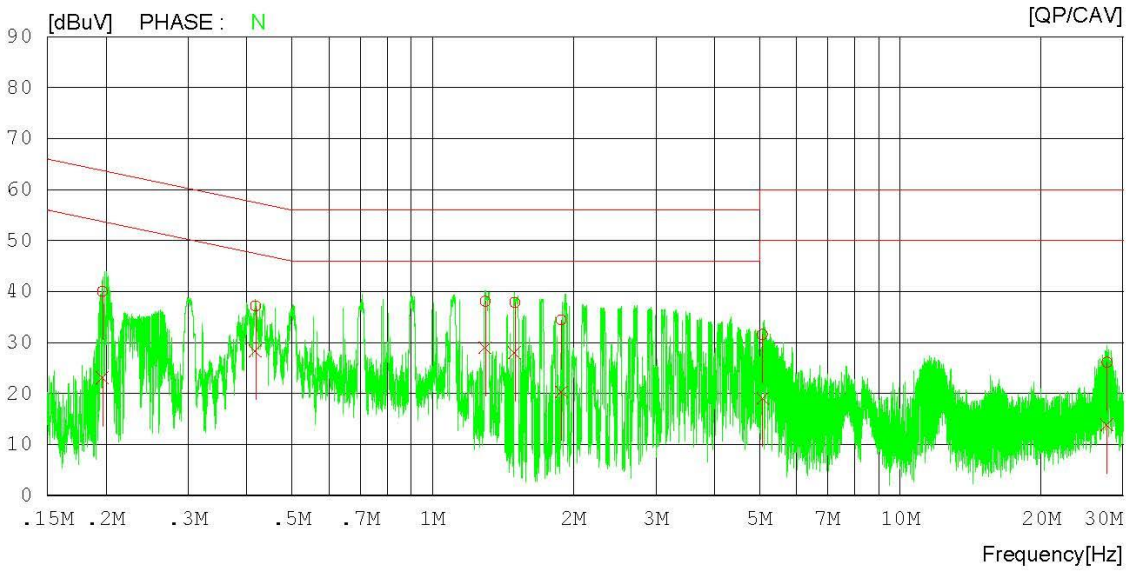
Results of Conducted Emission

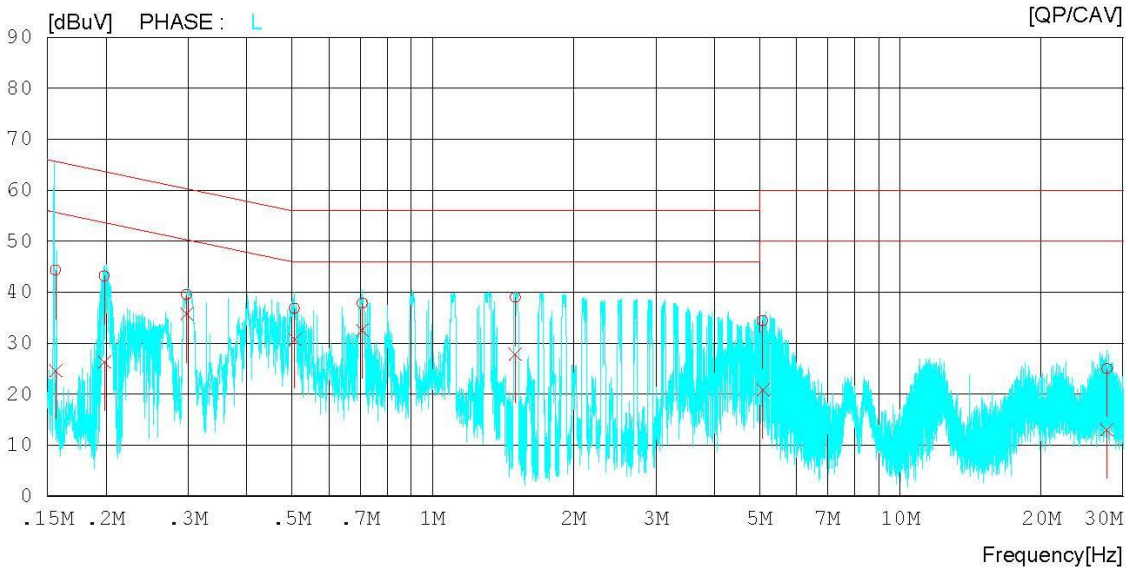
DT&C Date 2017-02-10

Model	EVS 2430W	Temp/Humi.	23 'C 48 %
Function	5.7GHz_WLAN	Power Supply	AC 120 V 60 Hz
Mode	802.11n(HT20)	Operator	J.W.Kim
Test condition			

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & 802.11n(HT20) & MIMO & 5745 MHz

Results of Conducted Emission

DT&C Date 2017-02-10

Model	EVS 2430W	Temp/Humi.	23 'C 48 %
Function	5.7GHz_WLAN	Power Supply	AC 120 V 60 Hz
Mode	802.11n(HT20)	Operator	J.W.Kim
Test condition			

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

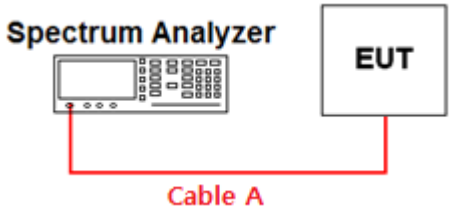
NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.19668	37.87	20.96	2.12	39.99	23.08	63.75	53.75	23.76	30.67	N
2	0.41764	36.33	27.53	0.84	37.17	28.37	57.49	47.49	20.32	19.12	N
3	1.29520	37.76	28.62	0.36	38.12	28.98	56.00	46.00	17.88	17.02	N
4	1.49820	37.52	27.69	0.34	37.86	28.03	56.00	46.00	18.14	17.97	N
5	1.88700	34.06	20.02	0.33	34.39	20.35	56.00	46.00	21.61	25.65	N
6	5.07540	31.23	18.76	0.34	31.57	19.10	60.00	50.00	28.43	30.90	N
7	27.67540	25.60	13.30	0.57	26.17	13.87	60.00	50.00	33.83	36.13	N
8	0.15617	41.05	21.39	3.18	44.23	24.57	65.67	55.67	21.44	31.10	L
9	0.19849	41.06	24.13	2.11	43.17	26.24	63.67	53.67	20.50	27.43	L
10	0.29796	38.21	34.43	1.25	39.46	35.68	60.30	50.30	20.84	14.62	L
11	0.50717	36.03	30.02	0.70	36.73	30.72	56.00	46.00	19.27	15.28	L
12	0.70738	37.30	31.95	0.53	37.83	32.48	56.00	46.00	18.17	13.52	L
13	1.50300	38.54	27.50	0.38	38.92	27.88	56.00	46.00	17.08	18.12	L
14	5.07680	34.00	20.46	0.38	34.38	20.84	60.00	50.00	25.62	29.16	L
15	27.68420	24.21	12.23	0.74	24.95	12.97	60.00	50.00	35.05	37.03	L

8.8 Occupied Bandwidth

▣ **Test Requirements**

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured

▣ **Test Configuration**



▣ **Test Procedure :**

- Procedure: RSS-Gen[6.6]

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

▣ **Test Result : NA**

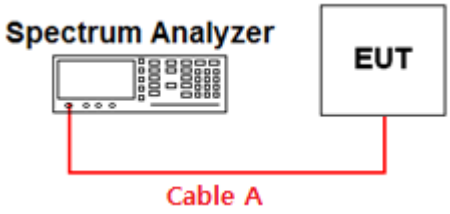
9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	16/09/09	17/09/09	MY50200834
Spectrum Analyzer	Agilent Technologies	N9030A	16/10/18	17/10/18	MY53310140
Digital Multimeter	Agilent Technologies	34401A	16/01/05	17/01/05	US36099541
			17/01/04	18/01/04	
DC Power Supply	SM techno	SDP30-5D	16/01/05	17/01/05	305DLJ204
			17/01/05	18/01/05	
Signal Generator	Rohde Schwarz	SMBV100A	16/01/05	17/01/05	255571
			17/01/04	08/01/04	
Signal Generator	Rohde Schwarz	SMF100A	16/06/23	17/06/23	102341
Thermohygrometer	BODYCOM	BJ5478	16/04/22	17/04/22	120612-2
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	16/09/09	17/09/09	U5542113
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
Bilog Antenna	SCHAFFNER	CBL6112B	16/05/23	18/05/23	2737
Horn Antenna	ETS-LINDGREN	3117	16/05/03	18/05/03	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	15/09/03	17/09/03	155
PreAmplifier	Agilent	8449B	16/02/24	17/02/24	3008A00370
PreAmplifier	tsj	MLA-010K01-B01-27	16/03/10	17/03/10	1844539
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	16/12/04	17/12/04	163
EMI TEST RECEIVER	Rohde Schwarz	ESU	16/07/18	17/07/18	100469
EMI TEST RECEIVER	Rohde Schwarz	ESCI	16/02/25	17/02/25	100364
Highpass Filter	Wainwright Instruments	WHNX6-6320-8000-26500-40CC	16/09/13	17/09/13	1
ARTIFICIAL MAINS NETWORK	Narda S.T.S. / PMM	PMM L2-16B	16/06/22	17/06/22	000WX20305
SINGLE-PHASE MASTER	NF	4420	16/09/08	17/09/08	3049354420023
Attenuator	SMAJK	SMAJK-50-10	16/09/08	17/09/08	15081901
Power Meter	Anritsu	ML2496A	16/06/23	17/06/23	1338004
Wide Bandwidth Sensor	Anritsu	MA2411B	16/06/23	17/06/23	1306053

APPENDIX I

Conducted Test set up Diagram

- **Conducted Measurement**



APPENDIX II

Duty Cycle Information

▣ **Test Procedure**

Duty Cycle [X = On Time / (On + Off time)] is measured using Measurement Procedure **of KDB789033 D02**

1. Set the center frequency of the spectrum analyzer to the center frequency of the transmission.
2. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW ≥ RBW. Set detector = peak.
4. Note : The zero-span measurement method shall not be used unless both **RBW and VBW are > 50/*T***, where *T* is defined in section II.B.1.a), and **the number of sweep points across duration *T* exceeds 100**. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

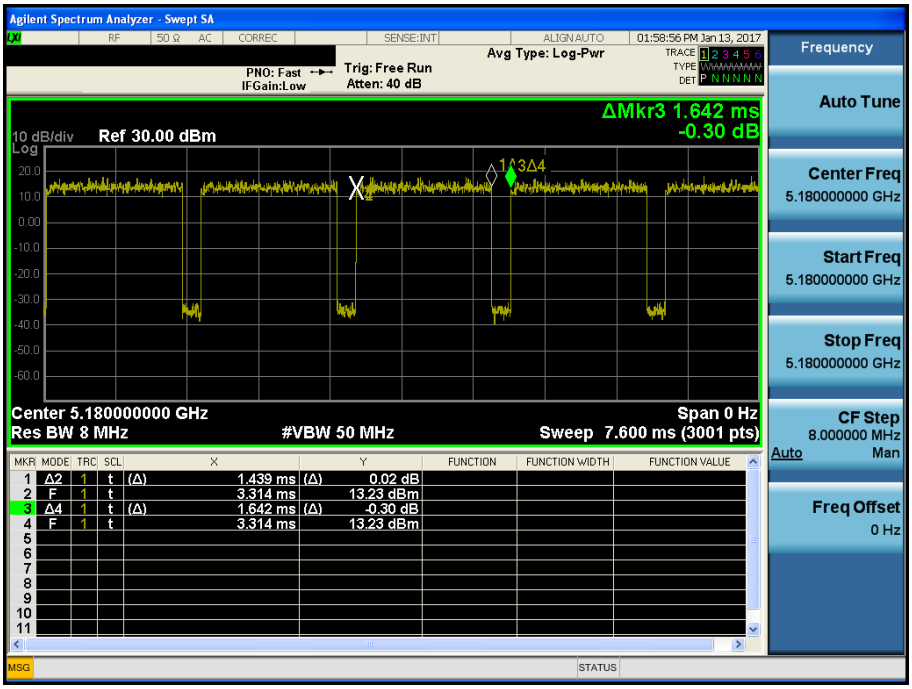
T : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
(***T* = On time** of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

▣ Test Results:

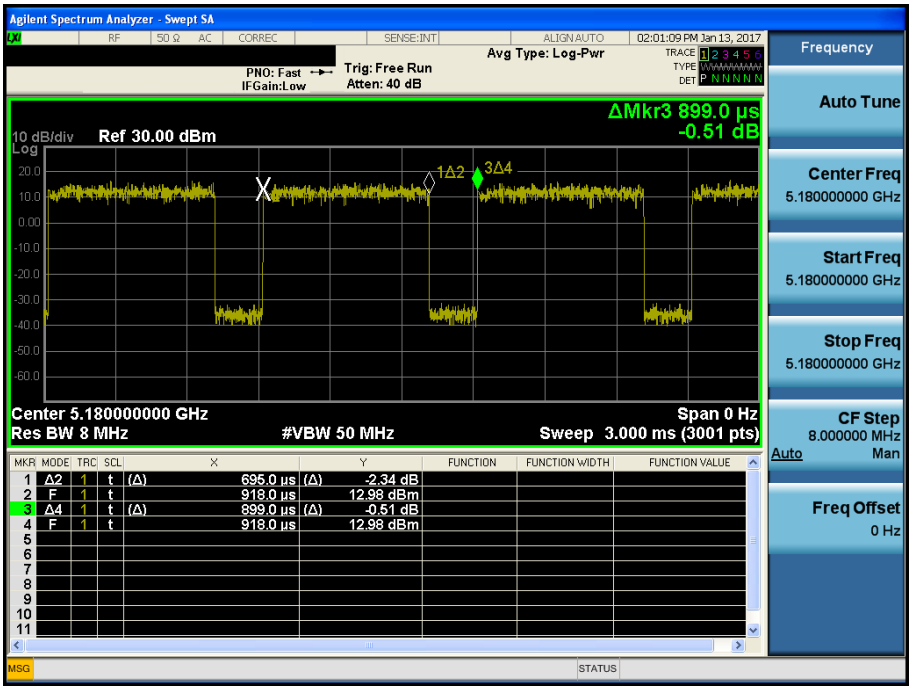
Multiple Transmit

Mode	Channel	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (*x*) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/*T* [kHz]
			On Time [ms]	On+OffTime [ms]	*x*		
802.11a	36	5180	1.439	1.642	0.87	0.61	34.75
802.11n (HT20)	36	5180	0.695	0.899	0.77	1.14	71.94
802.11n (HT40)	38	5190	0.355	0.558	0.63	2.01	140.85

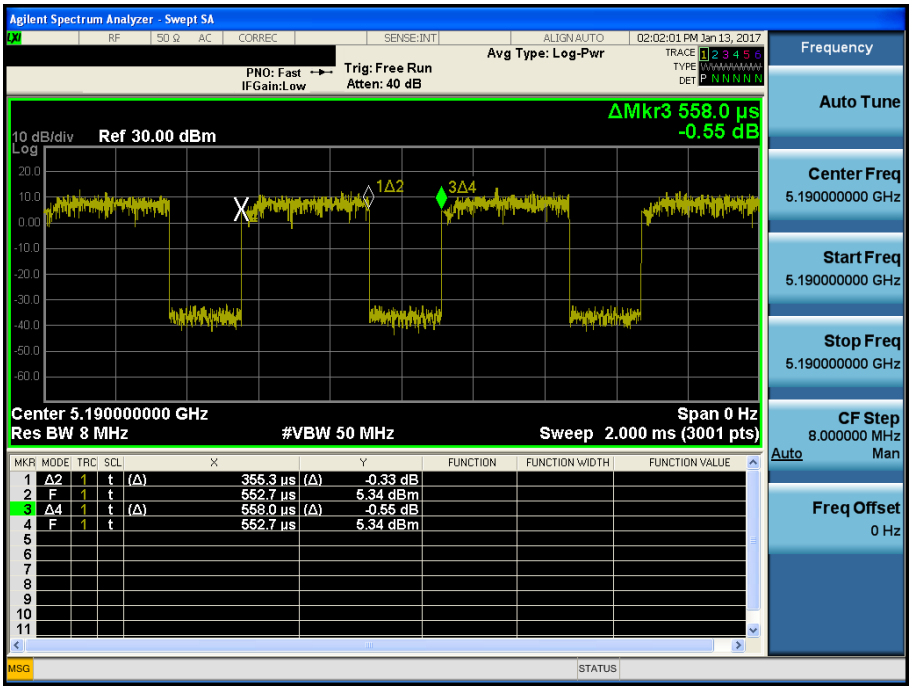
Duty Cycle Test Mode: 802.11a & Ch.36



Duty Cycle Test Mode: 802.11n HT20 & Ch.36



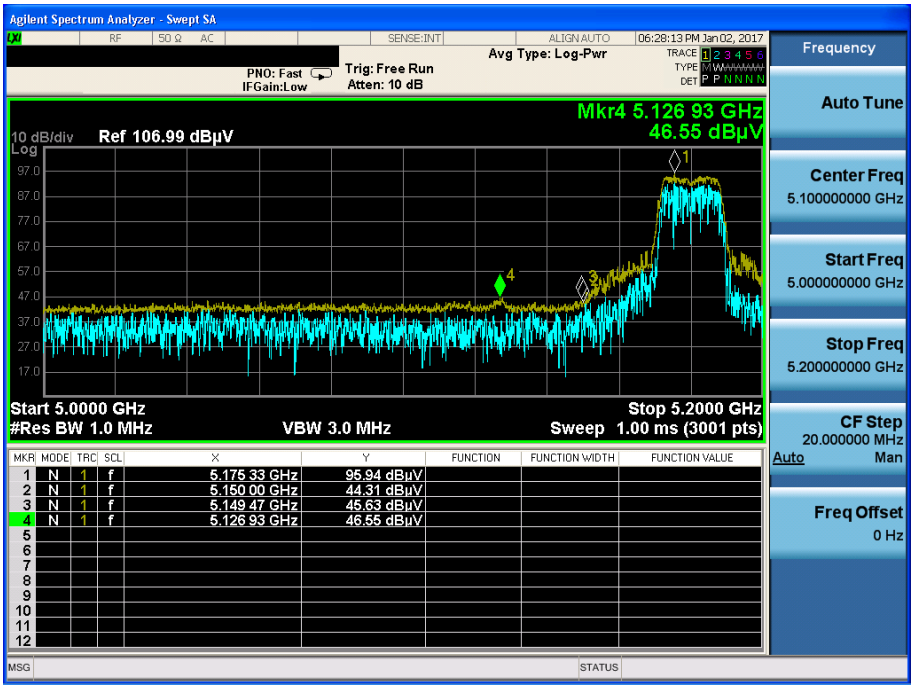
Duty Cycle Test Mode: 802.11n HT40 & Ch.38



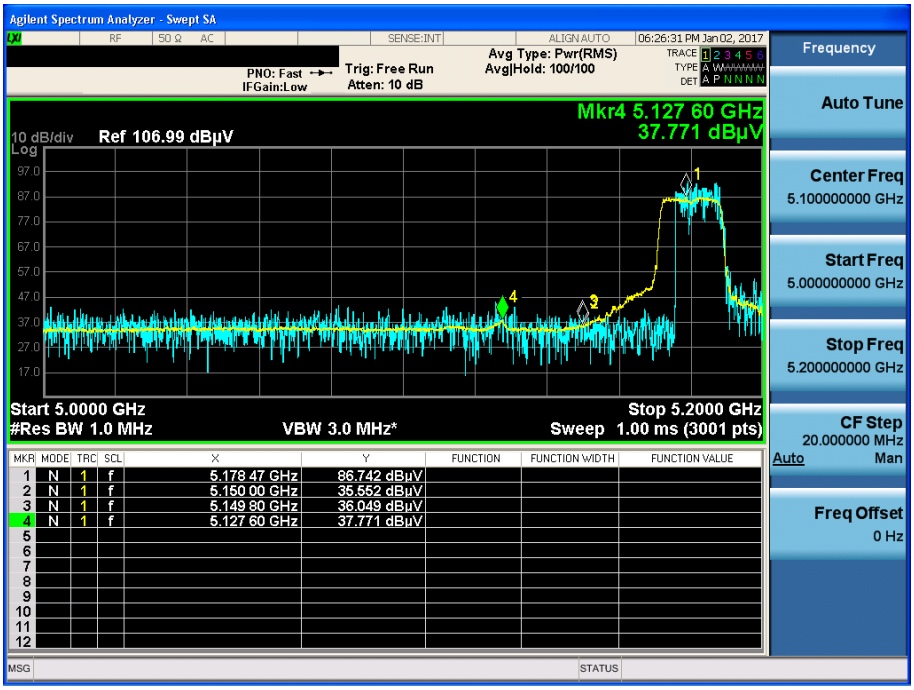
APPENDIX III

Unwanted Emissions (Radiated) Test Plot

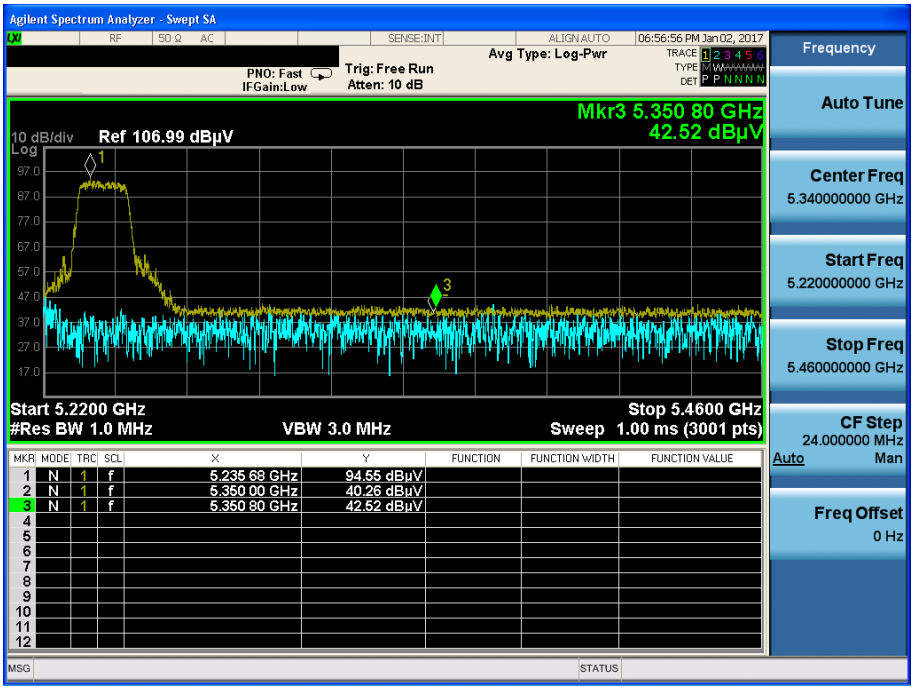
802.11a & U-NII 1 & Ch.36 & Z axis & Hor Detector Mode : PK



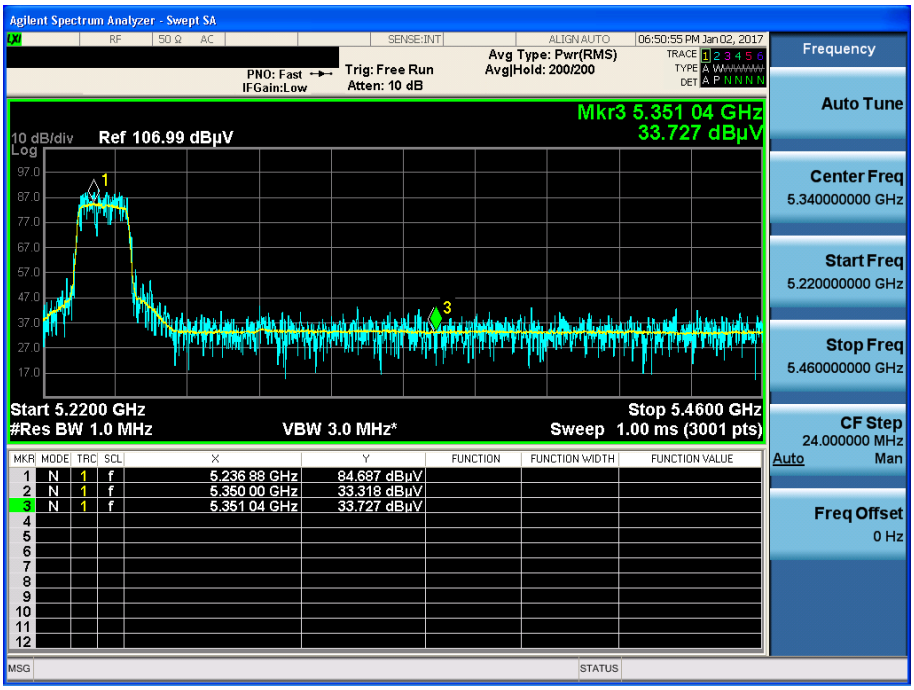
802.11a & U-NII 1 & Ch.36 & Z axis & Hor Detector Mode : AV



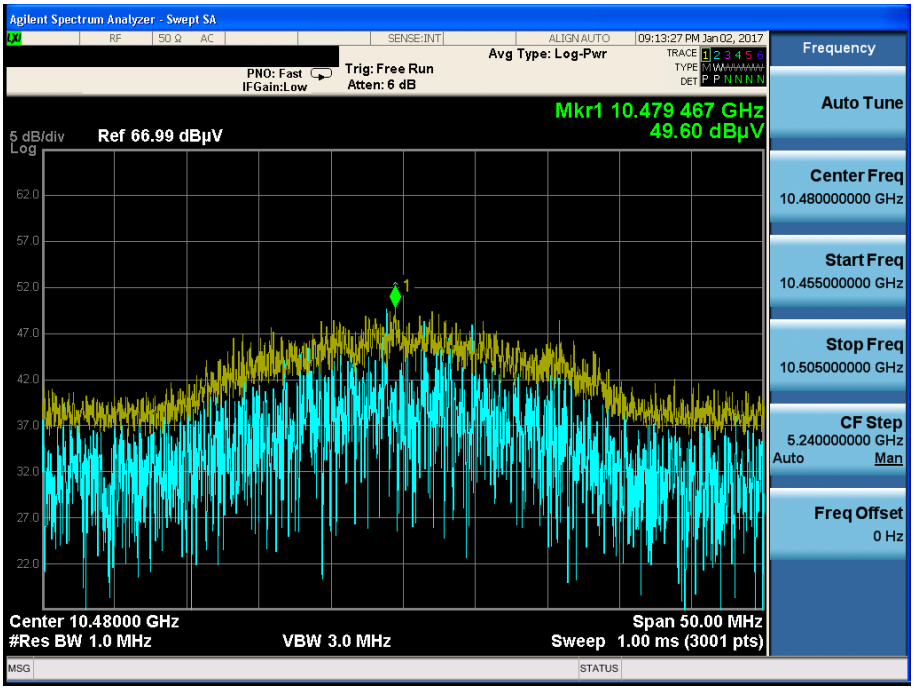
802.11a & U-NII 1 & Ch.48 & Z axis & Hor **Detector Mode : PK**



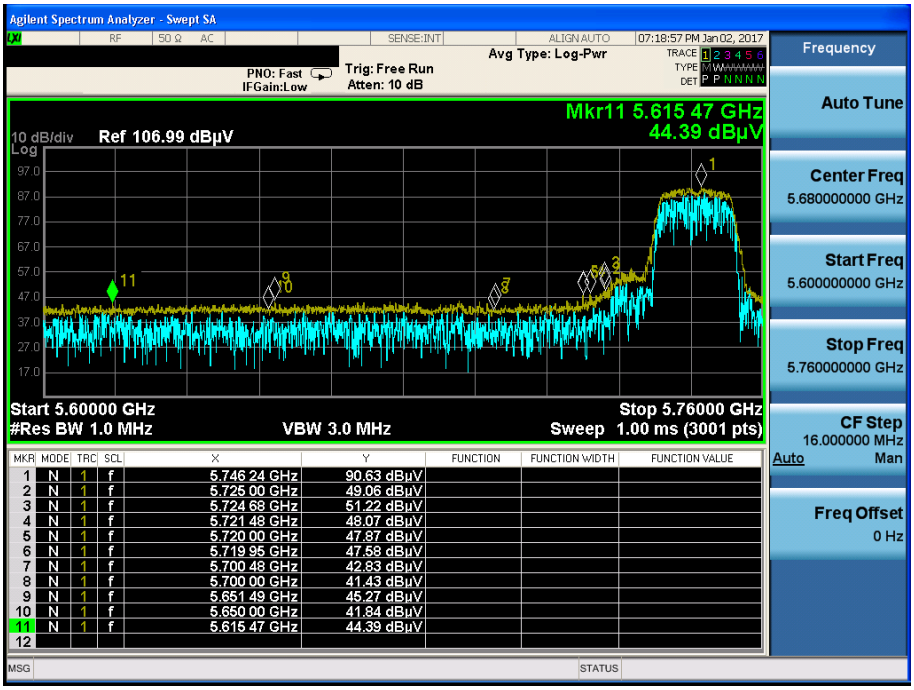
802.11a & U-NII 1 & Ch.48 & Z axis & Hor **Detector Mode : AV**



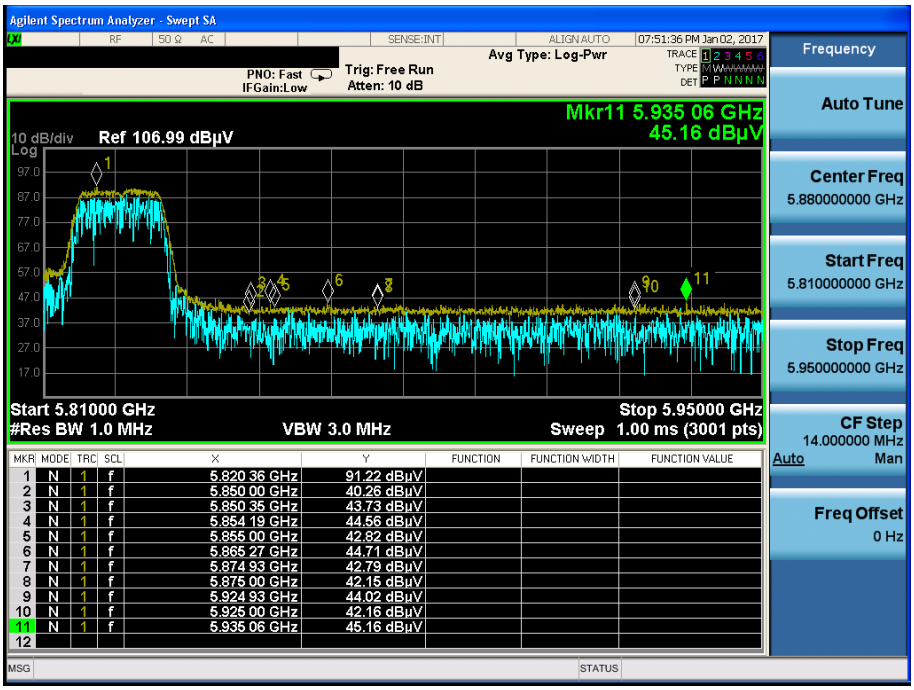
802.11a & U-NII 1 & Ch.48 & Z axis & Ver **Detector Mode : PK**



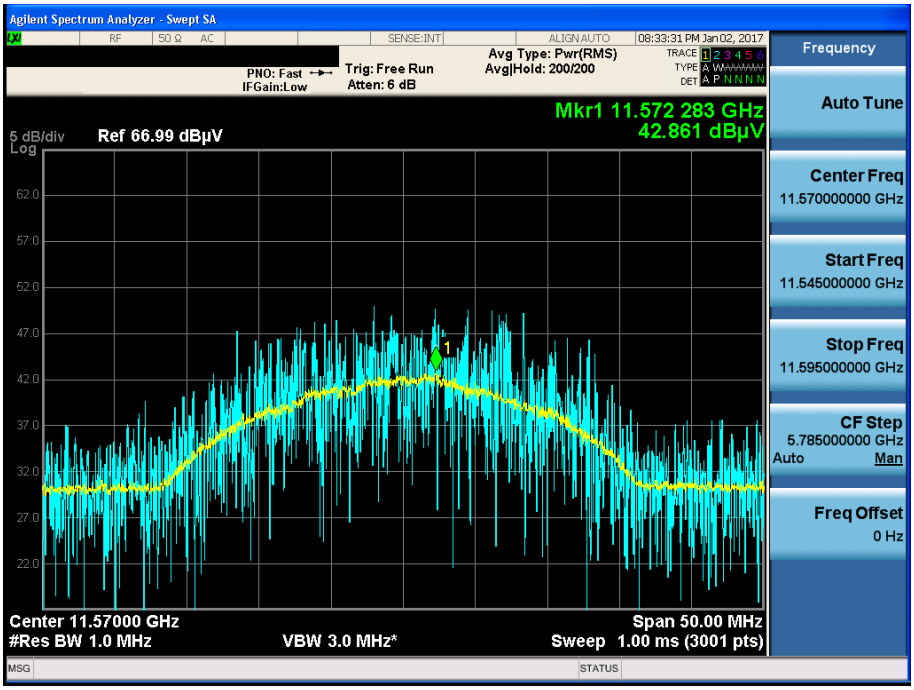
802.11a & U-NII 3 & Ch.149 & Z axis & Hor **Detector Mode : PK**



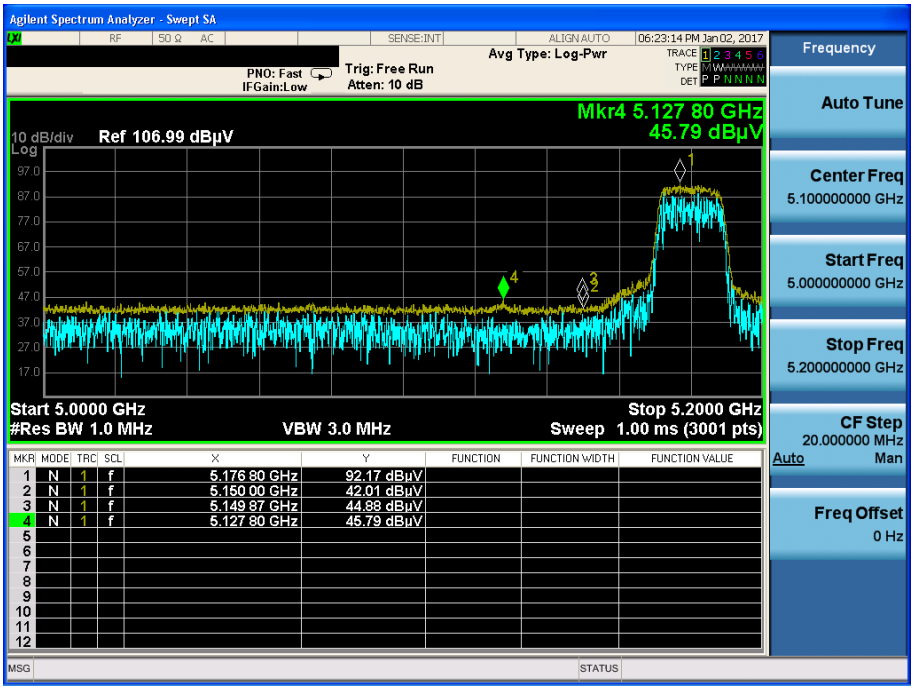
802.11a & U-NII 3 & Ch.165 & Z axis & Hor **Detector Mode : PK**



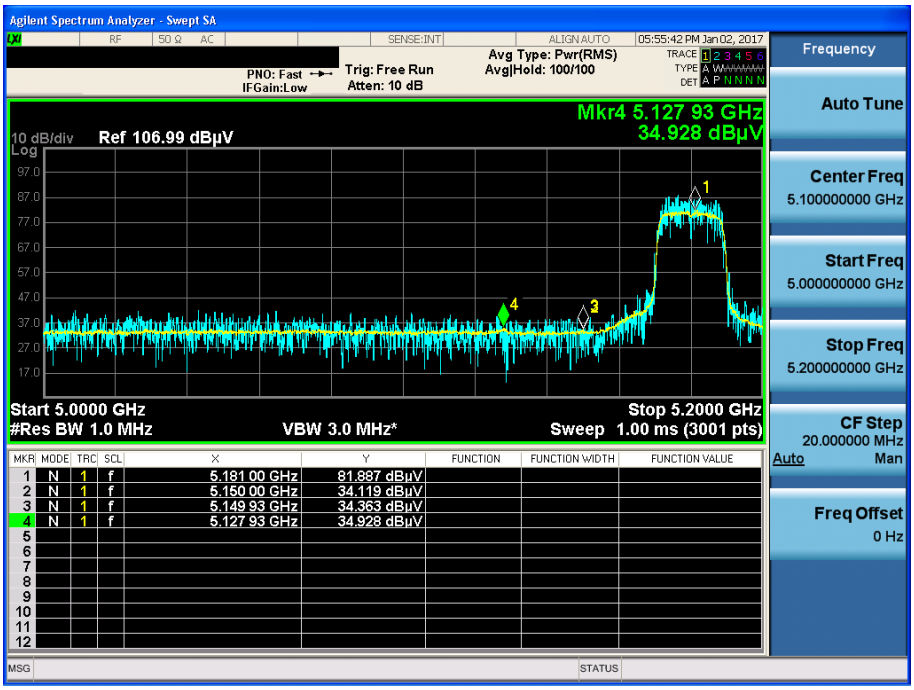
802.11a & U-NII 3 & Ch.157 & Z axis & Ver **Detector Mode : AV**



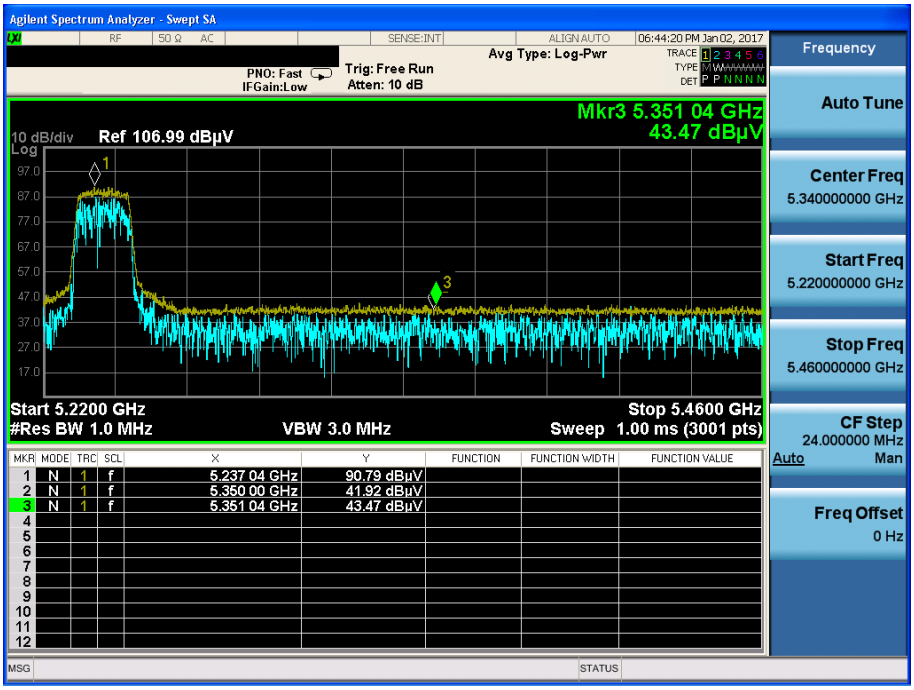
802.11n(HT20) & U-NII 1 & Ch.36 & Z axis & Hor Detector Mode : PK



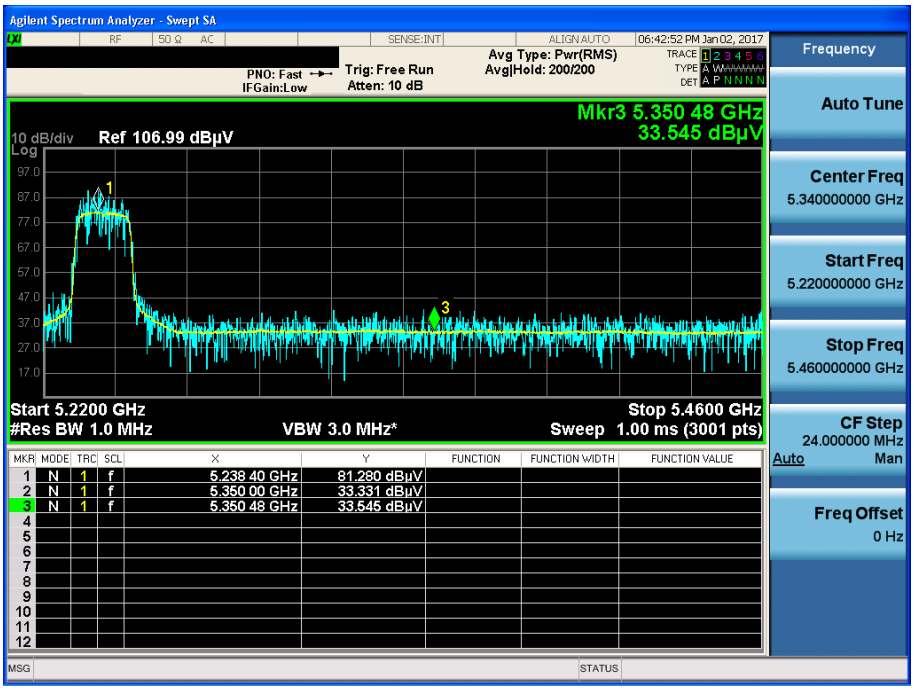
802.11n(HT20) & U-NII 1 & Ch.36 & Z axis & Hor Detector Mode : AV



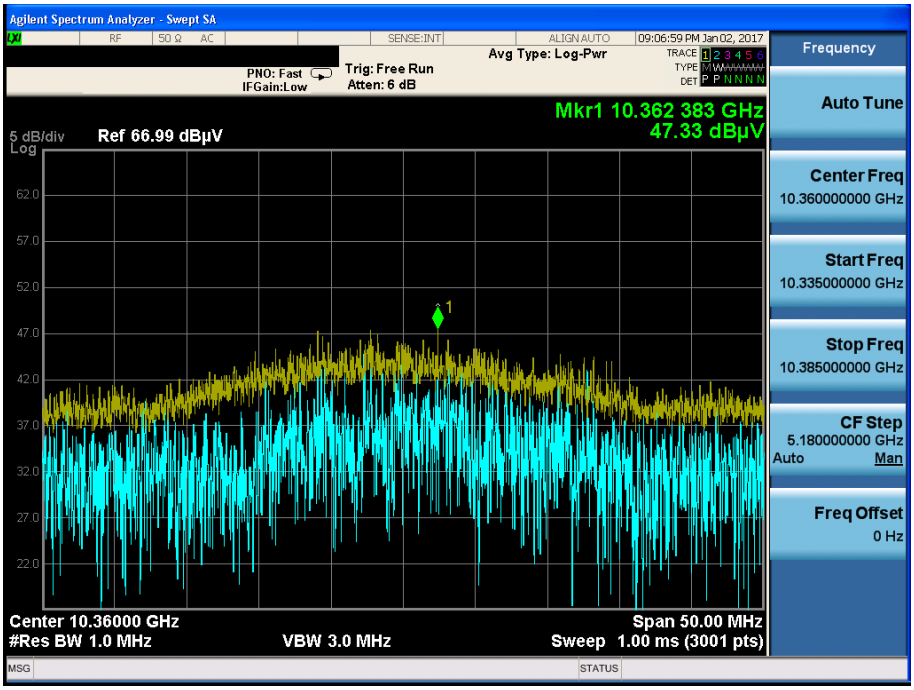
802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Hor Detector Mode : PK



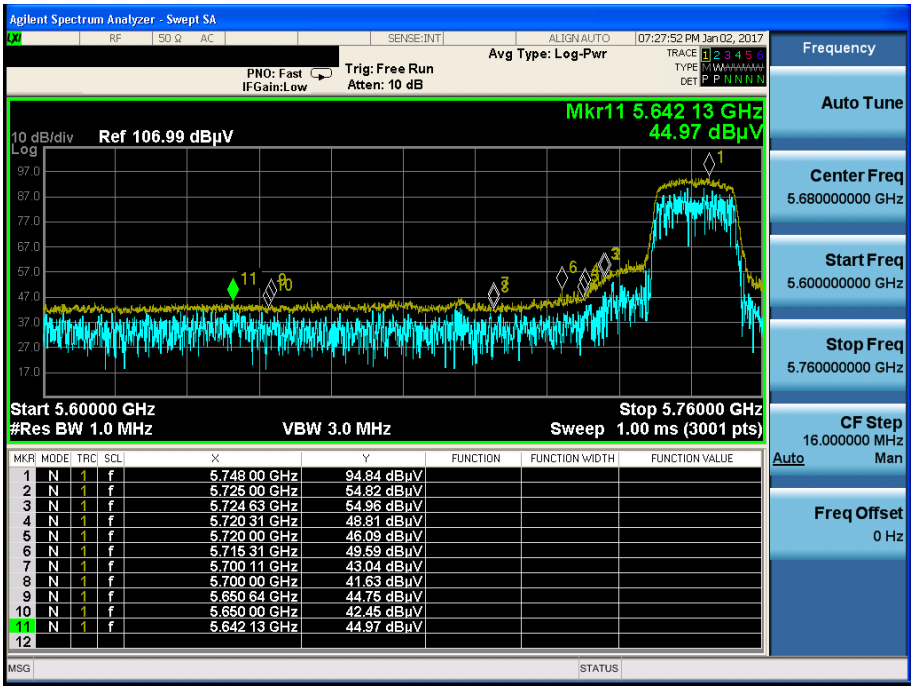
802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Hor Detector Mode : AV



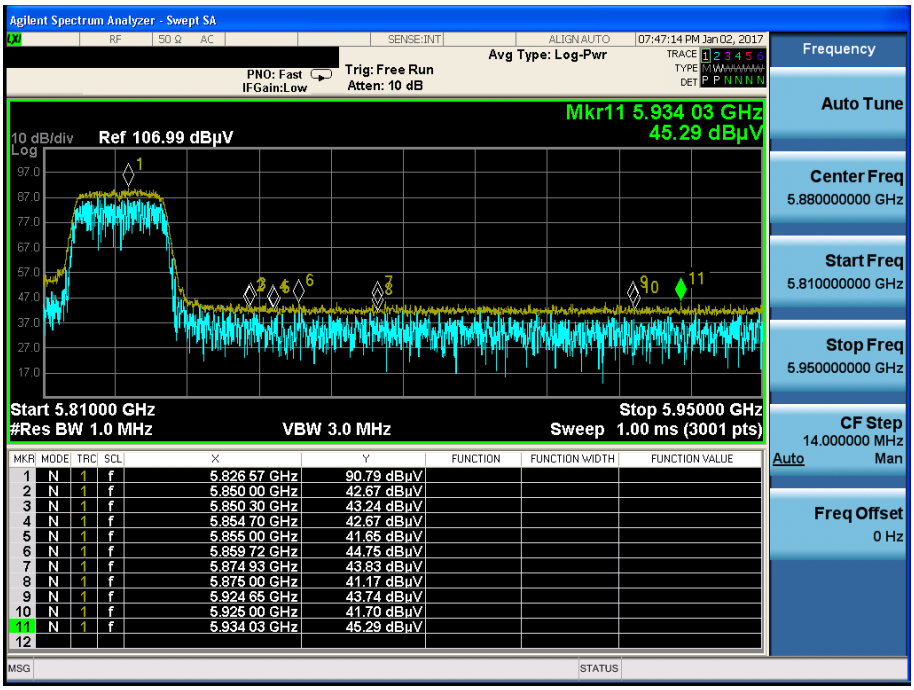
802.11n(HT20) & U-NII 1 & Ch.36 & Z axis & Ver Detector Mode : PK



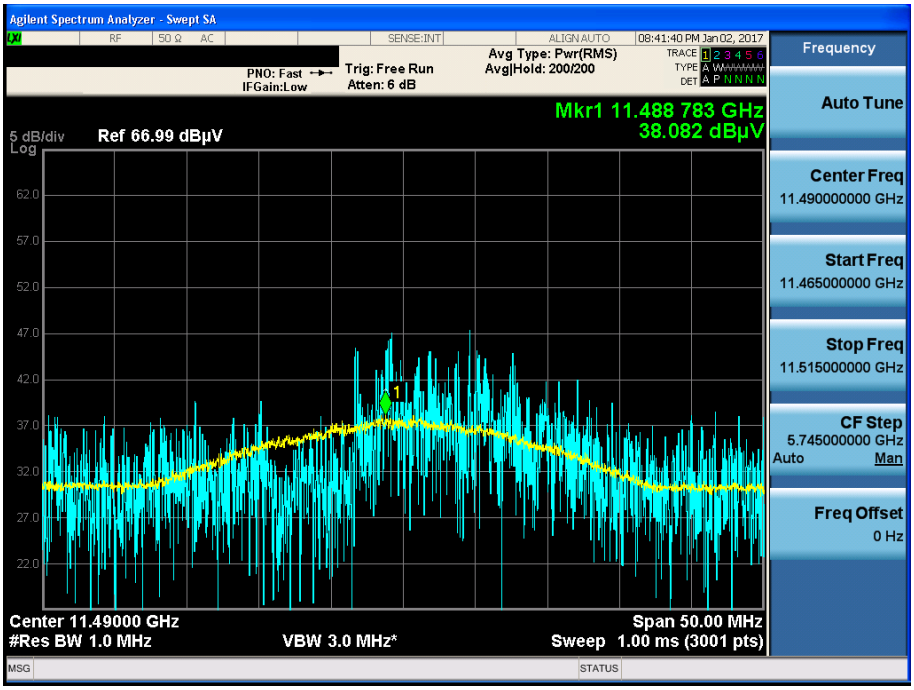
802.11n(HT20) & U-NII 3 & Ch.149 & Z axis & Hor Detector Mode : PK



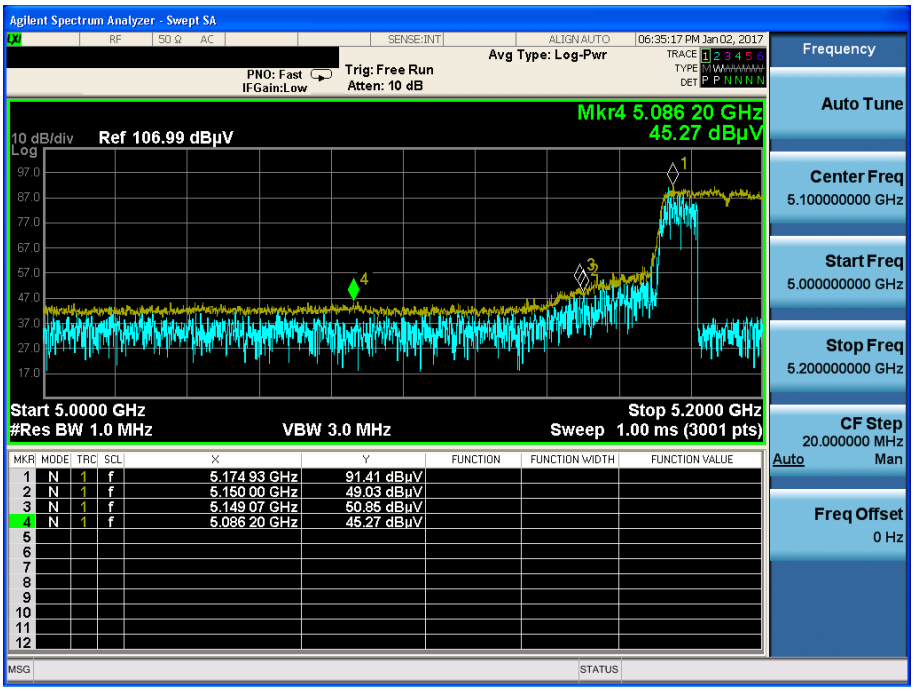
802.11n(HT20) & U-NII 3 & Ch.165 & Z axis & Hor Detector Mode : PK



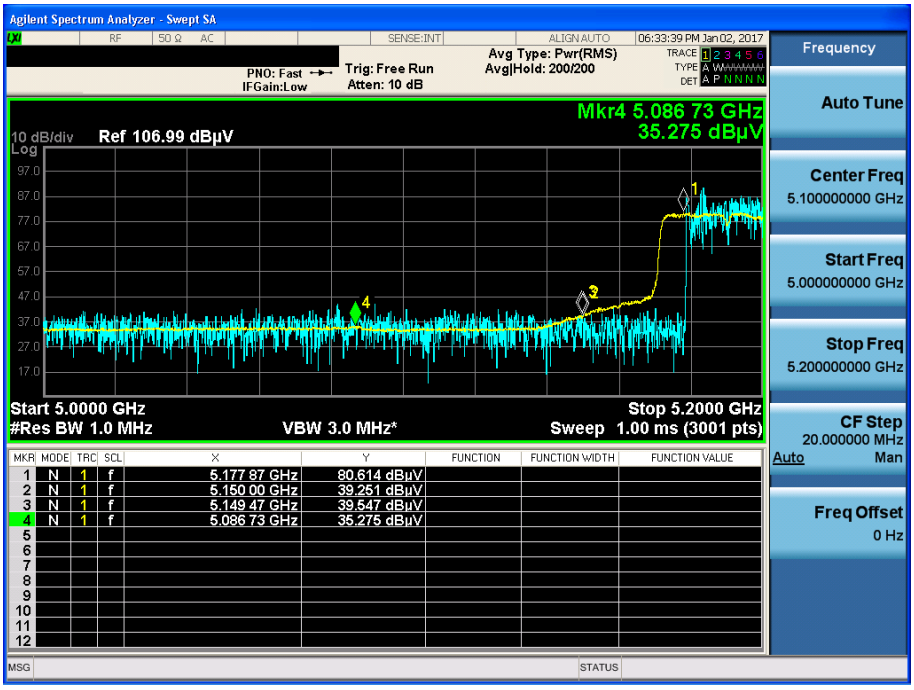
802.11n(HT20) & U-NII 3 & Ch.149 & Z axis & Ver Detector Mode : AV



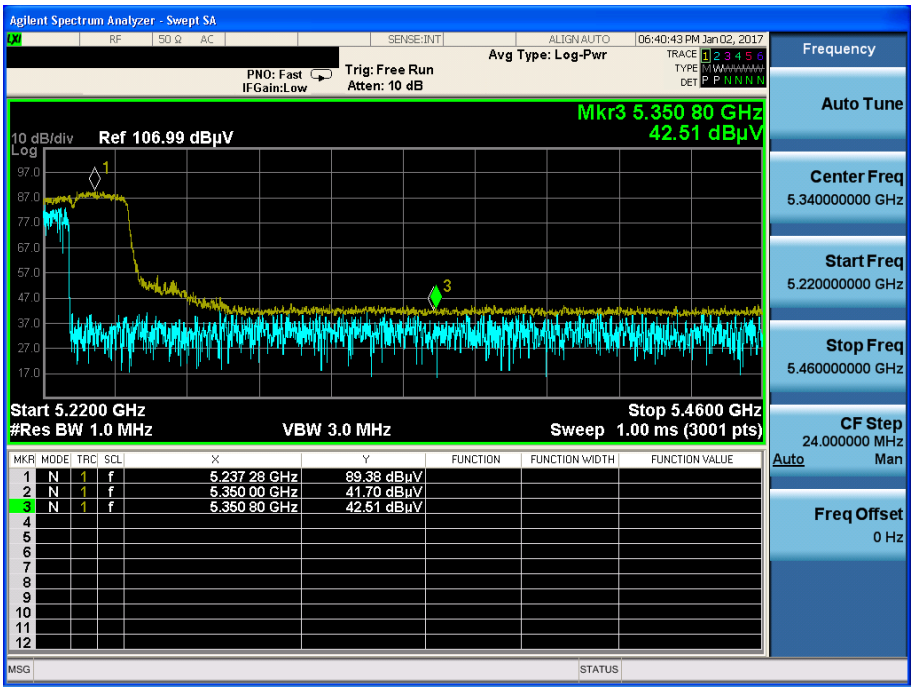
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor Detector Mode : PK



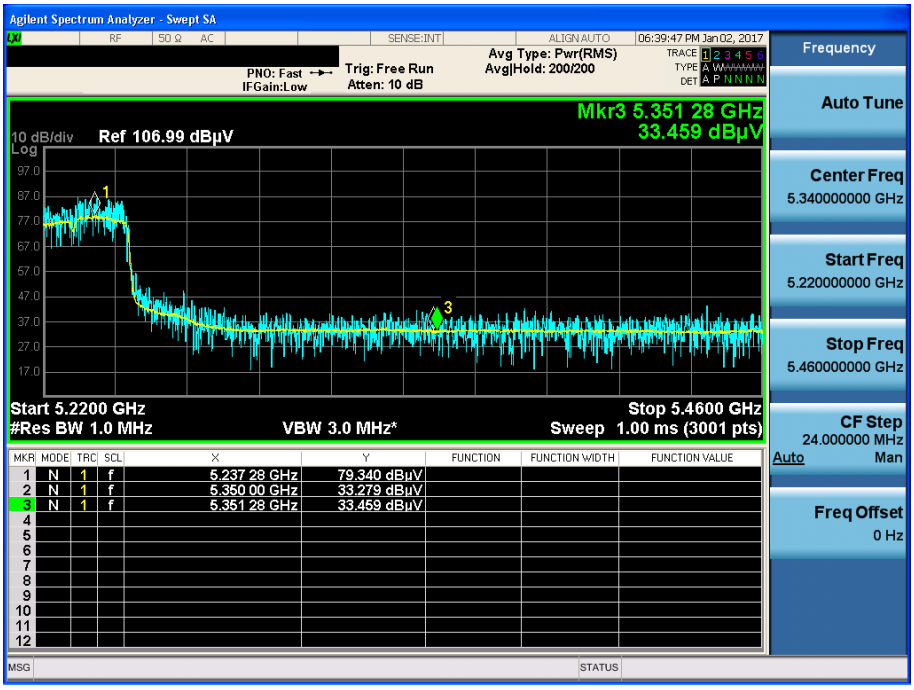
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor Detector Mode : AV



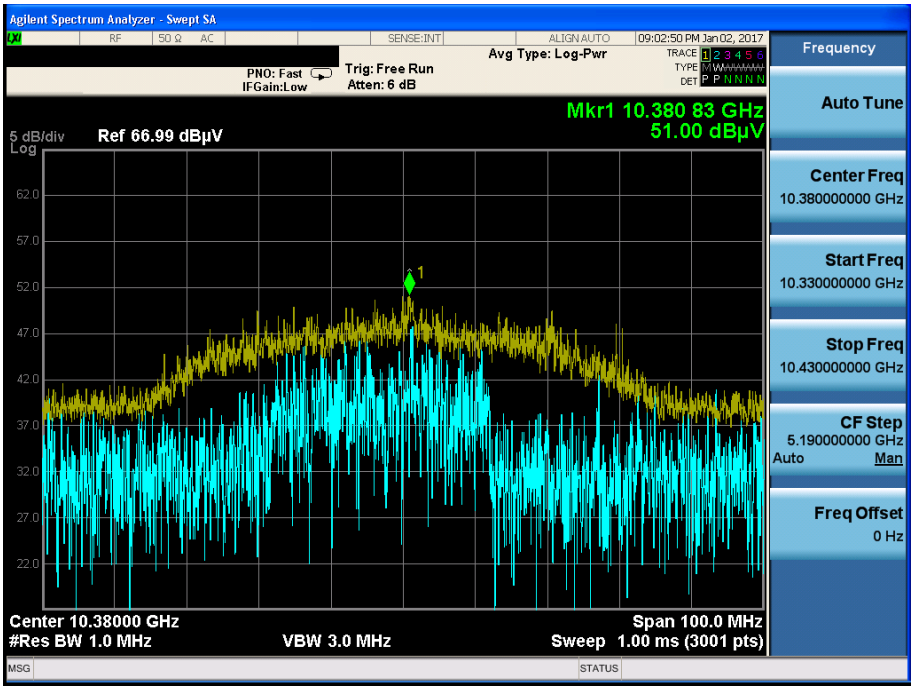
802.11n(HT40) & U-NII 1 & Ch.46 & Z axis & Hor Detector Mode : PK



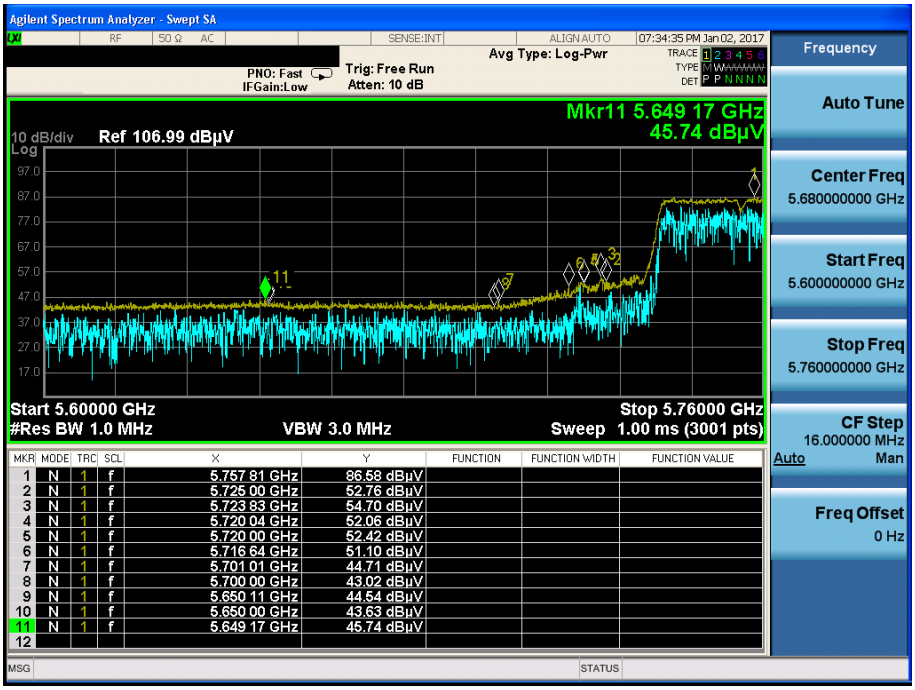
802.11n(HT40) & U-NII 1 & Ch.46 & Z axis & Hor Detector Mode : AV



802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Ver Detector Mode : PK

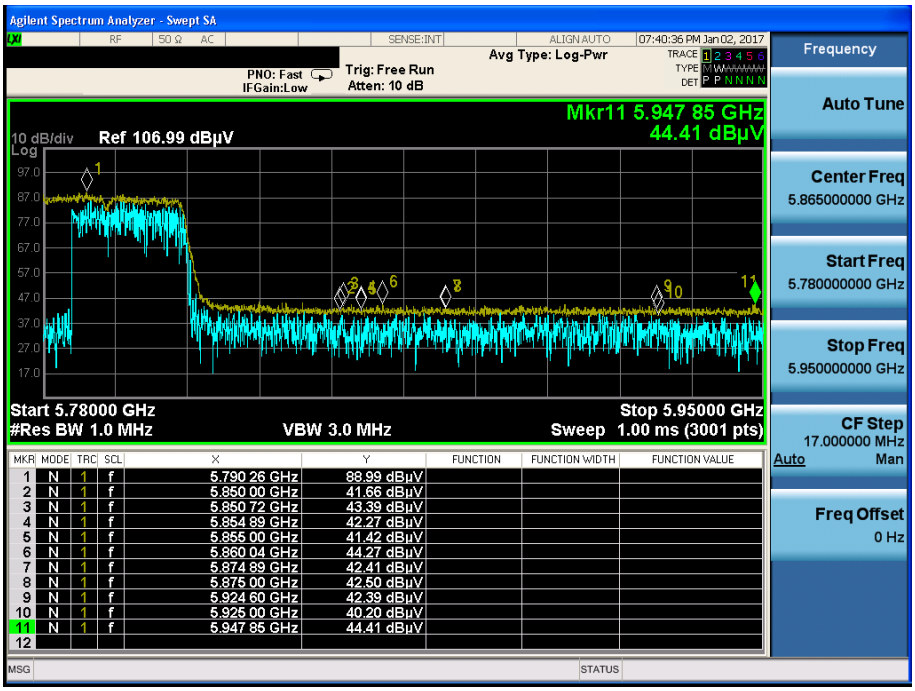


802.11n(HT40) & U-NII 3 & Ch.151 & Z axis & Hor **Detector Mode : PK**



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.757 81 GHz	86.58 dBµV			
2	N	1	f	5.725 00 GHz	52.76 dBµV			
3	N	1	f	5.723 83 GHz	54.70 dBµV			
4	N	1	f	5.720 04 GHz	52.06 dBµV			
5	N	1	f	5.720 00 GHz	52.42 dBµV			
6	N	1	f	5.716 64 GHz	51.10 dBµV			
7	N	1	f	5.701 01 GHz	44.71 dBµV			
8	N	1	f	5.700 00 GHz	43.02 dBµV			
9	N	1	f	5.650 11 GHz	44.54 dBµV			
10	N	1	f	5.650 00 GHz	43.63 dBµV			
11	N	1	f	5.649 17 GHz	45.74 dBµV			
12								

802.11n(HT40) & U-NII 3 & Ch.159 & Z axis & Hor **Detector Mode : PK**



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.790 26 GHz	88.99 dBµV			
2	N	1	f	5.850 00 GHz	41.66 dBµV			
3	N	1	f	5.850 72 GHz	43.39 dBµV			
4	N	1	f	5.854 89 GHz	42.27 dBµV			
5	N	1	f	5.855 00 GHz	41.42 dBµV			
6	N	1	f	5.860 04 GHz	44.27 dBµV			
7	N	1	f	5.874 89 GHz	42.41 dBµV			
8	N	1	f	5.875 00 GHz	42.50 dBµV			
9	N	1	f	5.924 60 GHz	42.39 dBµV			
10	N	1	f	5.925 00 GHz	40.20 dBµV			
11	N	1	f	5.947 85 GHz	44.41 dBµV			
12								

802.11n(HT40) & U-NII 3 & Ch.159 & Z axis & Ver Detector Mode : AV