RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-MF289F
Product	MF289F
Model	MF289F
Report No.	R2102A0149-R5V1
Issue Date	July 8, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	July 7, 2021
Rev.1	Add description Page 7. Update data in Page 11.	July 8, 2021
Note: This revised report (Report No. R2102A0149-R5V1) supersedes and replaces the previously issued report (Report No. R2102A0149-R5). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: June 9, 2021 ~ July 5, 2021 Date of Sample Received: February 22, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

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

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.

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
Fax:	+86-021-50791141/2/3-8000
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.2. General information

EUT Description	
Model	MF289F
IMEI	864781050002617
Hardware Version	mb5B
Software Version	VDF_DE_MF289FV1.0.0B01
Power Supply	AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 2.7dBi Antenna 2: 2.7dBi
Directional Gain	Without Beamforming Mode for Power: 2.7dBi Without Beamforming Mode for PSD: 5.71dBi Beamforming Mode: 5.71dBi
Test Band	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	17.48dBm
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-3: 5725MHz -5850MHz
Extreme temperature range:	-30 ° C to 50° C
Operating temperature range:	-20 ° C to 55° C
Operating voltage range:	10.8 V to 13.2 V
State DC voltage:	12V
EUT Accessory	
Adapter	Manufacturer: Shenzhen Ruijjng Industrial Co., Ltd. Model: STC-A1215C55-A

Note:1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. This device support automatically discontinue transmission, while the device is not transmitting any information, the device can automatically discontinue transmission and become standby mode for power saving. The device can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3. Applied Standards

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

Test standards:

FCC CFR47 Part 15E (2020)

ANSI C63.10 (2013)

Reference standard:

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.

Mode	Data Rate		
	Antenna 1	Antenna 2	MIMO
802.11a	6 Mbps	6 Mbps	/
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
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	802.11n HT20/40 802.11ac VHT20/40/80
Occupied bandwidth	O	--	--
Frequency stability	O	--	--
Power Spectral Density	O	O	802.11n HT20/40 802.11ac VHT20/40/80
Unwanted Emissions	802.11a	--	802.11n HT20/40 802.11ac VHT20/40/80
Conducted Emissions	802.11a	--	802.11n HT20/40 802.11ac VHT20/40/80
Note：“O”: test all bands			

According to RF Output power results in chapter 5.1, MIMO was selected as the worst antenna for 802.11n HT20/40, 802.11ac VHT20/40/80. SISO Antenna 1 was selected as the worst SISO antenna for 802.11a.

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

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.

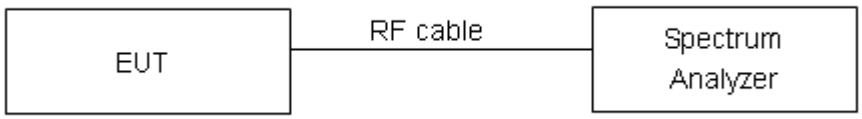
For U-NII-1, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

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

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.374	18.76	PASS
	5200	16.380	18.75	PASS
	5240	16.394	18.89	PASS
802.11n HT20	5180	17.577	19.62	PASS
	5200	17.586	19.82	PASS
	5240	17.576	19.64	PASS
802.11n HT40	5190	35.857	39.04	PASS
	5230	35.890	38.94	PASS
802.11ac VHT20	5180	17.566	19.63	PASS
	5200	17.598	19.89	PASS
	5240	17.578	19.61	PASS
802.11ac VHT40	5190	35.847	39.09	PASS
	5230	35.914	39.23	PASS
802.11ac VHT80	5210	75.718	83.16	PASS

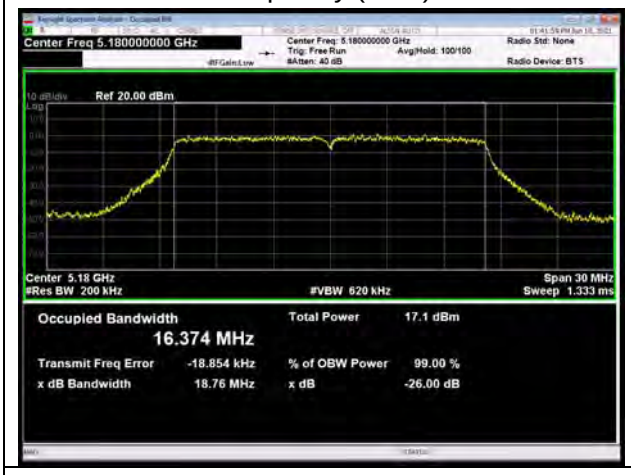
U-NII-3

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.370	16.35	0.5	PASS
	5785	16.391	16.33	0.5	PASS
	5825	16.382	16.35	0.5	PASS
802.11n HT20	5745	17.586	17.68	0.5	PASS
	5785	17.588	17.63	0.5	PASS
	5825	17.584	17.60	0.5	PASS
802.11n HT40	5755	35.901	34.11	0.5	PASS
	5795	35.875	35.02	0.5	PASS
802.11ac VHT20	5745	17.585	17.59	0.5	PASS
	5785	17.580	17.61	0.5	PASS
	5825	17.586	17.60	0.5	PASS
802.11ac VHT40	5755	35.903	35.13	0.5	PASS
	5795	35.891	33.85	0.5	PASS
802.11ac VHT80	5775	75.609	75.72	0.5	PASS

99% bandwidth

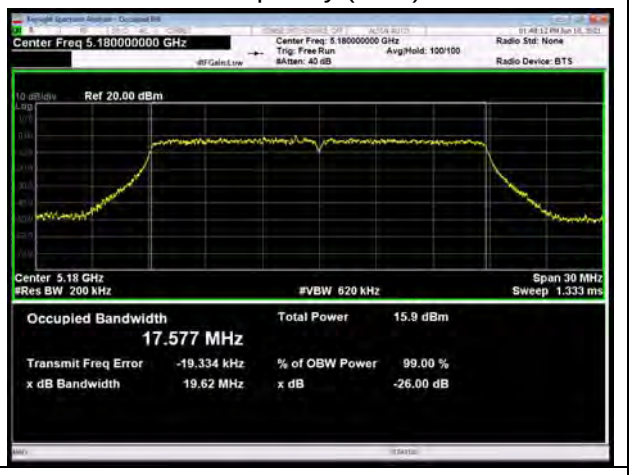
U-NII-1, 802.11a

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

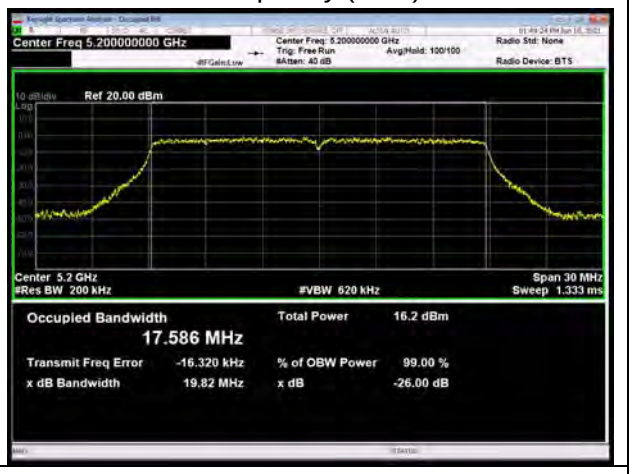


U-NII-1, 802.11a

Carrier frequency (MHz): 5200

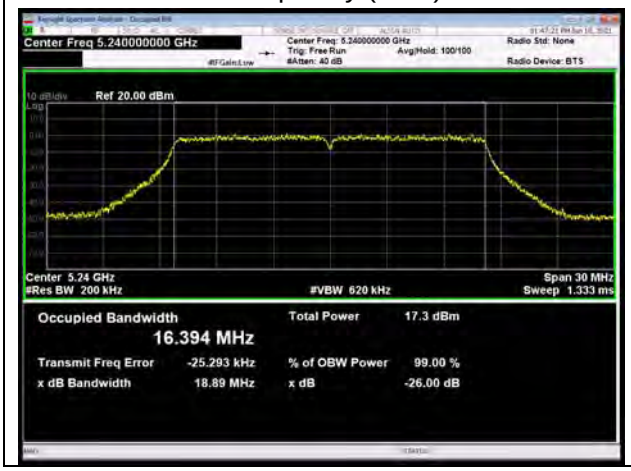
U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200



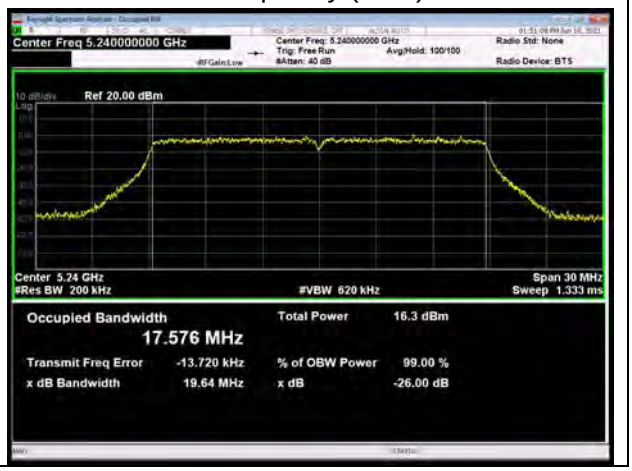
U-NII-1, 802.11a

Carrier frequency (MHz):5240



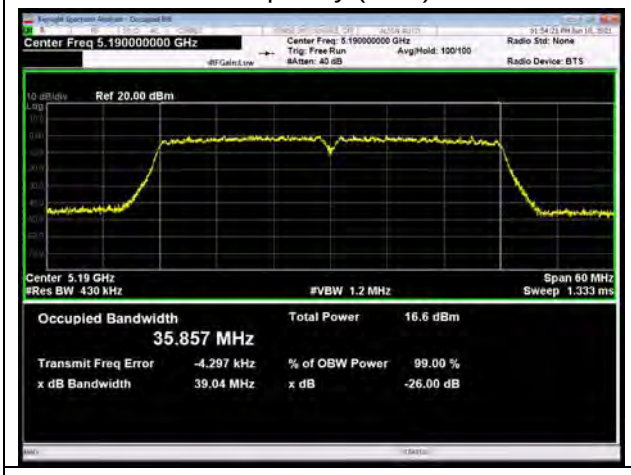
U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240



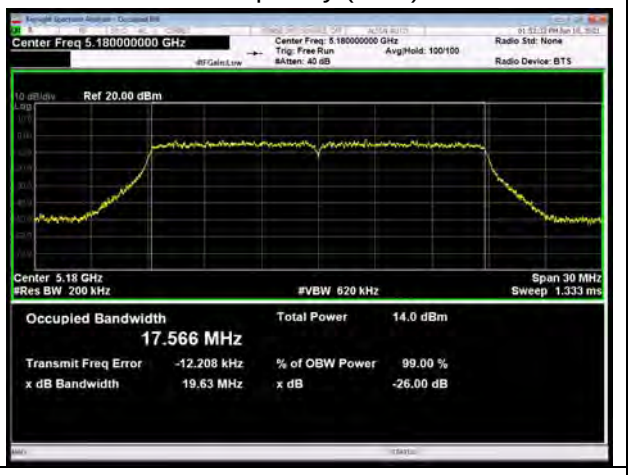
U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180

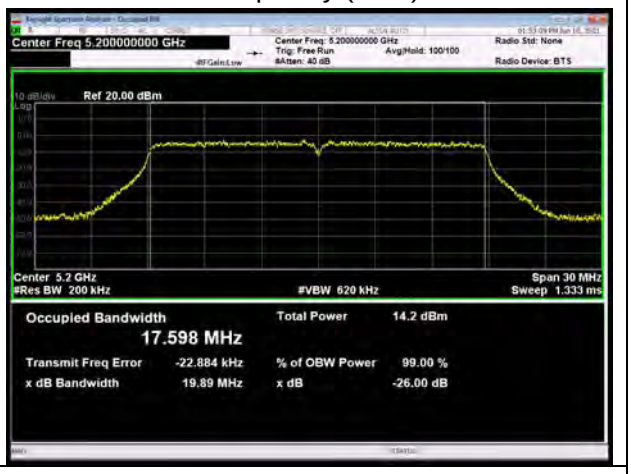


U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230

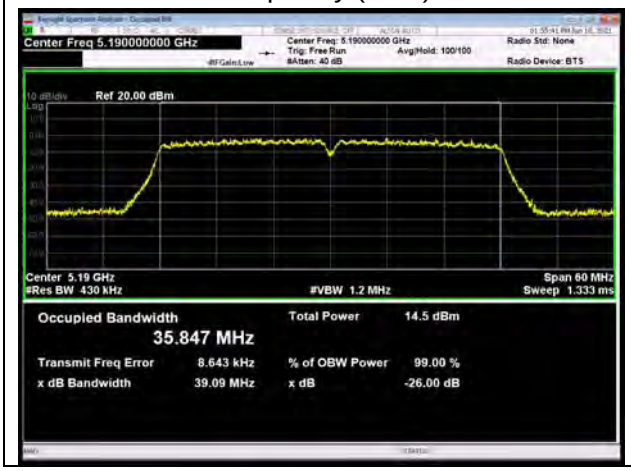
U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200



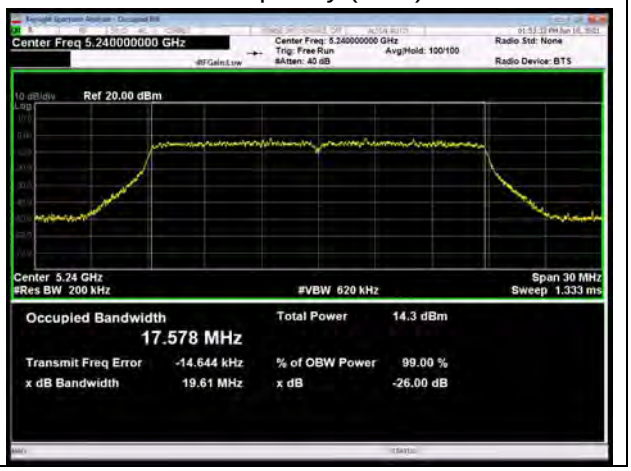
U-NII-1, 802.11ac VHT40

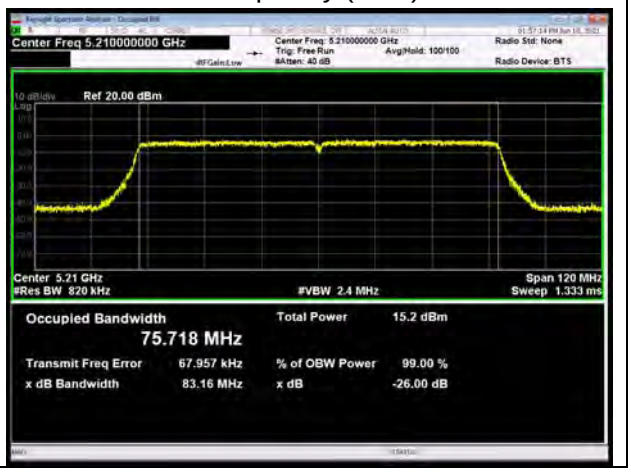
Carrier frequency (MHz): 5190



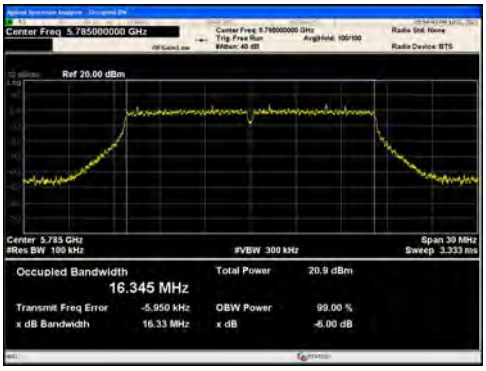
U-NII-1, 802.11ac VHT20

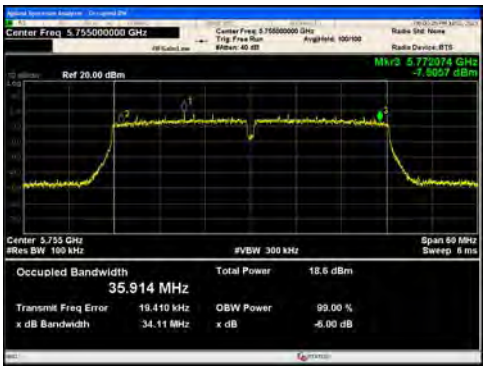
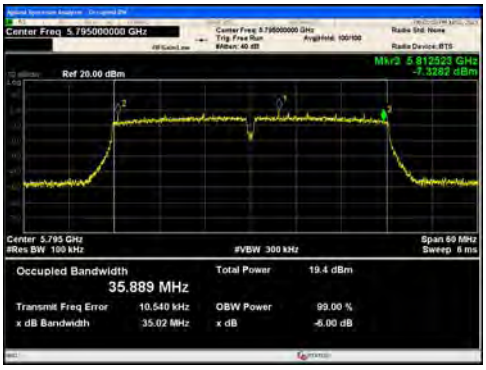
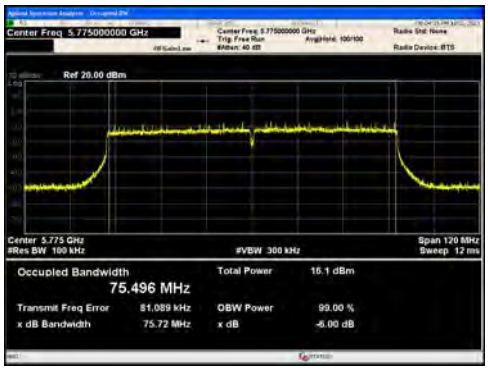
Carrier frequency (MHz):5240



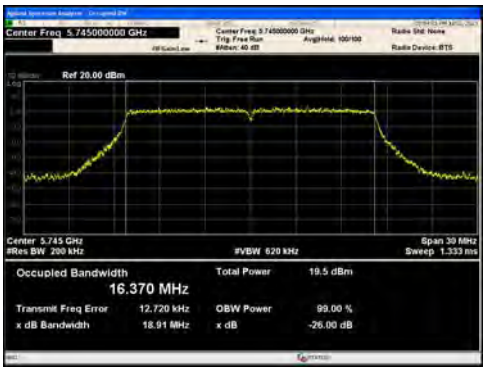
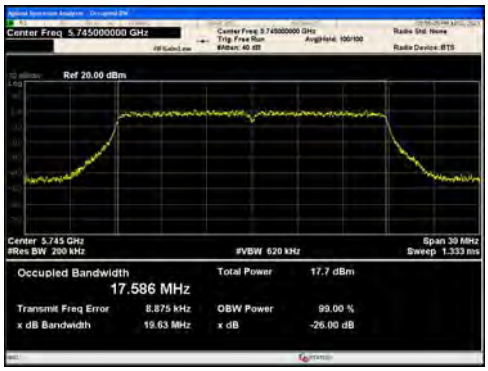
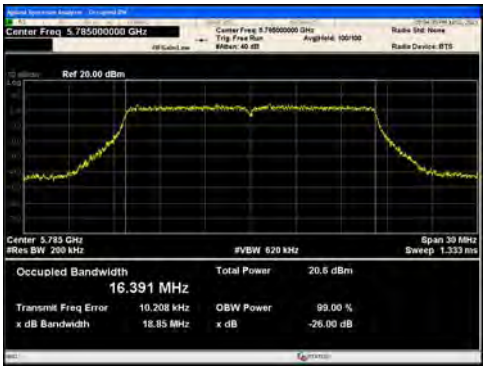
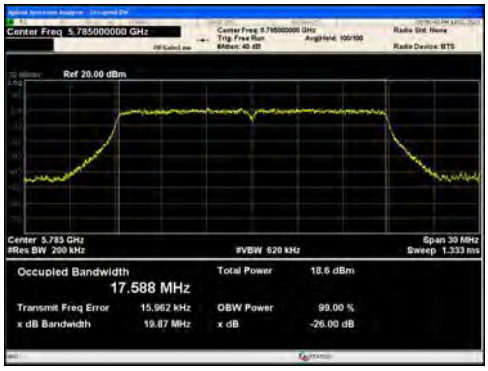
U-NII-1, 802.11ac VHT40 Carrier frequency (MHz): 5230	U-NII-1, 802.11ac VHT80 Carrier frequency (MHz): 5210
	

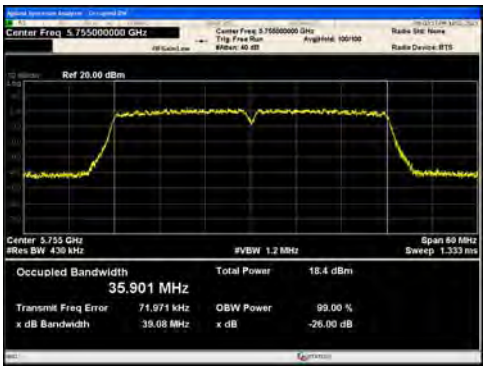
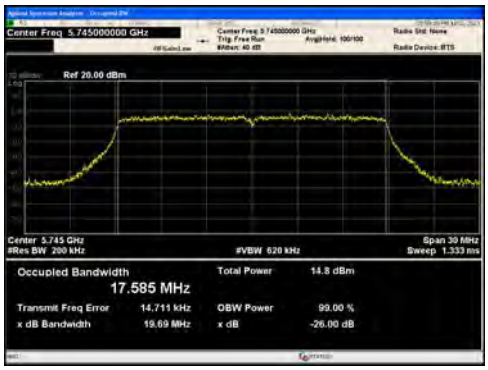
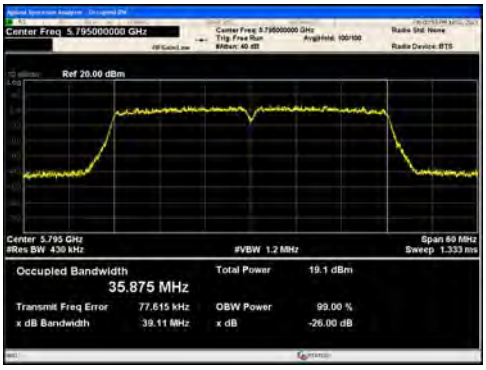
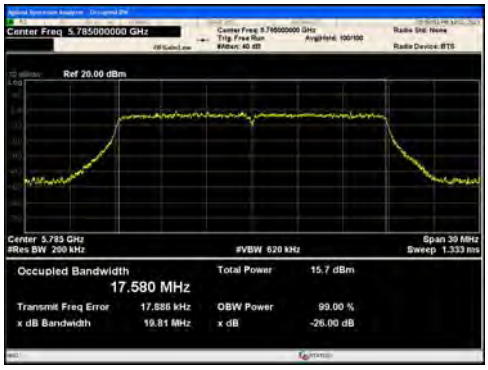
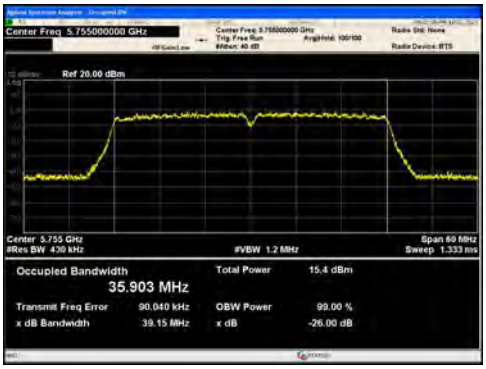
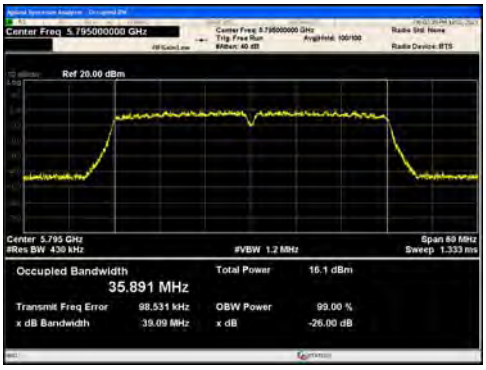
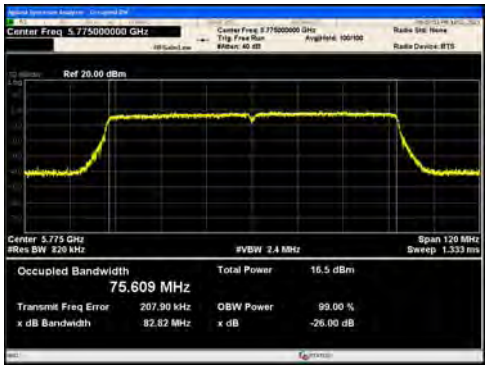
Minimum 6 dB bandwidth

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 

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): 5775 	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

Ambient condition

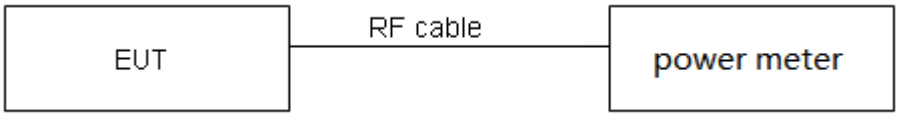
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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

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

Mode	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	2.06	2.15	0.96	0.19
802.11n HT20	5.01	5.09	0.98	NA
802.11n HT40	2.41	2.49	0.97	0.14
802.11ac VHT20	5.01	5.09	0.98	NA
802.11ac VHT40	2.44	2.51	0.97	0.14
802.11ac VHT80	1.15	1.23	0.94	0.28
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.				

SISO Antenna 1/2 Power Index								
Channel	802.11a	802.11n HT20	802.11ac VHT20	Channel	802.11n HT40	802.11ac VHT40	Channel	802.11ac VHT80
CH 36	12	11	8	CH 38	11	8	CH 42	8
CH 40	12	11	8	CH 46	11	8	/	/
CH 48	12	11	8	/	/	/	/	/
CH149	13	11	8	CH151	11	8	CH155	8
CH157	13	11	8	CH159	11	8	/	/
CH165	13	11	8	/	/	/	/	/

MIMO Antenna 1/2 with Beamforming Power Index							
Channel	802.11n HT20	802.11ac VHT20	Channel	802.11n HT40	802.11ac VHT40	Channel	802.11ac VHT80
CH 36	11	8	CH 38	11	8	CH 42	8
CH 40	11	8	CH 46	11	8	/	/
CH 48	11	8	/	/	/	/	/
CH149	11	8	CH151	11	8	CH155	8
CH157	11	8	CH159	11	8	/	/
CH165	11	8	/	/	/	/	/

MIMO Antenna 1/2 without Beamforming Power Index							
Channel	**802.11n HT20**	**802.11ac VHT20**	**Channel**	**802.11n HT40**	**802.11ac VHT40**	**Channel**	**802.11ac VHT80**
CH 36	11	8	**CH 38**	11	8	**CH 42**	8
CH 40	11	8	**CH 46**	11	8	**/**	/
CH 48	11	8	**/**	/	/	**/**	/
CH149	11	8	**CH151**	11	8	**CH155**	8
CH157	11	8	**CH159**	11	8	/	/
CH165	11	8	/	/	/	/	/

SISO Antenna 1

U-NII-1

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	15.16	15.35	30	PASS
	40/5200	15.13	15.32	30	PASS
	48/5240	15.31	15.50	30	PASS
802.11n HT20	36/5180	14.15	14.15	30	PASS
	40/5200	14.08	14.08	30	PASS
	48/5240	14.32	14.32	30	PASS
802.11n HT40	38/5190	14.16	14.30	30	PASS
	46/5230	14.27	14.41	30	PASS
802.11ac VHT20	36/5180	11.05	11.05	30	PASS
	40/5200	11.13	11.13	30	PASS
	48/5240	11.28	11.28	30	PASS
802.11ac VHT40	38/5190	11.14	11.28	30	PASS
	46/5230	11.21	11.35	30	PASS
802.11ac VHT80	42/5210	11.32	11.60	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	13.68	13.87	30	PASS
	157/5785	13.95	14.14	30	PASS
	165/5825	13.65	13.84	30	PASS
802.11n HT20	149/5745	11.52	11.52	30	PASS
	157/5785	11.82	11.82	30	PASS
	165/5825	11.57	11.57	30	PASS
802.11n HT40	151/5755	11.60	11.74	30	PASS
	159/5795	11.54	11.68	30	PASS
802.11ac VHT20	149/5745	8.42	8.42	30	PASS
	157/5785	8.81	8.81	30	PASS
	165/5825	8.55	8.55	30	PASS
802.11ac VHT40	151/5755	8.49	8.63	30	PASS
	159/5795	8.73	8.87	30	PASS
802.11ac VHT80	155/5775	8.66	8.94	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 2

U-NII-1

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	14.98	15.17	30	PASS
	40/5200	15.03	15.22	30	PASS
	48/5240	15.22	15.41	30	PASS
802.11n HT20	36/5180	14.10	14.10	30	PASS
	40/5200	14.16	14.16	30	PASS
	48/5240	14.25	14.25	30	PASS
802.11n HT40	38/5190	14.19	14.33	30	PASS
	46/5230	14.24	14.38	30	PASS
802.11ac VHT20	36/5180	10.95	10.95	30	PASS
	40/5200	11.04	11.04	30	PASS
	48/5240	11.11	11.11	30	PASS
802.11ac VHT40	38/5190	11.17	11.31	30	PASS
	46/5230	11.12	11.26	30	PASS
802.11ac VHT80	42/5210	11.03	11.31	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	13.42	13.61	30	PASS
	157/5785	13.35	13.54	30	PASS
	165/5825	13.36	13.55	30	PASS
802.11n HT20	149/5745	11.12	11.12	30	PASS
	157/5785	11.05	11.05	30	PASS
	165/5825	11.09	11.09	30	PASS
802.11n HT40	151/5755	11.28	11.42	30	PASS
	159/5795	11.22	11.36	30	PASS
802.11ac VHT20	149/5745	8.46	8.46	30	PASS
	157/5785	8.62	8.62	30	PASS
	165/5825	8.24	8.24	30	PASS
802.11ac VHT40	151/5755	8.51	8.65	30	PASS
	159/5795	8.43	8.57	30	PASS
802.11ac VHT80	155/5775	8.32	8.60	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO

U-NII-1

Mode	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)			
802.11n HT20	36/5180	14.16	14.16	14.08	14.08	17.13	30.00	PASS
	44/5220	14.19	14.19	14.13	14.13	17.17	30.00	PASS
	48/5240	14.22	14.22	14.18	14.18	17.21	30.00	PASS
802.11n HT40	38/5190	14.28	14.42	14.24	14.38	17.41	30.00	PASS
	46/5230	14.35	14.49	14.31	14.45	17.48	30.00	PASS
802.11ac VHT20	36/5180	11.01	11.01	10.93	10.93	13.98	30.00	PASS
	44/5220	11.03	11.03	10.95	10.95	14.00	30.00	PASS
	48/5240	11.18	11.18	11.02	11.02	14.11	30.00	PASS
802.11ac VHT40	38/5190	11.05	11.19	11.04	11.18	14.19	30.00	PASS
	46/5230	11.26	11.40	11.26	11.40	14.41	30.00	PASS
802.11ac VHT80	42/5210	10.88	11.16	10.88	11.16	14.17	30.00	PASS

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

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)}+10^{(\text{Power antenna3 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. 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 ≥ 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 $=2.7+0=2.7$ dBi<6dBi. So the power limt is 30dBm.

U-NII-3

Mode	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)			
802.11n HT20	149/5745	11.52	11.52	11.38	11.38	14.46	30.00	PASS
	157/5785	11.68	11.68	11.32	11.32	14.51	30.00	PASS
	165/5825	11.45	11.45	11.36	11.36	14.42	30.00	PASS
802.11n HT40	151/5755	11.65	11.79	11.61	11.75	14.78	30.00	PASS
	159/5795	11.57	11.71	11.52	11.66	14.70	30.00	PASS
802.11ac VHT20	149/5745	8.38	8.38	8.42	8.42	11.41	30.00	PASS
	157/5785	8.62	8.62	8.55	8.55	11.60	30.00	PASS
	165/5825	8.59	8.59	8.51	8.51	11.56	30.00	PASS
802.11ac VHT40	151/5755	8.39	8.53	8.35	8.49	11.52	30.00	PASS
	159/5795	8.91	9.05	8.76	8.90	11.98	30.00	PASS
802.11ac VHT80	155/5775	8.43	8.71	8.41	8.69	11.71	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 $N_{ss}=1$. 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 ≥ 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 = GANT + Array Gain =5.71+0=5.71 dBi<6dBi. So the power limt is 30dBm.

MIMO with Beamforming

U-NII-1

Power Index							
Channel	**802.11n HT20**	**802.11ac VHT20**	**Channel**	**802.11n HT40**	**802.11ac VHT40**	**Channel**	**802.11ac VHT80**
CH149	11	8	**CH151**	11	8	**CH155**	8
CH157	11	8	**CH159**	11	8	/	/
CH165	11	8	/	/	/	/	/

Mode	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)			
802.11n HT20	36/5180	14.14	14.14	14.05	14.05	17.11	30.00	PASS
	44/5220	14.15	14.15	14.09	14.09	17.13	30.00	PASS
	48/5240	14.18	14.18	14.13	14.13	17.17	30.00	PASS
802.11n HT40	38/5190	14.22	14.36	14.20	14.34	17.36	30.00	PASS
	46/5230	14.31	14.45	14.28	14.42	17.45	30.00	PASS
802.11ac VHT20	36/5180	10.96	10.96	10.91	10.91	13.95	30.00	PASS
	44/5220	10.94	10.94	10.92	10.92	13.94	30.00	PASS
	48/5240	11.13	11.13	10.98	10.98	14.07	30.00	PASS
802.11ac VHT40	38/5190	11.02	11.16	10.95	11.09	14.13	30.00	PASS
	46/5230	11.19	11.33	11.17	11.31	14.33	30.00	PASS
802.11ac VHT80	42/5210	10.86	11.14	10.85	11.13	14.15	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 $N_{ss}=1$. 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 ≥ 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 $=2.7+0=2.7$ dBi<6dBi. So the power limt is 30dBm.

U-NII-3

Power Index							
Channel	**802.11n HT20**	**802.11ac VHT20**	**Channel**	**802.11n HT40**	**802.11ac VHT40**	**Channel**	**802.11ac VHT80**
CH149	11	8	**CH151**	11	8	**CH155**	8
CH157	11	8	**CH159**	11	8	/	/
CH165	11	8	/	/	/	/	/

Mode	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)			
802.11n HT20	149/5745	11.45	11.45	11.32	11.32	14.40	30.00	PASS
	157/5785	11.63	11.63	11.27	11.27	14.46	30.00	PASS
	165/5825	11.42	11.42	11.31	11.31	14.38	30.00	PASS
802.11n HT40	151/5755	11.62	11.76	11.54	11.68	14.73	30.00	PASS
	159/5795	11.54	11.68	11.46	11.60	14.65	30.00	PASS
802.11ac VHT20	149/5745	8.31	8.31	8.34	8.34	11.34	30.00	PASS
	157/5785	8.57	8.57	8.48	8.48	11.54	30.00	PASS
	165/5825	8.52	8.52	8.44	8.44	11.49	30.00	PASS
802.11ac VHT40	151/5755	8.34	8.48	8.29	8.43	11.46	30.00	PASS
	159/5795	8.86	9.00	8.72	8.86	11.94	30.00	PASS
802.11ac VHT80	155/5775	8.37	8.65	8.43	8.71	11.69	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 $N_{ss}=1$. 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 ≥ 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 = GANT + Array Gain =5.71+0=5.71 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	-20	5199.990699	5199.990298	5199.984439	5199.980193
12	-10	5199.983559	5199.981378	5199.982563	5199.976529
12	0	5199.975973	5199.971823	5199.975832	5199.974139
12	10	5199.973787	5199.966396	5199.968151	5199.972344
12	20	5199.965452	5199.960909	5199.958834	5199.964649
12	30	5199.960165	5199.956469	5199.957517	5199.958104
12	40	5199.959090	5199.952567	5199.947752	5199.952250
12	50	5199.950087	5199.950730	5199.938162	5199.950189
10.2	20	5199.943947	5199.942060	5199.934418	5199.941724
13.8	20	5199.937137	5199.938201	5199.929349	5199.941041
MHz		-0.062863	-0.061799	-0.070651	-0.058959
PPM		-12.089115	-11.884488	-13.586641	-11.338297

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
12	-20	5785.002310	5784.998034	5784.988343	5784.979157
12	-10	5784.993716	5784.994261	5784.986197	5784.971305
12	0	5784.984913	5784.988827	5784.977951	5784.965645
12	10	5784.983010	5784.981627	5784.968513	5784.963352
12	20	5784.980487	5784.976617	5784.958970	5784.961374
12	30	5784.972252	5784.973732	5784.952067	5784.952654
12	40	5784.965653	5784.973382	5784.949956	5784.947317
12	50	5784.958514	5784.967460	5784.941964	5784.942224
10.2	20	5784.949444	5784.964852	5784.936856	5784.942059
13.8	20	5784.949127	5784.958140	5784.930869	5784.937863
MHz		-0.050873	-0.041860	-0.069131	-0.062137
PPM		-8.793920	-7.235900	-11.950070	-10.740994

5.4. Power Spectral Density

Ambient condition

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

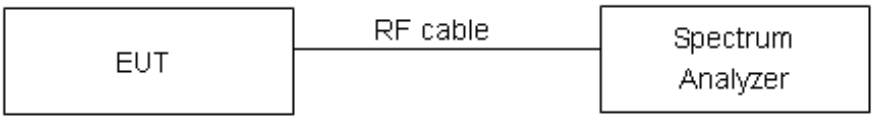
Method of Measurement

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

Set RBW = 1MHz, VBW =3MHz for the band 5.150-5.250GHz
Set RBW = 470kHz, VBW =1.5MHz for the band 5.725-5.850GHz

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.
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 500kHz 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	17/11dBm/MHz
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

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	4.01	4.20	17	PASS
	40	4.48	4.67	17	PASS
	48	4.35	4.53	17	PASS
802.11n HT20	36	2.89	2.89	17	PASS
	40	3.16	3.16	17	PASS
	48	3.50	3.50	17	PASS
802.11n HT40	38	0.55	0.69	17	PASS
	46	0.92	1.06	17	PASS
802.11ac VHT20	36	1.05	1.05	17	PASS
	40	1.25	1.25	17	PASS
	48	1.34	1.34	17	PASS
802.11ac VHT40	38	-1.35	-1.21	17	PASS
	46	-1.36	-1.22	17	PASS
802.11ac VHT80	42	-5.39	-5.11	17	PASS

U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	0.14	0.60	30	PASS
	157	1.30	1.75	30	PASS
	165	0.87	1.33	30	PASS
802.11n HT20	149	-1.91	-1.64	30	PASS
	157	-0.99	-0.72	30	PASS
	165	-1.38	-1.11	30	PASS
802.11n HT40	151	-4.42	-4.00	30	PASS
	159	-3.33	-2.92	30	PASS
802.11ac VHT20	149	-4.62	-4.35	30	PASS
	157	-3.67	-3.40	30	PASS
	165	-4.22	-3.95	30	PASS
802.11ac VHT40	151	-6.99	-6.58	30	PASS
	159	-6.47	-6.07	30	PASS
802.11ac VHT80	155	-9.99	-9.44	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					

SISO Antenna 2

U-NII-1

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	3.67	3.85	17	PASS
	40	3.84	4.03	17	PASS
	48	4.01	4.19	17	PASS
802.11n HT20	36	2.54	2.54	17	PASS
	40	2.79	2.79	17	PASS
	48	3.09	3.09	17	PASS
802.11n HT40	38	-0.04	0.10	17	PASS
	46	0.32	0.46	17	PASS
802.11ac VHT20	36	0.50	0.50	17	PASS
	40	1.04	1.04	17	PASS
	48	1.11	1.11	17	PASS
802.11ac VHT40	38	-2.12	-1.98	17	PASS
	46	-1.69	-1.55	17	PASS
802.11ac VHT80	42	-5.17	-4.88	17	PASS

U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	-0.13	0.33	30	PASS
	157	1.01	1.46	30	PASS
	165	0.34	0.79	30	PASS
802.11n HT20	149	-2.08	-1.81	30	PASS
	157	-1.05	-0.78	30	PASS
	165	-2.01	-1.74	30	PASS
802.11n HT40	151	-4.44	-4.03	30	PASS
	159	-3.66	-3.25	30	PASS
802.11ac VHT20	149	-5.15	-4.88	30	PASS
	157	-4.12	-3.85	30	PASS
	165	-5.06	-4.79	30	PASS
802.11ac VHT40	151	-7.32	-6.92	30	PASS
	159	-7.09	-6.69	30	PASS
802.11ac VHT80	155	-10.38	-9.83	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					

MIMO without Beamforming

U-NII-1

Mode	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)			
802.11n HT20	36/5180	2.53	2.53	3.13	3.13	5.85	17	PASS
	40/5200	2.72	2.72	2.87	2.87	5.80	17	PASS
	48/5240	2.67	2.67	2.93	2.93	5.81	17	PASS
802.11n HT40	38/5190	-0.05	0.09	0.04	0.18	3.14	17	PASS
	46/5230	-0.07	0.07	0.60	0.74	3.43	17	PASS
802.11ac VHT20	36/5180	0.72	0.72	0.96	0.96	3.85	17	PASS
	40/5200	1.06	1.06	0.60	0.60	3.85	17	PASS
	48/5240	0.48	0.48	0.84	0.84	3.67	17	PASS
802.11ac VHT40	38/5190	-1.95	-1.82	-2.05	-1.91	1.15	17	PASS
	46/5230	-2.08	-1.95	-1.76	-1.62	1.23	17	PASS
802.11ac VHT80	42/5210	-5.779	-5.49	-5.28	-4.99	-2.23	17	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=1. 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 the PSD limt 17.

U-NII-3

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /500kHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /500kHz)		
		Read Value (dBm/470kHz)	PSD (dBm /500kHz)	Read Value (dBm/470kHz)	PSD (dBm /500kHz)			
802.11n HT20	36/5180	-2.26	-1.99	-1.72	-1.45	1.30	30	PASS
	40/5200	-0.88	-0.61	-0.61	-0.34	2.54	30	PASS
	48/5240	-1.60	-1.33	-0.97	-0.70	2.01	30	PASS
802.11n HT40	38/5190	-4.21	-3.80	-3.76	-3.35	-0.56	30	PASS
	46/5230	-3.49	-3.08	-3.15	-2.74	0.10	30	PASS
802.11ac VHT20	36/5180	-4.97	-4.70	-5.41	-5.14	-1.90	30	PASS
	40/5200	-4.19	-3.92	-3.38	-3.11	-0.48	30	PASS
	48/5240	-4.11	-3.84	-4.37	-4.10	-0.96	30	PASS
802.11ac VHT40	38/5190	-6.95	-6.55	-7.09	-6.69	-3.61	30	PASS
	46/5230	-6.41	-6.01	-6.29	-5.88	-2.93	30	PASS
802.11ac VHT80	42/5210	-10.23	-9.68	-10.23	-9.67	-6.66	30	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=1. 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 the PSD limt 30.

MIMO with Beamforming

U-NII-1

Mode	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)			
802.11n HT20	36/5180	2.60	2.60	2.89	2.89	5.76	17	PASS
	40/5200	2.90	2.90	2.47	2.47	5.70	17	PASS
	48/5240	2.71	2.71	2.63	2.63	5.68	17	PASS
802.11n HT40	38/5190	0.12	0.26	0.07	0.21	3.25	17	PASS
	46/5230	-0.29	-0.15	0.50	0.64	3.27	17	PASS
802.11ac VHT20	36/5180	0.72	0.72	0.68	0.68	3.71	17	PASS
	40/5200	0.95	0.95	0.78	0.78	3.88	17	PASS
	48/5240	0.55	0.55	0.82	0.82	3.70	17	PASS
802.11ac VHT40	38/5190	-1.85	-1.72	-2.09	-1.95	1.18	17	PASS
	46/5230	-1.97	-1.83	-1.57	-1.43	1.38	17	PASS
802.11ac VHT80	42/5210	-5.73	-5.45	-5.47	-5.18	-2.30	17	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=1. 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 the PSD limt 17.

U-NII-3

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /500kHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /500kHz)		
		Read Value (dBm/470kHz)	PSD (dBm /500kHz)	Read Value (dBm/470kHz)	PSD (dBm /500kHz)			
802.11n HT20	36/5180	-1.82	-1.55	-1.73	-1.46	1.51	30	PASS
	40/5200	-0.94	-0.67	-0.63	-0.36	2.50	30	PASS
	48/5240	-1.65	-1.38	-1.21	-0.94	1.86	30	PASS
802.11n HT40	38/5190	-3.81	-3.40	-3.99	-3.58	-0.48	30	PASS
	46/5230	-3.34	-2.93	-3.43	-3.02	0.04	30	PASS
802.11ac VHT20	36/5180	-4.94	-4.67	-4.98	-4.71	-1.68	30	PASS
	40/5200	-3.89	-3.62	-3.57	-3.30	-0.45	30	PASS
	48/5240	-4.59	-4.32	-4.20	-3.93	-1.11	30	PASS
802.11ac VHT40	38/5190	-7.11	-6.71	-7.13	-6.73	-3.71	30	PASS
	46/5230	-6.49	-6.09	-6.14	-5.74	-2.90	30	PASS
802.11ac VHT80	42/5210	-10.18	-9.63	-9.87	-9.31	-6.46	30	PASS

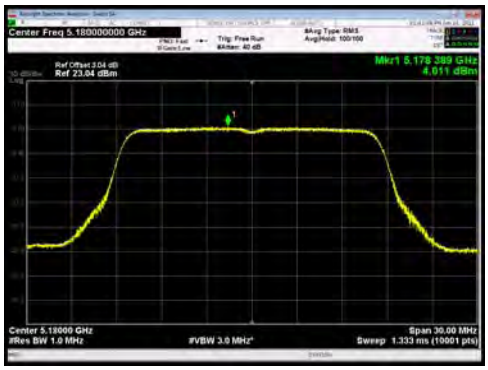
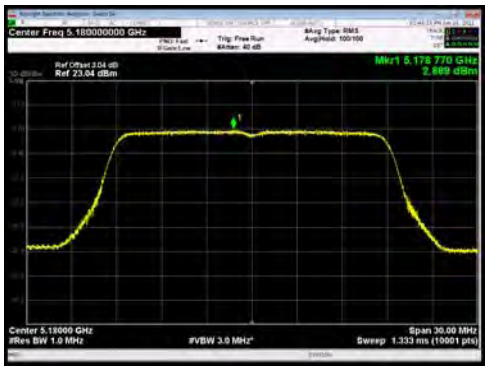
Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

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=1. 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 the PSD limt 30.

U-NII-1

SISO Antenna 1

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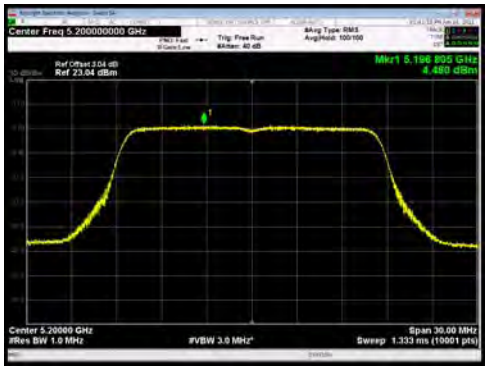	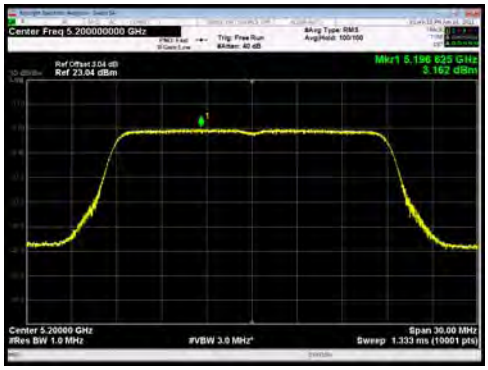
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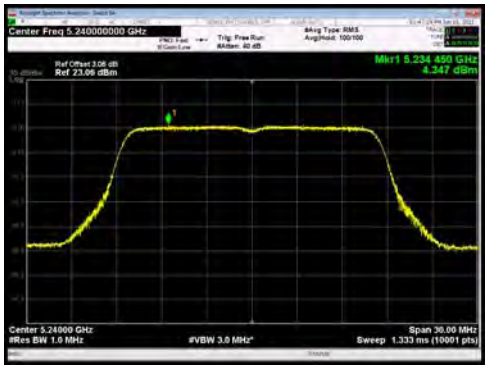	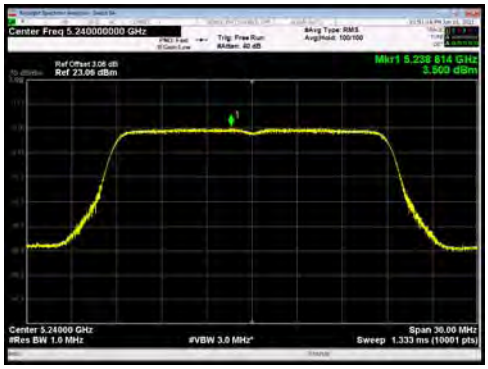

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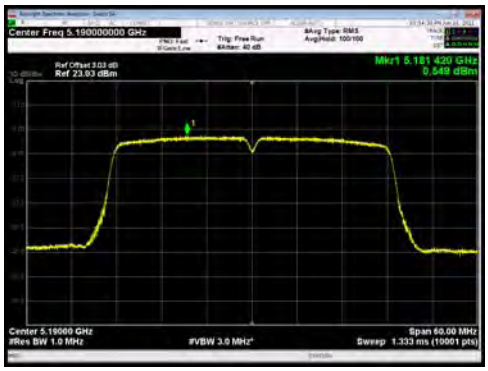	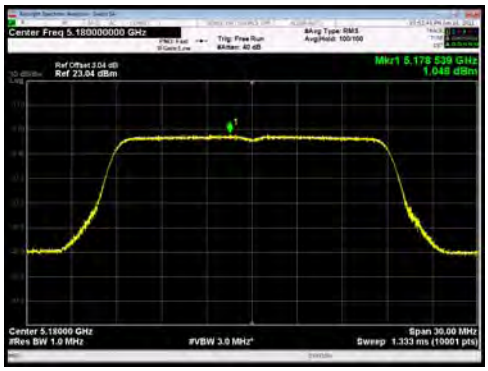
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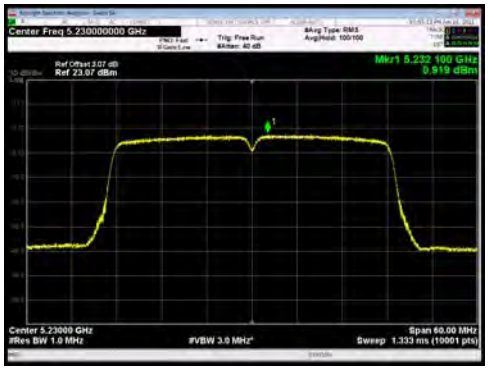	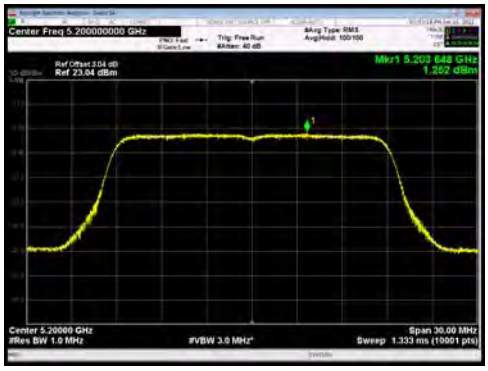
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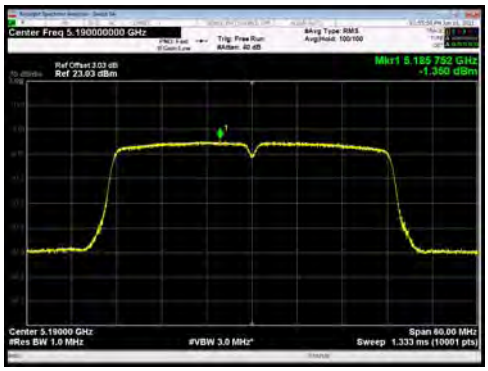	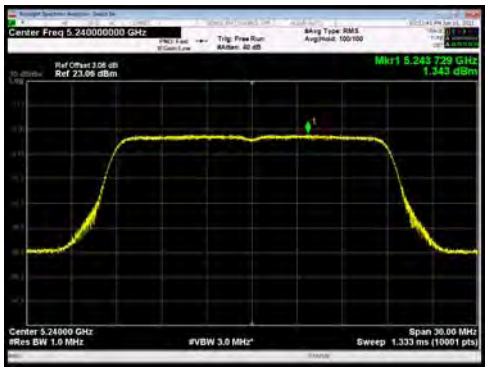
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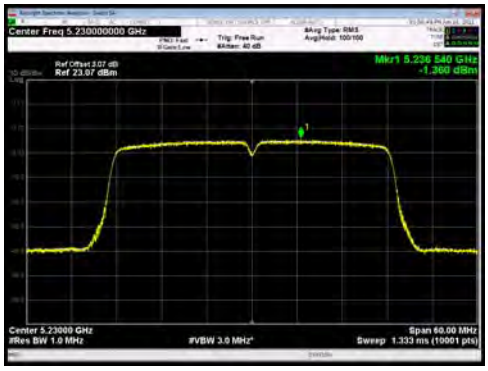	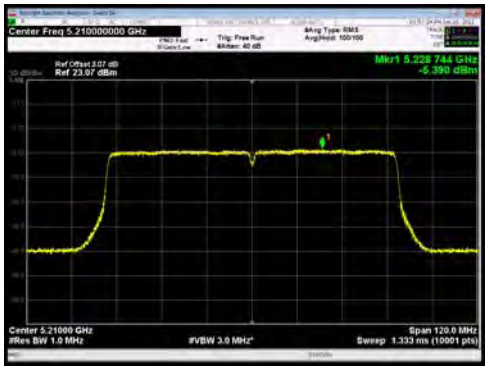

SISO Antenna 2

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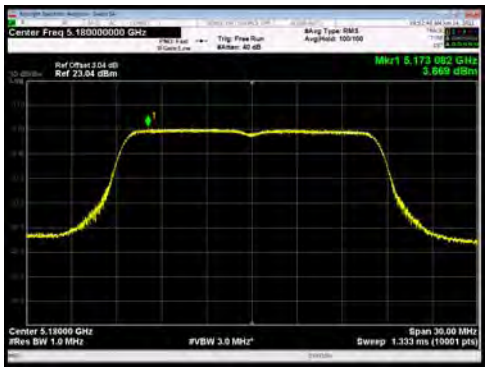	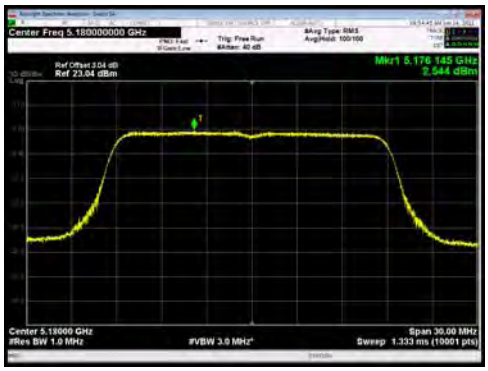
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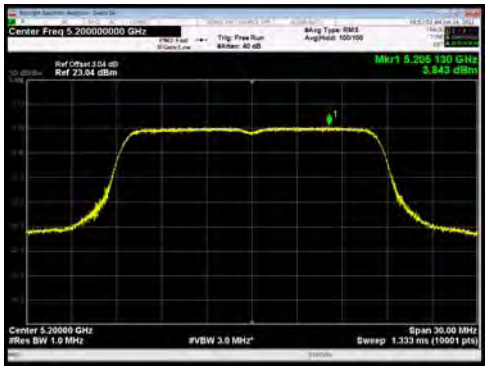
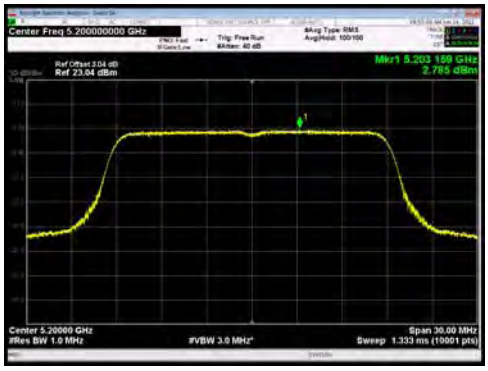
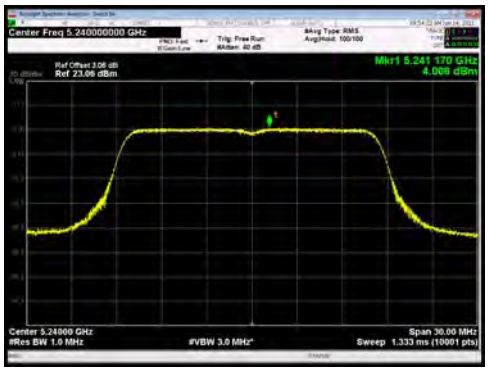
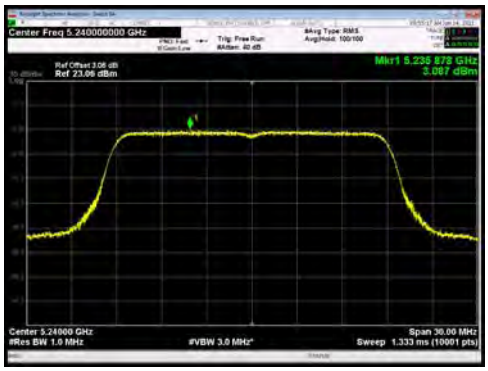
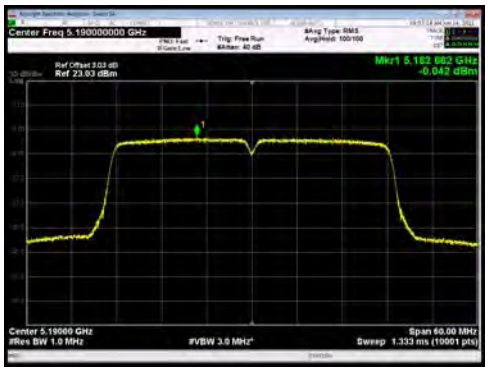
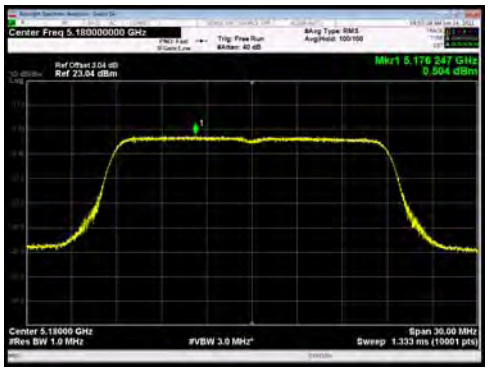
	
U-NII-1, 802.11a, Channel No.: 48	U-NII-1, 802.11n HT20, Channel No.: 48
	

U-NII-1, 802.11n HT40, Channel No.: 38	U-NII-1, 802.11ac VHT20, Channel No.: 36
	
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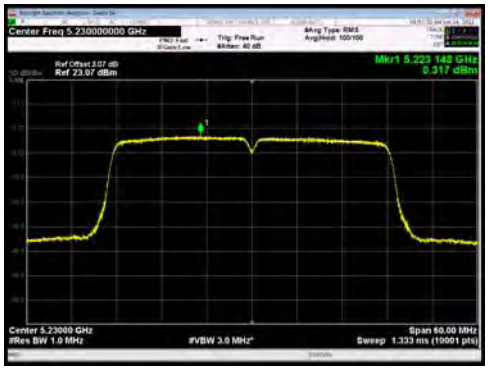	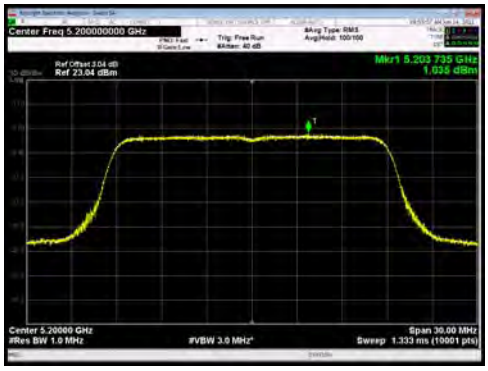
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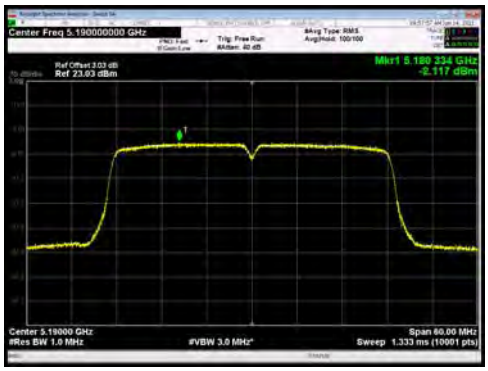	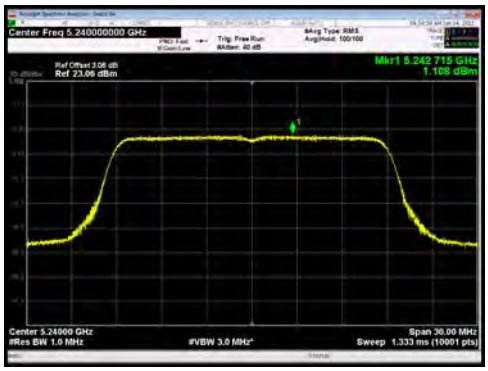
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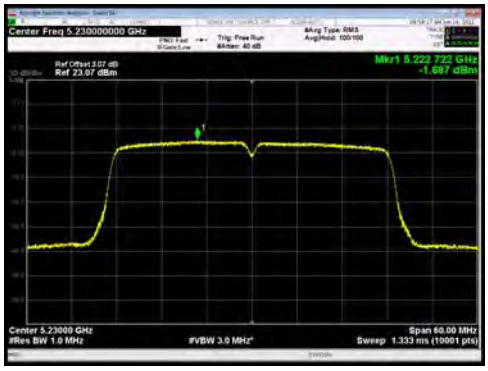
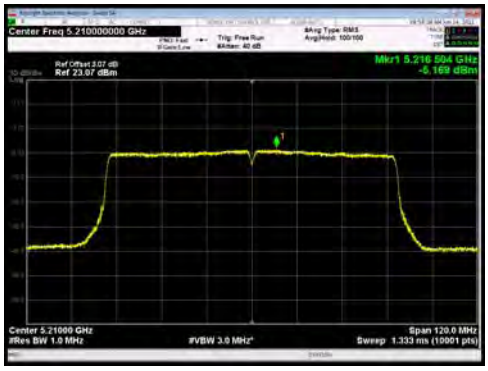
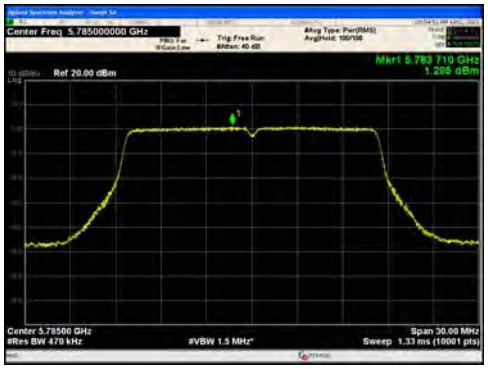
	

U-NII-3

SISO Antenna 1

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
	
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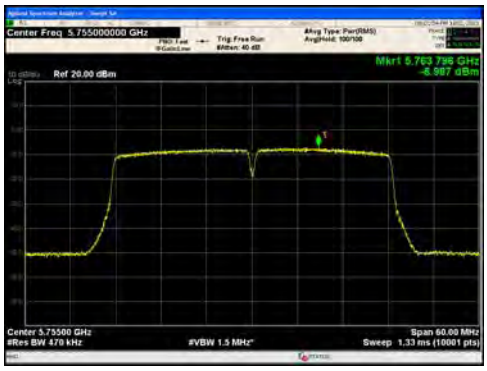
U-NII-3, 802.11n HT40, Channel No.: 151	U-NII-3, 802.11ac VHT20, Channel No.: 149
	
U-NII-3, 802.11n HT40, Channel No.: 159	U-NII-3, 802.11ac VHT20, Channel No.: 157
	
U-NII-3, 802.11ac VHT40, Channel No.: 151	U-NII-3, 802.11ac VHT20, Channel No.: 165
	
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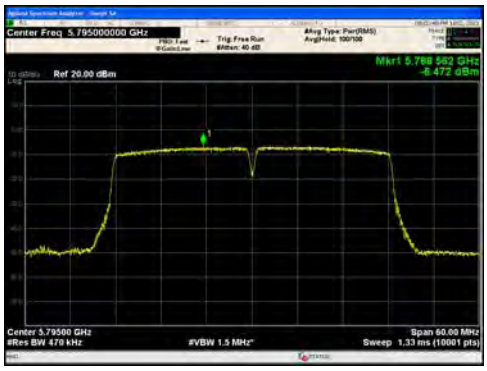	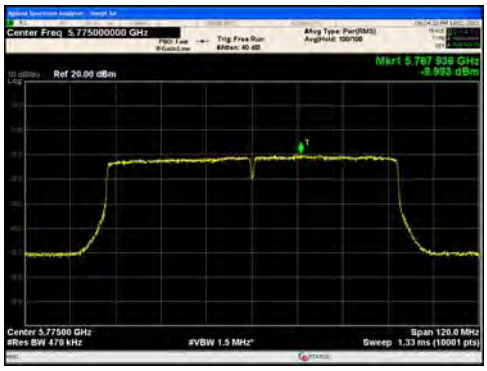

SISO Antenna 2

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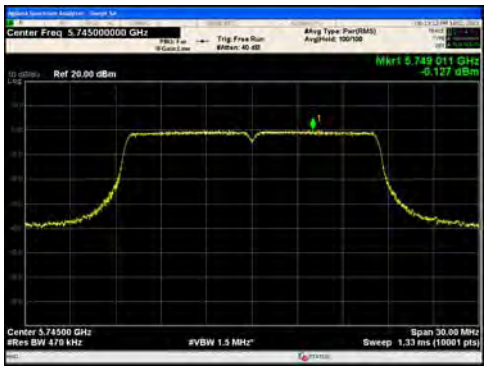	
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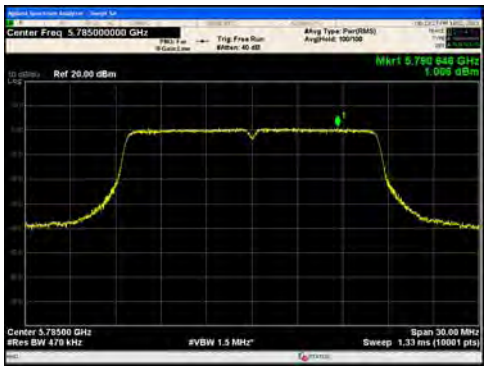	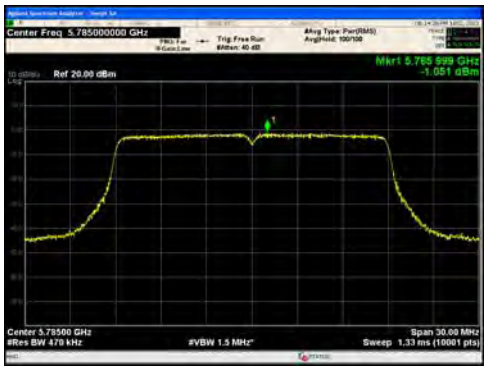
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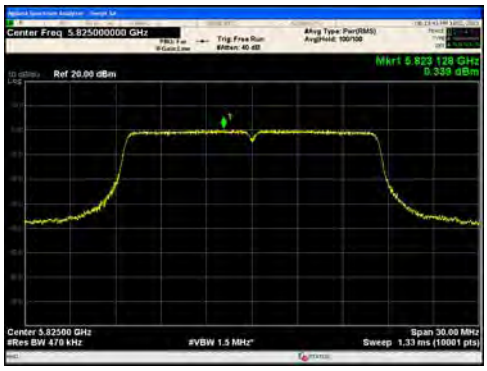	

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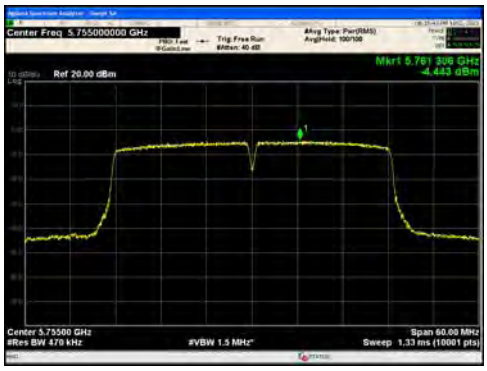
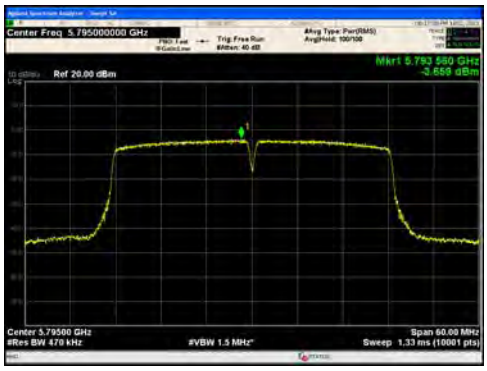


U-NII-3, 802.11ac VHT20, Channel No.: 149

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



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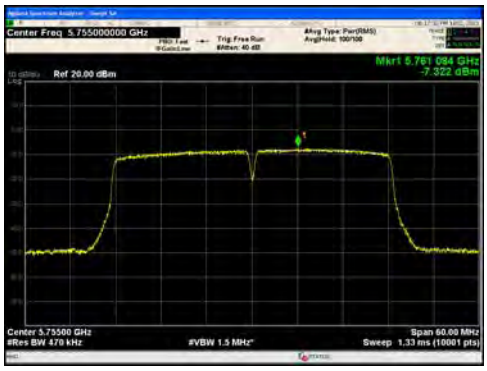
U-NII-3, 802.11ac VHT40, Channel No.: 151



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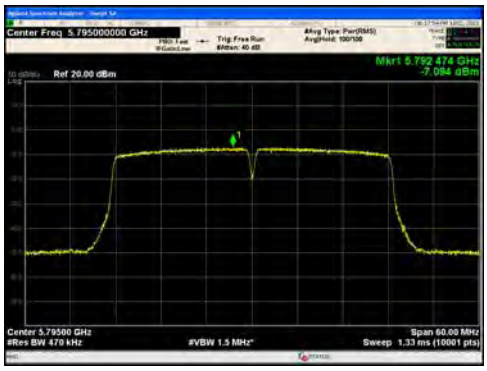
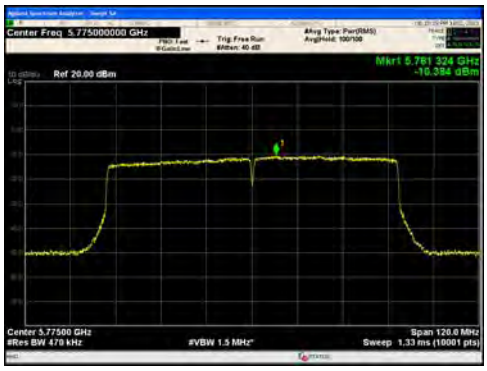
U-NII-3, 802.11ac VHT40, Channel No.: 159

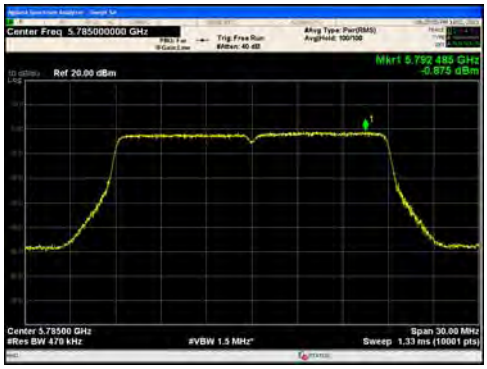
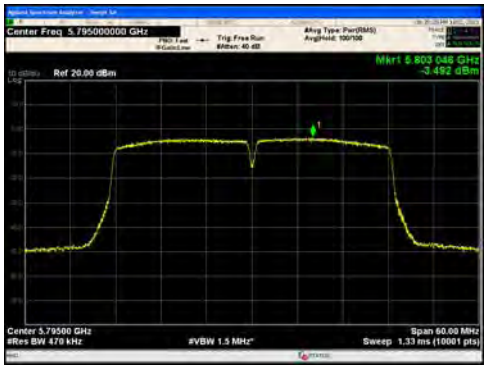
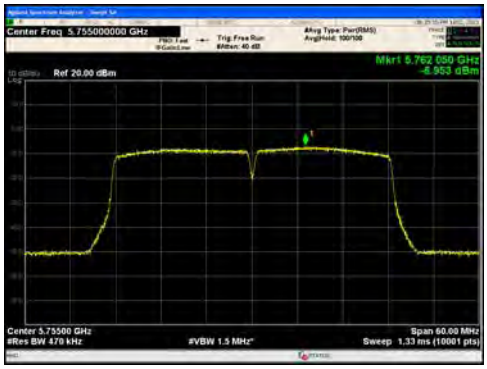
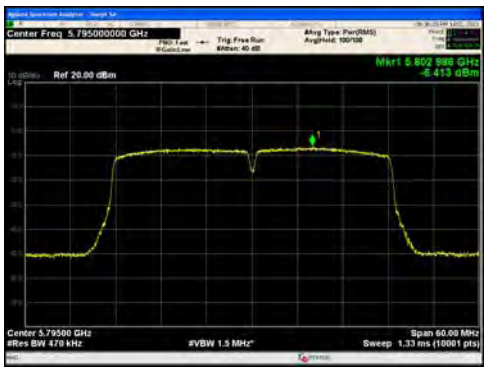


U-NII-3, 802.11ac VHT80, Channel No.: 155



MIMO

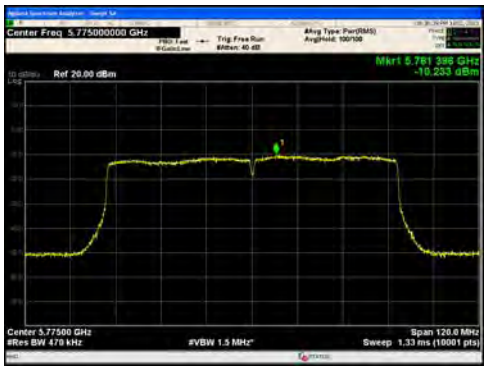
Antenna 1

802.11n HT20, Channel No.: 149	802.11n HT40, Channel No.: 151
	
802.11n HT20, Channel No.: 157	802.11n HT40, Channel No.: 159
	
802.11n HT20, Channel No.: 165	802.11ac VHT40, Channel No.: 151
	
802.11ac VHT40, Channel No.: 159	802.11ac VHT20, Channel No.: 149
	

802.11ac VHT20, Channel No.: 157

802.11ac VHT20, Channel No.: 165

802.11ac VHT80, Channel No.: 155



Antenna 2

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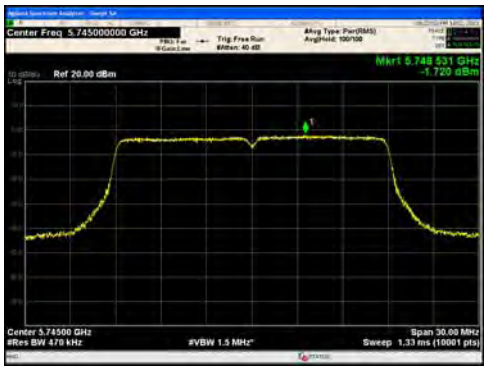
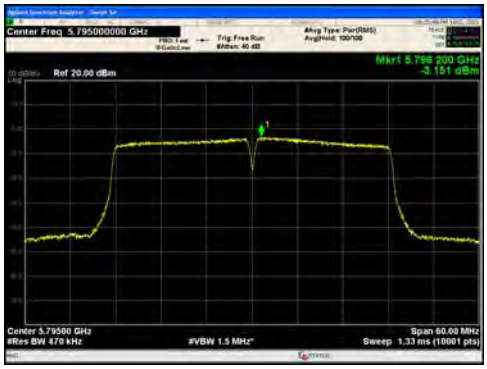
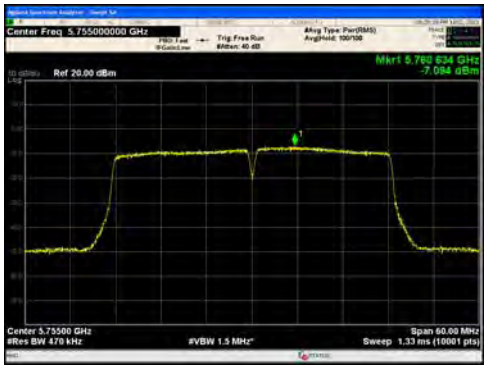
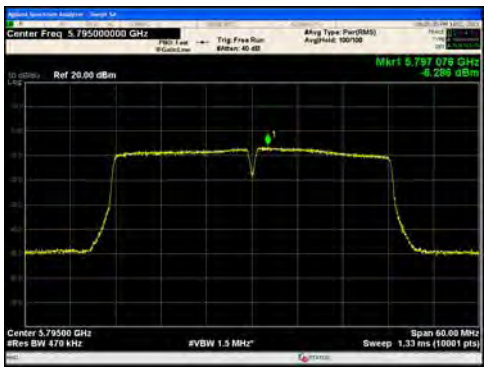
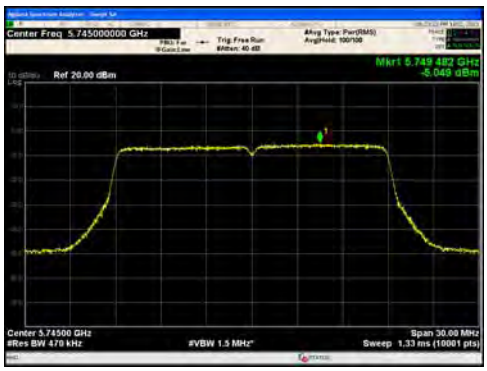
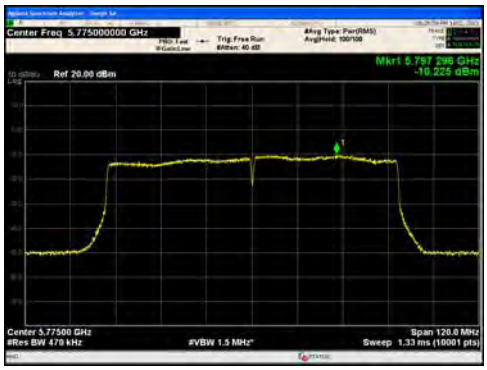
	
802.11n HT20, Channel No.: 157	802.11n HT40, Channel No.: 159
	
802.11n HT20, Channel No.: 165	802.11ac VHT40, Channel No.: 151
	
802.11ac VHT40, Channel No.: 159	802.11ac VHT20, Channel No.: 149
	

802.11ac VHT20, Channel No.: 157

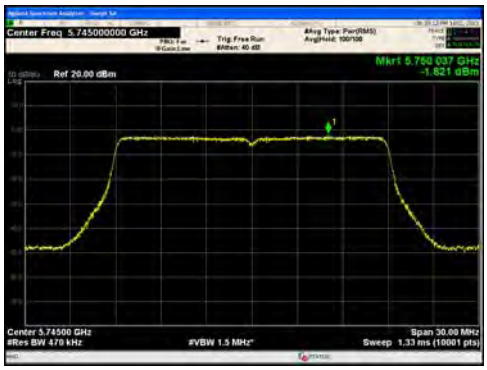
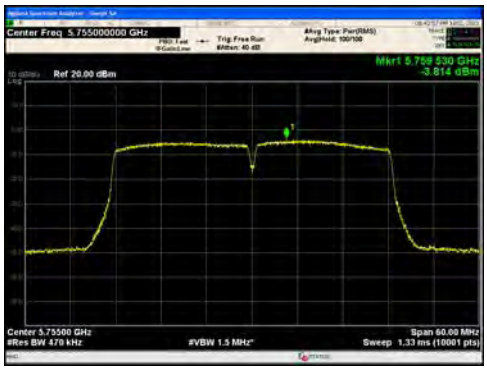
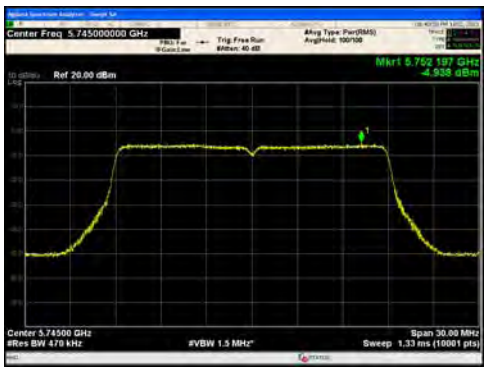
802.11ac VHT20, Channel No.: 165

802.11ac VHT80, Channel No.: 155



MIMO with Beamforming

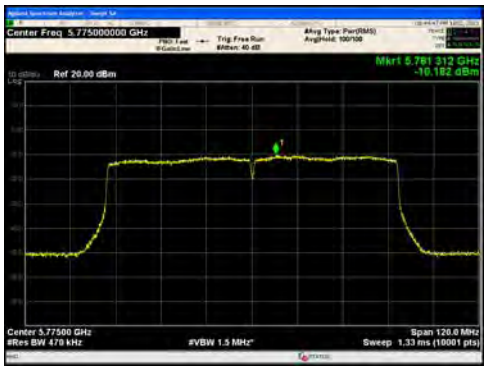
Antenna 1

802.11n HT20, Channel No.: 149	802.11n HT40, Channel No.: 151
	
802.11n HT20, Channel No.: 157	802.11n HT40, Channel No.: 159
	
802.11n HT20, Channel No.: 165	802.11ac VHT40, Channel No.: 151
	
802.11ac VHT40, Channel No.: 159	802.11ac VHT20, Channel No.: 149
	

802.11ac VHT20, Channel No.: 157

802.11ac VHT20, Channel No.: 165

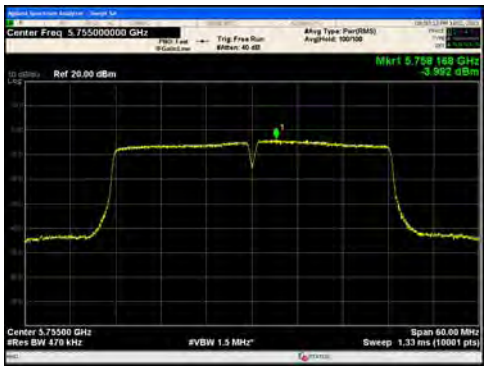
802.11ac VHT80, Channel No.: 155



Antenna 2

802.11n HT20, Channel No.: 149

802.11n HT40, Channel No.: 151

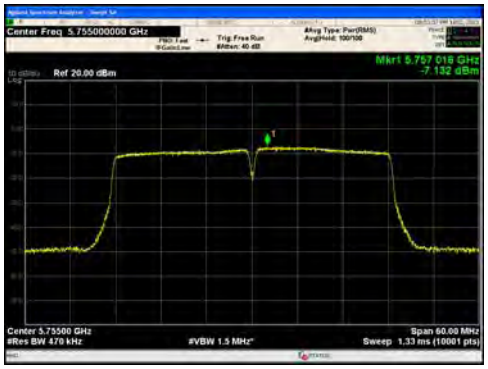


802.11n HT20, Channel No.: 157

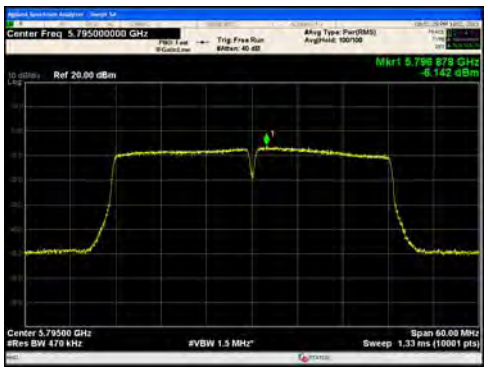
802.11n HT40, Channel No.: 159

802.11n HT20, Channel No.: 48

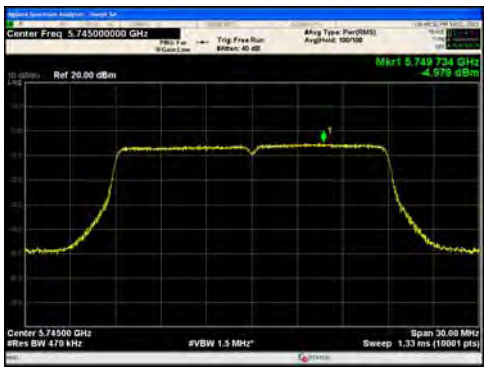
802.11ac VHT40, Channel No.: 157



802.11ac VHT40, Channel No.: 159



802.11ac VHT20, Channel No.: 149



802.11ac VHT20, Channel No.: 157

802.11ac VHT20, Channel No.: 165

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. 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:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9KHz, VBW=30KHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
a) Peak emission levels are measured by setting the instrument as follows:
Above 1GHz
PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
b) Average emission levels are measured by setting the instrument as follows:
Above 1GHz
AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
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.

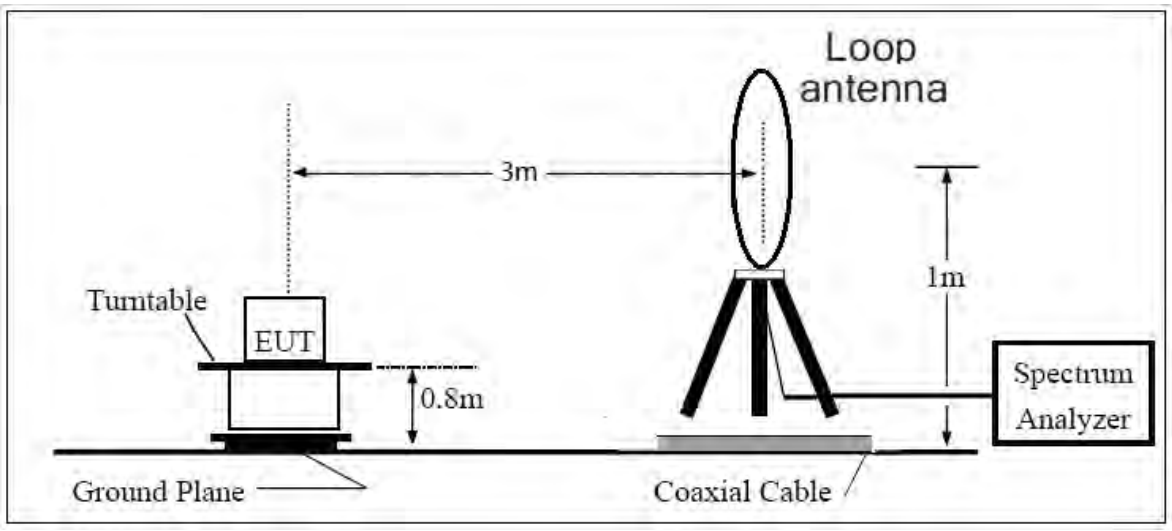
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Reduce the video bandwidth until no significant variations in the displayed signal are observed in subsequent traces, provided the video bandwidth is no less than 1 Hz. For regulatory requirements that specify averaging only over the transmit duration (e.g., digital transmission system [DTS] and Unlicensed National Information Infrastructure [U-NII]), the video bandwidth shall be greater than [1 / (minimum transmitter on time)] and no less than 1 Hz.

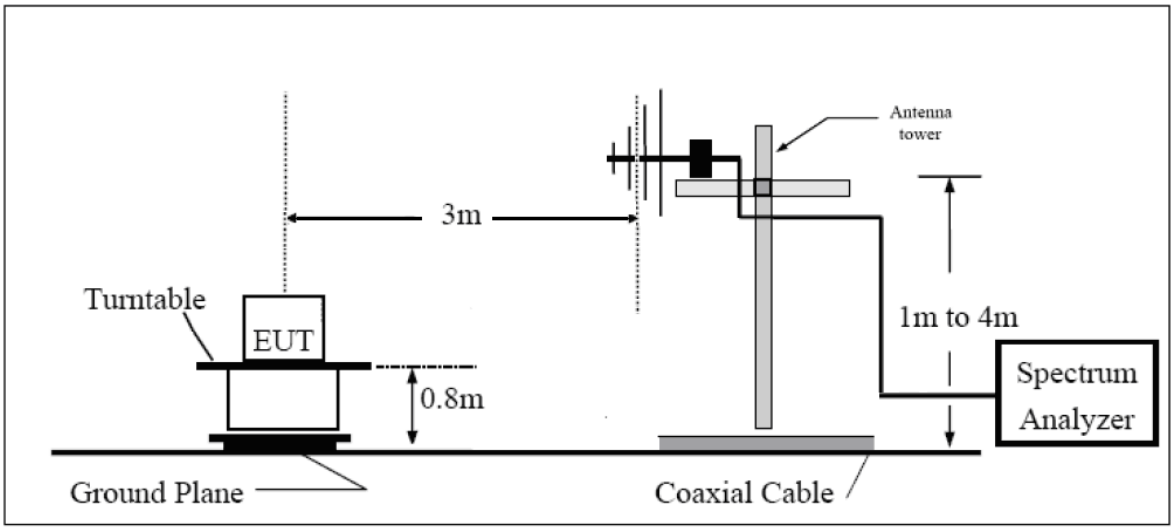
The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

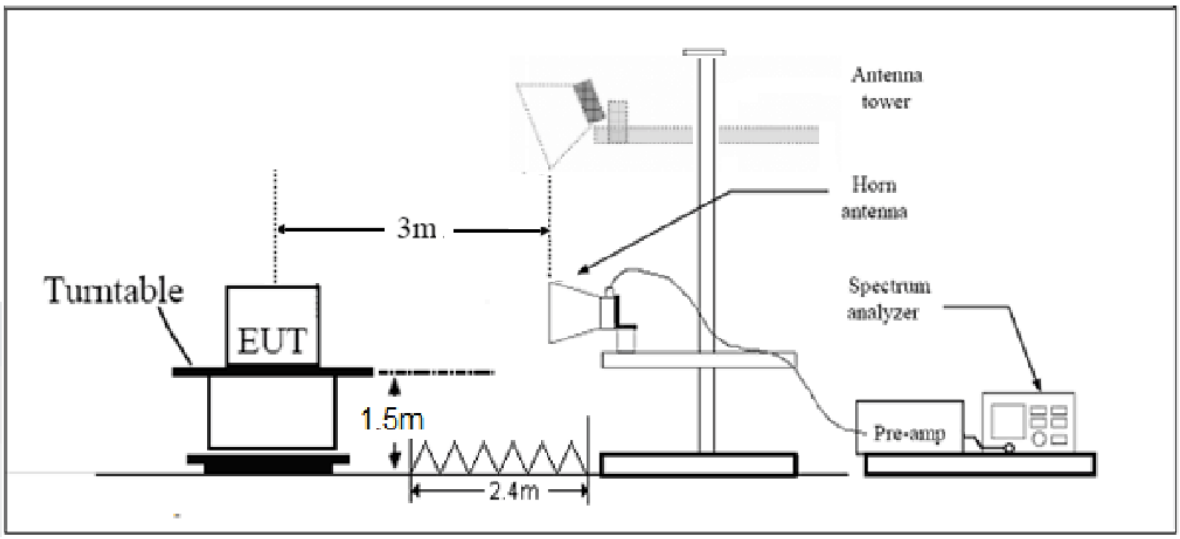
9KHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

(1) For transmitters operating in the 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.

(2) 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).

(3) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

(4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

Note: the following formula is used to convert the EIRP to field strength

§1、E[dBμV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and

d = distance at which field strength limit is specified in the rules;

§2、E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters

(5) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

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.

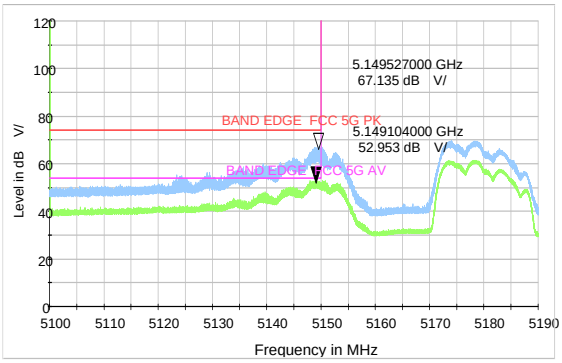
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

Test Results:

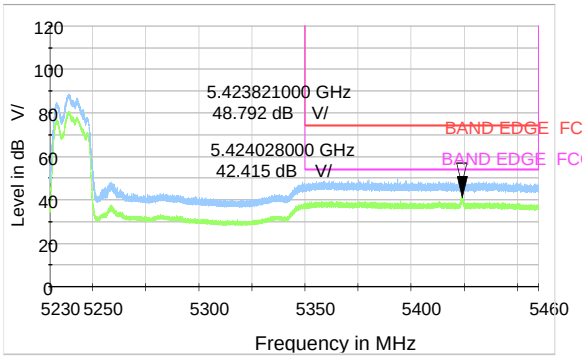
The signal beyond the limit is carrier.

U-NII-1

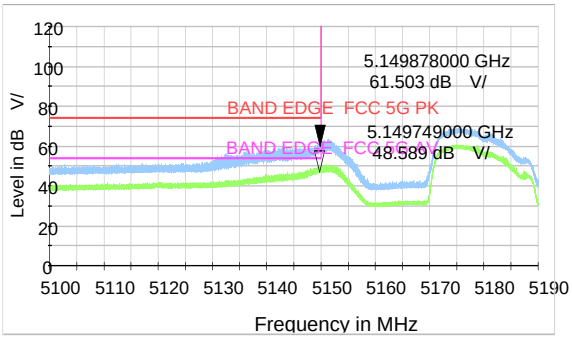
802.11a-Channel 36: Peak& Average



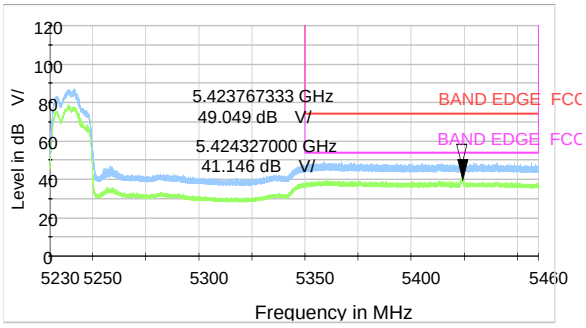
802.11a-Channel 48: Peak& Average



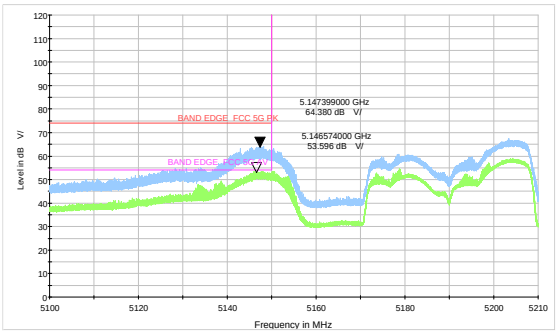
802.11n HT20-Channel 36: Peak& Average



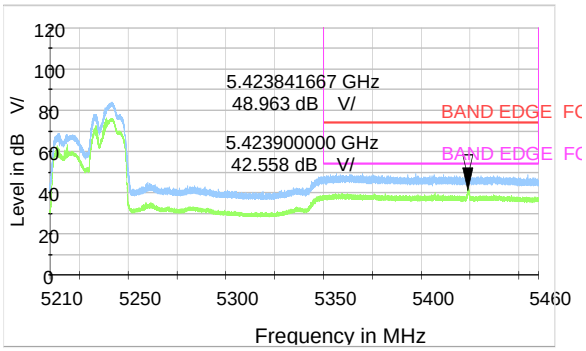
802.11n HT20-Channel 48: Peak& Average



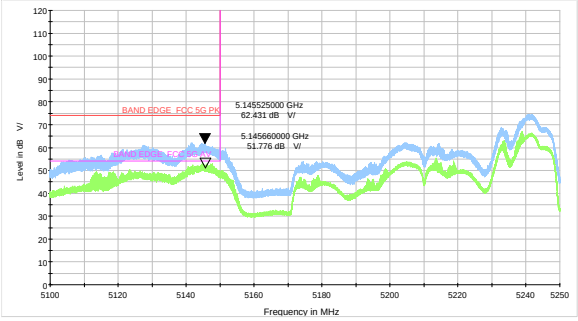
802.11n HT40-Channel 38: Peak& Average



802.11n HT40-Channel 46: Peak& Average

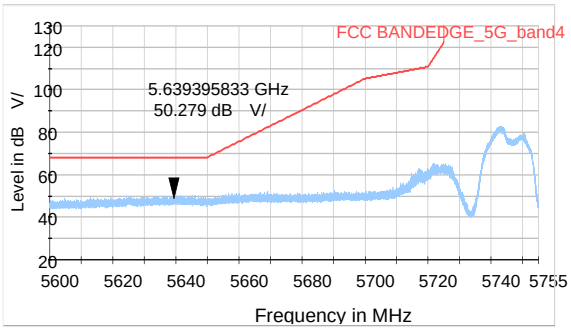


802.11ac VHT80- Channel 42: Peak & Average

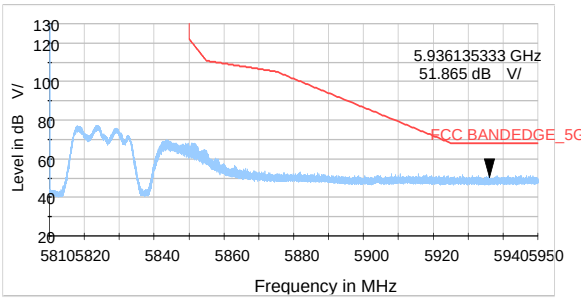


U-NII-3

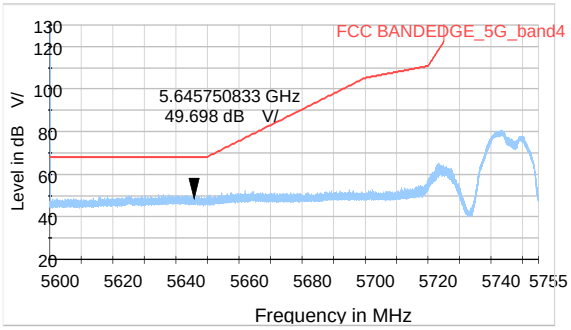
802.11a-Channel 149: Peak



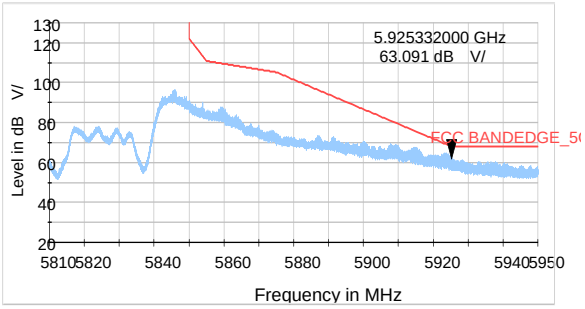
802.11a-Channel 165: Peak



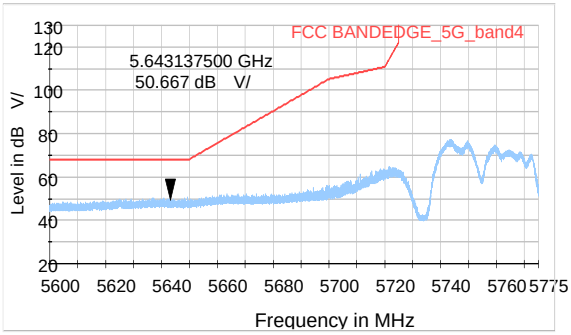
802.11n HT20-Channel 149: Peak



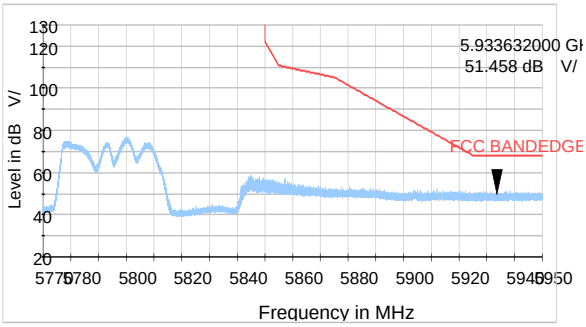
802.11n HT20-Channel 165: Peak



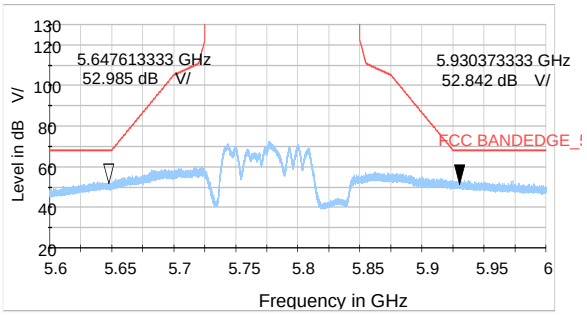
802.11n HT40-Channel 151: Peak



802.11n HT40-Channel 159: Peak



802.11ac VHT80- Channel 155: Peak



Result of RE

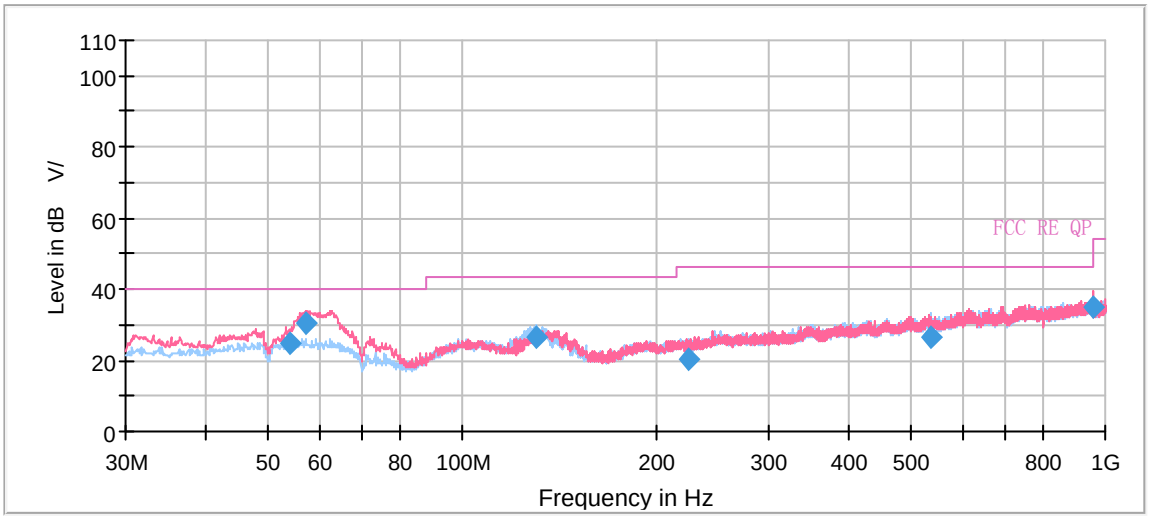
Test result

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. SISO Antenna 2 was selected as the worst SISO antenna.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11a, Channel 165 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Continuous TX mode:



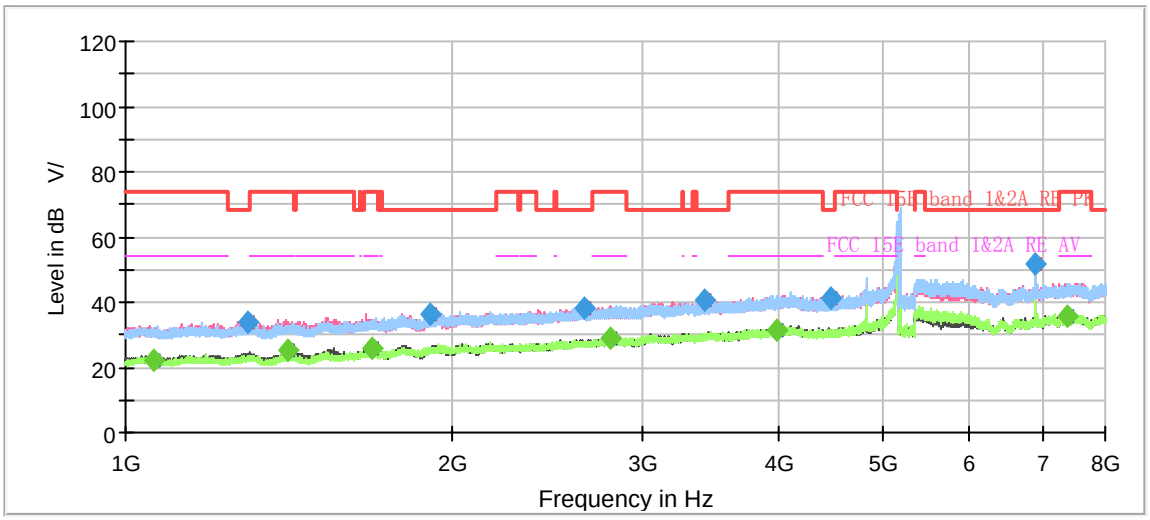
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
53.880000	24.64	100.0	V	0.0	-4.9	15.36	40.00
57.320000	30.43	100.0	V	10.0	-4.9	9.57	40.00
130.037500	26.26	185.0	H	91.0	-8.8	17.24	43.50
225.702500	20.06	185.0	V	28.0	-5.5	25.94	46.00
535.000000	26.67	211.0	H	301.0	1.1	19.33	46.00
959.745000	35.11	100.0	V	244.0	5.6	10.89	46.00

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

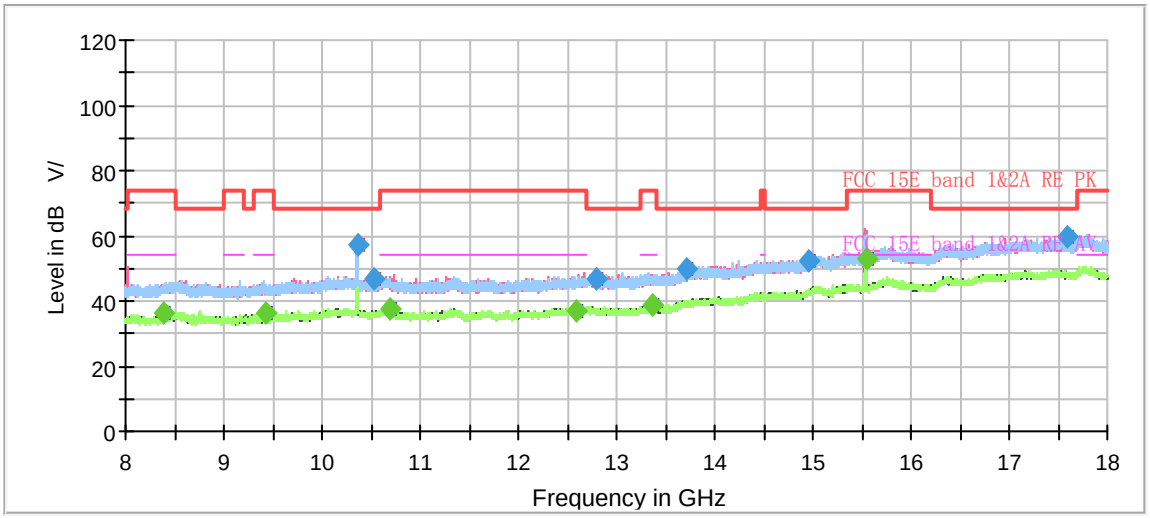
2. Margin = Limit – Quasi-Peak

802.11a CH36



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

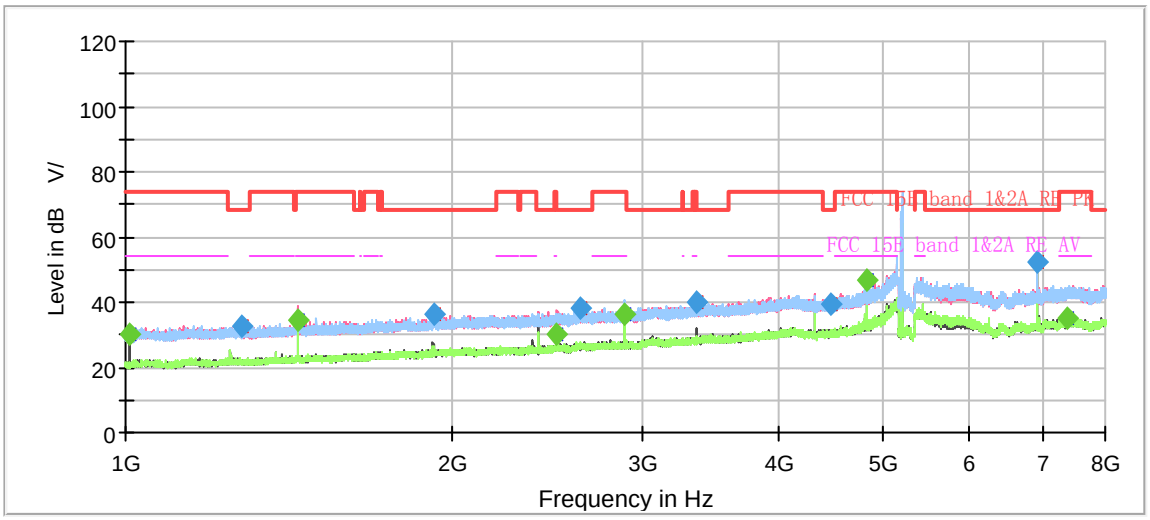


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1060.666667	---	22.06	54.00	31.94	200.0	V	345.0	-18.1
1298.900000	33.81	---	68.20	34.39	200.0	V	284.0	-16.8
1409.733333	---	25.02	54.00	28.98	200.0	V	117.0	-16.1
1687.400000	---	25.85	54.00	28.15	100.0	V	60.0	-14.6
1908.600000	36.48	---	68.20	31.72	100.0	V	242.0	-13.3
2646.400000	38.03	---	68.20	30.17	200.0	V	304.0	-9.7
2801.800000	---	28.92	54.00	25.08	100.0	V	11.0	-9.1
3424.333333	40.45	---	68.20	27.75	100.0	V	108.0	-6.5
3990.166667	---	31.68	54.00	22.32	100.0	H	147.0	-3.9
4473.866667	41.39	---	68.20	26.81	200.0	V	61.0	-3.6
6906.600000	51.88	---	68.20	16.32	200.0	H	238.0	0.7
7382.600000	---	35.98	54.00	18.02	100.0	V	347.0	1.5
15544.333333	---	52.73	54.00	1.27	200.0	V	296.0	13.7
17582.666667	59.55	---	68.20	8.65	100.0	H	64.0	18.8

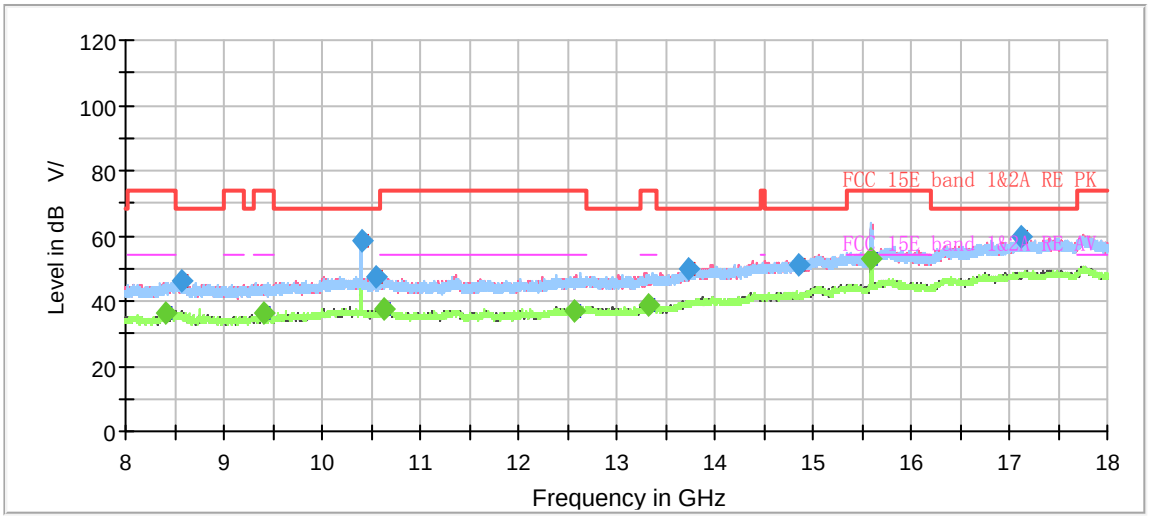
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH40



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

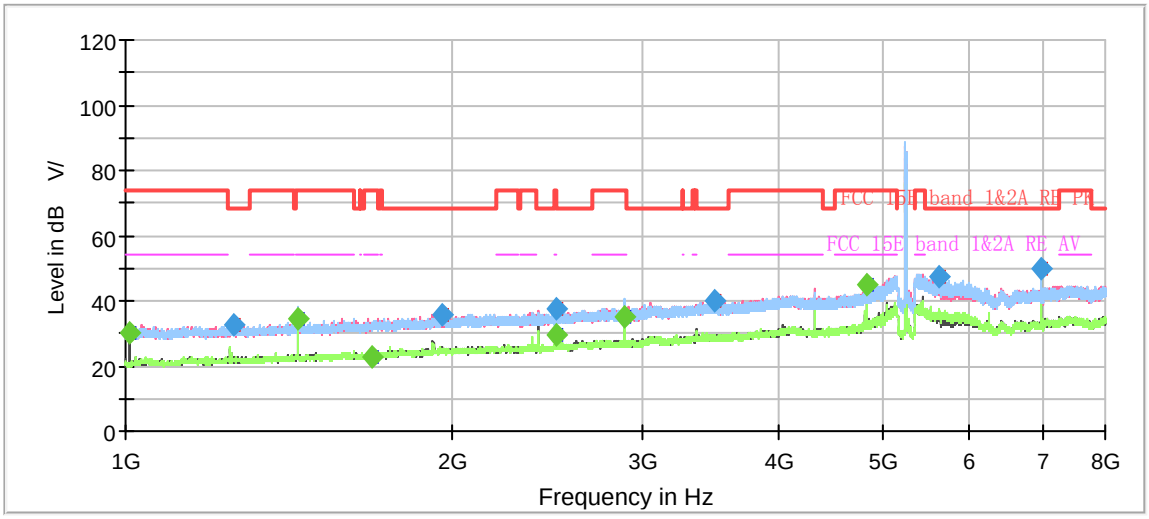


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1008.866667	---	30.08	54.00	23.92	200.0	V	303.0	-18.4
1281.866667	32.37	---	68.20	35.83	200.0	V	289.0	-16.8
1440.533333	---	34.74	54.00	19.26	200.0	H	319.0	-15.9
1921.200000	36.35	---	68.20	31.85	100.0	V	47.0	-13.2
2499.866667	---	30.43	54.00	23.57	100.0	V	164.0	-10.6
2620.966667	38.05	---	68.20	30.15	100.0	V	178.0	-9.8
2881.133333	---	36.30	54.00	17.70	100.0	V	357.0	-8.8
3361.333333	39.71	---	68.20	28.49	200.0	V	130.0	-6.7
4461.966667	39.68	---	68.20	28.52	200.0	V	19.0	-3.6
4817.100000	---	46.96	54.00	7.04	200.0	H	156.0	-2.4
6933.433333	52.08	---	68.20	16.12	200.0	H	243.0	0.7
7385.633333	---	35.23	54.00	18.77	200.0	H	19.0	1.5
15599.000000	---	53.09	54.00	0.91	200.0	V	298.0	13.7
17117.000000	59.42	---	68.20	8.78	100.0	H	112.0	18.1

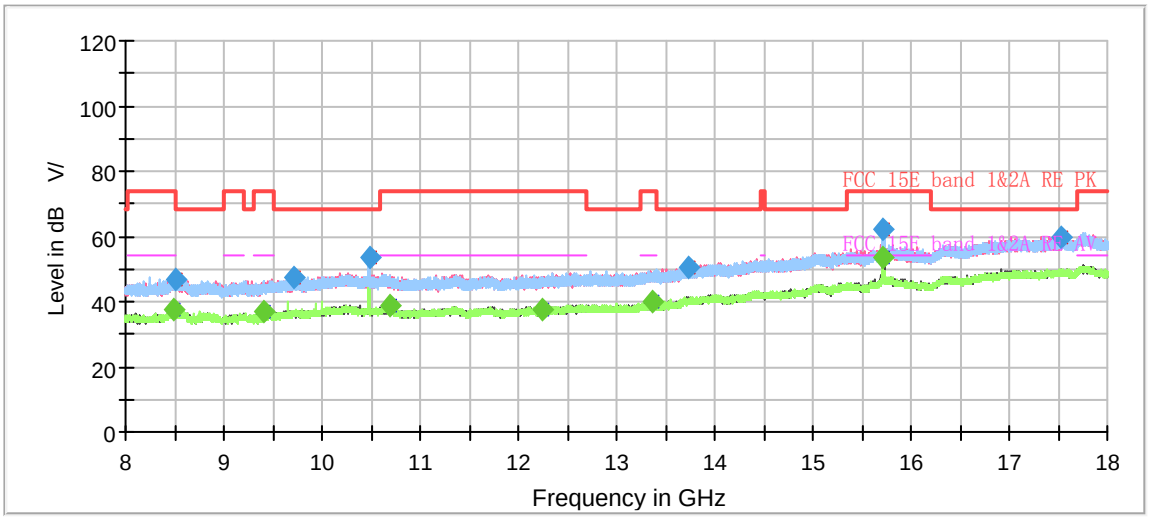
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH48



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.



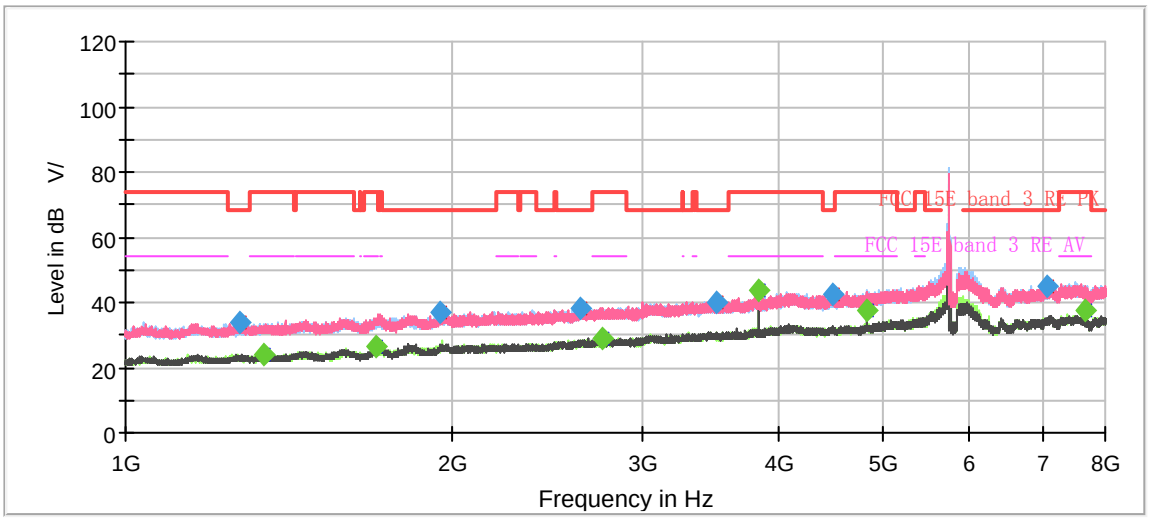
Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1008.166667	---	30.08	54.00	23.92	200.0	V	151.0	-18.4
1260.400000	32.74	---	68.20	35.46	200.0	H	88.0	-16.9
1440.533333	---	34.61	54.00	19.39	200.0	H	320.0	-15.9
1685.533333	---	22.92	54.00	31.08	100.0	V	0.0	-14.6
1958.300000	35.92	---	68.20	32.28	100.0	H	232.0	-12.9
2499.866667	---	29.78	54.00	24.22	100.0	V	194.0	-10.6
2500.100000	37.39	---	68.20	30.81	100.0	H	332.0	-10.6
2881.133333	---	35.21	54.00	18.79	100.0	V	134.0	-8.8
3490.366667	39.87	---	68.20	28.33	100.0	V	0.0	-6.3
4817.100000	---	45.16	54.00	8.84	200.0	H	159.0	-2.4
5625.133333	47.40	---	68.20	20.80	200.0	H	251.0	-0.9
6986.866667	49.69	---	68.20	18.51	200.0	H	236.0	0.8
15719.000000	---	53.38	54.00	0.62	200.0	V	297.0	14.0

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

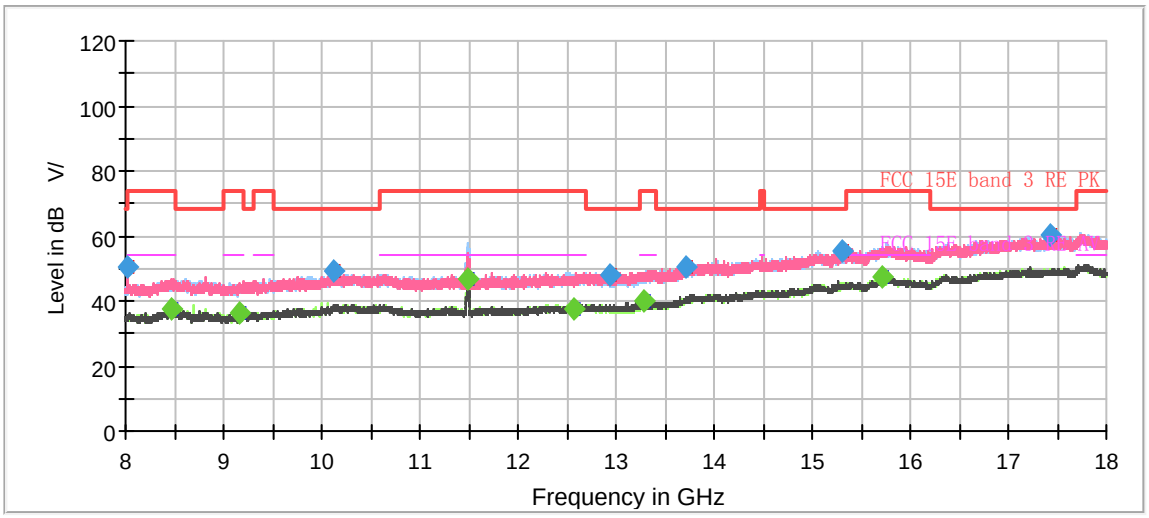
802.11a

CH149



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

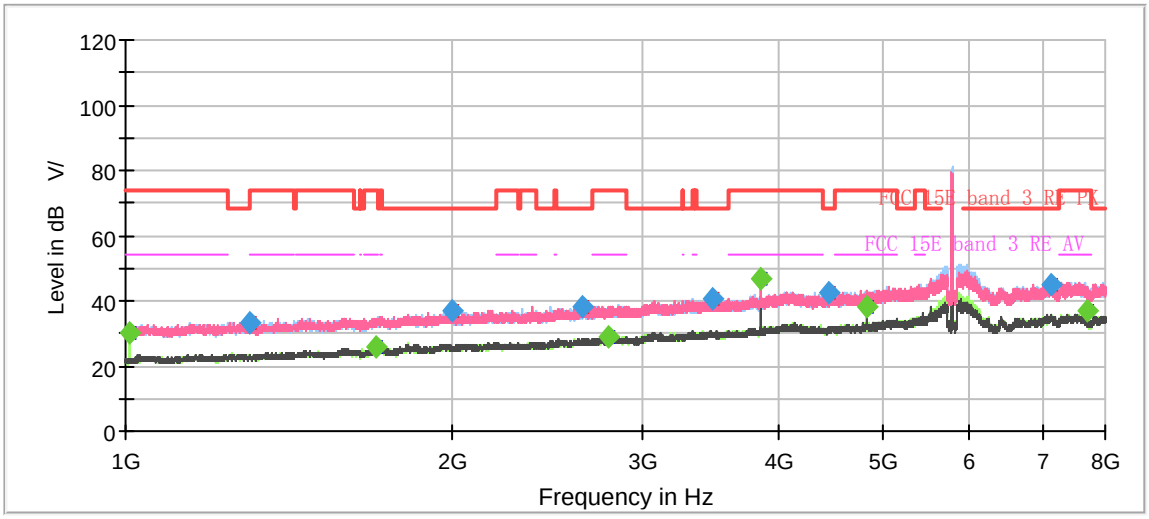


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1272.533333	33.76	---	68.20	34.44	100.0	H	34.0	-16.9
1342.066667	---	24.27	54.00	29.73	100.0	V	0.0	-16.6
1703.733333	---	26.34	54.00	27.66	100.0	V	91.0	-14.5
1949.666667	36.80	---	68.20	31.40	100.0	V	227.0	-13.0
2623.533333	37.99	---	68.20	30.21	200.0	H	0.0	-9.8
2753.033333	---	28.76	54.00	25.24	100.0	V	337.0	-9.2
3507.866667	39.96	---	68.20	28.24	100.0	V	337.0	-6.3
3830.100000	---	43.47	54.00	10.53	200.0	H	154.0	-4.9
4483.666667	42.23	---	68.20	25.97	100.0	V	208.0	-3.6
4817.800000	---	37.63	54.00	16.37	100.0	V	307.0	-2.4
7072.733333	45.03	---	68.20	23.17	100.0	H	243.0	0.9
7659.800000	---	37.78	54.00	16.22	200.0	V	274.0	1.4

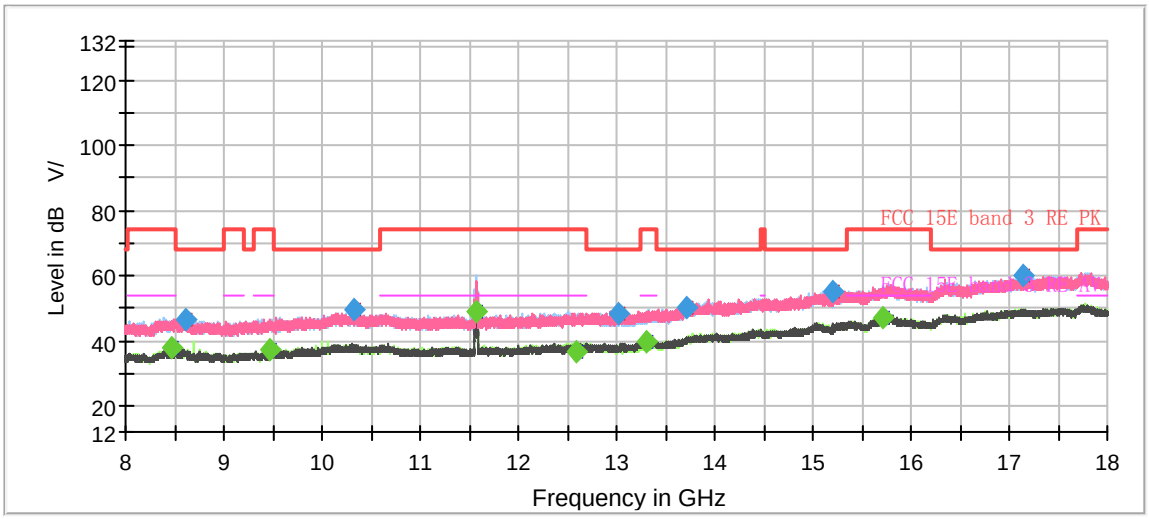
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH157



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

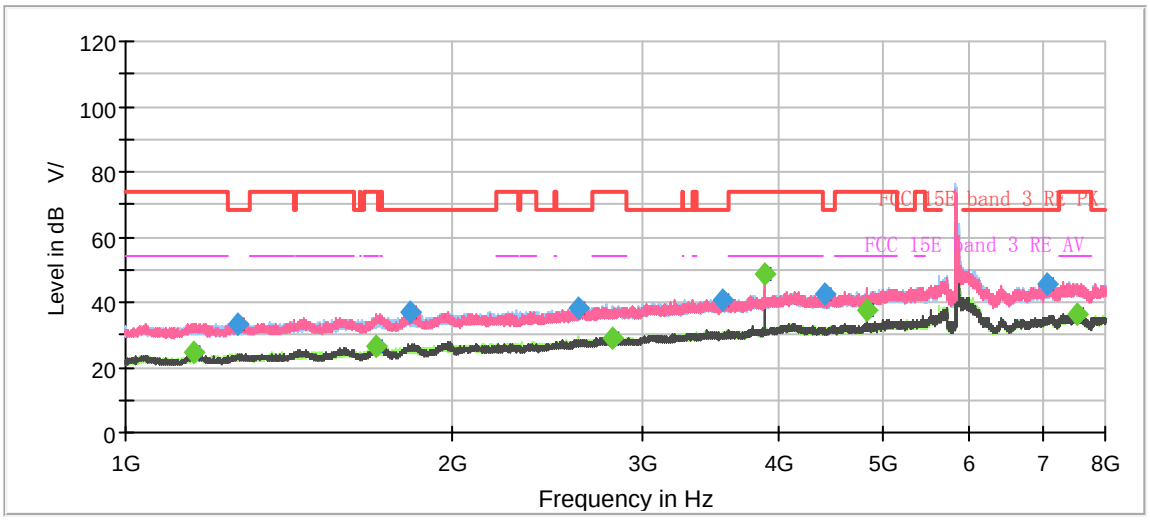


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1008.866667	---	30.09	54.00	23.91	100.0	H	15.0	-18.4
1299.833333	33.43	---	68.20	34.77	200.0	V	27.0	-16.7
1702.800000	---	25.79	54.00	28.21	100.0	V	141.0	-14.5
1997.033333	36.84	---	68.20	31.36	200.0	H	8.0	-12.7
2634.500000	38.12	---	68.20	30.08	200.0	V	35.0	-9.8
2788.500000	---	28.88	54.00	25.12	200.0	V	188.0	-9.1
3479.166667	40.69	---	68.20	27.51	100.0	V	0.0	-6.3
3856.700000	---	46.63	54.00	7.37	200.0	H	152.0	-4.7
4456.600000	42.62	---	68.20	25.58	200.0	V	108.0	-3.6
4816.866667	---	38.16	54.00	15.84	200.0	H	152.0	-2.4
7121.733333	44.62	---	68.20	23.58	100.0	V	240.0	1.0
7713.700000	---	37.01	54.00	16.99	200.0	V	287.0	1.3
11572.333333	---	49.04	54.00	4.96	200.0	H	217.0	5.9

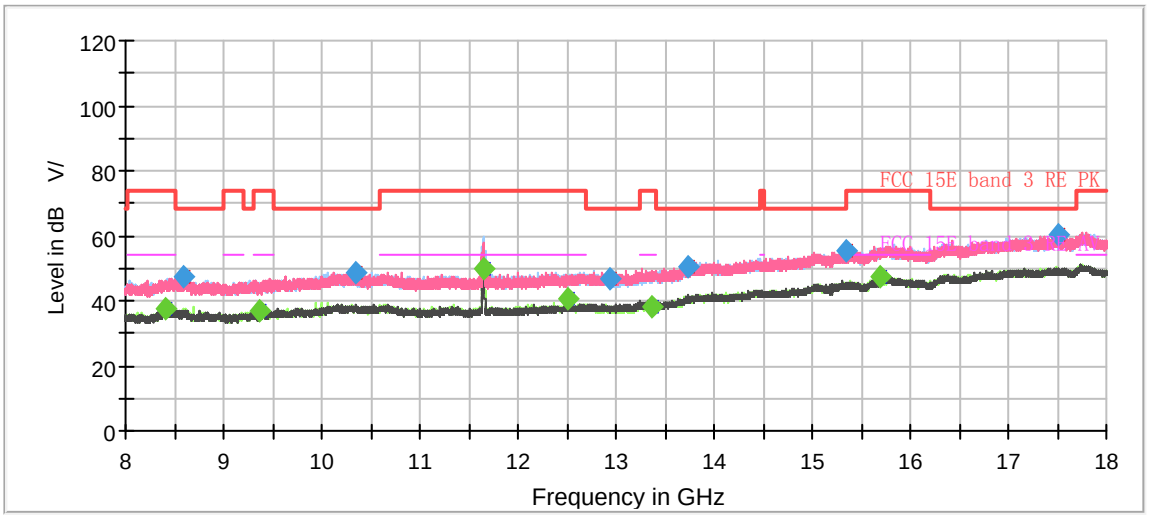
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH165



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

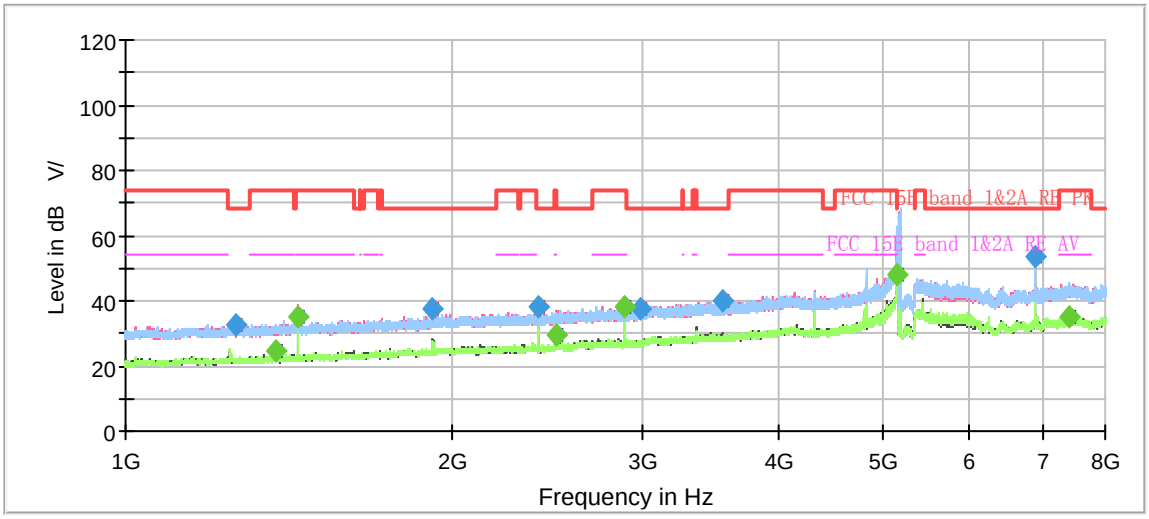


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1156.333333	---	24.67	54.00	29.33	200.0	V	204.0	-17.5
1267.633333	33.47	---	68.20	34.73	100.0	V	353.0	-16.9
1699.766667	---	26.65	54.00	27.35	100.0	V	240.0	-14.5
1830.433333	37.01	---	68.20	31.19	100.0	V	317.0	-13.7
2612.100000	38.21	---	68.20	29.99	200.0	V	276.0	-9.9
2809.033333	---	29.21	54.00	24.79	200.0	H	291.0	-9.0
3551.033333	40.67	---	68.20	27.53	200.0	V	320.0	-6.1
3883.300000	---	48.48	54.00	5.52	200.0	H	154.0	-4.6
4409.233333	42.68	---	68.20	25.52	200.0	H	179.0	-3.8
4815.933333	---	37.58	54.00	16.42	200.0	V	60.0	-2.4
7079.500000	45.61	---	68.20	22.59	200.0	V	221.0	1.0
7541.266667	---	36.14	54.00	17.86	200.0	H	188.0	1.5
11650.000000	---	49.65	54.00	4.35	200.0	H	152.0	6.0

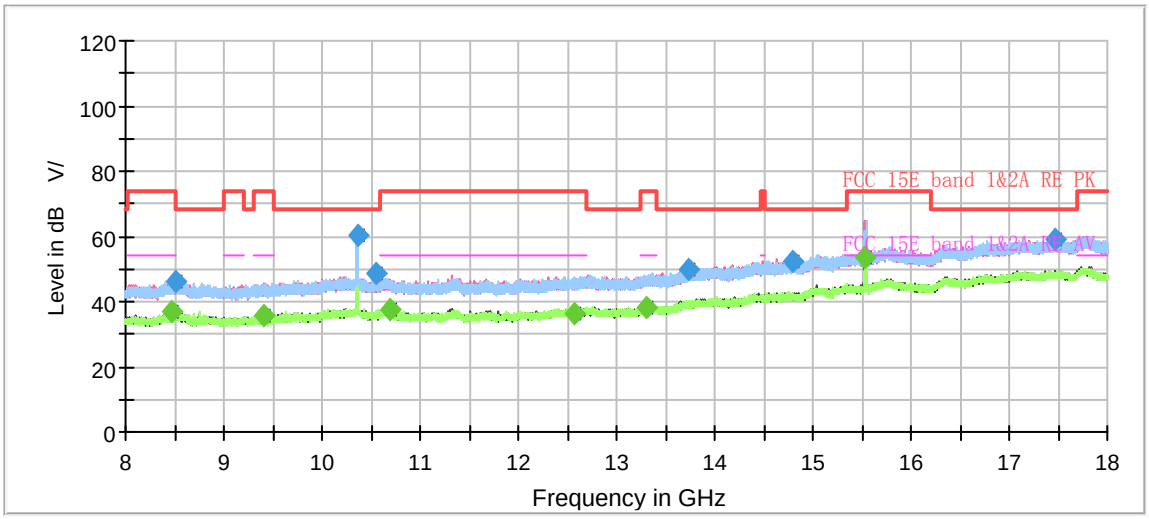
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH36



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

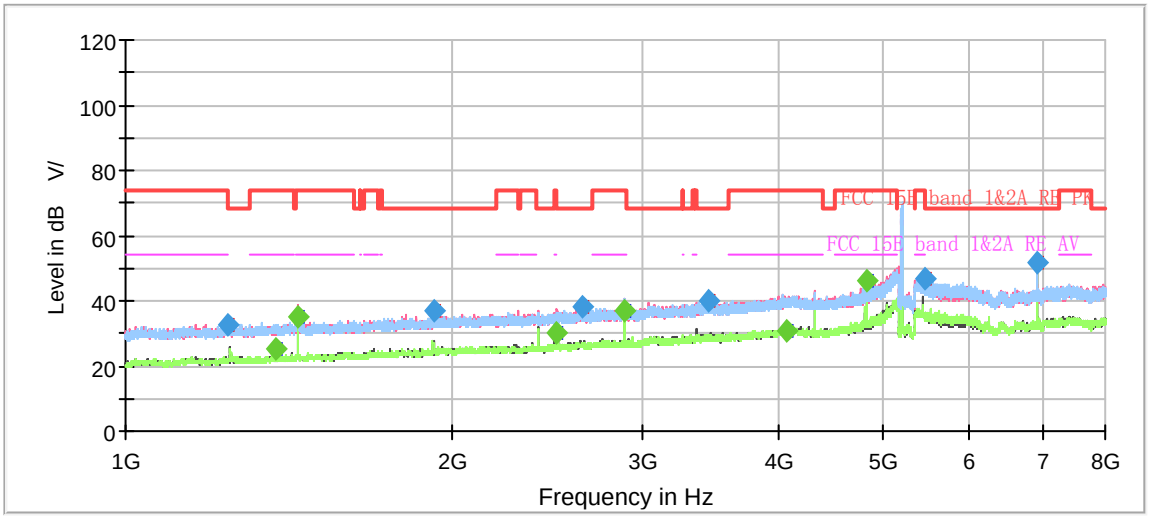


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1261.800000	32.69	---	68.20	35.51	200.0	H	76.0	-16.9
1374.966667	---	24.75	54.00	29.25	200.0	H	245.0	-16.3
1440.533333	---	34.90	54.00	19.10	200.0	V	324.0	-15.9
1919.800000	37.44	---	68.20	30.76	200.0	V	129.0	-13.2
2400.933333	38.43	---	68.20	29.77	100.0	H	22.0	-11.1
2499.866667	---	29.84	54.00	24.16	100.0	H	221.0	-10.6
2881.366667	---	37.93	54.00	16.07	200.0	V	47.0	-8.8
2985.900000	37.28	---	68.20	30.92	100.0	V	0.0	-8.2
3548.000000	40.13	---	68.20	28.07	200.0	V	150.0	-6.1
5149.833333	---	48.16	54.00	5.84	200.0	H	231.0	-1.3
6906.600000	53.70	---	68.20	14.50	200.0	V	40.0	0.7
7417.366667	---	35.28	54.00	18.72	100.0	H	311.0	1.5
15537.666667	---	53.69	54.00	0.31	200.0	V	298.0	13.6

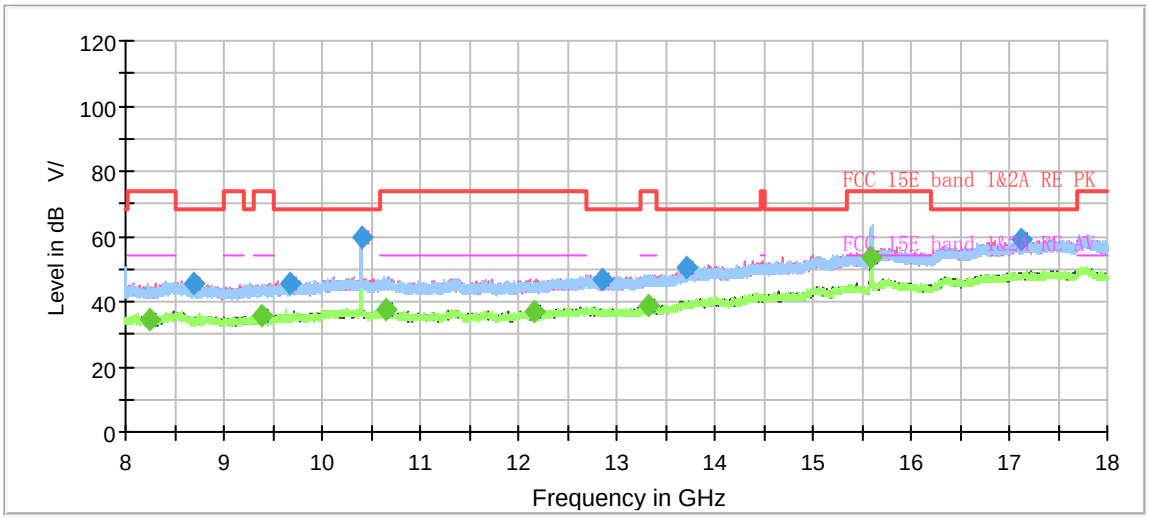
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH40



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

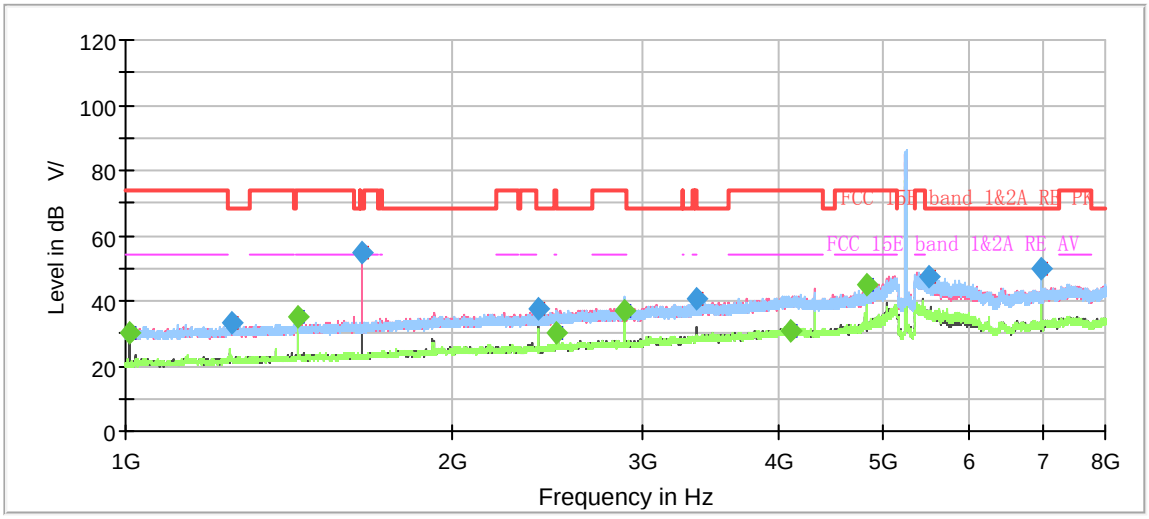


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1240.333333	32.90	---	68.20	35.30	200.0	H	41.0	-17.1
1374.966667	---	25.20	54.00	28.80	200.0	H	215.0	-16.3
1440.533333	---	35.17	54.00	18.83	200.0	V	334.0	-15.9
1921.433333	37.01	---	68.20	31.19	100.0	V	196.0	-13.2
2499.866667	---	29.98	54.00	24.02	200.0	V	301.0	-10.6
2636.600000	38.04	---	68.20	30.16	100.0	H	255.0	-9.7
2881.133333	---	37.18	54.00	16.82	200.0	V	42.0	-8.8
3452.800000	40.00	---	68.20	28.20	100.0	H	2.0	-6.4
4075.333333	---	30.73	54.00	23.27	200.0	V	279.0	-3.4
4817.100000	---	46.36	54.00	7.64	200.0	H	164.0	-2.4
5463.666667	46.61	---	68.20	21.59	200.0	V	85.0	-1.3
6933.433333	51.68	---	68.20	16.52	200.0	H	244.0	0.7
15595.666667	---	53.34	54.00	0.66	200.0	V	298.0	13.7

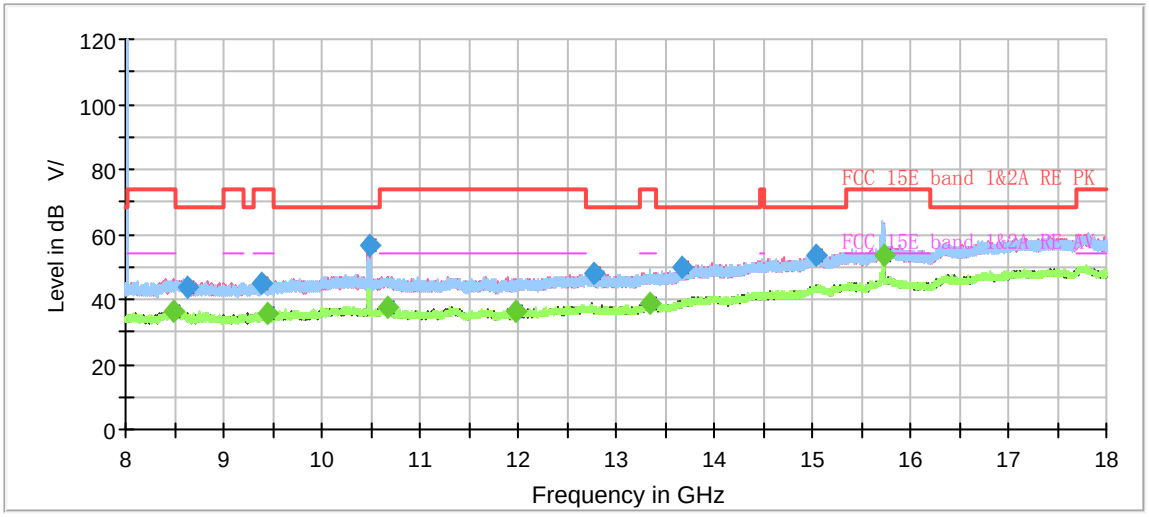
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH48



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

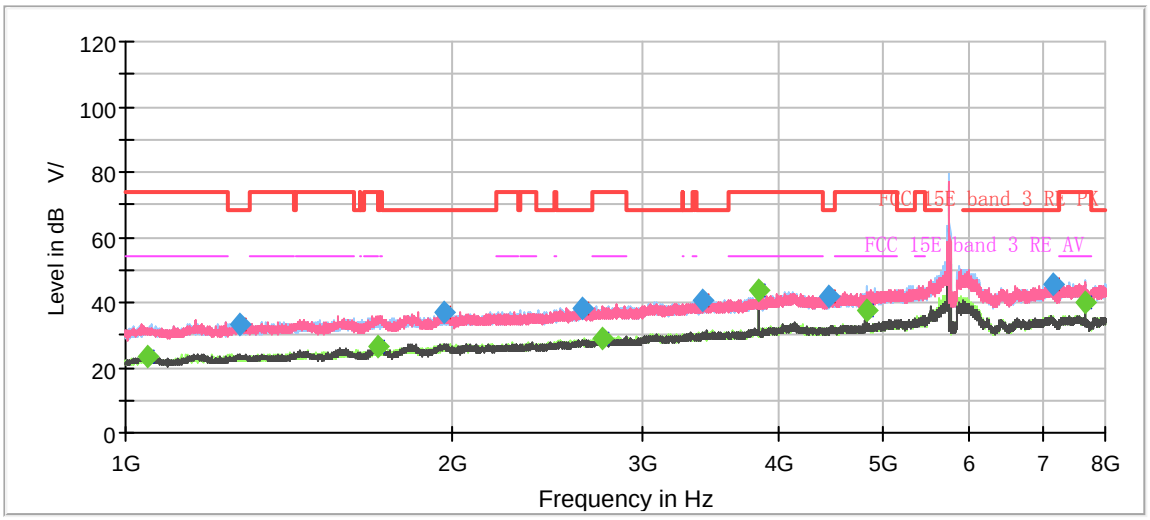


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1006.766667	---	30.08	54.00	23.92	100.0	V	345.0	-18.4
1253.633333	32.93	---	68.20	35.27	200.0	V	119.0	-17.0
1440.533333	---	34.96	54.00	19.04	200.0	V	333.0	-15.9
1653.100000	55.05	---	68.20	13.15	100.0	V	0.0	-14.8
2400.933333	37.25	---	68.20	30.95	200.0	V	54.0	-11.1
2499.866667	---	30.13	54.00	23.87	100.0	V	162.0	-10.6
2881.366667	---	37.02	54.00	16.98	200.0	V	39.0	-8.8
3361.333333	40.42	---	68.20	27.78	200.0	V	68.0	-6.7
4096.100000	---	30.61	54.00	23.39	200.0	V	75.0	-3.2
4817.100000	---	45.16	54.00	8.84	200.0	H	157.0	-2.4
5490.966667	47.44	---	68.20	20.76	200.0	V	0.0	-1.3
6987.100000	50.12	---	68.20	18.08	200.0	V	47.0	0.8
15724.666667	---	53.46	54.00	0.54	200.0	V	295.0	14.0

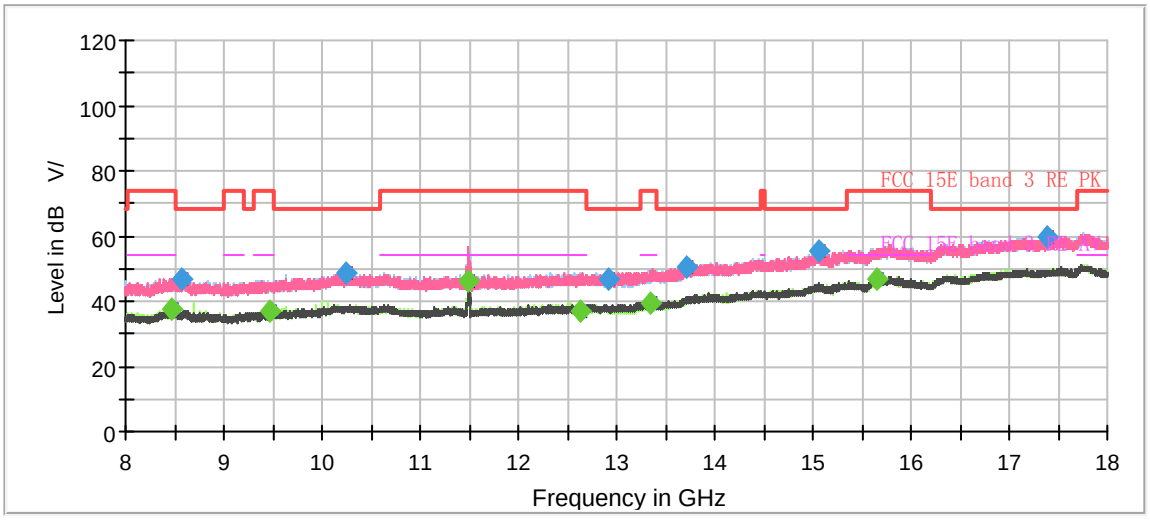
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH149



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

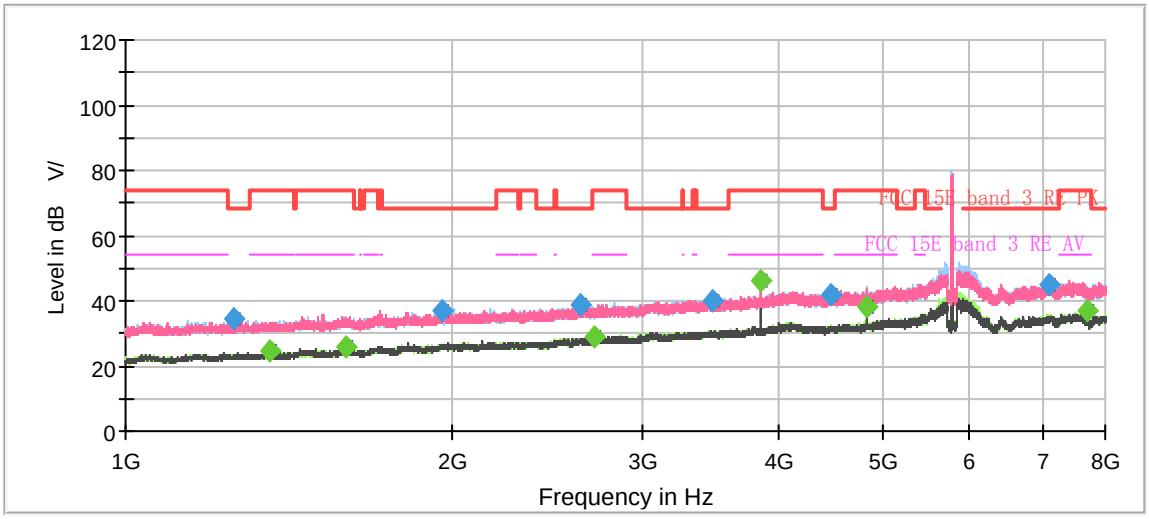


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1049.000000	---	23.44	54.00	30.56	200.0	V	13.0	-18.1
1272.066667	33.41	---	68.20	34.79	200.0	V	174.0	-16.9
1709.800000	---	26.57	54.00	27.43	200.0	V	164.0	-14.4
1966.700000	36.67	---	68.20	31.53	100.0	V	212.0	-12.9
2634.033333	38.19	---	68.20	30.01	100.0	H	0.0	-9.8
2753.733333	---	28.89	54.00	25.11	200.0	H	0.0	-9.2
3401.700000	40.64	---	68.20	27.56	100.0	V	221.0	-6.6
3830.100000	---	43.62	54.00	10.38	200.0	H	154.0	-4.9
4447.500000	41.79	---	68.20	26.41	200.0	H	287.0	-3.7
4815.700000	---	37.73	54.00	16.27	100.0	H	162.0	-2.4
7156.733333	45.69	---	68.20	22.51	200.0	V	164.0	1.1
7660.266667	---	39.84	54.00	14.16	200.0	V	279.0	1.4

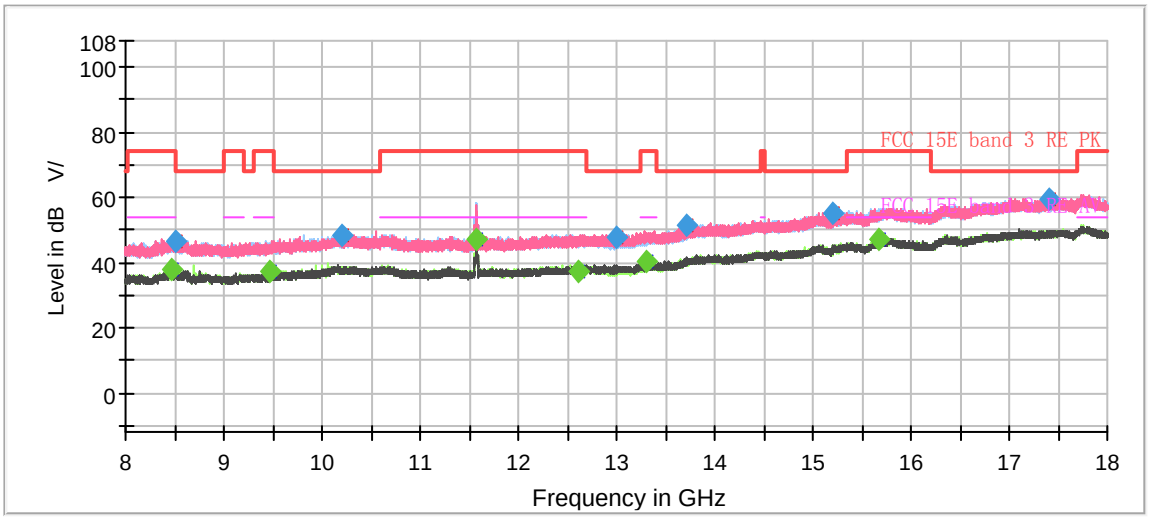
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH157



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

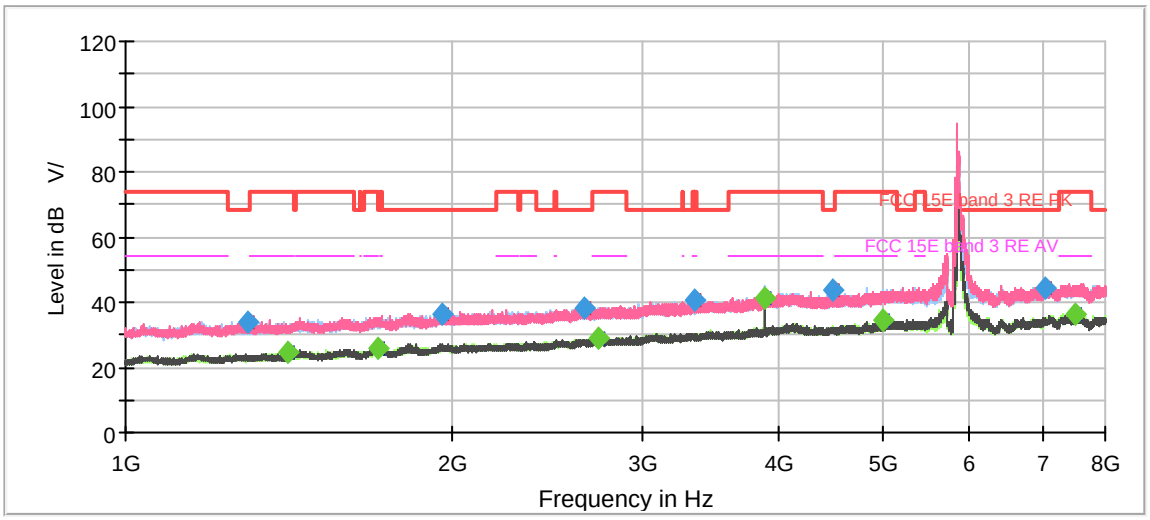


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1259.466667	34.31	---	68.20	33.89	200.0	H	91.0	-17.0
1358.400000	---	24.52	54.00	29.48	200.0	V	254.0	-16.4
1593.833333	---	25.73	54.00	28.27	200.0	V	138.0	-15.1
1960.400000	36.95	---	68.20	31.25	200.0	V	218.0	-12.9
2626.100000	38.56	---	68.20	29.64	100.0	H	12.0	-9.8
2701.233333	---	28.84	54.00	25.16	200.0	H	128.0	-9.4
3479.866667	40.28	---	68.20	27.92	200.0	V	21.0	-6.3
3856.700000	---	46.17	54.00	7.83	200.0	H	147.0	-4.7
4468.966667	41.76	---	68.20	26.44	200.0	H	0.0	-3.6
4815.000000	---	37.88	54.00	16.12	200.0	H	147.0	-2.4
7094.666667	45.21	---	68.20	22.99	200.0	H	227.0	1.0
7713.233333	---	36.90	54.00	17.10	200.0	H	271.0	1.3

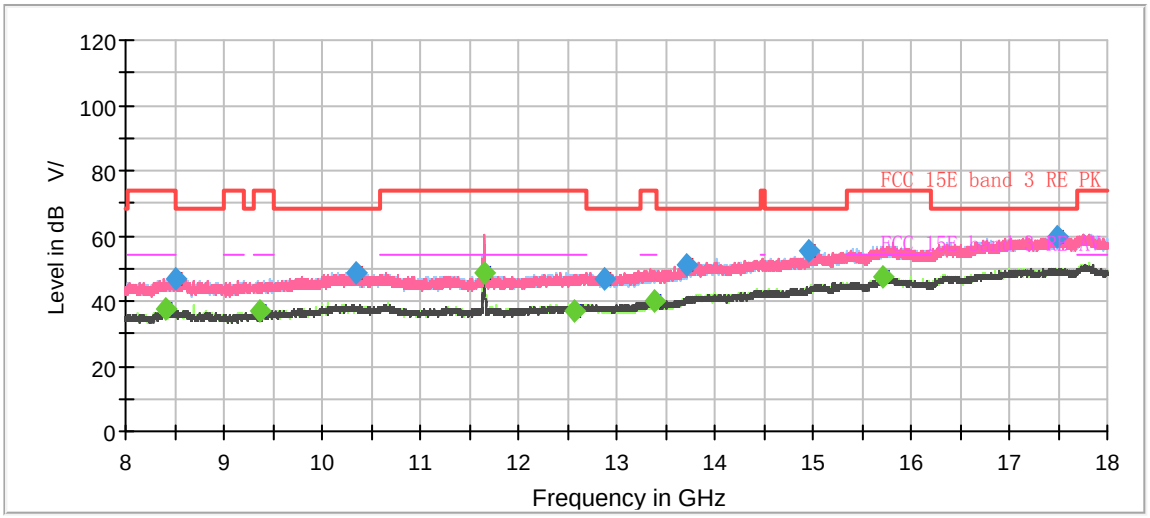
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH165



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

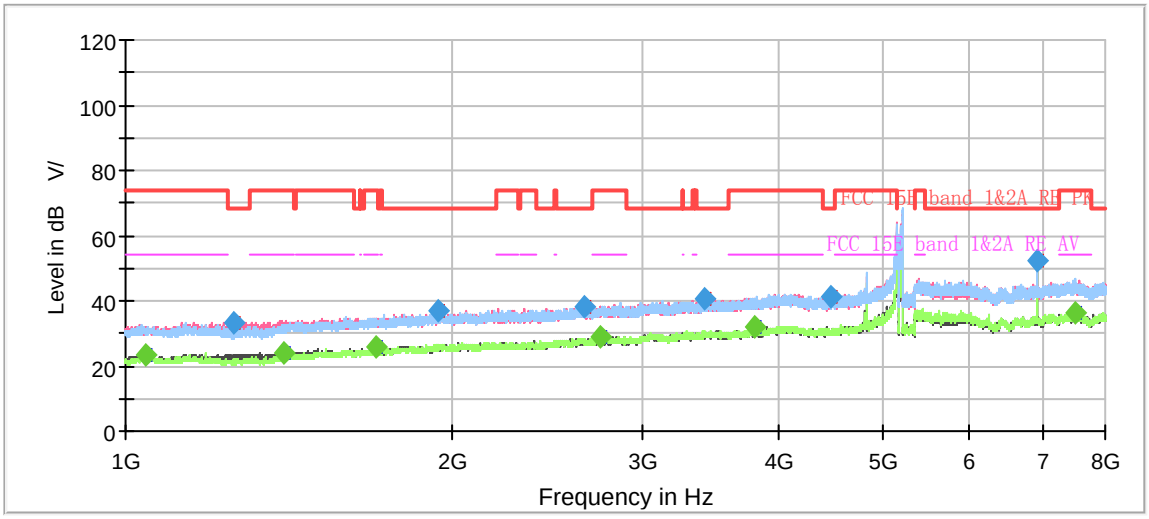


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1294.933333	34.06	---	68.20	34.14	100.0	V	281.0	-16.8
1408.800000	---	24.41	54.00	29.59	100.0	V	337.0	-16.1
1707.000000	---	25.89	54.00	28.11	100.0	V	355.0	-14.4
1961.800000	36.29	---	68.20	31.91	200.0	H	0.0	-12.9
2645.000000	38.28	---	68.20	29.92	200.0	H	215.0	-9.7
2727.366667	---	28.96	54.00	25.04	100.0	V	272.0	-9.3
3345.700000	40.89	---	68.20	27.31	100.0	V	209.0	-6.8
3883.300000	---	41.33	54.00	12.67	200.0	H	260.0	-4.6
4487.633333	43.45	---	68.20	24.75	100.0	H	153.0	-3.6
5000.033333	---	34.47	54.00	19.53	200.0	V	296.0	-1.3
7048.700000	44.58	---	68.20	23.62	200.0	H	260.0	0.9
7520.733333	---	36.45	54.00	17.55	100.0	V	165.0	1.5

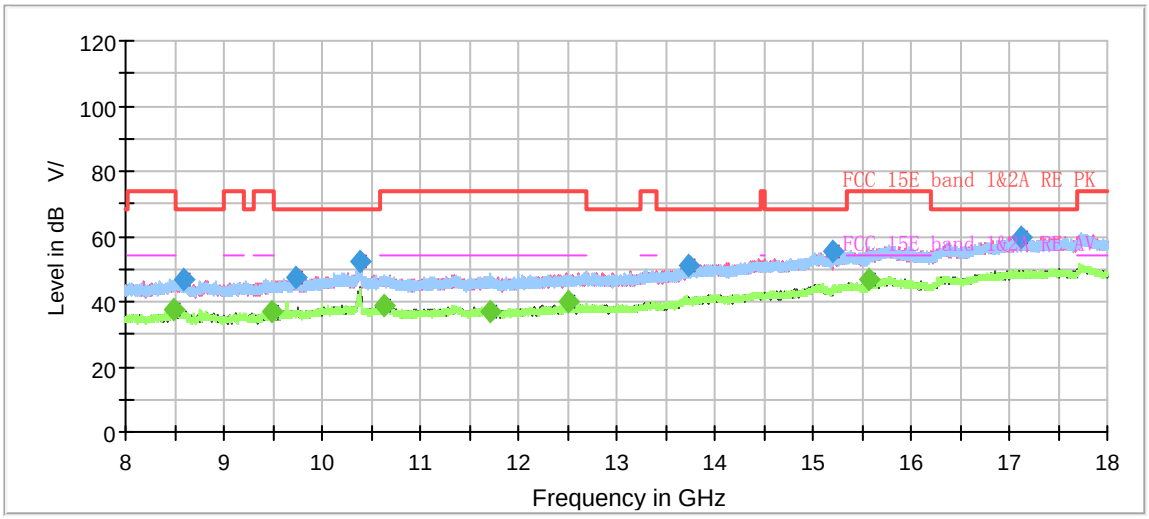
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH38



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

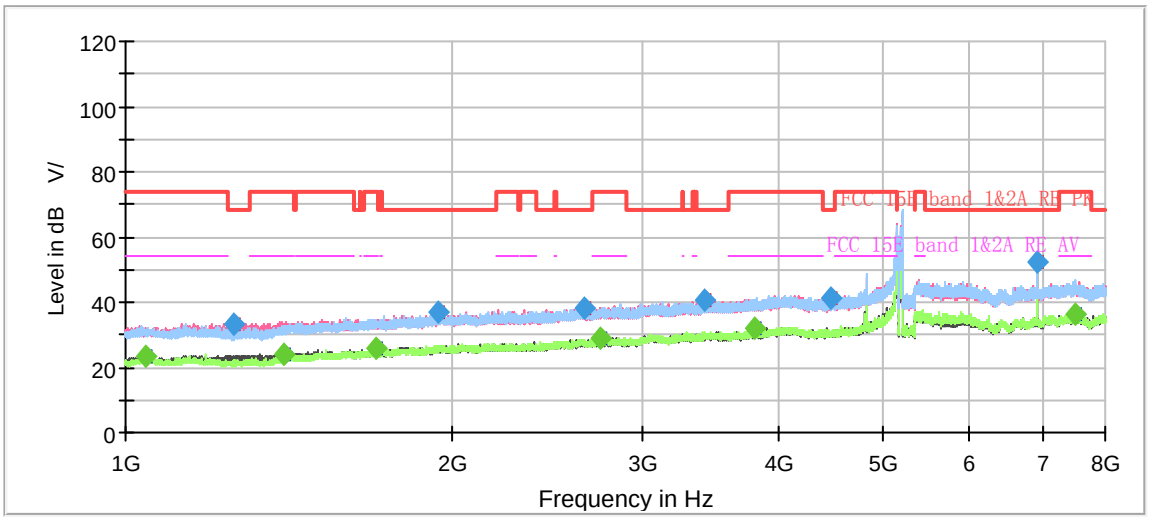


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1041.766667	---	23.33	54.00	30.67	100.0	V	172.0	-18.2
1259.233333	33.39	---	68.20	34.81	100.0	V	45.0	-17.0
1397.366667	---	24.28	54.00	29.72	200.0	V	0.0	-16.2
1701.400000	---	25.87	54.00	28.13	200.0	H	211.0	-14.5
1943.133333	36.97	---	68.20	31.23	100.0	H	158.0	-13.0
2649.666667	38.19	---	68.20	30.01	200.0	V	148.0	-9.7
2739.500000	---	28.82	54.00	25.18	100.0	V	73.0	-9.3
3415.933333	40.84	---	68.20	27.36	200.0	V	0.0	-6.5
3799.533333	---	31.78	54.00	22.22	100.0	H	279.0	-5.0
4462.200000	41.01	---	68.20	27.19	100.0	H	314.0	-3.6
6920.133333	52.57	---	68.20	15.63	200.0	V	49.0	0.7
7500.200000	---	36.17	54.00	17.83	100.0	H	307.0	1.5

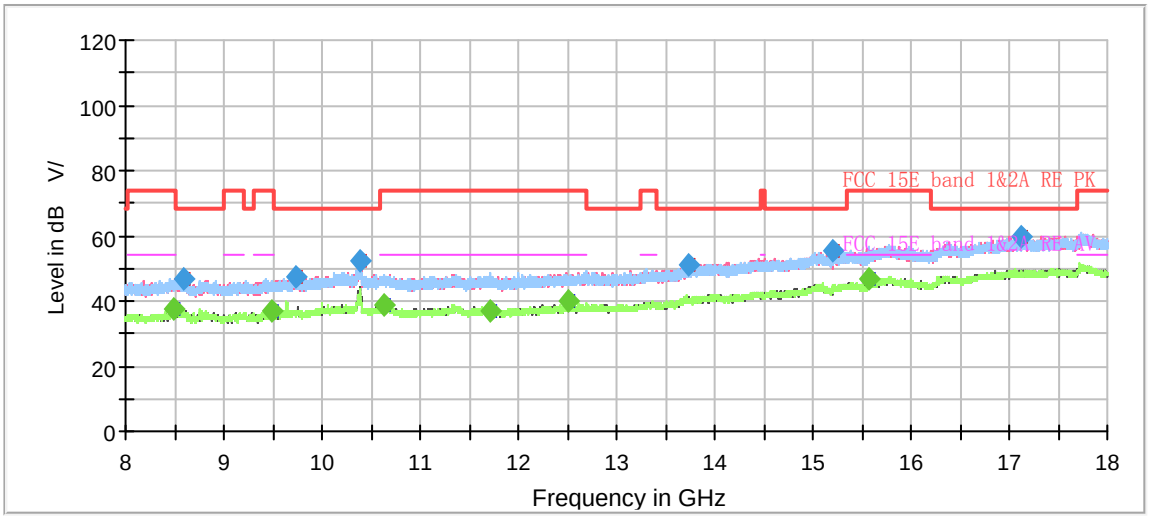
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH38



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

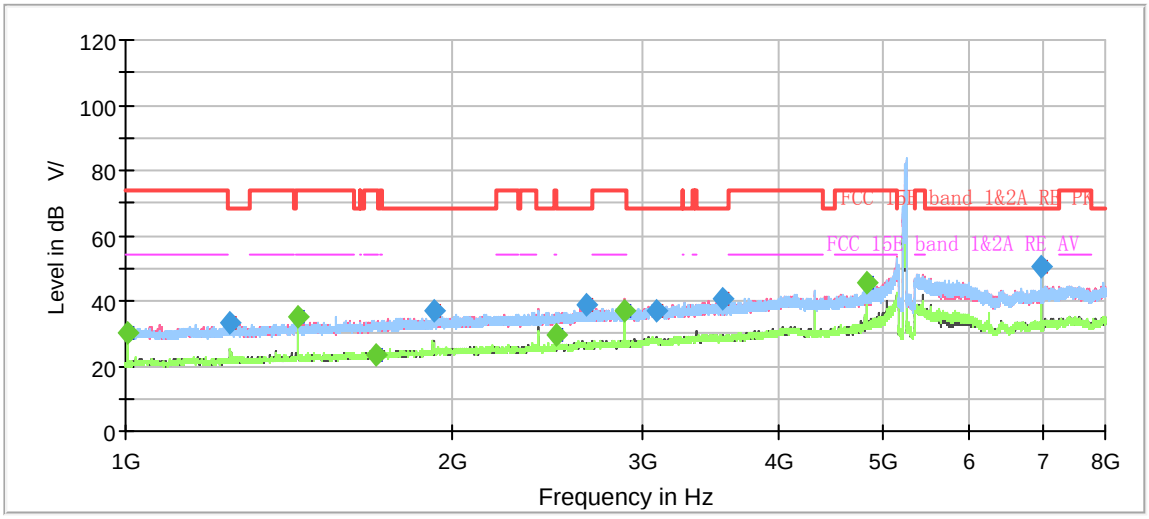


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1041.766667	---	23.33	54.00	30.67	100.0	V	172.0	-18.2
1259.233333	33.39	---	68.20	34.81	100.0	V	45.0	-17.0
1397.366667	---	24.28	54.00	29.72	200.0	V	0.0	-16.2
1701.400000	---	25.87	54.00	28.13	200.0	H	211.0	-14.5
1943.133333	36.97	---	68.20	31.23	100.0	H	158.0	-13.0
2649.666667	38.19	---	68.20	30.01	200.0	V	148.0	-9.7
2739.500000	---	28.82	54.00	25.18	100.0	V	73.0	-9.3
3415.933333	40.84	---	68.20	27.36	200.0	V	0.0	-6.5
3799.533333	---	31.78	54.00	22.22	100.0	H	279.0	-5.0
4462.200000	41.01	---	68.20	27.19	100.0	H	314.0	-3.6
6920.133333	52.57	---	68.20	15.63	200.0	V	49.0	0.7
7500.200000	---	36.17	54.00	17.83	100.0	H	307.0	1.5

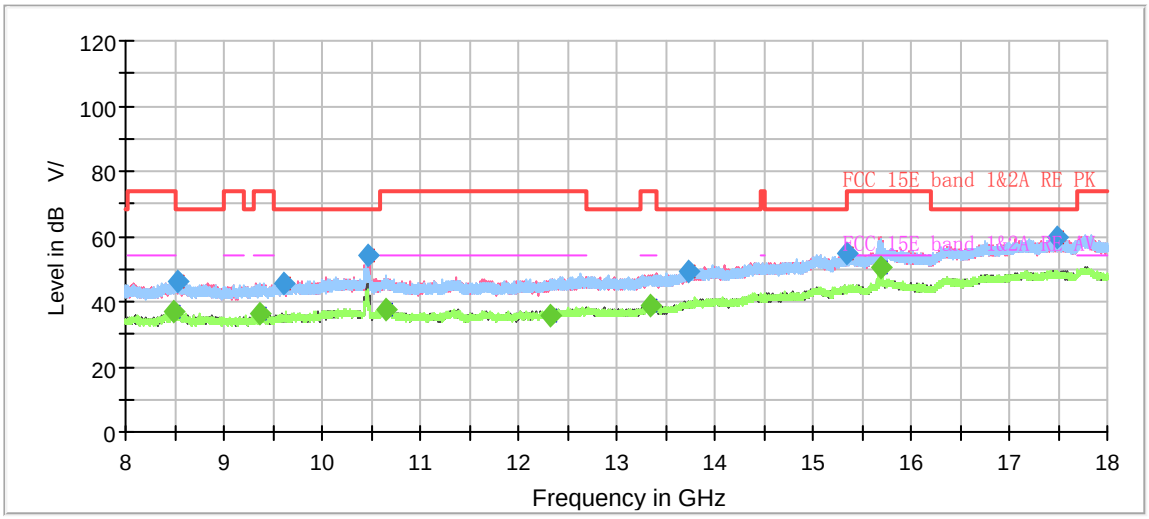
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH46



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

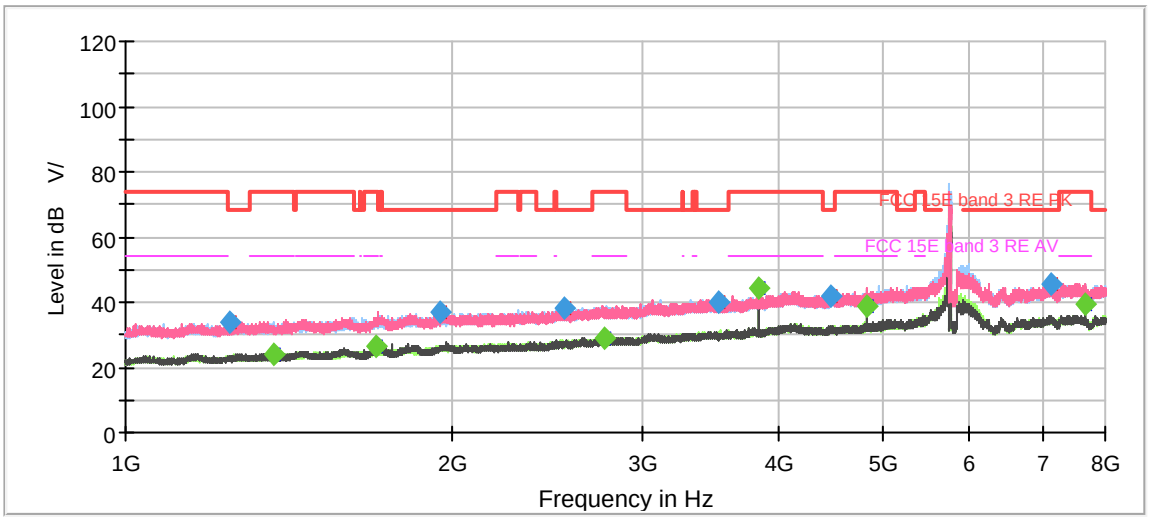


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1004.900000	---	30.06	54.00	23.94	100.0	H	354.0	-18.5
1249.900000	33.44	---	68.20	34.76	100.0	V	91.0	-17.0
1440.533333	---	34.93	54.00	19.07	200.0	V	327.0	-15.9
1698.366667	---	23.61	54.00	30.39	100.0	V	0.0	-14.5
1921.433333	37.11	---	68.20	31.09	100.0	H	317.0	-13.2
2499.866667	---	29.75	54.00	24.25	100.0	H	230.0	-10.6
2664.833333	38.81	---	68.20	29.39	100.0	V	49.0	-9.6
2881.133333	---	36.87	54.00	17.13	200.0	V	33.0	-8.8
3082.500000	36.97	---	68.20	31.23	200.0	V	341.0	-7.6
3545.200000	40.31	---	68.20	27.89	100.0	V	91.0	-6.2
4817.100000	---	45.44	54.00	8.56	200.0	H	160.0	-2.4
6973.566667	50.45	---	68.20	17.75	200.0	H	241.0	0.8
15699.000000	---	50.68	54.00	3.32	200.0	V	290.0	13.9

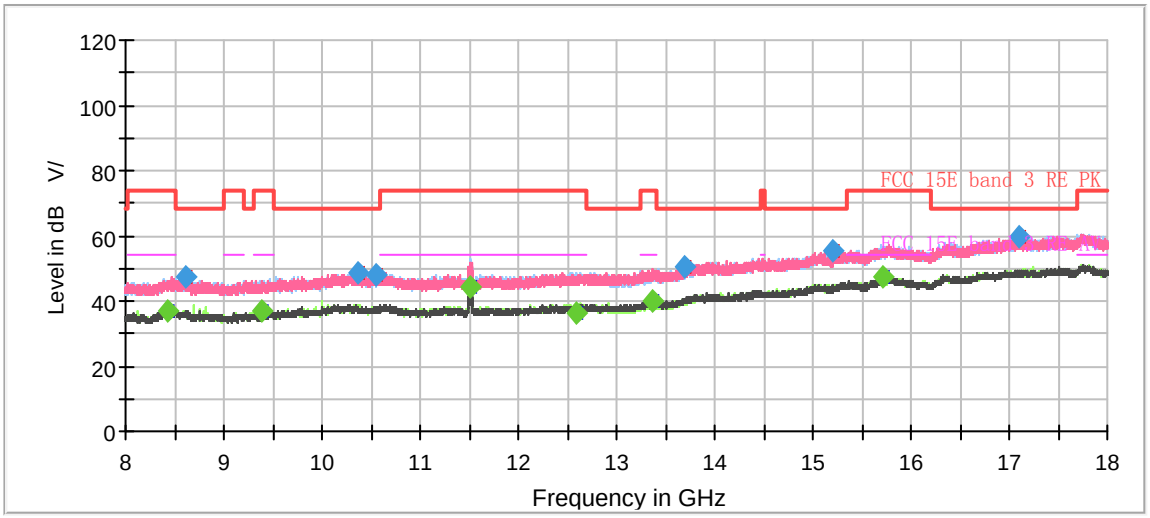
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH151



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

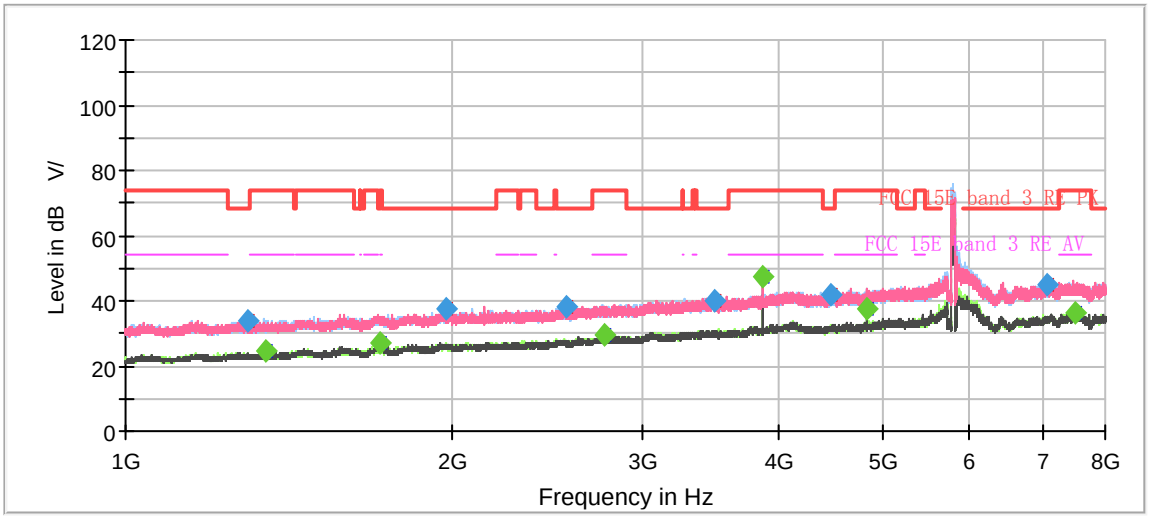


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1249.666667	33.85	---	68.20	34.35	100.0	H	239.0	-17.0
1372.400000	---	24.24	54.00	29.76	100.0	H	258.0	-16.4
1703.033333	---	26.44	54.00	27.56	100.0	V	351.0	-14.5
1949.666667	36.96	---	68.20	31.24	100.0	V	144.0	-13.0
2536.733333	38.37	---	68.20	29.83	200.0	H	34.0	-10.4
2766.566667	---	28.92	54.00	25.08	200.0	V	19.0	-9.2
3516.033333	39.91	---	68.20	28.29	100.0	H	195.0	-6.2
3836.633333	---	44.27	54.00	9.73	200.0	H	153.0	-4.8
4469.433333	41.68	---	68.20	26.52	200.0	H	18.0	-3.6
4815.700000	---	38.86	54.00	15.14	200.0	H	153.0	-2.4
7133.400000	45.27	---	68.20	22.93	100.0	V	351.0	1.1
7673.566667	---	39.09	54.00	14.91	200.0	V	0.0	1.3

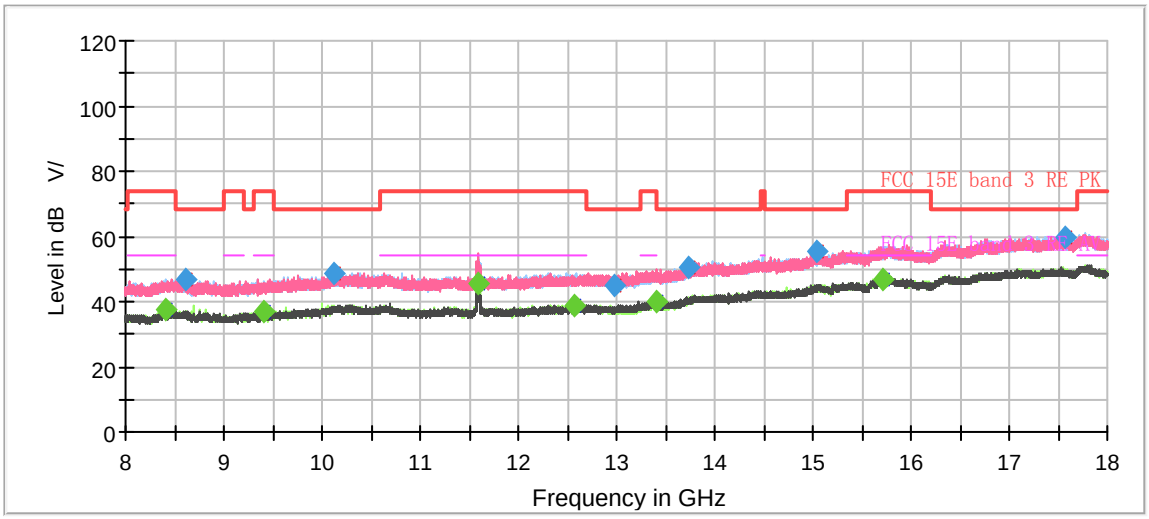
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH159



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

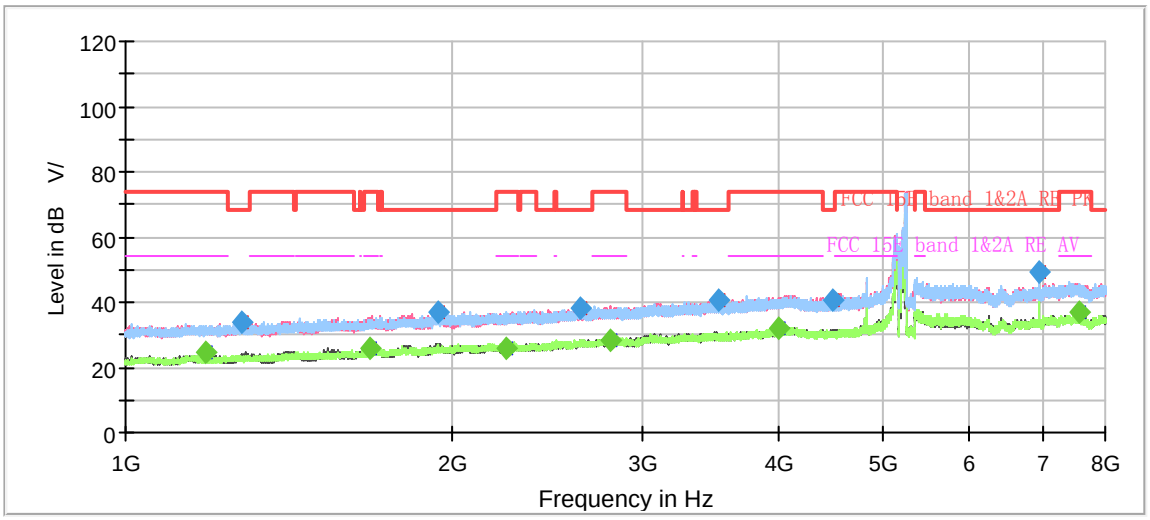


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1294.700000	33.69	---	68.20	34.51	100.0	V	314.0	-16.8
1349.533333	---	24.43	54.00	29.57	100.0	H	124.0	-16.5
1718.900000	---	26.81	54.00	27.19	100.0	V	287.0	-14.4
1971.366667	37.43	---	68.20	30.77	100.0	H	62.0	-12.8
2550.733333	38.04	---	68.20	30.16	100.0	V	341.0	-10.3
2757.933333	---	29.26	54.00	24.74	100.0	H	105.0	-9.2
3492.000000	40.21	---	68.20	27.99	100.0	V	199.0	-6.3
3863.466667	---	47.52	54.00	6.48	200.0	H	146.0	-4.7
4458.700000	41.70	---	68.20	26.50	200.0	V	73.0	-3.6
4815.700000	---	37.29	54.00	16.71	200.0	V	307.0	-2.4
7073.666667	44.80	---	68.20	23.40	100.0	H	50.0	0.9
7495.766667	---	36.14	54.00	17.86	200.0	H	334.0	1.5

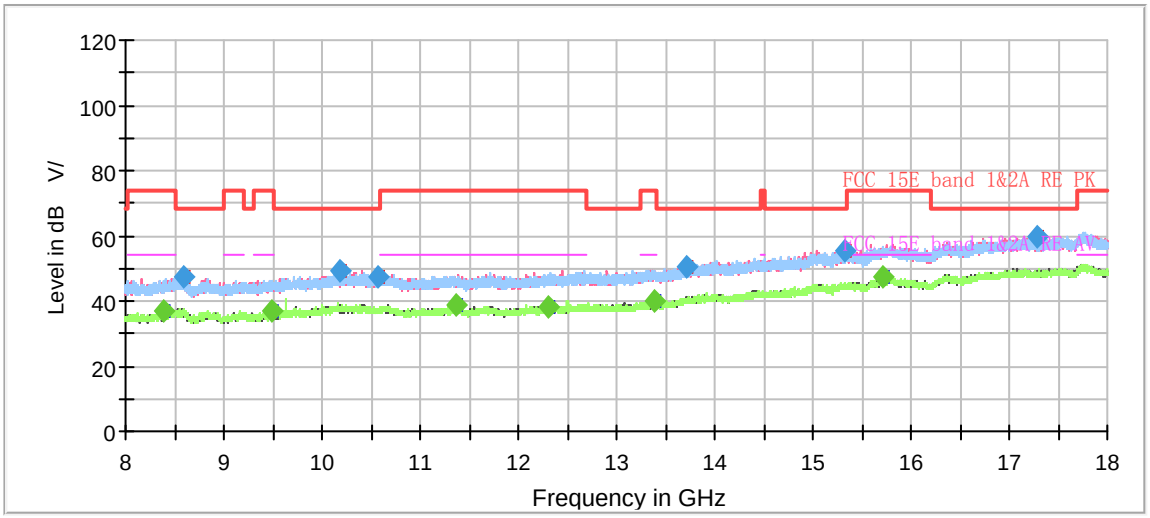
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT80) CH42



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

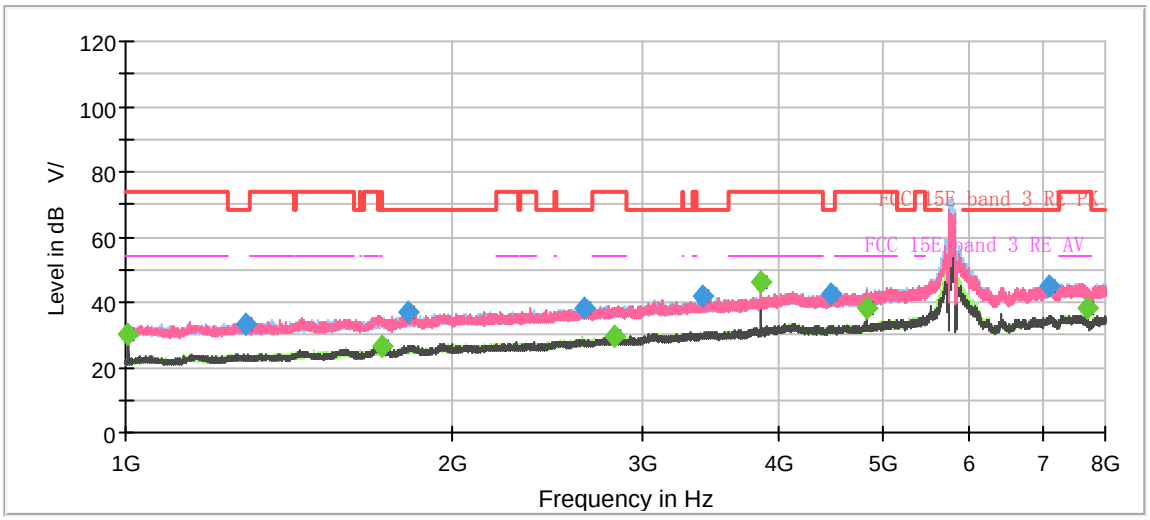


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1187.366667	---	24.92	54.00	29.08	100.0	H	225.0	-17.4
1279.066667	33.79	---	68.20	34.41	100.0	V	241.0	-16.8
1680.400000	---	25.93	54.00	28.07	100.0	V	158.0	-14.6
1940.100000	37.04	---	68.20	31.16	100.0	V	20.0	-13.0
2245.533333	---	25.98	54.00	28.02	200.0	V	61.0	-11.7
2626.100000	38.36	---	68.20	29.84	200.0	H	158.0	-9.8
2794.100000	---	28.60	54.00	25.40	100.0	H	273.0	-9.1
3516.733333	40.55	---	68.20	27.65	100.0	V	47.0	-6.2
3996.000000	---	32.24	54.00	21.76	200.0	H	281.0	-3.9
4480.166667	40.86	---	68.20	27.34	100.0	V	95.0	-3.6
6946.733333	49.34	---	68.20	18.86	200.0	H	242.0	0.7
7562.500000	---	36.73	54.00	17.27	200.0	H	89.0	1.4

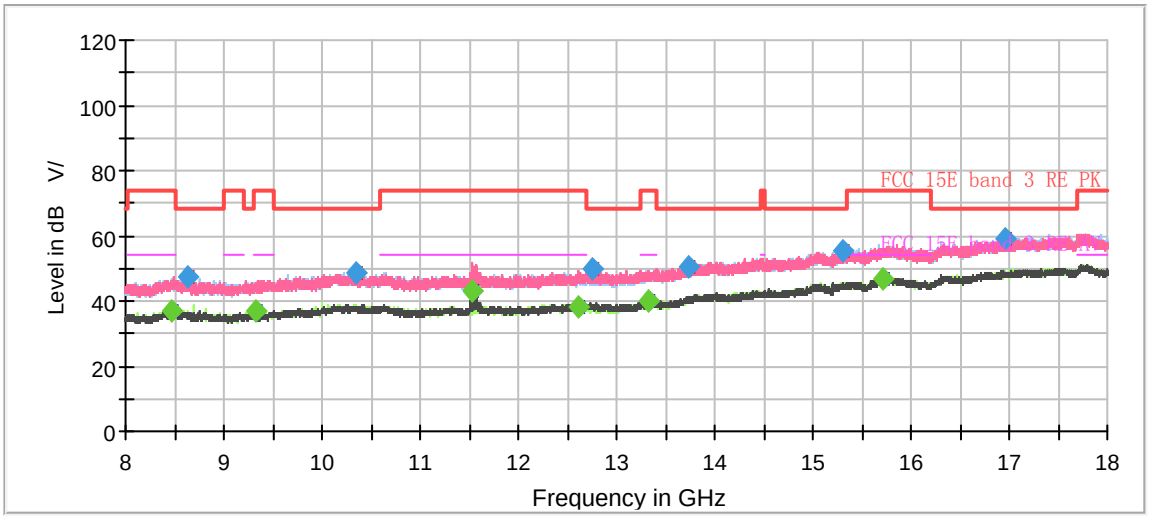
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ac (HT80) CH155



Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

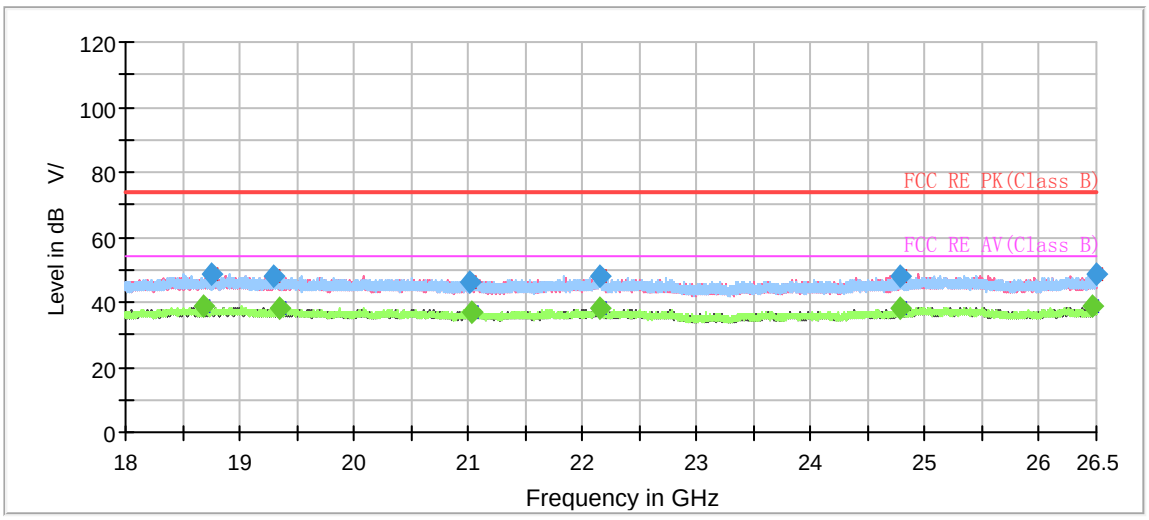


Radiates Emission from 8GHz to 18GHz

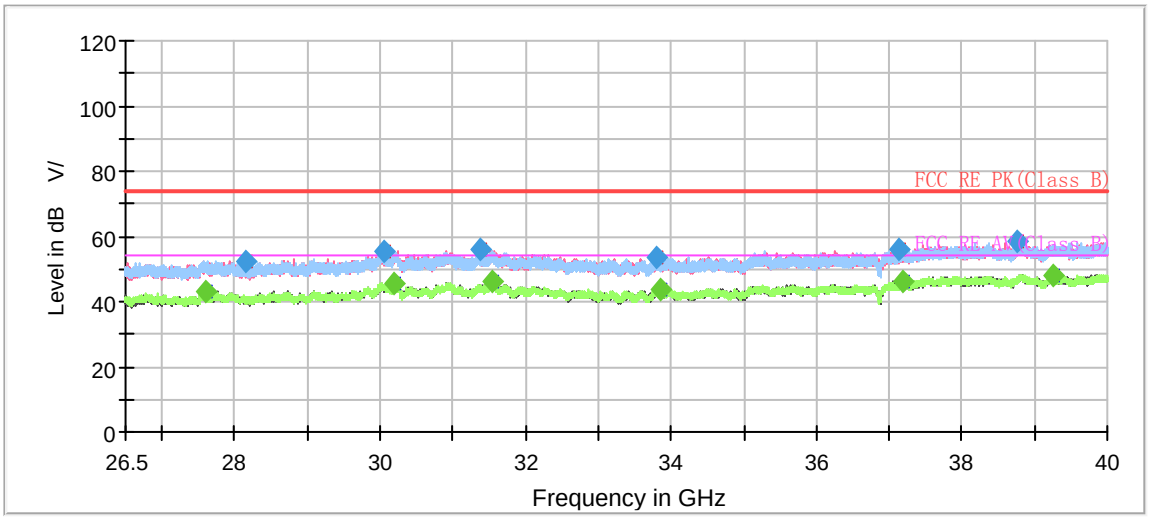
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1006.300000	---	30.08	54.00	23.92	200.0	V	119.0	-18.4
1288.633333	33.42	---	68.20	34.78	100.0	V	0.0	-16.8
1720.766667	---	26.32	54.00	27.68	100.0	V	227.0	-14.4
1822.733333	36.79	---	68.20	31.41	100.0	V	62.0	-13.7
2650.600000	38.33	---	68.20	29.87	200.0	V	156.0	-9.6
2820.466667	---	29.28	54.00	24.72	200.0	V	119.0	-9.0
3405.900000	41.69	---	68.20	26.51	200.0	H	215.0	-6.5
3850.166667	---	45.97	54.00	8.03	200.0	H	143.0	-4.8
4466.166667	42.37	---	68.20	25.83	200.0	H	197.0	-3.6
4815.700000	---	38.00	54.00	16.00	100.0	H	222.0	-2.4
7088.833333	45.11	---	68.20	23.09	200.0	H	224.0	1.0
7699.933333	---	37.98	54.00	16.02	200.0	V	281.0	1.3

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

During the test, the Radiates Emission from 18GHz to 40GHz was performed in all modes with all channels, 802.11a, Channel 165 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Radiates Emission from 18GHz to 26.5GHz



Radiates Emission from 26.5GHz to 40GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
18680.850000	---	38.58	54.00	15.42	200.0	V	0.0	-4.9
18749.983333	48.70	---	74.00	25.30	200.0	V	26.0	-4.8
19290.583333	48.20	---	74.00	25.80	100.0	V	217.0	-4.6
19344.133333	---	38.06	54.00	15.94	100.0	H	215.0	-4.6
21007.866667	46.34	---	74.00	27.66	200.0	H	242.0	-3.5
21025.716667	---	37.10	54.00	16.90	100.0	V	113.0	-3.5
22147.716667	---	38.16	54.00	15.84	100.0	H	215.0	-2.2
22157.350000	47.86	---	74.00	26.14	100.0	V	7.0	-2.2
24775.350000	48.09	---	74.00	25.91	100.0	H	215.0	-0.4
24783.283333	---	38.12	54.00	15.88	200.0	H	344.0	-0.4
26467.416667	---	38.52	54.00	15.48	100.0	H	144.0	-0.3
26497.733333	48.57	---	74.00	25.43	100.0	H	164.0	-0.3

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

5.6. Conducted Emission

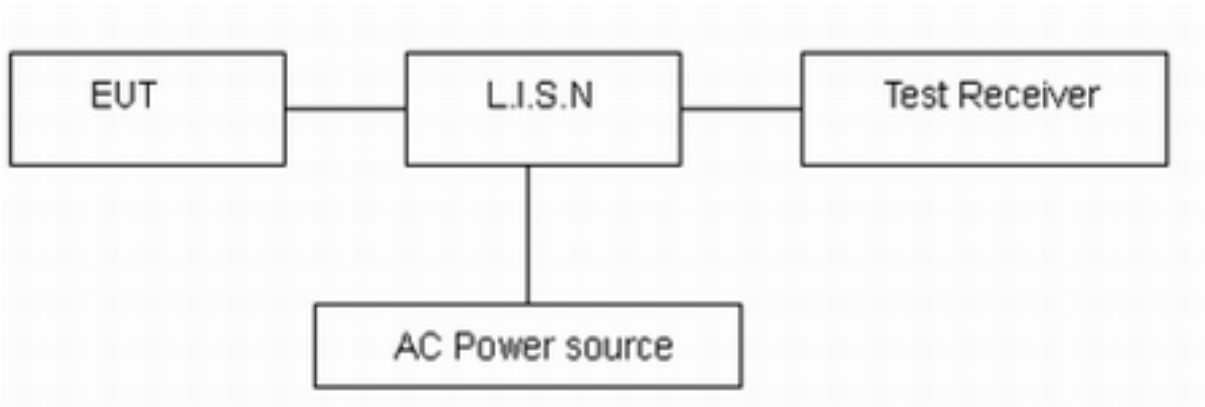
Ambient condition

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.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

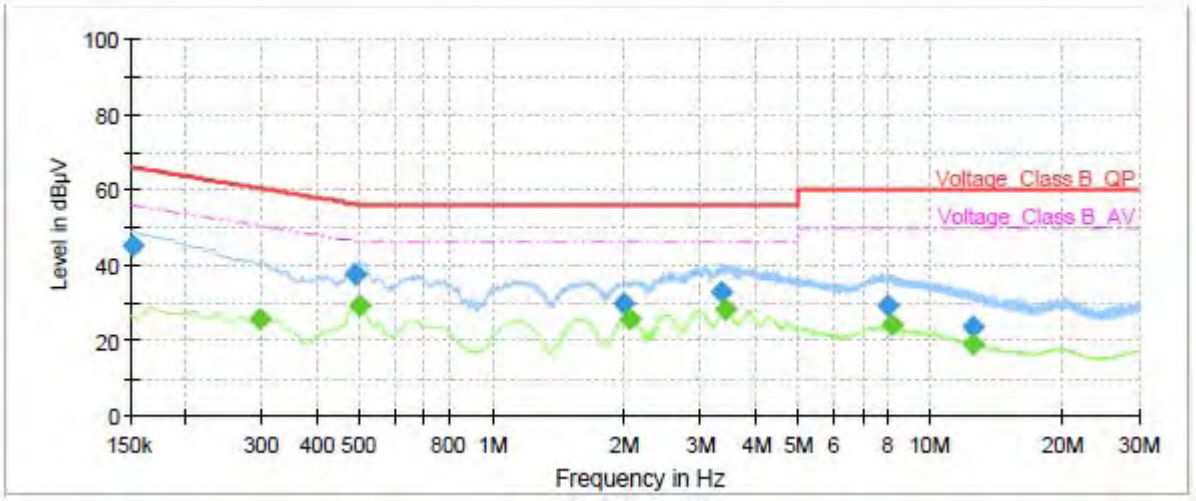
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

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:

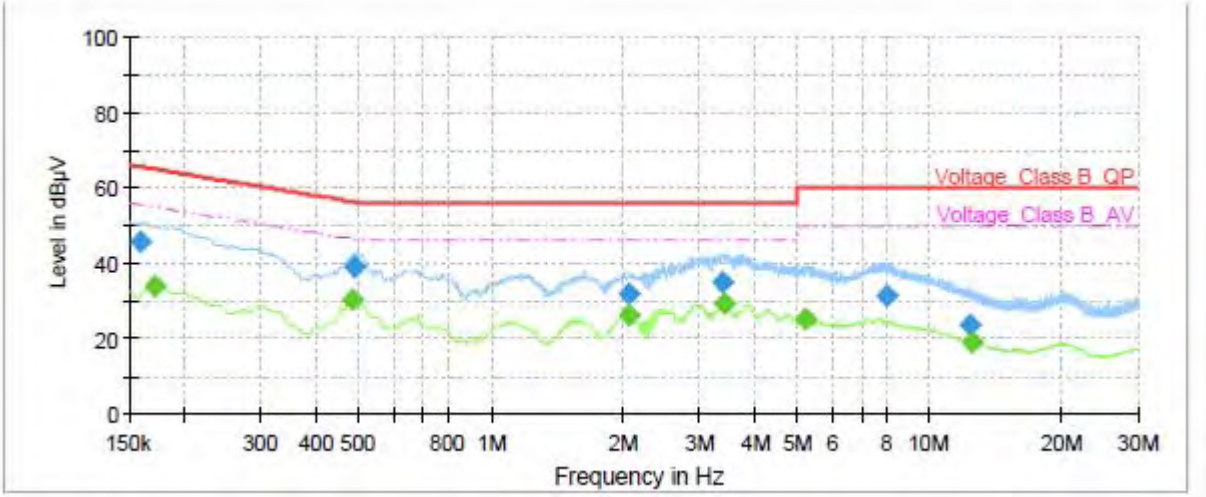
Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes with all channels, 802.11a, Channel 36 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	45.08	---	65.88	20.80	70.0	9.000	L1	ON	21
0.30	---	25.62	50.35	24.73	70.0	9.000	L1	ON	21
0.49	37.18	---	56.17	18.99	70.0	9.000	L1	ON	20
0.50	---	29.06	46.02	16.96	70.0	9.000	L1	ON	20
1.99	29.70	---	56.00	26.30	70.0	9.000	L1	ON	20
2.06	---	25.89	46.00	20.11	70.0	9.000	L1	ON	20
3.34	32.66	---	56.00	23.34	70.0	9.000	L1	ON	19
3.43	---	28.32	46.00	17.68	70.0	9.000	L1	ON	19
8.00	29.43	---	60.00	30.57	70.0	9.000	L1	ON	20
8.16	---	24.19	50.00	25.81	70.0	9.000	L1	ON	20
12.52	23.64	---	60.00	36.36	70.0	9.000	L1	ON	20
12.55	---	19.03	50.00	30.97	70.0	9.000	L1	ON	20

Remark: Correct factor=cable loss + LISN factor

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)
0.16	45.73	---	65.52	19.79	70.0	9.000	N	ON	21
0.17	---	34.06	54.95	20.89	70.0	9.000	N	ON	21
0.48	---	30.11	46.29	16.18	70.0	9.000	N	ON	20
0.49	39.21	---	56.21	17.00	70.0	9.000	N	ON	20
2.06	---	26.26	46.00	19.74	70.0	9.000	N	ON	20
2.06	31.54	---	56.00	24.46	70.0	9.000	N	ON	20
3.37	34.96	---	56.00	21.04	70.0	9.000	N	ON	19
3.40	---	29.41	46.00	16.59	70.0	9.000	N	ON	19
5.21	---	25.19	50.00	24.81	70.0	9.000	N	ON	19
8.03	31.40	---	60.00	28.60	70.0	9.000	N	ON	20
12.41	23.60	---	60.00	36.40	70.0	9.000	N	ON	20
12.48	---	19.17	50.00	30.83	70.0	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

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	2021-05-15	2022-05-14
EMI Test Receiver	R&S	ESCI	100948	2021-05-15	2022-05-14
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2022-12-15
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2023-06-19
Standard Gain Horn	STEATITE	QSH-SL-26-40 -K-15	16779	2019-12-24	2022-12-23
Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	430	2018-07-07	2023-07-06
EMI Test Receiver	R&S	ESR	101667	2021-05-16	2022-05-15
LISN	R&S	ENV216	101171	2018-12-15	2021-12-14
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2020-12-13	2021-12-12
RF Cable	Agilent	SMA 15cm	0001	2021-06-09	2021-12-08
TEMPERATURE CHAMBER	WEISS	VT4002	582261194500 10	2020-12-13	2021-12-12
Power Meter	R&S	NRP	104306	2021-05-15	2022-05-14
Power Sensor	R&S	NRP-Z21	104799	2021-05-15	2022-05-14
DC Power Supply	GWINSTEK	GPS-3030D	GEP882653	2021-05-15	2022-05-14
Software	R&S	EMC32	9.26.0	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.