

**802.11ac (VHT20) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5180	4.76	4.29	0.08	7.62	8.44	PASS
5220	4.26	4.31		7.38		
5240	3.74	4.99		7.50		
5260	3.83	5.14		7.62		
5300	4.59	5.39		8.10		
5320	5.00	5.59		8.40		
5500	4.42	4.93		7.77		
5600	4.42	5.61		8.15		
5720	4.63	4.30		7.56		
5720	4.63	4.30		7.56		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT A	ANT B				
5720	1.87	1.43	0.08	4.75	27.44	PASS
5745	1.59	1.47		4.62		
5785	2.07	1.55		4.91		
5825	2.22	1.87		5.14		
Note: Directional gain = 2.9dBi +10log(2) = 5.91dBi<6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band.						



B. Test Plot:



(Channel 36, 5180MHz, 802.11ac (VHT20), ANT1)



(Channel 44, 5220MHz, 802.11ac (VHT20), ANT1)



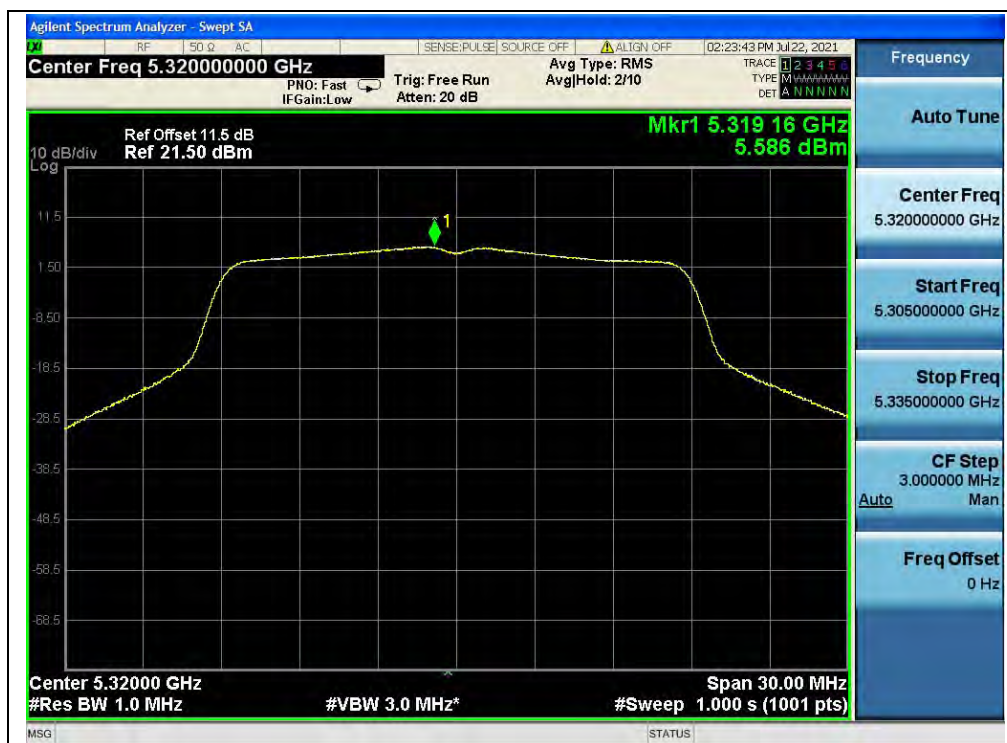
(Channel 48, 5240MHz, 802.11ac (VHT20), ANT1)



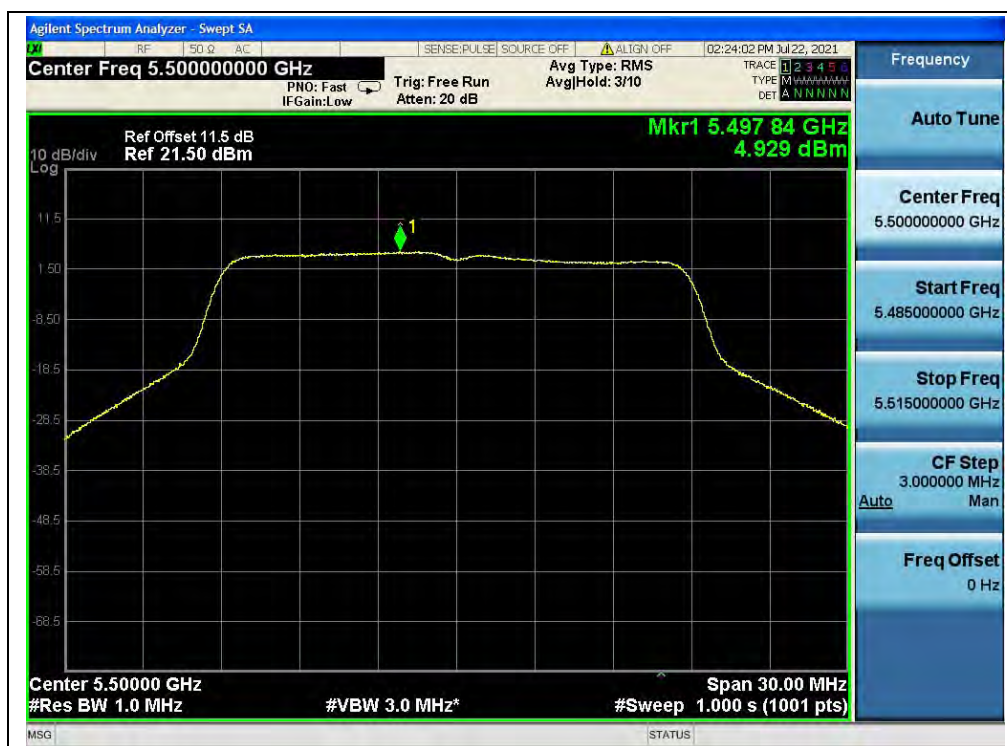
(Channel 52, 5260MHz, 802.11ac (VHT20), ANT1)



(Channel 60, 5300MHz, 802.11ac (VHT20), ANT1)



(Channel 64, 5320MHz, 802.11ac (VHT20), ANT1)



(Channel 100, 5500MHz, 802.11ac (VHT20), ANT1)



(Channel 120, 5600MHz, 802.11ac (VHT20), ANT1)



(Channel 144, 5720MHz, 802.11ac (VHT20), ANT1)



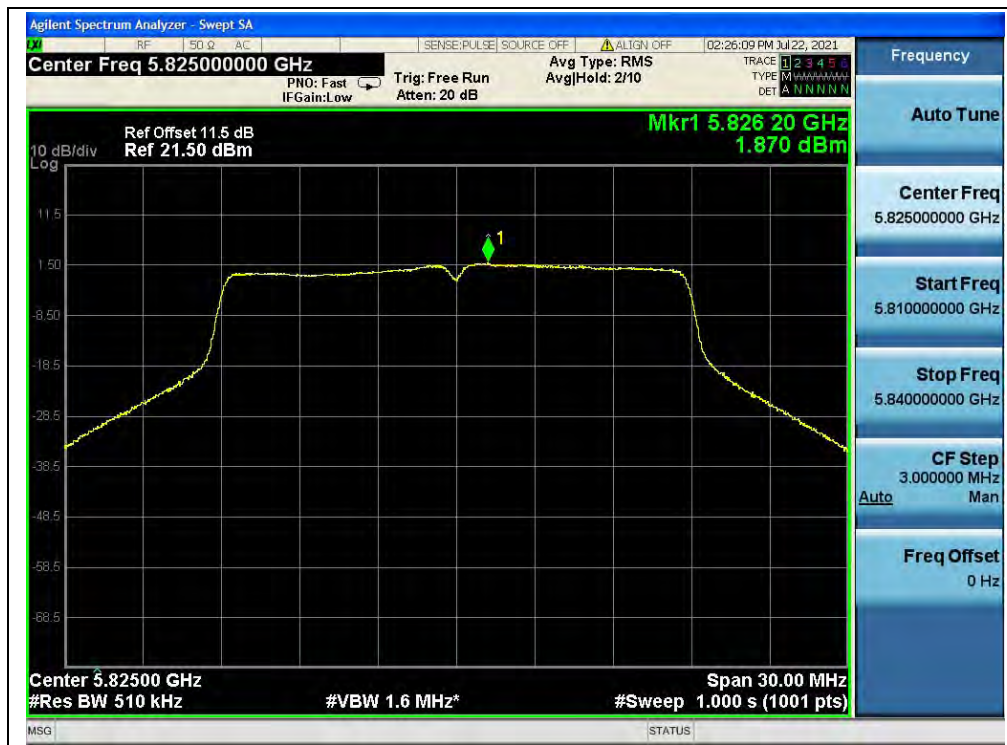
(Channel 144, 5720MHz, 802.11ac(VHT20), ANT1)



(Channel 149, 5745MHz, 802.11ac (VHT20), ANT1)



(Channel 157, 5785MHz, 802.11ac (VHT20), ANT1)



(Channel 165, 5825MHz, 802.11ac (VHT20), ANT1)

**802.11ac (VHT40) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5190	2.07	2.22	0.16	5.32	8.44	PASS
5230	1.64	2.16		5.08		
5270	1.30	2.56		5.15		
5310	2.49	3.08		5.97		
5510	1.92	2.73		5.51		
5630	1.99	3.04		5.72		
5710	2.16	2.00		5.25		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT A	ANT B				
5710	-0.83	-0.85	0.16	2.33	27.44	PASS
5755	-0.93	-0.92		2.25		
5795	-0.56	-0.92		2.43		
Note: Directional gain = 2.9dBi +10log(2) = 5.91dBi<6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band.						



B.Test Plot:



(Channel 38, 5190MHz, 802.11ac (VHT40), ANT1)



(Channel 46, 5230MHz, 802.11ac (VHT40), ANT1)



(Channel 54, 5270MHz, 802.11ac (VHT40), ANT1)



(Channel 62, 5310MHz, 802.11ac (VHT40), ANT1)



(Channel 102, 5510MHz, 802.11ac (VHT40), ANT1)



(Channel 126, 5630MHz, 802.11ac (VHT40), ANT1)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT1)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT1)



(Channel 151, 5755MHz, 802.11ac (VHT40), ANT1)



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

**802.11ac (VHT80) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5210	-1.99	-0.76	0.29	1.97	8.44	PASS
5290	-1.53	-1.15		1.96		
5530	-1.69	-0.60		2.19		
5610	-1.50	-1.02		2.05		
5690	-1.29	-0.39		2.48		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT A	ANT B				
5690	-4.04	-3.39	0.29	-0.40	27.44	PASS
5775	-4.37	-4.07		-0.92		

Note: Directional gain = 2.9dBi + 10log(2) = 5.91dBi < 6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band.

B.Test Plot:

(Channel 42, 5210MHz, 802.11ac (VHT80), ANT1)



(Channel 58, 5290MHz, 802.11ac (VHT80), ANT1)



(Channel 106, 5530MHz, 802.11ac (VHT80), ANT1)



(Channel 122, 5610MHz, 802.11ac (VHT80), ANT1)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT1)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT1)



(Channel 155, 5775MHz, 802.11ac (VHT80), ANT1)



2.6. Frequency Stability

2.6.1. Requirement

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

2.6.2. Test Procedure

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

2.6.3. Test Result

U-NII-1 (Ch. 36) 5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.85	+20(Ref)	23	4.440
100%		-30	31	5.985
100%		-20	29	5.598
100%		-10	26	5.019
100%		0	25	4.826
100%		+10	22	4.247
100%		+20	20	3.861
100%		+30	23	4.440
100%		+40	26	5.019
100%		+50	23	4.440
115%	4.40	+20	28	5.405
85%	3.55	+20	30	5.792



U-NII-2A (Ch. 52)				
5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.85	+20(Ref)	18	3.422
100%		-30	22	4.183
100%		-20	25	4.753
100%		-10	27	5.133
100%		0	19	3.612
100%		+10	17	3.232
100%		+20	21	3.992
100%		+30	26	4.943
100%		+40	30	5.703
100%		+50	25	4.753
115%	4.40	+20	19	3.612
85%	3.55	+20	21	3.992

U-NII-2C (Ch. 100)				
5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.85	+20(Ref)	21	3.818
100%		-30	25	4.545
100%		-20	30	5.455
100%		-10	29	5.273
100%		0	22	4.000
100%		+10	19	3.455
100%		+20	23	4.182
100%		+30	32	5.818
100%		+40	35	6.364
100%		+50	25	4.545
115%	4.40	+20	27	4.909
85%	3.55	+20	30	5.455



U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.85	+20(Ref)	22	3.829
100%		-30	26	4.526
100%		-20	27	4.700
100%		-10	21	3.655
100%		0	30	5.222
100%		+10	25	4.352
100%		+20	26	4.526
100%		+30	26	4.526
100%		+40	28	4.874
100%		+50	28	4.874
115%	4.40	+20	31	5.396
85%	3.55	+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 50 μ H/50 Ω line impedance stabilization network (LISN).

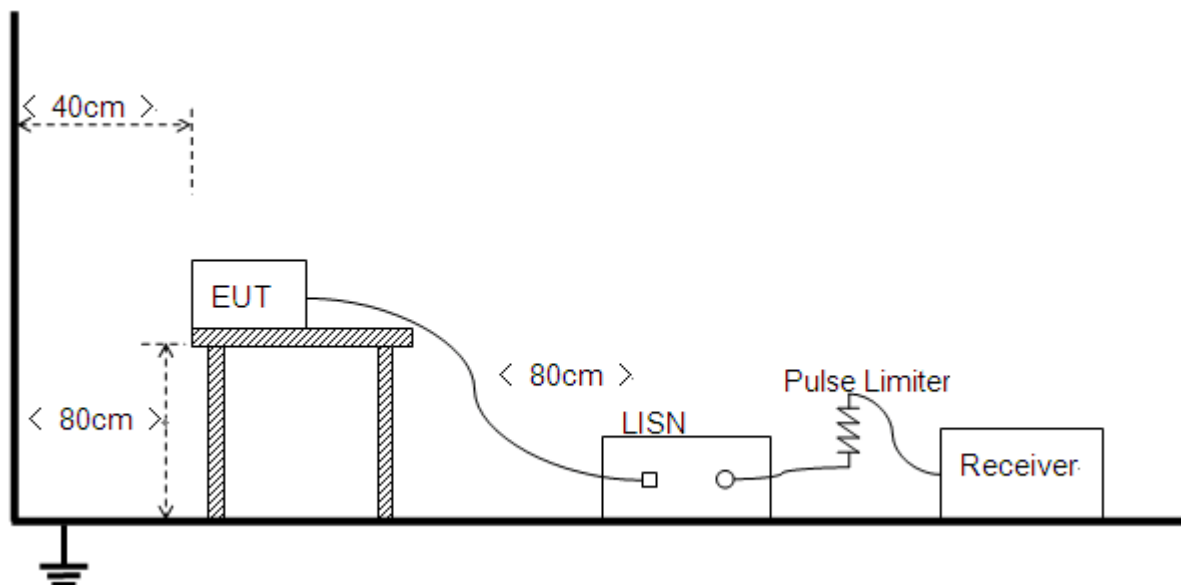
Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- The lower limit shall apply at the band edges.
- 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/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+Adaptor+Earphone +WIFI TX

Test Voltage: AC 120V/60Hz

The measurement results are obtained as below:

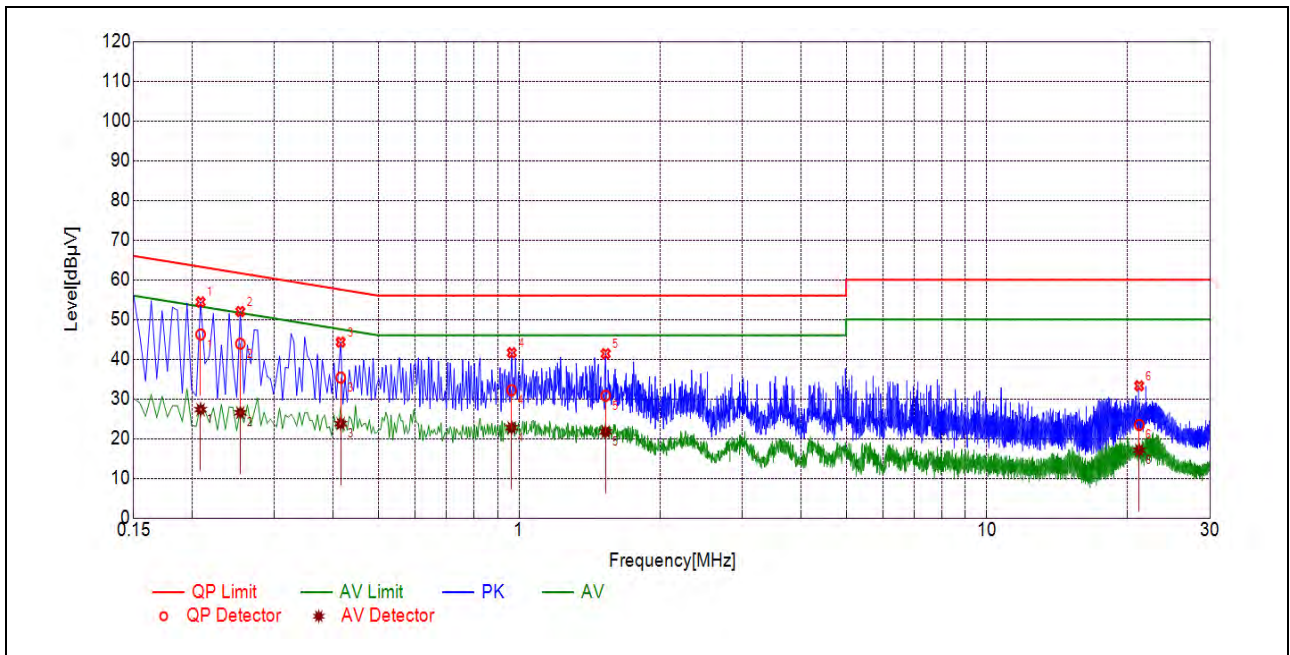
$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

A_{Factor} : Voltage division factor of LISN

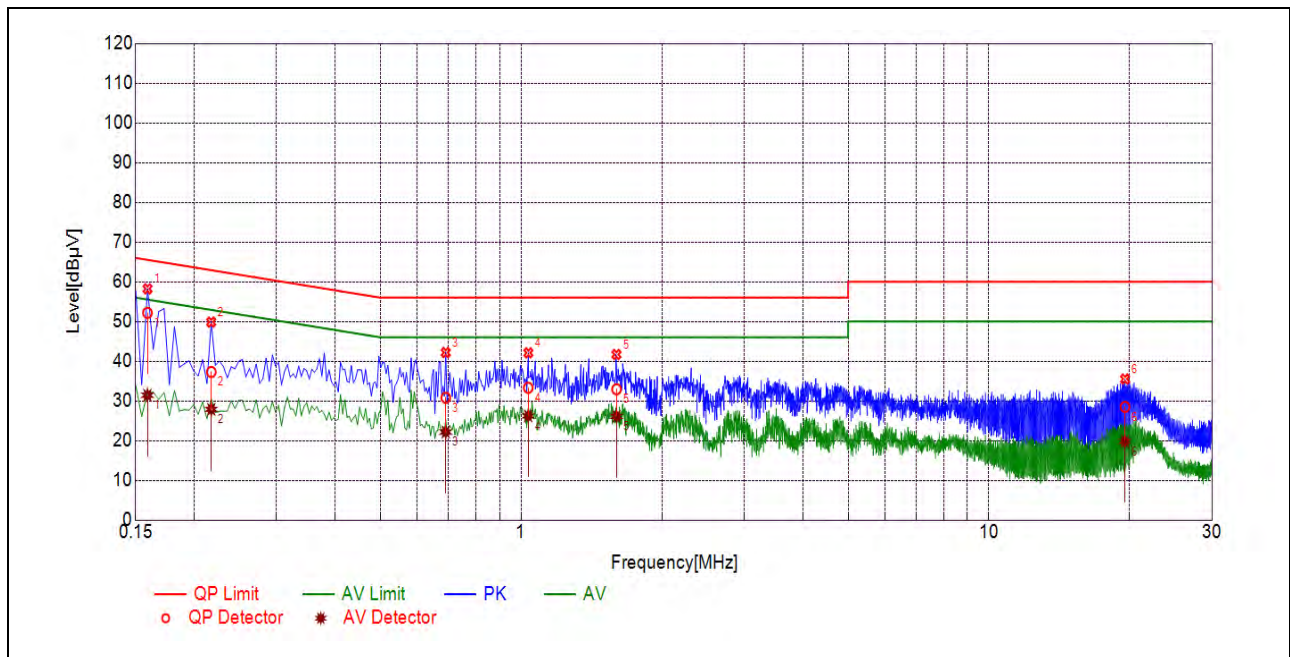


B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2085	46.23	27.32	63.26	53.26	Line	PASS
2	0.2535	43.89	26.52	61.64	51.64		PASS
3	0.4155	35.35	23.74	57.54	47.54		PASS
4	0.9637	32.22	22.74	56.00	46.00		PASS
5	1.5308	30.81	21.70	56.00	46.00		PASS
6	21.1676	23.47	17.11	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	0.1589	52.18	31.44	65.52	55.52	Neutral	PASS
2	0.2176	37.29	27.88	62.91	52.91		PASS
3	0.6900	30.80	22.15	56.00	46.00		PASS
4	1.0355	33.31	26.22	56.00	46.00		PASS
5	1.5992	32.93	26.12	56.00	46.00		PASS
6	19.5380	28.51	19.82	60.00	50.00		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);

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

where P is the EIRP in Watts

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

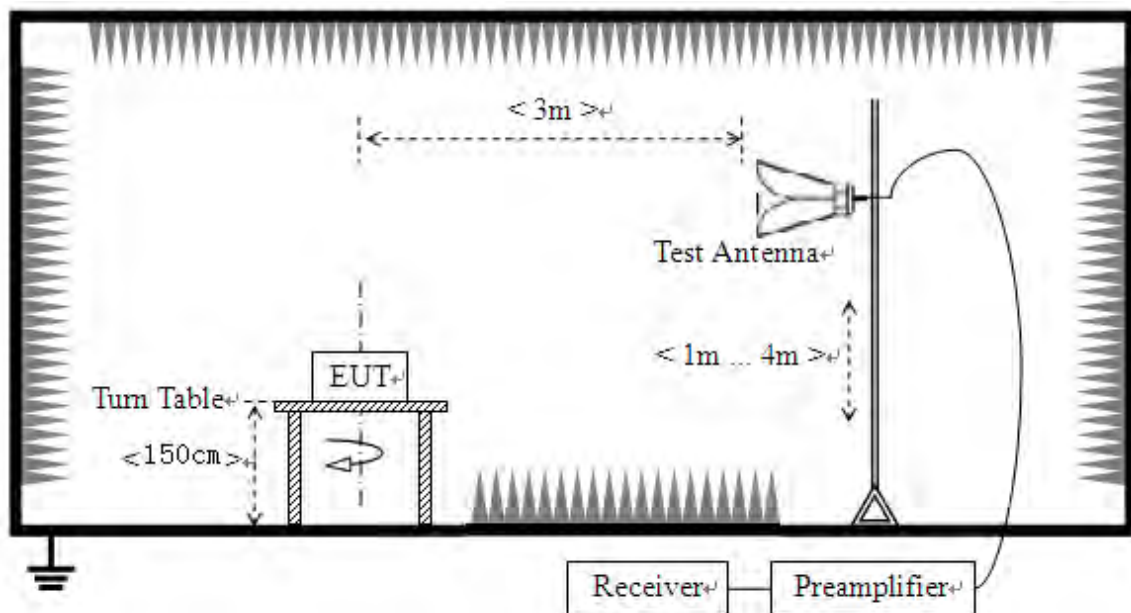
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following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

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	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:

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

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.

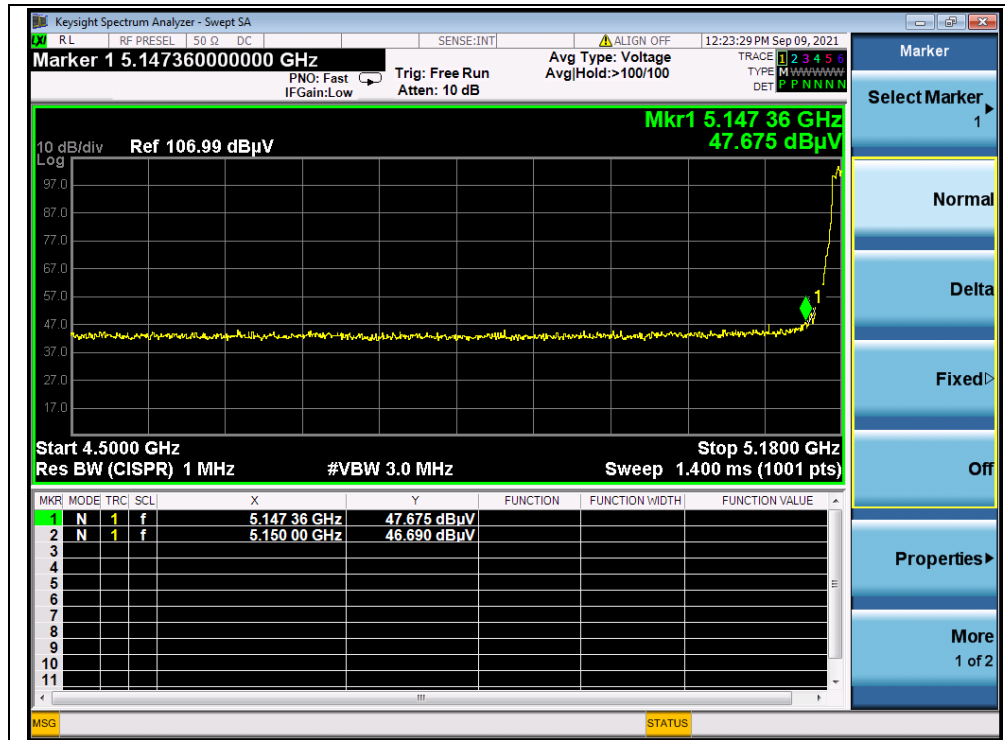
802.11a Mode

A.Test Verdict:

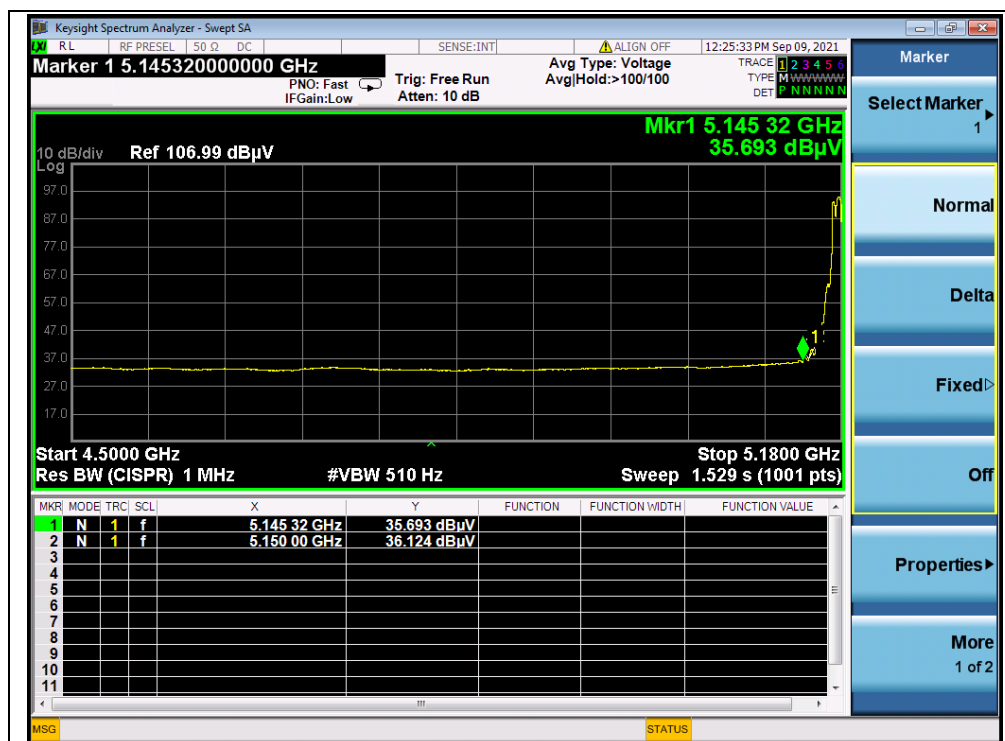
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
36	5147.36	PK	47.68	-19.54	32.20	60.34	74	PASS
36	5150.00	AV	36.12	-19.54	32.20	48.78	54	PASS
64	5352.48	PK	46.61	-18.80	32.20	60.01	74	PASS
64	5350.00	AV	34.76	-18.80	32.20	48.16	54	PASS
100	5465.63	PK	45.42	-19.20	32.20	58.42	68.23	PASS
100	5470.00	AV	35.50	-19.20	32.20	48.50	54	PASS
144	5802.60	PK	46.91	-19.20	32.20	59.91	68.23	PASS
144	5748.90	AV	37.44	-19.20	32.20	50.44	54	PASS
149	5725.00	PK	56.08	-19.01	32.20	69.27	122.23	PASS
165	5850.00	PK	44.34	-19.01	32.20	57.53	122.23	PASS



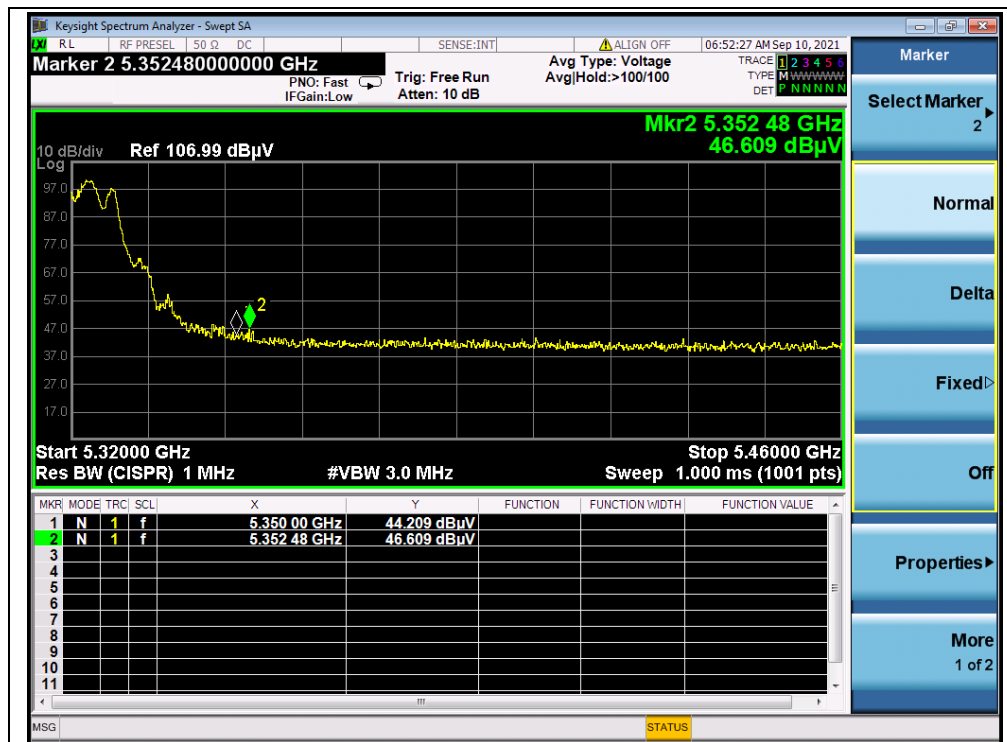
B.Test Plot:



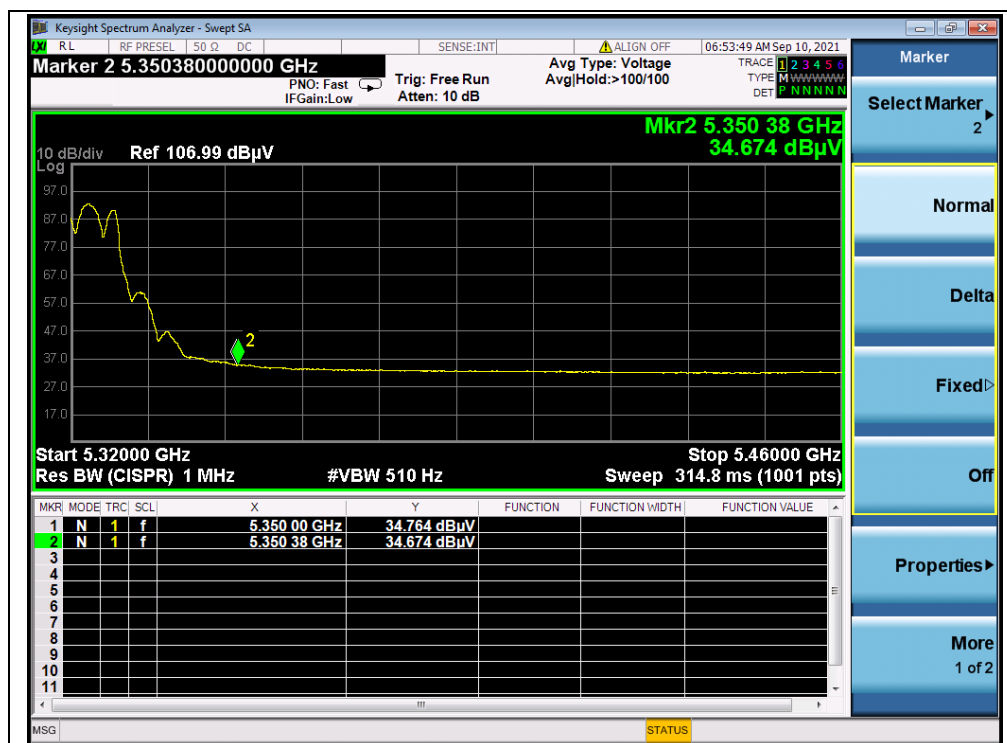
(PEAK, Channel 36, 802.11a)



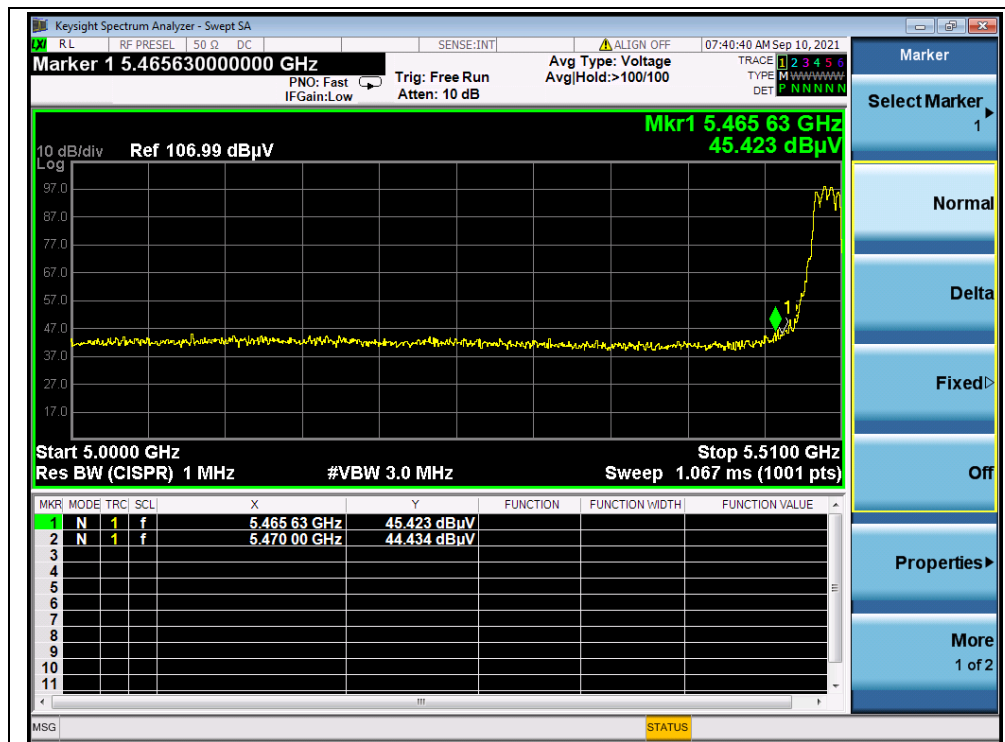
(AVERAGE, Channel 36, 802.11a)



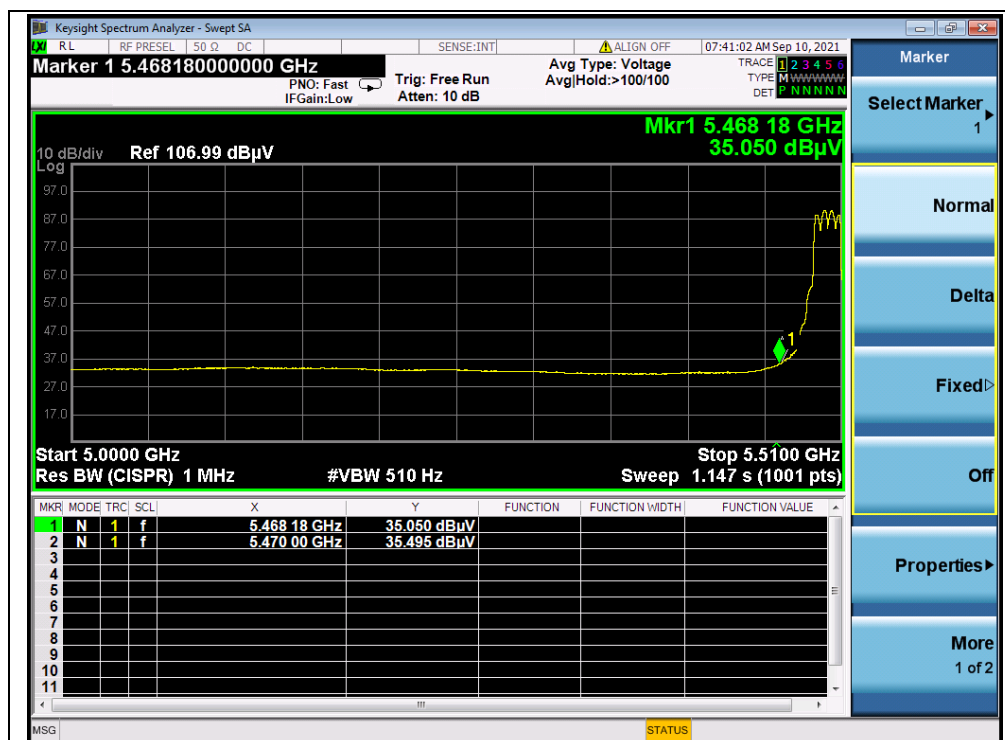
(PEAK, Channel 64, 802.11a)



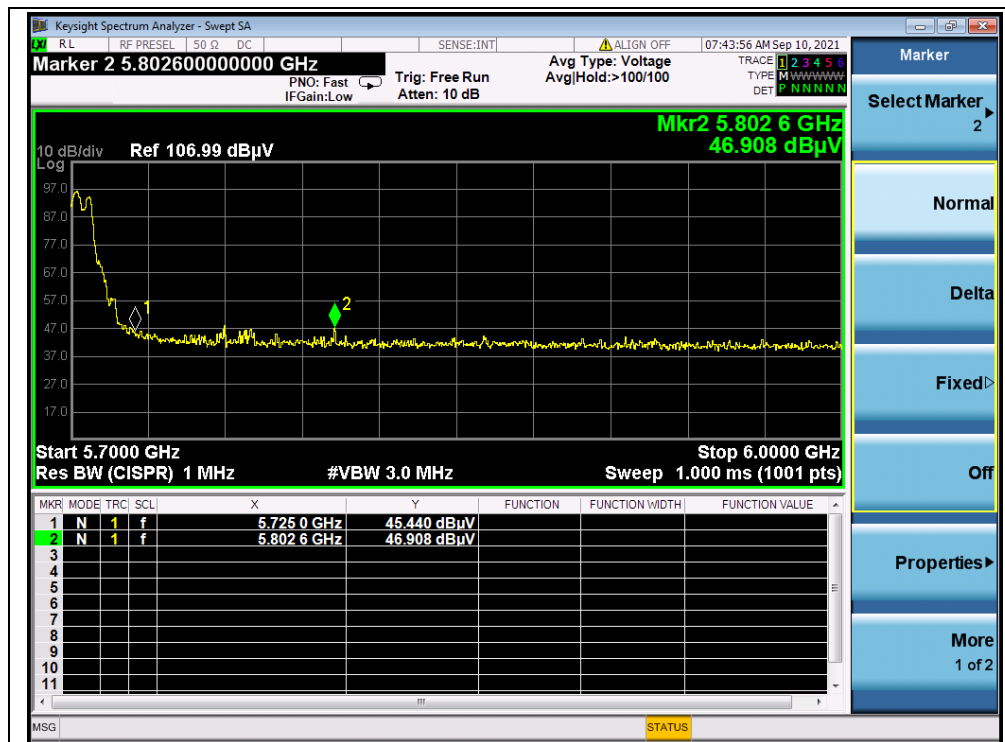
(AVERAGE, Channel 64, 802.11a)



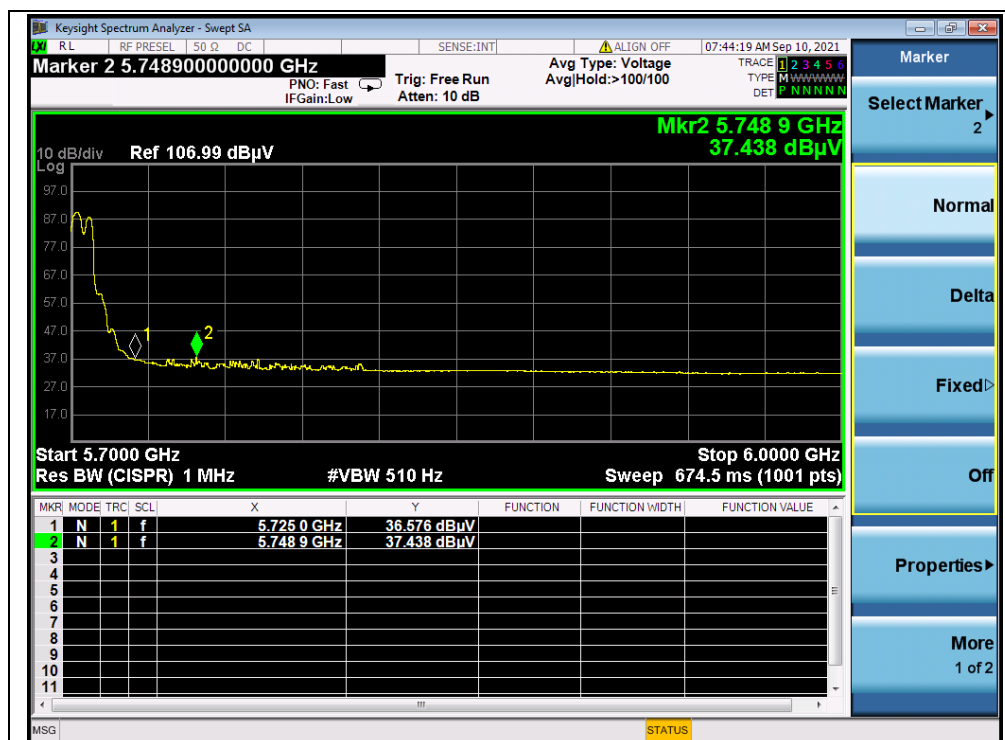
(PEAK, Channel100, 802.11a)



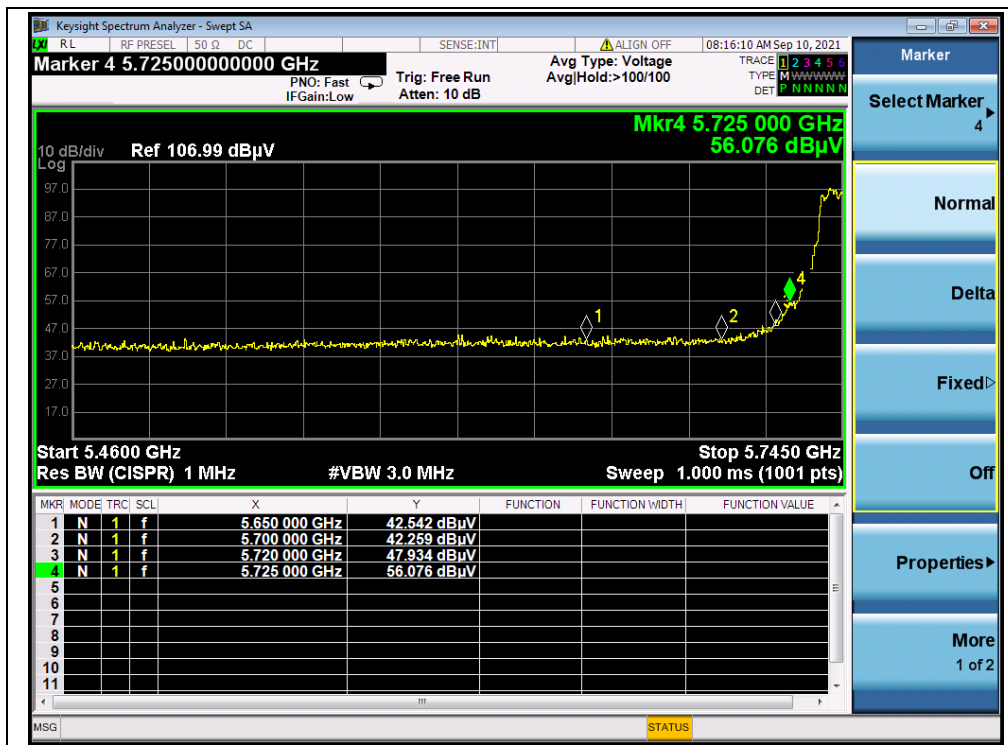
(AVERAGE, Channel 100, 802.11a)



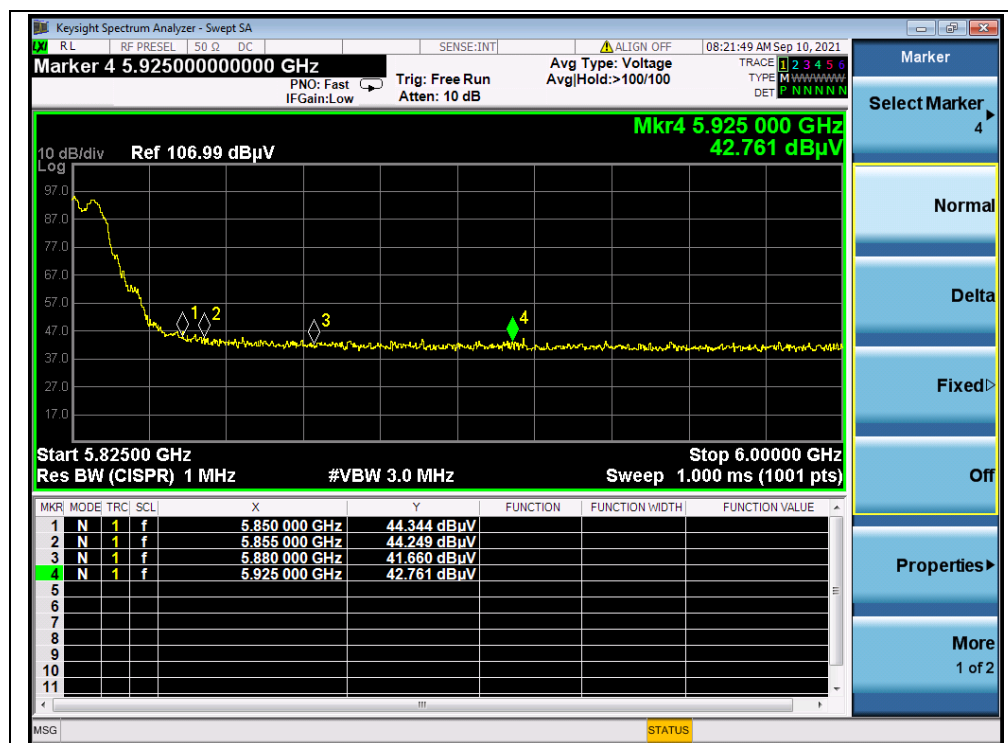
(PEAK, Channel 144, 802.11a)



(AVERAGE, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)



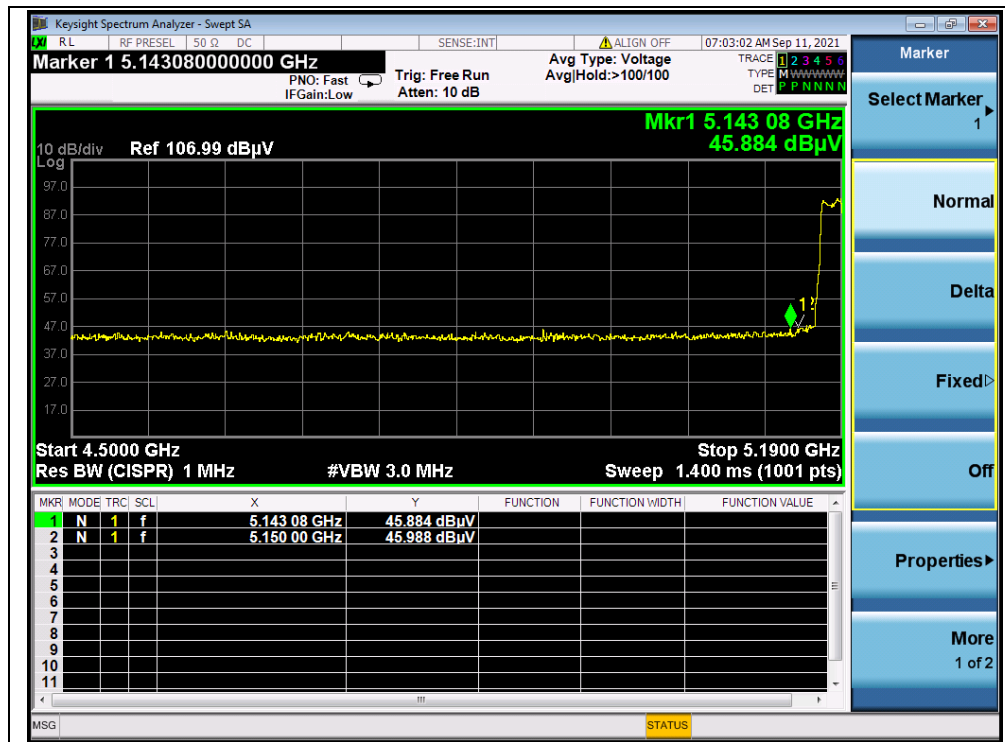
(PEAK, Channel 165, 802.11a)

**802.11n (HT40) Mode****A.Test Verdict:**

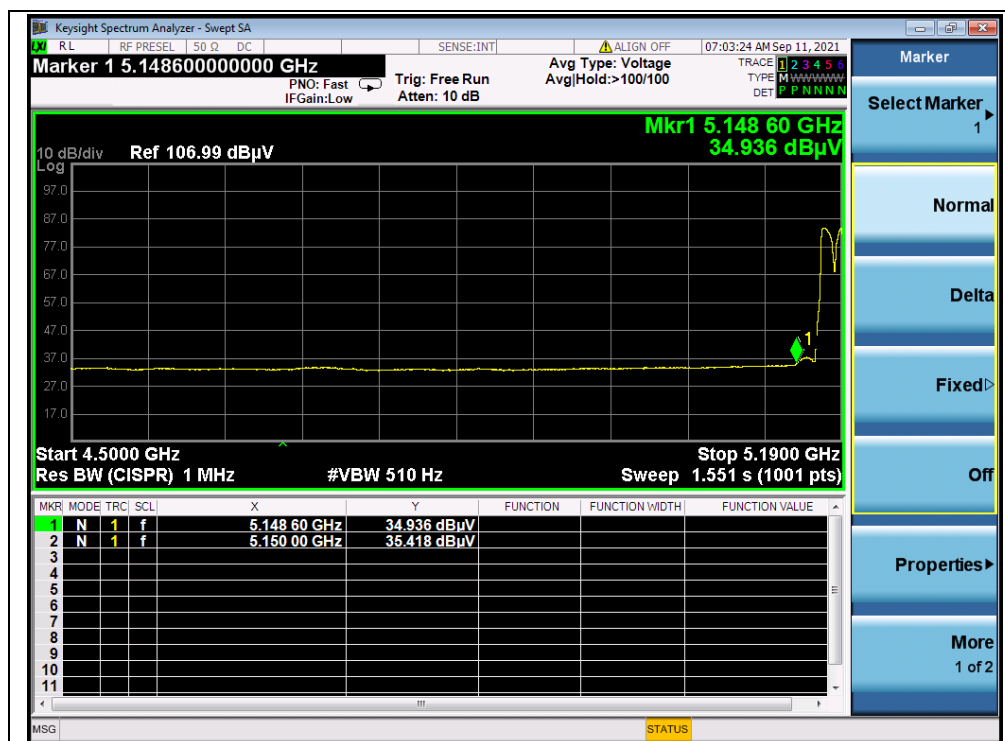
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
38	5150.00	PK	45.99	-19.54	32.20	58.65	74	PASS
38	5150.00	AV	35.42	-19.54	32.20	48.08	54	PASS
62	5350.00	PK	45.64	-18.80	32.20	59.04	74	PASS
62	5350.00	AV	34.82	-18.80	32.20	48.22	54	PASS
102	5284.07	PK	46.06	-19.20	32.20	59.06	68.23	PASS
102	5470.00	AV	35.57	-19.20	32.20	48.57	54	PASS
142	5750.85	PK	44.87	-19.20	32.20	57.87	68.23	PASS
142	5725.00	AV	35.82	-19.20	32.20	48.82	54	PASS
151	5725.00	PK	57.02	-19.01	32.20	70.21	122.23	PASS
159	5850.000	PK	45.66	-19.01	32.20	58.85	122.23	PASS



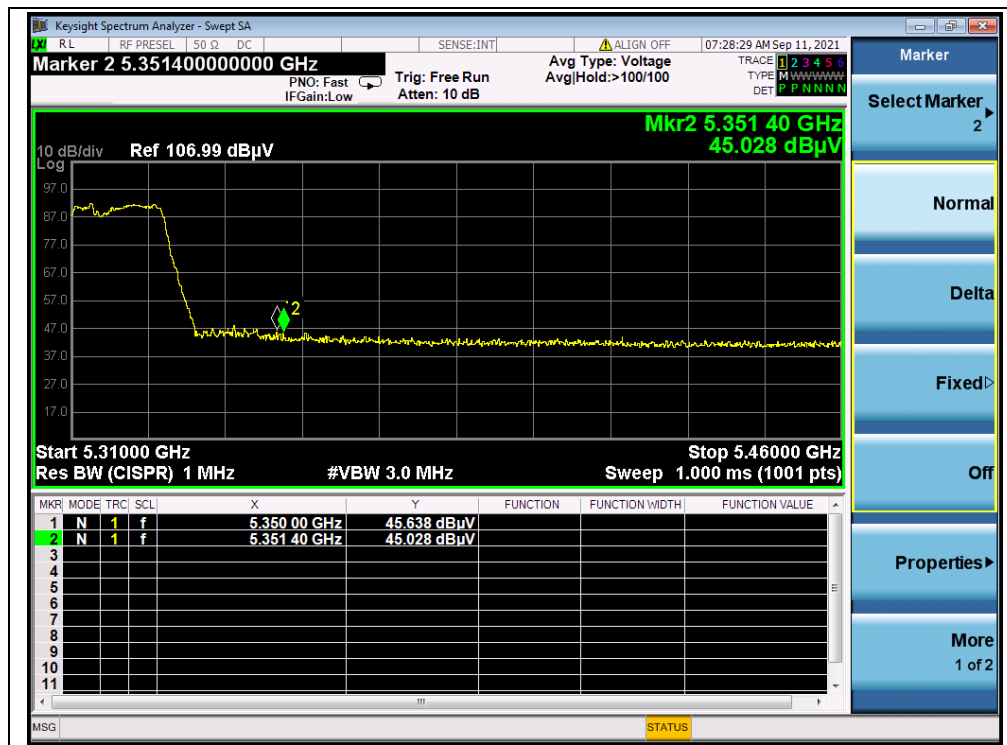
B.Test Plot:



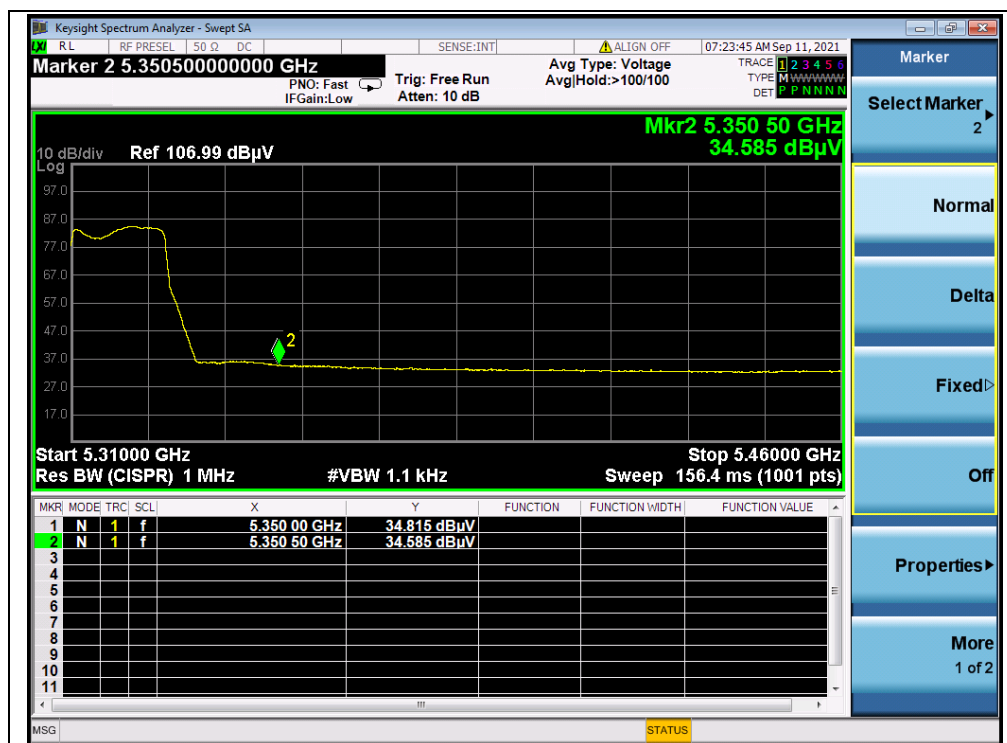
(PEAK, Channel 38, 802.11n (HT40))



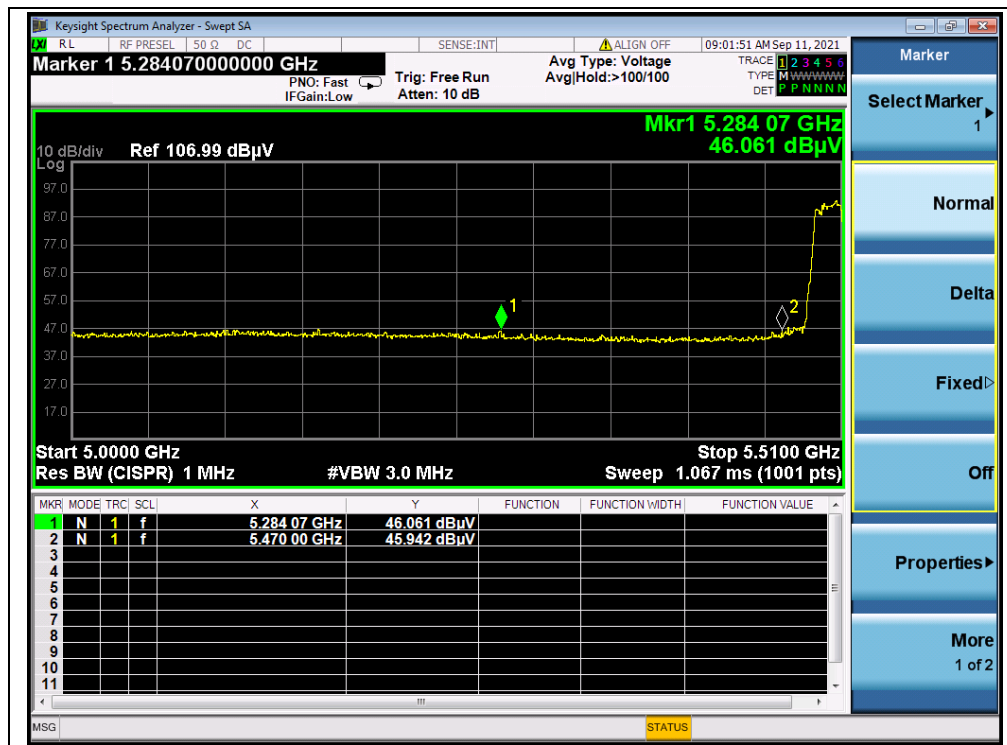
(AVERAGE, Channel 38, 802.11n (HT40))



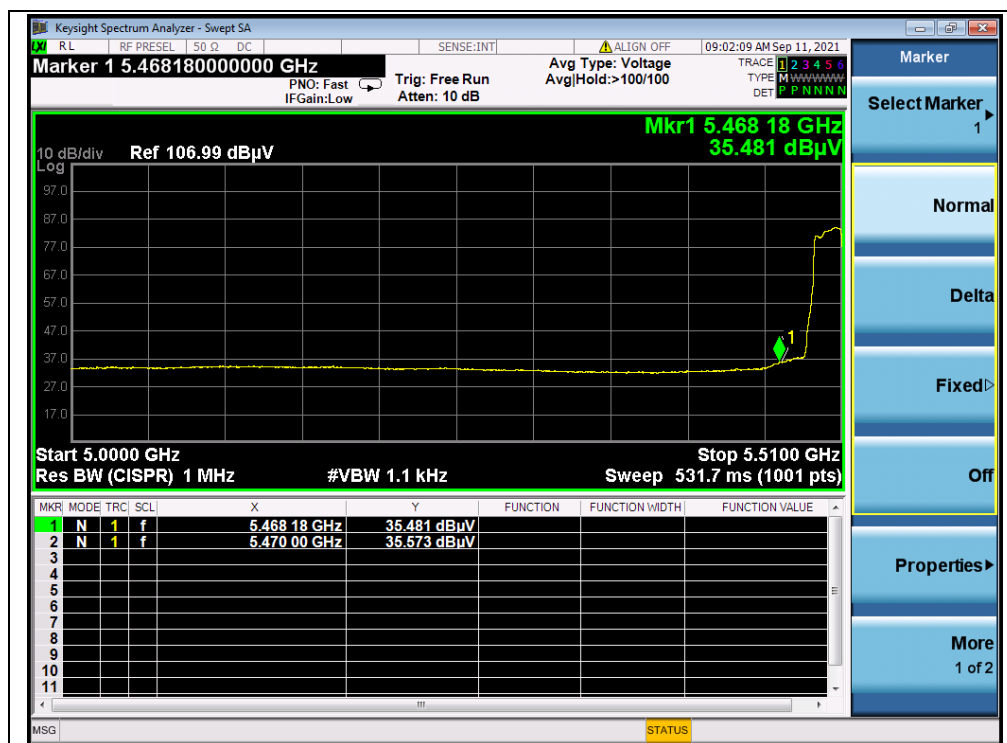
(PEAK, Channel 62, 802.11n (HT40))



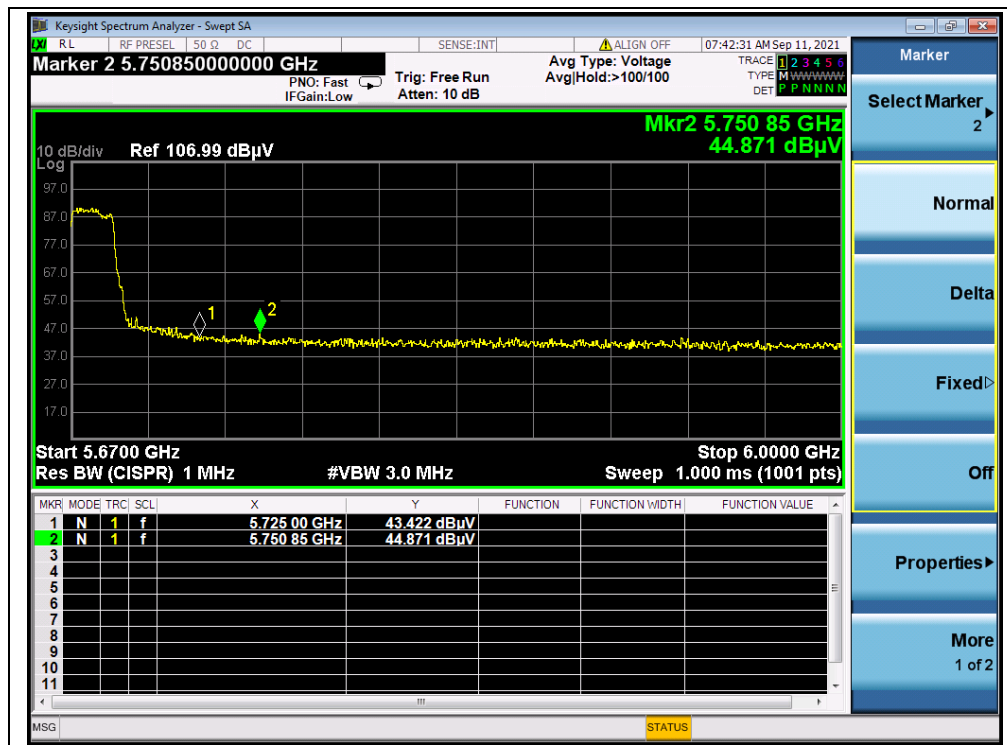
(AVERAGE, Channel 62, 802.11n (HT40))



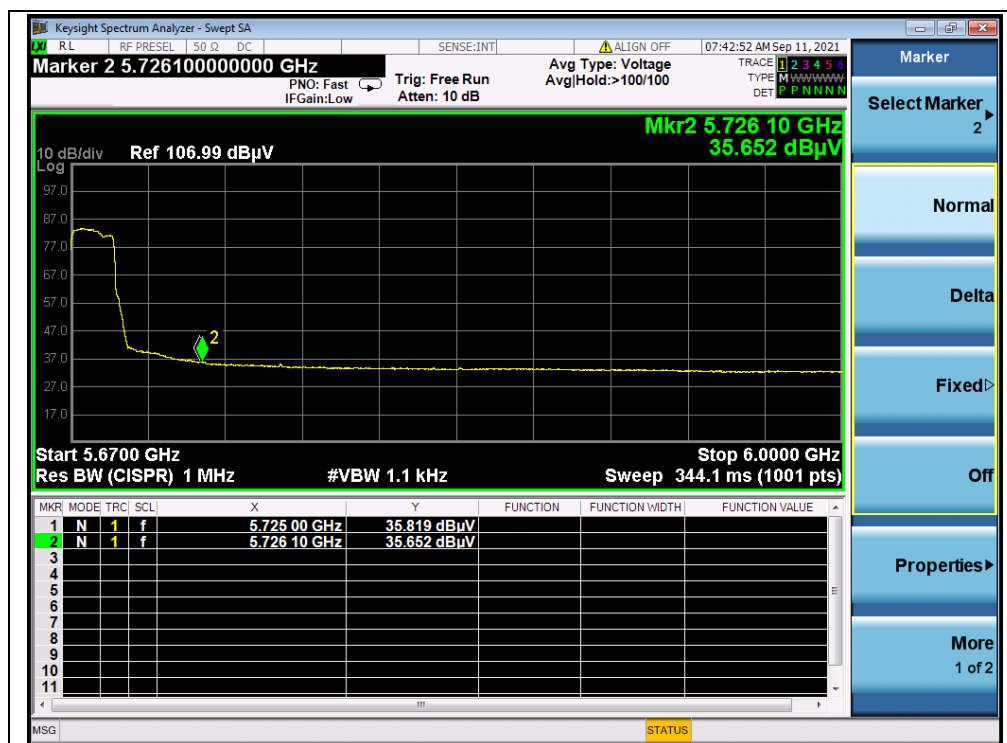
(PEAK, Channel 102, 802.11n (HT40))



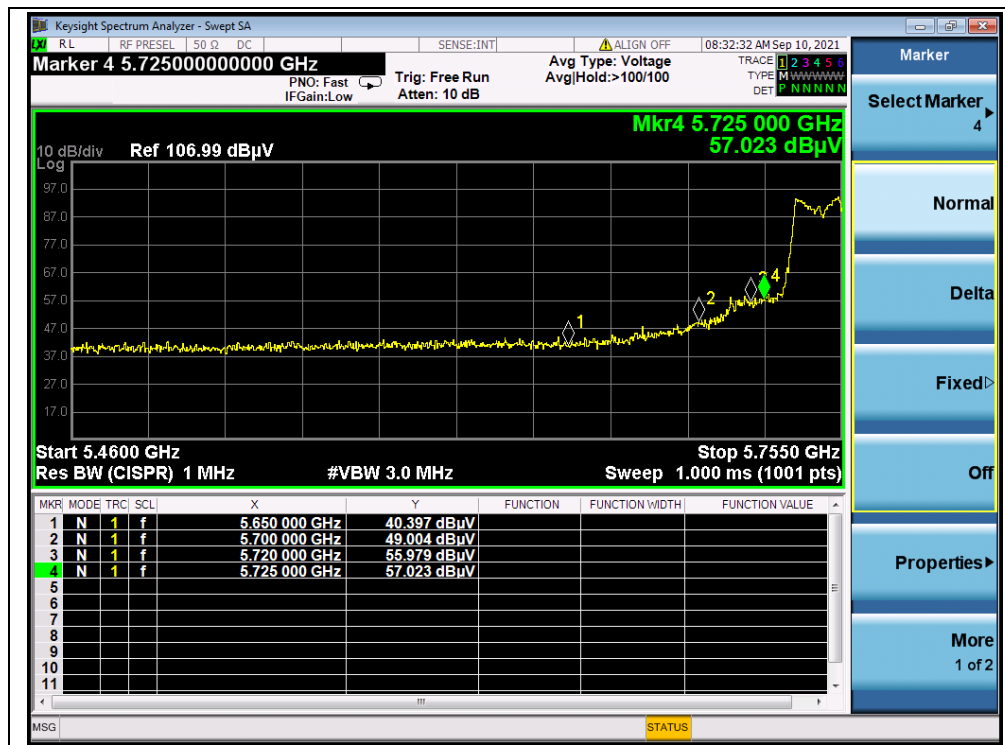
(AVERAGE, Channel 102, 802.11n (HT40))



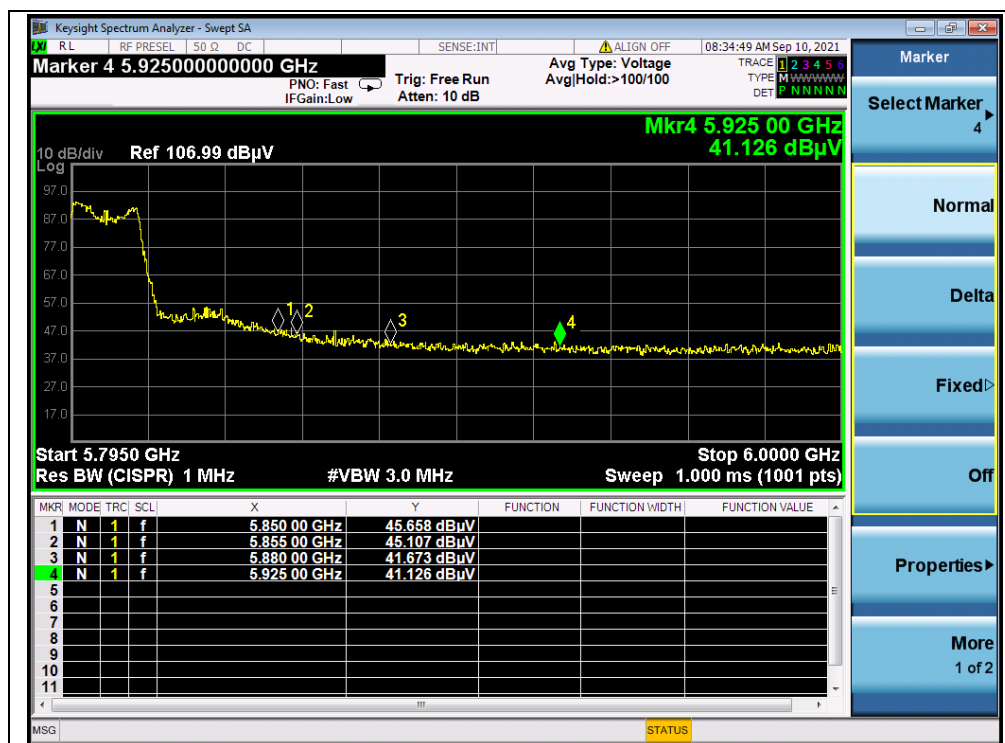
(PEAK, Channel 142, 802.11n (HT40))



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



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



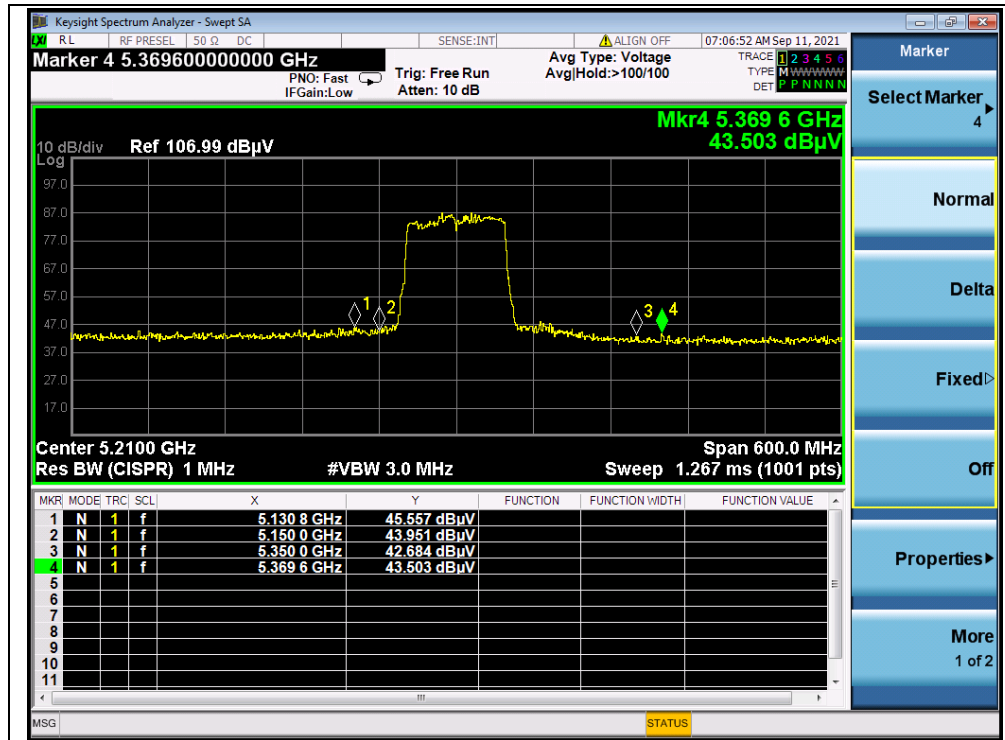
(PEAK, Channel 159, 802.11n (HT40))

**802.11ac (VHT80) Mode****A.Test Verdict:**

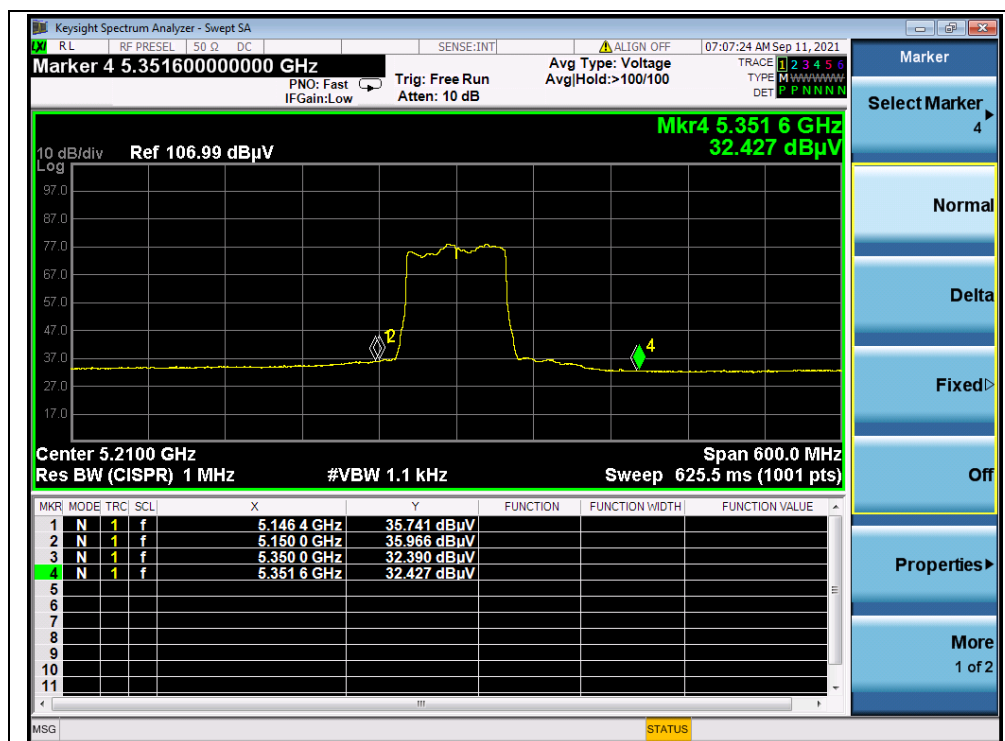
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
42	5130.80	PK	45.56	-19.54	32.2	58.22	74	PASS
42	5150.00	AV	35.97	-19.54	32.2	48.63	54	PASS
58	5350.00	PK	48.34	-18.8	32.2	61.74	74	PASS
58	5350.00	AV	36.87	-18.8	32.2	50.27	54	PASS
106	5462.16	PK	46.09	-19.2	32.2	59.09	68.23	PASS
106	5470.00	AV	36.78	-19.2	32.2	49.78	54	PASS
138	5731.68	PK	45.85	-19.2	32.2	58.85	68.23	PASS
138	5745.33	AV	34.70	-19.2	32.2	47.70	54	PASS
155	5720.00	PK	59.14	-19.01	32.2	72.33	110.83	PASS
155	5850.00	PK	50.49	-19.01	32.2	63.68	122.23	PASS



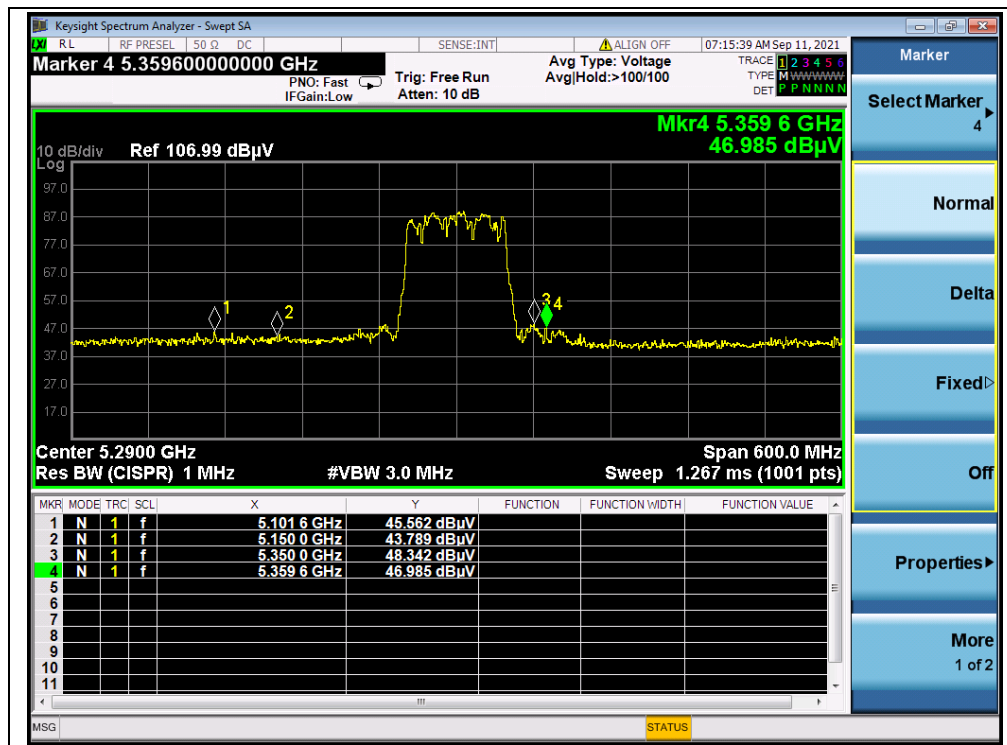
B.Test Plot:



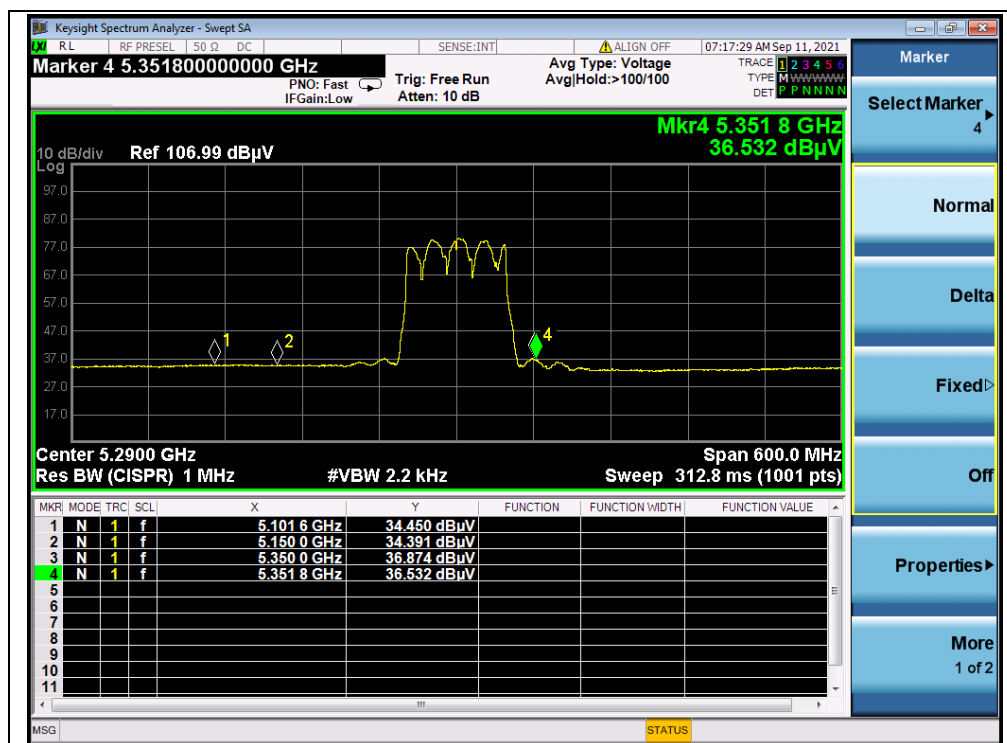
(PEAK, Channel 42, 802.11ac (VHT80))



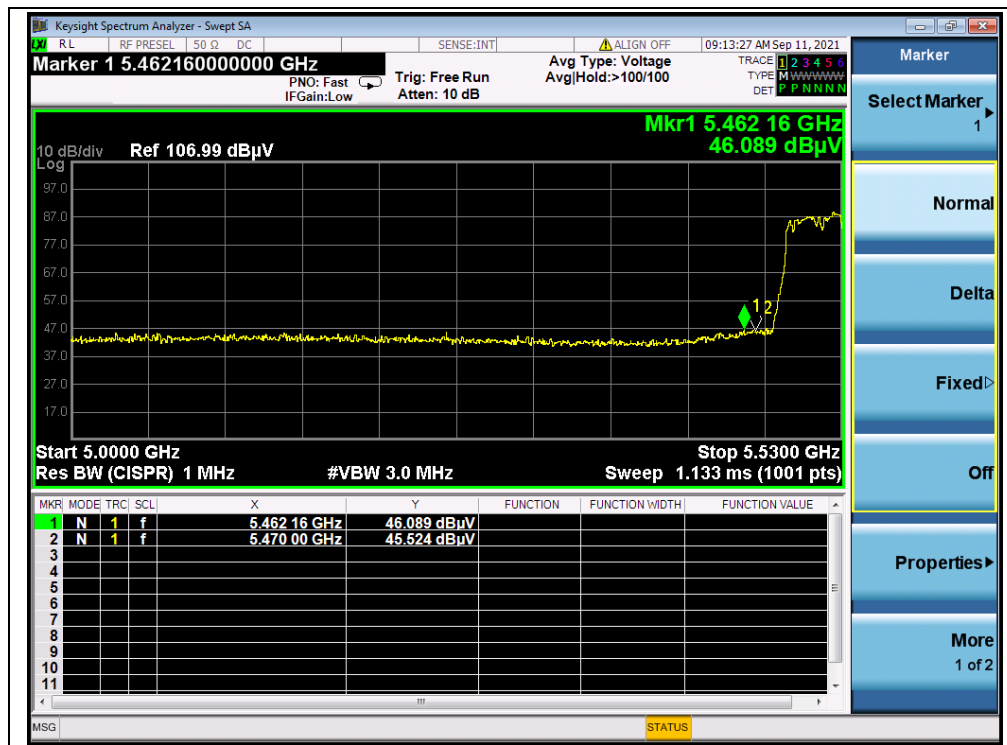
(AVERAGE, Channel 42, 802.11ac (VHT80))



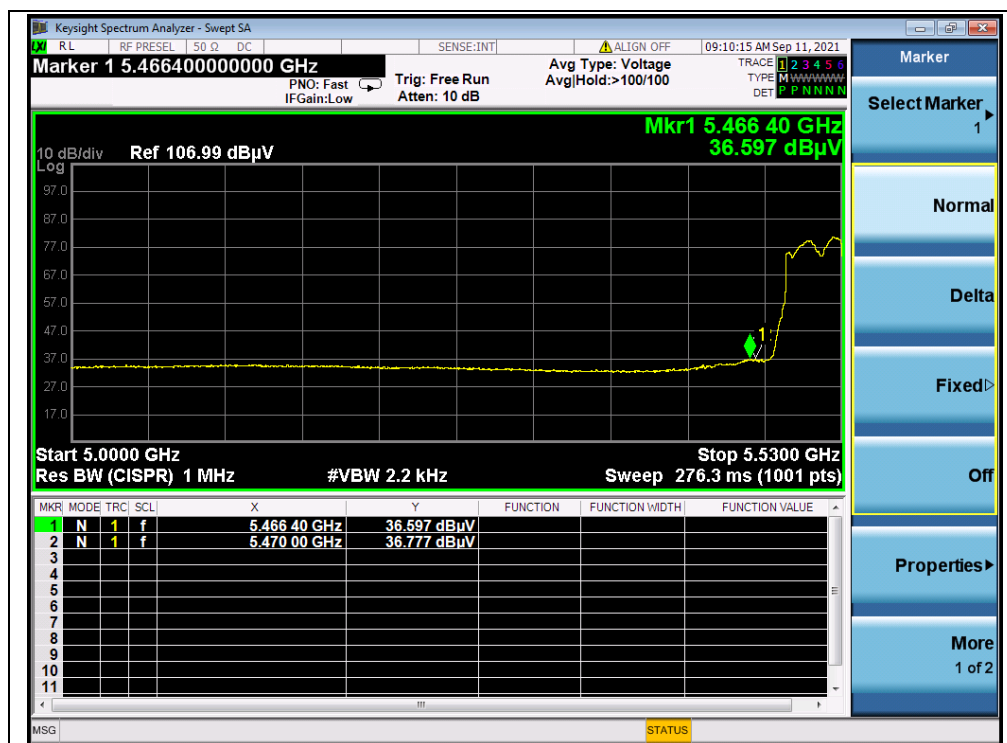
(PEAK, Channel 58, 802.11ac (VHT80))



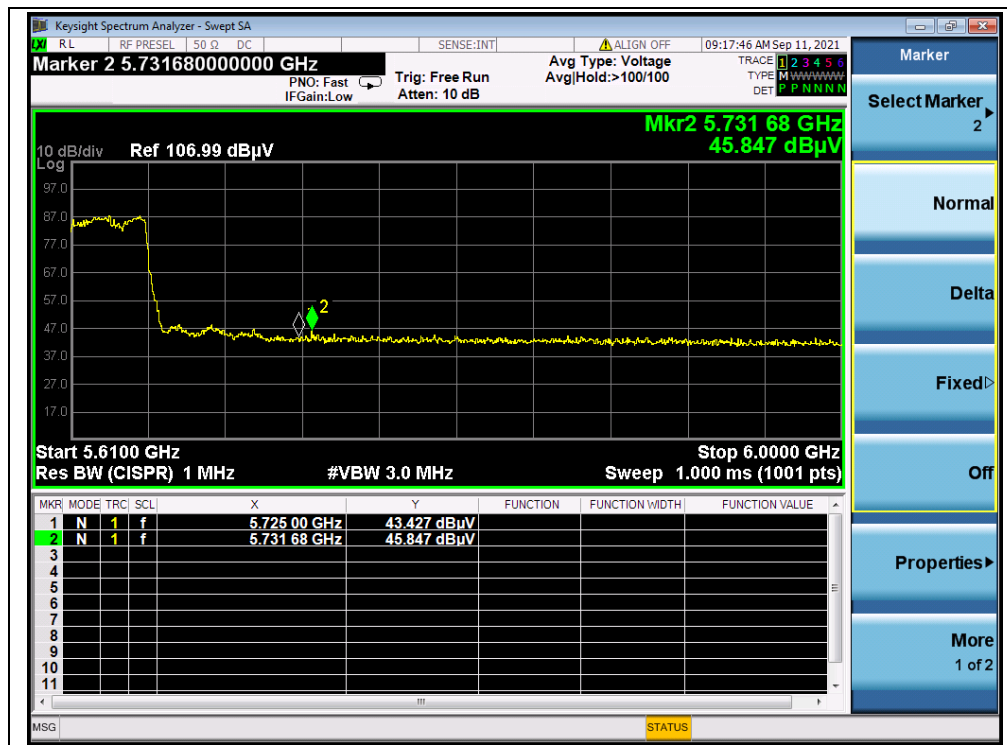
(AVERAGE, Channel 58, 802.11ac (VHT80))



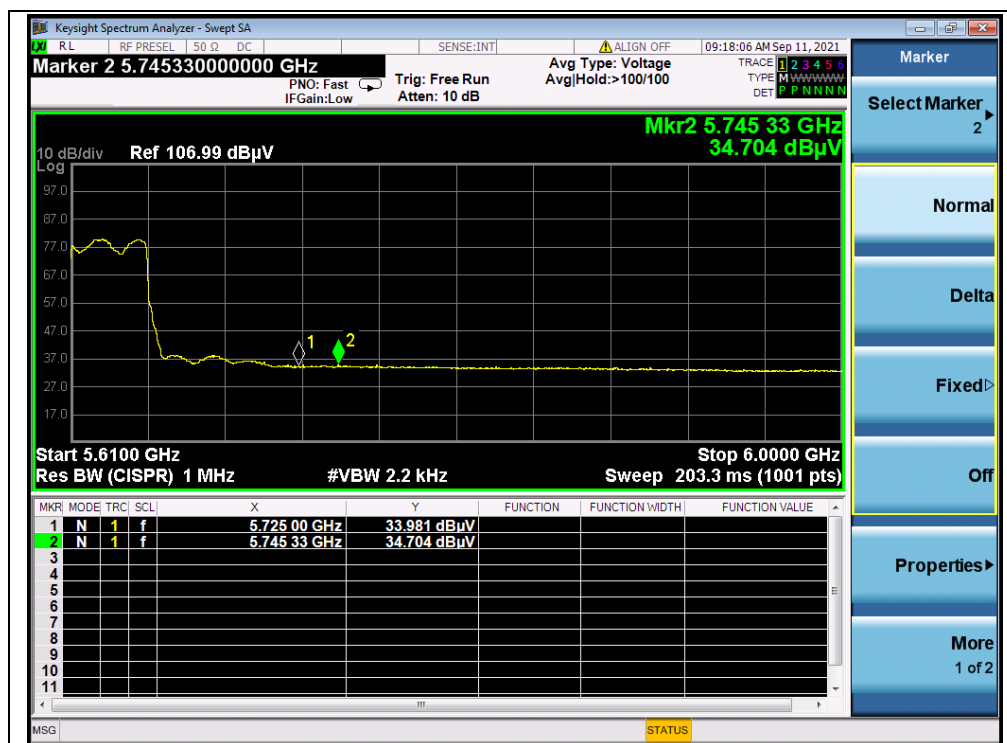
(PEAK, Channel 106, 802.11ac (VHT80))



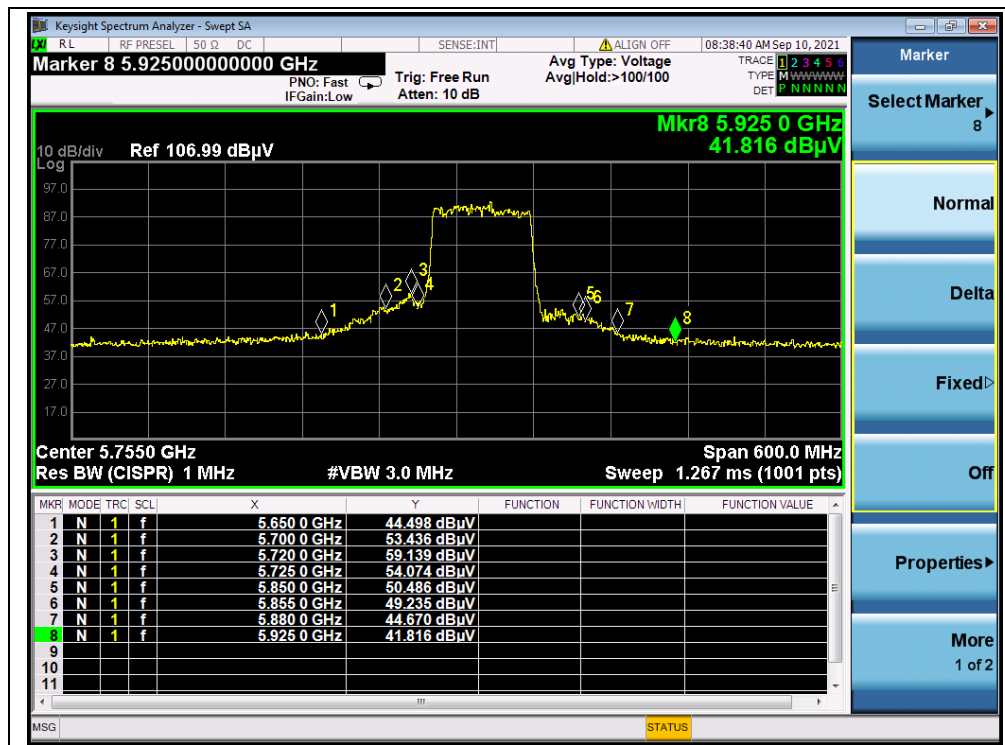
(AVERAGE, Channel 106, 802.11ac (VHT80))



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



(AVERAGE, 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);

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

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:

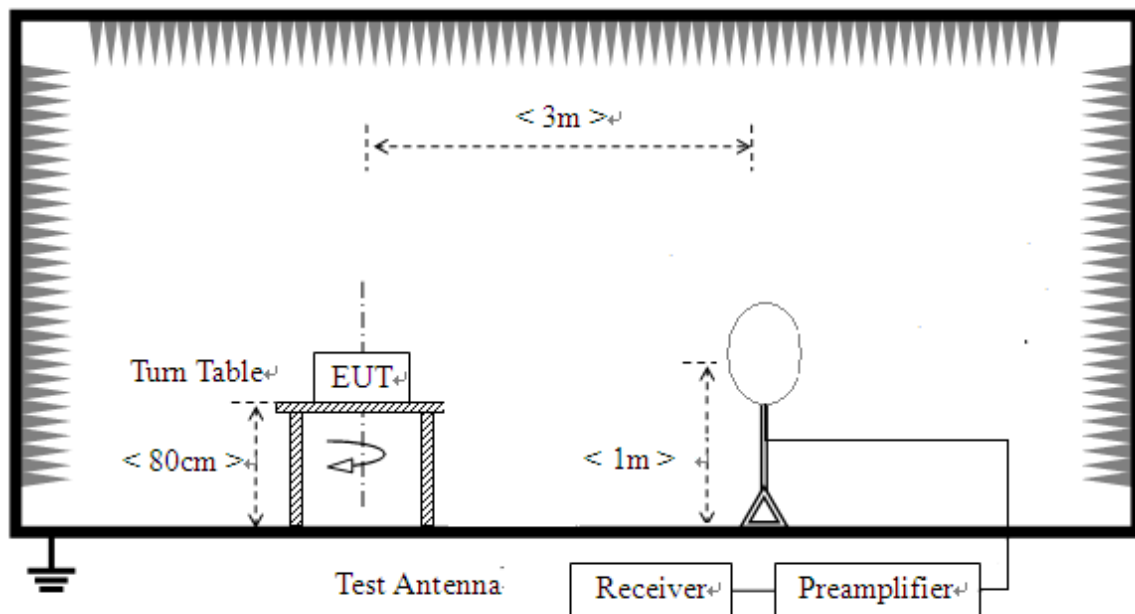
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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).

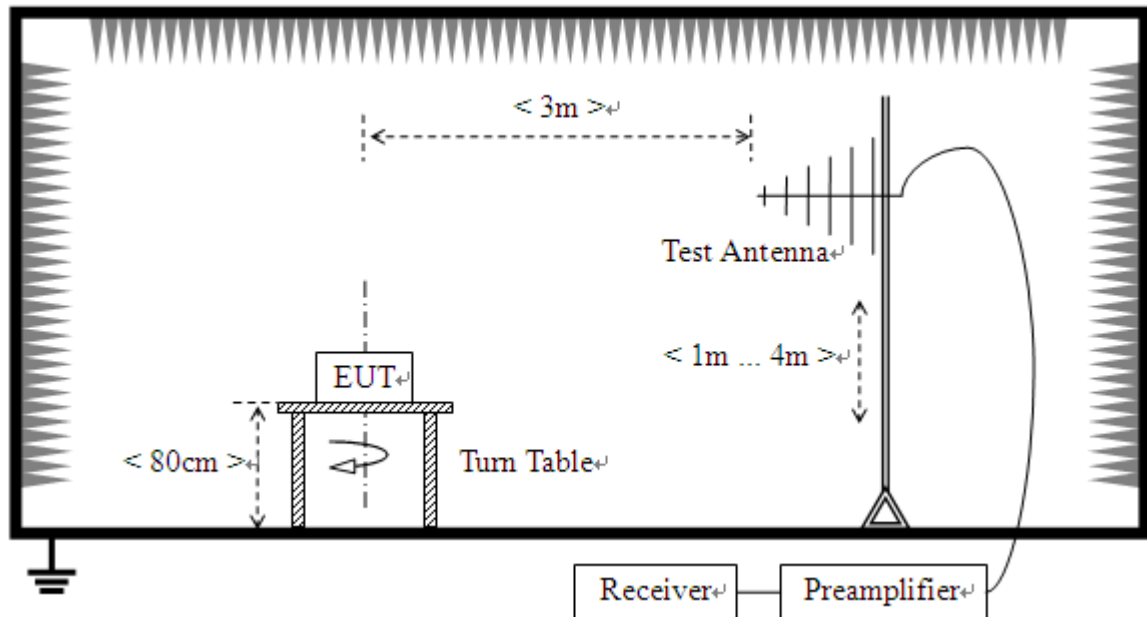
2.9.2. Test Description

Test Setup:

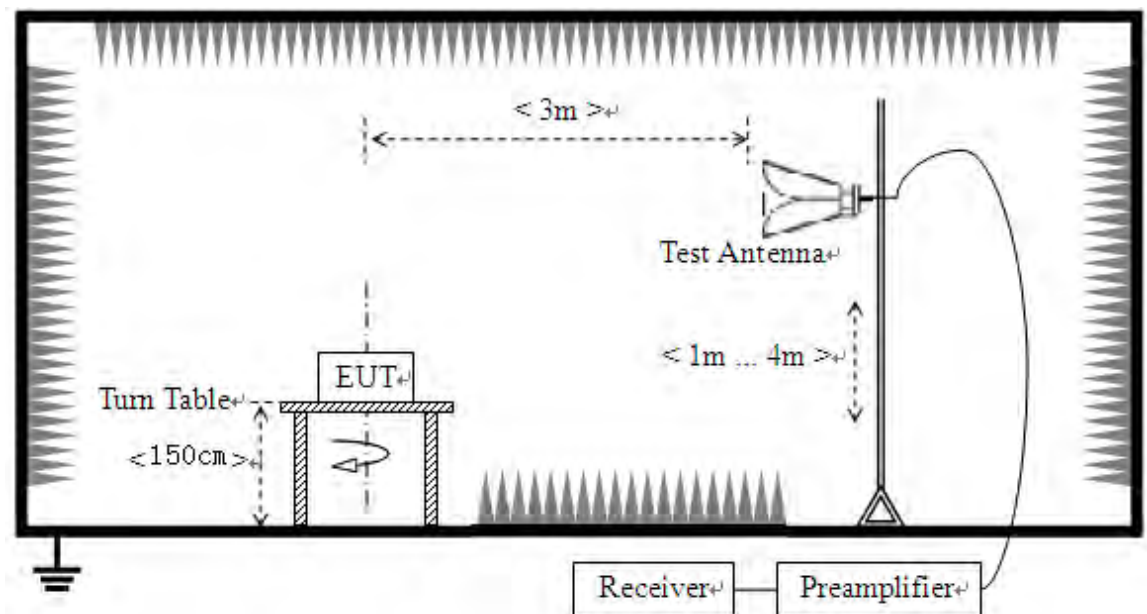
- 1) For radiated emissions from 9kHz to 30MHz



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:

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

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.

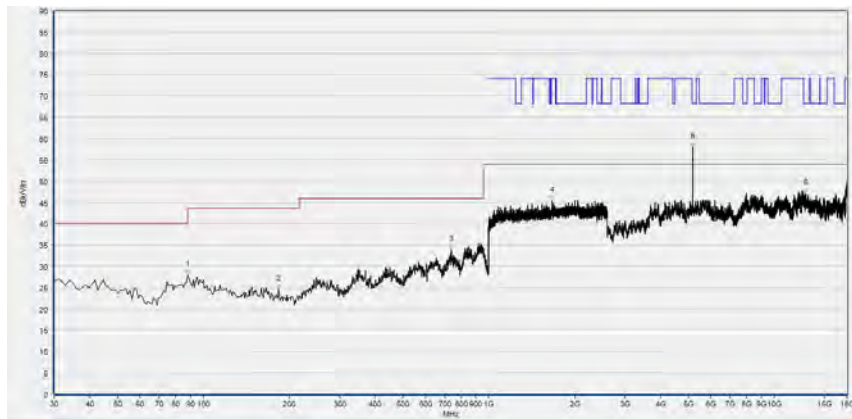
Note 2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

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.

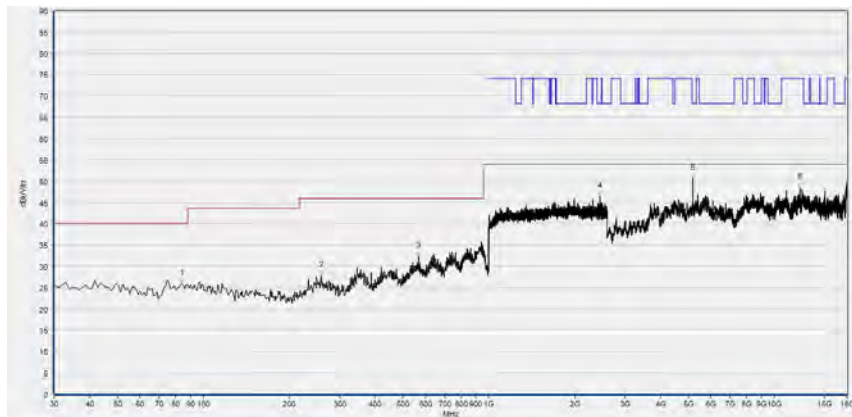
**802.11a Mode**

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
88.200	27.94	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
183.260	24.68	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
737.130	33.84	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1666.667	45.48	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5181.040	57.96	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12874.880	47.13	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

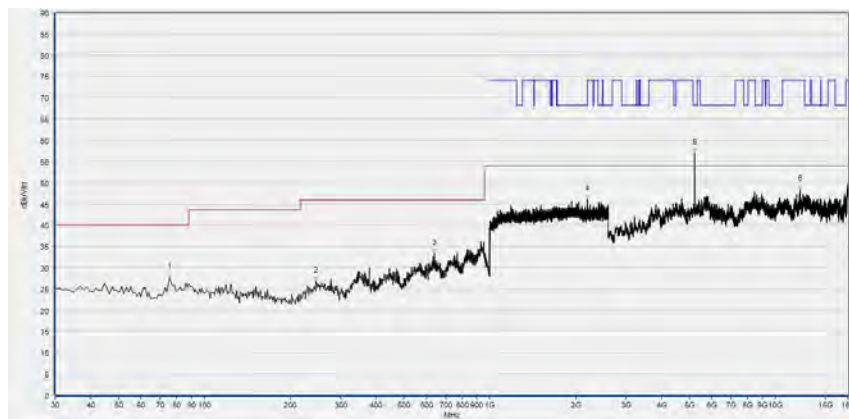


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
84.320	25.95	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
258.920	27.85	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
568.350	32.32	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2455.467	46.48	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5181.040	50.59	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12289.680	48.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

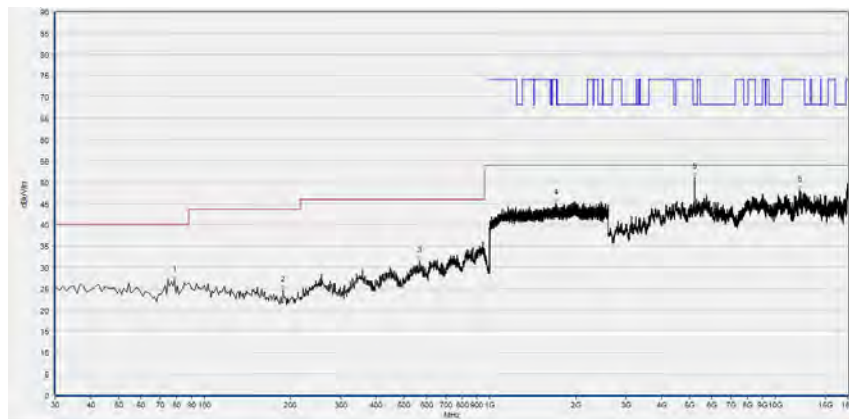


Plot for Channel 44



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
75.590	27.67	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
246.310	26.73	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
640.130	33.31	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2198.933	46.01	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5218.000	56.95	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12200.360	48.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

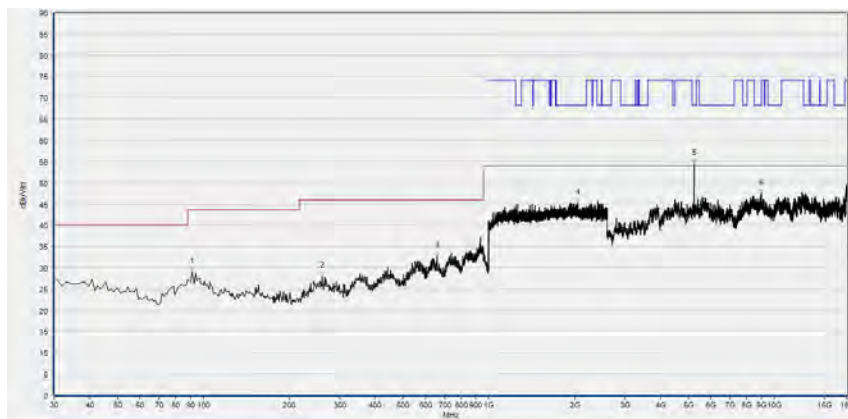


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
78.500	26.97	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
189.080	24.71	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
565.440	31.50	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1699.733	45.01	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5214.920	51.14	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12135.680	48.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

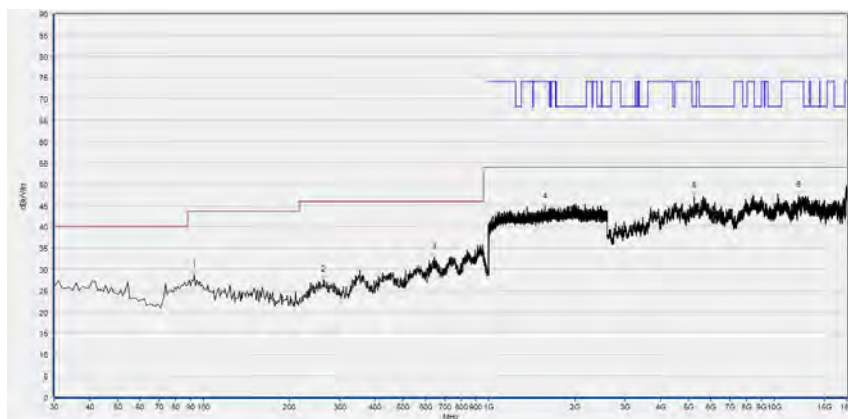


Plot for Channel 48



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
91.110	28.98	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
260.860	28.01	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
660.500	32.64	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2048.533	45.30	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5236.480	54.47	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8994.080	47.42	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

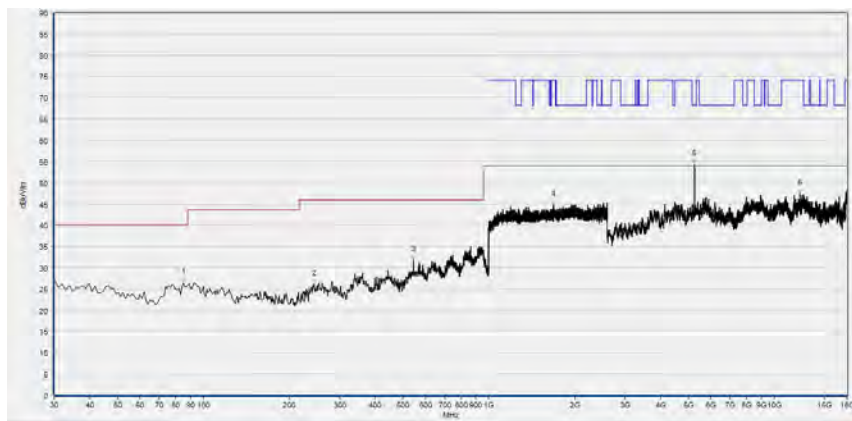
(Antenna Horizontal, 30MHz to 18GHz)



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
93.050	28.60	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
263.770	27.54	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
643.040	32.67	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1574.400	44.66	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5239.560	47.09	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12151.080	47.22	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

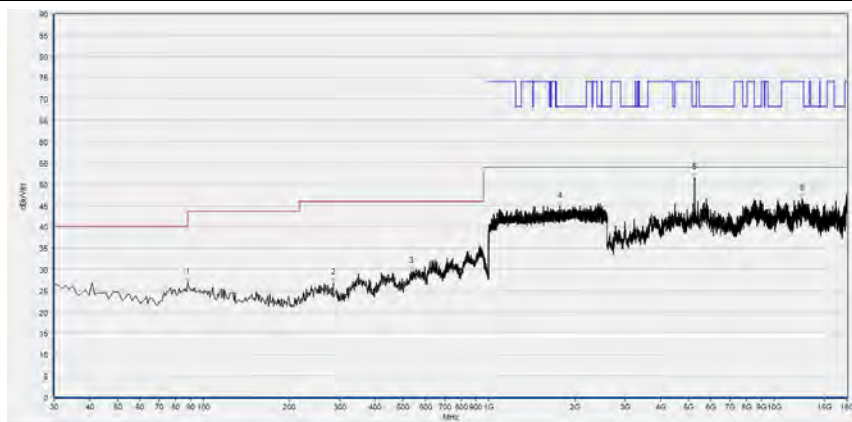
(Antenna Vertical, 30MHz to 18GHz)

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
85.290	26.52	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
244.370	26.07	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
545.070	31.80	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1684.267	44.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5258.040	54.30	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12283.520	47.50	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

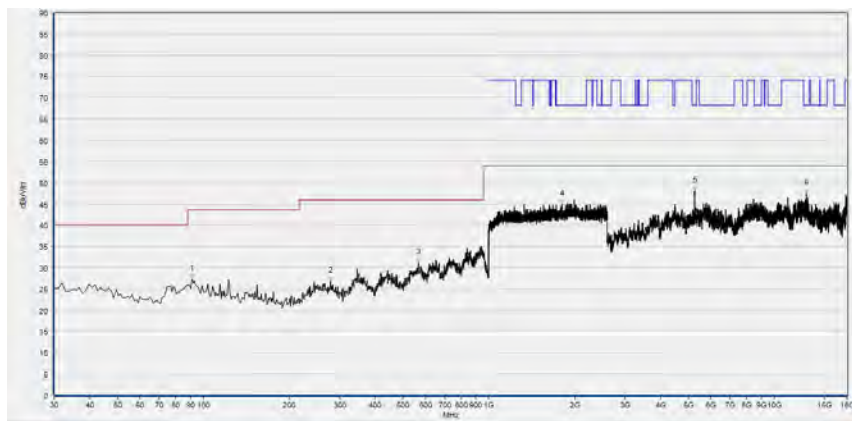
(Antenna Horizontal, 30MHz to 18GHz)



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
88.200	27.02	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
285.110	26.74	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
536.340	29.46	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1777.067	44.68	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5254.960	51.54	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12496.040	46.52	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

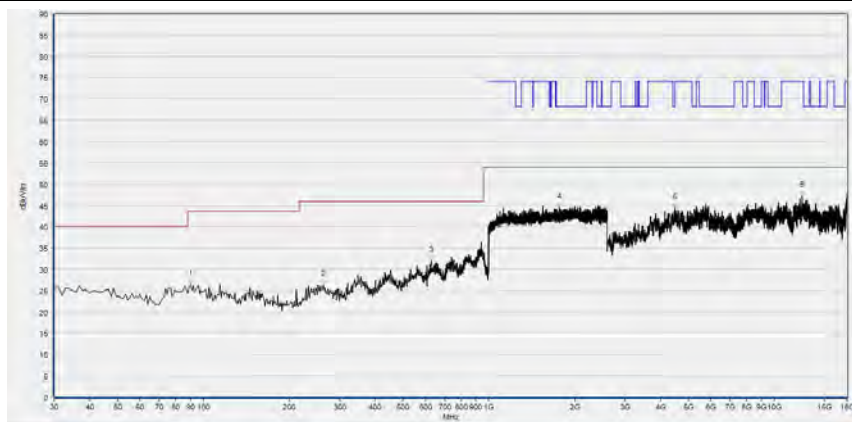
(Antenna Vertical, 30MHz to 18GHz)

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
91.110	27.36	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
278.320	26.77	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
566.410	31.22	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1809.600	44.96	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5291.120	48.11	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12936.480	47.43	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

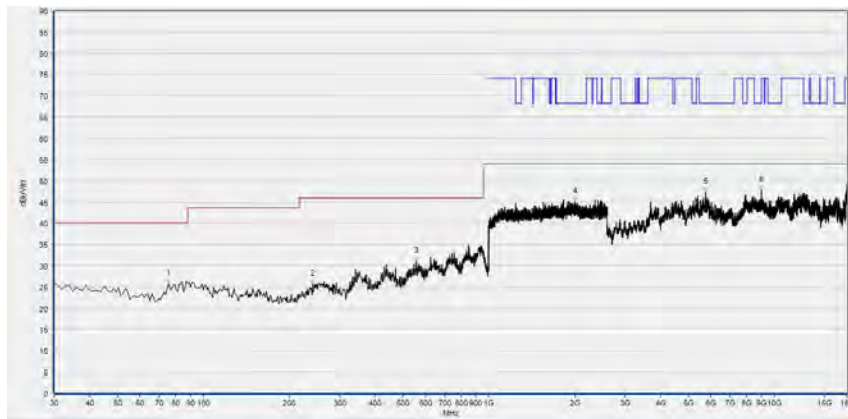
(Antenna Horizontal, 30MHz to 18GHz)



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
90.140	26.40	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
263.770	26.38	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
627.520	32.06	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1765.867	44.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4494.200	44.37	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12508.360	47.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

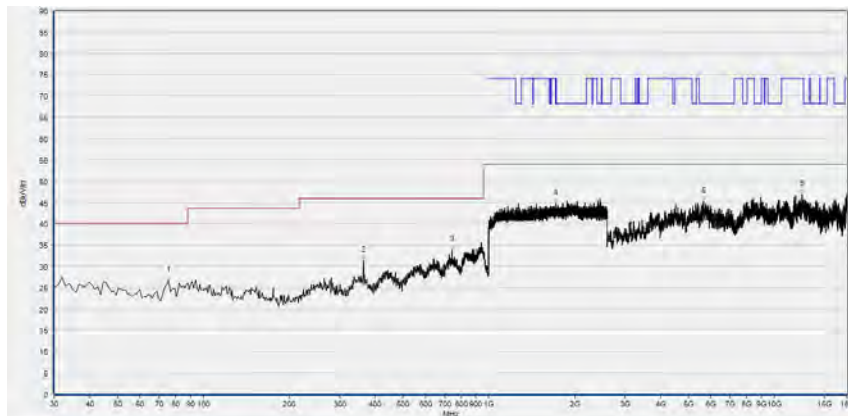
(Antenna Vertical, 30MHz to 18GHz)

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
75.590	25.86	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
241.460	25.59	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
558.650	30.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2004.800	45.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5741.600	47.19	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
9018.720	47.80	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

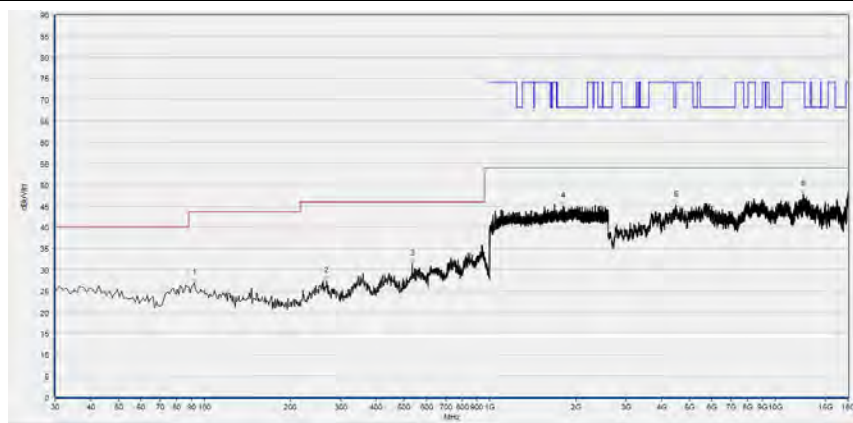
(Antenna Horizontal, 30MHz to 18GHz)



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
75.590	26.67	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
364.650	31.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
741.980	33.77	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1714.667	44.81	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5649.200	45.20	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12523.760	46.94	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

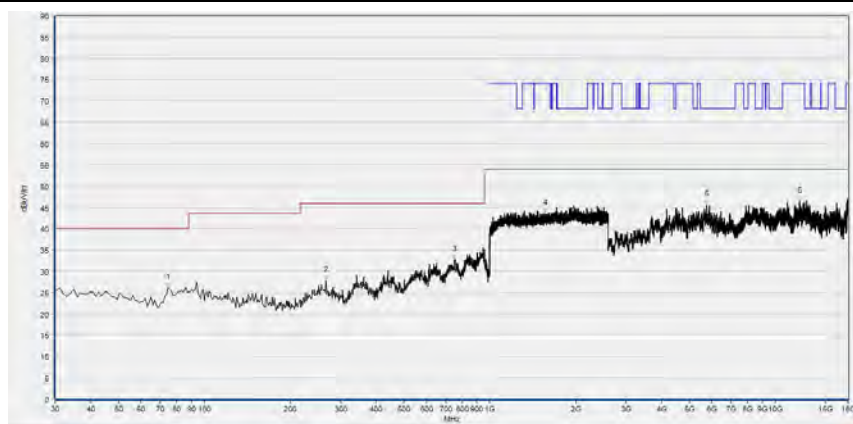
(Antenna Vertical, 30MHz to 18GHz)

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
92.080	26.74	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
268.620	27.32	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
534.400	31.39	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1802.667	44.98	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4484.960	45.26	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12505.280	47.81	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

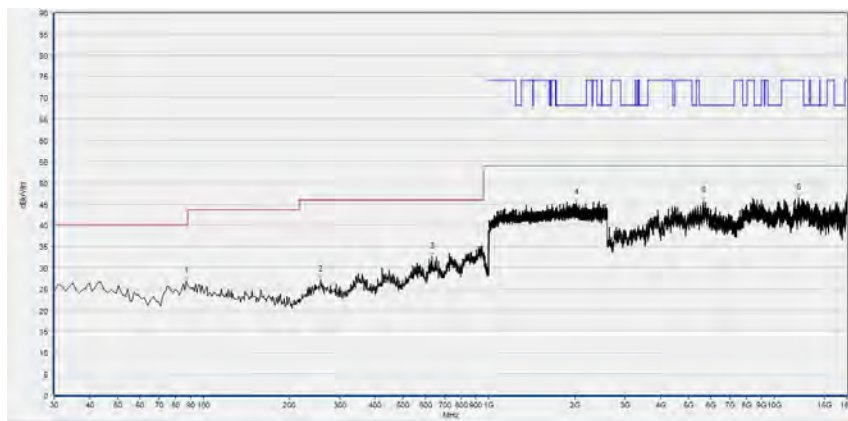
(Antenna Horizontal, 30MHz to 18GHz)



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
74.620	26.11	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
266.680	27.82	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
752.650	32.72	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1565.333	43.50	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5744.680	45.54	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12154.160	46.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

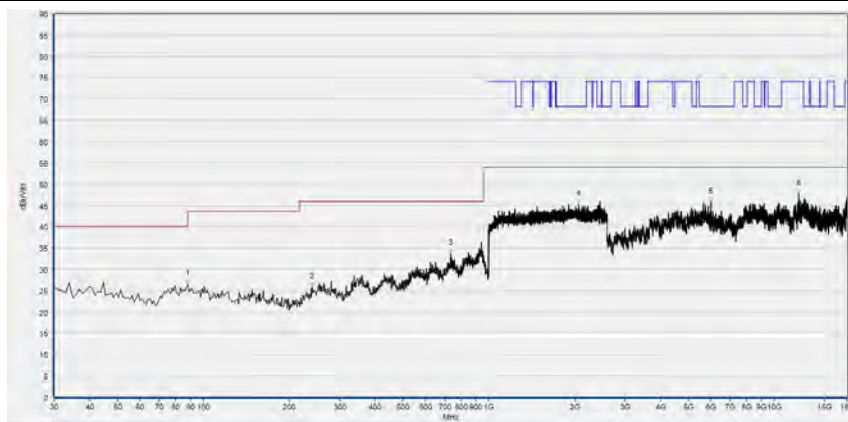
(Antenna Vertical, 30MHz to 18GHz)

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
87.230	26.83	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
257.950	27.18	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
632.370	32.54	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2028.267	45.28	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5649.200	45.65	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12141.840	46.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

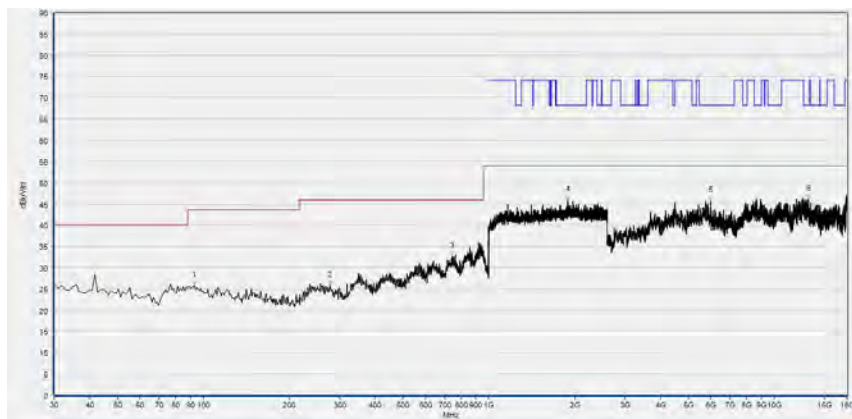


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
88.200	26.56	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
240.490	25.89	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
733.250	33.75	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2058.133	45.18	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
6003.400	45.81	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12197.280	47.71	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

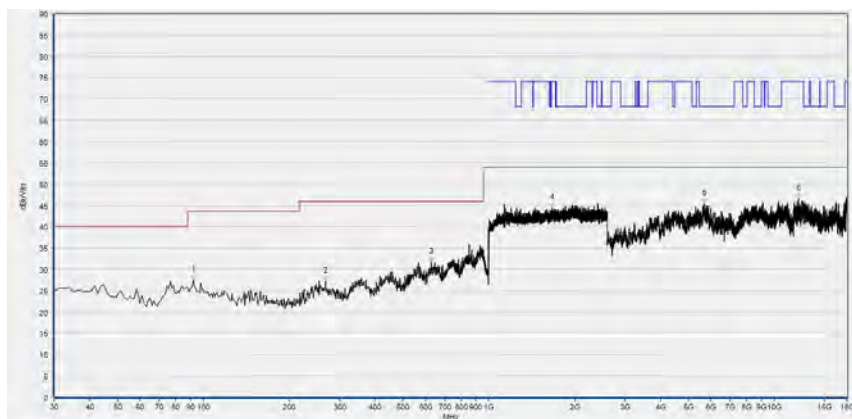


Plot for Channel 144



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
93.050	25.79	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
277.350	25.84	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
741.980	32.75	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1893.867	45.99	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5975.680	45.81	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13161.320	46.05	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

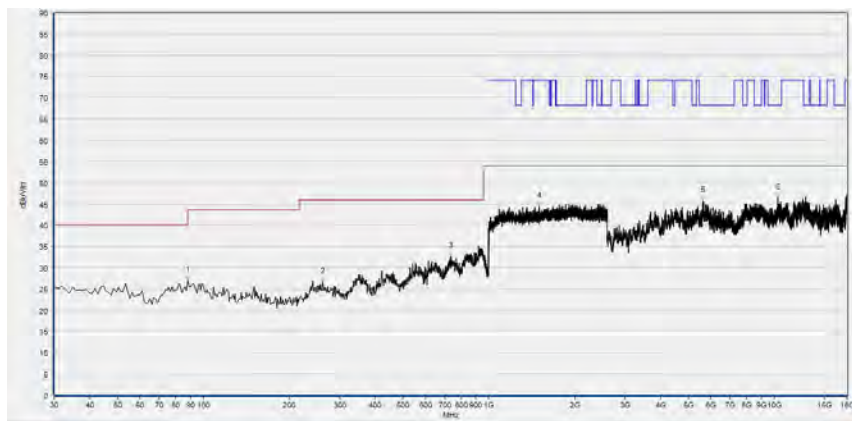
(Antenna Horizontal, 30MHz to 18GHz)



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
92.080	27.49	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
267.650	27.07	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
627.520	31.65	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1666.667	44.45	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5695.400	45.46	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12184.960	46.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

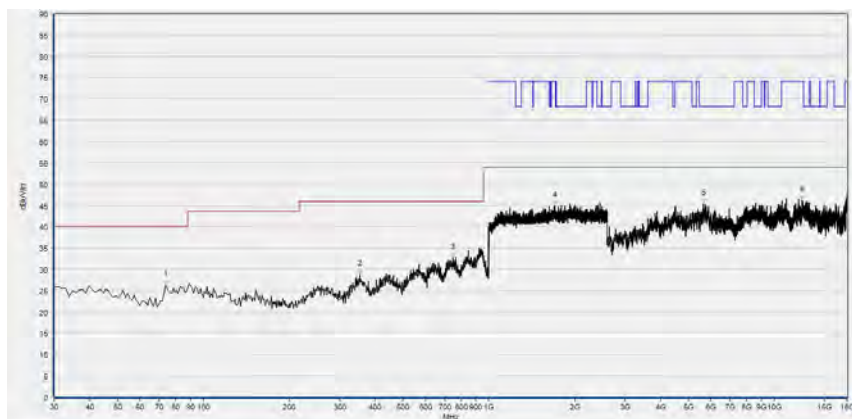
(Antenna Vertical, 30MHz to 18GHz)

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
88.200	26.91	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
261.830	26.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
736.160	32.66	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1501.333	44.47	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5612.240	45.73	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10272.280	46.41	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

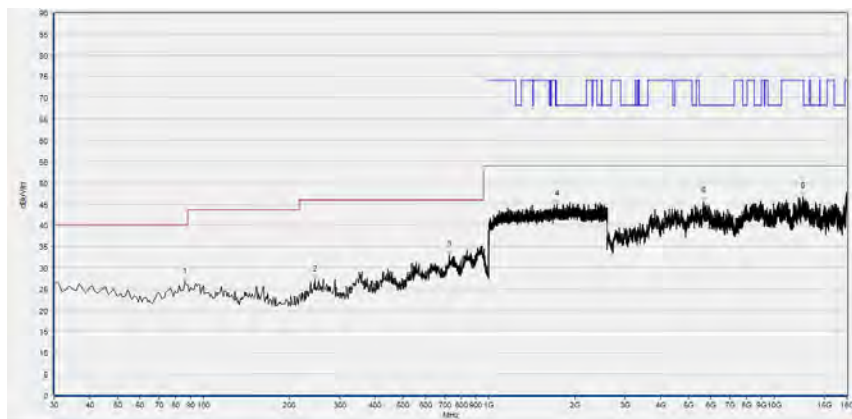
(Antenna Horizontal, 30MHz to 18GHz)



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
73.650	26.24	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
353.010	28.79	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
749.740	32.60	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1701.867	44.88	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5652.280	45.36	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12529.920	46.22	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

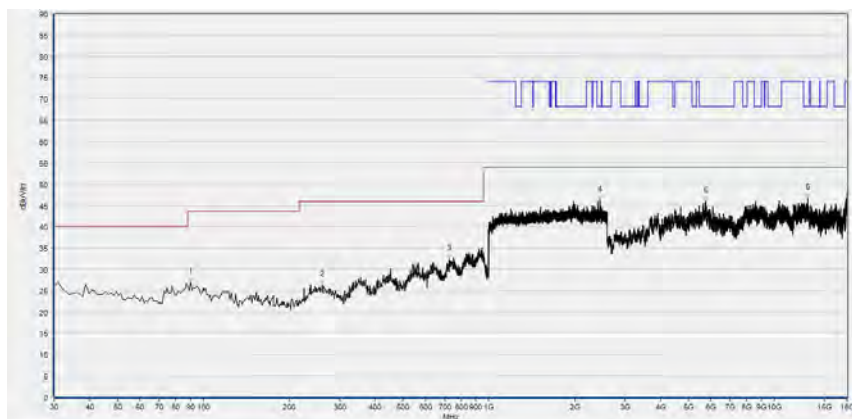
(Antenna Vertical, 30MHz to 18GHz)

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
86.260	26.58	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
246.310	27.11	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
726.460	33.02	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1736.000	44.92	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5652.280	45.60	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12610.000	46.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

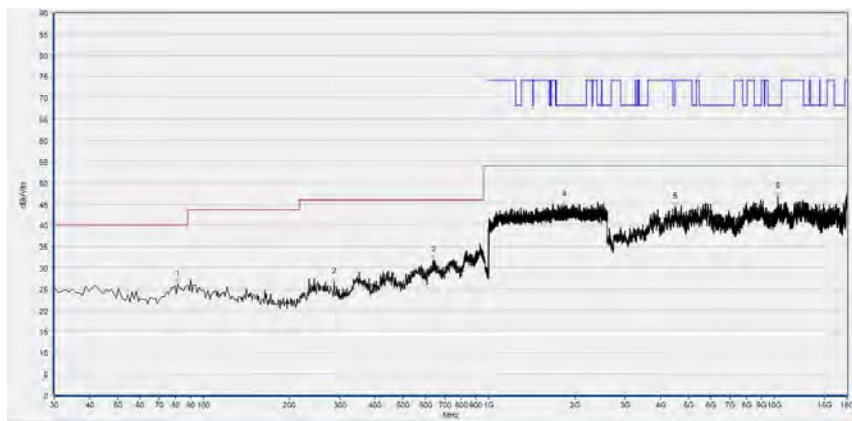
(Antenna Horizontal, 30MHz to 18GHz)



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
90.140	26.92	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
260.860	26.33	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
725.490	32.33	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2446.400	46.24	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5741.600	45.91	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13142.840	46.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

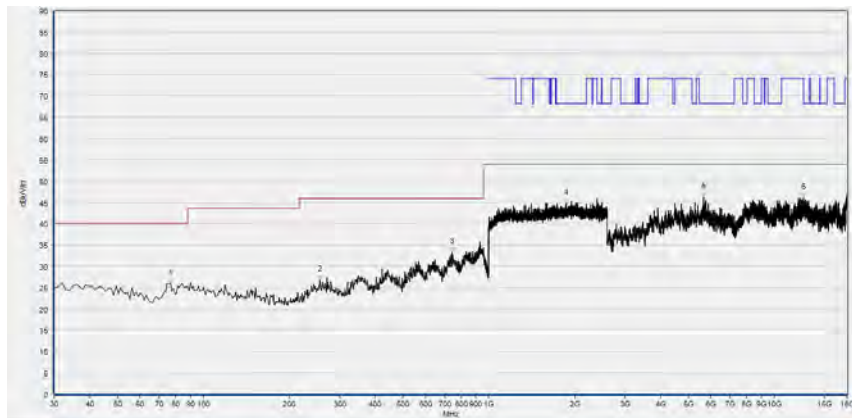
(Antenna Vertical, 30MHz to 18GHz)

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
81.410	26.19	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
287.050	26.66	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
641.100	31.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1836.267	44.78	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4497.280	44.27	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10312.320	46.82	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

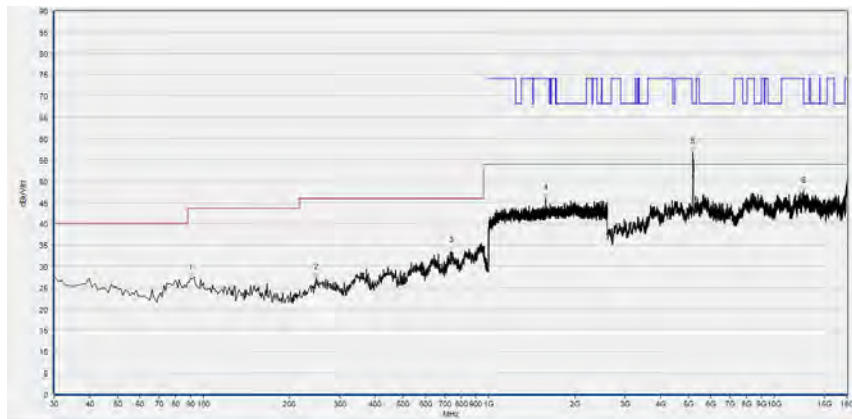


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
76.560	25.95	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
256.010	26.85	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
741.980	33.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1865.600	44.67	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5643.040	46.23	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12665.440	46.03	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

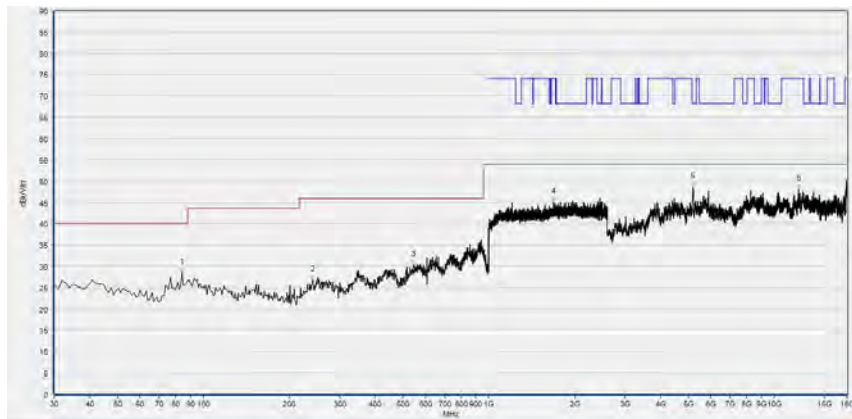
**802.11n (HT40) mode**

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
90.140	27.09	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
249.220	27.32	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
741.010	33.57	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1582.933	45.94	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5193.360	56.75	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12640.800	47.52	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

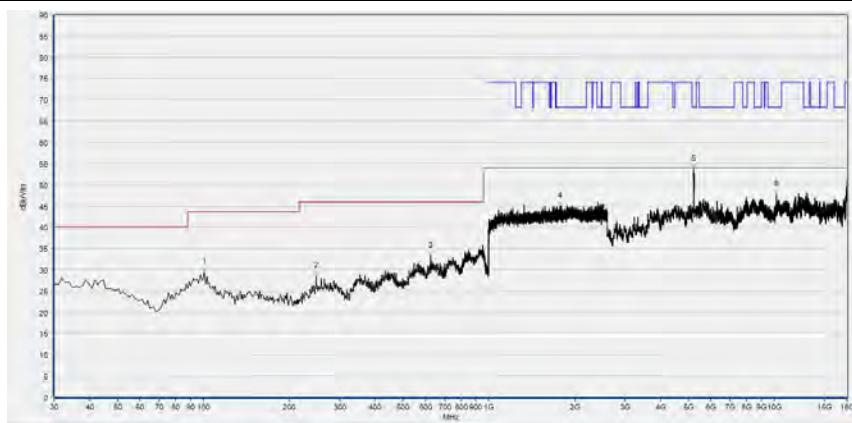
(Antenna Horizontal, 30MHz to 18GHz)



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
84.320	28.46	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
241.460	26.89	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
546.040	30.38	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1687.467	45.01	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5196.440	48.53	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12154.160	48.04	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

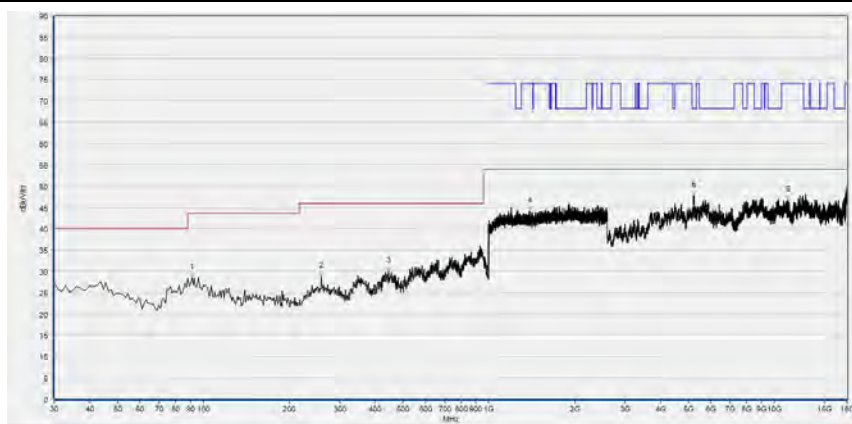
(Antenna Vertical, 30MHz to 18GHz)

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
100.810	29.58	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
248.250	28.55	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
623.640	33.22	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1777.600	44.85	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5224.160	53.60	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10189.120	47.72	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

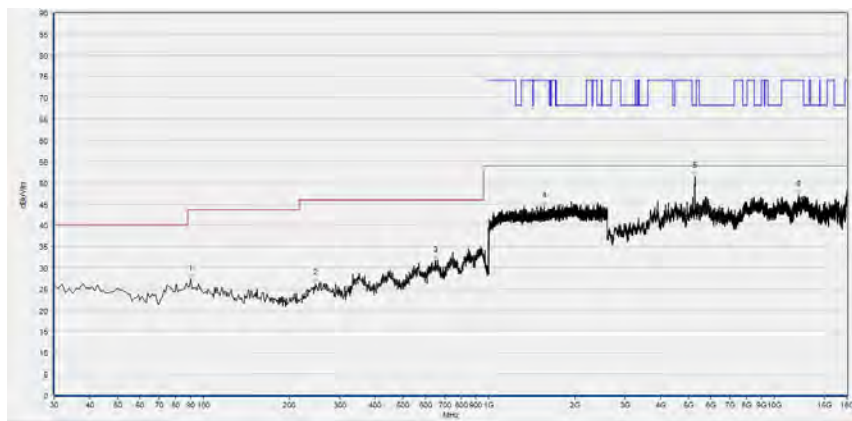
(Antenna Horizontal, 30MHz to 18GHz)



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
91.110	28.43	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
258.920	28.83	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
446.130	30.05	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1395.200	44.16	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5211.840	47.83	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11131.600	46.76	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

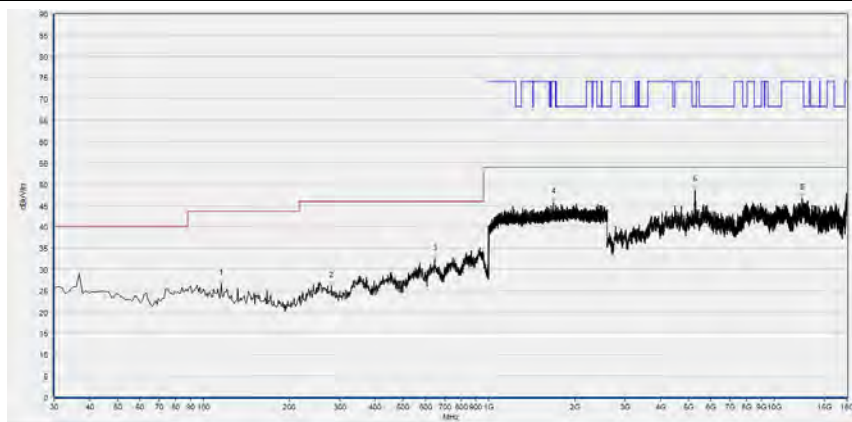
(Antenna Vertical, 30MHz to 18GHz)

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
90.140	27.32	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
247.280	26.36	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
650.800	31.75	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1565.867	44.49	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5276.520	51.44	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12141.840	47.04	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

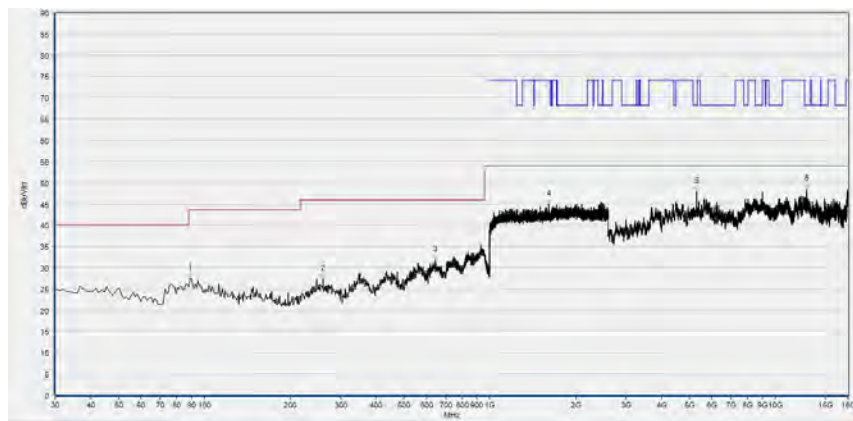
(Antenna Horizontal, 30MHz to 18GHz)



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
115.360	26.61	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
281.230	26.09	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
645.950	32.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1682.133	45.73	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5264.200	48.63	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12502.200	46.83	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

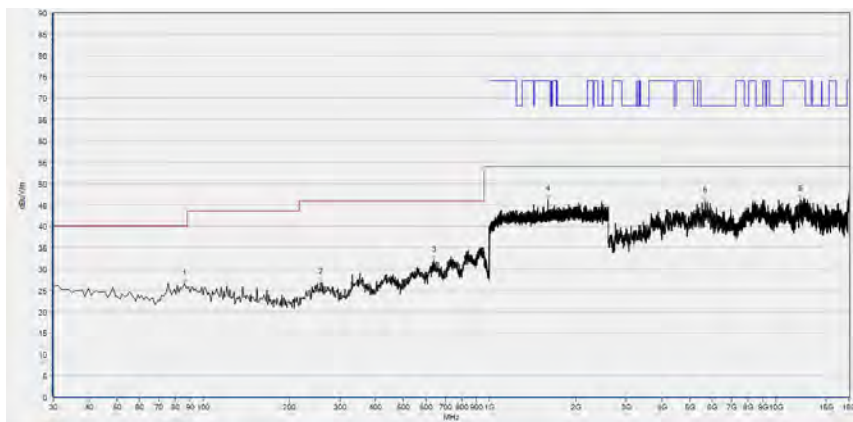
(Antenna Vertical, 30MHz to 18GHz)

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
89.170	27.40	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
260.860	27.33	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
644.010	31.89	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1612.267	44.96	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5298.080	47.89	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12921.080	48.37	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

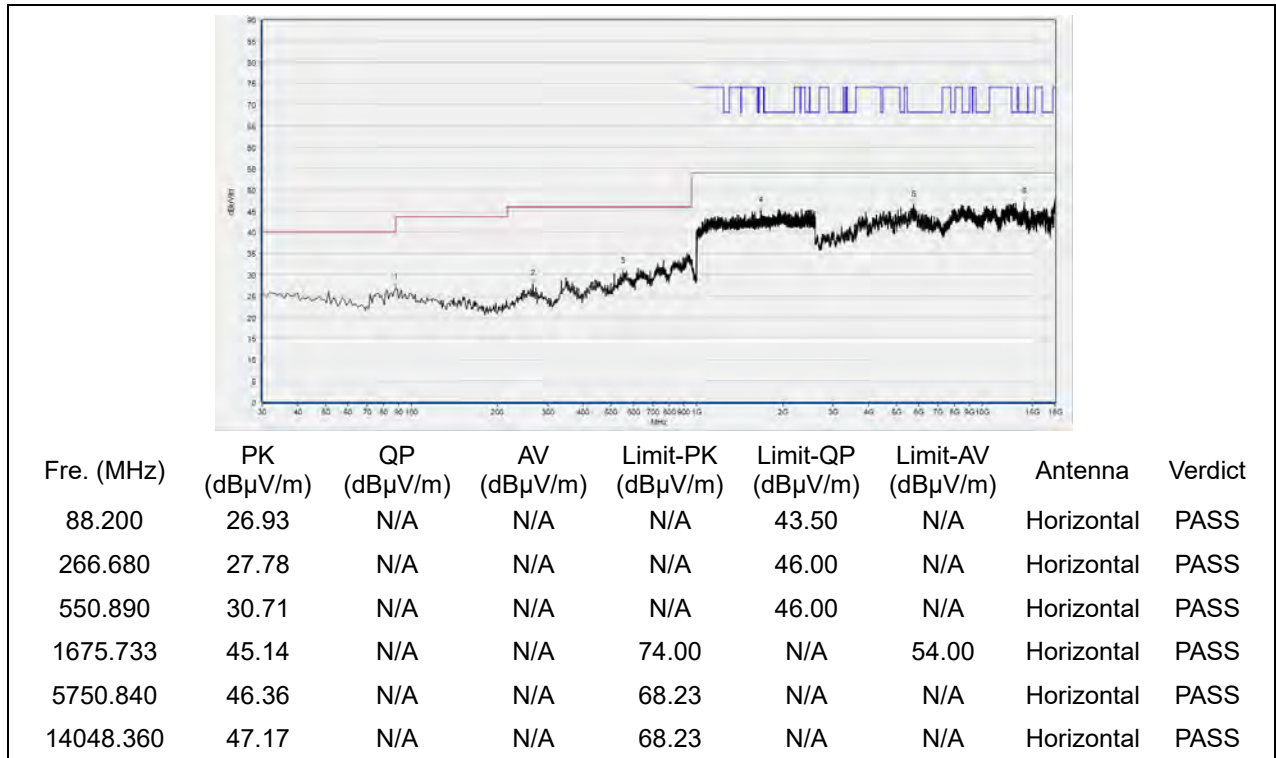
(Antenna Horizontal, 30MHz to 18GHz)



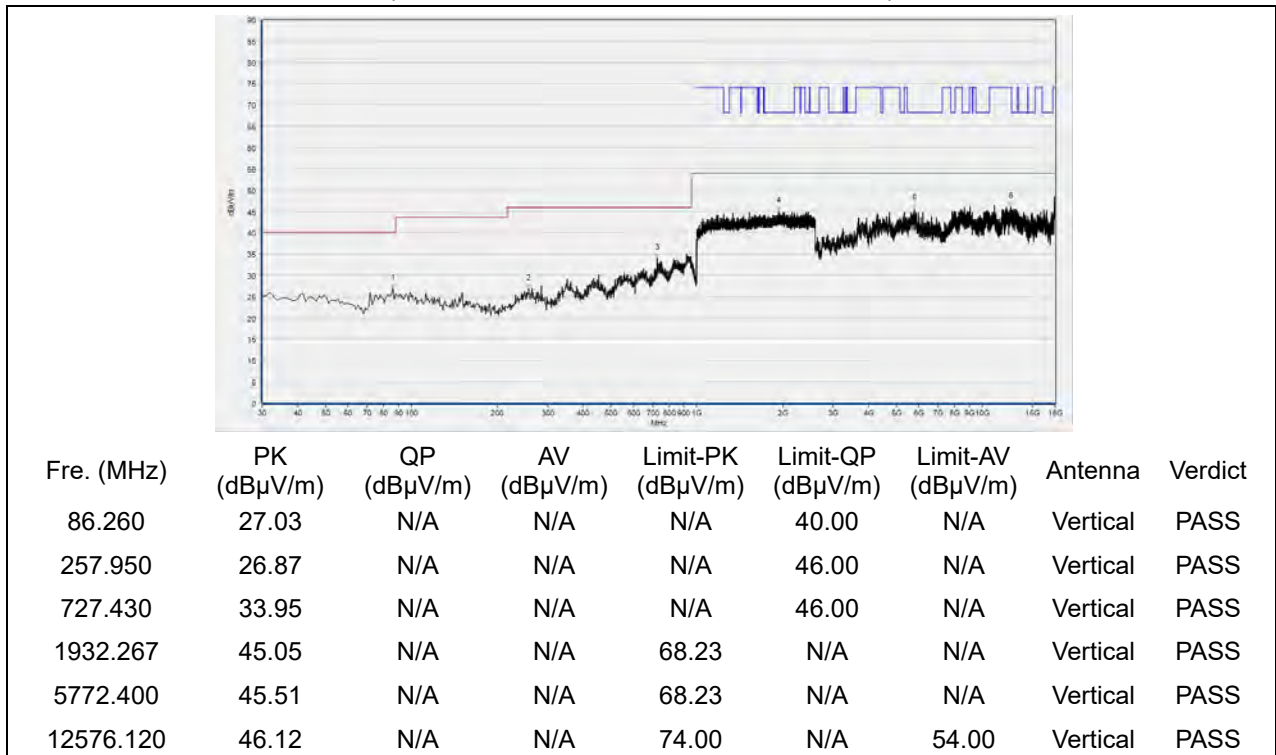
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
86.260	26.42	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
256.980	26.85	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
638.190	32.03	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1597.867	46.32	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5658.440	45.75	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12144.920	46.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 102

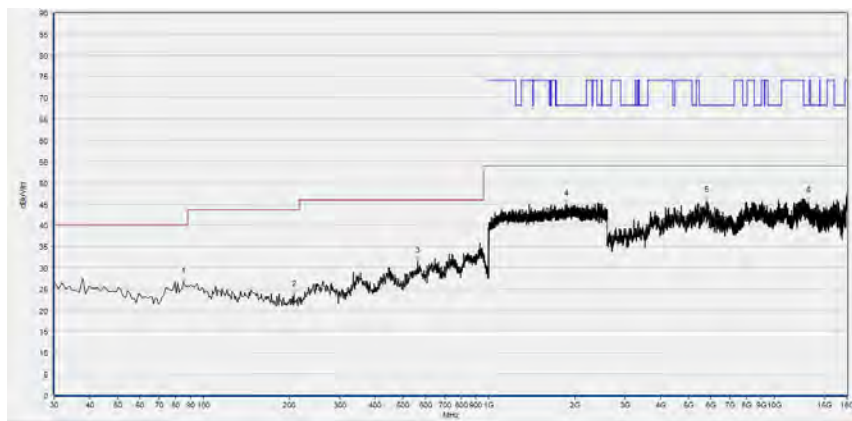


(Antenna Horizontal, 30MHz to 18GHz)



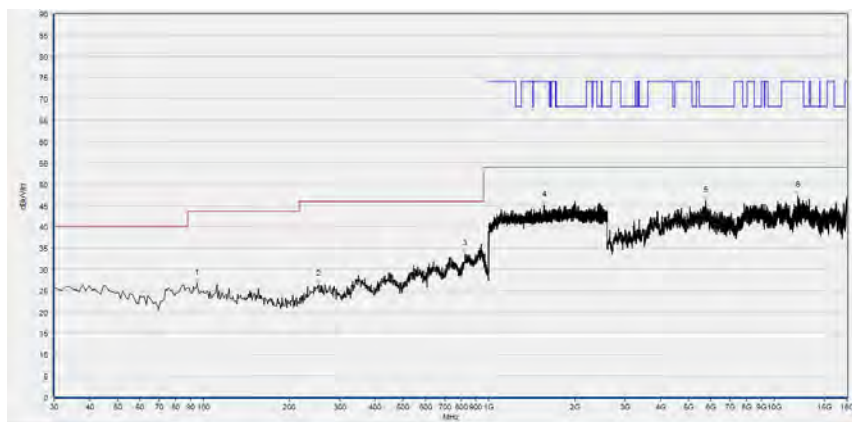
(Antenna Vertical, 30MHz to 18GHz)

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
85.290	26.61	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
207.510	23.61	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
562.530	31.45	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1864.000	44.83	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5772.400	45.81	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13195.200	45.54	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

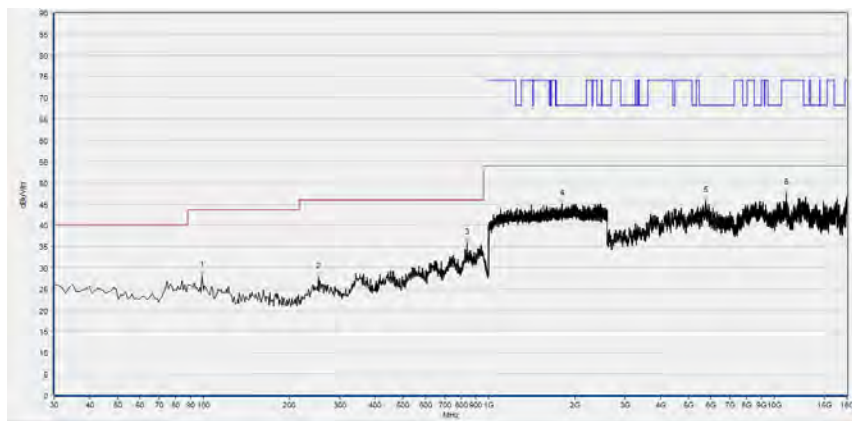
(Antenna Horizontal, 30MHz to 18GHz)



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
94.990	26.69	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
253.100	26.51	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
825.400	33.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1561.067	45.05	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5738.520	46.17	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12067.920	47.26	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

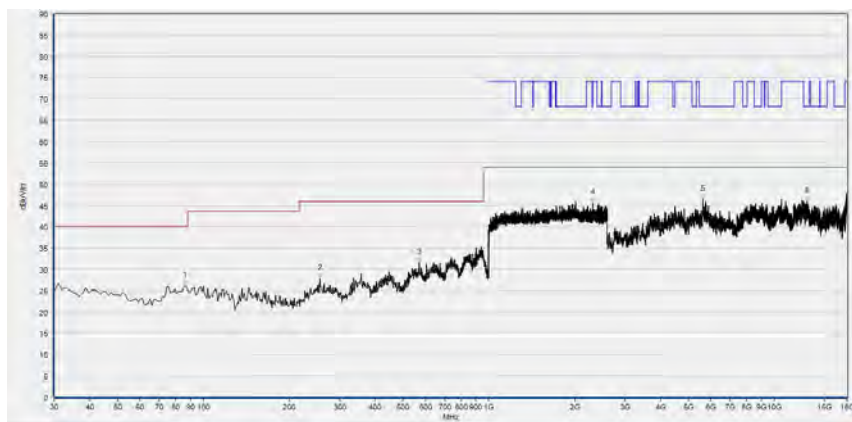
(Antenna Vertical, 30MHz to 18GHz)

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
98.870	28.12	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
253.100	27.75	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
839.950	35.83	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1802.667	45.14	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5750.840	45.69	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10999.160	47.57	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

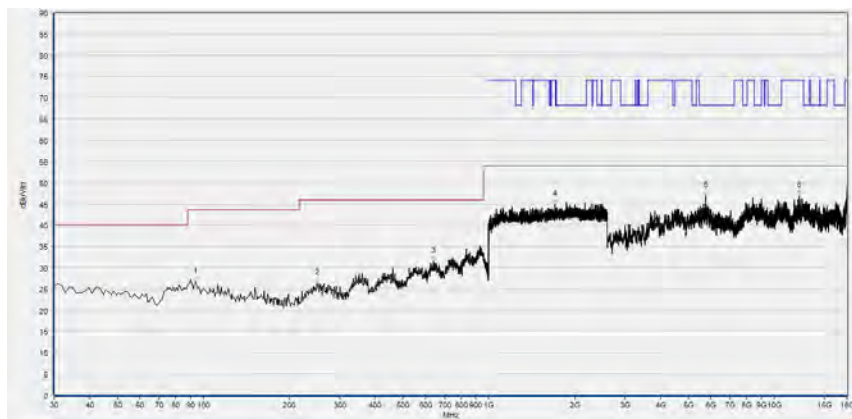
(Antenna Horizontal, 30MHz to 18GHz)



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
86.260	26.11	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
256.010	27.74	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
571.260	31.48	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2307.733	45.58	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5633.800	46.39	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13050.440	45.98	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

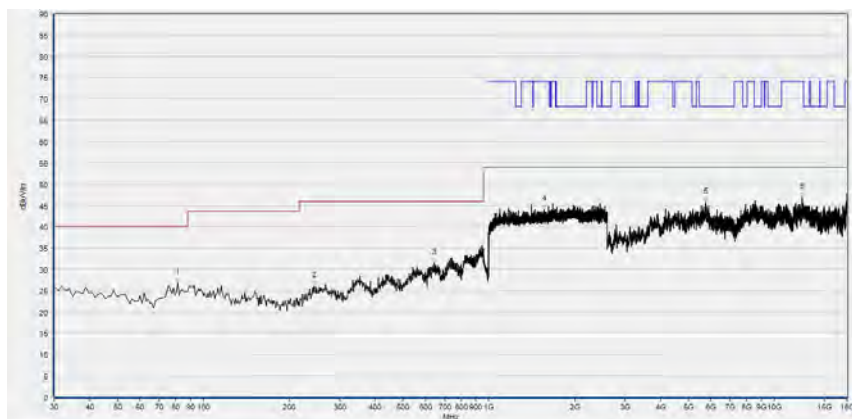
(Antenna Vertical, 30MHz to 18GHz)

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
94.020	26.68	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
250.190	26.28	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
639.160	31.51	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1703.467	44.92	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5744.680	46.93	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12203.440	46.90	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

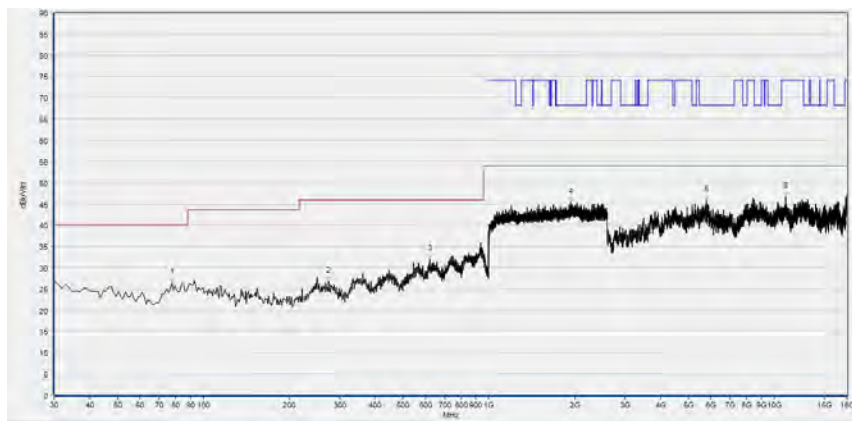
(Antenna Horizontal, 30MHz to 18GHz)



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
81.410	26.83	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
244.370	26.07	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
644.010	31.56	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1563.200	44.00	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5753.920	45.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12499.120	46.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

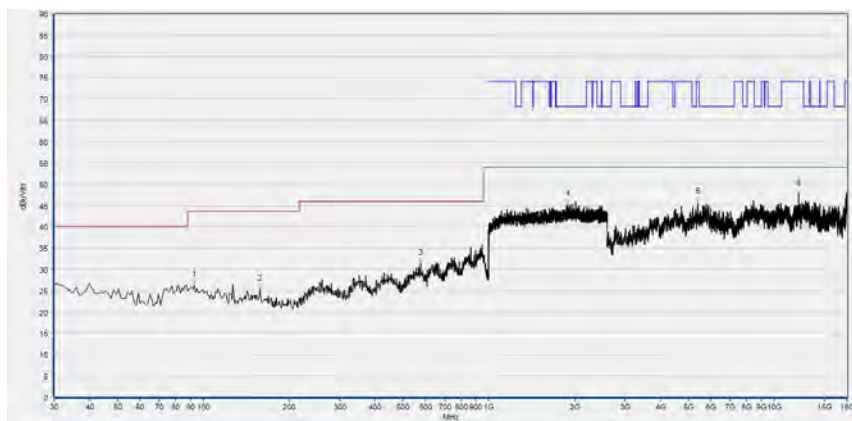
(Antenna Vertical, 30MHz to 18GHz)

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
77.530	26.48	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
274.440	26.89	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
620.730	31.98	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1936.000	45.47	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5772.400	45.87	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10956.040	46.77	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

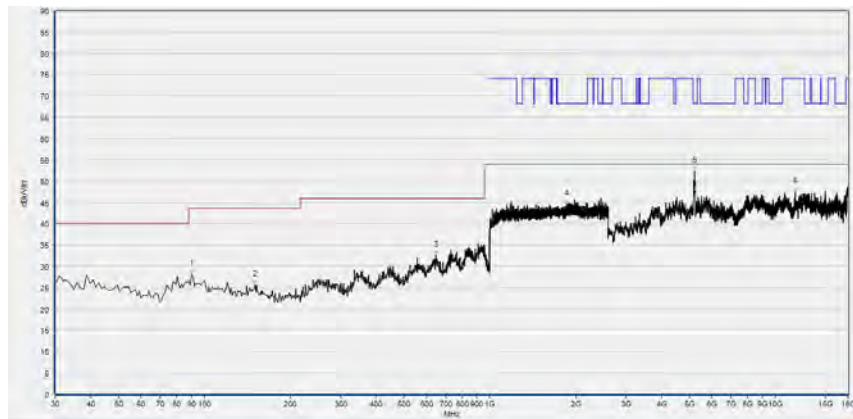


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
93.050	26.26	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
158.040	25.28	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
577.080	31.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1886.933	45.33	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5399.720	45.70	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12135.680	47.80	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

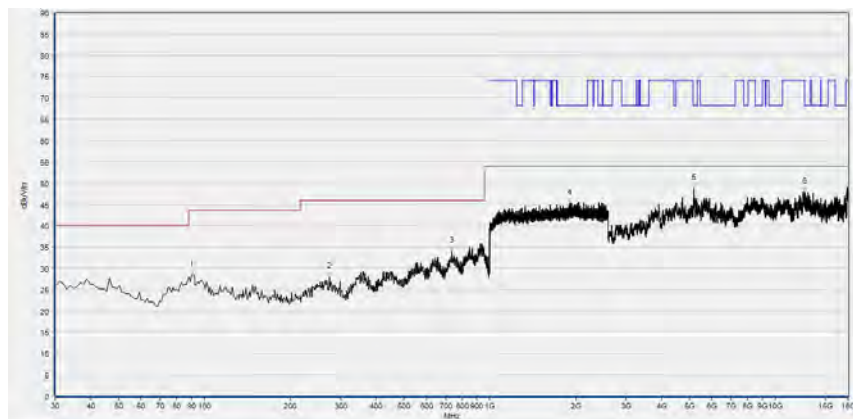
**802.11ac (VHT80) Mode**

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
90.140	28.12	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
150.280	25.69	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
647.890	32.45	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1854.933	44.65	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5211.840	52.34	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
11732.200	47.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

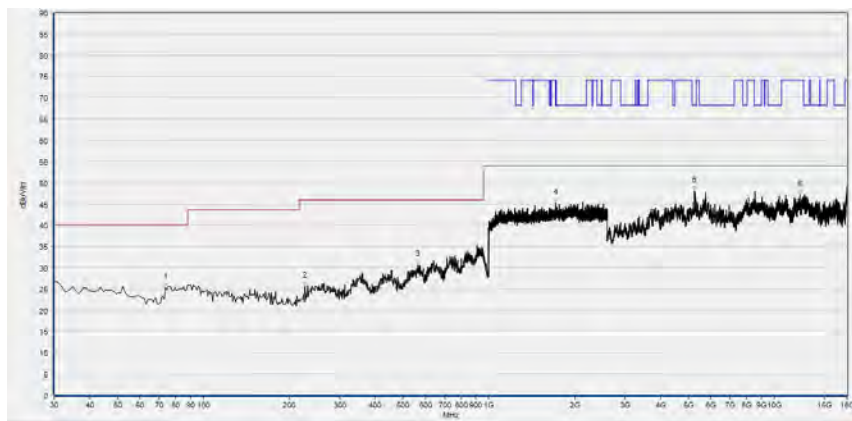
(Antenna Horizontal, 30MHz to 18GHz)



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
90.140	28.46	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
274.440	28.00	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
736.160	34.03	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1903.467	45.29	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5187.200	48.71	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12637.720	47.95	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

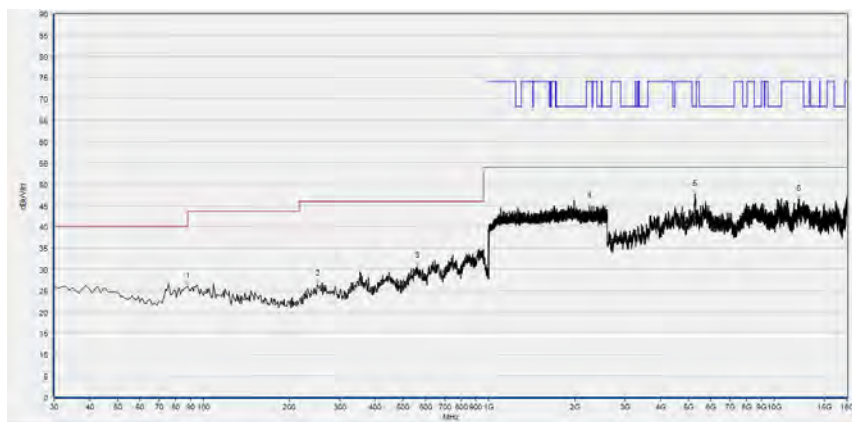
(Antenna Vertical, 30MHz to 18GHz)

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
73.650	25.39	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
226.910	25.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
562.530	30.67	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1715.200	45.17	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5258.040	48.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12311.240	47.08	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

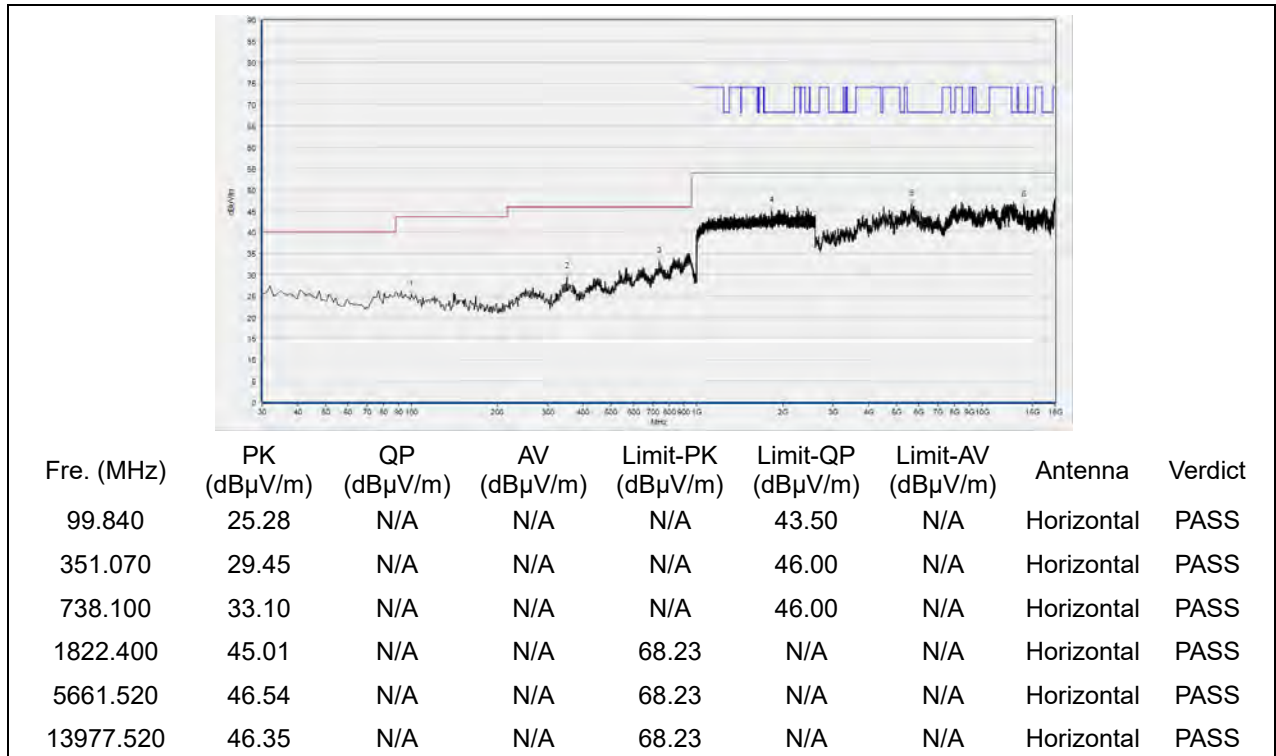
(Antenna Horizontal, 30MHz to 18GHz)



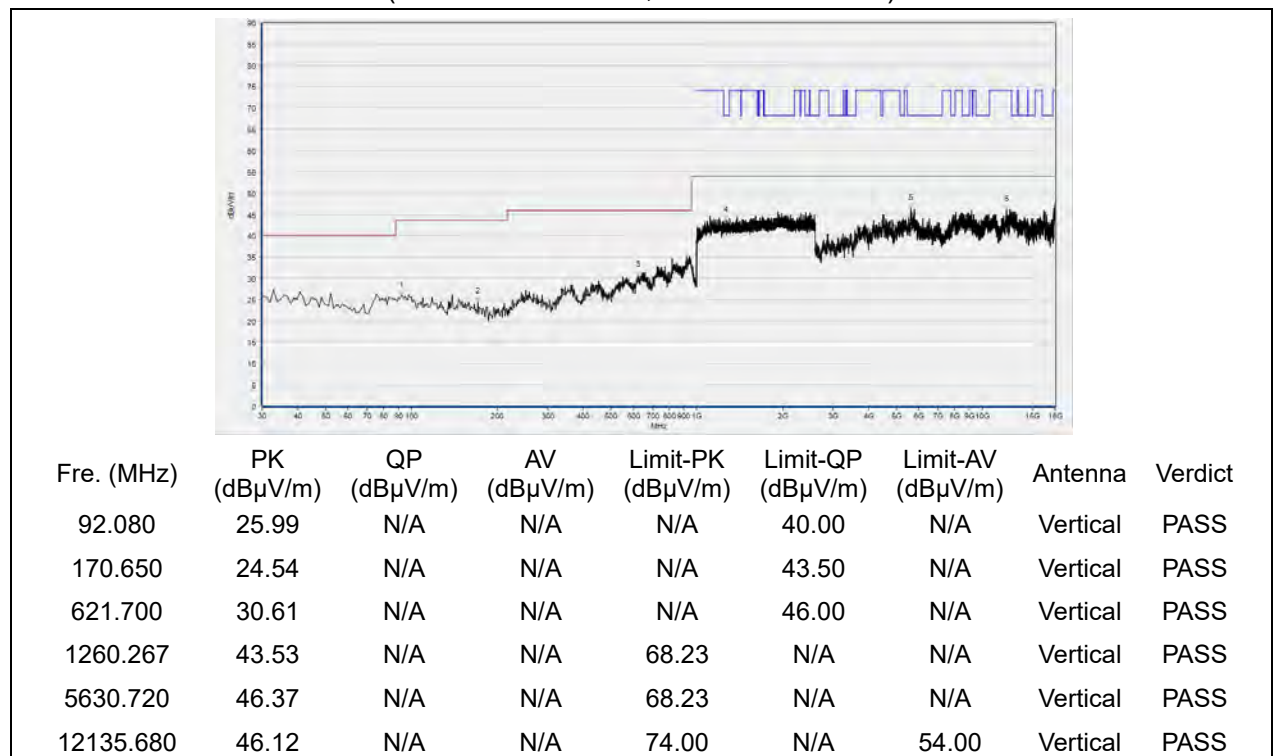
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
88.200	25.94	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
251.160	26.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
559.620	30.68	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2249.600	44.76	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5279.600	47.60	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12169.560	46.46	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 106

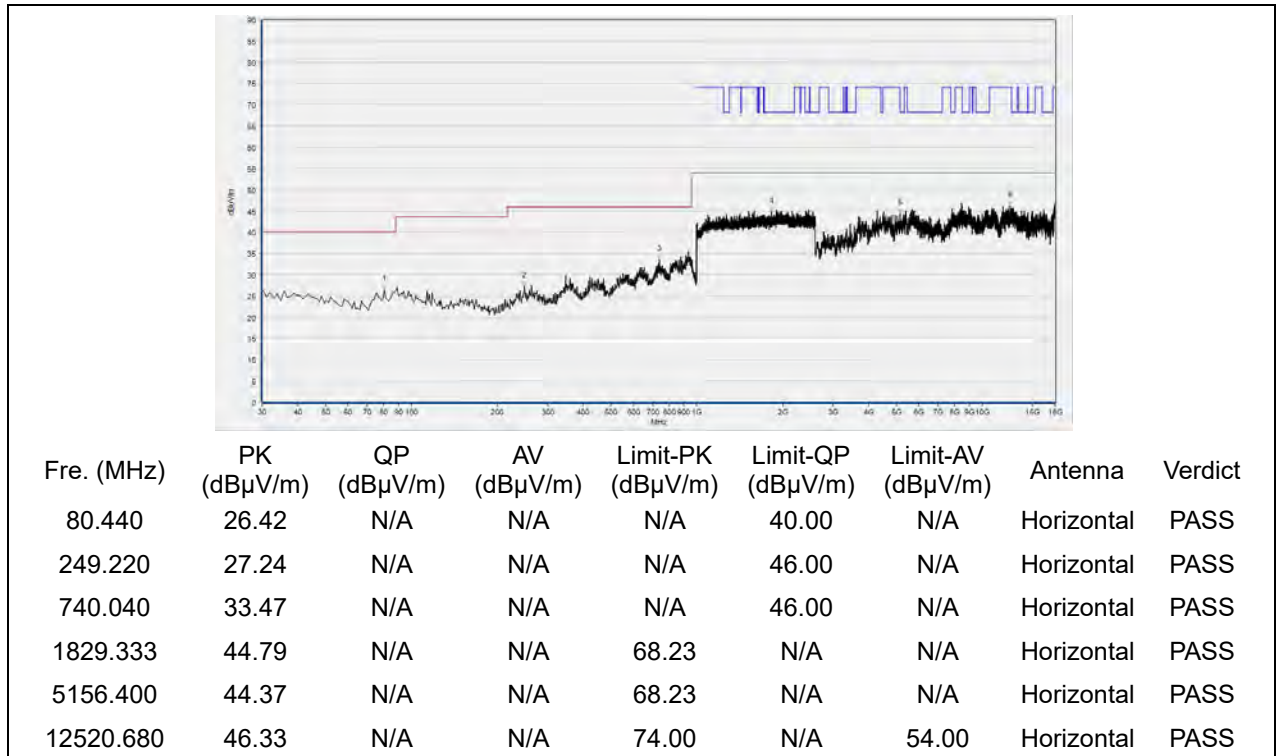


(Antenna Horizontal, 30MHz to 18GHz)

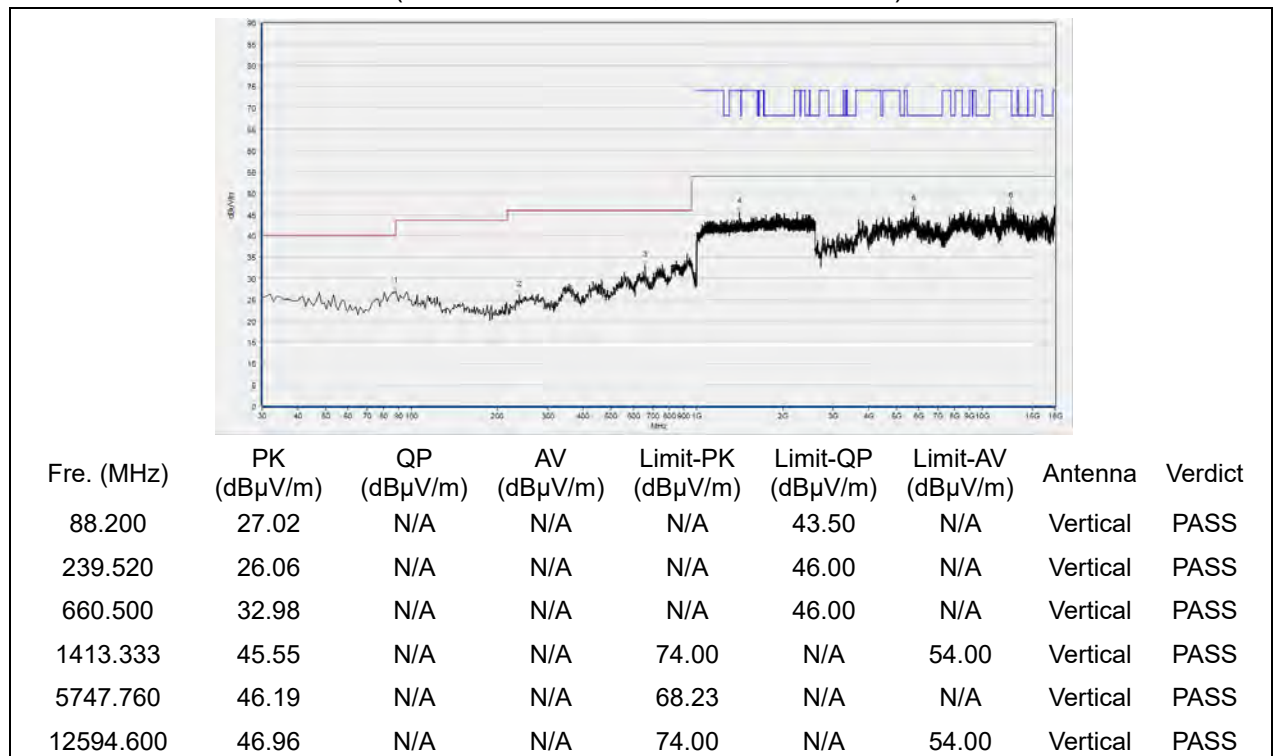


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 122

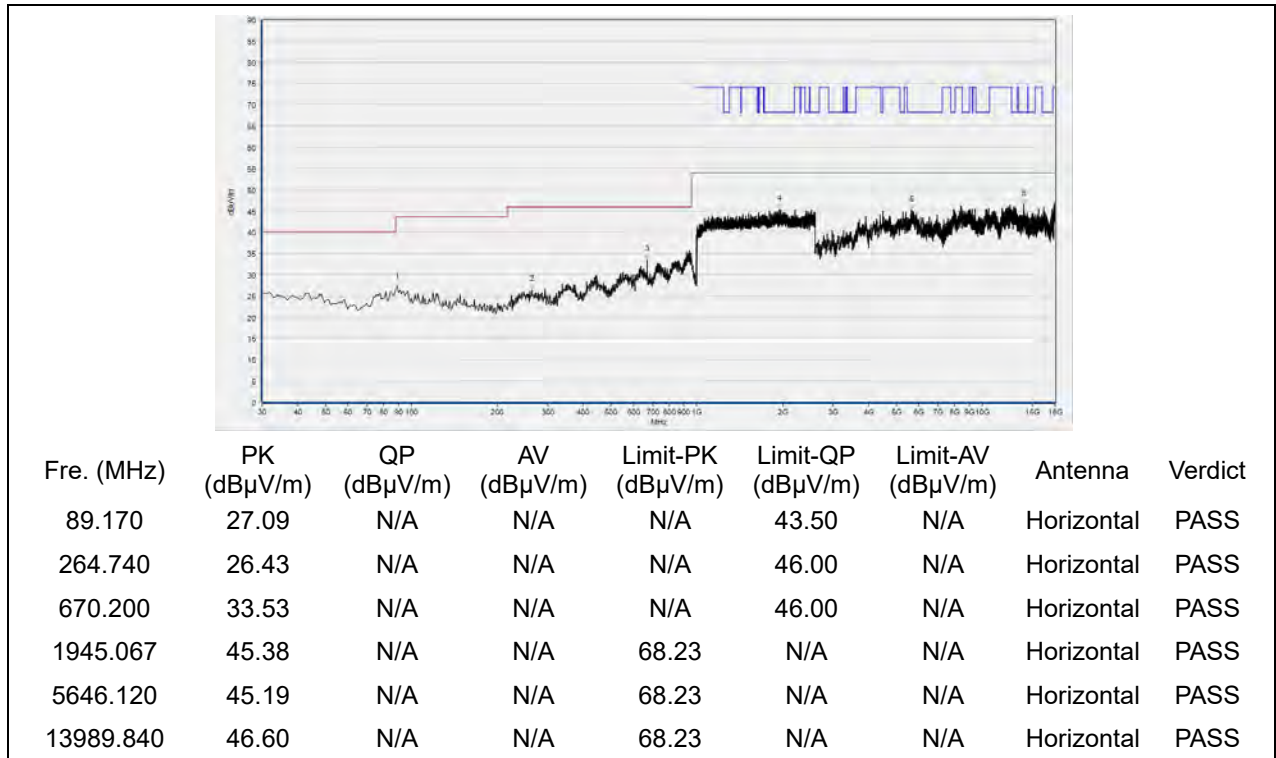


(Antenna Horizontal, 30MHz to 18GHz)

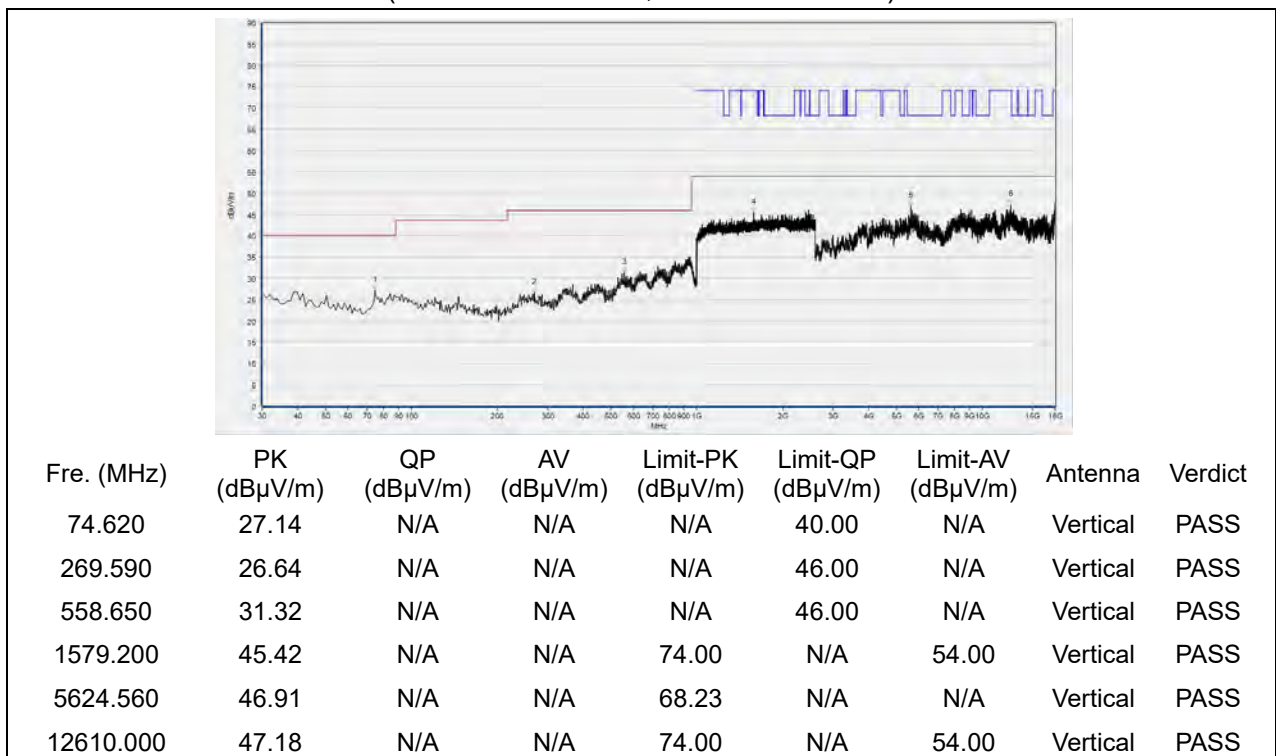


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 138

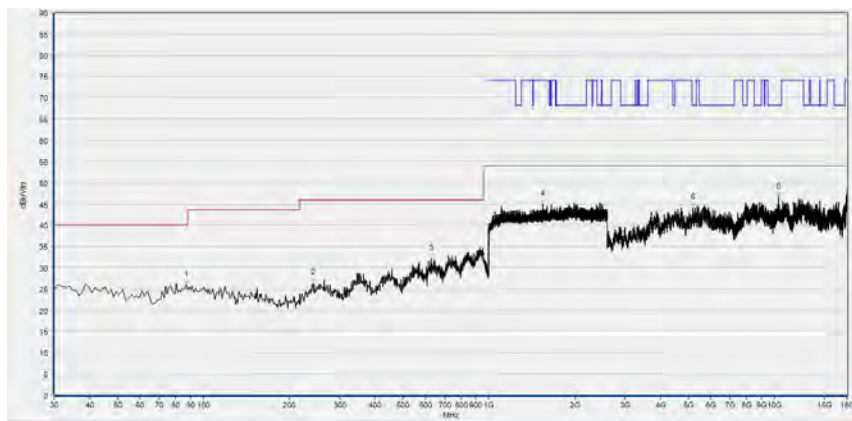


(Antenna Horizontal, 30MHz to 18GHz)



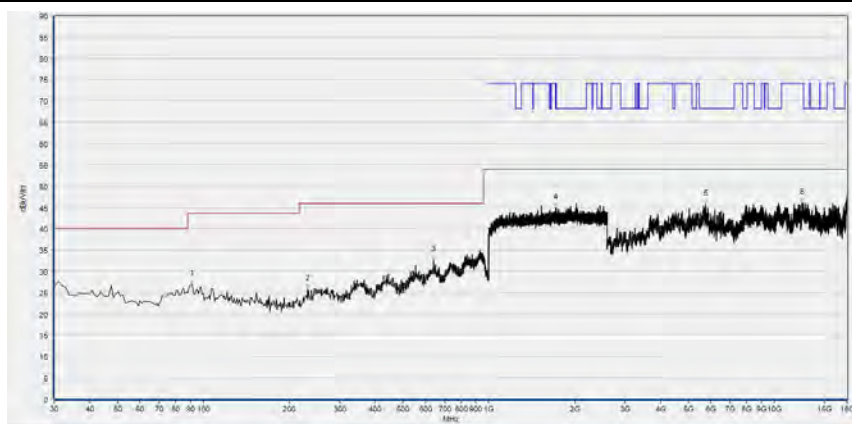
(Antenna Vertical, 30MHz to 18GHz)

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
87.230	25.92	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
243.400	26.30	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
627.520	31.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1546.667	44.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5184.120	44.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10333.880	46.57	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
91.110	26.99	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
231.760	25.87	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
641.100	32.64	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1713.067	44.83	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5747.760	45.73	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12508.360	46.09	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	$\pm 2.22\text{dB}$
Power Spectral Density	$\pm 2.22\text{dB}$
Bandwidth	$\pm 5\%$
Restricted Frequency Bands	$\pm 5\%$
Radiated Emission	$\pm 2.95\text{dB}$
Conducted Emission	$\pm 2.44\text{dB}$

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 C63.10-2013 and 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 Analyzer	MY53470836	N9010A	Agilent	2021.03.25	2022.03.24
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2020.10.23	2021.10.22
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
LISN	812744	NSLK 8127	Schwarzbeck	2021.03.09	2022.03.08
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

**4.4 Radiated 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
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	S020180L32 03	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L38 02	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L40 02	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



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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 _____

