



REPORT No.: SZ18100025W06

TEST REPORT

APPLICANT : Hyco Genyong Technology Co., Ltd.

PRODUCT NAME : Smart Watch

MODEL NAME : W562

BRAND NAME : HYCO

FCC ID : 2ARHS-W562

STANDARD(S) : 47 CFR Part 15 Subpart E

TEST DATE : 2018-10-18 to 2018-10-25

ISSUE DATE : 2018-11-06

Tested by:

Wang Meng
Wang Meng (Test Engineer)

Approved by:

Peng Huarui
Peng Huarui (Supervisor)

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REPORT No.: SZ18100025W06

Change History		
Issue	Date	Reason for change
1.0	2018-11-06	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Hyco Genyong Technology Co., Ltd.
Applicant Address:	Room 105, 1/F, Building B, No.999 of Huaxu Road, Qingpu District, Shanghai, CN
Manufacturer:	HYCO Information Technology Co., Ltd
Manufacturer Address:	Room 3A07, Tower B, North Zone, No.999, Huaxu Road, Qingpu District, Shanghai, CN

1.2. Equipment Under Test (EUT) Description

Product Name:	Smart Watch	
Serial No:	(N/A, marked #1 by test site)	
Hardware Version:	W562_V1.2	
Software Version:	W562-FL_6.0_20180625_1408	
Modulation Type:	OFDM	
Modulation Mode:	802.11a, 802.11n(HT20), 802.11n(HT40)	
Operating Frequency Range:	5.180 GHz- 5.240 GHz; 5.260 GHz -5.320 GHz ; 5.745GHz- 5.825GHz	
Channel Number:	Refer to 1.3	
Antenna Type:	FPC Antenna	
Antenna Gain:	-0.23 dBi	
Accessory Information:	Battery	
	Brand Name:	HYCO
	Model No.:	964655P
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	3600mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V



Accessory Information:	AC Adapter 1	
	Brand Name:	AOHAI
	Model No.:	A18A-050100U-US2
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	~ 100-240V, 50/60Hz, 0.2A
	Rated Output:	=5V, 1A
	AC Adapter 2	
	Brand Name:	N/A
	Model No.:	UT-146A-5100
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	~ 100-240V, 50/60Hz, 0.15A
	Rated Output:	=5V, 1A

Note 1: The EUT has two adaptors, both of the two adaptors were tested, only the worst test result(Adapter1) were recorded in the test report.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. The channel number and frequency of EUT

Frequency Range: 5180MHz-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	36	5180	40	5200
	44	5220	48	5240
40MHz	38	5190	46	5230
Frequency Range: 5260MHz-5320MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	52	5260	56	5280
	60	5300	64	5320
40MHz	54	5270	62	5310
Frequency Range: 5745-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825		
40MHz	151	5775	159	5795

Note 1: The black bold channels were selected for test.



1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart E (U-NII band) for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 15 (5-1-14 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result
1	15.203	Antenna Requirement	N/A	N/A	PASS
2	ANSI C63.10	Duty Cycle of the test signal	Oct 18, 2018	Wang Meng	PASS
2	15.407(a) (e)	Emission Bandwidth	Oct 18, 2018	Wang Meng	PASS
3	15.407(a)	Maximum conducted output Power	Oct 18, 2018	Wang Meng	PASS
4	15.407(a)	Peak Power spectral density	Oct 18, 2018	Wang Meng	PASS
5	15.407(g)	Frequency Stability	Oct 18, 2018	Wang Meng	PASS
6	15.207	Conducted Emission	Oct 20, 2018	Wang Dalong	PASS
7	15.407(b)	Restricted Frequency Bands	Oct 25, 2018	Wang Dalong	PASS
8	15.407(b)	Radiated Emission	Oct 25, 2018	Wang Dalong	PASS

Note1: EUT is a Client Device Without Radar Detection, WIFI hotspot does not support U-NII band; A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

Note2: The DFS test report was documented in a separate report (Report No.: SZ18100025W07).

Note3: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013.

Note4: These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 General UNII Test Procedures New Rules v01r03

1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106



2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

2.1.2. 2.1.2 Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Duty Cycle of the test signal

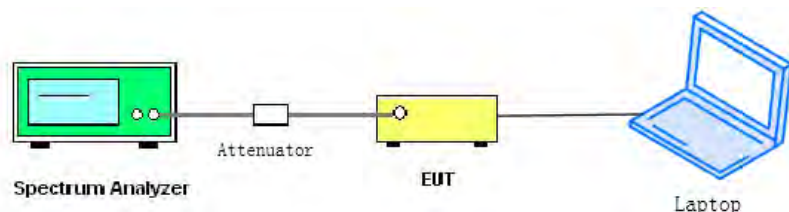
2.2.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e., no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this subclause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than $\pm 2\%$; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

B. Test Procedure

KDB 789033 Section B was used in order to prove compliance.

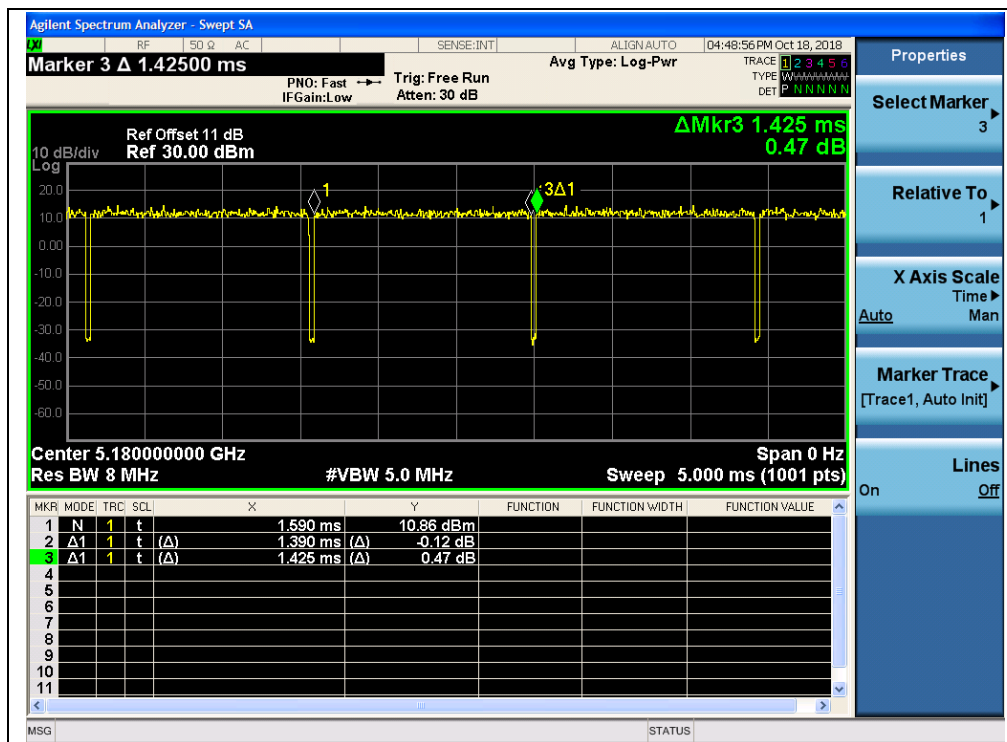


2.2.3. Test Result

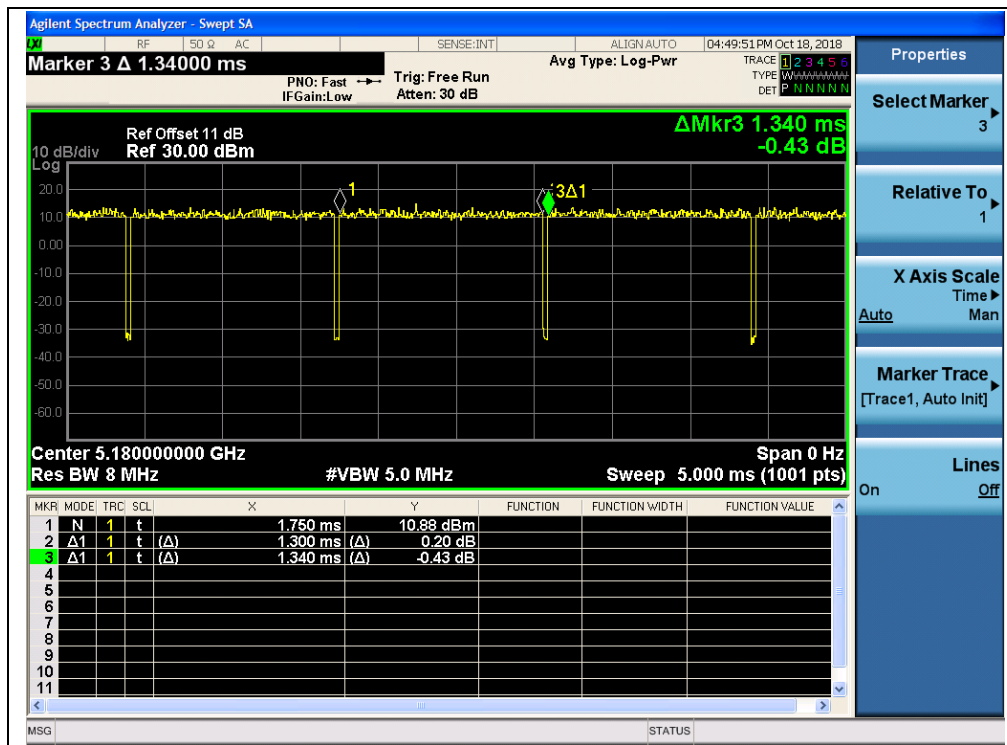
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor (10*log[1/D])
802.11a	97.54	0.11
802.11n(HT20)	97.01	0.13
802.11n(HT40)	94.30	0.25

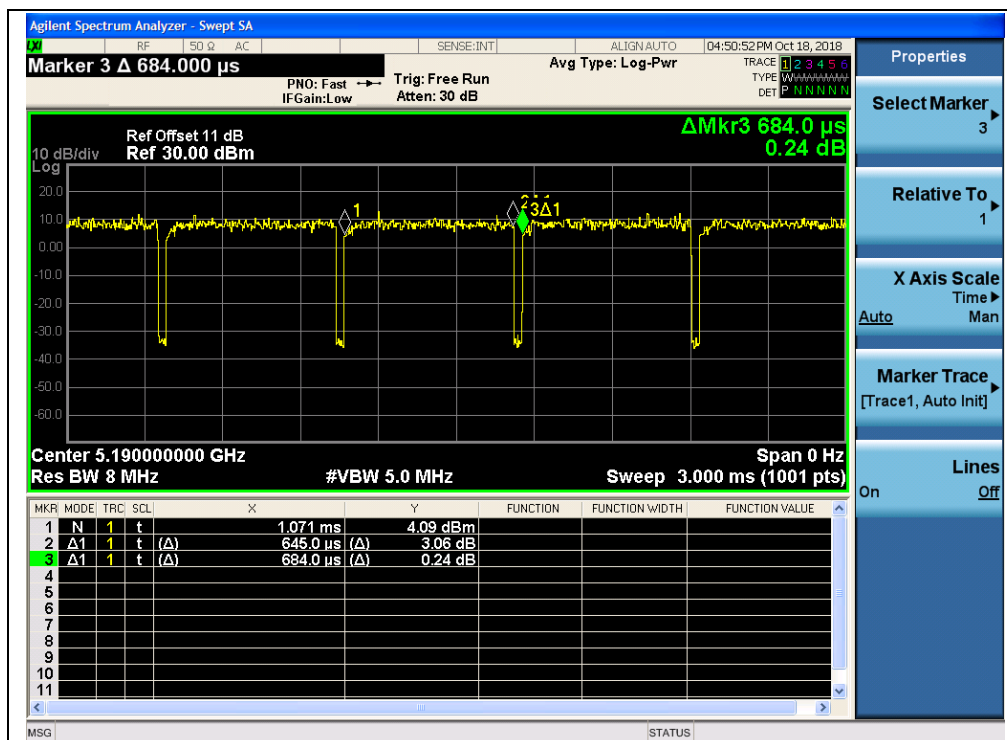
B. Test Plots



(CH36_5180MHz_802.11a)



(CH36_5180MHz_802.11n20)



(CH38_5190MHz_802.11n40)

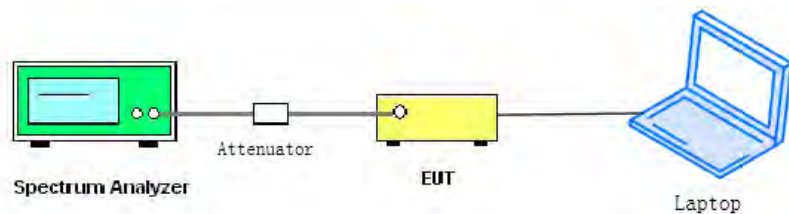
2.3. Emission Bandwidth

2.3.1. Requirement

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

2.3.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

B. Test Procedure

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance
 - a) Set RBW = approximately 1% of the emission bandwidth.
 - b) Set the VBW > RBW.
 - c) Detector = Peak.
 - d) Trace mode = max hold.
 - e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

 - a) Set RBW = 100 kHz.
 - b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.



- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

2.3.3. Test Result

802.11a Test mode

A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	31.02
44	5220	31.32
48	5240	31.26 _{Note}
52	5260	28.81
60	5300	27.82
64	5320	26.08
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
149	5745	15.35
157	5785	15.68
165	5825	15.64

Note: The high frequency of the -26dB is 5250.20MHz which is in the DFS frequency range, so DFS testing is required. Please refer to DFS report (Report No.: SZ18100025W07).



B. Test Plots



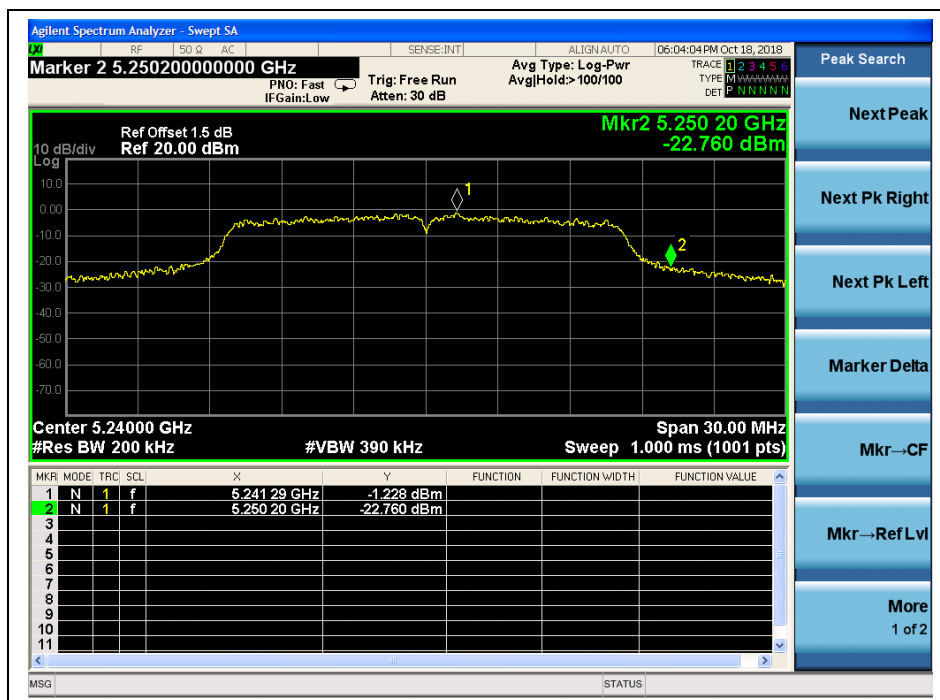
(Channel 36, 5180MHz, 802.11a,)



(Channel 44, 5220 MHz, 802.11a,)



(Channel 48, 5240MHz, 802.11a,)



(Channel 48, 5240MHz, fh of -26dB, 802.11a,)



(Channel 52, 5260MHz, 802.11a,)



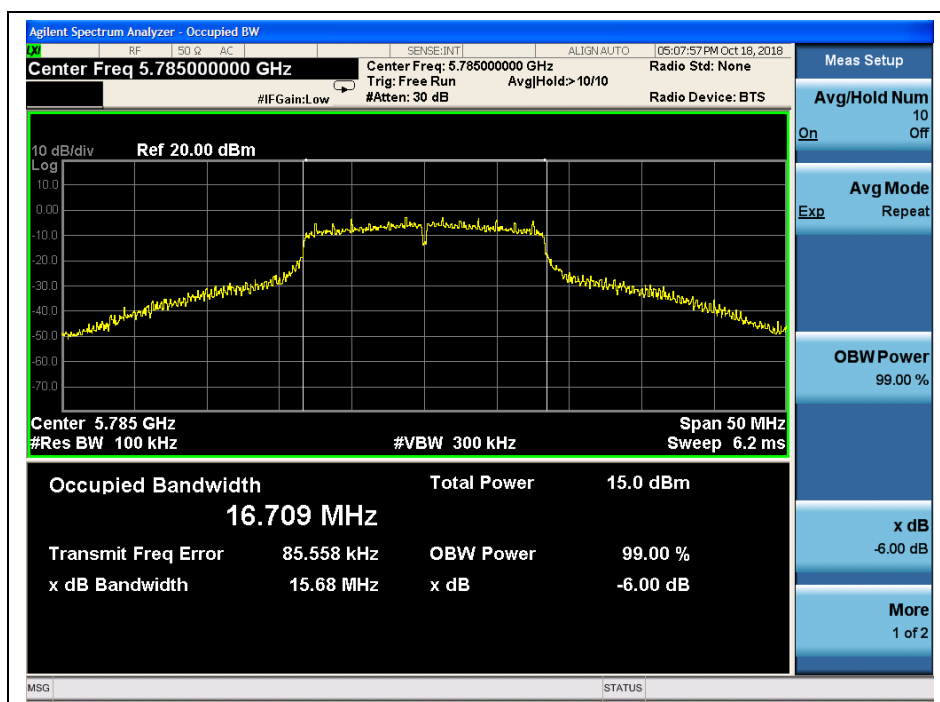
(Channel 60, 5300 MHz, 802.11a,)



(Channel 64, 5320MHz, 802.11a,)



(Channel 149, 5745MHz, 802.11a)



(Channel 157, 5785MHz, 802.11a)



(Channel 165, 5825MHz, 802.11a)



802.11n (HT20) Test mode

A. Test Verdict:

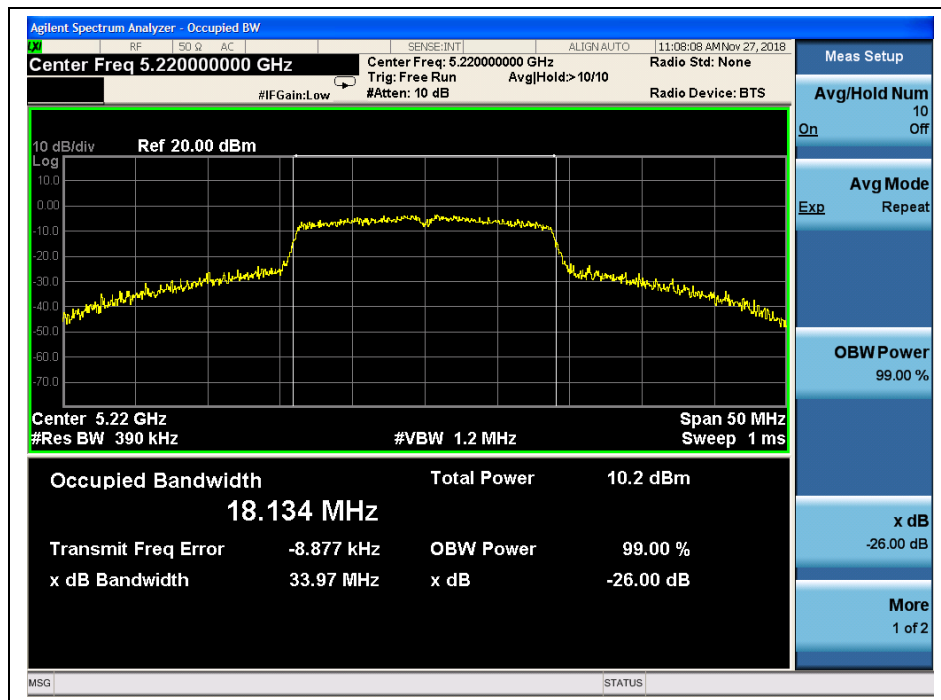
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	33.76
44	5220	33.97
48	5240	32.92 Note
52	5260	28.70
60	5300	28.29
64	5320	28.52
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
149	5745	15.36
157	5785	15.72
165	5825	15.93

Note: The high frequency of the -26dB is 5250.35MHz which is in the DFS frequency range, so DFS testing is required. Please refer to DFS report (Report No.: SZ18100025W07).

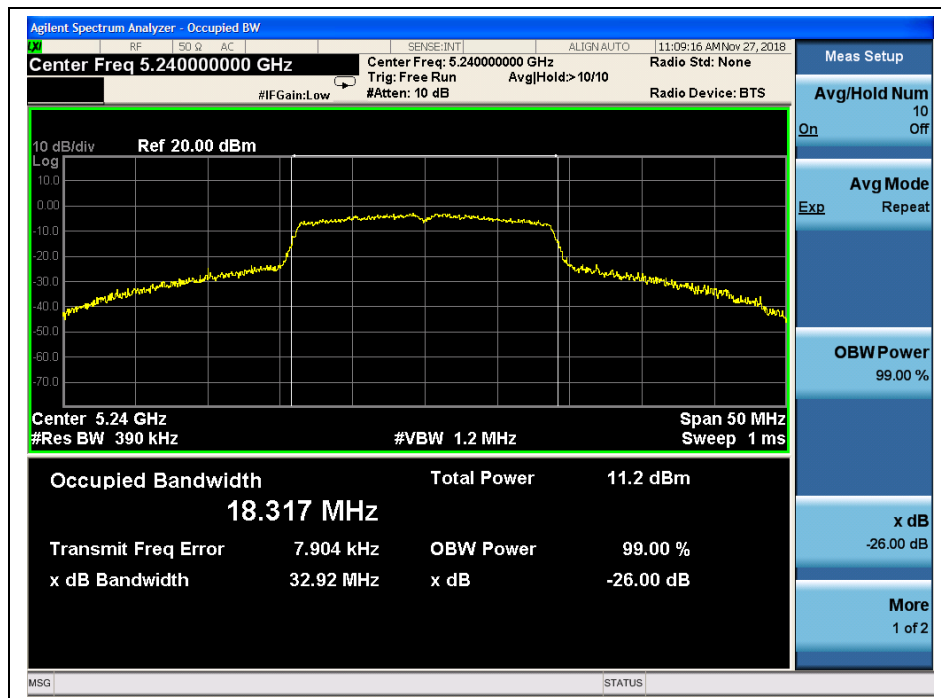
B. Test Plots



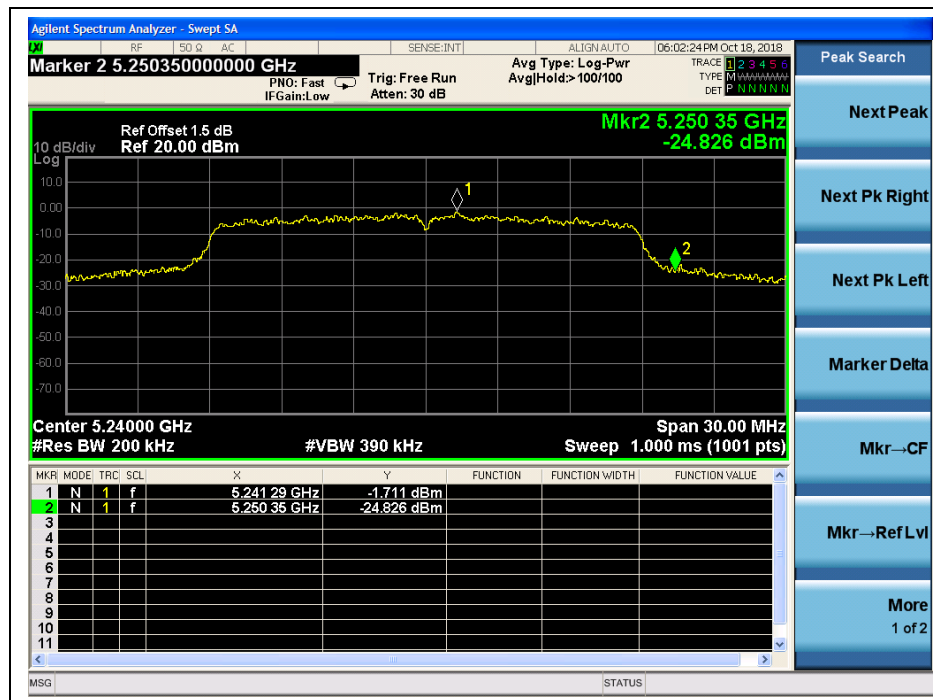
(Channel 36, 5180MHz, 802.11 n (HT20))



(Channel 44, 5220 MHz, 802.11 n (HT20))



(Channel 48, 5240MHz, 802.11 n (HT20))



(Channel 48, 5240MHz, fh of -26dB, 802.11 n (HT20))



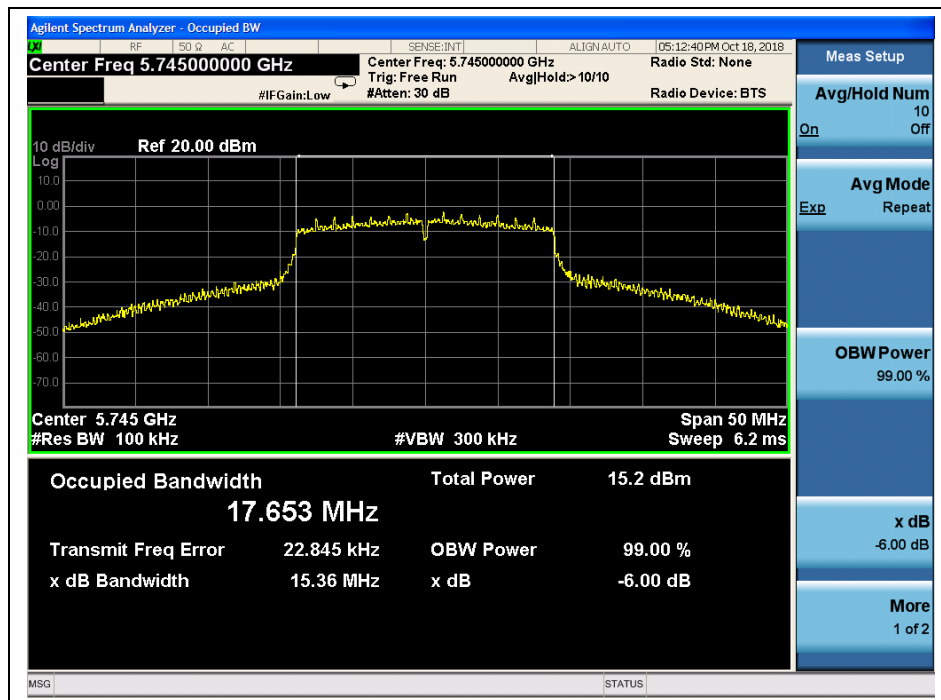
(Channel 52, 5260MHz, 802.11 n (HT20))



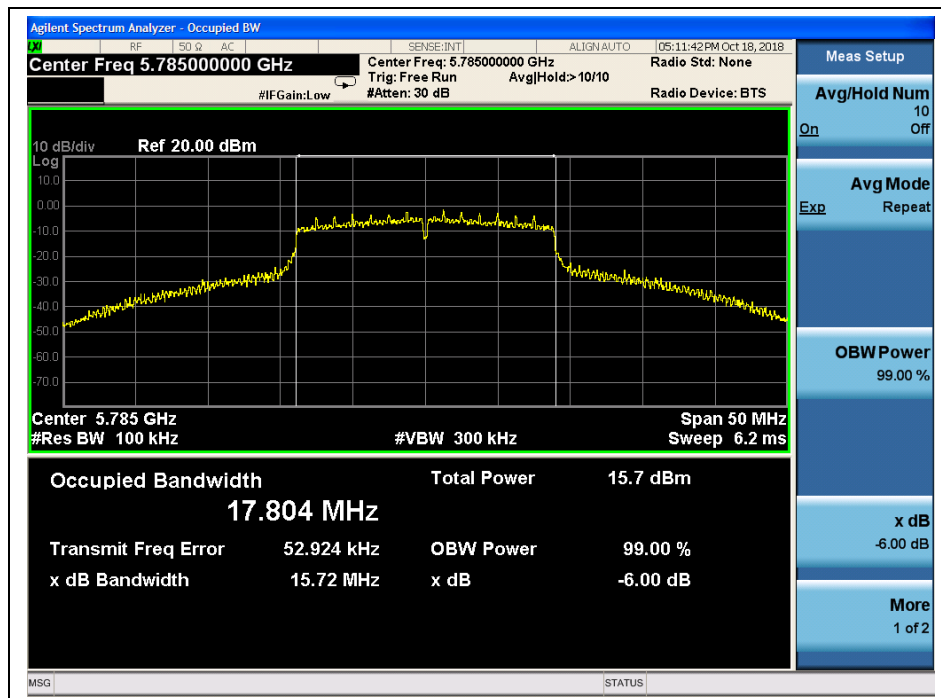
(Channel 60, 5300 MHz, 802.11 n (HT20))



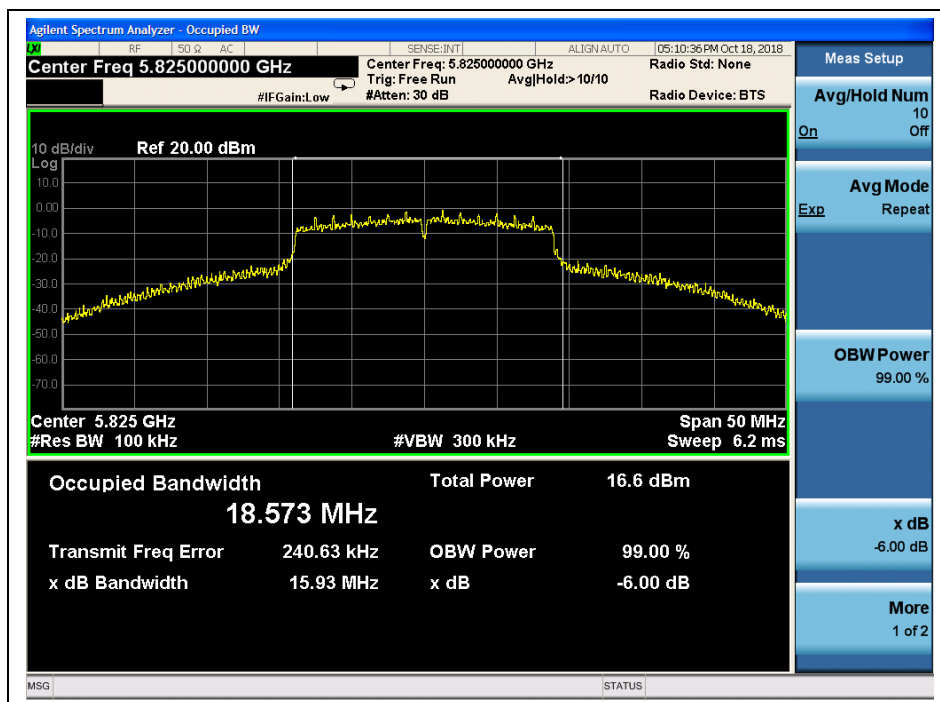
(Channel 64, 5320MHz, 802.11 n (HT20))



(Channel 149, 5745MHz, 802.11 n (HT20))



(Channel 157, 5785MHz, 802.11 n (HT20))



(Channel 165, 5825MHz, 802.11 n (HT20))

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

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	81.51
46	5230	79.83 Note
54	5270	67.05
62	5310	68.98
Channel	Frequency (MHz)	6dB Bandwidth (MHz)
151	5755	35.43
159	5795	35.75

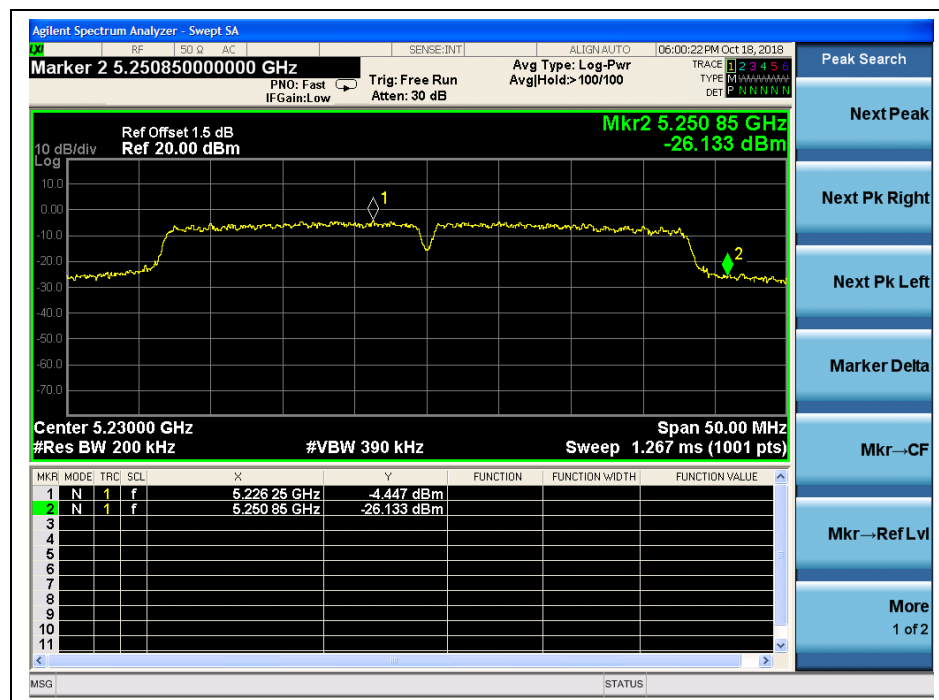
Note: The high frequency of the -26dB is 5250.85MHz which is in the DFS frequency range, so DFS testing is required. Please refer to DFS report (Report No.: SZ18100025W07).

B. Test Plots

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



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



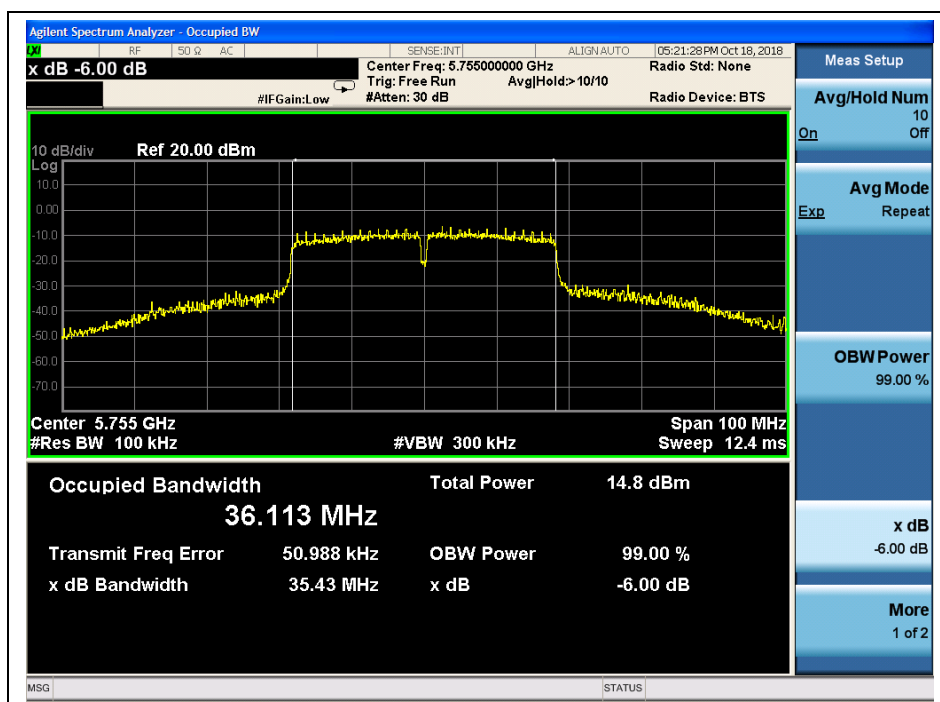
(Channel 46, 5230 MHz, fh of -26dB, 802.11n (HT40))



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



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



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



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

2.4. Maximum conducted output power

2.4.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

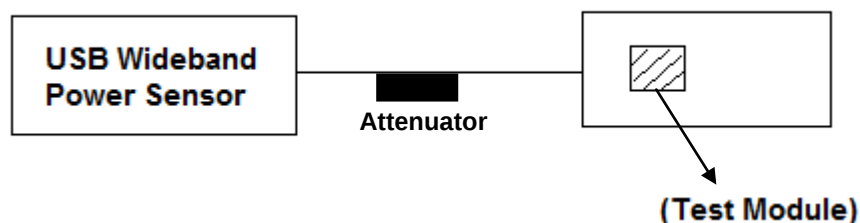
(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{\text{ANT}} + 10 \log(N_{\text{ANT}})$ dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.4.2. Test Description

Section E) 3) of KDB 789033 defines a methodology using a USB Wideband Power Sensor.

A. Test Setup:



The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in USB Wideband Power Sensor.



2.4.3. Limits

For the 5.25-5.35 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

Mode	Band	Channel (MHz)	26dB BW (MHz)	$11+10\log(26\text{dB BW})$	Limits (dBm)
a	UNII-2a	5260	29.07	25.63	24.00
		5300	28.27	25.51	24.00
		5320	28.82	25.60	24.00
n(HT20)	UNII-2a	5260	28.87	25.60	24.00
		5300	28.06	25.48	24.00
		5320	27.46	25.39	24.00

**2.4.4. Test Result****802.11a Test mode**

Channel	Frequency (MHz)	Measured Peak Power (dBm)	Limit (dBm)	Verdict
36	5180	19.12	24	PASS
44	5220	18.35		
48	5240	17.86		
52	5260	18.08		
60	5300	17.17		
64	5320	17.57		
149	5745	20.04	30	
157	5785	19.23		
165	5825	19.72		
Channel	Frequency (MHz)	Measured Average Power (dBm)	Limit (dBm)	Verdict
36	5180	11.93	24	PASS
44	5220	11.40		
48	5240	10.88		
52	5260	10.93		
60	5300	9.94		
64	5320	10.18		
149	5745	13.03	30	
157	5785	12.06		
165	5825	12.51		

**802.11n (HT20) Test mode**

Channel	Frequency (MHz)	Measured Peak Power (dBm)	Limit (dBm)	Verdict
36	5180	18.91	24	PASS
44	5220	18.27		
48	5240	17.46		
52	5260	17.34		
60	5300	16.42		
64	5320	16.67		
149	5745	19.56	30	
157	5785	19.50		
165	5825	19.30		
Channel	Frequency (MHz)	Measured Average Power (dBm)	Limit (dBm)	Verdict
36	5180	12.07	24	PASS
44	5220	11.40		
48	5240	10.75		
52	5260	9.99		
60	5300	9.36		
64	5320	10.01		
149	5745	12.58	30	
157	5785	12.63		
165	5825	12.06		

**802.11n (HT40) Test mode**

Channel	Frequency (MHz)	Measured Peak Power (dBm)	Limit (dBm)	Verdict
38	5190	18.56	24	PASS
46	5230	17.62		
54	5270	16.98		
62	5310	16.62		
151	5755	19.66	30	
159	5795	19.21		
Channel	Frequency (MHz)	Measured Average Power (dBm)	Limit (dBm)	Verdict
38	5190	12.13	24	PASS
46	5230	11.37		
54	5270	10.32		
62	5310	9.98		
151	5755	12.91	30	
159	5795	12.70		

2.5. Peak Power spectral density

2.5.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500KHz band.

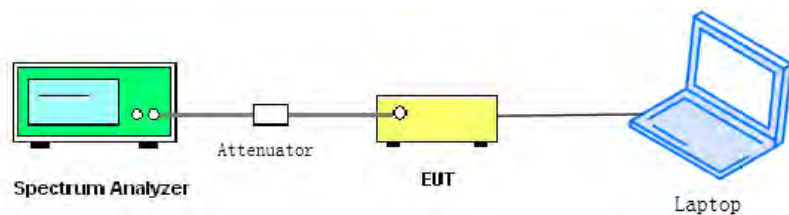
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.5.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

**B. Test Procedure**

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance

- 1) Set span to encompass the entire 26-dB emission bandwidth
- 2) Set RBW = 1 MHz. Set VBW $\geq$ 3 MHz.
- 3) Number of points in sweep $\geq$ 2 Span / RBW. Sweep time = auto.
- 4) Detector = Peak
- 5) Allow the trace to stabilize
- 6) Record the max value

2.5.3. Test Result**802.11a Test mode****A. Test Verdict:**

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	5.59	11	PASS
44	5220	4.69		
48	5240	4.87		
52	5260	3.88		
60	5300	3.16		
64	5320	3.29		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	4.61	30	PASS
157	5785	4.72		
165	5825	4.77		



B. Test Plots



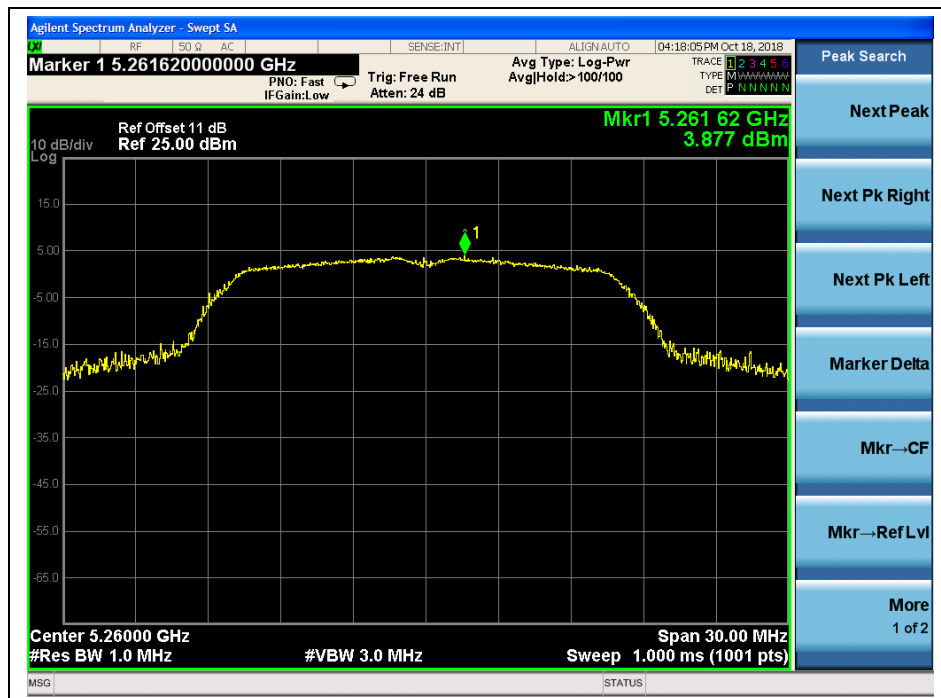
(Channel 36, 5180MHz, 802.11a,)



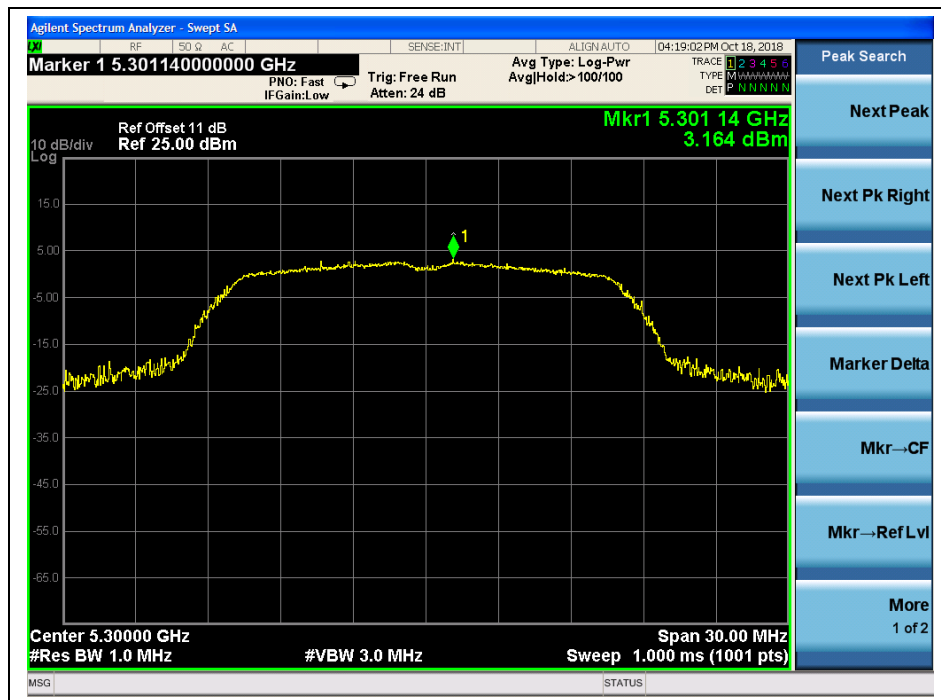
(Channel 44, 5220 MHz, 802.11a,)



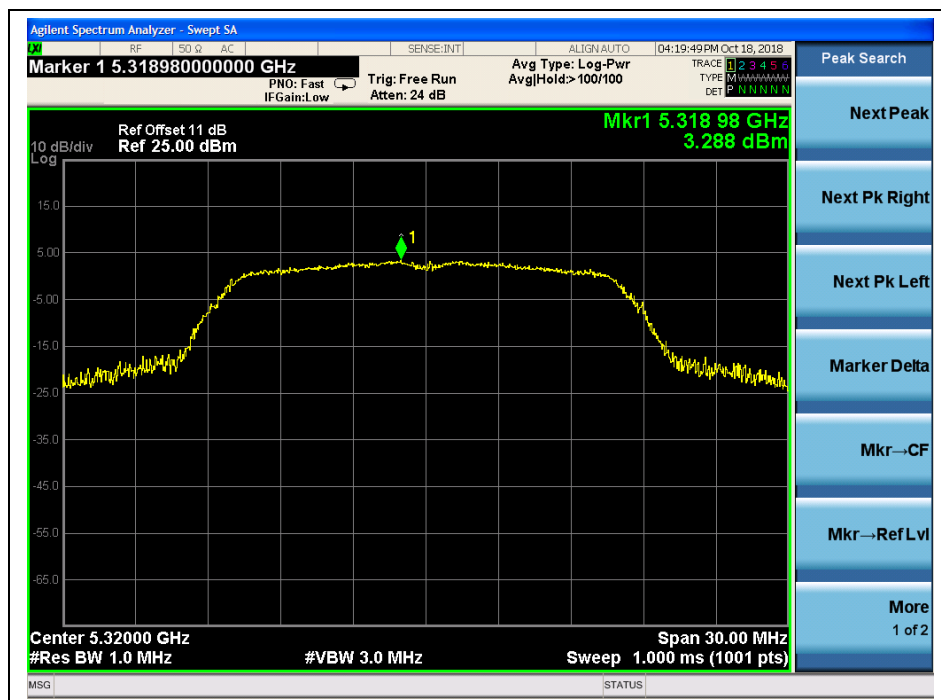
(Channel 48, 5240MHz, 802.11a,)



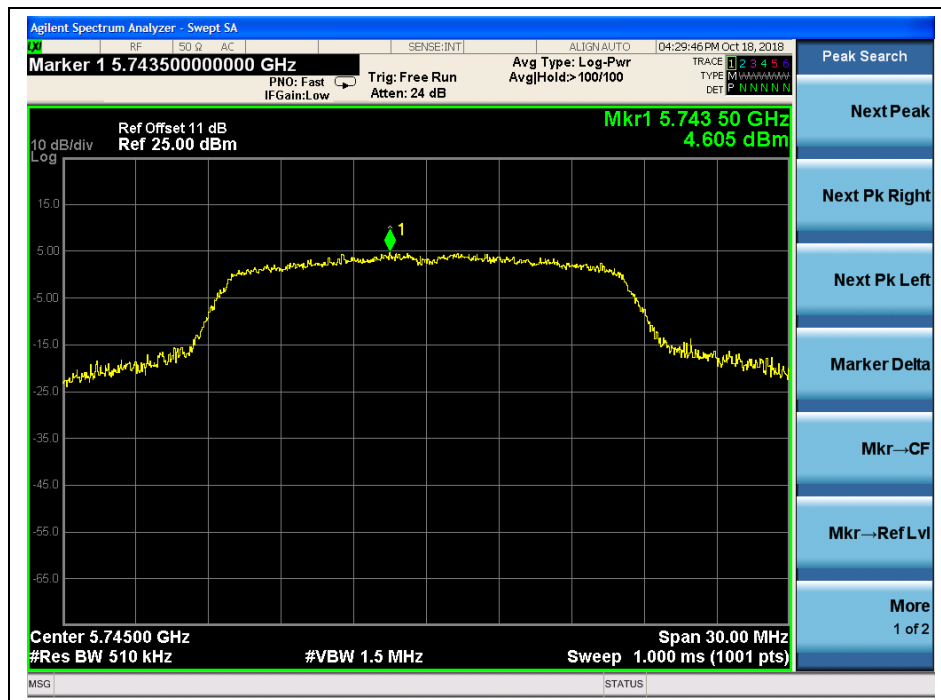
(Channel 52, 5260MHz, 802.11a,)



(Channel 60, 5300 MHz, 802.11a,)



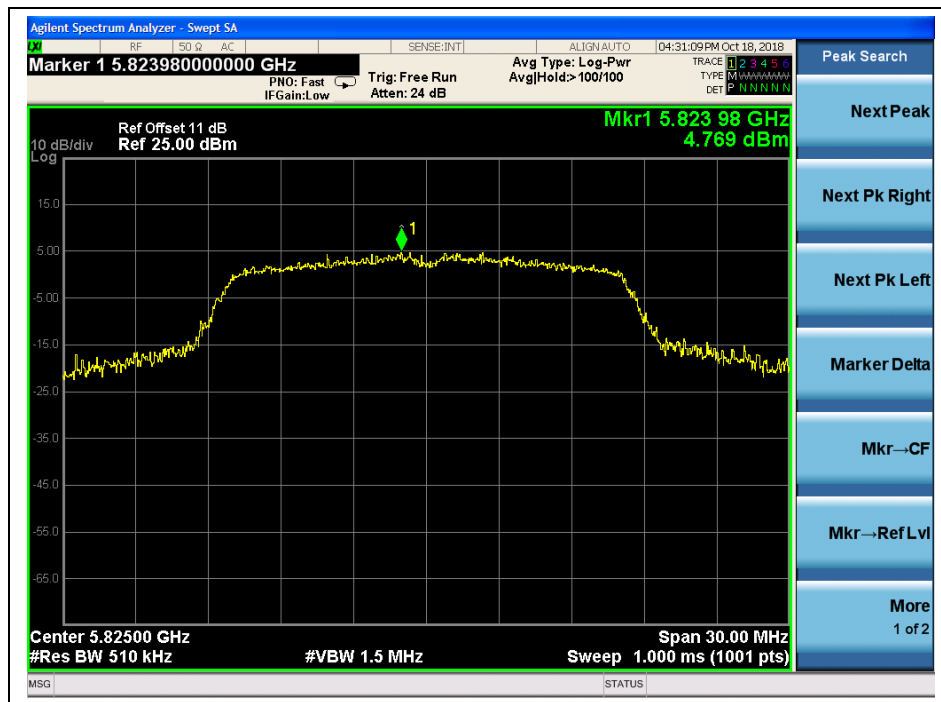
(Channel 64, 5320MHz, 802.11a,)



(Channel 149, 5745MHz, 802.11a)



(Channel 157, 5785MHz, 802.11a)



(Channel 165, 5825MHz, 802.11a)

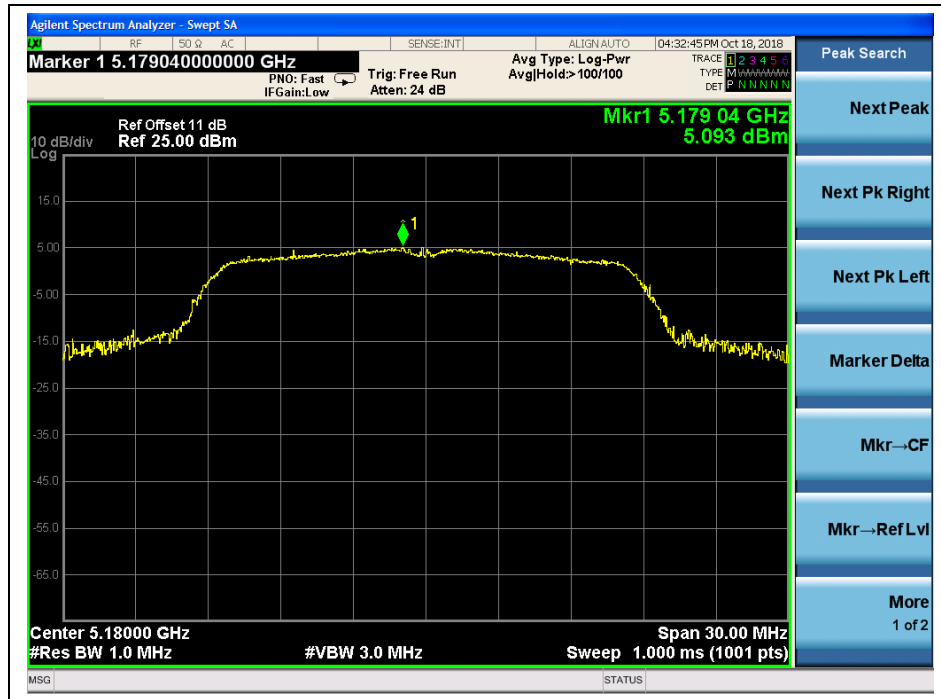
802.11n (HT20) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	5.09	11	PASS
44	5220	4.53		
48	5240	3.76		
52	5260	4.30		
60	5300	3.06		
64	5320	3.13		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	3.96	30	PASS
157	5785	3.85		
165	5825	4.11		



B. Test Plots



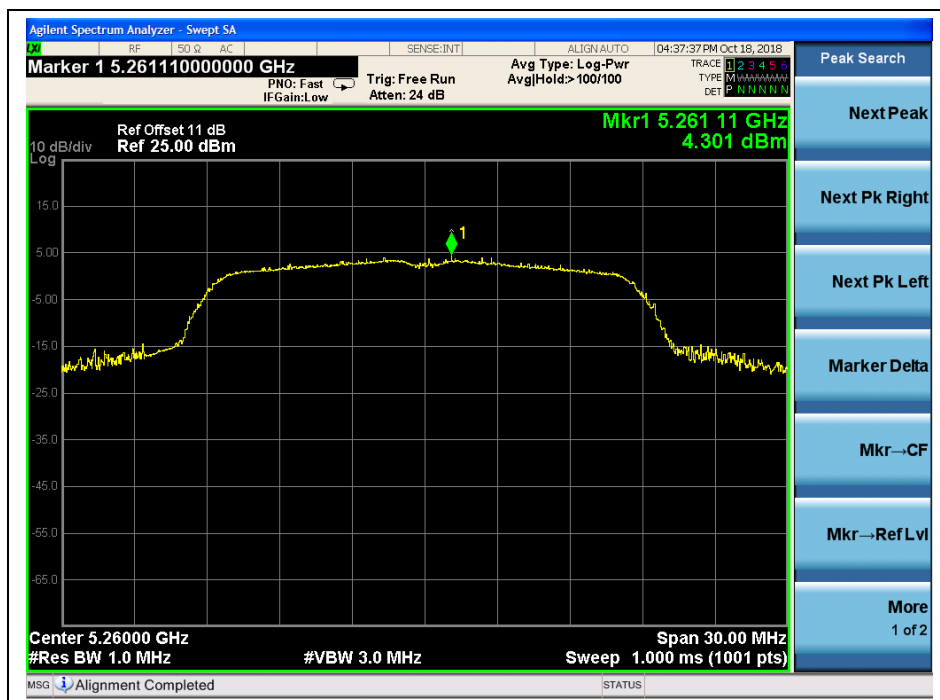
(Channel 36, 5180MHz, 802.11 n (HT20))



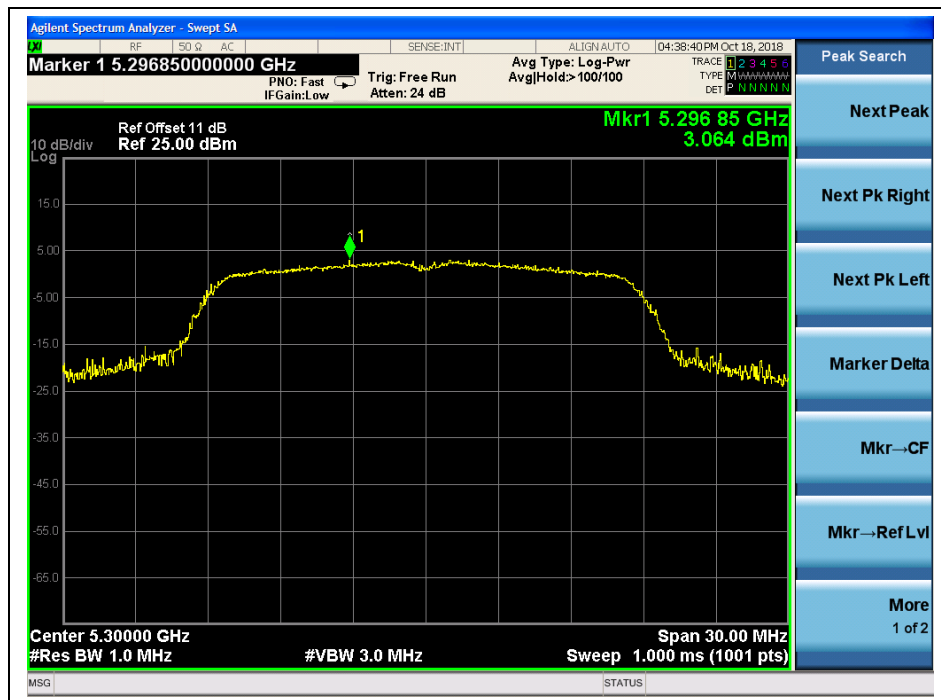
(Channel 44, 5220 MHz, 802.11 n (HT20))



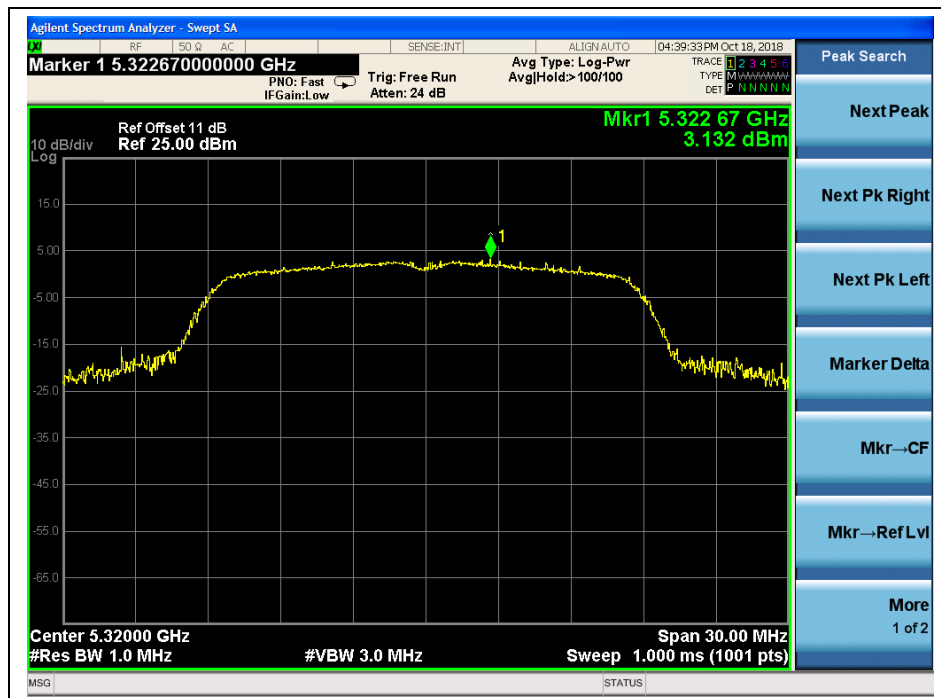
(Channel 48, 5240MHz, 802.11 n (HT20))



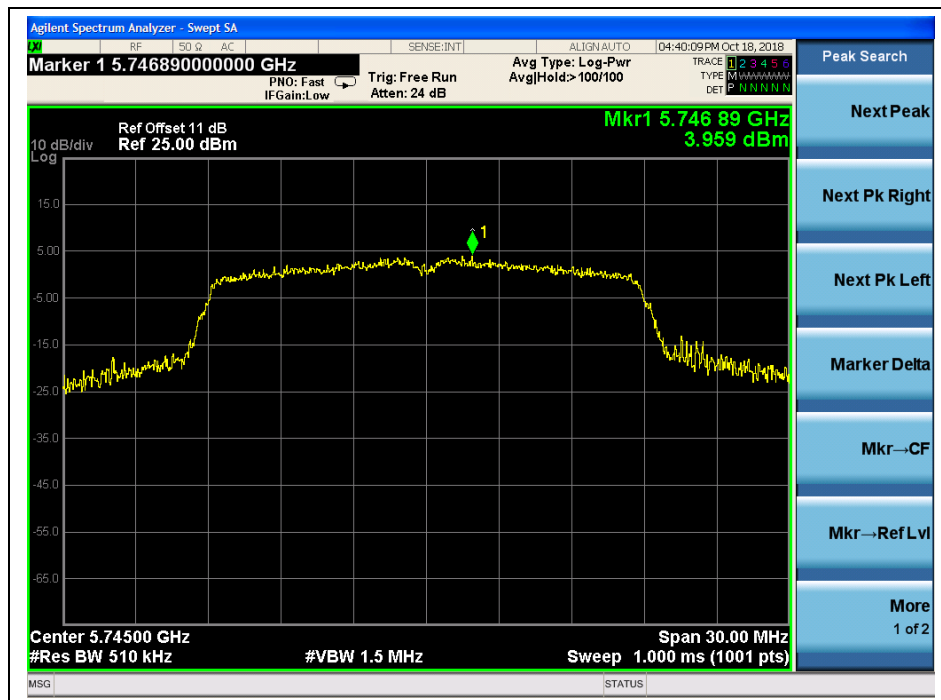
(Channel 52, 5260MHz, 802.11 n (HT20))



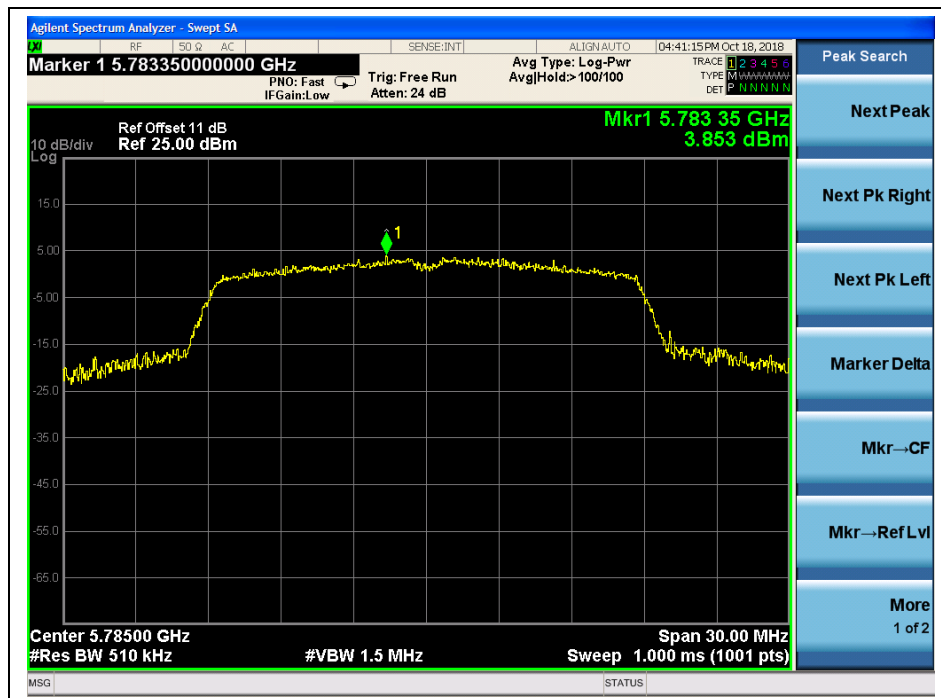
(Channel 60, 5300 MHz, 802.11 n (HT20))



(Channel 64, 5320MHz, 802.11 n (HT20))



(Channel 149, 5745MHz, 802.11 n (HT20))



(Channel 157, 5785MHz, 802.11 n (HT20))



(Channel 165, 5825MHz, 802.11 n (HT20))

802.11n (HT40) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	1.89	11	PASS
46	5230	1.91		
54	5270	0.77		
62	5310	0.20		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
151	5755	0.71	30	PASS
159	5795	1.26		



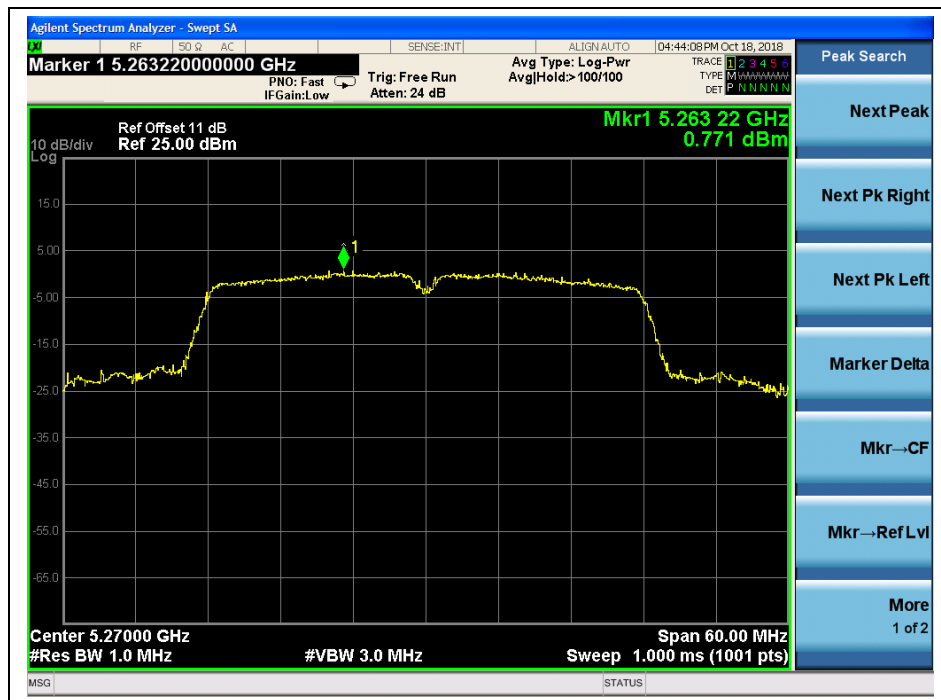
B. Test Plots



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



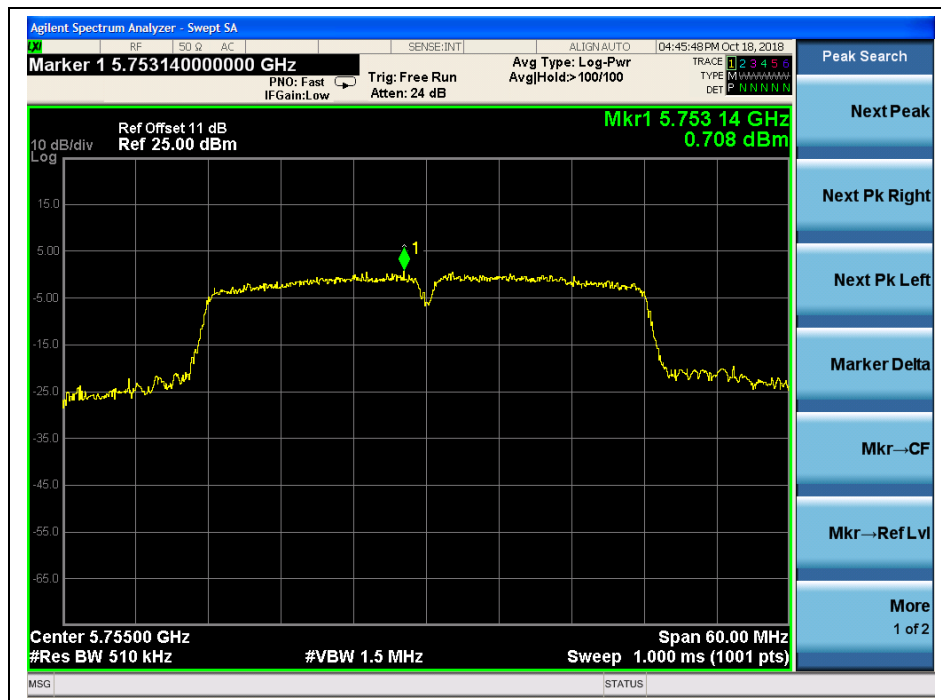
(Channel 46, 5230 MHz, 802.11n (HT40))



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



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



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



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

2.6. Frequency Stability

2.6.1. Requirement

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

2.6.2. Test Procedure

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

2.6.3. Test Result

U-NII-1 (Ch. 36) 5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.8	+20(Ref)	10	0.002
100%		-30	45	0.009
100%		-20	37	0.007
100%		-10	30	0.006
100%		0	26	0.005
100%		+10	18	0.003
100%		+20	20	0.004
100%		+30	38	0.007
100%		+40	40	0.008
100%		+50	43	0.008
85%	3.4	+20	47	0.009
115%	4.35	+20	42	0.008



U-NII-2A (Ch. 52)				
5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.8	+20(Ref)	31	0.006
100%		-30	55	0.010
100%		-20	46	0.009
100%		-10	39	0.007
100%		0	34	0.006
100%		+10	32	0.006
100%		+20	37	0.007
100%		+30	44	0.008
100%		+40	49	0.009
100%		+50	51	0.010
85%	3.4	+20	25	0.005
115%	4.35	+20	28	0.005

U-NII-3 (Ch. 149)				
5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Freq Dev. (Hz)	Deviation (ppm)
100%	3.8	+20(Ref)	19	0.003
100%		-30	49	0.009
100%		-20	36	0.007
100%		-10	25	0.005
100%		0	18	0.003
100%		+10	16	0.003
100%		+20	21	0.004
100%		+30	25	0.005
100%		+40	33	0.006
100%		+50	42	0.008
85%	3.4	+20	22	0.004
115%	4.35	+20	32	0.006

2.7. Conducted Emission

2.7.1. Requirement

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

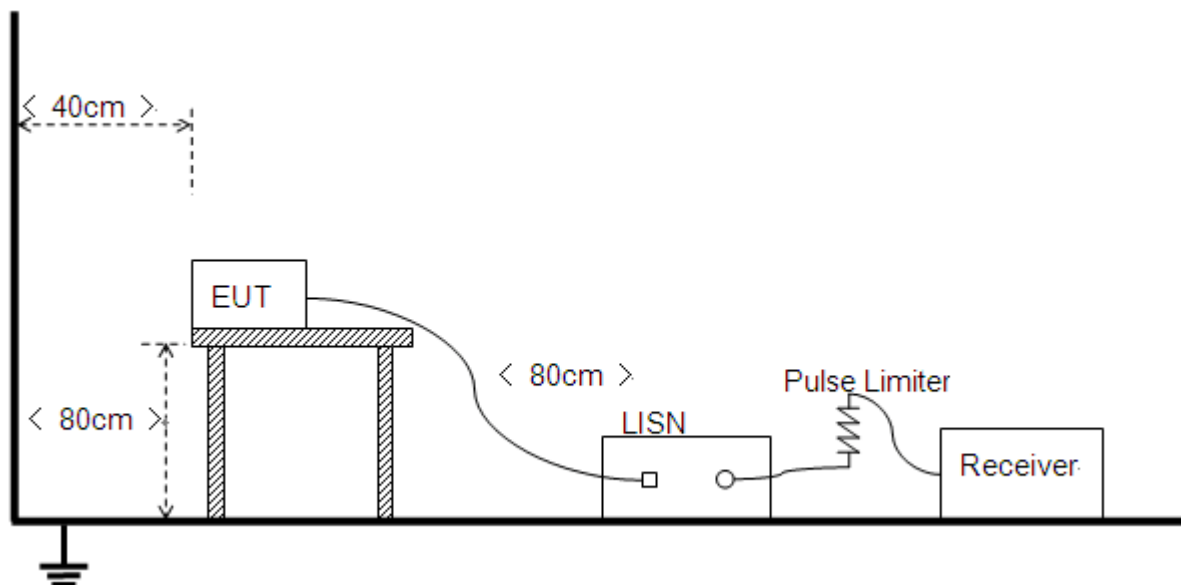
Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

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

A. Test Setup:



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

2.7.3. Test Result

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

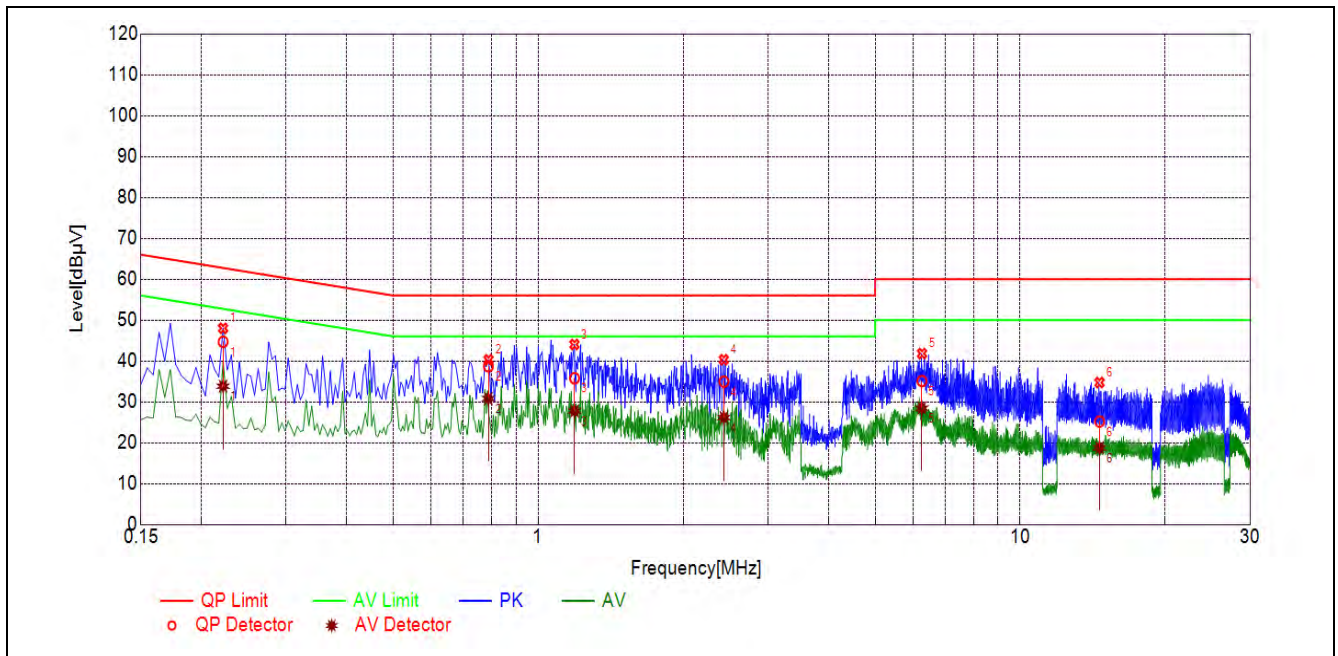
Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test setup:

The EUT configuration of the emission tests is Adaptor1 + EUT + Link.

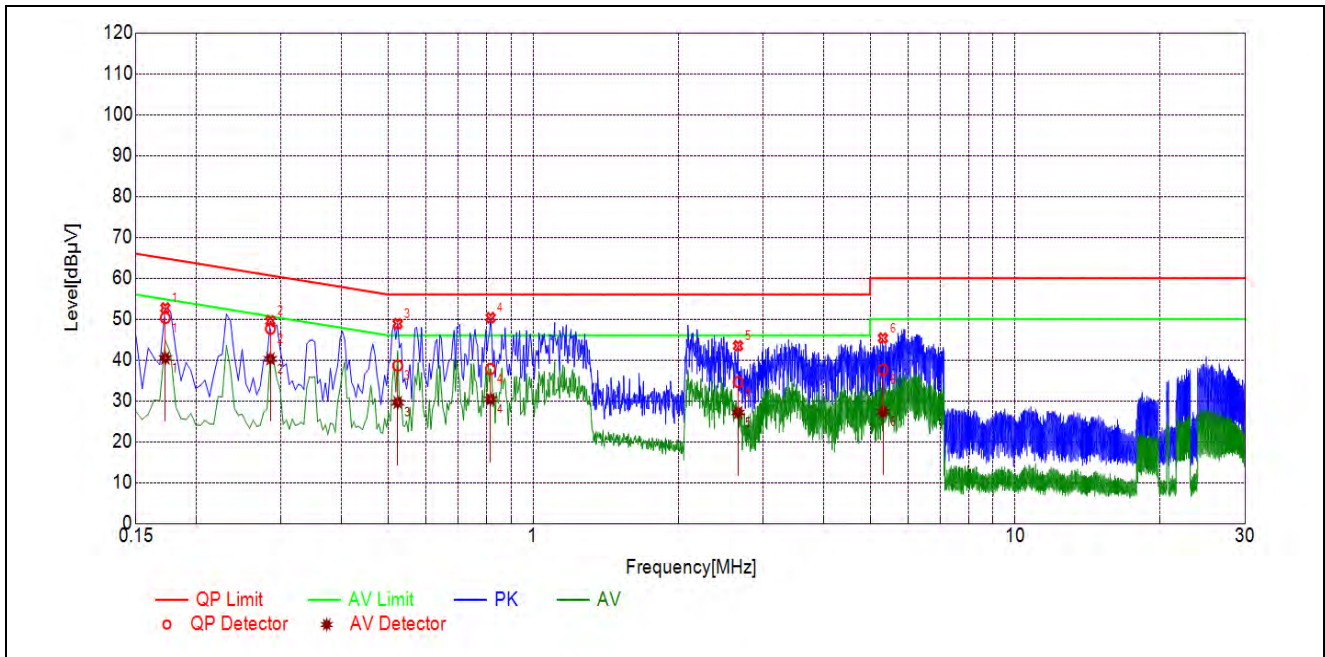
Note: The test voltage is AC 120V/60Hz.

B. Test Plots:



(L Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.2220	44.70	33.83	62.74	52.74	Line	PASS
2	0.7883	38.69	30.80	56.00	46.00		PASS
3	1.1898	35.77	27.75	56.00	46.00		PASS
4	2.4280	34.94	26.14	56.00	46.00		PASS
5	6.2523	35.09	28.47	60.00	50.00		PASS
6	14.6083	25.19	18.76	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	0.1725	50.29	40.48	64.84	54.84	Neutral	PASS
2	0.2850	47.66	40.27	60.67	50.67		PASS
3	0.5234	38.60	29.59	56.00	46.00		PASS
4	0.8153	37.79	30.40	56.00	46.00		PASS
5	2.6620	34.59	27.13	56.00	46.00		PASS
6	5.3213	37.60	27.36	60.00	50.00		PASS

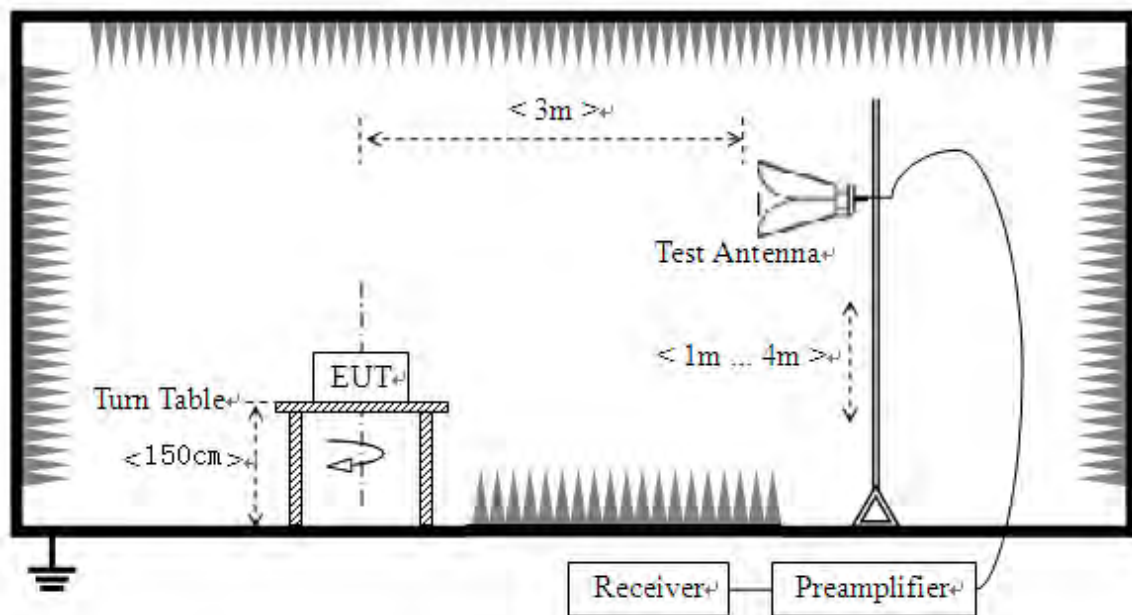
2.8. Restricted Frequency Bands

2.8.1. Requirement

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

2.8.2. Test Description

A. Test Setup



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

KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.



2.8.3. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:

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

A_T : Total correction Factor except Antenna; U_R : Receiver Reading

G_{preamp} : Preamplifier Gain; A_{Factor} : Antenna Factor at 3m

Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

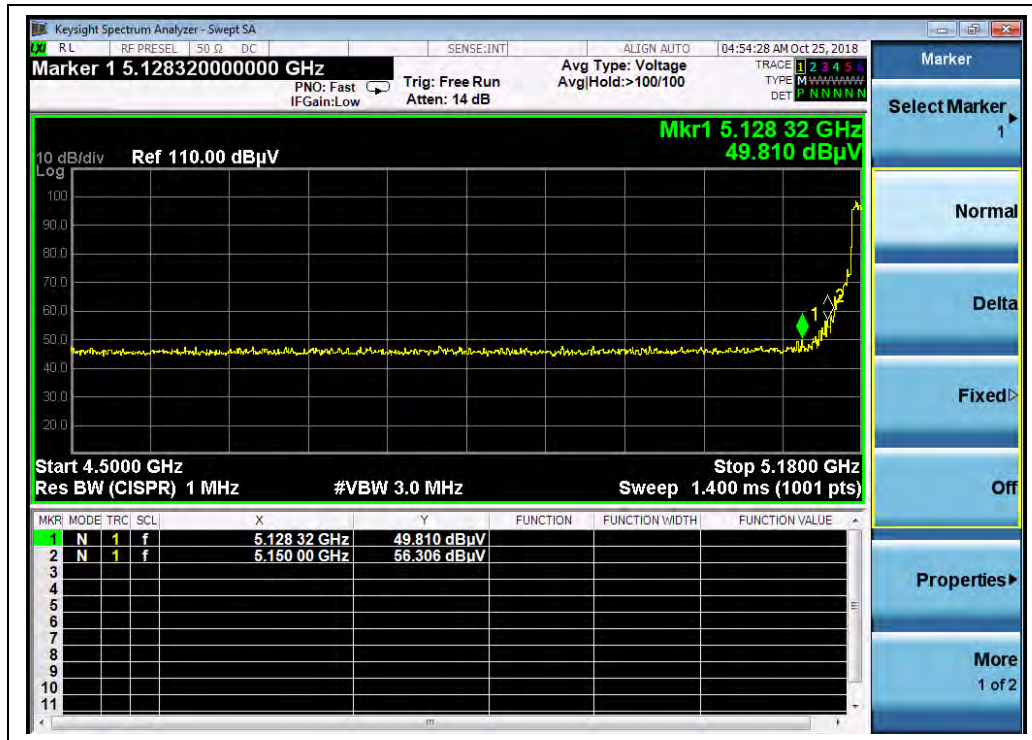
802.11a Test mode

A. Test Verdict:

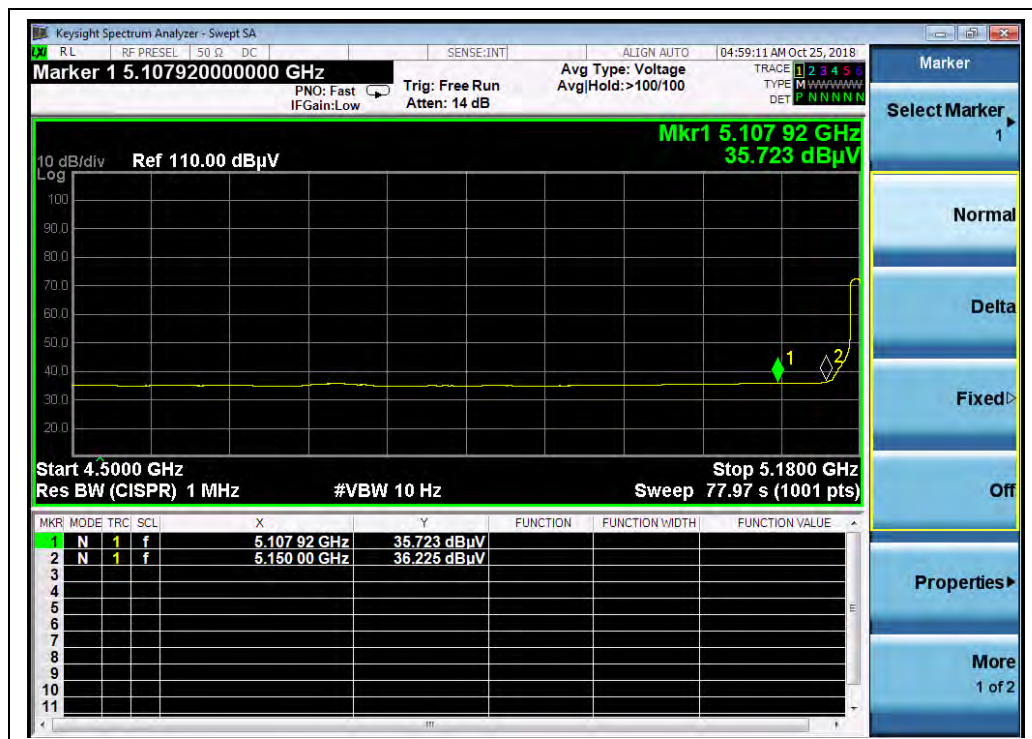
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
36	5150.00	PK	56.31	-49.53	32.20	38.98	68.23	PASS
36	5150.00	AV	36.23	-49.53	32.20	18.90	54	PASS
64	5354.70	PK	50.20	-49.53	32.20	32.87	74	PASS
64	5350.00	AV	36.45	-49.53	32.20	19.12	54	PASS
149	5725.00	PK	56.06	-49.53	32.20	38.73	122.23	PASS
149	5725.00	AV	41.91	-49.53	32.20	24.58	54	PASS
165	5850.00	PK	48.35	-49.53	32.20	31.02	122.23	PASS
165	5850.00	AV	38.09	-49.53	32.20	20.76	54	PASS



B. Test Plots:



(Channel 36, PEAK, 802.11a)



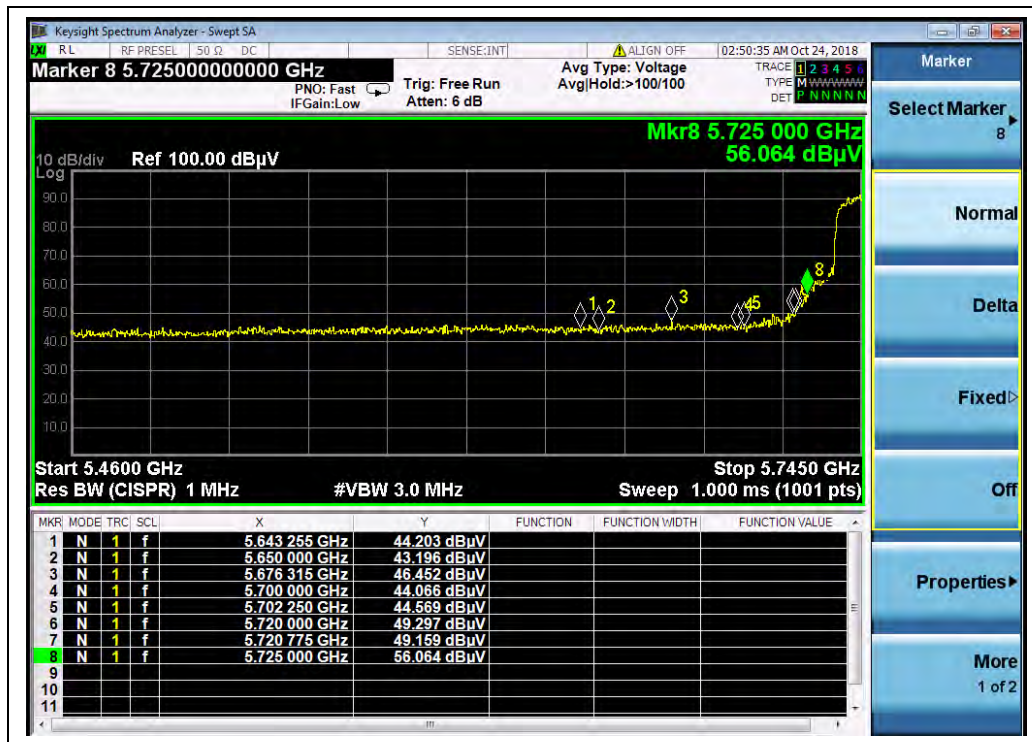
(Channel 36, AVG, 802.11a)



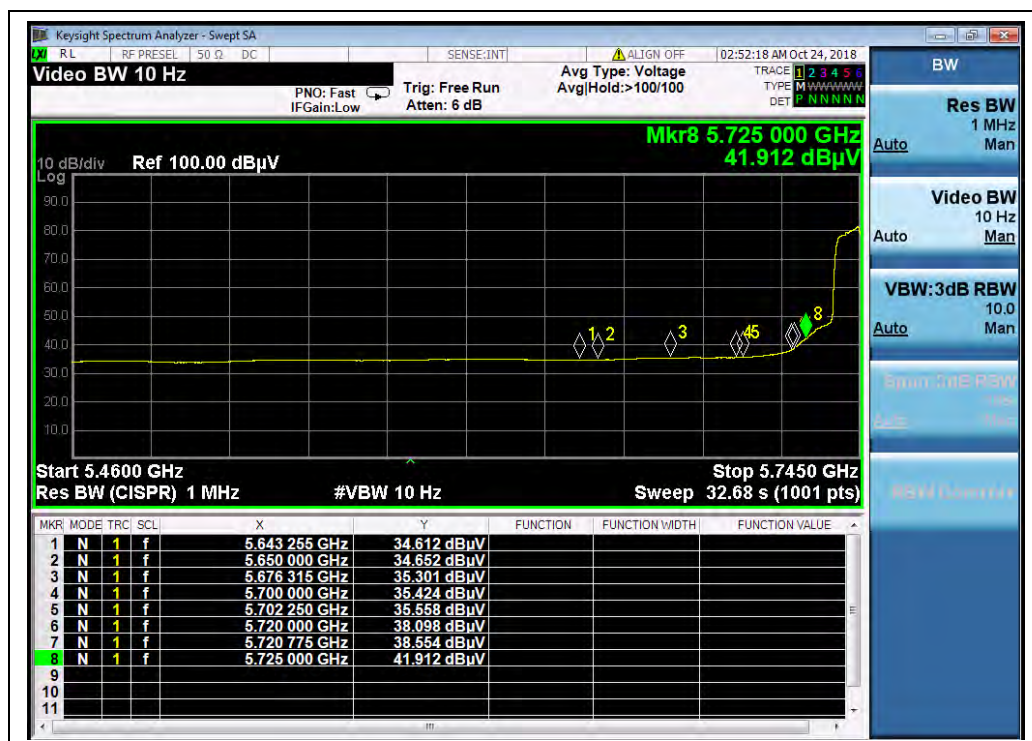
(Channel 64, PEAK, 802.11a)



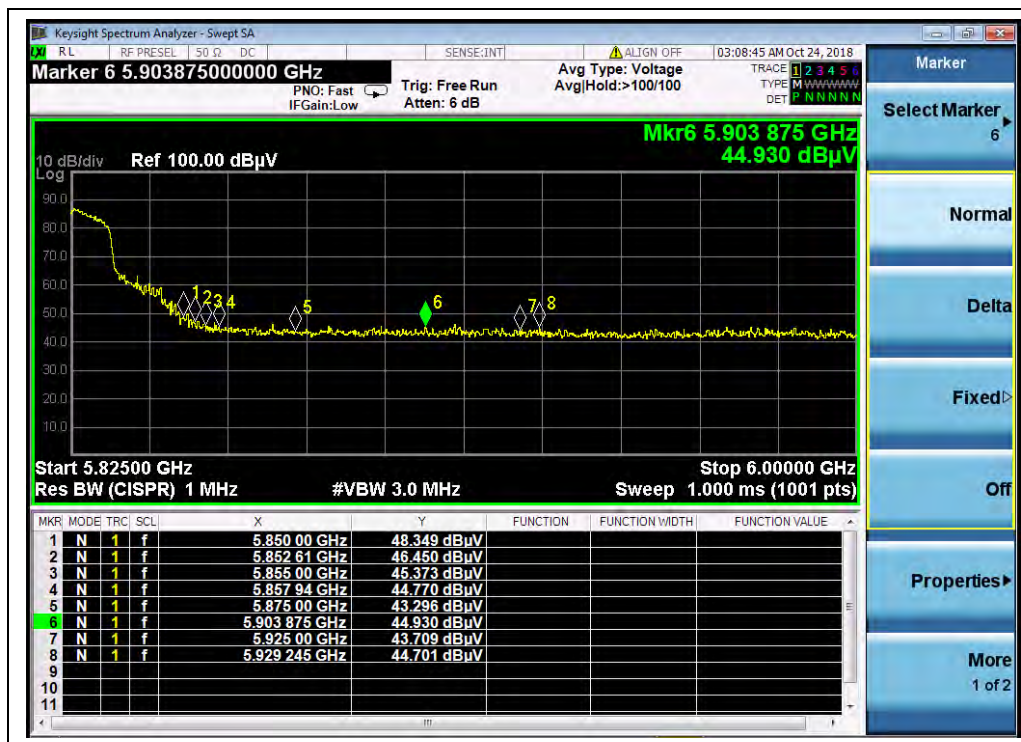
(Channel 64, AVG, 802.11a)



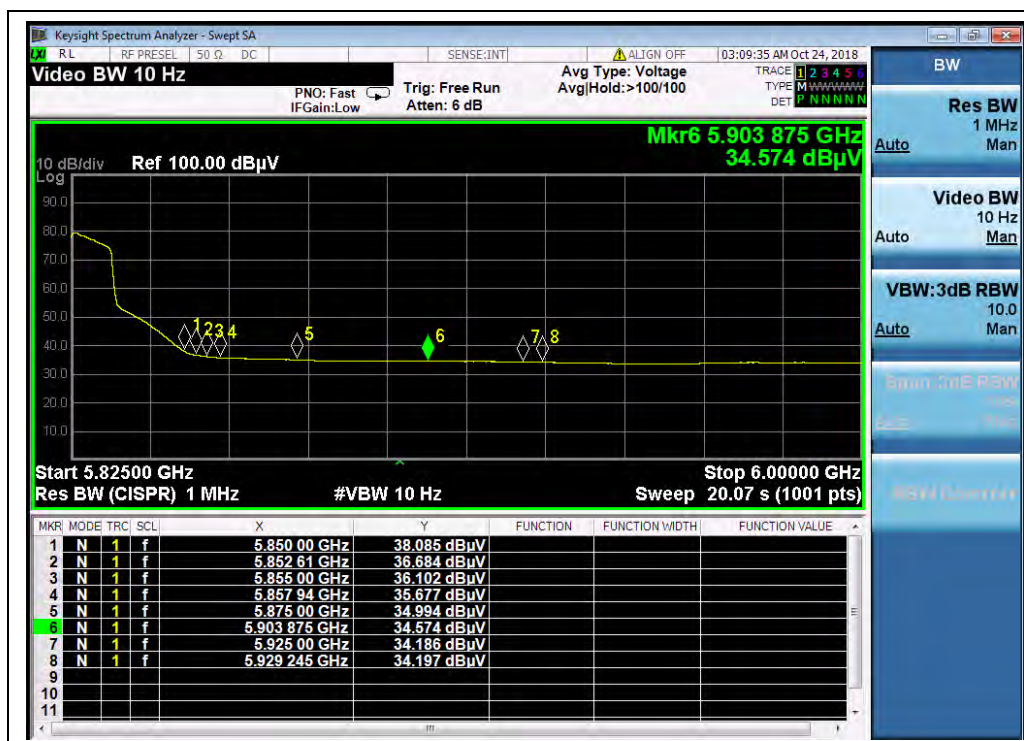
(Channel 149, PEAK, 802.11a)



(Channel 149, AVG, 802.11a)



(Channel 165, PEAK, 802.11a)



(Channel 165, AVG, 802.11a)

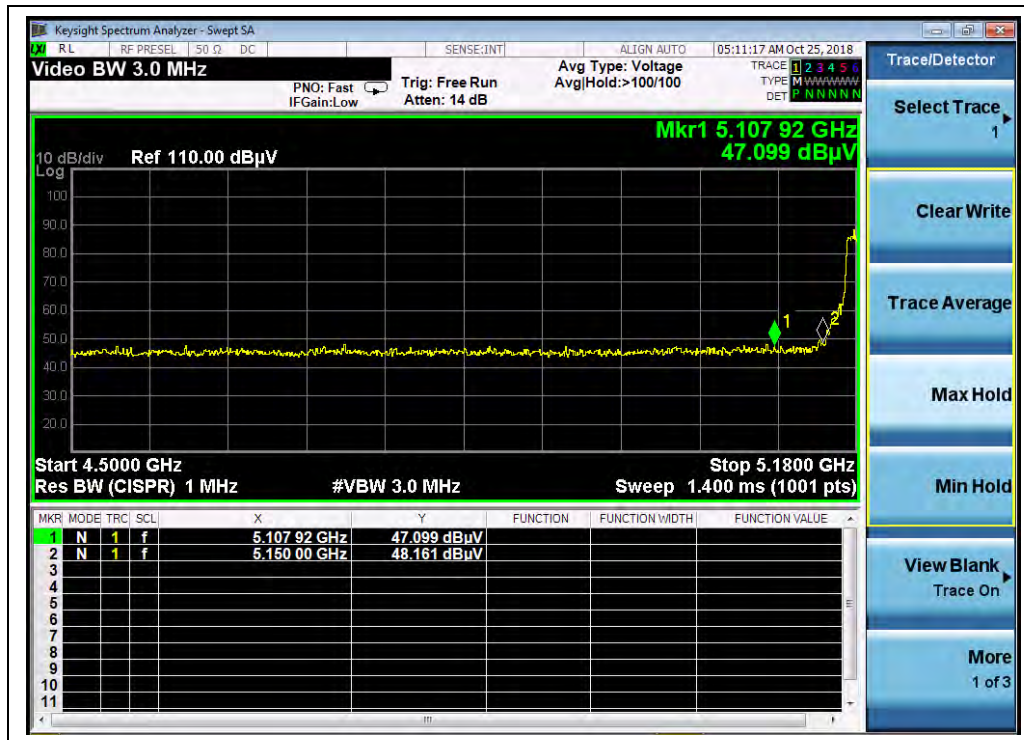


802.11n (HT20) Test mode

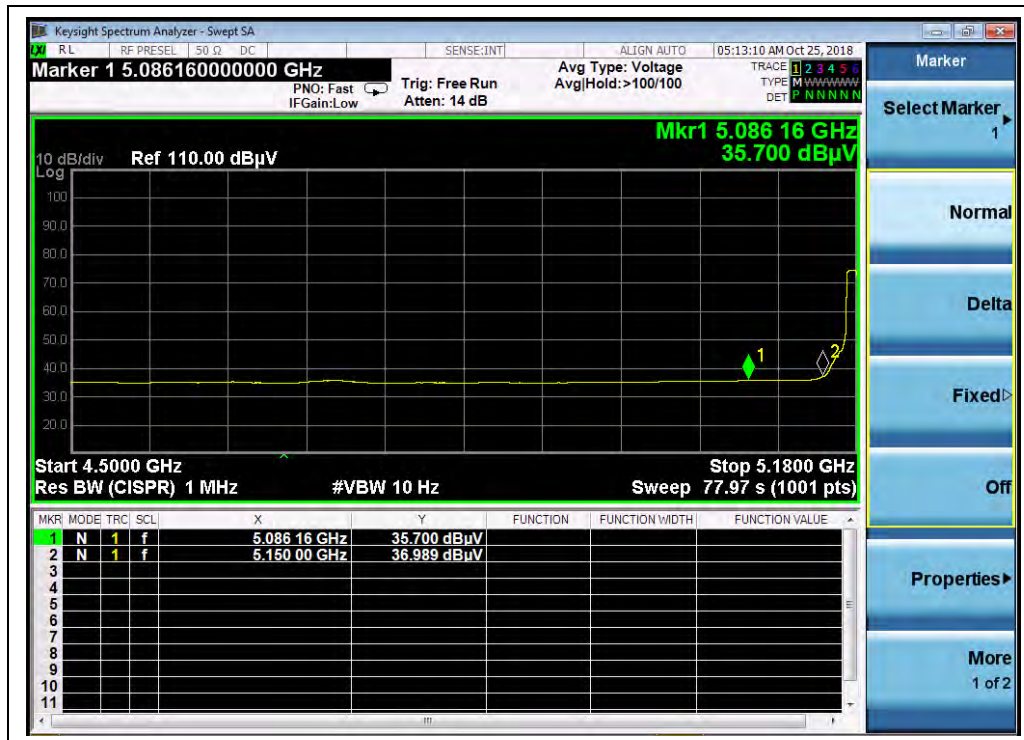
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
36	5150.00	PK	48.16	-49.53	32.20	30.83	68.23	PASS
36	5150.00	AV	36.99	-49.53	32.20	19.66	54	PASS
64	5353.58	PK	47.92	-49.53	32.20	30.59	74	PASS
64	5350.00	AV	35.79	-49.53	32.20	18.46	54	PASS
149	5725.00	PK	56.42	-49.53	32.20	39.09	122.23	PASS
149	5725.00	AV	41.90	-49.53	32.20	24.57	54	PASS
165	5850.00	PK	53.38	-49.53	32.20	36.05	122.23	PASS
165	5850.00	AV	37.82	-49.53	32.20	20.49	54	PASS

B. Test Plots:



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



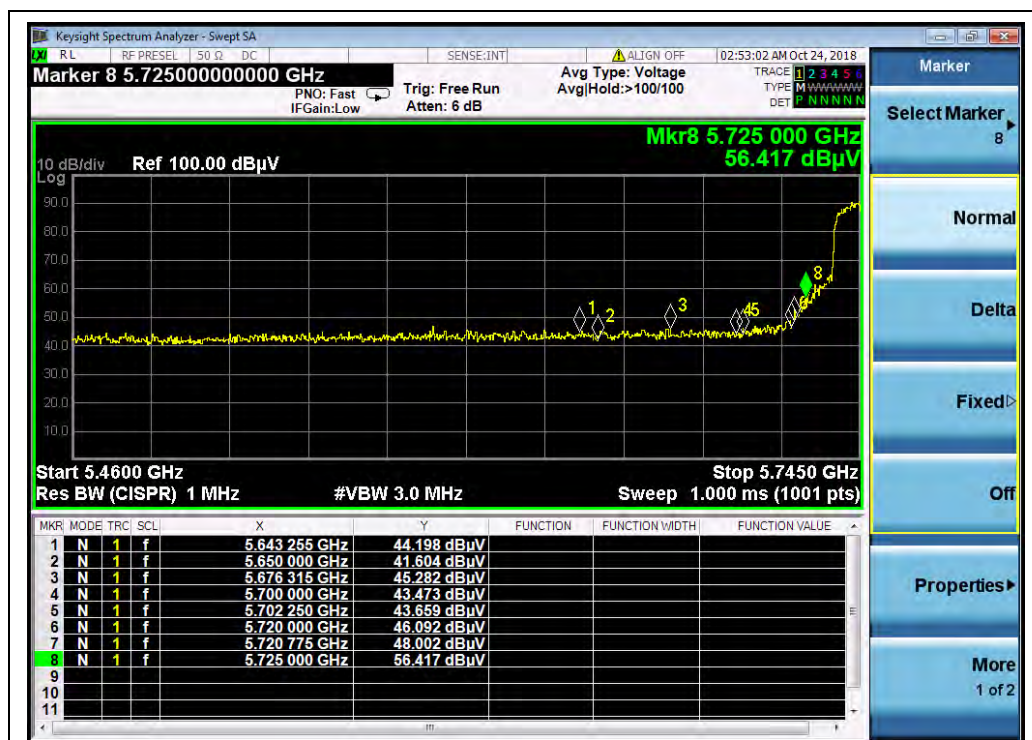
(Channel 36, AVG, 802.11 n (HT20))



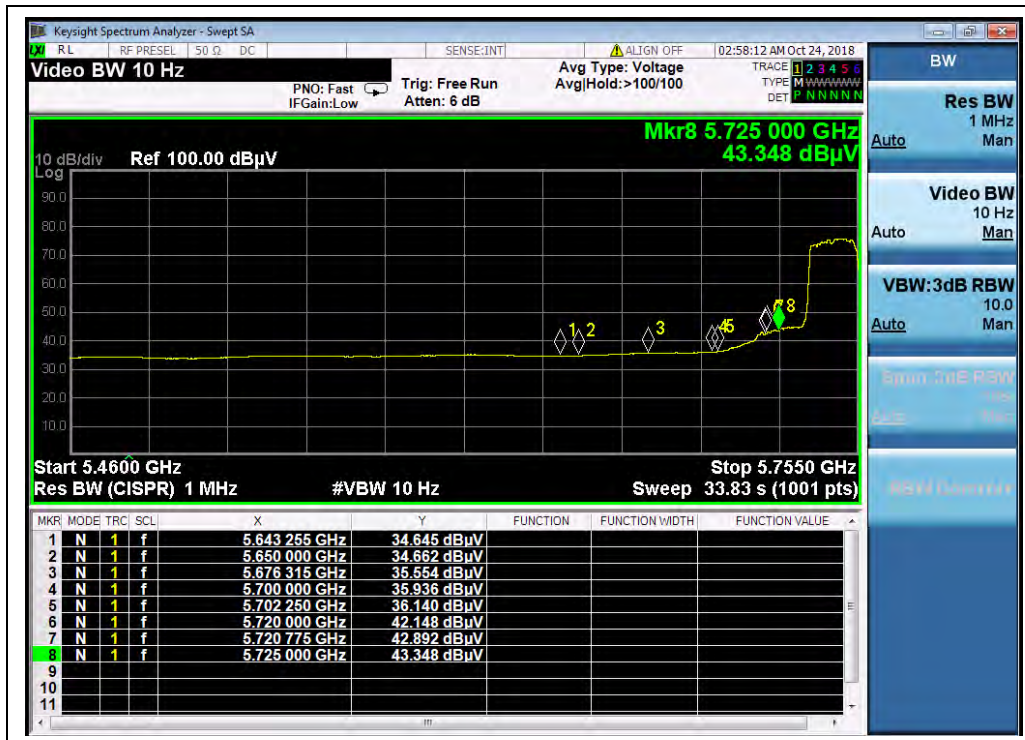
(Channel 64, PEAK, 802.11 n (HT20))



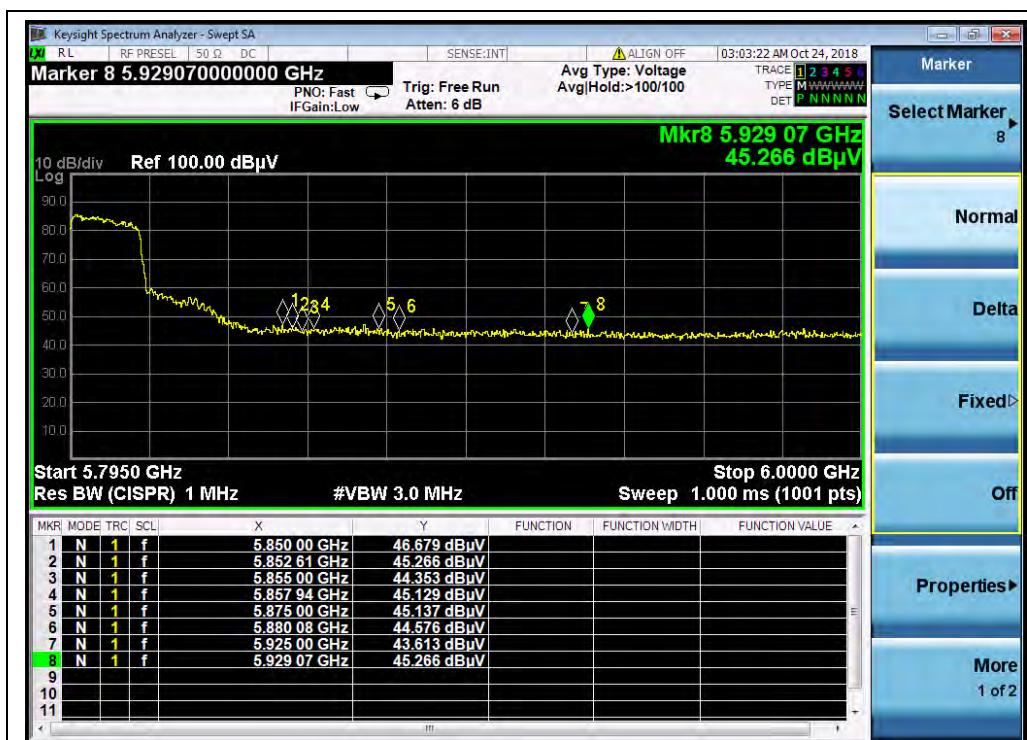
(Channel 64, AVG, 802.11n (HT20))



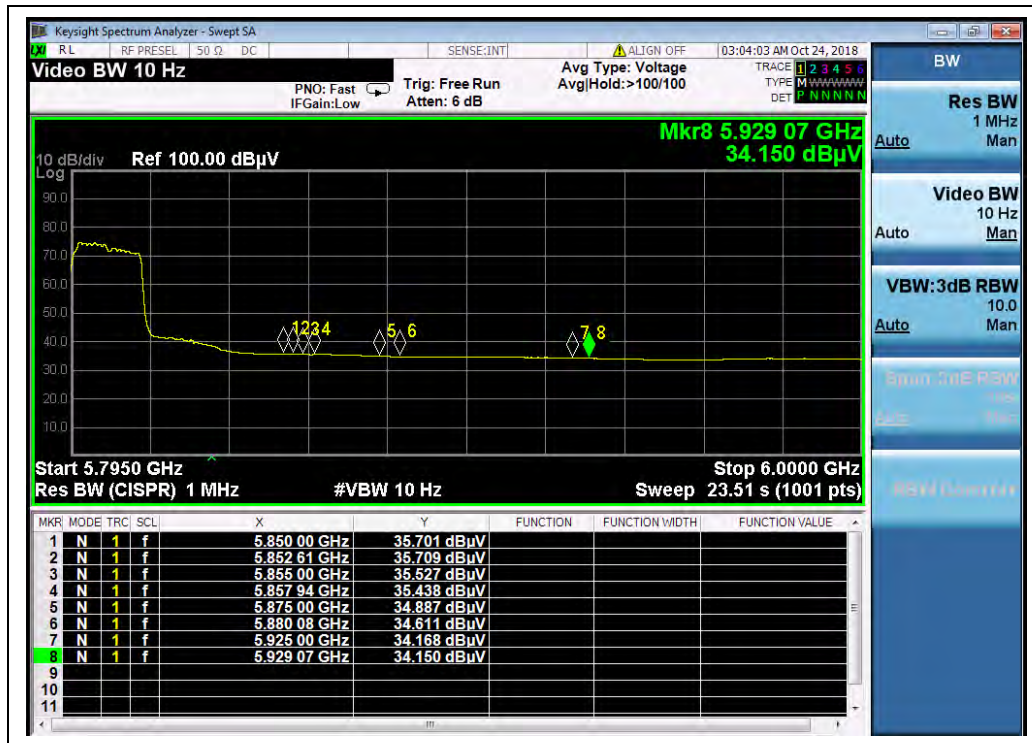
(Channel 149, PEAK, 802.11 n (HT20))



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



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



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

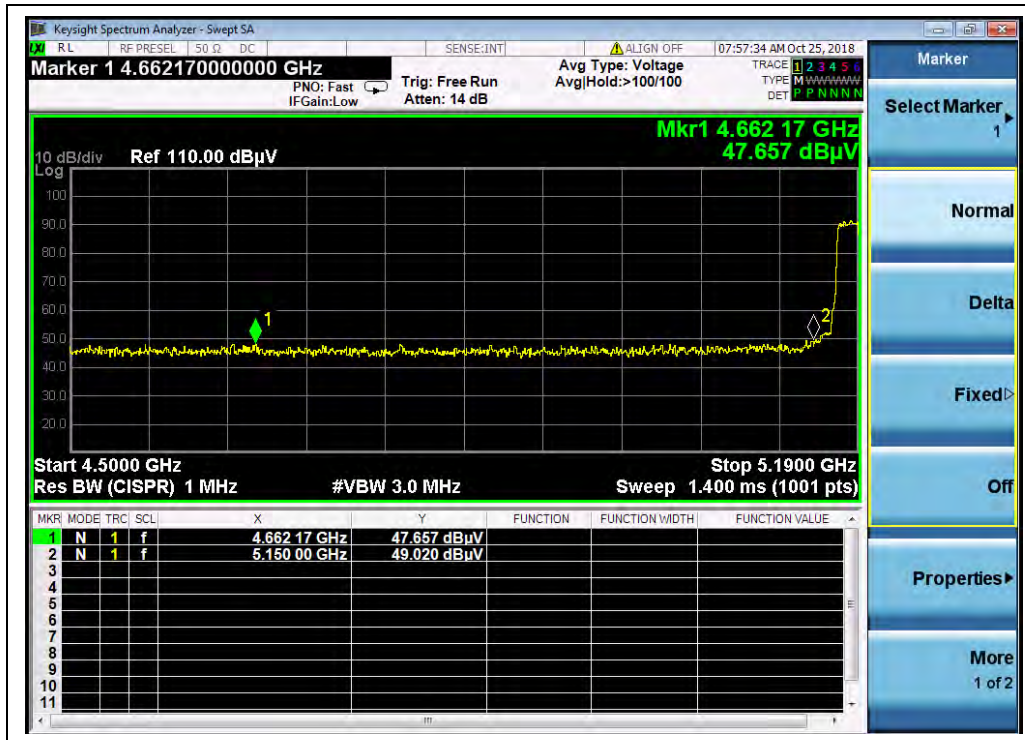
802.11n (HT40) Test mode

A. Test Verdict:

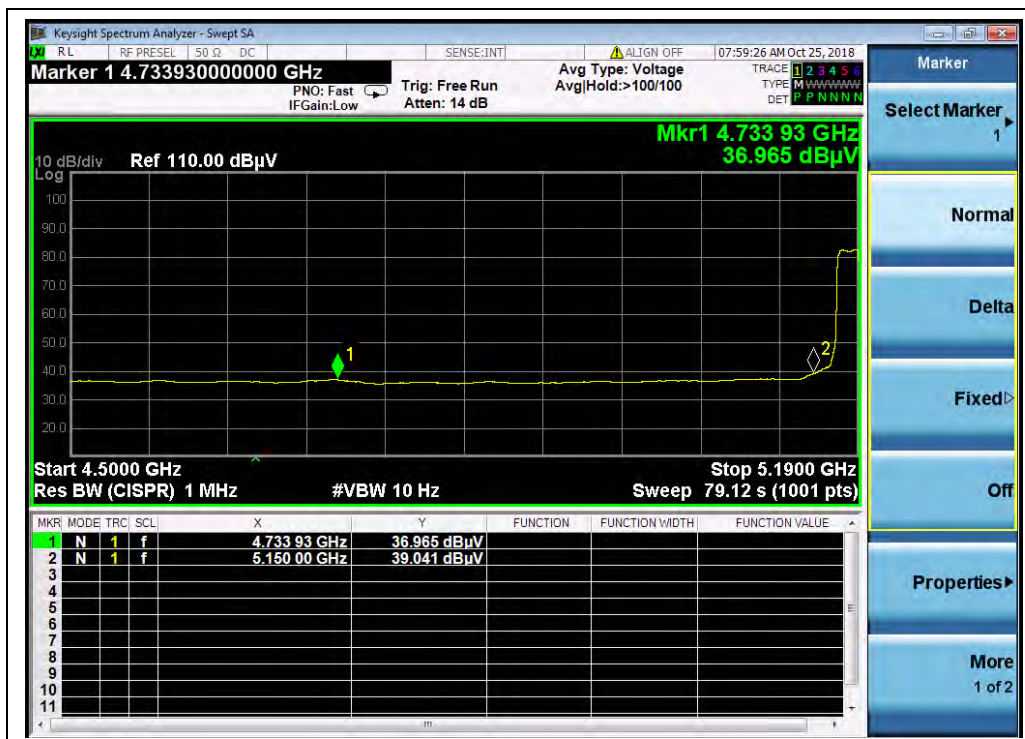
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
38	5150.00	PK	49.02	-49.53	32.20	31.69	68.23	PASS
38	5150.00	AV	39.04	-49.53	32.20	21.71	54	PASS
62	5352.20	PK	58.06	-49.53	32.20	40.73	74	PASS
62	5350.00	AV	42.18	-49.53	32.20	24.85	54	PASS
151	5720.78	PK	59.65	-49.53	32.20	42.32	112.61	PASS
151	5725.00	AV	43.35	-49.53	32.20	26.02	54	PASS
159	5850.00	PK	46.68	-49.53	32.20	29.35	122.23	PASS
159	5852.61	AV	35.71	-49.53	32.20	18.38	54	PASS



B. Test Plots:



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



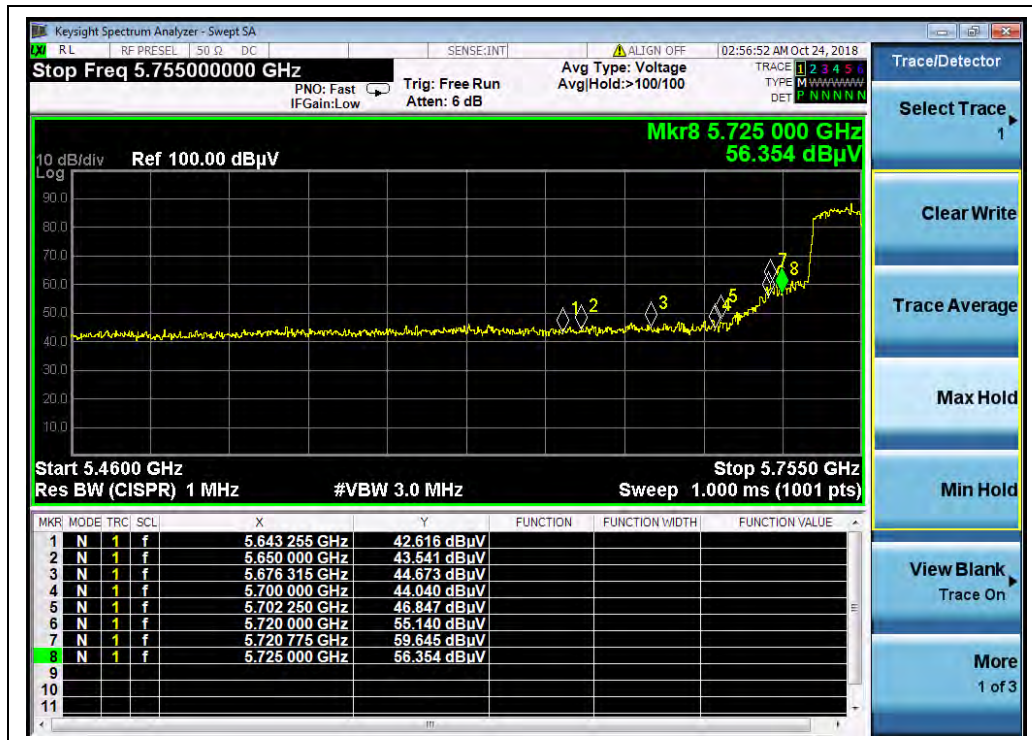
(Channel 38, AVG, 802.11n (HT40))



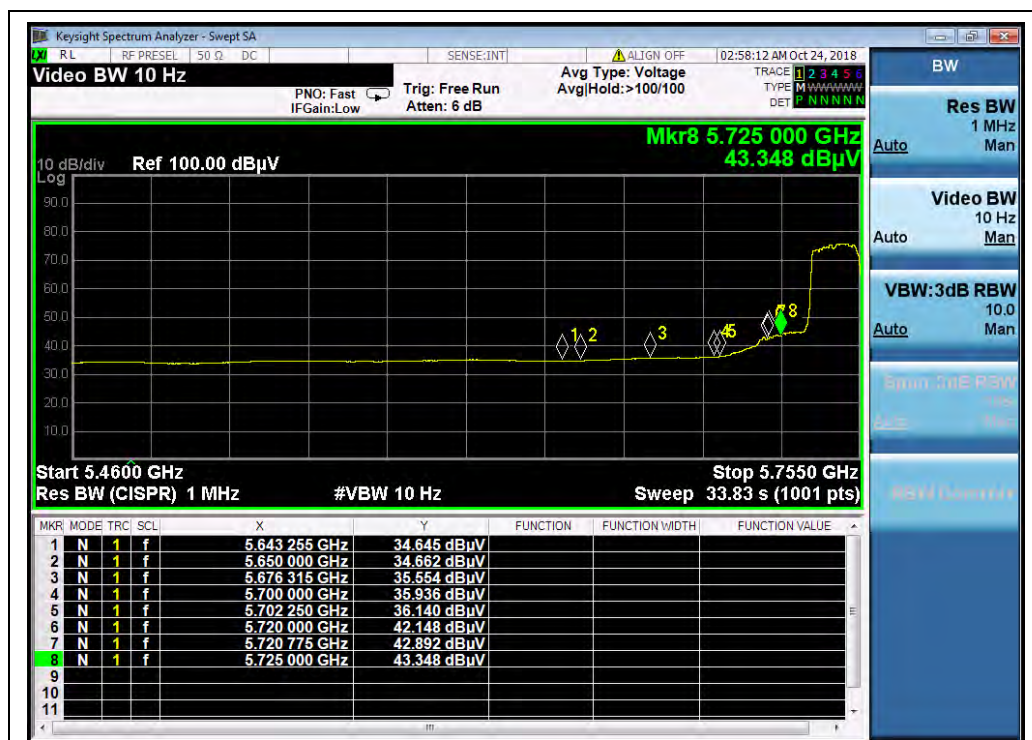
(Channel 62, PEAK, 802.11n (HT40))



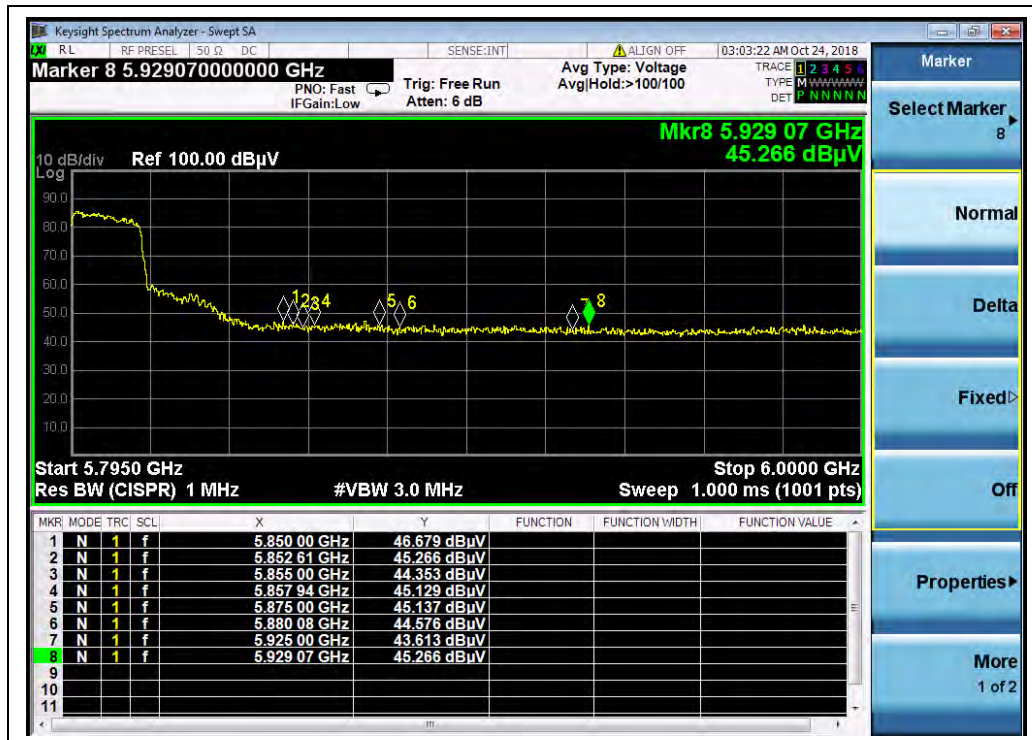
(Channel 62, AVG, 802.11n (HT40))



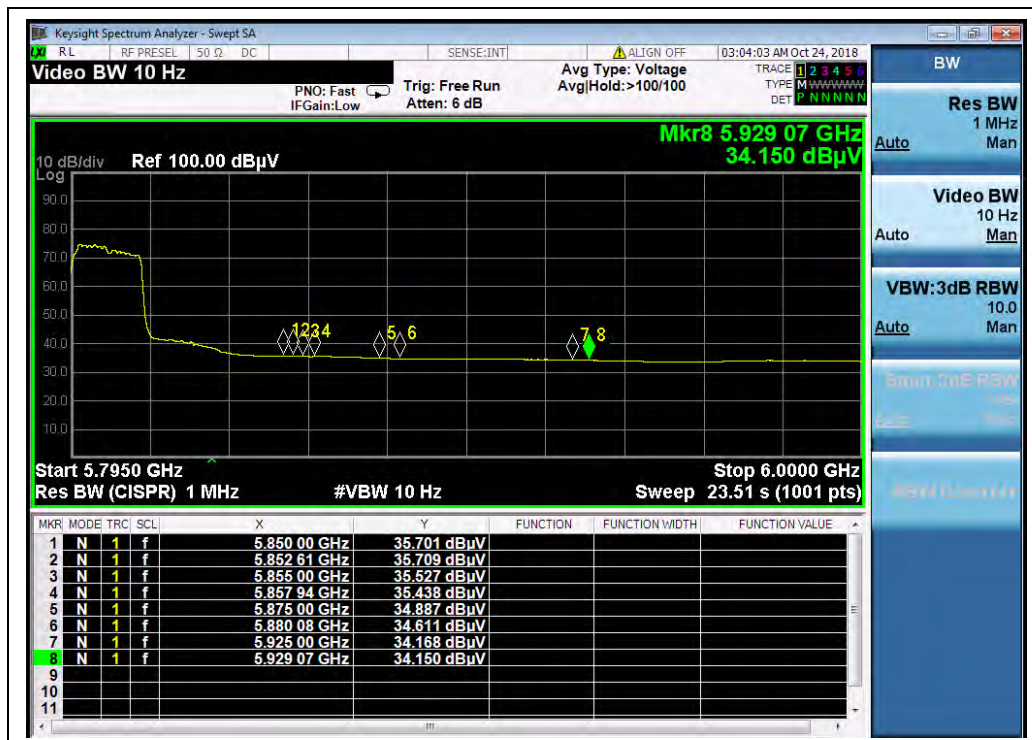
(Channel 151, PEAK, 802.11n (HT40))



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



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



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

2.9. Radiated Emission

2.9.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

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

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

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

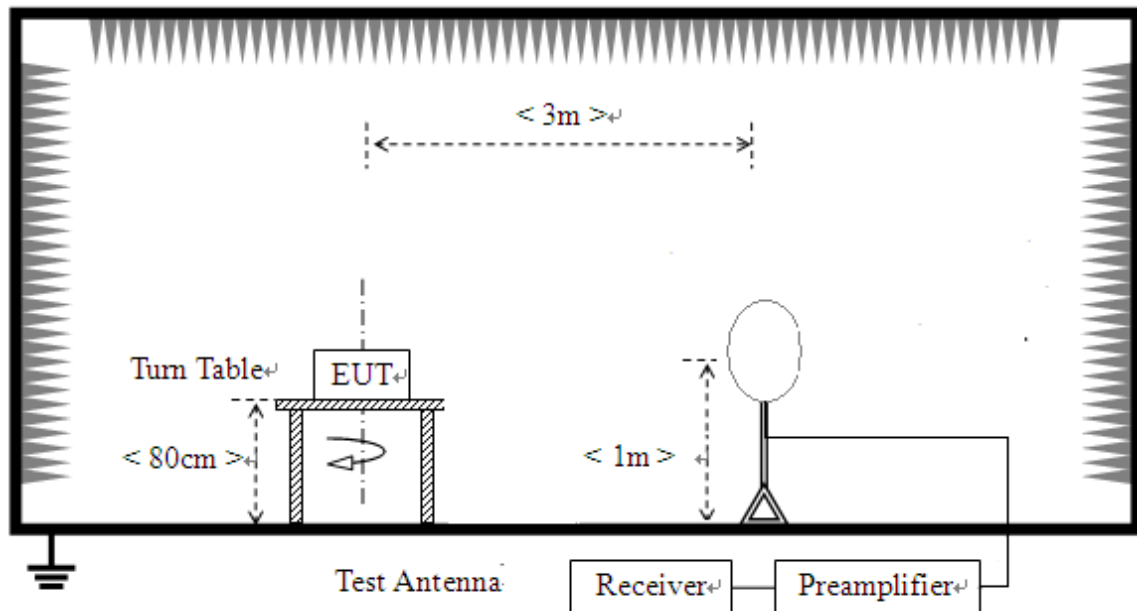
Note:

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

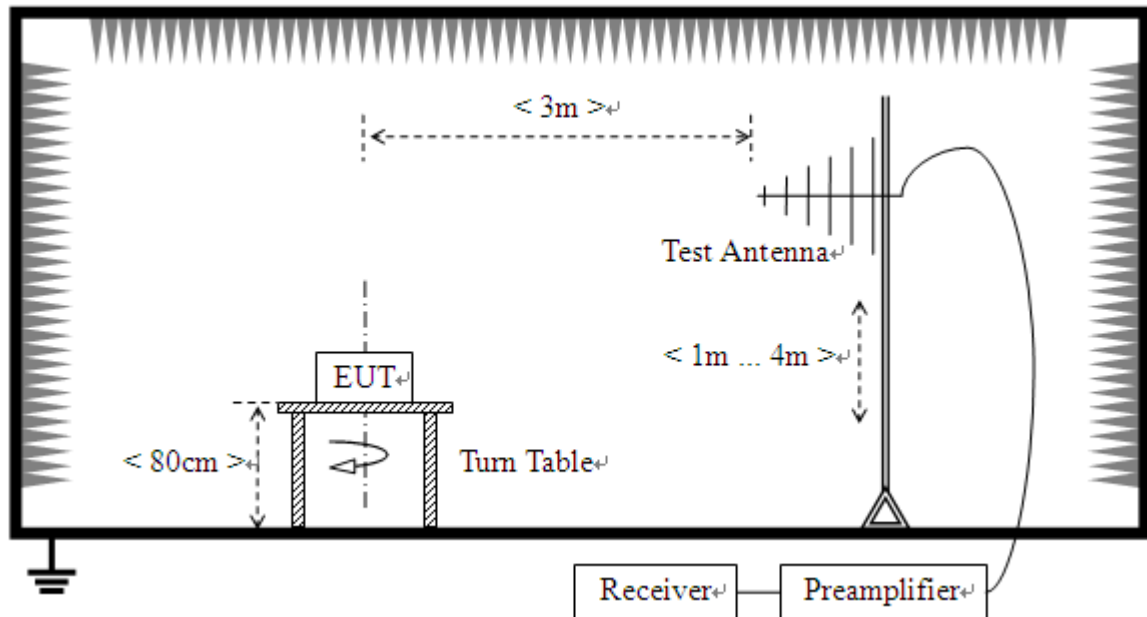
In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

2.9.2. Test Description
A. Test Setup:

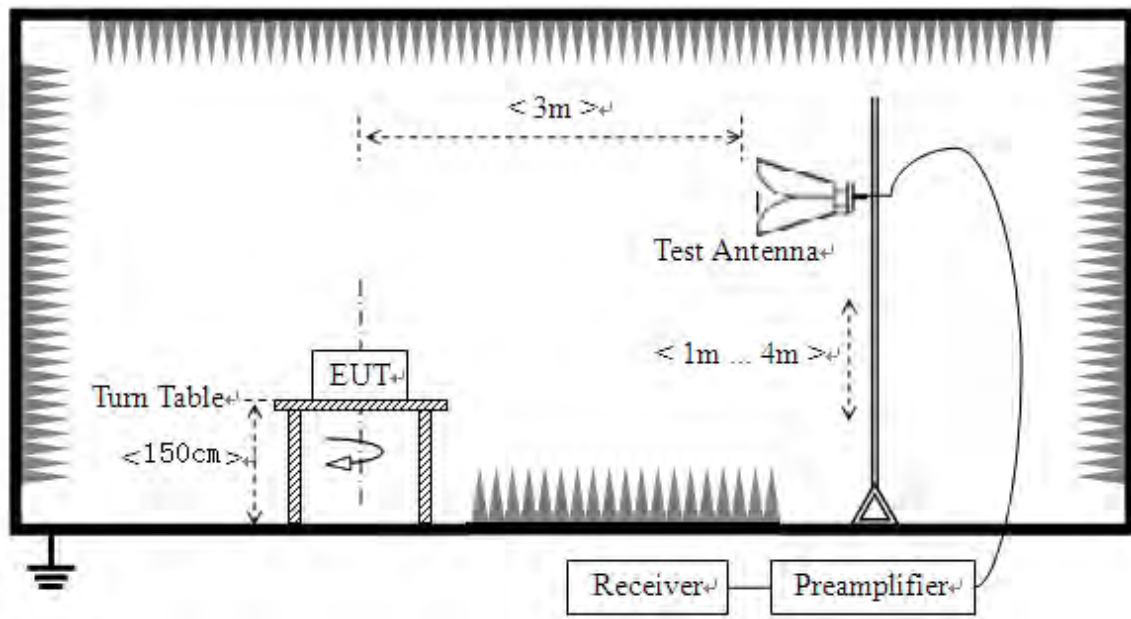
- 1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to 1GHz



3) For radiated emissions above 1GHz



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

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



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

For the radiated emission test above 1GHz:

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

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

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

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



2.9.3. Test Result

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

The measurement results are obtained as below:

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

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.

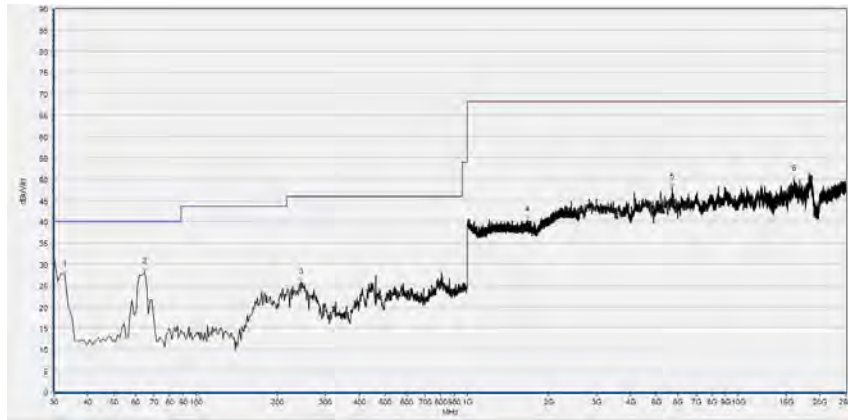
Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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

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

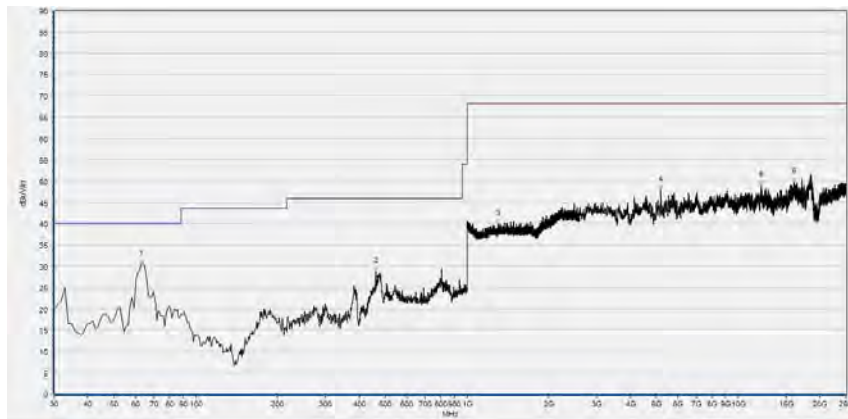
**802.11a Test mode**

Plots for Channel = 36



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	27.41	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
64.955	28.13	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
244.585	25.75	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1663.688	40.35	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
5714.223	48.04	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16038.208	49.96	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

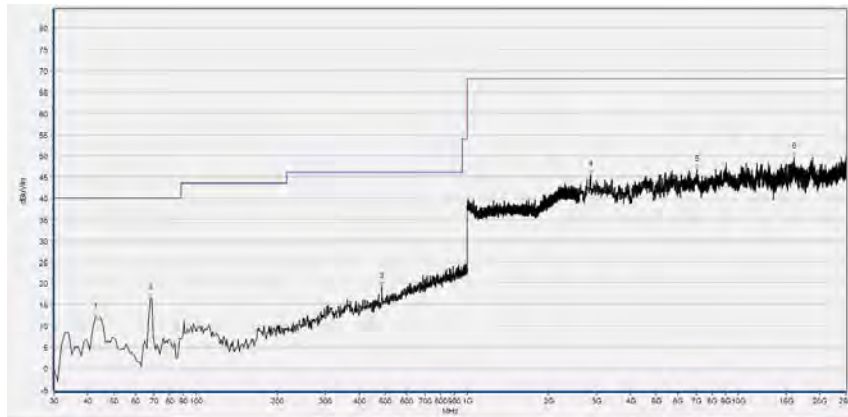


Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
63.013	30.55	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	28.86	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1299.833	39.89	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5180.996	47.92	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12166.713	48.86	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
16024.765	49.79	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

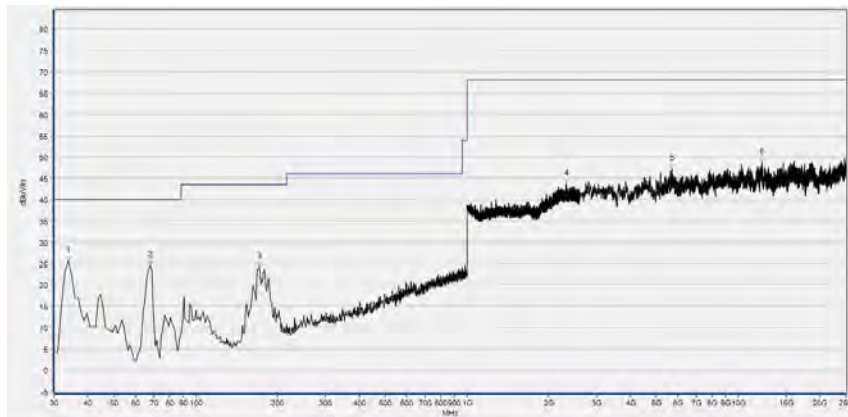


Plots for Channel = 44



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
42.623	12.09	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
67.868	16.43	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
485.385	19.15	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2850.930	45.57	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
7045.049	46.79	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16096.459	49.77	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

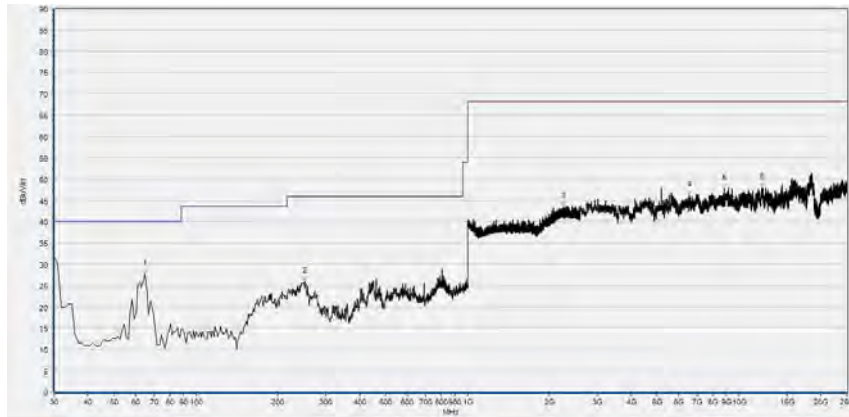
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	25.61	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	24.58	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
171.762	24.24	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2323.641	43.74	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5709.742	47.18	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12260.812	48.77	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

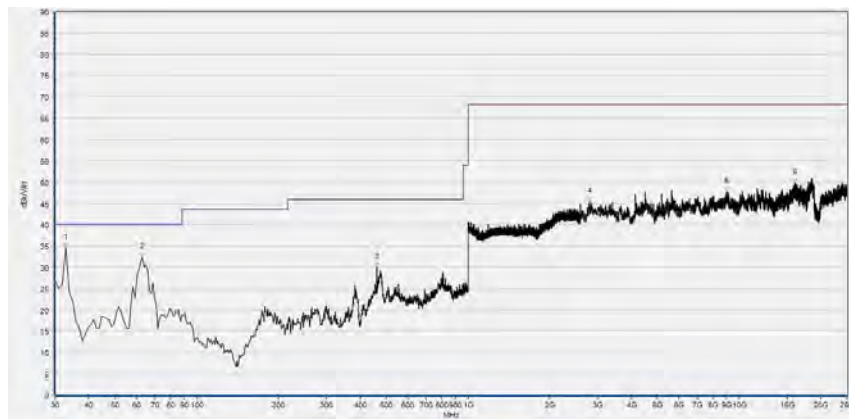
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 48



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
64.955	27.62	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
252.352	25.97	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2261.220	43.61	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
6570.074	46.22	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8810.522	47.70	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12171.194	48.03	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

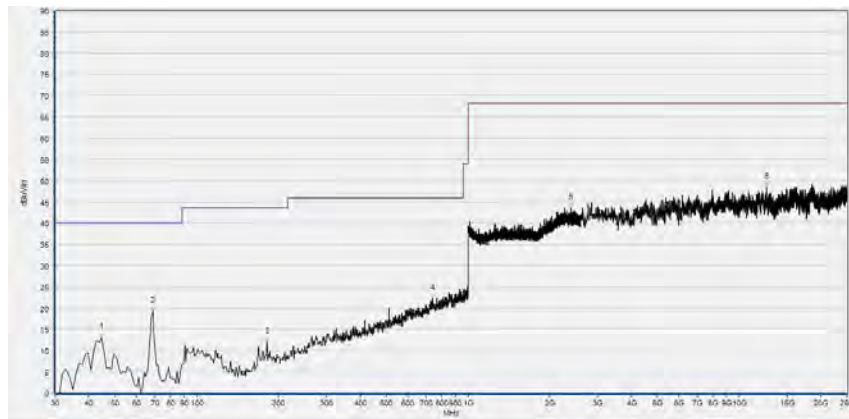
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	34.47	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
63.013	32.36	40.87	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	29.96	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2810.602	45.48	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
8998.720	47.82	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
16083.017	49.73	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

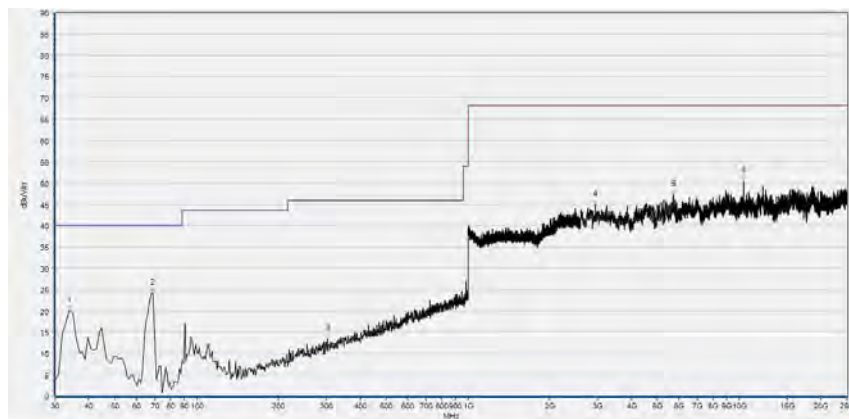
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 52



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	13.11	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
68.839	19.24	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
181.471	12.14	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
738.809	22.23	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2397.799	43.63	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12587.918	48.51	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

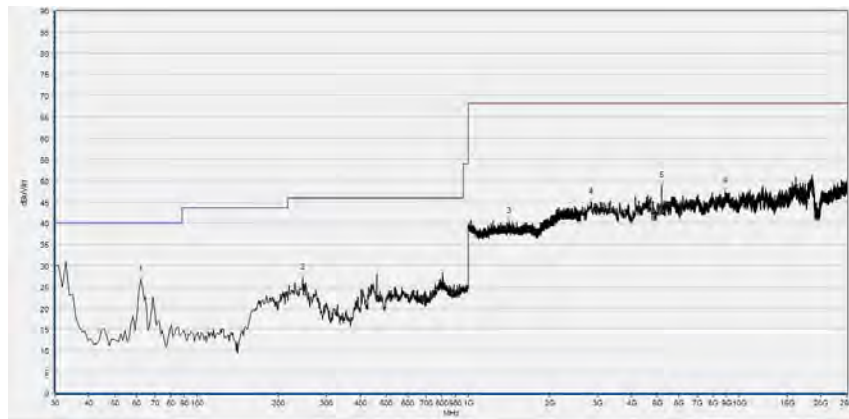
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	20.12	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
68.839	24.21	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
302.843	13.36	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2949.510	44.87	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5718.704	47.23	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10365.393	50.50	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

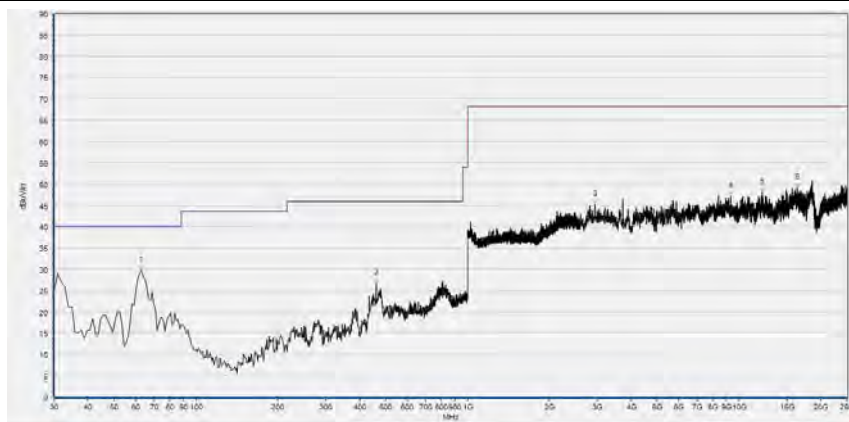
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 60



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
62.042	26.70	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
245.556	27.20	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1417.206	40.32	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
2841.968	44.84	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
5176.515	48.73	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8873.255	47.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

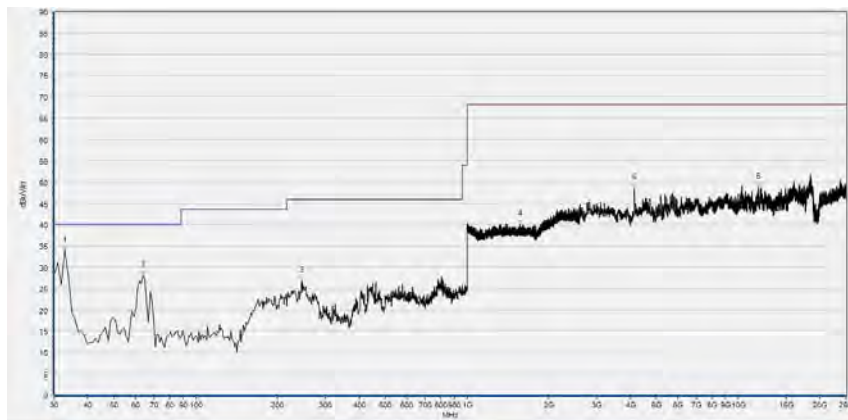


Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
63.013	29.61	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	26.63	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2940.548	45.32	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9321.344	47.17	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
12148.790	48.14	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
16374.275	49.10	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

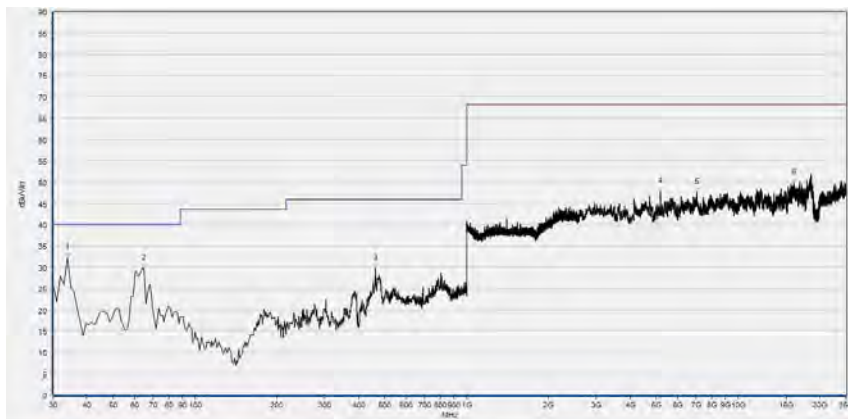


Plot for Channel = 64



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	33.78	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
63.984	28.08	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
245.556	26.87	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1570.323	40.06	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
4145.909	48.65	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
11853.051	48.74	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

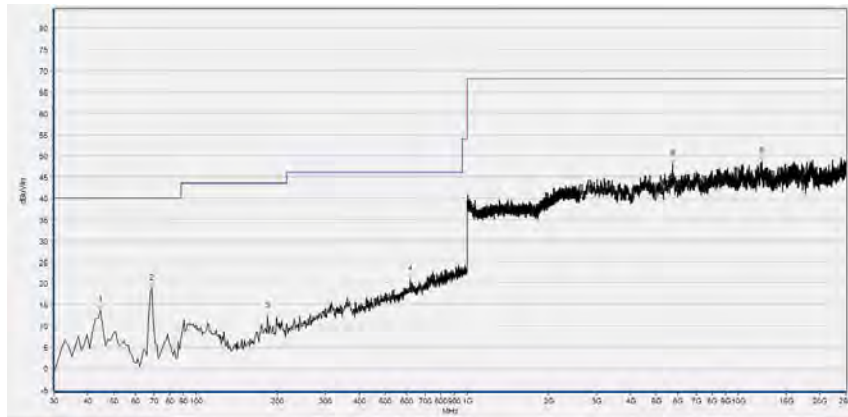
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	32.11	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
64.955	29.60	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	29.60	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5176.515	47.81	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7049.530	47.57	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
16033.727	49.74	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

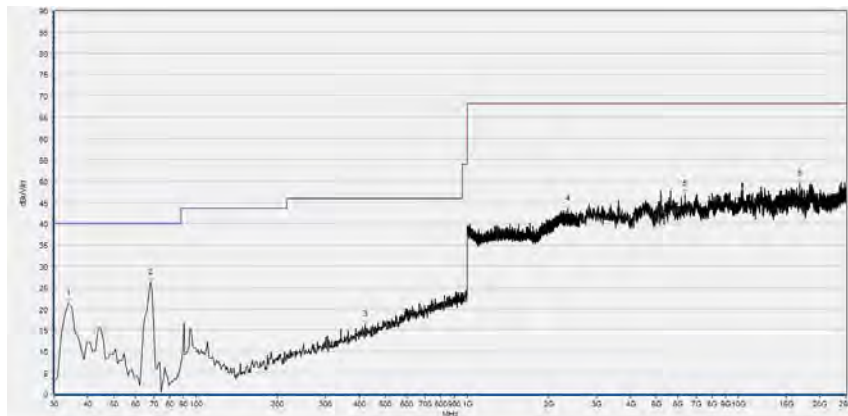
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 149



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	13.60	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
68.839	18.75	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
183.413	12.19	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
617.437	20.87	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
12207.041	48.76	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5723.185	48.11	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

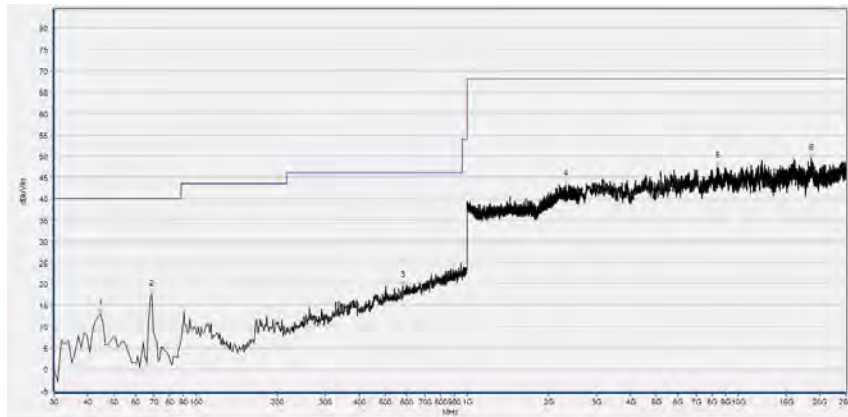
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	21.24	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	26.23	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
420.330	16.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2347.649	43.45	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
6372.915	46.97	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
16826.845	49.36	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

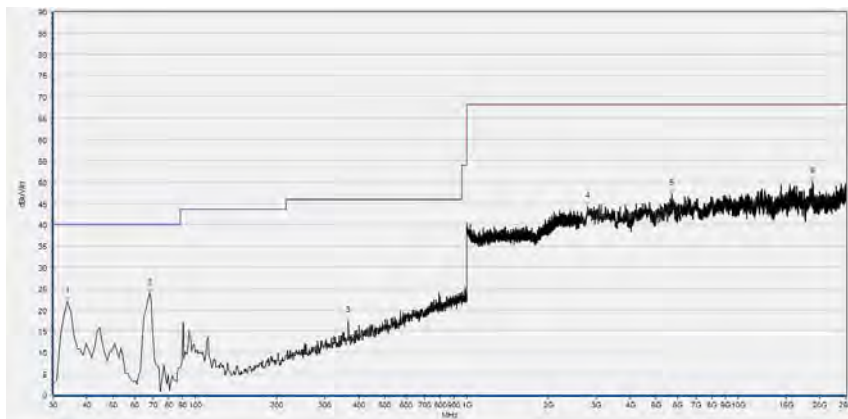
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	12.96	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
68.839	17.48	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
579.570	19.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2306.035	43.38	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8393.799	47.55	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
18596.799	49.35	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

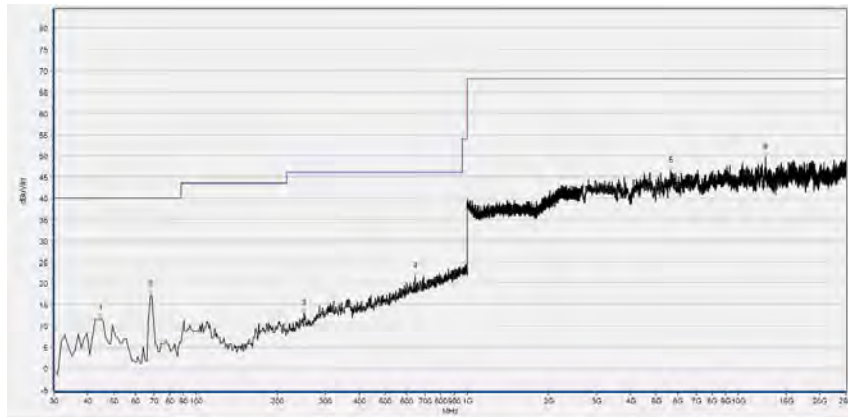
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	21.90	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	23.98	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
366.927	17.35	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2792.679	44.20	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5714.223	47.26	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18847.730	50.17	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

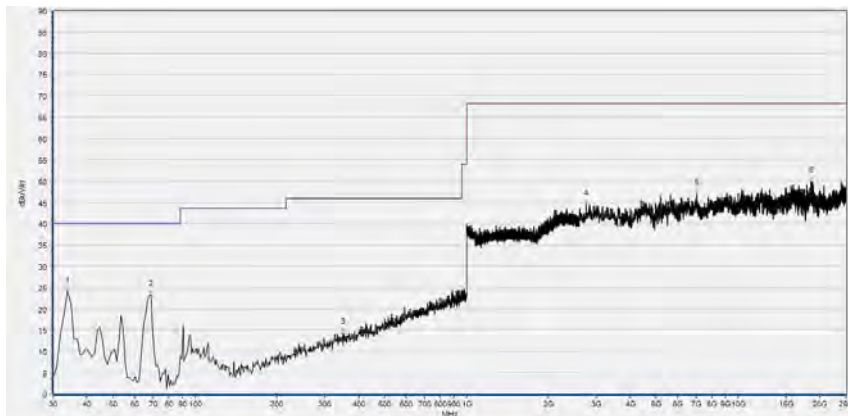
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165



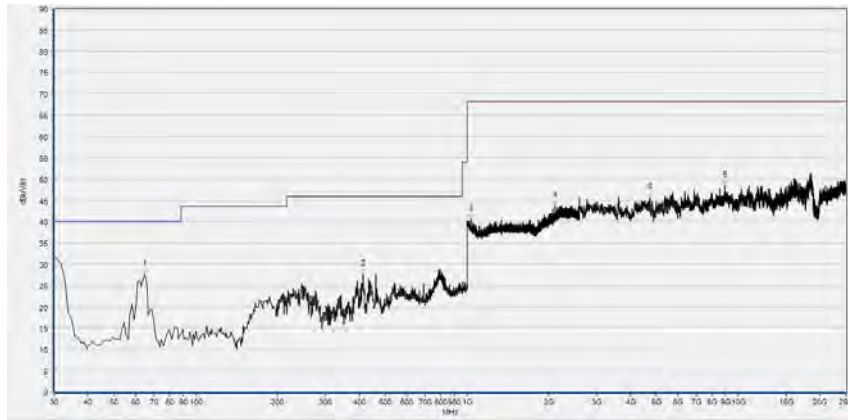
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	11.64	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
67.868	17.36	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
250.410	12.94	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
644.625	21.63	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5642.529	46.40	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12610.322	49.65	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



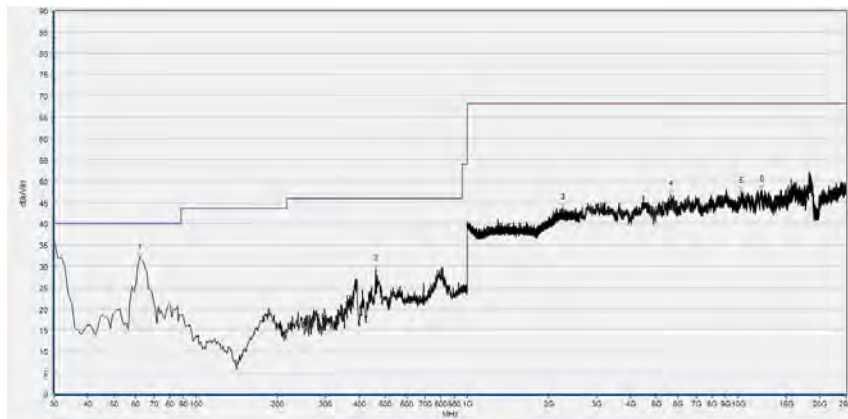
Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	24.17	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
68.839	23.31	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
351.391	14.42	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2761.312	44.63	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
7049.530	47.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18574.395	49.94	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

**802.11n (HT20) Test mode**Plots for Channel = 36

Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
64.955	27.65	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
414.505	27.60	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1035.212	40.54	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
2116.639	43.71	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
4732.907	45.51	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
8935.987	48.46	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

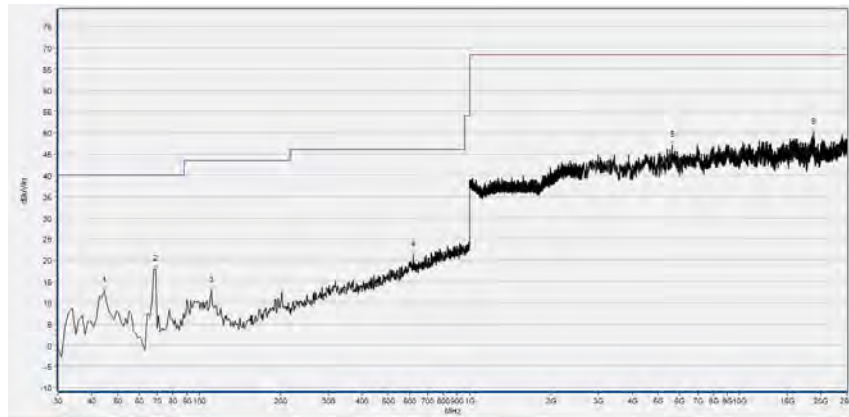
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
62.042	32.01	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	29.35	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2254.285	43.78	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5642.529	47.01	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10284.737	47.58	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12238.408	47.97	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

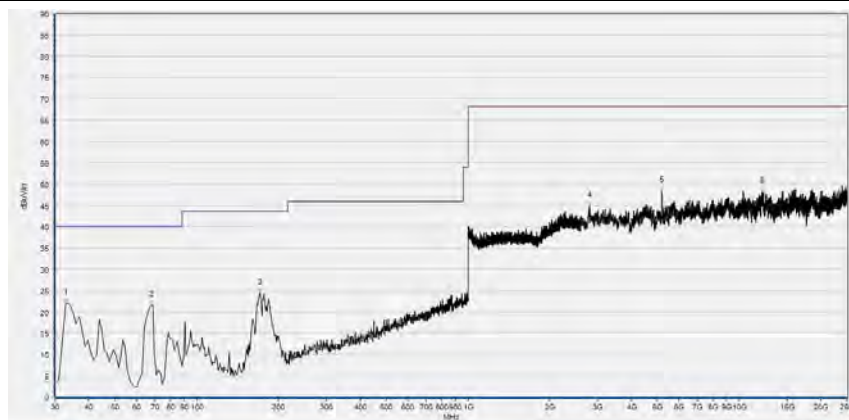
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 44



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	12.87	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
68.839	17.94	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
110.591	12.87	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
620.350	21.23	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5624.605	46.95	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18789.478	49.96	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

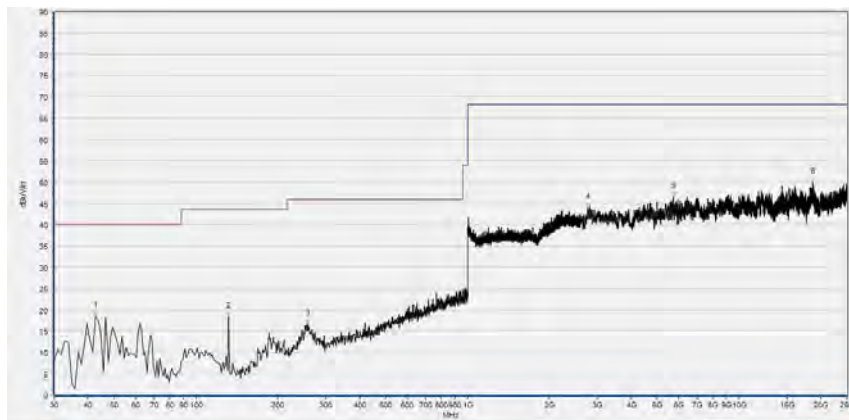


Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	21.94	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	21.69	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
170.791	24.46	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2810.602	44.88	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5180.996	48.45	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12144.309	48.30	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

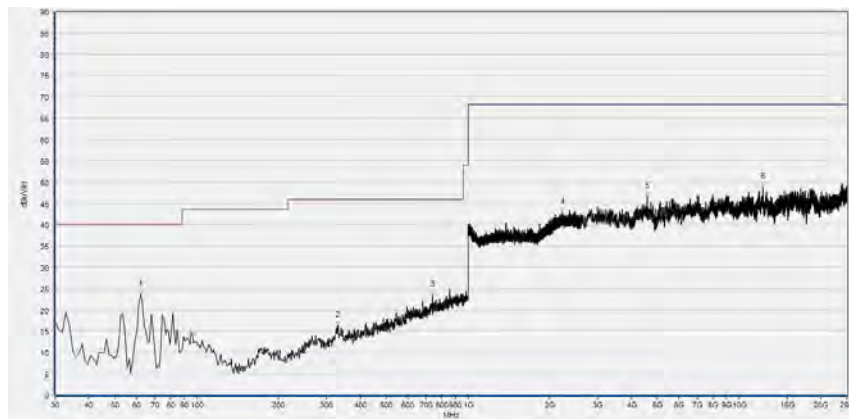


Plot for Channel = 48



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
42.623	18.60	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
131.952	18.47	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
257.207	16.79	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2765.793	44.08	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
5723.185	46.58	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18744.669	49.90	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

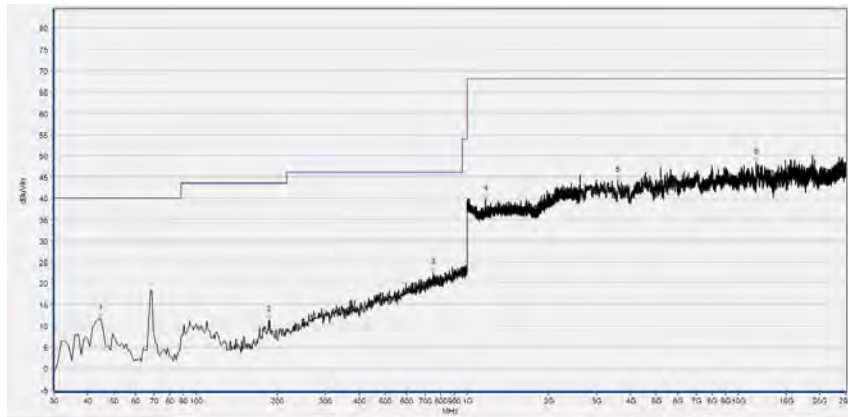
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
62.042	23.56	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
330.030	16.18	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
737.838	23.53	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2234.545	42.92	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
4571.594	46.51	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
12242.889	48.73	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

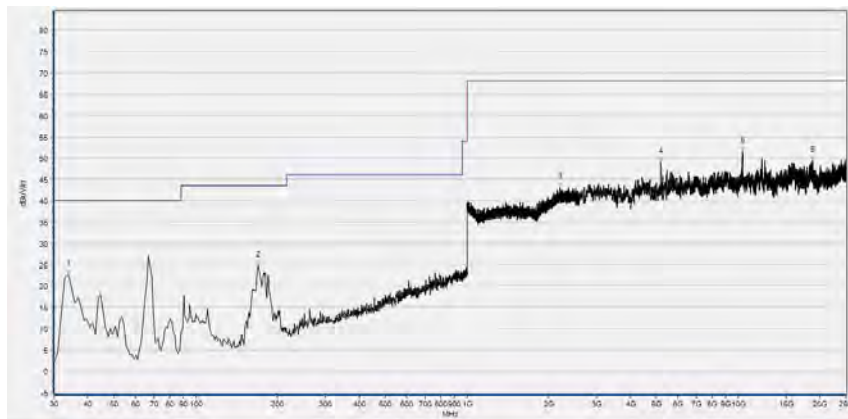
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 52



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	11.72	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
185.355	11.36	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
750.460	22.38	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1169.123	39.77	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
3603.721	44.25	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
11678.296	48.32	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

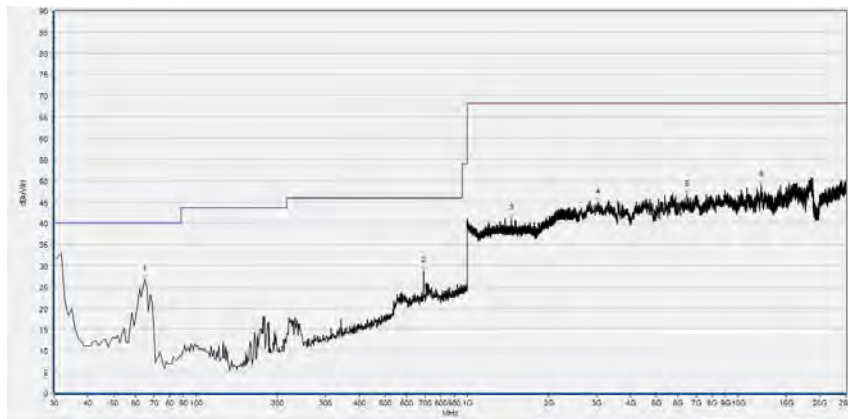
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	22.73	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
169.820	24.85	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2205.735	43.14	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5185.477	49.06	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10356.431	51.63	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18807.401	49.39	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

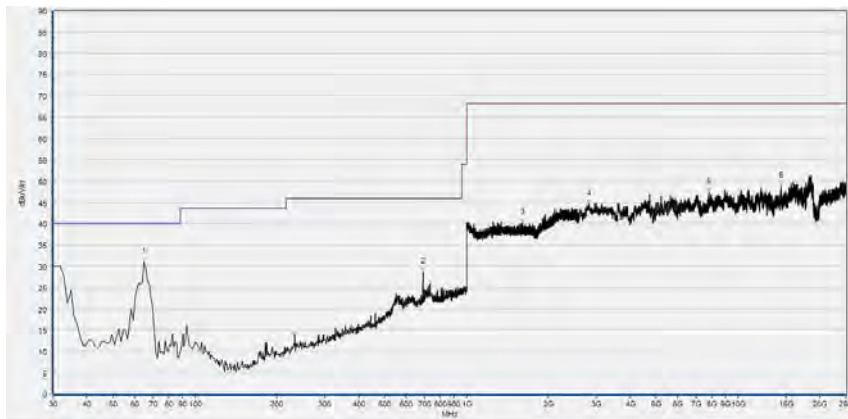
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 60



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
64.955	26.57	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
690.260	28.83	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1454.018	41.08	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
3039.128	44.97	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
6467.013	46.81	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12139.828	48.93	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

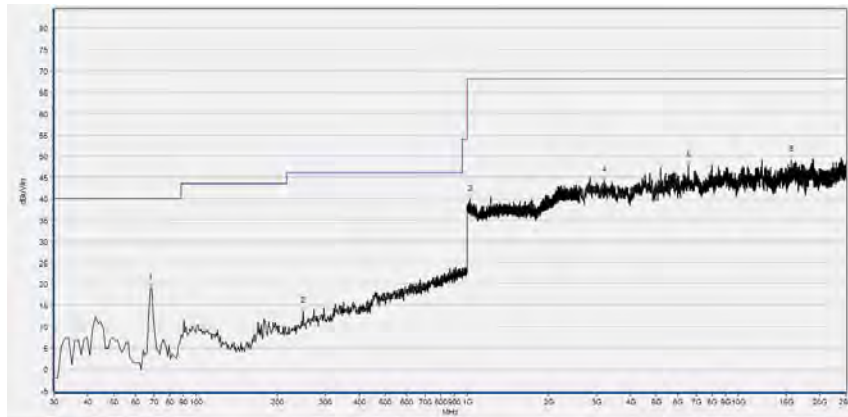
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
64.955	30.96	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
690.260	28.58	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1608.203	40.17	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
2828.526	44.60	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
7788.878	47.48	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
14411.642	48.85	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

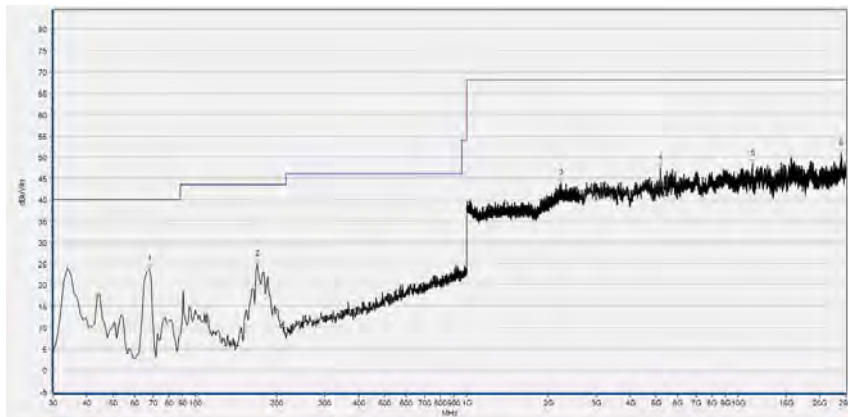
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 64



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
67.868	19.12	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
248.468	13.54	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1027.743	39.83	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
3200.440	44.14	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
6543.189	47.70	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
15661.812	49.07	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

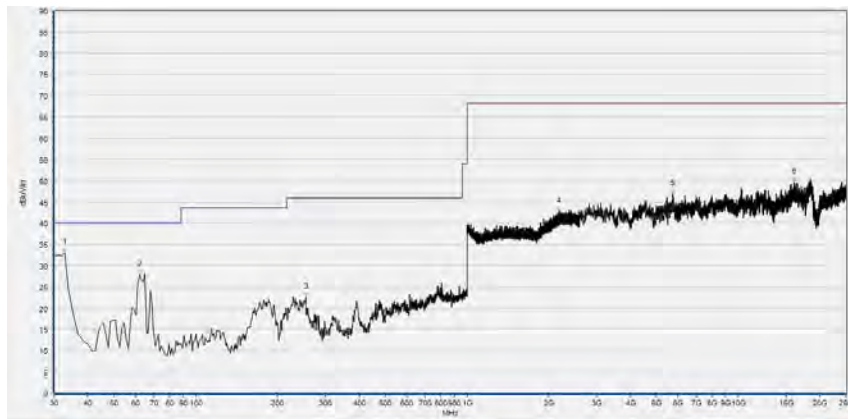
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
67.868	23.63	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
169.820	24.75	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2225.475	43.84	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5180.996	47.37	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11275.015	48.44	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
23946.989	50.80	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

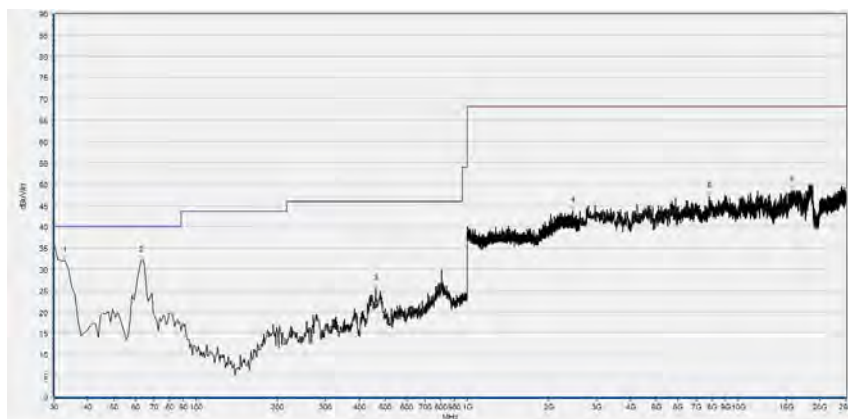
(Antenna Vertical, 30MHz to 25GHz)

Plots for Channel = 149



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	33.01	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
62.042	27.77	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
254.294	22.61	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2179.593	42.73	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5727.666	46.94	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16042.689	49.55	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

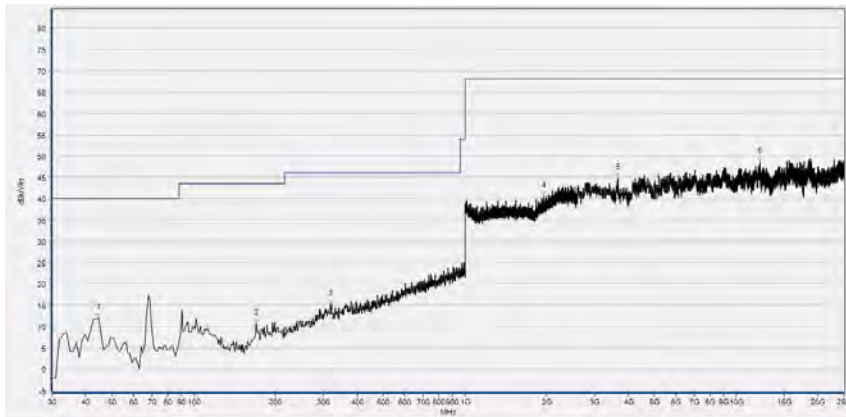
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	39.23	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
63.013	32.04	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	25.49	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2453.818	43.67	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7793.359	47.03	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
15742.468	48.66	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

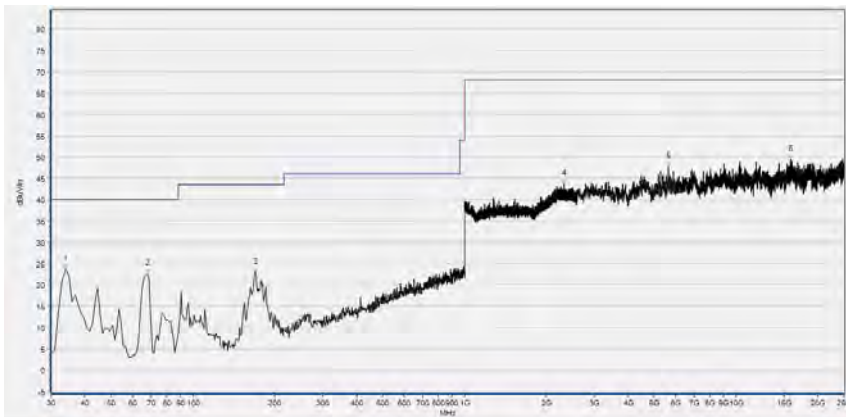
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 157



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
44.565	12.08	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
169.820	10.67	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
318.378	15.21	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1948.583	40.53	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3670.934	44.92	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
12265.293	48.65	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

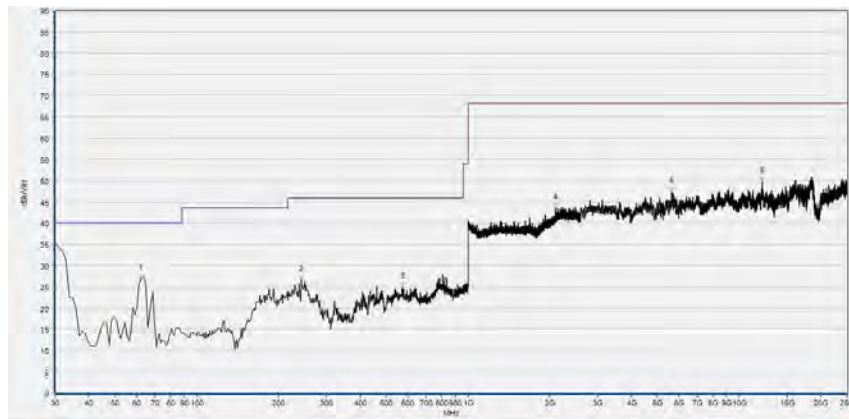
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	23.60	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	22.54	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
169.820	22.94	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2323.641	43.64	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5638.048	47.65	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
15917.223	49.46	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

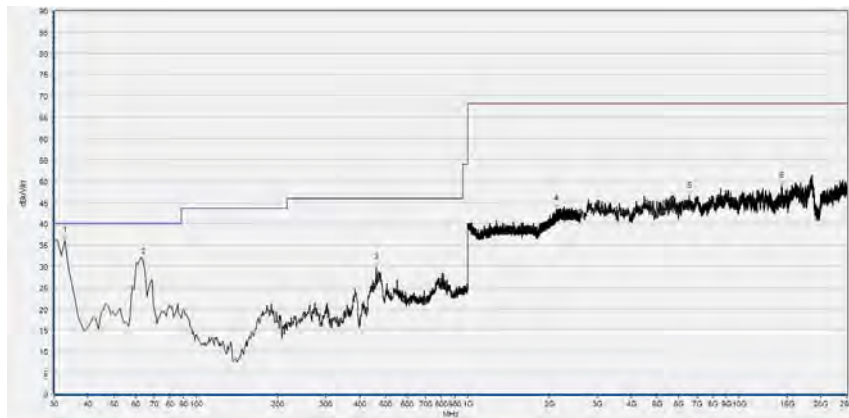
(Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 165



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
62.042	27.01	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
242.643	26.66	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
574.715	25.05	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2096.899	43.50	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5629.086	47.38	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12153.271	49.79	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)

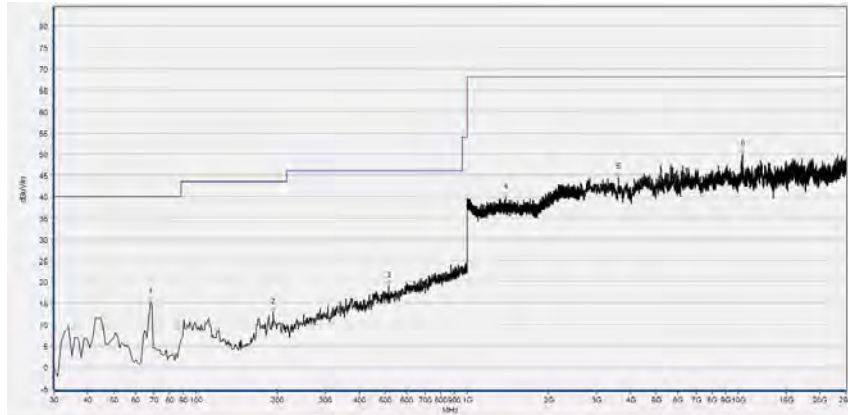


Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	39.16	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
63.984	30.81	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	29.67	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2125.175	43.36	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
6534.227	46.37	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
14330.986	48.75	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)

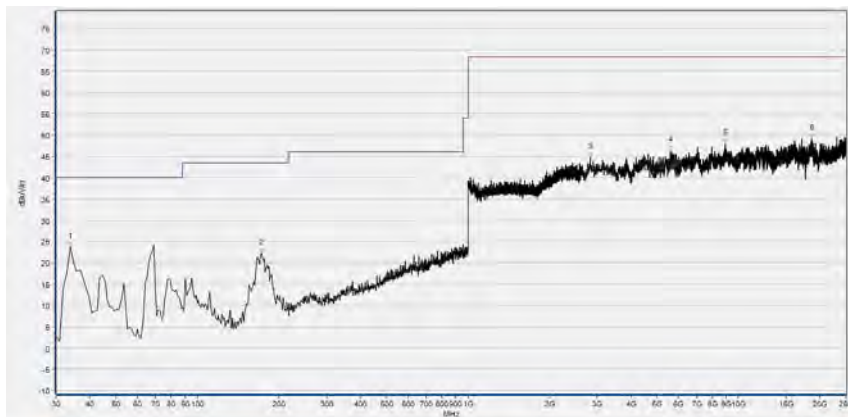
**802.11n (HT40) Test mode**

Plots 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
67.868	15.26	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
193.123	12.93	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
513.544	19.11	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1385.195	39.87	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
3612.683	44.52	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
10369.874	49.99	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

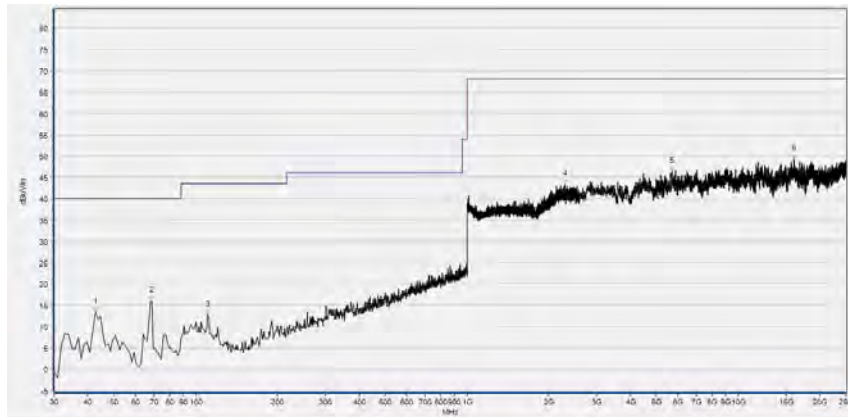
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	23.72	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
172.733	22.27	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2837.487	44.81	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
5606.681	46.36	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8931.506	48.02	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
18619.204	49.28	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

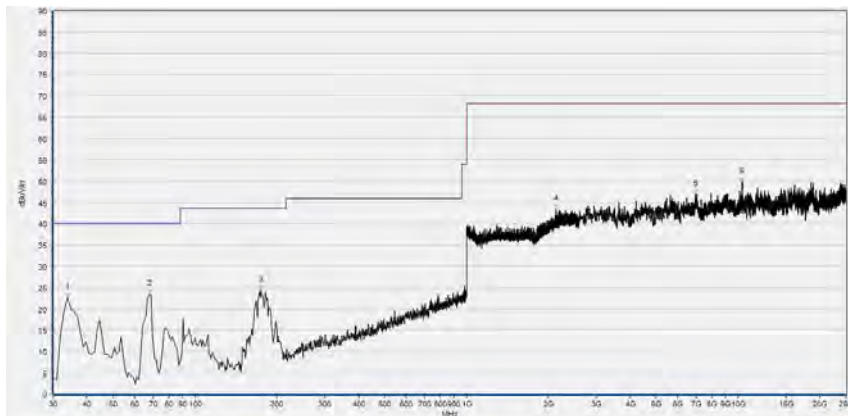
(Antenna Vertical, 30MHz to 25GHz)

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
42.623	13.33	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
68.839	15.97	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
110.591	12.64	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
2299.633	43.29	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
5709.742	46.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
16029.246	49.20	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

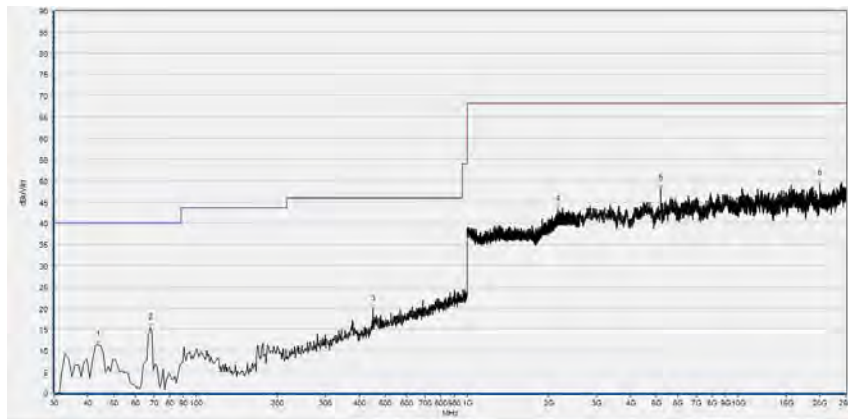
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	22.56	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	23.42	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
174.675	24.34	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
2133.178	43.40	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
6973.355	46.97	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10351.950	49.76	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

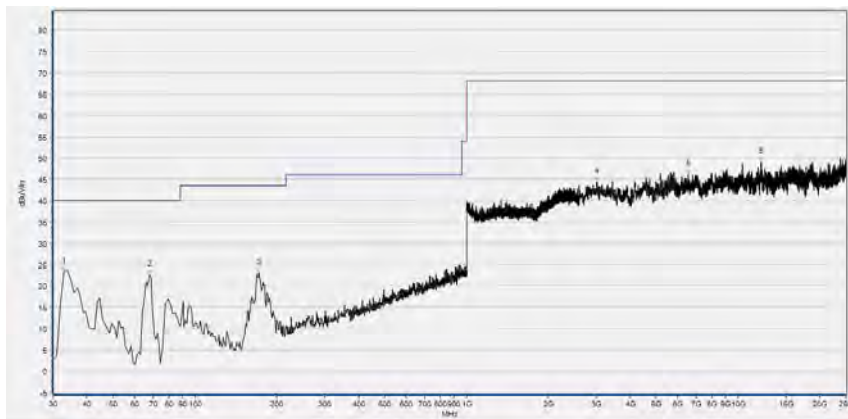
(Antenna Vertical, 30MHz to 25GHz)

Plots 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
43.594	11.39	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
67.868	15.47	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
449.459	19.79	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2161.454	43.26	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5180.996	48.03	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
20039.648	49.34	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

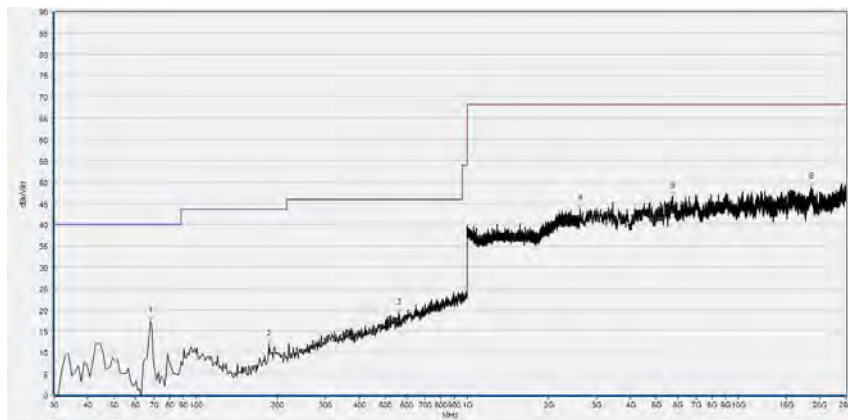
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	23.26	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	22.67	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
171.762	23.17	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
3016.723	44.33	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
6534.227	46.28	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12144.309	49.05	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

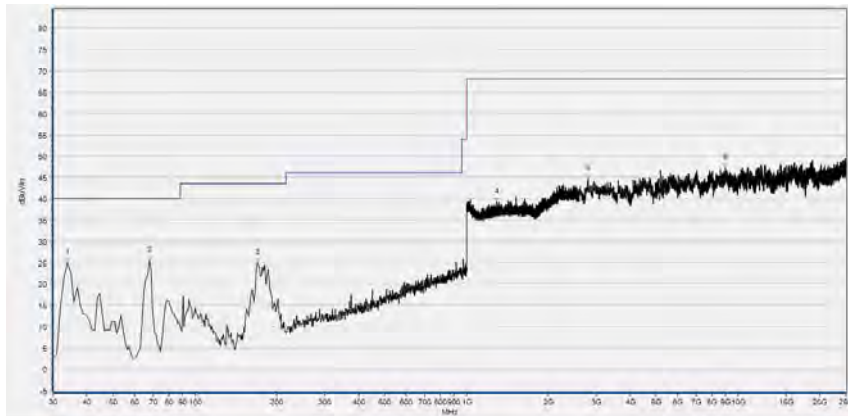
(Antenna Vertical, 30MHz to 25GHz)

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
67.868	17.49	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
185.355	11.86	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
558.208	19.33	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2608.962	43.71	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5718.704	46.56	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
18583.357	48.78	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

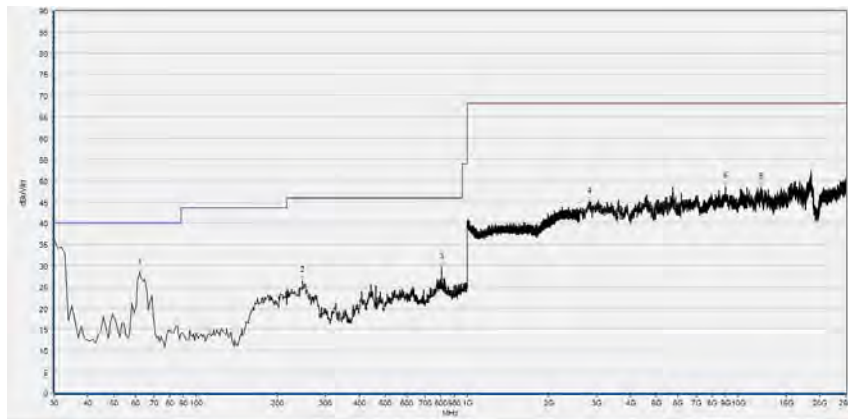
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
33.884	25.01	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
67.868	25.43	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
169.820	24.94	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1289.697	39.20	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
2801.640	44.68	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
8971.834	47.24	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

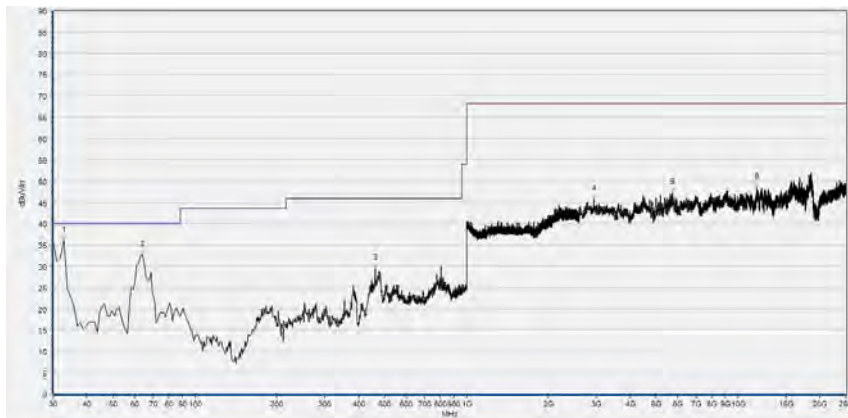
(Antenna Vertical, 30MHz to 25GHz)

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
62.042	28.32	N/A	N/A	N/A	40.00	N/A	Horizontal	PASS
247.497	26.45	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
804.835	29.70	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2828.526	45.02	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS
8962.873	48.59	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12157.752	48.37	N/A	N/A	74.00	N/A	N/A	Horizontal	PASS

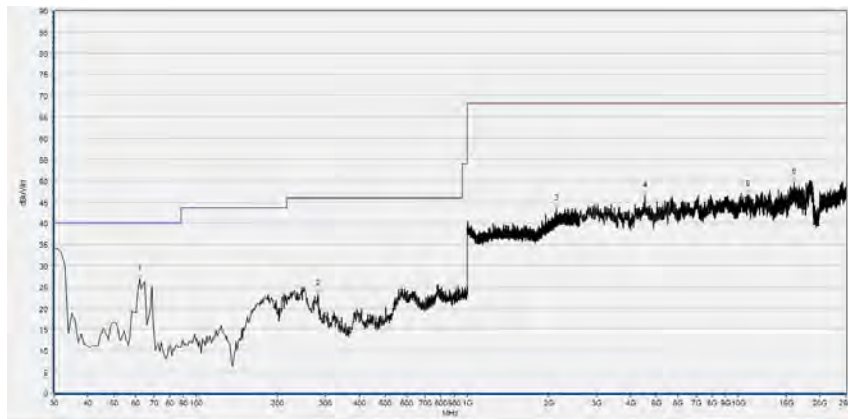
(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
32.913	37.76	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
63.984	32.60	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
460.140	29.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2936.067	45.70	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5718.704	47.27	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
11691.738	48.51	N/A	N/A	74.00	N/A	N/A	Vertical	PASS

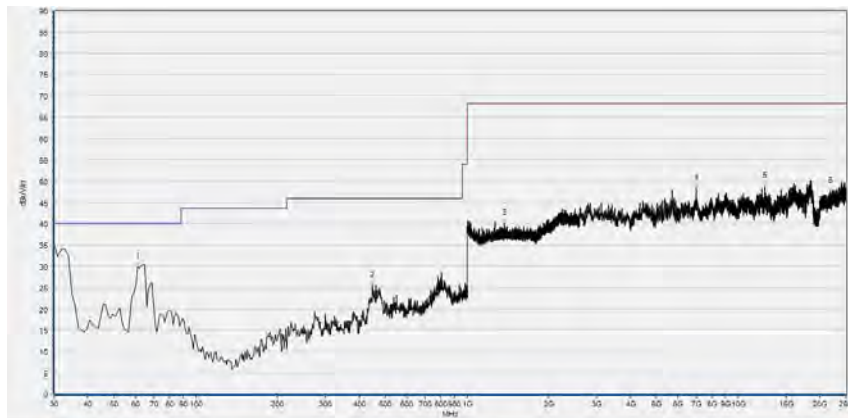
(Antenna Vertical, 30MHz to 25GHz)

Plots 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
62.042	26.85	28.32	N/A	N/A	40.00	N/A	Horizontal	PASS
282.452	23.32	27.05	N/A	N/A	46.00	N/A	Horizontal	PASS
2136.379	43.42	29.30	N/A	68.23	N/A	N/A	Horizontal	PASS
4531.266	46.44	47.18	N/A	74.00	N/A	N/A	Horizontal	PASS
10831.406	46.71	45.56	N/A	68.23	N/A	N/A	Horizontal	PASS
16078.536	49.64	46.78	N/A	74.00	N/A	N/A	Horizontal	PASS

(Antenna Horizontal, 30MHz to 25GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
61.071	29.82	N/A	N/A	N/A	40.00	N/A	Vertical	PASS
447.518	25.43	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1370.790	40.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7004.721	48.21	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12525.185	48.70	N/A	N/A	74.00	N/A	N/A	Vertical	PASS
21890.258	47.64	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 25GHz)



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 (PSD)	$\pm 2.22\text{dB}$
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

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
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	Cal. Due
Power Splitter	NW521	1506A	Weinschel	2018.04.17	2019.04.16
Attenuator 1	(N/A)	10dB	Resnet	2018.04.17	2019.04.16
Attenuator 2	(N/A)	3dB	Resnet	2018.04.17	2019.04.16
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2017.12.03	2018.12.02
USB Wideband Power Sensor	MY54210011	U2021XA	Agilent	2018.04.17	2019.04.16
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	(N/A)	HUT705P	CHONGQING HANBA EXPERIMENTAL EQUIPMENT CO.,LTD	2018.04.17	2019.04.16

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Receiver	MY56400093	N9038A	KEYSIGHT	2018.05.08	2019.05.07
LISN	812744	NSLK 8127	Schwarzbeck	2018.05.08	2019.05.07
Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2018.05.08	2019.05.07
Coaxial cable(BNC)	CB01	EMC01	Morlab	N/A	N/A

4.3 Auxiliary Test Equipment

Equipment Name	Model No.	Brand Name	Manufacturer	Cal.Date	Cal. Due
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.4 List of Software Used

Description	Manufacturer	Software Version
Test system	Tonscend	V2.6
Power Panel	Agilent	V3.8
MORLAB EMCR V1.2	MORLAB	V 1.0

**4.5 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Receiver	MY54130016	N9038A	Agilent	2018.08.04	2019.08.03
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2018.05.18	2019.05.17
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2018.03.03	2019.03.02
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2018.08.06	2019.08.05
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2018.08.02	2019.08.01
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	MA02	TS-PR18	Rohde& Schwarz	2018.05.08	2019.05.07
18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde& Schwarz	2018.05.08	2019.05.07
26GHz -40GHz pre-Amplifier	MA05	BBV9721	Rohde& Schwarz	2018.05.08	2019.05.07
Anechoic Chamber	N/A	9m*6m*6m	CRT	2017.11.19	2020.11.18

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