RF TEST REPORT

Applicant	Airspan Networks LTD
FCC ID	PIDAS62125V
Product	999-03-718-US
Brand	AirSpot 621V
Model	999-03-718-US
Marketing	My-ES-ZM-B41-42-43-48-VW-12
Report No.	R1902A0055-R6
Issue Date	May 5, 2019

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Peng Tao

Performed by: Peng Tao

Kai Xu

Approved by: Kai Xu

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TABLE OF CONTENT

Summary of measurement results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Average conducted output power	15.407(a)	Refer to the Original
2	Occupied bandwidth	15.407(e)	Refer to the Original
3	Frequency stability	15.407(g)	Refer to the Original
4	Power spectral density	15.407(a)	Refer to the Original
5	Unwanted Emissions	15.407(b)	Refer to the Original
6	Conducted Emissions	15.207	Refer to the Original
Date of Testing: February 16, 2019~ April 15, 2019			

999-03-718-US (Report No: R1902A0055-R6) is a variant model of 999-03-716-US (Report No: R1902A0055-63). Test values duplicated from Original for variant. There is no test for variant in this report. The detailed product change description please refers to the ANNEX B.

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	Airspan Networks LTD
Applicant address	777 Yamato Road, Boca Raton, Florida USA
Manufacturer	Airspan Networks LTD
Manufacturer address	777 Yamato Road, Boca Raton, Florida USA

General information

EUT Description	
Model	999-03-718-US
IMEI	860524031819954
Hardware Version	V3.0
Software Version	M-IDU-1.6.0.3_V1.7 CAT12_BYPASS_0.3.2.20_V1.4
Power Supply	AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 3.00 dBi Antenna 2: 3.00dBi
additional beamforming gain	NA
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM
Max. Conducted Power	21.39 dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-3: 5725-5850MHz
Operating temperature range:	0 ° C to 40° C
Operating voltage range:	10 V to 14V
State AC voltage:	12V
EUT Accessory	
Adapter	Manufacturer: Aquilstar Precision Industry (Shenzhen) Co., Ltd. Model: ASSA53A-120150
Note: The information of the EUT is declared by the manufacturer.	

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 15E (2018) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	Data Rate		
	Antenna 1	**Antenna 2**	**MIMO**
802.11a	6 Mbps	6 Mbps	6 Mbps
802.11n HT20	MCS0	MCS0	MCS0
802.11n HT40	MCS0	MCS0	MCS0
802.11ac VHT20	MCS0	MCS0	MCS0
802.11ac VHT40	MCS0	MCS0	MCS0
802.11ac VHT80	MCS0	MCS0	MCS0

The worst case Antenna mode for each of the following tests for Wi-Fi:

Test Cases	Antenna 1	Antenna 2	MIMO
Average conducted output power	O	O	O
Occupied bandwidth	--	--	O
Frequency stability	--	--	O
Power Spectral Density	O	O	O
Unwanted Emissions	--	--	O
Conducted Emissions	--	--	O
Note：“O”: test all bands			

Wireless Technology and Frequency Range

Wireless Technology		Bandwidth	Channel	Frequency
Wi-Fi	U-NII-1	20 MHz	36	5180MHz
			40	5200MHz
			44	5220MHz
			48	5240MHz
		40 MHz	38	5190MHz
			46	5230MHz
		80 MHz	42	5210MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz
			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
		80 MHz	155	5775MHz
Does this device support TPC Function? ☐Yes ☒No				
Does this device support TDWR Band? ☐ Yes ☒No				

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

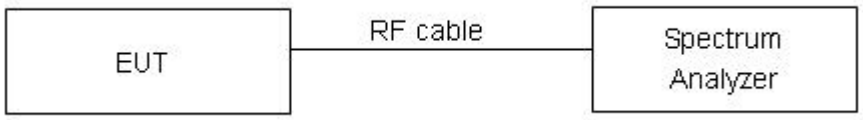
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, 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.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

Test Results:

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.396	19.170	PASS
	5200	16.389	18.910	PASS
	5240	16.395	18.870	PASS
802.11n HT20	5180	17.623	20.670	PASS
	5200	17.623	20.020	PASS
	5240	17.625	20.220	PASS
802.11n HT40	5190	36.050	40.140	PASS
	5230	35.989	39.820	PASS
802.11ac VHT20	5180	17.618	20.180	PASS
	5200	17.613	20.300	PASS
	5240	17.615	19.840	PASS
802.11ac VHT40	5190	36.027	39.900	PASS
	5230	36.025	39.890	PASS
802.11ac VHT80	5210	75.085	81.010	PASS

U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.649	15.490	500	PASS
	5785	16.633	15.720	500	PASS
	5825	16.619	15.490	500	PASS
802.11n HT20	5745	17.451	15.170	500	PASS
	5785	17.421	16.420	500	PASS
	5825	17.526	16.920	500	PASS
802.11n HT40	5755	36.186	35.160	500	PASS
	5795	36.201	35.180	500	PASS
802.11ac VHT20	5745	17.590	16.320	500	PASS
	5785	17.584	15.760	500	PASS
	5825	17.586	16.290	500	PASS
802.11ac VHT40	5755	36.047	35.200	500	PASS
	5795	36.107	35.380	500	PASS
802.11ac VHT80	5775	75.044	75.190	500	PASS

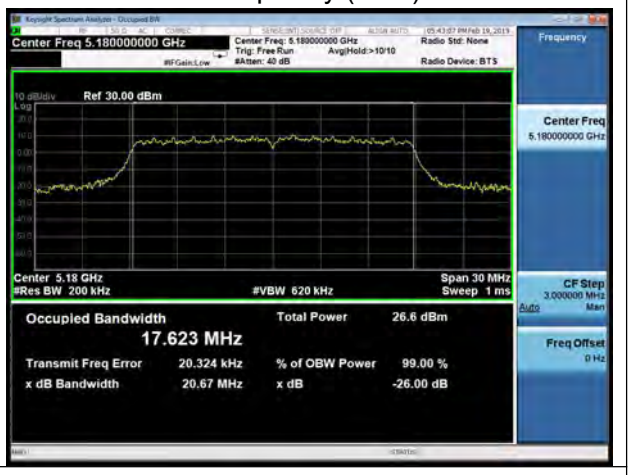
Antenna 1

U-NII-1, 802.11a

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11a

Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5190

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz):5240

U-NII-1, 802.11ac VHT40 Carrier frequency (MHz): 5230	U-NII-1, 802.11ac VHT80 Carrier frequency (MHz): 5210
	

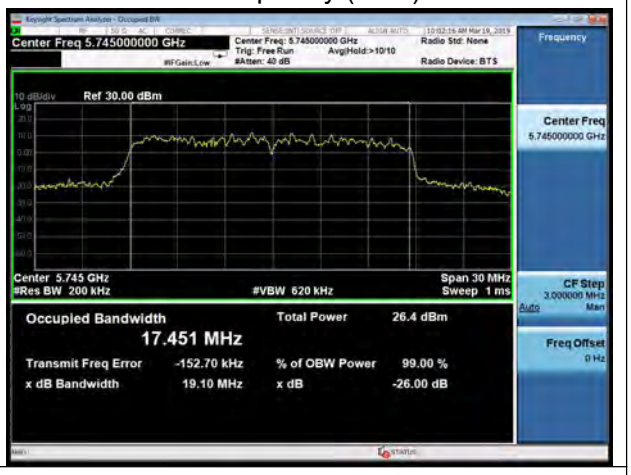
99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11a

Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11a

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

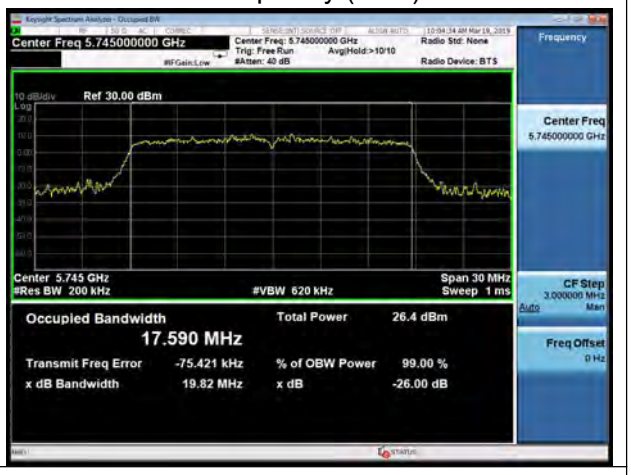
Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT80

Carrier frequency (MHz): 5775

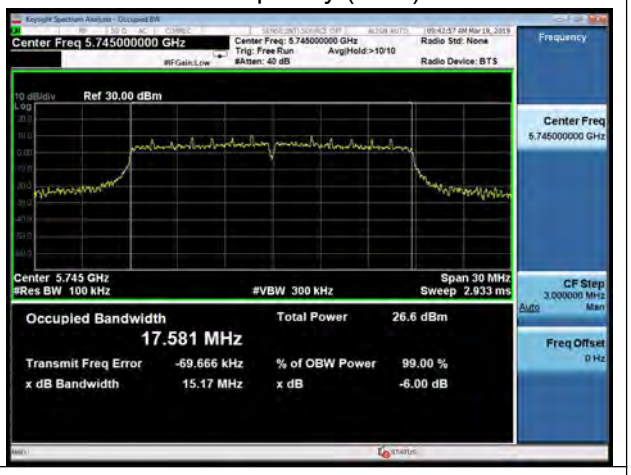
Minimum 6 dB bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11a

Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11a

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

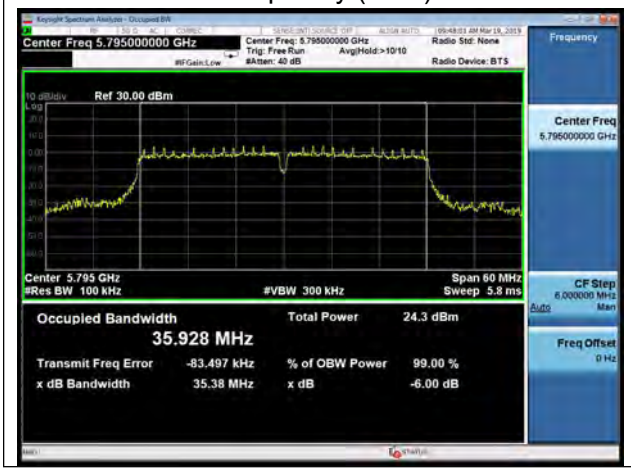
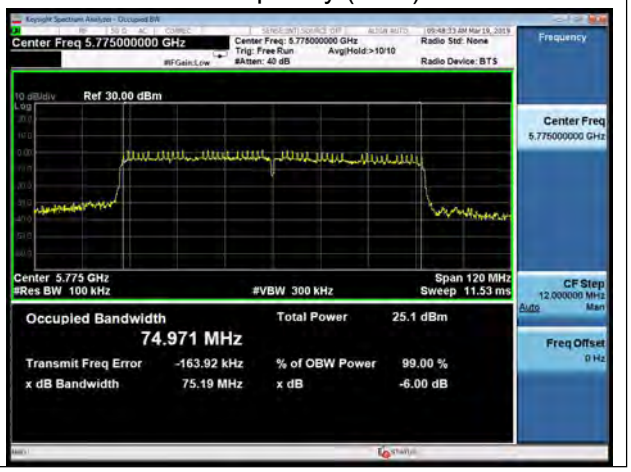
Carrier frequency (MHz): 5785

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11ac VHT40 Carrier frequency (MHz): 5795	U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775
	

5.2. Average Power Output –Conducted

Ambient condition

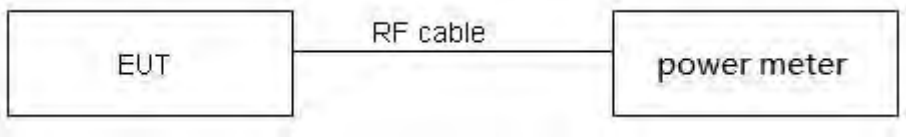
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test Setup



Limits

Rule FCC Part 15.407(a)(1)(2)(3)
(1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23

dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2)For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

Test Results

Band	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	1.44	1.51	0.95	0.21
802.11n HT20	1.35	1.43	0.94	0.25
802.11n HT40	0.67	0.81	0.82	0.85
802.11ac VHT20	1.36	1.53	0.89	0.51
802.11ac VHT40	0.68	0.83	0.81	0.90
802.11ac VHT80	0.34	0.49	0.69	1.62
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

SISO Antenna 1 Power Index						
Packet Type	**CH36**	**CH40**	**CH48**	**CH149**	**CH157**	**CH165**
802.11a	27	27	27	27	28	28
802.11n HT20	28	28	28	27	28	28
802.11ac VHT20	27	27	27	27	28	28
Packet Type	**CH38**	**CH46**	**CH151**	**CH159**	/	/
802.11n HT40	26	26	25	26	/	/
802.11ac VHT40	26	26	25	26	/	/
Packet Type	**CH42**	**CH155**	/	/	/	/
802.11ac VHT80	24	23	/	/	/	/
SISO Antenna 2 Power Index						
Packet Type	**CH36**	**CH40**	**CH48**	**CH149**	**CH157**	**CH165**
802.11a	2B	2B	2C	27	29	29
802.11n HT20	2B	2B	2C	28	29	29
802.11ac VHT20	2B	2B	2C	27	29	29
Packet Type	**CH38**	**CH46**	**CH151**	**CH159**	/	/
802.11n HT40	2B	2B	25	27	/	/
802.11ac VHT40	2B	2B	26	27	/	/
Packet Type	**CH42**	**CH155**	/	/	/	/
802.11ac VHT80	29	24	/	/	/	/

MIMO Antenna 1 Power Index						
Packet Type	**CH36**	**CH40**	**CH48**	**CH149**	**CH157**	**CH165**
802.11a	28	28	29	27	28	28
802.11n HT20	29	29	29	27	28	28
802.11ac VHT20	28	28	29	26	28	28
Packet Type	**CH38**	**CH46**	**CH151**	**CH159**	/	/
802.11n HT40	2A	2A	25	27	/	/
802.11ac VHT40	2A	2A	26	27	/	/
Packet Type	**CH42**	**CH155**	/	/	/	/
802.11ac VHT80	13	23	/	/	/	/
MIMO Antenna 2 Power Index						
Packet Type	**CH36**	**CH40**	**CH48**	**CH149**	**CH157**	**CH165**
802.11a	28	28	29	27	28	28
802.11n HT20	29	29	29	27	28	28
802.11ac VHT20	28	28	29	26	28	28
Packet Type	**CH38**	**CH46**	**CH151**	**CH159**	/	/
802.11n HT40	2A	2A	25	27	/	/
802.11ac VHT40	2A	2A	26	27	/	/
Packet Type	**CH42**	**CH155**	/	/	/	/
802.11ac VHT80	13	23	/	/	/	/

SISO Antenna 1

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	17.96	18.17	24	PASS
	40/5200	18.06	18.27	24	PASS
	48/5240	17.87	18.08	24	PASS
802.11n HT20	36/5180	18.13	18.38	24	PASS
	40/5200	18.06	18.31	24	PASS
	48/5240	17.99	18.24	24	PASS
802.11n HT40	38/5190	17.33	18.18	24	PASS
	46/5230	17.28	18.13	24	PASS
802.11ac VHT20	36/5180	17.88	18.39	24	PASS
	40/5200	17.83	18.34	24	PASS
	48/5240	17.89	18.40	24	PASS
802.11ac VHT40	38/5190	17.22	18.12	24	PASS
	46/5230	17.18	18.08	24	PASS
802.11ac VHT80	42/5210	16.57	18.19	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	18.26	18.47	30	PASS
	157/5785	18.15	18.36	30	PASS
	165/5825	18.08	18.29	30	PASS
802.11n HT20	149/5745	18.24	18.49	30	PASS
	157/5785	18.06	18.31	30	PASS
	165/5825	18.13	18.38	30	PASS
802.11n HT40	151/5755	17.58	18.43	30	PASS
	159/5795	17.39	18.24	30	PASS
802.11ac VHT20	149/5745	18.04	18.55	30	PASS
	157/5785	17.86	18.37	30	PASS
	165/5825	17.79	18.30	30	PASS
802.11ac VHT40	151/5755	17.63	18.53	30	PASS
	159/5795	17.42	18.32	30	PASS
802.11ac VHT80	155/5775	16.51	18.13	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 2

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	17.76	17.97	24	PASS
	40/5200	17.83	18.04	24	PASS
	48/5240	17.99	18.20	24	PASS
802.11n HT20	36/5180	17.84	18.09	24	PASS
	40/5200	17.68	17.93	24	PASS
	48/5240	17.94	18.19	24	PASS
802.11n HT40	38/5190	17.16	18.01	24	PASS
	46/5230	16.98	17.83	24	PASS
802.11ac VHT20	36/5180	17.46	17.97	24	PASS
	40/5200	17.37	17.88	24	PASS
	48/5240	17.73	18.24	24	PASS
802.11ac VHT40	38/5190	17.14	18.04	24	PASS
	46/5230	16.93	17.83	24	PASS
802.11ac VHT80	42/5210	16.55	18.17	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	17.86	18.07	30	PASS
	157/5785	18.16	18.37	30	PASS
	165/5825	18.33	18.54	30	PASS
802.11n HT20	149/5745	18.03	18.28	30	PASS
	157/5785	18.16	18.41	30	PASS
	165/5825	18.05	18.30	30	PASS
802.11n HT40	151/5755	17.72	18.57	30	PASS
	159/5795	17.52	18.37	30	PASS
802.11ac VHT20	149/5745	17.77	18.28	30	PASS
	157/5785	18.14	18.65	30	PASS
	165/5825	18.11	18.62	30	PASS
802.11ac VHT40	151/5755	17.77	18.67	30	PASS
	159/5795	17.48	18.38	30	PASS
802.11ac VHT80	155/5775	16.81	18.43	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO

U-NII-1

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	36/5180	17.79	18.00	16.38	16.59	20.36	24	PASS
	40/5200	17.83	18.04	16.39	16.60	20.39	24	PASS
	48/5240	18.44	18.65	16.97	17.18	20.99	24	PASS
802.11n HT20	36/5180	17.88	18.13	16.84	17.09	20.65	24	PASS
	40/5200	17.83	18.08	16.74	16.99	20.58	24	PASS
	48/5240	17.92	18.17	16.69	16.94	20.61	24	PASS
802.11n HT40	38/5190	18.03	18.88	16.96	17.81	21.39	24	PASS
	46/5230	17.98	18.83	16.82	17.67	21.30	24	PASS
802.11ac VHT20	36/5180	17.78	18.29	16.03	16.54	20.51	24	PASS
	40/5200	17.59	18.10	16.28	16.79	20.50	24	PASS
	48/5240	18.06	18.57	17.03	17.54	21.09	24	PASS
802.11ac VHT40	38/5190	17.84	18.74	16.54	17.44	21.15	24	PASS
	46/5230	18.01	18.91	16.74	17.64	21.33	24	PASS
802.11ac VHT80	42/5210	10.02	11.64	8.54	10.16	13.97	24	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=2$. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geq$ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = G_{ANT} + Array Gain $=3+0=3$ dBi<6dBi. So the power limt is 24dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	149/5745	18.40	18.61	17.88	18.09	21.37	30.00	PASS
	157/5785	18.26	18.47	17.65	17.86	21.19	30.00	PASS
	165/5825	17.85	18.06	17.49	17.70	20.90	30.00	PASS
802.11n HT20	149/5745	18.24	18.49	17.53	17.78	21.16	30.00	PASS
	157/5785	18.03	18.28	17.58	17.83	21.07	30.00	PASS
	165/5825	18.14	18.39	17.49	17.74	21.09	30.00	PASS
802.11n HT40	151/5755	17.74	18.59	17.28	18.13	21.37	30.00	PASS
	159/5795	17.58	18.43	17.09	17.94	21.20	30.00	PASS
802.11ac VHT20	149/5745	18.03	18.54	17.45	17.96	21.27	30.00	PASS
	157/5785	17.83	18.34	17.36	17.87	21.12	30.00	PASS
	165/5825	17.76	18.27	17.28	17.79	21.04	30.00	PASS
802.11ac VHT40	151/5755	17.74	18.64	17.18	18.08	21.38	30.00	PASS
	159/5795	17.49	18.39	16.97	17.87	21.15	30.00	PASS
802.11ac VHT80	155/5775	16.83	18.45	16.27	17.89	21.19	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=2$. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geq$ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = G_{ANT} + Array Gain $=3+0=3$ dBi<6dBi. So the power limt is 30dBm.

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10 C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15 C to +25 C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
c) Measure the frequency at each of the frequencies specified in 5.6.
d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

Limit

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 users manual.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
12	-10	5200.007551	5199.999247	5199.995809	5199.986500
12	0	5200.004980	5199.993641	5199.986086	5199.983708
12	10	5199.999896	5199.984565	5199.978092	5199.976802
12	20	5199.994645	5199.981286	5199.976576	5199.971807
12	30	5199.989958	5199.972027	5199.966633	5199.963416
12	40	5199.980240	5199.967983	5199.966443	5199.960693
12	50	5199.976727	5199.959386	5199.963553	5199.952641
12	55	5199.967651	5199.951905	5199.960818	5199.949074
10.8	25	5199.958815	5199.947464	5199.955019	5199.948550
13.2	25	5199.950127	5199.940941	5199.947651	5199.944367
MHz		-0.049873	-0.059059	-0.052349	-0.055633
PPM		-9.590985	-11.357442	-10.067082	-10.698670

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
12	-10	5784.990888	5784.985774	5784.983207	5784.973850
12	0	5784.982536	5784.980228	5784.980633	5784.969267
12	10	5784.976612	5784.972825	5784.973571	5784.966490
12	20	5784.971590	5784.966192	5784.970821	5784.963216
12	30	5784.967653	5784.959702	5784.969131	5784.960977
12	40	5784.967343	5784.958391	5784.967382	5784.959048
12	50	5784.958587	5784.954489	5784.957985	5784.958405
12	55	5784.958256	5784.949438	5784.957157	5784.955881
10.8	25	5784.952364	5784.942277	5784.948096	5784.954220
13.2	25	5784.950829	5784.936143	5784.946343	5784.950448
MHz		-0.049171	-0.063857	-0.053657	-0.049552
PPM		-8.499742	-11.038370	-9.275263	-8.565591

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

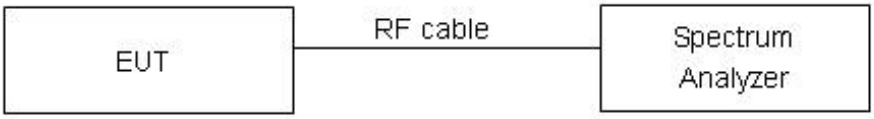
Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1 MHz, VBW =3MHz for the band 5.150-5.250 GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iv) 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmittingantennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Bands/MHz	Limits
5150-5250	11MHz
5725-5850	30dBm/500kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

Note: Power Spectral Density =Read Value+Duty cycle correction factor

SISO Antenna 1

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	9.41	9.62	11	PASS
	40	9.62	9.83	11	PASS
	48	9.38	9.59	11	PASS
802.11n HT20	36	8.82	9.07	11	PASS
	40	8.99	9.24	11	PASS
	48	8.35	8.60	11	PASS
802.11n HT40	38	4.80	5.65	11	PASS
	46	4.60	5.45	11	PASS
802.11ac VHT20	36	9.05	9.56	11	PASS
	40	8.71	9.22	11	PASS
	48	9.32	9.82	11	PASS
802.11ac VHT40	38	5.14	6.04	11	PASS
	46	5.27	6.17	11	PASS
802.11ac VHT80	42	1.07	2.69	11	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	6.50	6.71	30	PASS
	157	5.88	6.09	30	PASS
	165	5.62	5.84	30	PASS
802.11n HT20	149	6.72	6.97	30	PASS
	157	5.64	5.89	30	PASS
	165	5.45	5.69	30	PASS
802.11n HT40	151	2.02	2.87	30	PASS
	159	0.99	1.83	30	PASS
802.11ac	149	6.65	7.16	30	PASS

VHT20	157	5.00	5.51	30	PASS
	165	5.04	5.55	30	PASS
802.11ac VHT40	151	1.73	2.63	30	PASS
	159	0.56	1.46	30	PASS
802.11ac VHT80	155	-2.96	-1.34	30	PASS

SISO Antenna 2

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	8.48	8.69	11	PASS
	40	8.17	8.39	11	PASS
	48	8.16	8.37	11	PASS
802.11n HT20	36	8.35	8.60	11	PASS
	40	7.90	8.15	11	PASS
	48	8.07	8.31	11	PASS
802.11n HT40	38	4.77	5.62	11	PASS
	46	4.20	5.04	11	PASS
802.11ac VHT20	36	8.02	8.53	11	PASS
	40	7.91	8.42	11	PASS
	48	8.19	8.70	11	PASS
802.11ac VHT40	38	5.27	6.17	11	PASS
	46	4.95	5.85	11	PASS
802.11ac VHT80	42	1.29	2.91	11	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	6.82	7.03	30	PASS
	157	6.40	6.61	30	PASS
	165	6.45	6.66	30	PASS
802.11n HT20	149	6.76	7.00	30	PASS
	157	5.29	5.54	30	PASS

	165	5.39	5.64	30	PASS
802.11n HT40	151	1.75	2.60	30	PASS
	159	0.58	1.43	30	PASS
802.11ac VHT20	149	6.68	7.19	30	PASS
	157	6.10	6.60	30	PASS
	165	5.53	6.03	30	PASS
802.11ac VHT40	151	1.77	2.67	30	PASS
	159	1.19	2.09	30	PASS
802.11ac VHT80	155	-3.25	-1.63	30	PASS

MIMO

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11a	36/5180	8.18	8.39	6.00	6.21	10.45	11	PASS
	40/5200	7.91	8.12	5.42	5.64	10.07	11	PASS
	48/5240	8.87	9.08	6.09	6.30	10.92	11	PASS
802.11n HT20	36/5180	7.99	8.24	5.93	6.18	10.34	11	PASS
	40/5200	8.20	8.45	5.19	5.44	10.21	11	PASS
	48/5240	7.61	7.86	5.93	6.18	10.11	11	PASS
802.11n HT40	38/5190	5.73	6.58	3.53	4.37	8.62	11	PASS
	46/5230	5.08	5.93	2.95	3.80	8.00	11	PASS
802.11ac VHT20	36/5180	8.28	8.78	4.95	5.45	10.44	11	PASS
	40/5200	7.77	8.28	5.83	6.34	10.43	11	PASS
	48/5240	8.21	8.71	6.24	6.74	10.85	11	PASS
802.11ac VHT40	38/5190	4.82	5.73	3.49	4.39	8.12	11	PASS
	46/5230	4.89	5.79	3.44	4.34	8.14	11	PASS
802.11ac VHT80	42/5210	-7.748	-6.13	-9.24	-7.62	-3.80	11	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})}$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,so directional gain=GANT+Array Gain=3+10log（2/1)=<6 dBi. So the PSD

limt is 11dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11a	149/5745	6.85	7.06	5.94	6.15	9.64	30.00	PASS
	157/5785	4.62	4.83	4.38	4.60	7.73	30.00	PASS
	165/5825	5.24	5.45	4.59	4.80	8.15	30.00	PASS
802.11n HT20	149/5745	6.22	6.47	5.56	5.81	9.16	30.00	PASS
	157/5785	4.23	4.48	4.32	4.57	7.54	30.00	PASS
	165/5825	4.03	4.28	4.04	4.29	7.29	30.00	PASS
802.11n HT40	151/5755	0.65	1.50	0.81	1.66	4.59	30.00	PASS
	159/5795	0.53	1.38	0.28	1.13	4.27	30.00	PASS
802.11ac VHT20	149/5745	5.19	5.69	5.05	5.56	8.64	30.00	PASS
	157/5785	4.31	4.81	4.11	4.62	7.73	30.00	PASS
	165/5825	4.07	4.57	4.14	4.64	7.62	30.00	PASS
802.11ac VHT40	151/5755	1.25	2.15	1.03	1.94	5.06	30.00	PASS
	159/5795	0.20	1.10	0.40	1.30	4.21	30.00	PASS
802.11ac VHT80	155/5775	-3.30	-1.68	-3.75	-2.13	1.11	30.00	PASS

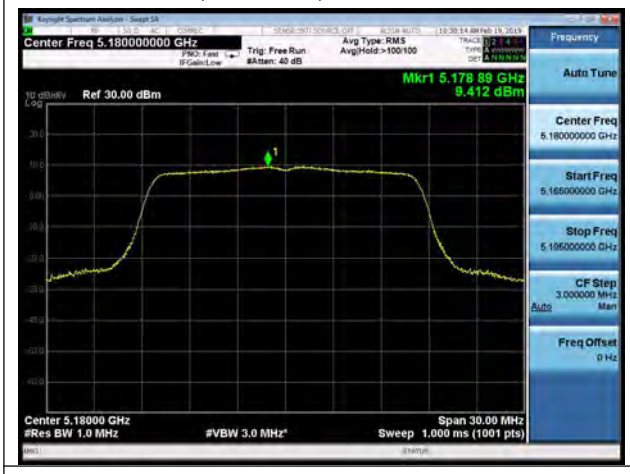
Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})}$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,so directional gain=GANT+Array Gain=3+10log（2/1)=<6 dBi. So the PSD limt is 30dBm.

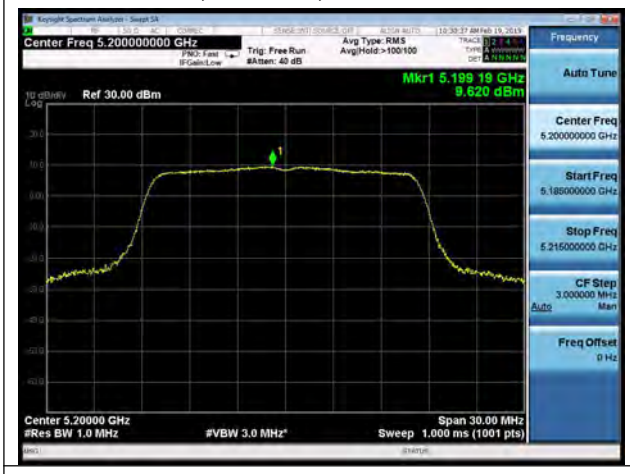
SISO Antenna 1

U-NII-1, 802.11a, Channel No.: 36



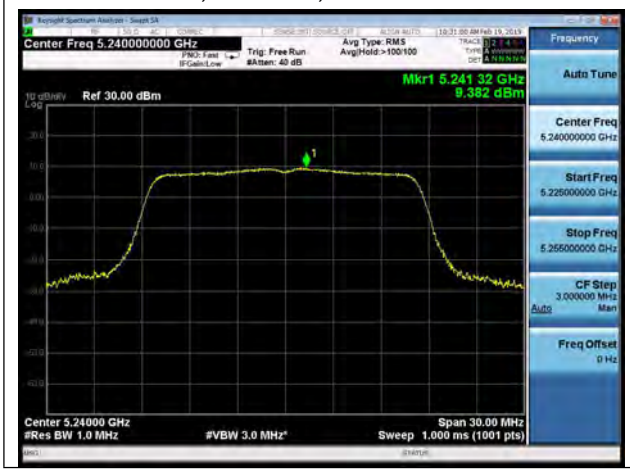
U-NII-1, 802.11n HT20, Channel No.: 36

U-NII-1, 802.11a, Channel No.: 40



U-NII-1, 802.11n HT20, Channel No.: 40

U-NII-1, 802.11a, Channel No.: 48



U-NII-1, 802.11n HT20, Channel No.: 48

U-NII-1, 802.11n HT40, Channel No.: 38

U-NII-1, 802.11ac VHT20, Channel No.: 36

U-NII-1, 802.11n HT40, Channel No.: 46

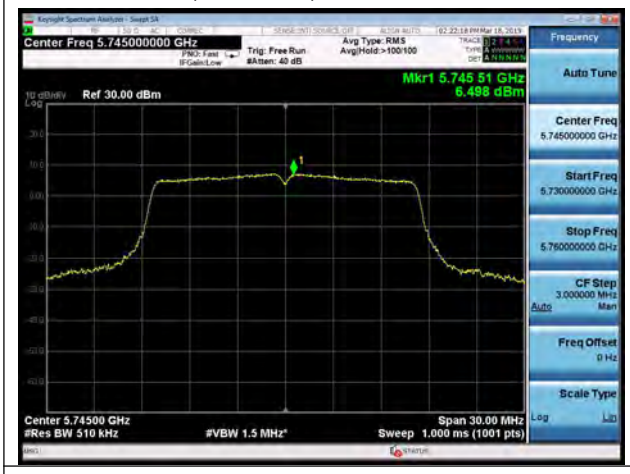
U-NII-1, 802.11ac VHT20, Channel No.: 40

U-NII-1, 802.11ac VHT40, Channel No.: 38

U-NII-1, 802.11ac VHT20, Channel No.: 48

U-NII-1, 802.11ac VHT40, Channel No.: 46	U-NII-1, 802.11ac VHT80, Channel No.: 42
	

U-NII-3, 802.11a, Channel No.: 149

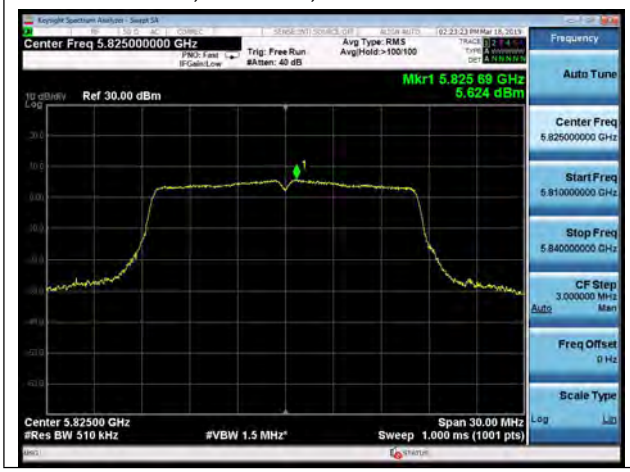


U-NII-3, 802.11n HT20, Channel No.: 149

U-NII-3, 802.11a, Channel No.: 157

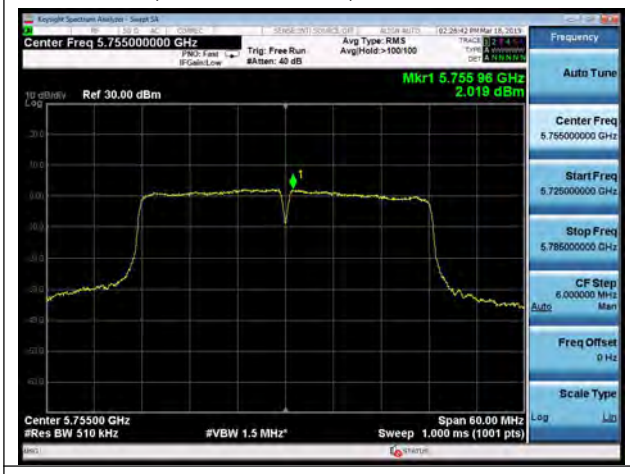
U-NII-3, 802.11n HT20, Channel No.: 157

U-NII-3, 802.11a, Channel No.: 165



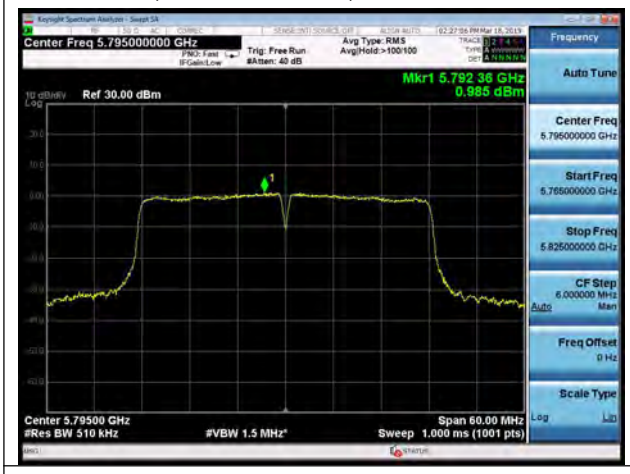
U-NII-3, 802.11n HT20, Channel No.: 165

U-NII-3, 802.11n HT40, Channel No.: 151



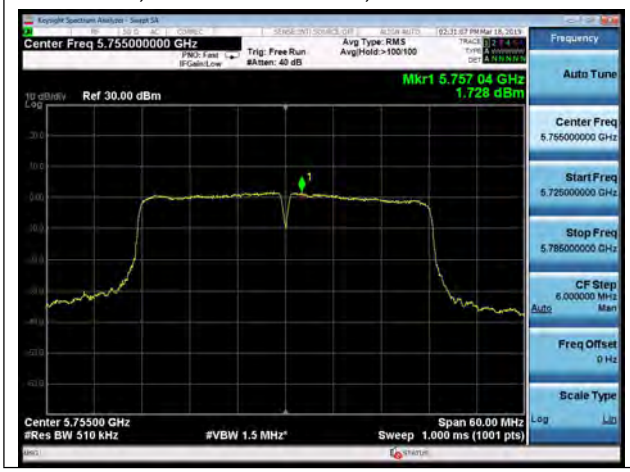
U-NII-3, 802.11ac VHT20, Channel No.: 149

U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157

U-NII-3, 802.11ac VHT40, Channel No.: 151



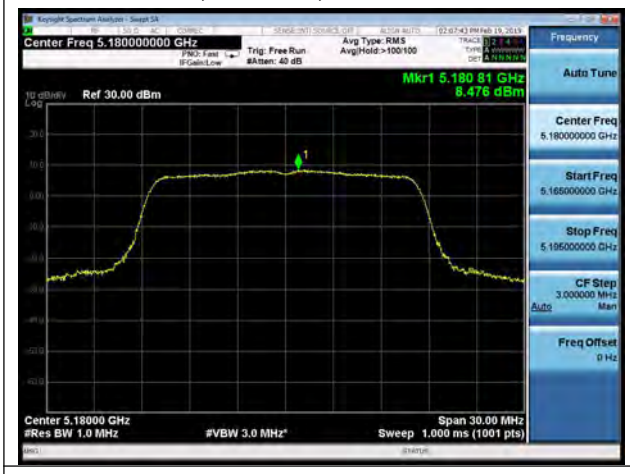
U-NII-3, 802.11ac VHT20, Channel No.: 165

U-NII-3, 802.11ac VHT40, Channel No.: 159

U-NII-3, 802.11ac VHT80, Channel No.: 155

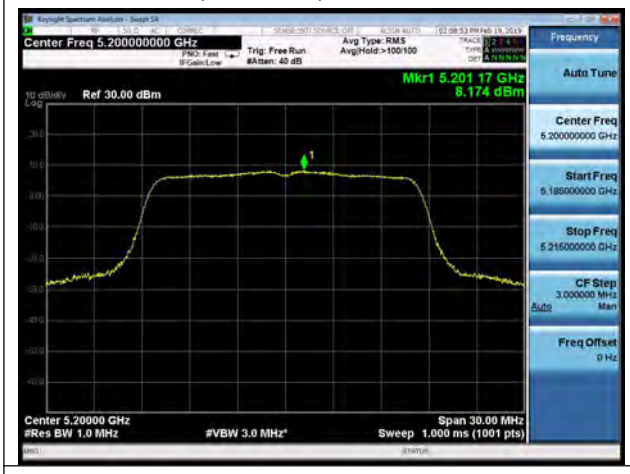
SISO Antenna 2

U-NII-1, 802.11a, Channel No.: 36



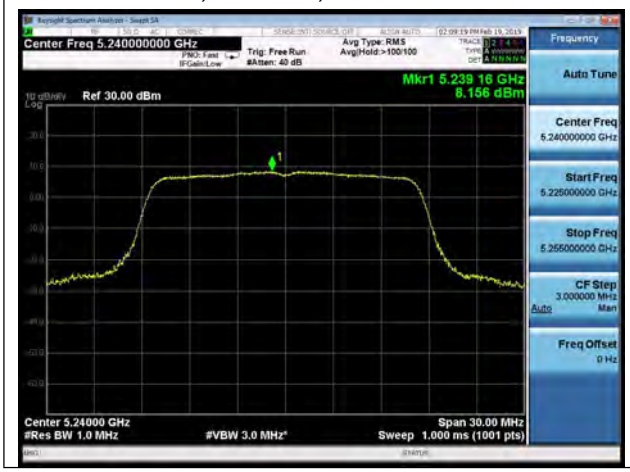
U-NII-1, 802.11n HT20, Channel No.: 36

U-NII-1, 802.11a, Channel No.: 40



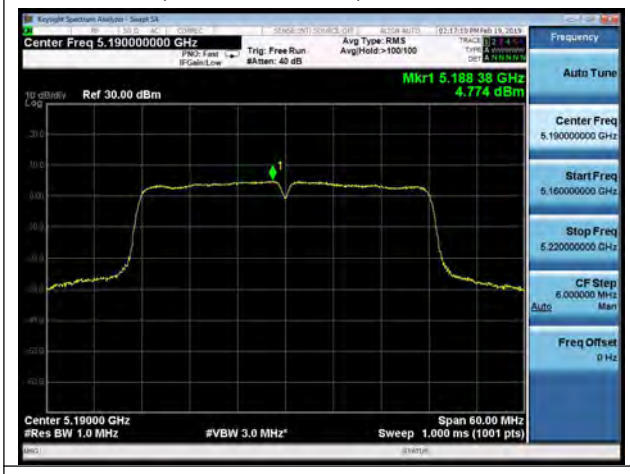
U-NII-1, 802.11n HT20, Channel No.: 40

U-NII-1, 802.11a, Channel No.: 48



U-NII-1, 802.11n HT20, Channel No.: 48

U-NII-1, 802.11n HT40, Channel No.: 38

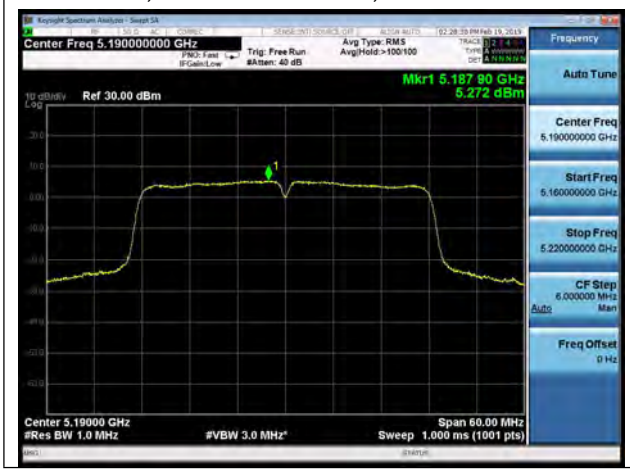


U-NII-1, 802.11ac VHT20, Channel No.: 36

U-NII-1, 802.11n HT40, Channel No.: 46

U-NII-1, 802.11ac VHT20, Channel No.: 40

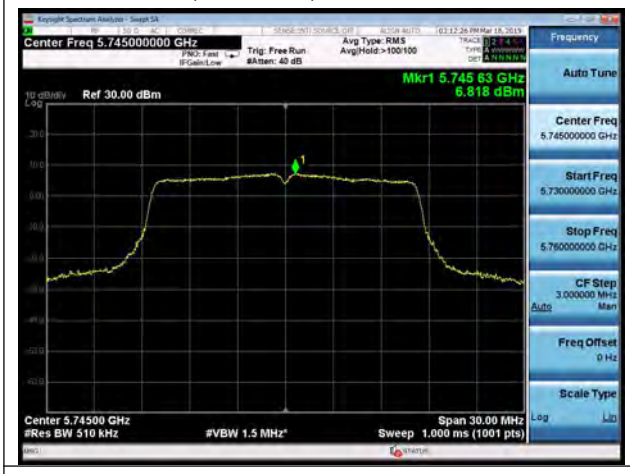
U-NII-1, 802.11ac VHT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 48

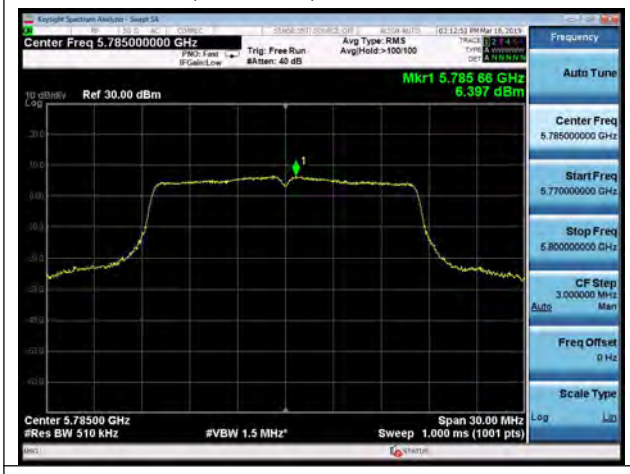
U-NII-1, 802.11ac VHT40, Channel No.: 46	U-NII-1, 802.11ac VHT80, Channel No.: 42
	

U-NII-3, 802.11a, Channel No.: 149



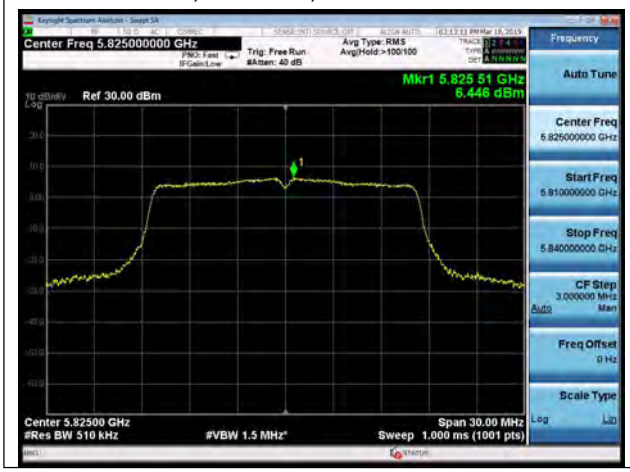
U-NII-3, 802.11n HT20, Channel No.: 149

U-NII-3, 802.11a, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 157

U-NII-3, 802.11a, Channel No.: 165

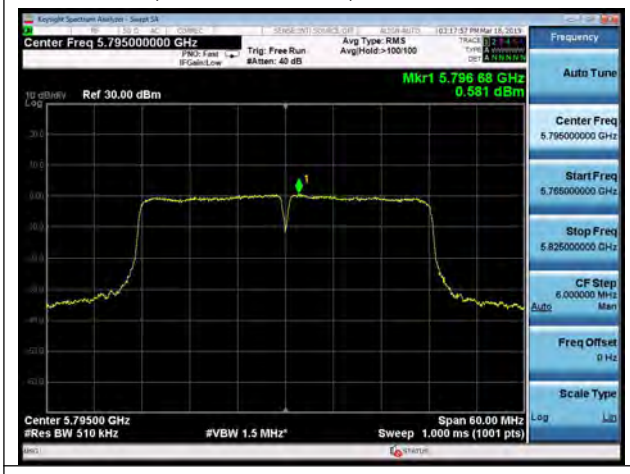


U-NII-3, 802.11n HT20, Channel No.: 165

U-NII-3, 802.11n HT40, Channel No.: 151

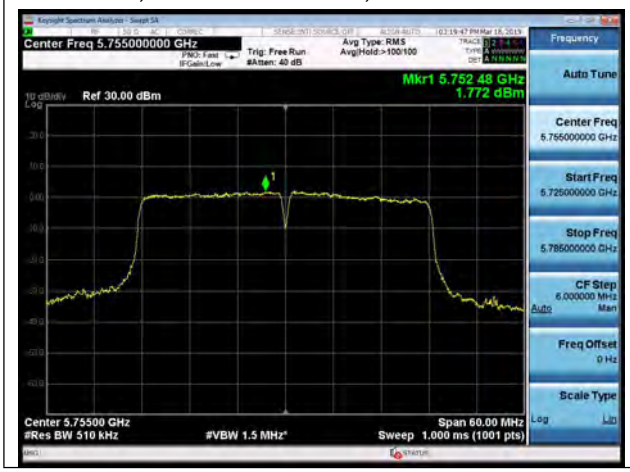
U-NII-3, 802.11ac VHT20, Channel No.: 149

U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157

U-NII-3, 802.11ac VHT40, Channel No.: 151



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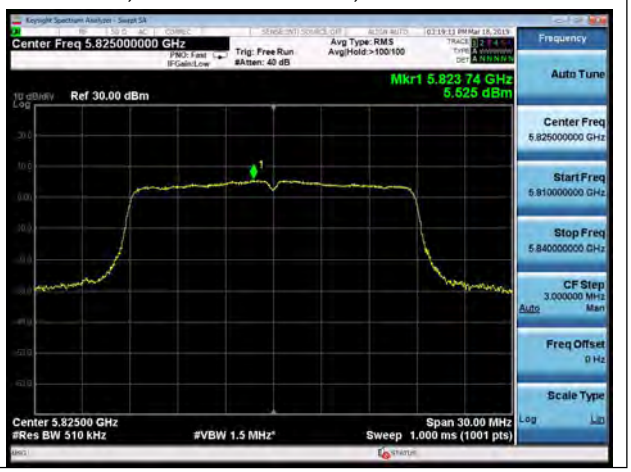
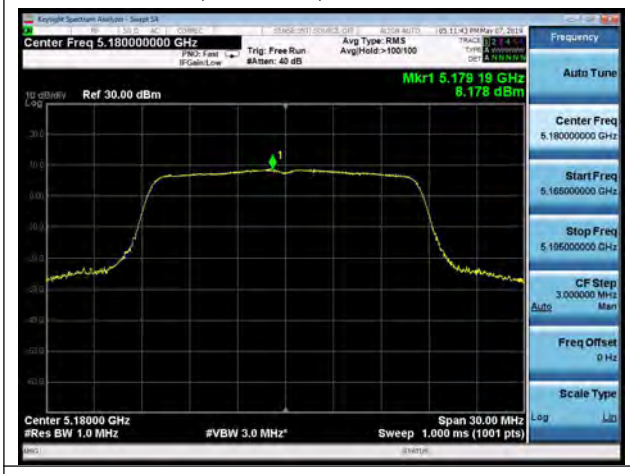


U-NII-3, 802.11ac VHT40, Channel No.: 159

U-NII-3, 802.11ac VHT80, Channel No.: 155

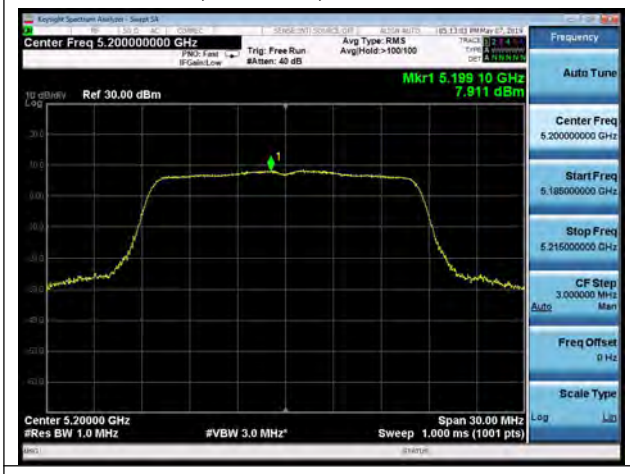
MIMO Antenna 1

U-NII-1, 802.11a, Channel No.: 36



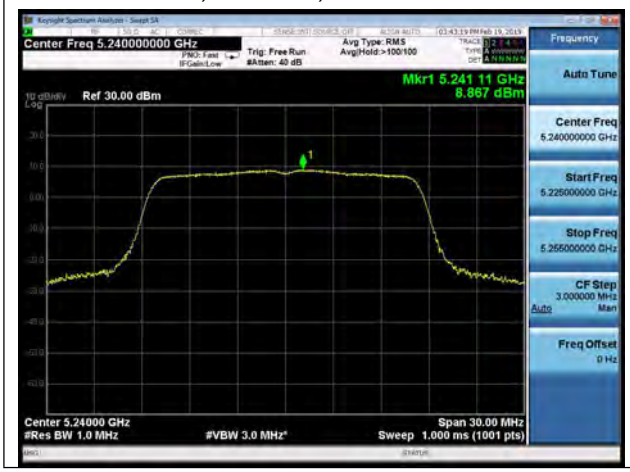
U-NII-1, 802.11n HT20, Channel No.: 36

U-NII-1, 802.11a, Channel No.: 40



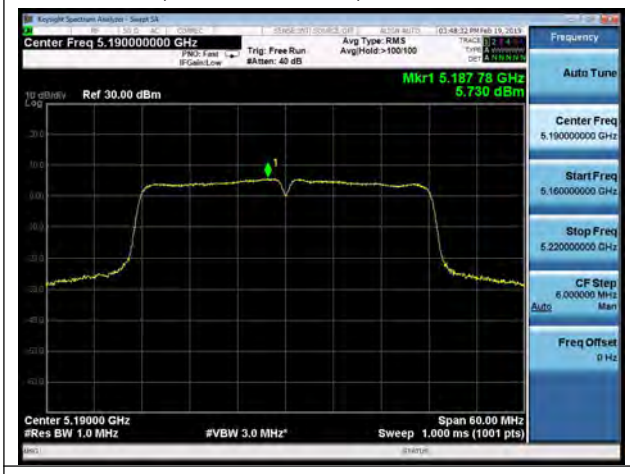
U-NII-1, 802.11n HT20, Channel No.: 40

U-NII-1, 802.11a, Channel No.: 48



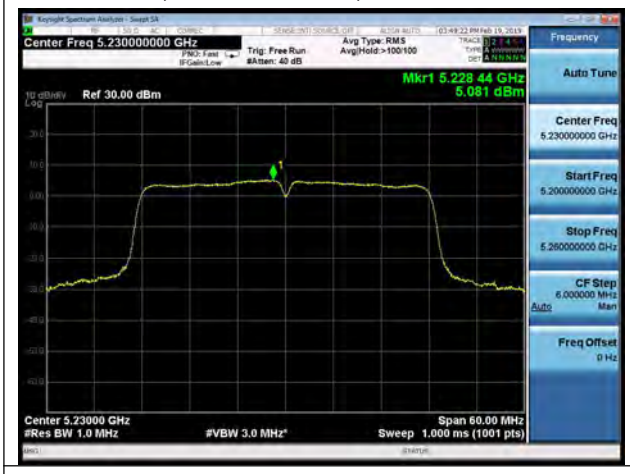
U-NII-1, 802.11n HT20, Channel No.: 48

U-NII-1, 802.11n HT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 36

U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40

U-NII-1, 802.11ac VHT40, Channel No.: 38

U-NII-1, 802.11ac VHT20, Channel No.: 48

U-NII-1, 802.11ac VHT40, Channel No.: 46	U-NII-1, 802.11ac VHT80, Channel No.: 42
	

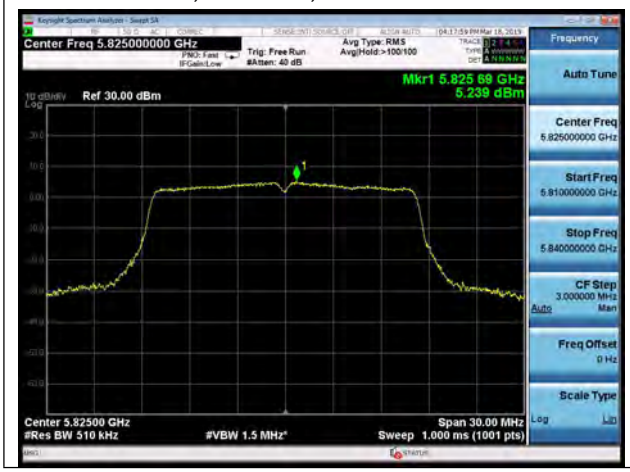
U-NII-3, 802.11a, Channel No.: 149

U-NII-3, 802.11n HT20, Channel No.: 149

U-NII-3, 802.11a, Channel No.: 157

U-NII-3, 802.11n HT20, Channel No.: 157

U-NII-3, 802.11a, Channel No.: 165

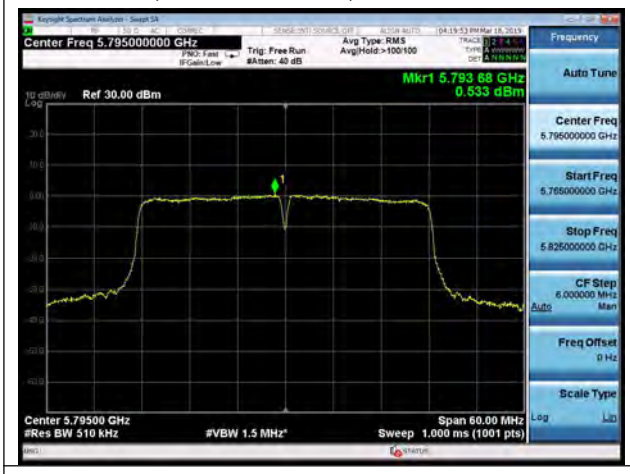


U-NII-3, 802.11n HT20, Channel No.: 165

U-NII-3, 802.11n HT40, Channel No.: 151

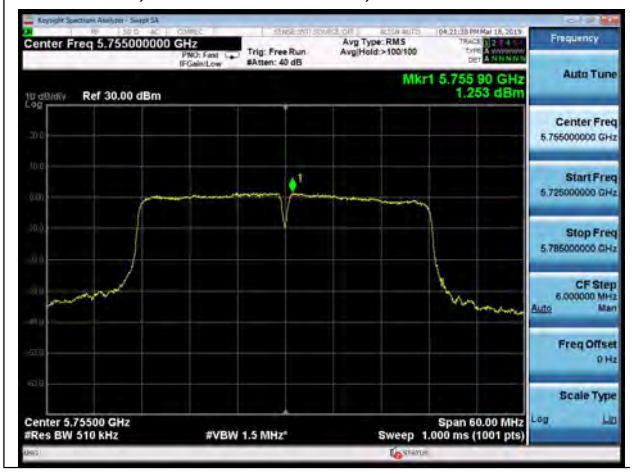
U-NII-3, 802.11ac VHT20, Channel No.: 149

U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157

U-NII-3, 802.11ac VHT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 165

U-NII-3, 802.11ac VHT40, Channel No.: 159

U-NII-3, 802.11ac VHT80, Channel No.: 155

MIMO Antenna 2

U-NII-1, 802.11a, Channel No.: 36

U-NII-1, 802.11n HT20, Channel No.: 36

U-NII-1, 802.11a, Channel No.: 40

U-NII-1, 802.11n HT20, Channel No.: 40

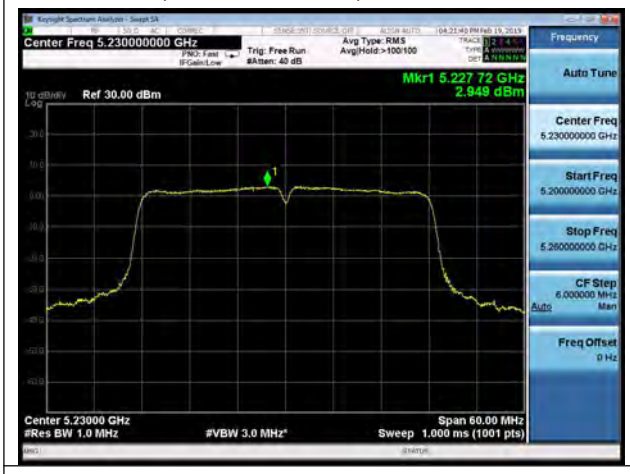
U-NII-1, 802.11a, Channel No.: 48

U-NII-1, 802.11n HT20, Channel No.: 48

U-NII-1, 802.11n HT40, Channel No.: 38

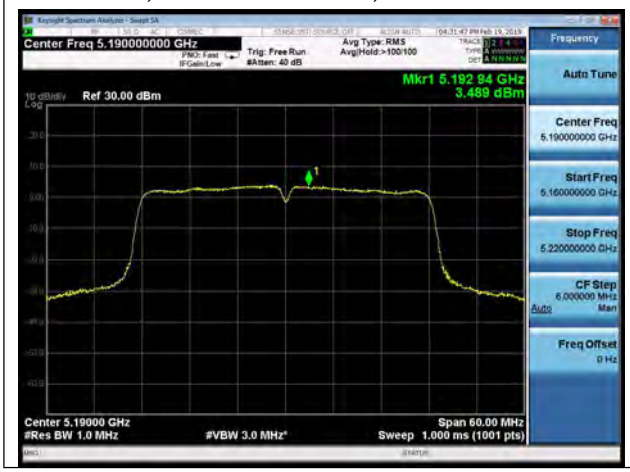
U-NII-1, 802.11ac VHT20, Channel No.: 36

U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40

U-NII-1, 802.11ac VHT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 48

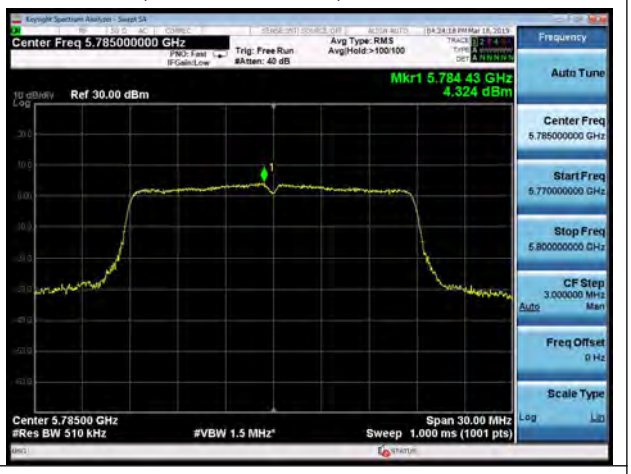
U-NII-1, 802.11ac VHT40, Channel No.: 46	U-NII-1, 802.11ac VHT80, Channel No.: 42
	

U-NII-3, 802.11a, Channel No.: 149

U-NII-3, 802.11n HT20, Channel No.: 149

U-NII-3, 802.11a, Channel No.: 157

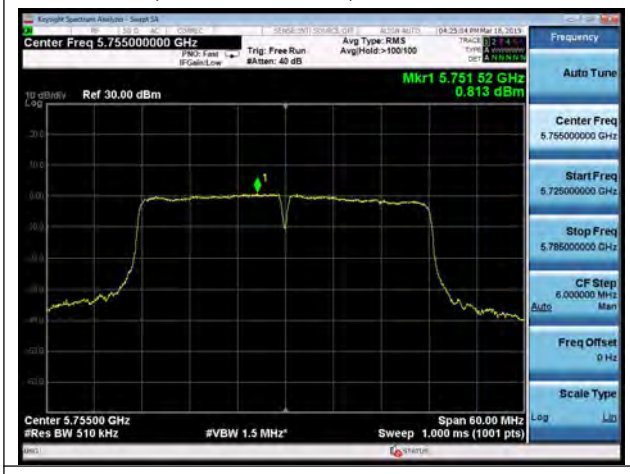
U-NII-3, 802.11n HT20, Channel No.: 157



U-NII-3, 802.11a, Channel No.: 165

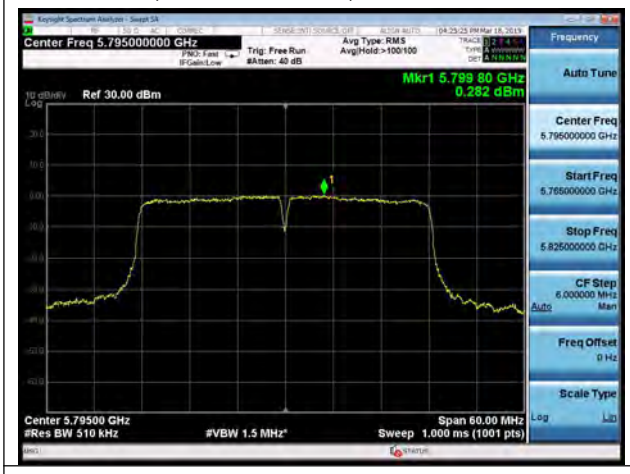
U-NII-3, 802.11n HT20, Channel No.: 165

U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 149

U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157

U-NII-3, 802.11ac VHT40, Channel No.: 151

U-NII-3, 802.11ac VHT20, Channel No.: 165

U-NII-3, 802.11ac VHT40, Channel No.: 159

U-NII-3, 802.11ac VHT80, Channel No.: 155

5.5. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
Below 1GHz (detector: Peak and Quasi-Peak)
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz (detector: Peak):
I) Peak emission levels are measured by setting the instrument as follows:
1) RBW = 1 MHz.
2) VBW ≥ [3 × RBW]
3) Detector = peak.
4) Sweep time = auto.
5) Trace mode = max hold.
6) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, then the time required for the trace to stabilize will increase by a factor of approximately 1 / D, where D is the duty cycle.

II) Average emission levels are measured by setting the instrument as follows:
a) RBW = 1 MHz.
b) VBW ≥ [3 × RBW].
c) Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

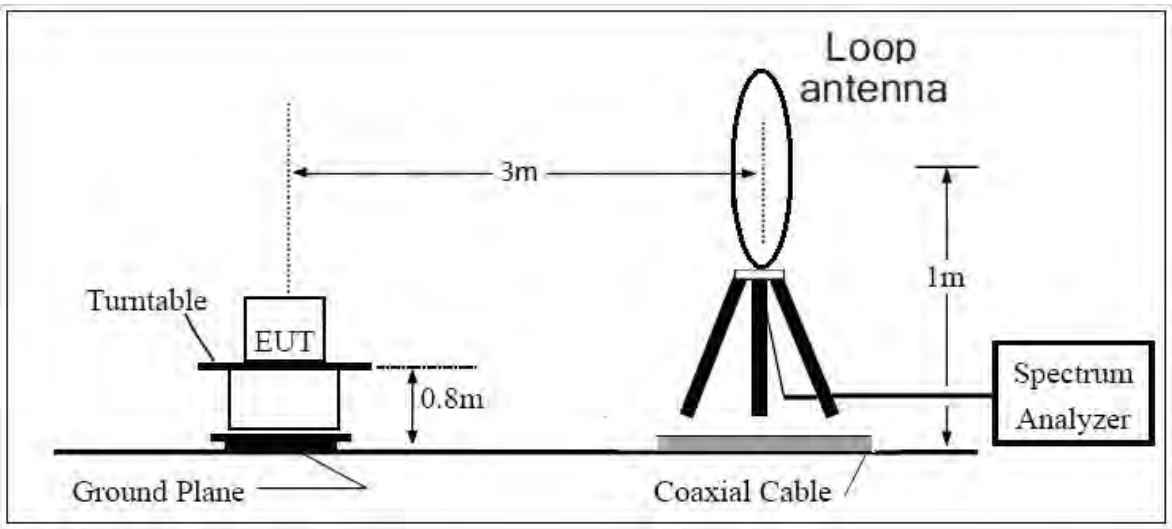
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

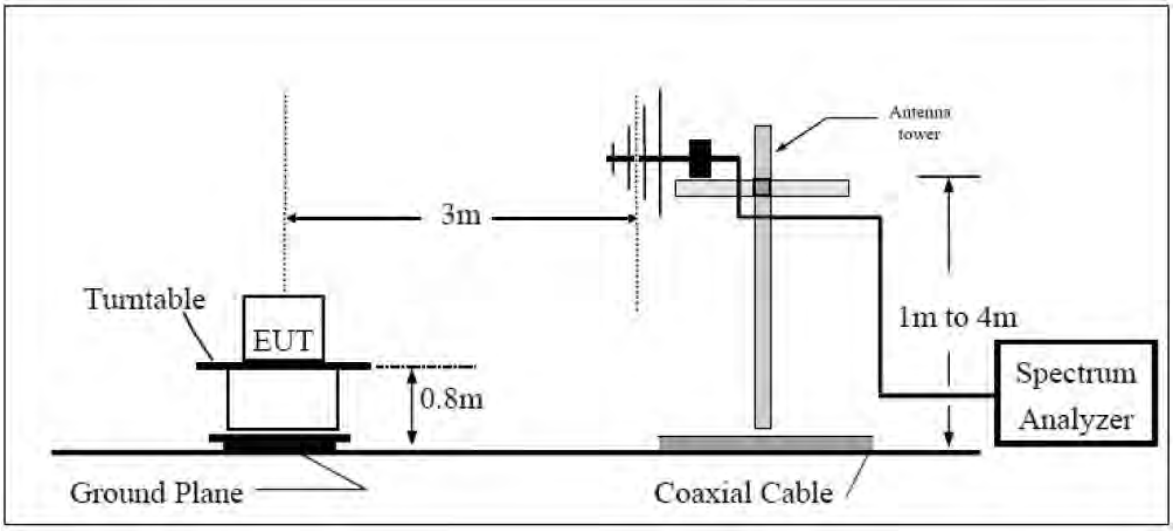
The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

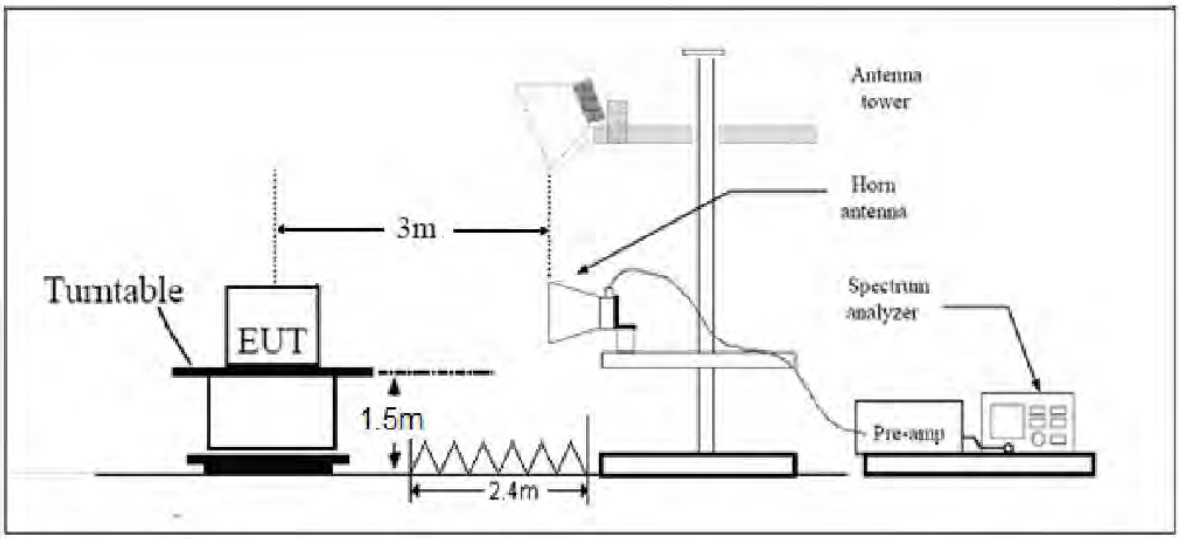
9KHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

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 e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

(2) For transmitters operating in the 5725-5850 MHz band: 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.

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

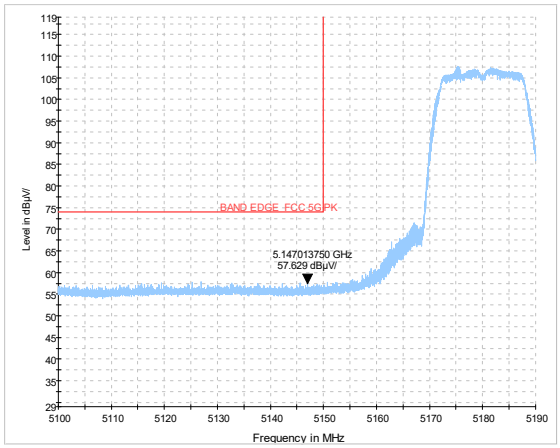
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.02 dB
200MHz-1GHz	3.28 dB
1GHz-18G	3.70 dB
18GHz-26.5GHz	5.78 dB
26.5G-40GHz	5.82 dB

Test Results:

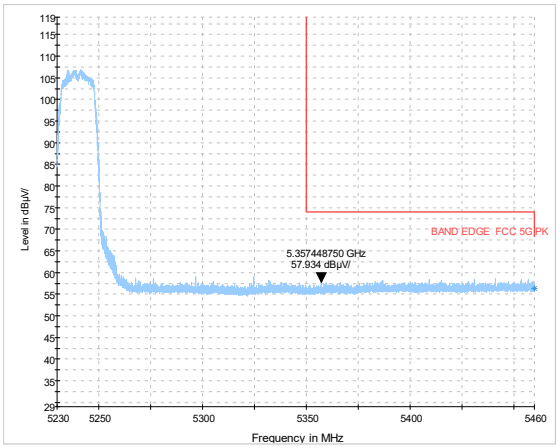
The signal beyond the limit is carrier.

U-NII-1

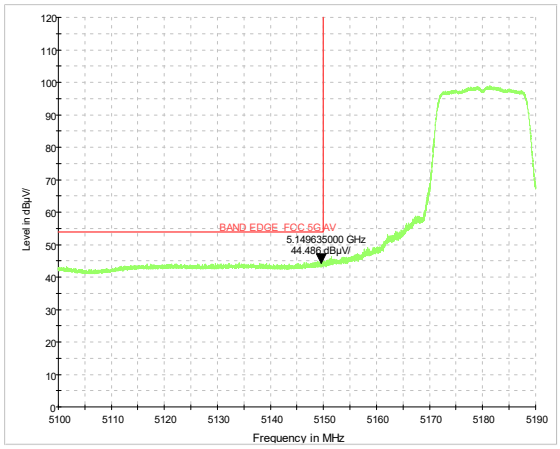
802.11a-Channel 36: Peak



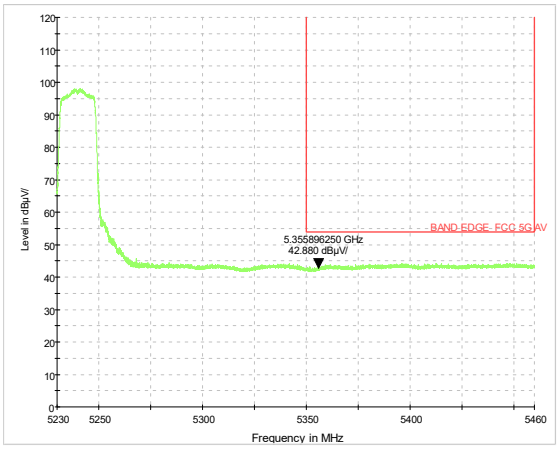
802.11a-Channel 48: Peak



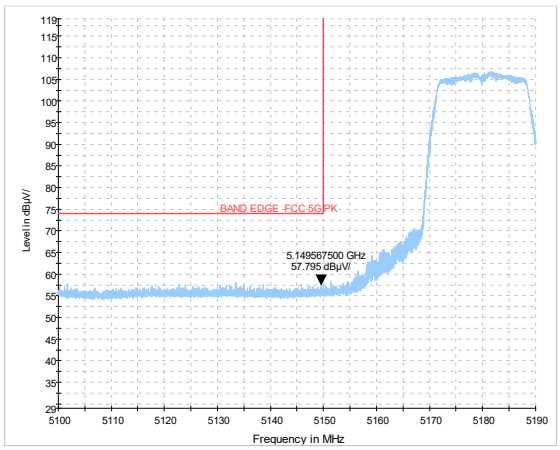
802.11a-Channel 36: Average



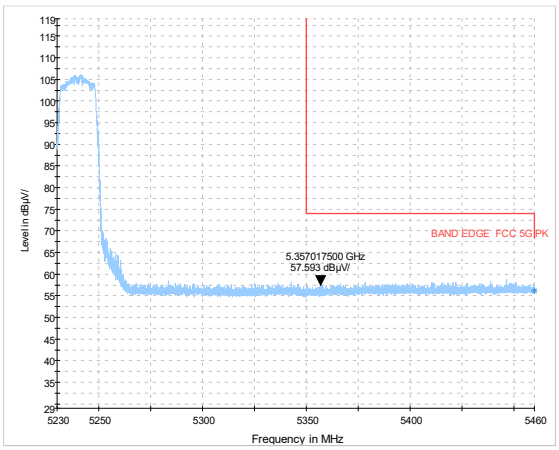
802.11a-Channel 48: Average



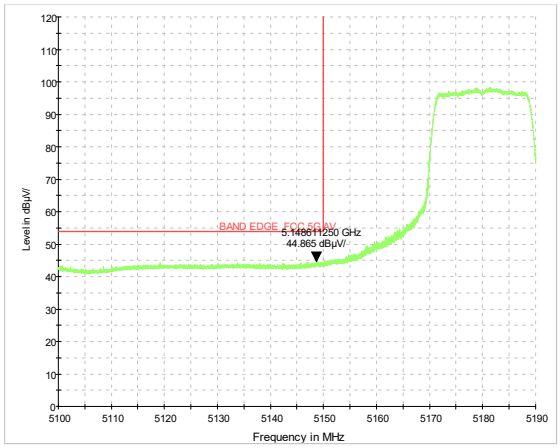
802.11n HT20-Channel 36: Peak



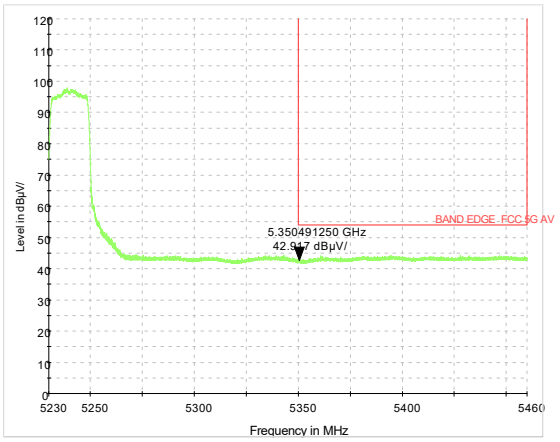
802.11n HT20-Channel 48: Peak



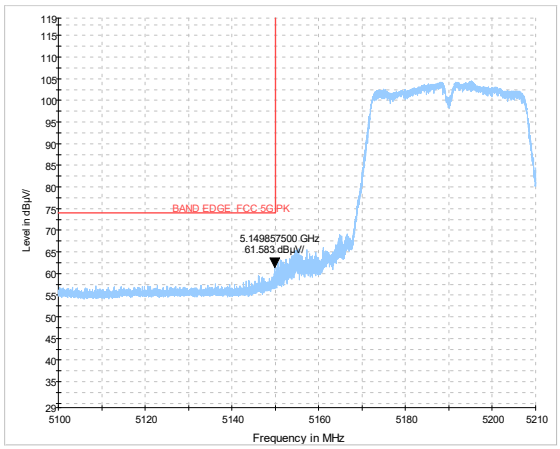
802.11n HT20-Channel 36: Average



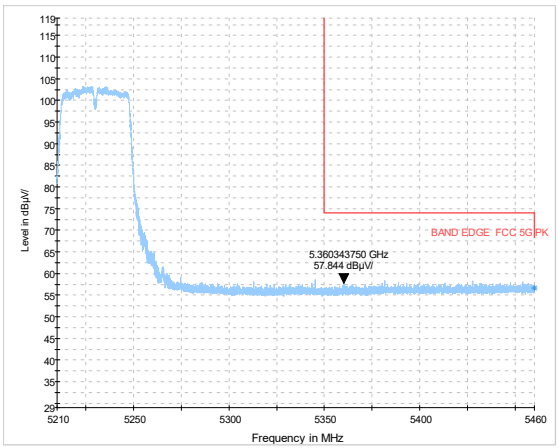
802.11n HT20-Channel 48: Average



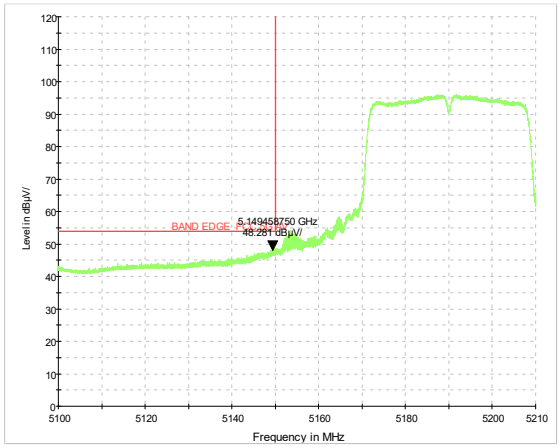
802.11n HT40-Channel 38: Peak



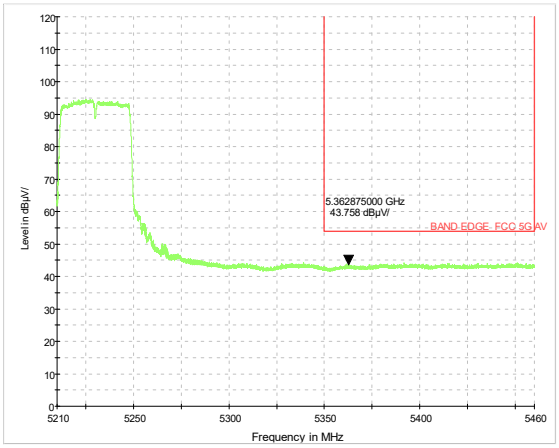
802.11n HT40-Channel 46: Peak



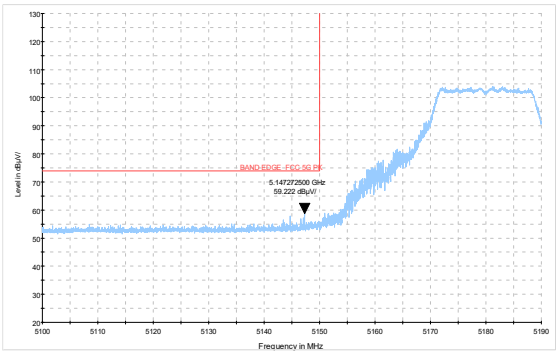
802.11n HT40-Channel 38: Average



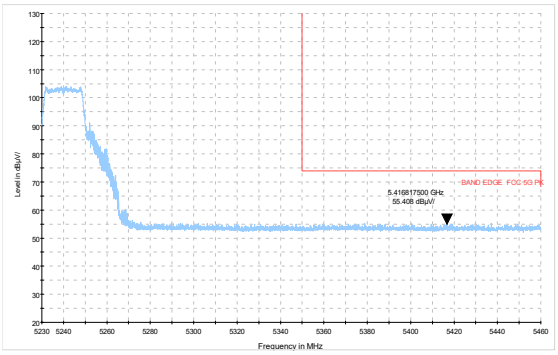
802.11n HT40-Channel 46: Average



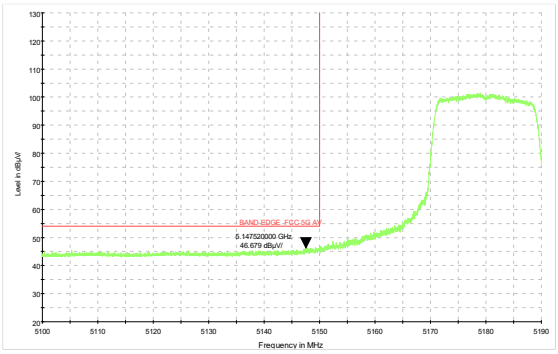
802.11ac VHT20 -Channel 36: Peak



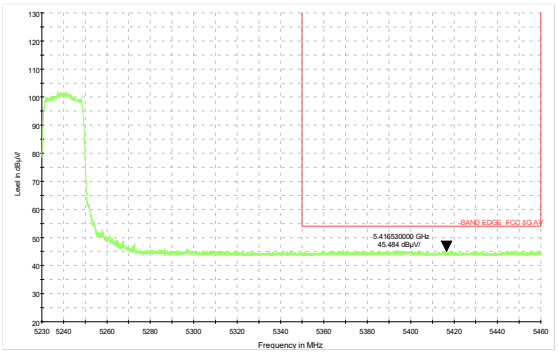
802.11ac VHT20 -Channel 48: Peak



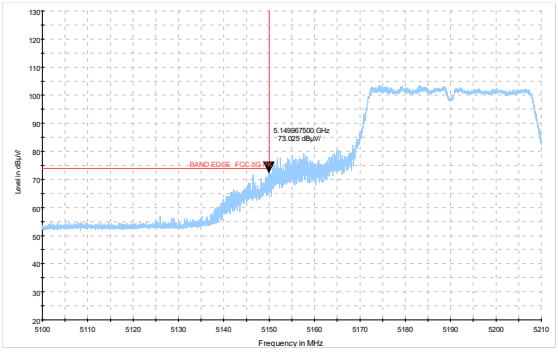
802.11ac VHT20-Channel 36: Average



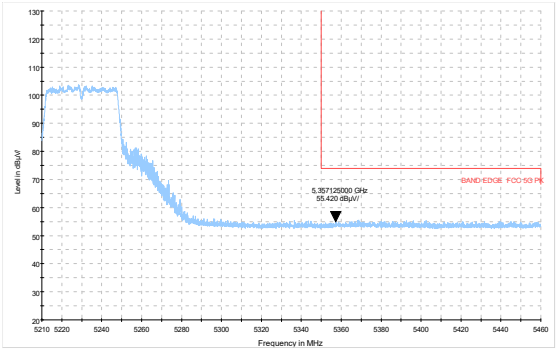
802.11ac VHT20 -Channel 48: Average



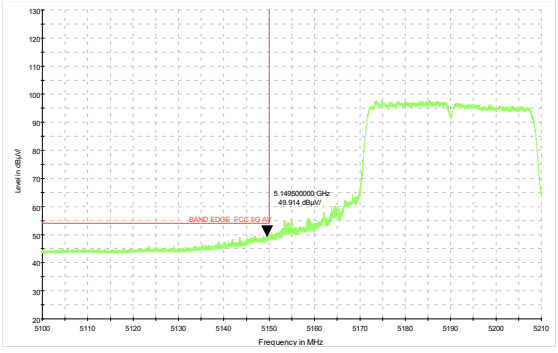
802.11ac VHT40-Channel 38: Peak



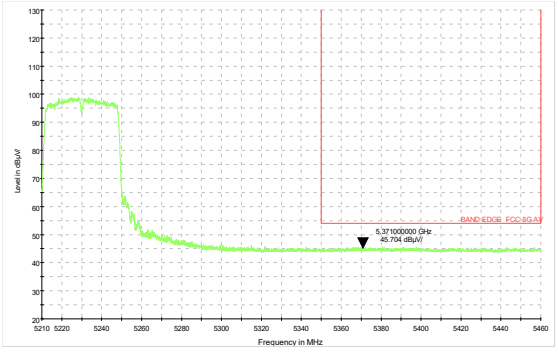
802.11ac VHT40-Channel 46: Peak

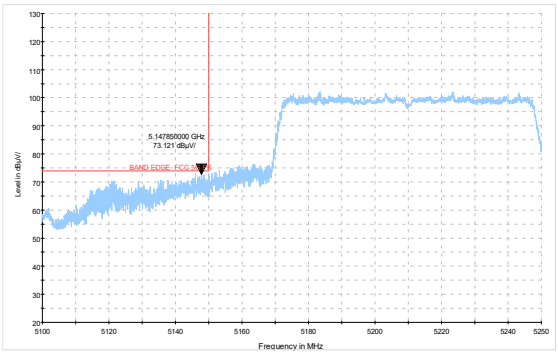
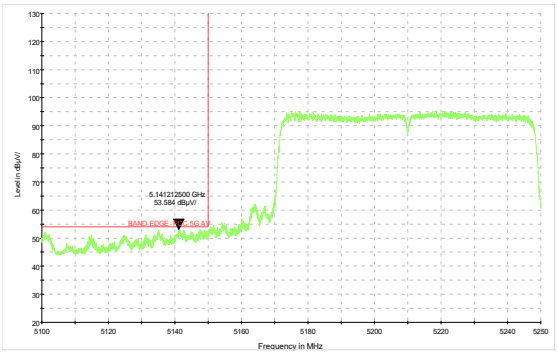


802.11ac VHT40-Channel 38: Average



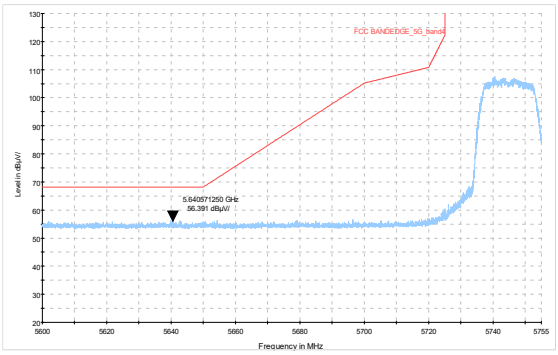
802.11ac VHT40-Channel 46: Average



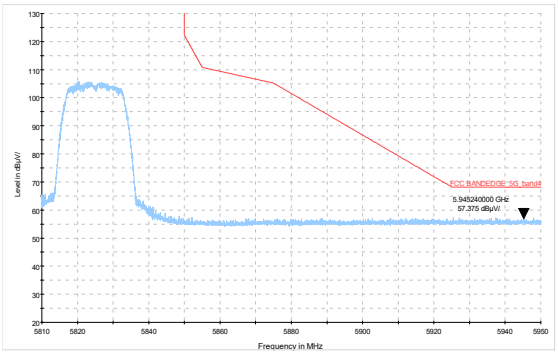
802.11ac VHT80 –Channel 42: Peak	802.11ac VHT80- Channel 42: Average
	

U-NII-3

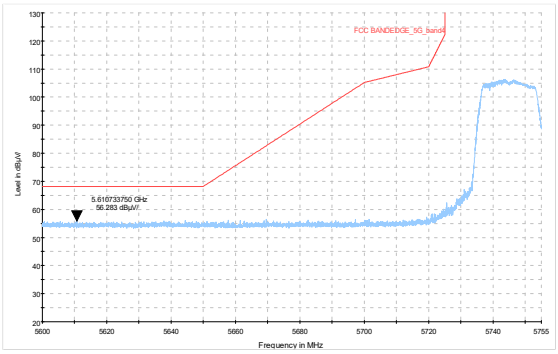
802.11a-Channel 149: Peak



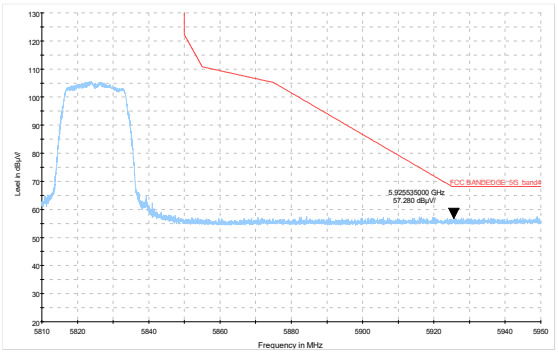
802.11a-Channel 165: Peak



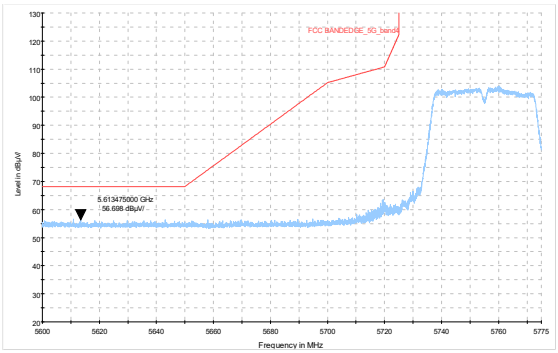
802.11n HT20-Channel 149: Peak



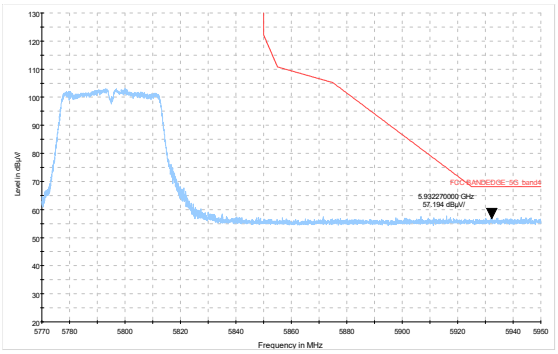
802.11n HT20-Channel 165: Peak



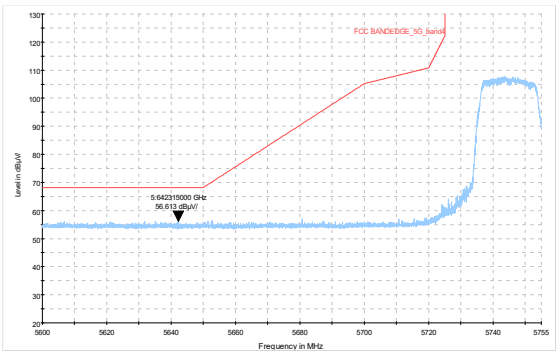
802.11n HT40-Channel 151: Peak



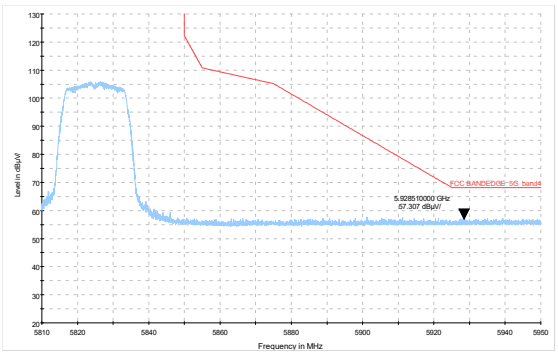
802.11n HT40-Channel 159: Peak



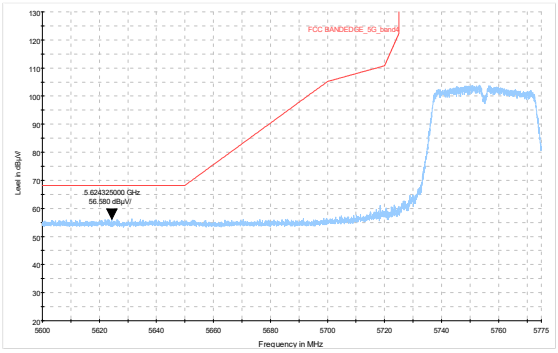
802.11ac VHT20-Channel 149: Peak



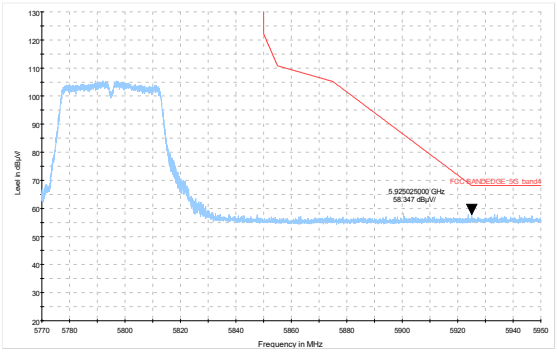
802.11ac VHT20-Channel 165: Peak



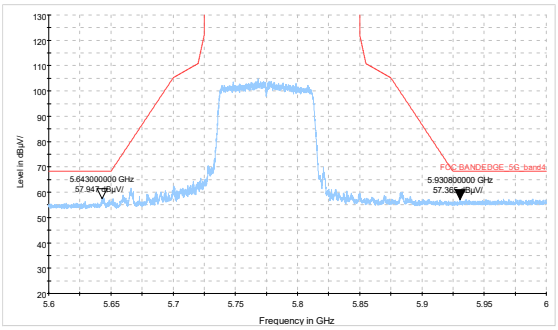
802.11ac VHT40-Channel 151: Peak



802.11ac VHT40-Channel 159: Peak



802.11ac VHT80- Channel 155: Peak



Result of RE

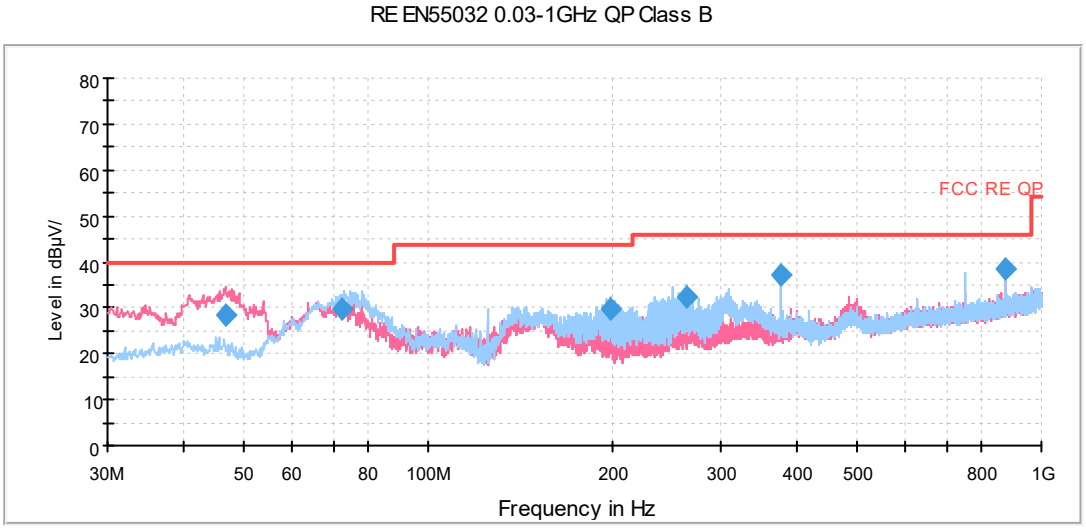
Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 26.5GHz-40GHz are more than 20dB below the limit are not reported.

After the pretest, MIMO was selected as the worst antenna.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11n-HT40, Channel 38 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Continuous TX mode:



Radiates Emission from 30MHz to 1GHz

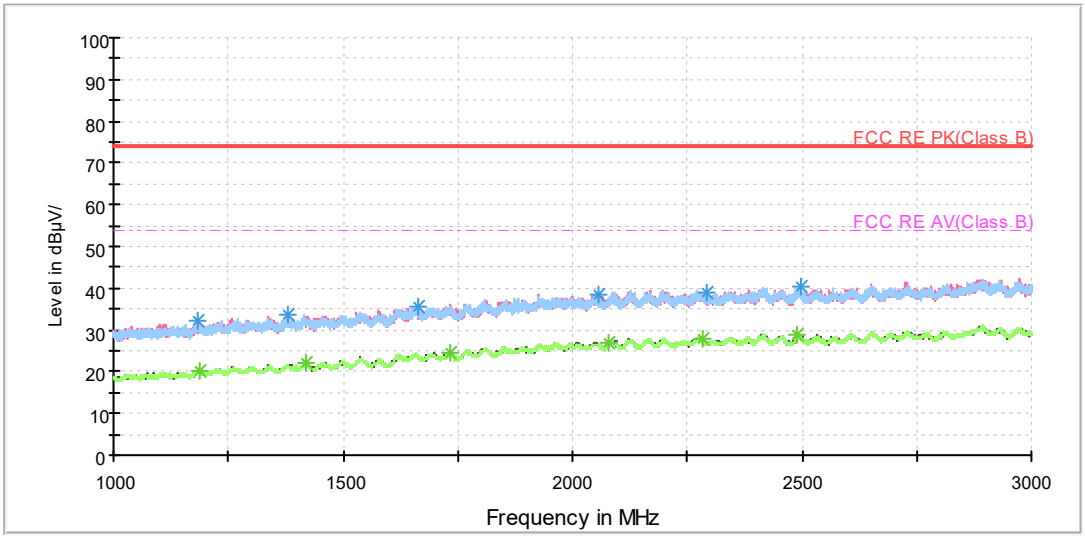
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
46.652500	28.6	100.0	V	102.0	14.8	11.4	40.0
72.605000	29.8	200.0	H	0.0	9.9	10.2	40.0
198.381250	29.7	100.0	H	87.0	11.8	13.8	43.5
264.012500	32.5	100.0	H	87.0	14.2	13.5	46.0
374.996250	37.0	100.0	H	144.0	18.5	9.0	46.0
874.992500	38.7	100.0	H	336.0	25.0	7.3	46.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak

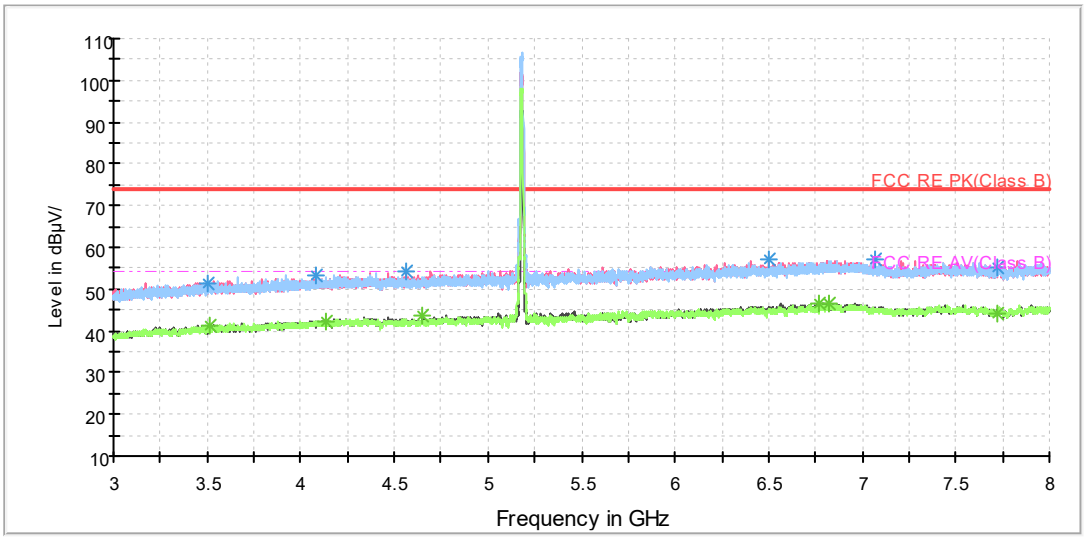
802.11a CH36

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

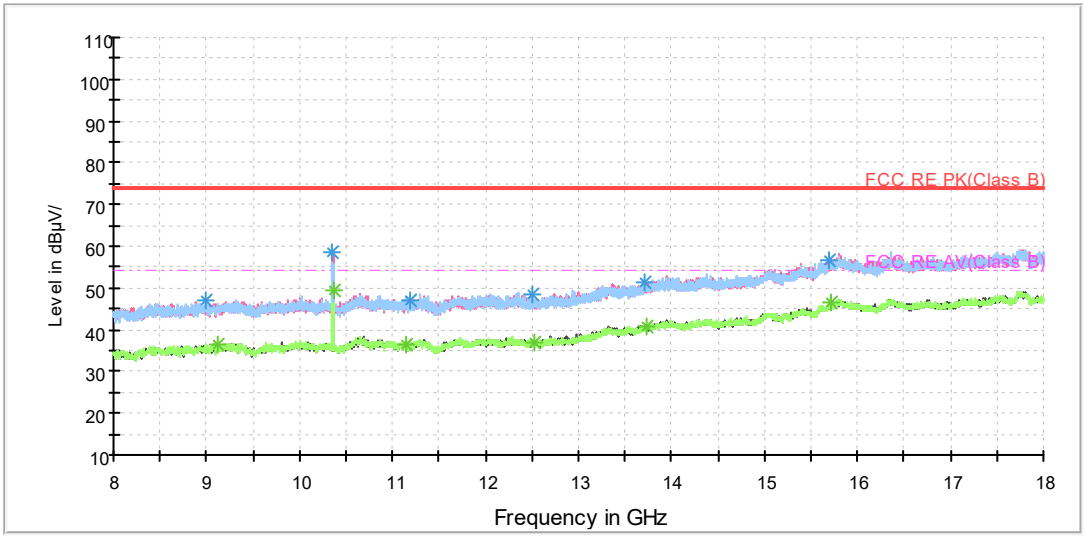
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3502.500000	51.4	200.0	H	0.0	8.3	22.6	74
4081.875000	53.5	100.0	H	142.0	10.0	20.5	74
4567.500000	54.2	100.0	V	331.0	10.8	19.8	74
6501.250000	57.2	200.0	V	283.0	14.8	16.8	74
7067.500000	57.2	200.0	V	164.0	15.5	16.8	74
7725.625000	55.4	200.0	H	231.0	16.1	18.6	74

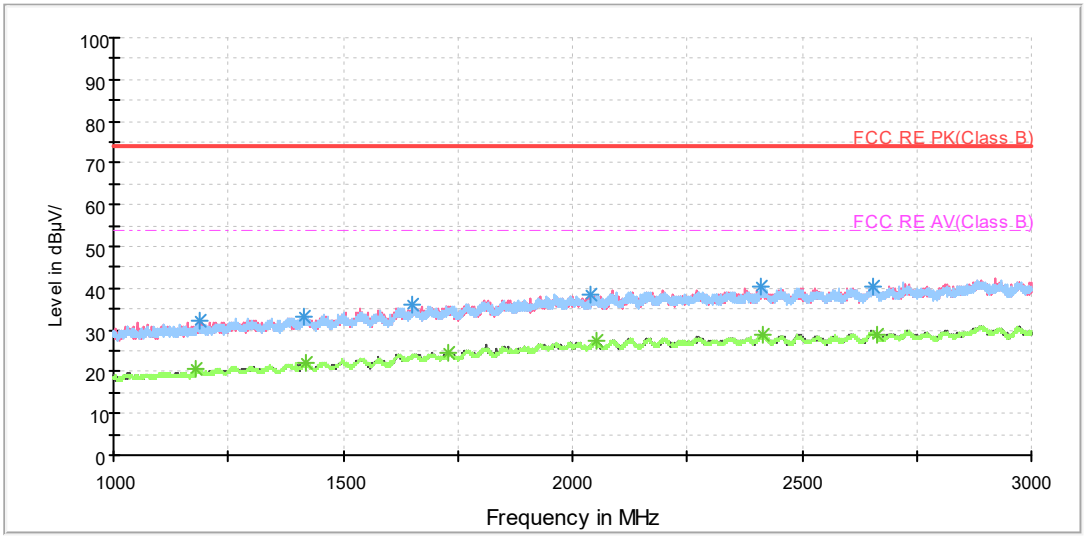
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3508.750000	41.3	200.0	V	77.0	8.3	12.7	54
4137.500000	42.4	200.0	H	246.0	10.1	11.6	54
4649.375000	43.4	100.0	V	0.0	11.0	10.6	54
6770.000000	46.4	100.0	V	138.0	15.4	7.6	54
6819.375000	46.4	200.0	V	30.0	15.4	7.6	54
7717.500000	44.3	200.0	V	30.0	16.1	9.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

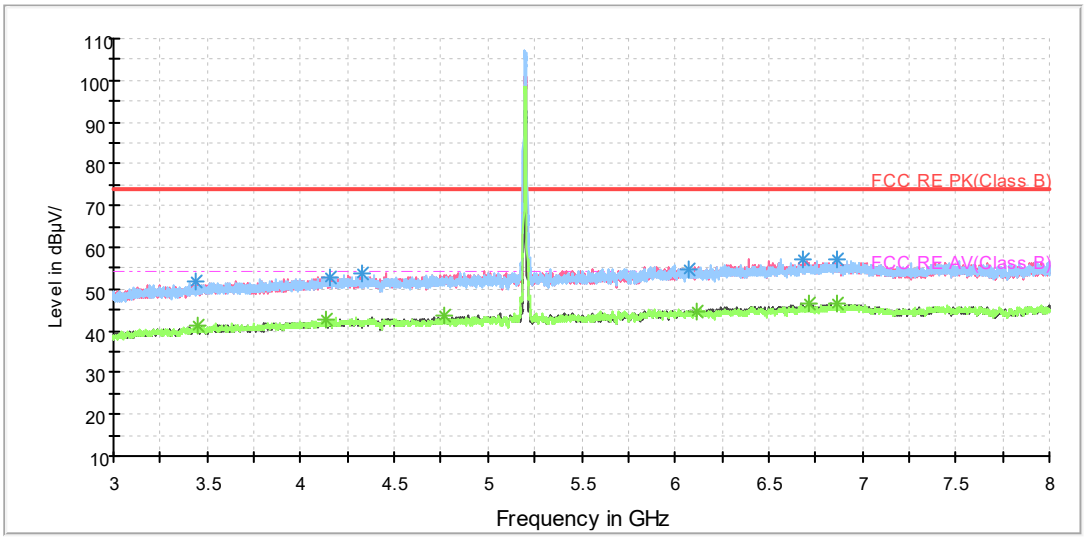
802.11a CH40

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

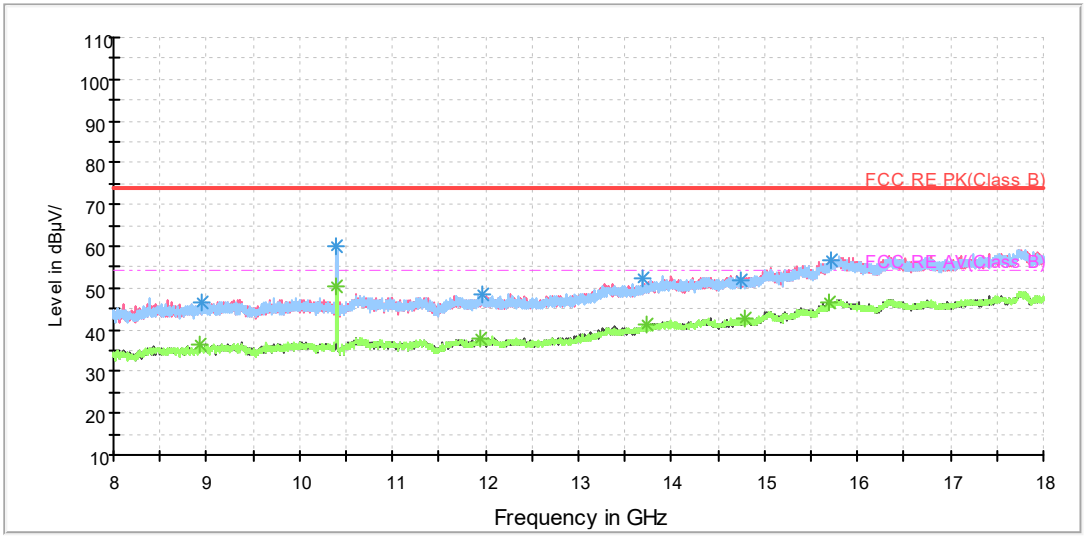
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3438.750000	51.6	100.0	H	132.0	8.0	22.4	74
4153.125000	52.8	200.0	V	171.0	10.1	21.2	74
4331.250000	54.0	100.0	H	148.0	10.5	20.0	74
6077.500000	54.9	100.0	V	172.0	13.8	19.1	74
6686.875000	57.1	200.0	V	38.0	15.3	16.9	74
6870.000000	57.0	100.0	V	123.0	15.4	17.0	74

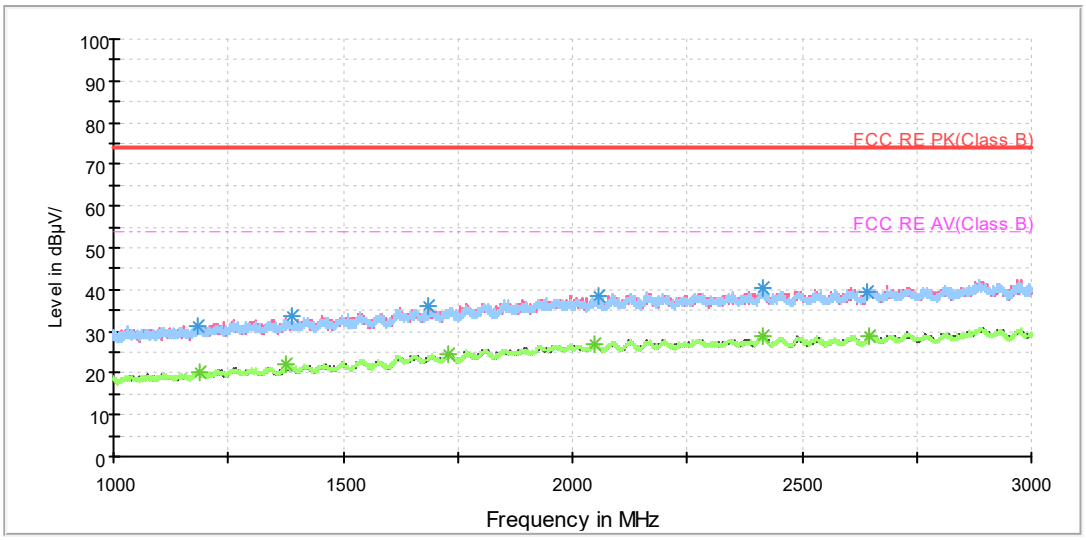
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3453.125000	41.1	100.0	V	264.0	8.1	12.9	54
4136.875000	42.7	200.0	H	280.0	10.1	11.3	54
4766.250000	43.6	100.0	V	131.0	11.3	10.4	54
6120.625000	44.6	100.0	V	264.0	13.9	9.4	54
6718.125000	46.4	200.0	V	210.0	15.3	7.6	54
6863.750000	46.4	200.0	H	272.0	15.4	7.6	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

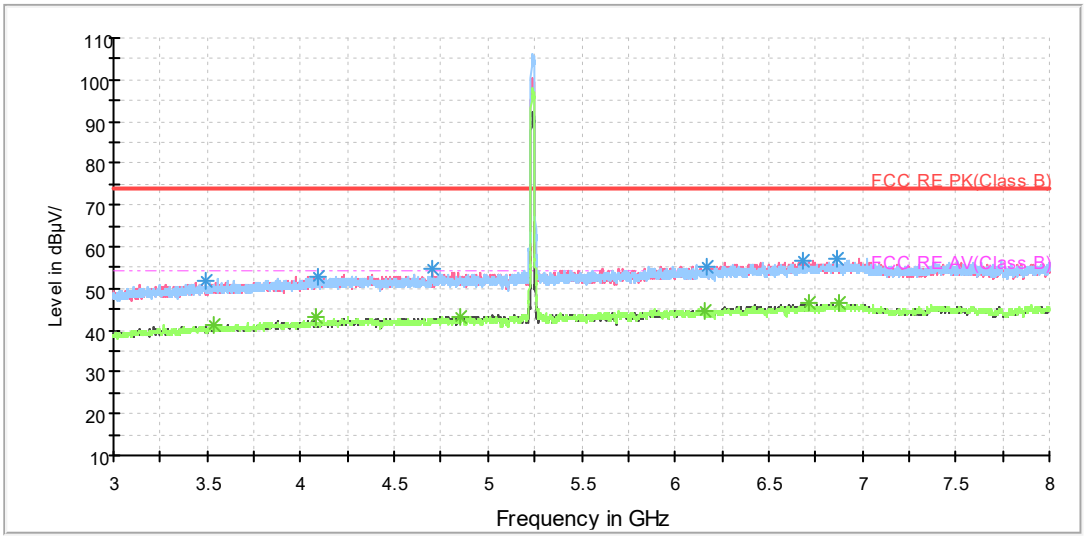
802.11a CH48

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

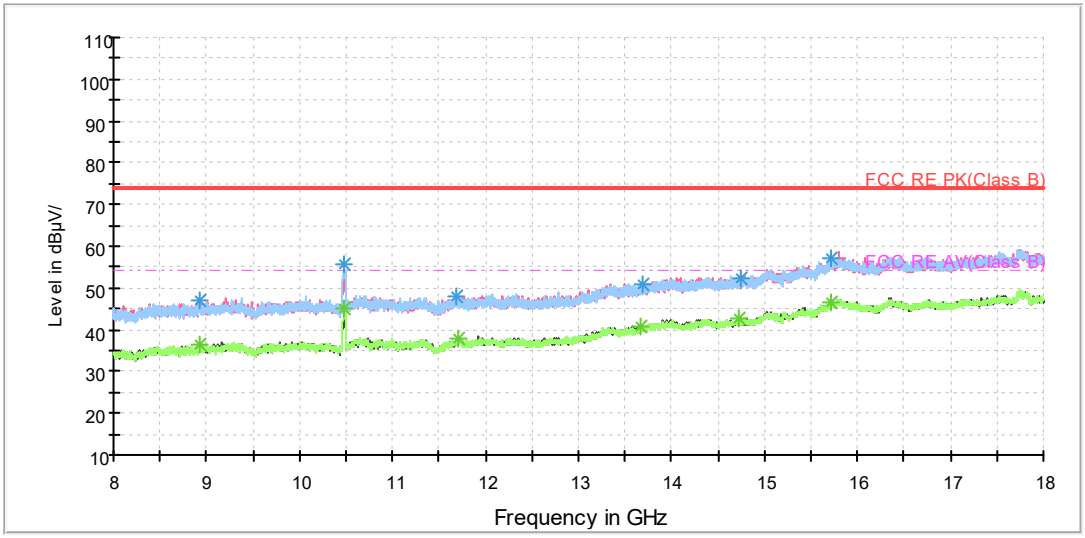
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3493.125000	51.8	200.0	H	211.0	8.3	22.2	74
4092.500000	52.8	100.0	H	158.0	10.0	21.2	74
4702.500000	54.7	100.0	V	181.0	11.2	19.3	74
6168.750000	55.1	100.0	V	62.0	14.0	18.9	74
6681.250000	56.8	200.0	V	260.0	15.3	17.2	74
6866.250000	57.2	100.0	H	197.0	15.4	16.8	74

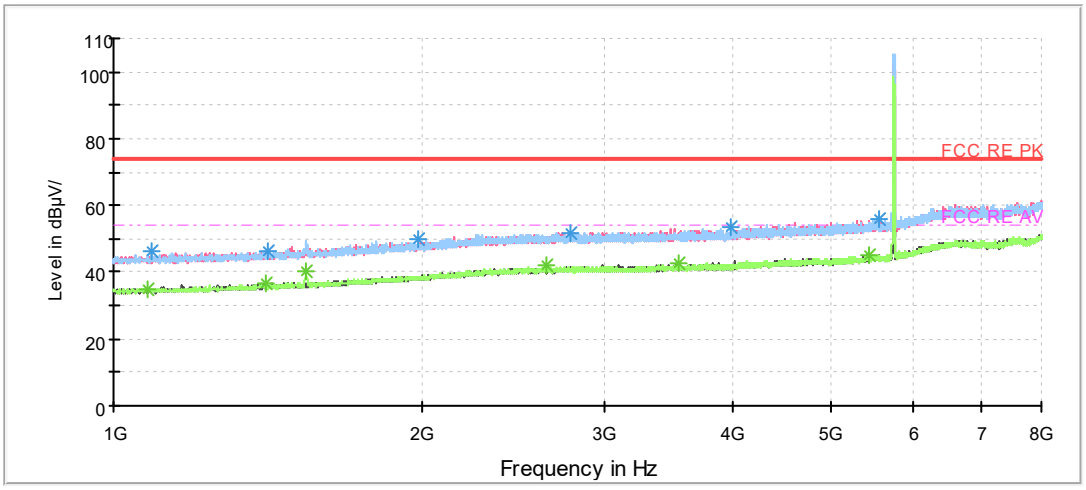
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3532.500000	41.4	200.0	H	179.0	8.4	12.6	54
4085.625000	42.9	200.0	H	350.0	10.0	11.1	54
4856.250000	43.3	100.0	V	197.0	11.5	10.7	54
6158.125000	44.8	200.0	V	25.0	14.0	9.2	54
6710.625000	46.5	100.0	V	118.0	15.3	7.5	54
6870.625000	46.3	200.0	H	211.0	15.4	7.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH149

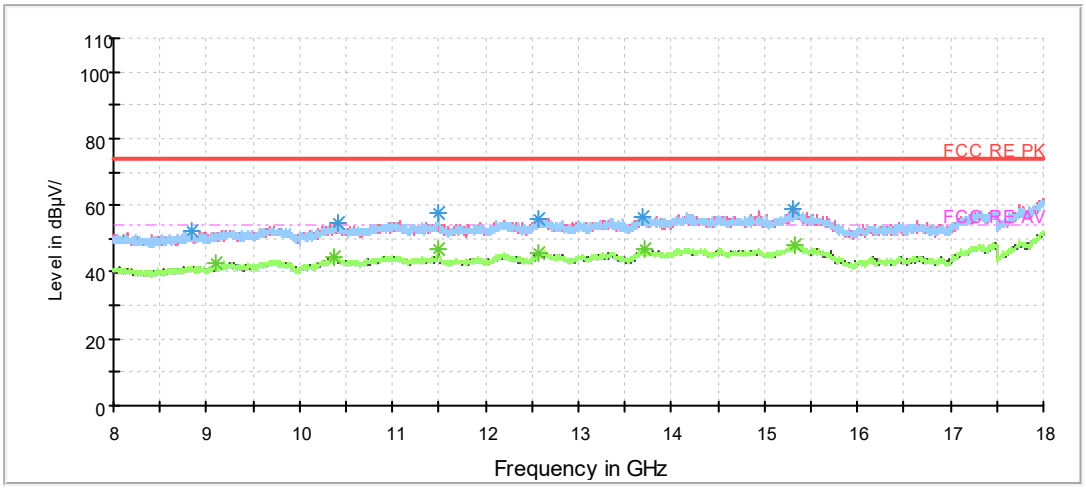
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

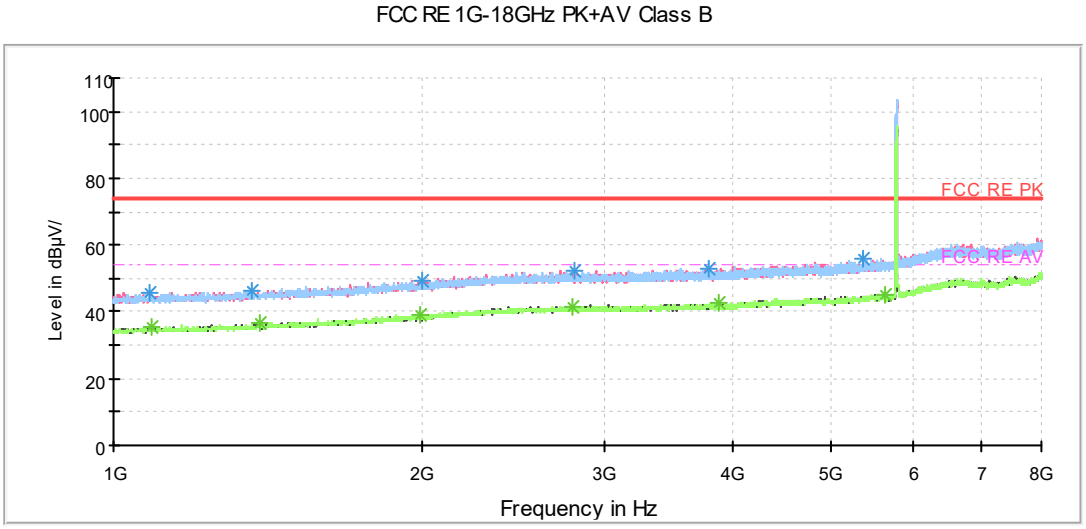
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1088.375000	46.1	200.0	H	0.0	-1.3	27.9	74
1413.875000	46.3	200.0	V	313.0	0.0	27.7	74
1977.375000	50.0	100.0	H	114.0	3.0	24	74
2778.875000	51.7	200.0	H	229.0	6.3	22.3	74
3983.750000	53.7	200.0	H	188.0	7.8	20.3	74
5552.625000	55.9	100.0	H	311.0	10.8	18.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1077.875000	34.9	100.0	V	170.0	-1.3	19.1	54
1405.125000	36.4	200.0	H	93.0	0.0	17.6	54
1540.750000	40.3	200.0	H	78.0	0.7	13.7	54
2643.250000	41.8	200.0	H	174.0	6.0	12.2	54
3555.000000	42.5	100.0	V	344.0	7.2	11.5	54
5430.125000	45.1	200.0	H	0.0	10.7	8.9	54

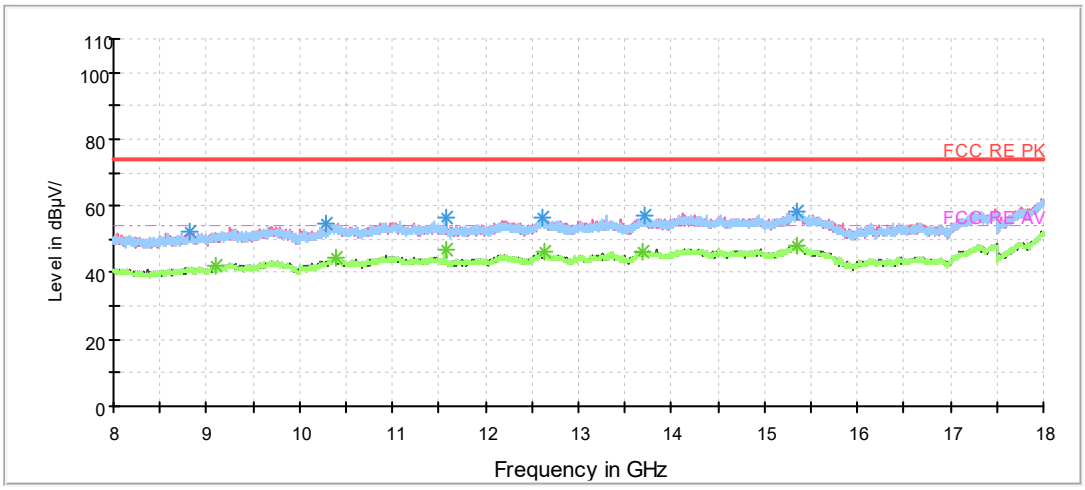
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH157



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1086.625000	45.6	200.0	V	83.0	-1.3	28.4	74
1362.250000	46.5	100.0	H	138.0	-0.2	27.5	74
1994.875000	49.2	200.0	H	359.0	3.1	24.8	74
2806.875000	52.1	200.0	H	352.0	6.2	21.9	74
3796.500000	53.0	200.0	H	203.0	7.6	21	74
5372.375000	56.1	200.0	V	312.0	10.5	17.9	74

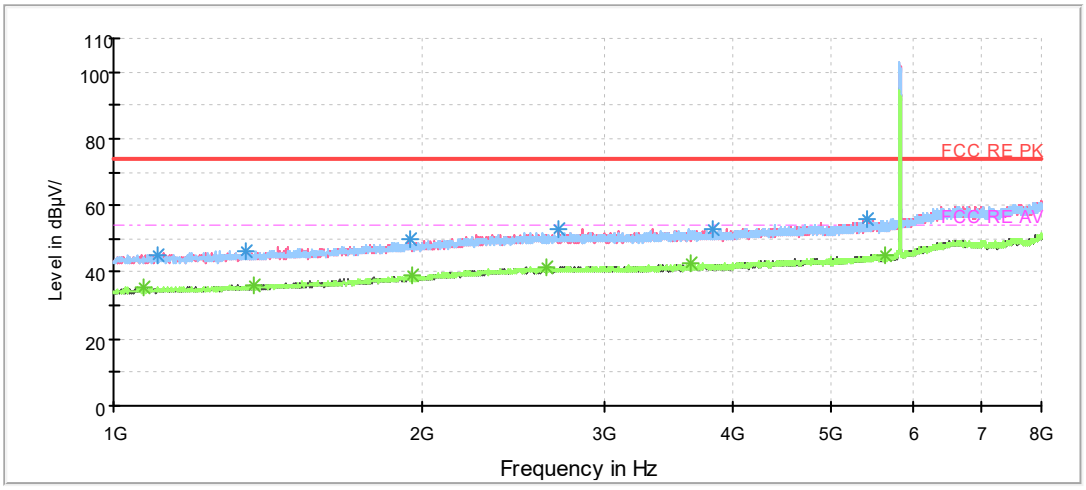
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1091.000000	35.6	100.0	H	0.0	-1.2	18.4	54
1385.000000	36.5	200.0	H	327.0	-0.1	17.5	54
1989.625000	38.9	200.0	H	259.0	3.1	15.1	54
2797.250000	41.6	200.0	H	203.0	6.2	12.4	54
3890.125000	42.5	200.0	H	132.0	7.7	11.5	54
5648.000000	45.1	200.0	H	346.0	11.0	8.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH165

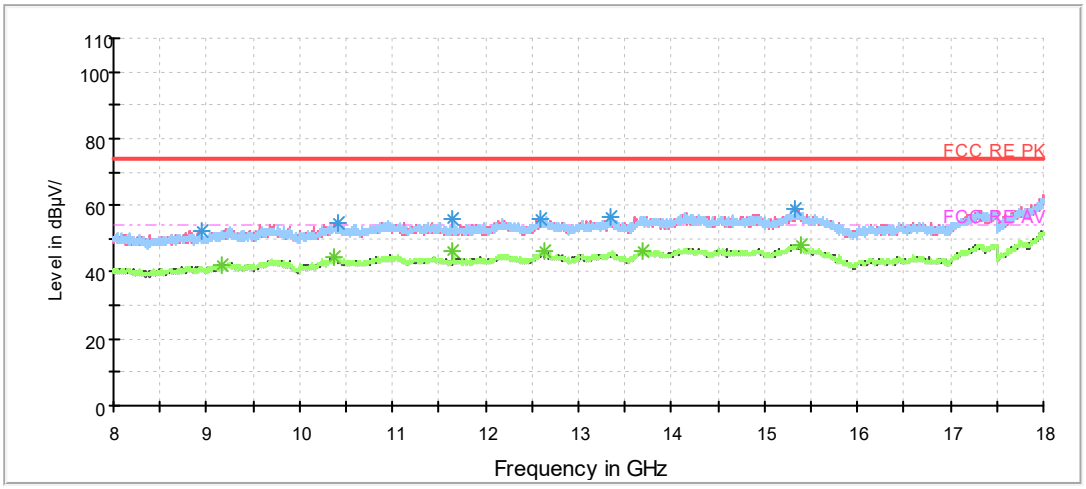
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1105.000000	45.2	200.0	V	18.0	-1.2	28.8	74
1344.750000	46.5	200.0	V	280.0	-0.3	27.5	74
1940.625000	49.8	100.0	H	138.0	2.9	24.2	74
2705.375000	52.6	100.0	V	146.0	6.1	21.4	74
3826.250000	52.9	200.0	H	0.0	7.6	21.1	74
5410.875000	55.7	200.0	H	4.0	10.6	18.3	74

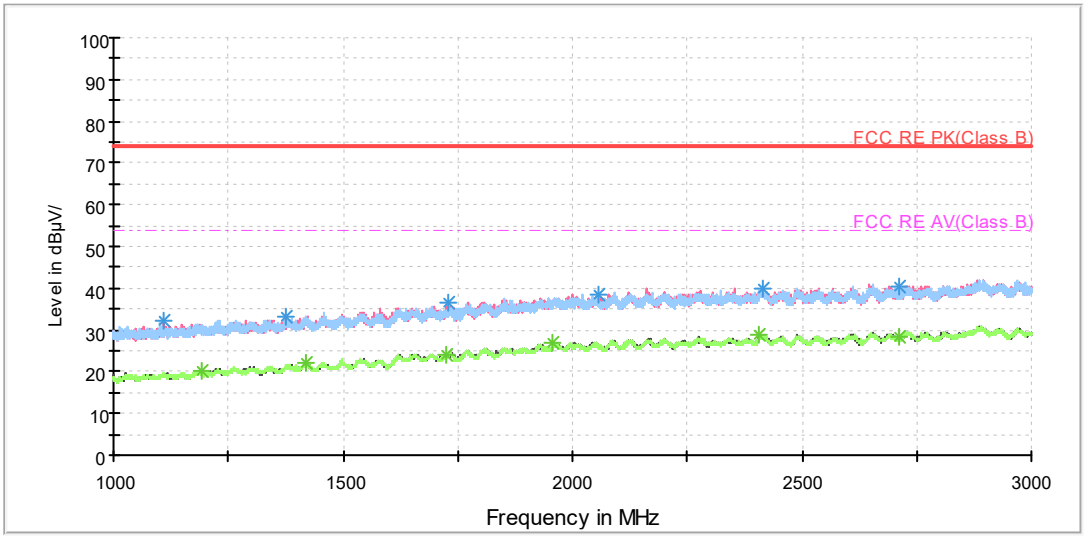
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1069.125000	35.3	200.0	V	166.0	-1.3	18.7	54
1369.250000	36.3	100.0	H	19.0	-0.2	17.7	54
1951.125000	39.0	200.0	V	6.0	2.9	15	54
2632.750000	41.8	100.0	H	29.0	6.0	12.2	54
3653.000000	42.7	100.0	V	350.0	7.4	11.3	54
5637.500000	45.0	100.0	H	83.0	11.0	9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

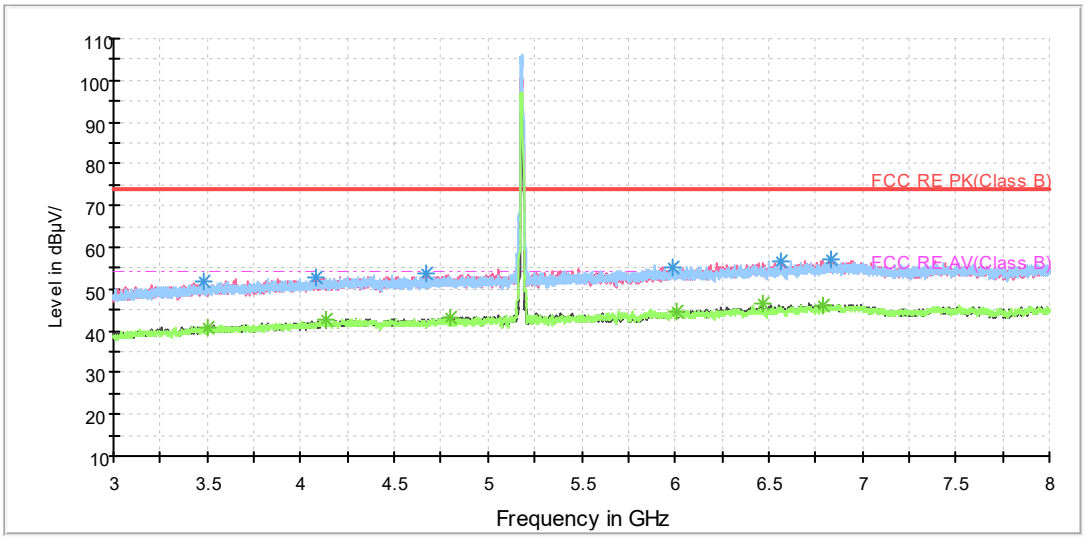
802.11n (HT20) CH36

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

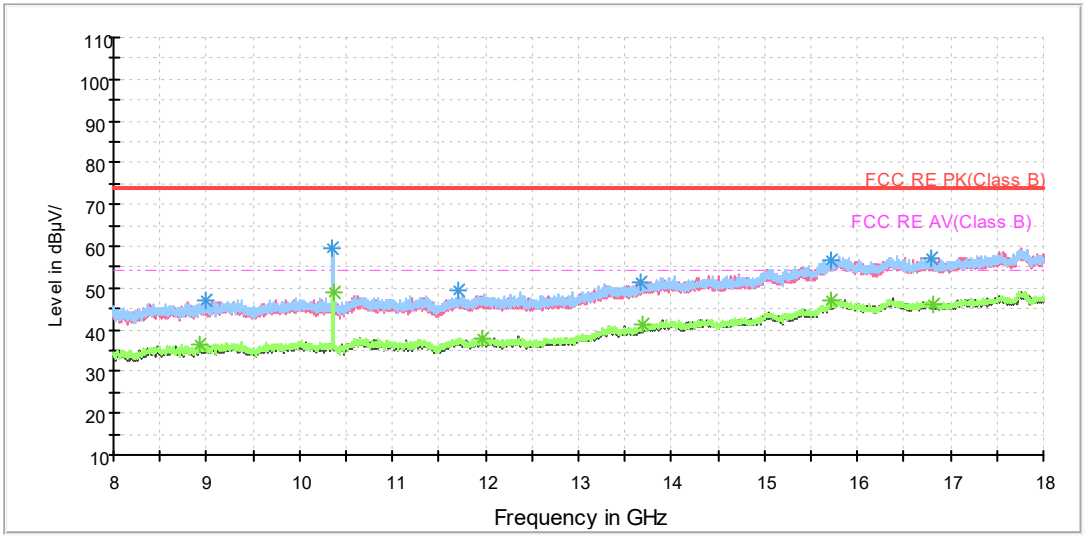
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3485.625000	51.7	100.0	H	52.0	8.2	22.3	74
4085.625000	52.7	100.0	V	217.0	10.0	21.3	74
4674.375000	53.8	200.0	V	54.0	11.1	20.2	74
5986.875000	55.0	100.0	H	314.0	13.8	19.0	74
6567.500000	56.7	100.0	V	31.0	15.0	17.3	74
6830.625000	57.0	200.0	V	346.0	15.4	17.0	74

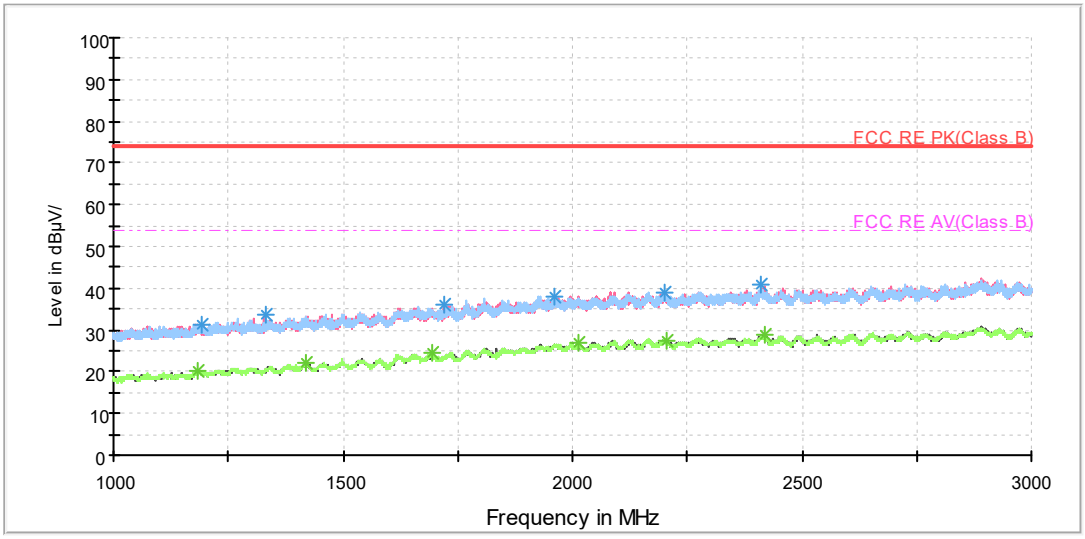
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3507.500000	40.9	200.0	H	355.0	8.3	13.1	54
4130.625000	42.8	100.0	H	201.0	10.1	11.2	54
4801.875000	43.3	100.0	V	324.0	11.4	10.7	54
6013.750000	44.8	200.0	H	332.0	13.8	9.2	54
6469.375000	46.6	200.0	V	16.0	14.8	7.4	54
6793.750000	46.3	200.0	H	332.0	15.4	7.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

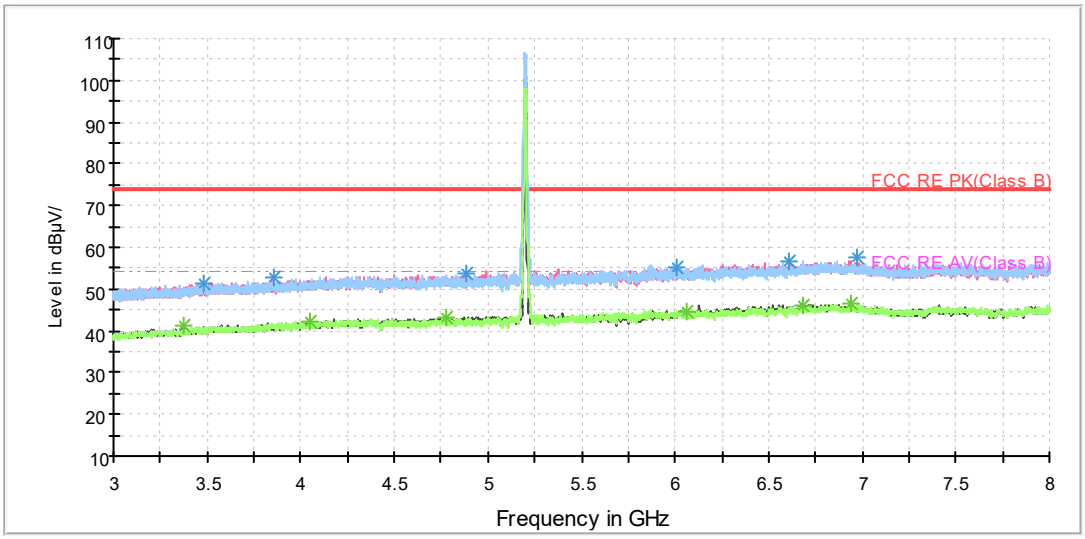
802.11n (HT20) CH40

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

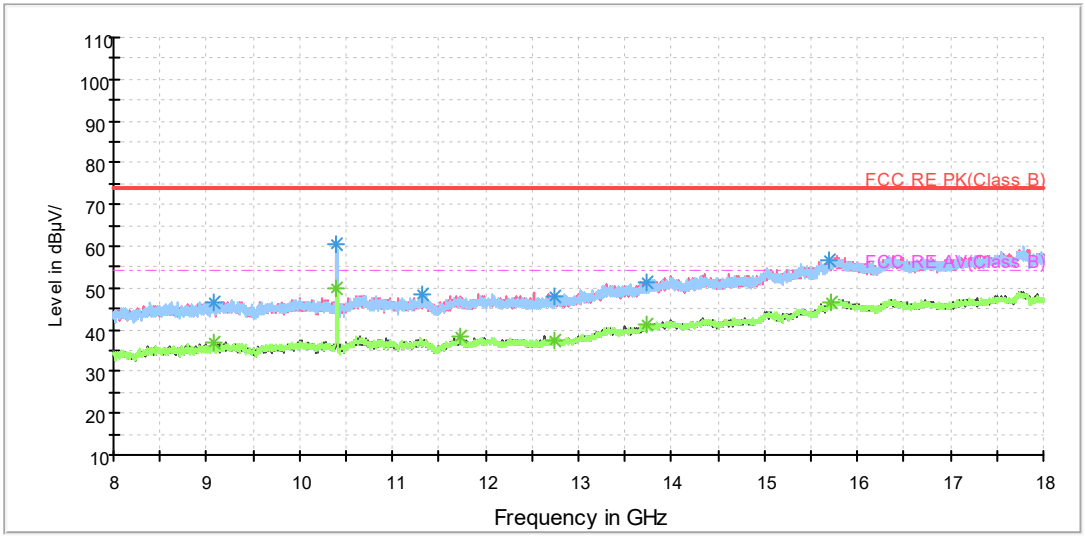
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3483.125000	51.2	100.0	H	119.0	8.2	22.8	74
3856.875000	52.7	200.0	V	261.0	9.1	21.3	74
4889.375000	53.7	200.0	V	4.0	11.5	20.3	74
6013.750000	55.3	200.0	V	333.0	13.8	18.7	74
6608.750000	56.6	200.0	H	245.0	15.1	17.4	74
6973.125000	57.5	200.0	V	0.0	15.4	16.5	74

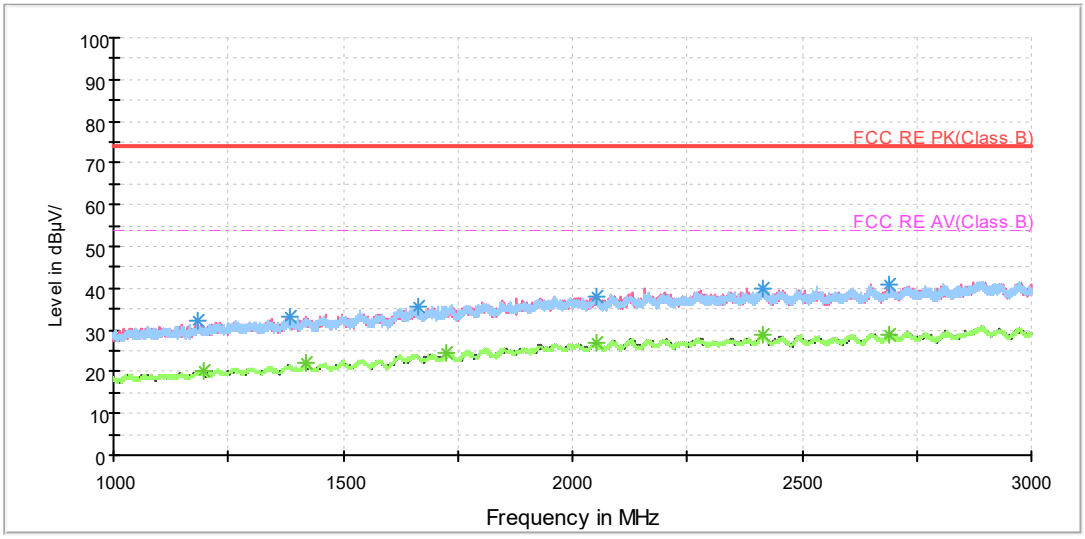
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3373.125000	41.1	100.0	V	172.0	7.8	12.9	54
4052.500000	42.4	200.0	V	214.0	9.9	11.6	54
4778.125000	43.2	200.0	V	237.0	11.3	10.8	54
6062.500000	44.5	100.0	H	192.0	13.8	9.5	54
6687.500000	46.2	100.0	V	271.0	15.3	7.8	54
6935.625000	46.3	200.0	V	17.0	15.4	7.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

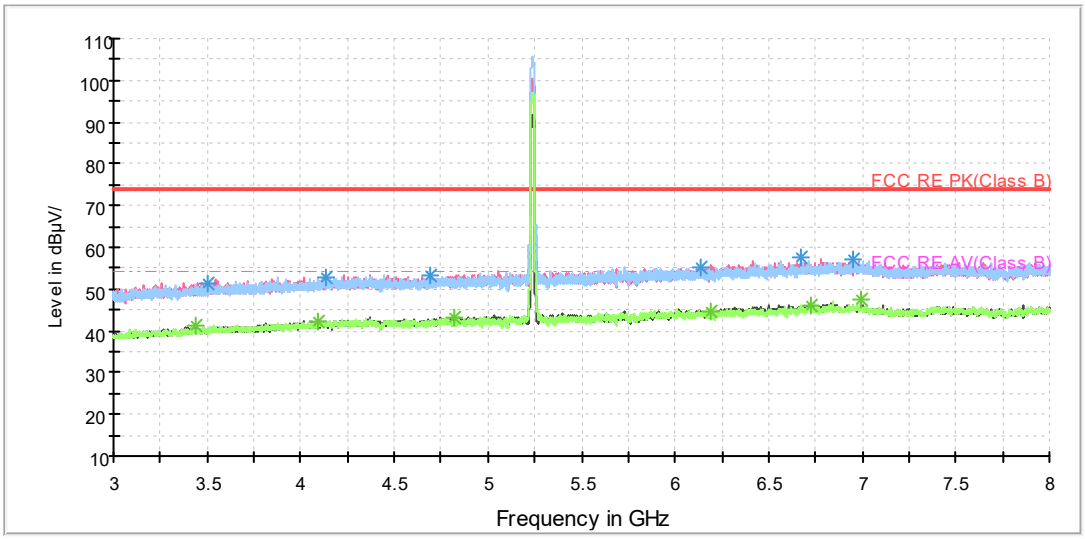
802.11n (HT20) CH48

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

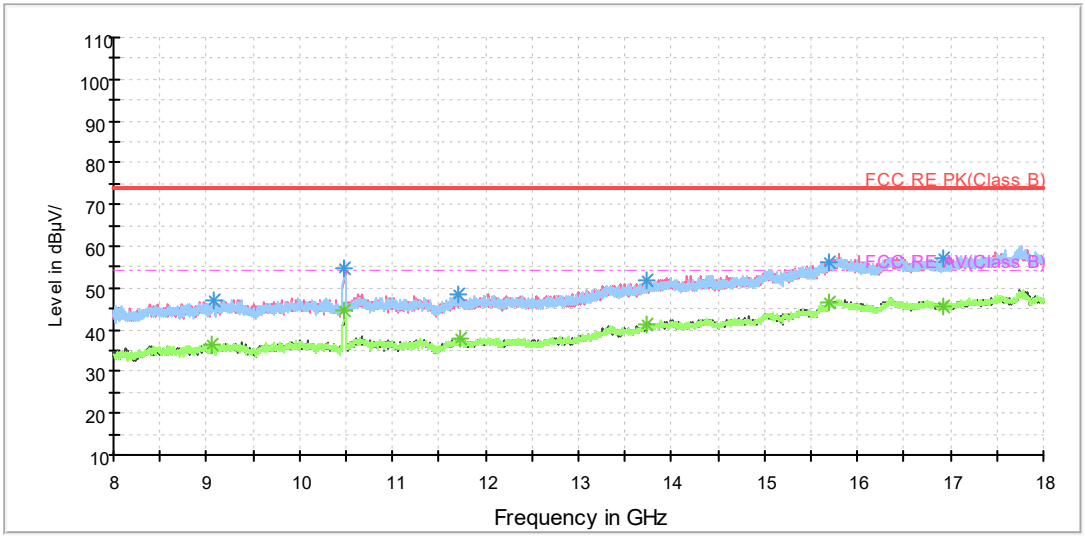
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3504.375000	51.5	200.0	V	17.0	8.3	22.5	74
4133.125000	52.8	100.0	V	50.0	10.1	21.2	74
4695.625000	53.5	100.0	V	113.0	11.1	20.5	74
6134.375000	55.0	200.0	V	32.0	14.0	19.0	74
6668.750000	57.7	200.0	V	176.0	15.3	16.3	74
6951.875000	56.9	100.0	V	97.0	15.4	17.1	74

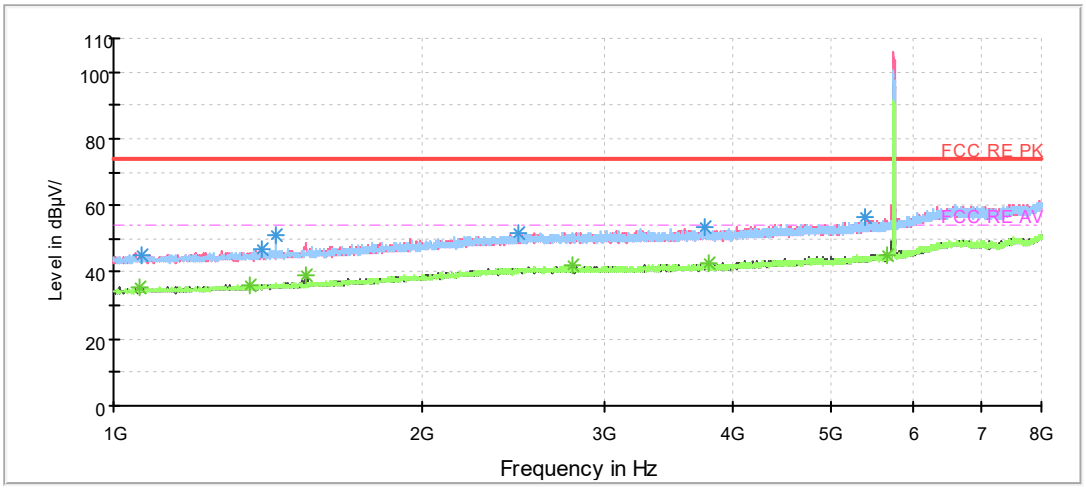
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3436.875000	41.0	200.0	V	2.0	8.0	13.0	54
4090.625000	42.3	200.0	V	92.0	10.0	11.7	54
4823.750000	43.3	200.0	V	243.0	11.4	10.7	54
6189.375000	44.8	200.0	V	2.0	14.1	9.2	54
6721.250000	46.2	200.0	V	32.0	15.3	7.8	54
6988.750000	47.3	100.0	H	79.0	15.5	6.7	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH149

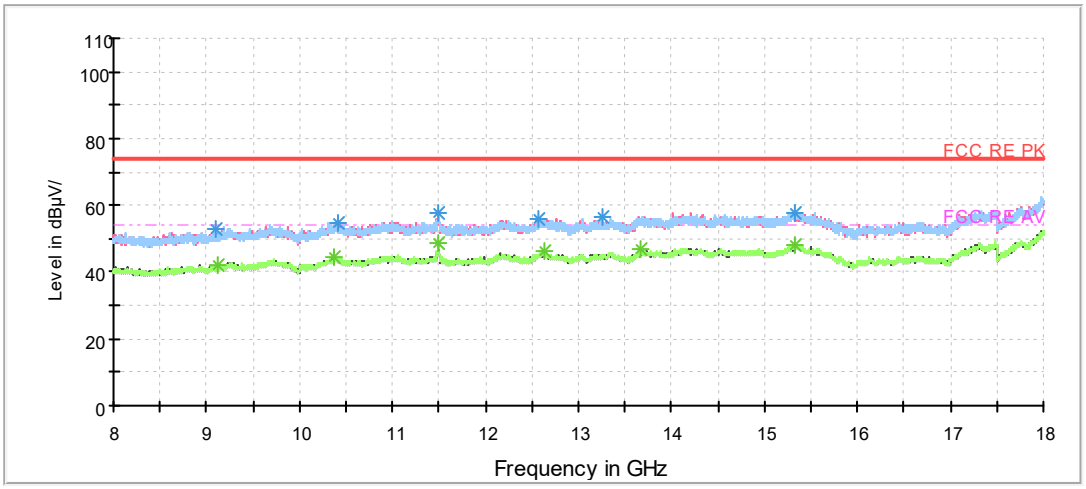
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

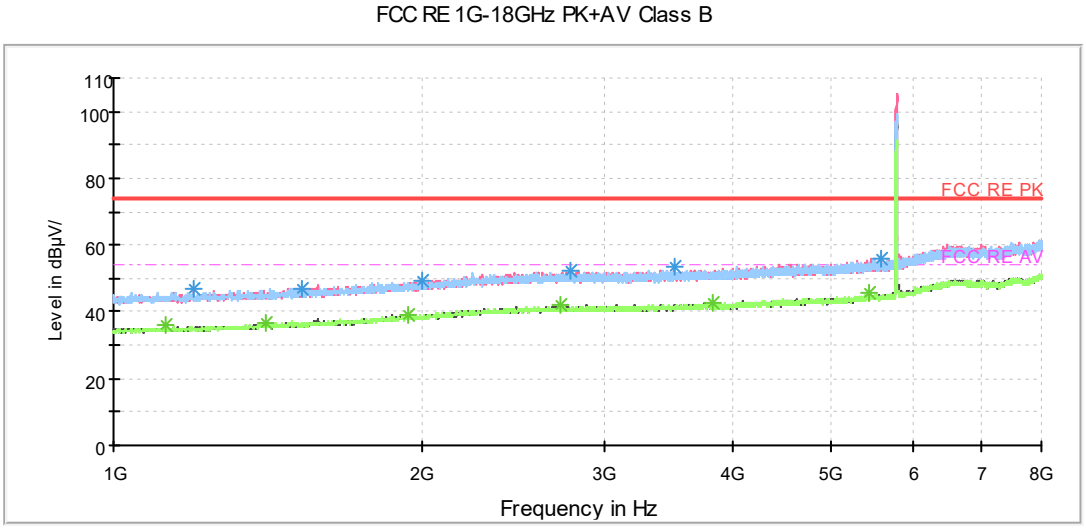
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1065.625000	45.3	100.0	V	358.0	-1.4	28.7	74
1393.750000	46.9	100.0	H	138.0	0.0	27.1	74
1436.625000	50.9	100.0	H	2.0	0.2	23.1	74
2476.125000	51.7	200.0	H	359.0	5.7	22.3	74
3769.375000	53.2	200.0	H	152.0	7.6	20.8	74
5377.625000	56.3	100.0	V	315.0	10.5	17.7	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1057.750000	35.2	100.0	V	288.0	-1.4	18.8	54
1358.750000	36.1	100.0	H	96.0	-0.3	17.9	54
1539.000000	39.4	200.0	V	312.0	0.7	14.6	54
2801.625000	41.9	200.0	V	82.0	6.2	12.1	54
3793.000000	42.5	200.0	H	217.0	7.6	11.5	54
5655.000000	45.2	200.0	V	312.0	11.0	8.8	54

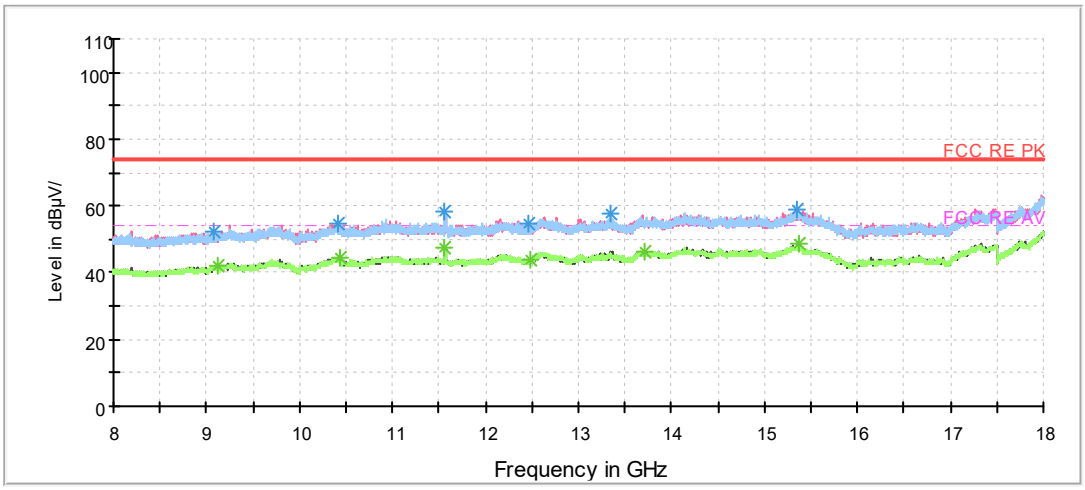
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH157



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

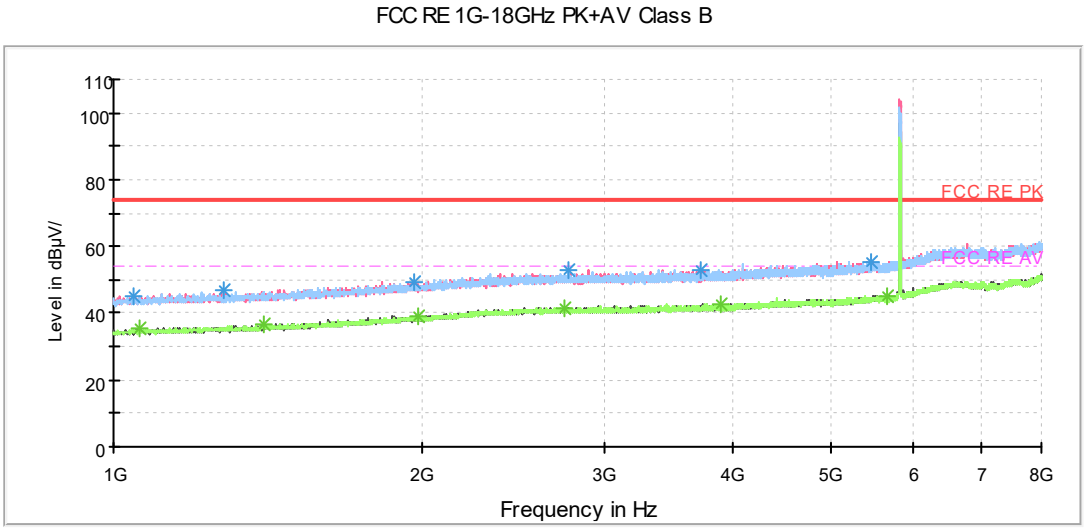
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1197.750000	47.0	200.0	V	16.0	-0.9	27.0	74
1522.375000	47.0	200.0	V	217.0	0.6	27.0	74
1994.875000	49.4	100.0	V	268.0	3.1	24.6	74
2785.000000	52.0	200.0	H	259.0	6.2	22.0	74
3509.500000	53.2	200.0	V	10.0	7.1	20.8	74
5587.625000	55.9	100.0	H	36.0	10.9	18.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1124.250000	35.8	200.0	H	218.0	-1.1	18.2	54
1405.125000	36.7	100.0	V	113.0	0.0	17.3	54
1936.250000	39.0	200.0	H	190.0	2.9	15.0	54
2722.875000	41.8	200.0	H	299.0	6.1	12.2	54
3822.750000	42.8	200.0	H	313.0	7.6	11.2	54
5439.750000	45.5	200.0	V	146.0	10.7	8.5	54

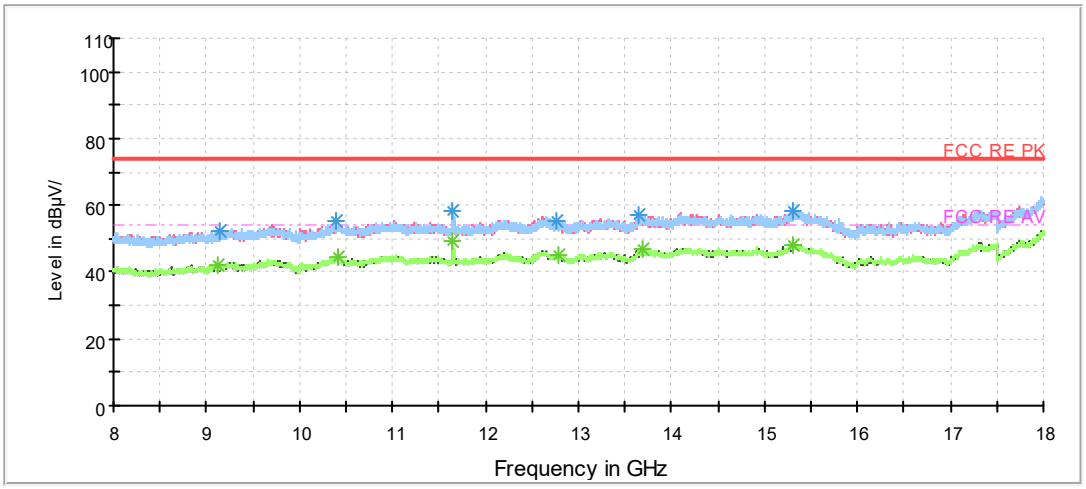
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH165



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1046.375000	45.0	200.0	V	79.0	-1.5	29.0	74
1278.250000	46.7	100.0	H	59.0	-0.6	27.3	74
1960.750000	49.1	100.0	V	232.0	3.0	24.9	74
2777.125000	52.7	200.0	V	26.0	6.3	21.3	74
3726.500000	53.2	200.0	V	79.0	7.5	20.8	74
5465.125000	55.2	100.0	V	149.0	10.7	18.8	74

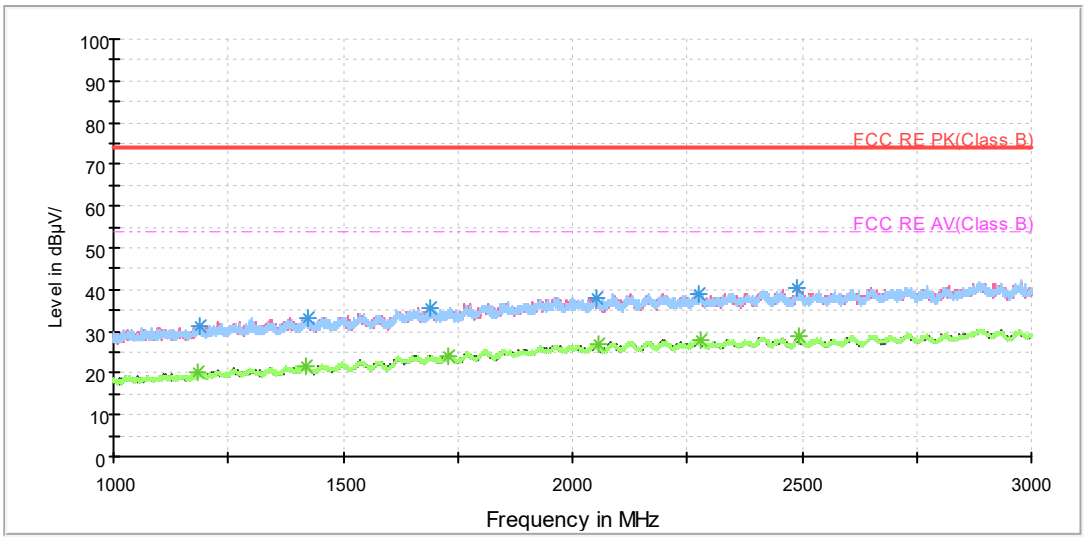
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1060.375000	35.2	200.0	V	79.0	-1.4	18.8	54
1399.000000	36.4	100.0	V	273.0	0.0	17.6	54
1980.875000	39.1	100.0	V	164.0	3.0	14.9	54
2743.875000	41.6	200.0	H	359.0	6.1	12.4	54
3892.750000	42.9	200.0	H	143.0	7.7	11.1	54
5651.500000	45.1	200.0	V	283.0	11.0	8.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

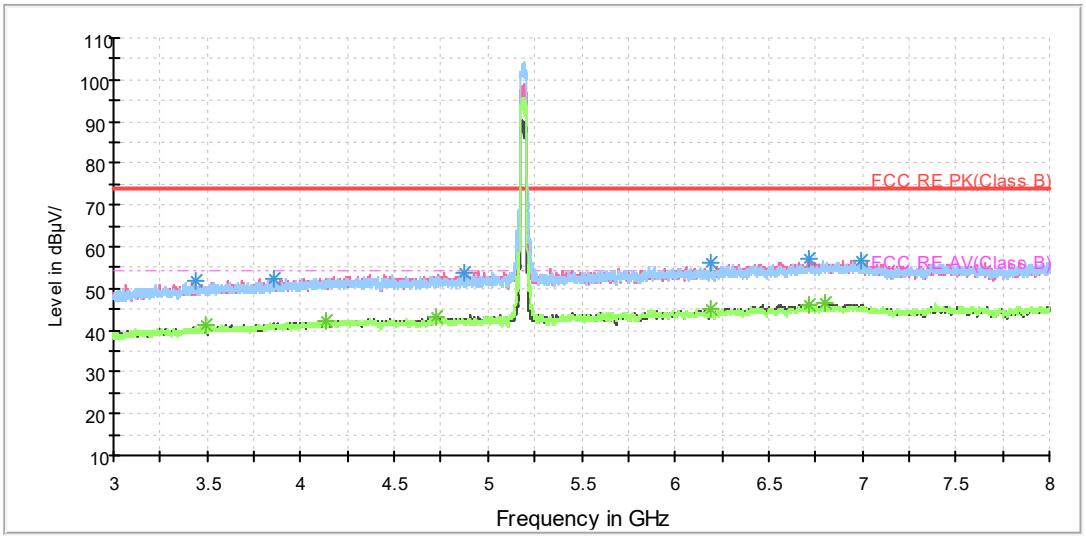
802.11n (HT40) CH38

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

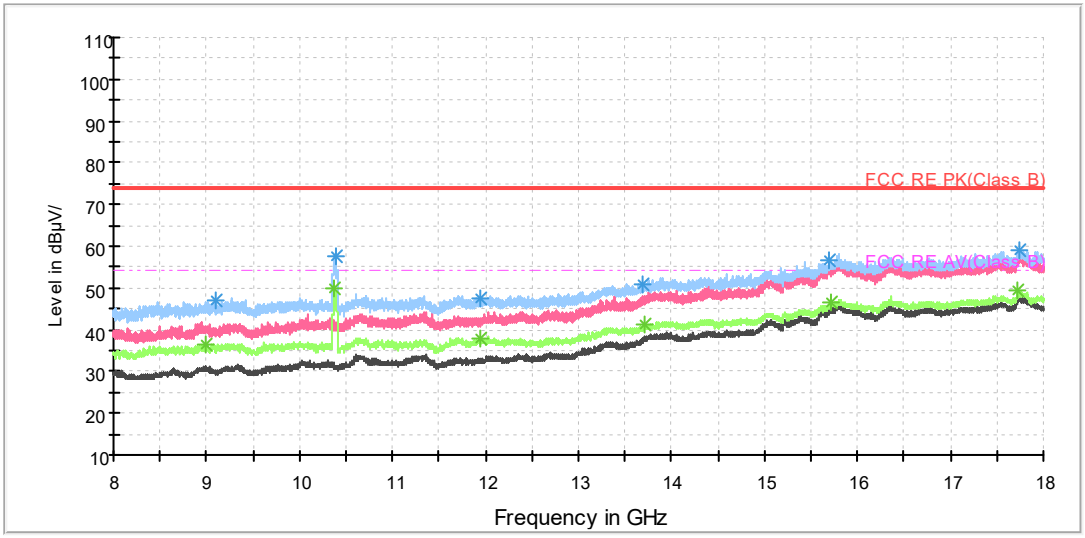
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3435.000000	51.8	200.0	H	252.0	8.0	22.2	74
3855.625000	52.5	200.0	V	288.0	9.1	21.5	74
4873.125000	53.9	100.0	V	315.0	11.5	20.1	74
6195.625000	56.3	100.0	V	237.0	14.1	17.7	74
6710.000000	57.1	100.0	V	284.0	15.3	16.9	74
6994.375000	56.8	100.0	V	170.0	15.5	17.2	74

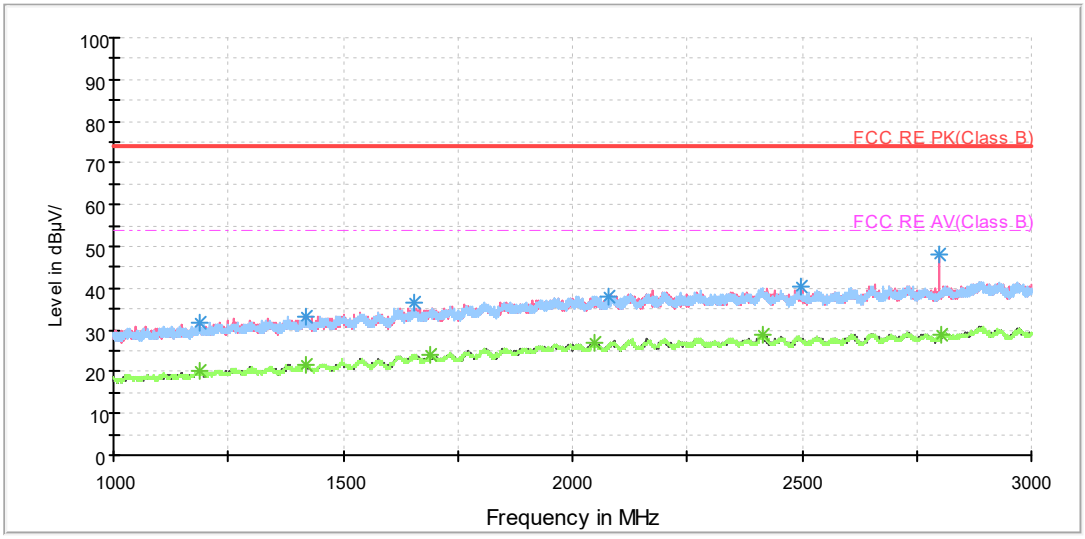
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3490.000000	41.1	200.0	V	37.0	8.3	12.9	54
4138.125000	42.3	200.0	H	343.0	10.1	11.7	54
4726.875000	43.4	200.0	H	221.0	11.2	10.6	54
6191.250000	45.2	200.0	V	144.0	14.1	8.8	54
6715.000000	46.1	200.0	V	242.0	15.3	7.9	54
6805.625000	46.4	200.0	V	152.0	15.4	7.6	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

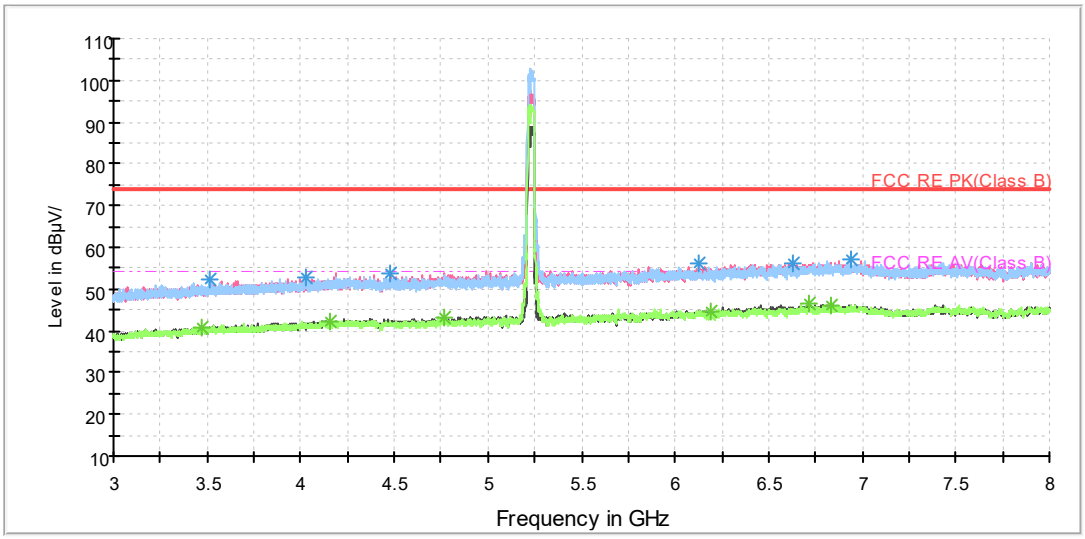
802.11n (HT40) CH46

RE 1G-3GHz PK+AV



Radiates Emission from 1GHz to 3GHz

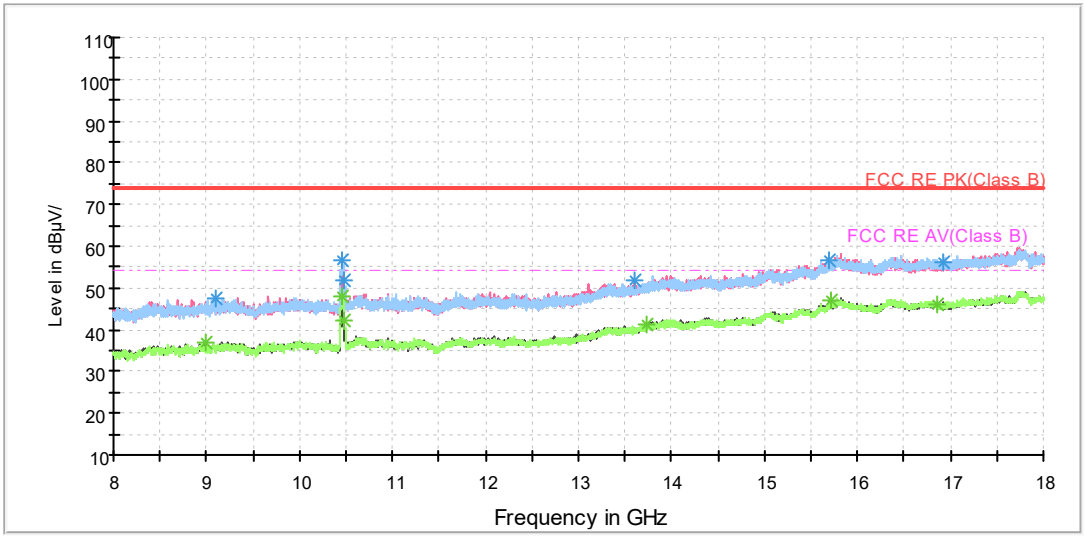
RE 3-18GHz PK+AV 15C



Note: The signal beyond the limit is carrier.

Radiates Emission from 3GHz to 8GHz

RE 3-18GHz PK+AV 15C



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3516.250000	52.2	200.0	H	328.0	8.4	21.8	74
4030.000000	52.7	200.0	H	186.0	9.8	21.3	74
4482.500000	53.6	200.0	V	138.0	10.6	20.4	74
6127.500000	56.4	200.0	H	250.0	14.0	17.6	74
6628.125000	56.0	100.0	V	158.0	15.2	18.0	74
6939.375000	56.9	100.0	V	353.0	15.4	17.1	74

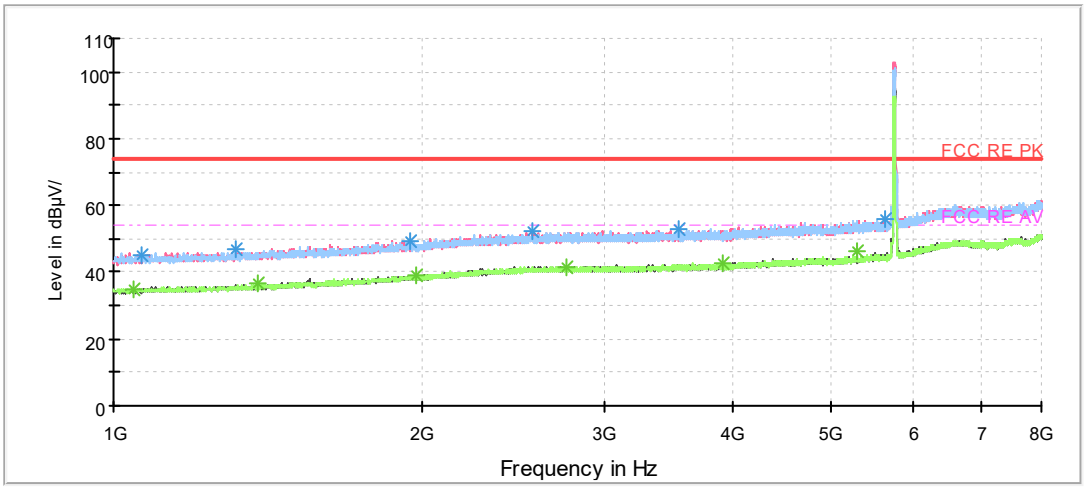
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3473.750000	41.0	200.0	H	112.0	8.2	13.0	54
4152.500000	42.3	200.0	H	297.0	10.1	11.7	54
4767.500000	43.4	200.0	V	147.0	11.3	10.6	54
6190.625000	44.4	200.0	V	15.0	14.1	9.6	54
6714.375000	46.3	200.0	V	69.0	15.3	7.7	54
6835.000000	46.1	100.0	V	268.0	15.4	7.9	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH151

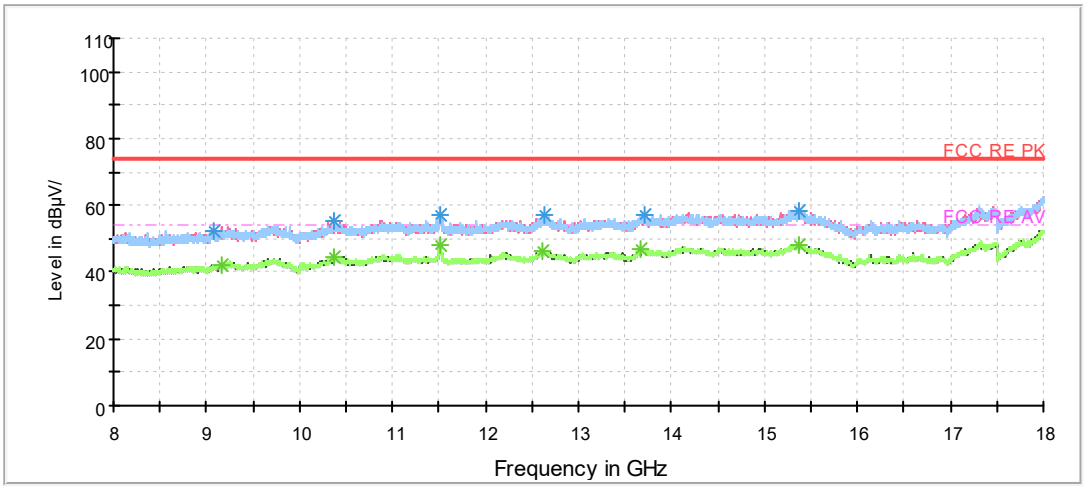
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

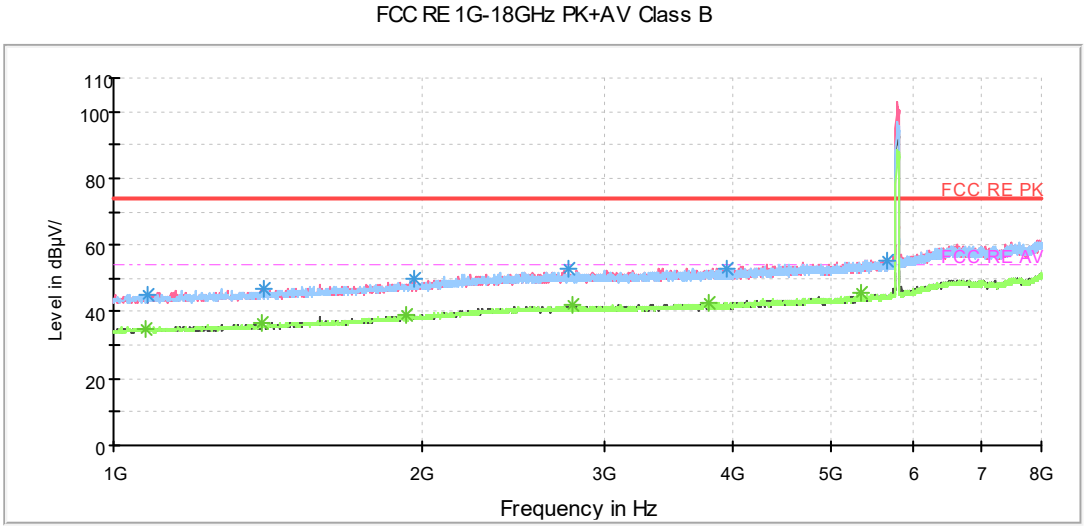
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1063.875000	45.3	200.0	H	29.0	-1.4	28.7	74
1312.375000	47.0	100.0	H	2.0	-0.5	27	74
1945.000000	49.6	200.0	H	345.0	2.9	24.4	74
2560.125000	52.1	100.0	V	295.0	5.8	21.9	74
3551.500000	52.9	100.0	H	73.0	7.2	21.1	74
5634.000000	55.7	200.0	V	66.0	11.0	18.3	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1045.500000	34.9	100.0	V	227.0	-1.5	19.1	54
1383.250000	36.4	200.0	H	351.0	-0.1	17.6	54
1967.750000	39.0	200.0	H	270.0	3.0	15	54
2764.875000	41.6	200.0	H	351.0	6.2	12.4	54
3912.875000	42.7	200.0	H	345.0	7.7	11.3	54
5291.875000	46.3	200.0	V	304.0	10.3	7.7	54

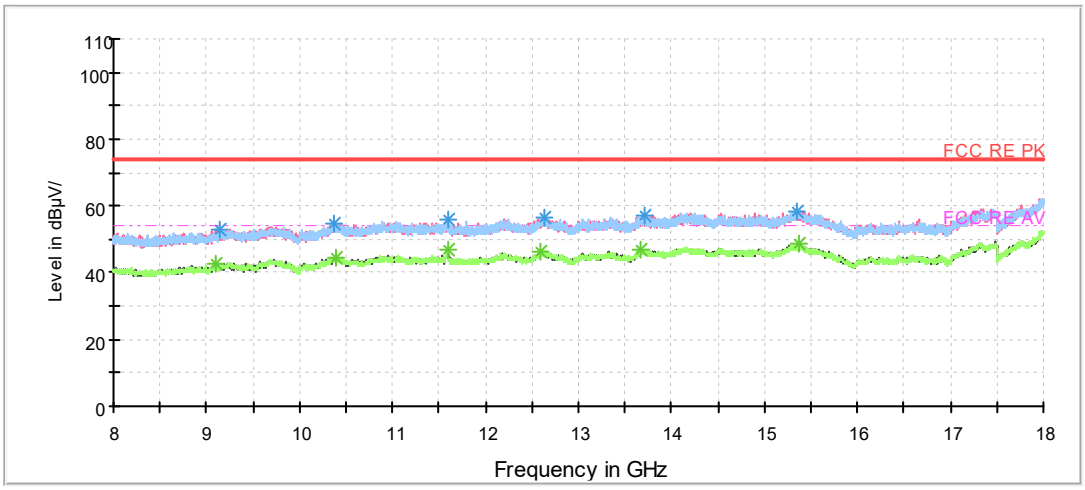
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH159



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

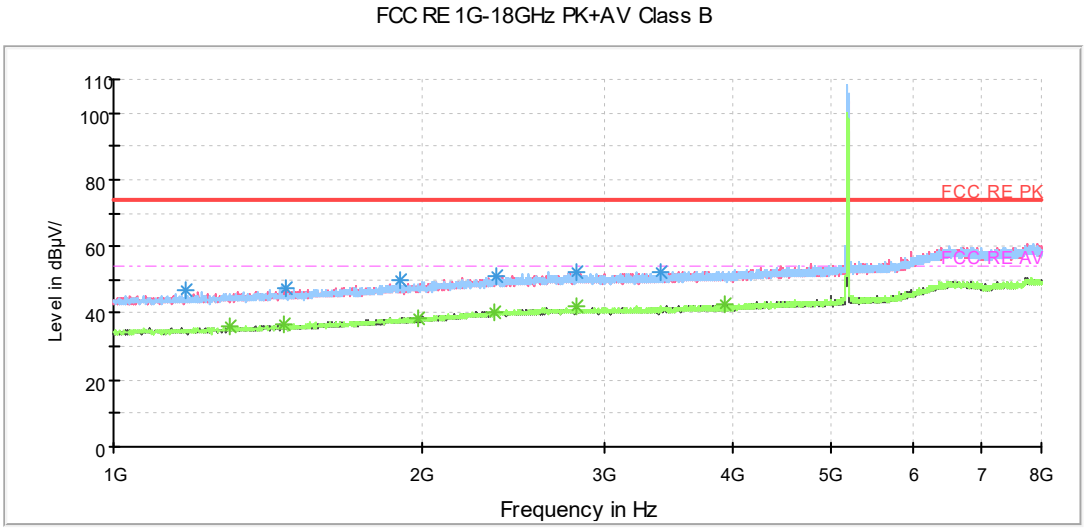
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1080.500000	45.3	200.0	H	356.0	-1.3	28.7	74
1403.375000	46.9	200.0	H	122.0	0.0	27.1	74
1965.125000	49.9	100.0	V	332.0	3.0	24.1	74
2772.750000	52.8	100.0	H	19.0	6.2	21.2	74
3955.750000	53.2	200.0	H	301.0	7.7	20.8	74
5652.375000	55.4	100.0	H	140.0	11.0	18.6	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1075.250000	35.0	200.0	V	0.0	-1.3	19.0	54
1397.250000	36.6	200.0	V	283.0	0.0	17.4	54
1922.250000	38.9	200.0	V	72.0	2.8	15.1	54
2796.375000	41.9	100.0	V	137.0	6.2	12.1	54
3790.375000	42.6	100.0	V	152.0	7.6	11.4	54
5332.125000	45.6	200.0	H	92.0	10.4	8.4	54

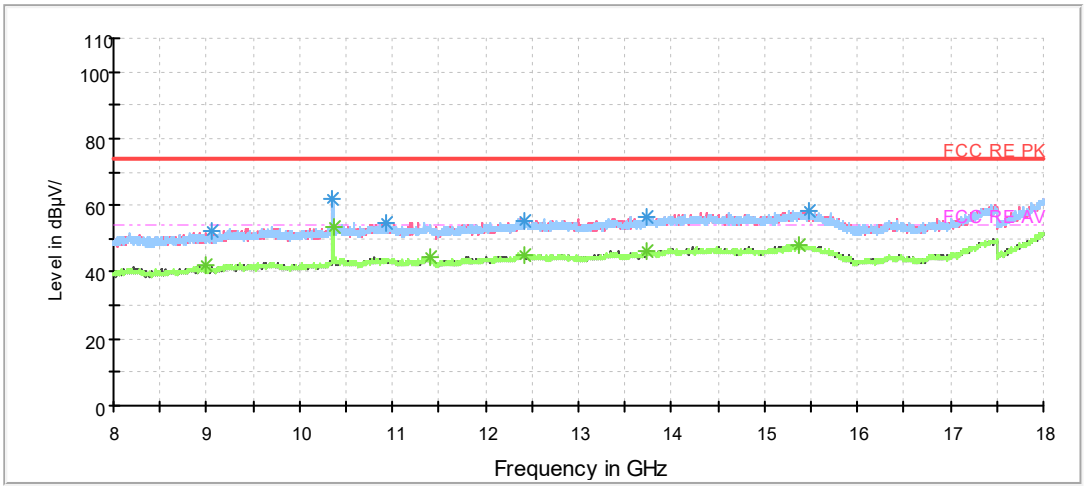
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH36



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

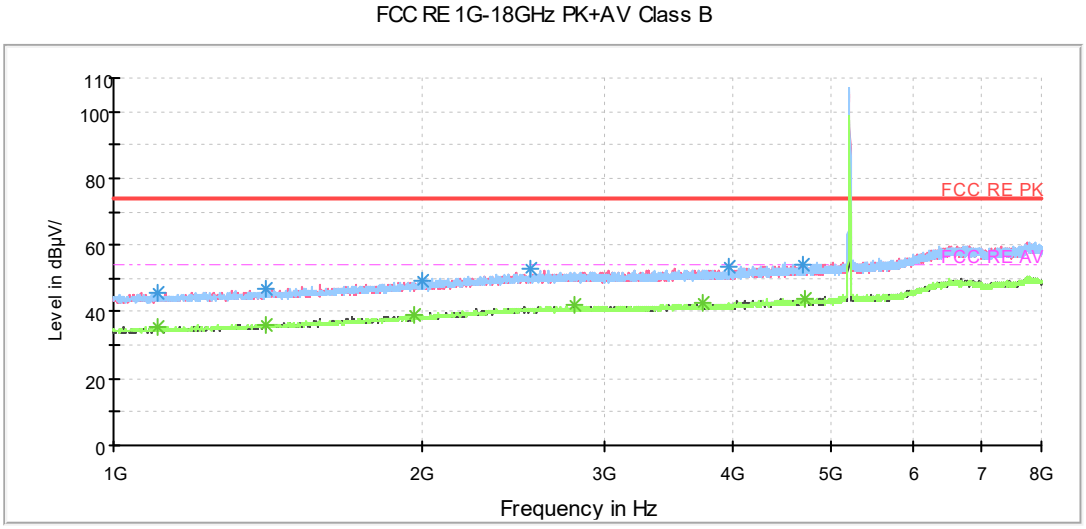
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1175.000000	46.7	100.0	H	77.0	-1.0	27.3	74
1469.000000	47.5	100.0	V	358.0	0.3	26.5	74
1897.750000	49.7	200.0	H	222.0	2.7	24.3	74
2356.250000	50.8	100.0	H	0.0	5.2	23.2	74
2823.500000	52.3	200.0	H	168.0	6.3	21.7	74
3407.125000	52.6	100.0	H	141.0	6.9	21.4	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1294.875000	36.2	100.0	H	5.0	-0.5	17.8	54
1466.375000	36.5	100.0	V	0.0	0.3	17.5	54
1980.000000	38.7	100.0	V	356.0	3.0	15.3	54
2347.500000	40.5	200.0	V	170.0	5.2	13.5	54
2826.125000	42.0	200.0	V	105.0	6.3	12.0	54
3926.000000	42.5	200.0	V	0.0	7.7	11.5	54

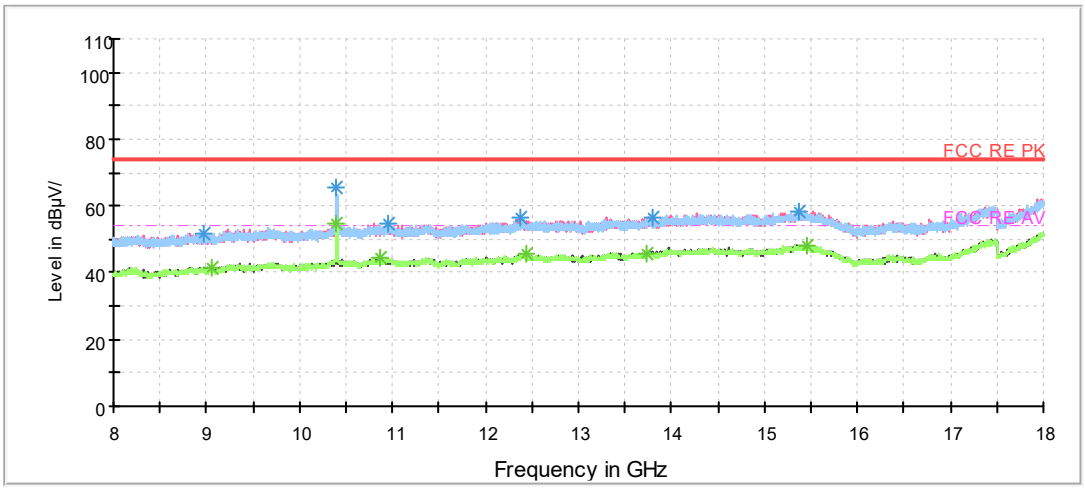
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH40



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

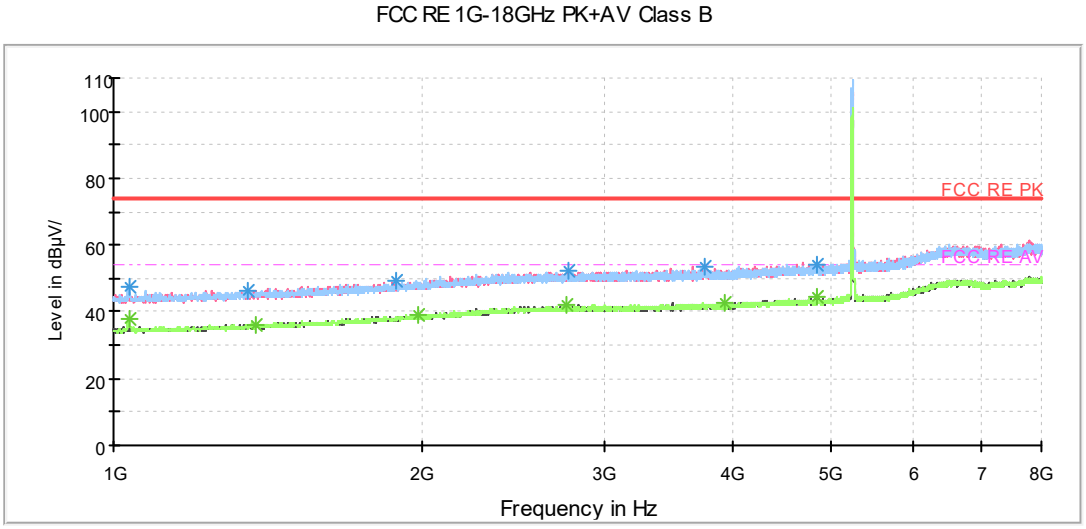
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1105.875000	45.8	200.0	V	13.0	-1.2	28.2	74
1405.125000	46.9	100.0	V	186.0	0.0	27.1	74
1994.875000	49.3	200.0	V	27.0	3.1	24.7	74
2541.750000	52.6	200.0	H	86.0	5.8	21.4	74
3966.250000	53.3	200.0	H	277.0	7.7	20.7	74
4696.875000	53.9	200.0	V	13.0	9.4	20.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1101.500000	35.2	100.0	V	0.0	-1.2	18.8	54
1407.750000	36.2	100.0	H	77.0	0.0	17.8	54
1961.625000	38.8	200.0	V	0.0	3.0	15.2	54
2810.375000	42.1	200.0	V	1.0	6.3	11.9	54
3744.875000	42.6	200.0	H	327.0	7.5	11.4	54
4713.500000	43.8	100.0	V	131.0	9.4	10.2	54

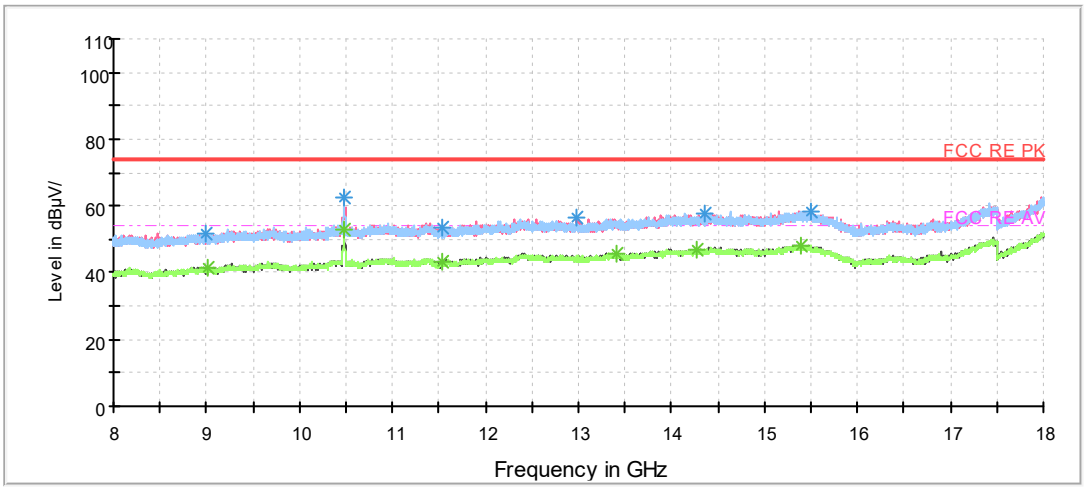
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH48



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1035.000000	47.7	200.0	H	63.0	-1.6	26.3	74
1350.000000	46.4	100.0	V	326.0	-0.3	27.6	74
1885.500000	49.2	200.0	H	262.0	2.6	24.8	74
2777.125000	52.0	100.0	V	86.0	6.3	22.0	74
3770.250000	53.8	100.0	H	147.0	7.6	20.2	74
4829.000000	54.2	100.0	V	283.0	9.6	19.8	74

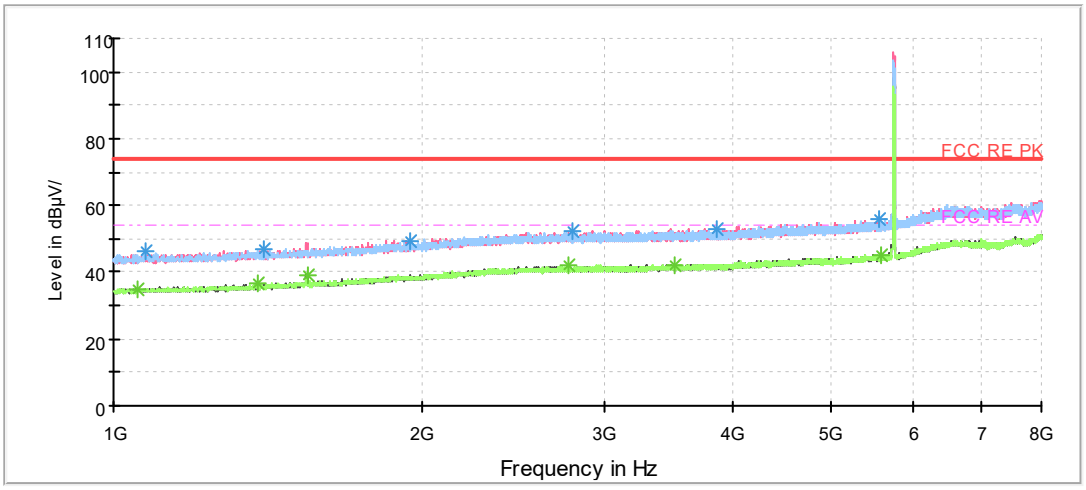
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1035.875000	37.6	200.0	H	63.0	-1.6	16.4	54
1979.125000	39.0	100.0	H	357.0	3.0	15.0	54
2761.375000	41.8	100.0	V	0.0	6.2	12.2	54
3933.875000	42.8	100.0	V	230.0	7.7	11.2	54
1372.750000	36.1	200.0	V	22.0	-0.2	17.9	54
4843.875000	44.2	100.0	V	165.0	9.6	9.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH149

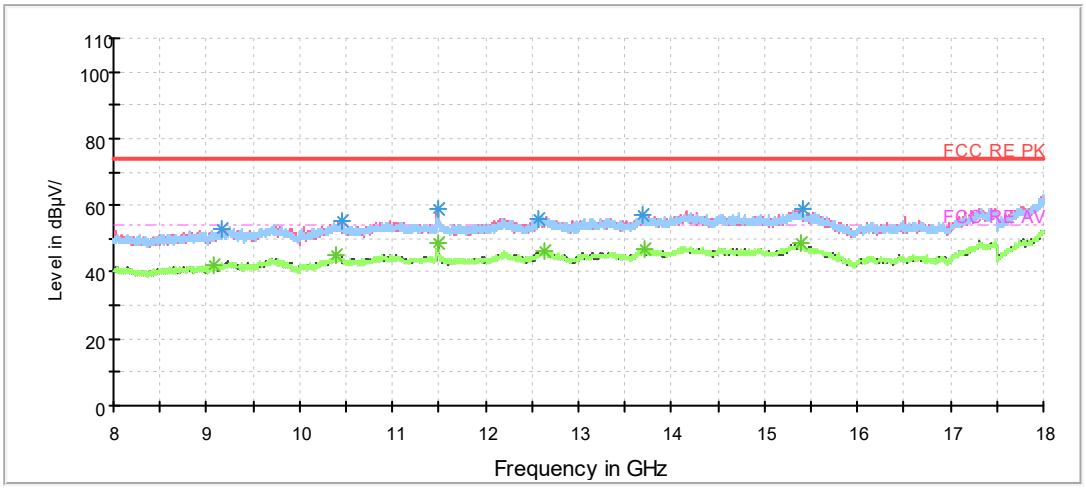
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1075.250000	46.0	100.0	H	154.0	-1.3	28.0	74
1402.500000	46.9	200.0	V	125.0	0.0	27.1	74
1945.000000	49.3	200.0	H	254.0	2.9	24.7	74
2801.625000	52.4	100.0	H	0.0	6.2	21.6	74
3872.625000	52.7	100.0	H	141.0	7.6	21.3	74
5562.250000	55.9	100.0	H	127.0	10.8	18.1	74

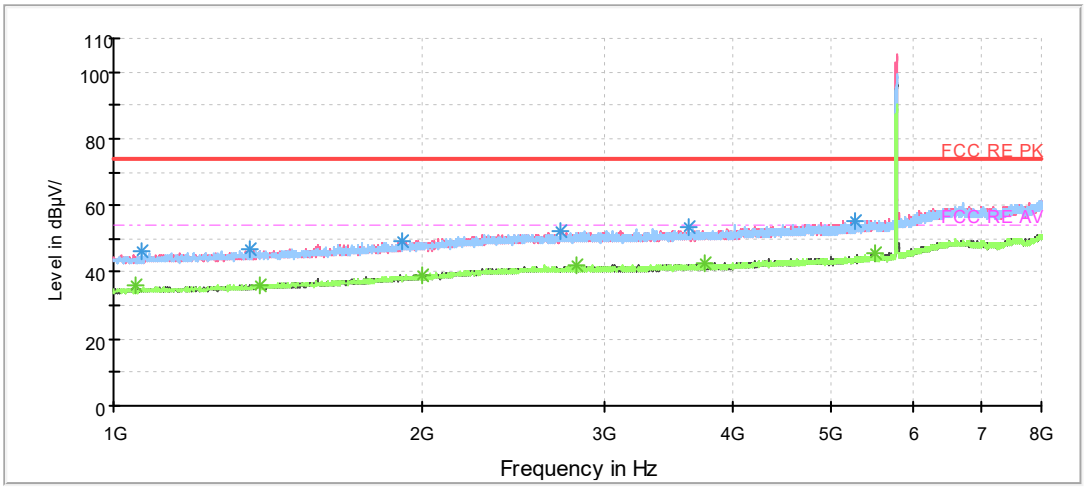
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1055.125000	35.1	100.0	V	206.0	-1.5	18.9	54
1383.250000	36.5	100.0	H	29.0	-0.1	17.5	54
1542.500000	39.1	200.0	V	332.0	0.7	14.9	54
2773.625000	41.9	200.0	H	226.0	6.2	12.1	54
3523.500000	42.4	100.0	H	349.0	7.2	11.6	54
5578.875000	45.2	200.0	V	83.0	10.9	8.8	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH157

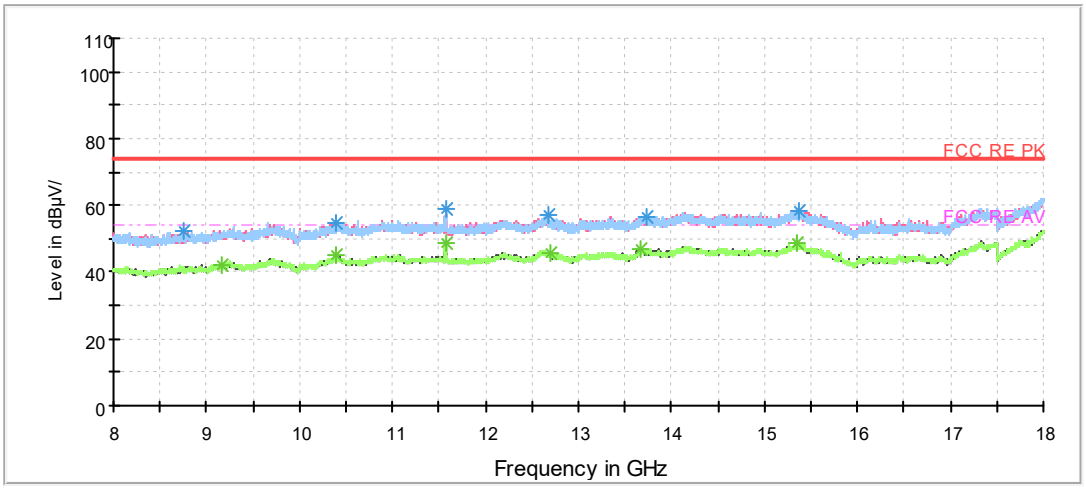
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

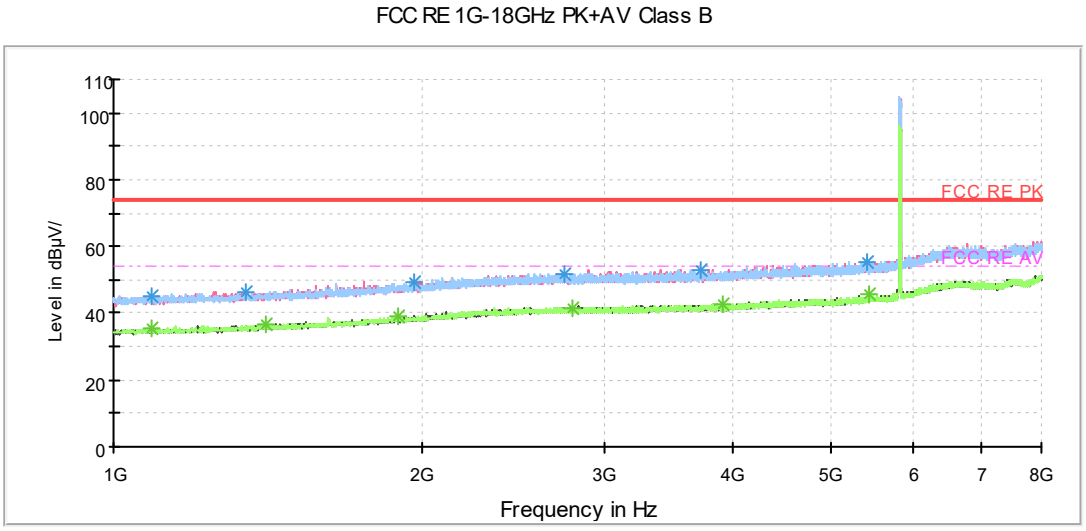
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1066.500000	46.3	200.0	H	304.0	-1.4	27.7	74
1357.000000	46.8	200.0	V	268.0	-0.3	27.2	74
1906.500000	49.2	100.0	H	112.0	2.8	24.8	74
2722.875000	52.1	100.0	V	341.0	6.1	21.9	74
3621.500000	53.2	100.0	V	304.0	7.3	20.8	74
5264.750000	55.5	100.0	H	140.0	10.3	18.5	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1049.000000	36.1	100.0	H	238.0	-1.5	17.9	54
1390.250000	36.2	100.0	H	0.0	0.0	17.8	54
1994.000000	39.2	200.0	H	194.0	3.1	14.8	54
2819.125000	42.0	100.0	H	44.0	6.3	12.0	54
3764.125000	42.8	100.0	V	0.0	7.6	11.2	54
5515.000000	45.6	100.0	V	304.0	10.8	8.4	54

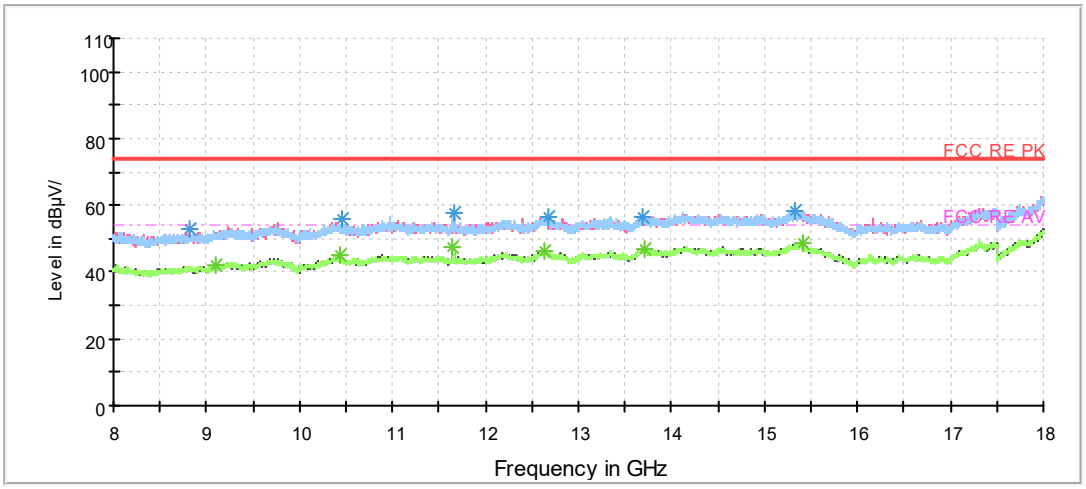
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT20) CH165



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

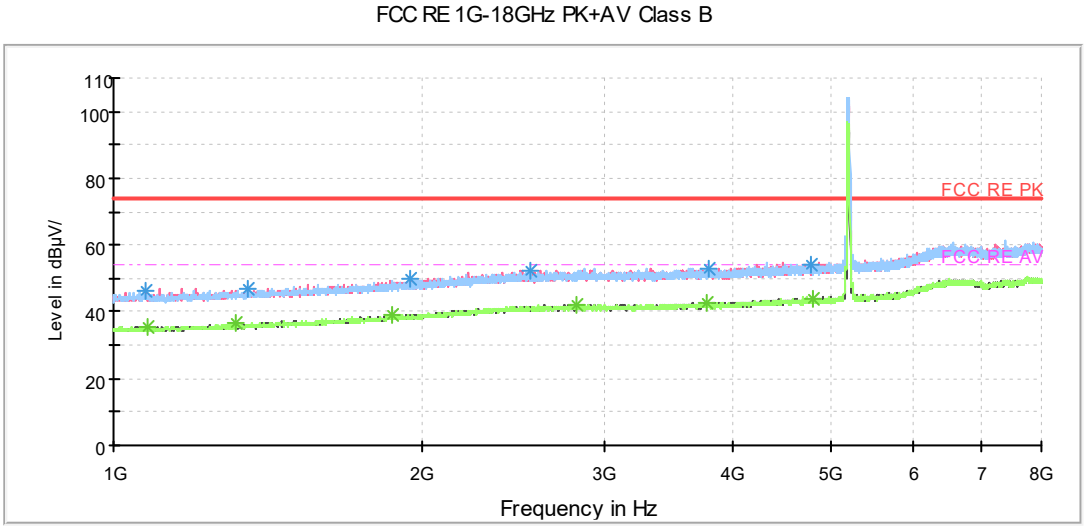
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1090.125000	45.3	100.0	H	0.0	-1.2	28.7	74
1342.125000	46.4	200.0	V	196.0	-0.3	27.6	74
1963.375000	49.3	200.0	V	182.0	3.0	24.7	74
2752.625000	52.0	100.0	V	0.0	6.2	22	74
3728.250000	53.0	100.0	H	222.0	7.5	21	74
5411.750000	55.4	200.0	H	358.0	10.6	18.6	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1089.250000	35.4	100.0	V	0.0	-1.3	18.6	54
1409.500000	36.4	200.0	V	169.0	0.0	17.6	54
1891.625000	39.2	100.0	H	0.0	2.7	14.8	54
2799.000000	41.7	200.0	V	86.0	6.2	12.3	54
3909.375000	43.0	100.0	V	95.0	7.7	11	54
5444.125000	45.4	100.0	H	12.0	10.7	8.6	54

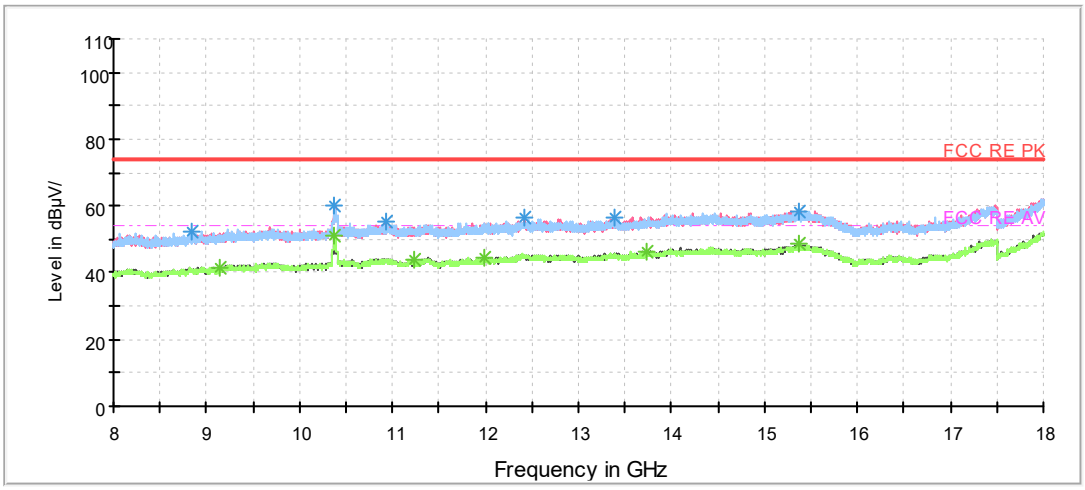
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT40) CH38



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

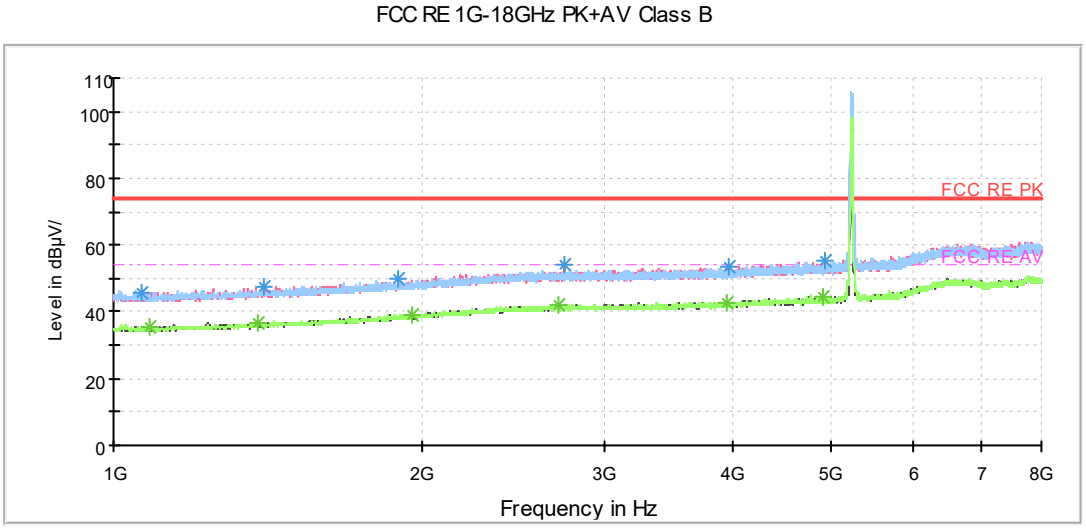
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1076.125000	46.4	100.0	V	358.0	-1.3	27.6	74
1352.625000	47.2	200.0	H	354.0	-0.3	26.8	74
1945.000000	49.7	200.0	V	322.0	2.9	24.3	74
2540.875000	52.3	100.0	H	2.0	5.8	21.7	74
3800.000000	53.1	200.0	H	268.0	7.6	20.9	74
4770.375000	54.0	100.0	H	182.0	9.5	20.0	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1077.875000	35.5	200.0	V	72.0	-1.3	18.5	54
1317.625000	36.6	100.0	V	358.0	-0.4	17.4	54
1868.875000	39.3	200.0	H	108.0	2.6	14.7	54
2823.500000	42.1	100.0	H	21.0	6.3	11.9	54
3784.250000	42.8	200.0	H	331.0	7.6	11.2	54
4801.000000	44.2	200.0	V	0.0	9.5	9.8	54

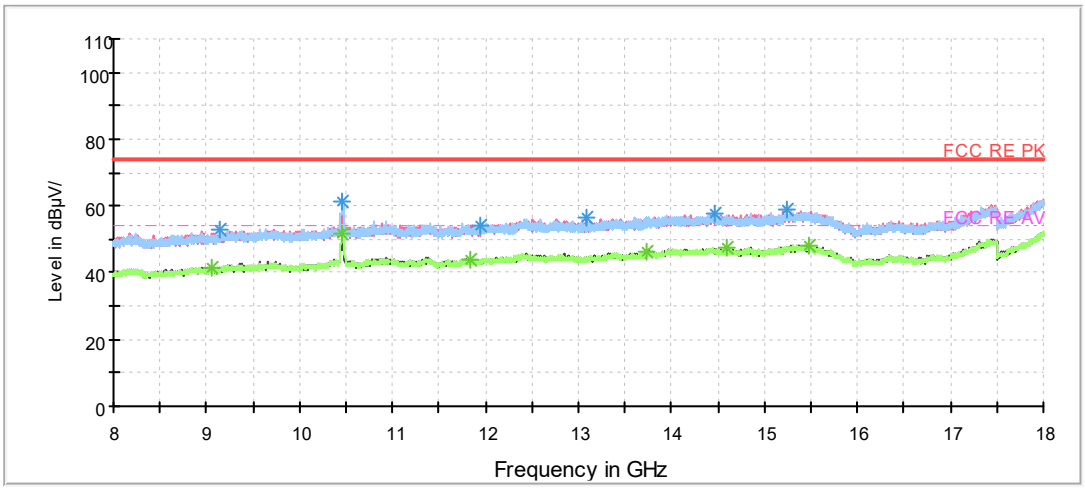
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT40) CH46



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1063.000000	45.5	100.0	V	0.0	-1.4	28.5	74
1398.125000	47.3	100.0	V	100.0	0.0	26.7	74
1890.750000	49.9	200.0	H	188.0	2.7	24.1	74
2750.000000	54.0	200.0	V	350.0	6.1	20	74
3971.500000	53.6	100.0	V	221.0	7.7	20.4	74
4926.125000	55.4	100.0	H	97.0	9.6	18.6	74

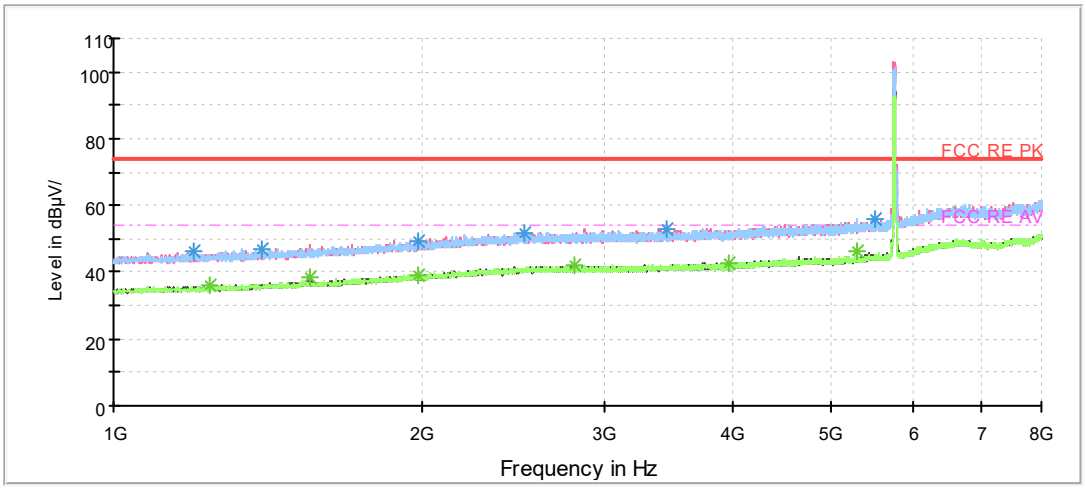
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1082.250000	35.5	200.0	V	283.0	-1.3	18.5	54
1381.500000	36.9	200.0	V	86.0	-0.1	17.1	54
1952.000000	39.3	100.0	V	188.0	2.9	14.7	54
2712.375000	42.2	200.0	V	0.0	6.1	11.8	54
3946.125000	42.9	200.0	V	118.0	7.7	11.1	54
4907.750000	44.8	200.0	H	352.0	9.6	9.2	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT40) CH151

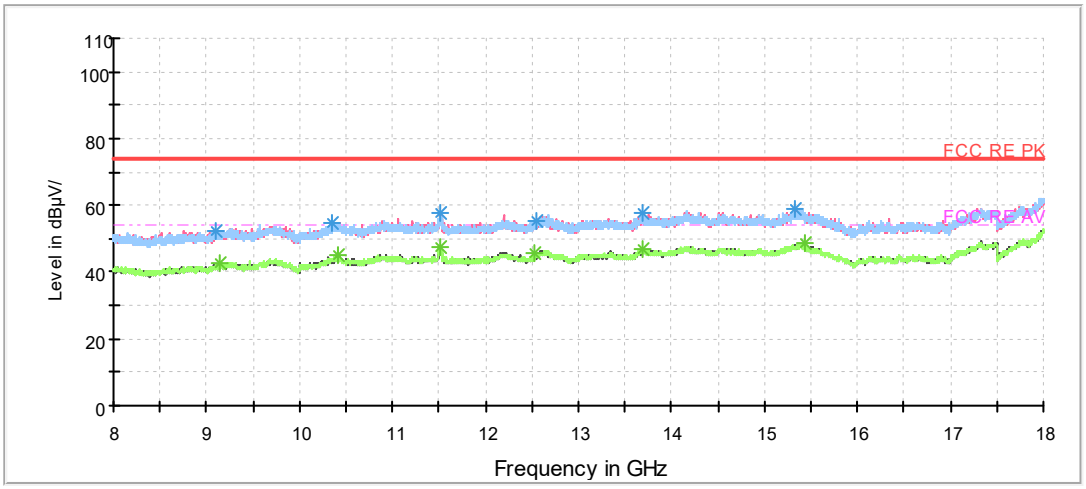
FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

FCC RE 1G-18GHz PK+AV Class B



Radiates Emission from 8GHz to 18GHz

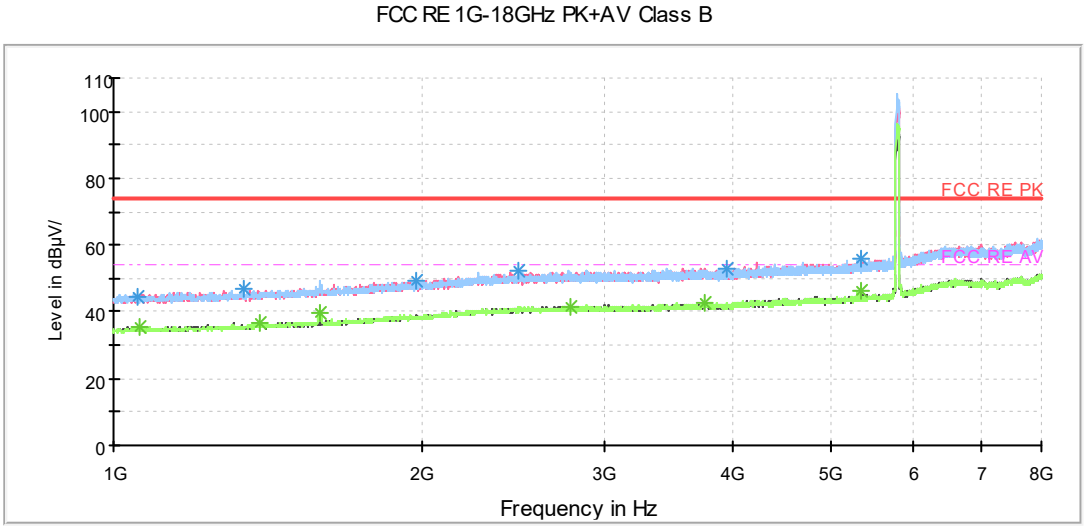
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1194.250000	46.3	100.0	V	150.0	-0.9	27.7	74
1392.000000	46.8	100.0	H	268.0	0.0	27.2	74
1979.125000	49.5	100.0	H	4.0	3.0	24.5	74
2512.000000	51.9	100.0	V	356.0	5.7	22.1	74
3454.375000	53.1	100.0	V	20.0	7.0	20.9	74
5521.125000	55.9	200.0	H	336.0	10.8	18.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1242.375000	36.2	200.0	H	256.0	-0.8	17.8	54
1549.500000	38.3	200.0	V	330.0	0.8	15.7	54
1975.625000	39.2	200.0	H	297.0	3.0	14.8	54
2803.375000	42.0	100.0	V	29.0	6.2	12	54
3976.750000	42.7	100.0	V	340.0	7.8	11.3	54
5292.750000	46.4	200.0	H	86.0	10.3	7.6	54

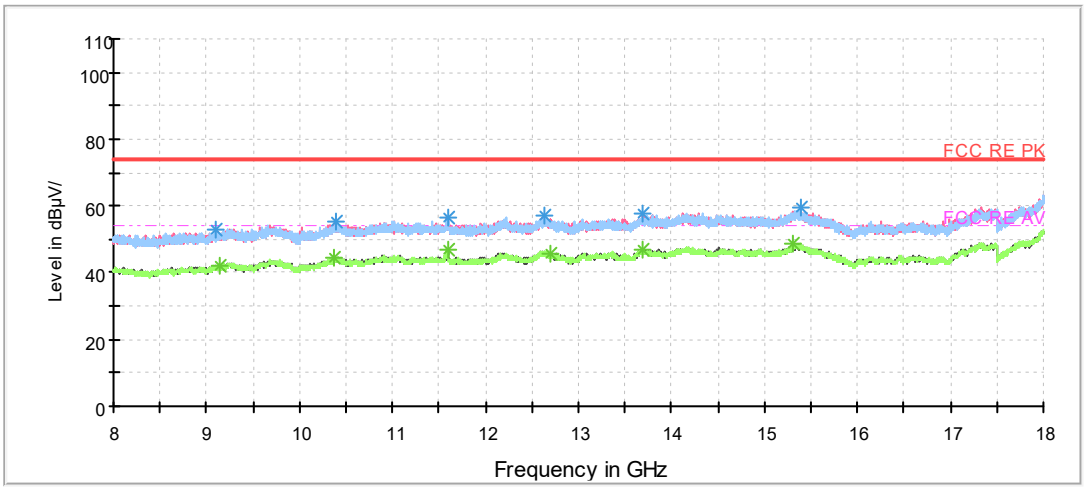
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT40) CH159



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

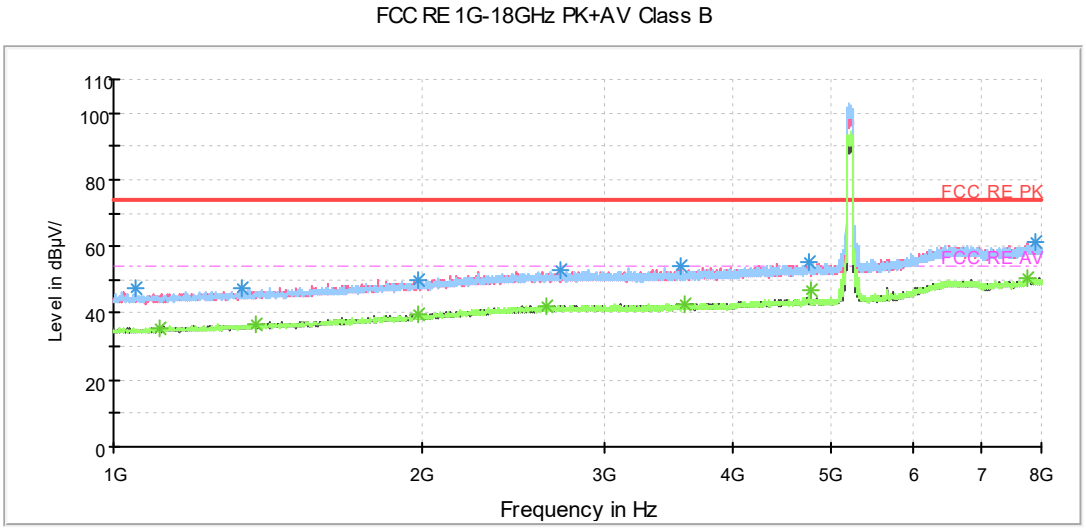
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1053.375000	44.6	200.0	V	0.0	-1.5	29.4	74
1340.375000	46.7	200.0	H	107.0	-0.3	27.3	74
1972.125000	49.4	100.0	H	20.0	3.0	24.6	74
2478.750000	52.1	200.0	H	351.0	5.7	21.9	74
3954.875000	53.0	200.0	V	19.0	7.7	21	74
5332.125000	55.7	200.0	H	191.0	10.4	18.3	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1059.500000	36.2	200.0	V	207.0	-1.4	17.8	54
1386.750000	38.3	200.0	H	270.0	0.0	15.7	54
1586.250000	39.2	200.0	H	78.0	1.0	14.8	54
2778.875000	42	200.0	H	121.0	6.3	12	54
3760.625000	42.7	100.0	V	257.0	7.6	11.3	54
5332.125000	46.4	200.0	H	191.0	10.4	7.6	54

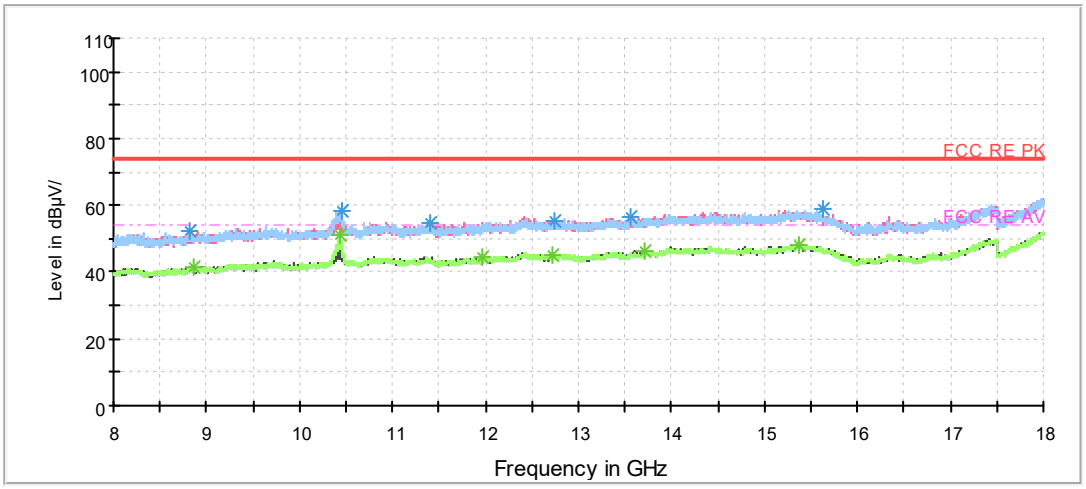
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT80) CH42



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

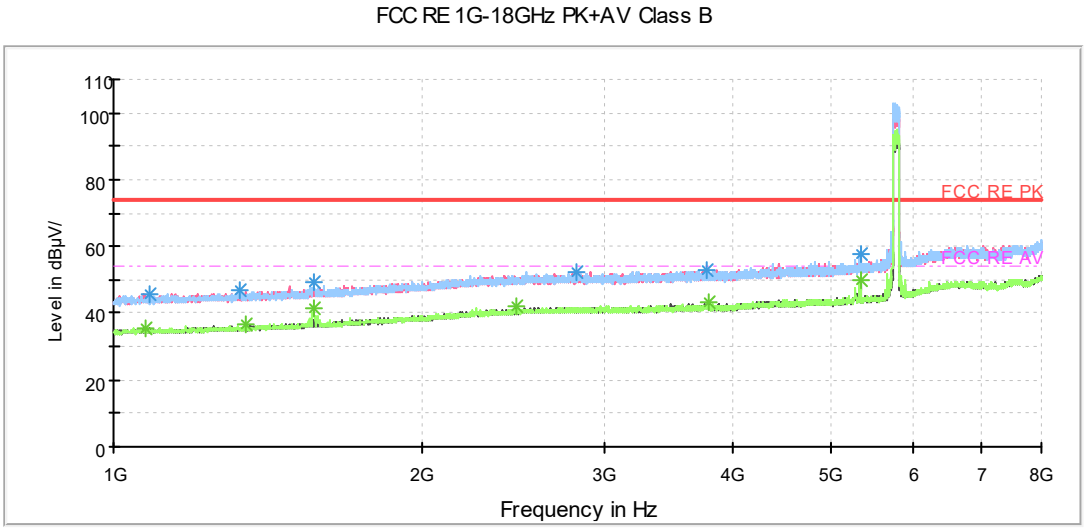
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1050.750000	47.8	200.0	H	353.0	-1.5	26.2	74
1334.250000	47.7	100.0	H	323.0	-0.3	26.3	74
1977.375000	49.9	200.0	V	5.0	3.0	24.1	74
2722.875000	52.6	100.0	H	142.0	6.1	21.4	74
3571.625000	53.8	200.0	V	56.0	7.2	20.2	74
4761.625000	55.4	200.0	H	229.0	9.5	18.6	74
7908.125000	61.1	100.0	V	0.0	17.3	12.9	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1106.750000	35.6	100.0	V	168.0	-1.2	18.4	54
1373.625000	36.8	200.0	V	0.0	-0.1	17.2	54
1979.125000	39.6	200.0	V	0.0	3.0	14.4	54
2643.250000	42.2	200.0	V	195.0	6.0	11.8	54
3597.000000	42.9	100.0	V	168.0	7.2	11.1	54
4766.000000	46.9	200.0	H	49.0	9.5	7.1	54
7761.125000	50.6	100.0	V	244.0	16.7	3.4	54

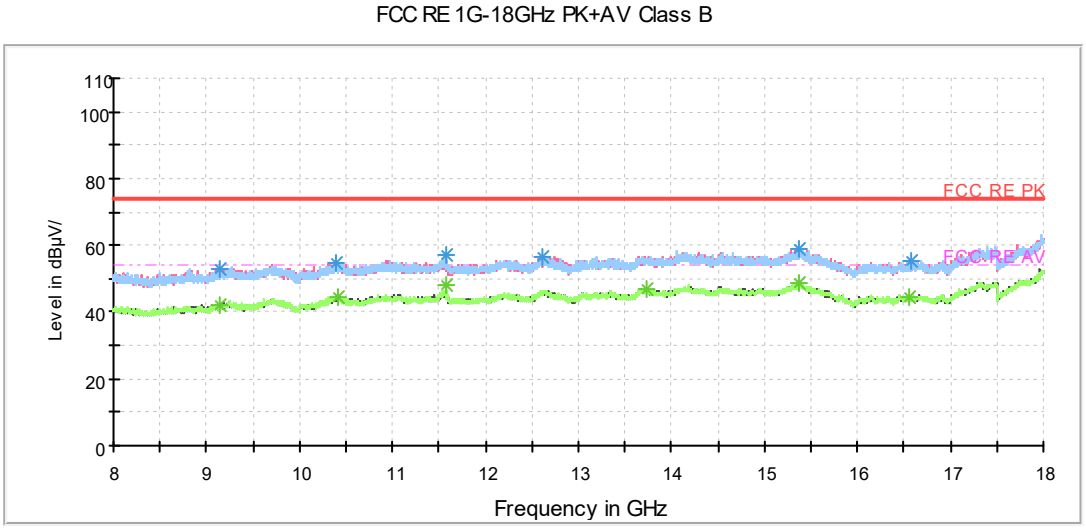
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT80) CH155



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1084.875000	45.6	100.0	V	342.0	-1.3	28.4	74
1329.875000	46.7	100.0	H	70.0	-0.4	27.3	74
1568.750000	49.4	200.0	H	79.0	0.9	24.6	74
2820.875000	52.3	200.0	H	357.0	6.3	21.7	74
3774.625000	52.9	200.0	H	151.0	7.6	21.1	74
5331.250000	57.9	200.0	H	63.0	10.4	16.1	74

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1075.250000	35.4	100.0	V	356.0	-1.3	18.6	54
1346.500000	36.5	200.0	V	100.0	-0.3	17.5	54
1567.000000	41.4	200.0	H	79.0	0.9	12.6	54
2463.875000	41.8	100.0	V	125.0	5.6	12.2	54
3795.625000	43.0	100.0	V	318.0	7.6	11	54
5331.250000	49.7	200.0	H	63.0	10.4	4.3	54

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

5.6. Conducted Emission

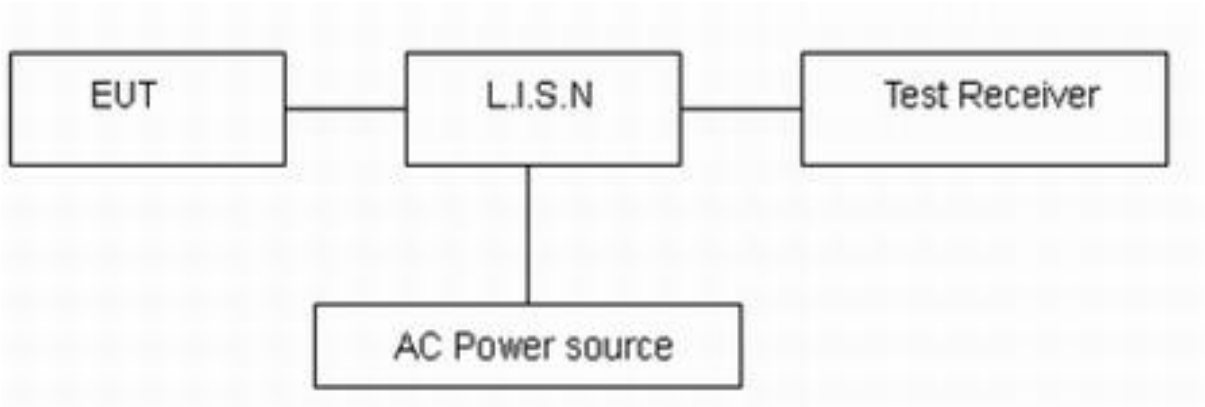
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT IS placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10-2013.Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9kHz, VBW is set to 30kHz The measurement result should include both L line and N line.
The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

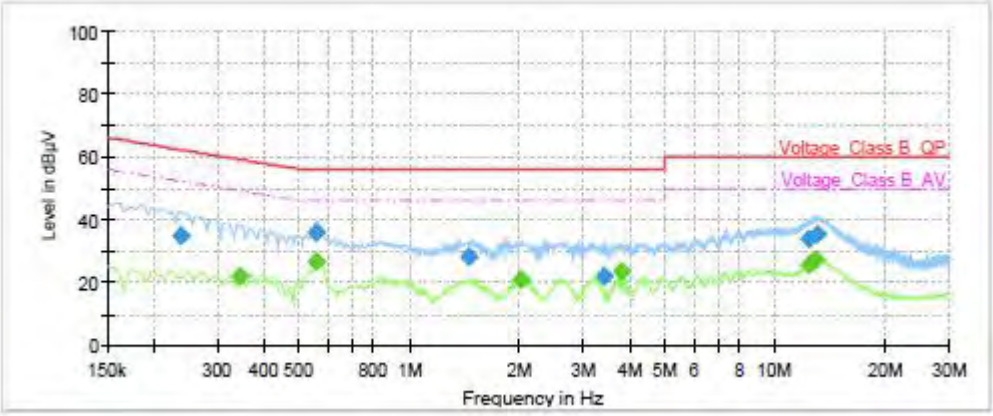
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.69 dB.

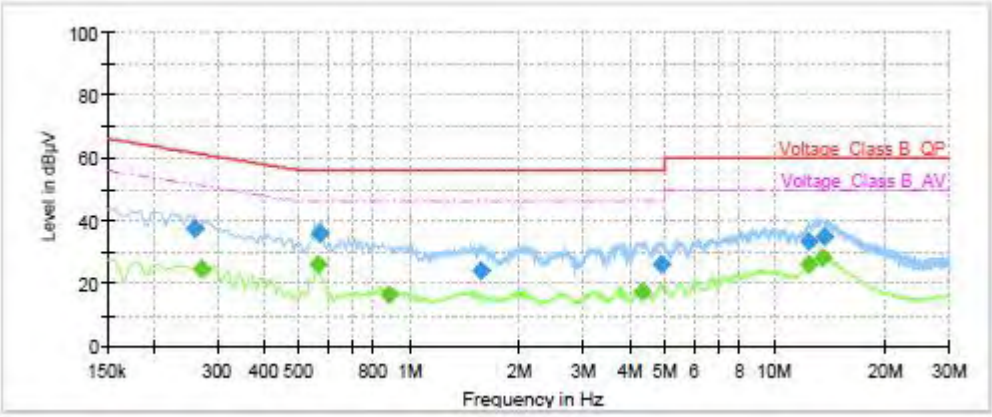
Test Results:

Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes with all channels, 802.11n-HT40, Channel 38 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.24	34.85	---	62.17	27.32	100.0	9.000	L1	ON	19.12
0.35	---	21.90	49.06	27.16	100.0	9.000	L1	ON	19.18
0.56	---	26.80	46.00	19.20	100.0	9.000	L1	ON	19.25
0.56	36.13	---	56.00	19.87	100.0	9.000	L1	ON	19.25
1.46	28.41	---	56.00	27.59	100.0	9.000	L1	ON	19.18
2.03	---	20.82	46.00	25.18	100.0	9.000	L1	ON	19.12
3.41	21.87	---	56.00	34.13	100.0	9.000	L1	ON	19.05
3.81	---	23.35	46.00	22.65	100.0	9.000	L1	ON	19.05
12.37	33.69	---	60.00	26.31	100.0	9.000	L1	ON	19.42
12.40	---	25.80	50.00	24.20	100.0	9.000	L1	ON	19.43
12.94	---	27.19	50.00	22.81	100.0	9.000	L1	ON	19.51
13.04	35.18	---	60.00	24.82	100.0	9.000	L1	ON	19.50

L line Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.26	37.20	---	61.42	24.22	100.0	9.000	N	ON	19.15
0.27	---	24.72	51.14	26.42	100.0	9.000	N	ON	19.15
0.56	---	25.95	46.00	20.05	100.0	9.000	N	ON	19.26
0.57	35.71	---	56.00	20.29	100.0	9.000	N	ON	19.26
0.88	---	16.51	46.00	29.49	100.0	9.000	N	ON	19.24
1.57	24.09	---	56.00	31.91	100.0	9.000	N	ON	19.19
4.35	---	17.63	46.00	28.37	100.0	9.000	N	ON	19.10
4.87	26.30	---	56.00	29.70	100.0	9.000	N	ON	19.06
12.37	33.32	---	60.00	26.68	100.0	9.000	N	ON	19.40
12.40	---	26.00	50.00	24.00	100.0	9.000	N	ON	19.41
13.49	---	28.28	50.00	21.72	100.0	9.000	N	ON	19.46
13.63	34.96	---	60.00	25.04	100.0	9.000	N	ON	19.45

N line Conducted Emission from 150 KHz to 30 MHz

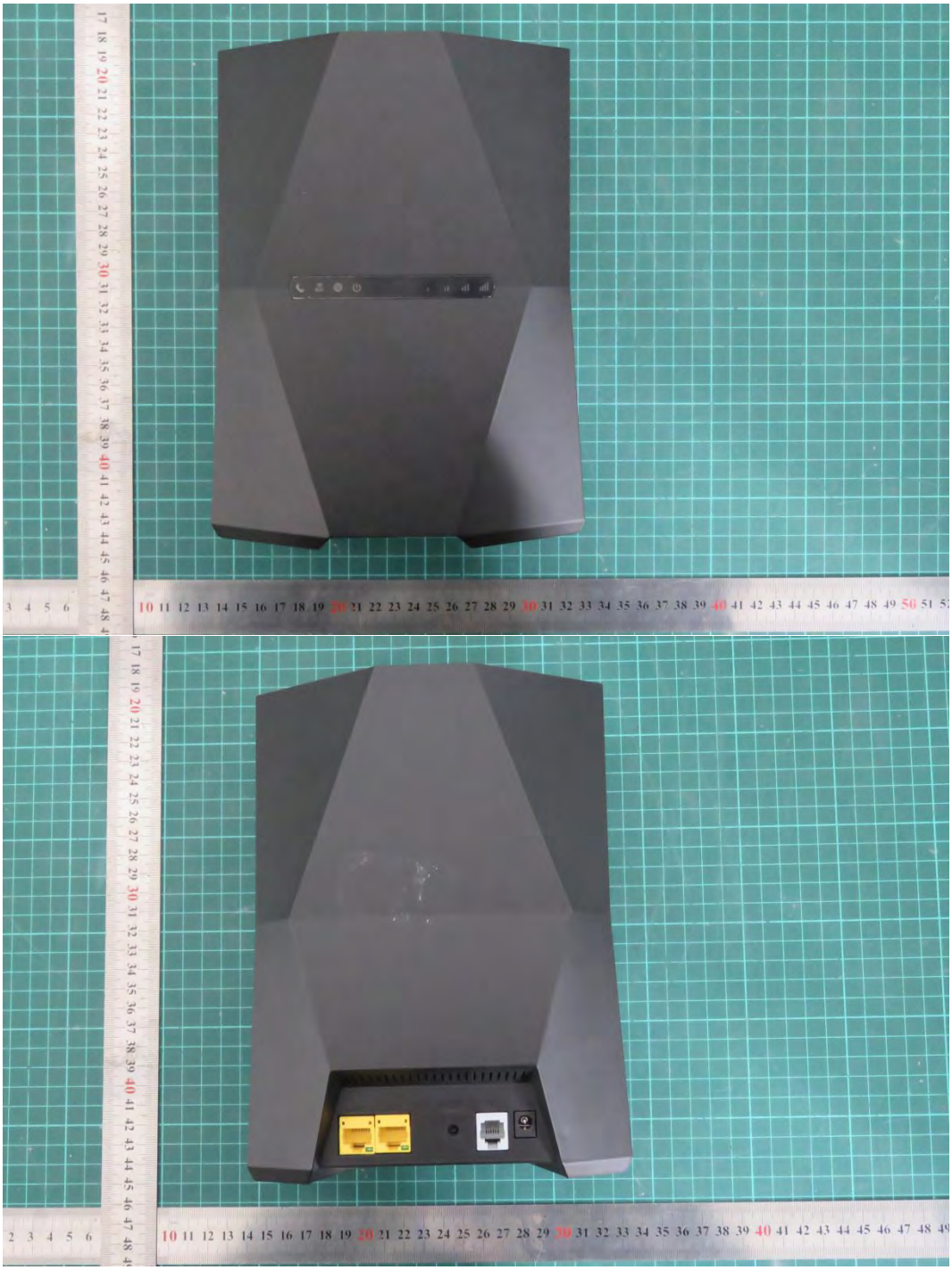
6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Spectrum Analyzer	R&S	FSV40	15195-01-00	2018-05-20	2019-05-19
EMI Test Receiver	R&S	ESCI	100948	2018-05-20	2019-05-19
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2019-11-17
Double Ridged Waveguide Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Standard Gain Horn	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Standard Gain Horn	STEATITE	QSH-SL-26-40 -K-15	16779	2017-07-20	2019-07-19
Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	430	2018-07-07	2020-07-06
EMI Test Receiver	R&S	ESR	101667	2018-05-20	2019-05-19
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2018-12-16	2019-12-15
RF Cable	Agilent	SMA 15cm	0001	/	/
TEMPERATURE CHAMBER	WEISS	VT4002	582261194500 10	2018-12-16	2019-12-15
AV Power Meter	R&S	NRP	104306	2018-05-20	2019-05-19
Power Probe	R&S	NRP-Z21	104799	2018-05-20	2019-05-19
DC Power Supply	GWINSTEK	GPS-3030D	GEP882653	2018-05-20	2020-05-19
Software	R&S	EMC32	9.26.0	/	/

*******END OF REPORT *******

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance



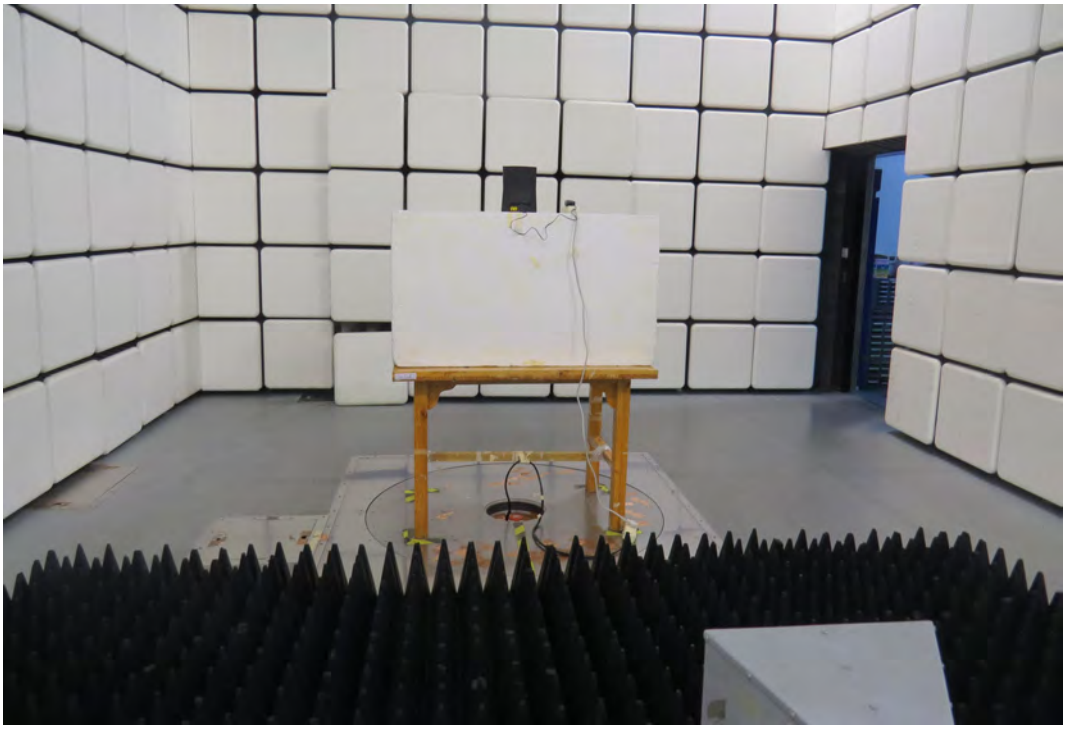
a: EUT

b: Charger

Picture 1 EUT and Accessory

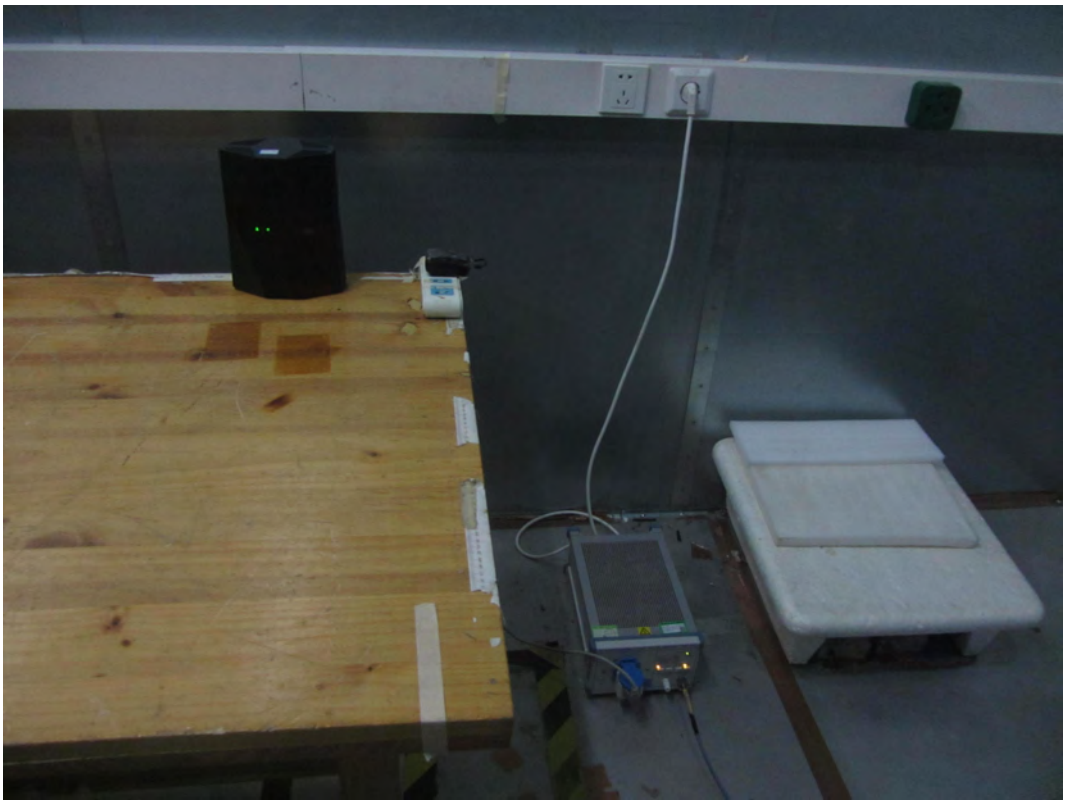
A.2 Test Setup

30MHz-1GHz



Above 1GHz

Picture 2 Radiated Emission Test Setup



Picture 3 Conducted Emission Test Setup

ANNEX B: Product Change Description

We, zhongmi communication ,declare on our sole responsibility that the product,

999-03-718-US

is the variant of the initial certified product,

999-03-716-US

Except the following changes on the latest MODEL: 999-03-718-US

SOFTWARE MODIFICATIONS:

Protocol Stack changes: NO
MMS/STK changes: NO
JAVA changes: NO
Other changes detailed: ADD VOICE

HARDWARE MODIFICATION:

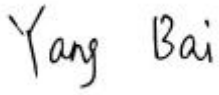
Band changes: NO
Power Amplifier changes: NO
Antenna changes: NO
PCB Layout changes: NO.
Components on PCB changes: NO
LCD changes: No
Speaker changes: NO
Camera changes: NO
Vibrator changes: NO
Bluetooth changes: NO
FM changes: NO
Other changes: ADD VOICE

MECHANICAL MODIFICATIONS:

Use new metal front/back cover or keypad: no
Mechanical shell changes: No.
Other changes detailed: ADD VOICE, ADD VOICE，CHANGE PRODUCT NAME，CHANGE BRAND NAME，CHANGE MODEL NAME

ACCESSORY MODIFICATIONS:

Battery changes: NO
AC Adaptor changes: ADD VOICE
Earphone changes: NO

Signature: 

Print name: Yang Bai

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