802.11ac (VHT20) Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Duty Factor	Corrected PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	0.82	0.15	0.97	11	PASS
44	5220	0.95		1.10		
48	5240	1.08		1.23		
52	5260	1.12		1.27		
60	5300	1.49		1.64		
64	5320	1.51		1.66		
100	5500	1.18		1.33		
120	5600	1.06		1.21		
144	5720	1.04		1.19		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Duty Factor	Corrected (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	-1.59	0.15	-1.44	30	PASS
149	5745	-1.61		-1.46		
157	5785	-1.63		-1.48		
165	5825	-2.31		-2.16		

B. Test Plot:

(Channel 36, 5180MHz, 802.11ac (VHT20))

(Channel 44, 5220MHz, 802.11ac (VHT20))

(Channel 48, 5240MHz, 802.11ac (VHT20))

(Channel 52, 5260MHz, 802.11ac (VHT20))

(Channel 60, 5300MHz, 802.11ac (VHT20))

(Channel 64, 5320MHz, 802.11ac (VHT20))

(Channel 100, 5500MHz, 802.11ac (VHT20))

(Channel 120, 5600MHz, 802.11ac (VHT20))

(Channel 144, 5720MHz, 802.11ac (VHT20))

(Channel 144, 5720MHz, 802.11ac(VHT20))

(Channel 149, 5745MHz, 802.11ac (VHT20))

(Channel 157, 5785MHz, 802.11ac (VHT20))

(Channel 165, 5825MHz, 802.11ac (VHT20))

802.11ac (VHT40) Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Duty Factor	Corrected PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	-2.30	0.56	-1.74	11	PASS
46	5230	-2.06		-1.50		
54	5270	-1.88		-1.32		
62	5310	-1.70		-1.14		
102	5510	-1.97		-1.41		
126	5630	-2.28		-1.72		
142	5710	-2.12		-1.56		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Duty Factor	Corrected (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
142	5710	-5.03	0.56	-4.47	30	PASS
151	5755	-5.07		-4.51		
155	5795	-4.92		-4.36		

B. Test Plot:

(Channel 38, 5190MHz, 802.11ac (VHT40))

(Channel 46, 5230MHz, 802.11ac (VHT40))

(Channel 54, 5270MHz, 802.11ac (VHT40))

(Channel 62, 5310MHz, 802.11ac (VHT40))

(Channel 102, 5510MHz, 802.11ac (VHT40))

(Channel 126, 5630MHz, 802.11ac (VHT40))

(Channel 142, 5710MHz, 802.11ac (VHT40))

(Channel 142, 5710MHz, 802.11ac (VHT40))

(Channel 151, 5755MHz, 802.11ac (VHT40))

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

802.11ac (VHT80) Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Duty Factor	Corrected PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
42	5210	-5.43	0.56	-4.87	11	PASS
58	5290	-4.95		-4.39		
106	5530	-5.32		-4.76		
122	5610	-5.46		-4.90		
138	5690	-5.42		-4.86		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Duty Factor	Corrected (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
138	5690	-8.04	0.56	-7.48	30	PASS
155	5775	-8.11		-7.55		

B. Test Plot:

(Channel 42, 5210MHz, 802.11ac (VHT80))

(Channel 58, 5290MHz, 802.11ac (VHT80))

(Channel 106, 5530MHz, 802.11ac (VHT80))

(Channel 122, 5610MHz, 802.11ac (VHT80))

(Channel 138, 5690MHz, 802.11ac (VHT80))

(Channel 138, 5690MHz, 802.11ac (VHT80))

(Channel 155, 5775MHz, 802.11ac (VHT80))

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°Cto 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)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	23	4.440
100%		-30	27	5.212
100%		-20	29	5.598
100%		-10	24	4.633
100%		0	25	4.826
100%		+10	22	4.247
100%		+20	23	4.440
100%		+30	23	4.440
100%		+40	26	5.019
100%		+50	25	4.826
115%	4.35	+20	28	5.405
85%	3.00	+20	30	5.792

U-NII-2A (Ch. 52) 5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	18	3.422
100%		-30	22	4.183
100%		-20	26	4.943
100%		-10	27	5.133
100%		0	18	3.422
100%		+10	19	3.612
100%		+20	21	3.992
100%		+30	26	4.943
100%		+40	30	5.703
100%		+50	25	4.753
115%	4.35	+20	20	3.802
85%	3.00	+20	21	3.992

U-NII-2C (Ch. 100) 5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	21	3.818
100%		-30	25	4.545
100%		-20	26	4.727
100%		-10	29	5.273
100%		0	17	3.091
100%		+10	19	3.455
100%		+20	23	4.182
100%		+30	32	5.818
100%		+40	33	6.000
100%		+50	25	4.545
115%	4.35	+20	27	4.909
85%	3.00	+20	29	5.273

U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	10.0	+20(Ref)	22	3.829
100%		-30	26	4.526
100%		-20	27	4.700
100%		-10	21	3.655
100%		0	28	4.874
100%		+10	25	4.352
100%		+20	26	4.526
100%		+30	30	5.222
100%		+40	28	4.874
100%		+50	28	4.874
115%	11.5	+20	31	5.396
85%	8.5	+20	29	5.048

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

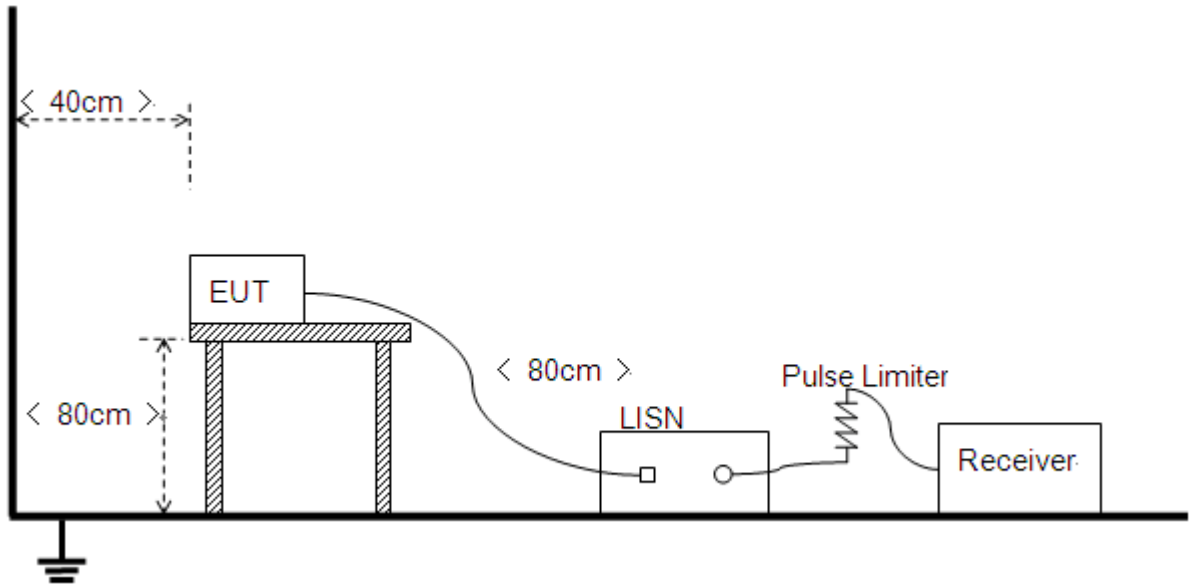
Note:

(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

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. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and Plot below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hzwere 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+Adaptor+Earphone +WIFI TX

Test Voltage: AC 120V/60Hz

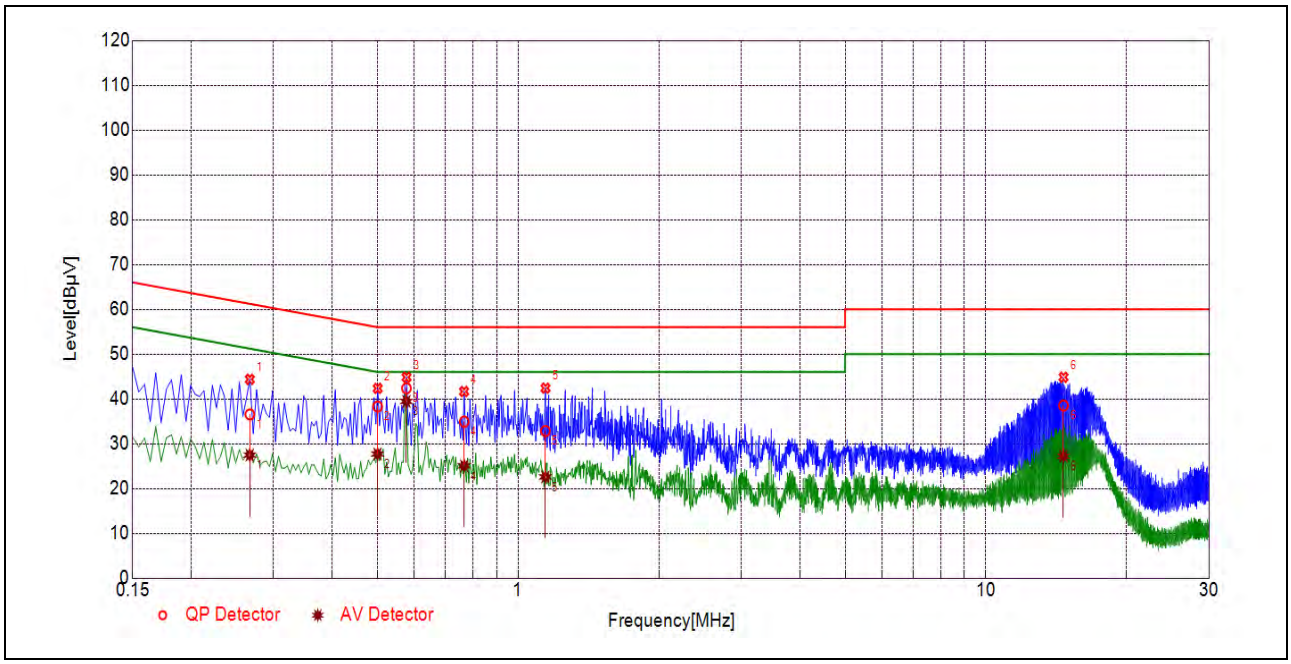
The measurement results are obtained as below:

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

U_R: Receiver Reading

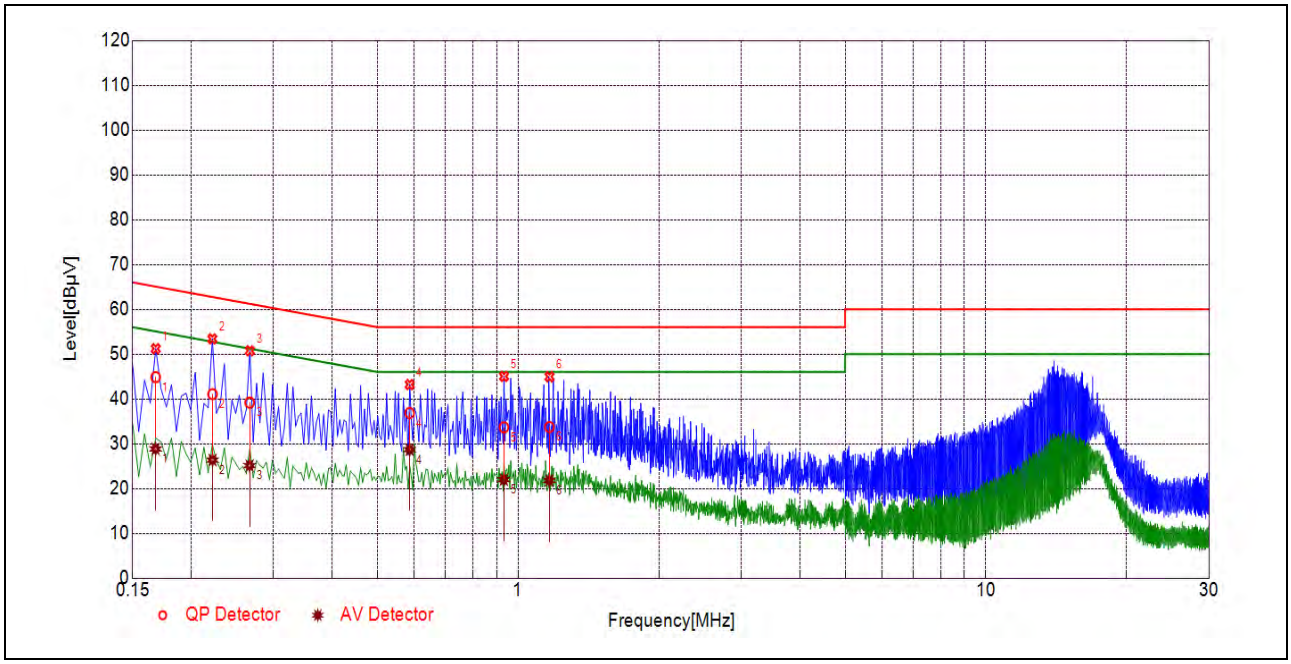
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2669	36.53	27.47	61.22	51.22	Line	PASS
2	0.5006	38.30	27.70	56.00	46.00		PASS
3	0.5770	42.36	39.45	56.00	46.00		PASS
4	0.7668	34.91	25.05	56.00	46.00		PASS
5	1.1436	32.82	22.56	56.00	46.00		PASS
6	14.6490	38.53	27.23	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1679	44.84	28.81	65.06	55.06	Neutral	PASS
2	0.2222	41.05	26.35	62.74	52.74		PASS
3	0.2667	39.17	25.11	61.22	51.22		PASS
4	0.5862	36.86	28.67	56.00	46.00		PASS
5	0.9323	33.64	21.96	56.00	46.00		PASS
6	1.1662	33.71	21.78	56.00	46.00		PASS

2.8. Restricted Frequency Bands

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:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) 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:

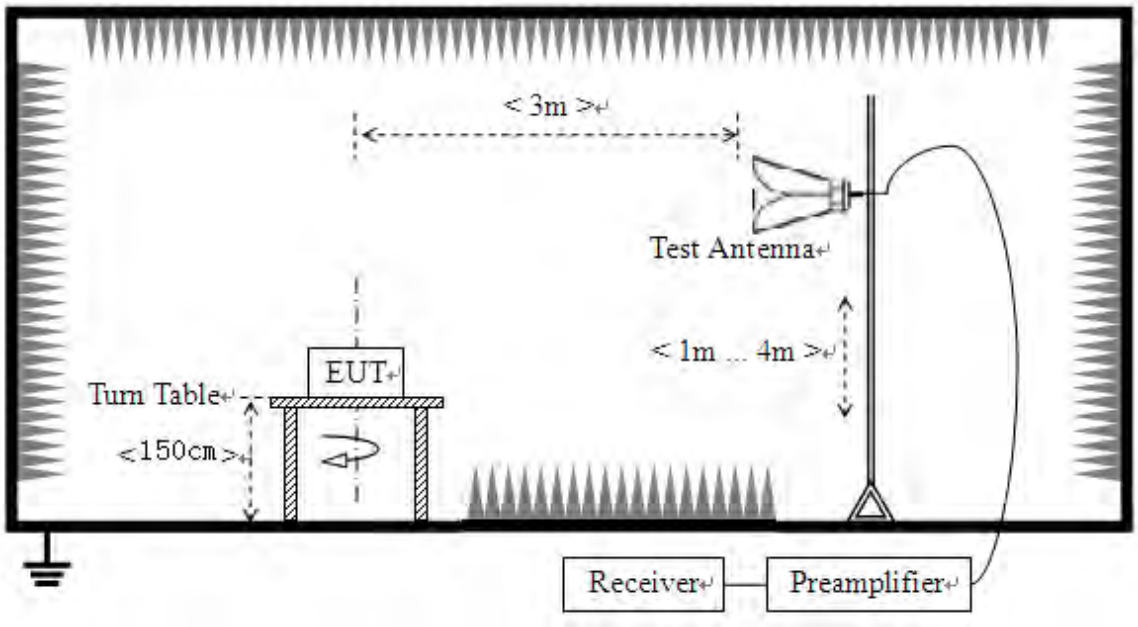
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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

Test Setup



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.
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

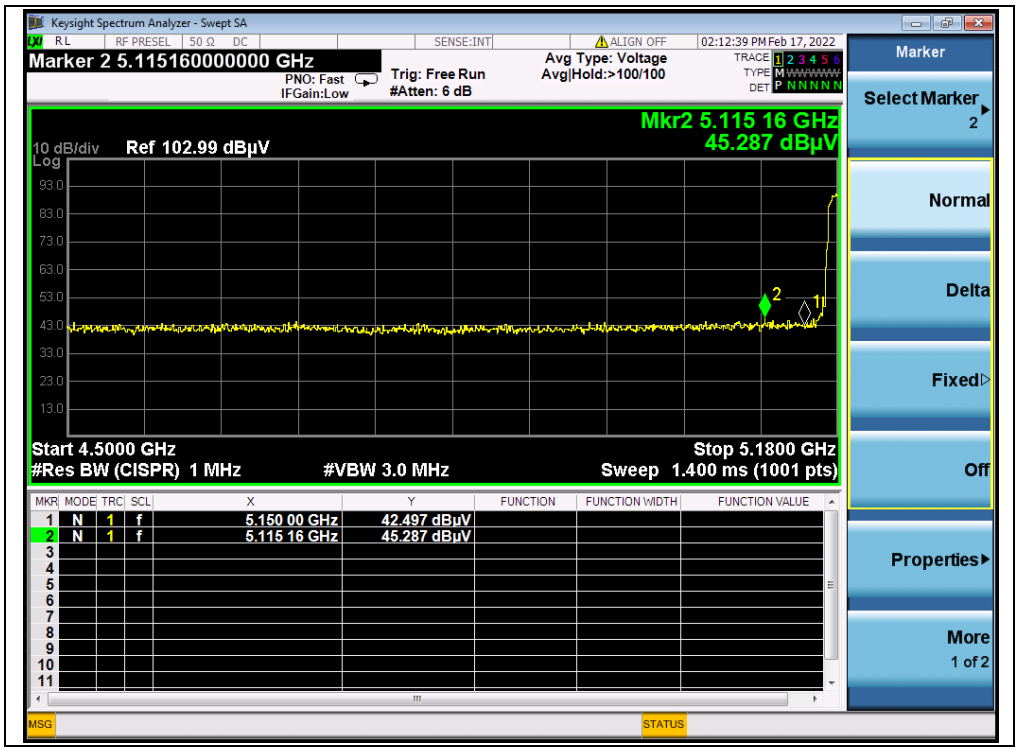
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]
A_T: Total correction Factor except Antenna; U_R: Receiver Reading
G_{preamp}: Preamplifier Gain; A_{Factor}: Antenna Factor at 3m
Note 1: 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.
Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

802.11a Mode

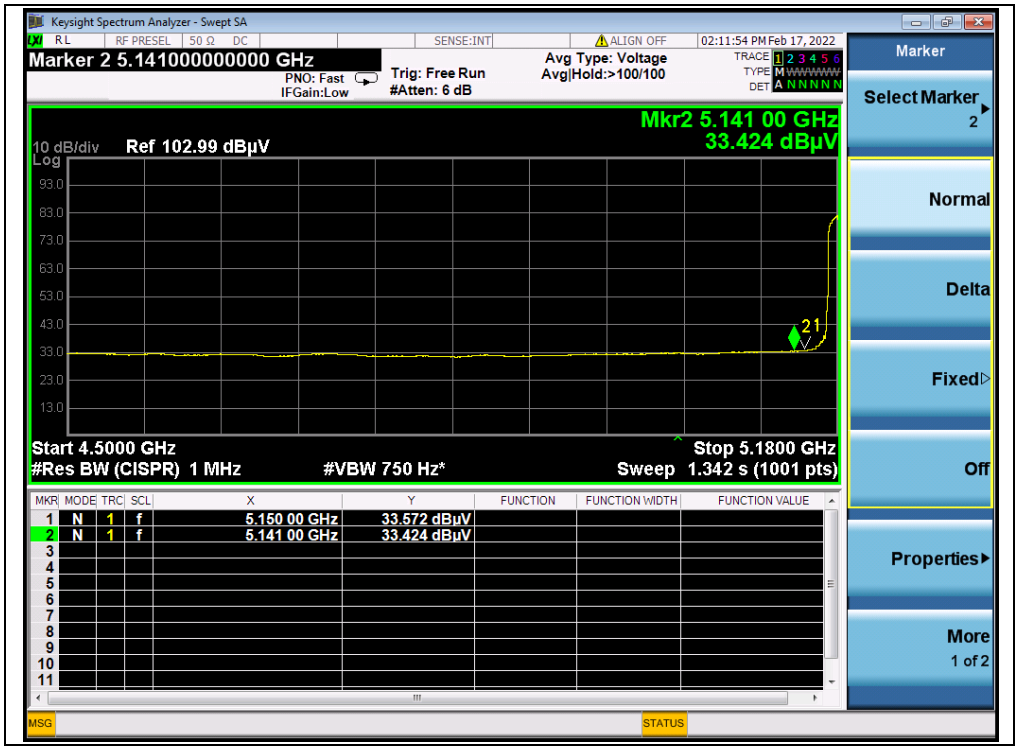
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
36	5115.16	PK	45.29	-19.54	32.20	57.95	74	PASS
36	5150.00	AV	33.57	-19.54	32.20	46.23	54	PASS
64	5360.50	PK	43.37	-18.80	32.20	56.77	74	PASS
64	5350.00	AV	32.72	-18.80	32.20	46.12	54	PASS
100	5246.84	PK	44.72	-19.20	32.20	57.72	68.23	PASS
100	5459.00	AV	34.91	-19.20	32.20	47.91	54	PASS
144	5725.00	PK	46.27	-19.20	32.20	59.27	68.23	PASS
149	5725.00	PK	43.54	-19.01	32.20	56.73	122.23	PASS
165	5850.00	PK	43.88	-19.01	32.20	57.07	122.23	PASS

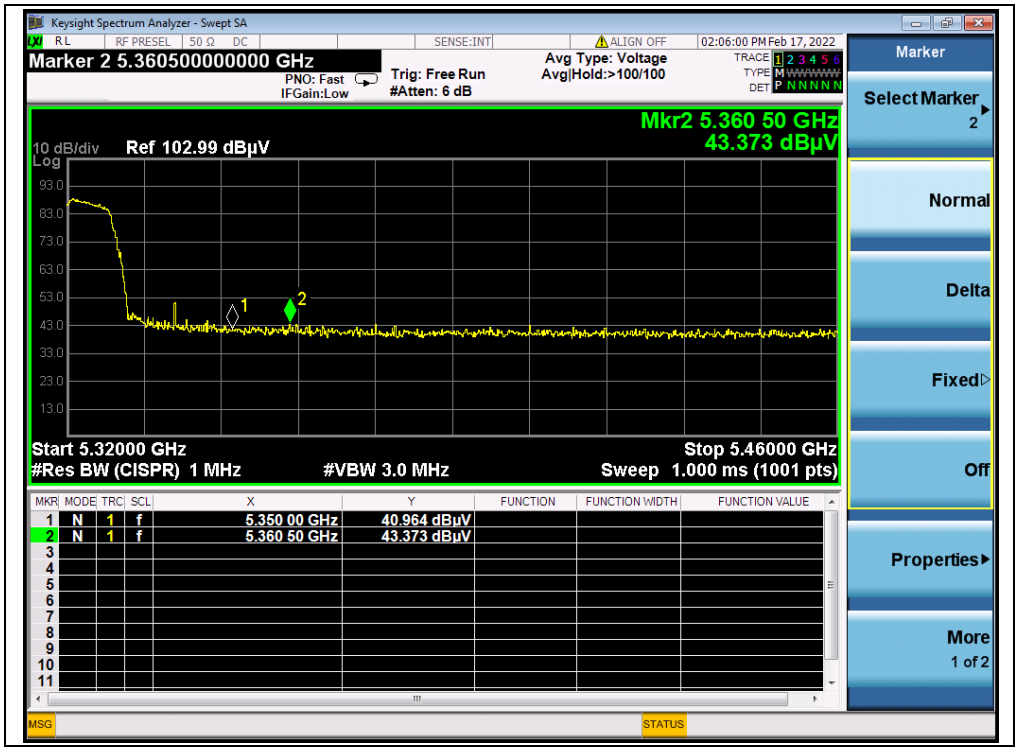
B.Test Plot:



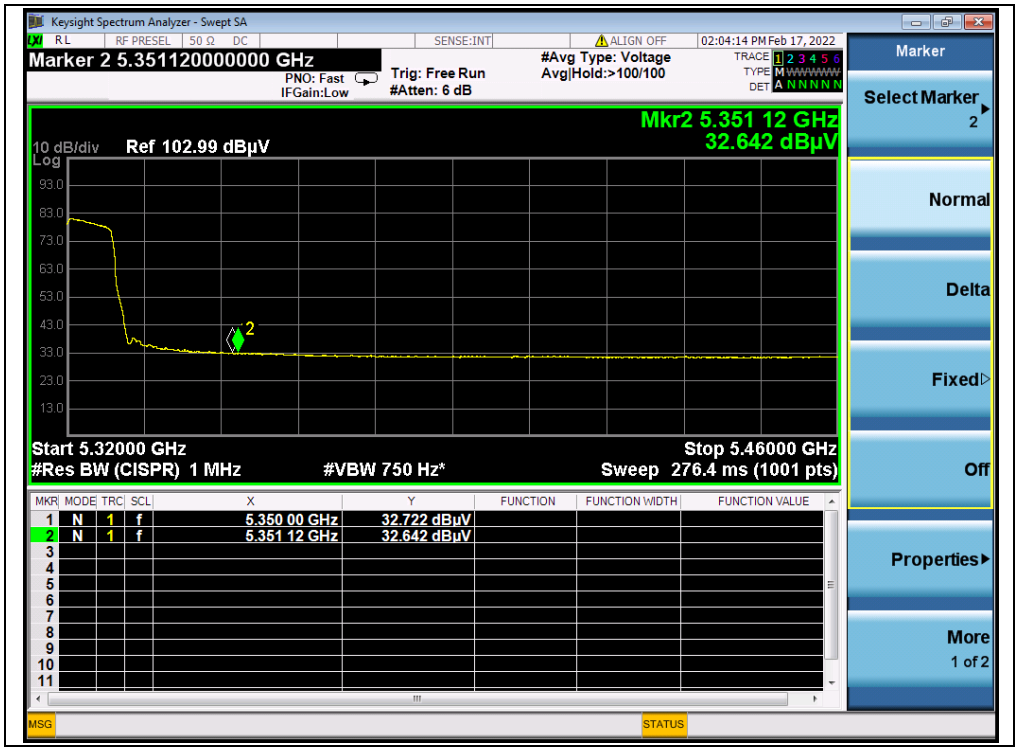
(PEAK, Channel 36, 802.11a)



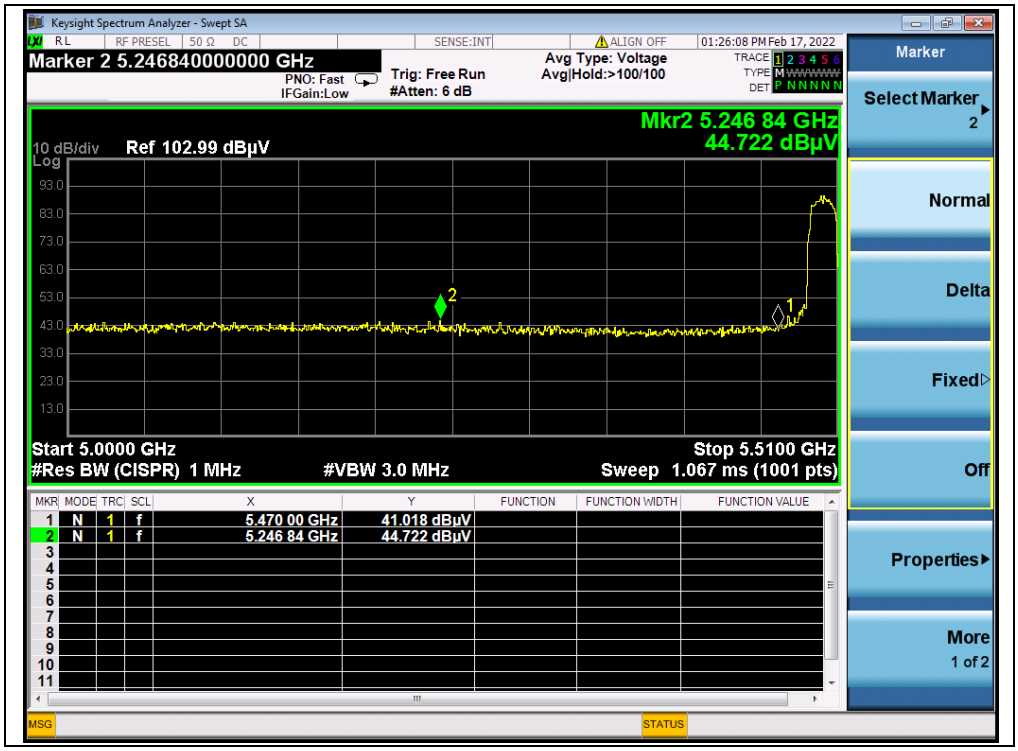
(AVERAGE, Channel 36, 802.11a)



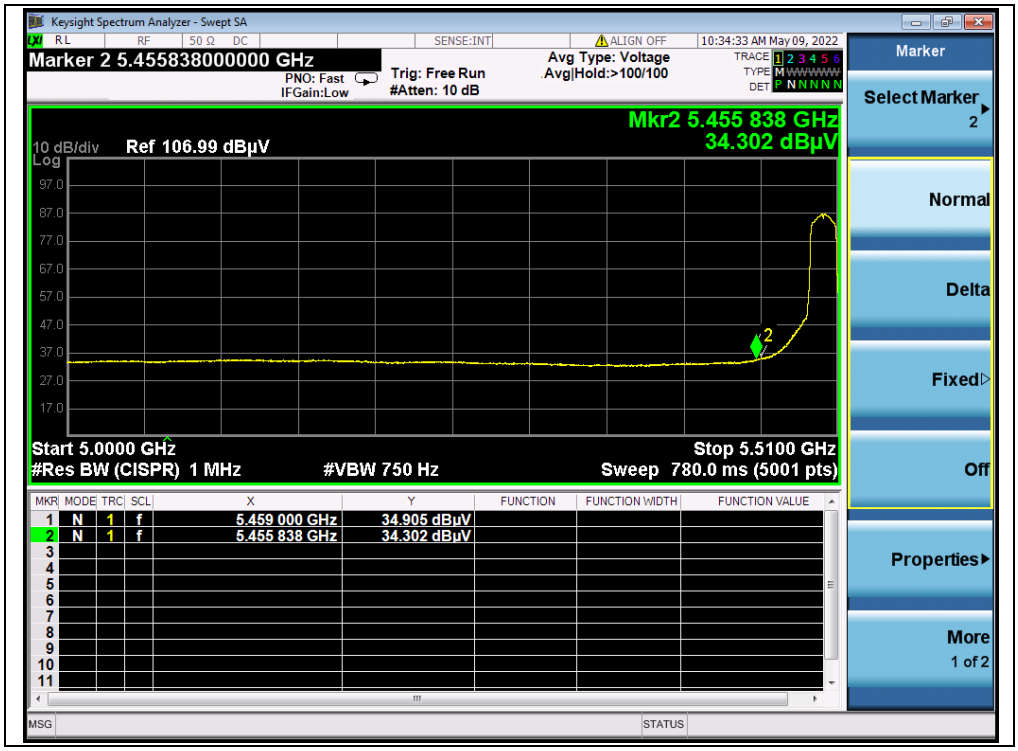
(PEAK, Channel 64, 802.11a)



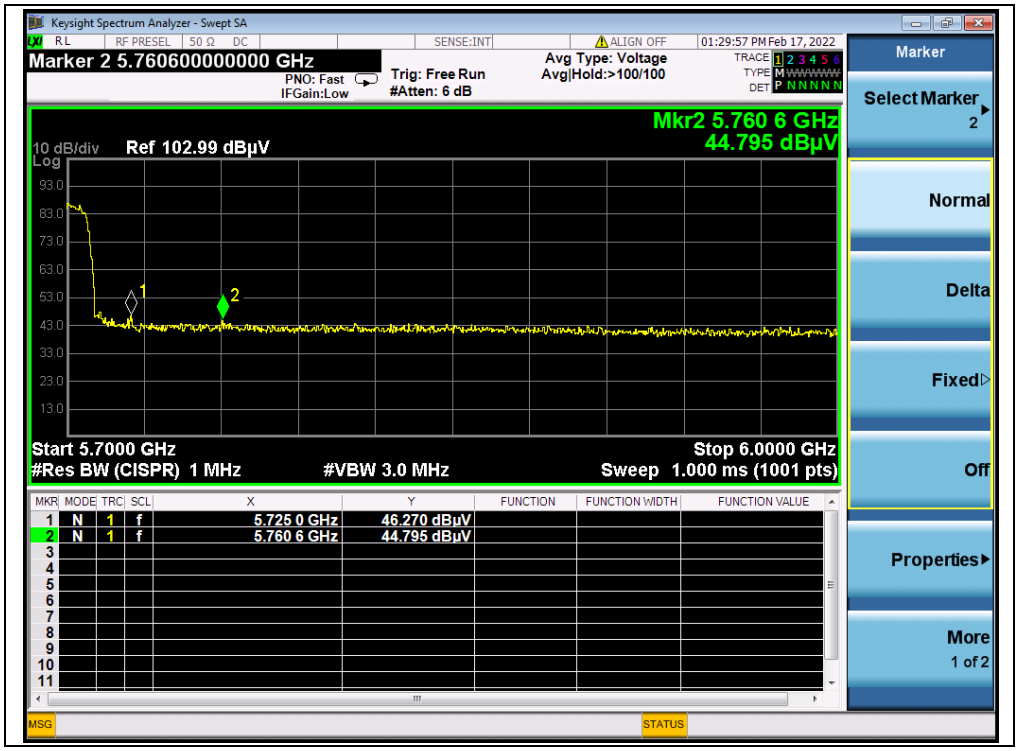
(AVERAGE, Channel 64, 802.11a)



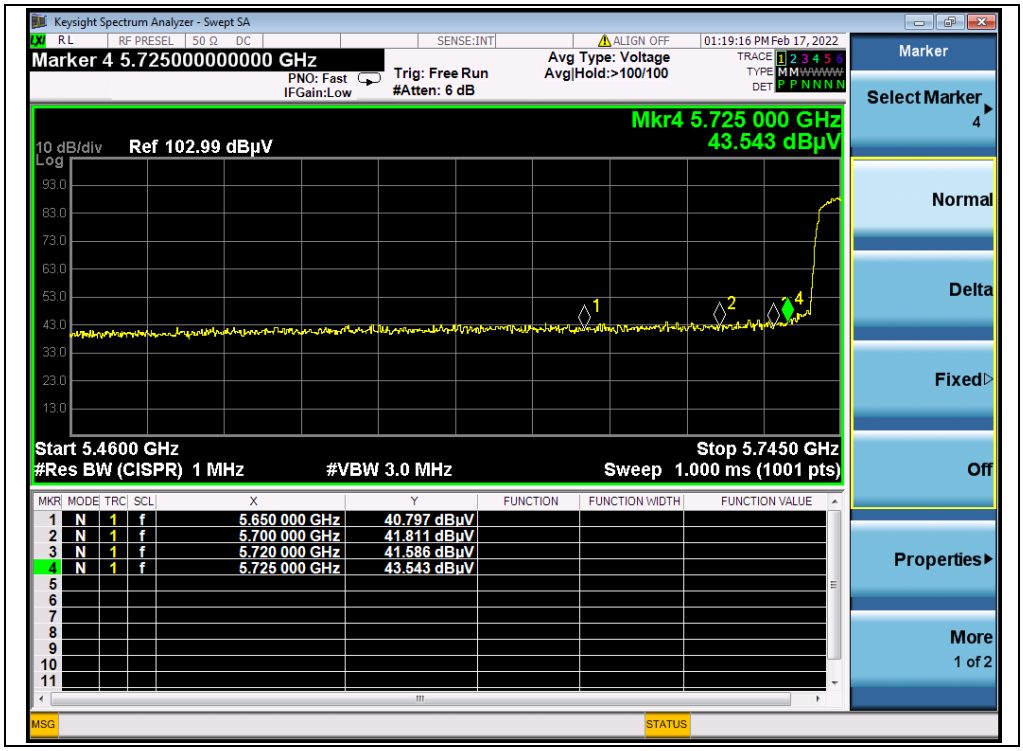
(PEAK, Channel 100, 802.11a)



(AVERAGE, Channel 100, 802.11a)



(PEAK, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)

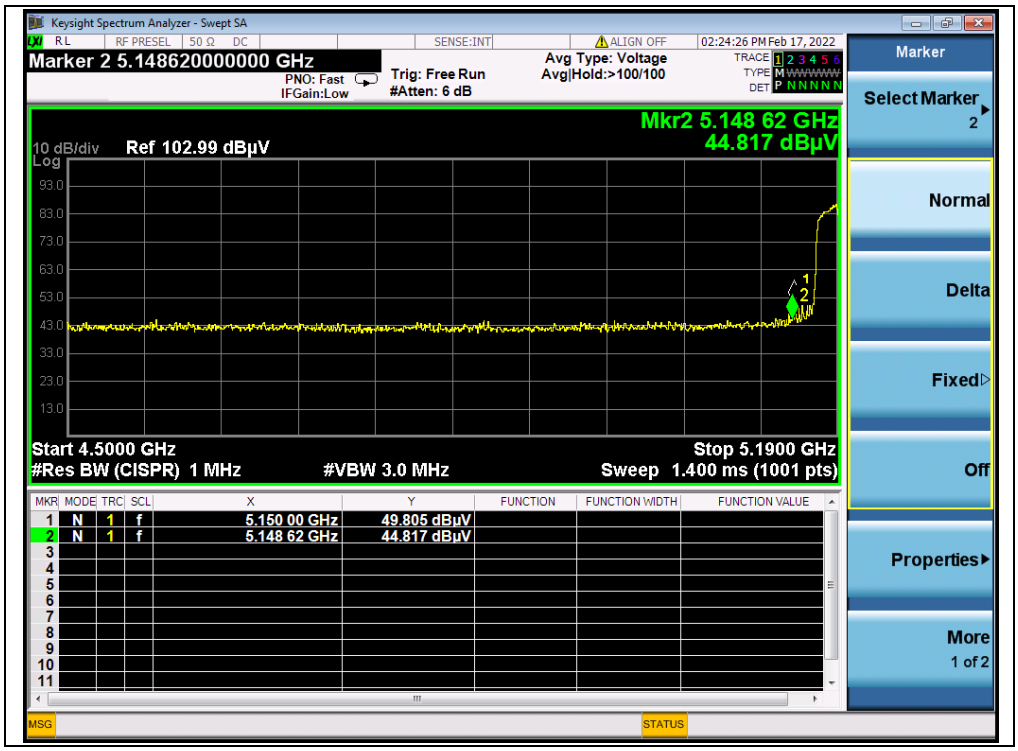
(PEAK, Channel 165, 802.11a)

802.11n (HT40) Mode

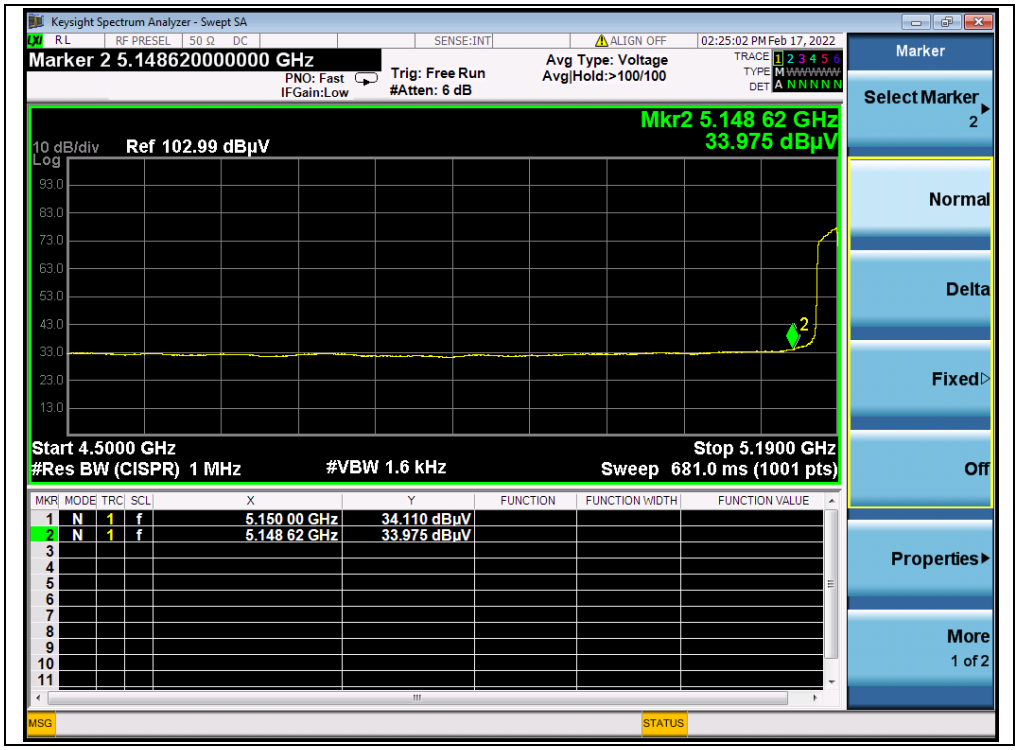
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
38	5150.00	PK	49.81	-19.54	32.20	62.47	74	PASS
38	5150.00	AV	34.11	-19.54	32.20	46.77	54	PASS
62	5365.25	PK	42.56	-18.80	32.20	55.96	74	PASS
62	5350.00	AV	32.41	-18.80	32.20	45.81	54	PASS
102	5126.99	PK	45.23	-19.20	32.20	58.23	74	PASS
102	5459.00	AV	37.63	-19.20	32.20	50.63	54	PASS
142	5744.81	PK	43.95	-19.20	32.20	56.95	68.23	PASS
151	5725.00	PK	45.01	-19.01	32.20	58.20	122.23	PASS
159	5850.00	PK	42.81	-19.01	32.20	56.00	122.23	PASS

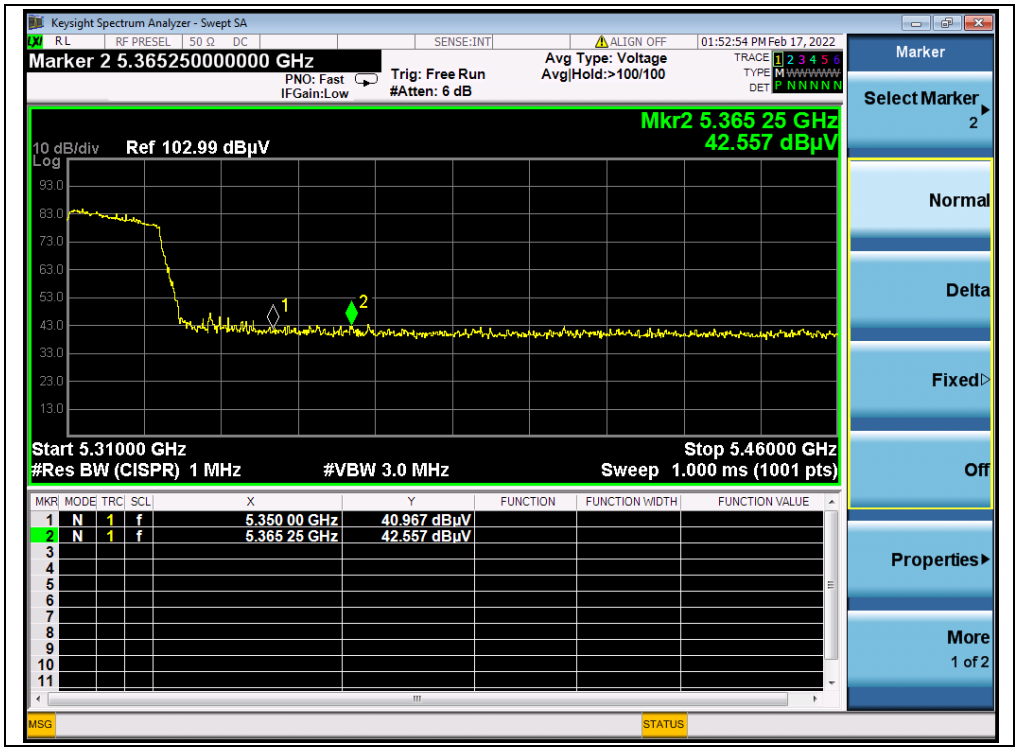
B.Test Plot:



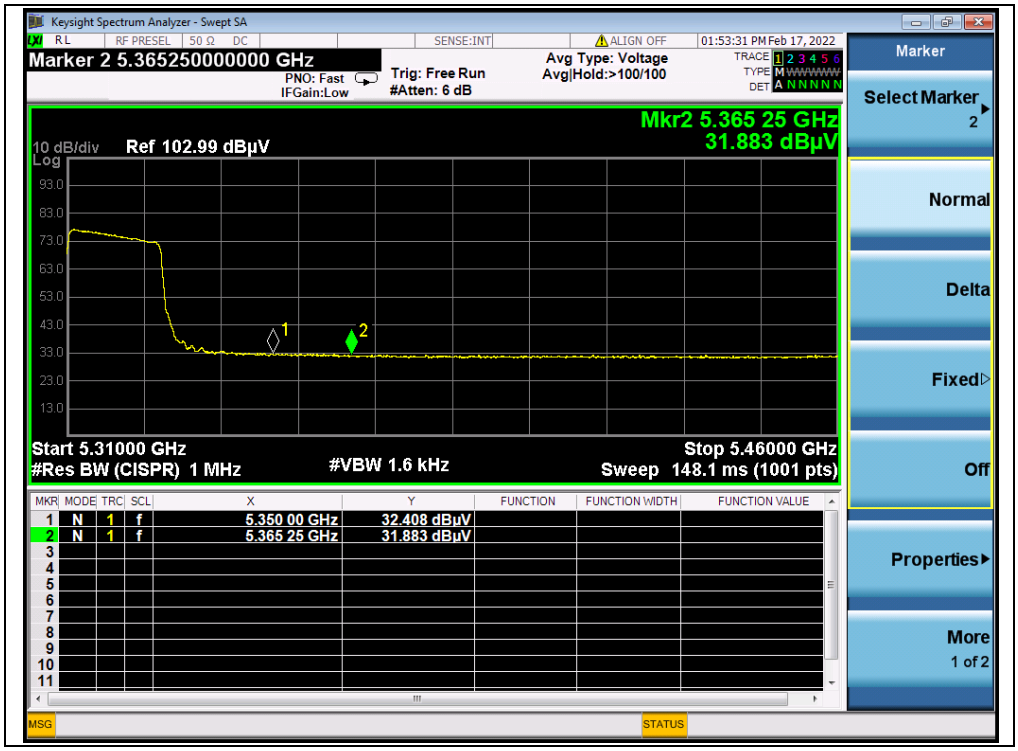
(PEAK, Channel 38, 802.11n (HT40))



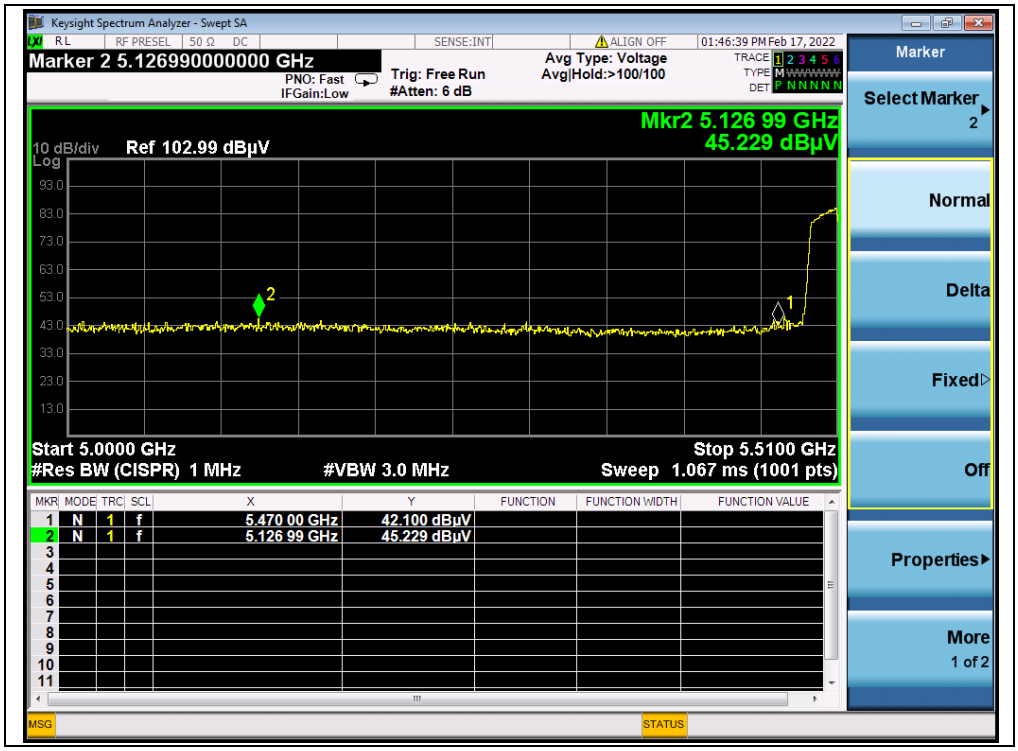
(AVERAGE, Channel 38, 802.11n (HT40))



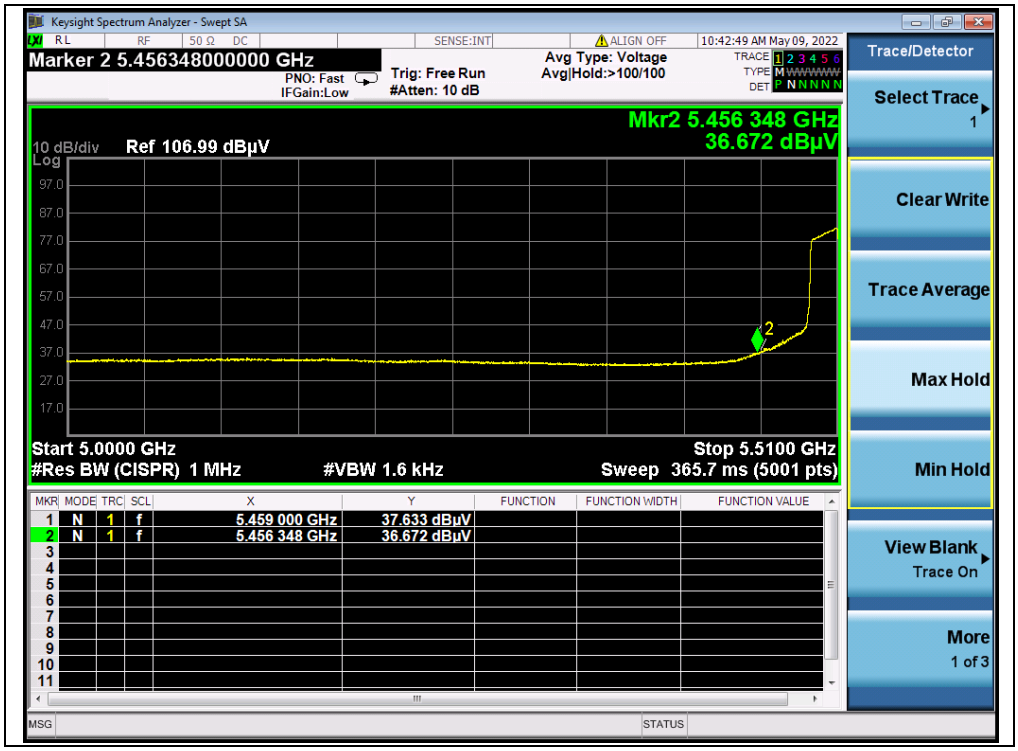
(PEAK, Channel 62, 802.11n (HT40))



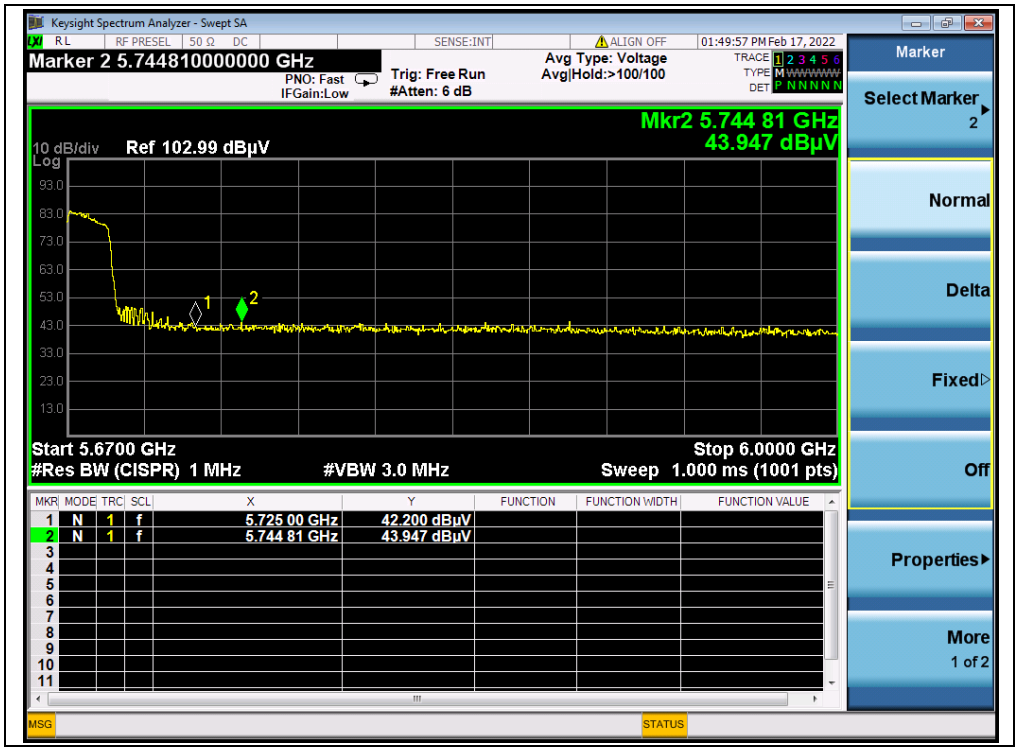
(AVERAGE, Channel 62, 802.11n (HT40))



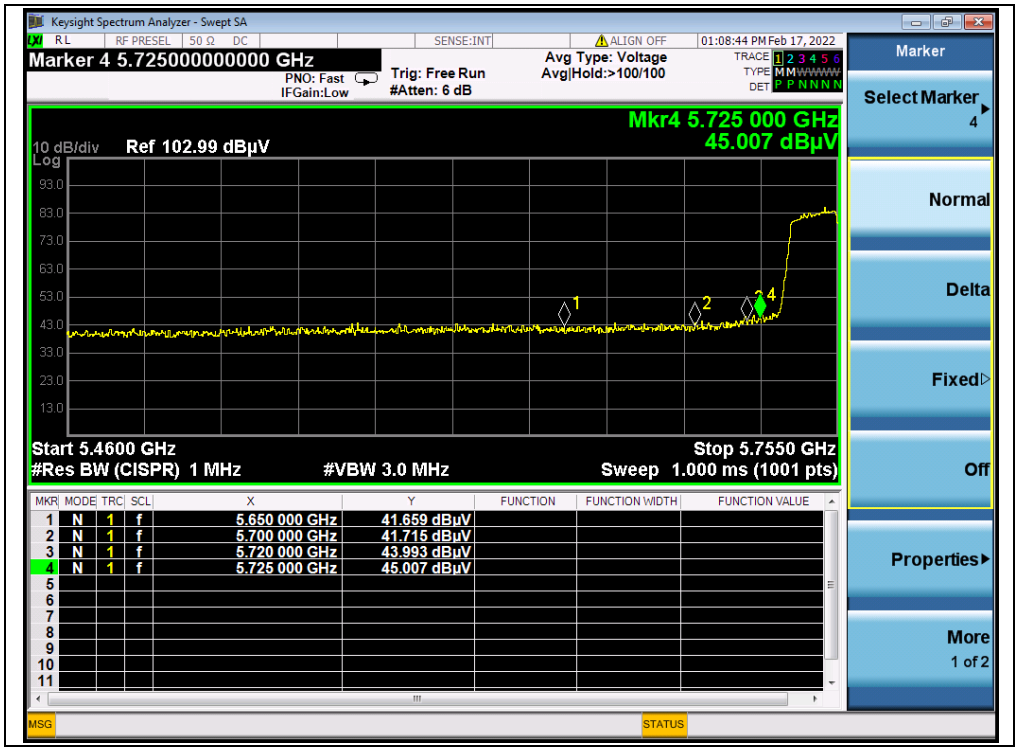
(PEAK, Channel 102, 802.11n (HT40))



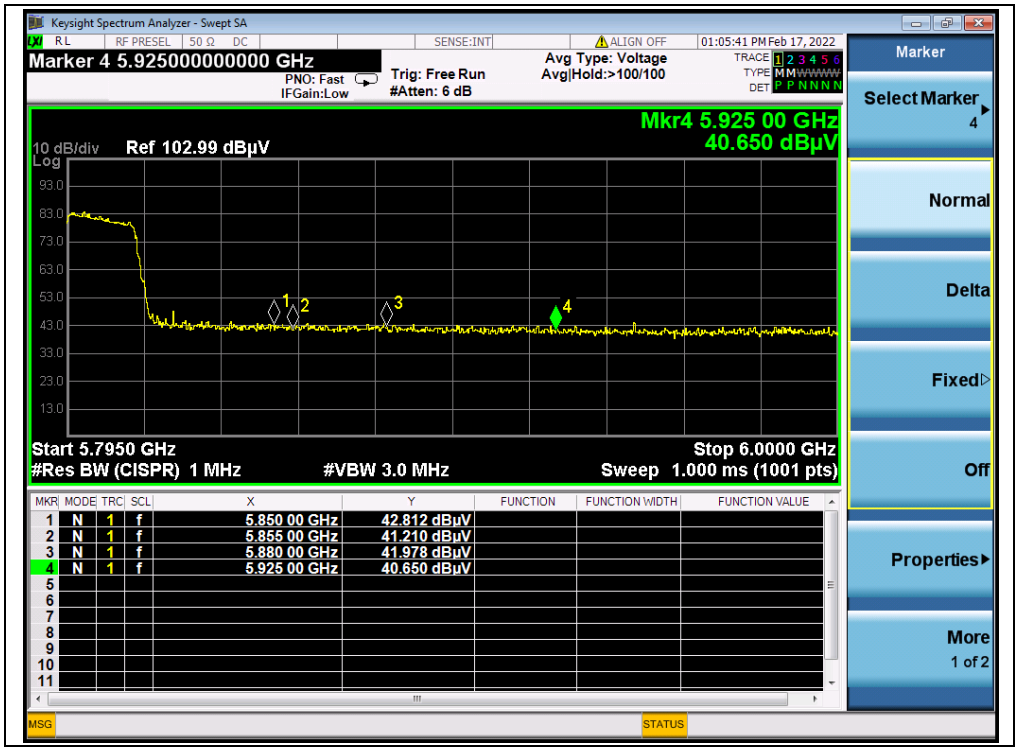
(AVERAGE, Channel 102, 802.11n (HT40))



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



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



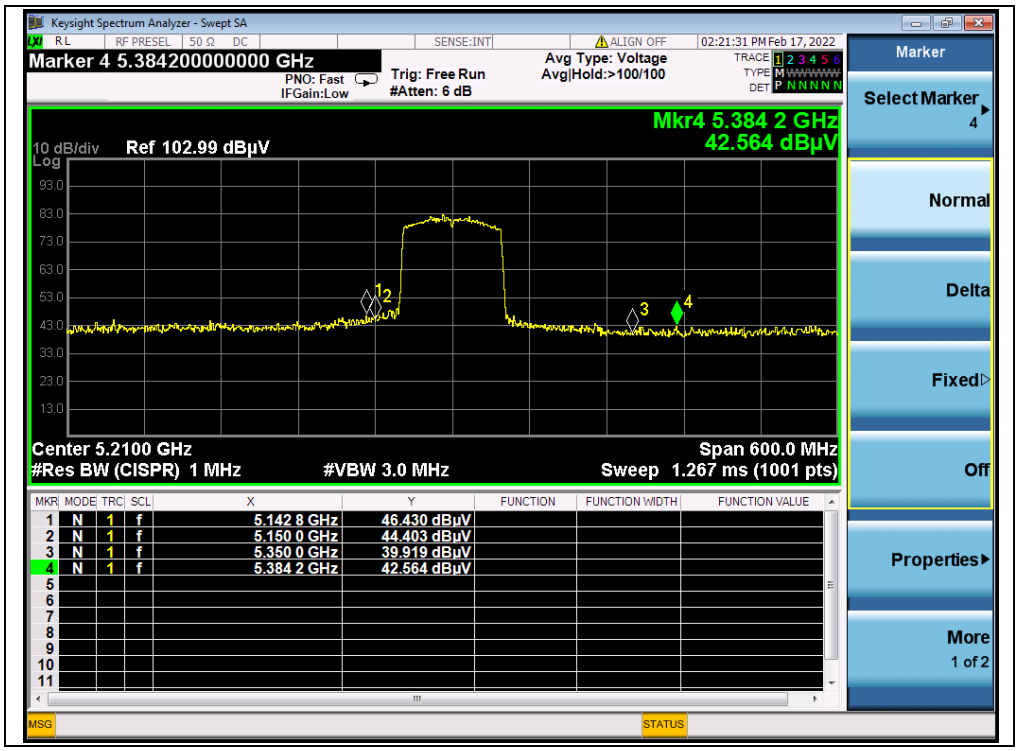
(PEAK, Channel 159, 802.11n (HT40))

802.11ac (VHT80) Mode

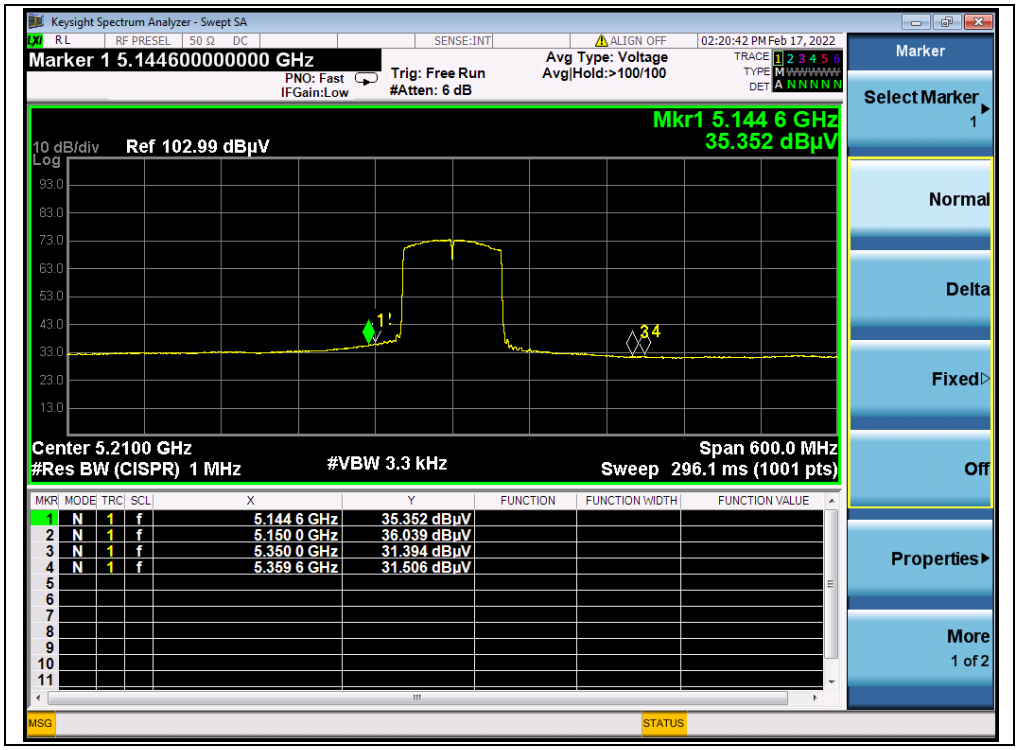
A.Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
42	5142.80	PK	46.43	-19.54	32.20	59.09	74	PASS
42	5150.00	AV	36.04	-19.54	32.20	48.70	54	PASS
58	5350.00	PK	42.99	-18.80	32.20	56.39	74	PASS
58	5350.00	AV	32.87	-18.80	32.20	46.27	54	PASS
106	5304.71	PK	43.70	-19.20	32.20	56.70	68.23	PASS
106	5460.00	AV	33.15	-19.20	32.20	46.15	54	PASS
138	5767.35	PK	43.29	-19.20	32.20	56.29	68.23	PASS
155	5725.00	PK	45.47	-19.01	32.20	58.66	122.23	PASS
155	5855.00	PK	43.14	-19.01	32.20	56.33	110.83	PASS

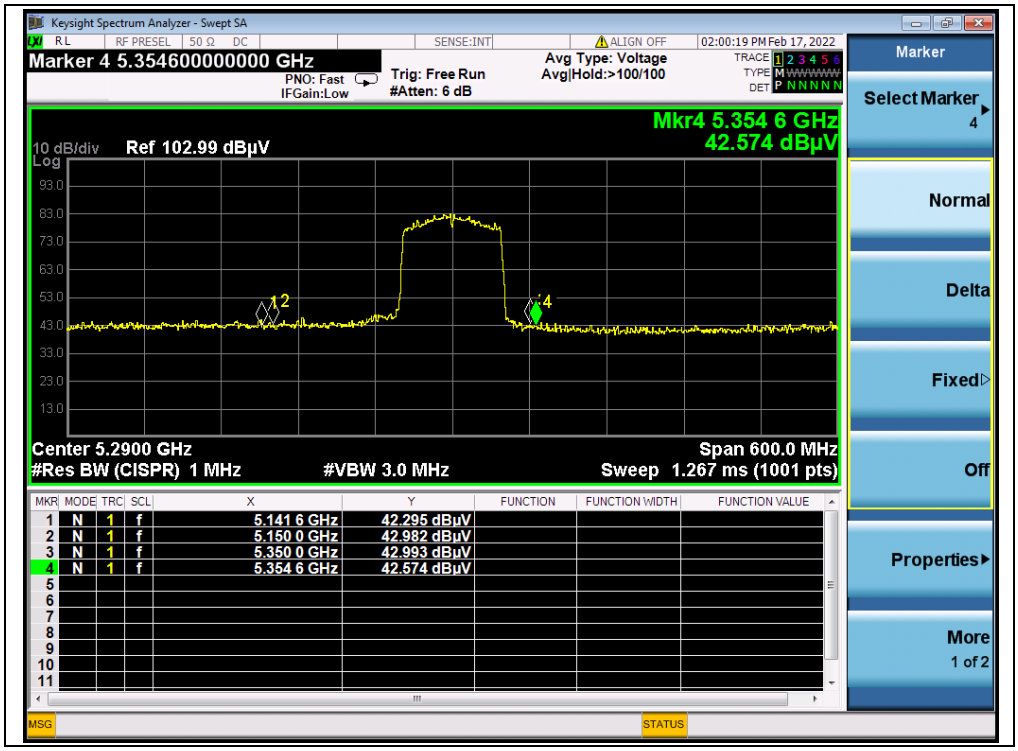
B.Test Plot:



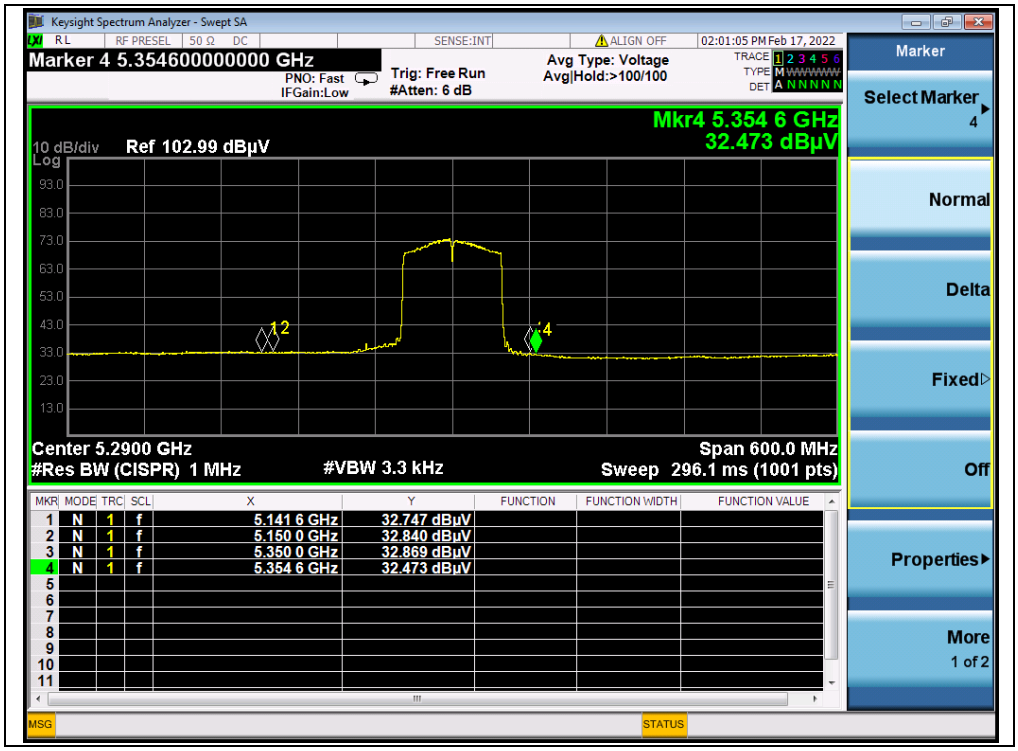
(PEAK, Channel 42, 802.11ac (VHT80))



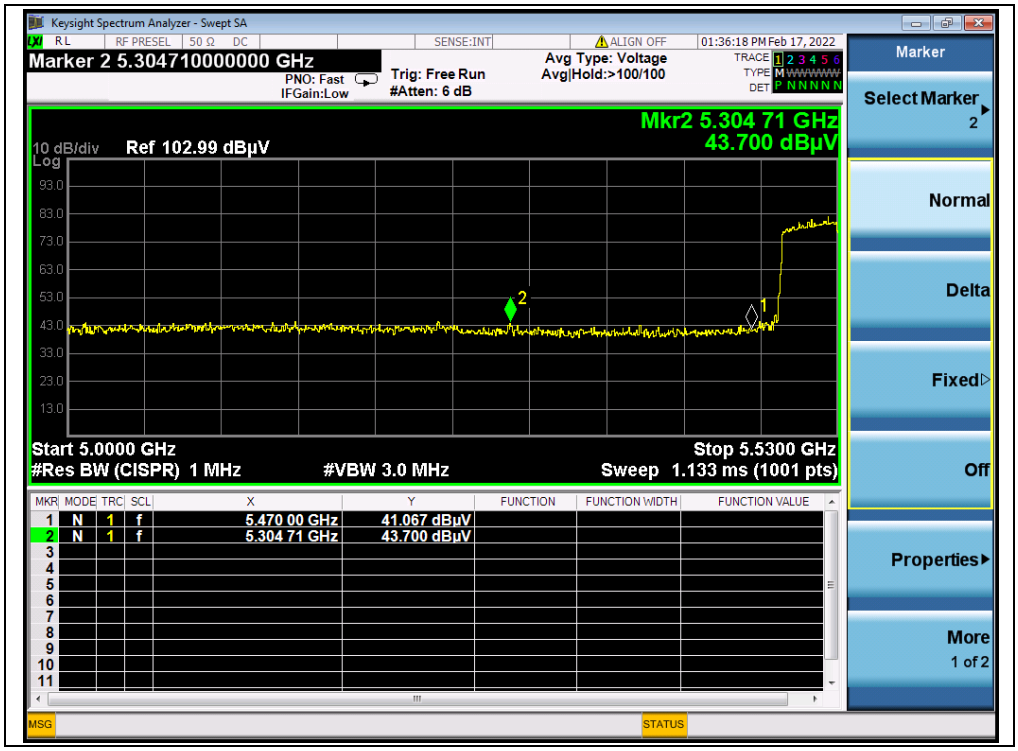
(AVERAGE, Channel 42, 802.11ac (VHT80))



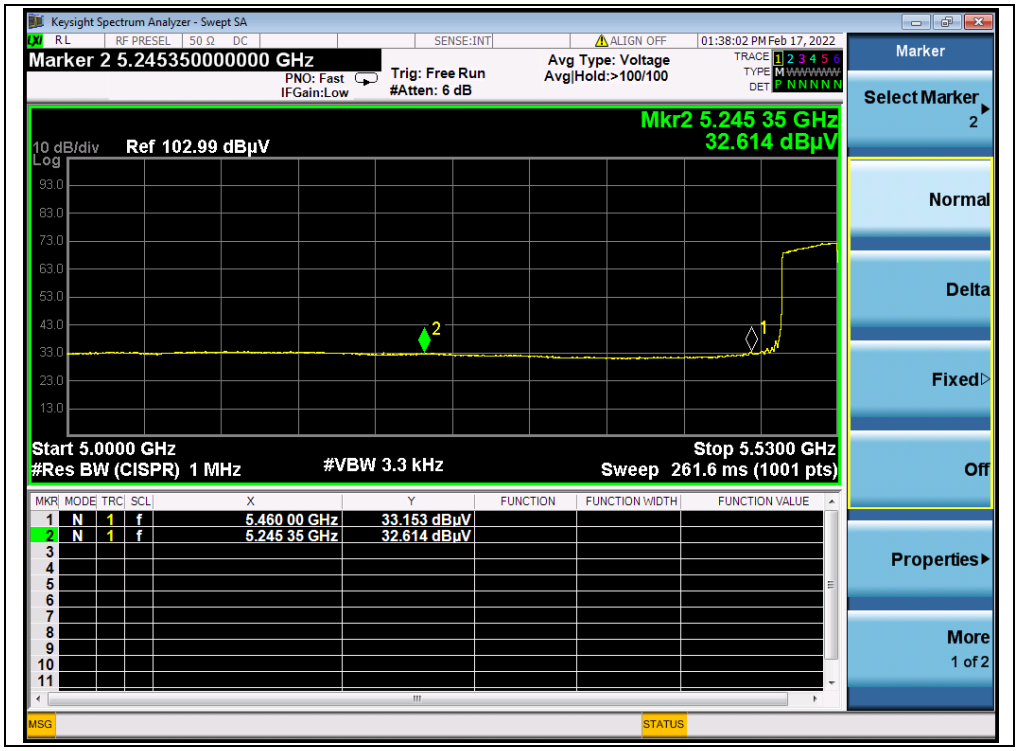
(PEAK, Channel 58, 802.11ac (VHT80))



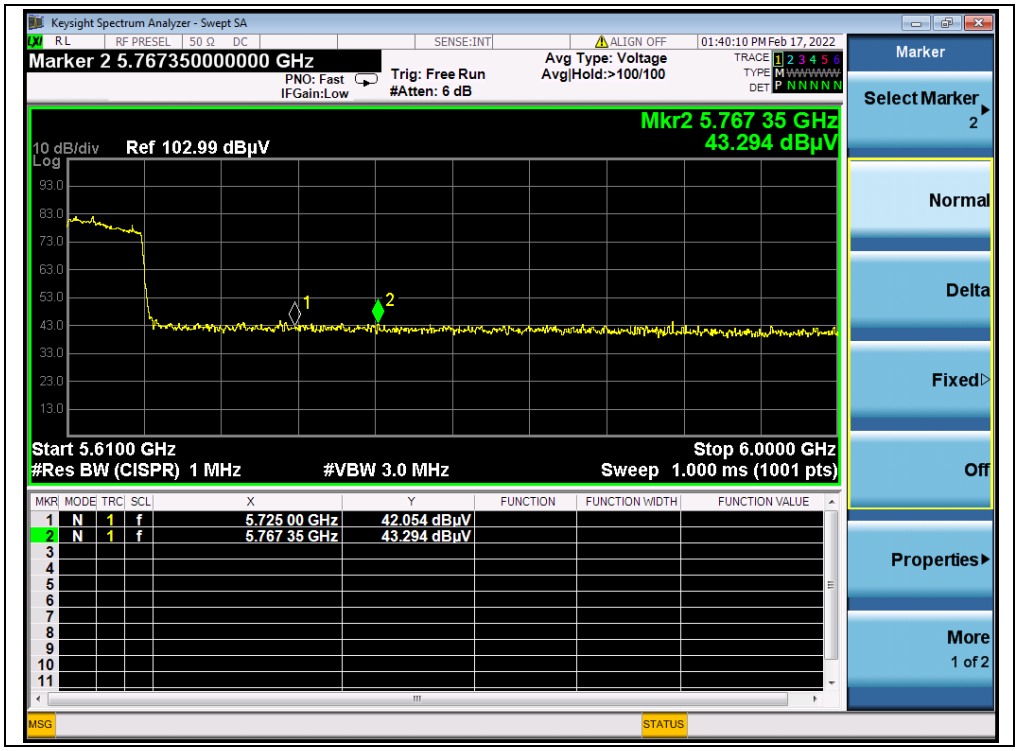
(AVERAGE, Channel 58, 802.11ac (VHT80))



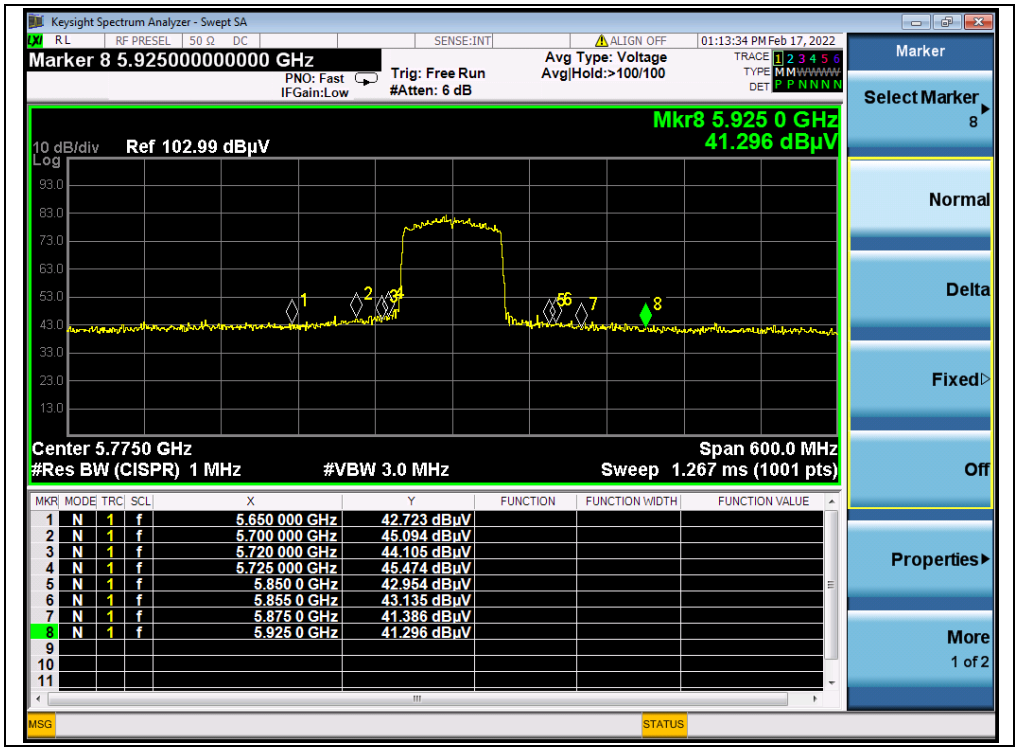
(PEAK, Channel 106, 802.11ac (VHT80))



(AVERAGE, Channel 106, 802.11ac (VHT80))



(PEAK, Channel 138, 802.11ac (VHT80))



(PEAK, Channel 155, 802.11ac (VHT80))

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(e.i.r.p.) 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:

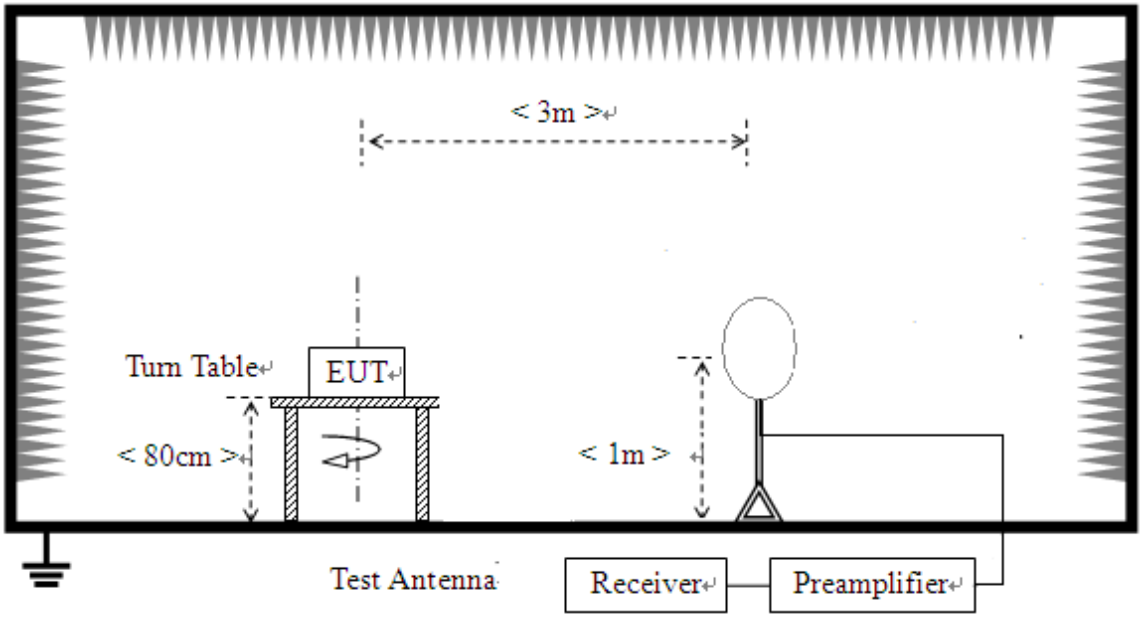
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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).

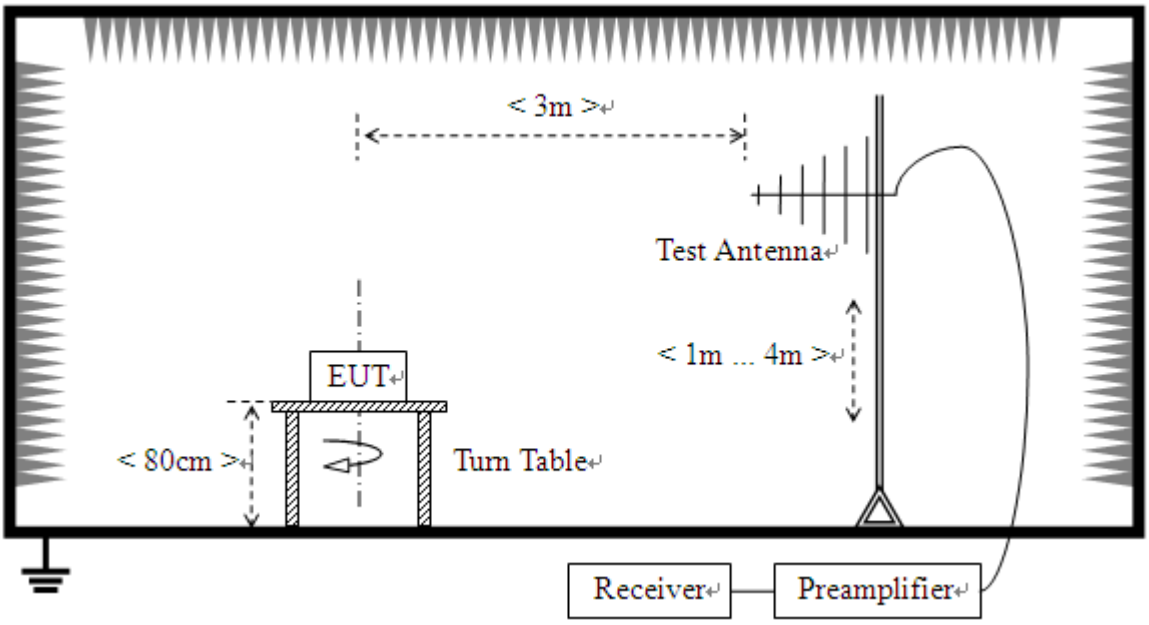
2.9.2. Test Description

Test Setup:

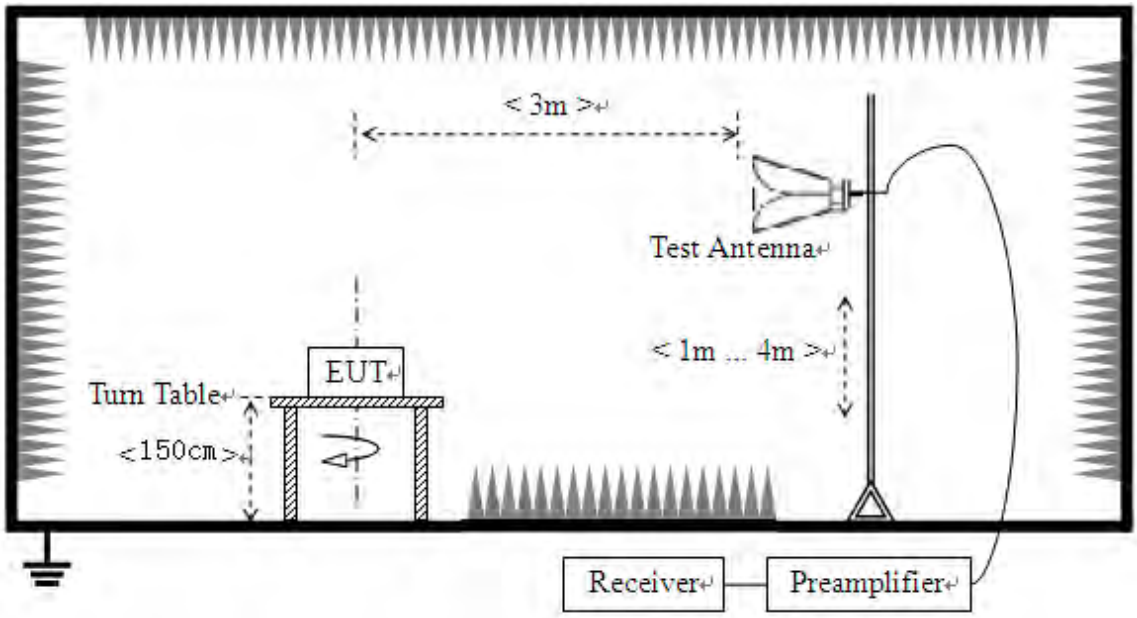
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

2.9.3. Test Result

According to ANSI C63.10, 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 (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

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.

Note 1: 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.

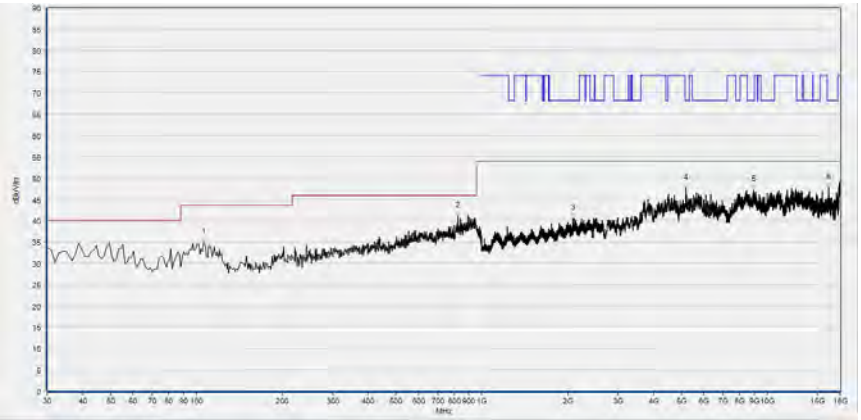
Note 2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 3: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

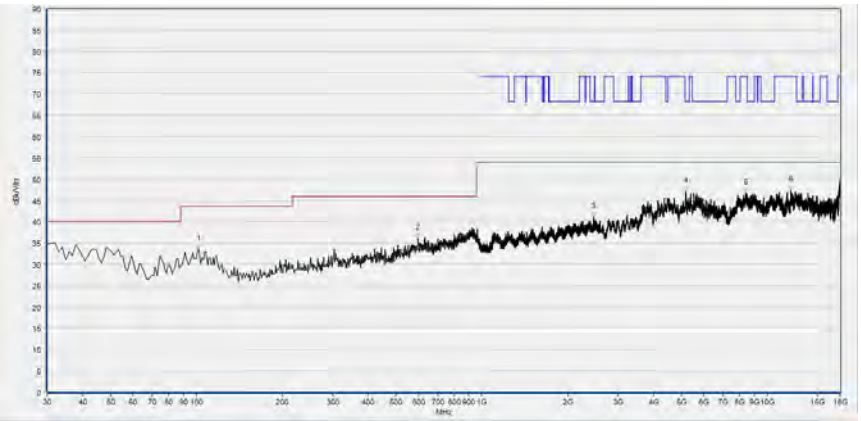
802.11a Mode

Plot 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
105.736	34.93	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
822.312	41.14	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2087.296	40.58	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5181.556	47.63	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8961.472	47.24	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16407.321	47.78	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

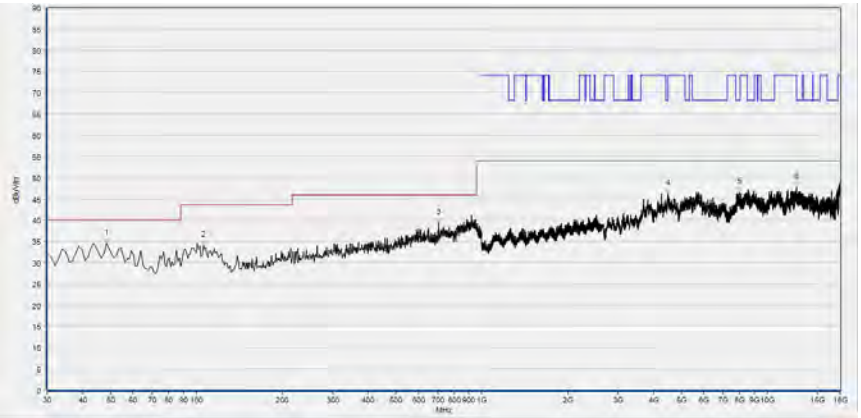
(Antenna Horizontal, 30MHz to 18GHz)



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
101.852	33.54	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
598.018	36.10	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2471.957	40.99	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5178.476	47.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8428.526	46.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12063.653	47.40	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

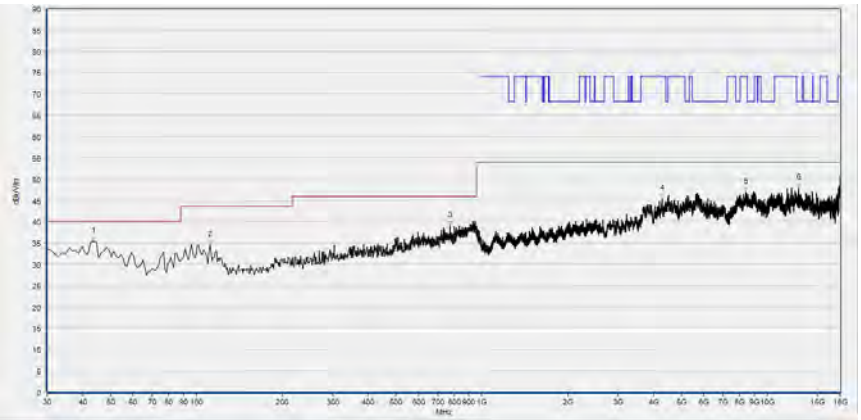
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
48.448	34.58	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
105.736	34.01	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
706.767	39.33	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4497.660	46.23	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8003.401	46.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12676.695	47.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

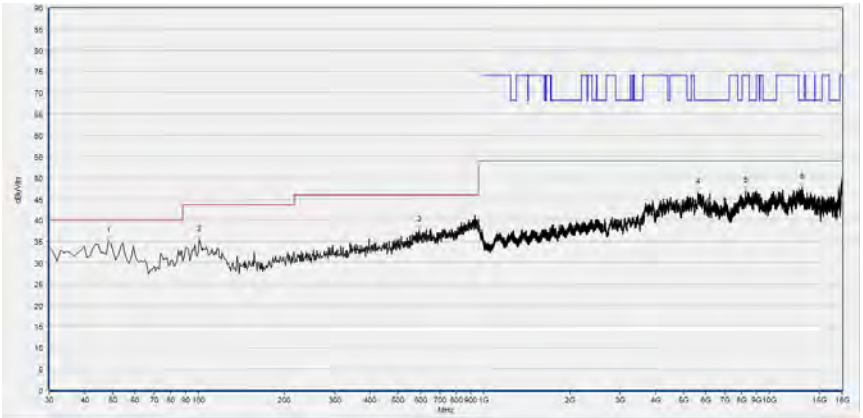
(Antenna Horizontal, 30MHz to 18GHz)



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	35.28	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
111.562	34.46	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
772.793	39.13	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4282.016	45.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8400.800	46.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12895.419	47.86	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

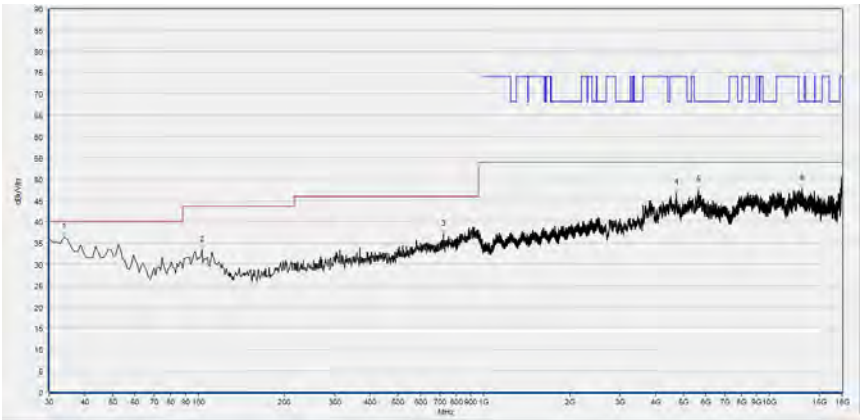
(Antenna Vertical, 30MHz to 18GHz)

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
48.448	34.96	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
100.881	35.36	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
592.192	37.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5622.084	46.60	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8274.495	46.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
13064.853	47.77	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

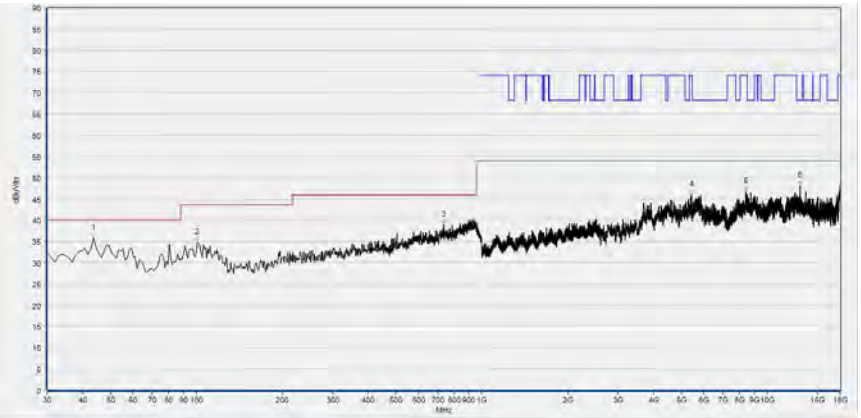
(Antenna Horizontal, 30MHz to 18GHz)



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	36.42	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
102.823	33.32	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
721.331	36.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4731.786	46.74	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5649.810	47.48	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13055.611	47.71	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

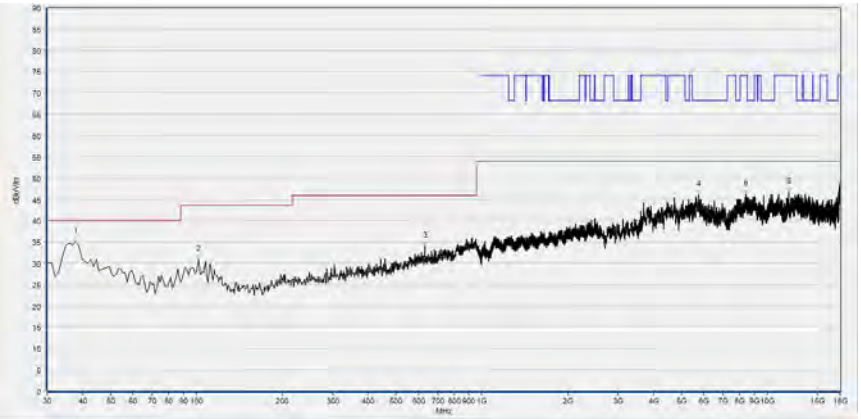
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
43.594	35.63	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
100.881	34.62	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
733.954	38.94	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5421.844	45.89	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8406.961	46.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
13052.531	48.05	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

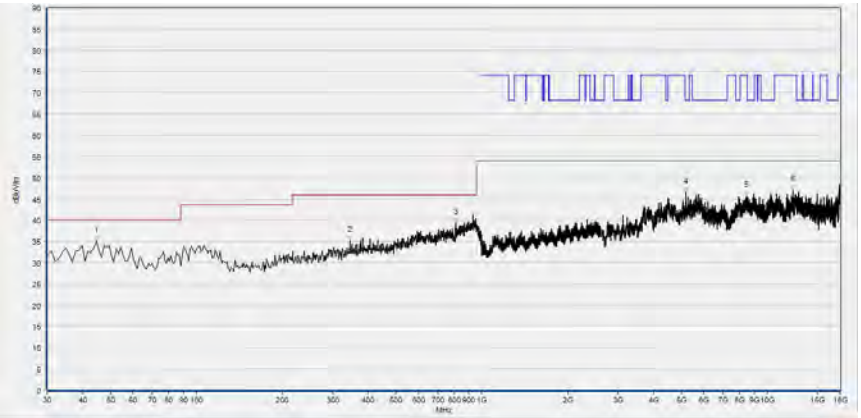
(Antenna Horizontal, 30MHz to 18GHz)



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	34.95	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
101.852	30.90	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
631.031	33.96	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5745.309	46.14	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8413.123	46.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11866.493	46.75	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

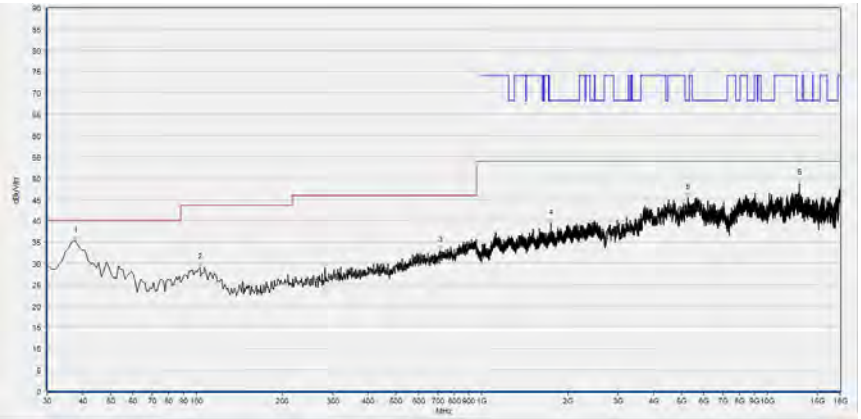
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
44.565	35.10	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
345.566	35.20	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
809.690	39.31	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5184.637	46.67	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8471.654	45.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12313.183	47.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

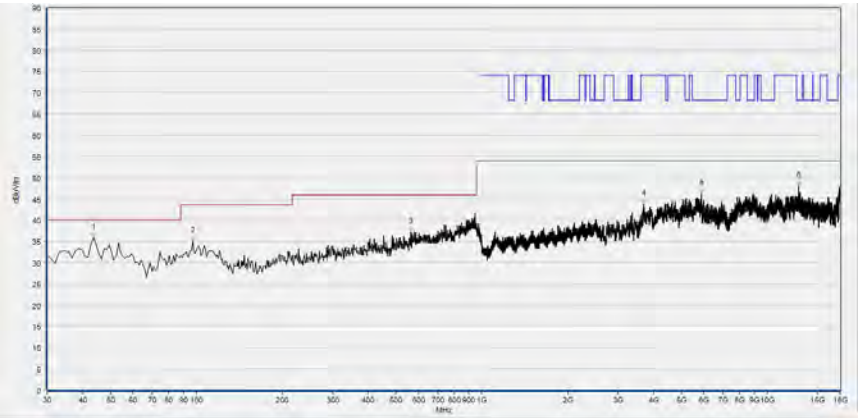
(Antenna Horizontal, 30MHz to 18GHz)



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	35.19	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
102.823	28.94	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
715.506	33.07	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1744.782	39.47	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5289.378	45.36	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12926.225	48.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

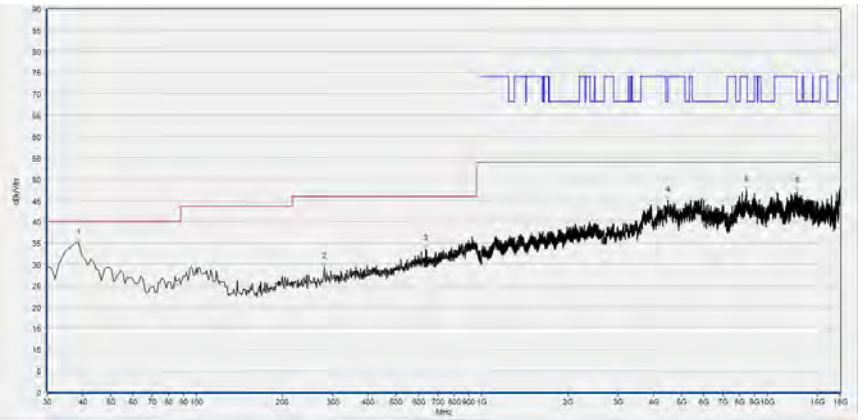
(Antenna Vertical, 30MHz to 18GHz)

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
43.594	35.82	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
96.997	35.02	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
564.034	37.25	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
3693.619	43.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5868.534	46.23	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12913.903	48.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

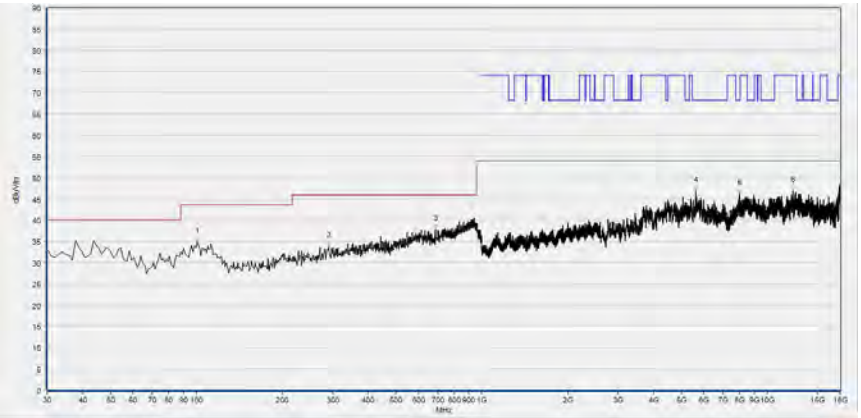
(Antenna Horizontal, 30MHz to 18GHz)



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	35.03	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
280.511	29.26	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
634.915	33.44	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4497.660	45.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8443.929	47.37	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12735.227	47.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

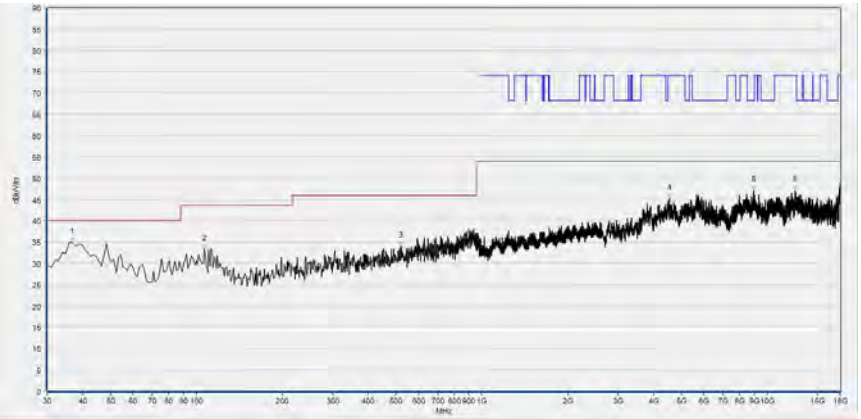
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
100.881	34.79	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
291.191	33.85	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
688.318	37.84	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5615.923	46.98	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
7978.756	46.21	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12285.457	46.96	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

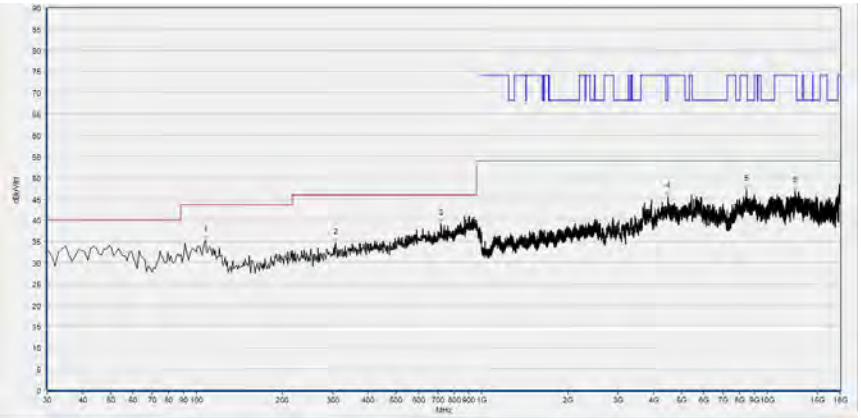
(Antenna Horizontal, 30MHz to 18GHz)



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
36.797	34.91	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
106.707	33.30	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
520.340	34.01	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4531.546	45.26	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8973.795	47.07	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12498.020	47.10	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

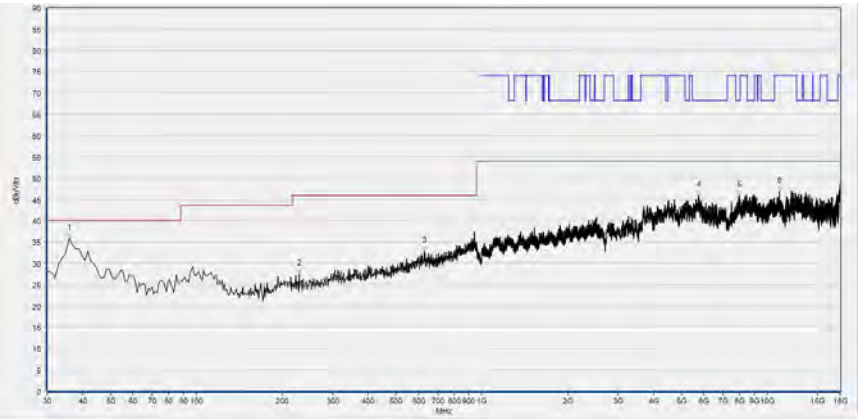
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
107.678	35.15	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
307.698	34.70	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
717.447	39.23	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4500.740	45.61	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8462.412	47.27	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12525.745	46.92	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

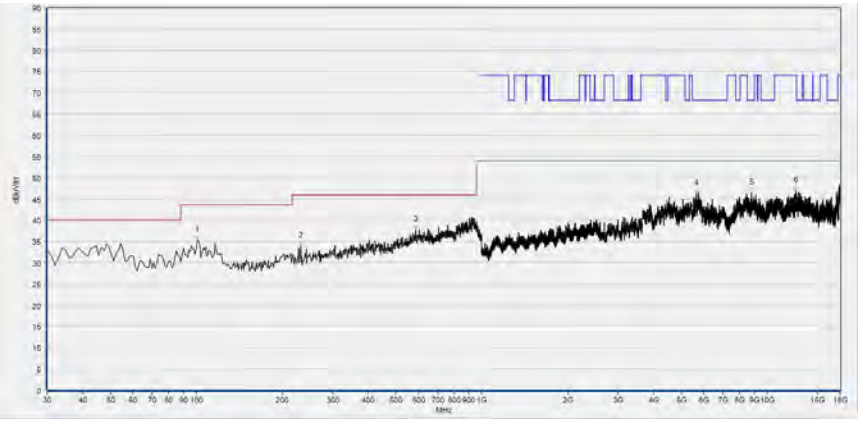
(Antenna Horizontal, 30MHz to 18GHz)



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
35.826	35.87	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
229.049	27.53	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
627.147	32.83	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5763.793	45.92	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7984.917	45.99	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11050.130	46.93	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

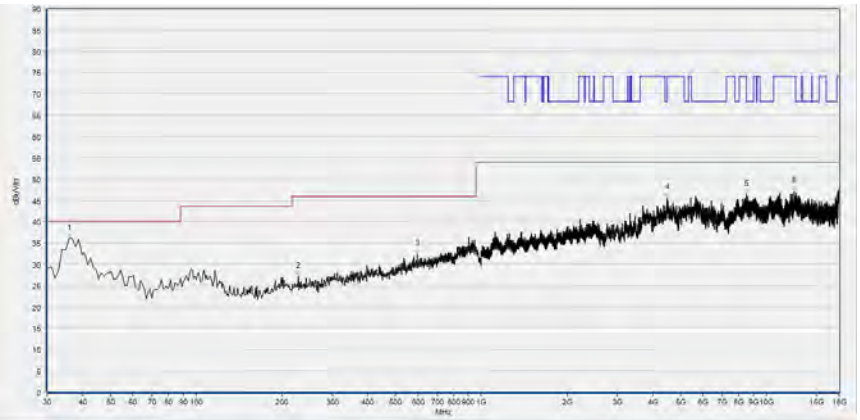
(Antenna Vertical, 30MHz to 18GHz)

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
100.881	35.24	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
231.962	33.88	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
587.337	37.79	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5646.729	46.22	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8813.603	46.40	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12581.196	46.89	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

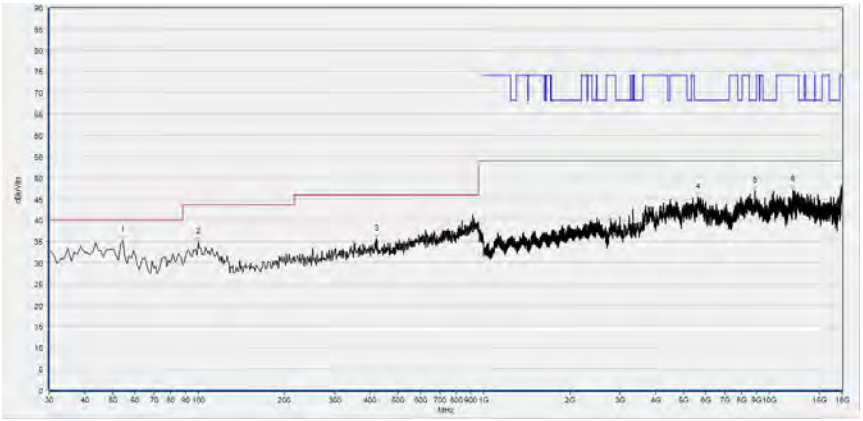
(Antenna Horizontal, 30MHz to 18GHz)



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
35.826	35.96	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
228.078	27.20	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
596.076	32.38	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4497.660	45.58	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8496.299	46.50	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12538.068	47.08	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

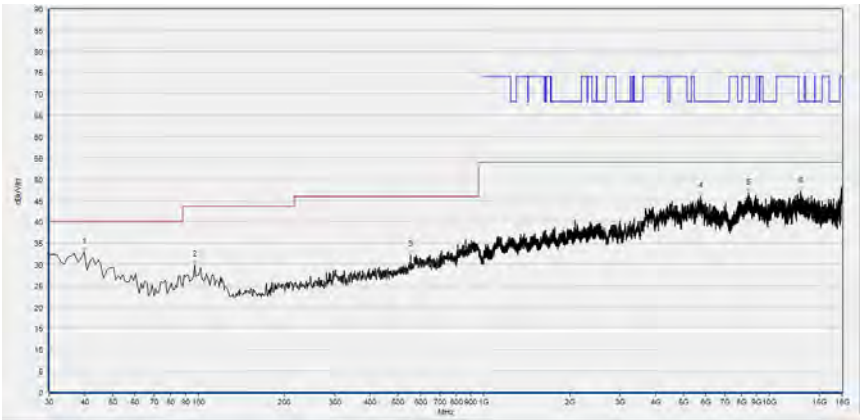
(Antenna Vertical, 30MHz to 18GHz)

Plot 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
54.274	35.19	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
99.910	34.90	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
419.359	35.54	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5612.843	45.45	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8909.102	46.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12128.346	47.16	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

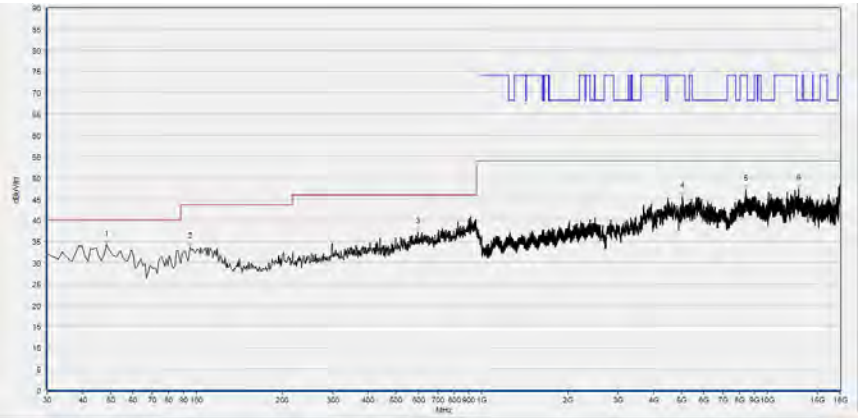
(Antenna Horizontal, 30MHz to 18GHz)



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	32.79	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
96.997	29.80	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
554.324	32.12	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5754.551	45.96	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8443.929	46.75	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12901.580	47.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

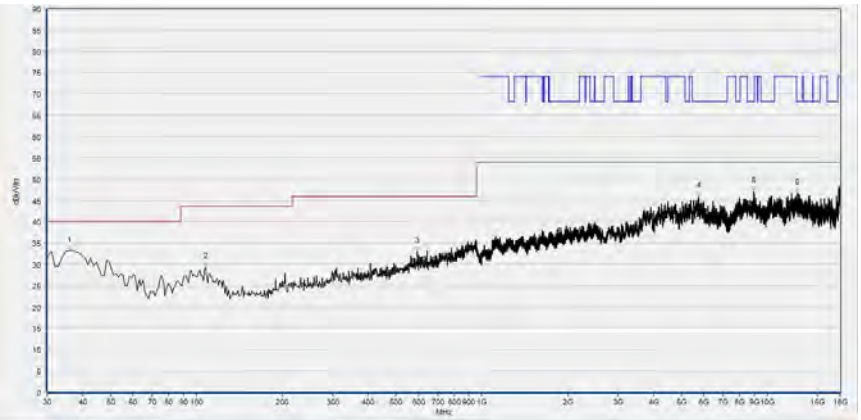
(Antenna Vertical, 30MHz to 18GHz)

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
48.448	34.13	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
95.055	33.68	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
597.047	37.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5033.687	45.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8406.961	47.30	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12880.016	47.38	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

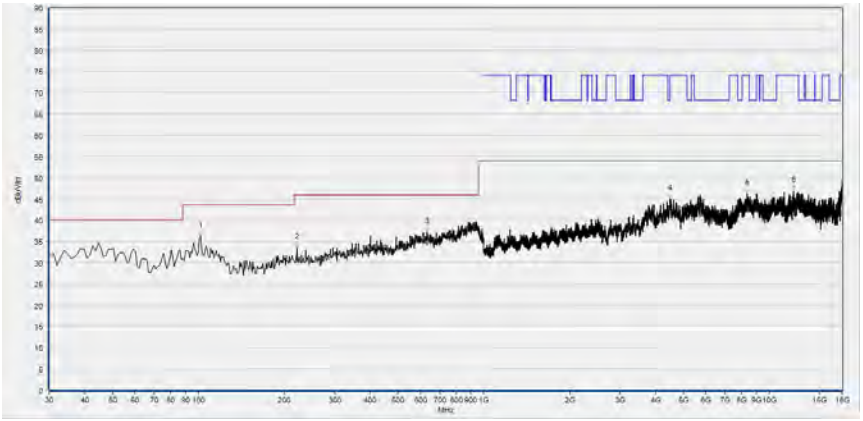
(Antenna Horizontal, 30MHz to 18GHz)



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
35.826	33.14	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
107.678	29.36	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
595.105	32.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5748.390	45.90	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8976.875	47.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12750.630	46.78	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

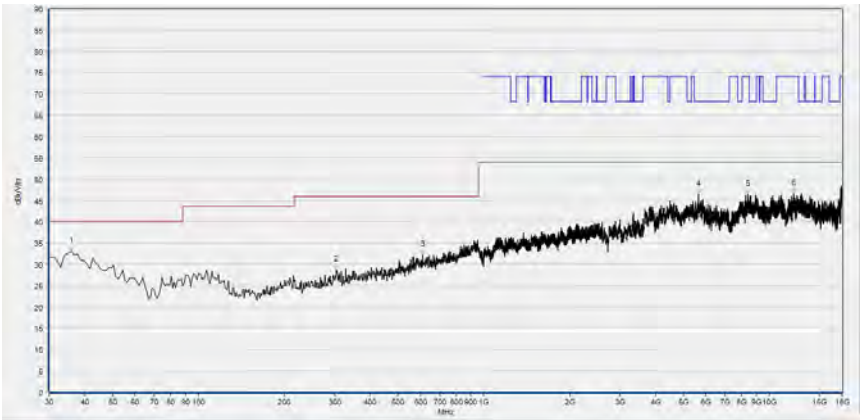
(Antenna Vertical, 30MHz to 18GHz)

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
101.852	36.14	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
222.252	33.59	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
631.031	37.25	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4491.498	45.06	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8348.430	46.25	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12193.039	46.88	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

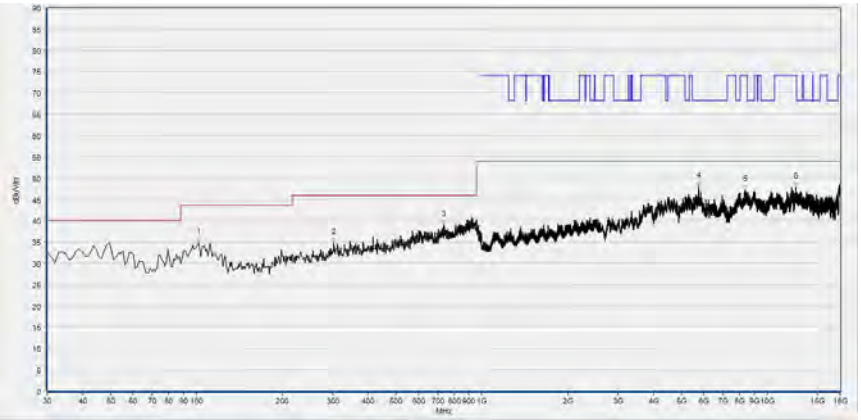


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
35.826	32.99	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
303.814	28.68	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
611.612	32.15	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5649.810	46.40	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8413.123	46.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12140.668	46.54	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

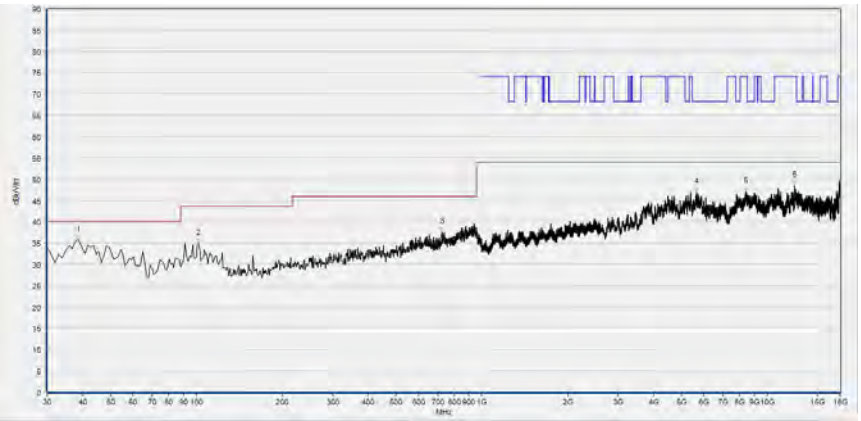
802.11n (HT40) mode

Plot for Channel 38



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
101.852	34.89	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
302.843	34.85	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
732.983	39.02	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5763.793	48.09	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8366.913	47.28	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12608.922	47.90	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

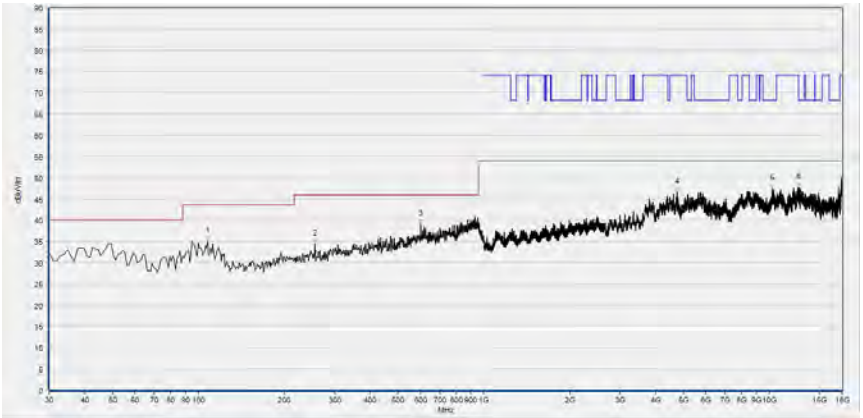
(Antenna Horizontal, 30MHz to 18GHz)



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	35.70	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
101.852	34.85	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
726.186	37.53	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5640.568	46.90	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8425.445	47.01	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12482.617	48.39	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

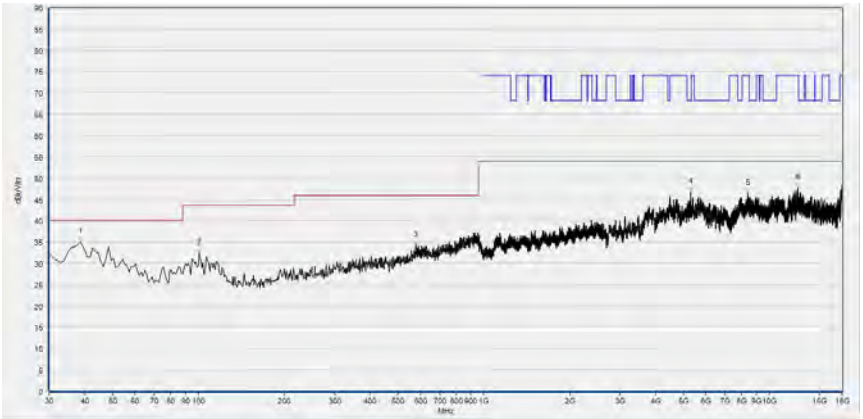
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 46



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
107.678	34.98	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
255.265	34.44	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
601.902	39.06	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4747.189	46.61	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10224.525	47.36	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12673.615	47.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

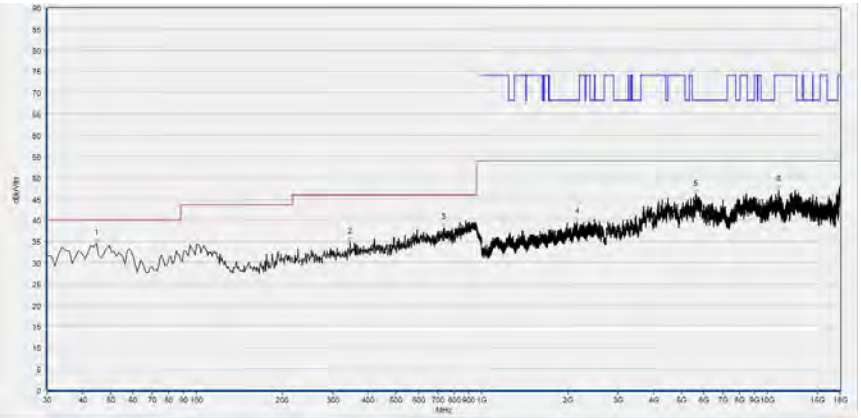
(Antenna Horizontal, 30MHz to 18GHz)



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	34.97	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
100.881	32.35	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
577.628	34.18	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5307.862	46.81	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8416.203	46.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12615.083	47.69	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

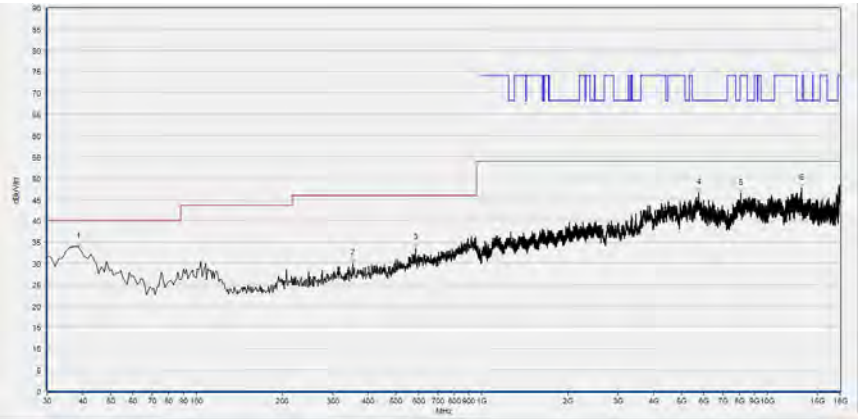
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 54



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
44.565	34.53	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
345.566	34.80	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
732.983	38.18	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2152.918	39.47	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5631.326	46.03	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10963.873	47.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

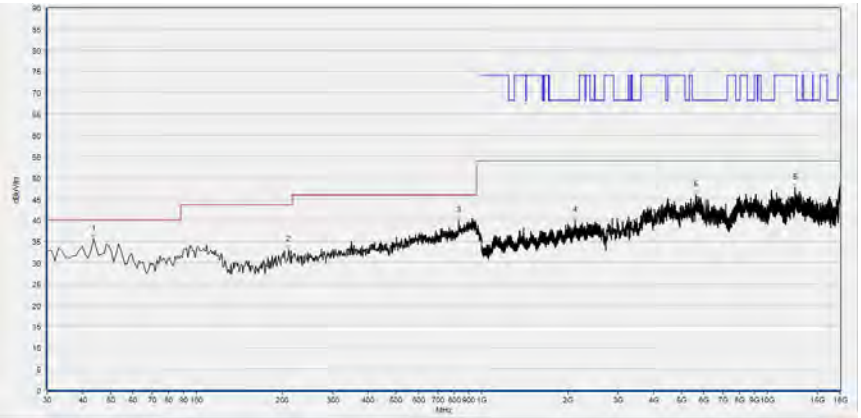
(Antenna Horizontal, 30MHz to 18GHz)



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	33.82	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
353.333	29.97	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
586.366	33.53	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5766.873	46.65	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8068.094	46.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13166.513	47.58	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

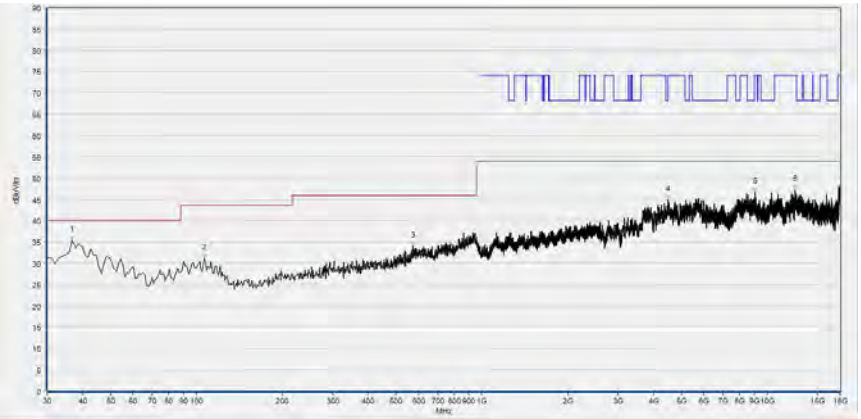
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 62



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	35.52	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
210.601	32.95	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
830.080	39.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2126.242	39.81	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5609.762	45.99	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12485.697	47.66	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

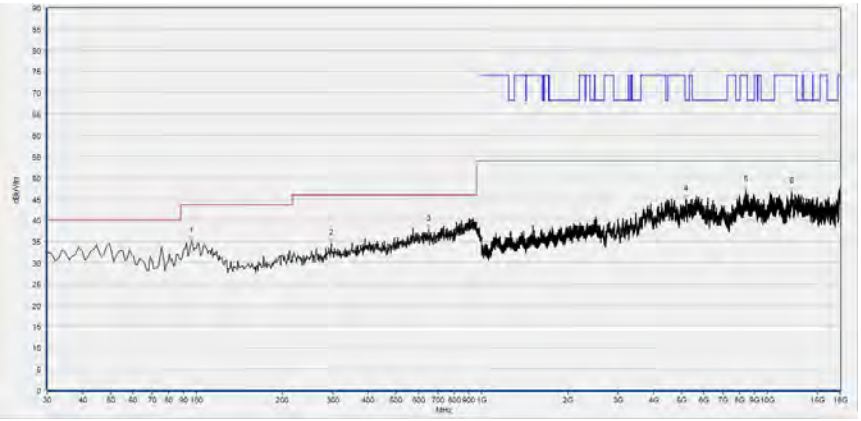
(Antenna Horizontal, 30MHz to 18GHz)



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
36.797	35.32	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
106.707	31.23	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
574.715	33.97	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4500.740	44.88	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
9050.810	46.69	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12488.778	47.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

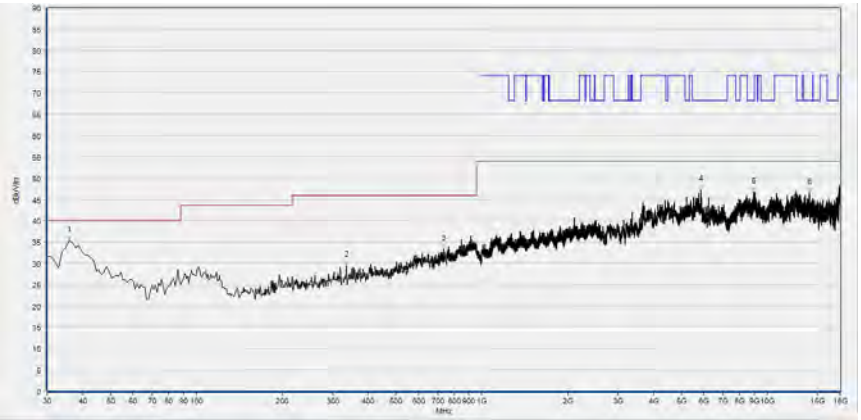
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 102



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
96.026	34.98	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
297.017	34.46	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
652.392	37.83	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5190.798	44.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8416.203	47.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12168.394	46.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

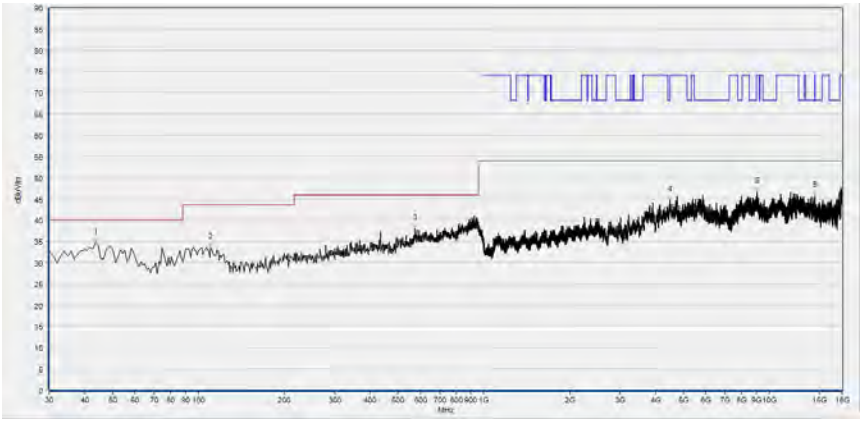
(Antenna Horizontal, 30MHz to 18GHz)



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
35.826	35.29	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
334.885	29.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
736.867	33.40	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5859.292	47.19	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8983.037	46.83	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
14081.456	46.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

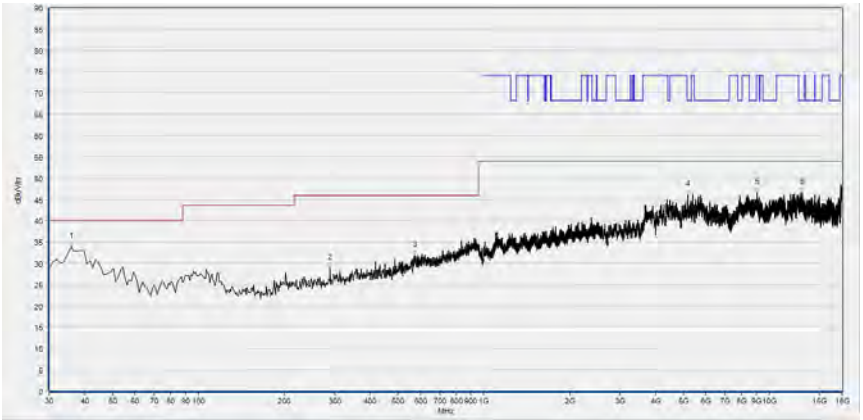
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 126



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	34.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
110.591	33.46	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
573.744	38.03	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4482.256	44.82	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
9053.891	46.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
14423.405	45.74	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

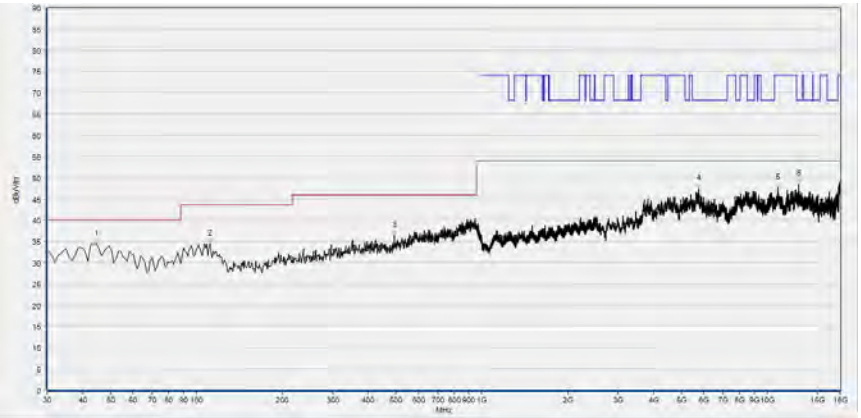
(Antenna Horizontal, 30MHz to 18GHz)



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
35.826	33.79	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
289.249	28.84	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
572.773	31.76	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5187.718	46.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9060.052	46.67	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13071.014	46.54	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

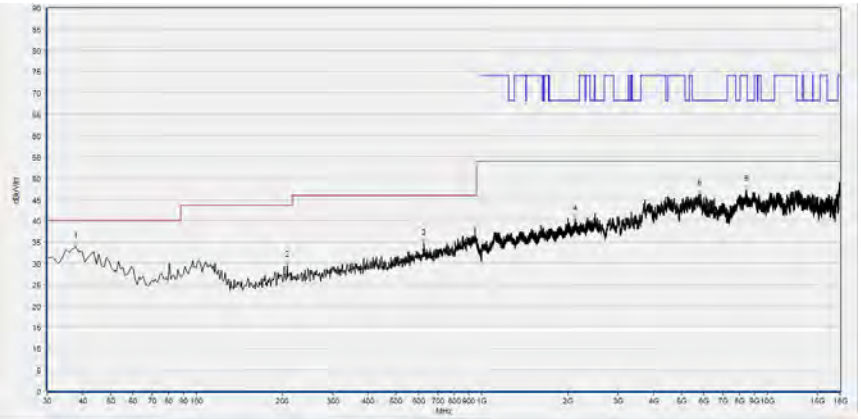
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 142



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
44.565	34.29	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
111.562	34.30	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
494.124	36.31	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5760.712	47.45	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10917.664	47.55	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12876.935	48.48	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

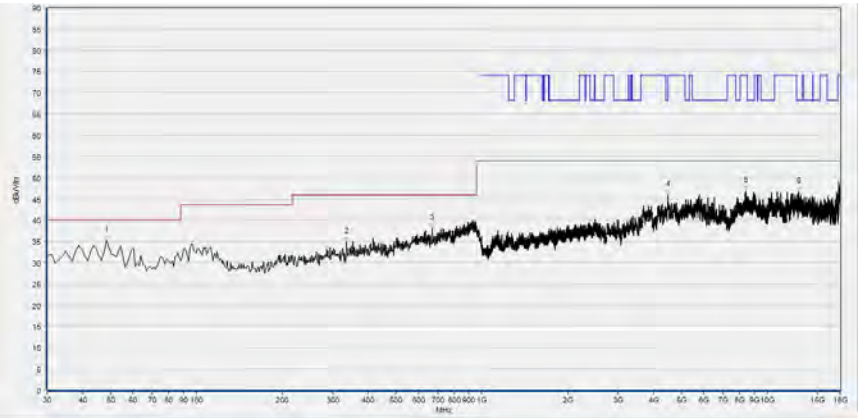
(Antenna Horizontal, 30MHz to 18GHz)



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	33.80	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
207.688	29.54	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
626.176	34.66	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2123.041	40.33	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5776.115	46.24	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8465.493	47.20	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

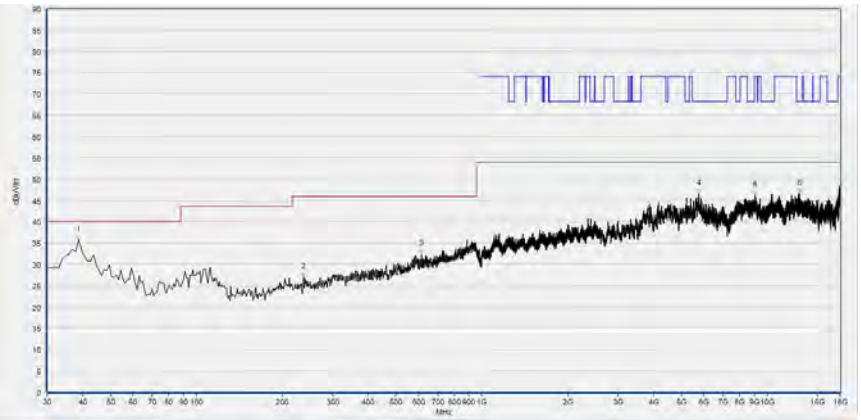
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 151



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
48.448	35.22	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
335.856	34.87	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
671.812	37.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4497.660	45.95	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8428.526	46.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12901.580	46.79	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

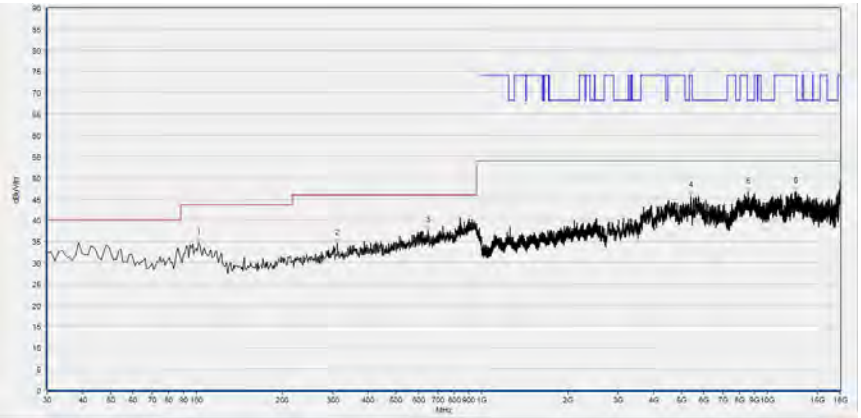
(Antenna Horizontal, 30MHz to 18GHz)



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	35.71	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
236.817	26.94	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
614.525	32.40	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5766.873	46.59	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9053.891	46.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12984.757	46.60	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

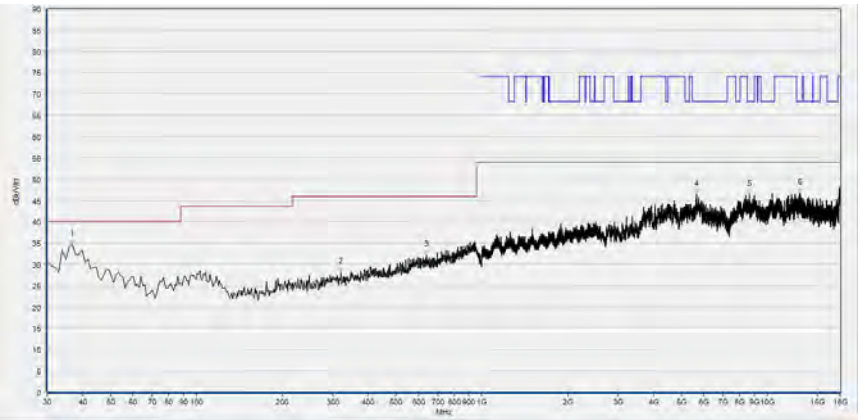
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 159



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
101.852	34.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
311.582	34.57	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
646.567	37.47	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5397.199	45.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8548.670	46.65	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12621.244	46.70	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

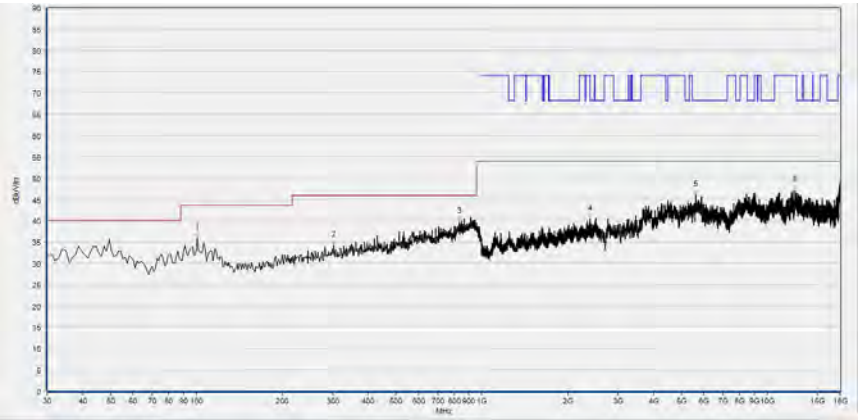


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
36.797	34.70	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
321.291	28.09	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
641.712	32.12	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5668.294	46.48	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8641.088	46.41	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13055.611	46.70	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

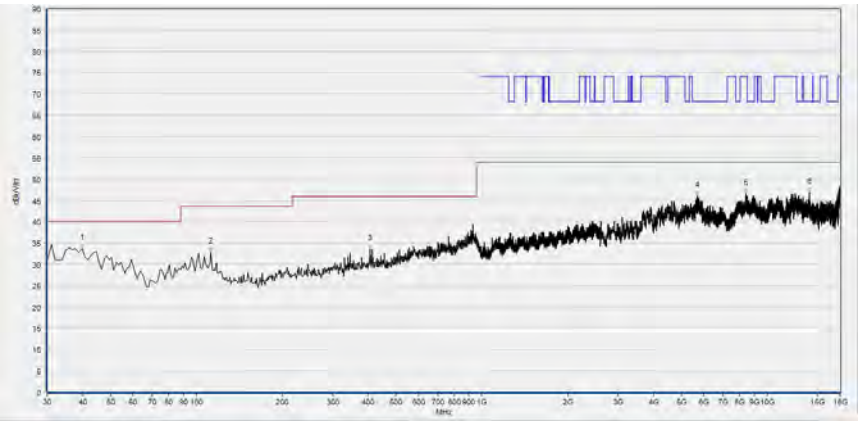
802.11ac (VHT80) Mode

Plot for Channel 42



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
100.881	35.80	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
302.843	34.17	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
832.022	39.77	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2399.400	40.34	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5631.326	46.13	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12513.423	47.07	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

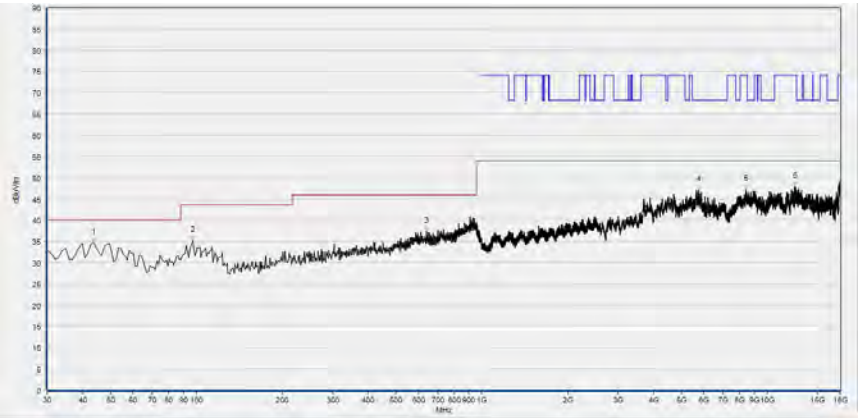
(Antenna Horizontal, 30MHz to 18GHz)



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	33.73	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
112.533	32.79	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
405.766	33.45	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5686.777	46.04	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8428.526	46.62	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
14053.731	46.93	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

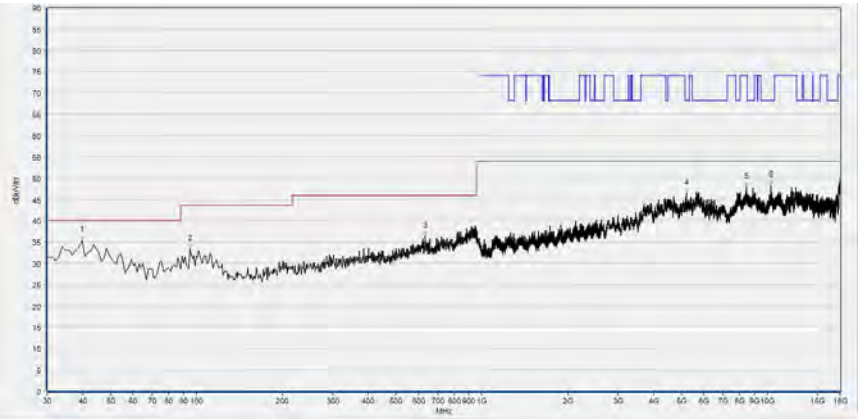
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 58



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	34.66	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
96.997	35.18	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
638.799	37.39	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5766.873	47.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8416.203	47.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12516.503	47.88	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

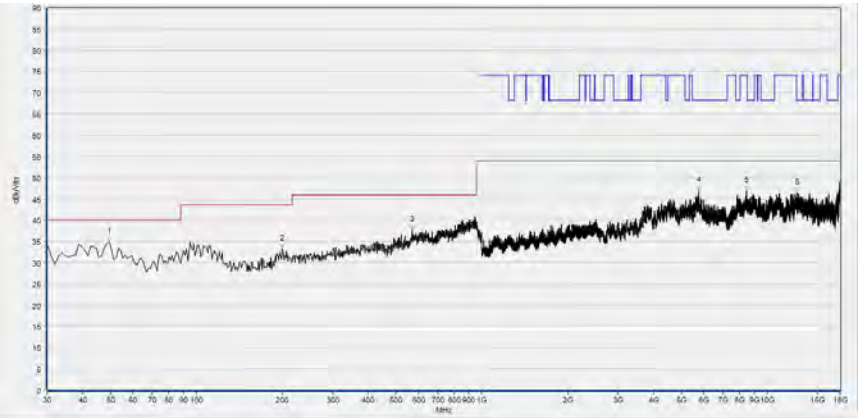
(Antenna Horizontal, 30MHz to 18GHz)



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	35.32	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
95.055	33.30	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
633.944	36.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5200.040	46.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8443.929	47.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10304.621	48.25	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

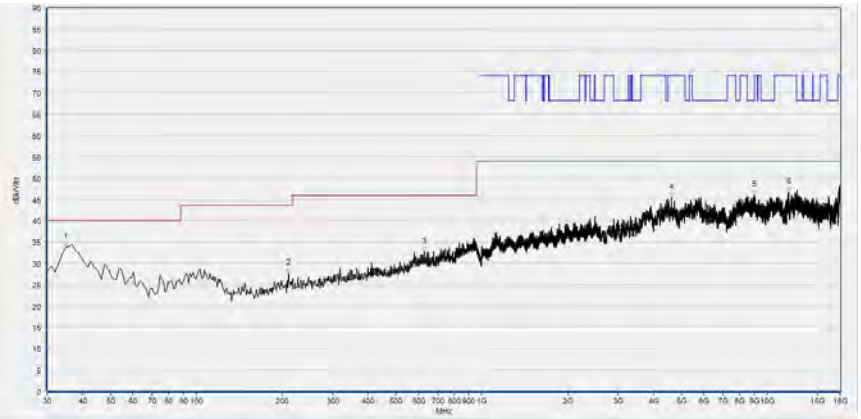
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 106



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
49.419	34.80	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
199.920	33.11	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
570.831	37.76	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5751.470	47.00	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8437.768	46.91	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12744.469	46.38	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

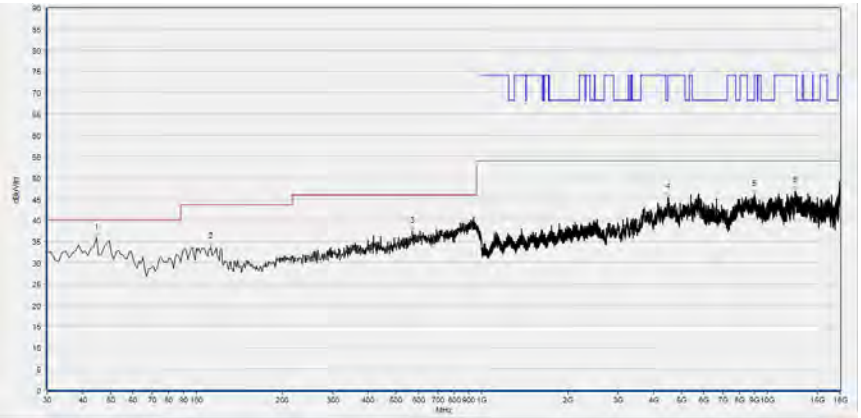
(Antenna Horizontal, 30MHz to 18GHz)



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	33.67	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
210.601	27.71	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
628.118	32.72	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4620.884	45.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
9001.520	46.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11872.655	46.84	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

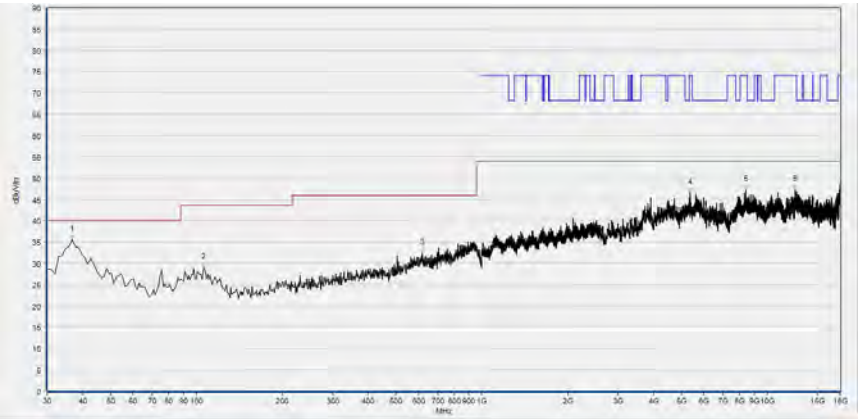
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 138



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
44.565	35.82	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
112.533	33.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
571.802	37.43	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4485.337	45.36	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8995.359	46.14	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12491.858	47.01	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

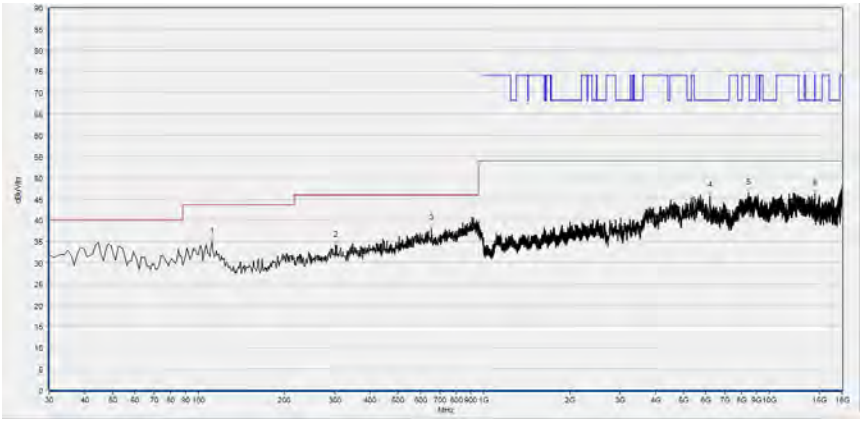
(Antenna Horizontal, 30MHz to 18GHz)



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
36.797	35.49	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
105.736	28.98	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
619.379	32.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5366.393	46.54	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8422.364	47.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12507.261	47.25	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

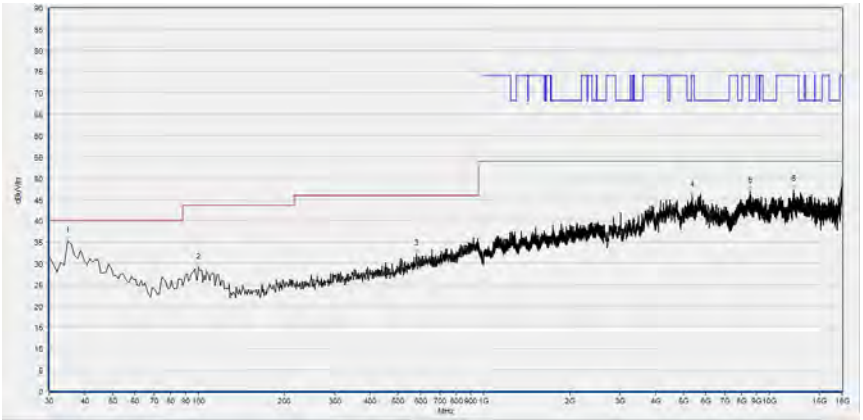
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 155



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
111.562	34.90	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
301.872	33.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
654.334	38.01	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
6201.240	45.75	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8453.171	46.50	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
14426.485	46.27	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



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	35.16	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
99.910	29.00	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
579.570	32.23	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5381.796	45.91	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8579.476	46.96	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12149.910	47.23	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Peak Output Power	±2.22dB
Power Spectral Density	±2.22dB
Bandwidth	±5%
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Attenuator 1	N/A	10dB	Resnet	N/A	N/A
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2021.03.25	2022.03.24
				2022.03.01	2023.02.28
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2021.03.25	2022.03.24
				2022.03.01	2023.02.28
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	12108015	DTL-003S101	YOMA	2020.10.26	2021.10.25

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2021.03.09	2022.03.08
				2022.03.03	2023.03.02
LISN	812744	NSLK 8127	Schwarzbeck	2021.03.09	2022.03.08
				2022.03.03	2023.03.02
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2021.07.21	2022.07.20
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Tonscend	V2.5.77.0418
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

4.4Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	BBHA9170 #774	BBHA 9170	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2019.02.14	2022.02.13
				2022.02.11	2025.02.10
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Coaxial Cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-5150-5350	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-5470-5725	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-5725-5850	Wainwright	2021.07.16	2022.07.15

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

END OF REPORT