(Channel 159, 5795MHz, 802.11ac (VHT40), ANT1)

2.6. Frequency Stability

2.6.1. Requirement

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.

2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°C to 40°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before 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. Data for the worst case channel is shown below.

2.6.3. Test Result

U-NII-1 (Ch. 36) 5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.82	+20(Ref)	20	0.004
100%		-30	51	0.010
100%		-20	47	0.009
100%		-10	37	0.007
100%		0	31	0.006
100%		+10	25	0.005
100%		+20	27	0.005
100%		+30	34	0.007
100%		+40	42	0.008
100%		+50	48	0.009
85%	3.25	+20	52	0.010
115%	4.39	+20	41	0.008

U-NII-2A (Ch. 52) 5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.82	+20(Ref)	32	0.006
100%		-30	55	0.010
100%		-20	46	0.009
100%		-10	39	0.007
100%		0	33	0.006
100%		+10	33	0.006
100%		+20	37	0.007
100%		+30	44	0.008
100%		+40	49	0.009
100%		+50	56	0.011
85%	3.25	+20	30	0.006
115%	4.39	+20	31	0.006

U-NII-2C (Ch. 100) 5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.82	+20(Ref)	21	0.004
100%		-30	48	0.009
100%		-20	39	0.007
100%		-10	28	0.005
100%		0	20	0.004
100%		+10	18	0.003
100%		+20	23	0.004
100%		+30	30	0.005
100%		+40	35	0.006
100%		+50	47	0.009
85%	3.25	+20	25	0.005
115%	4.39	+20	36	0.007

U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.82	+20(Ref)	25	0.004
100%		-30	49	0.009
100%		-20	45	0.008
100%		-10	38	0.007
100%		0	33	0.006
100%		+10	24	0.004
100%		+20	29	0.005
100%		+30	25	0.004
100%		+40	39	0.007
100%		+50	40	0.007
85%	3.25	+20	49	0.009
115%	4.39	+20	35	0.006

2.7. Conducted Emission

2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

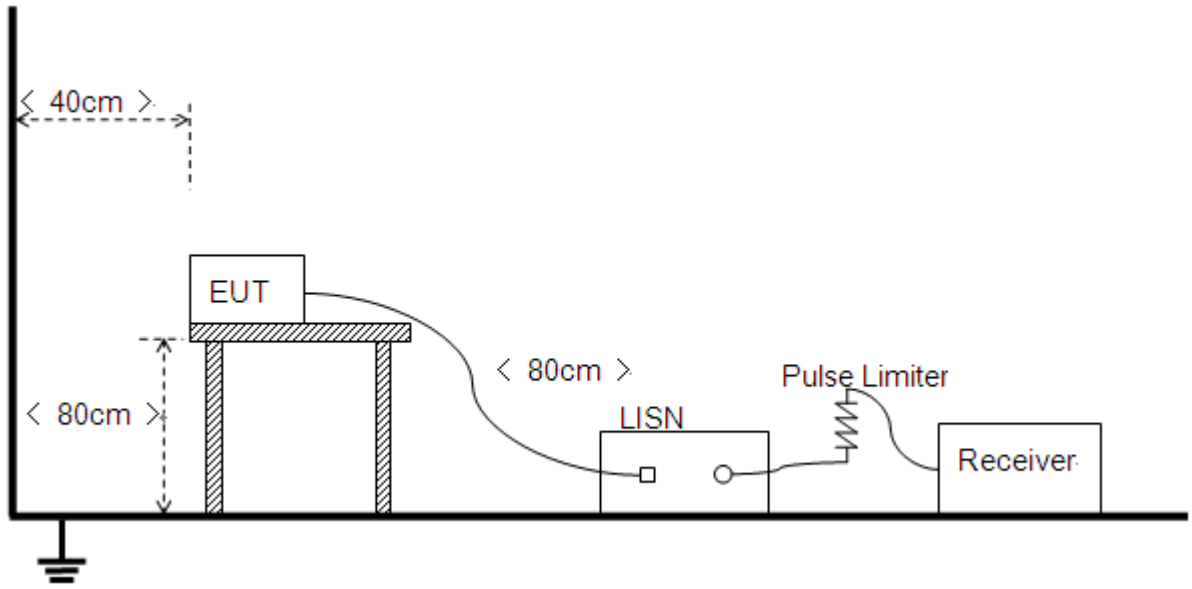
NOTE:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2. Test Description

A. Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test setup:

Test Mode: EUT + USB Cable + Adapter +WIFI TX

Test Voltage: AC 120V/60Hz

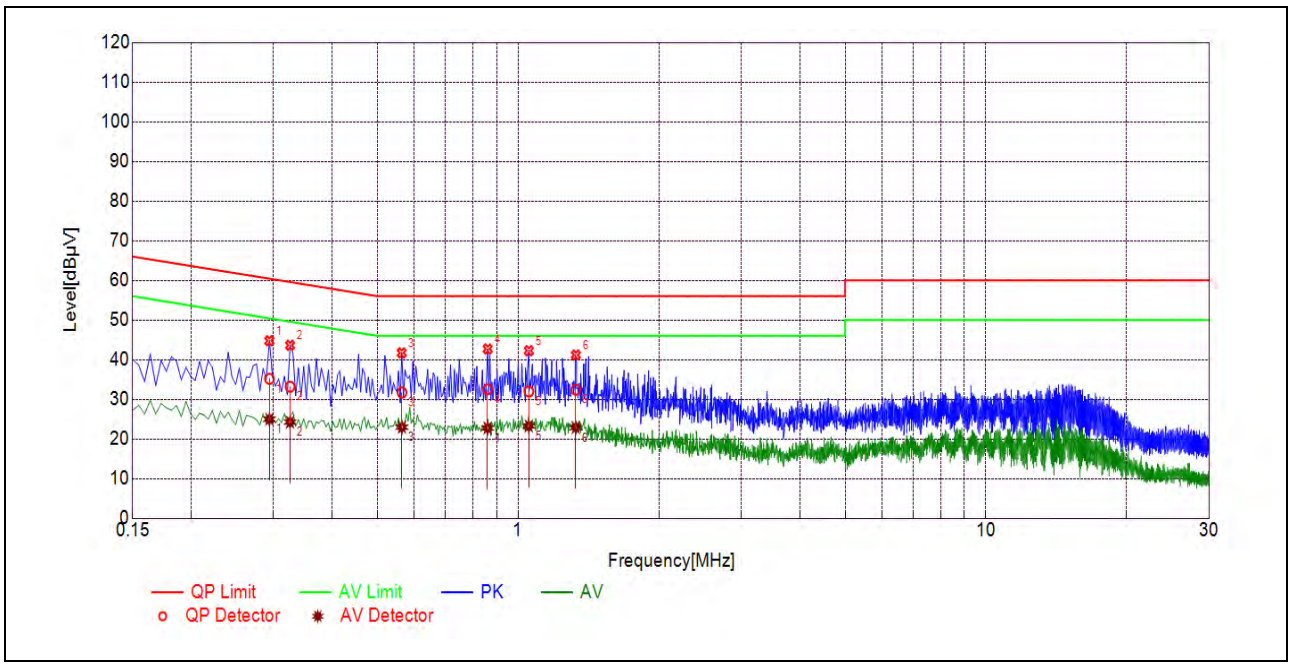
The measurement results are obtained as below:

E [dBμV] $=U_R + L_{Cable\ loss}$ [dB] + A_{Factor}

U_R: Receiver Reading

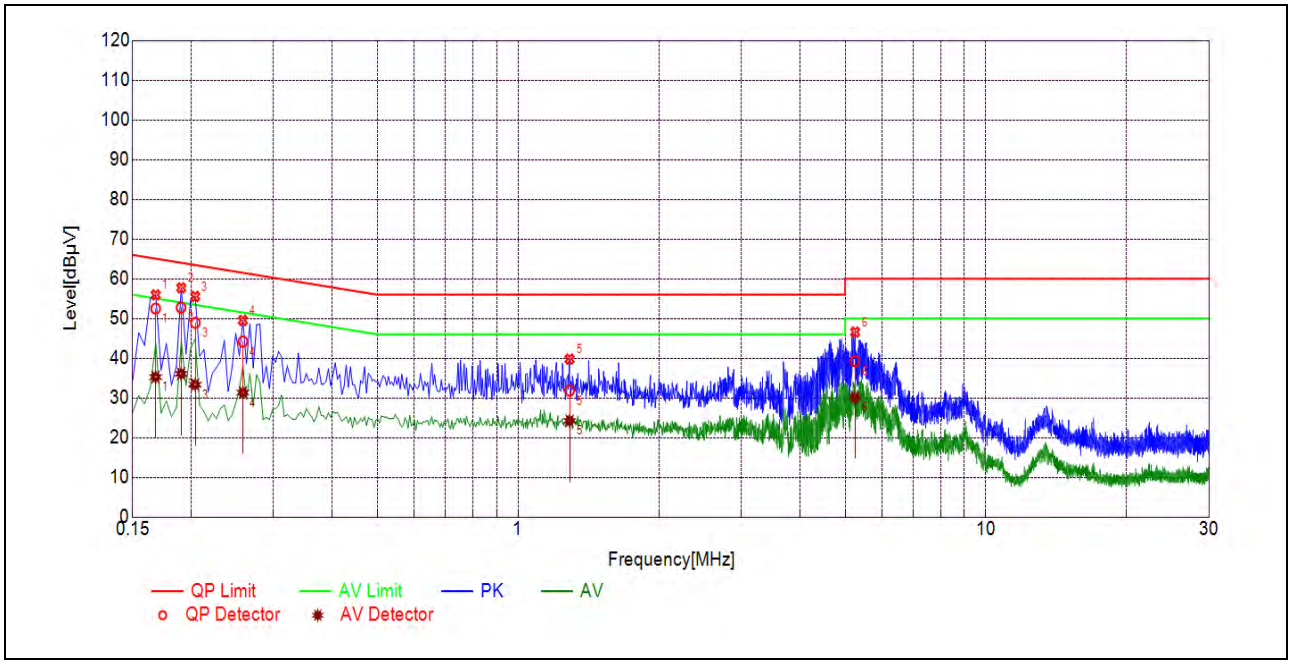
A_{Factor}: Voltage division factor of LISN

B. Test Plots:



(L Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2940	35.17	24.98	60.41	50.41	Line	PASS
2	0.3254	33.19	24.23	59.57	49.57		PASS
3	0.5645	31.71	22.98	56.00	46.00		PASS
4	0.8605	32.53	22.76	56.00	46.00		PASS
5	1.0540	31.98	23.28	56.00	46.00		PASS
6	1.3283	32.44	22.87	56.00	46.00		PASS



(N Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1679	52.50	35.24	65.06	55.06	Neutral	PASS
2	0.1903	52.74	36.06	64.02	54.02		PASS
3	0.2041	48.91	33.34	63.44	53.44		PASS
4	0.2580	44.18	31.36	61.50	51.50		PASS
5	1.2887	31.86	24.22	56.00	46.00		PASS
6	5.2518	39.26	30.10	60.00	50.00		PASS

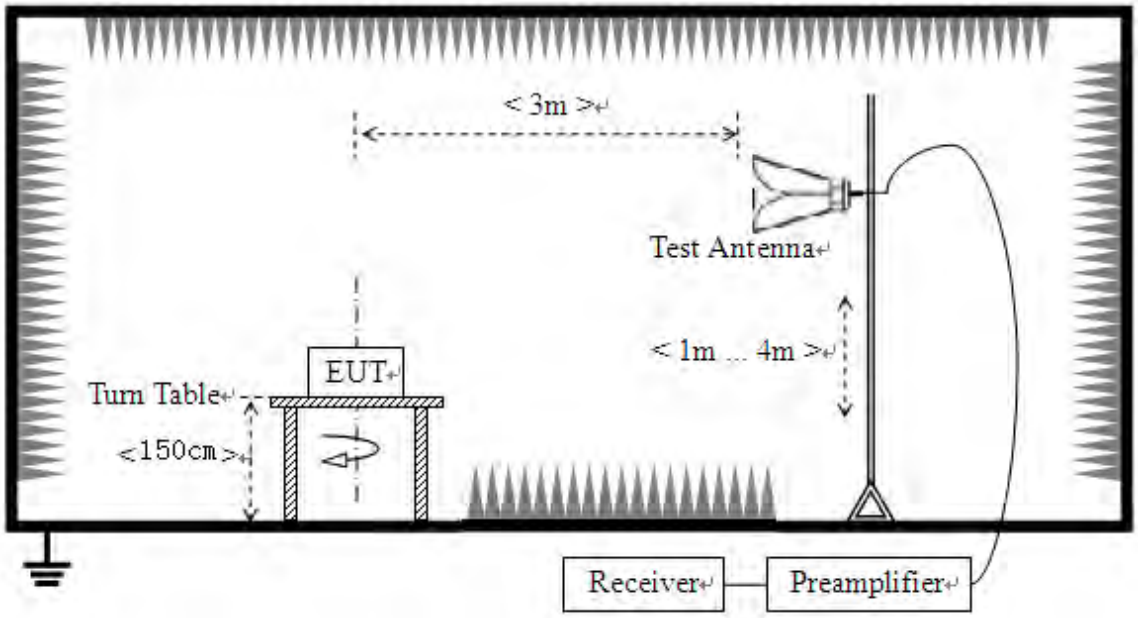
2.8. Restricted Frequency Bands

2.8.1. Requirement

According to FCC section 15.407(b)(7), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

2.8.2. Test Description

A. Test Setup



The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance
For the Test Antenna:
Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

2.8.3. Test Result

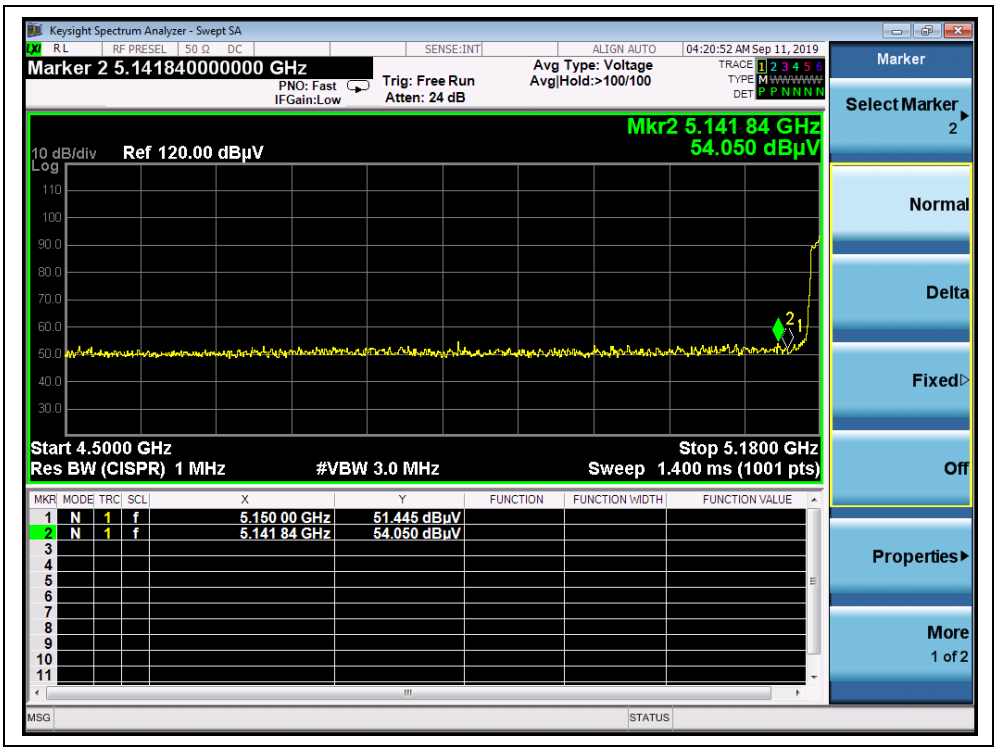
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
A_T: Total correction Factor except Antenna; U_R: Receiver Reading
G_{preamp}: Preamplifier Gain; A_{Factor}: Antenna Factor at 3m
Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

802.11a Test mode

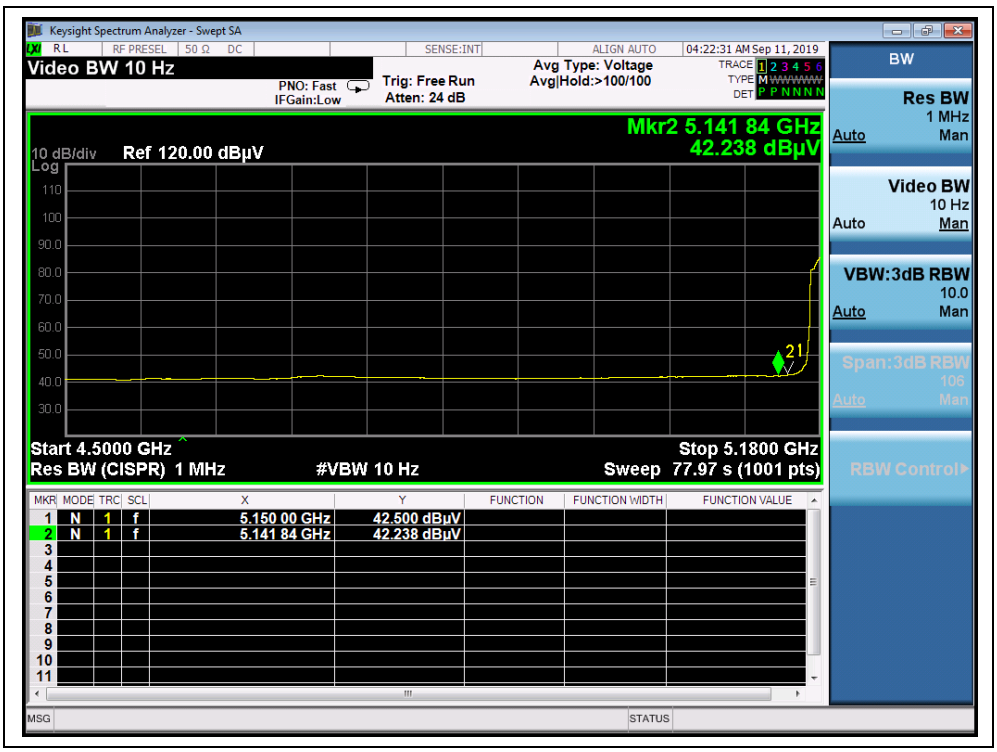
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
36	5141.84	PK	54.05	-26.92	32.20	59.33	74	PASS
36	5150.00	AV	42.50	-26.92	32.20	47.78	54	PASS
64	5351.26	PK	50.92	-26.80	32.20	56.32	74	PASS
64	5350.00	AV	40.27	-26.80	32.20	45.67	54	PASS
100	5445.80	PK	51.98	-26.64	32.20	57.54	74	PASS
100	5470.00	AV	40.92	-26.64	32.20	46.48	54	PASS
144	5755.90	PK	52.44	-26.64	32.20	58.00	68.23	PASS
144	5726.80	AV	41.53	-26.64	32.20	47.09	54	PASS
149	5723.63	PK	56.13	-26.23	32.20	62.10	119.11	PASS
149	5725.00	AV	42.58	-26.23	32.20	48.55	54	PASS
165	5851.75	PK	51.63	-26.23	32.20	57.60	118.24	PASS
165	5850.00	AV	41.78	-26.23	32.20	47.75	54	PASS

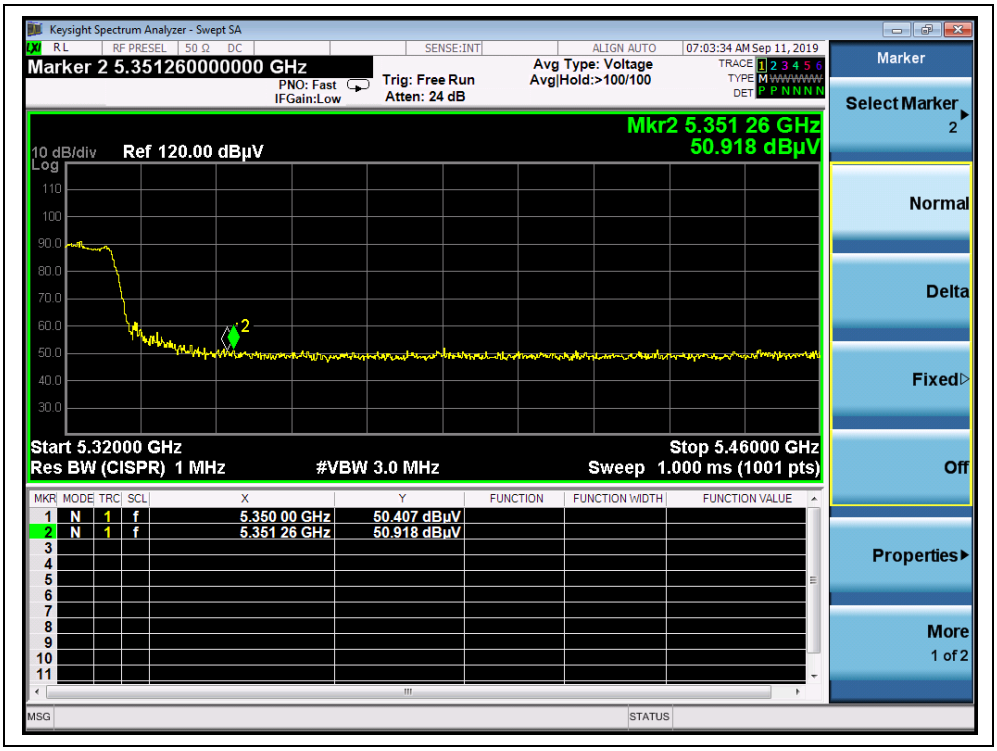
B. Test Plots:



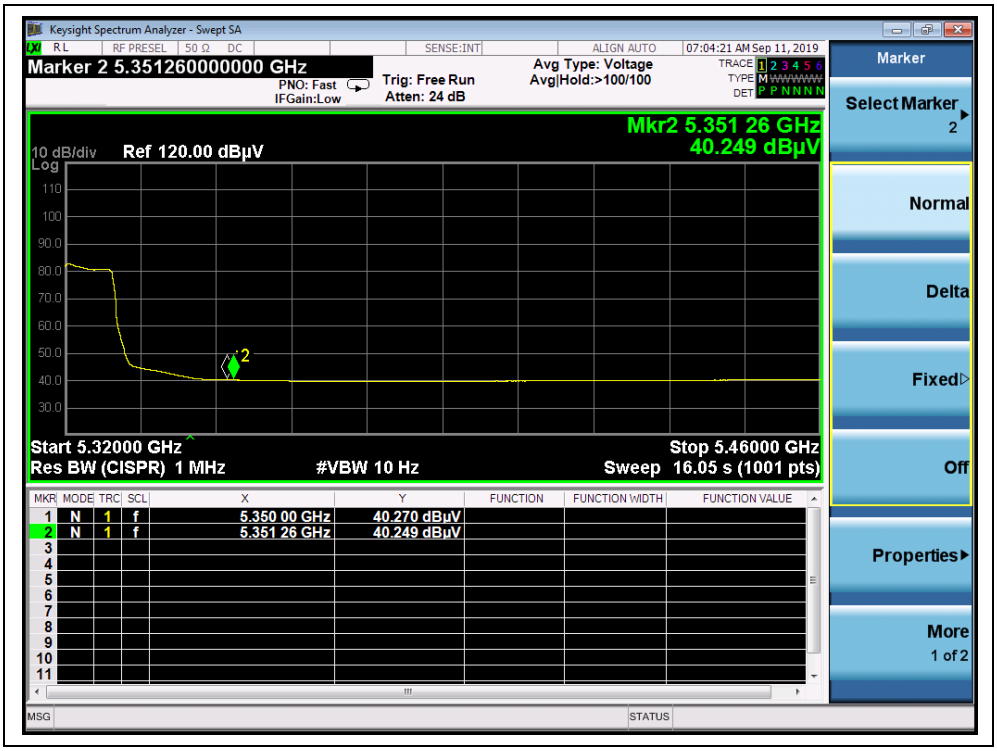
(Channel 36, PEAK, 802.11a)



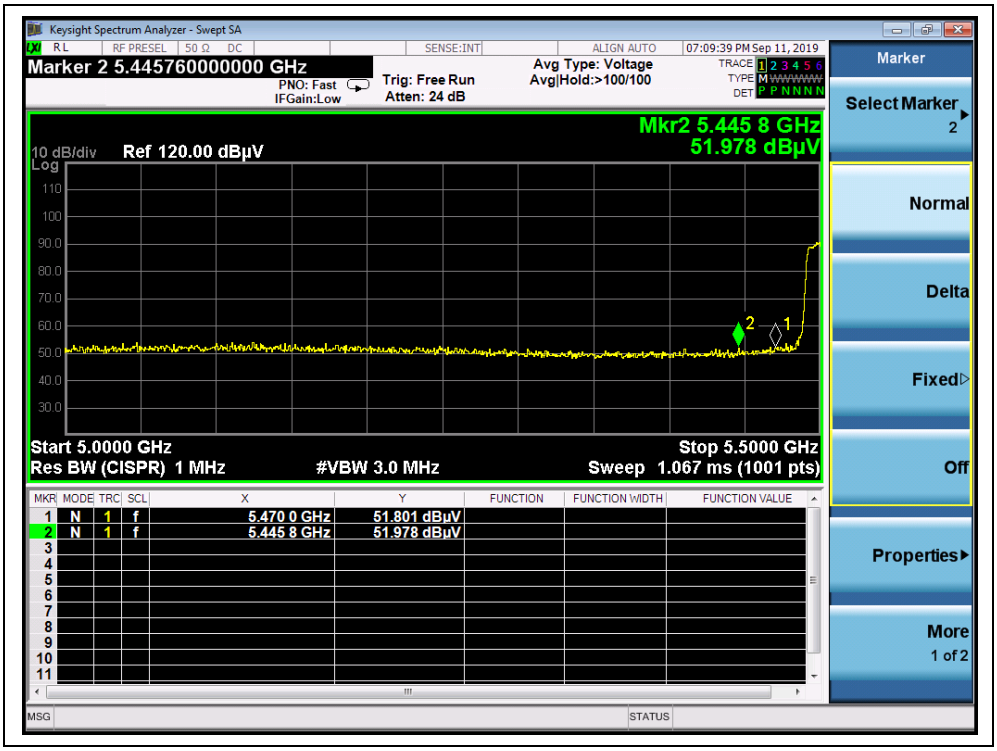
(Channel 36, AVG, 802.11a)



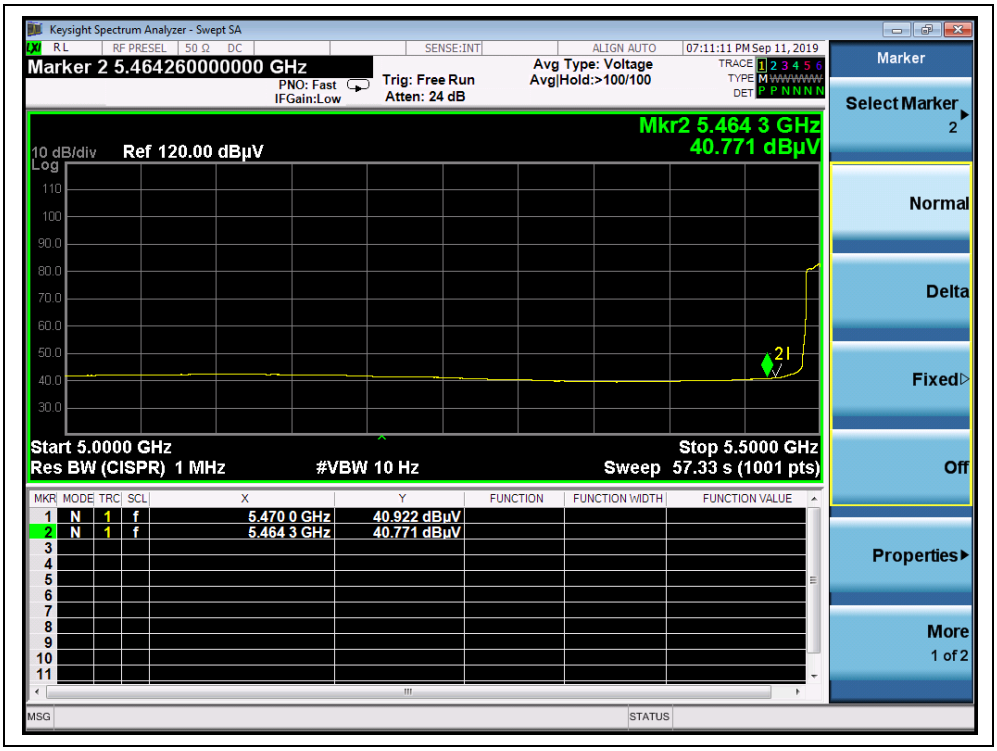
(Channel 64, PEAK, 802.11a)



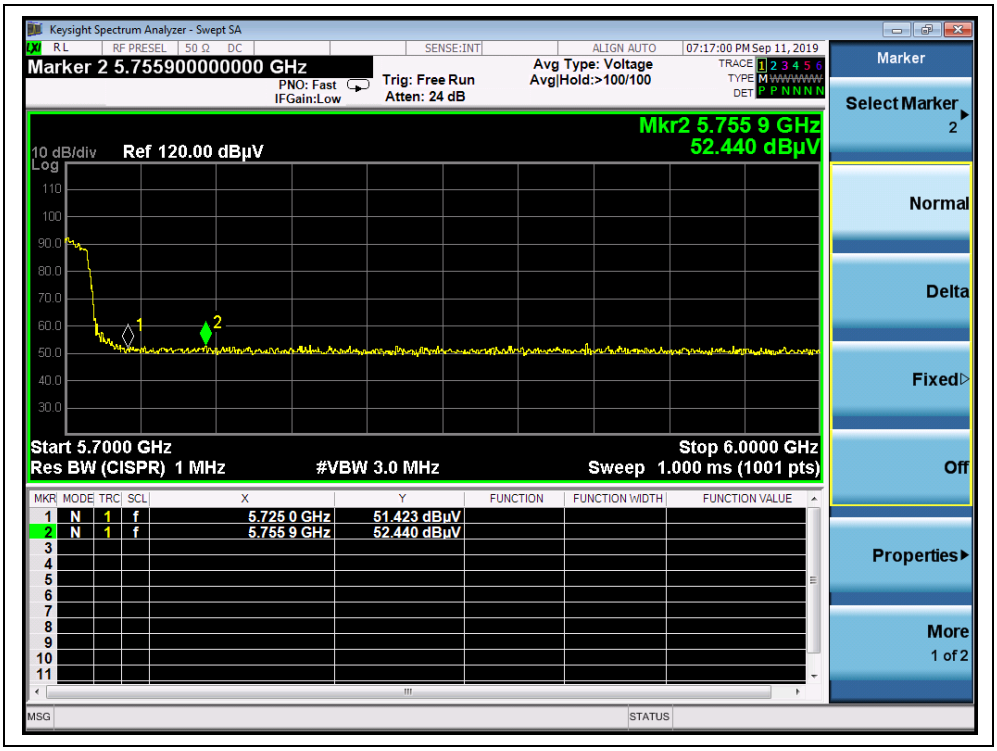
(Channel 64, AVG, 802.11a)



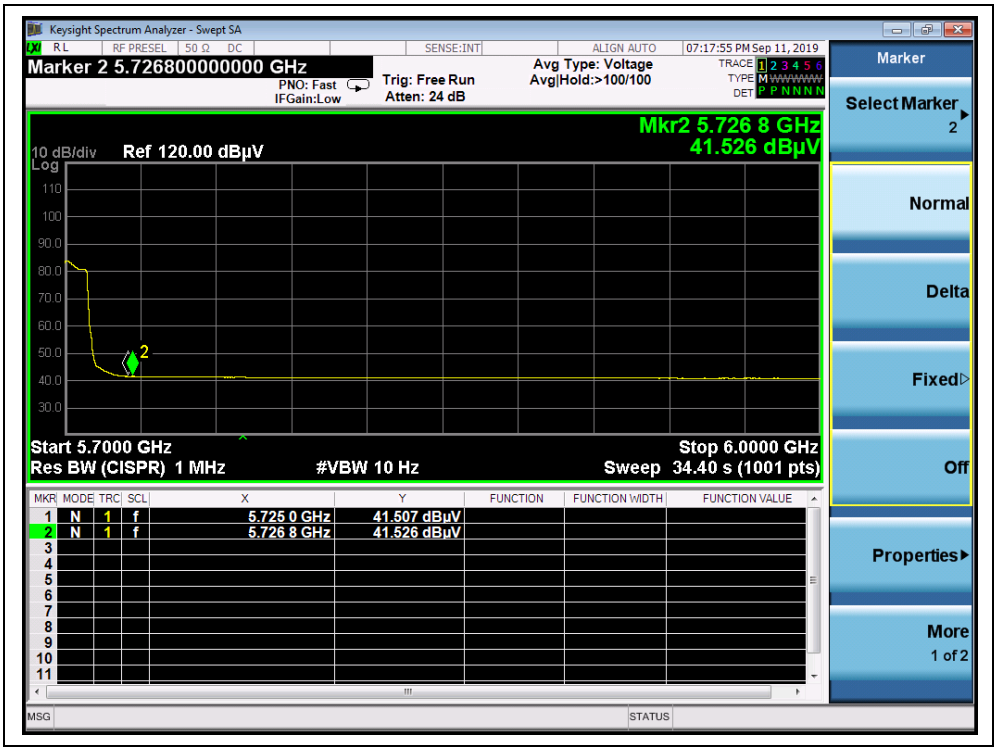
(Channel 100, PEAK, 802.11a)



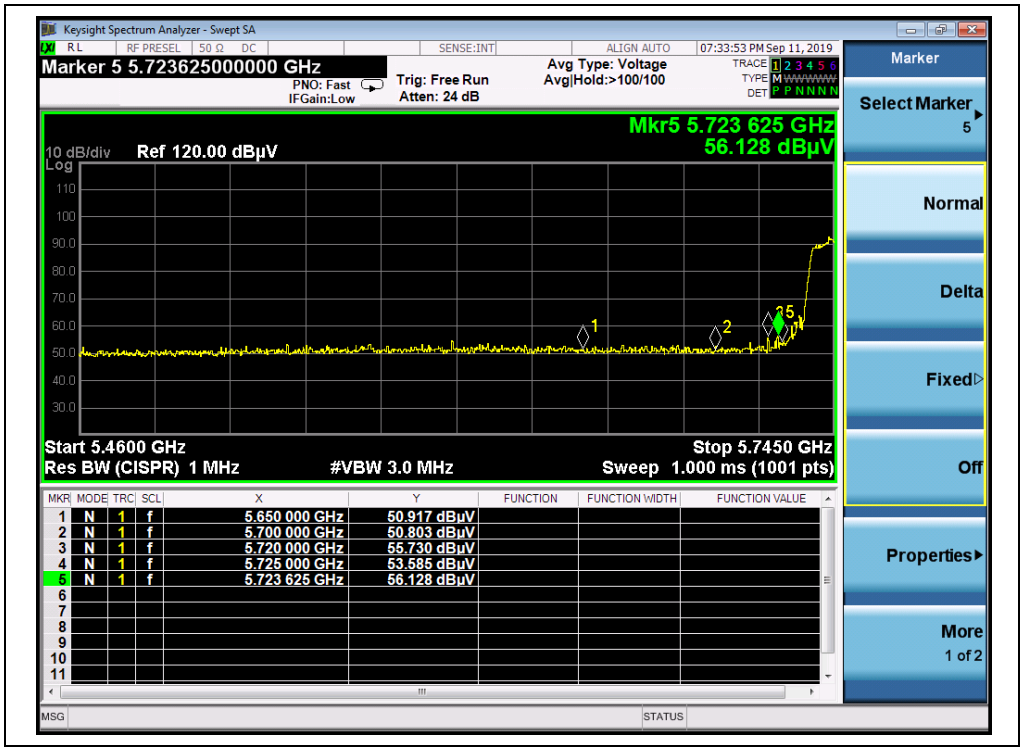
(Channel 100, AVG, 802.11a)



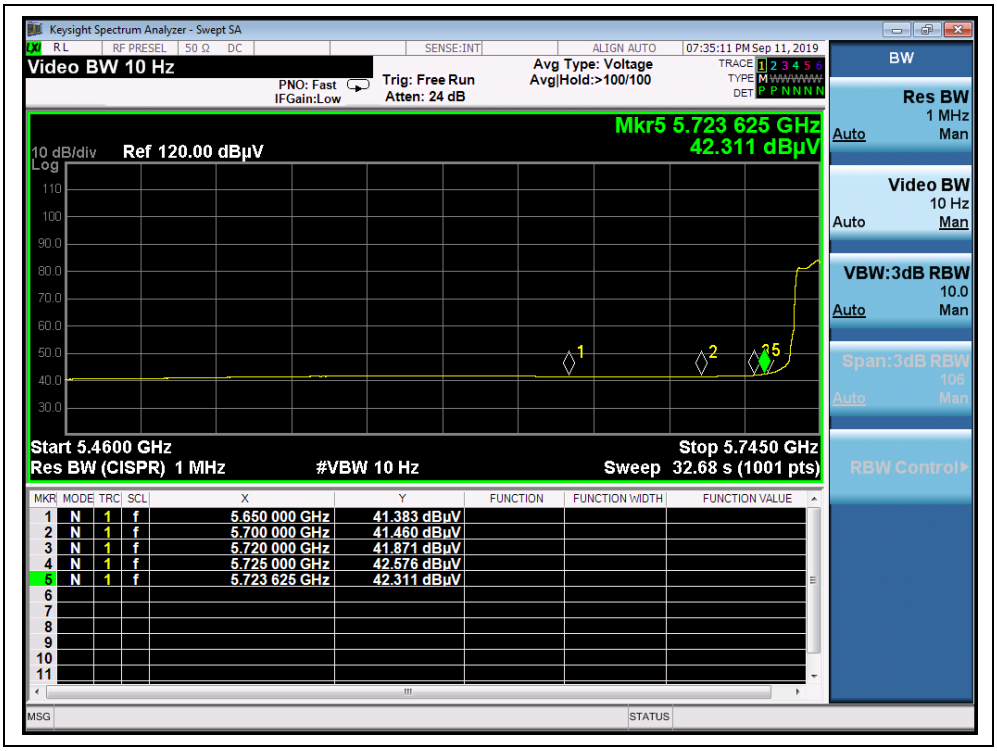
(Channel 144, PEAK, 802.11a)



(Channel 144, AVG, 802.11a)

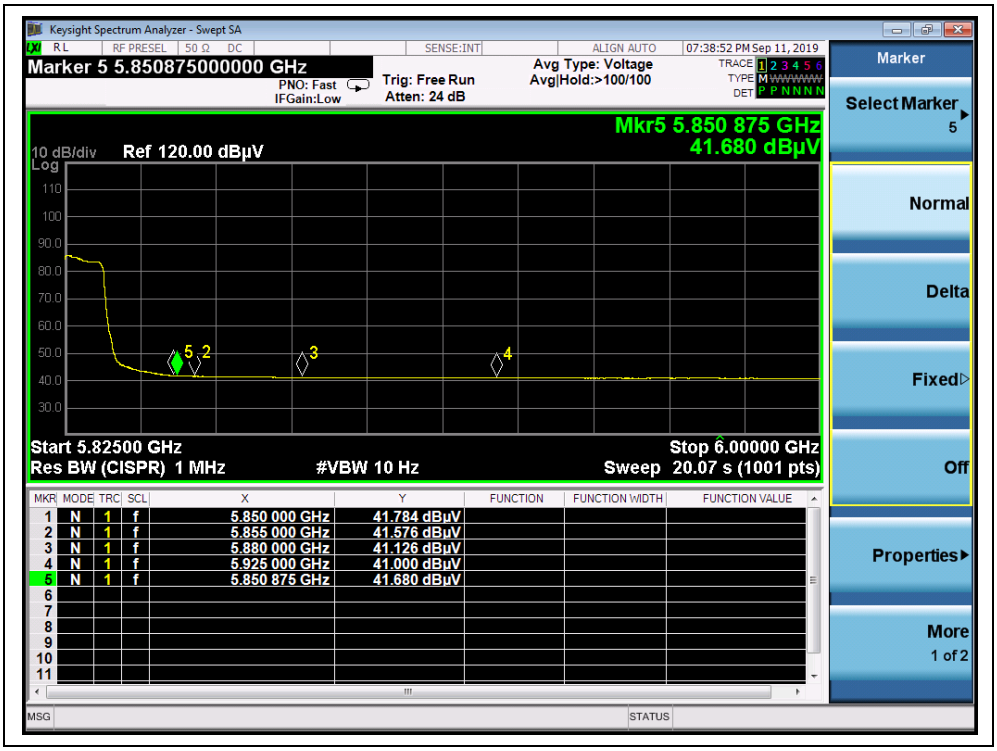


(Channel 149, PEAK, 802.11a)



(Channel 149, AVG, 802.11a)

(Channel 165, PEAK, 802.11a)



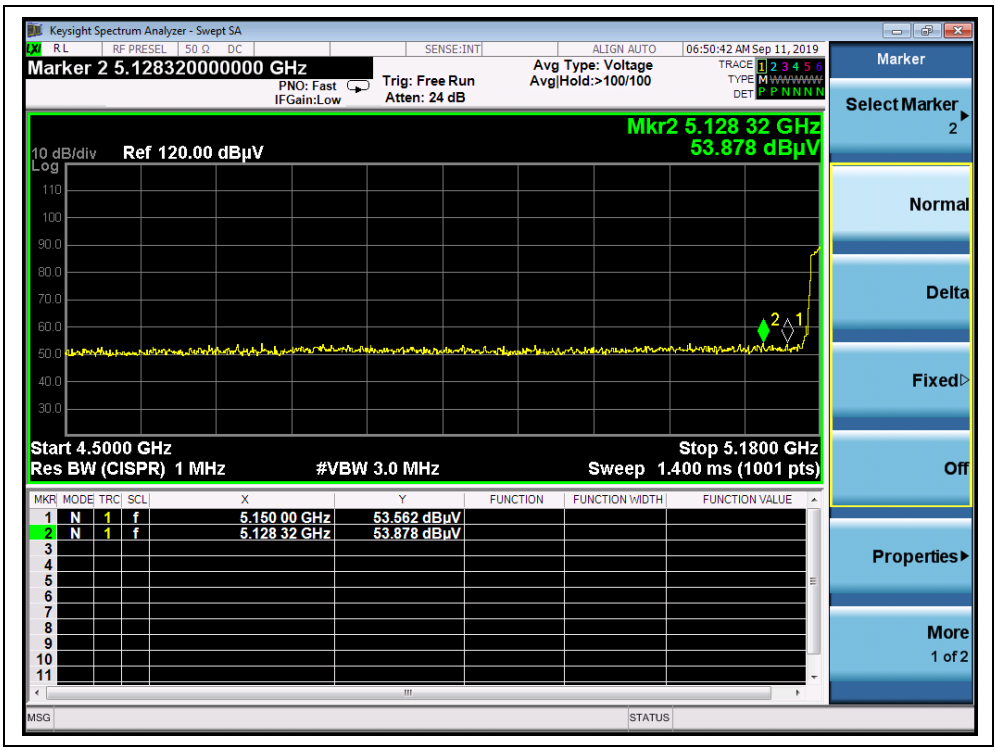
(Channel 165, AVG, 802.11a)

802.11n (HT20) Test mode

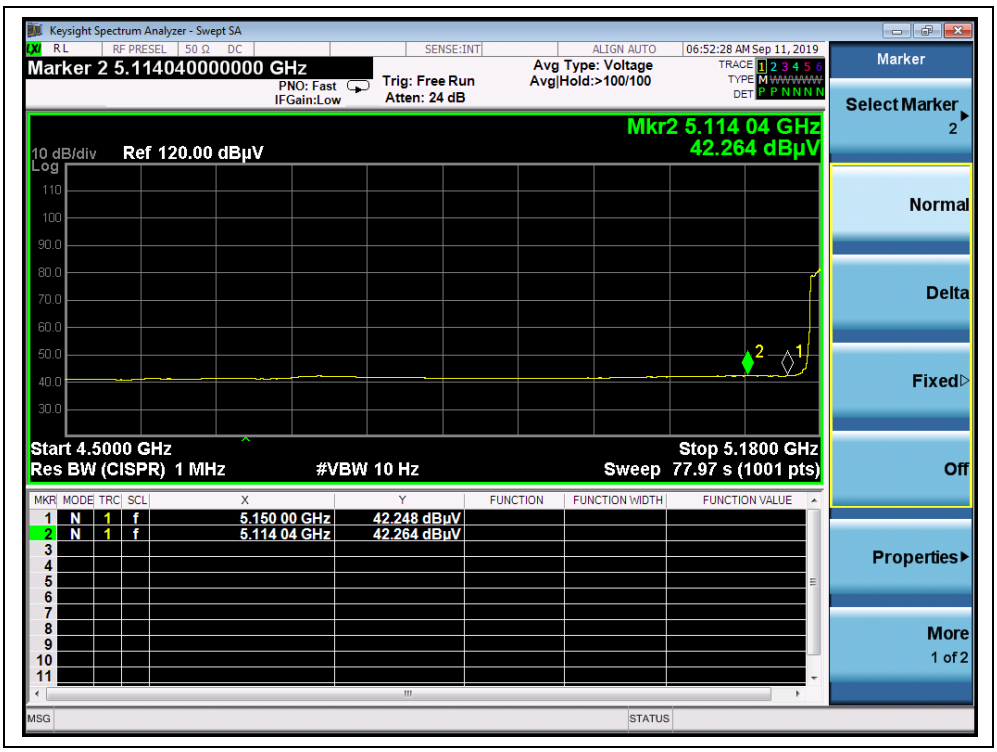
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
36	5128.32	PK	53.88	-26.92	32.20	59.16	74	PASS
36	5114.04	AV	42.26	-26.92	32.20	47.54	54	PASS
64	5352.94	PK	55.55	-26.80	32.20	60.95	74	PASS
64	5350.00	AV	42.52	-26.80	32.20	47.92	54	PASS
100	5467.50	PK	53.01	-26.64	32.20	58.57	68.23	PASS
100	5470.00	AV	42.39	-26.64	32.20	47.95	54	PASS
144	5726.80	PK	55.94	-26.64	32.20	61.50	68.23	PASS
144	5725.00	AV	42.52	-26.64	32.20	48.08	54	PASS
149	5723.34	PK	61.43	-26.23	32.20	67.40	118.44	PASS
149	5725.00	AV	45.90	-26.23	32.20	51.87	54	PASS
165	5850.00	PK	57.95	-26.23	32.20	63.92	122.23	PASS
165	5850.00	AV	44.25	-26.23	32.20	50.22	54	PASS

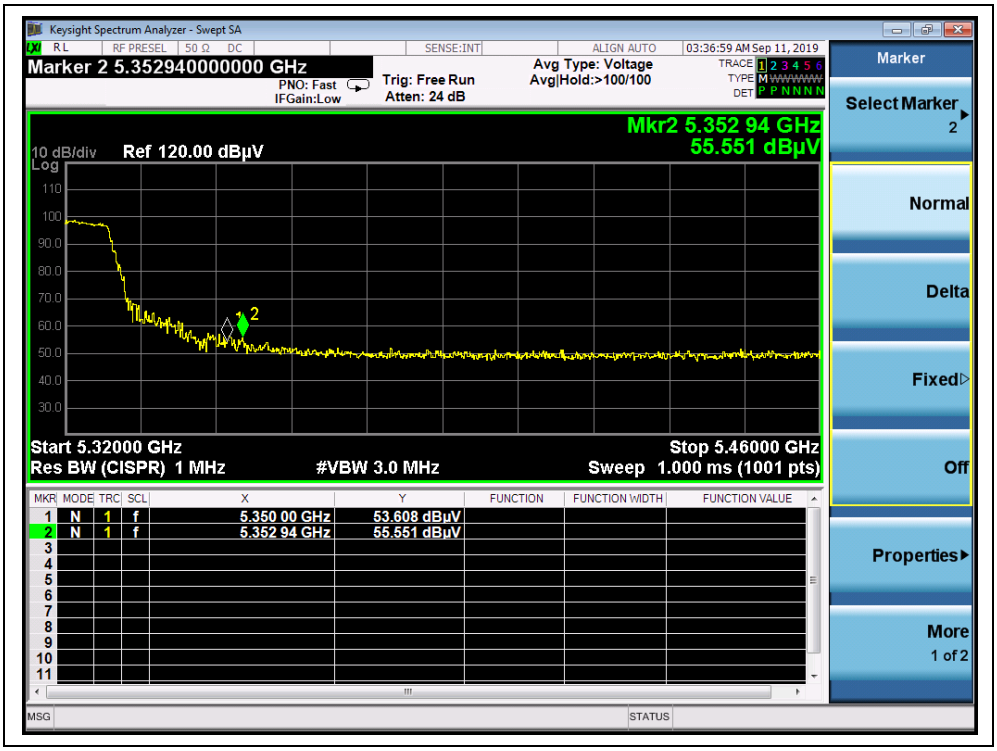
B. Test Plots:



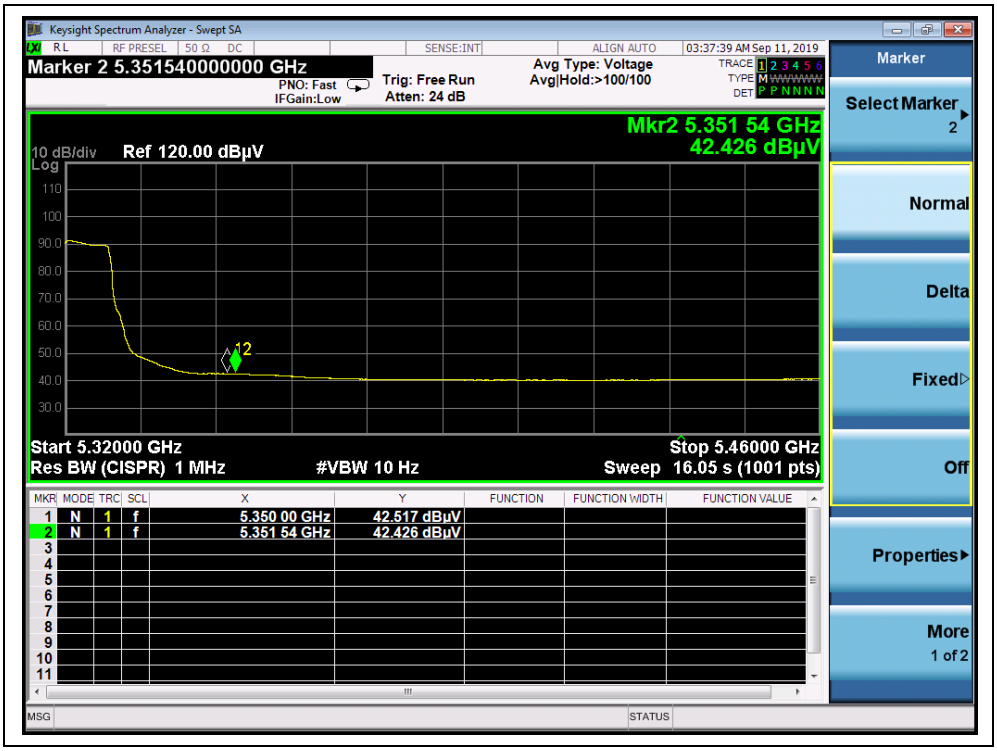
(Channel 36, PEAK, 802.11n (HT20))



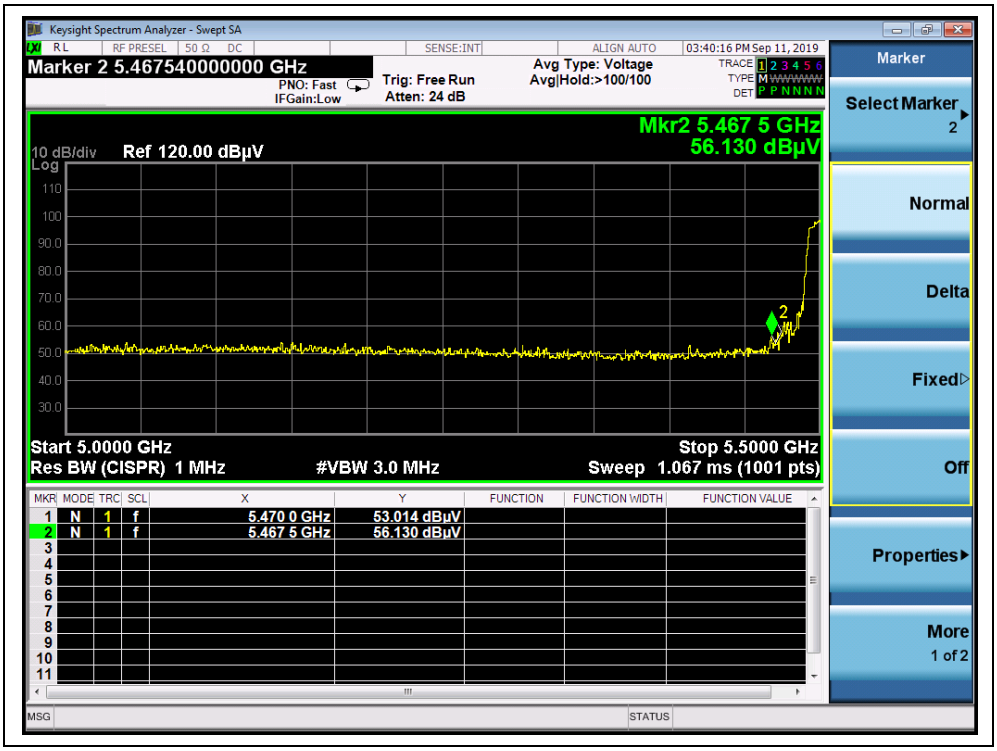
(Channel 36, AVG, 802.11 n (HT20))



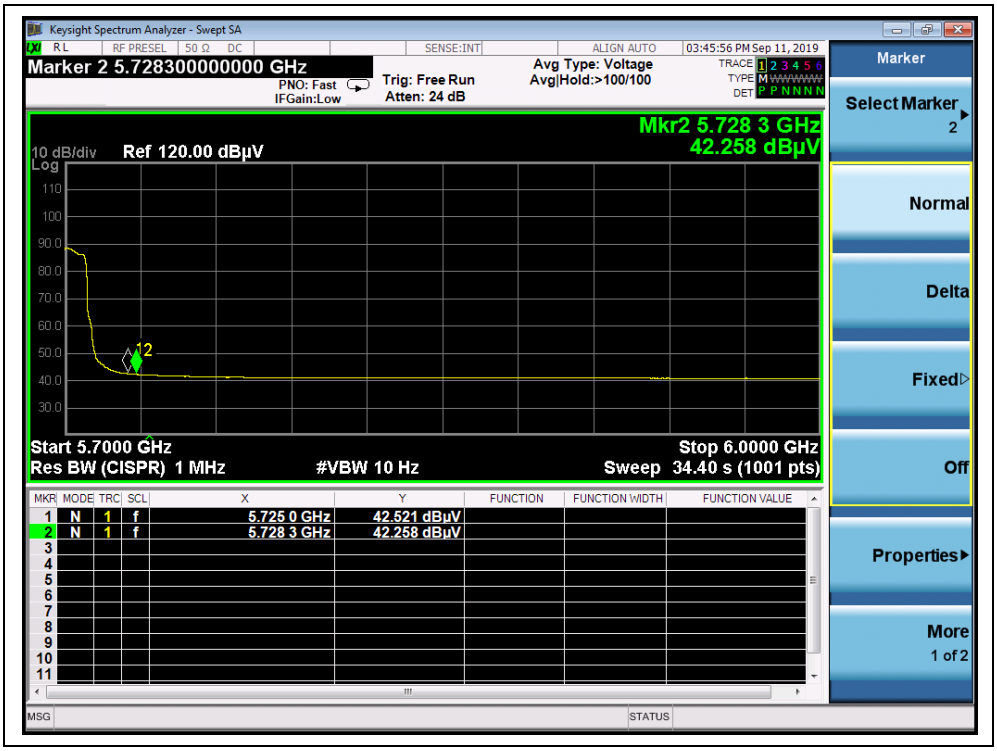
(Channel 64, PEAK, 802.11 n (HT20))



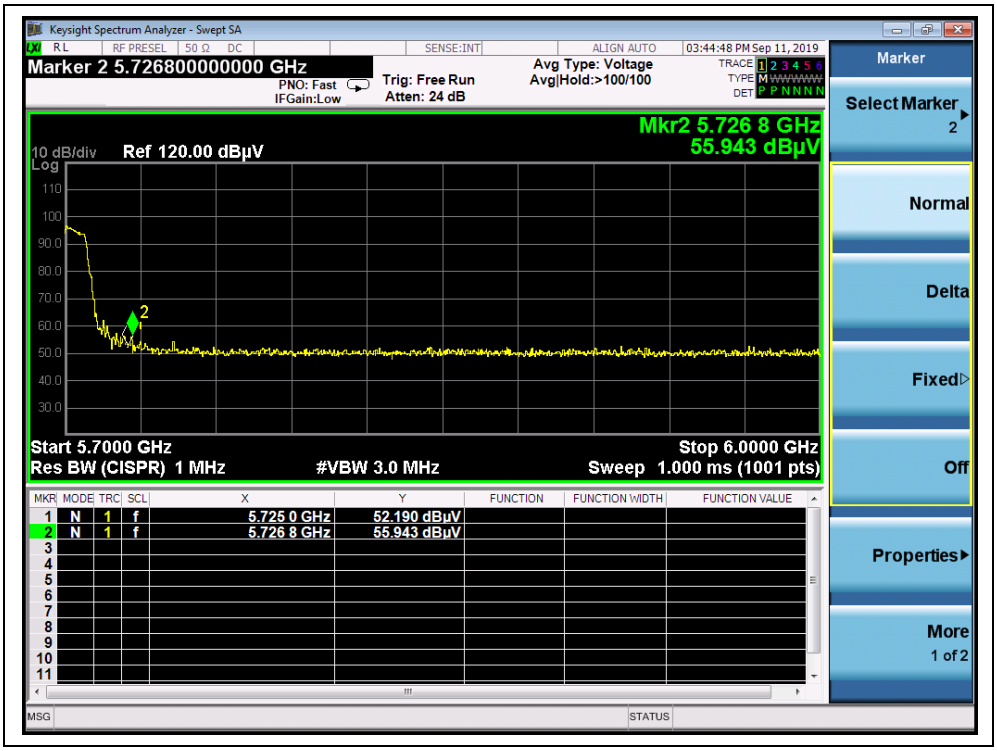
(Channel 64, AVG, 802.11n (HT20))



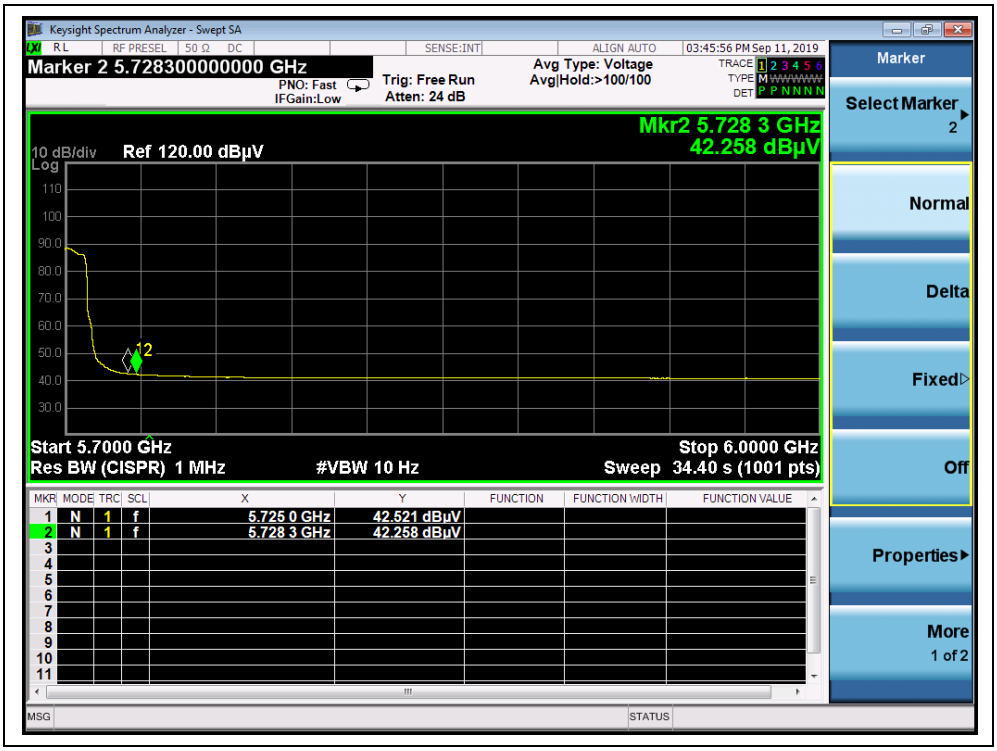
(Channel 100, PEAK, 802.11 n (HT20))



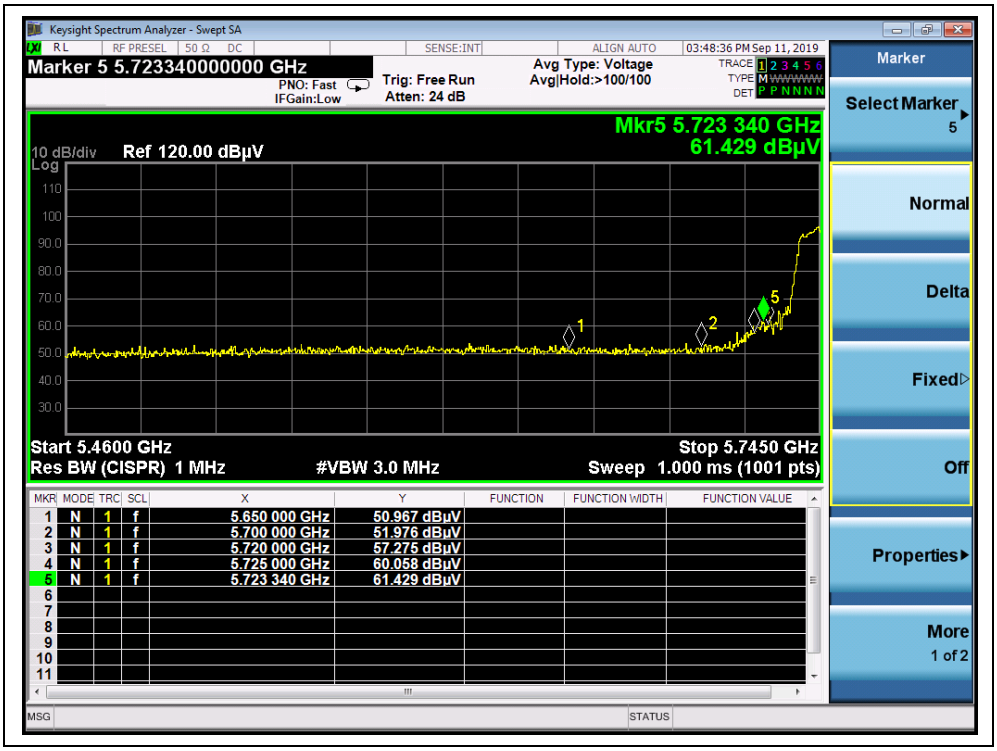
(Channel 100, AVG, 802.11n (HT20))



(Channel 144, PEAK, 802.11 n (HT20))



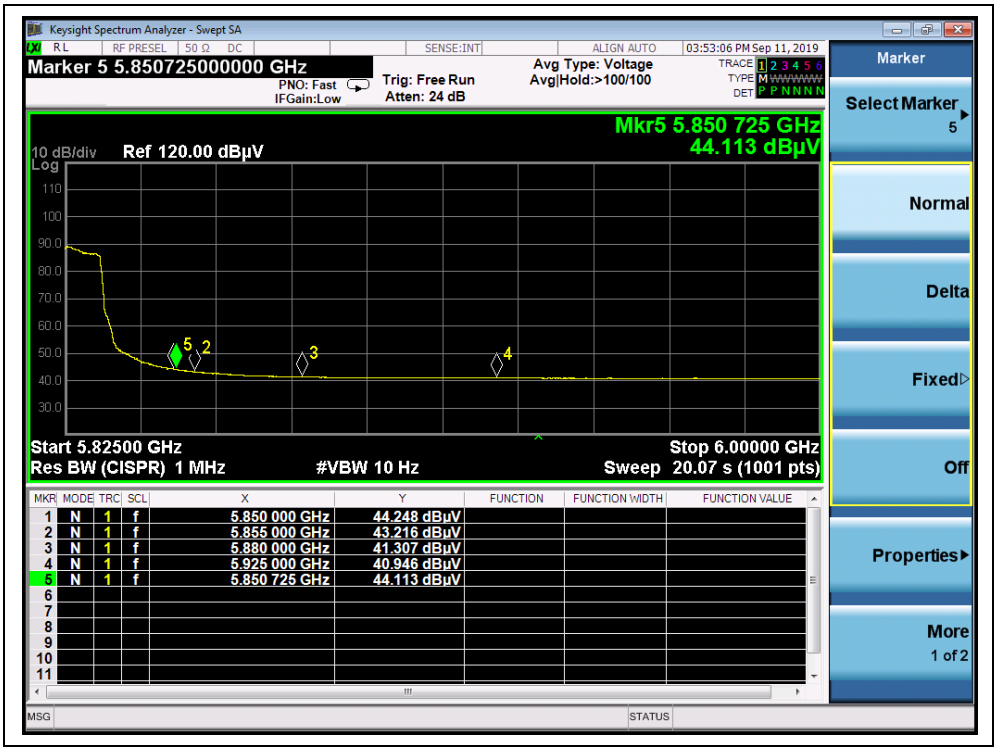
(Channel 144, AVG, 802.11n (HT20))



(Channel 149, PEAK, 802.11 n (HT20))

(Channel 149, AVG, 802.11n (HT20))

(Channel 165, PEAK, 802.11 n (HT20))



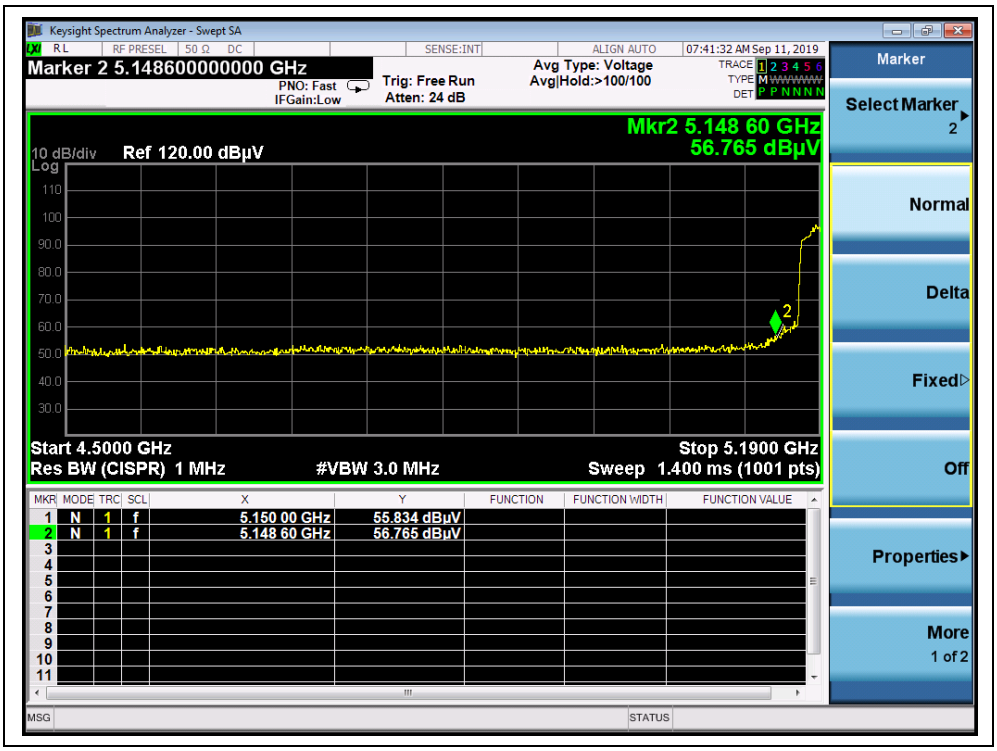
(Channel 165, AVG, 802.11n (HT20))

802.11n (HT40) Test mode

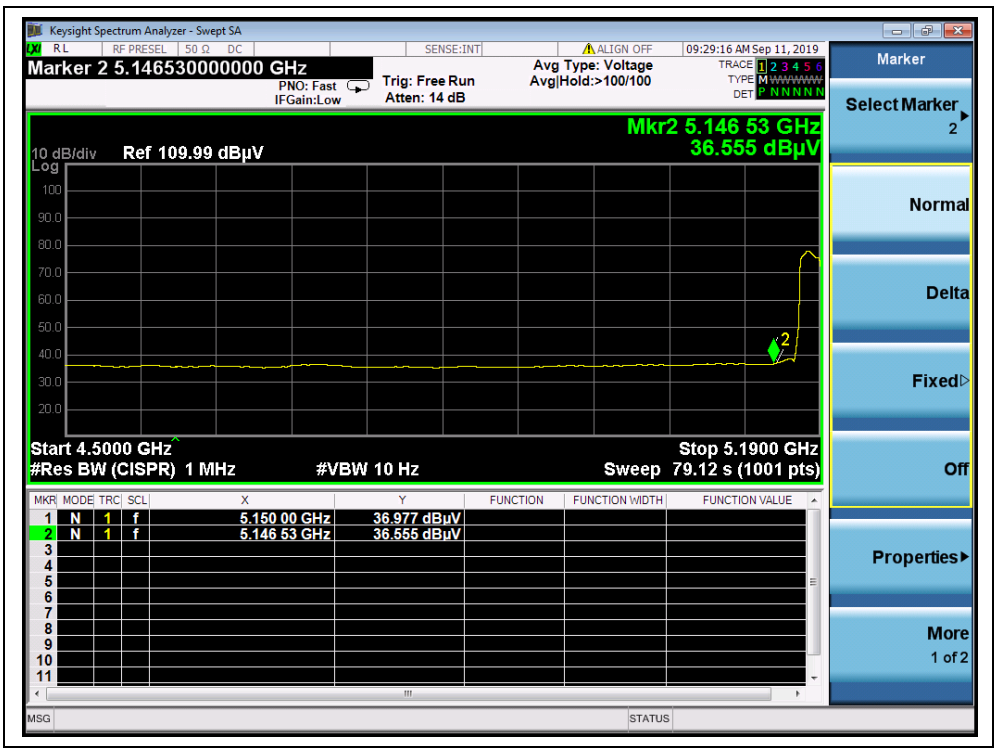
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
38	5148.60	PK	55.83	-26.92	32.20	61.11	74	PASS
38	5150.00	AV	36.98	-26.92	32.20	42.26	54	PASS
62	5351.95	PK	54.43	-26.80	32.20	59.83	74	PASS
62	5350.00	AV	42.91	-26.80	32.20	48.31	54	PASS
102	5467.33	PK	54.86	-26.64	32.20	60.42	68.23	PASS
102	5470.00	AV	43.83	-26.64	32.20	49.39	54	PASS
142	5751.07	PK	53.50	-26.64	32.20	59.06	68.23	PASS
142	5726.98	AV	41.44	-26.64	32.20	47.00	54	PASS
151	5725.00	PK	56.79	-26.23	32.20	62.76	122.23	PASS
151	5725.00	AV	44.10	-26.23	32.20	50.07	54	PASS
159	5880.00	PK	52.21	-26.23	32.20	58.18	101.53	PASS
159	5851.85	AV	41.36	-26.23	32.20	47.33	54	PASS

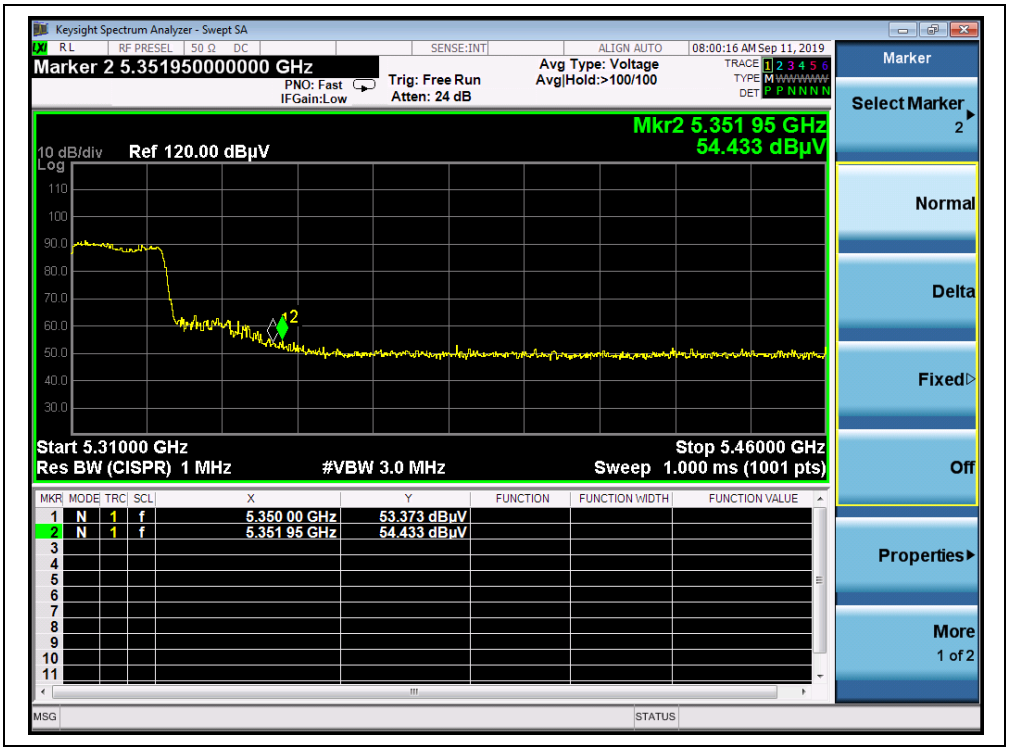
B. Test Plots:



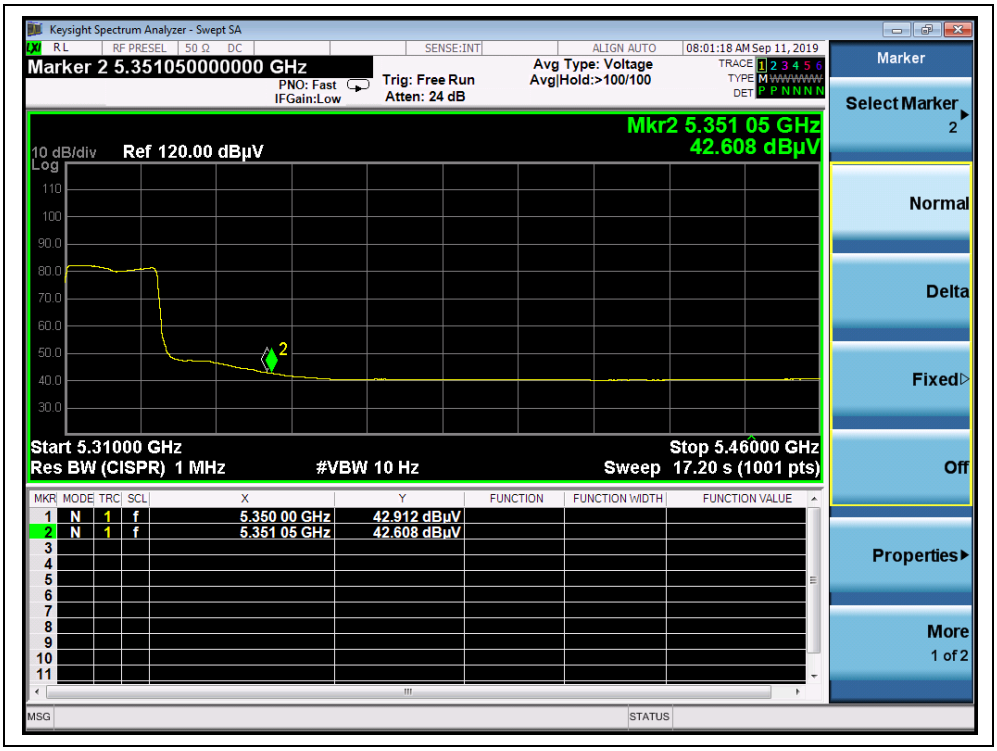
(Channel 38, PEAK, 802.11n (HT40))



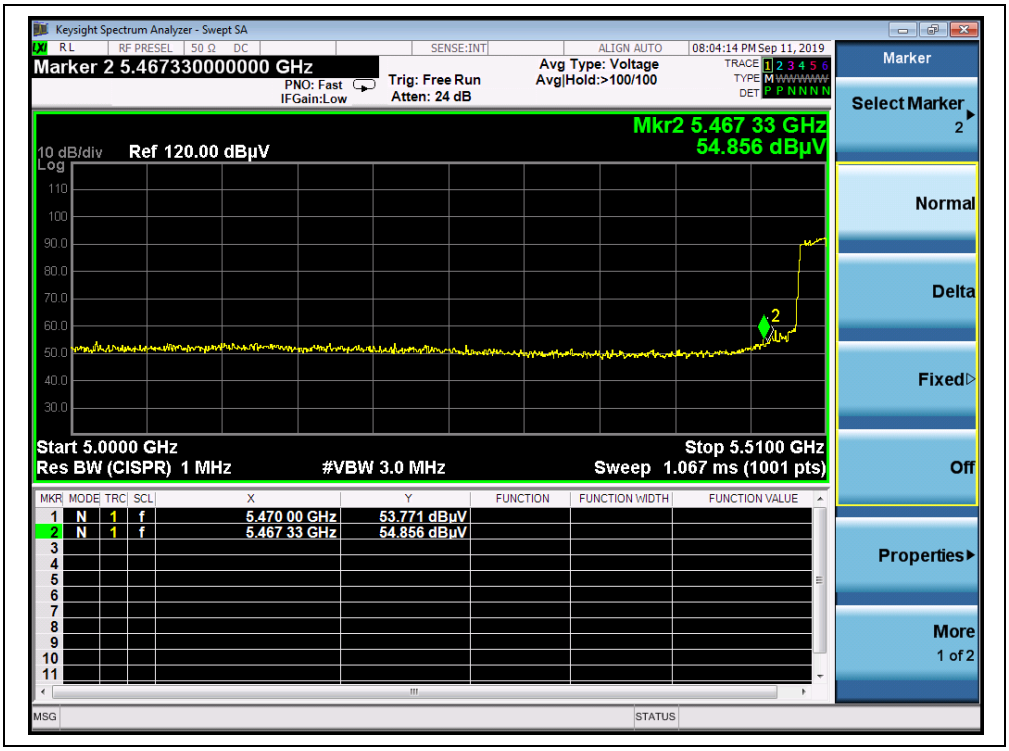
(Channel 38, AVG, 802.11n (HT40))



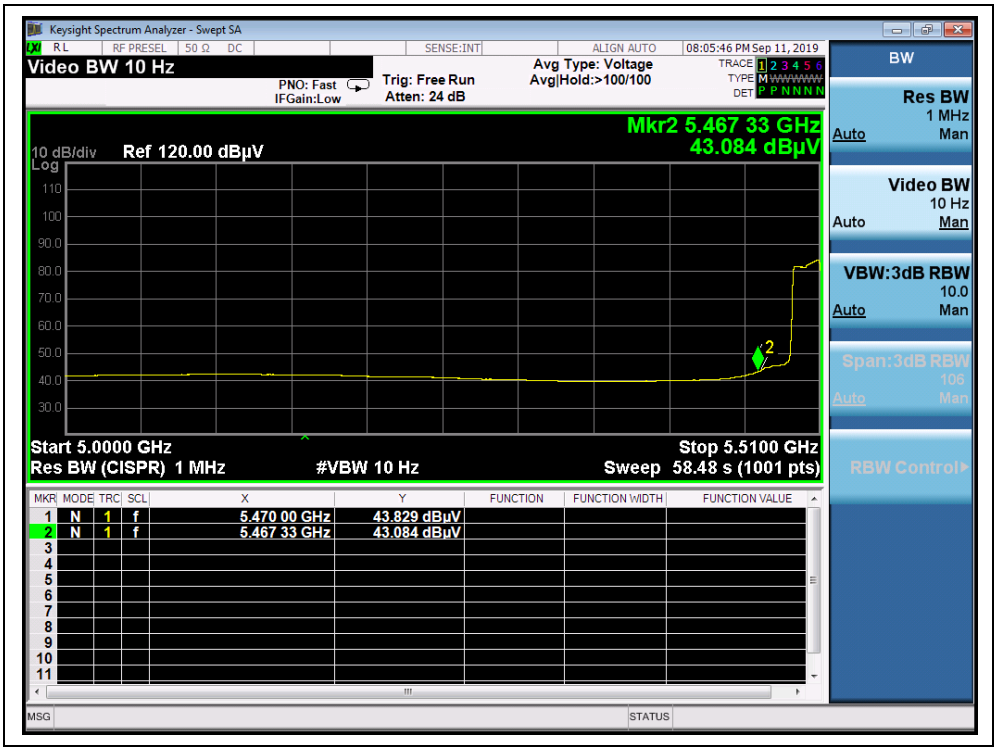
(Channel 62, PEAK, 802.11n (HT40))



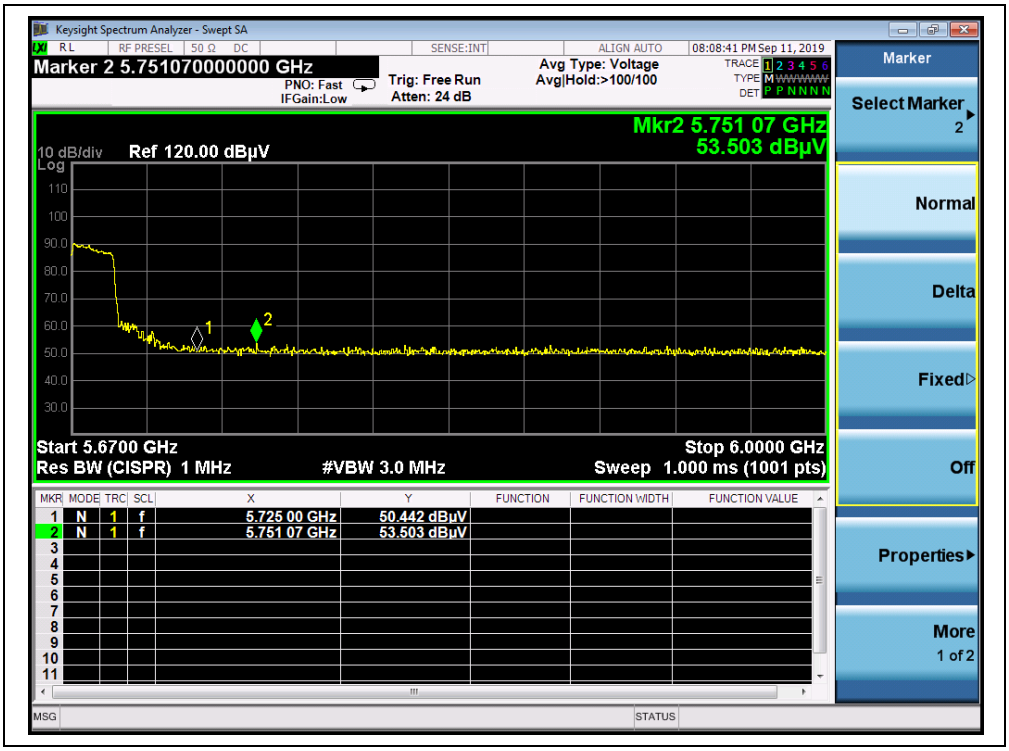
(Channel 62, AVG, 802.11n (HT40))



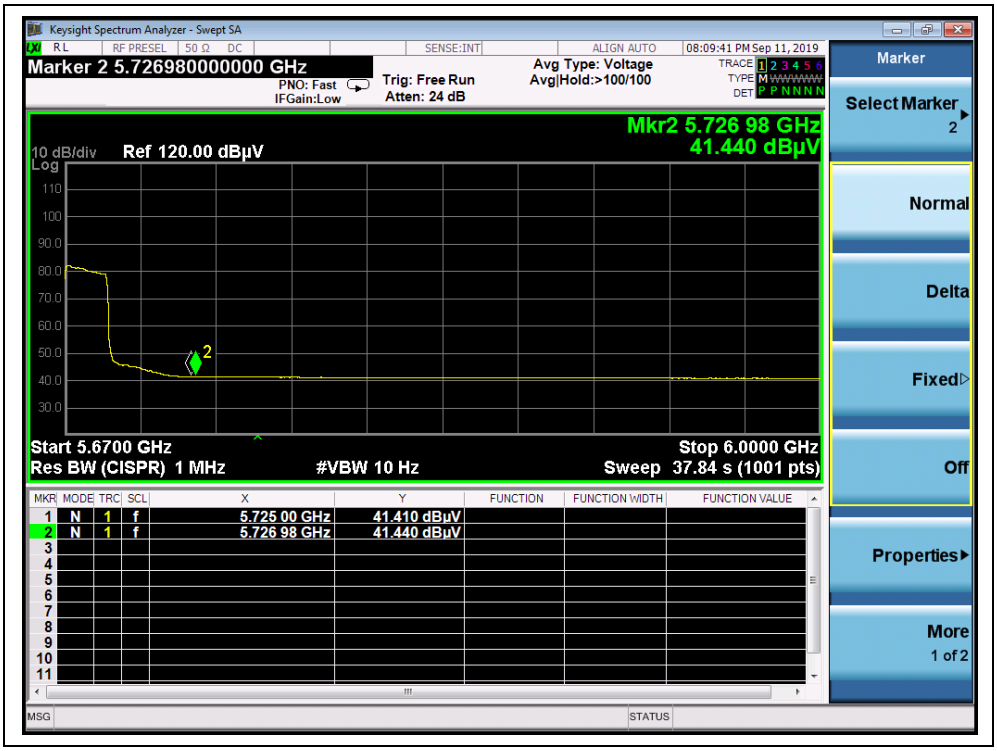
(Channel 102, PEAK, 802.11n (HT40))



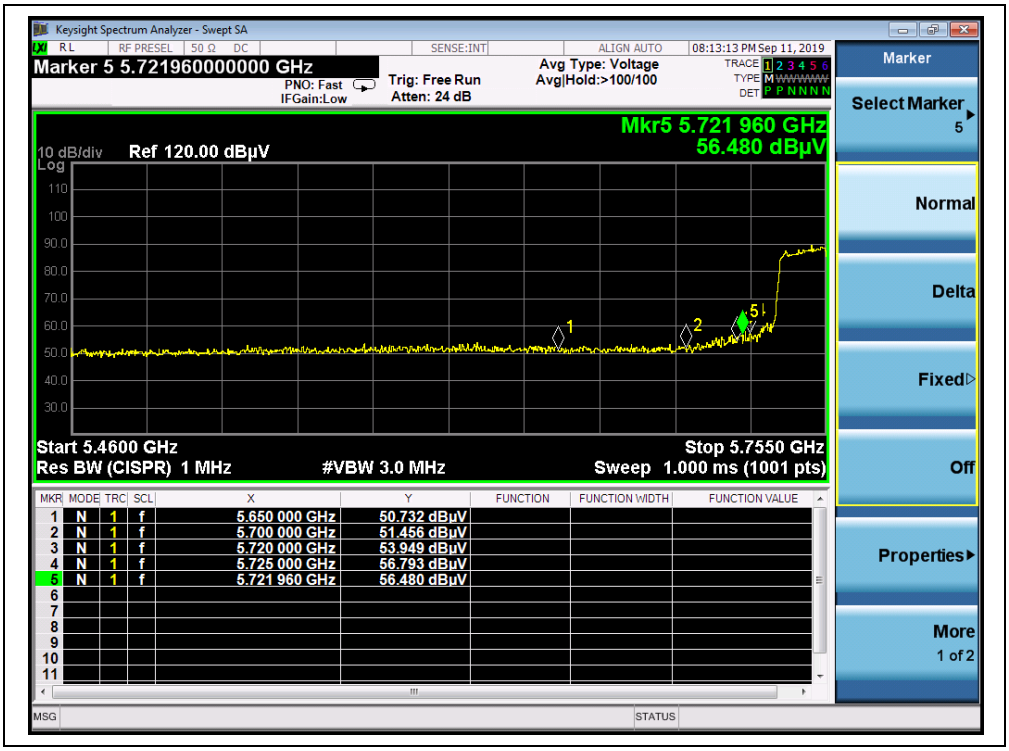
(Channel 102, AVG, 802.11n (HT40))



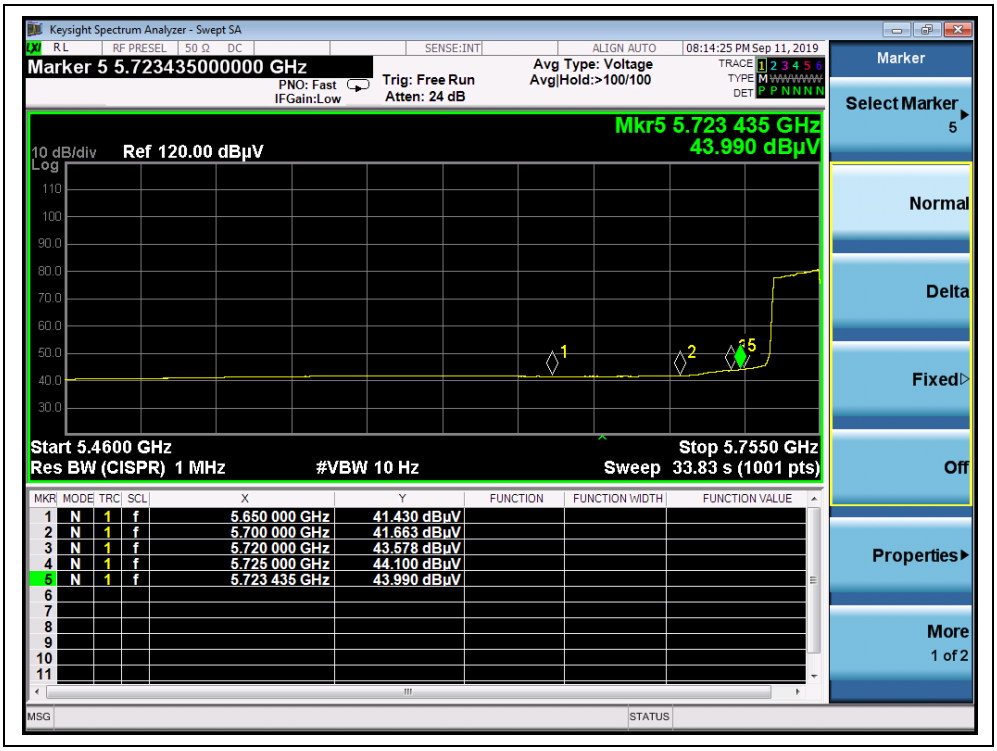
(Channel 142, PEAK, 802.11n (HT40))



(Channel 142, AVG, 802.11n (HT40))

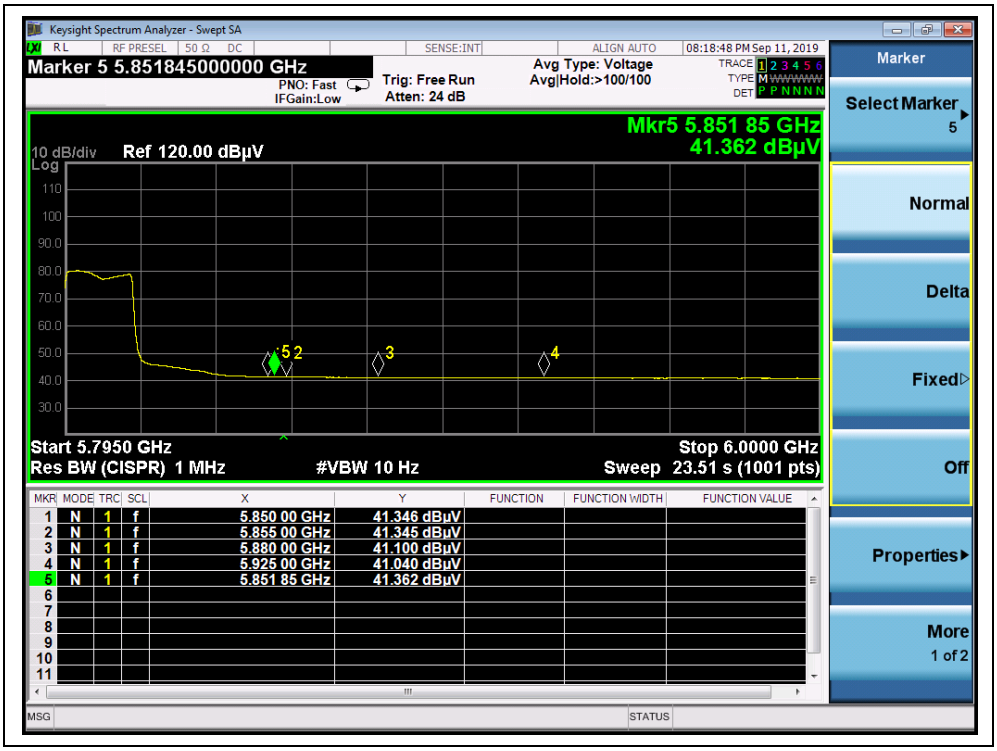


(Channel 151, PEAK, 802.11n (HT40))



(Channel 151, AVG, 802.11n (HT40))

(Channel 159, PEAK, 802.11n (HT40))



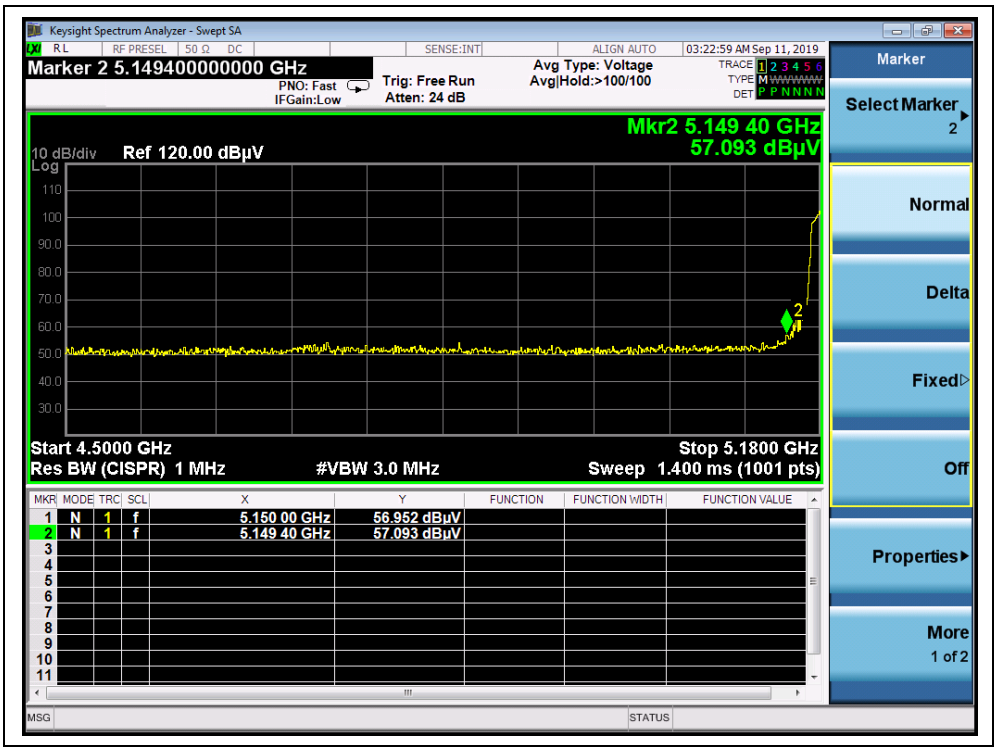
(Channel 159, AVG, 802.11n (HT40))

802.11ac (VHT20) Test mode

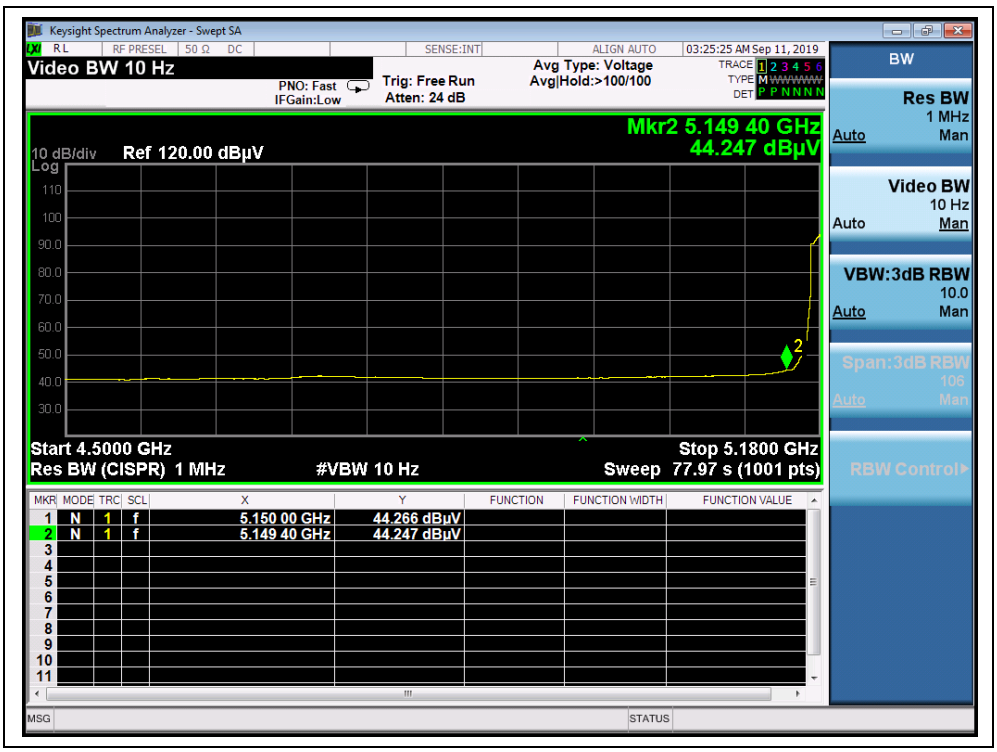
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
36	5149.40	PK	57.09	-26.92	32.20	62.37	74	PASS
36	5150.00	AV	44.27	-26.92	32.20	49.55	54	PASS
64	5354.34	PK	51.83	-26.80	32.20	57.23	74	PASS
64	5350.00	AV	40.36	-26.80	32.20	45.76	54	PASS
100	5468.00	PK	53.04	-26.64	32.20	58.60	68.23	PASS
100	5470.00	AV	41.95	-26.64	32.20	47.51	54	PASS
144	5733.00	PK	52.44	-26.64	32.20	58.00	68.23	PASS
144	5725.00	AV	41.84	-26.64	32.20	47.40	54	PASS
149	5725.00	PK	61.89	-26.23	32.20	67.86	122.23	PASS
149	5725.00	AV	43.49	-26.23	32.20	49.46	54	PASS
165	5851.78	PK	55.57	-26.23	32.20	61.54	119.84	PASS
165	5850.00	AV	42.39	-26.23	32.20	48.36	54	PASS

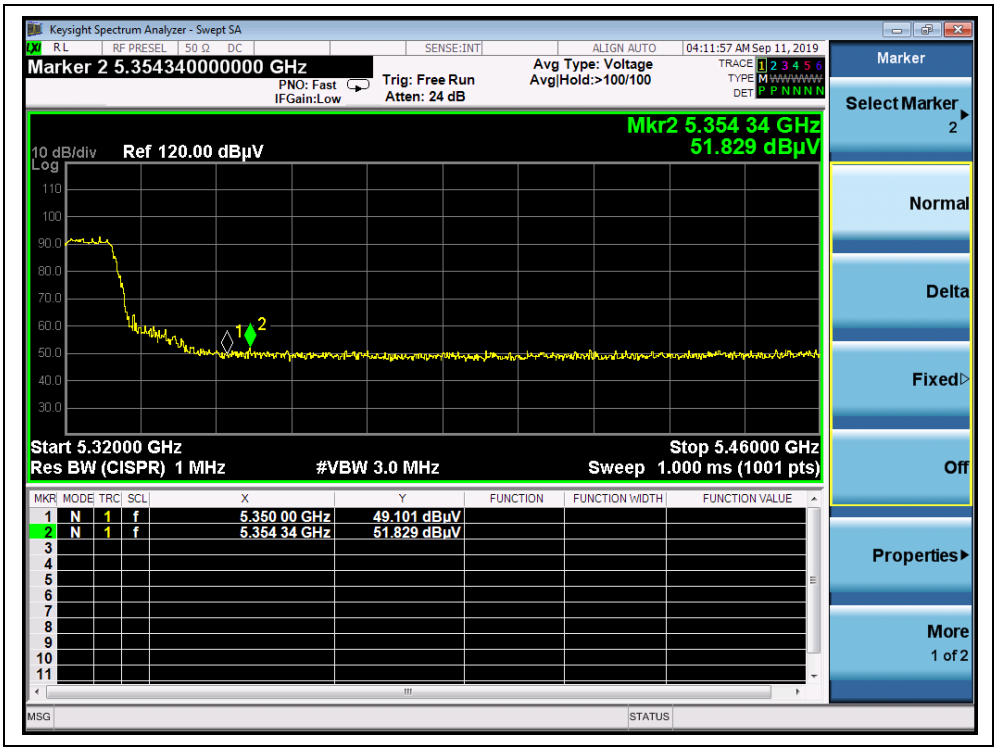
B. Test Plots:



(Channel 36, PEAK, 802.11 ac (VHT20))

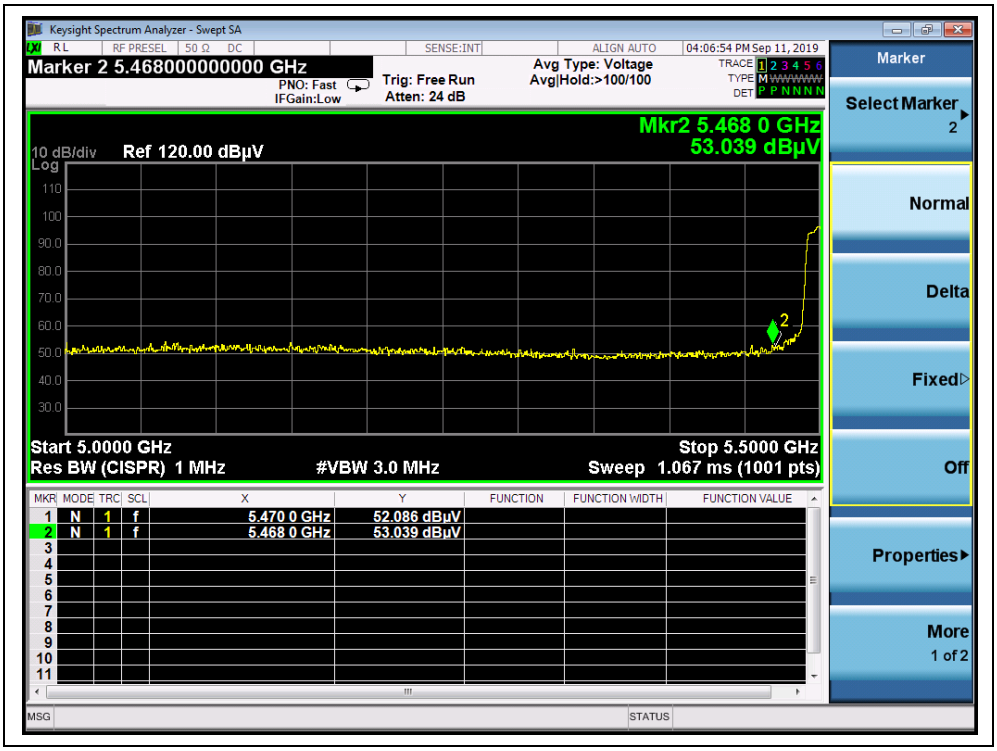


(Channel 36, AVG, 802.11 ac (VHT20))

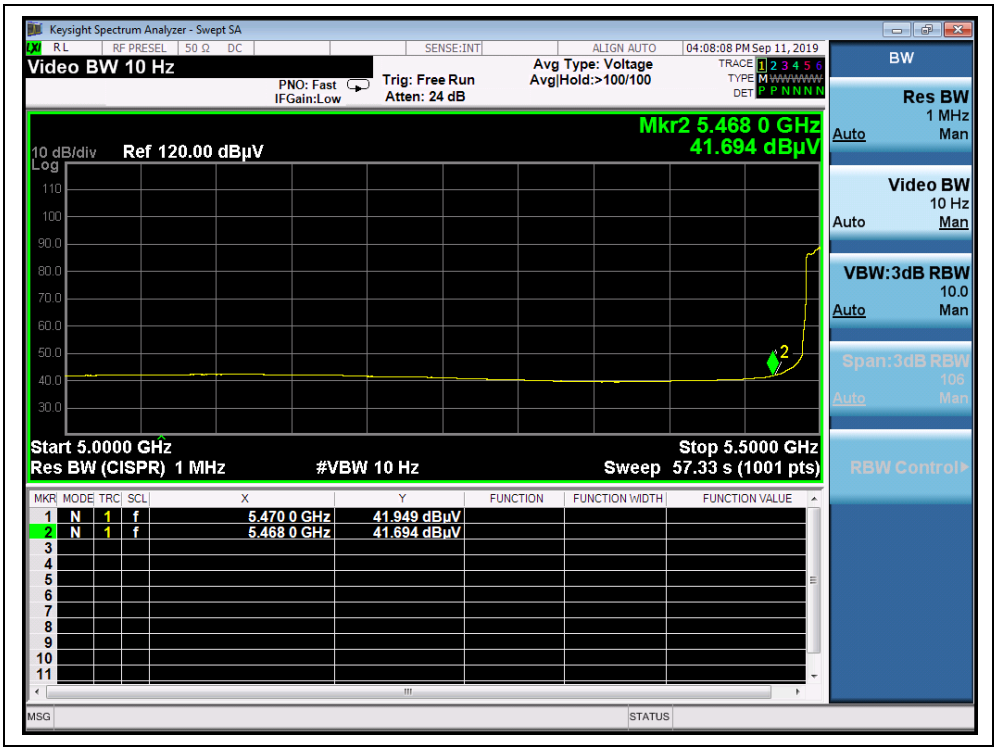


(Channel 64, PEAK, 802.11 ac (VHT20))

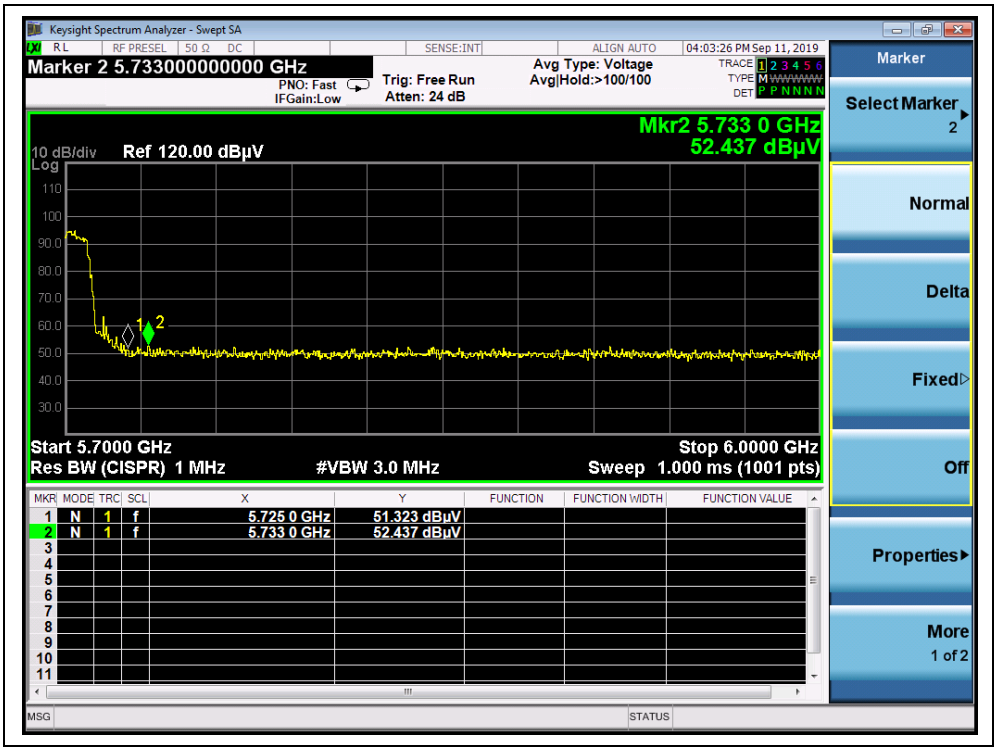
(Channel 64, AVG, 802.11 ac (VHT20))



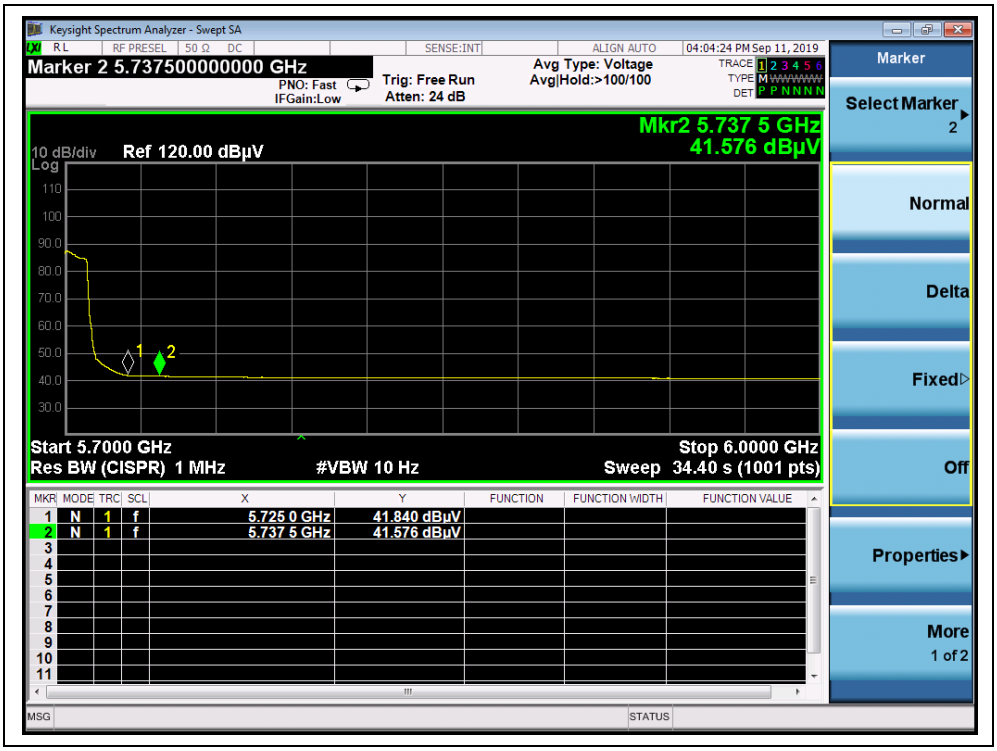
(Channel 100, PEAK, 802.11 ac (VHT20))



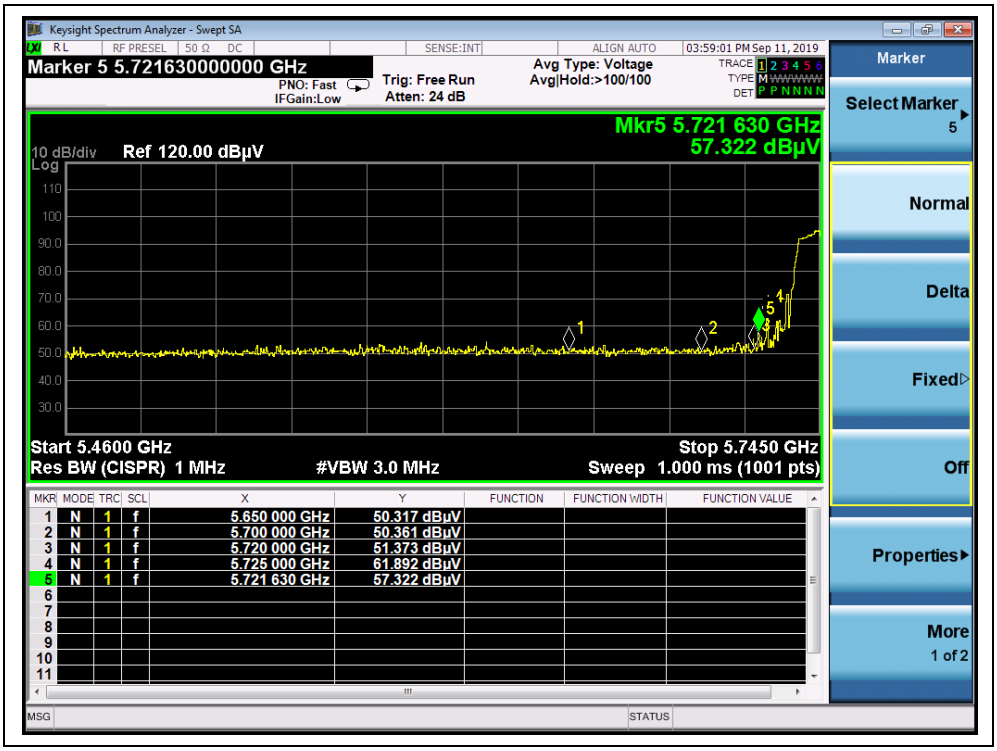
(Channel 100, AVG, 802.11 ac (VHT20))



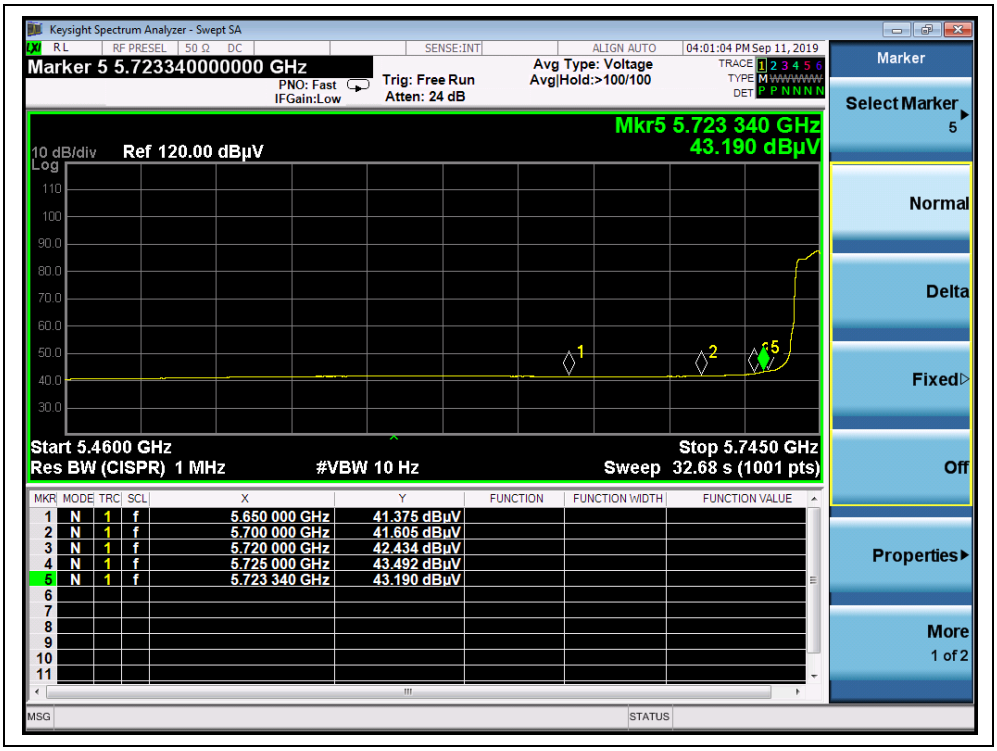
(Channel 144, PEAK, 802.11 ac (VHT20))



(Channel 144, AVG, 802.11 ac (VHT20))

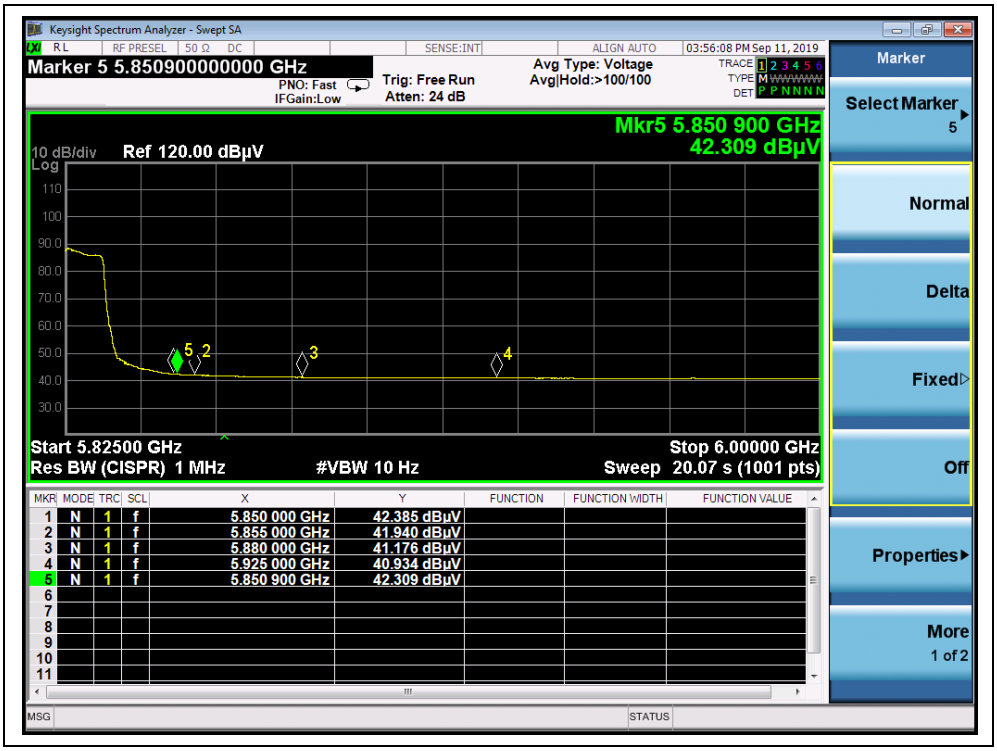


(Channel 149, PEAK, 802.11 ac (VHT20))



(Channel 149, AVG, 802.11 ac (VHT20))

(Channel 165, PEAK, 802.11 ac (VHT20))



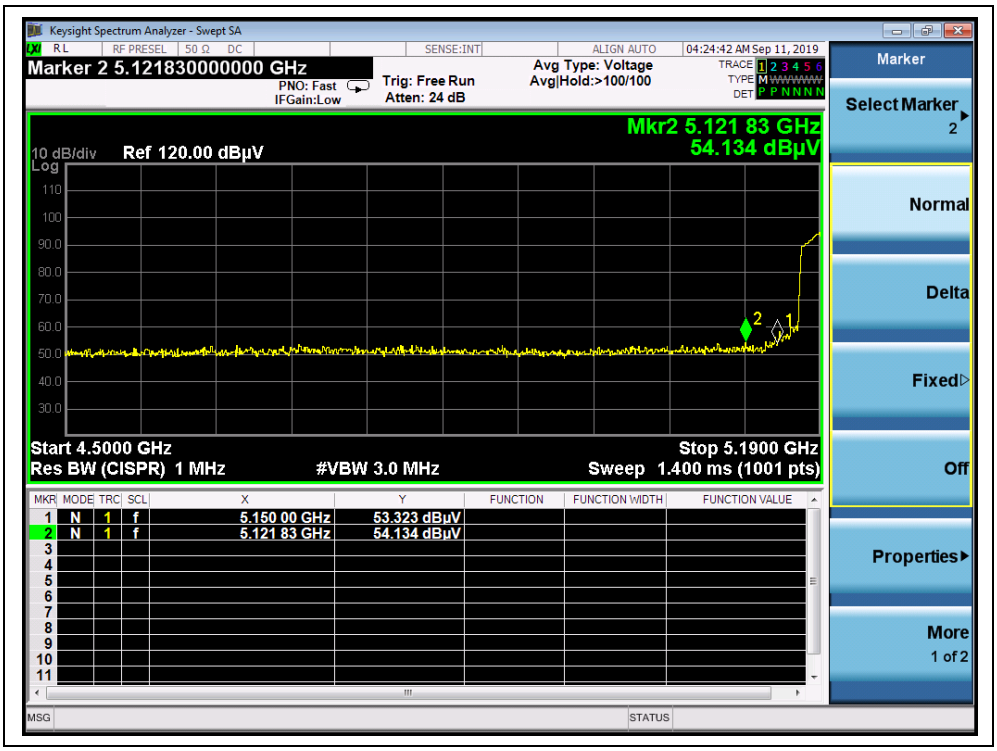
(Channel 165, AVG, 802.11 ac (VHT20))

802.11ac (VHT40) Test mode

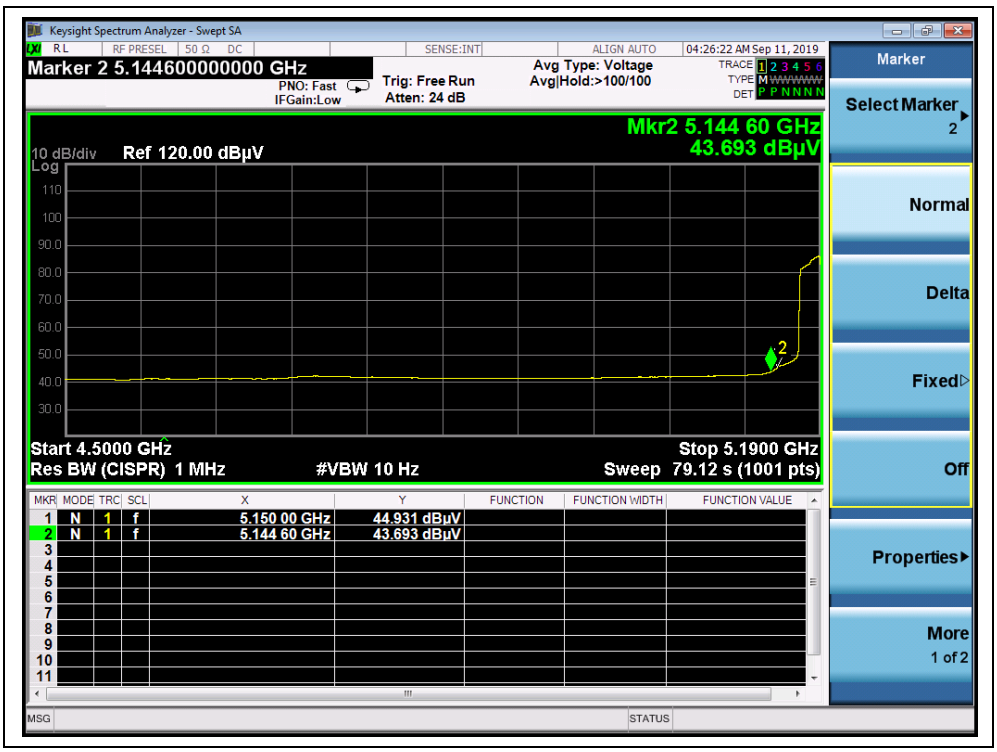
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
38	5121.83	PK	54.13	-26.92	32.20	59.41	74	PASS
38	5150.00	AV	44.93	-26.92	32.20	50.21	54	PASS
62	5353.90	PK	52.17	-26.80	32.20	57.57	74	PASS
62	5350.00	AV	41.74	-26.80	32.20	47.14	54	PASS
102	5469.20	PK	55.84	-26.64	32.20	61.40	68.23	PASS
102	5470.00	AV	44.96	-26.64	32.20	50.52	54	PASS
142	5739.52	PK	52.42	-26.64	32.20	57.98	68.23	PASS
142	5727.64	AV	41.54	-26.64	32.20	47.10	54	PASS
151	5721.67	PK	57.01	-26.23	32.20	62.98	114.64	PASS
151	5725.00	AV	44.55	-26.23	32.20	50.52	54	PASS
159	5853.22	PK	52.79	-26.23	32.20	58.76	115.81	PASS
159	5850.00	AV	41.32	-26.23	32.20	47.29	54	PASS

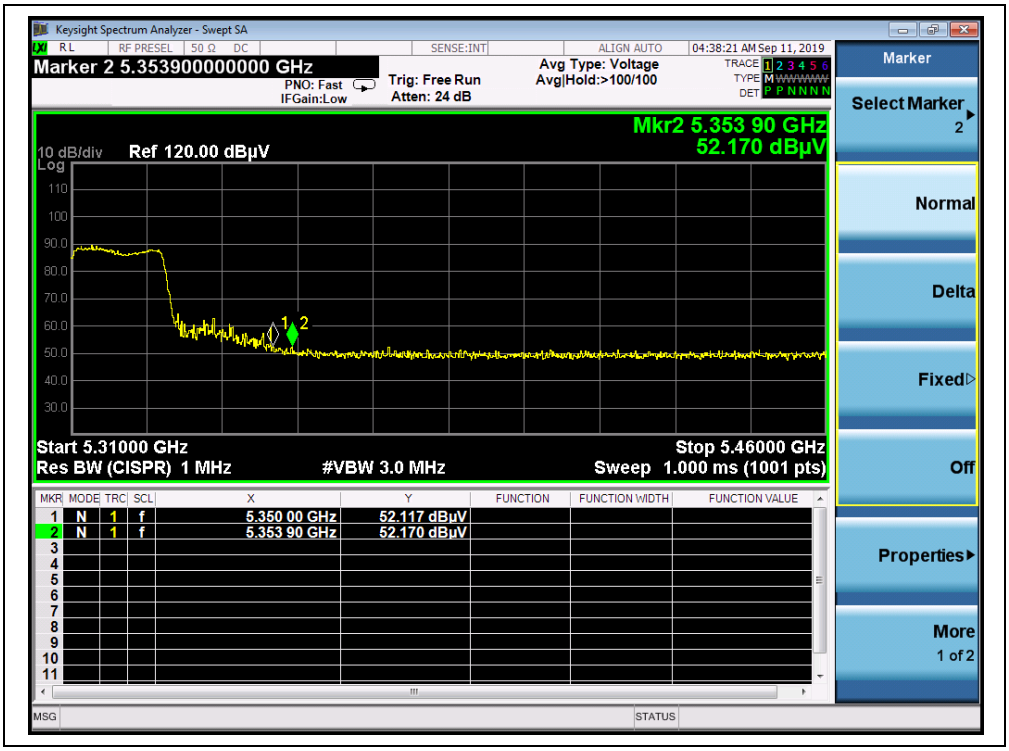
B. Test Plots:



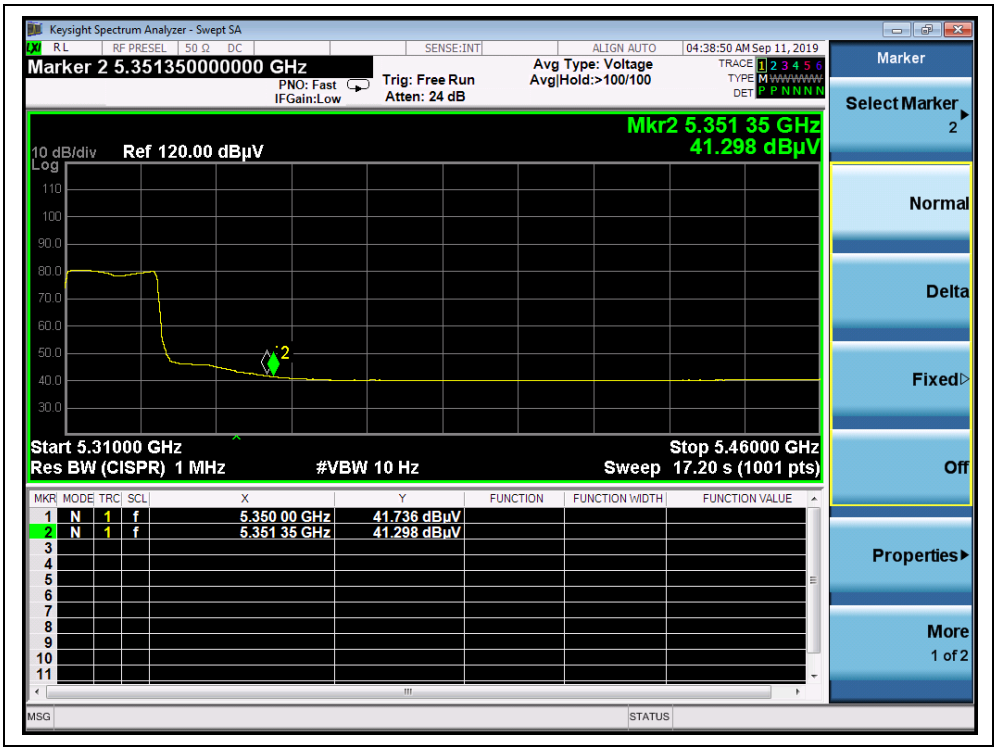
(Channel 38, PEAK, 802.11ac (VHT40))



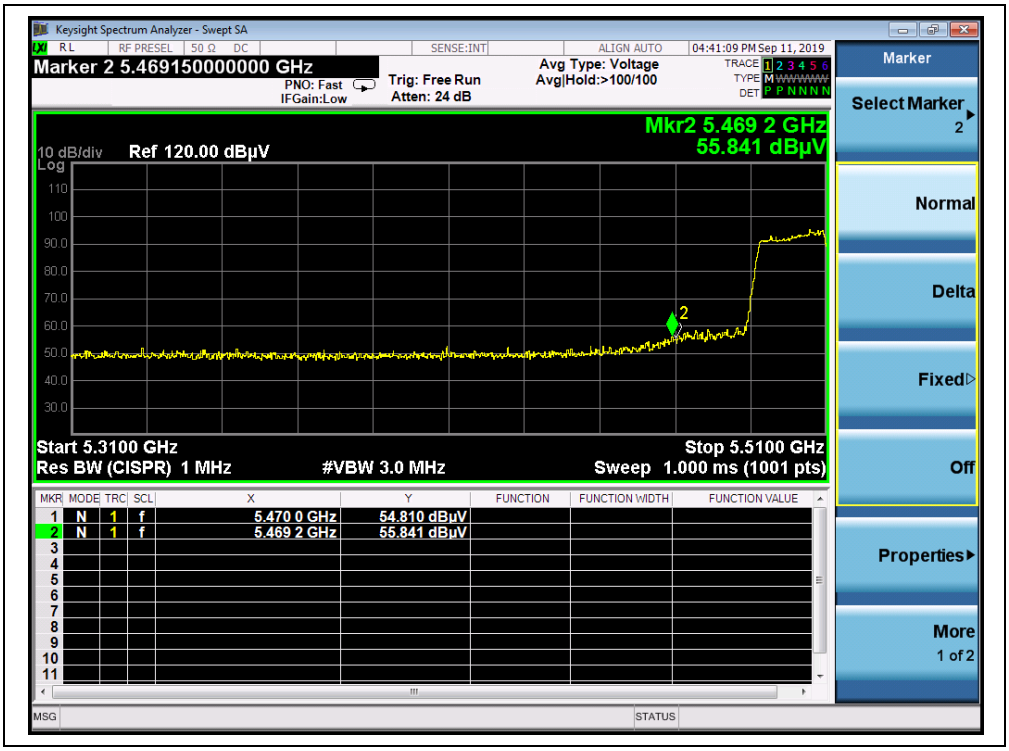
(Channel 38, AVG, 802.11ac (VHT40))



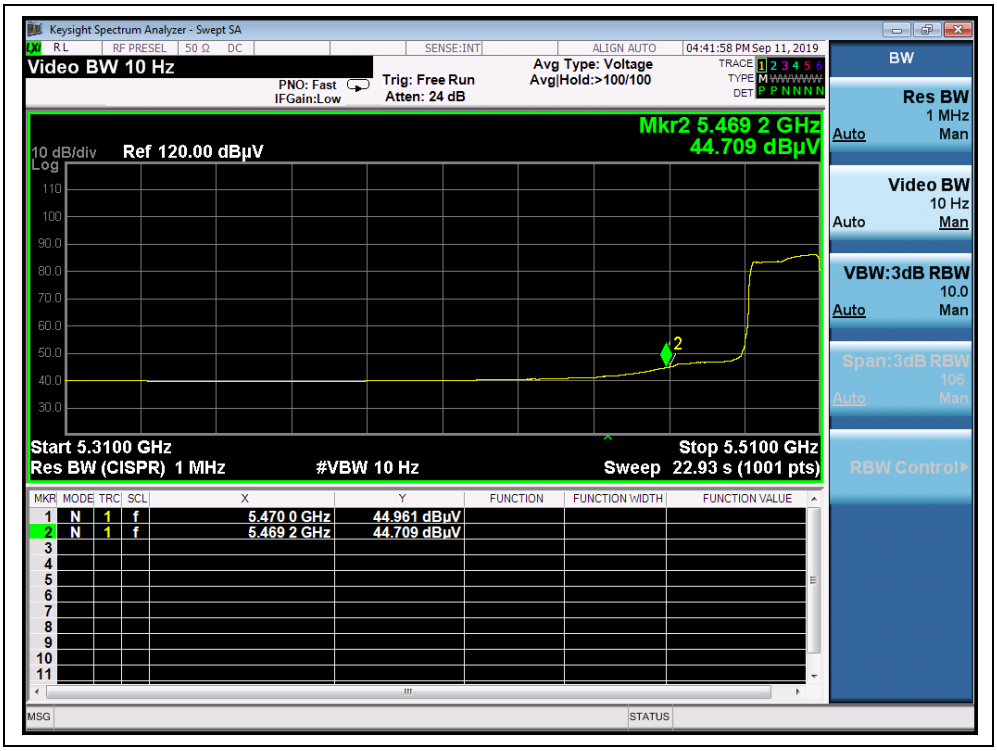
(Channel 62, PEAK, 802.11ac (VHT40))



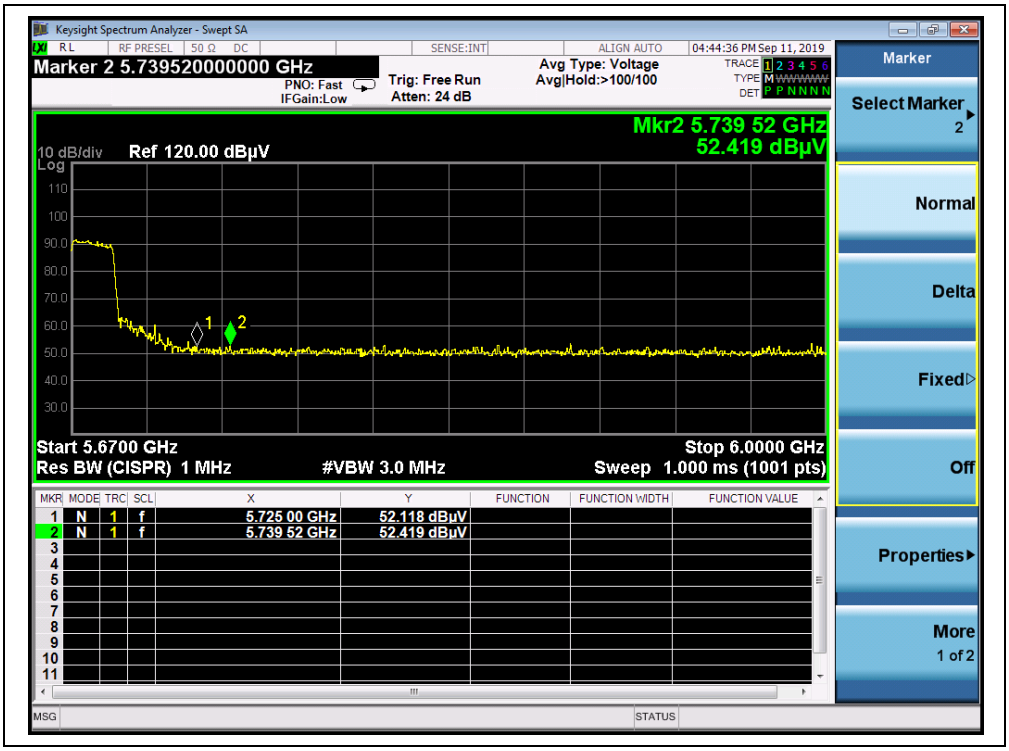
(Channel 62, AVG, 802.11ac (VHT40))



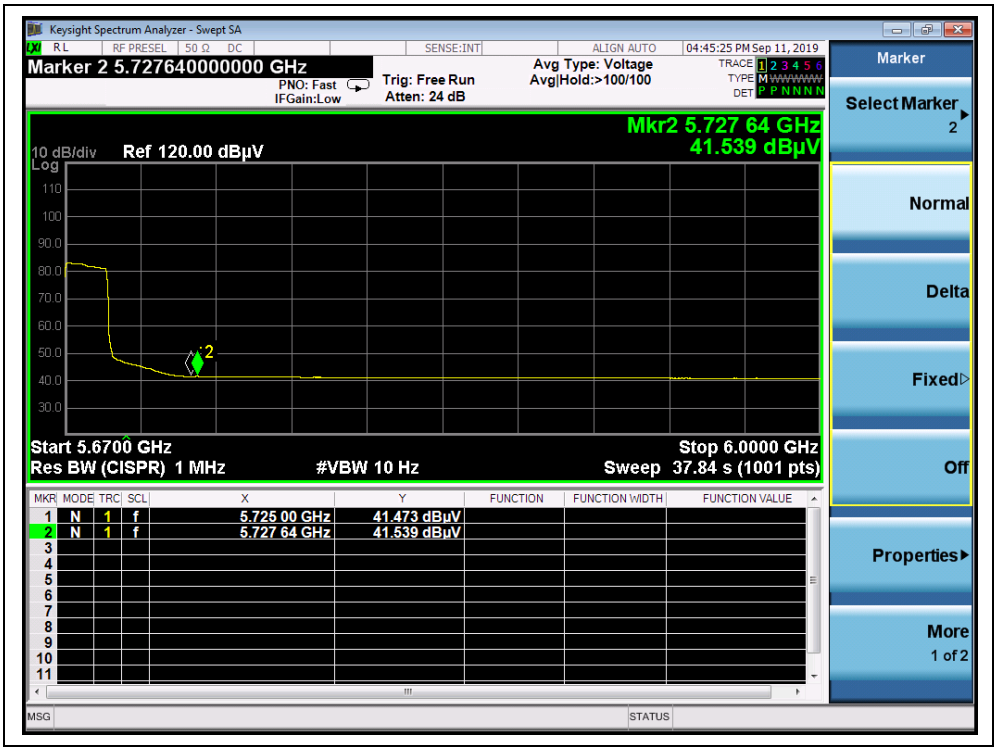
(Channel 102, PEAK, 802.11ac (VHT40))



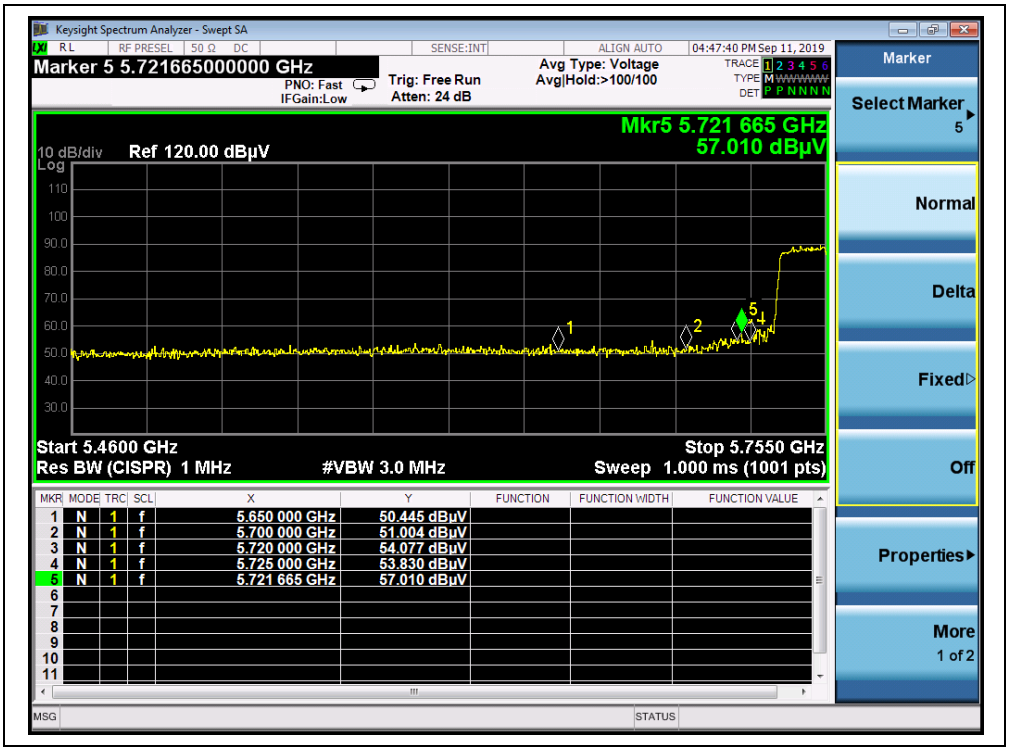
(Channel 102, AVG, 802.11ac (VHT40))



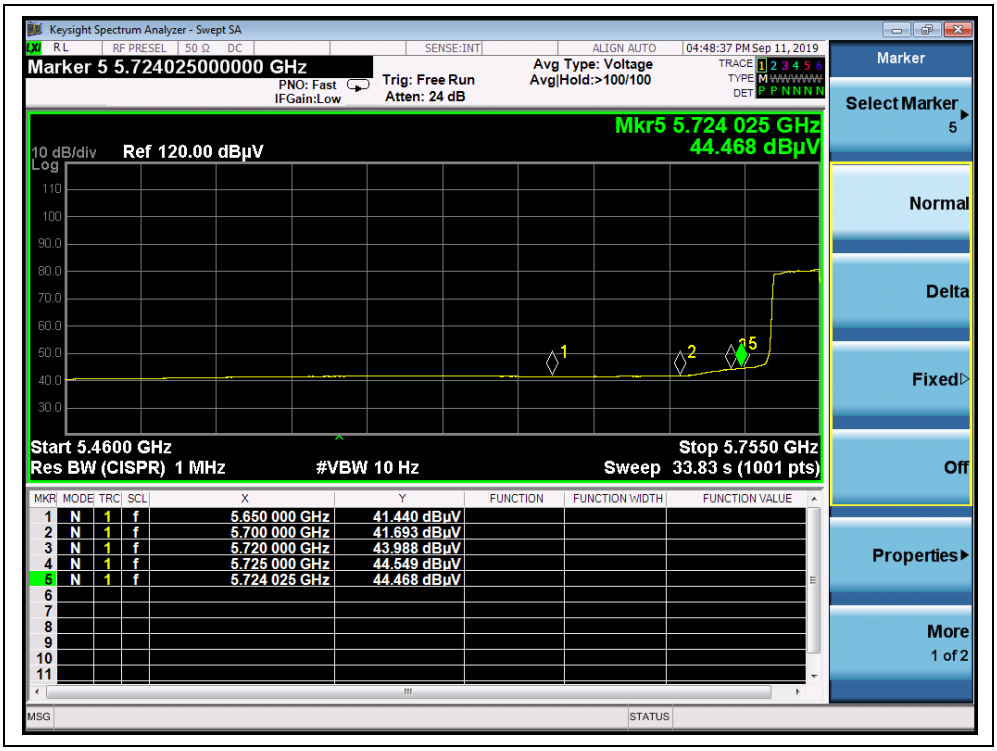
(Channel 142, PEAK, 802.11ac (VHT40))



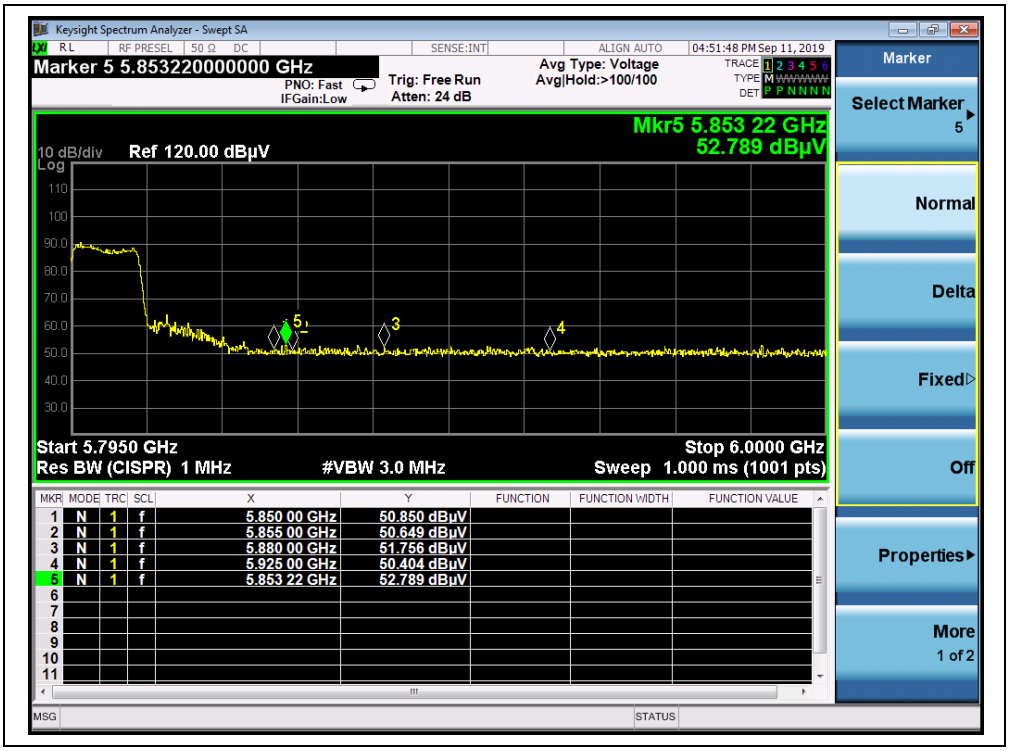
(Channel 142, AVG, 802.11ac (VHT40))



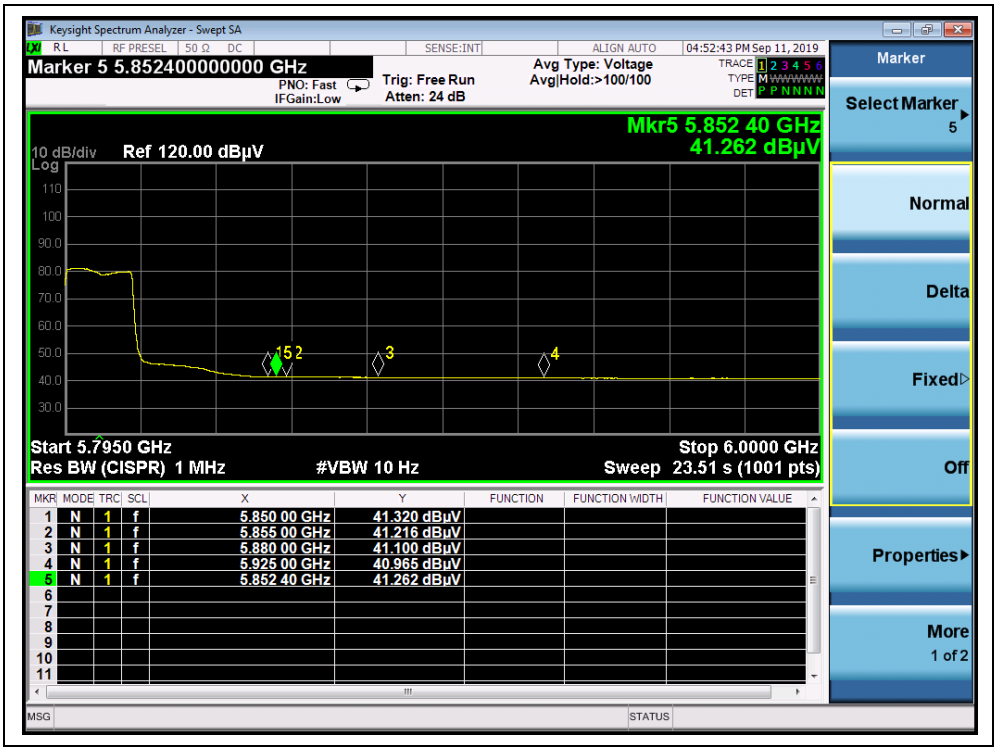
(Channel 151, PEAK, 802.11ac (VHT40))



(Channel 151, AVG, 802.11ac (VHT40))



(Channel 159, PEAK, 802.11ac (VHT40))



(Channel 159, AVG, 802.11ac (VHT40))

2.9. Radiated Emission

2.9.1. Requirement

The peak 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 -27dBm/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 -27dBm/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 -27dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

The following formula is used to convert the equipment isotropic radiated power(eirp) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

Note:

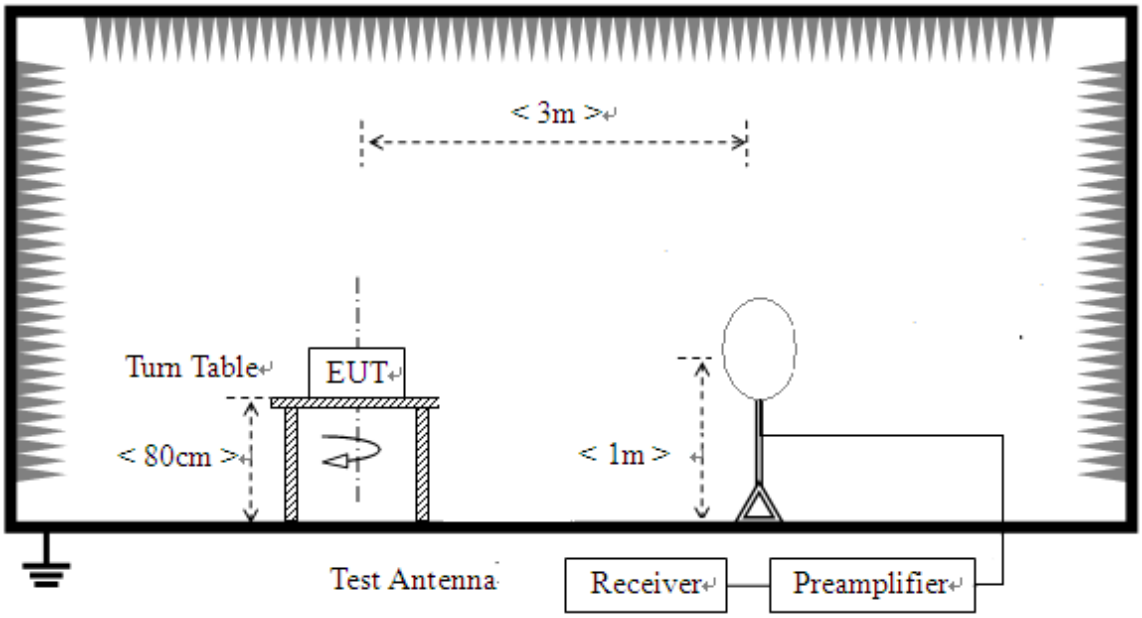
For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

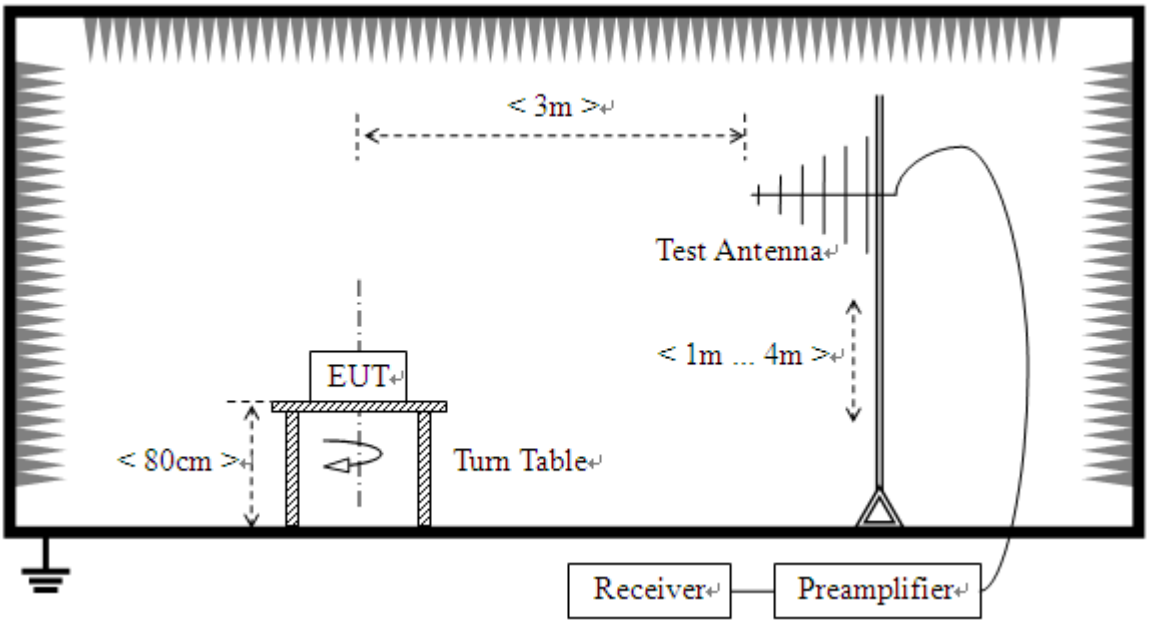
2.9.2. Test Description

A. Test Setup:

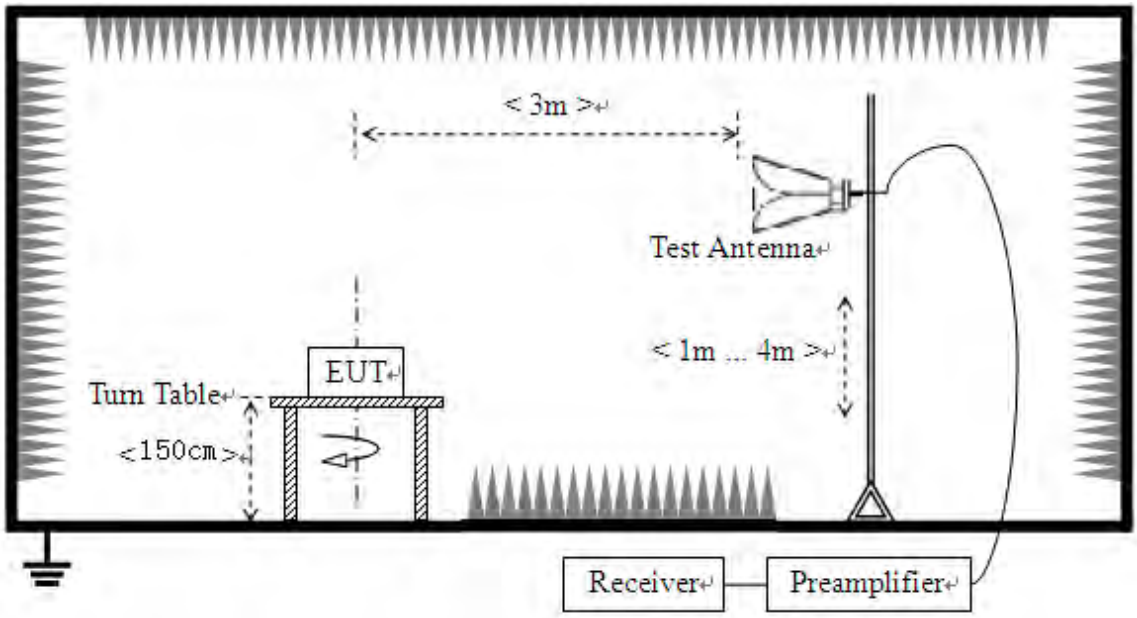
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



The RF absorbing material used on the reference ground plane and on the turntable have a maximum height (thickness) of 30 cm (12 in) and have a minimum-rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz.

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10 (2013). For radiated emissions below or equal to 1GHz, The EUT was set-up on insulator 80cm above the Ground Plane, For radiated emissions above 1GHz, The EUT

was set-up on insulator 150cm above the Ground Plane. The set-up and test methods were according to ANSI C63.10

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Place the test antenna at 3m away from area of the EUT, while keeping the test antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The test antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final test antenna elevation shall be that which maximizes the emissions. The test antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. The emission levels at both horizontal and vertical polarizations should be tested.

2.9.3. Test Result

According to ANSI C63.4 selection 4.2.2, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

E [dBμV/m] $= U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

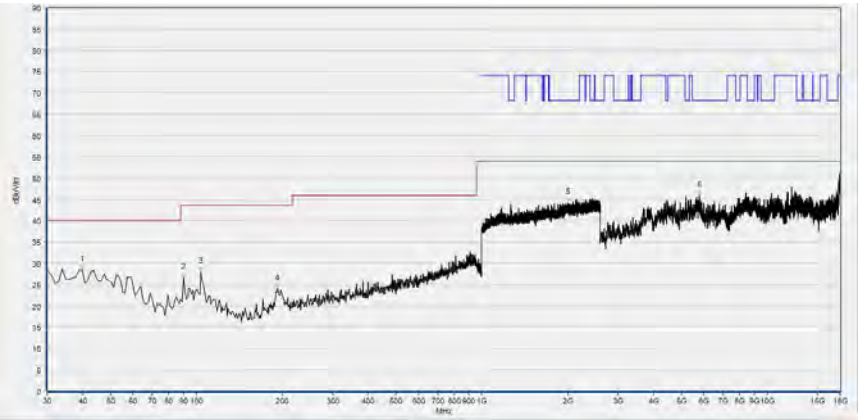
Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 25GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

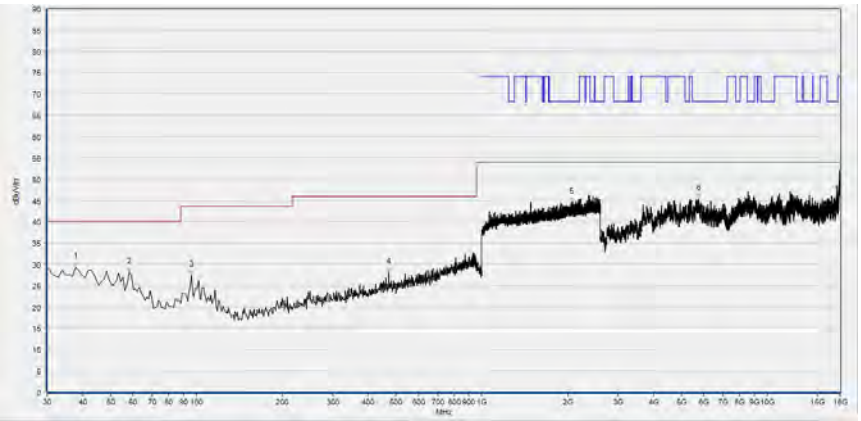
802.11a Test mode

Plots for Channel = 36



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
39.710	28.42	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	26.65	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
103.794	27.97	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
192.152	23.96	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
2007.269	44.18	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5776.115	45.93	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

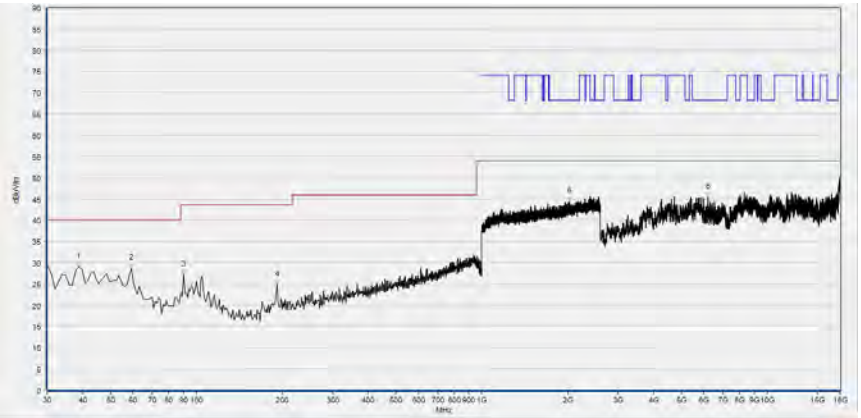
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
37.768	29.35	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
58.158	28.22	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	27.56	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
472.763	28.10	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2056.886	44.50	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5745.309	45.40	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

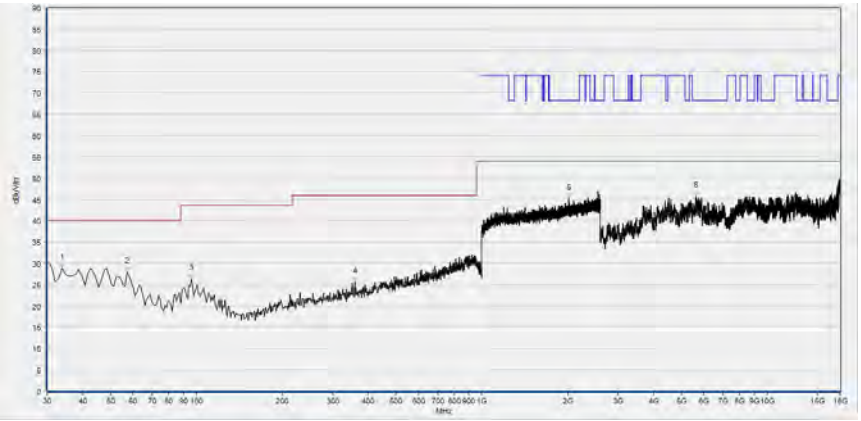
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 44



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	29.00	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
59.129	28.69	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	27.21	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
192.152	24.77	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
2029.677	44.33	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
6204.321	45.44	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

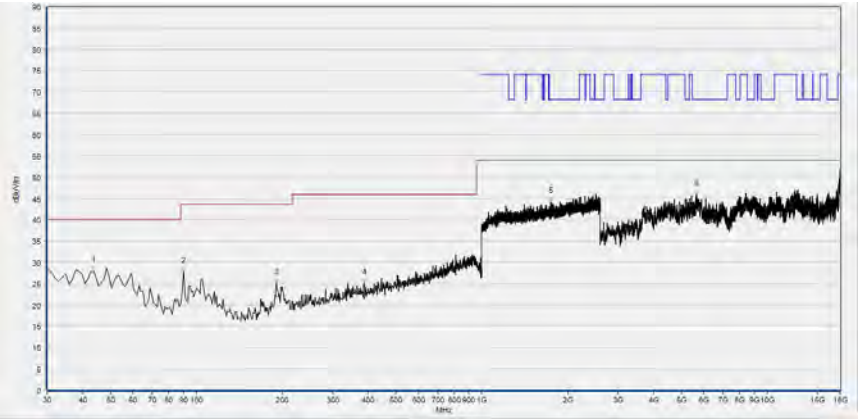
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	28.89	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
57.187	27.93	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	26.38	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
359.159	25.69	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2016.339	45.23	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5625.165	45.74	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

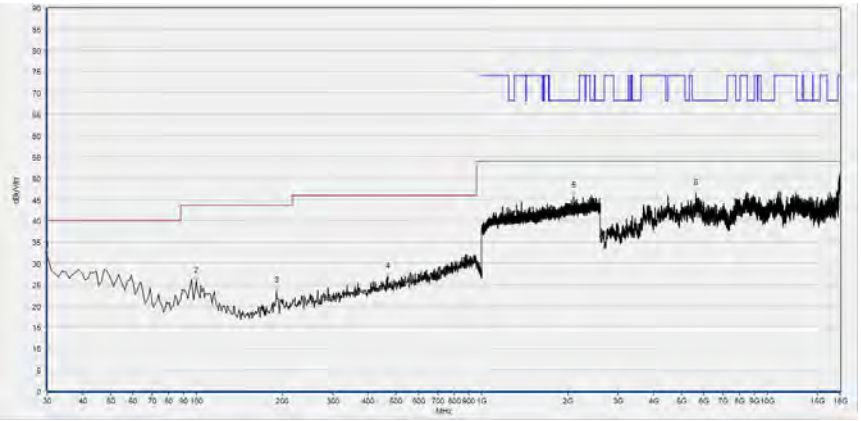
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
43.594	28.05	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	27.88	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
191.181	25.11	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
387.317	25.19	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1747.983	44.20	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5640.568	45.88	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

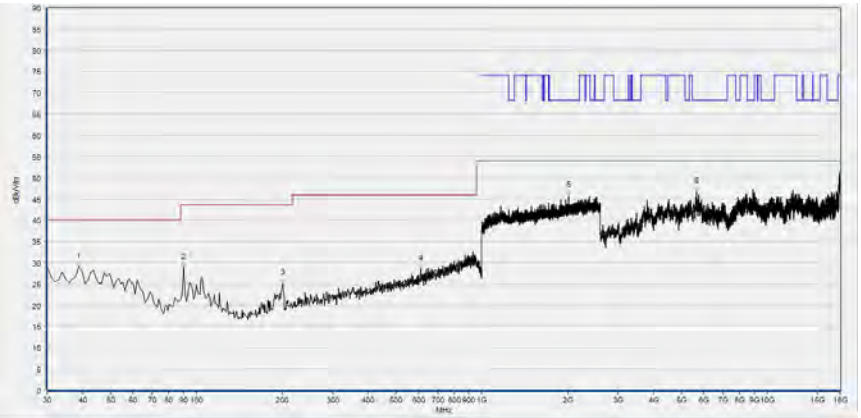
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
30.000	31.87	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
99.910	25.73	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
191.181	23.46	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
467.908	26.89	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2100.100	45.70	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5634.407	46.45	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

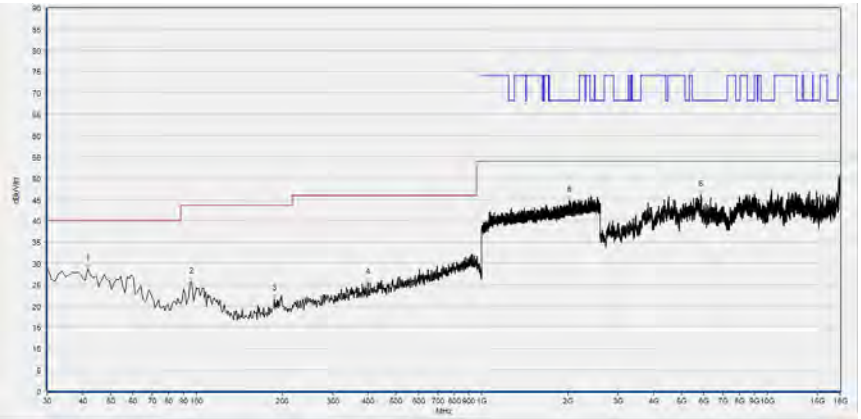
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 52



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	29.01	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	28.78	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
200.891	25.15	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
611.612	28.48	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2012.604	45.78	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5655.971	46.73	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

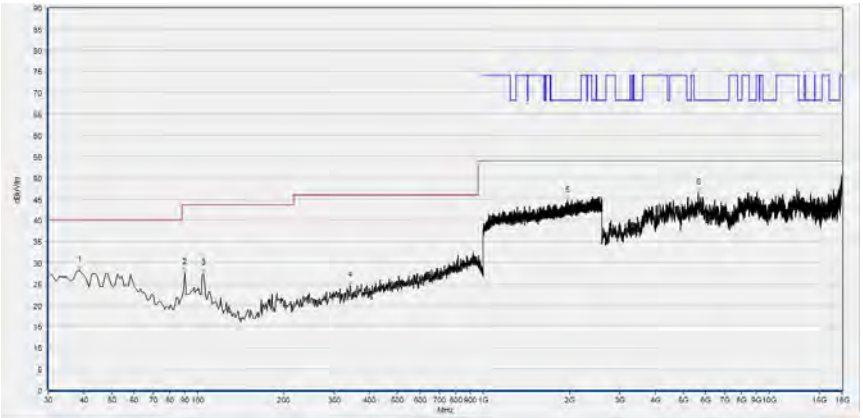
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
41.652	28.67	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	25.69	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
187.297	21.67	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
397.998	25.41	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2031.811	44.76	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5856.211	46.03	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

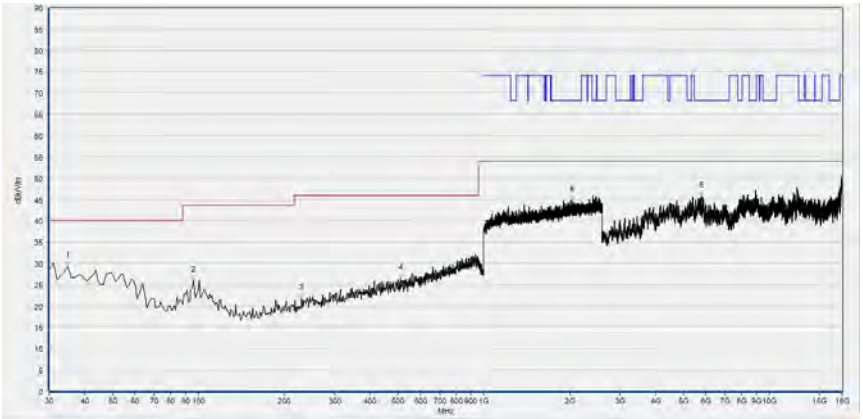
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 60



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	28.23	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	27.73	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
104.765	27.55	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
341.682	24.64	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1969.923	44.57	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5640.568	46.51	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

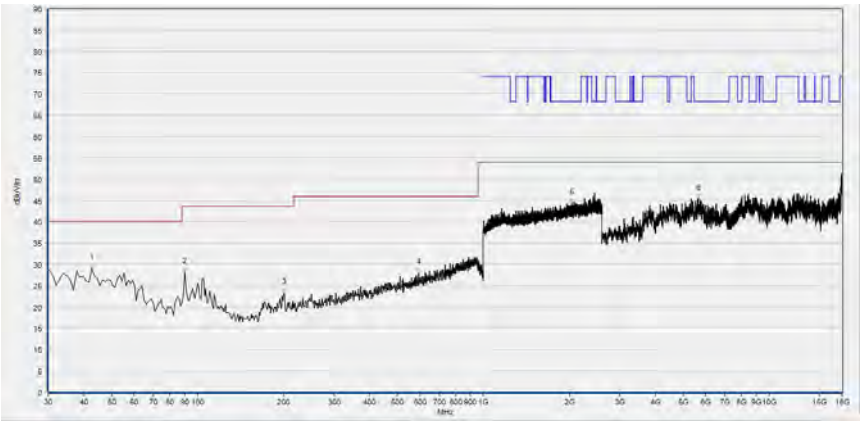
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
34.855	29.28	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	25.96	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
230.020	21.86	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
512.573	26.40	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2038.213	44.68	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5776.115	45.70	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

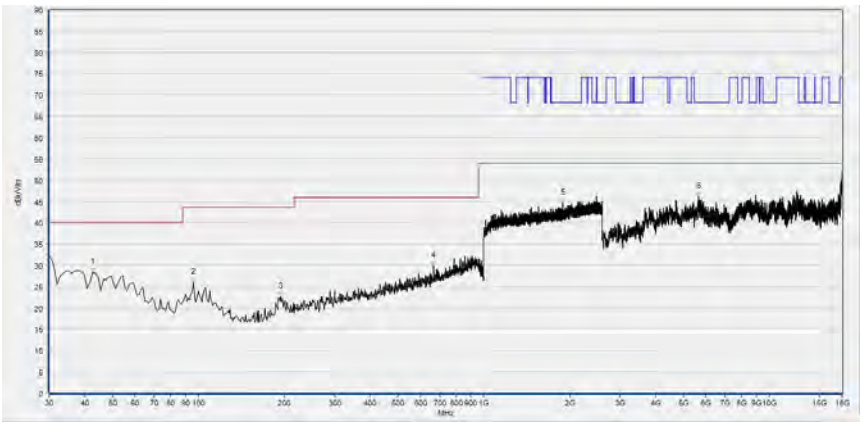
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 64



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
42.623	29.08	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	28.21	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
200.891	23.25	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
592.192	27.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2040.880	44.41	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5643.649	45.36	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

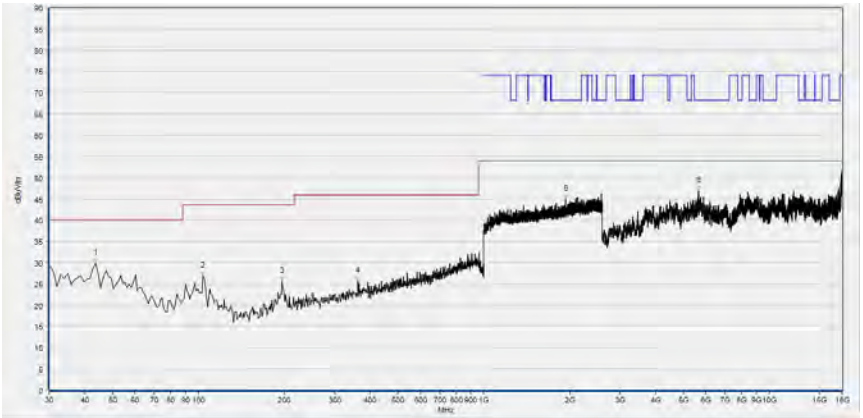
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
42.623	28.25	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	26.04	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
194.094	22.62	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
667.928	29.87	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1894.165	44.58	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5640.568	46.09	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

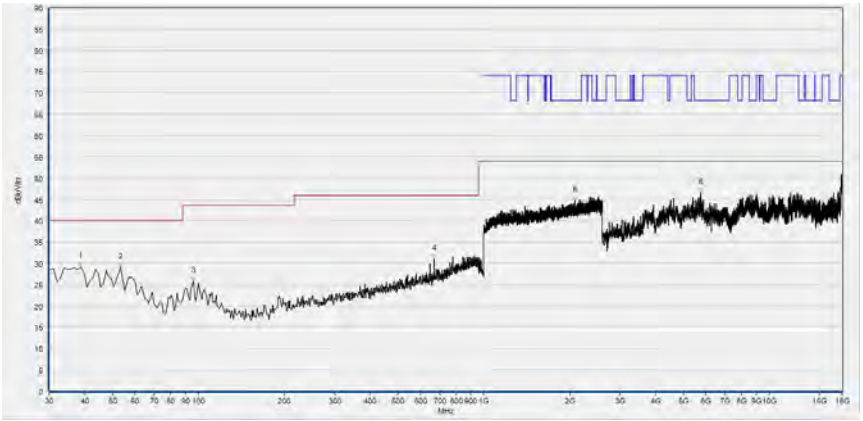
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 100



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
43.594	29.81	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
103.794	26.79	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
196.036	25.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
362.072	25.67	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1929.910	44.87	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5652.891	46.88	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

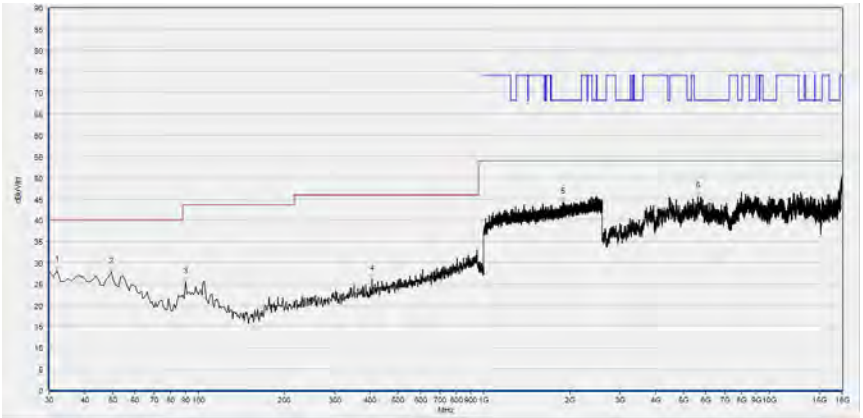
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	29.19	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
53.303	28.91	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	25.76	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
669.870	30.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2091.030	44.69	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5766.873	46.61	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

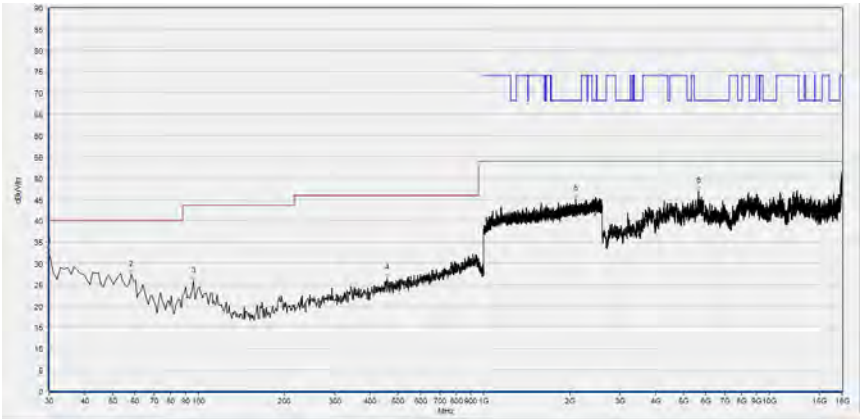
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 120



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
31.942	28.15	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
49.419	27.85	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	25.39	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
405.766	26.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1886.162	44.18	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5625.165	45.51	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

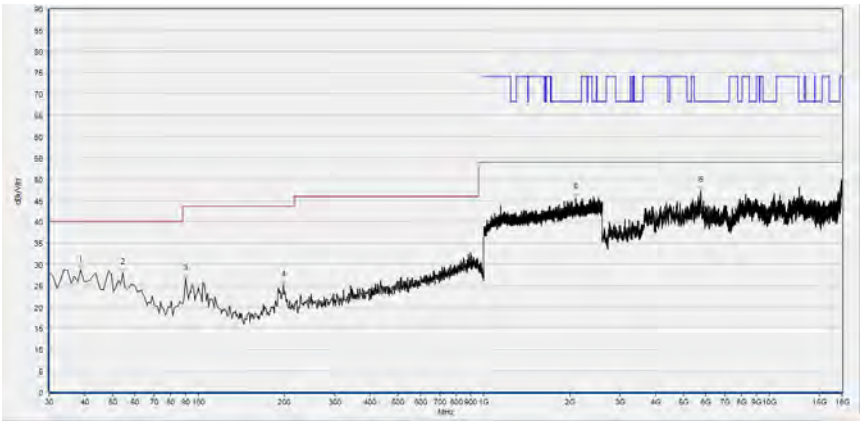
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
30.000	32.61	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
58.158	27.36	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	25.85	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
458.198	26.46	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2100.634	45.05	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5640.568	46.89	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

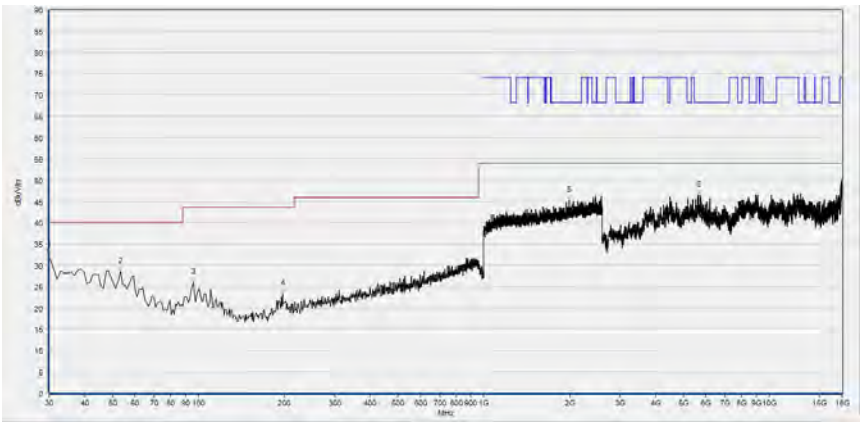
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 144



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	28.66	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
54.274	28.04	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	26.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
198.949	25.06	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
2101.167	45.51	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5766.873	47.20	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

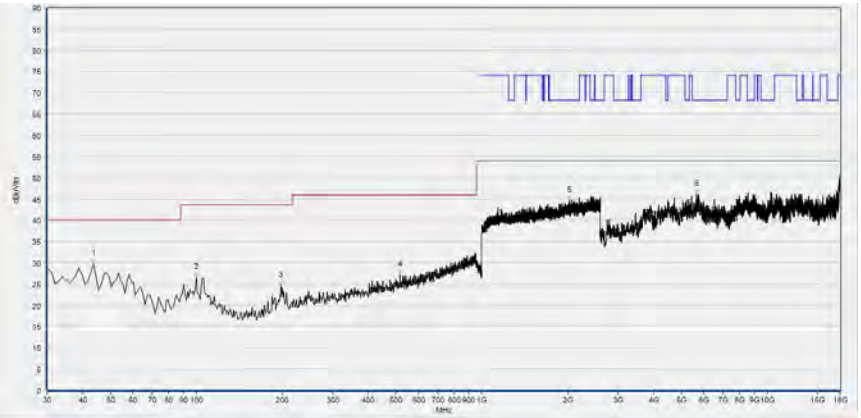
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
30.000	32.26	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
53.303	28.55	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.026	26.00	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
197.007	23.31	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1992.331	45.22	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5640.568	46.46	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

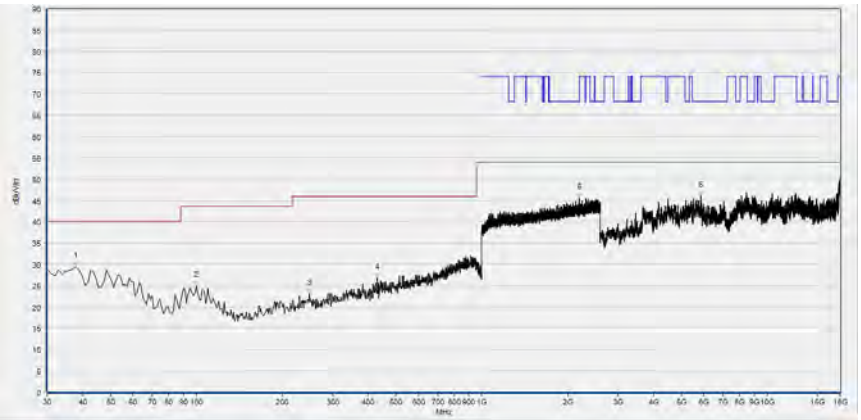
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 149



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
43.594	29.59	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
99.910	26.46	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
197.978	24.71	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
516.456	27.21	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2027.009	44.60	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5646.729	46.10	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

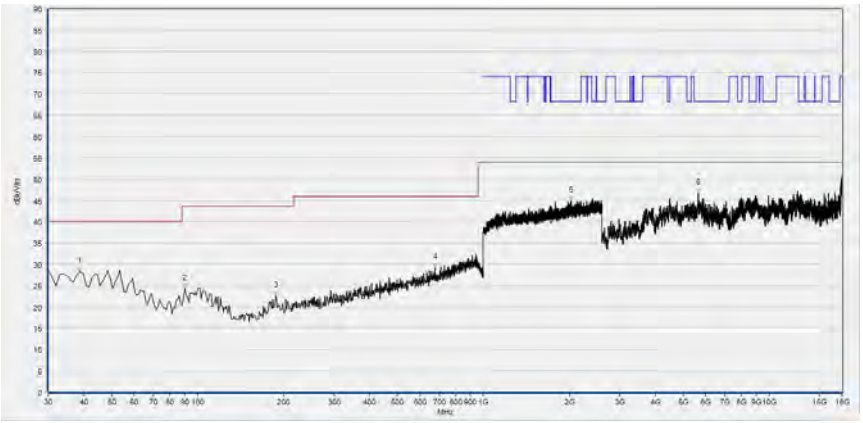
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
37.768	29.46	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
99.910	25.02	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
248.468	23.21	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
431.011	26.85	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2191.330	45.51	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5846.969	46.13	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

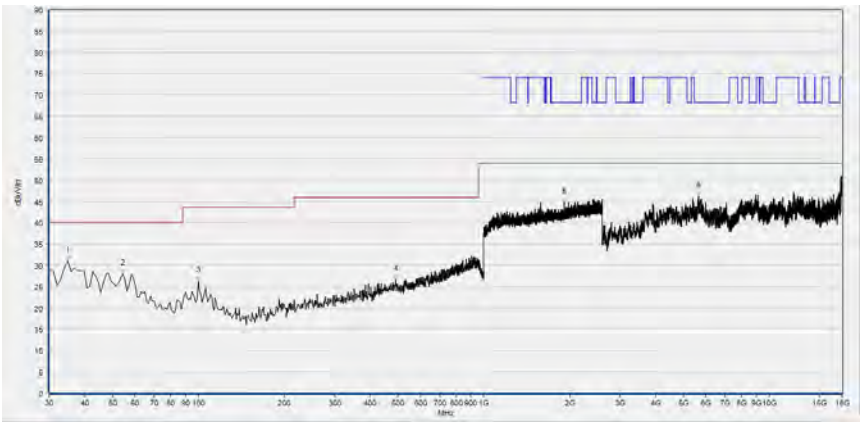
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
38.739	28.34	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
90.200	24.33	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
187.297	22.60	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
676.667	29.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2021.674	44.98	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS
5640.568	46.82	N/A	N/A	68.23	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
34.855	30.93	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
54.274	28.03	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
99.910	26.35	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
491.211	26.66	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1910.704	44.78	N/A	N/A	68.23	N/A	54.00	Vertical	PASS
5643.649	46.28	N/A	N/A	68.23	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)