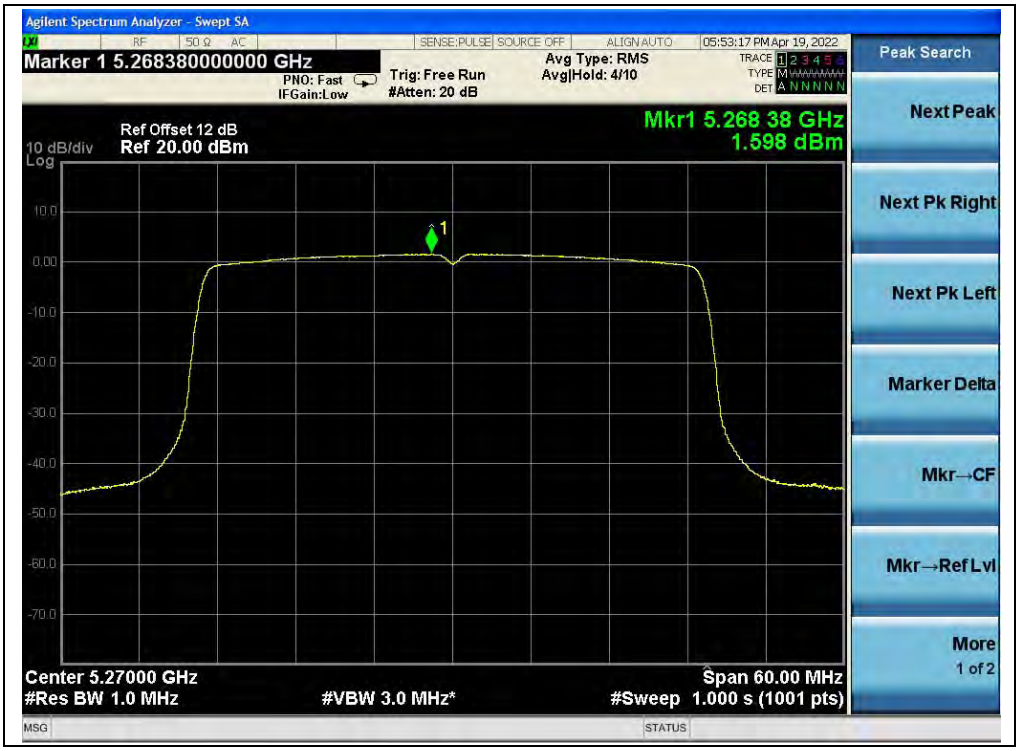
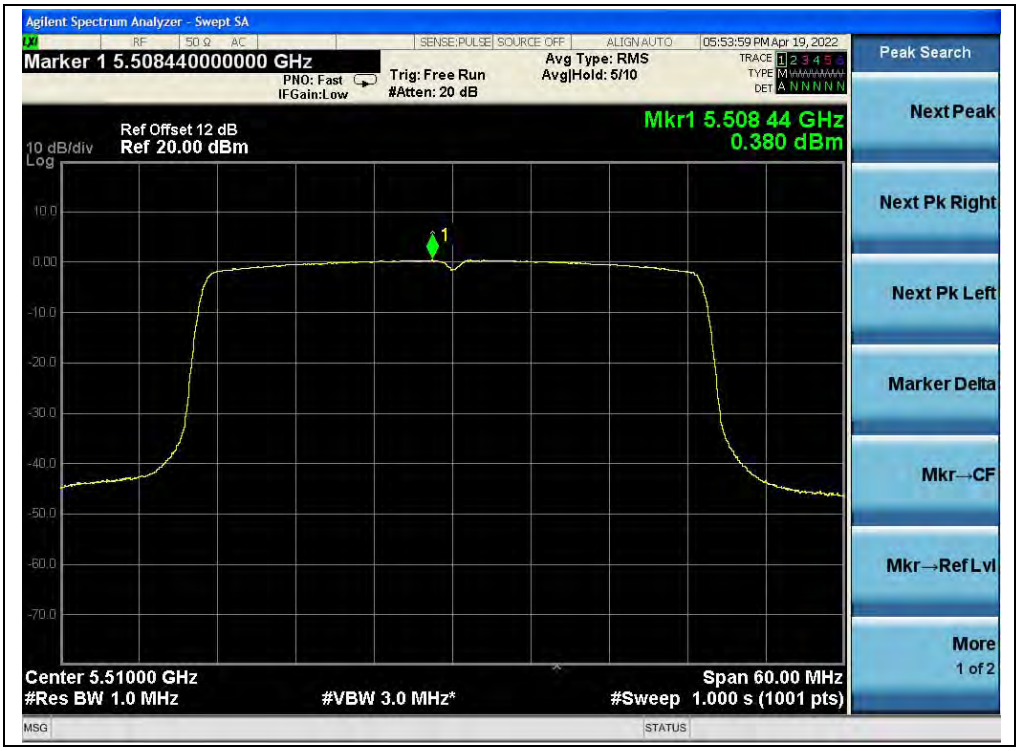
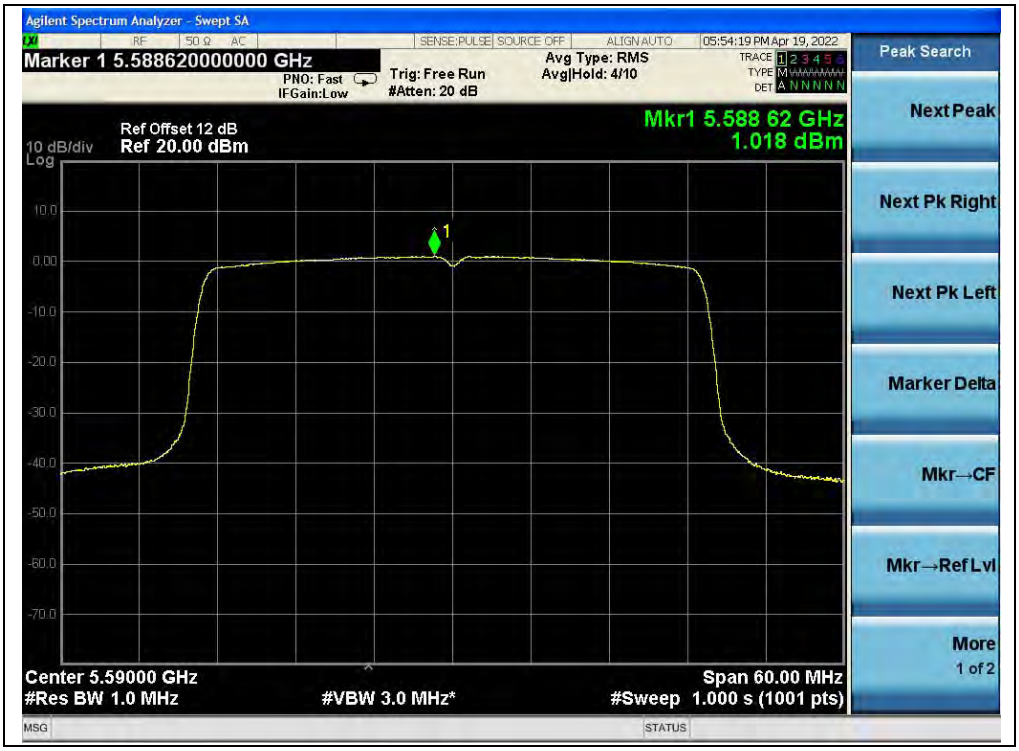


(Channel 54, 5270MHz, 802.11ax (HEW40), ANT0)

(Channel 62, 5310MHz, 802.11ax (HEW40), ANT0)

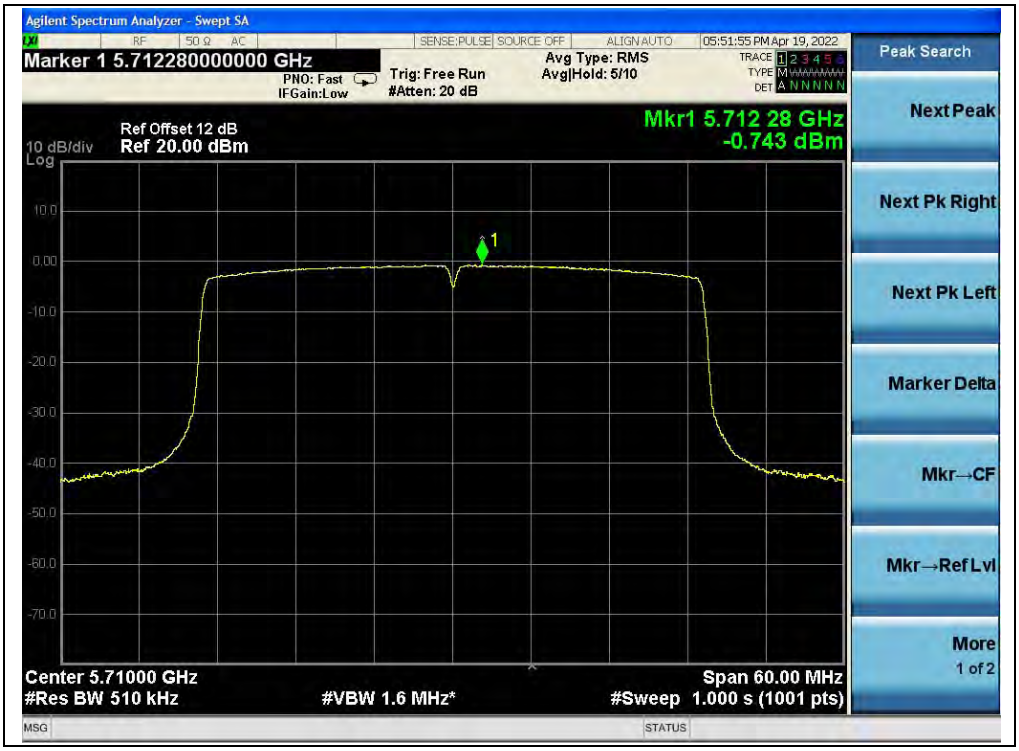


(Channel 102, 5510MHz, 802.11ax (HEW40), ANT0)



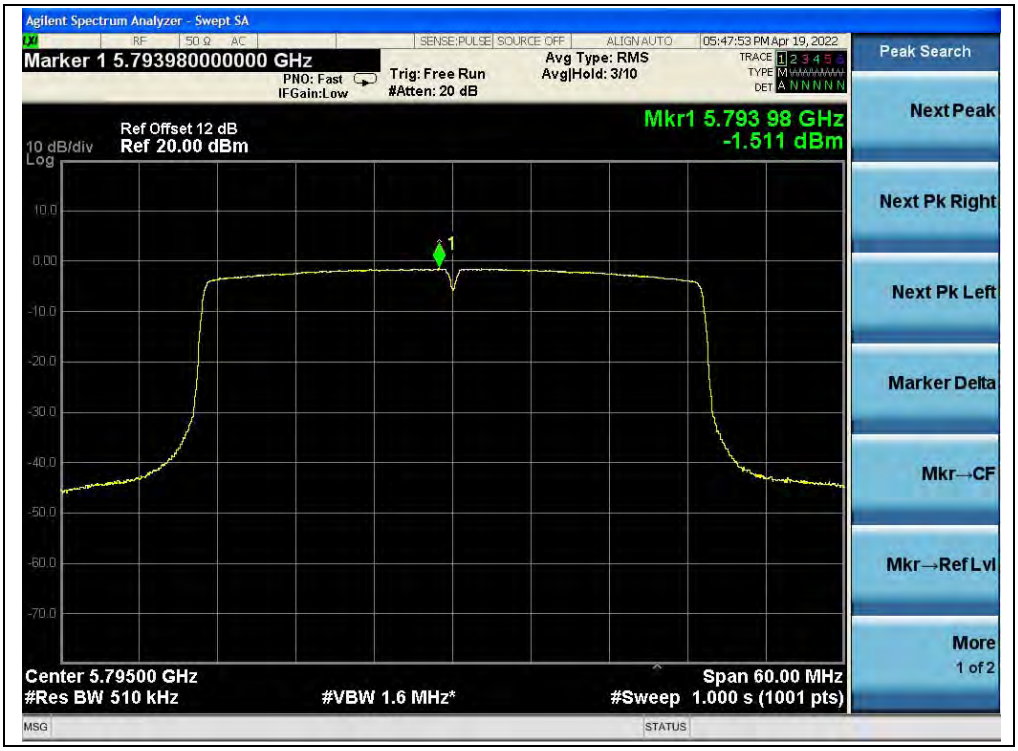
(Channel 126, 5630MHz, 802.11ax (HEW40), ANT0)

(Channel 142, 5710MHz, 802.11ax (HEW40), ANT0)



(Channel 142, 5710MHz, 802.11ax (HEW40), ANT0)

(Channel 151, 5755MHz, 802.11ax (HEW40), ANT0)



(Channel 159, 5795MHz, 802.11ax (HEW40), ANT0)

802.11ax (HEW80) Mode

A.Test Verdict:

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT0	ANT1				
5210	-1.70	-2.19	0.00	1.07	11	PASS
5290	-1.86	-1.75		1.21		
5530	-2.88	-3.36		-0.10		
5610	-2.35	-3.51		0.12		
5690	-1.43	-2.32		1.16		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT0	ANT1				
5690	-4.33	-5.30	0.00	-1.78	30	PASS
5775	-4.42	-5.17		-1.77		
Note: Directional gain = 2.7dBi +10log(2) = 5.71dBi＜6dBi, so the limit shall be 11dBm/MHz for 5.18-5.24GHz, 5.260-5.320GHz, 5.500-5.720GHz band and 30dBm/500KHz for 5.745-5.825GHz band.						

B.Test Plot:

(Channel 42, 5210MHz, 802.11ax (HEW80), ANT0)

(Channel 58, 5290MHz, 802.11ax (HEW80), ANT0)

(Channel 106, 5530MHz, 802.11ax (HEW80), ANT0)

(Channel 122, 5610MHz, 802.11ax (HEW80), ANT0)

(Channel 138, 5690MHz, 802.11ax (HEW80), ANT0)

(Channel 138, 5690MHz, 802.11ax (HEW80), ANT0)

(Channel 155, 5775MHz, 802.11ax (HEW80), ANT0)

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%	4.20	+20(Ref)	23	4.440
100%		-30	25	4.826
100%		-20	29	5.598
100%		-10	26	5.019
100%		0	25	4.826
100%		+10	24	4.633
100%		+20	20	3.861
100%		+30	28	5.405
100%		+40	26	5.019
100%		+50	23	4.440
115%	4.35	+20	29	5.598
85%	3.20	+20	30	5.792

U-NII-2A (Ch. 52) 5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	4.20	+20(Ref)	18	3.422
100%		-30	22	4.183
100%		-20	25	4.753
100%		-10	24	4.563
100%		0	19	3.612
100%		+10	18	3.422
100%		+20	21	3.992
100%		+30	26	4.943
100%		+40	30	5.703
100%		+50	25	4.753
115%	4.35	+20	19	3.612
85%	3.20	+20	22	4.183

U-NII-2C (Ch. 100) 5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	4.20	+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	20	3.636
100%		+20	24	4.364
100%		+30	32	5.818
100%		+40	34	6.182
100%		+50	25	4.545
115%	4.35	+20	27	4.909
85%	3.20	+20	30	5.455

U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	4.20	+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	26	4.526
100%		+20	26	4.526
100%		+30	26	4.526
100%		+40	28	4.874
100%		+50	28	4.874
115%	4.35	+20	31	5.396
85%	3.20	+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

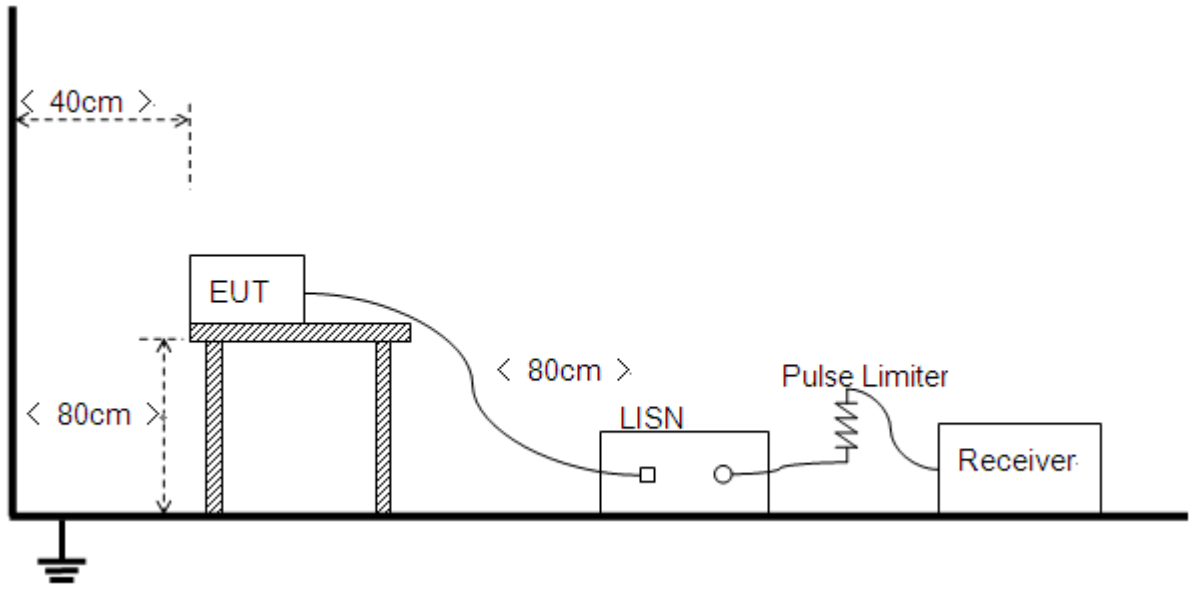
Note:

(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+Adapter+PC +WIFI TX

Test Voltage: AC 120V/60Hz

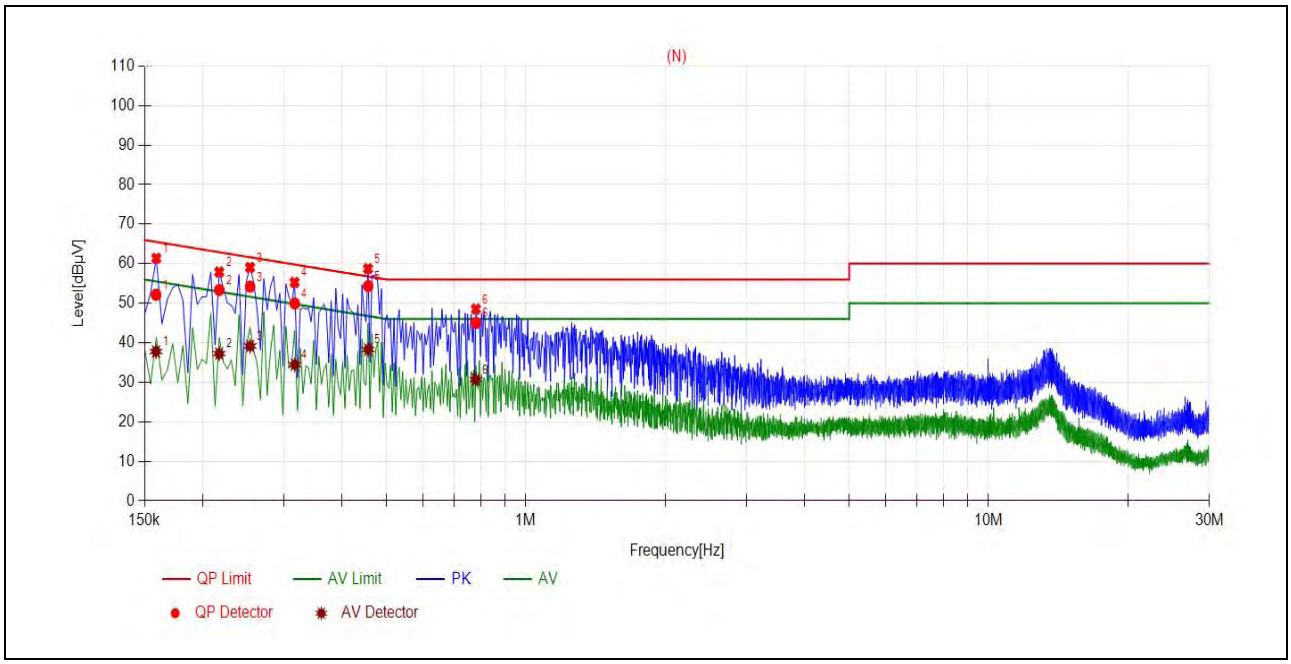
The measurement results are obtained as below:

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

U_R: Receiver Reading

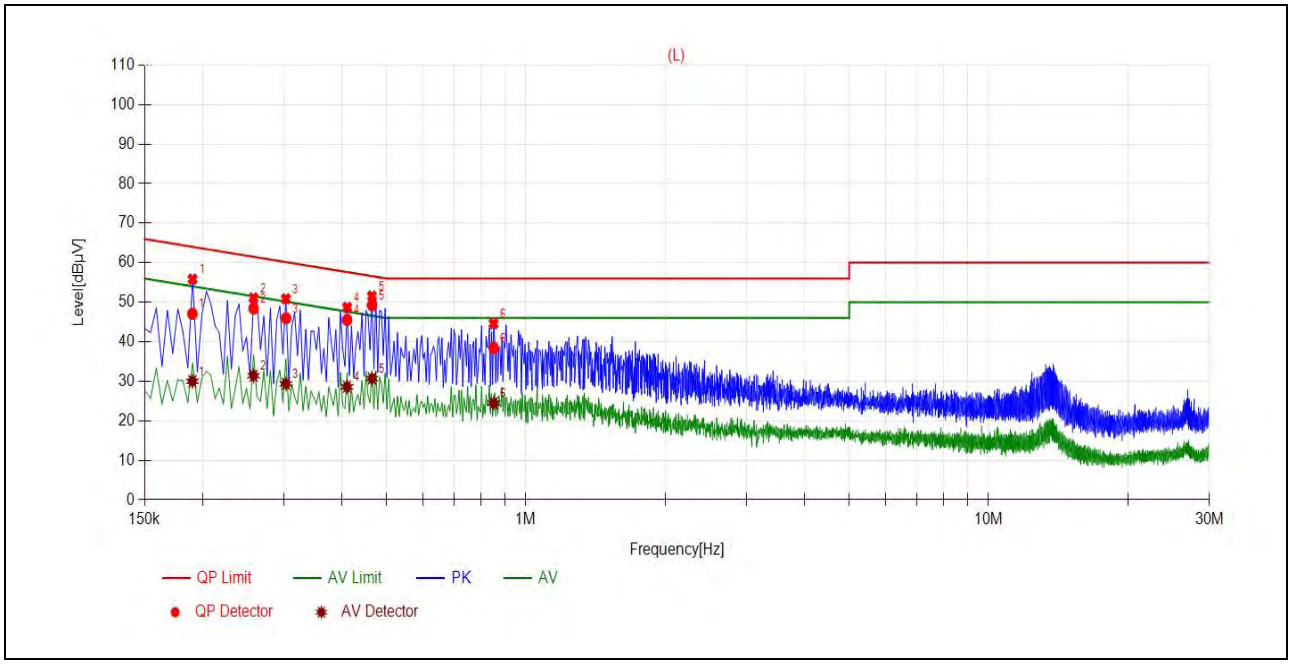
A_{Factor}: Voltage division factor of LISN

B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1588	52.16	37.77	65.52	55.52	Line	PASS
2	0.2175	53.34	37.26	62.91	52.91		PASS
3	0.2536	54.19	39.15	61.64	51.64		PASS
4	0.3167	49.94	34.45	59.79	49.79		PASS
5	0.4562	54.32	38.28	56.76	46.76		PASS
6	0.7797	45.05	30.70	56.00	46.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1903	47.08	30.00	64.02	54.02	Neutral	PASS
2	0.2580	48.41	31.40	61.50	51.50		PASS
3	0.3032	45.93	29.35	60.15	50.15		PASS
4	0.4107	45.51	28.60	57.63	47.63		PASS
5	0.4650	49.22	30.70	56.60	46.60		PASS
6	0.8523	38.39	24.47	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:

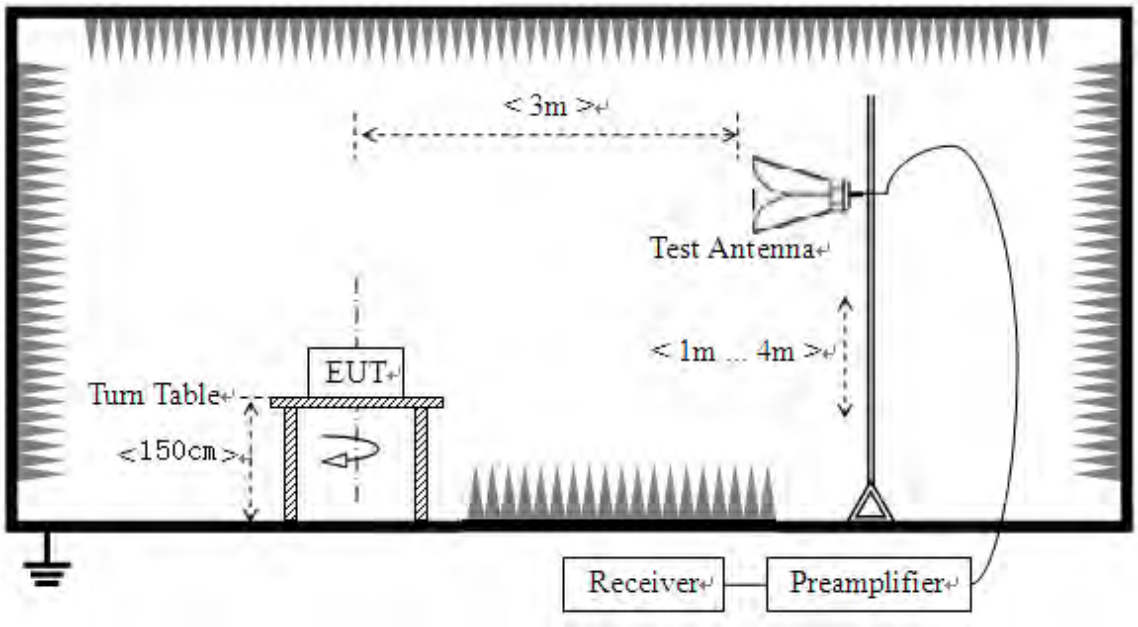
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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

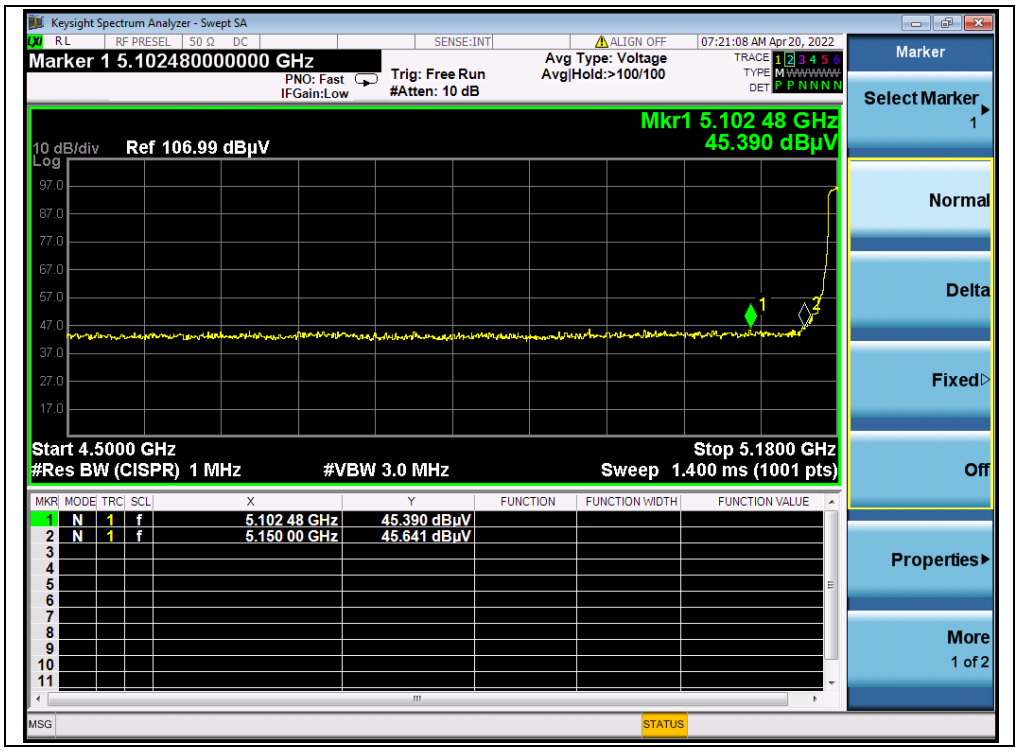
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]
A_T: Total correction Factor except Antenna; U_R: Receiver Reading
G_{preamp}: Preamplifier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

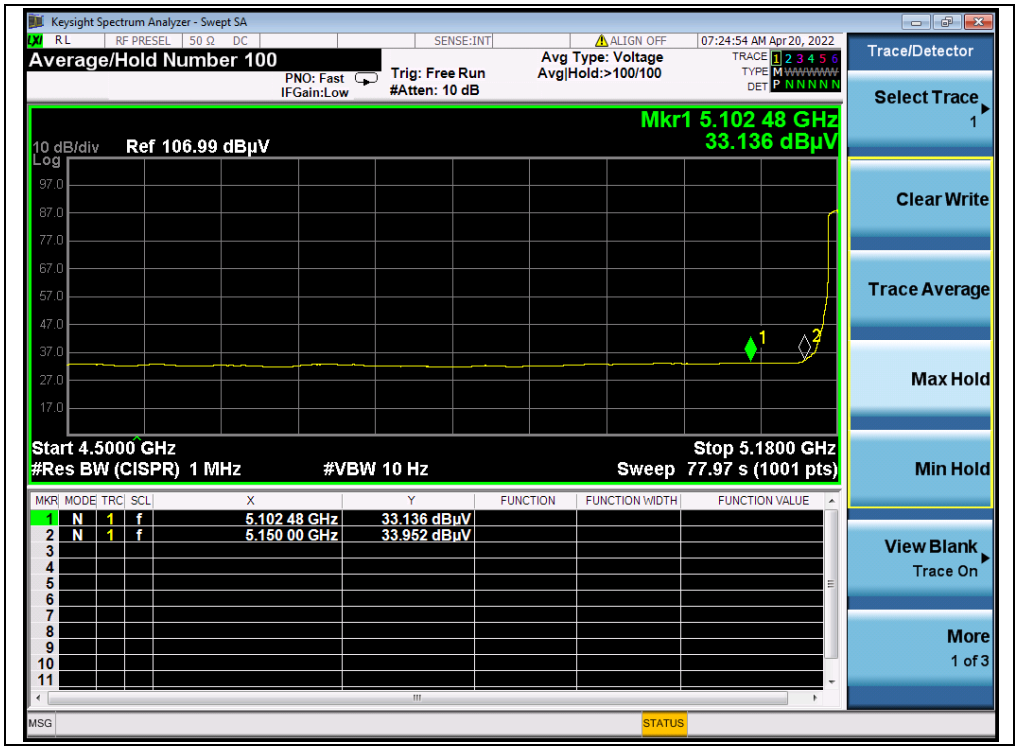
A.Test Verdict:

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	5150.00	PK	45.64	-19.54	32.20	58.30	74	PASS
36	5150.00	AV	33.95	-19.54	32.20	46.61	54	PASS
64	5350.00	PK	43.34	-18.80	32.20	56.74	74	PASS
64	5350.00	AV	31.74	-18.80	32.20	45.14	54	PASS
100	5445.61	PK	42.45	-19.20	32.20	55.45	74	PASS
100	5470.00	AV	32.27	-19.20	32.20	45.27	54	PASS
144	5725.00	PK	51.05	-19.20	32.20	64.05	68.23	PASS
149	5725.00	PK	57.04	-19.01	32.20	70.23	122.23	PASS
165	5850.00	PK	49.46	-19.01	32.20	62.65	122.23	PASS

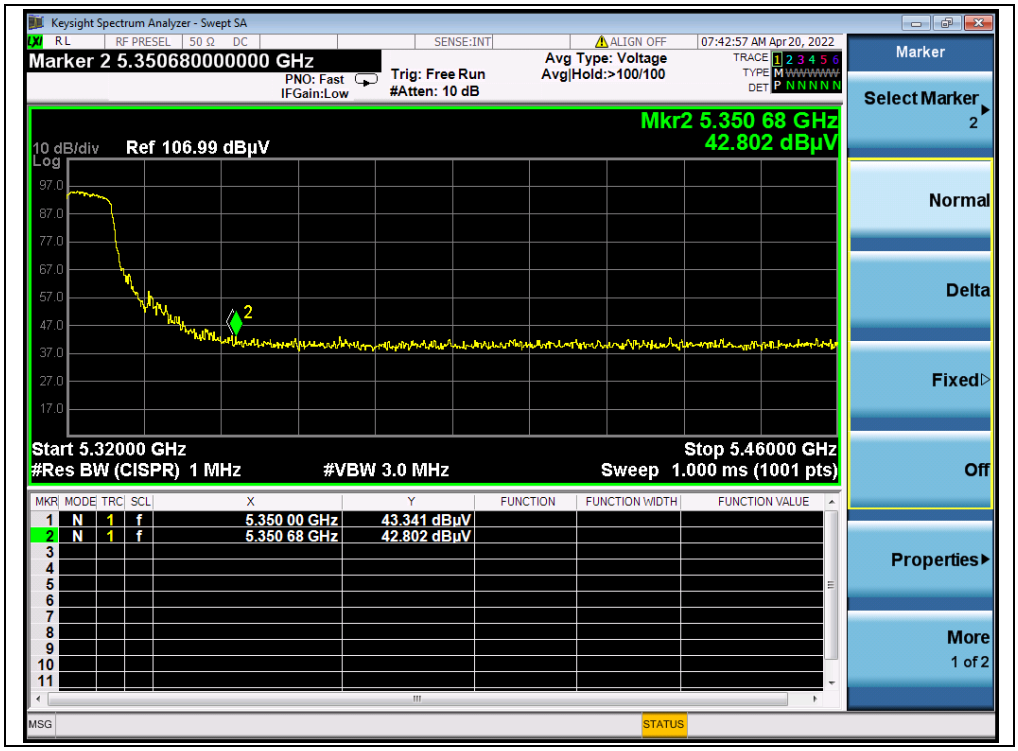
B.Test Plot:



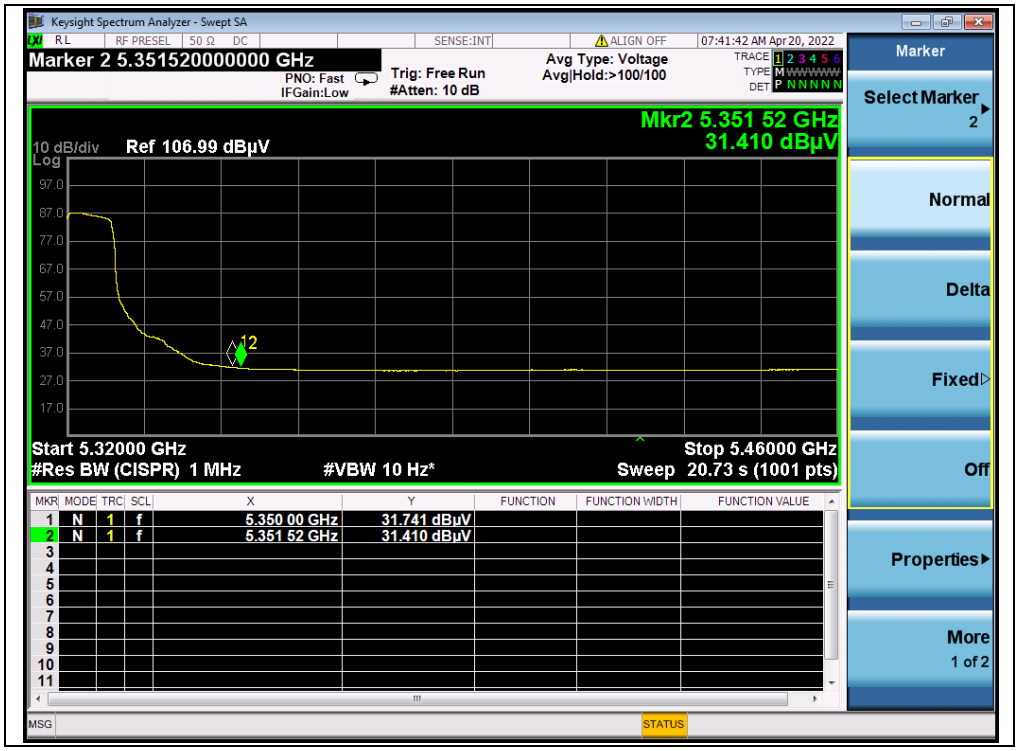
(PEAK, Channel 36, 802.11a)



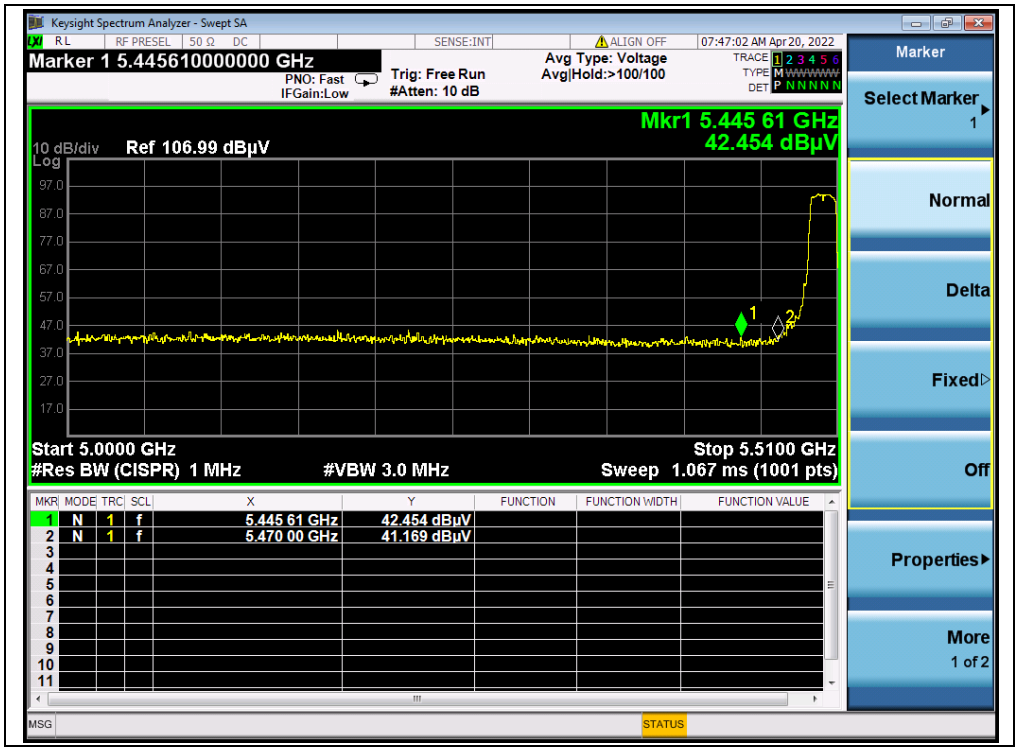
(AVERAGE, Channel 36, 802.11a)



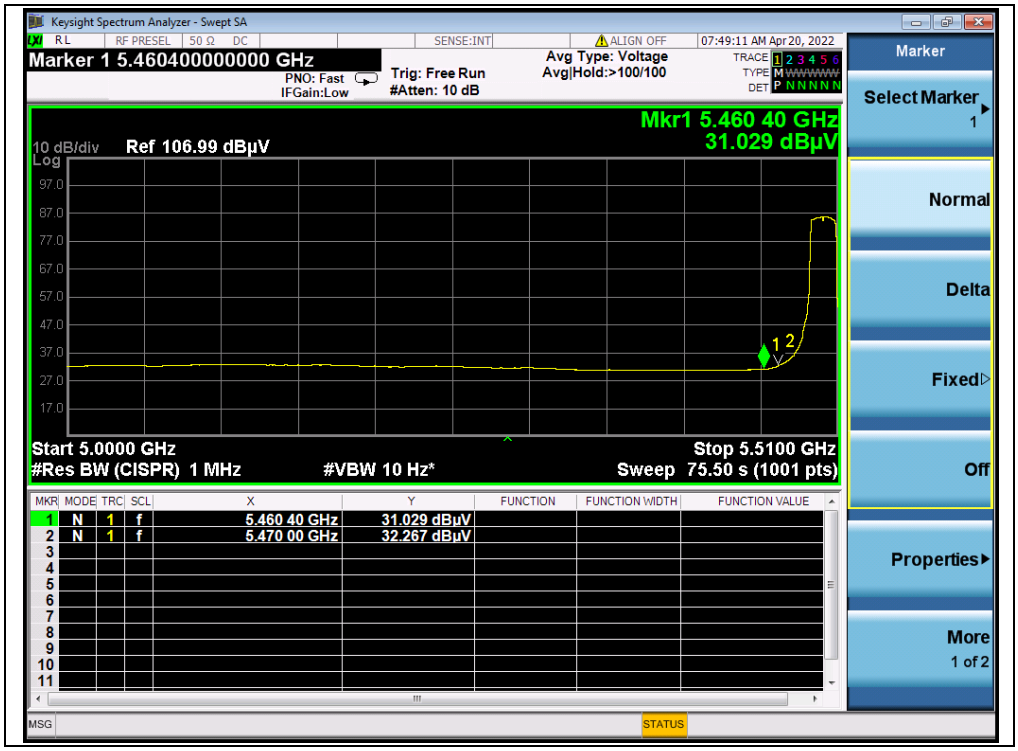
(PEAK, Channel 64, 802.11a)



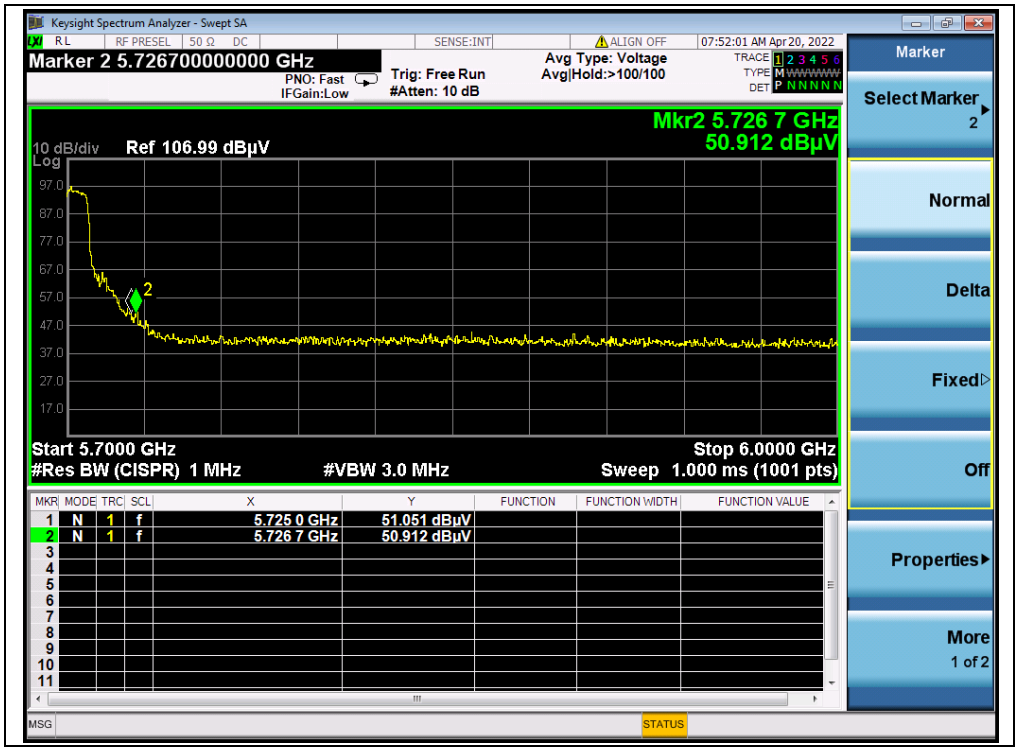
(AVERAGE, Channel 64, 802.11a)



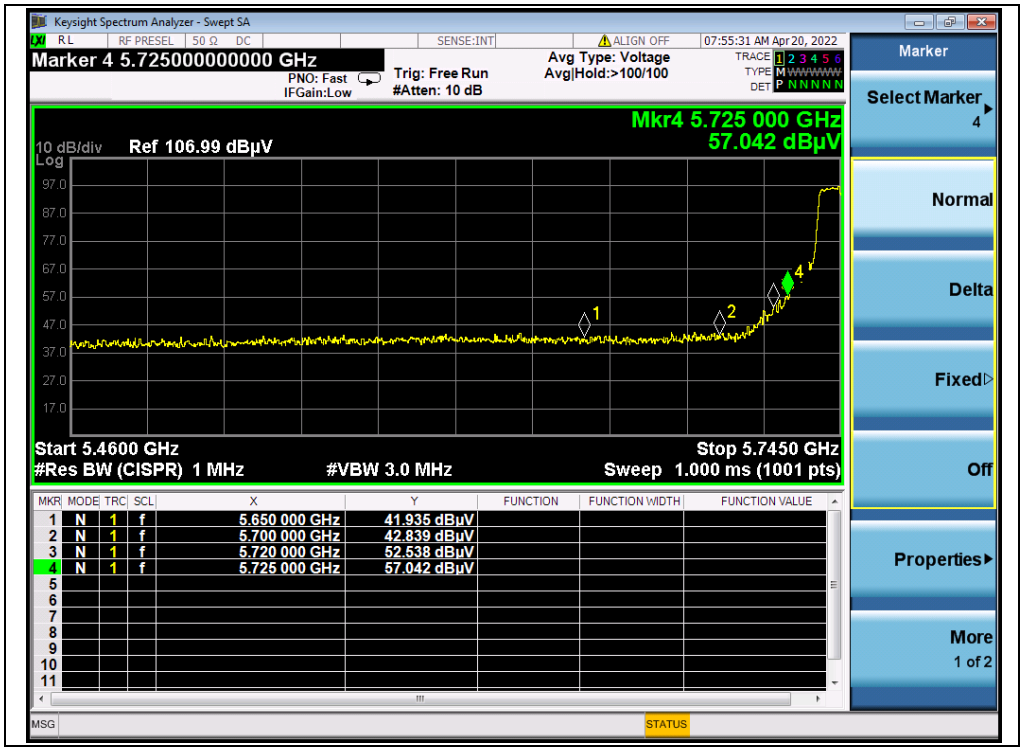
(PEAK, Channel100, 802.11a)



(AVERAGE, Channel 100, 802.11a)



(PEAK, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)

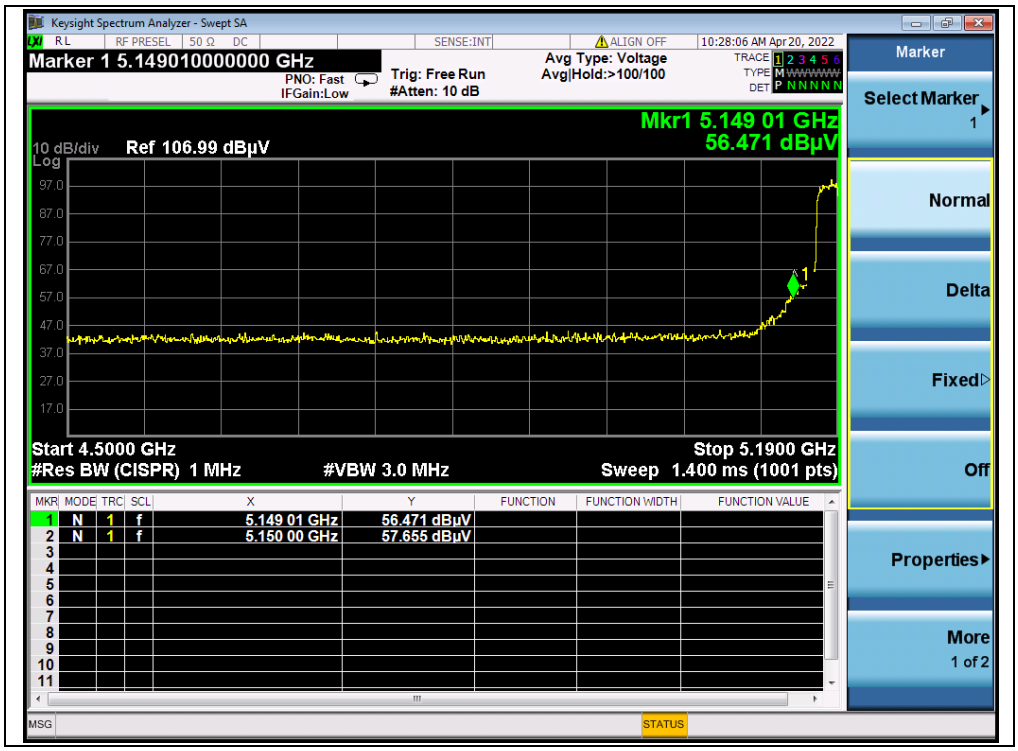
(PEAK, Channel 165, 802.11a)

802.11n (HT40) Mode

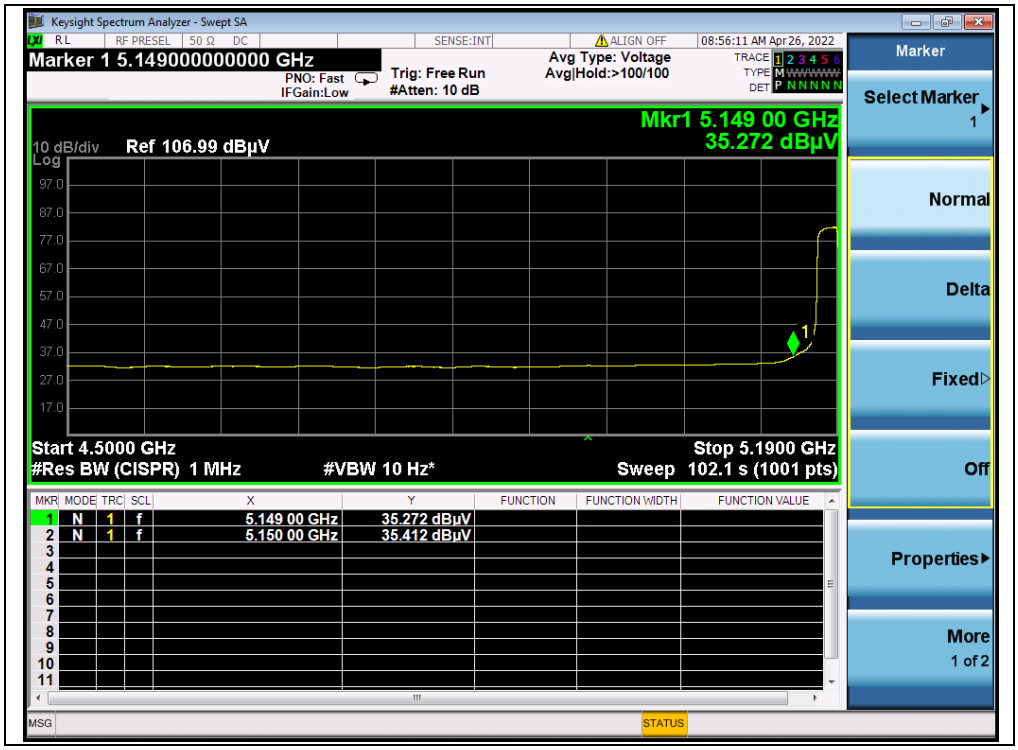
A.Test Verdict:

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	57.66	-19.54	32.20	70.32	74	PASS
38	5150.00	AV	35.41	-19.54	32.20	48.07	54	PASS
62	5350.80	PK	56.02	-18.80	32.20	69.42	74	PASS
62	5350.00	AV	37.39	-18.80	32.20	50.79	54	PASS
102	5468.32	PK	53.79	-19.20	32.20	66.79	68.23	PASS
102	5470.00	AV	35.06	-19.20	32.20	48.06	54	PASS
142	5727.76	PK	48.28	-19.20	32.20	61.28	68.23	PASS
151	5725.00	PK	63.17	-19.01	32.20	76.36	122.23	PASS
159	5850.00	PK	47.03	-19.01	32.20	60.22	122.23	PASS

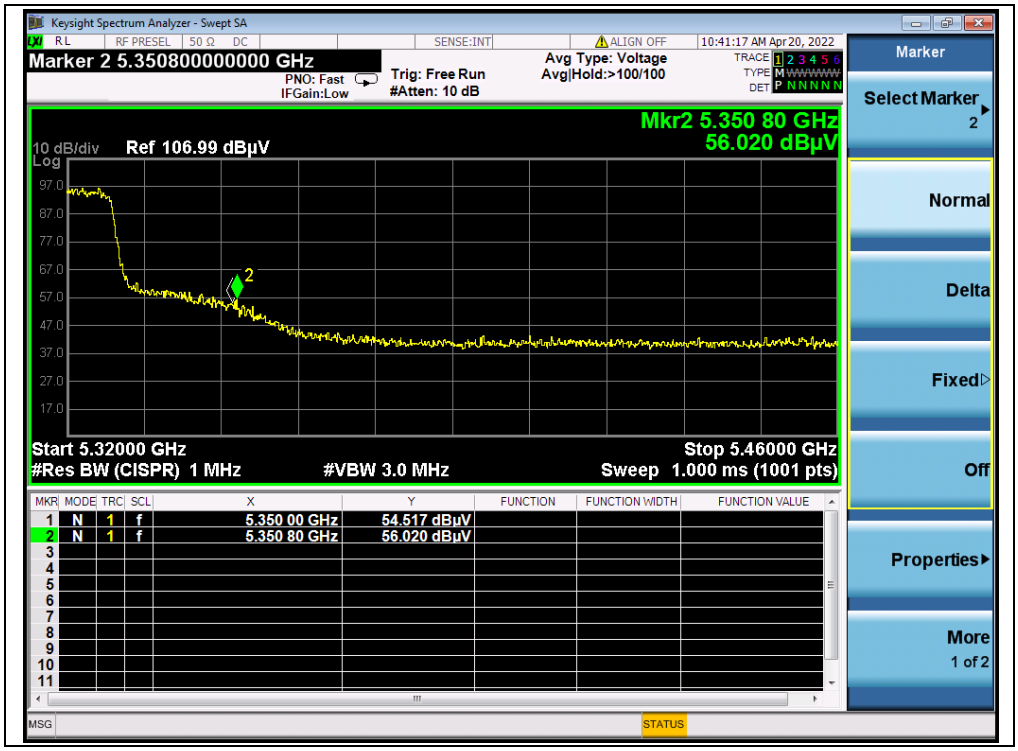
B.Test Plot:



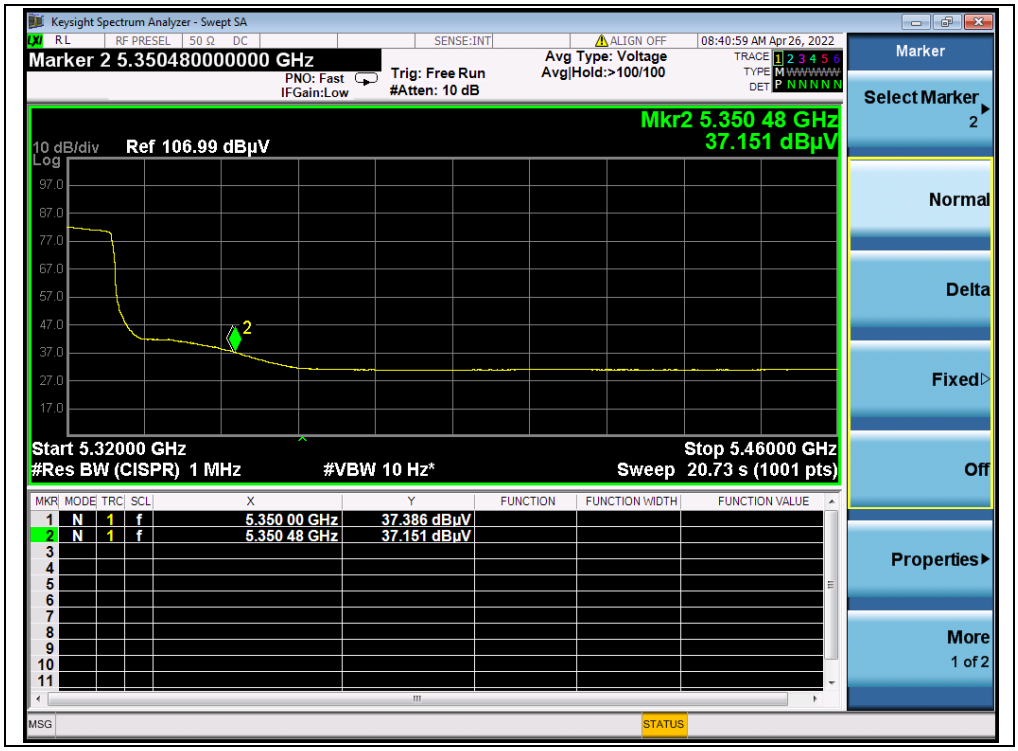
(PEAK, Channel 38, 802.11n (HT40))



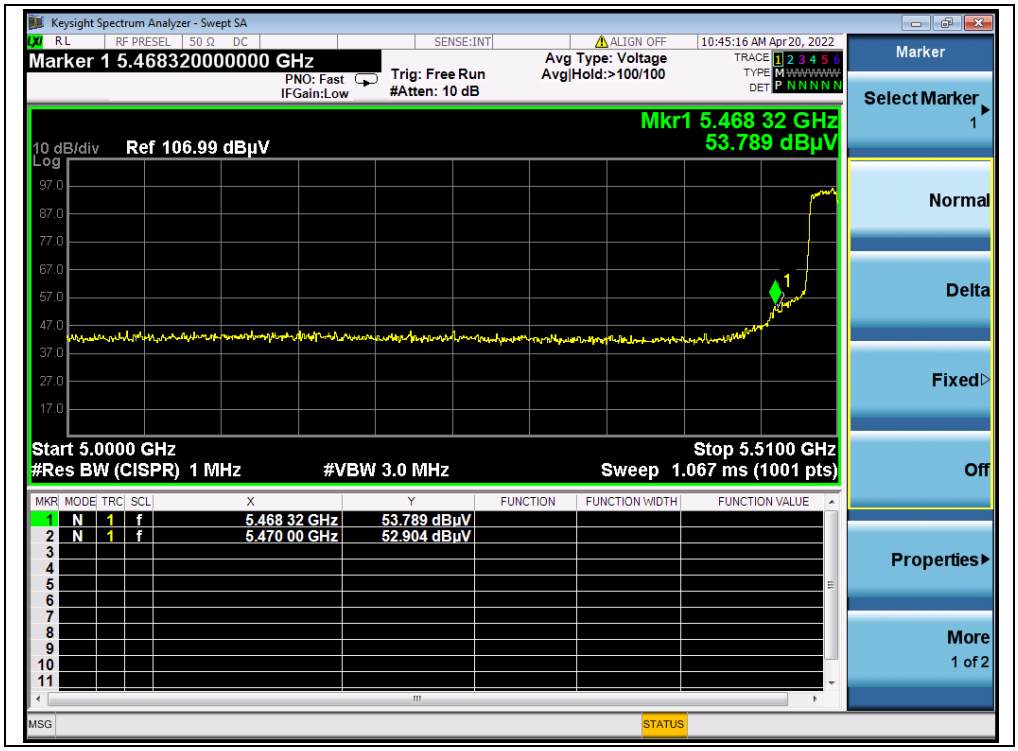
(AVERAGE, Channel 38, 802.11n (HT40))



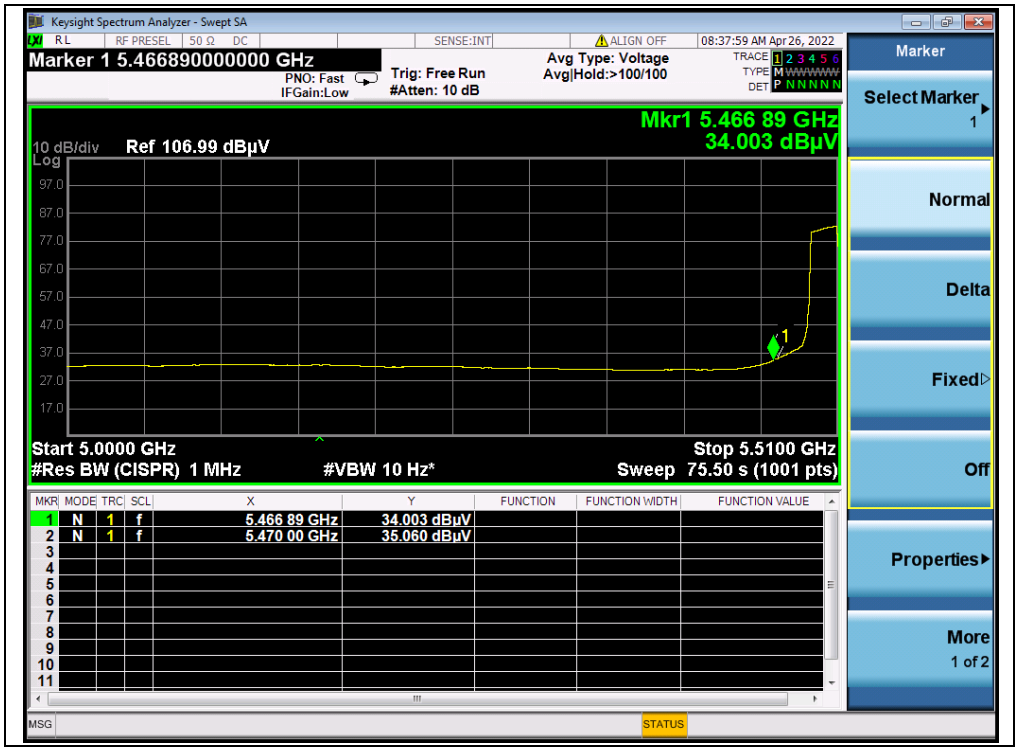
(PEAK, Channel 62, 802.11n (HT40))



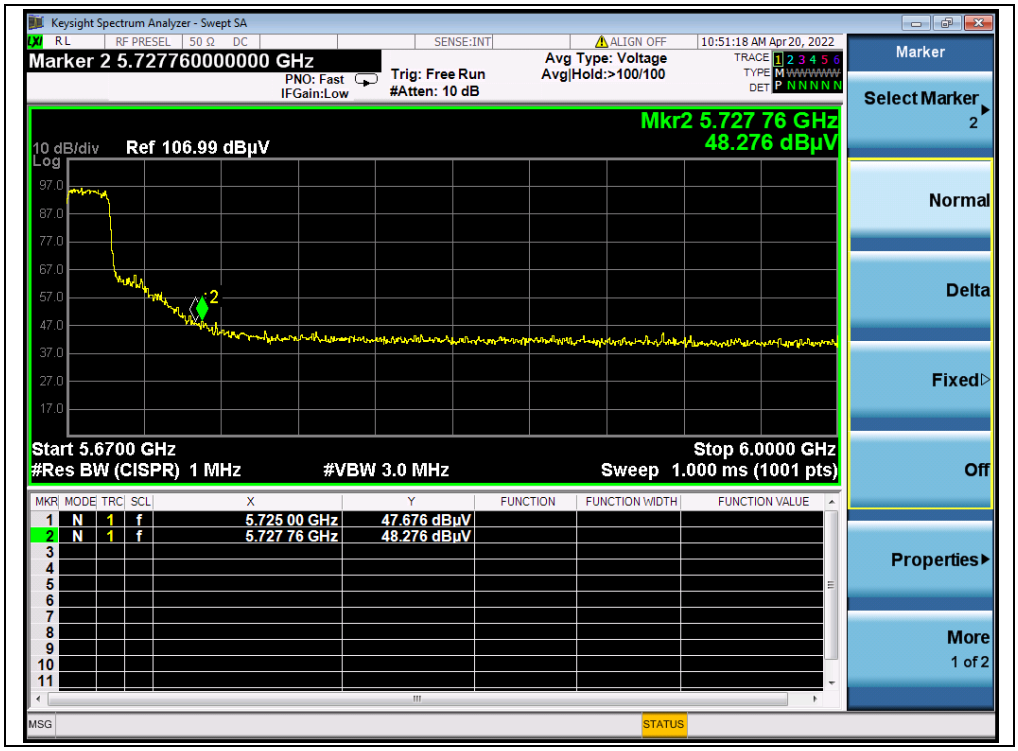
(AVERAGE, Channel 62, 802.11n (HT40))



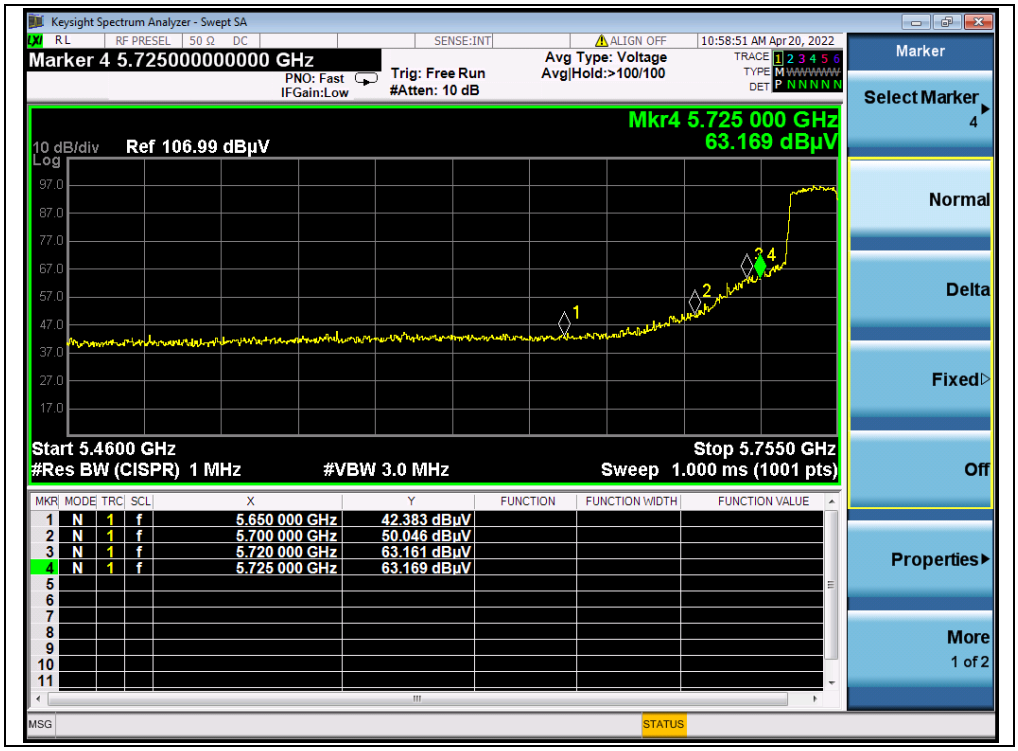
(PEAK, Channel 102, 802.11n (HT40))



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



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



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

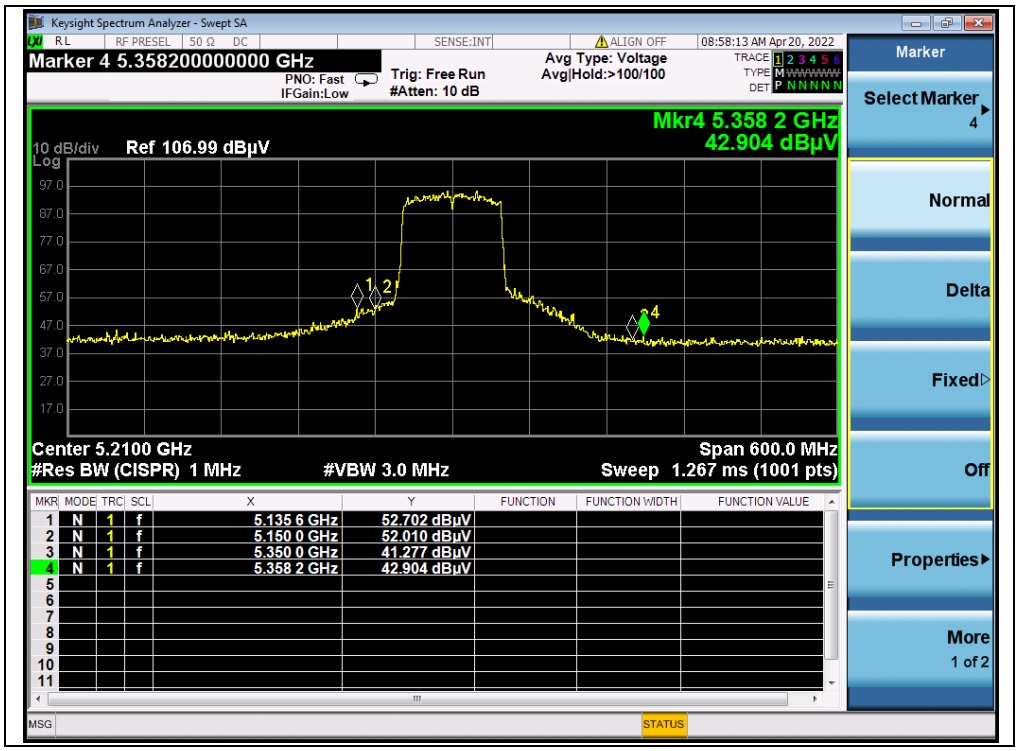
(PEAK, Channel 159, 802.11n (HT40))

802.11ac (VHT80) Mode

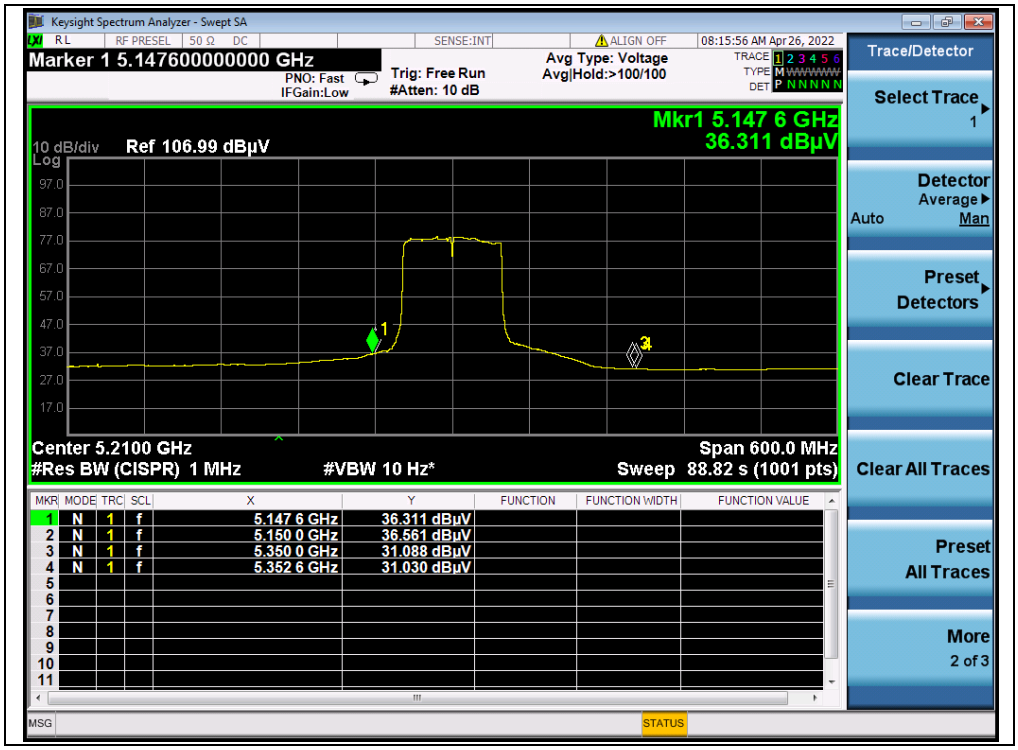
A.Test Verdict:

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	5135.60	PK	52.70	-19.54	32.20	65.36	74	PASS
42	5150.00	AV	36.56	-19.54	32.20	49.22	54	PASS
58	5355.80	PK	51.09	-18.80	32.20	64.49	74	PASS
58	5350.00	AV	35.39	-18.80	32.20	48.79	54	PASS
106	5464.16	PK	50.90	-19.20	32.20	63.90	68.23	PASS
106	5466.89	AV	33.89	-19.20	32.20	46.89	54	PASS
138	5743.21	PK	44.31	-19.20	32.20	57.31	68.23	PASS
155	5725.00	PK	57.99	-19.01	32.20	71.18	122.23	PASS
155	5850.00	PK	56.01	-19.01	32.20	69.20	122.23	PASS

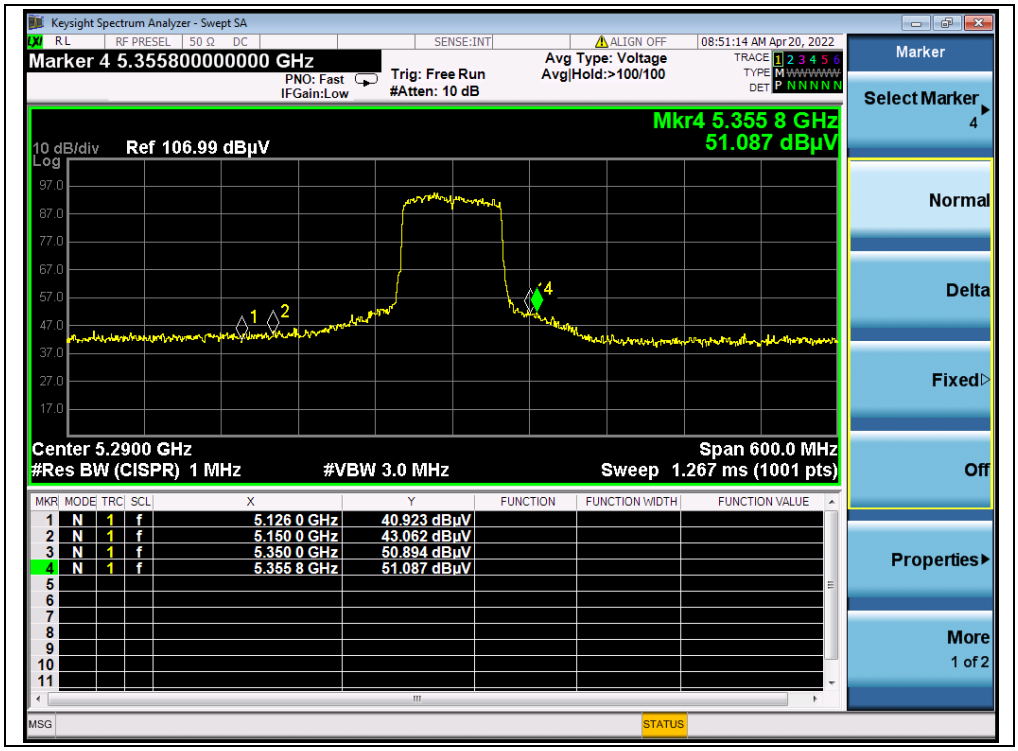
B.Test Plot:



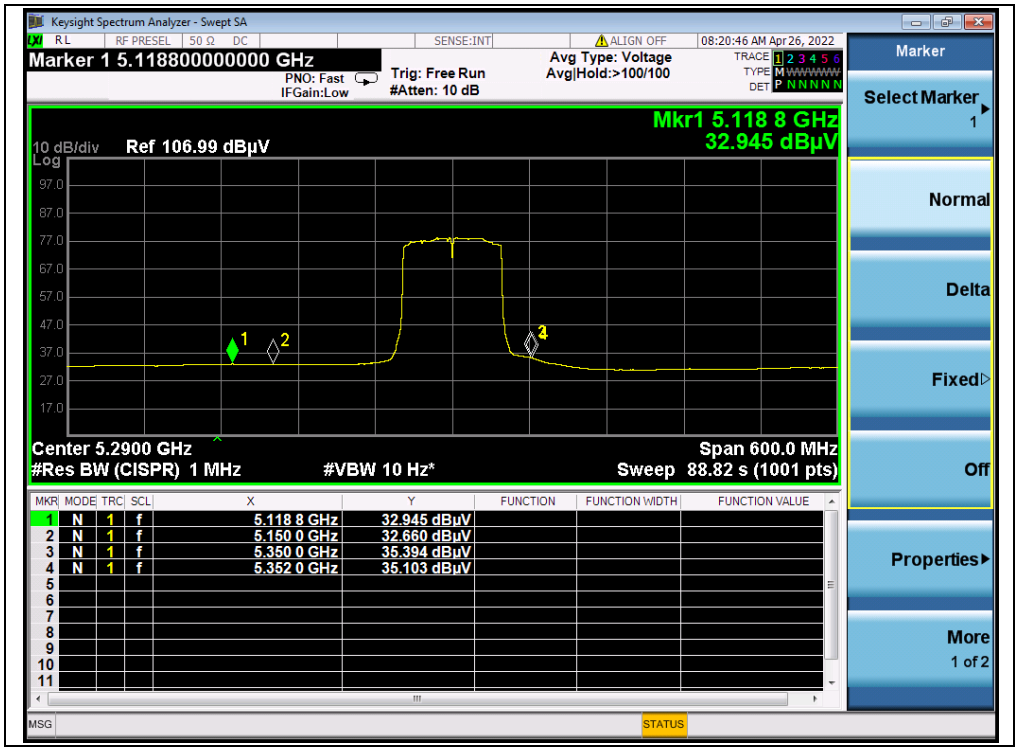
(PEAK, Channel 42, 802.11ac (VHT80))



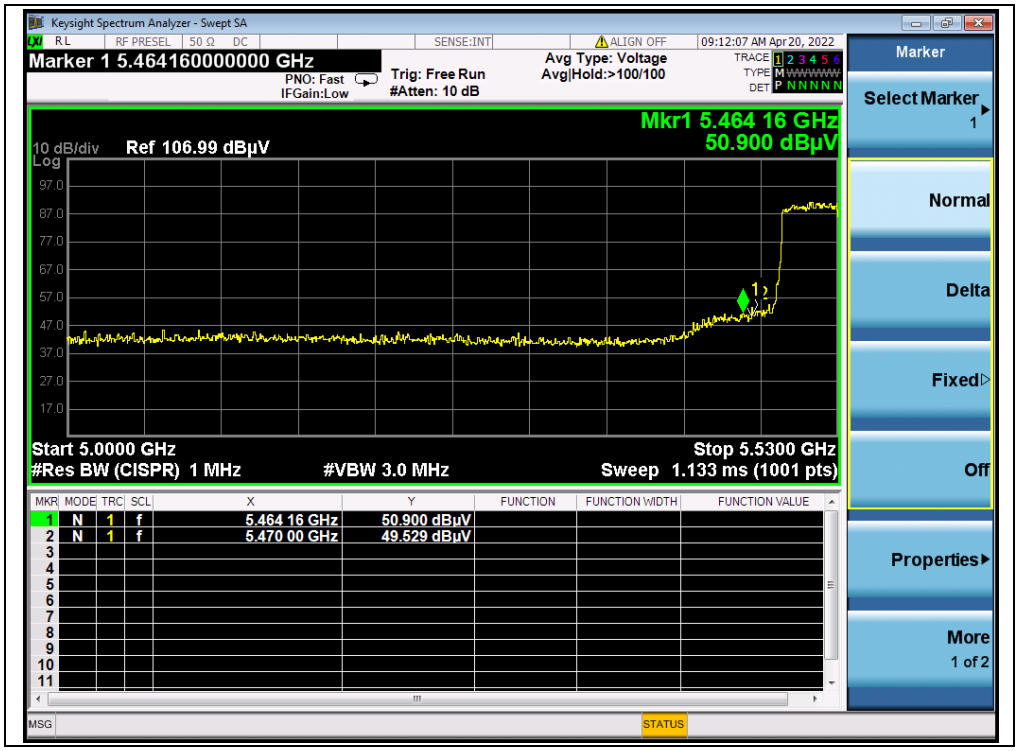
(AVERAGE, Channel 42, 802.11ac (VHT80))



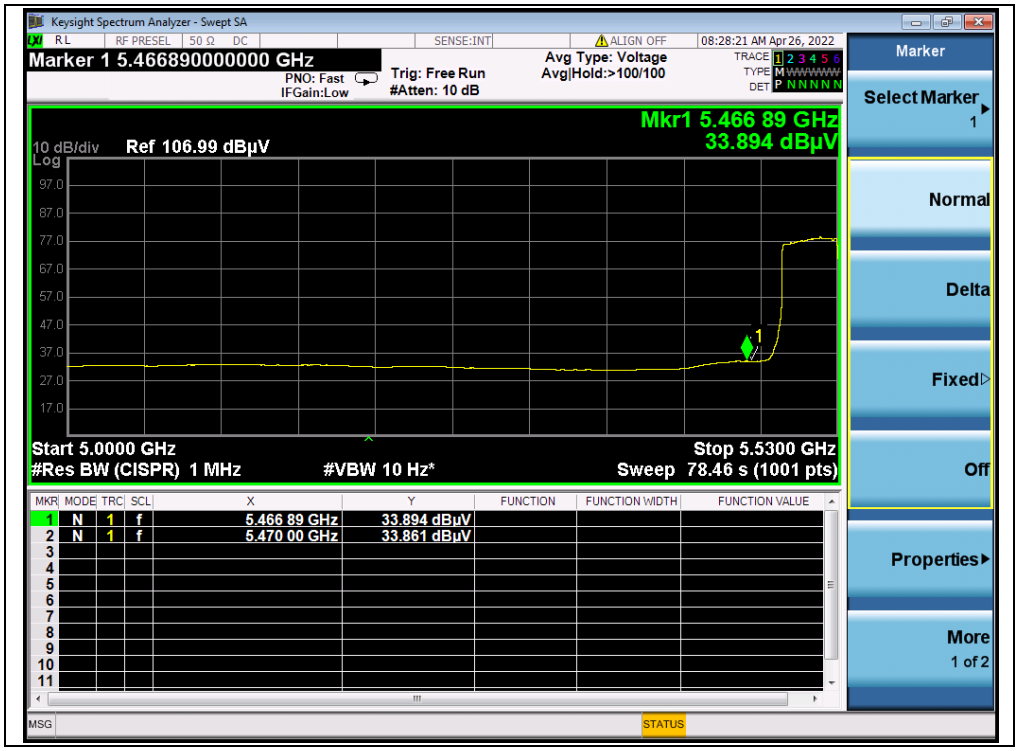
(PEAK, Channel 58, 802.11ac (VHT80))



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

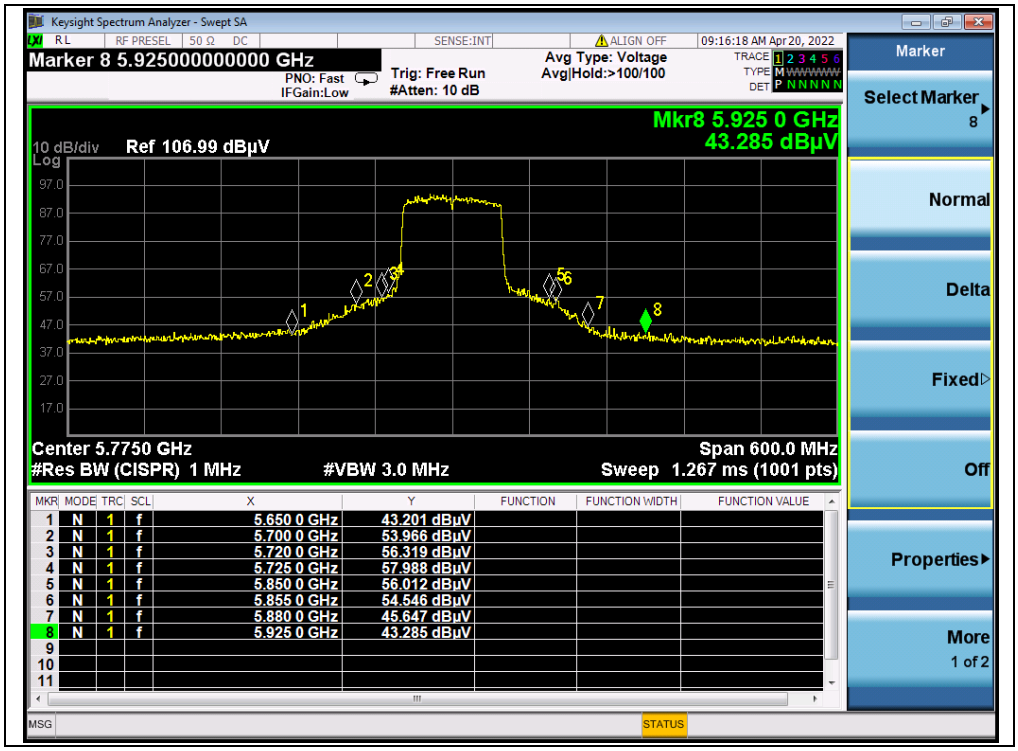


(PEAK, Channel 106, 802.11ac (VHT80))



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

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



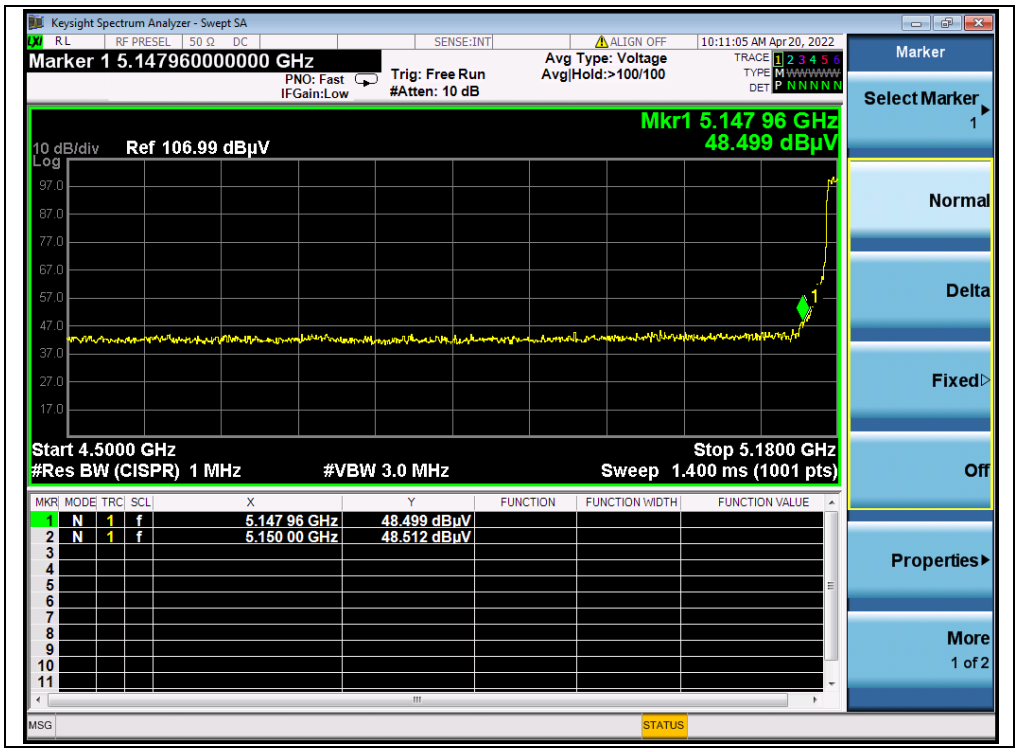
(PEAK, Channel 155, 802.11ac (VHT80))

802.11ax (HEW20) Mode

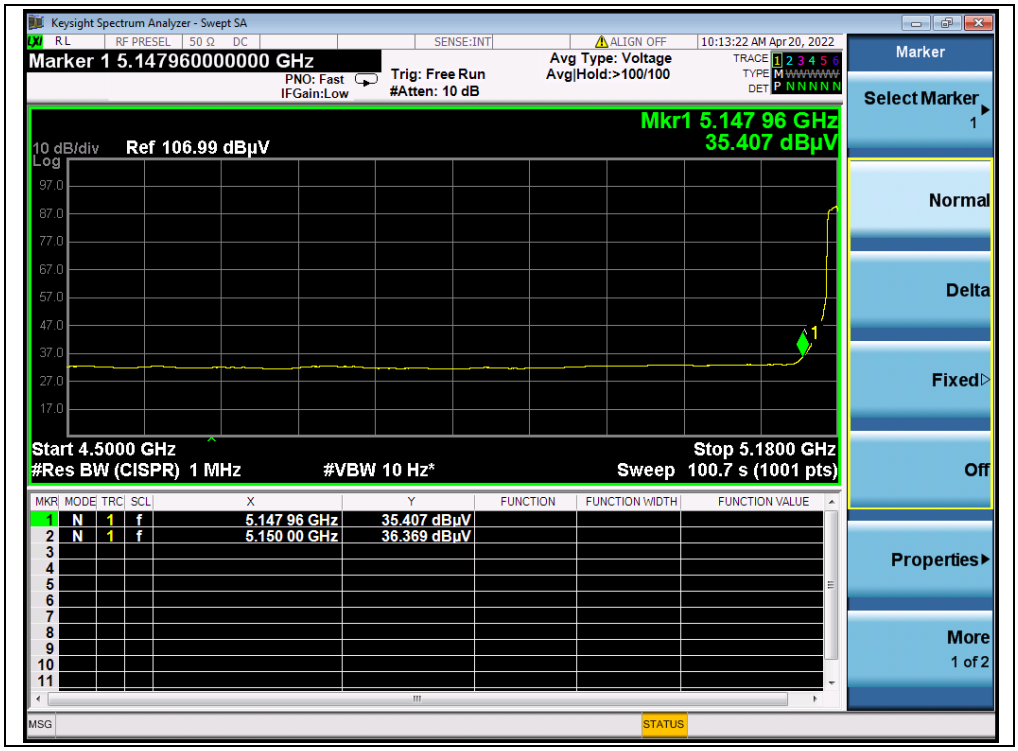
A.Test Verdict:

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	5150.00	PK	48.51	-19.54	32.20	61.17	74	PASS
36	5150.00	AV	36.37	-19.54	32.20	49.03	54	PASS
64	5361.30	PK	43.34	-18.80	32.20	56.74	74	PASS
64	5350.00	AV	31.71	-18.80	32.20	45.11	54	PASS
100	5470.00	PK	43.42	-19.20	32.20	56.42	68.23	PASS
100	5470.00	AV	32.26	-19.20	32.20	45.26	54	PASS
144	5725.00	PK	47.86	-19.20	32.20	60.86	68.23	PASS
149	5725.00	PK	55.13	-19.01	32.20	68.32	122.23	PASS
165	5850.00	PK	48.59	-19.01	32.20	61.78	122.23	PASS

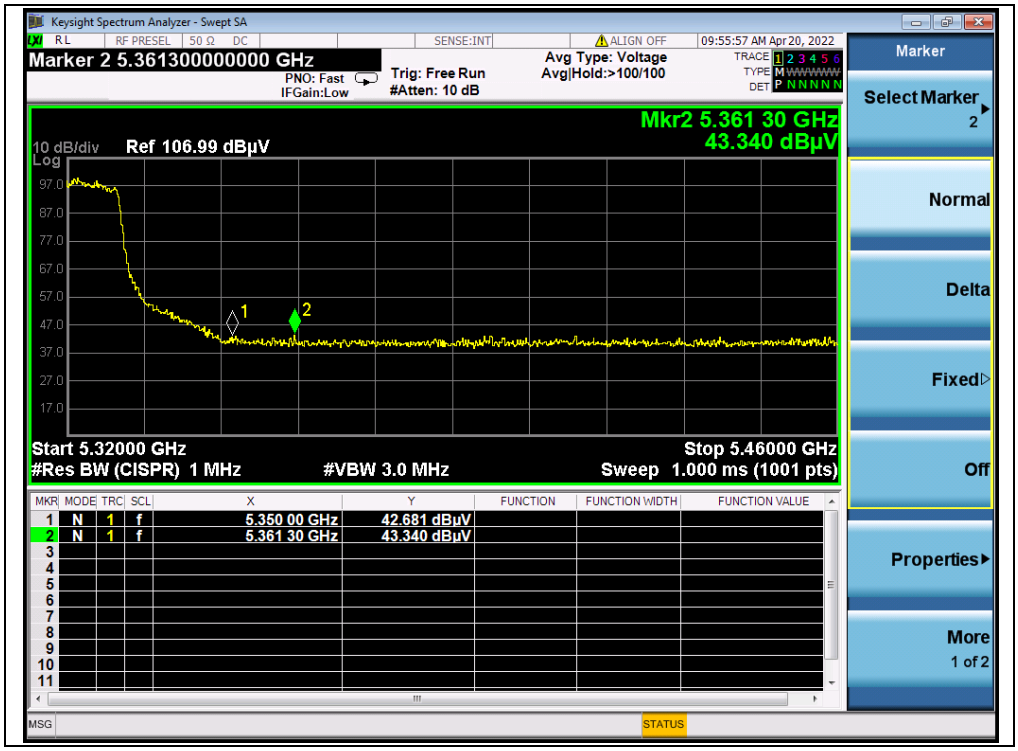
B.Test Plot:



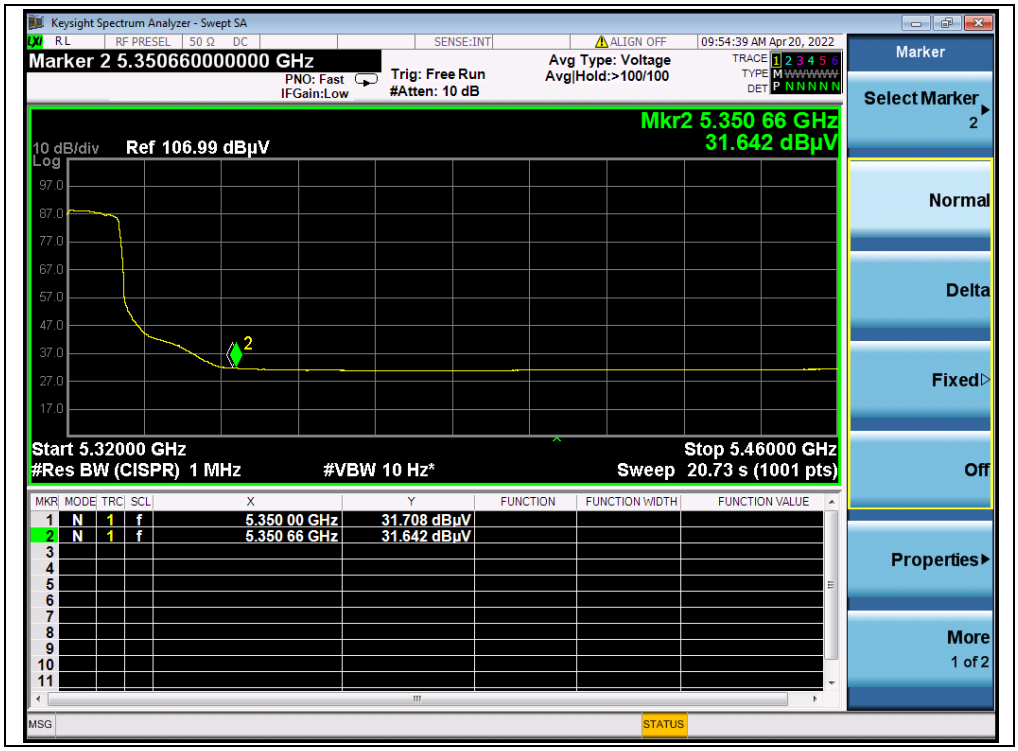
(PEAK, Channel 36, 802.11ax (HEW20))



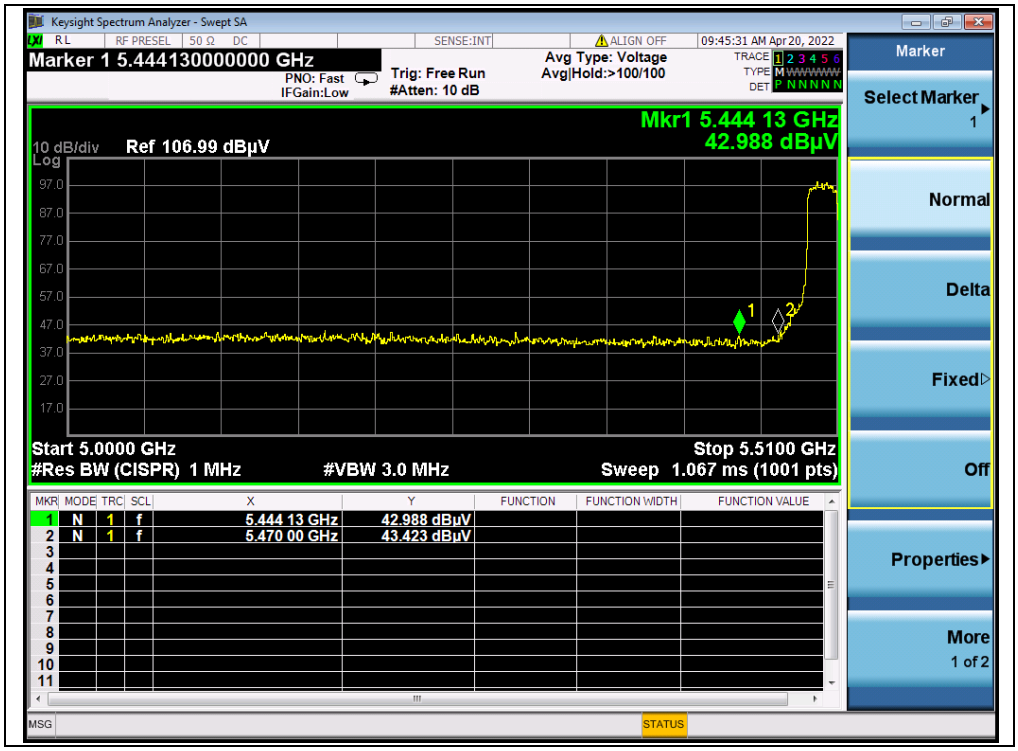
(AVERAGE, Channel 36, 802.11ax (HEW20))



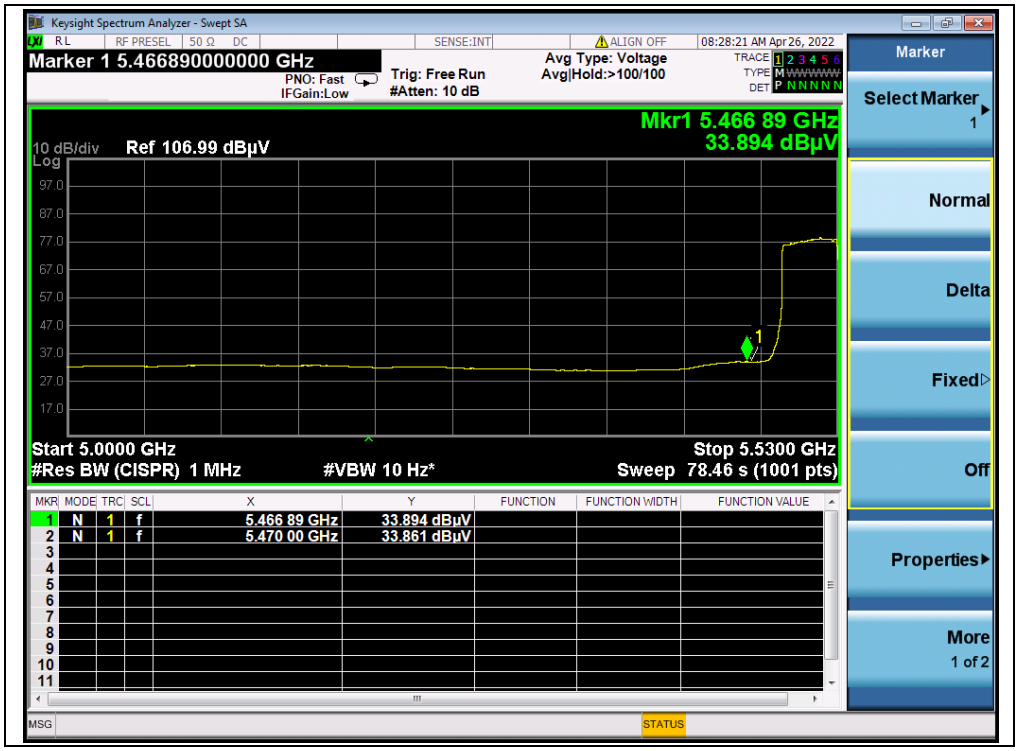
(PEAK, Channel 64, 802.11ax (HEW20))



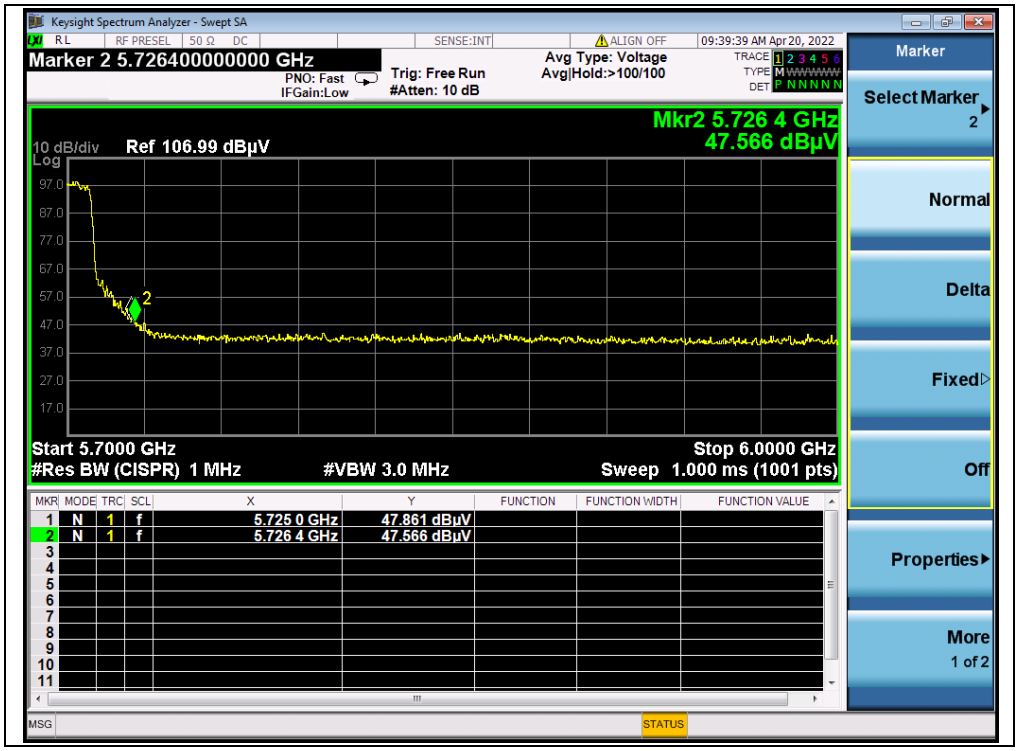
(AVERAGE, Channel 64, 802.11ax (HEW20))



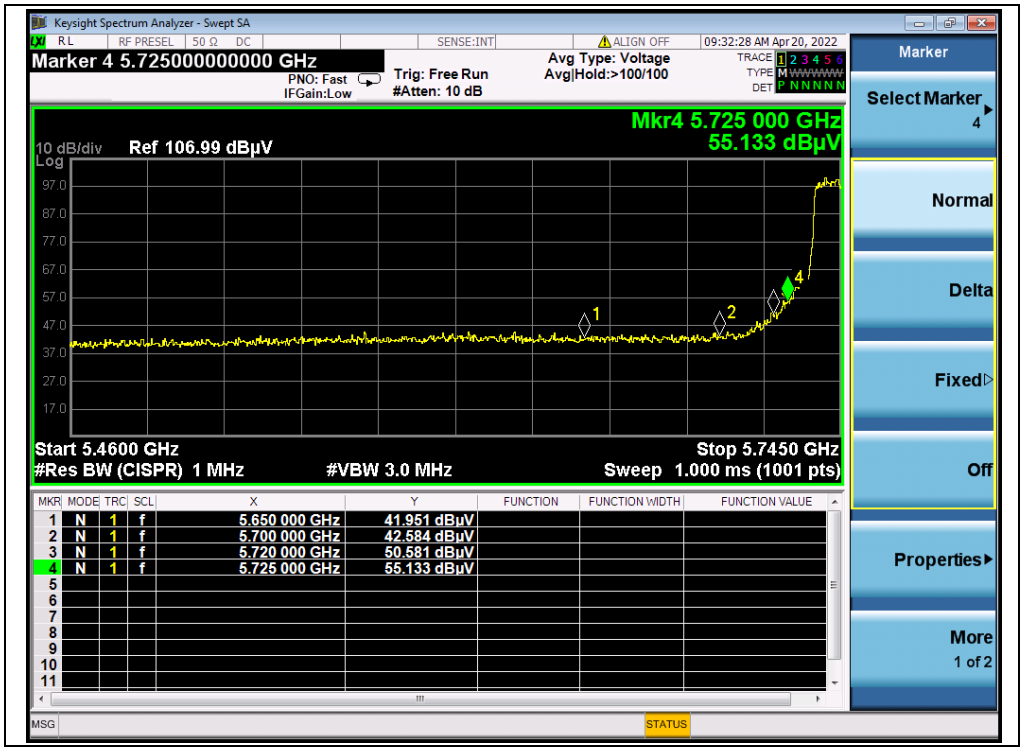
(PEAK, Channel100, 802.11ax (HEW20))



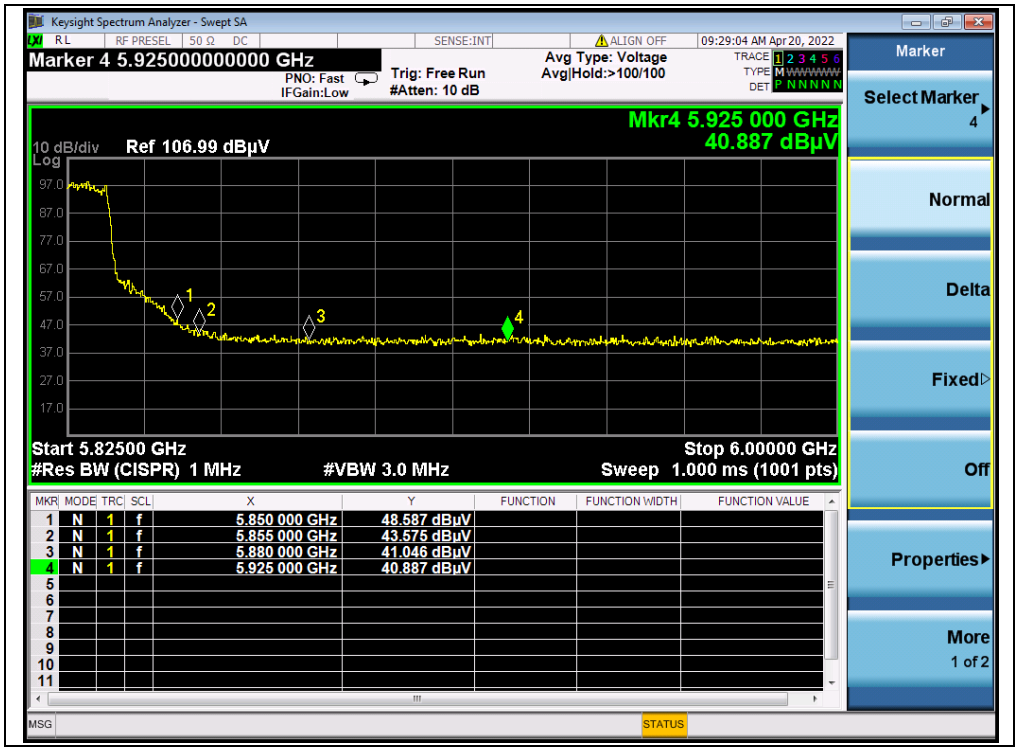
(AVERAGE, Channel 100, 802.11ax (HEW20))



(PEAK, Channel 144, 802.11ax (HEW20))



(PEAK, Channel 149, 802.11ax (HEW20))



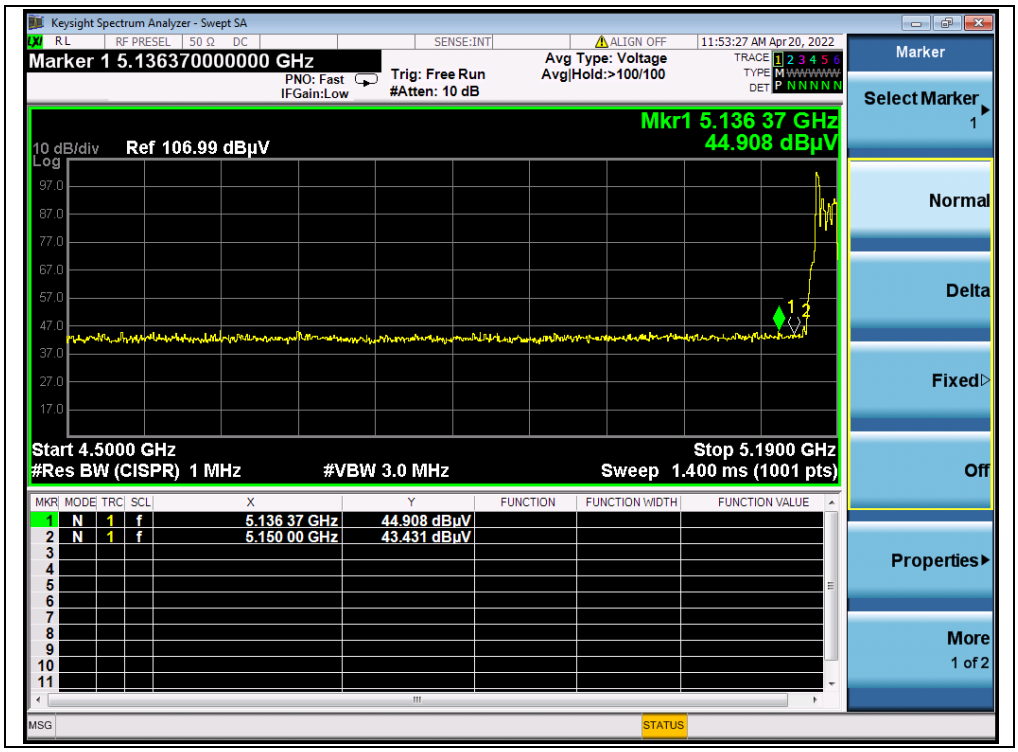
(PEAK, Channel 165, 802.11ax (HEW20))

802.11ax (HEW20) RU26 Mode

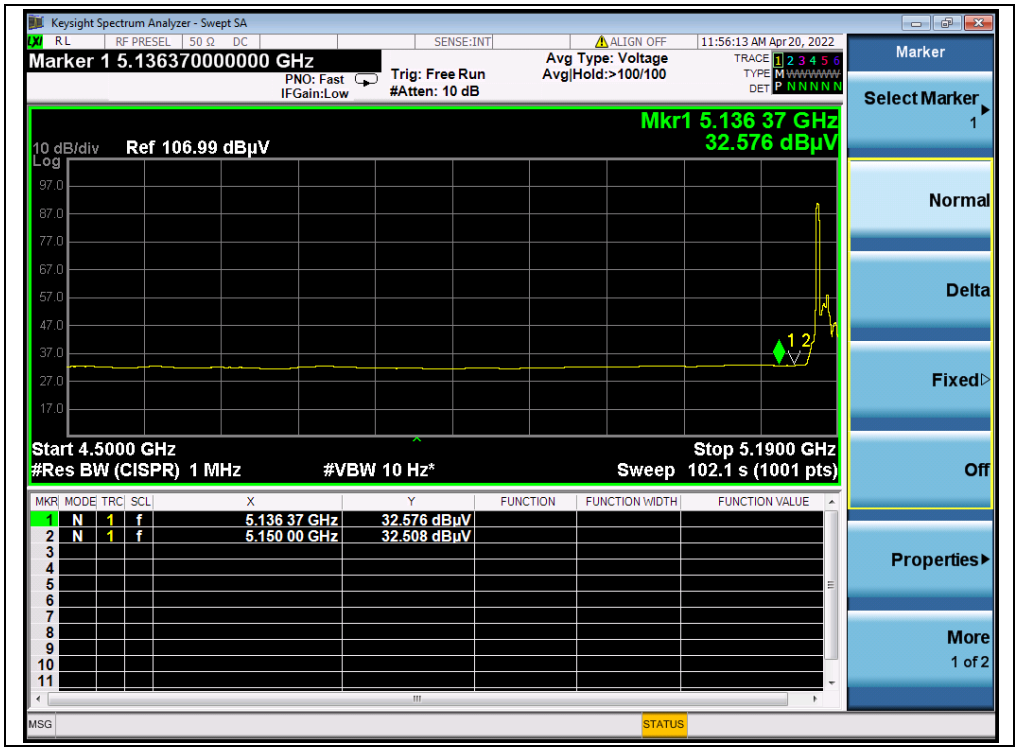
A.Test Verdict:

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	5136.37	PK	44.91	-19.54	32.20	57.57	74	PASS
36	5136.37	AV	32.58	-19.54	32.20	45.24	54	PASS
64	5370.95	PK	41.95	-18.80	32.20	55.35	74	PASS
64	5352.80	AV	30.70	-18.80	32.20	44.10	54	PASS
100	5247.04	PK	45.98	-19.20	32.20	58.98	68.23	PASS
100	5465.44	AV	31.00	-19.20	32.20	44.00	54	PASS
144	5775.93	PK	44.76	-19.20	32.20	57.76	68.23	PASS
149	5700.00	PK	43.15	-19.01	32.20	56.34	105.23	PASS
165	5850.00	PK	42.63	-19.01	32.20	55.82	122.23	PASS

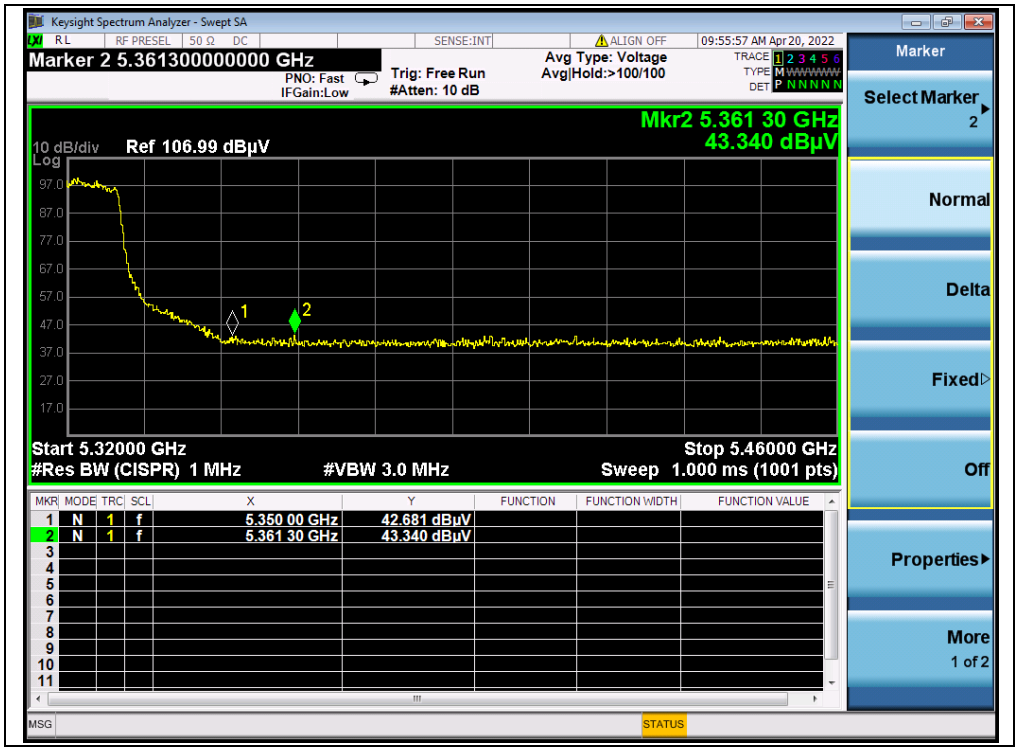
B.Test Plot:



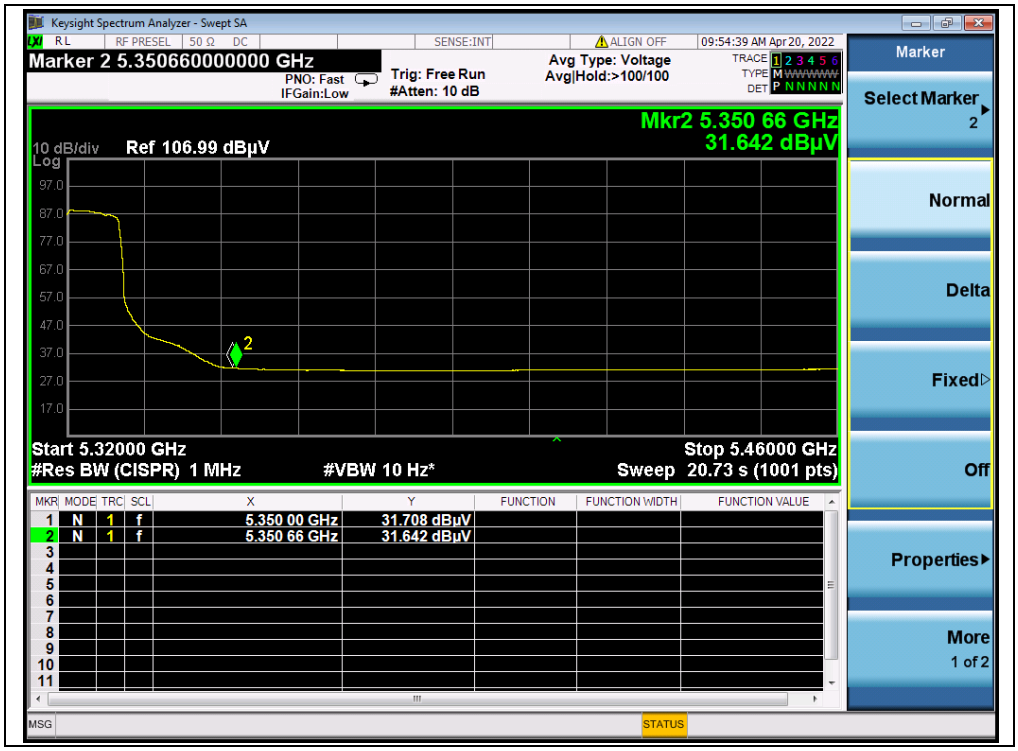
(PEAK, Channel 36, 802.11ax (HEW20) RU26)



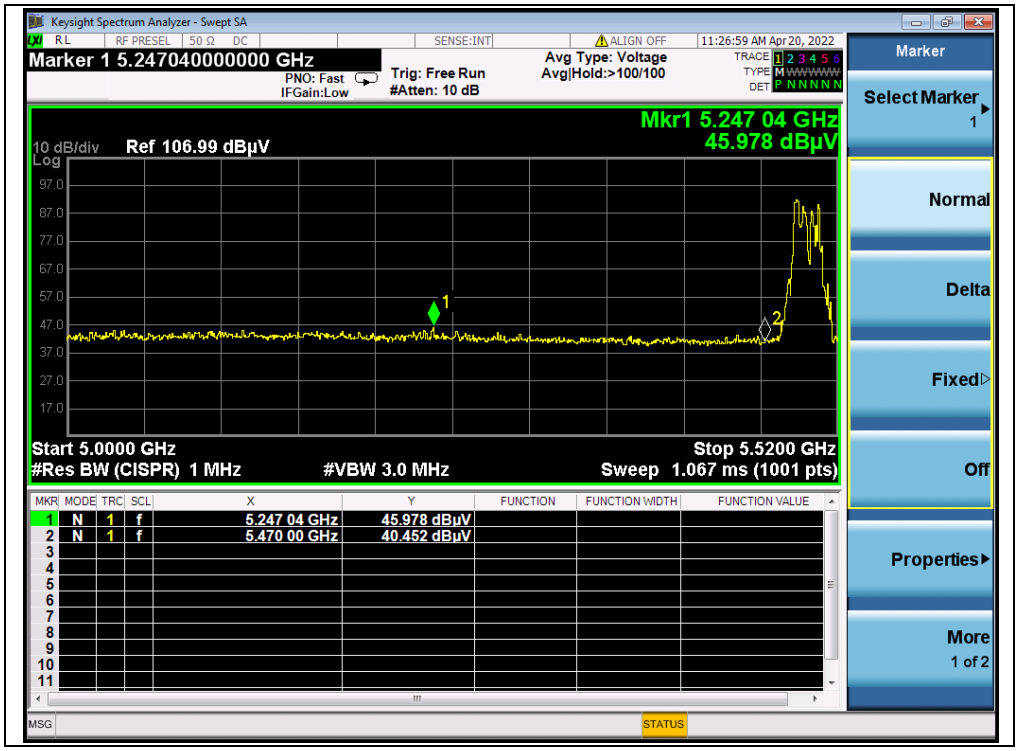
(AVERAGE, Channel 36, 802.11ax (HEW20) RU26)



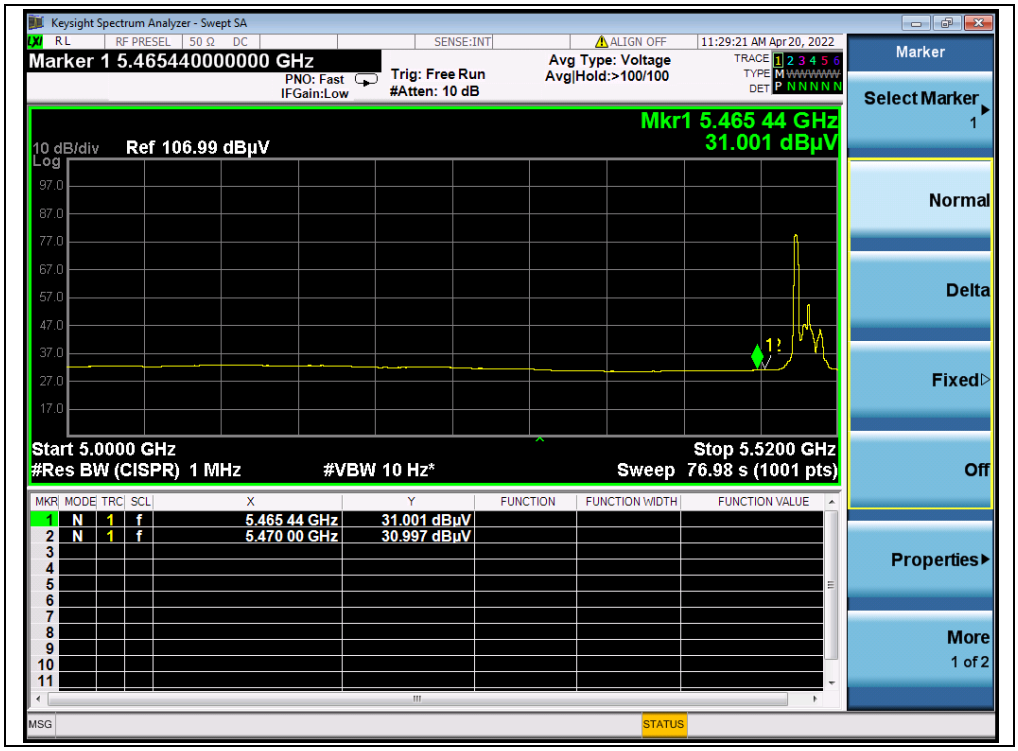
(PEAK, Channel 64, 802.11ax (HEW20) RU26)



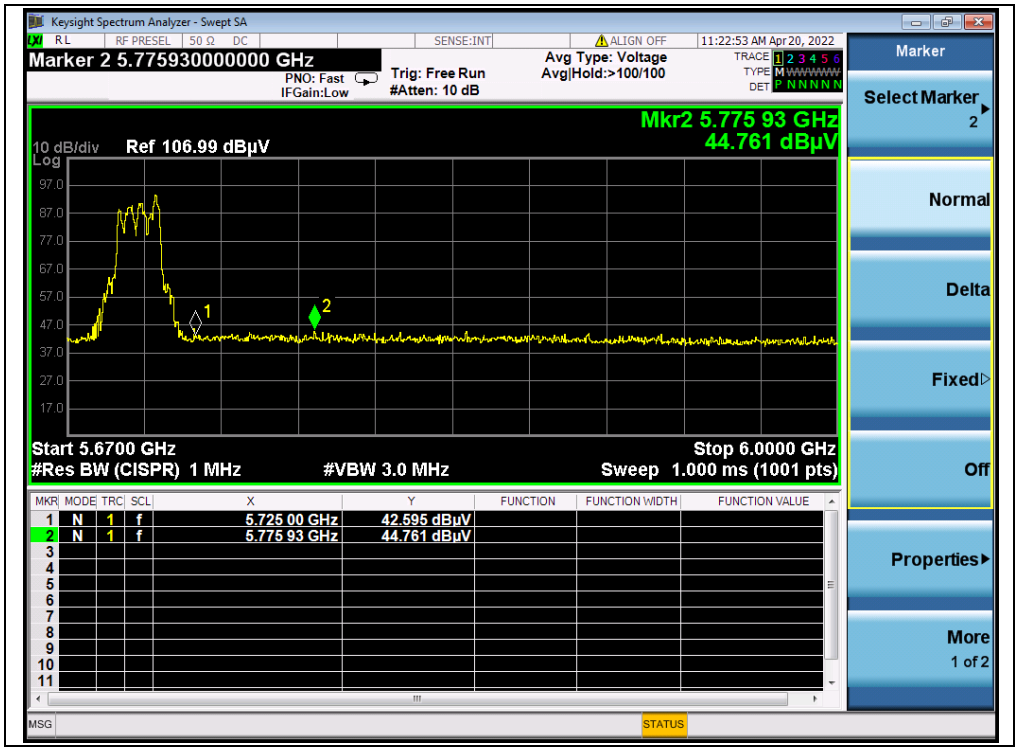
(AVERAGE, Channel 64, 802.11ax (HEW20) RU26)



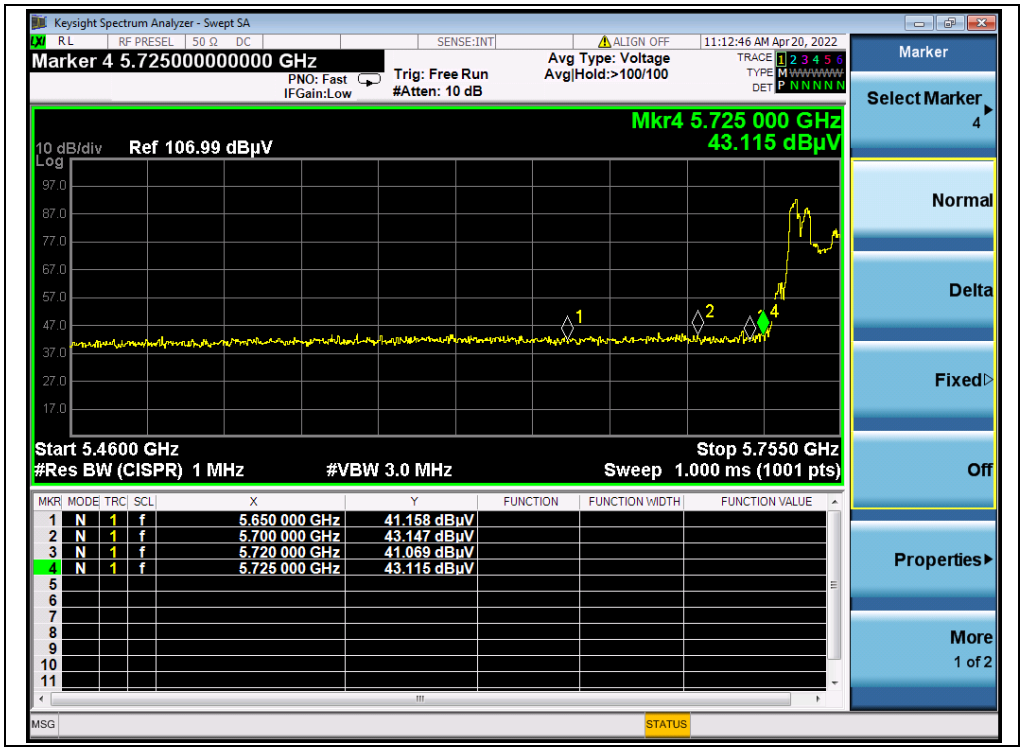
(PEAK, Channel100, 802.11ax (HEW20) RU26)



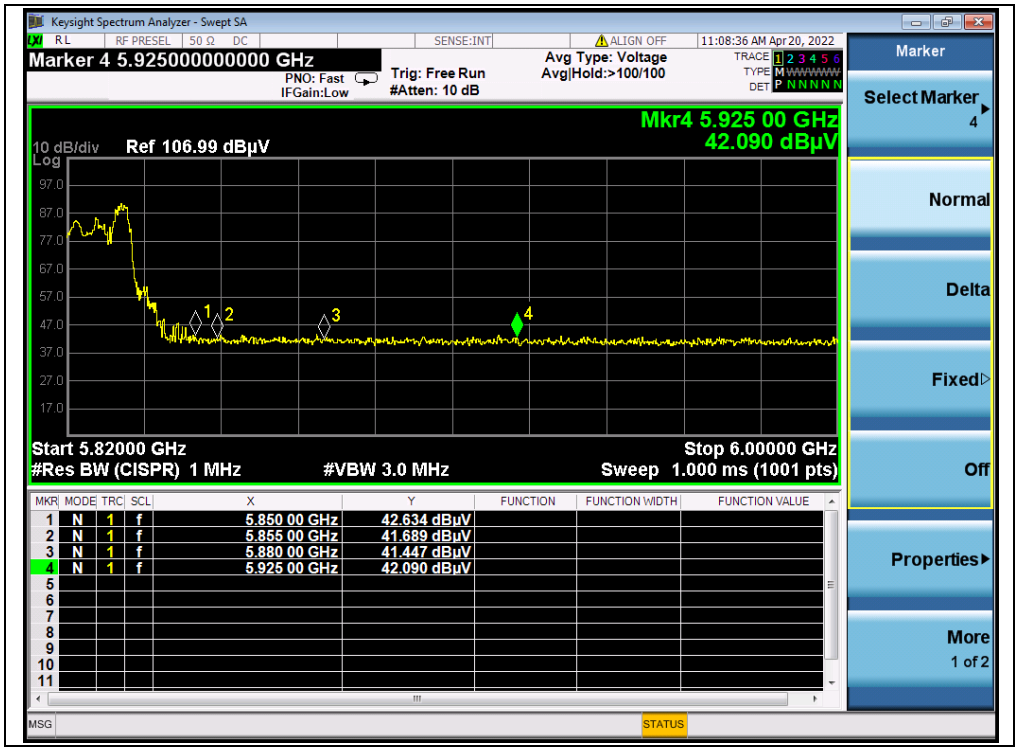
(AVERAGE, Channel 100, 802.11ax (HEW20) RU26)



(PEAK, Channel 144, 802.11ax (HEW20) RU26)



(PEAK, Channel 149, 802.11ax (HEW20) RU26)



(PEAK, Channel 165, 802.11ax (HEW20) RU26)

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:

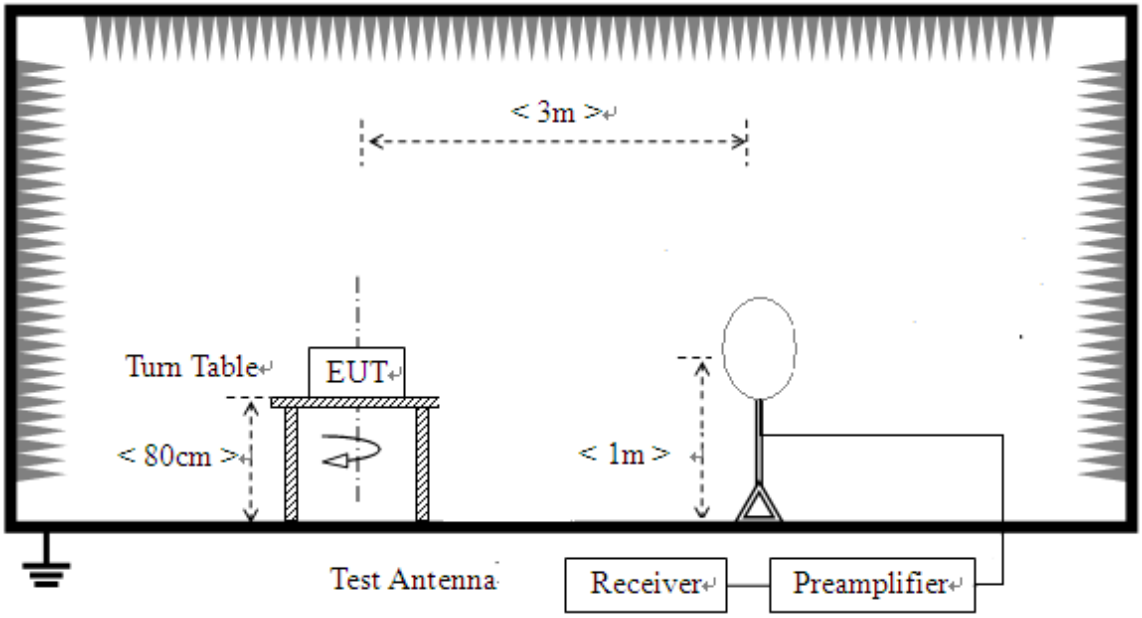
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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).

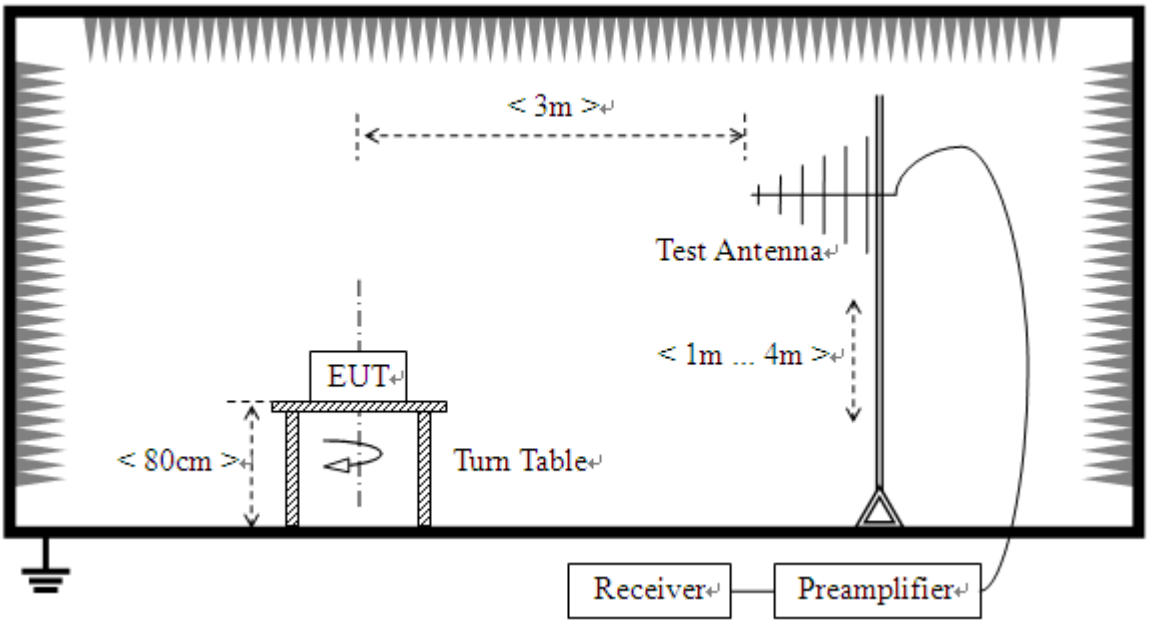
2.9.2. Test Description

Test Setup:

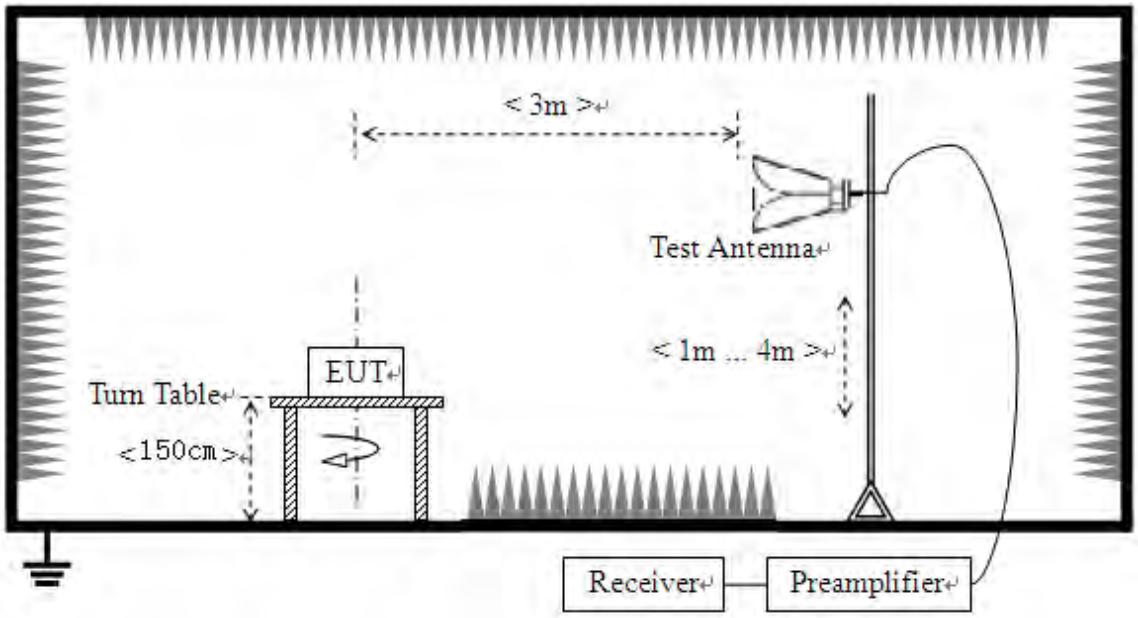
1) For radiated emissions from 9kHz to 30MHz



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.

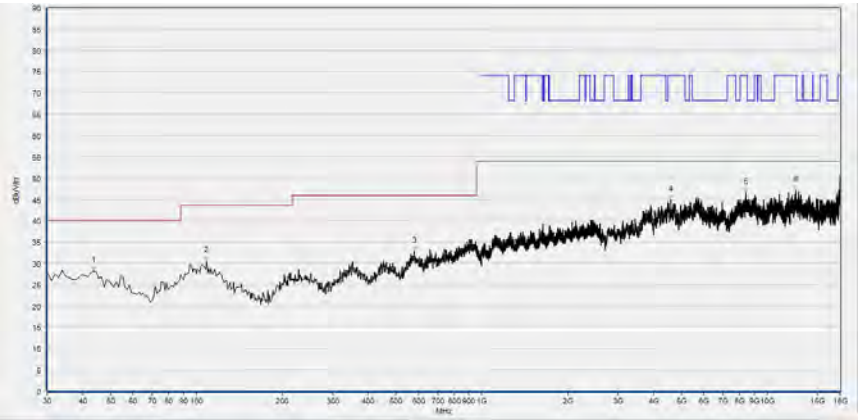
Note 2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

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.

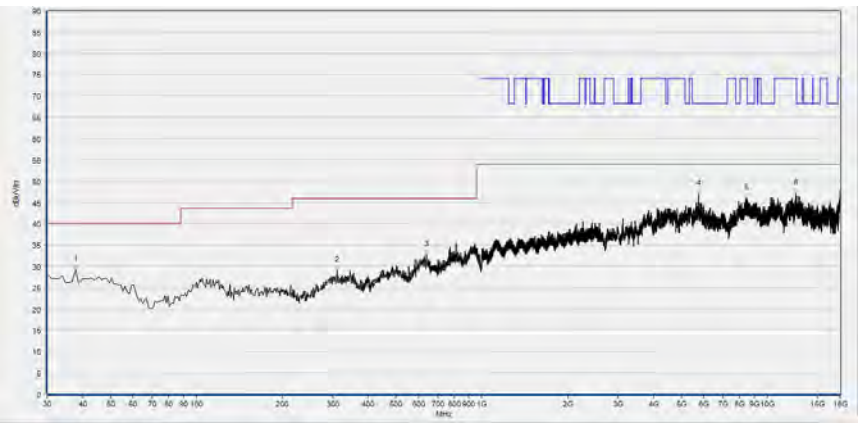
802.11a Mode

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
43.594	28.13	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
108.649	30.42	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
580.541	32.86	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4593.159	44.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8425.445	46.60	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12608.922	47.09	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

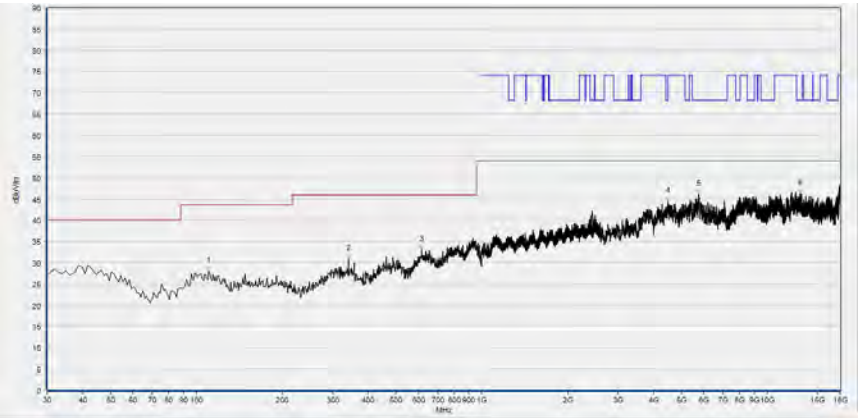
(Antenna Horizontal, 30MHz to 18GHz)



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	29.17	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
310.611	28.96	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
639.770	32.76	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5748.390	46.88	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8468.574	45.89	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12593.519	47.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

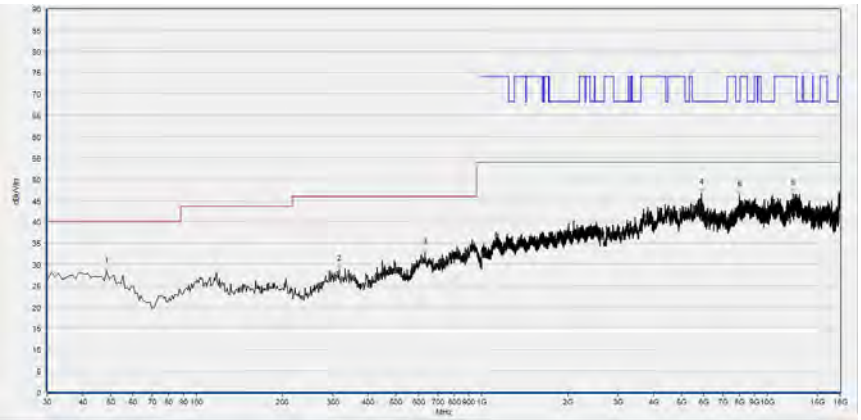
(Antenna Vertical, 30MHz to 18GHz)

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
110.591	27.94	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
340.711	30.78	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
615.495	33.06	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4497.660	44.45	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5748.390	46.17	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13058.692	46.22	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

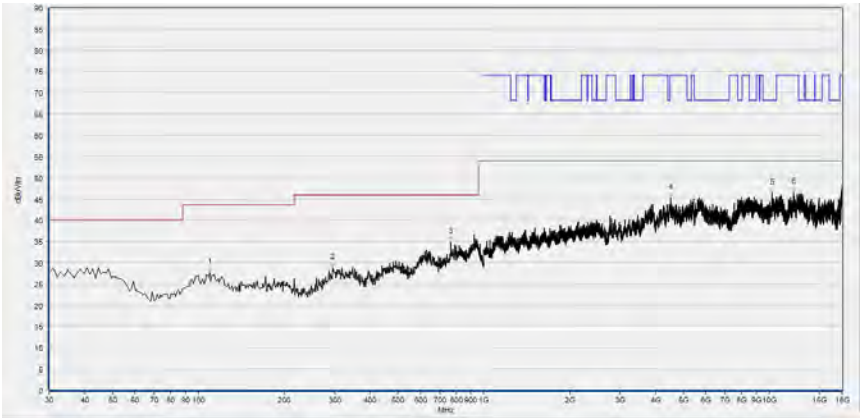
(Antenna Horizontal, 30MHz to 18GHz)



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
48.448	28.34	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
316.436	28.77	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
632.973	32.70	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5880.856	46.74	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7975.675	46.32	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12294.699	46.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

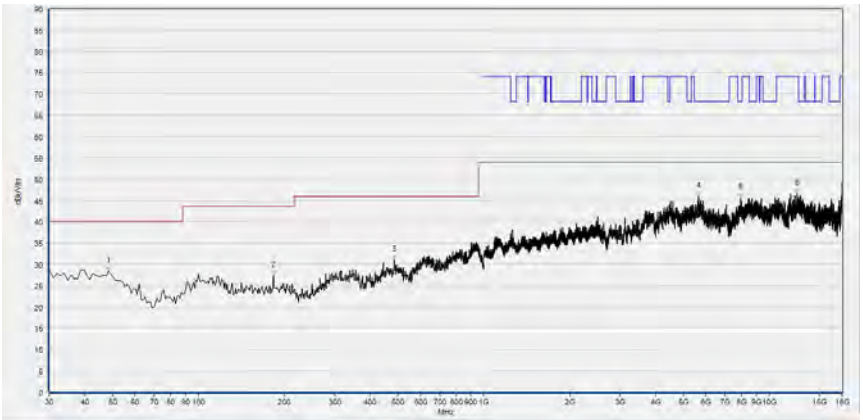
(Antenna Vertical, 30MHz to 18GHz)

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
109.620	27.73	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
295.075	28.80	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
766.967	34.81	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4513.063	45.30	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10215.283	46.44	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12162.232	46.64	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

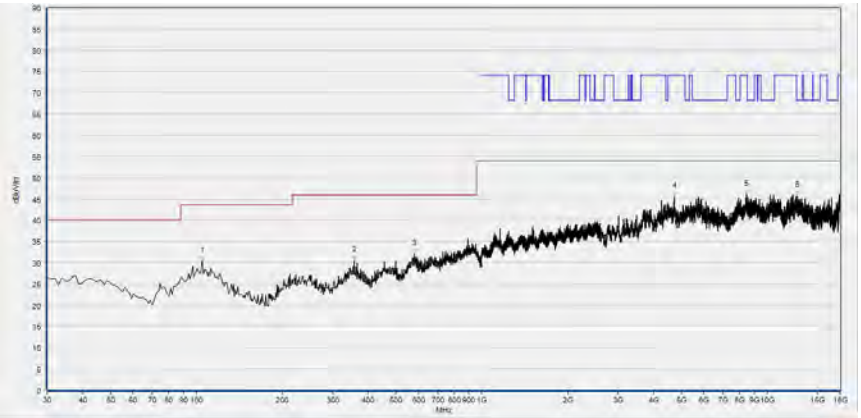
(Antenna Horizontal, 30MHz to 18GHz)



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
48.448	28.32	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
183.413	27.37	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
485.385	31.09	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5659.052	45.89	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7951.030	45.57	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12525.745	46.54	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

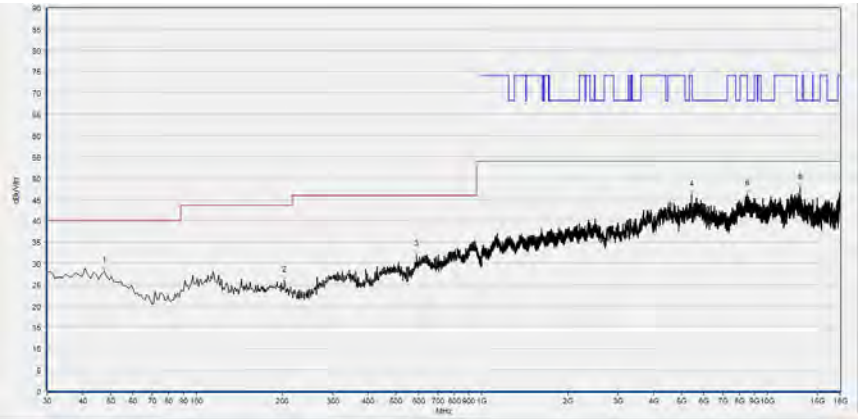
(Antenna Vertical, 30MHz to 18GHz)

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
104.765	30.33	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
357.217	30.49	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
578.599	31.99	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4722.545	45.64	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8462.412	46.09	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12756.791	45.75	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

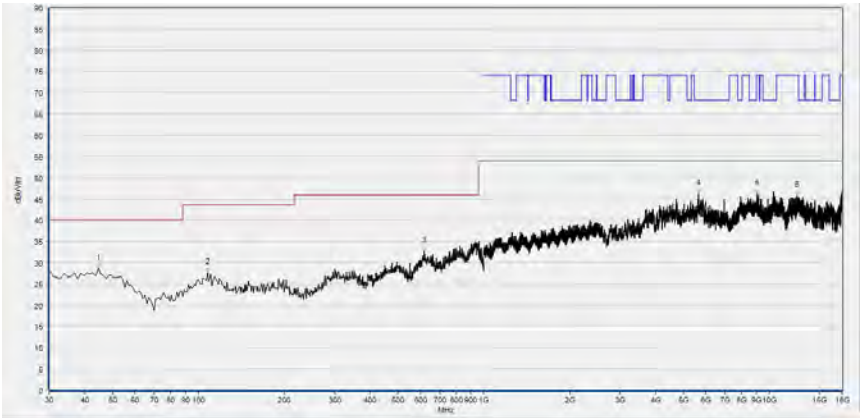
(Antenna Horizontal, 30MHz to 18GHz)



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
47.477	28.21	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
203.804	25.95	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
591.221	31.97	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5431.086	46.12	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8502.460	46.29	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13049.450	47.84	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

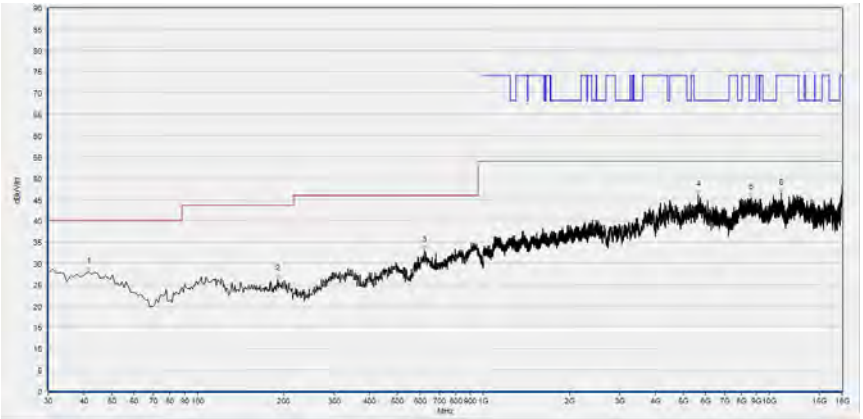
(Antenna Vertical, 30MHz to 18GHz)

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	28.60	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
107.678	27.63	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
617.437	32.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5655.971	46.31	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
9069.294	46.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12538.068	45.72	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

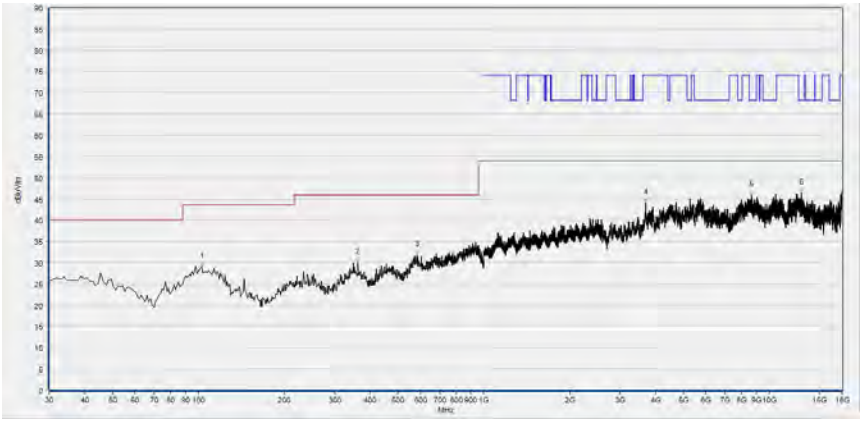
(Antenna Horizontal, 30MHz to 18GHz)



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
41.652	27.94	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
191.181	26.34	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
623.263	32.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5649.810	46.10	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8634.927	45.35	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11050.130	46.35	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

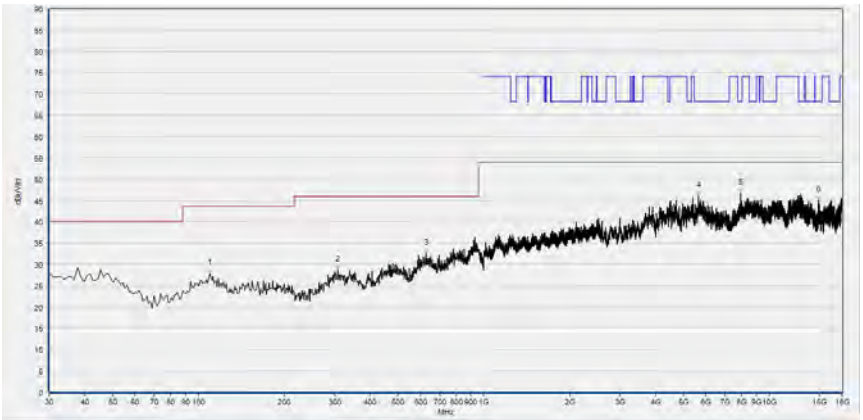
(Antenna Vertical, 30MHz to 18GHz)

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
102.823	29.07	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
362.072	29.93	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
582.482	31.80	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
3684.377	44.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8681.136	45.97	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12935.467	46.49	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

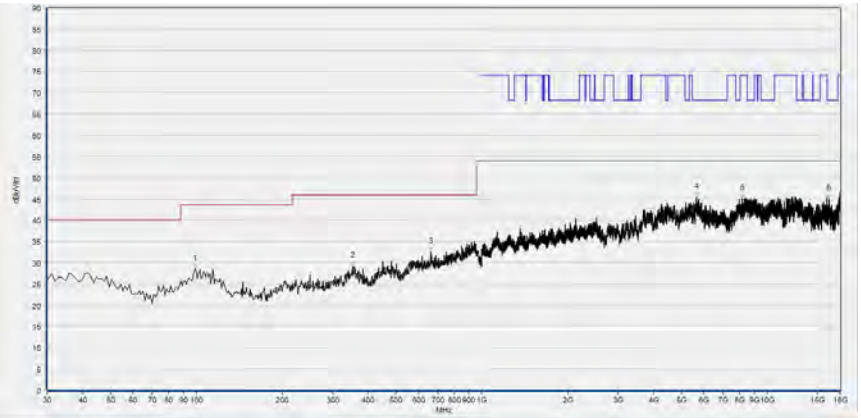
(Antenna Horizontal, 30MHz to 18GHz)



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
109.620	27.79	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
308.669	28.58	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
627.147	32.50	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5643.649	46.02	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7929.466	46.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
14879.336	45.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

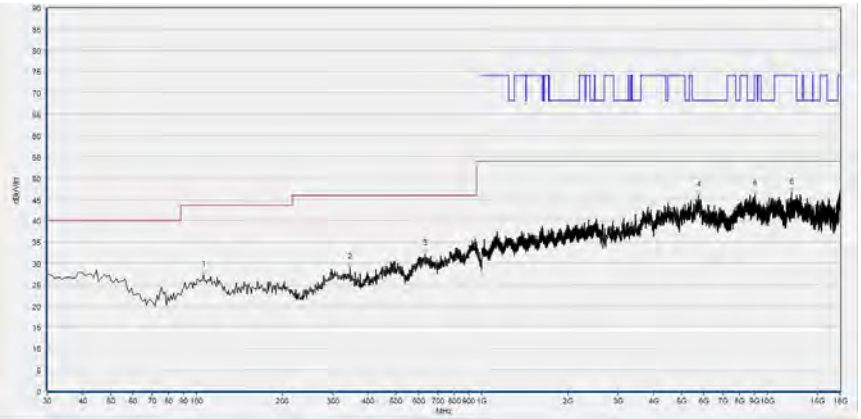
(Antenna Vertical, 30MHz to 18GHz)

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
98.939	28.55	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
353.333	29.22	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
664.044	32.51	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5637.487	45.40	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8154.351	45.01	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
16404.241	45.11	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

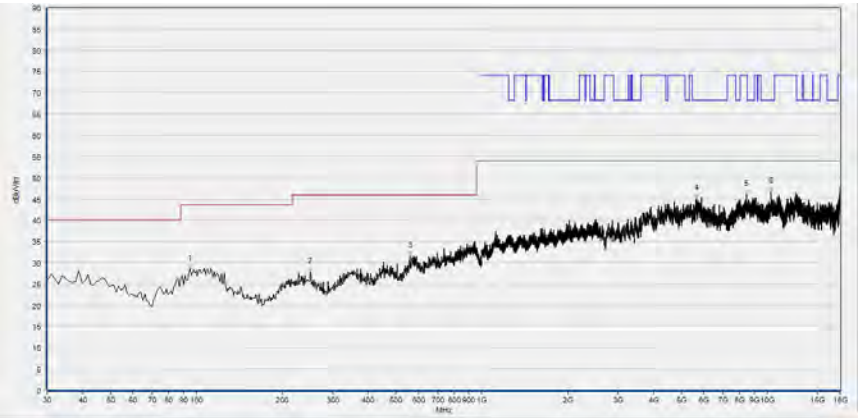
(Antenna Horizontal, 30MHz to 18GHz)



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
105.736	27.24	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
345.566	28.98	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
632.973	32.13	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5748.390	45.92	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9056.971	46.21	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12146.829	46.67	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

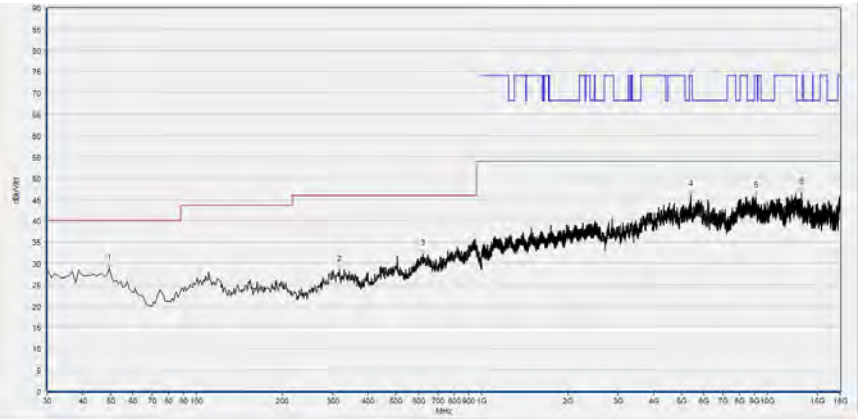
(Antenna Vertical, 30MHz to 18GHz)

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
95.055	28.54	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
250.410	27.82	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
560.150	31.56	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5643.649	45.04	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8465.493	46.11	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10320.024	46.84	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

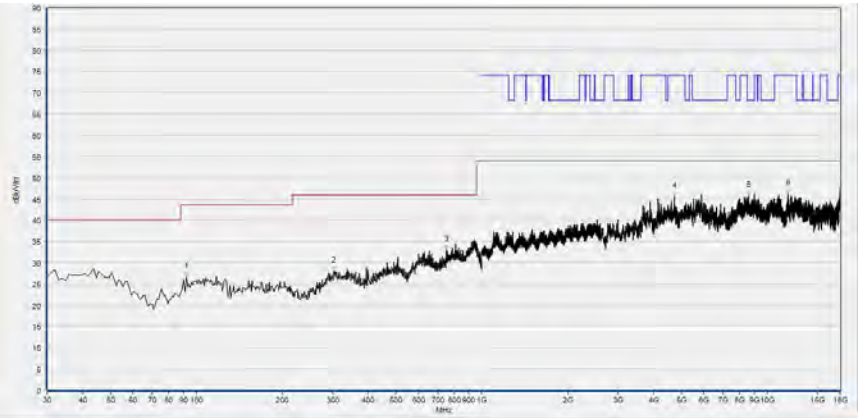
(Antenna Horizontal, 30MHz to 18GHz)



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
49.419	28.86	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
317.407	28.46	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
623.263	32.21	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5403.361	46.12	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
9093.939	45.74	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13175.755	46.57	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

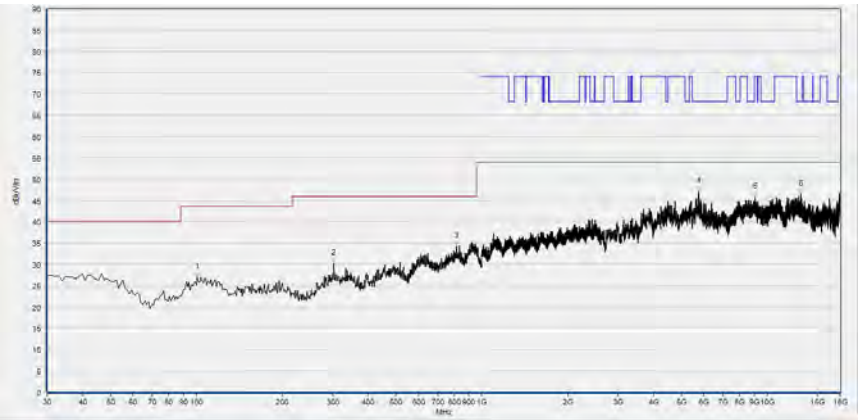
(Antenna Vertical, 30MHz to 18GHz)

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
92.142	26.71	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
302.843	28.04	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
750.460	33.01	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4719.464	45.52	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8610.282	45.72	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
11829.526	46.22	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

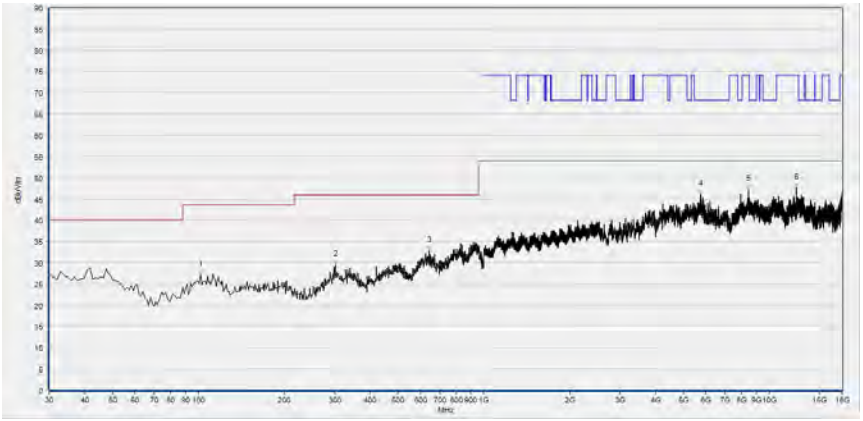
(Antenna Horizontal, 30MHz to 18GHz)



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
100.881	27.02	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
302.843	30.12	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
815.516	34.26	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5763.793	47.06	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9078.536	45.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
13095.659	46.45	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

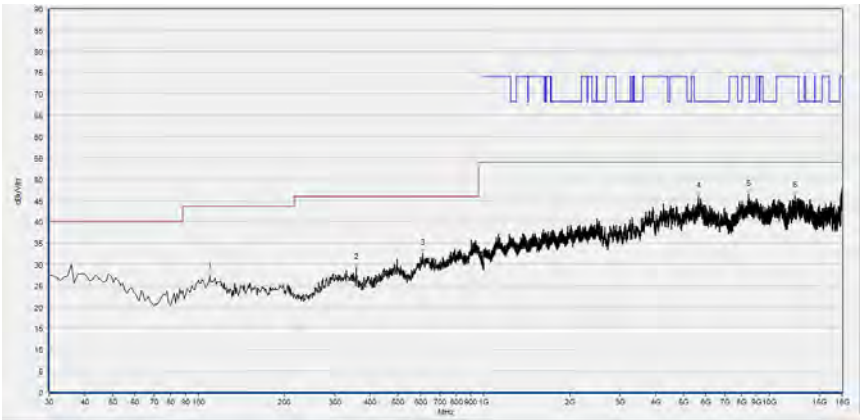
(Antenna Vertical, 30MHz to 18GHz)

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
101.852	27.21	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
301.872	29.43	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
642.683	32.79	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5763.793	46.16	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8450.090	47.30	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12467.213	47.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

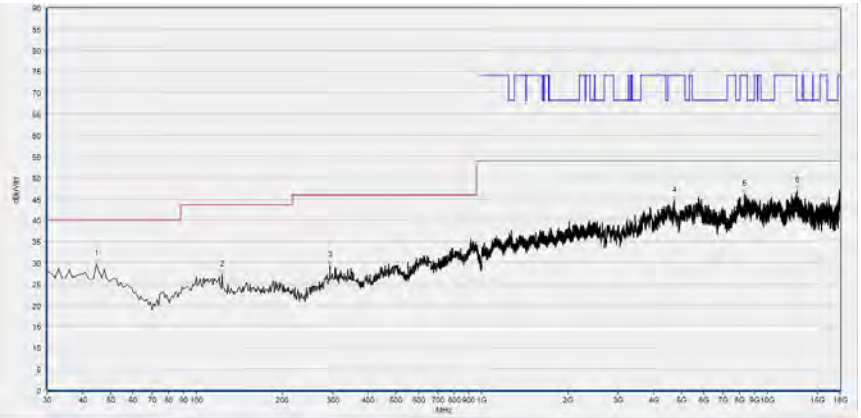
(Antenna Horizontal, 30MHz to 18GHz)



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
109.620	27.12	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
357.217	29.18	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
611.612	32.56	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5649.810	45.87	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8440.848	46.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12294.699	46.05	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

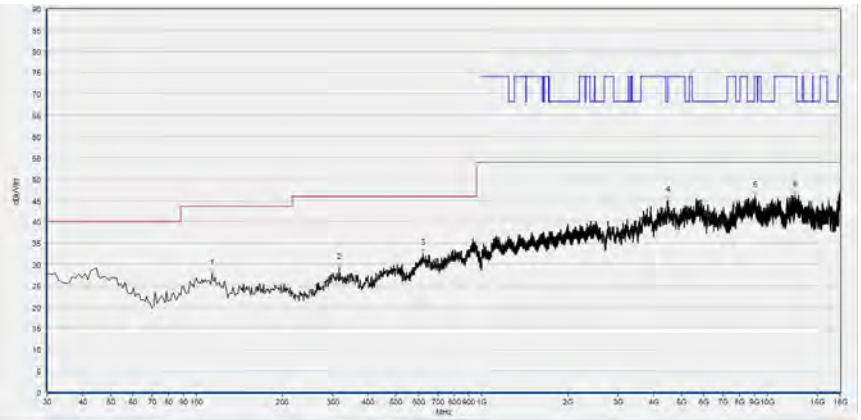
(Antenna Vertical, 30MHz to 18GHz)

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
44.565	29.66	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
123.213	27.11	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
293.133	29.28	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4722.545	44.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8308.382	46.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12738.308	46.90	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

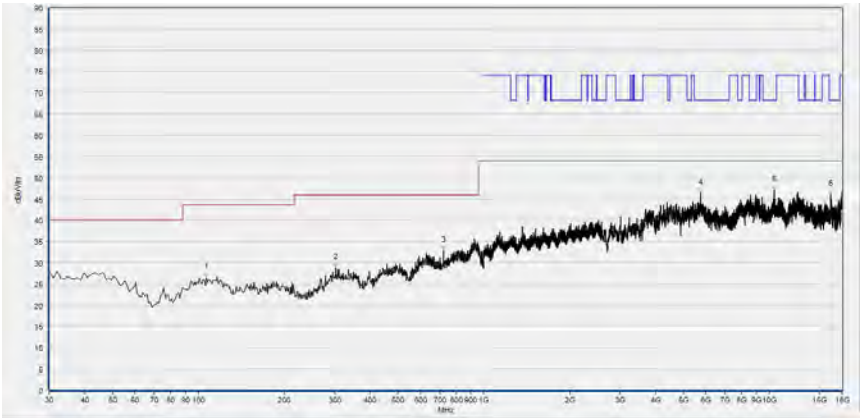
(Antenna Horizontal, 30MHz to 18GHz)



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
113.504	27.80	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
316.436	29.10	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
623.263	32.45	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4482.256	45.11	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9056.971	46.09	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12507.261	46.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

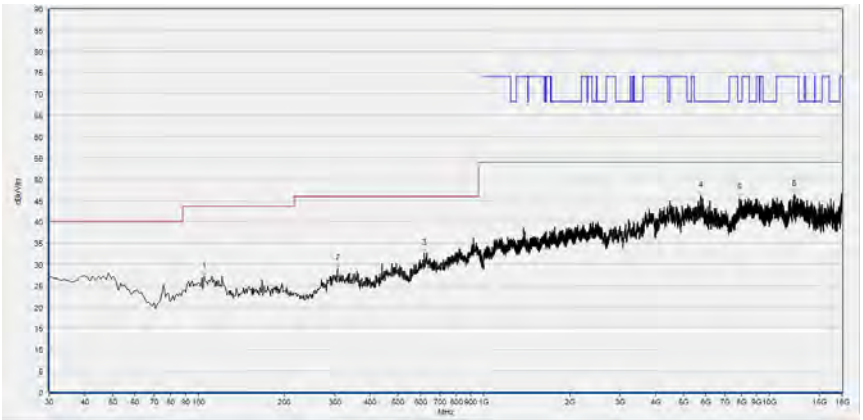
(Antenna Vertical, 30MHz to 18GHz)

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
106.707	26.54	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
301.872	28.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
722.302	32.83	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5739.148	46.34	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10437.087	47.09	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16388.838	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
104.765	27.07	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
307.698	28.92	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
618.408	32.58	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5763.793	46.15	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7846.289	45.58	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12214.603	46.37	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)