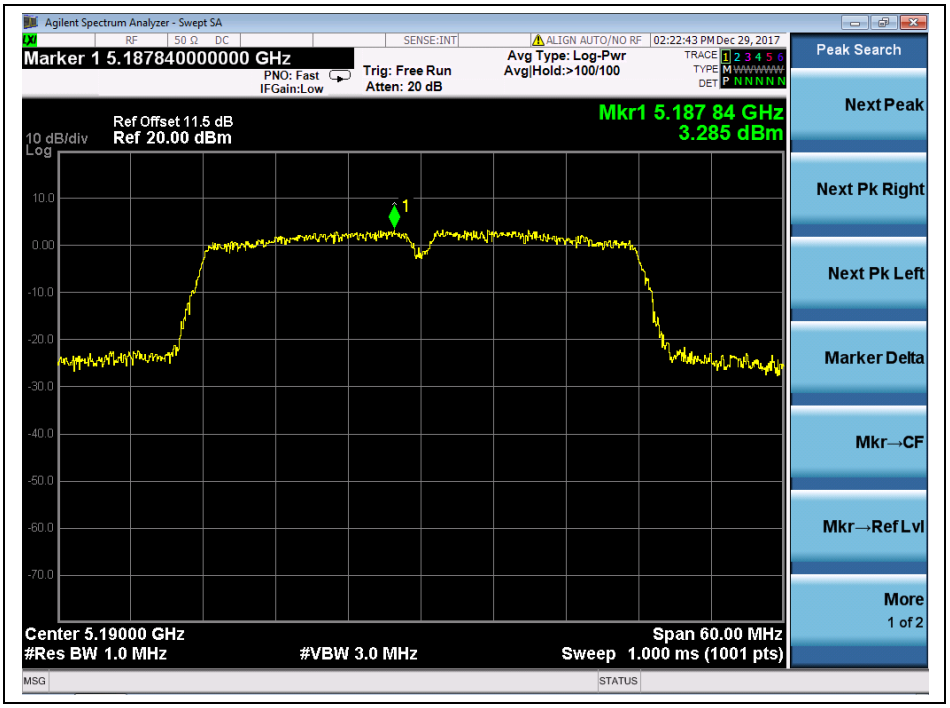
802.11n (HT40) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	3.29	11	PASS
46	5230	3.31		
54	5270	3.85		
62	5310	3.86		
102	5510	6.55		
126	5630	7.14		
142	5710	7.88		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
151	5755	4.20	30	PASS
159	5795	4.61		

B. Test Plots

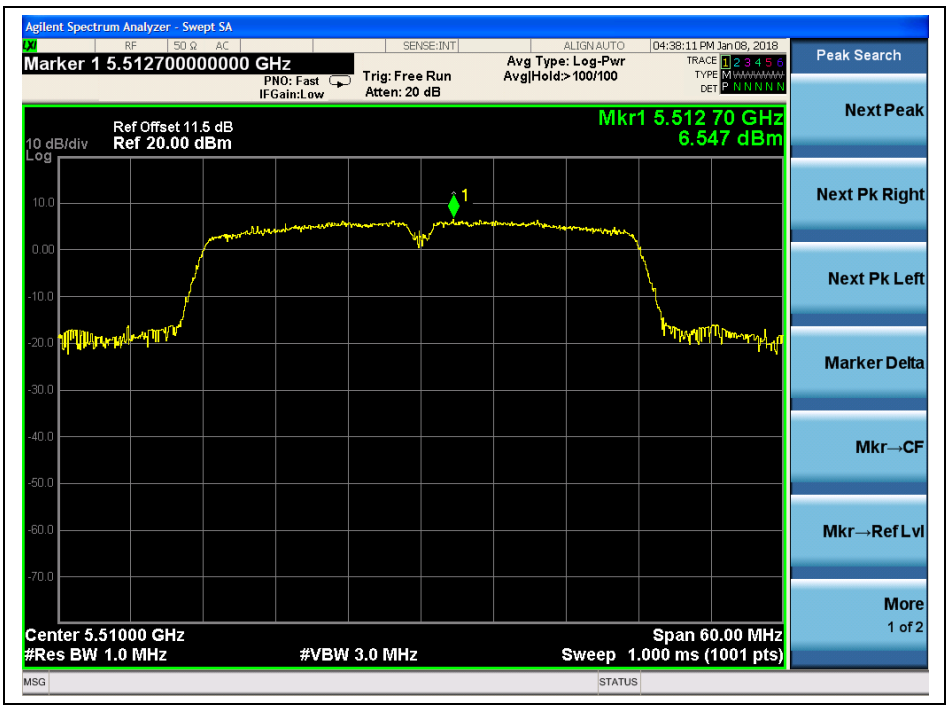


(Channel 38, 5190MHz, 802.11n (HT40))

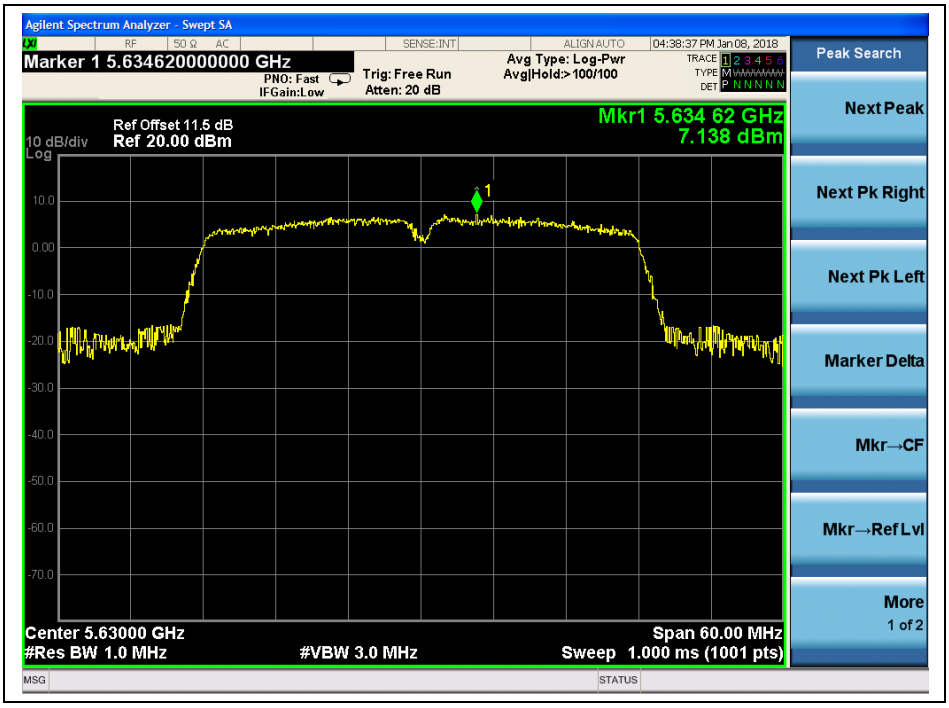
(Channel 46, 5230 MHz, 802.11n (HT40))

(Channel 54, 5270MHz, 802.11n (HT40))

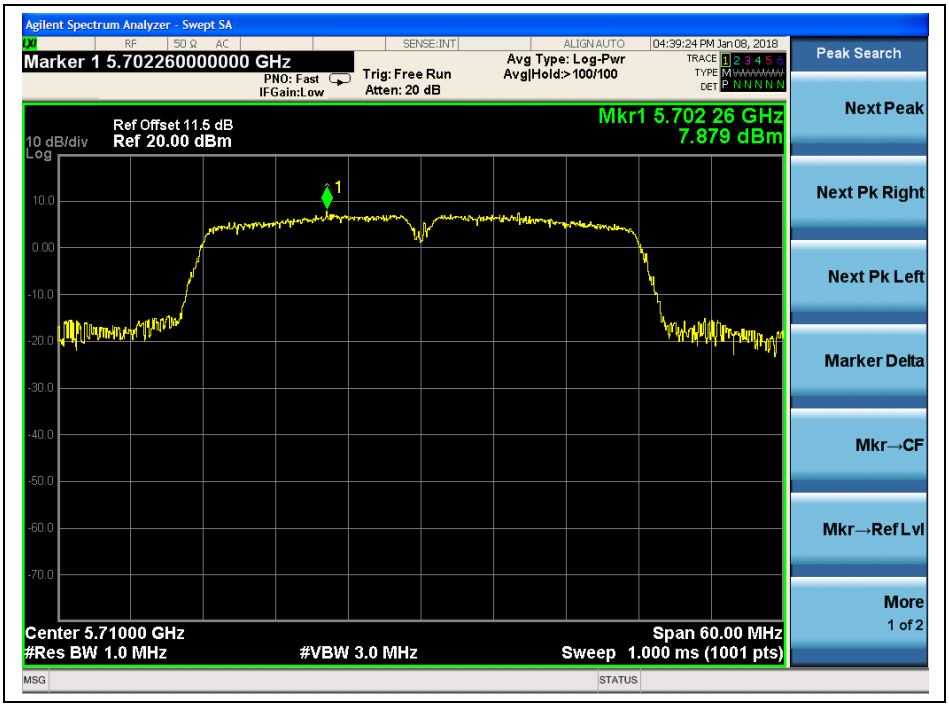
(Channel 62, 5310 MHz, 802.11n (HT40))



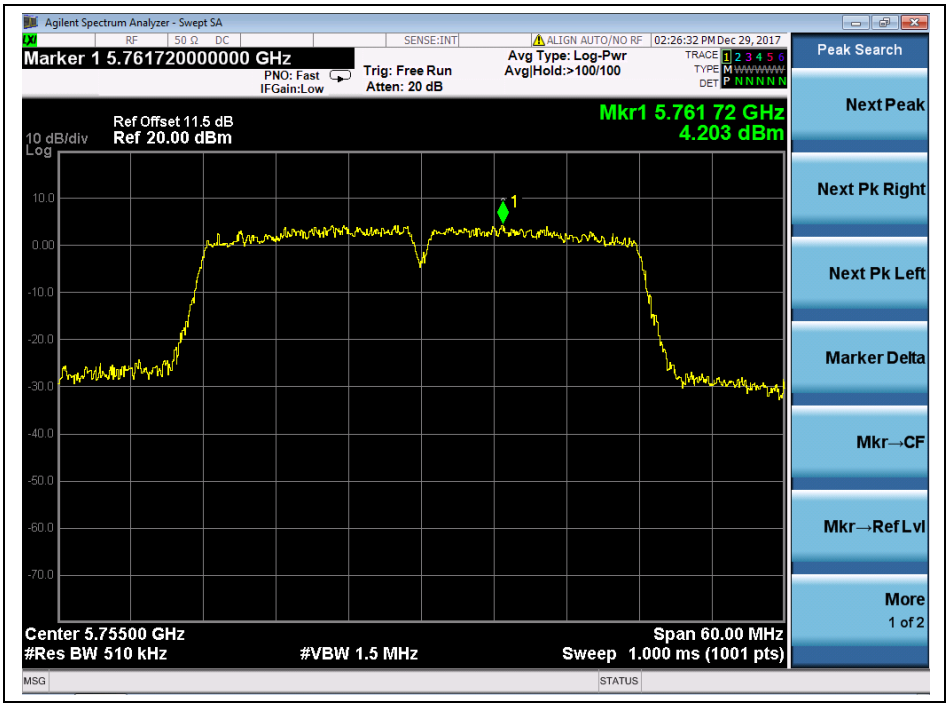
(Channel 102, 5510MHz, 802.11n (HT40))



(Channel 126, 5630 MHz, 802.11n (HT40))



(Channel 142, 5710MHz, 802.11n (HT40))



(Channel 151, 5755 MHz, 802.11n (HT40))

(Channel 159, 5795MHz, 802.11n (HT40))

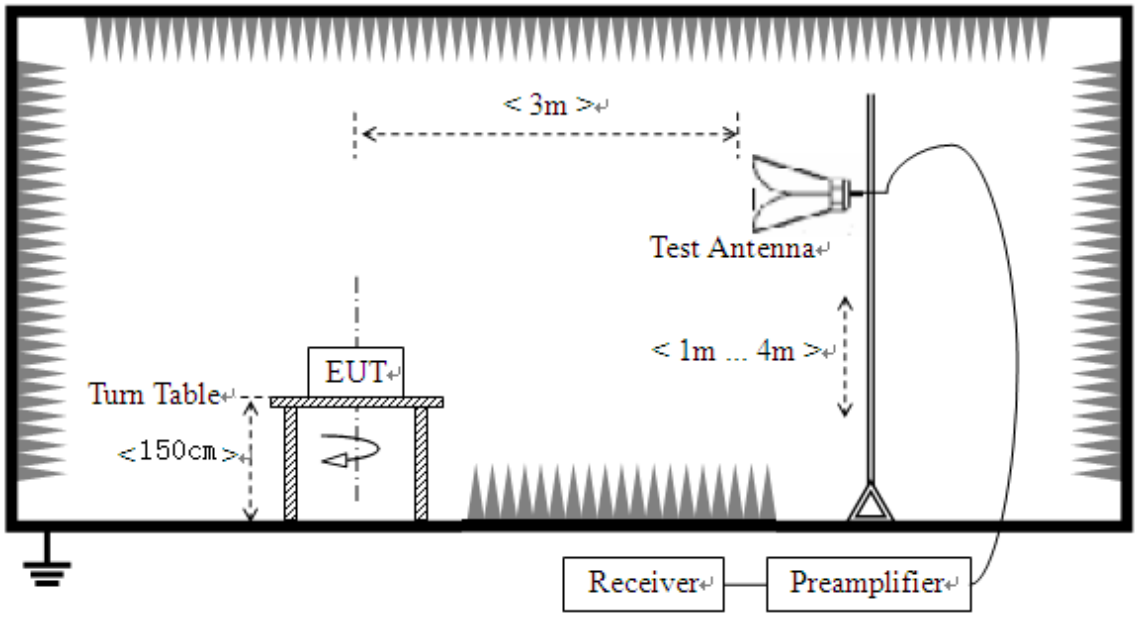
2.5. Restricted Frequency Bands

2.5.1. 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).

2.5.2. 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.

2.5.3. Test Result

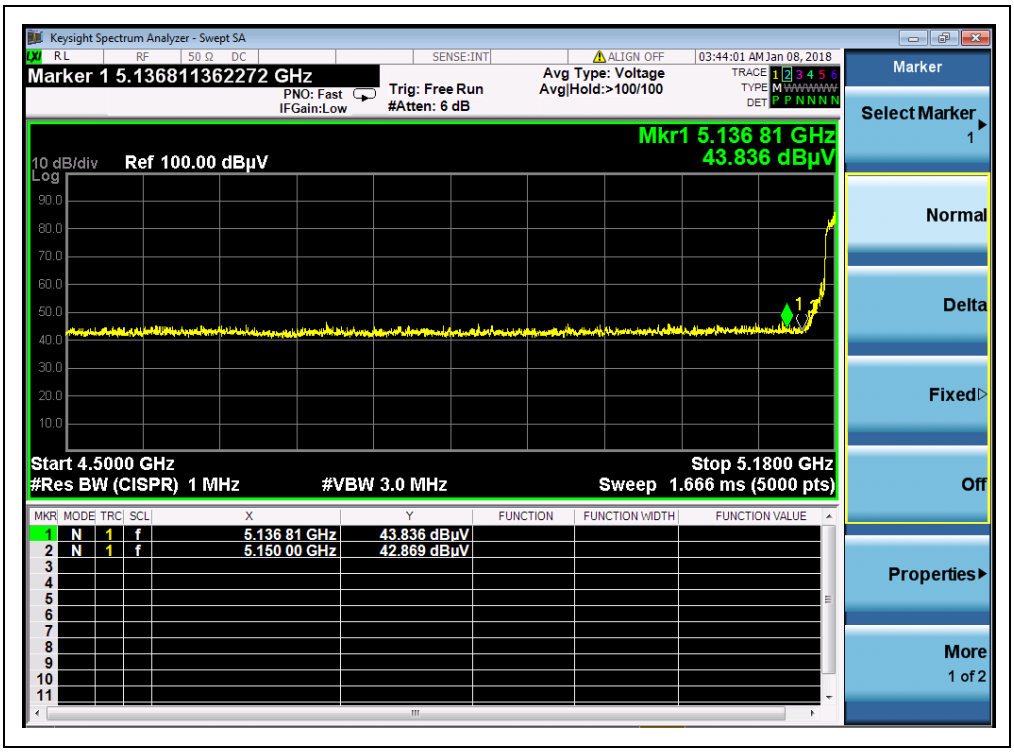
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =U_R + A_T + A_{Factor} [dB]; A_T =$L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
A_T: Total correction Factor except Antenna; U_R: Receiver Reading
G_{preamp}: Preamplifier 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

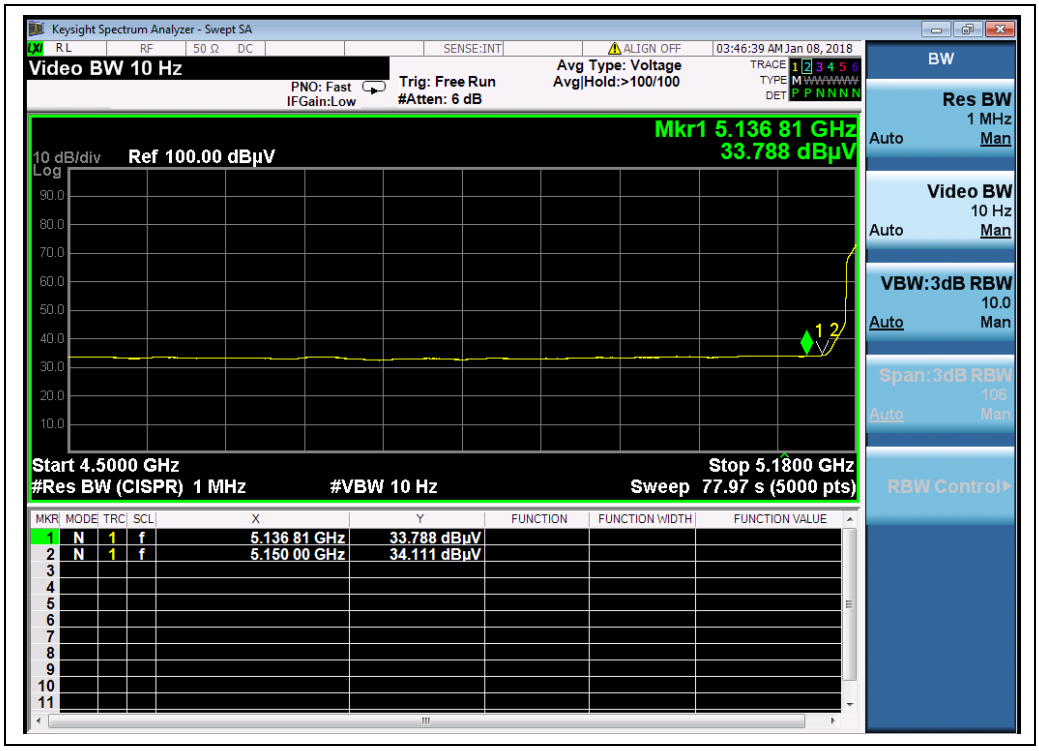
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
36	5136.81	PK	43.84	-50.65	32.11	25.30	74	PASS
36	5136.81	AV	33.79	-50.65	32.11	15.25	54	PASS
64	5367.04	PK	61.31	-50.65	32.11	42.77	74	PASS
64	5350.66	AV	36.10	-50.65	32.11	17.56	54	PASS
100	5457.90	PK	53.82	-50.65	32.11	35.28	74	PASS
100	5467.90	AV	38.80	-50.65	32.11	20.26	54	PASS
140	5726.70	PK	53.29	-50.65	32.11	34.75	74	PASS
140	5725.80	AV	42.83	-50.65	32.11	24.29	54	PASS
149	5720.00	PK	57.78	-50.65	32.11	39.24	110.83	PASS
149	5720.00	AV	42.61	-50.65	32.11	24.07	54	PASS
165	5872.82	PK	55.88	-50.65	32.11	37.34	60.93	PASS
165	5855.00	AV	40.21	-50.65	32.11	21.67	54	PASS

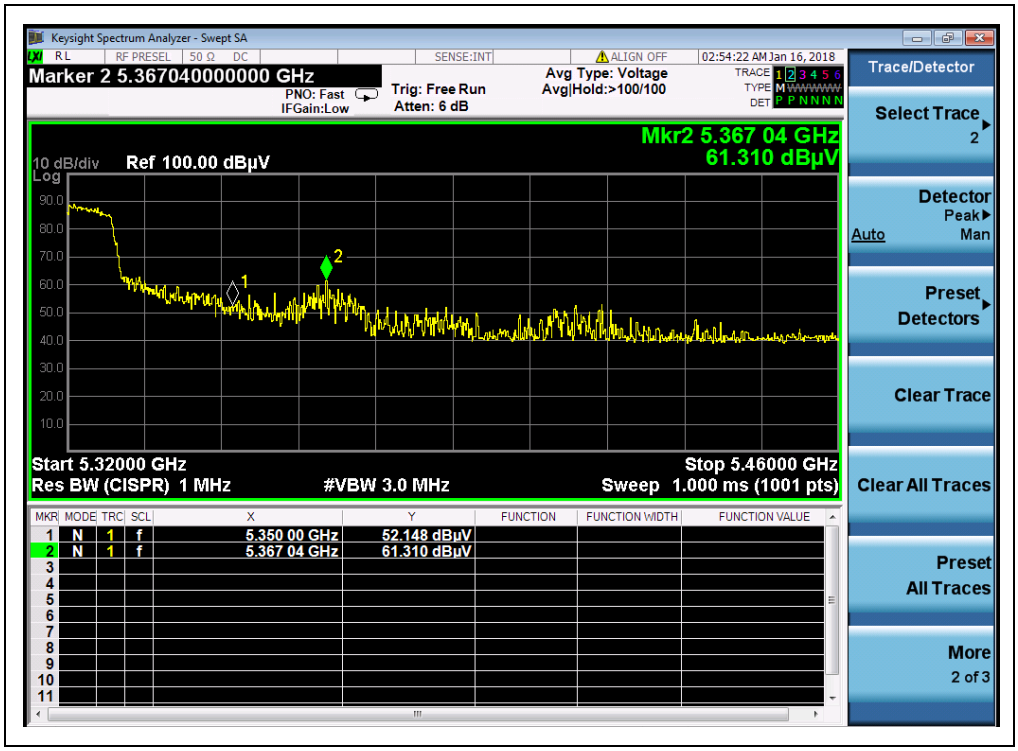
B. Test Plots:



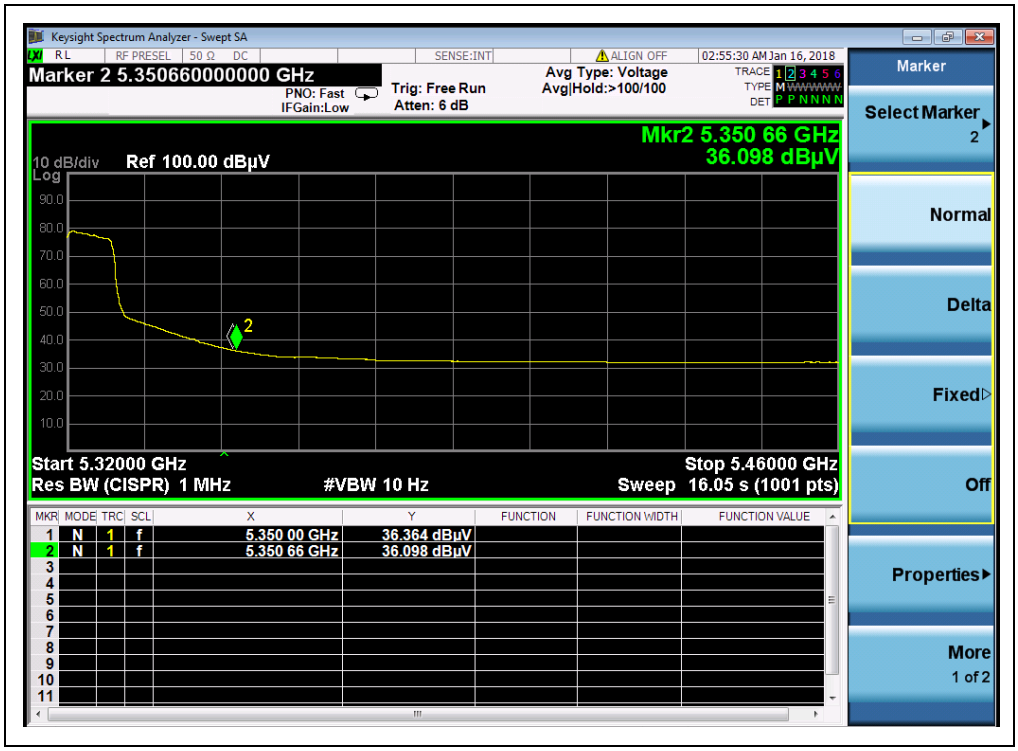
(Channel 36, PEAK, 802.11a)



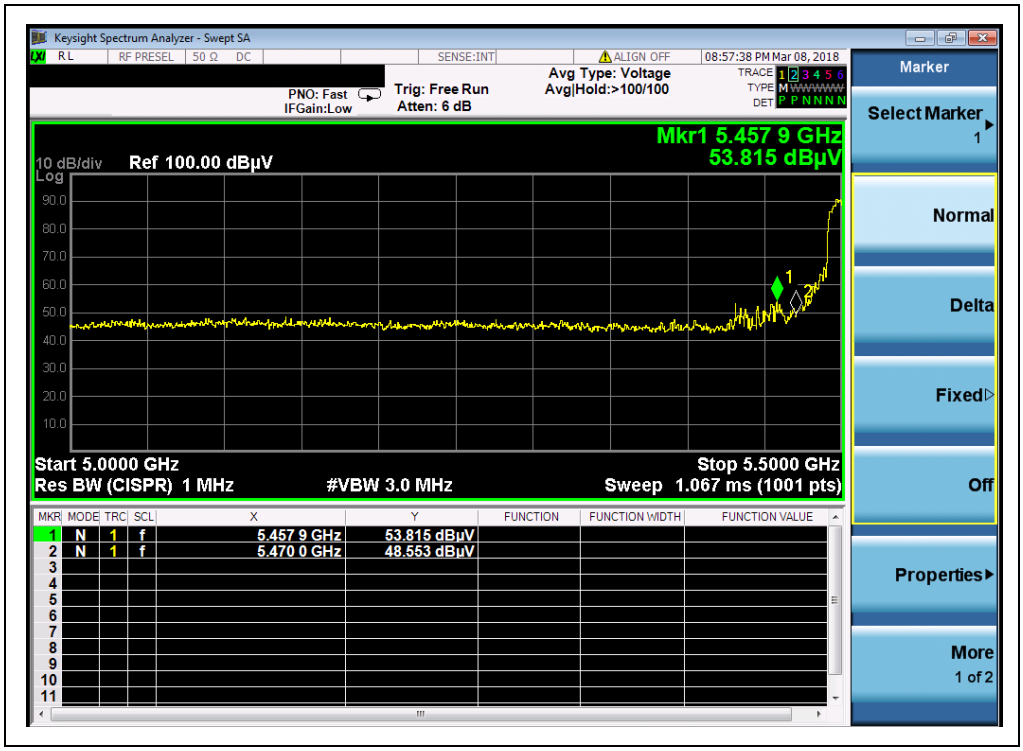
(Channel 36, AVG, 802.11a)



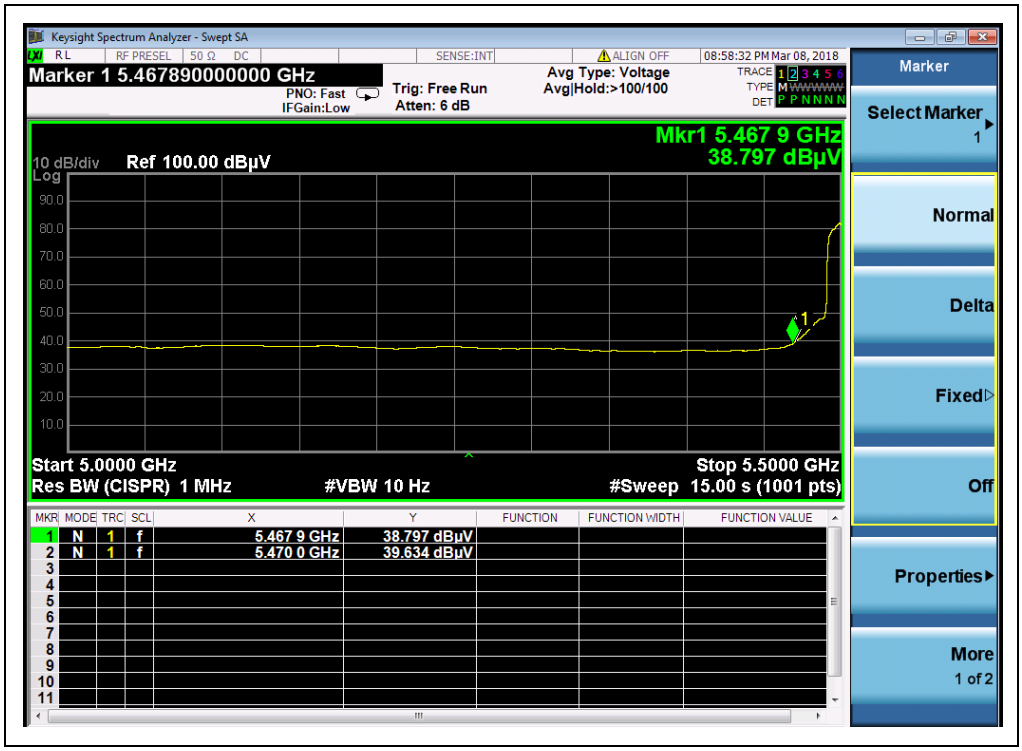
(Channel 64, PEAK, 802.11a)



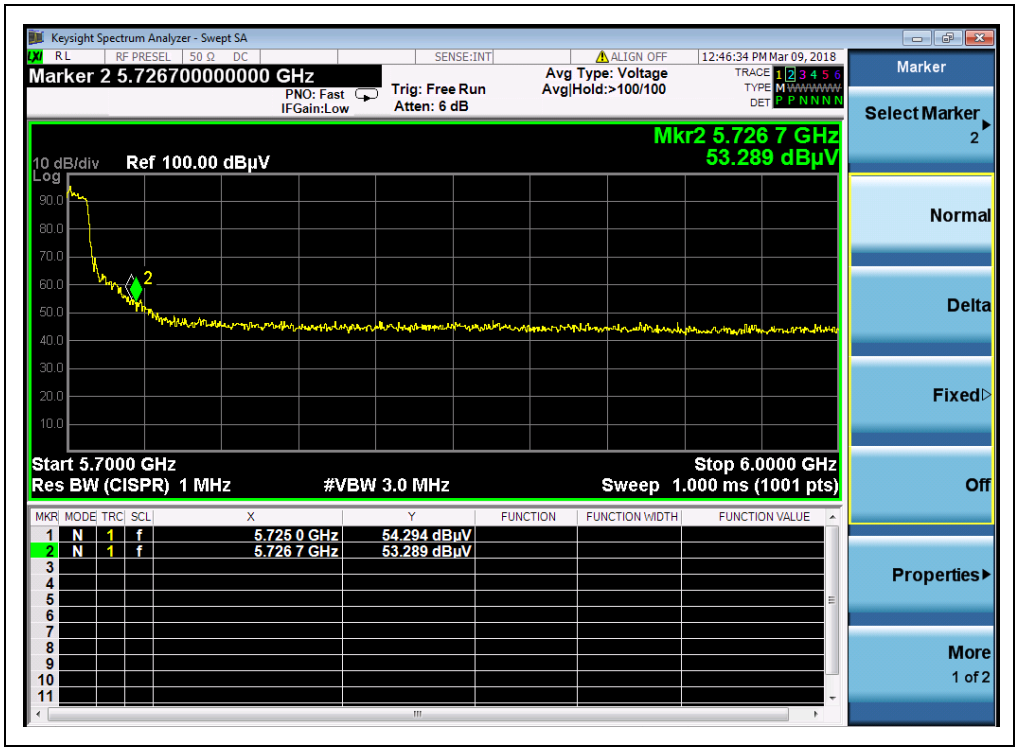
(Channel 64, AVG, 802.11a)



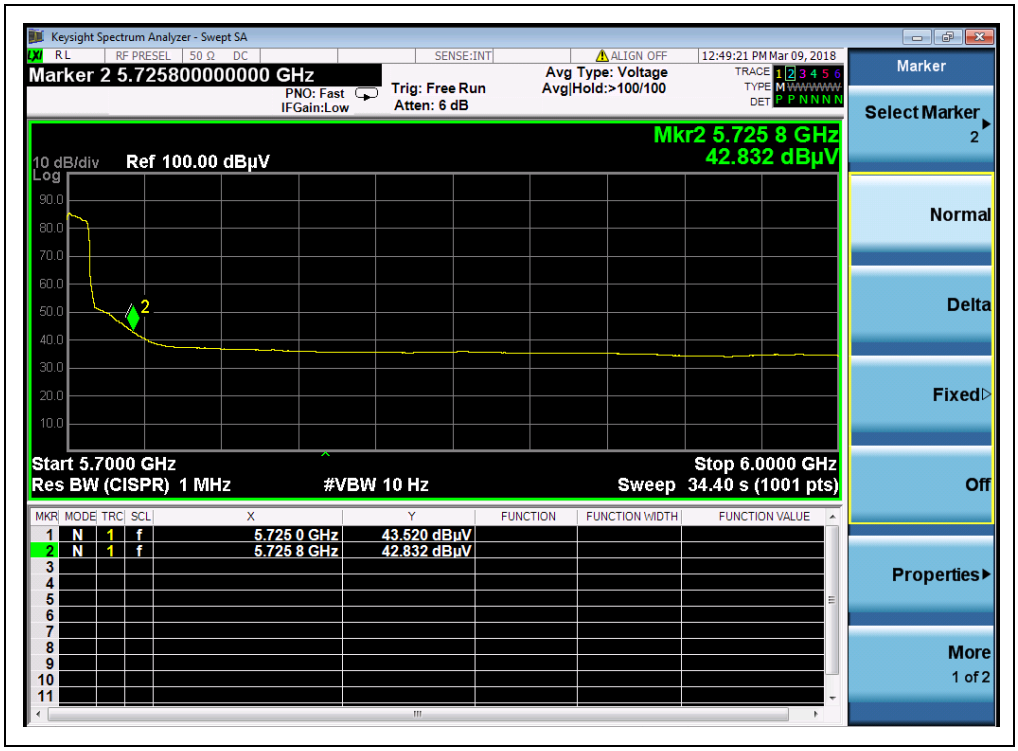
(Channel 100, PEAK, 802.11a)



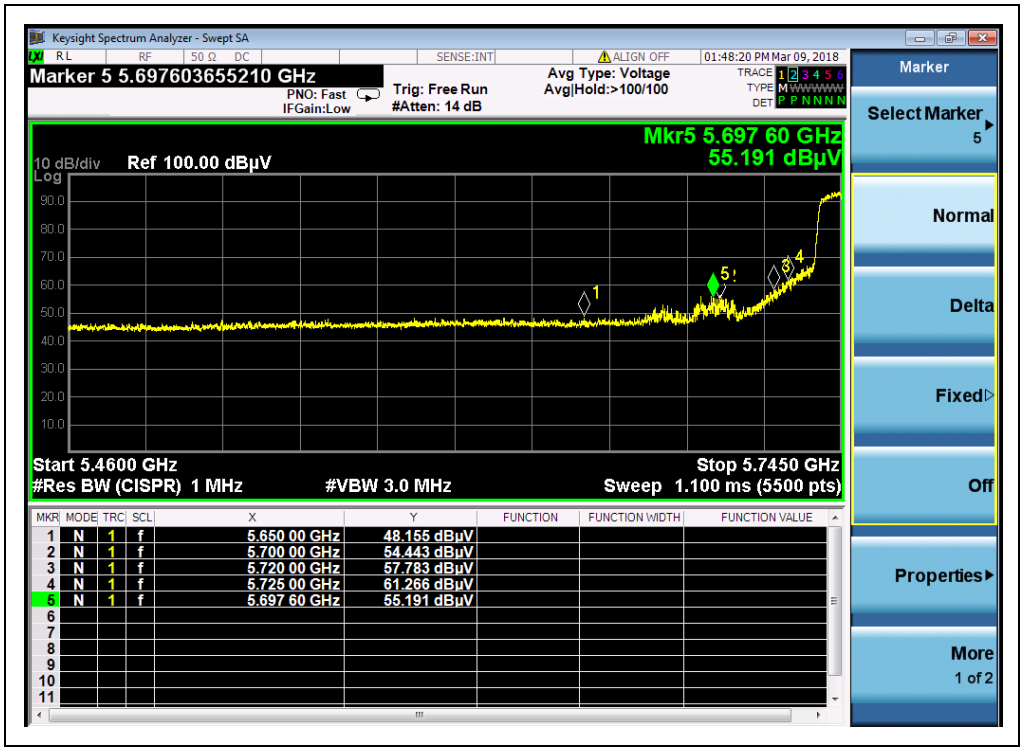
(Channel 100, AVG, 802.11a)



(Channel 140, PEAK, 802.11a)

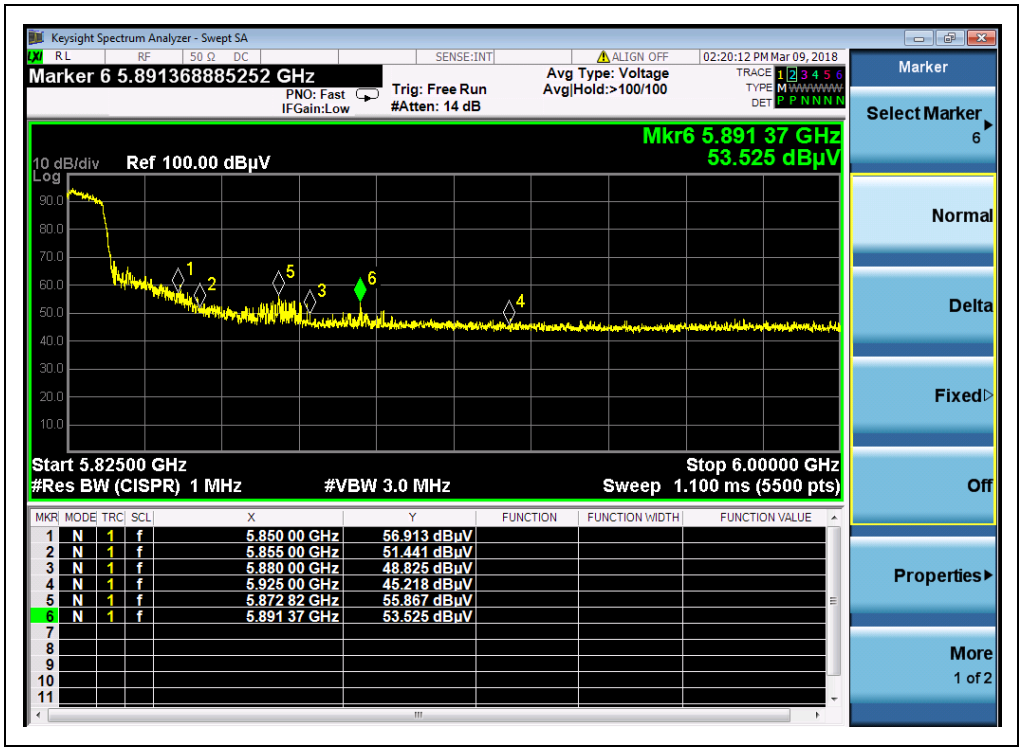


(Channel 140, AVG, 802.11a)



(Channel 149, PEAK, 802.11a)

(Channel 149, AVG, 802.11a)



(Channel 165, PEAK, 802.11a)

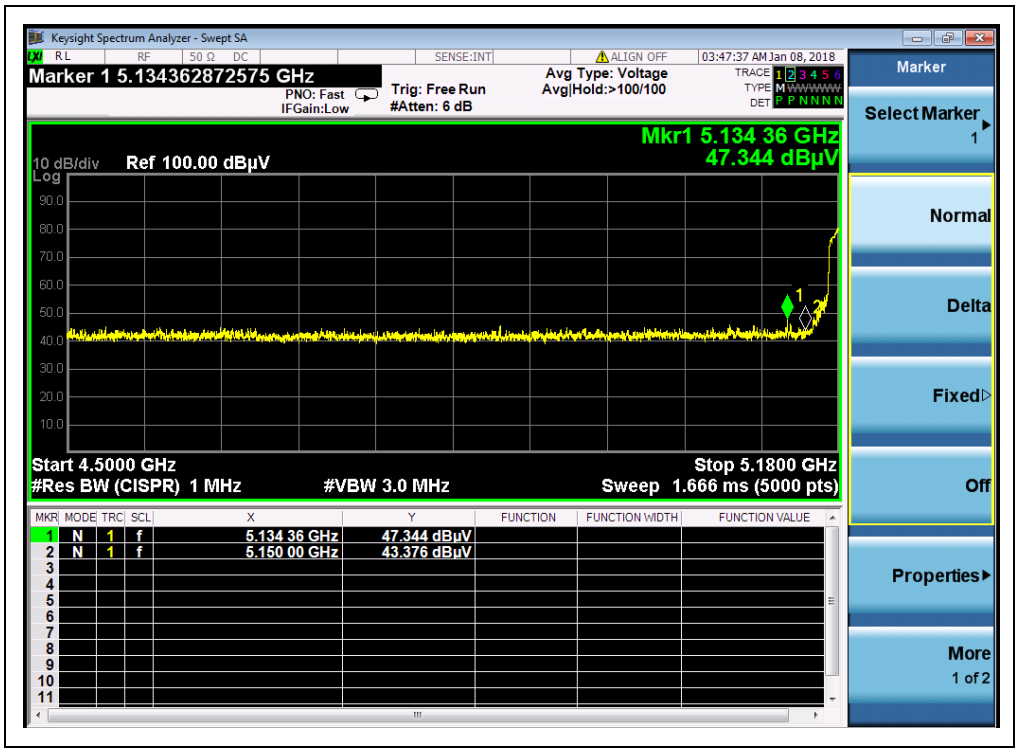
(Channel 165, AVG, 802.11a)

802.11n (HT20) Test mode

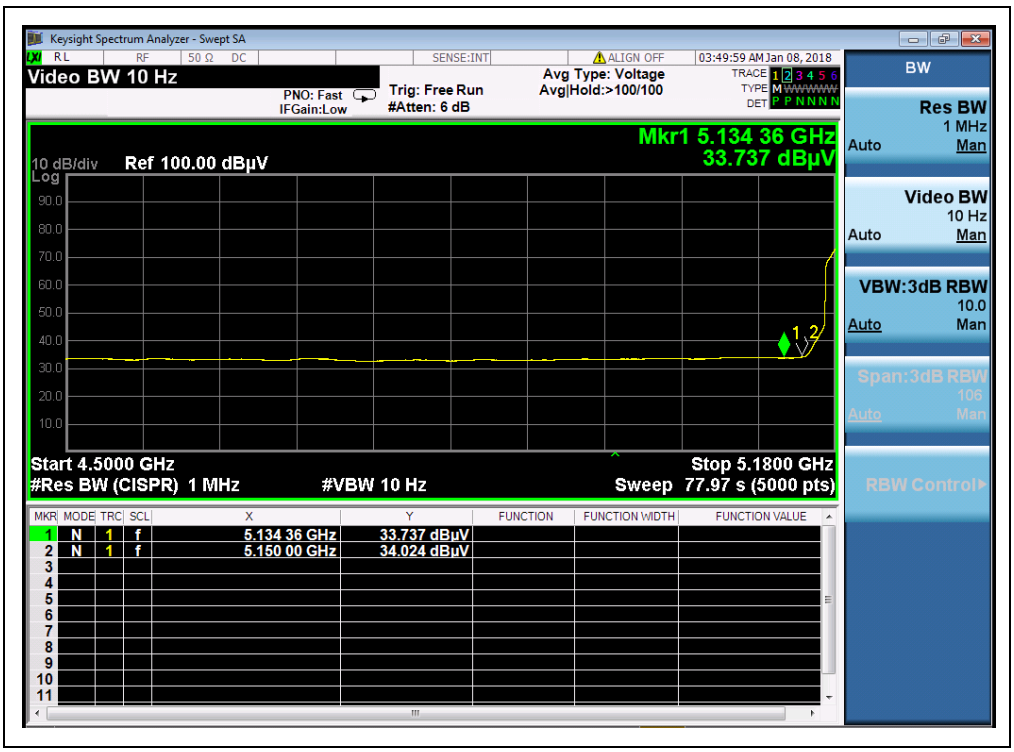
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
36	5134.36	PK	47.34	-50.65	32.11	28.80	74	PASS
36	5134.36	AV	33.74	-50.65	32.11	15.20	54	PASS
64	5362.14	PK	58.59	-50.65	32.11	40.05	74	PASS
64	5351.64	AV	34.23	-50.65	32.11	15.69	54	PASS
100	5433.90	PK	51.65	-50.65	32.11	33.11	74	PASS
100	5166.40	AV	38.23	-50.65	32.11	19.69	54	PASS
140	5726.40	PK	49.90	-50.65	32.11	31.36	74	PASS
140	5726.40	AV	39.25	-50.65	32.11	20.71	54	PASS
149	5694.88	PK	56.16	-50.65	32.11	37.62	86.64	PASS
149	5720.00	AV	43.13	-50.65	32.11	24.59	54	PASS
165	5873.17	PK	54.44	-50.65	32.11	35.90	59.95	PASS
165	5859.48	AV	38.15	-50.65	32.11	19.61	54	PASS

B. Test Plots:

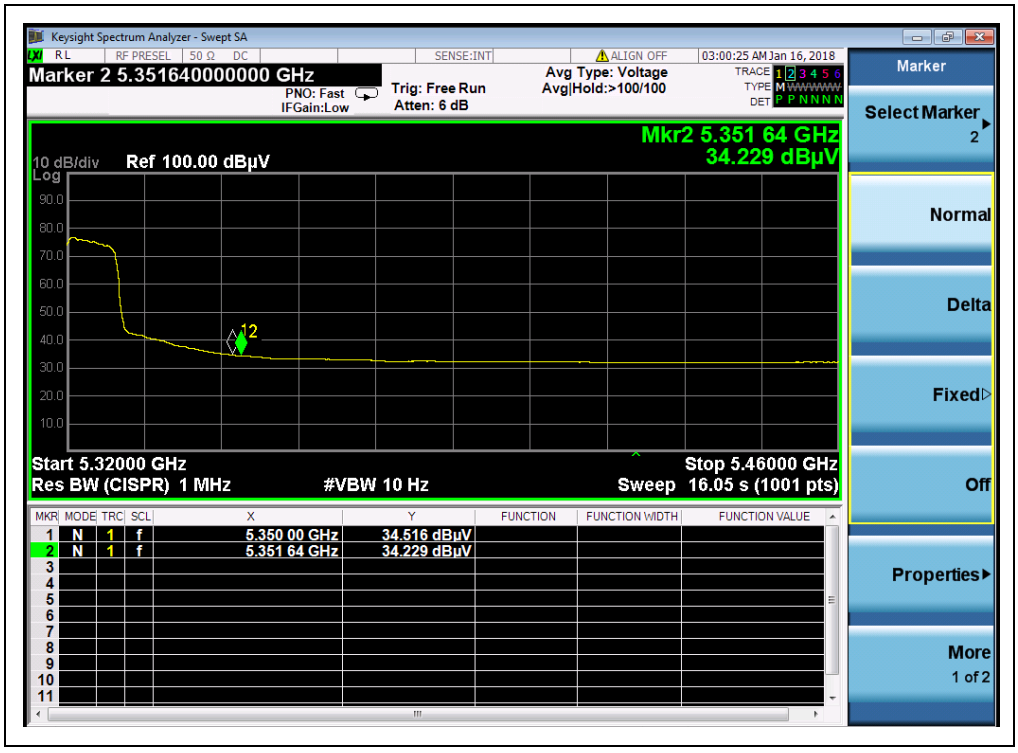


(Channel 36, PEAK, 802.11n (HT20))

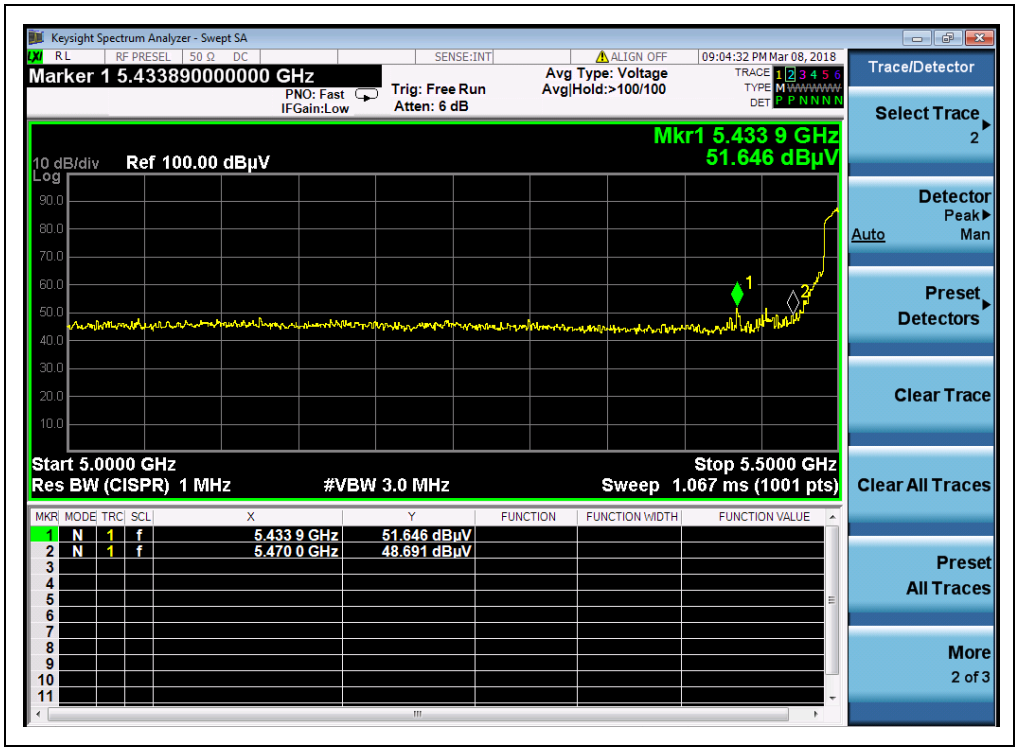


(Channel 36, AVG, 802.11 n (HT20))

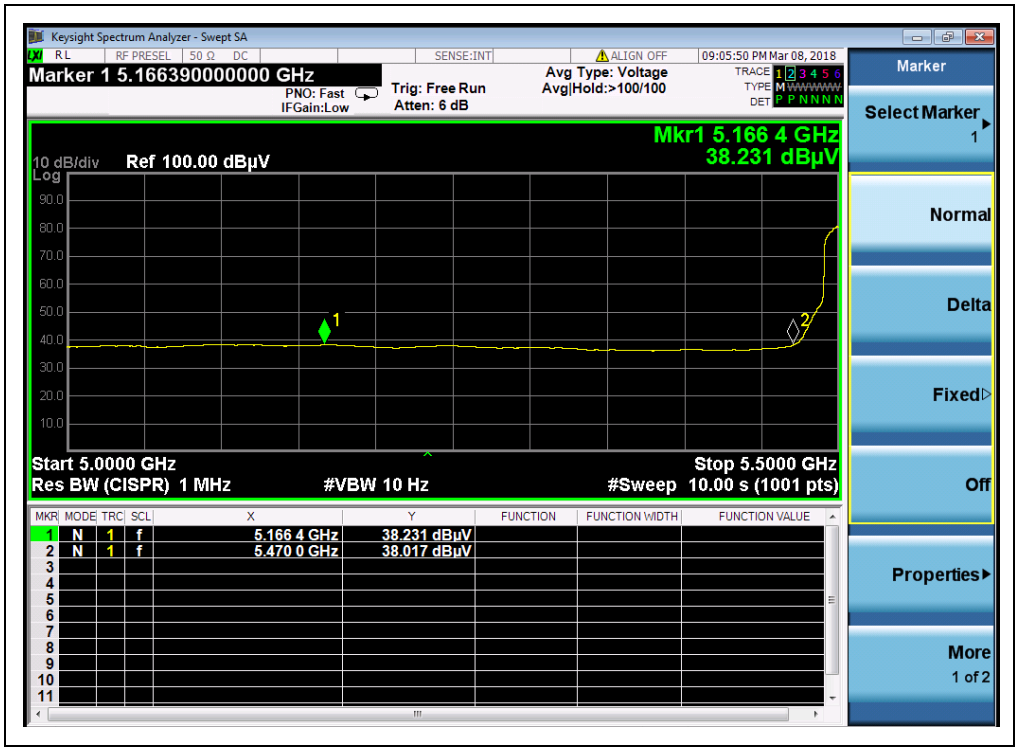
(Channel 64, PEAK, 802.11 n (HT20))



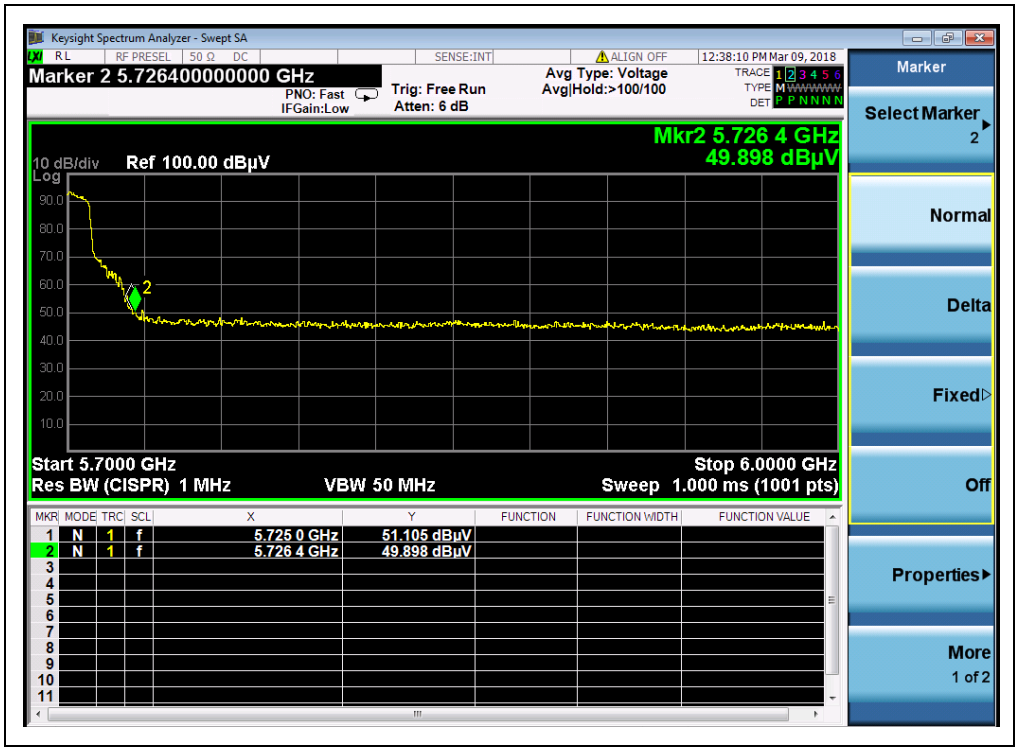
(Channel 64, AVG, 802.11n (HT20))



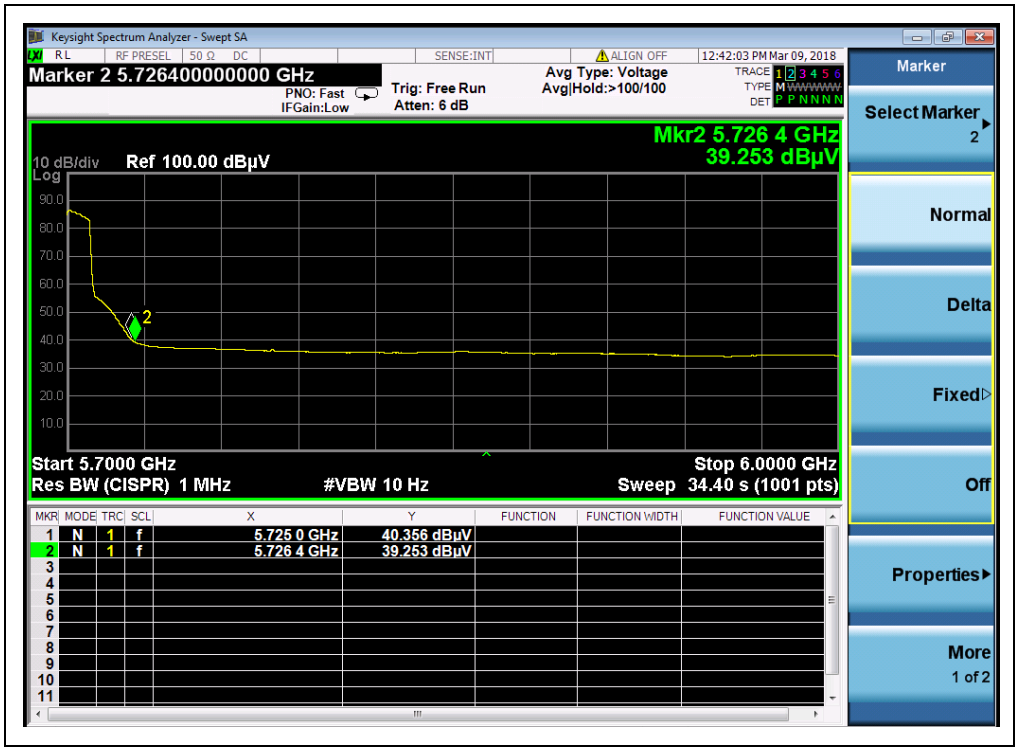
(Channel 100, PEAK, 802.11 n (HT20))



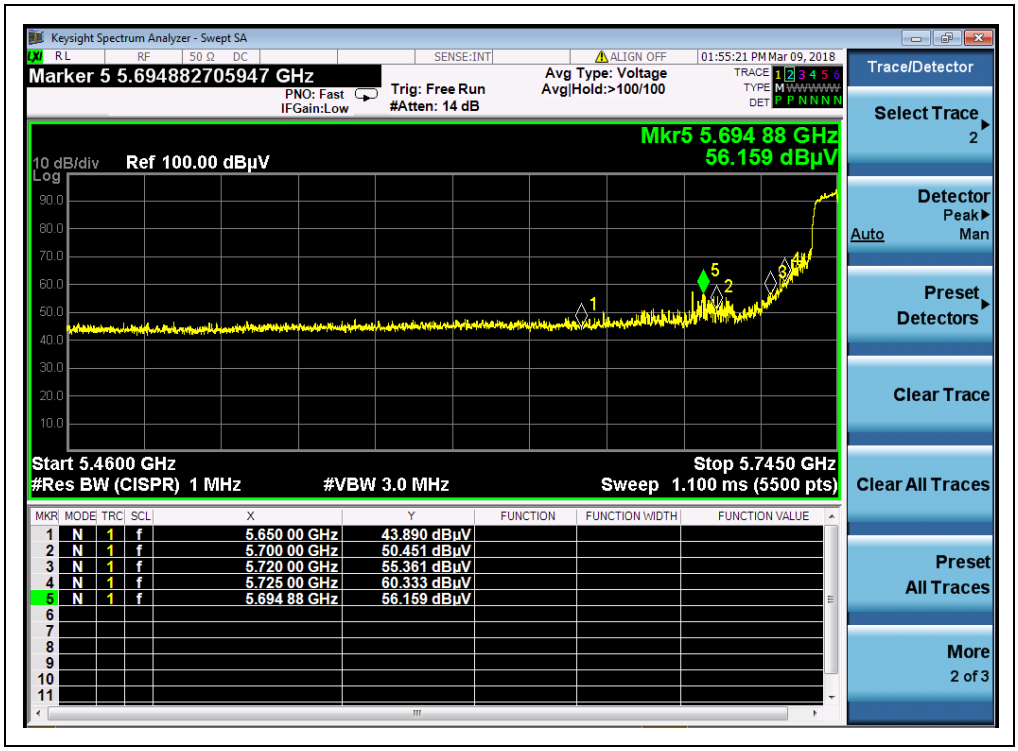
(Channel 100, AVG, 802.11n (HT20))



(Channel 140, PEAK, 802.11 n (HT20))

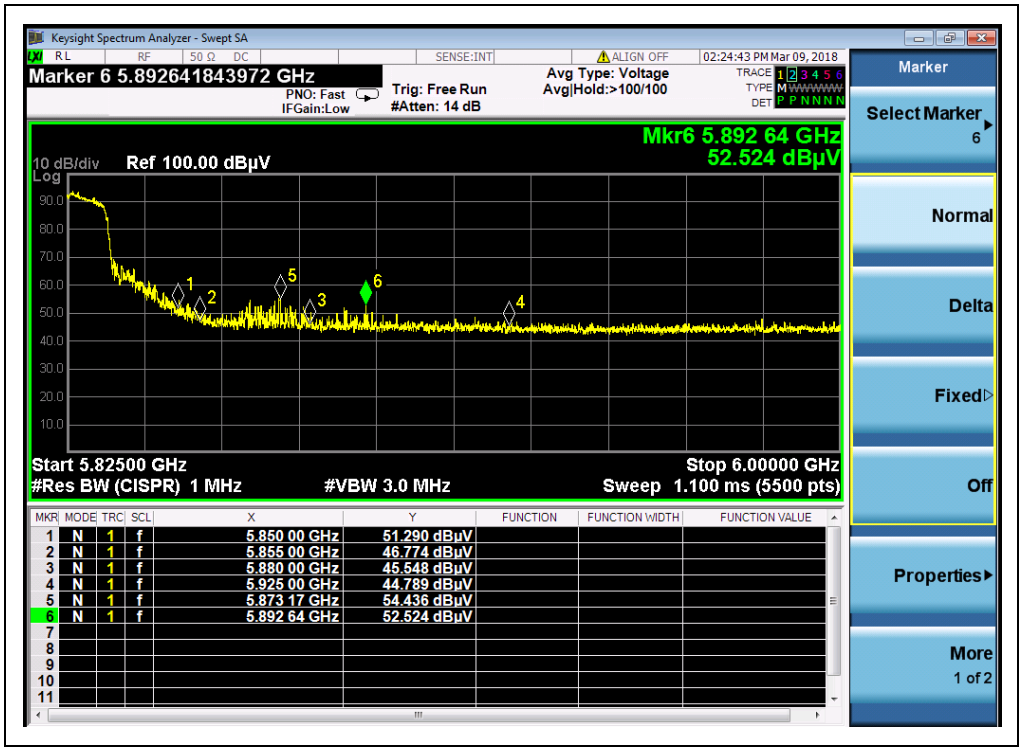


(Channel 140, AVG, 802.11n (HT20))



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

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



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

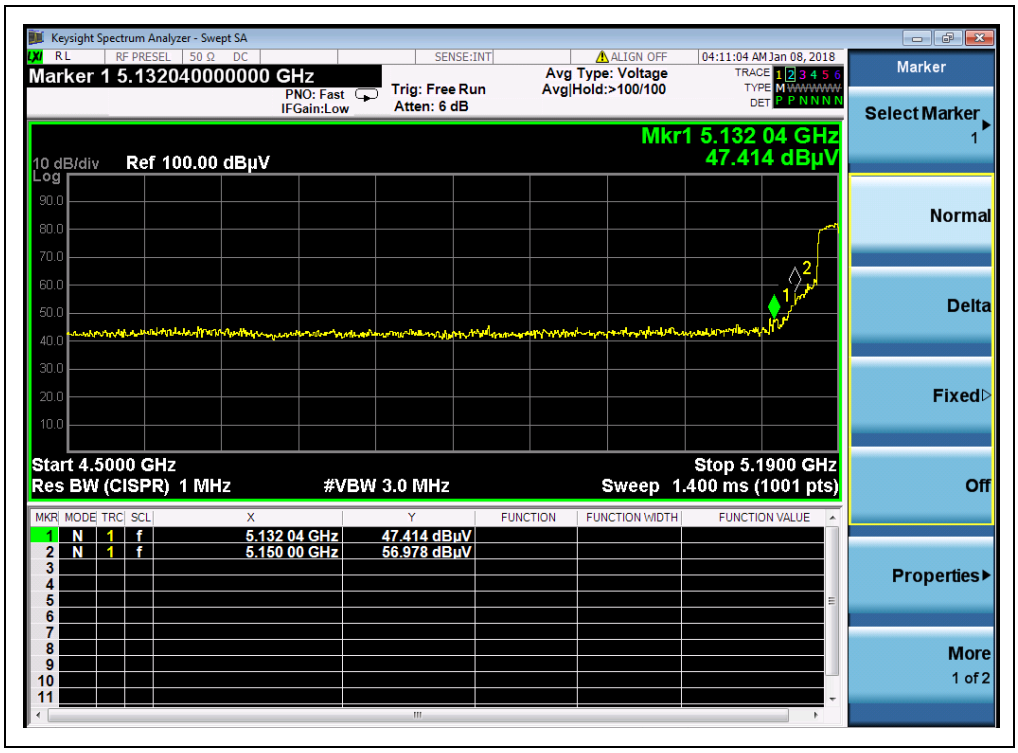
(Channel 165, AVG, 802.11n (HT20))

802.11n (HT40) Test mode

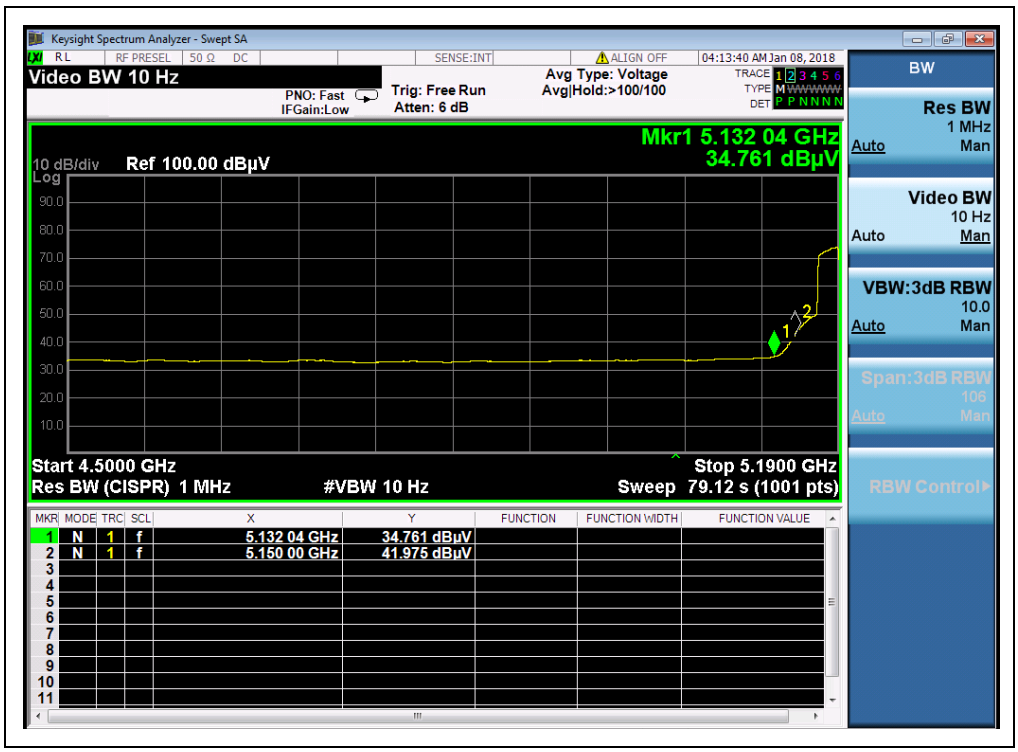
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
38	5132.04	PK	47.41	-50.65	32.11	28.87	74	PASS
38	5132.04	AV	34.76	-50.65	32.11	16.22	54	PASS
62	5351.34	PK	55.35	-50.65	32.11	36.81	74	PASS
62	5352.24	AV	36.61	-50.65	32.11	18.07	54	PASS
102	5467.80	PK	52.78	-50.65	32.11	34.24	74	PASS
102	5468.82	AV	41.65	-50.65	32.11	23.11	54	PASS
134	5740.62	PK	47.29	-50.65	32.11	28.75	74	PASS
134	5727.42	AV	36.43	-50.65	32.11	17.89	54	PASS
151	5720.00	PK	56.34	-50.65	32.11	37.80	110.83	PASS
151	5720.00	AV	44.50	-50.65	32.11	25.96	54	PASS
159	5855.00	PK	45.60	-50.65	32.11	27.06	110.83	PASS
159	5855.00	AV	37.91	-50.65	32.11	19.37	54	PASS

B. Test Plots:

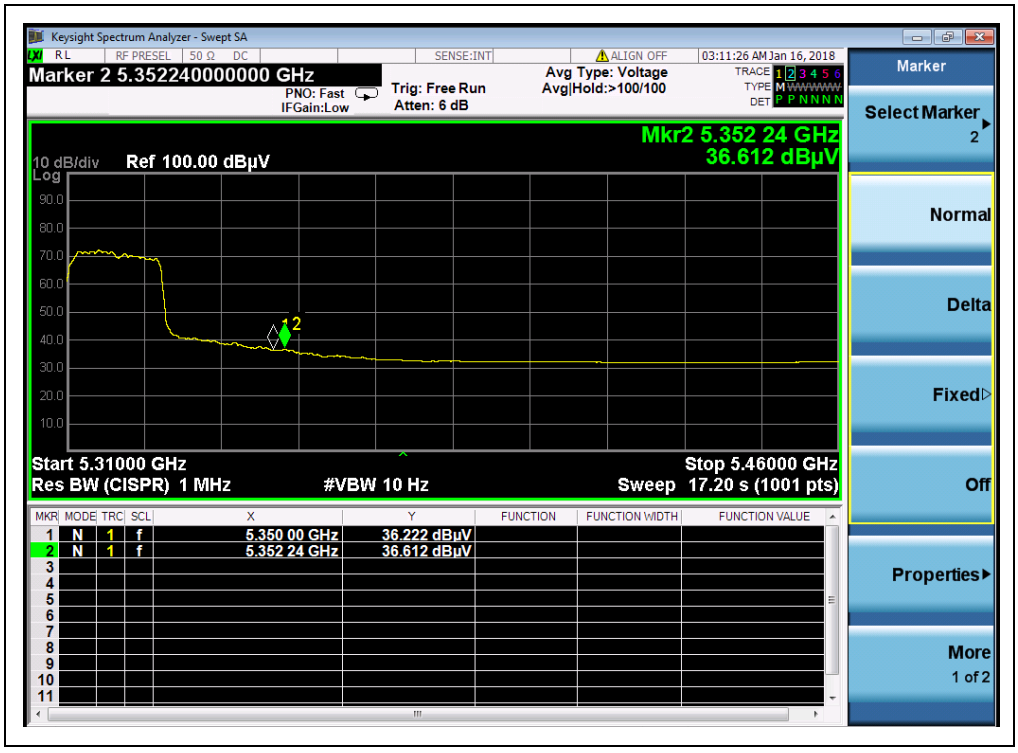


(Channel 38, PEAK, 802.11n (HT40))

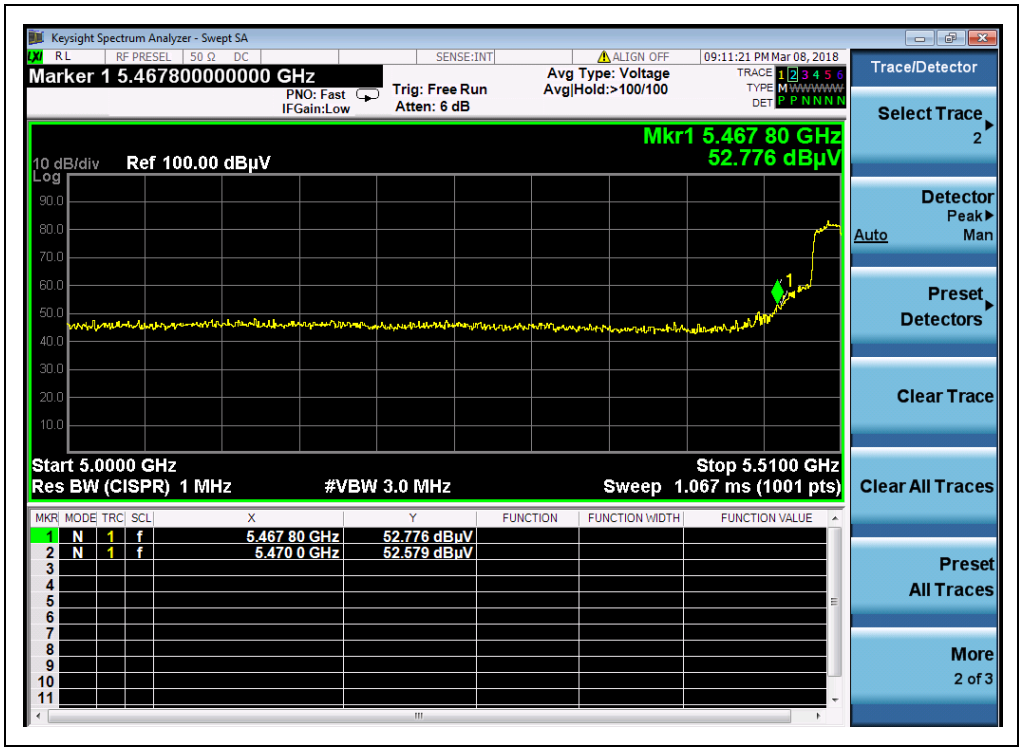


(Channel 38, AVG, 802.11n (HT40))

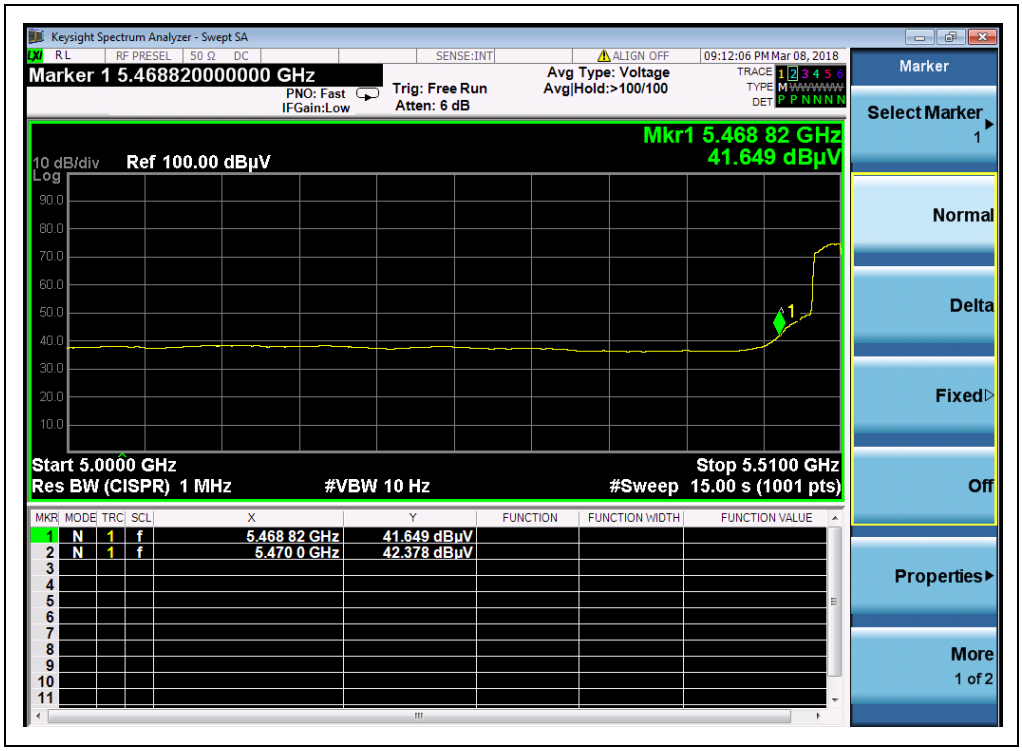
(Channel 62, PEAK, 802.11n (HT40))



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

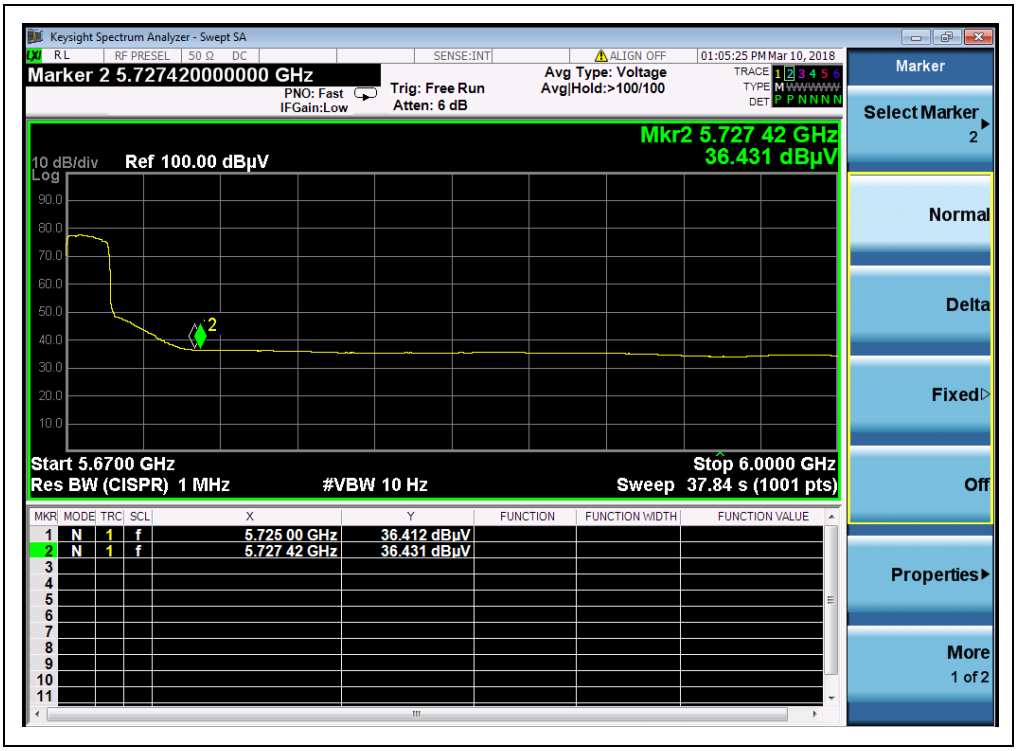


(Channel 102, PEAK, 802.11n (HT40))

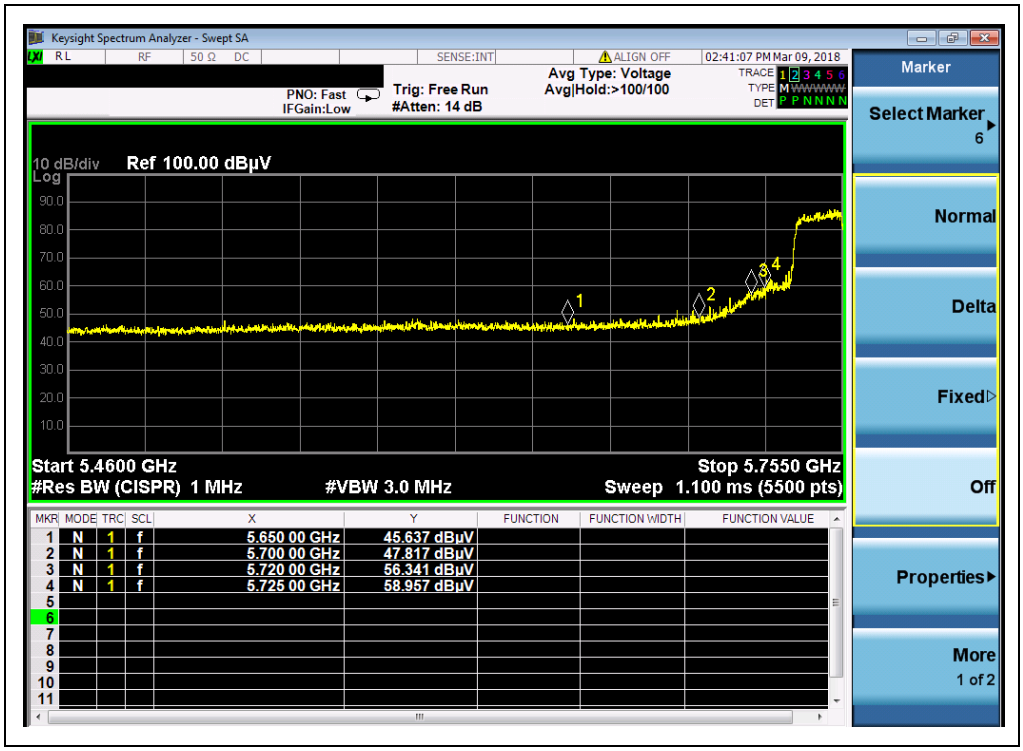


(Channel 102, AVG, 802.11n (HT40))

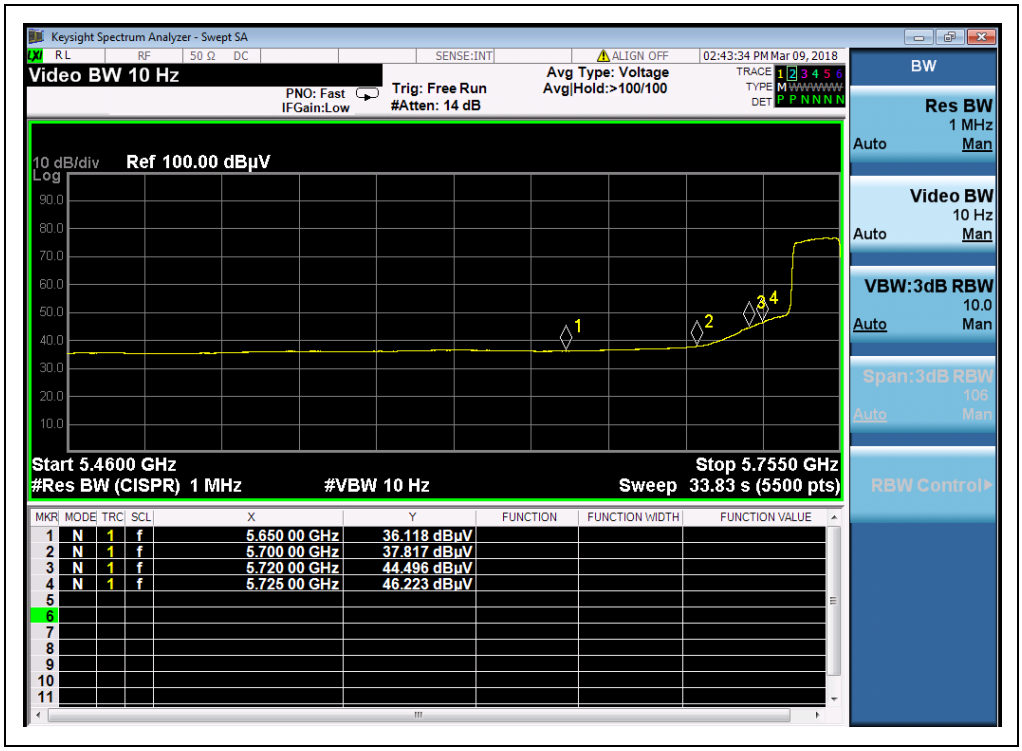
(Channel 134, PEAK, 802.11n (HT40))



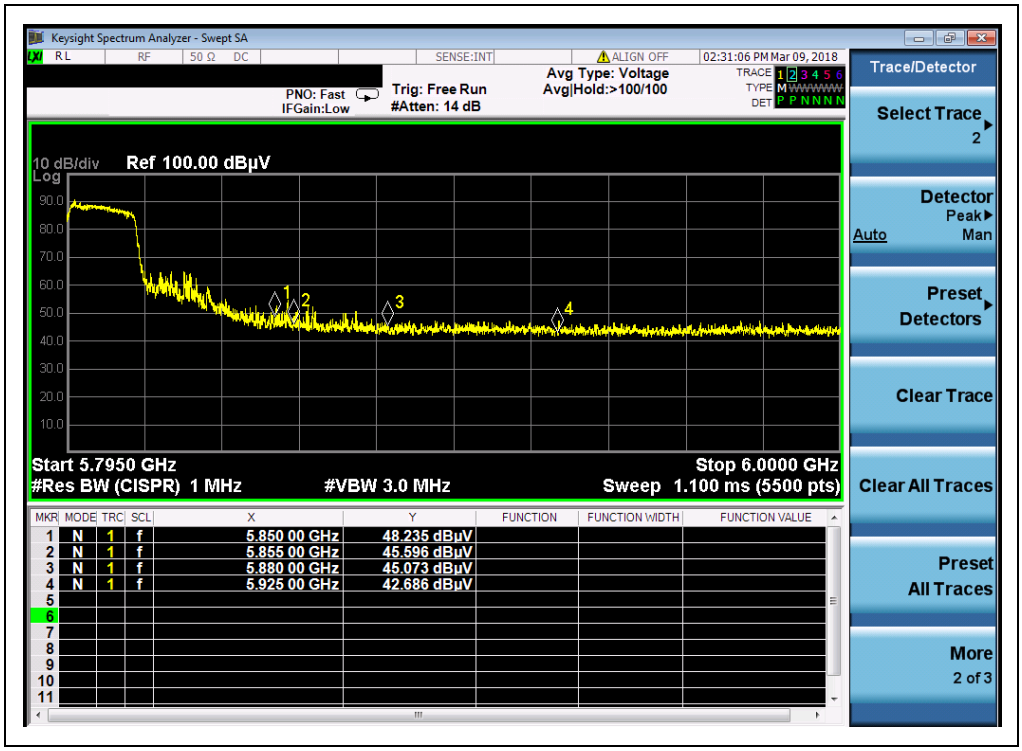
(Channel 134, AVG, 802.11n (HT40))



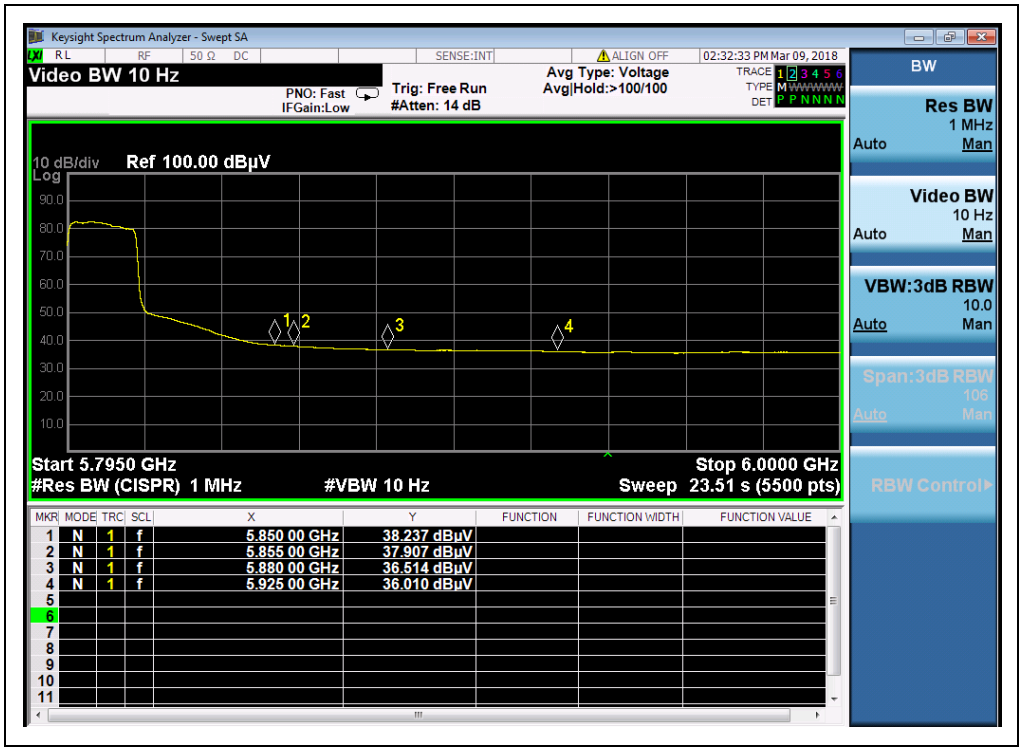
(Channel 151, PEAK, 802.11n (HT40))



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



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



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

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^{o} 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

Frequency Stability Measurements for UNII Band 1 (Ch. 36)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+20(Ref)	5,179,999,992	8	0.0000002
100%		-30	5,180,000,013	13	0.0000003
100%		-20	5,180,000,021	21	0.0000004
100%		-10	5,179,999,989	11	0.0000002
100%		0	5,180,000,018	18	0.0000003
100%		+10	5,180,000,012	12	0.0000002
100%		+20	5,179,999,997	3	0.0000001
100%		+30	5,180,000,012	12	0.0000002
100%		+40	5,180,000,023	23	0.0000004
100%		+50	5,180,000,014	14	0.0000003
85%	3.6	+20	5,179,999,986	14	0.0000003
115%	4.35	+20	5,179,999,991	9	0.0000002

Frequency Stability Measurements for UNII Band 2A (Ch. 52)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+20(Ref)	5,259,999,989	11	0.0000002
100%		-30	5,260,000,024	24	0.0000005
100%		-20	5,260,000,023	23	0.0000004
100%		-10	5,259,999,985	15	0.0000003
100%		0	5,259,999,996	4	0.0000001
100%		+10	5,260,000,015	15	0.0000003
100%		+20	5,260,000,010	10	0.0000002
100%		+30	5,259,999,984	16	0.0000003
100%		+40	5,259,999,993	7	0.0000001
100%		+50	5,260,000,023	23	0.0000004
85%	3.6	+20	5,260,000,015	15	0.0000003
115%	4.35	+20	5,259,999,988	12	0.0000002

Frequency Stability Measurements for UNII Band 2C (Ch. 100)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+20(Ref)	5,500,000,026	26	0.0000005
100%		-30	5,500,000,021	21	0.0000004
100%		-20	5,500,000,012	12	0.0000002
100%		-10	5,499,999,989	11	0.0000002
100%		0	5,500,000,009	9	0.0000002
100%		+10	5,499,999,988	12	0.0000002
100%		+20	5,500,000,013	13	0.0000002
100%		+30	5,500,000,022	22	0.0000004
100%		+40	5,500,000,025	25	0.0000005
100%		+50	5,500,000,014	14	0.0000003
85%	3.6	+20	5,500,000,026	26	0.0000005
115%	4.35	+20	5,499,999,987	13	0.0000002

Frequency Stability Measurements for UNII Band 3 (Ch. 149)

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq Dev. (Hz)	Deviation (%)
100%	3.8	+20(Ref)	5,745,000,026	26	0.0000005
100%		-30	5,744,999,995	5	0.0000001
100%		-20	5,745,000,025	25	0.0000004
100%		-10	5,744,999,989	11	0.0000002
100%		0	5,745,000,015	15	0.0000003
100%		+10	5,744,999,993	7	0.0000001
100%		+20	5,745,000,022	22	0.0000004
100%		+30	5,745,000,019	19	0.0000003
100%		+40	5,744,999,994	6	0.0000001
100%		+50	5,745,000,018	18	0.0000003
85%	3.6	+20	5,745,000,010	10	0.0000002
115%	4.35	+20	5,745,000,016	16	0.0000003

Note: Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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

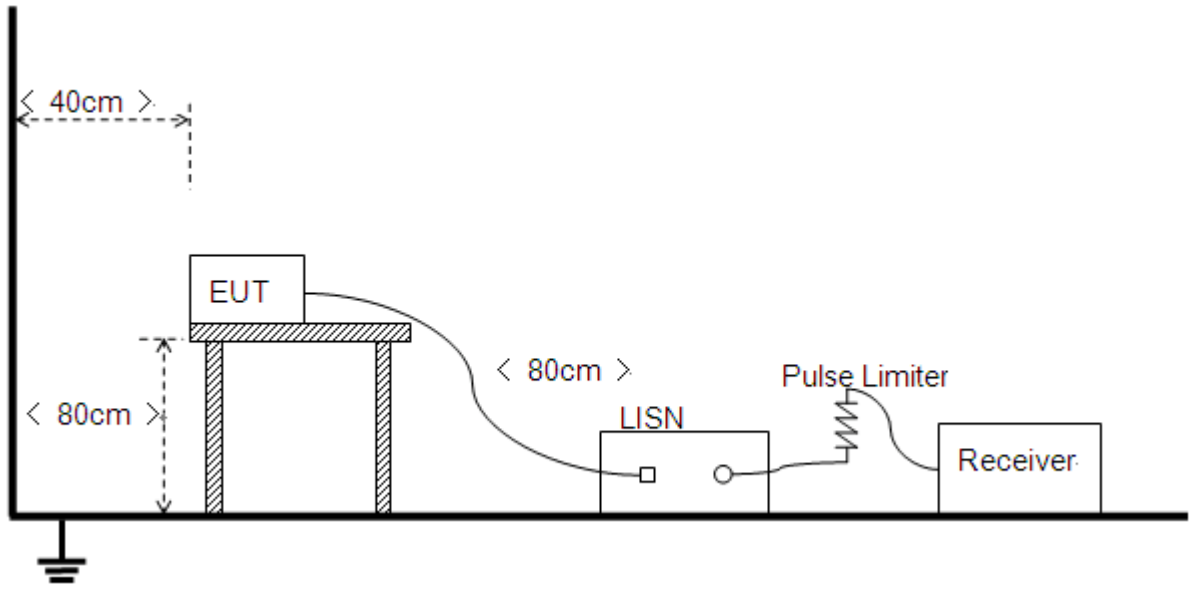
NOTE:

(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.

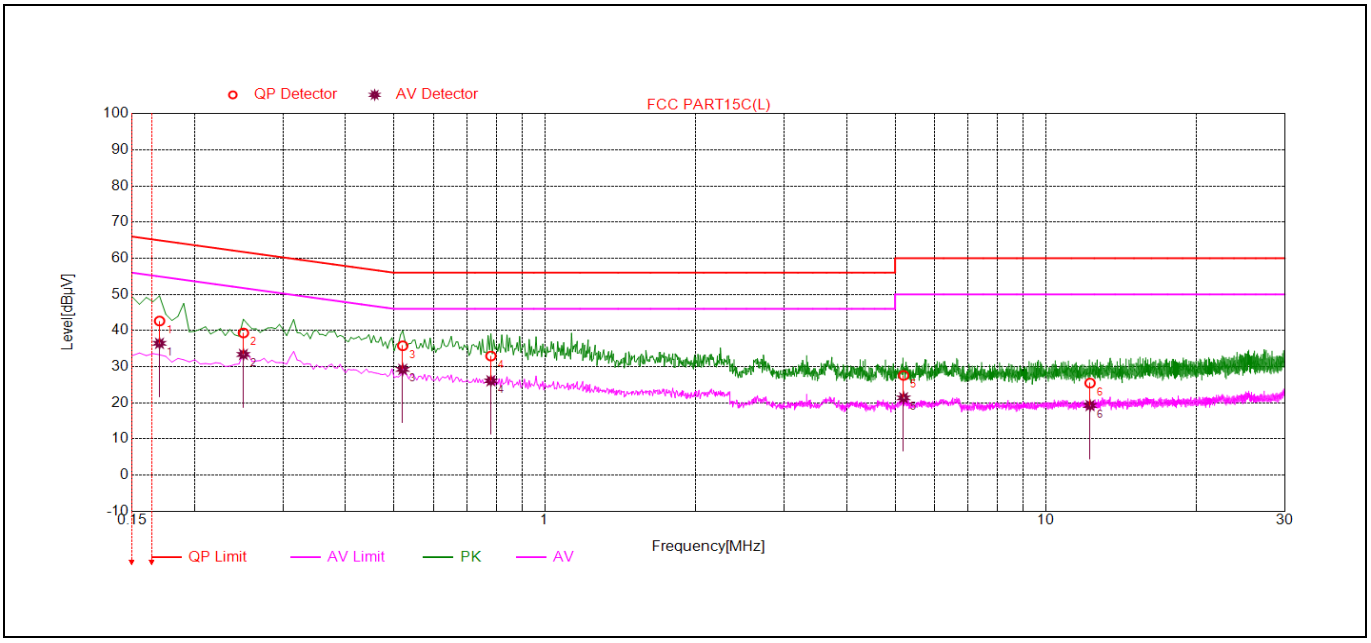
Note: All test modes are performed, only the worst case is recorded in this report.

A. Test setup:

The EUT configuration of the emission tests is EUT + Link.

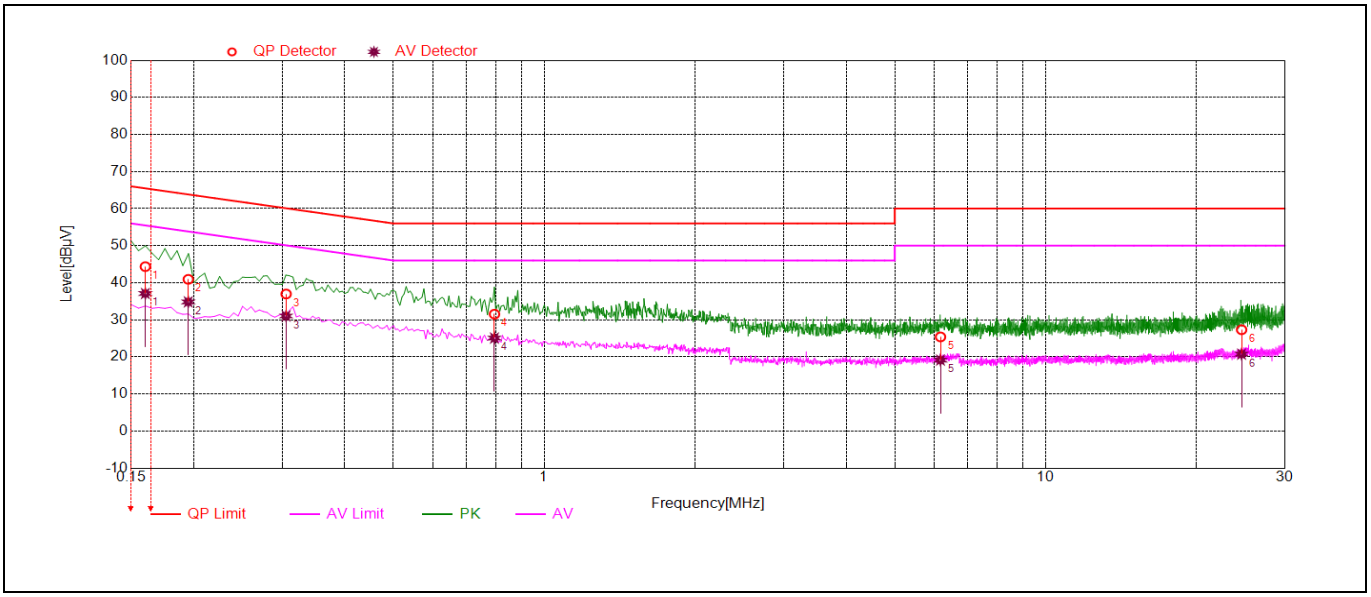
Note: The test voltage is AC 120V/60Hz.

B. Test Plots:



(Plot A: L Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.17	42.64	36.46	64.96	54.96	Line	PASS
2	0.25	39.34	33.38	61.76	51.76		PASS
3	0.52	35.79	29.25	56.00	46.00		PASS
4	0.78	32.94	26.08	56.00	46.00		PASS
5	5.20	27.57	21.36	60.00	50.00		PASS
6	12.25	25.46	19.23	60.00	50.00		PASS



(Plot B: N Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.16	44.36	37.10	65.47	55.47	Neutral	PASS
2	0.19	40.93	34.84	63.83	53.83		PASS
3	0.31	36.98	31.03	60.10	50.10		PASS
4	0.80	31.54	25.08	56.00	46.00		PASS
5	6.17	25.40	19.14	60.00	50.00		PASS
6	24.61	27.33	20.75	60.00	50.00		PASS

2.8. Radiated Emission

2.8.1. 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:

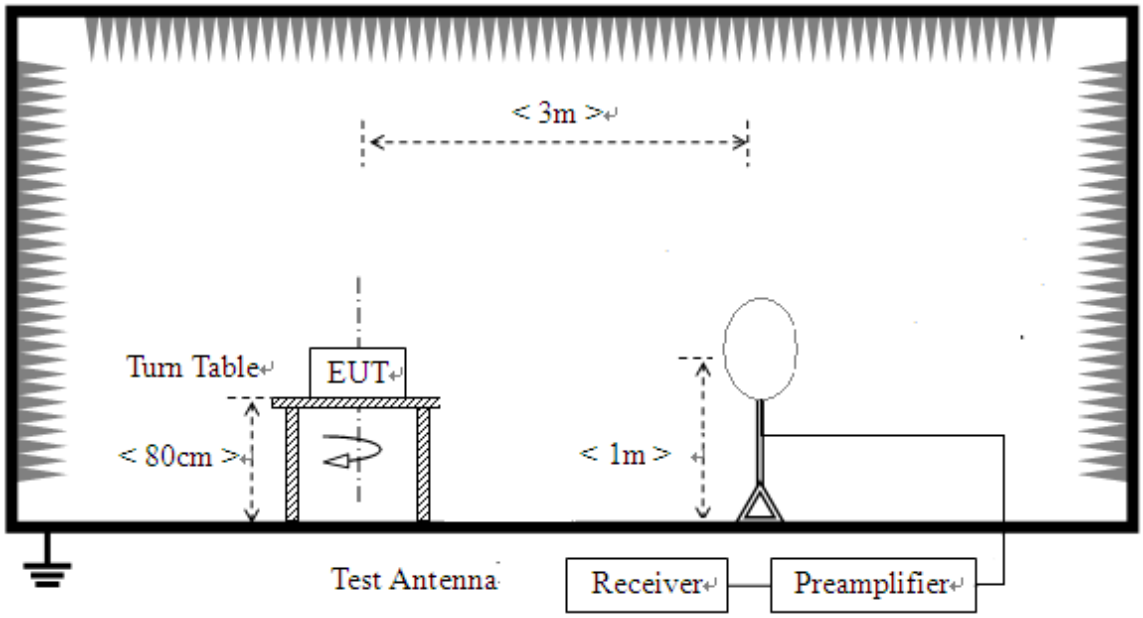
For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

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)

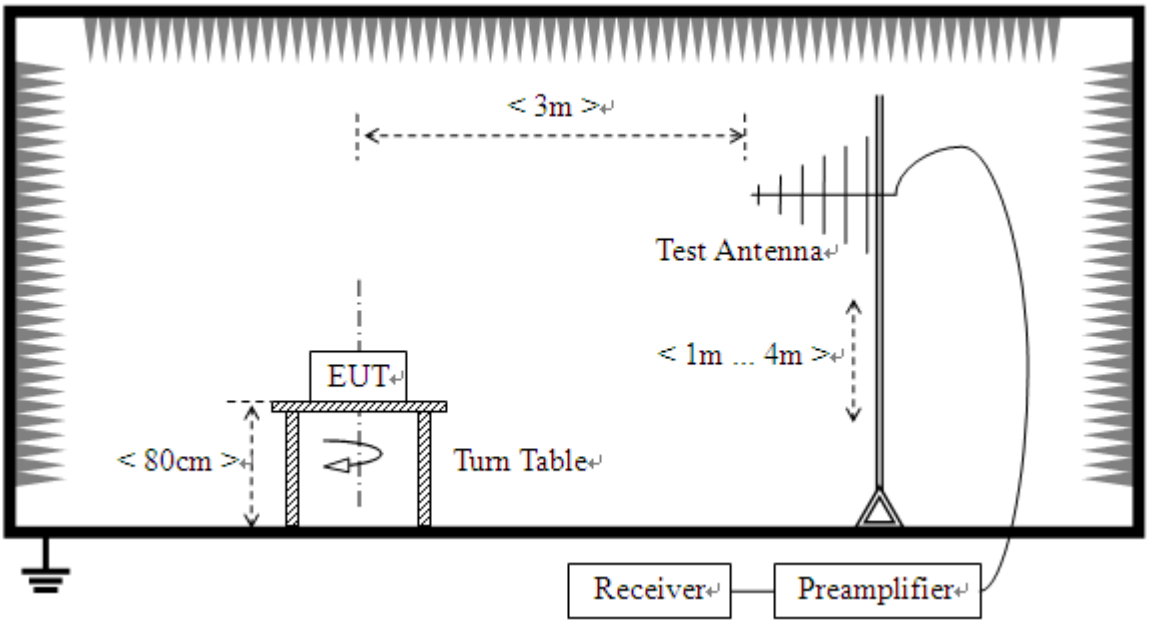
2.8.2. Test Description

A. Test Setup:

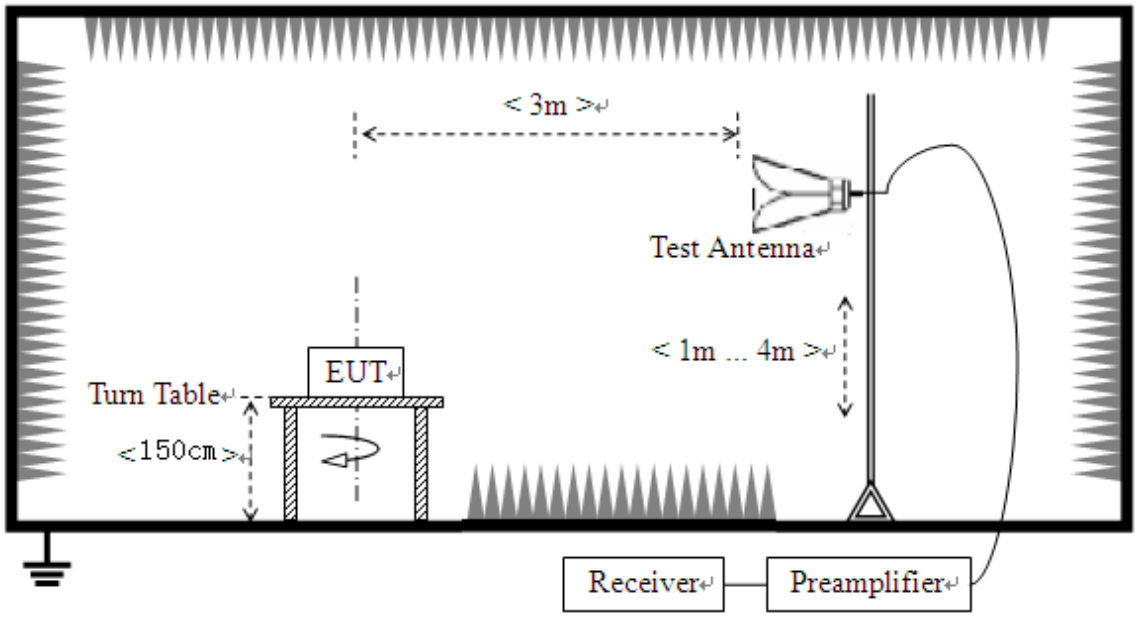
1) For radiated emissions from 9kHz to 30MHz



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.

2.8.3. 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:

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

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.

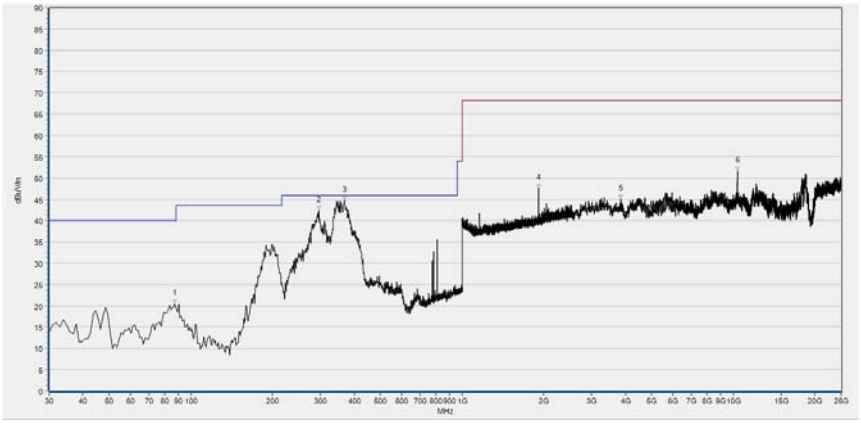
Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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.

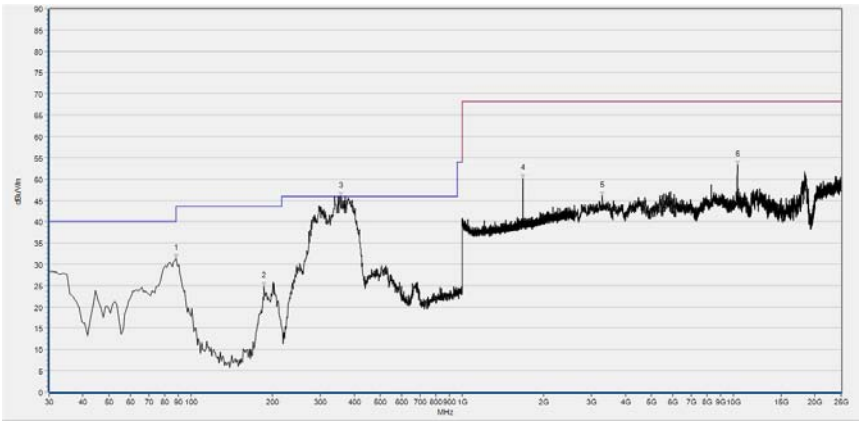
802.11a Test mode

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
87.287	20.39	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
297.017	42.32	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
362.340	45.54	40.81	N/A	N/A	46.00	N/A	Horizontal	PASS
1916.572	47.53	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3854.651	45.01	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10360.912	51.62	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

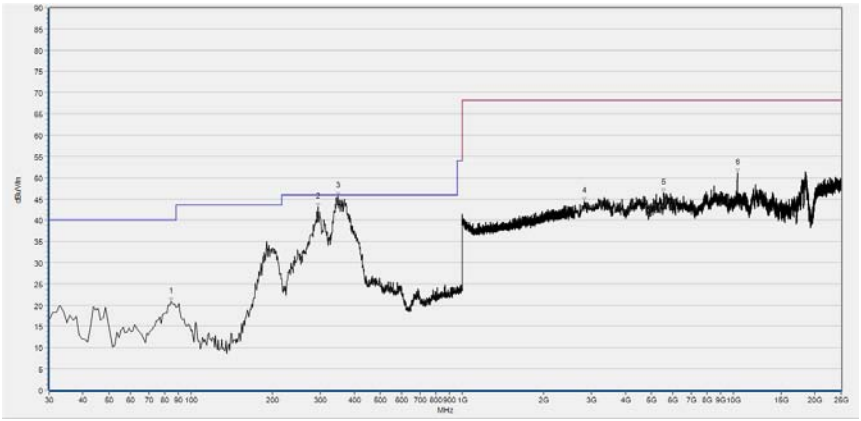
(Antenna Horizontal, 30MHz to 25GHz)



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
88.258	31.34	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
186.326	24.82	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
349.150	47.68	43.02	N/A	N/A	46.00	N/A	Vertical	PASS
1673.291	50.06	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3290.058	46.10	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10360.912	53.29	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

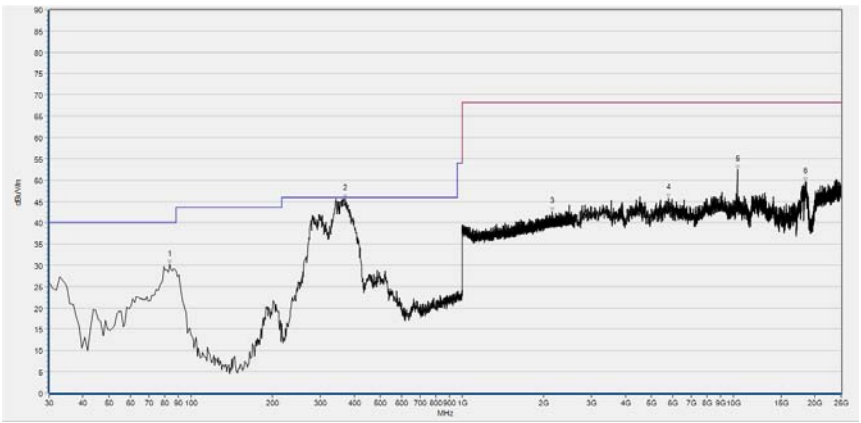
(Antenna Vertical, 30MHz to 25GHz)

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
84.374	20.71	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
294.104	43.11	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
348.478	45.63	42.25	N/A	N/A	46.00	N/A	Horizontal	PASS
2824.045	44.48	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5539.468	46.36	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10360.912	51.10	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

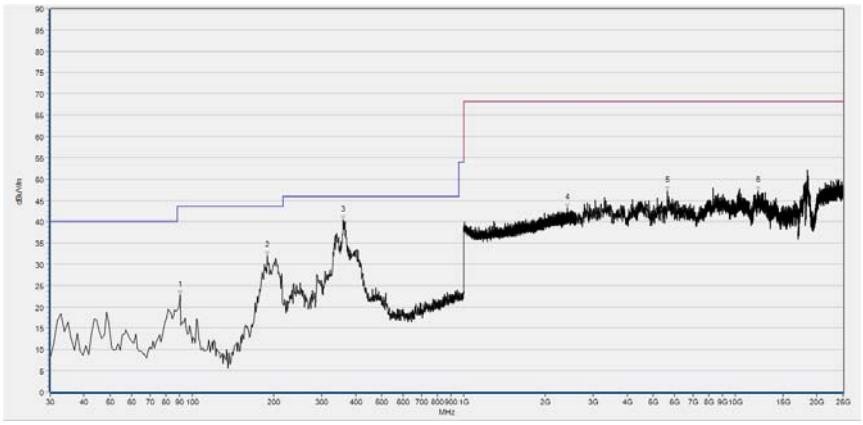
(Antenna Horizontal, 30MHz to 25GHz)



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
83.403	30.09	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
370.811	45.51	40.26	N/A	N/A	46.00	N/A	Vertical	PASS
2145.448	42.60	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5785.917	45.77	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10356.431	52.38	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18489.258	49.55	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

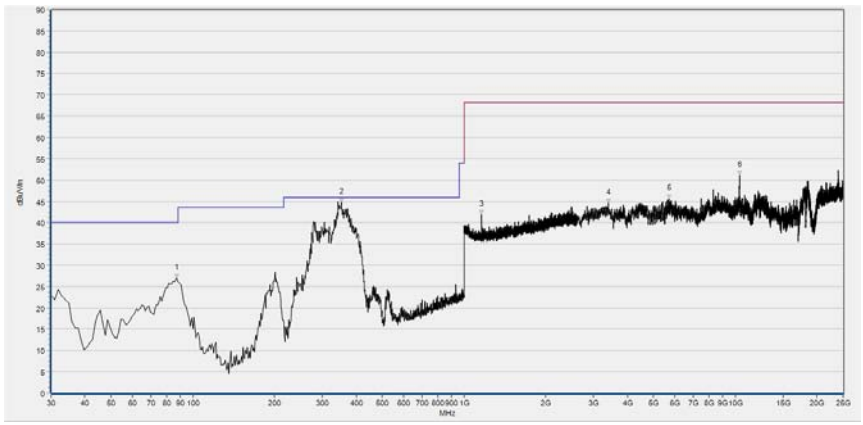
(Antenna Vertical, 30MHz to 25GHz)

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
90.200	22.84	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
189.239	32.01	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
360.130	40.36	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2417.006	43.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5624.605	47.29	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12157.752	47.27	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

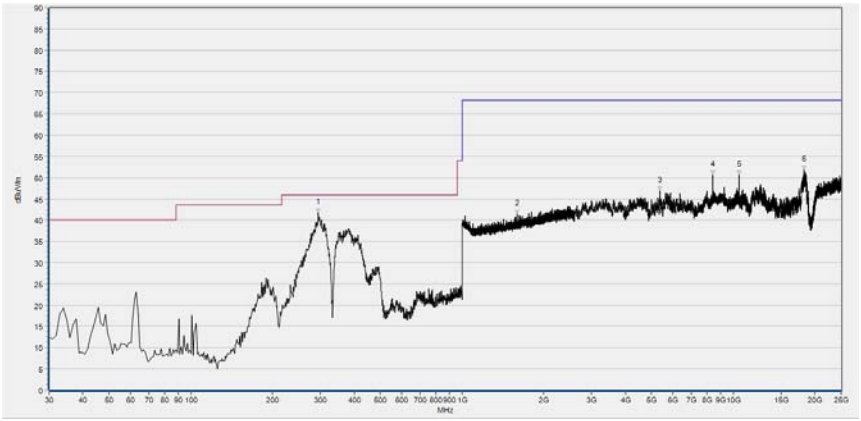
(Antenna Horizontal, 30MHz to 25GHz)



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
87.287	26.95	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
352.362	44.81	40.87	N/A	N/A	46.00	N/A	Vertical	PASS
1161.120	41.87	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3406.561	44.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5705.261	45.56	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10365.393	51.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

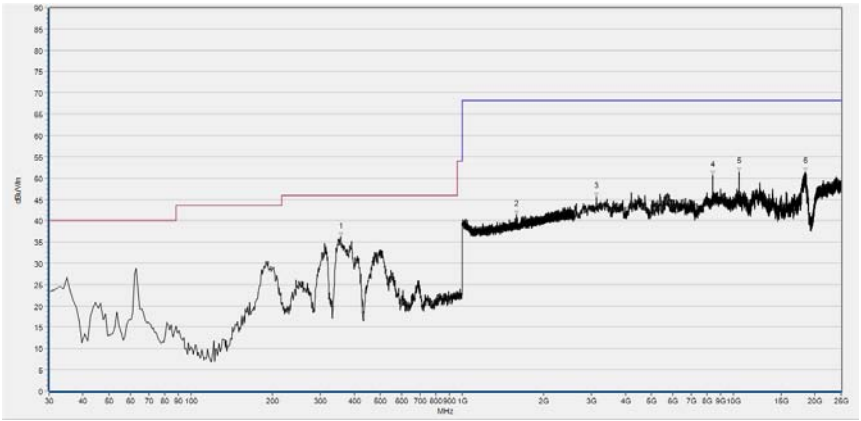
(Antenna Vertical, 30MHz to 25GHz)

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
295.075	41.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1599.667	41.32	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5360.232	46.97	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8416.203	50.61	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10517.744	50.63	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18198.000	51.74	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

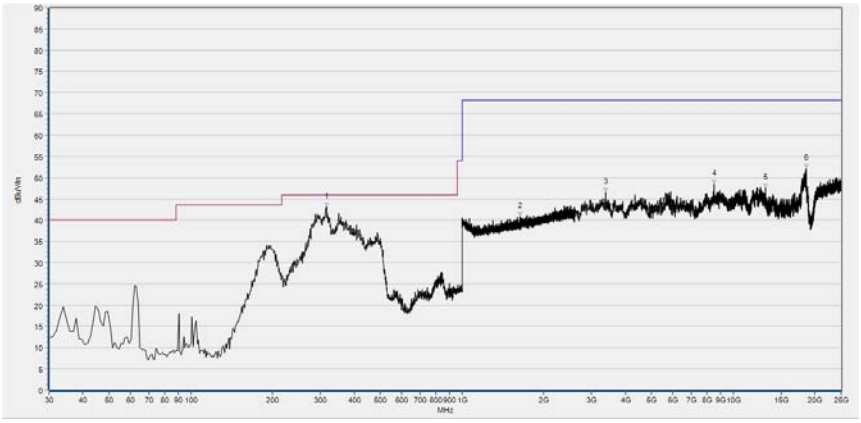
(Antenna Horizontal, 30MHz to 25GHz)



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
357.217	36.23	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1585.795	41.32	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3137.708	45.63	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8416.203	50.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10517.744	51.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18426.525	51.50	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

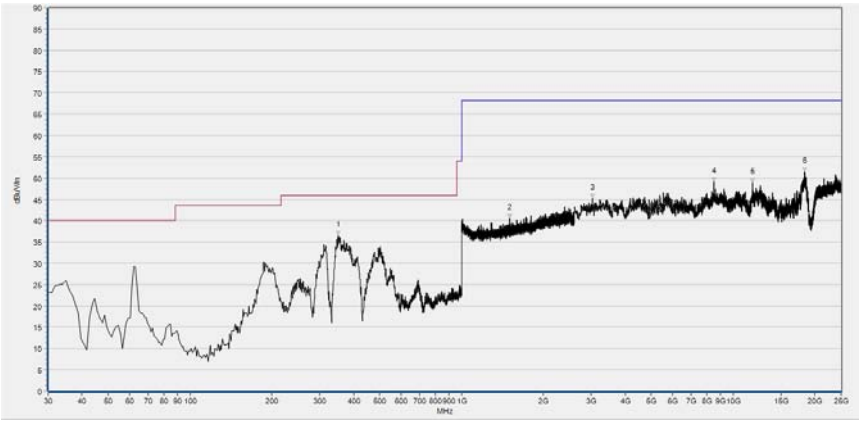
(Antenna Vertical, 30MHz to 25GHz)

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
316.436	43.12	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1632.744	40.94	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3384.157	46.52	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8478.936	48.48	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13170.434	47.55	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18565.433	52.20	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

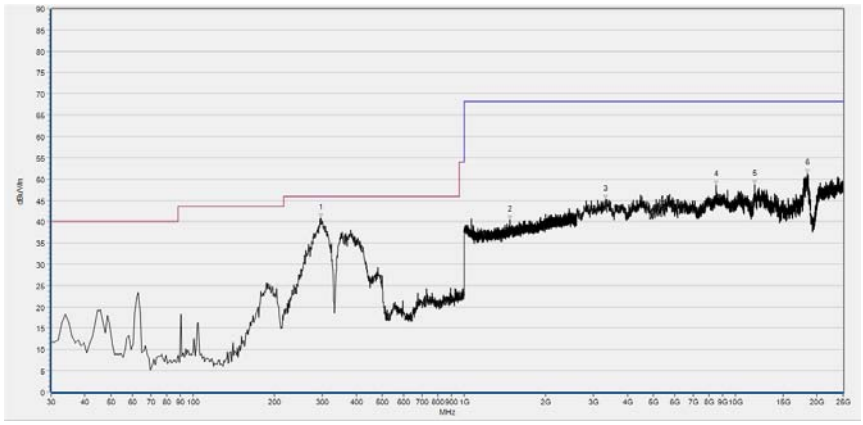
(Antenna Horizontal, 30MHz to 25GHz)



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
350.420	36.60	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1499.900	40.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3030.166	45.24	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8478.936	49.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11763.433	48.91	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18323.465	51.50	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

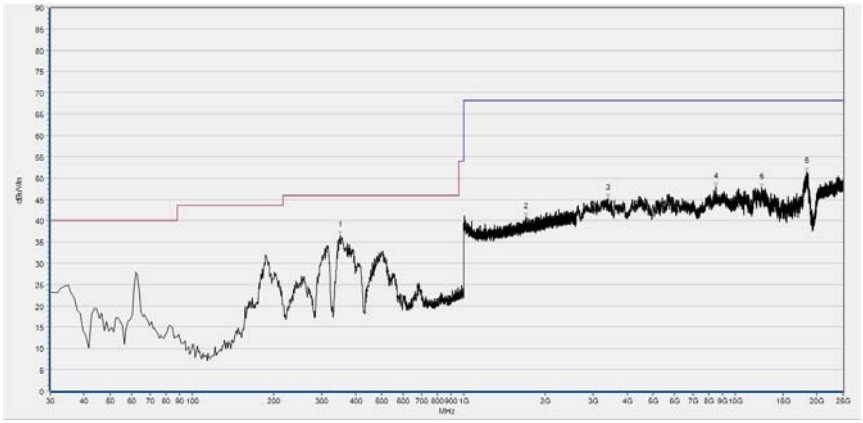
(Antenna Vertical, 30MHz to 25GHz)

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
297.017	40.88	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1472.157	40.41	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3330.386	45.29	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8510.302	48.67	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
11767.914	48.72	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18484.777	51.26	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

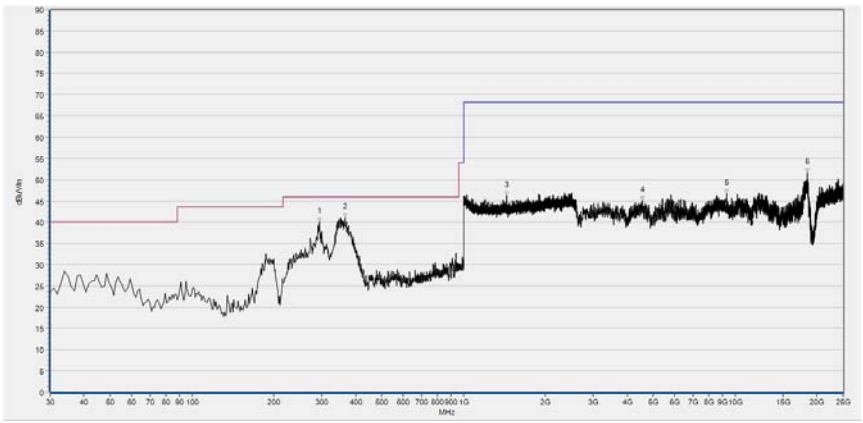
(Antenna Horizontal, 30MHz to 25GHz)



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
351.391	36.46	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1697.299	40.83	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3415.523	45.33	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8510.302	48.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12538.628	47.74	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18314.503	51.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

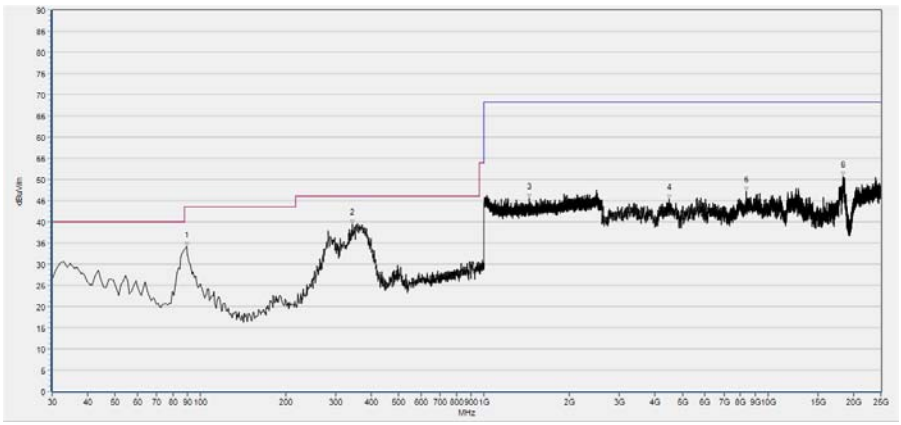
(Antenna Vertical, 30MHz to 25GHz)

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
295.075	40.12	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
365.956	41.06	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1440.680	46.33	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4558.152	45.15	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
9330.306	46.69	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18413.083	51.57	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

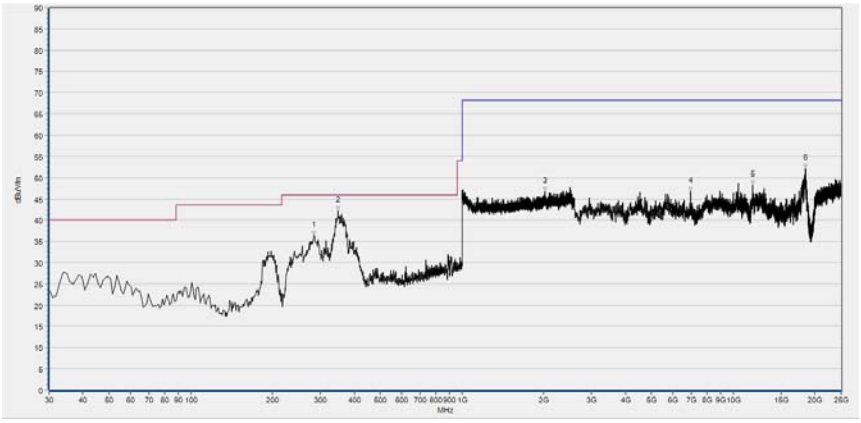
(Antenna Horizontal, 30MHz to 25GHz)



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
89.229	34.16	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
343.624	39.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1437.479	45.47	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4490.938	45.30	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8389.318	47.19	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18386.197	50.77	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

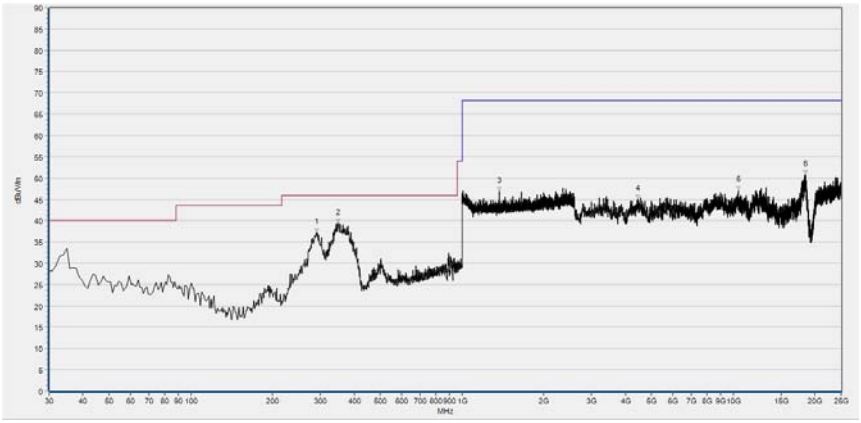
(Antenna Vertical, 30MHz to 25GHz)

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
284.394	36.33	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
348.478	42.27	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2023.274	46.83	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
6955.431	46.80	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
11767.914	48.20	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18475.815	52.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

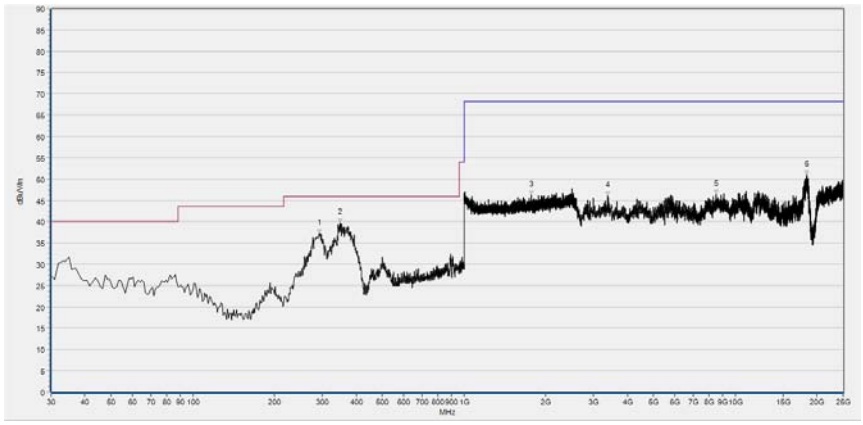
(Antenna Horizontal, 30MHz to 25GHz)



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
290.220	37.19	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
349.449	39.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1373.991	46.95	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4441.648	45.04	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10423.645	47.12	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18471.334	50.73	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

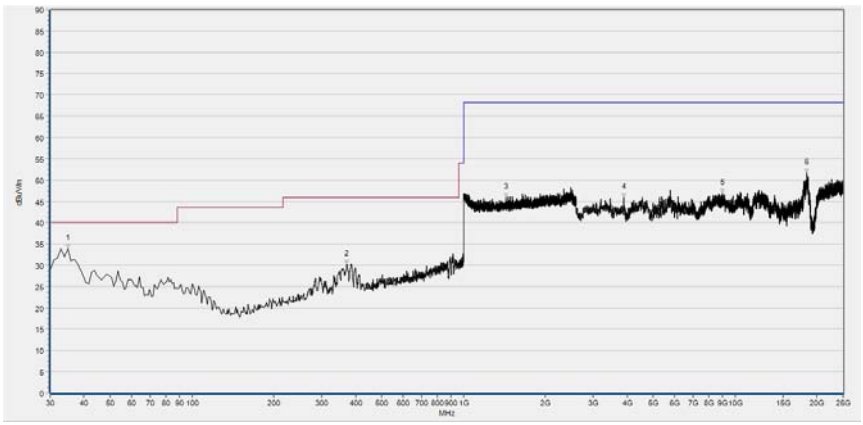
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 140



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
292.162	37.14	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
348.478	39.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1765.589	46.32	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3384.157	46.14	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8505.821	46.37	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18404.121	51.02	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

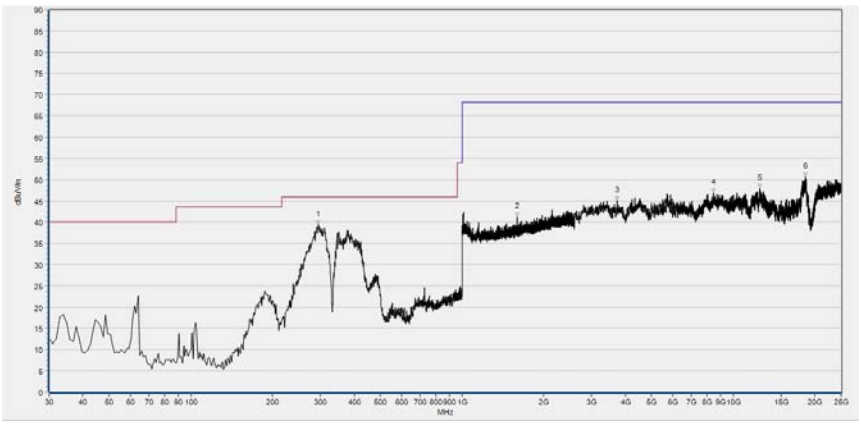
(Antenna Horizontal, 30MHz to 25GHz)



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	33.79	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
370.811	30.25	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1431.611	45.84	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3881.536	45.92	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8980.796	46.90	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18408.602	51.60	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

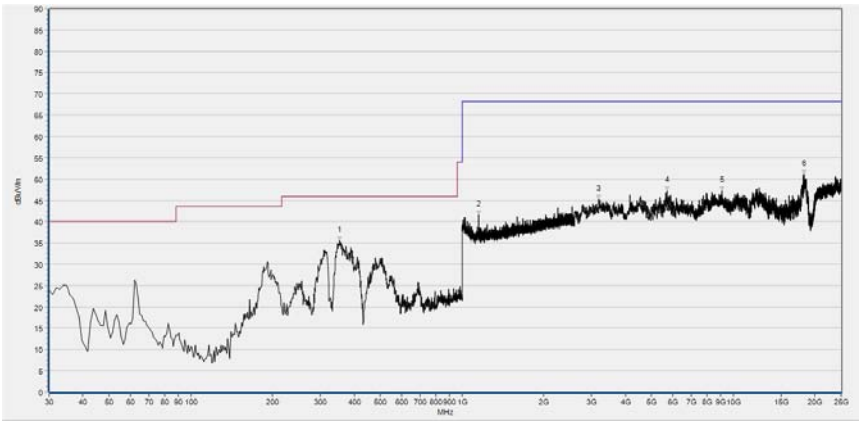
(Antenna Vertical, 30MHz to 25GHz)

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
295.075	39.37	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1599.667	41.25	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3733.667	45.13	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8452.050	46.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12525.185	47.93	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18475.815	50.57	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

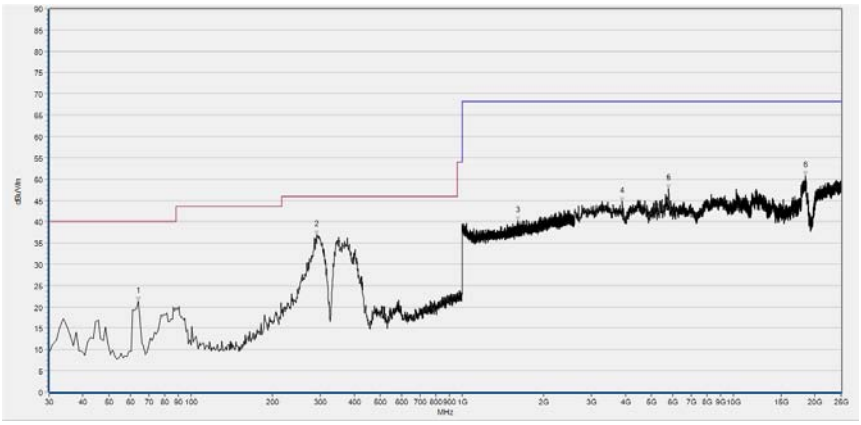
(Antenna Horizontal, 30MHz to 25GHz)



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
354.304	35.54	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1153.651	41.62	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3191.478	45.25	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5700.780	47.22	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9061.452	47.24	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18242.809	51.15	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

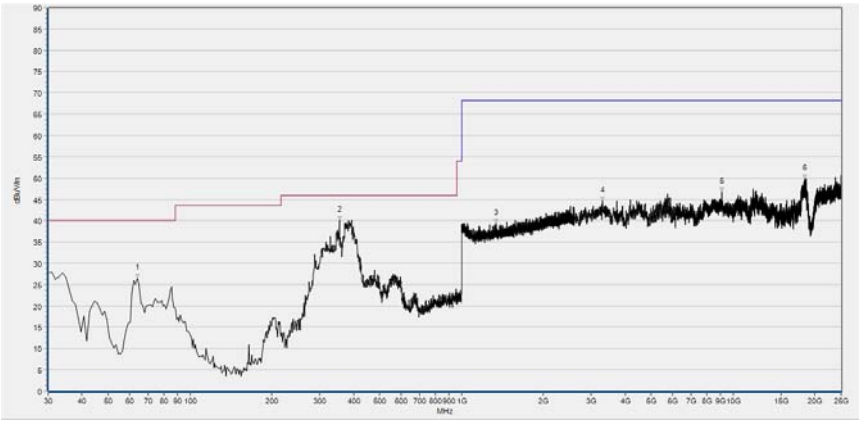
(Antenna Vertical, 30MHz to 25GHz)

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
63.984	21.37	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
291.191	36.91	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1605.535	40.24	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3899.460	44.76	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5781.436	47.78	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18507.181	50.76	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

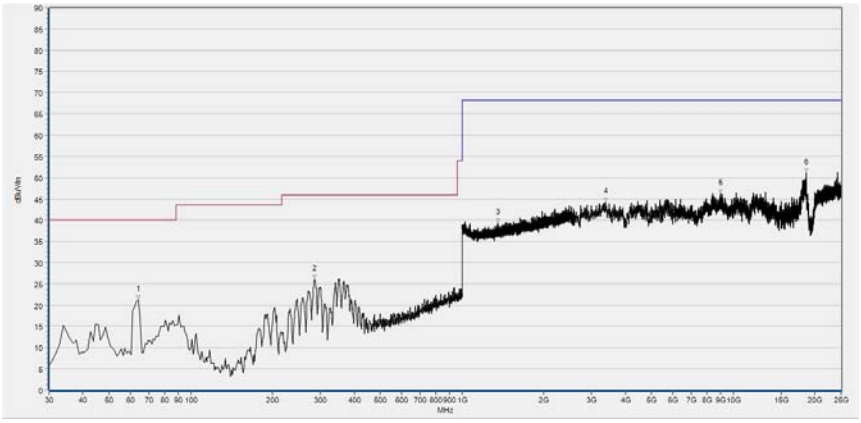
(Antenna Horizontal, 30MHz to 25GHz)



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
63.984	26.52	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
355.275	39.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1336.646	39.44	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
3303.501	44.57	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9101.780	46.74	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18310.022	49.72	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

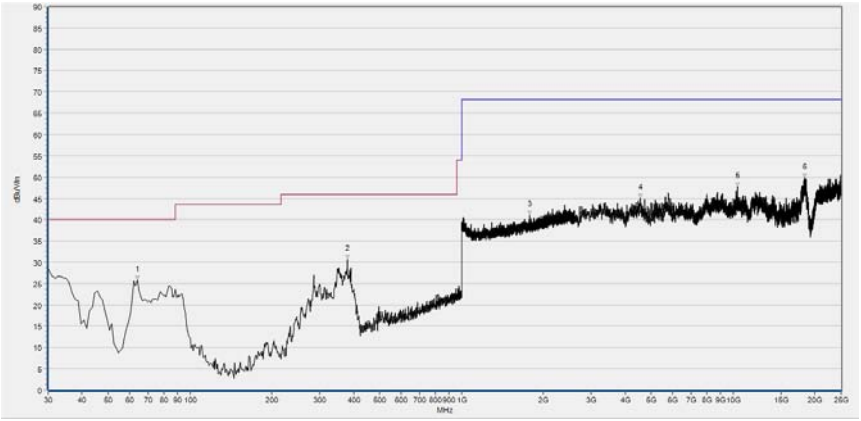
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165



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
63.984	21.29	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
285.365	26.17	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1355.318	39.33	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3388.638	44.28	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8985.277	46.32	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18569.914	51.18	N/A	N/A	68.23	N/A	N/A	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
63.984	25.88	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
379.550	30.74	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1783.728	41.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4549.190	45.13	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10405.721	47.78	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18318.984	49.77	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)