RF TEST REPORT

Applicant	Emerson White-Rodgers
FCC ID	2A4JN-ST765470
Product	Sensi Touch 2
Brand	Sensi
Model	1F96U-42WFB; 1F96U-42WF; ST76; ST76W; ST76U; ST76WU; 1F96U-42WFBC; 1F96U-42WFC; ST76C; ST76WC
Report No.	R2211A1116-R3V2
Issue Date	January 6, 2023

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2022)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying

Approved by: Xu Kai

TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

Version	Revision description	Issue Date
Rev.0	Initial issue of report.	January 4, 2023
Rev.1	Update information.	January 6, 2023
Rev.2	Update description.	January 6, 2023
Note: This revised report (Report No.: R2211A1116-R3V2) supersedes and replaces the previously issued report (Report No.: R2211A1116-R3V1). 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: December 20, 2021~ January 26, 2022 Date of Sample Received: December 17, 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.			

1F96U-42WFB; 1F96U-42WF; ST76; ST76W; ST76U; ST76WU; 1F96U-42WFBC; 1F96U-42WFC; ST76C; ST76WC (Report No.: R2211A1116-R3V2) is a variant model of 1F96U-42WFB; 1F96U-42WF; ST76; ST76W; ST76U; ST76WU; 1F96U-42WFBC; 1F96U-42WFC; ST76C; ST76WC (Report No.: R2112A1148-R3V1). This report only changes Antenna Gain/ HW Version/ SW Version Information. There is only tested Unwanted Emission (U-NII-1: 802.11n HT20) for variant in this report, and did not worsen, so they were not recorded in the report. Power of new variant is varied due to measurement uncertainty, and sample tolerance of the acceptance range.

The detailed product change description please refers to the *Difference Declaration Letter*.

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:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
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
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Emerson White-Rodgers
Applicant address	8100 West Florissant Ave St. Louis United States of America
Manufacturer	Emerson White-Rodgers
Manufacturer address	8100 West Florissant Ave St. Louis United States of America

2.2. General information

EUT Description		
Model	1F96U-42WFB; 1F96U-42WF; ST76; ST76W; ST76U; ST76WU; 1F96U-42WFBC; 1F96U-42WFC; ST76C; ST76WC	
Lab internal SN	R2112A1148/S01	
Hardware Version	0059-5470 REV.C	
Software Version	0170-1581v02_03.hex	
Power Supply	External power supply	
Antenna Type	PCB Antenna	
Antenna Gain	UNII-1	3.93 dBi
	UNII-2A	3.94 dBi
	UNII-2C	1.92 dBi
	UNII-3	1.47 dBi
Directional Gain	NA	
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-2A: 5250MHz -5350MHz U-NII-2C: 5470MHz-5600MHz, 5650MHz-5725MHz U-NII-3: 5725MHz -5850MHz	
Modulation Type	802.11a/n (HT20) : OFDM	
Max. Conducted Power	11.46 dBm	
Testing temperature range:	-20 ° C to 50° C	
Operating temperature range:	0 ° C to 40° C	
Operating voltage range:	20 V to 30 V	
State AC voltage:	24 V	
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. The main test model is ST76 in this report.		

Model Difference Table				
Model Number	**Description**	**Color**	**Channel**	**Instructions**
1F96U-42WFB	Sensi Touch 2	Black	Pro	English
1F96U-42WF	Sensi Touch 2	White	Pro	English
ST76	Sensi Touch 2	Black	Retail	English
ST76W	Sensi Touch 2	White	Retail	English
ST76U	Sensi Touch 2	Black	Utility	English
ST76WU	Sensi Touch 2	White	Utility	English
1F96U-42WFBC	Sensi Touch 2	Black	Pro	French / English
1F96U-42WFC	Sensi Touch 2	White	Pro	French / English
ST76C	Sensi Touch 2	Black	Retail	French / English
ST76WC	Sensi Touch 2	White	Retail	French / English
Note: The customer declares that the models have the same PCB assembly, the only difference is color, package and sale channels.				

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 (2022) Unlicensed National Information Infrastructure Devices

ANSI C63.10-2013

Reference standard:

KDB 789033 D02 General UNII Test Procedures New Rules 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
802.11a	6 Mbps
802.11n HT20	MCS0

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
	U-NII-2A	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
	U-NII-2C	20 MHz	100	5500MHz
			104	5520MHz
			108	5540MHz
			112	5560MHz
			116	5580MHz
			132	5660MHz
			136	5680MHz
			140	5700MHz
			144	5720MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz
			165	5825MHz
Does this device support TPC Function? ☐Yes ☒No				
Does this device support TDWR Band? ☐Yes ☒No				

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

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

Method of Measurement

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

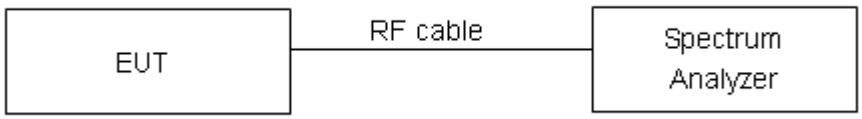
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the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

For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

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

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

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

Measurement Uncertainty

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

Test Results:

U-NII-1

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.657	27.22	PASS
	5200	16.658	25.68	PASS
	5240	16.675	26.88	PASS
802.11n HT20	5180	17.775	29.45	PASS
	5200	17.808	28.22	PASS
	5240	17.818	29.99	PASS

U-NII-2A

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.613	20.99	PASS
	5300	16.607	21.02	PASS
	5320	16.613	20.92	PASS
802.11n HT20	5260	17.737	26.32	PASS
	5300	17.748	25.12	PASS
	5320	17.755	24.82	PASS

U-NII-2C

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
PASS PASS	5500	16.564	20.58	PASS
	5580	16.659	23.24	PASS
	5700	16.700	26.31	PASS
	5720	16.699	27.17	PASS
802.11n HT20	5500	17.737	22.23	PASS
	5580	17.808	29.83	PASS
	5700	17.849	29.95	PASS
	5720	17.857	29.98	PASS

U-NII-3

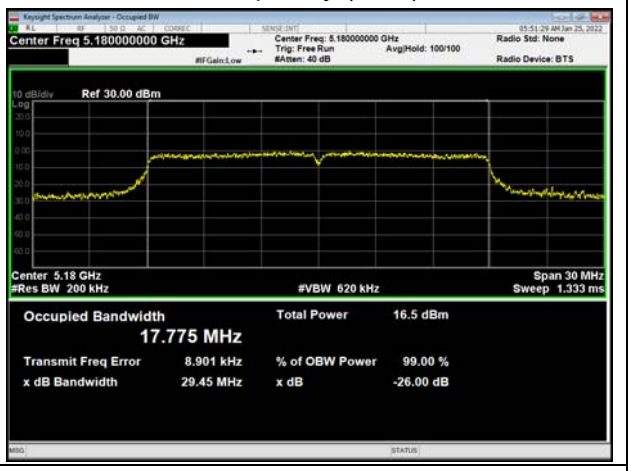
Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.601	16.49	500	PASS
	5785	16.600	16.50	500	PASS
	5825	16.601	16.52	500	PASS
802.11n HT20	5745	17.729	17.75	500	PASS
	5785	17.471	17.17	500	PASS
	5825	17.462	17.25	500	PASS

U-NII-1, 802.11a

Carrier frequency (MHz): 5180

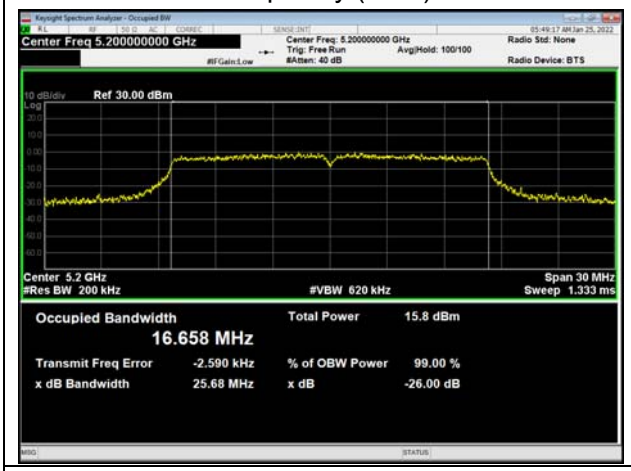
U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11a

Carrier frequency (MHz): 5200

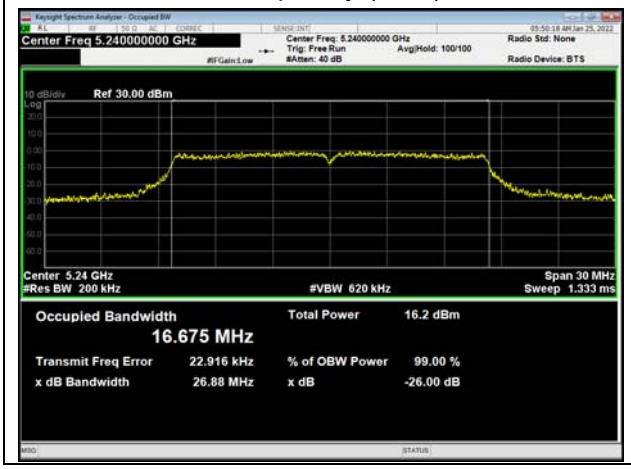


U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

Carrier frequency (MHz):5240

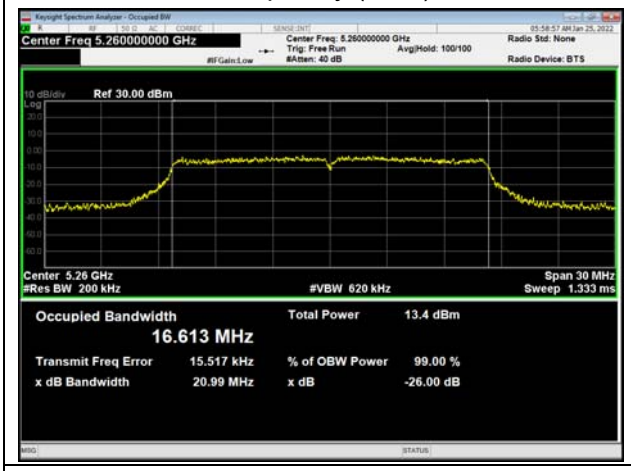


U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

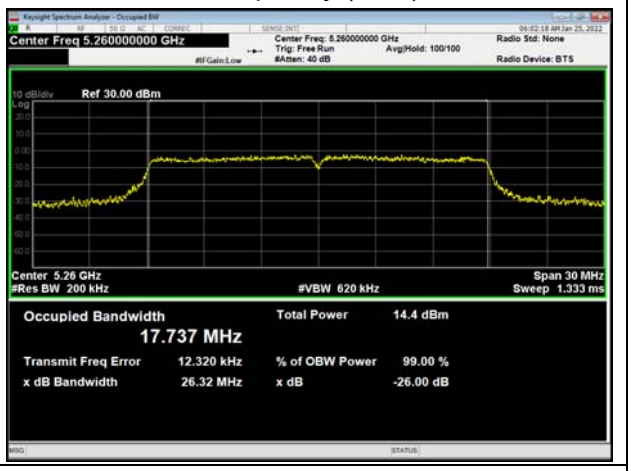
U-NII-2A, 802.11a

Carrier frequency (MHz): 5260



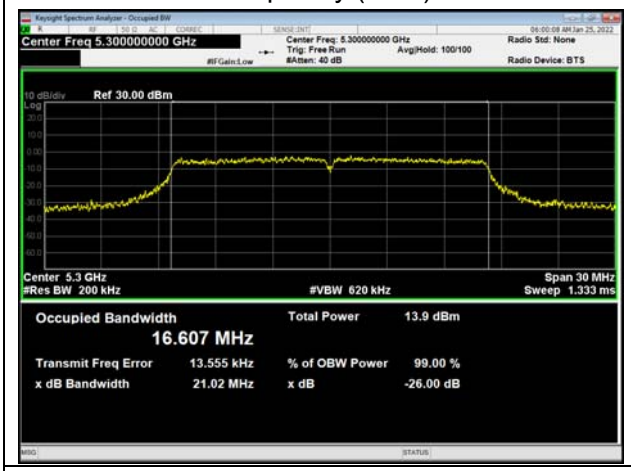
U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

Carrier frequency (MHz): 5300



U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5300

U-NII-2A, 802.11a

Carrier frequency (MHz):5320

U-NII-2A, 802.11n HT20

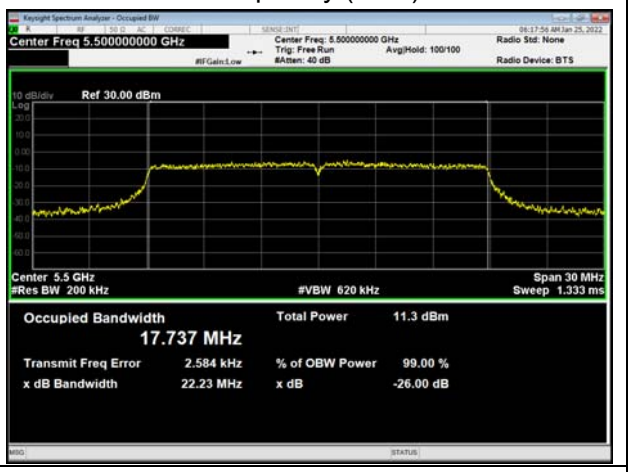
Carrier frequency (MHz):5320

U-NII-2C, 802.11a

Carrier frequency (MHz): 5500

U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500

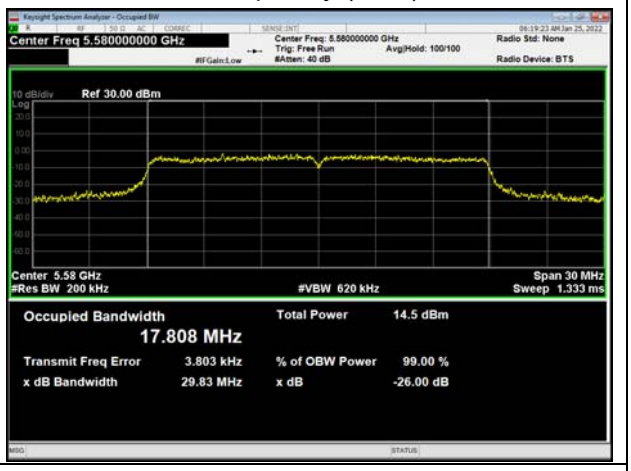


U-NII-2C, 802.11a

Carrier frequency (MHz): 5580

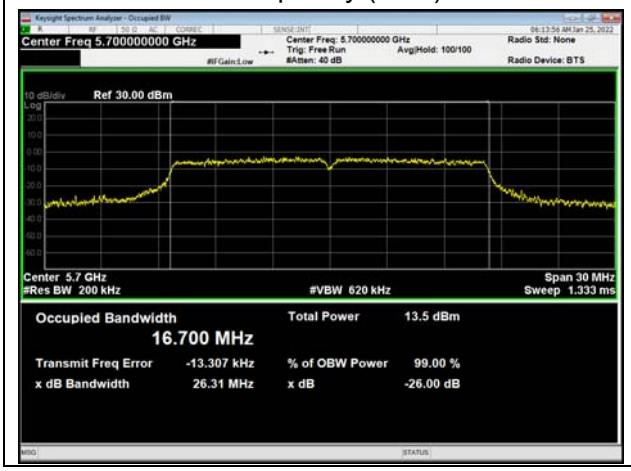
U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580



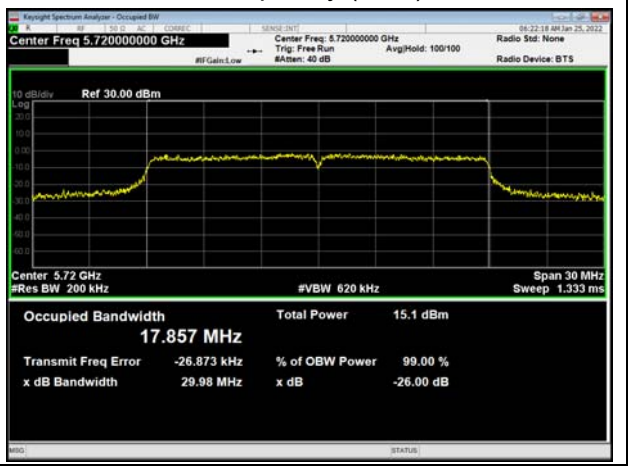
U-NII-2C, 802.11a

Carrier frequency (MHz):5700



U-NII-2C, 802.11n HT20

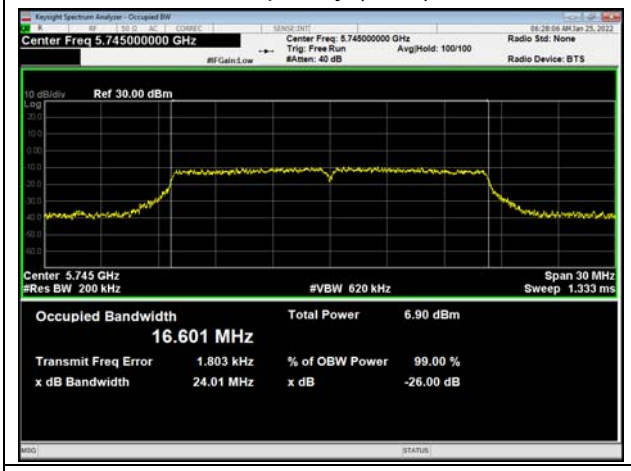
Carrier frequency (MHz):5700

U-NII-2C, 802.11a Carrier frequency (MHz):5720	U-NII-2C, 802.11n HT20 Carrier frequency (MHz):5720
	

99% bandwidth

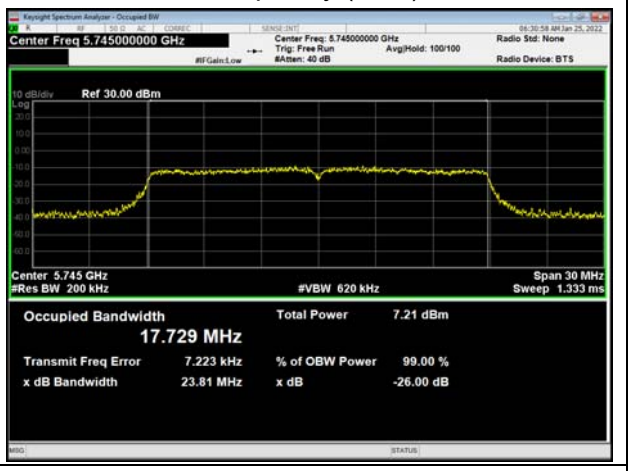
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



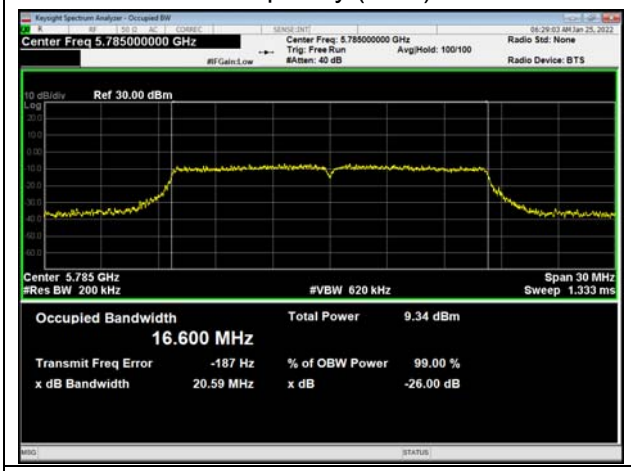
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



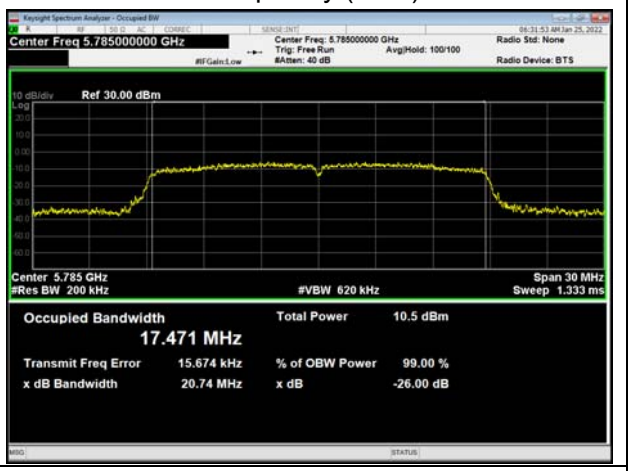
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



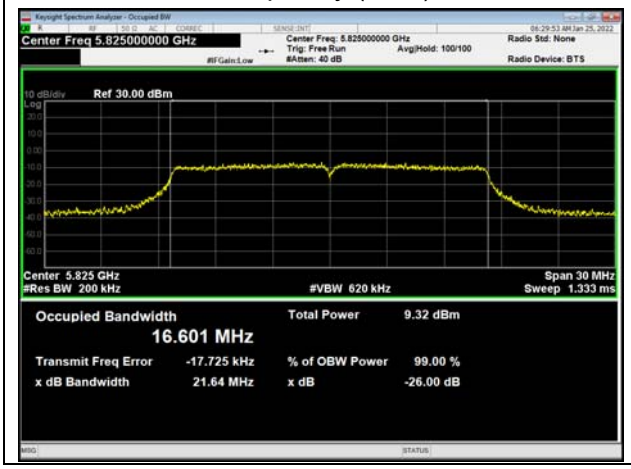
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11a

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

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

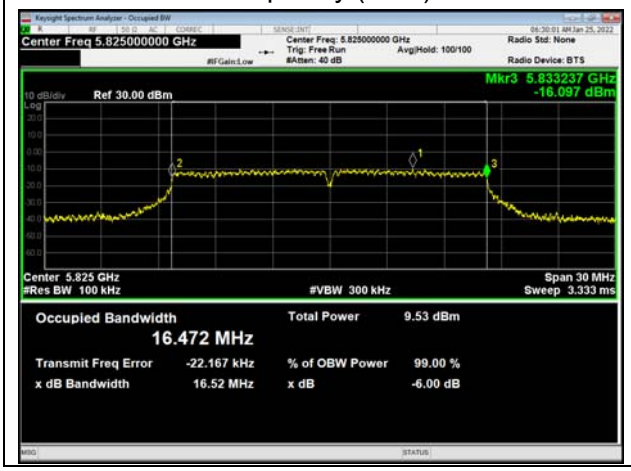
Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

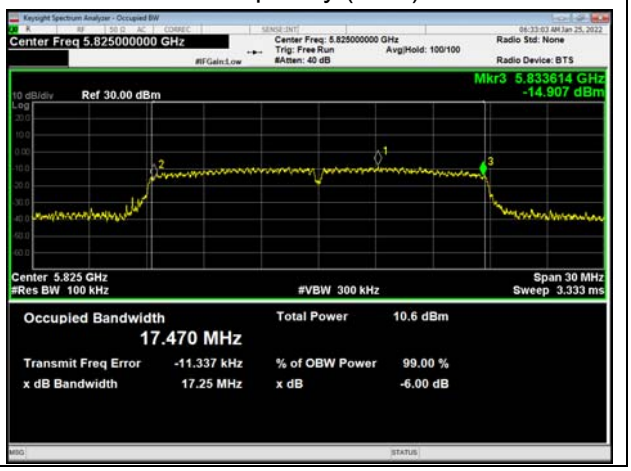
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



5.2. Average Power Output

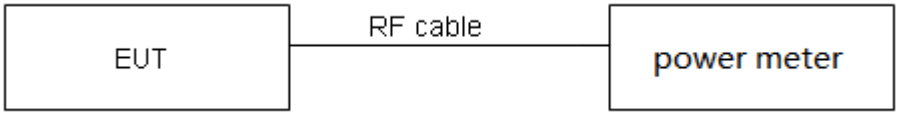
Ambient condition

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

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	1.00	1.00	1.00	0.00
802.11n HT20	1.00	1.00	1.00	0.00
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.				

Test Mode		Channel/Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit(dBm)
U-NII-2A	802.11a	100/5500	20.99	24.22>24	24
		116/5580	21.02	24.23>24	24
		140/5700	20.92	24.21>24	24
	802.11n HT20	144/5720	26.32	25.20>24	24
		100/5500	25.12	25.00>24	24
		116/5580	24.82	24.95>24	24
U-NII-2C	802.11a	140/5700	20.58	24.13>24	24
		144/5720	23.24	24.66>24	24
		100/5500	26.31	25.20>24	24
		116/5580	27.17	25.34>24	24
	802.11n HT20	140/5700	22.23	24.47>24	24
		144/5720	29.83	25.75>24	24
		100/5500	29.95	25.76>24	24
		116/5580	29.98	25.77>24	24
Note: 250mW=24dBm					

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

U-NII-1

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	10.72	10.72	24	PASS
	40/5200	10.46	10.46	24	PASS
	48/5240	10.73	10.73	24	PASS
802.11n HT20	36/5180	11.05	11.05	24	PASS
	40/5200	11.36	11.36	24	PASS
	48/5240	11.46	11.46	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2A

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	8.02	8.02	24	PASS
	60/5300	8.48	8.48	24	PASS
	64/5320	8.72	8.72	24	PASS
802.11n HT20	52/5260	8.99	8.99	24	PASS
	60/5300	9.35	9.35	24	PASS
	64/5320	9.54	9.54	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2C

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	5.58	5.58	24	PASS
	116/5580	7.59	7.59	24	PASS
	140/5700	8.05	8.05	24	PASS
	144/5720	7.90	7.90	24	PASS
802.11n HT20	100/5500	5.86	5.86	24	PASS
	116/5580	8.59	8.59	24	PASS
	140/5700	9.40	9.40	24	PASS
	144/5720	9.93	9.93	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	0.40	0.40	30	PASS
	157/5785	3.57	3.57	30	PASS
	165/5825	3.60	3.60	30	PASS
802.11n HT20	149/5745	1.20	1.20	30	PASS
	157/5785	5.05	5.05	30	PASS
	165/5825	4.83	4.83	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

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
24.00	-20	5200.007222	5199.998416	5199.995784	5199.990801
24.00	-10	5200.005989	5199.994839	5199.987078	5199.986979
24.00	0	5200.000423	5199.987631	5199.984705	5199.977629
24.00	10	5199.990533	5199.985081	5199.981394	5199.973820
24.00	20	5199.983885	5199.980288	5199.974085	5199.973767
24.00	30	5199.975824	5199.973745	5199.973587	5199.966135
24.00	40	5199.967387	5199.970499	5199.964986	5199.960875
24.00	50	5199.960608	5199.963061	5199.963147	5199.953454
20.00	20	5199.956039	5199.958151	5199.959432	5199.953167
30.00	20	5199.953827	5199.953812	5199.953553	5199.943551
Max. ΔMHz		-0.046173	-0.046188	-0.046447	-0.056449
PPM		-8.879507	-8.882326	-8.932024	-10.855602

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
24.00	-20	5299.997199	5299.992984	5299.988067	5299.981261
24.00	-10	5299.995072	5299.983853	5299.980297	5299.972369
24.00	0	5299.987800	5299.974497	5299.976184	5299.971565
24.00	10	5299.984536	5299.967257	5299.975425	5299.967729
24.00	20	5299.977756	5299.959837	5299.973718	5299.966591
24.00	30	5299.976282	5299.956268	5299.968131	5299.962009
24.00	40	5299.973666	5299.955827	5299.960030	5299.958553
24.00	50	5299.970818	5299.952994	5299.954494	5299.953969
20.00	20	5299.970086	5299.946656	5299.947555	5299.946361
30.00	20	5299.965445	5299.936906	5299.939208	5299.937745
Max. ΔMHz		-0.034555	-0.063094	-0.060792	-0.062255
PPM		-6.519879	-11.904479	-11.470283	-11.746301

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
24.00	-20	5579.997094	5579.995340	5579.995270	5579.989264
24.00	-10	5579.992693	5579.992009	5579.985664	5579.988474
24.00	0	5579.988173	5579.989611	5579.983289	5579.980450
24.00	10	5579.985532	5579.980193	5579.976679	5579.976892
24.00	20	5579.983588	5579.977667	5579.970908	5579.971104
24.00	30	5579.978826	5579.968577	5579.969387	5579.961435
24.00	40	5579.977361	5579.964984	5579.963589	5579.954218
24.00	50	5579.973483	5579.959258	5579.958986	5579.945846
20.00	20	5579.963989	5579.953435	5579.956715	5579.941700
30.00	20	5579.955884	5579.953012	5579.950224	5579.933995
Max. ΔMHz		-0.044116	-0.046988	-0.049776	-0.066005
PPM		-7.906050	-8.420745	-8.920496	-11.828866

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
24.00	-20	5784.998433	5784.988632	5784.981860	5784.980567
24.00	-10	5784.992710	5784.985271	5784.973682	5784.979102
24.00	0	5784.992025	5784.984844	5784.964366	5784.976139
24.00	10	5784.988257	5784.982307	5784.962905	5784.974059
24.00	20	5784.982695	5784.972546	5784.958455	5784.970629
24.00	30	5784.977965	5784.969856	5784.949404	5784.966890
24.00	40	5784.968524	5784.960659	5784.944242	5784.957871
24.00	50	5784.960189	5784.957803	5784.938713	5784.950962
20.00	20	5784.954447	5784.952138	5784.930753	5784.942405
30.00	20	5784.944686	5784.947739	5784.921917	5784.937315
Max. ΔMHz		-0.055314	-0.052261	-0.078083	-0.062685
PPM		-9.561615	-9.033828	-13.497450	-10.835794

5.4. Power Spectral Density

Ambient condition

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

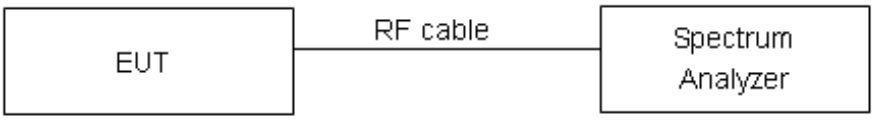
Method of Measurement

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, 5.250-5.350GHz, 5.470-5.725GHz.
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 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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	11dBm/MHz
5.25-5.35 GHz and 5.47-5.725 GHz	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

U-NII-1

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	0.27	0.27	11	PASS
	40	0.01	0.01	11	PASS
	48	0.65	0.65	11	PASS
802.11n HT20	36	0.47	0.47	11	PASS
	40	0.57	0.57	11	PASS
	48	0.87	0.87	11	PASS

U-NII-2A

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	-1.90	-1.90	11	PASS
	60	-1.86	-1.86	11	PASS
	64	-1.55	-1.55	11	PASS
802.11n HT20	52	-1.64	-1.64	11	PASS
	60	-1.28	-1.28	11	PASS
	64	-1.13	-1.13	11	PASS

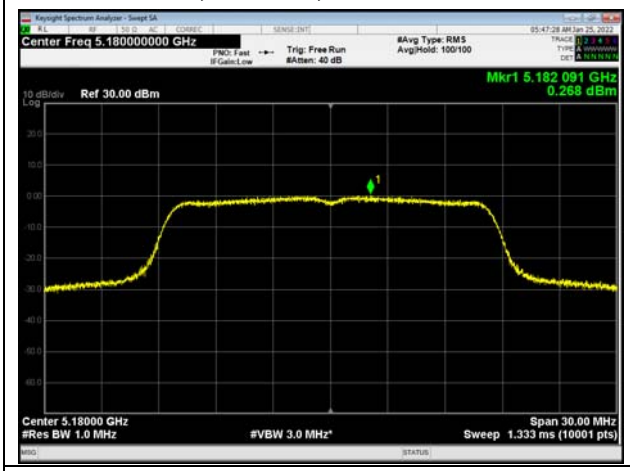
U-NII-2C

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	-4.71	-4.71	11	PASS
	116	-2.38	-2.38	11	PASS
	140	-2.31	-2.31	11	PASS
	144	-2.24	-2.24	11	PASS
802.11n HT20	100	-4.61	-4.61	11	PASS
	116	-1.41	-1.41	11	PASS
	140	-1.16	-1.16	11	PASS
	144	-0.94	-0.94	11	PASS

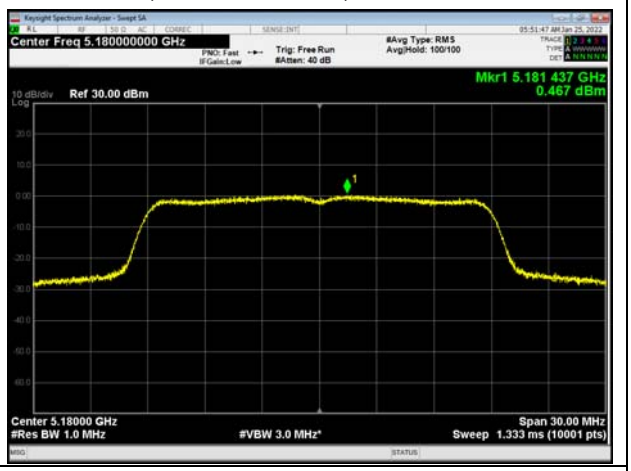
U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	-11.92	-11.65	30	PASS
	157	-9.79	-9.52	30	PASS
	165	-9.70	-9.43	30	PASS
802.11n HT20	149	-12.12	-11.85	30	PASS
	157	-8.64	-8.37	30	PASS
	165	-8.76	-8.49	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					

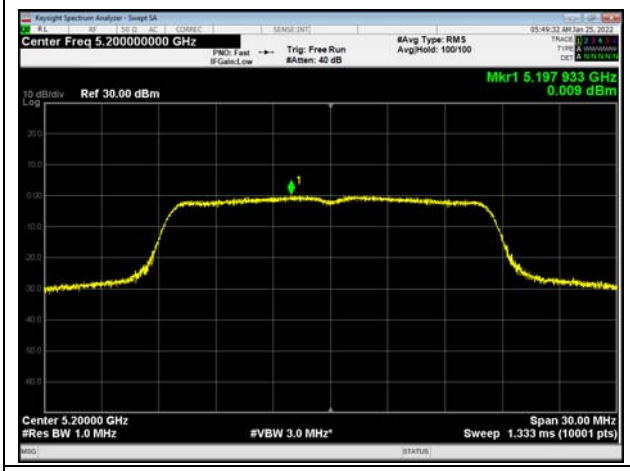
U-NII-1, 802.11a, Channel No.: 36



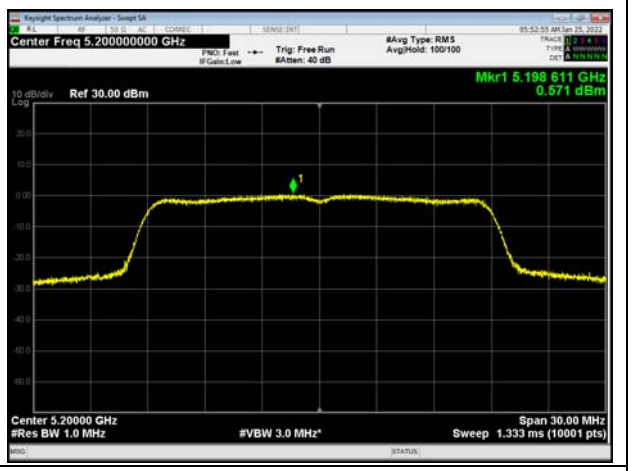
U-NII-1, 802.11n HT20, Channel No.: 36



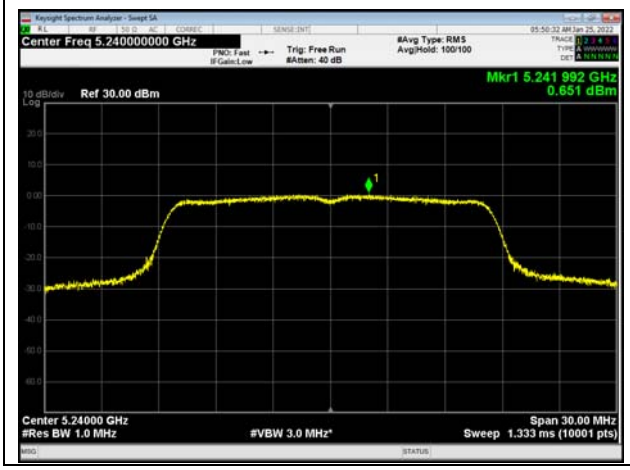
U-NII-1, 802.11a, Channel No.: 40



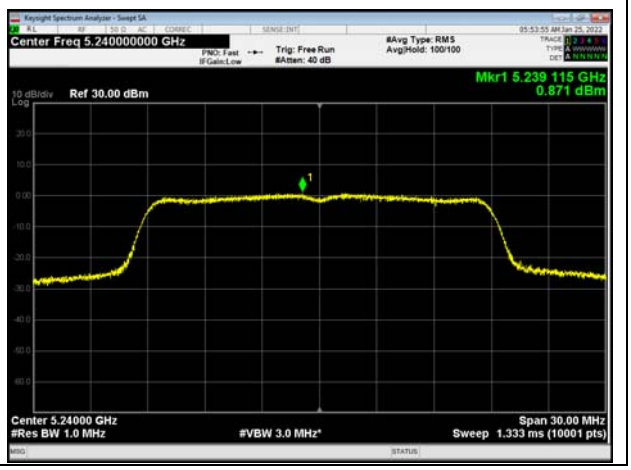
U-NII-1, 802.11n HT20, Channel No.: 40



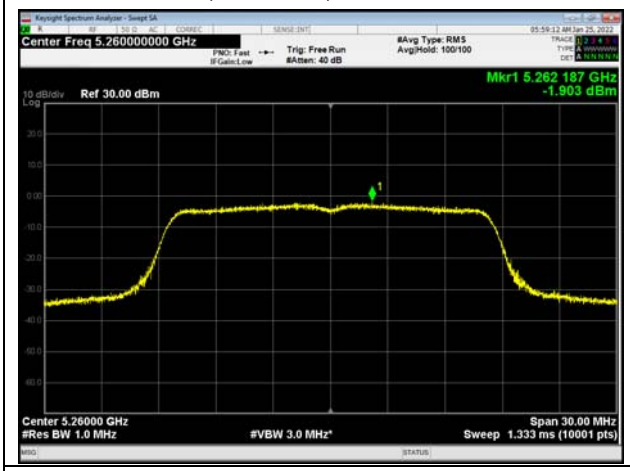
U-NII-1, 802.11a, Channel No.: 48



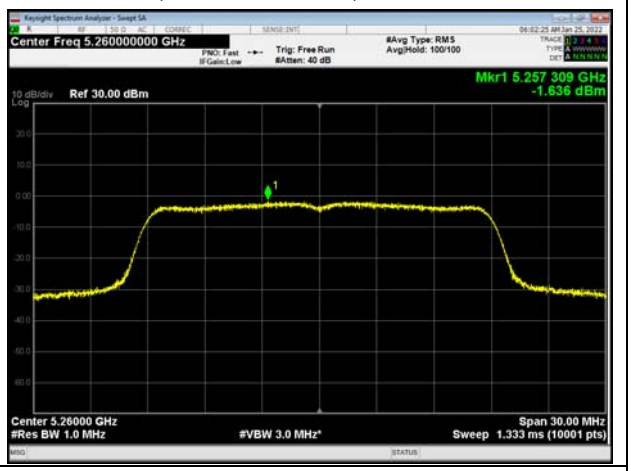
U-NII-1, 802.11n HT20, Channel No.: 48



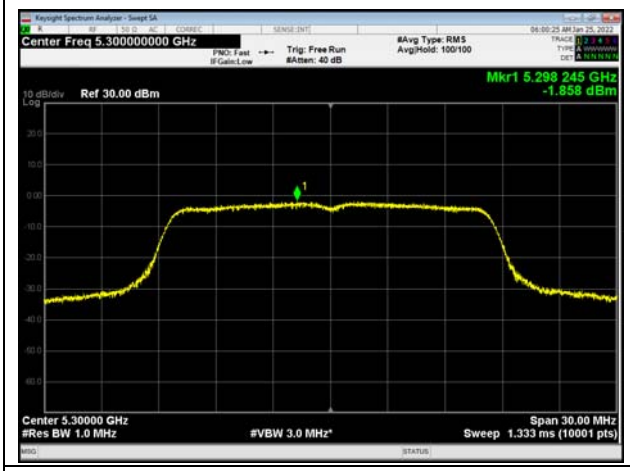
U-NII-2A, 802.11a, Channel No.: 52



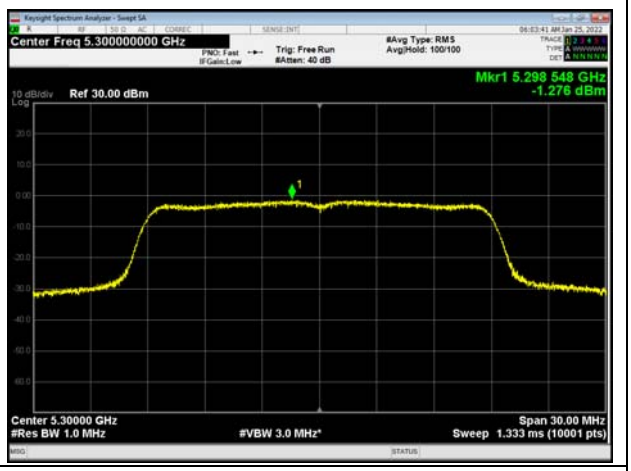
U-NII-2A, 802.11n HT20, Channel No.: 52



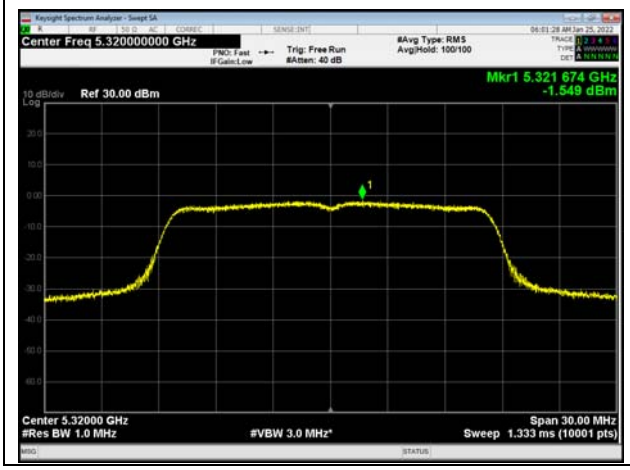
U-NII-2A, 802.11a, Channel No.: 60



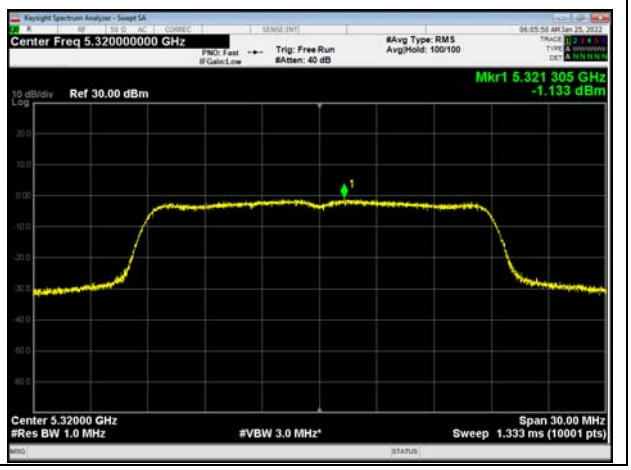
U-NII-2A, 802.11n HT20, Channel No.: 60



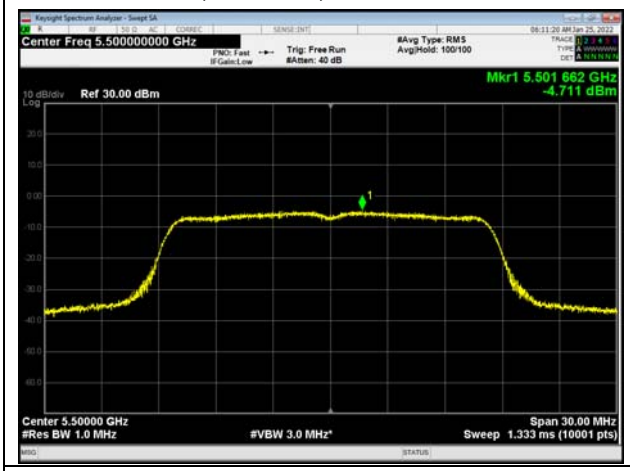
U-NII-2A, 802.11a, Channel No.: 64



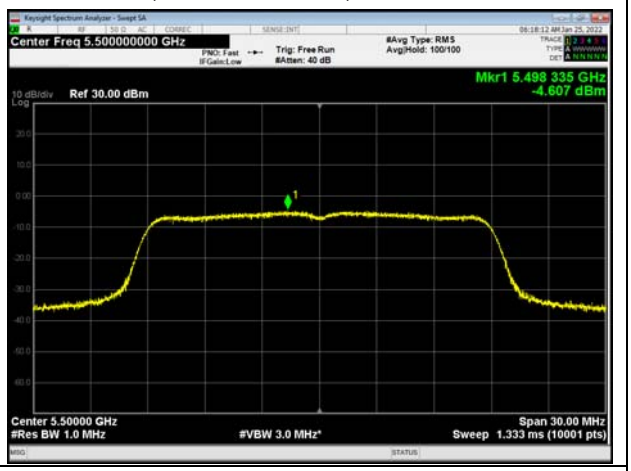
U-NII-2A, 802.11n HT20, Channel No.: 64



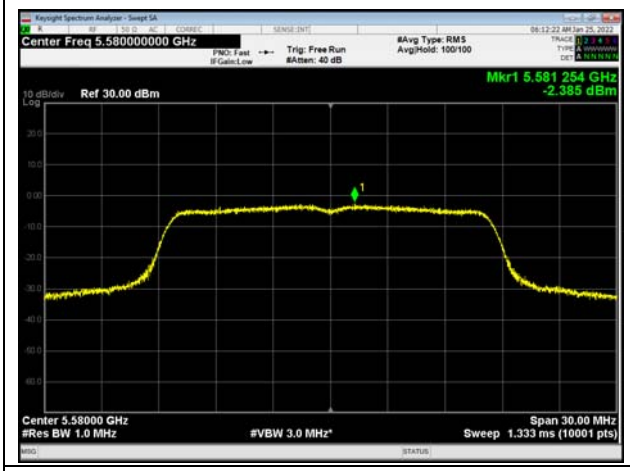
U-NII-2C, 802.11a, Channel No.: 100



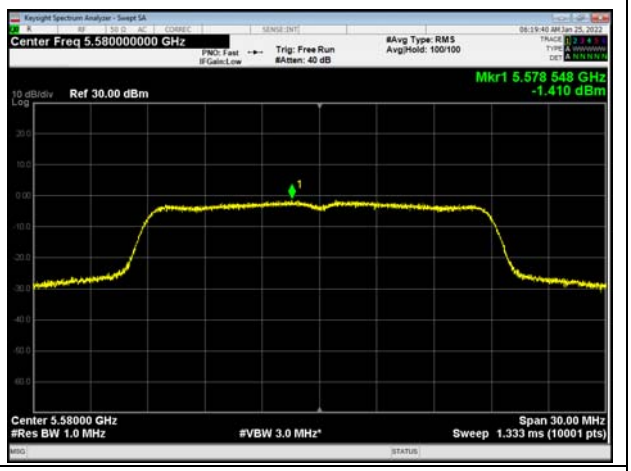
U-NII-2C, 802.11n HT20, Channel No.: 100



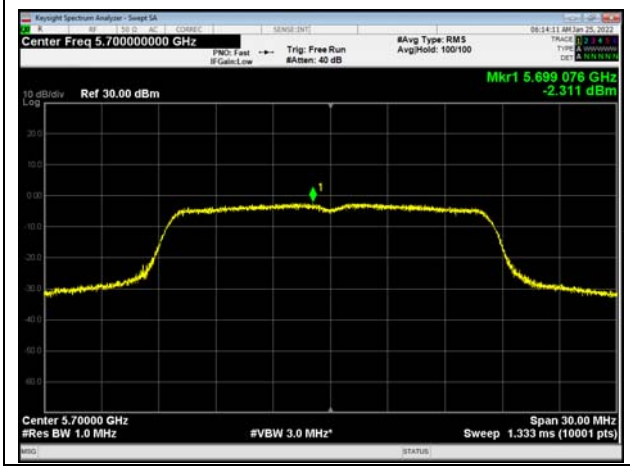
U-NII-2C, 802.11a, Channel No.: 116



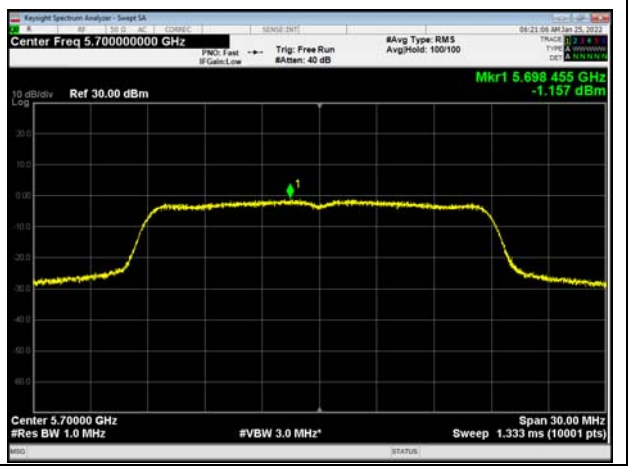
U-NII-2C, 802.11n HT20, Channel No.: 116

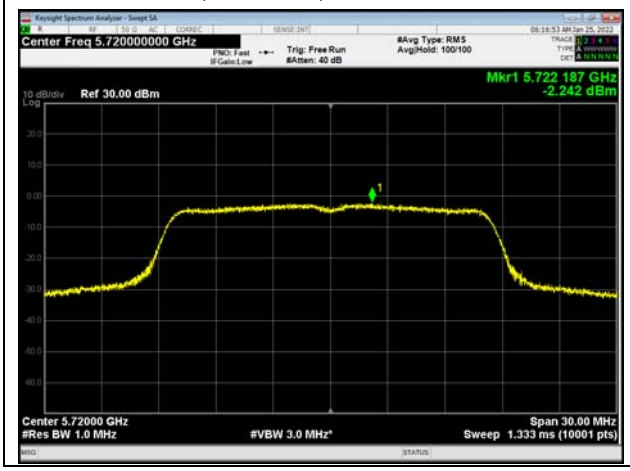
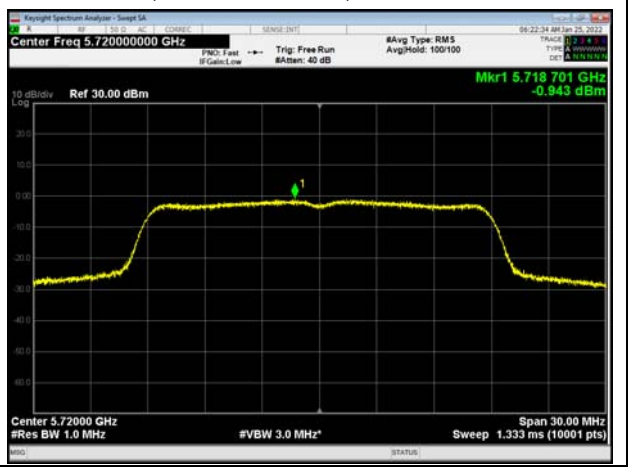


U-NII-2C, 802.11a, Channel No.: 140

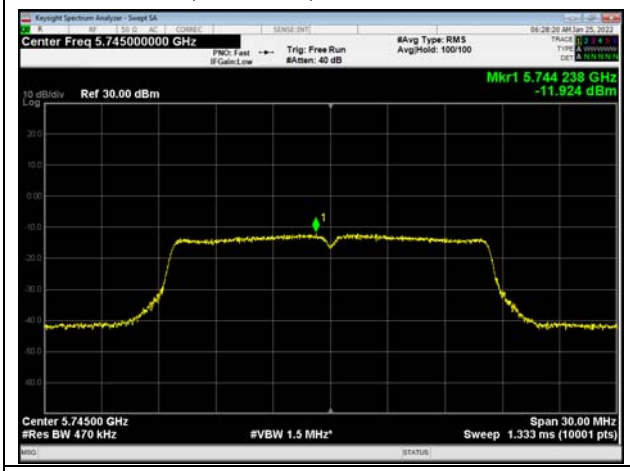


U-NII-2C, 802.11n HT20, Channel No.: 140

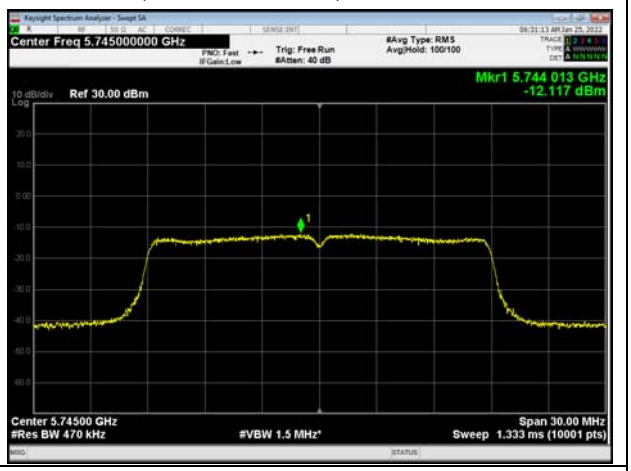


U-NII-2C, 802.11a, Channel No.: 144	U-NII-2C, 802.11n HT20, Channel No.: 144
	

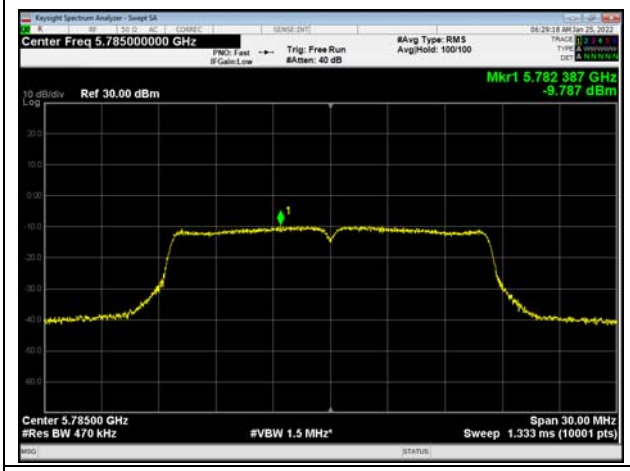
U-NII-3, 802.11a, Channel No.: 149



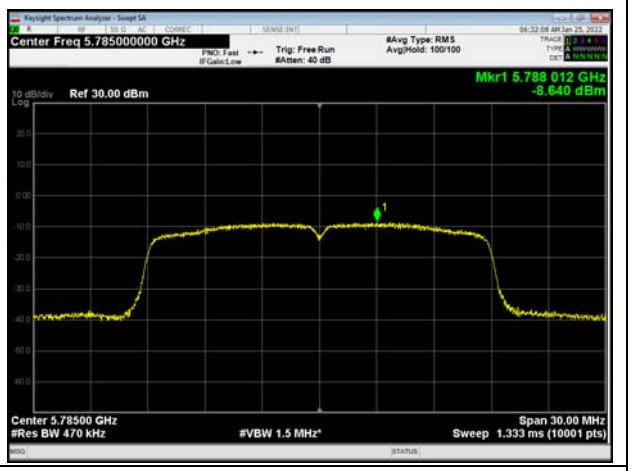
U-NII-3, 802.11n HT20, Channel No.: 149



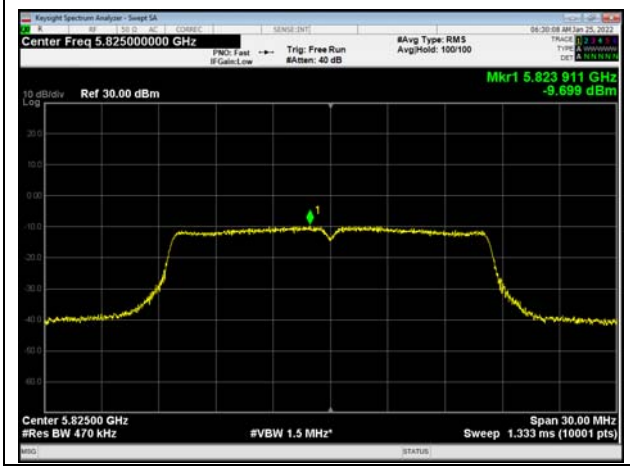
U-NII-3, 802.11a, Channel No.: 157



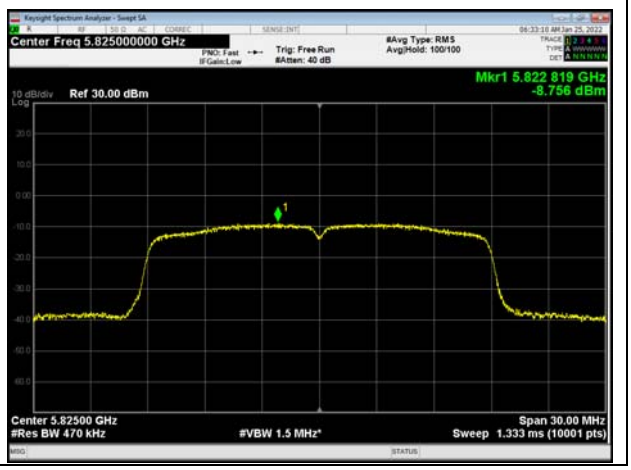
U-NII-3, 802.11n HT20, Channel No.: 157



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



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



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.

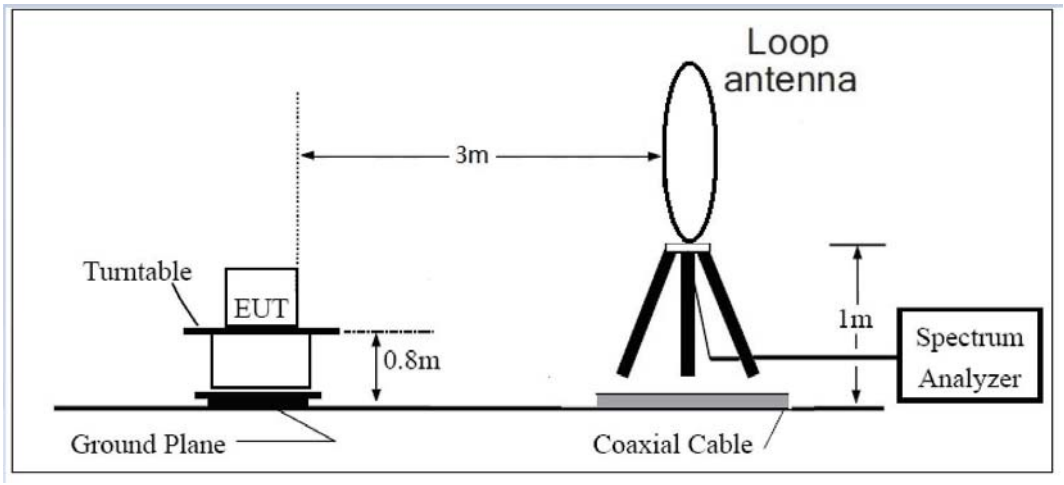
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

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.

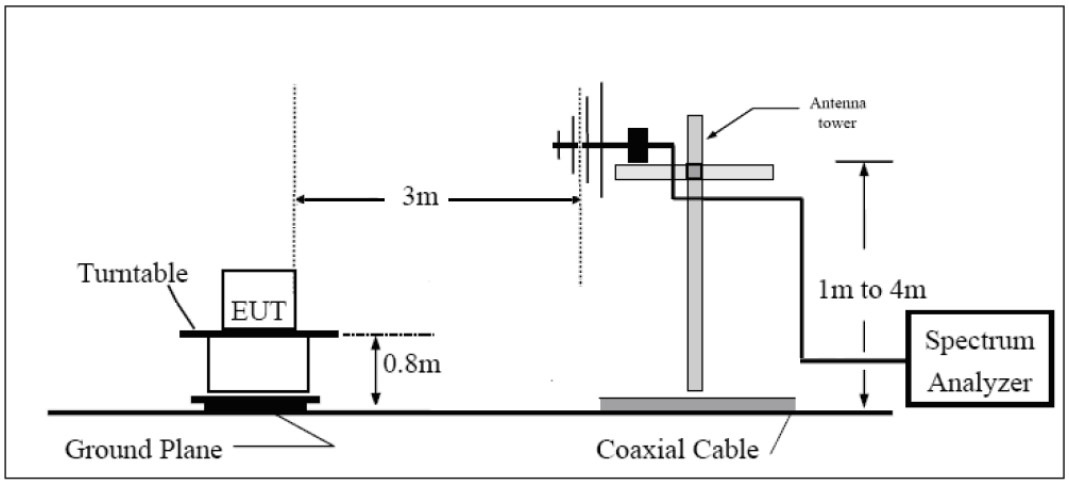
The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

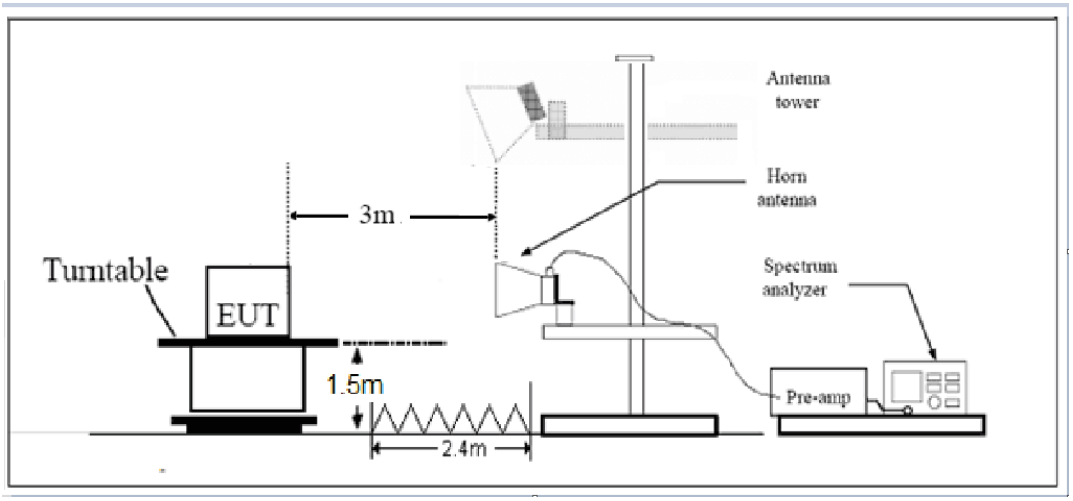
9KHz~~~30MHz



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

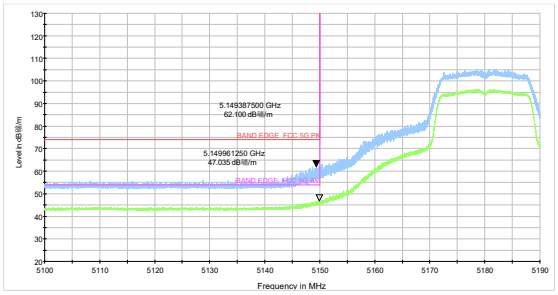
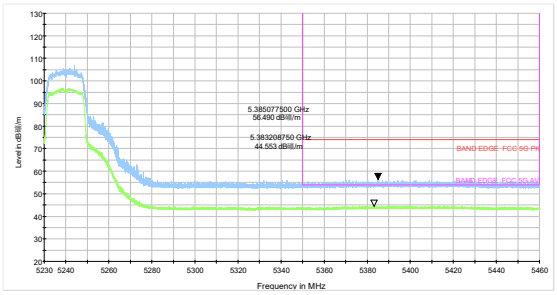
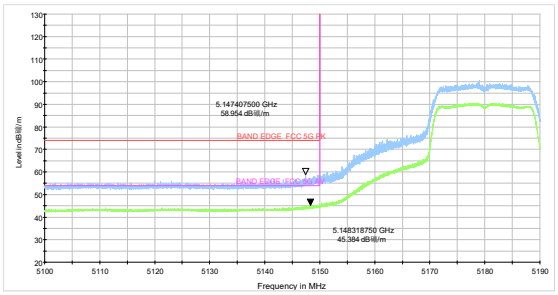
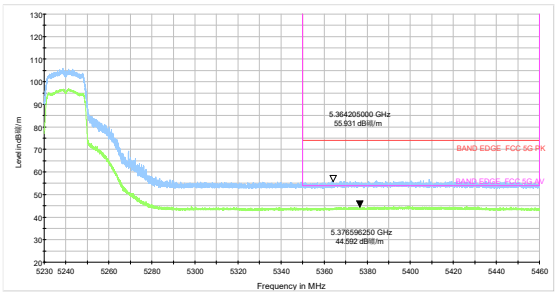
Test Results:

A font (Level in dB磛/m)in the test plot =(level in dB μ V/m)

A font (Level in dBμV/)in the test plot =(level in dB μ V/m)

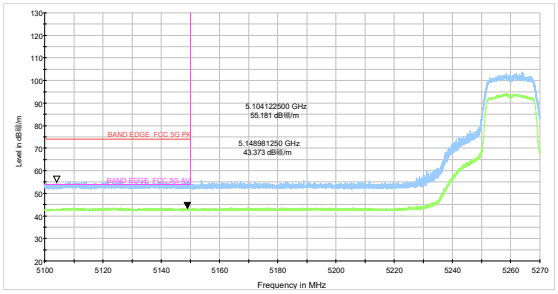
The signal beyond the limit is carrier.

U-NII-1

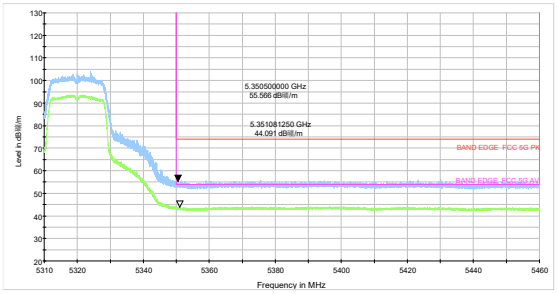
802.11a-Channel 36: Peak + Average	802.11a-Channel 48: Peak + Average
	
802.11n HT20-Channel 36: Peak + Average	**802.11n HT20-Channel 48: Peak + Average**
	

U-NII-2A

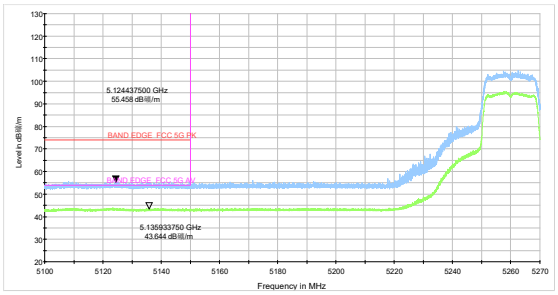
802.11a-Channel 52: Peak + Average



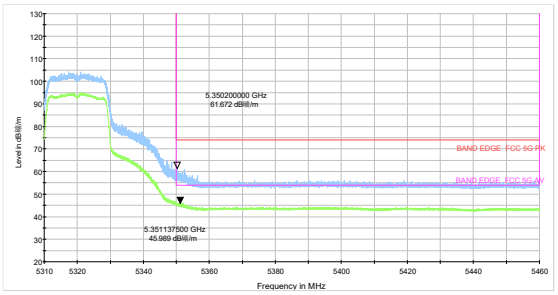
802.11a-Channel 64: Peak + Average



802.11n HT20-Channel 52: Peak + Average

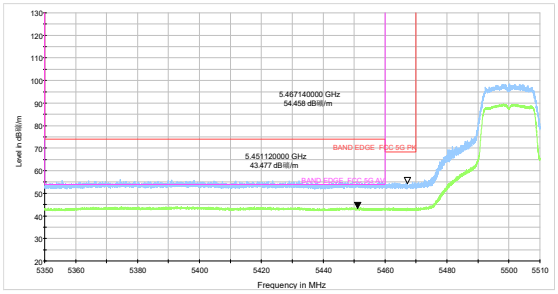


802.11n HT20-Channel 64: Peak + Average

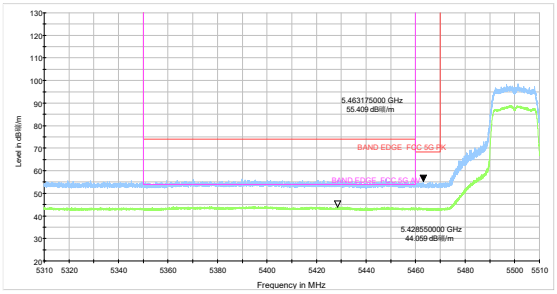


U-NII-2C

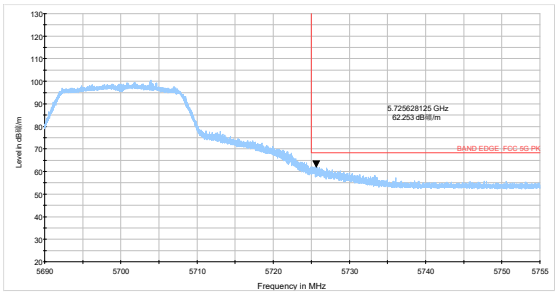
802.11a-Channel 100: Peak + Average



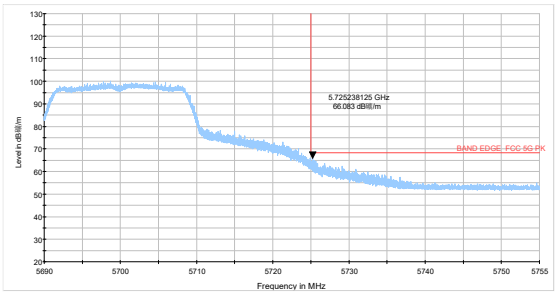
802.11n HT20-Channel 100: Peak + Average



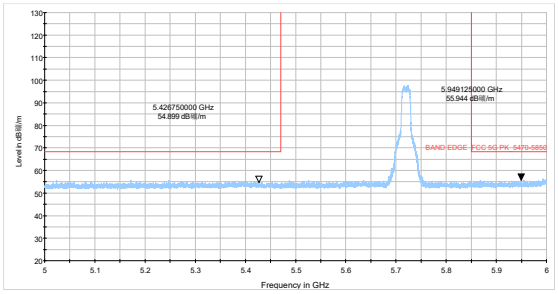
802.11a-Channel 140: Peak + Average



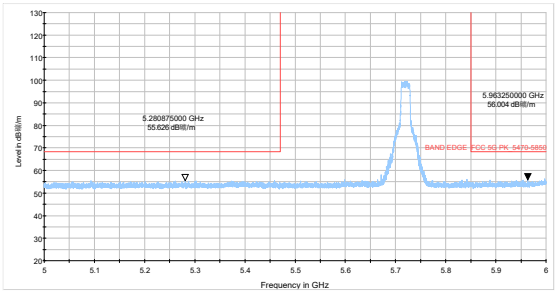
802.11n HT20-Channel 140: Peak + Average



802.11a-Channel 144: Peak

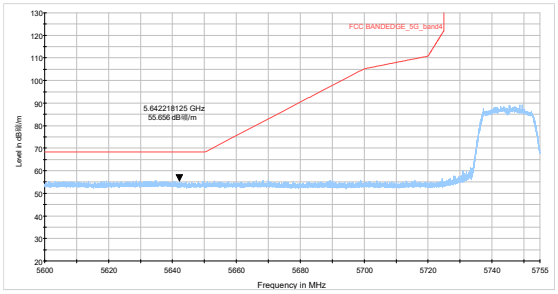


802.11n HT20-Channel 144: Peak

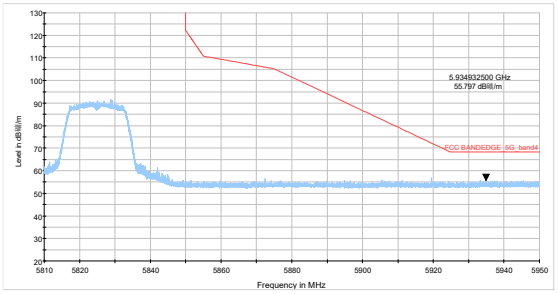


U-NII-3

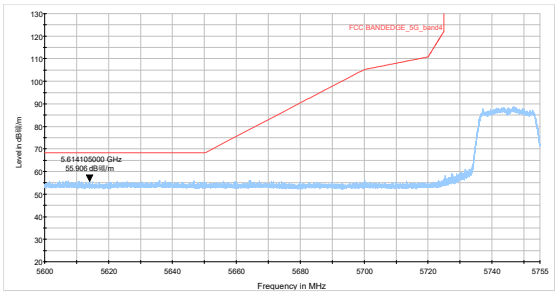
802.11a-Channel 149: Peak



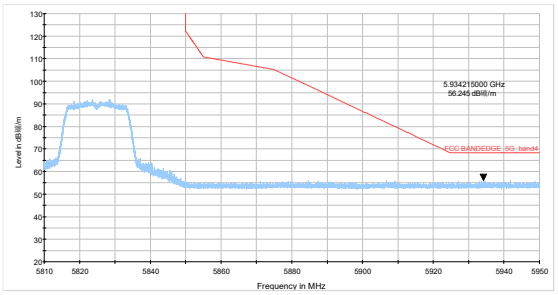
802.11a-Channel 165: Peak



802.11n HT20-Channel 149: Peak



802.11n HT20-Channel 165: Peak



Result of RE

Test result

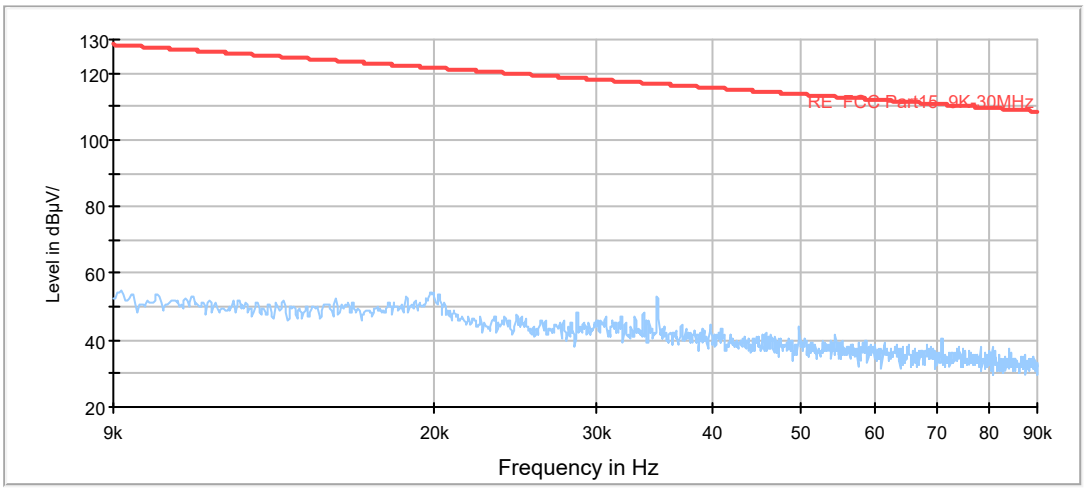
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 26.5GHz-40GHz are more than 20dB below the limit are not reported.

A font (Level in dB磠/m) in the test plot =(level in dB μ V/m)
A font (Level in dBμV/) in the test plot =(level in dB μ V/m)

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11a, Channel 100 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

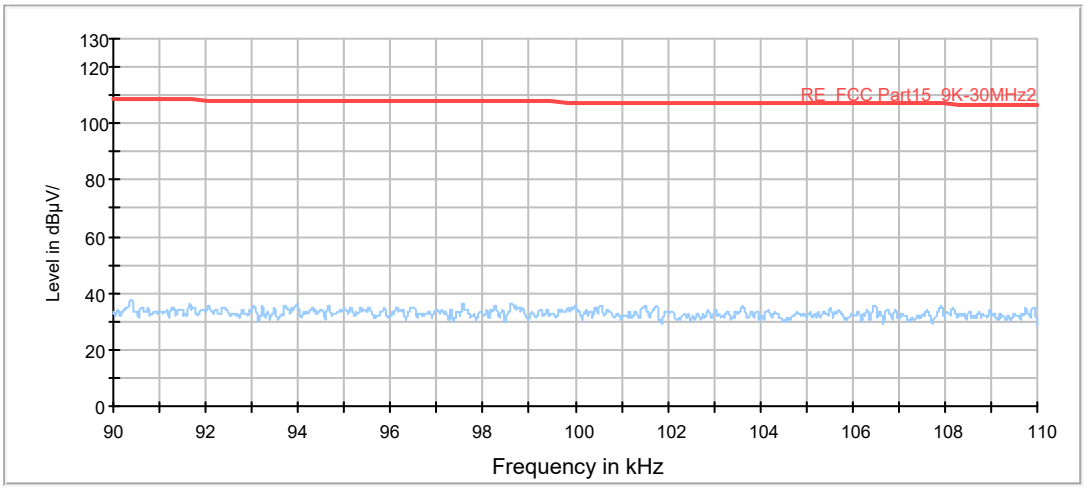
Continuous TX mode:

FCC RE 9K-90KHz AV



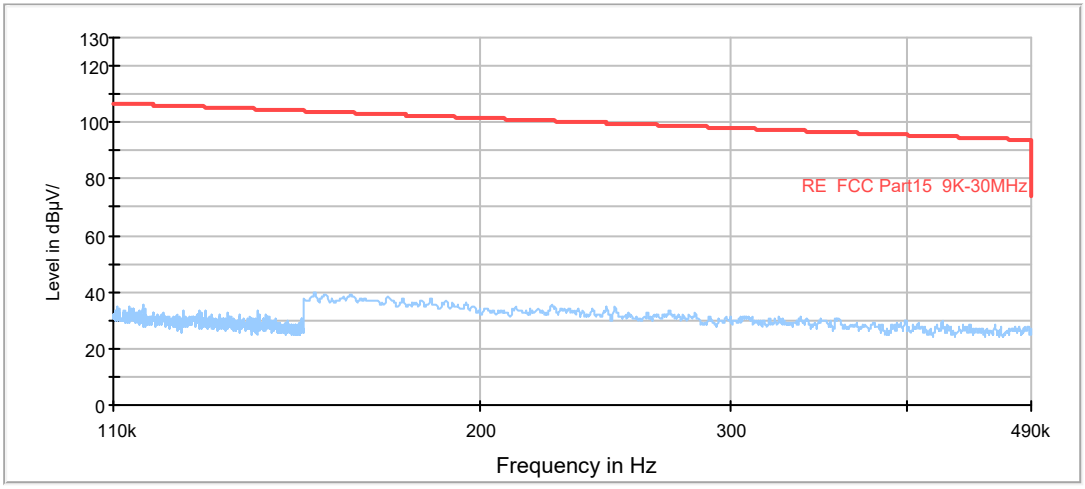
Radiates Emission from 9KHz to 90KHz

FCC RE 90K-110KHz QP



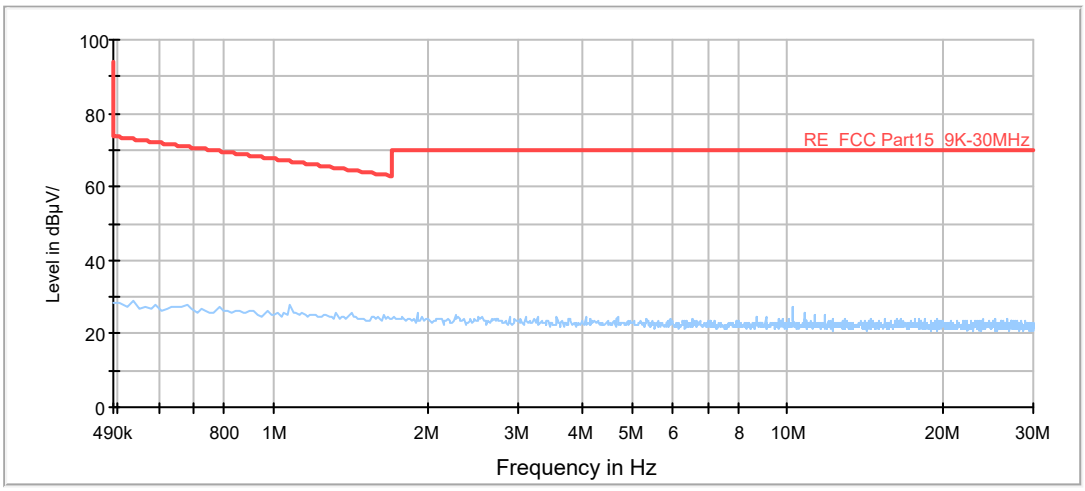
Radiates Emission from 90KHz to 110KHz

FCC RE 110K-490KHz AV

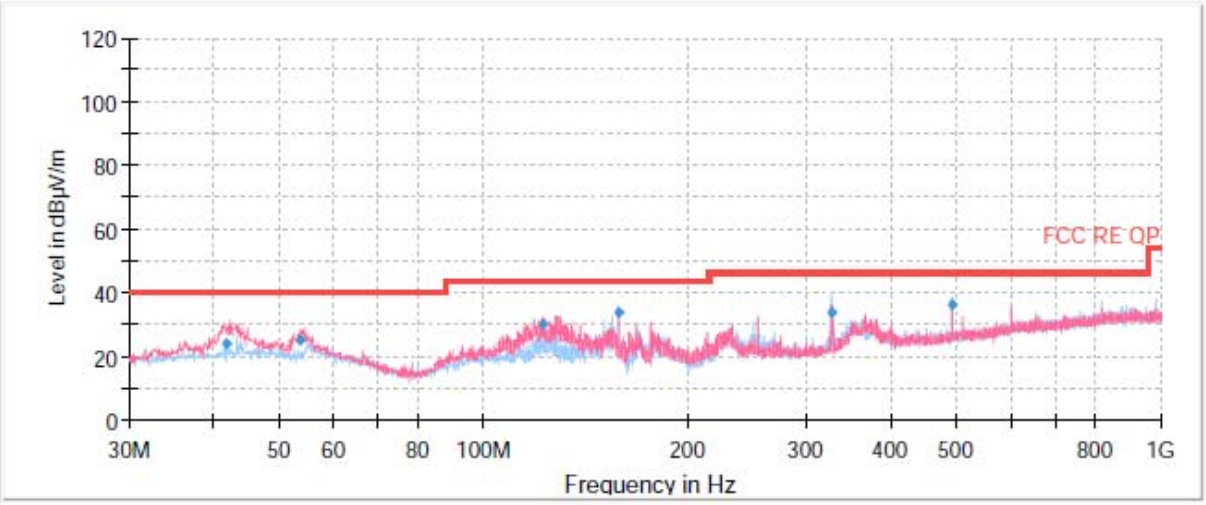


Radiates Emission from 110KHz to 490KHz

FCC RE 490K-30MHz QP



Radiates Emission from 490KHz to 30MHz



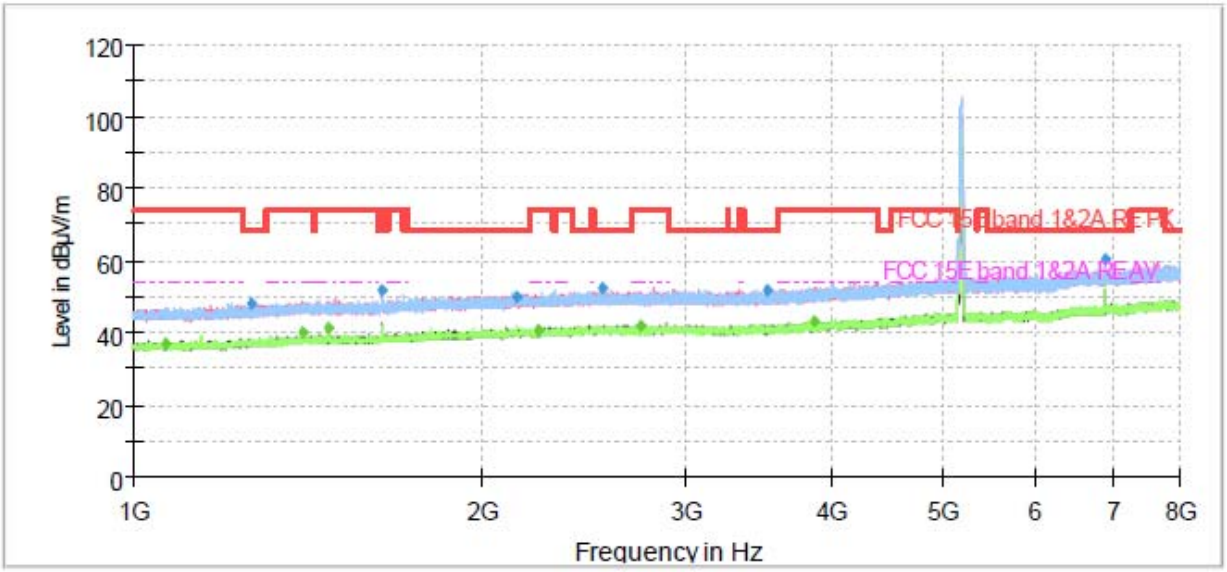
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
41.847500	24.01	115.0	V	0.0	14	15.99	40.00
53.567500	25.46	100.0	V	0.0	13	14.54	40.00
122.108750	30.30	125.0	V	160.0	11	13.20	43.50
158.080000	33.59	100.0	V	294.0	9	9.91	43.50
327.708750	33.78	100.0	H	122.0	16	12.22	46.00
491.598750	36.59	190.0	H	112.0	19	9.41	46.00

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

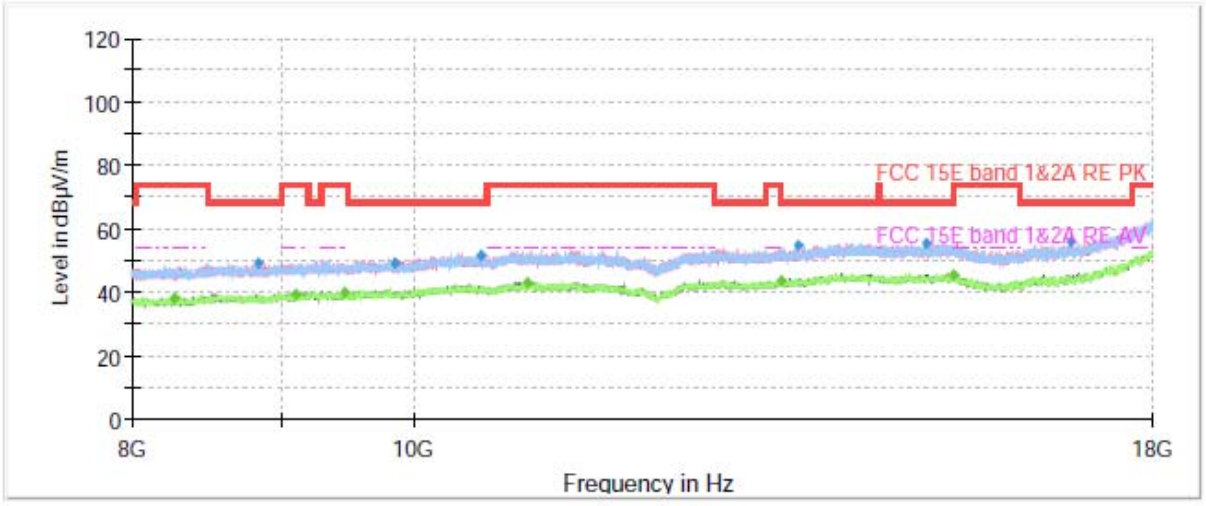
2. Margin = Limit – Quasi-Peak

802.11a CH36



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

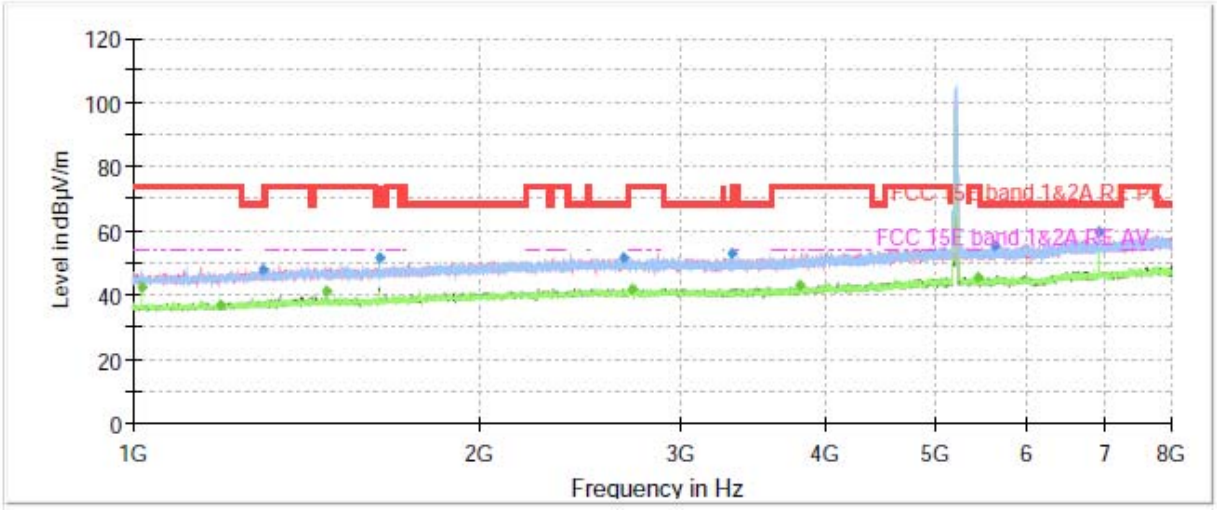


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1065.800000	---	36.84	54.00	17.16	100.0	V	174.0	-9
1261.800000	47.95	---	68.20	20.25	100.0	V	2.0	-8
1397.600000	---	40.02	54.00	13.98	100.0	H	292.0	-7
1474.600000	---	41.44	54.00	12.56	200.0	V	0.0	-7
1639.333333	51.57	---	68.20	16.63	200.0	V	350.0	-6
2139.600000	50.06	---	68.20	18.14	200.0	V	1.0	-4
2231.766667	---	40.46	54.00	13.54	200.0	V	240.0	-4
2538.366667	52.05	---	68.20	16.15	100.0	V	0.0	-4
2736.000000	---	41.86	54.00	12.14	100.0	V	120.0	-4
3522.566667	51.69	---	68.20	16.51	100.0	H	61.0	-3
3862.300000	---	42.87	54.00	11.13	100.0	V	329.0	-2
6907.066667	60.09	---	68.20	8.11	100.0	H	15.0	7

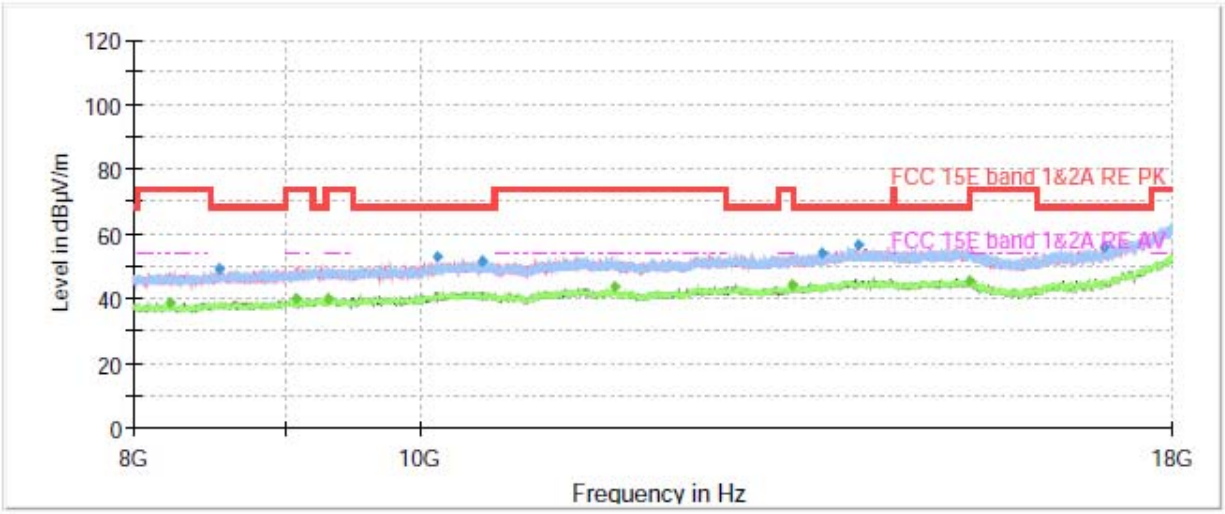
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH40



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

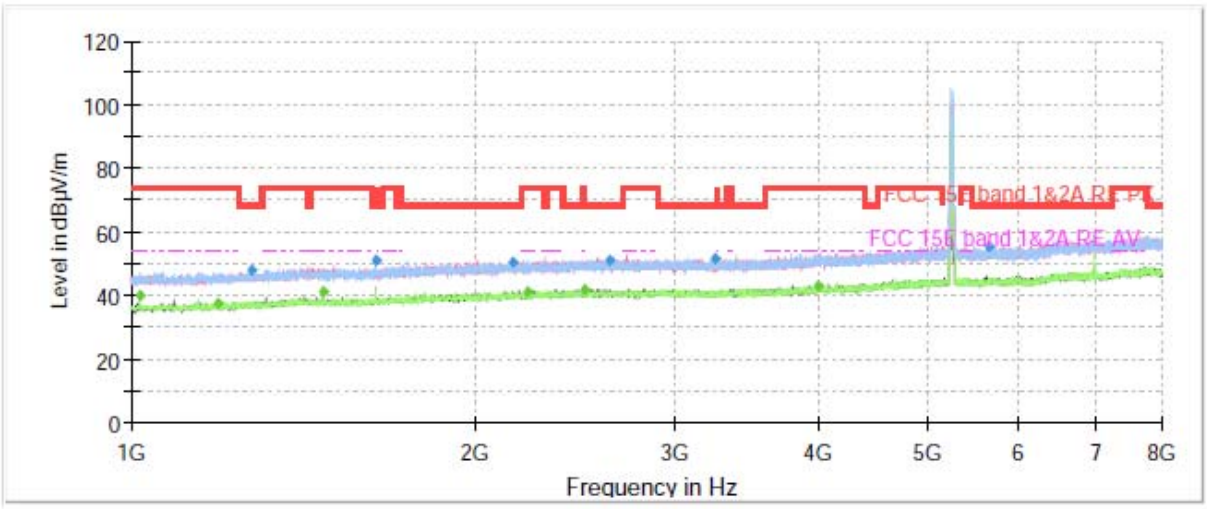


Radiates Emission from 8GHz to 18GHz

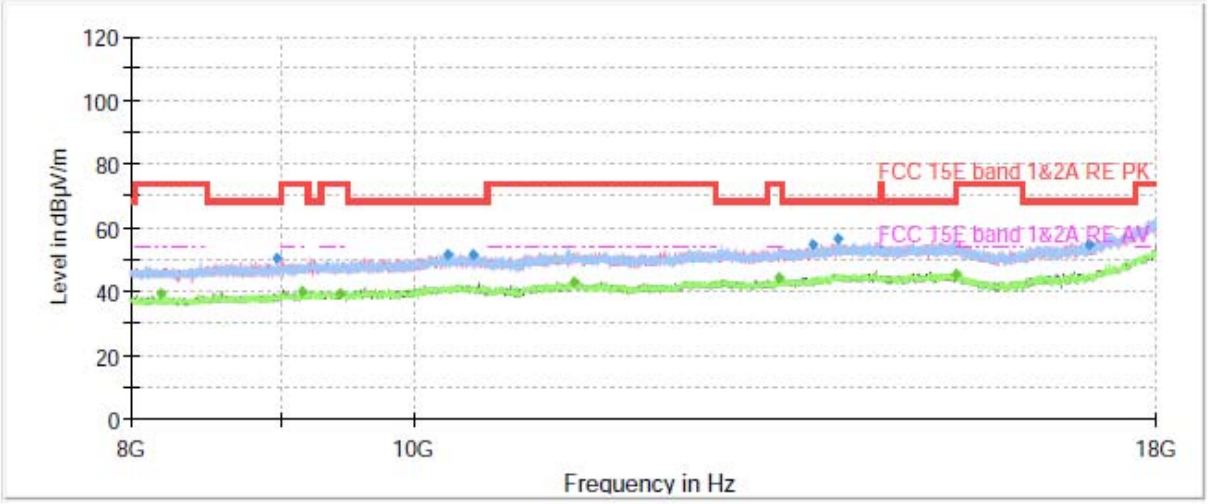
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	42.20	54.00	11.80	200.0	H	1.0	-10
1189.700000	---	37.23	54.00	16.77	200.0	V	185.0	-9
1295.633333	47.94	---	68.20	20.26	200.0	V	199.0	-8
1474.833333	---	41.44	54.00	12.56	100.0	H	294.0	-7
1638.866667	51.53	---	68.20	16.67	200.0	V	2.0	-6
2672.300000	51.58	---	68.20	16.62	200.0	V	0.0	-3
2711.733333	---	42.05	54.00	11.95	200.0	H	178.0	-4
3323.066667	52.62	---	68.20	15.58	200.0	H	110.0	-3
3800.233333	---	43.34	54.00	10.66	200.0	H	358.0	-2
5424.000000	---	45.39	54.00	8.61	100.0	V	359.0	3
5620.700000	55.60	---	68.20	12.60	200.0	V	79.0	3
6933.666667	59.41	---	68.20	8.79	100.0	H	94.0	7

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

802.11a CH48



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

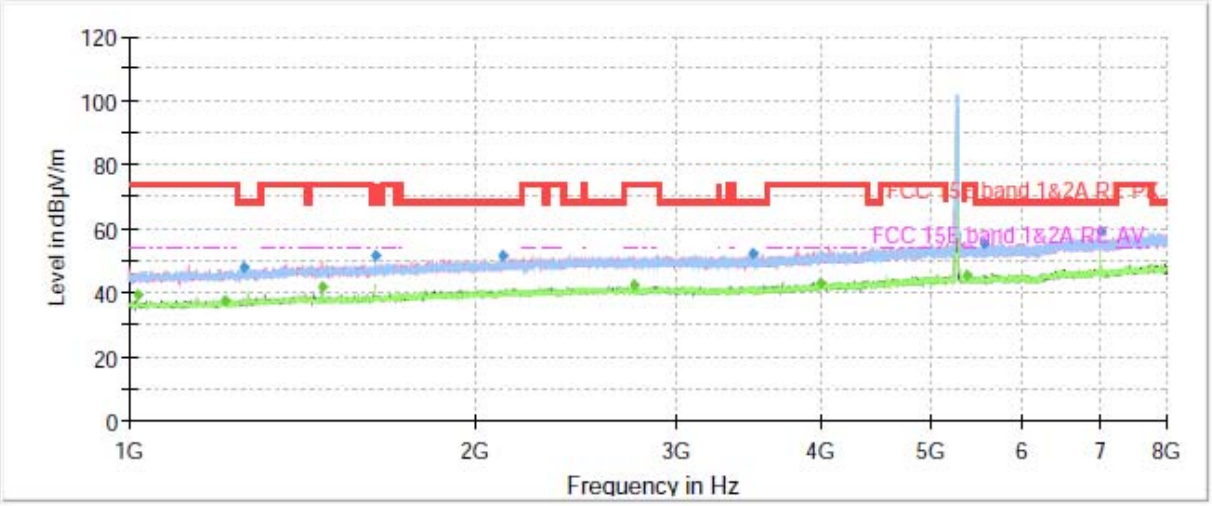


Radiates Emission from 8GHz to 18GHz

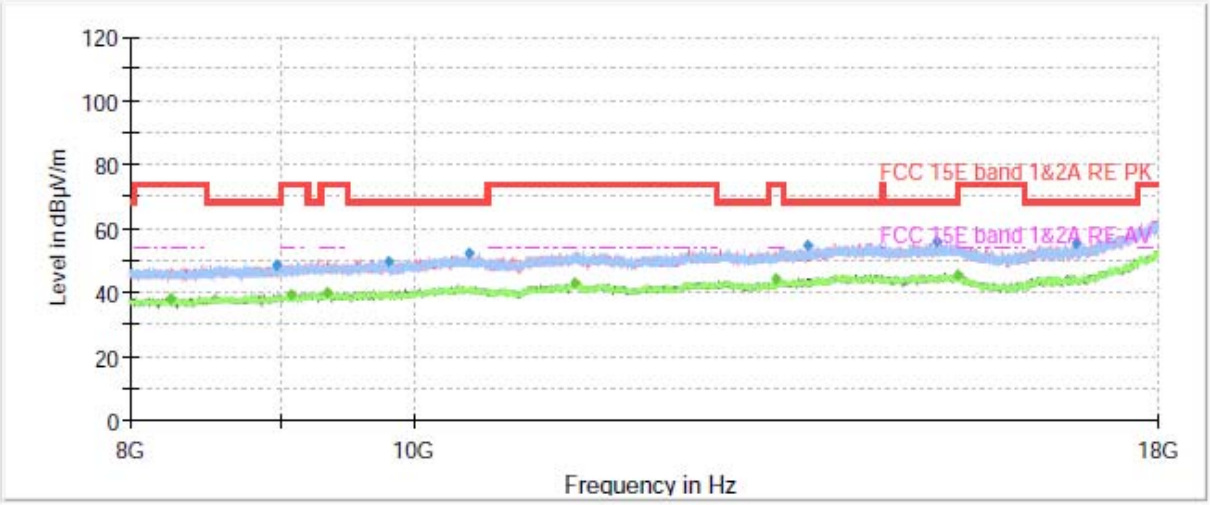
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	40.12	54.00	13.88	200.0	H	53.0	-10
1192.966667	---	37.62	54.00	16.38	200.0	H	353.0	-9
1274.866667	48.30	---	68.20	19.90	100.0	H	359.0	-8
1474.600000	---	41.18	54.00	12.82	200.0	V	16.0	-7
1637.700000	51.35	---	68.20	16.85	200.0	V	2.0	-6
2162.466667	50.52	---	68.20	17.68	200.0	H	358.0	-4
2223.133333	---	41.04	54.00	12.96	200.0	V	308.0	-4
2495.433333	---	42.00	54.00	12.00	100.0	H	1.0	-4
2625.866667	51.35	---	68.20	16.85	100.0	V	357.0	-4
3250.966667	51.90	---	68.20	16.30	200.0	V	0.0	-3
3992.033333	---	43.16	54.00	10.84	100.0	V	146.0	-1
5635.633333	55.32	---	68.20	12.88	200.0	H	293.0	3

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

802.11a CH52



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

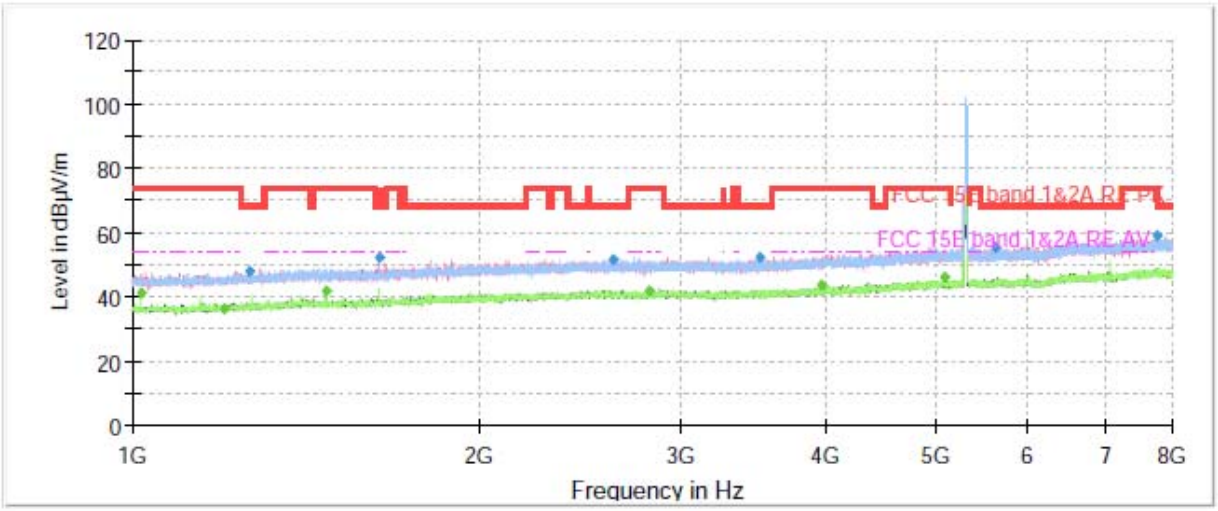


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.800000	---	39.43	54.00	14.57	100.0	H	75.0	-10
1211.633333	---	37.28	54.00	16.72	200.0	V	36.0	-9
1259.466667	47.77	---	68.20	20.43	100.0	V	177.0	-8
1474.600000	---	41.58	54.00	12.42	100.0	V	332.0	-7
1638.866667	51.78	---	68.20	16.42	200.0	V	6.0	-6
2113.933333	51.70	---	68.20	16.50	100.0	H	335.0	-4
2754.200000	---	42.51	54.00	11.49	100.0	V	0.0	-4
3495.966667	52.08	---	68.20	16.12	200.0	V	144.0	-3
3998.800000	---	43.02	54.00	10.98	100.0	H	16.0	-1
5366.600000	---	45.58	54.00	8.42	200.0	H	234.0	3
5545.566667	55.58	---	68.20	12.62	100.0	H	4.0	3
7013.933333	58.84	---	68.20	9.36	100.0	H	6.0	7

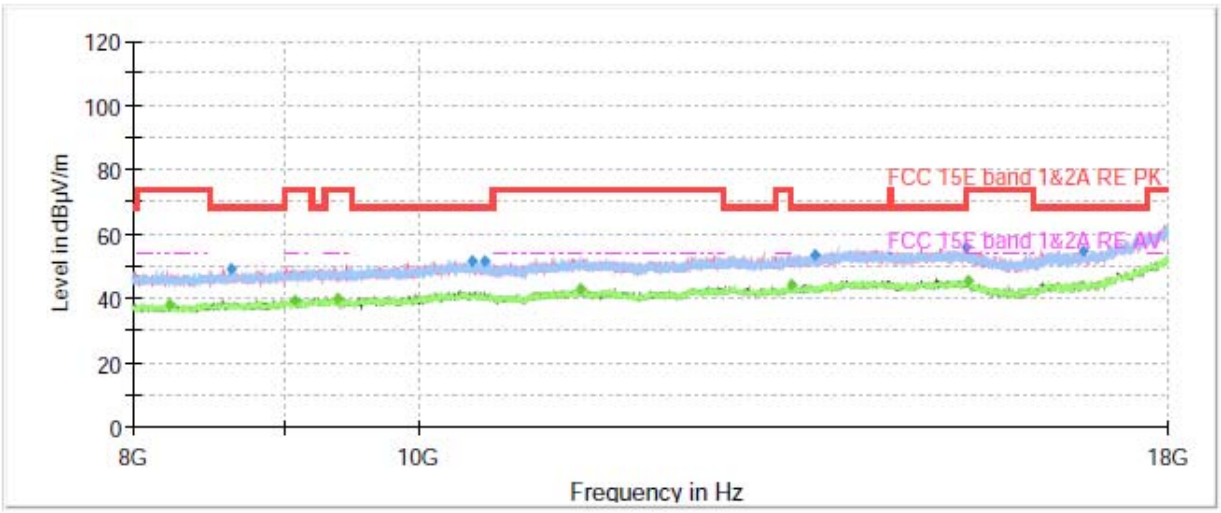
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH60



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

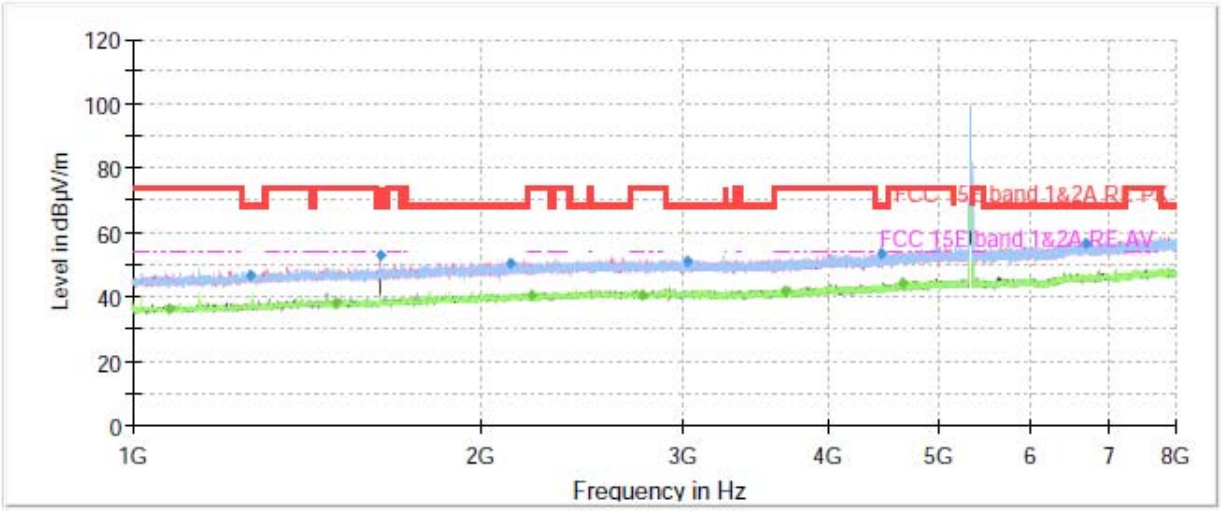


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.100000	---	41.36	54.00	12.64	100.0	H	56.0	-10
1199.500000	---	36.57	54.00	17.43	100.0	V	188.0	-9
1262.733333	48.02	---	68.20	20.18	200.0	V	350.0	-8
1474.833333	---	42.01	54.00	11.99	100.0	V	259.0	-7
1638.166667	52.19	---	68.20	16.01	200.0	V	1.0	-6
2614.666667	51.84	---	68.20	16.36	100.0	V	0.0	-4
2815.333333	---	41.81	54.00	12.19	100.0	H	56.0	-3
3503.900000	52.25	---	68.20	15.95	200.0	H	358.0	-3
3962.400000	---	43.41	54.00	10.59	100.0	H	108.0	-1
5081.000000	---	46.04	54.00	7.96	200.0	V	41.0	2
5620.466667	55.31	---	68.20	12.89	200.0	V	336.0	3
7771.800000	58.86	---	68.20	9.34	100.0	V	53.0	7

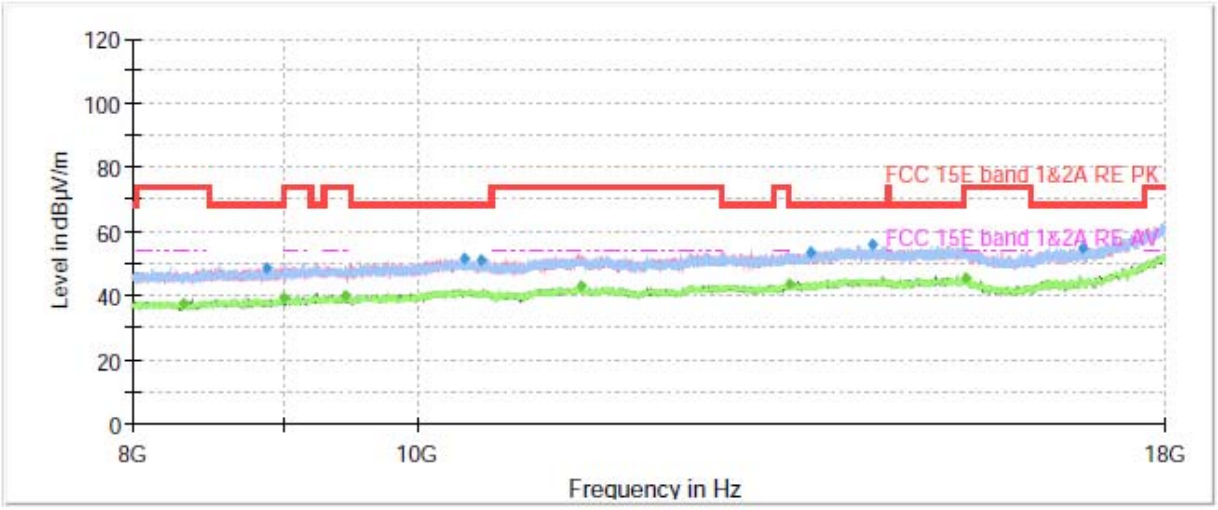
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH64



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

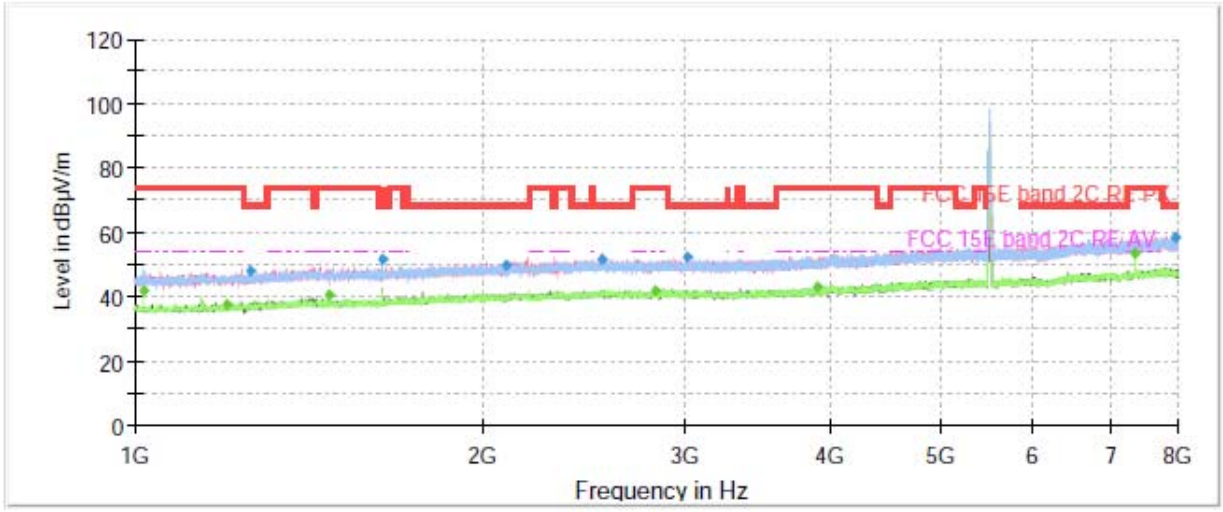


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1077.233333	---	36.28	54.00	17.72	200.0	V	78.0	-9
1261.100000	46.83	---	68.20	21.37	100.0	V	354.0	-8
1496.066667	---	38.45	54.00	15.55	100.0	V	158.0	-7
1638.400000	53.11	---	68.20	15.09	200.0	V	10.0	-6
2123.500000	50.45	---	68.20	17.75	100.0	V	215.0	-4
2211.466667	---	40.37	54.00	13.63	200.0	V	4.0	-4
2763.533333	---	40.81	54.00	13.19	200.0	V	39.0	-4
3019.500000	51.21	---	68.20	16.99	100.0	H	225.0	-3
3676.100000	---	41.87	54.00	12.13	200.0	V	0.0	-2
4447.500000	53.51	---	68.20	14.69	200.0	H	0.0	0
4637.433333	---	44.17	54.00	9.83	200.0	H	285.0	1
6686.100000	56.78	---	68.20	11.42	200.0	V	265.0	6

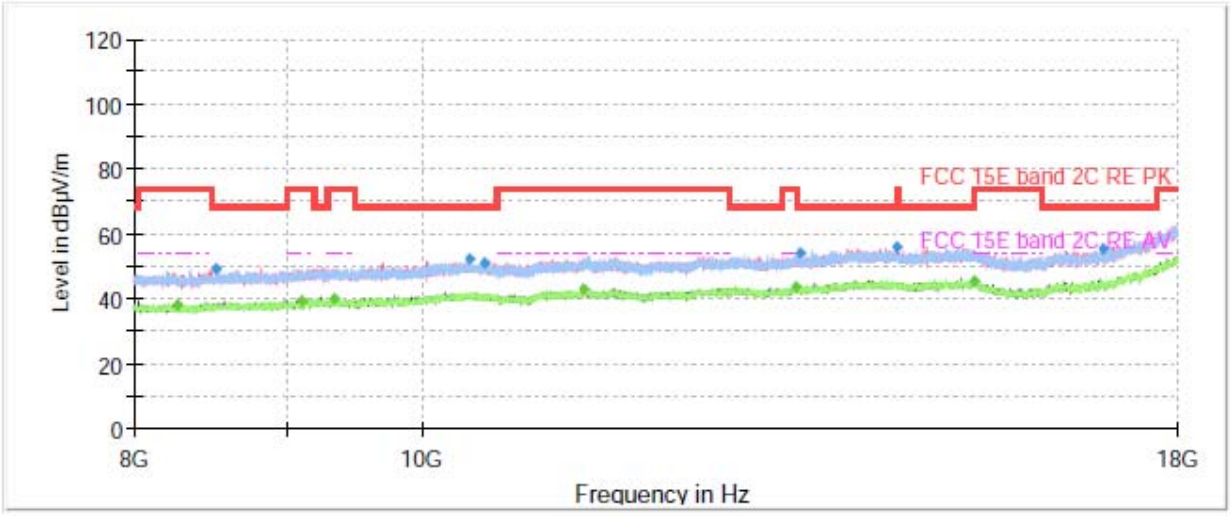
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH100



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

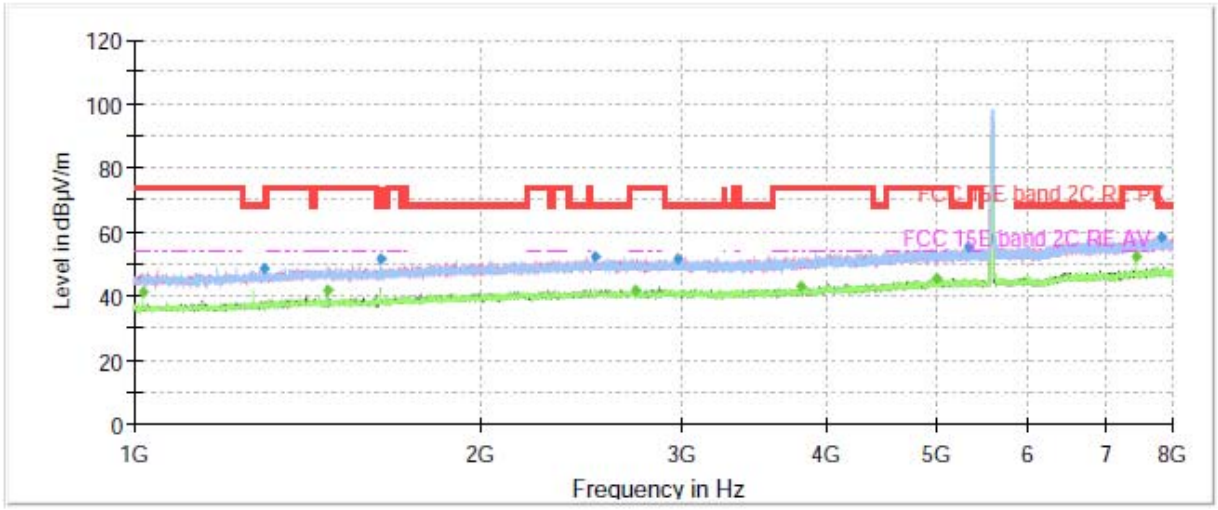


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	42.08	54.00	11.92	200.0	H	42.0	-10
1200.433333	---	37.68	54.00	16.32	200.0	V	106.0	-9
1259.233333	47.74	---	68.20	20.46	100.0	V	186.0	-8
1474.600000	---	40.76	54.00	13.24	100.0	V	213.0	-7
1638.866667	51.54	---	68.20	16.66	200.0	V	350.0	-6
2098.300000	50.05	---	68.20	18.15	100.0	H	50.0	-4
2540.233333	51.85	---	68.20	16.35	200.0	H	356.0	-4
2822.333333	---	41.99	54.00	12.01	100.0	V	353.0	-3
3004.100000	52.29	---	68.20	15.91	200.0	H	56.0	-3
3904.300000	---	43.03	54.00	10.97	100.0	H	89.0	-2
7333.366667	---	53.31	54.00	0.69	100.0	H	0.0	7
7972.933333	58.42	---	68.20	9.78	200.0	H	256.0	8

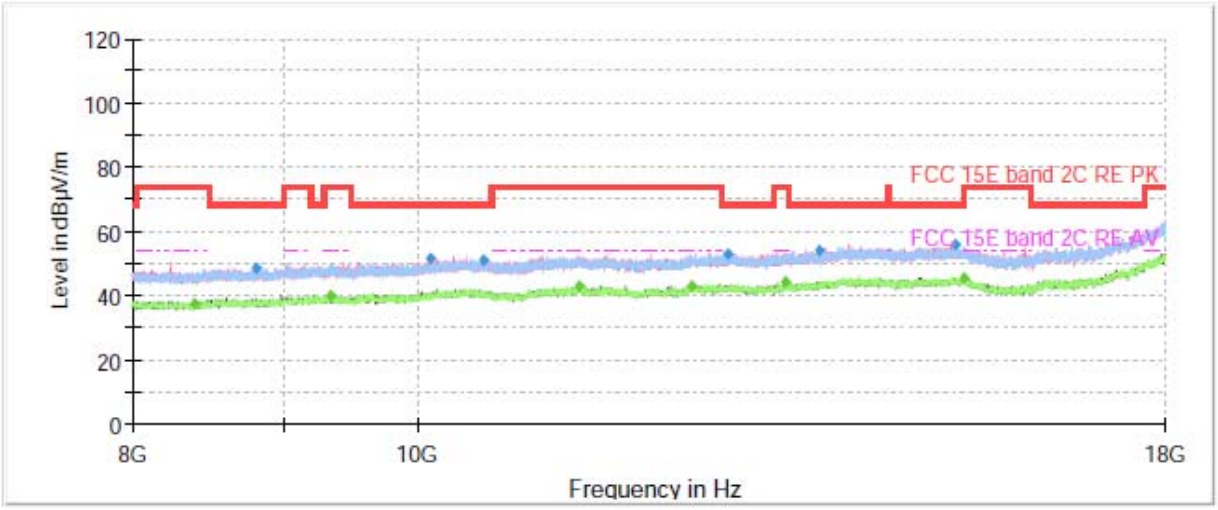
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH116



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

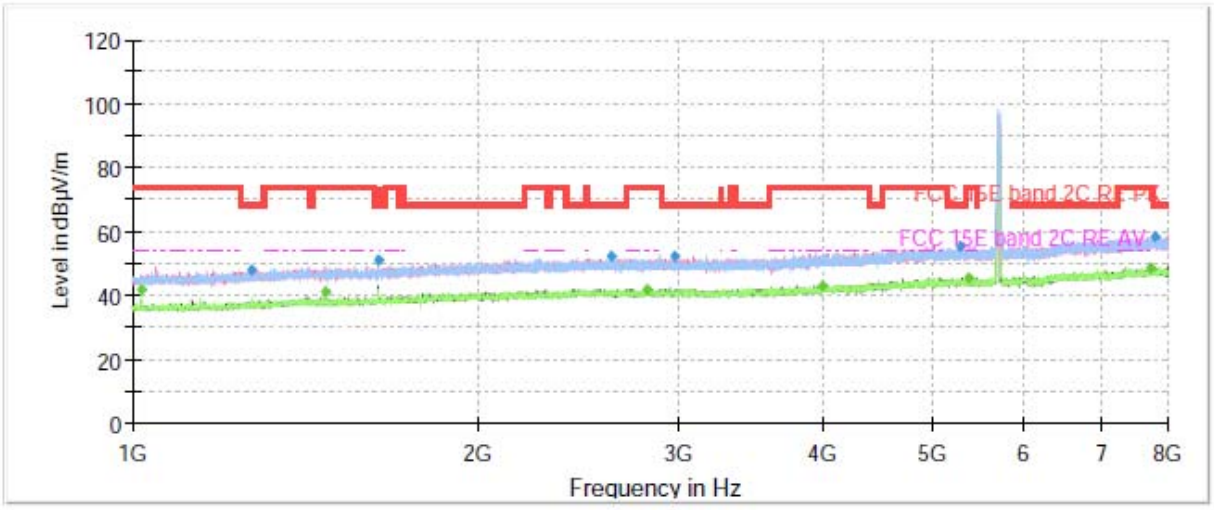


Radiates Emission from 8GHz to 18GHz

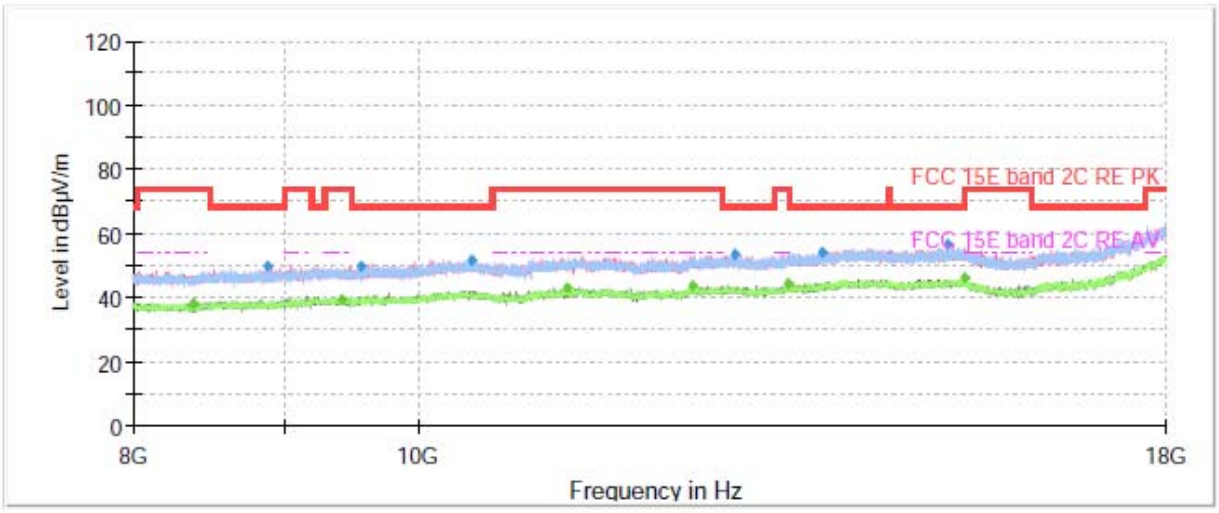
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	41.45	54.00	12.55	100.0	H	0.0	-10
1295.866667	48.49	---	68.20	19.71	200.0	H	269.0	-8
1474.833333	---	41.76	54.00	12.24	200.0	V	308.0	-7
1638.633333	51.69	---	68.20	16.51	100.0	V	25.0	-6
2511.300000	52.59	---	68.20	15.61	100.0	H	6.0	-4
2728.533333	---	42.04	54.00	11.96	100.0	V	217.0	-4
2967.233333	51.63	---	68.20	16.57	100.0	H	171.0	-3
3805.133333	---	43.15	54.00	10.85	200.0	V	134.0	-2
4990.466667	---	45.45	54.00	8.55	100.0	V	297.0	2
5312.000000	55.09	---	68.20	13.11	100.0	V	270.0	2
7440.233333	---	52.11	54.00	1.89	100.0	H	10.0	7
7818.933333	58.46	---	68.20	9.74	100.0	V	244.0	7

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

802.11a CH140



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

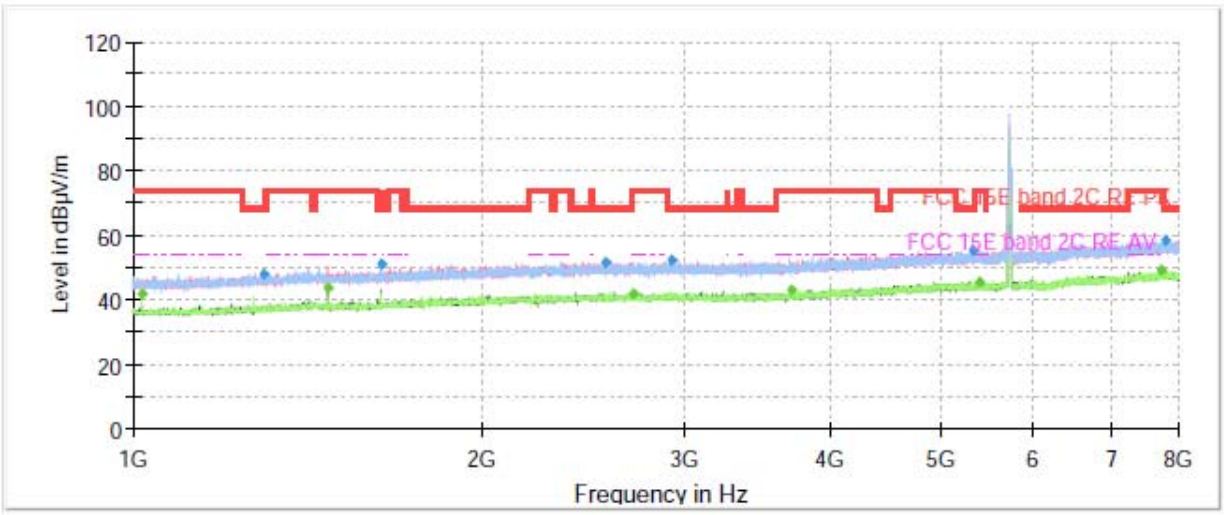


Radiates Emission from 8GHz to 18GHz

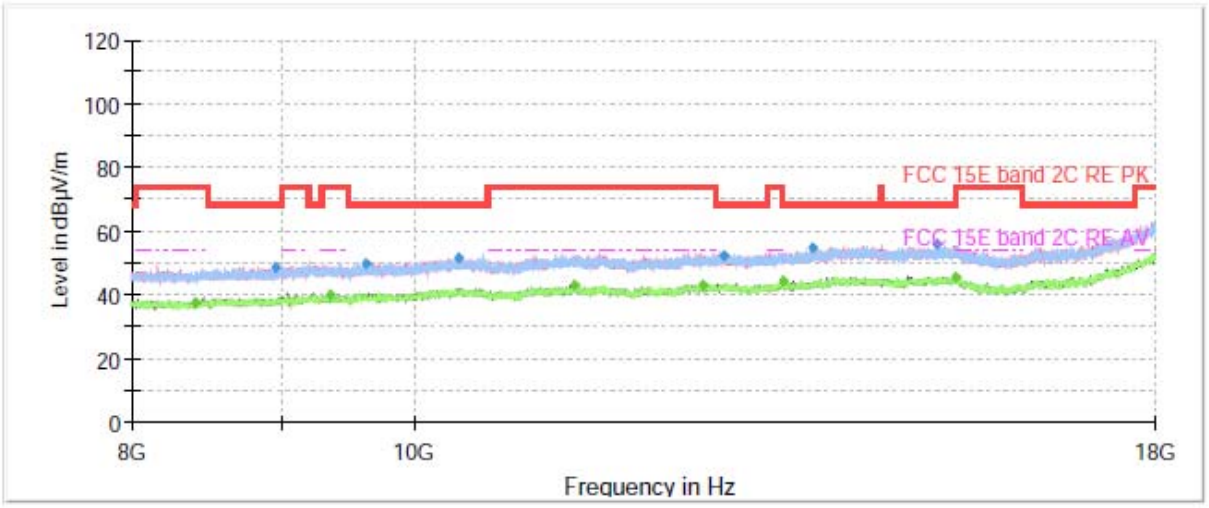
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.333333	---	41.72	54.00	12.28	100.0	H	6.0	-10
1267.400000	48.05	---	68.20	20.15	100.0	V	299.0	-8
1474.833333	---	41.11	54.00	12.89	200.0	H	283.0	-7
1638.633333	51.27	---	68.20	16.93	200.0	V	213.0	-6
2609.533333	52.15	---	68.20	16.05	200.0	H	219.0	-4
2811.833333	---	42.01	54.00	11.99	100.0	H	306.0	-3
2971.666667	52.17	---	68.20	16.03	200.0	H	309.0	-3
3997.633333	---	43.26	54.00	10.74	200.0	V	226.0	-1
5270.700000	55.32	---	68.20	12.88	200.0	H	245.0	2
5369.633333	---	45.53	54.00	8.47	100.0	H	4.0	3
7736.566667	---	48.60	54.00	5.40	100.0	V	359.0	7
7807.500000	58.74	---	68.20	9.46	200.0	H	271.0	7

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

802.11a CH144



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

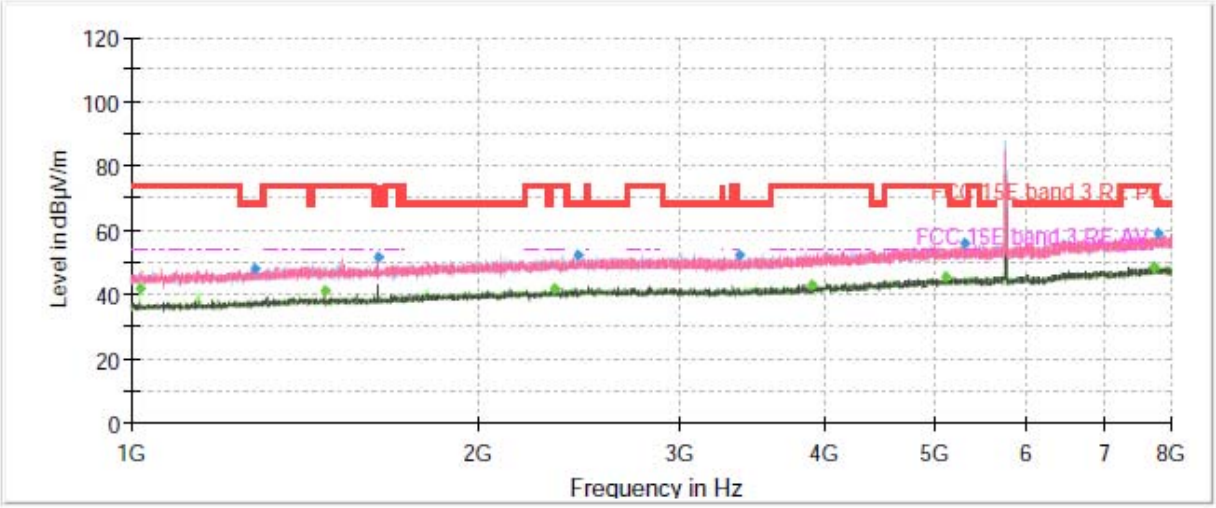


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.333333	---	41.69	54.00	12.31	100.0	H	36.0	-10
1295.166667	48.07	---	68.20	20.13	200.0	H	108.0	-8
1474.600000	---	43.60	54.00	10.40	200.0	V	306.0	-7
1638.400000	51.21	---	68.20	16.99	200.0	V	50.0	-6
2563.100000	51.97	---	68.20	16.23	100.0	H	128.0	-4
2700.533333	---	42.10	54.00	11.90	200.0	H	10.0	-4
2914.033333	52.41	---	68.20	15.79	200.0	H	122.0	-3
3712.733333	---	43.15	54.00	10.85	200.0	V	4.0	-2
5308.033333	55.08	---	68.20	13.12	100.0	H	0.0	2
5392.266667	---	45.72	54.00	8.28	200.0	V	16.0	3
7737.733333	---	49.17	54.00	4.83	200.0	V	6.0	7
7791.400000	58.63	---	68.20	9.57	200.0	V	237.0	7

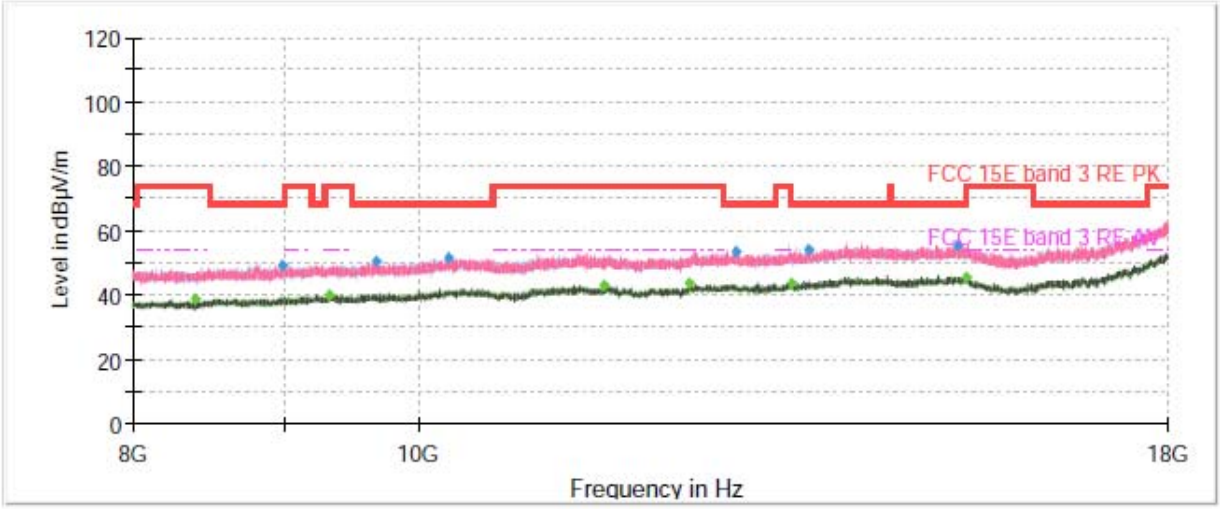
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH149



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

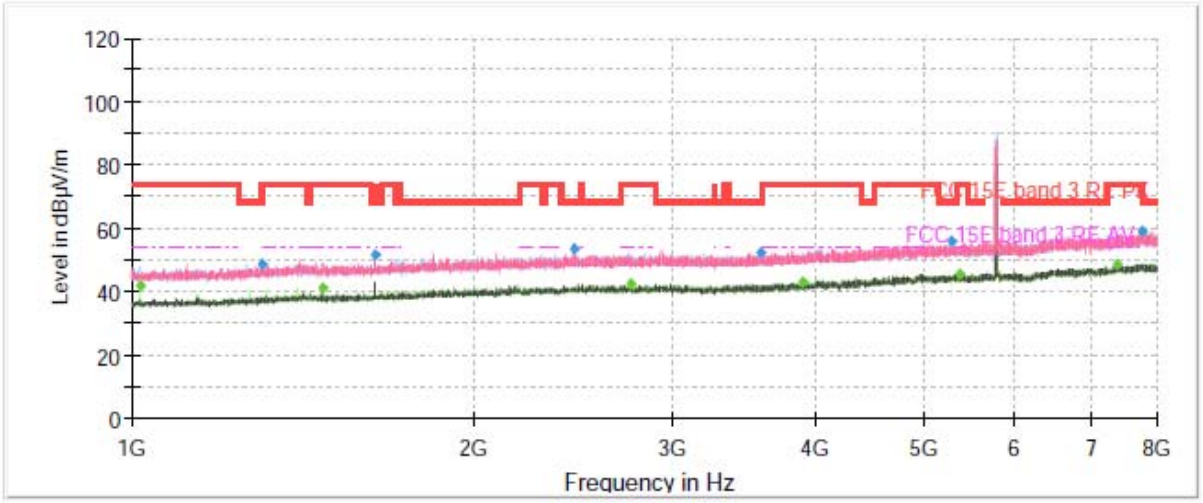


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.800000	---	41.74	54.00	12.26	200.0	H	28.0	-10
1277.200000	47.82	---	68.20	20.38	100.0	H	358.0	-8
1474.833333	---	41.33	54.00	12.67	100.0	V	279.0	-7
1638.400000	51.60	---	68.20	16.60	200.0	V	10.0	-6
2327.666667	---	42.06	54.00	11.94	200.0	H	252.0	-4
2442.700000	52.23	---	68.20	15.97	200.0	H	4.0	-4
3368.100000	52.37	---	68.20	15.83	100.0	V	0.0	-3
3905.466667	---	43.20	54.00	10.80	100.0	V	240.0	-2
5092.200000	---	45.59	54.00	8.41	100.0	H	308.0	2
5305.233333	55.73	---	68.20	12.47	200.0	H	53.0	2
7735.400000	---	48.54	54.00	5.46	100.0	H	342.0	7
7793.500000	58.97	---	68.20	9.23	100.0	H	269.0	7

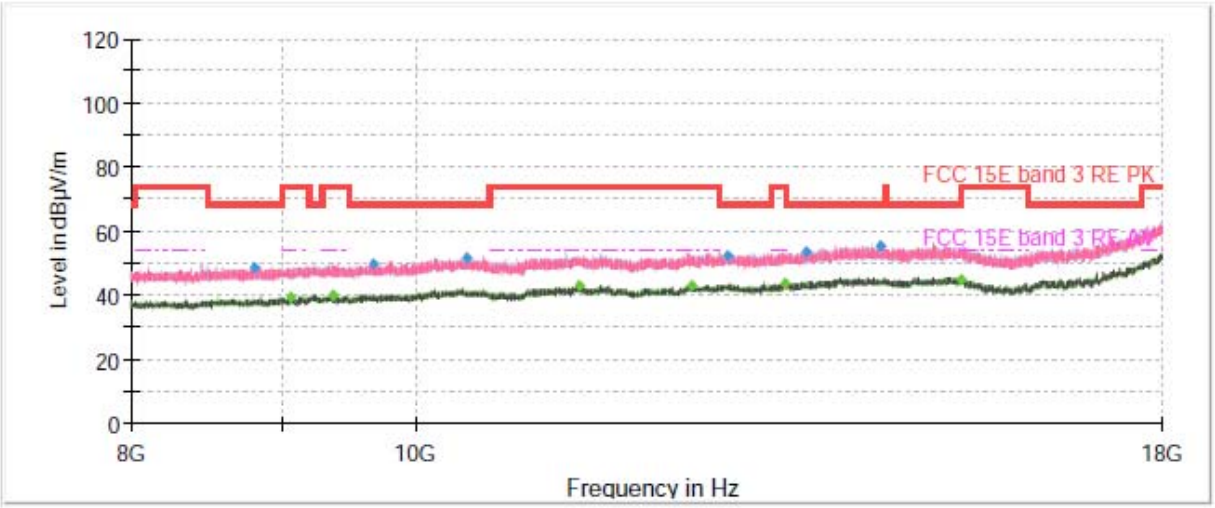
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH157



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

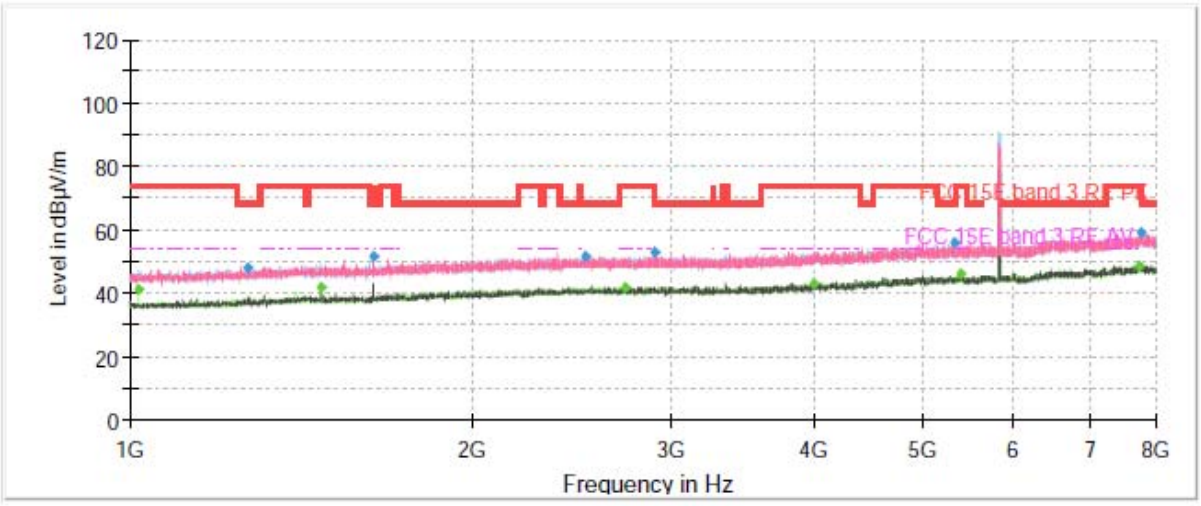


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	42.06	54.00	11.94	100.0	H	53.0	-10
1299.133333	48.87	---	68.20	19.33	100.0	V	234.0	-8
1474.833333	---	41.01	54.00	12.99	200.0	V	332.0	-7
1637.933333	51.83	---	68.20	16.37	200.0	V	353.0	-6
2453.433333	53.38	---	68.20	14.82	200.0	V	348.0	-4
2755.366667	---	42.25	54.00	11.75	100.0	H	187.0	-4
3575.766667	52.36	---	68.20	15.84	200.0	V	280.0	-3
3896.600000	---	42.99	54.00	11.01	200.0	V	292.0	-2
5266.966667	55.87	---	68.20	12.33	200.0	V	341.0	2
5373.366667	---	45.60	54.00	8.40	200.0	H	234.0	3
7372.100000	---	48.69	54.00	5.31	100.0	H	358.0	7
7763.633333	58.97	---	68.20	9.23	200.0	V	356.0	7

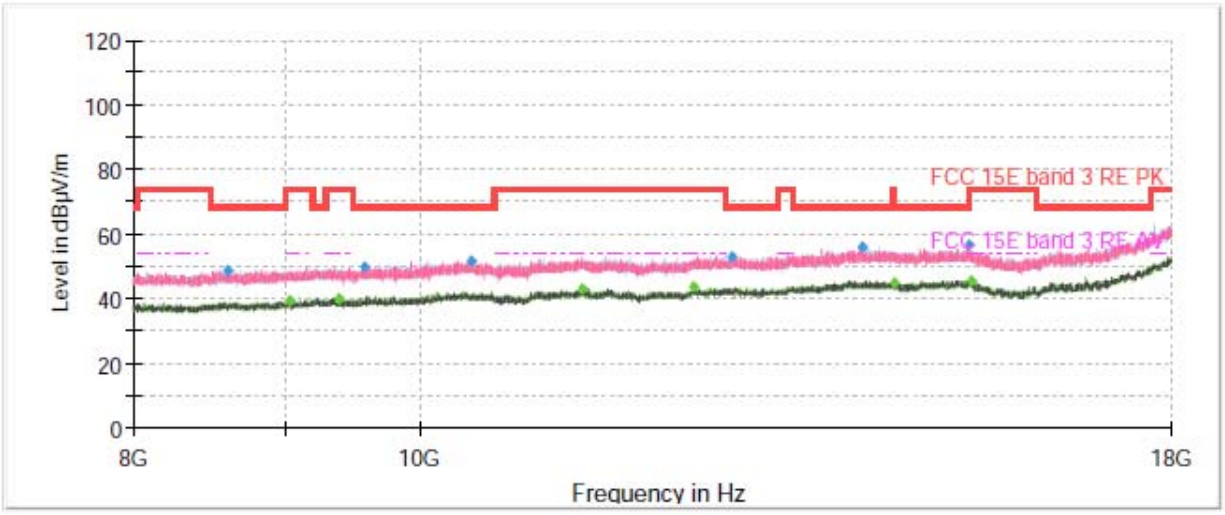
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11a CH165



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

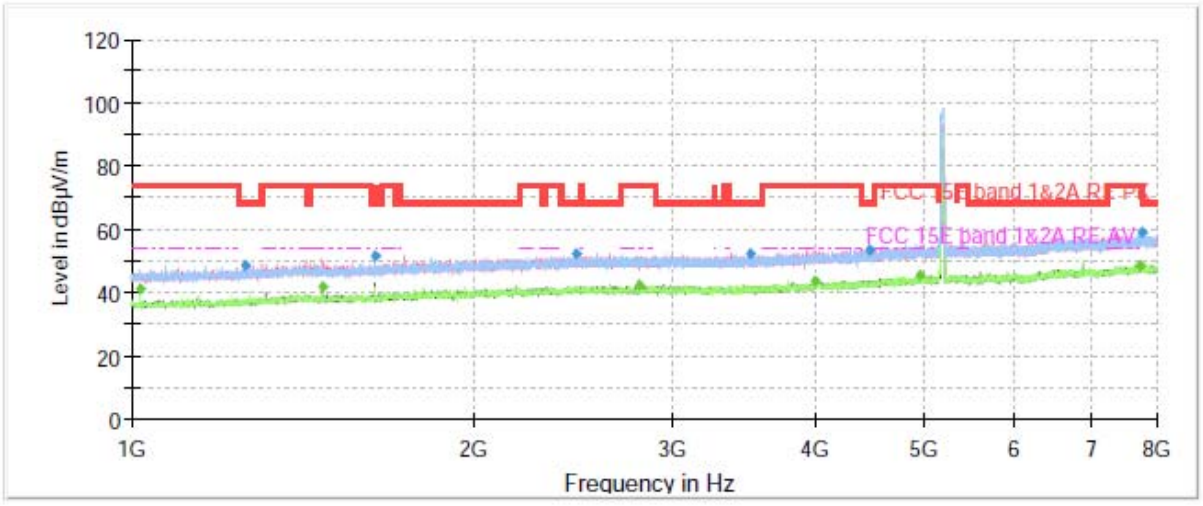


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	41.37	54.00	12.63	200.0	H	2.0	-10
1270.433333	47.76	---	68.20	20.44	100.0	H	0.0	-8
1474.366667	---	41.67	54.00	12.33	100.0	V	265.0	-7
1638.400000	51.71	---	68.20	16.49	200.0	V	266.0	-6
2512.000000	51.72	---	68.20	16.48	100.0	H	290.0	-4
2722.700000	---	41.88	54.00	12.12	200.0	H	50.0	-4
2901.433333	52.65	---	68.20	15.55	200.0	H	10.0	-3
3998.566667	---	43.37	54.00	10.63	100.0	V	0.0	-1
5314.800000	56.02	---	68.20	12.18	200.0	V	358.0	2
5385.733333	---	45.86	54.00	8.14	200.0	H	37.0	3
7732.366667	---	48.71	54.00	5.29	200.0	V	51.0	7
7772.500000	59.18	---	68.20	9.02	200.0	V	331.0	7

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

802.11n (HT20) CH36



Note: The signal beyond the limit is carrier.

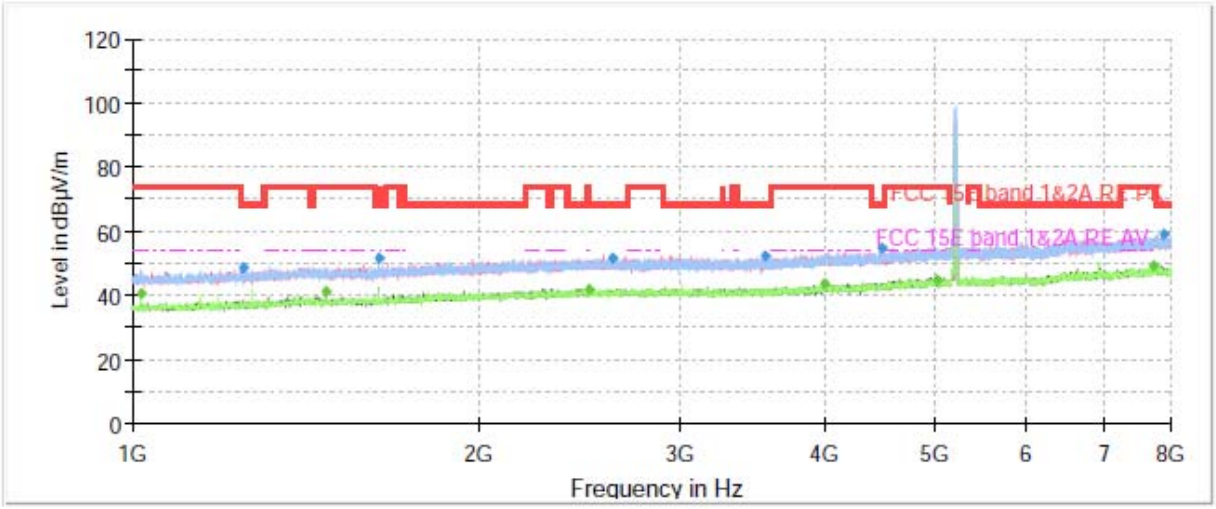
Radiates Emission from 1GHz to 8GHz

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)
1016.566667	---	41.30	54.00	12.70	100.0	H	81.0	-10
1259.466667	48.36	---	68.20	19.84	100.0	H	124.0	-8
1474.600000	---	41.78	54.00	12.22	200.0	V	213.0	-7
1638.400000	51.67	---	68.20	16.53	100.0	V	349.0	-6
2466.966667	52.35	---	68.20	15.85	200.0	H	14.0	-4
2799.466667	---	42.22	54.00	11.78	100.0	H	0.0	-3
3499.466667	52.40	---	68.20	15.80	100.0	H	94.0	-3
3997.166667	---	43.53	54.00	10.47	100.0	V	24.0	-1
4477.133333	53.53	---	68.20	14.67	100.0	H	188.0	0
4941.933333	---	45.36	54.00	8.64	100.0	V	358.0	2
7734.933333	---	48.78	54.00	5.22	200.0	H	359.0	7
7773.433333	58.94	---	68.20	9.26	200.0	H	355.0	7

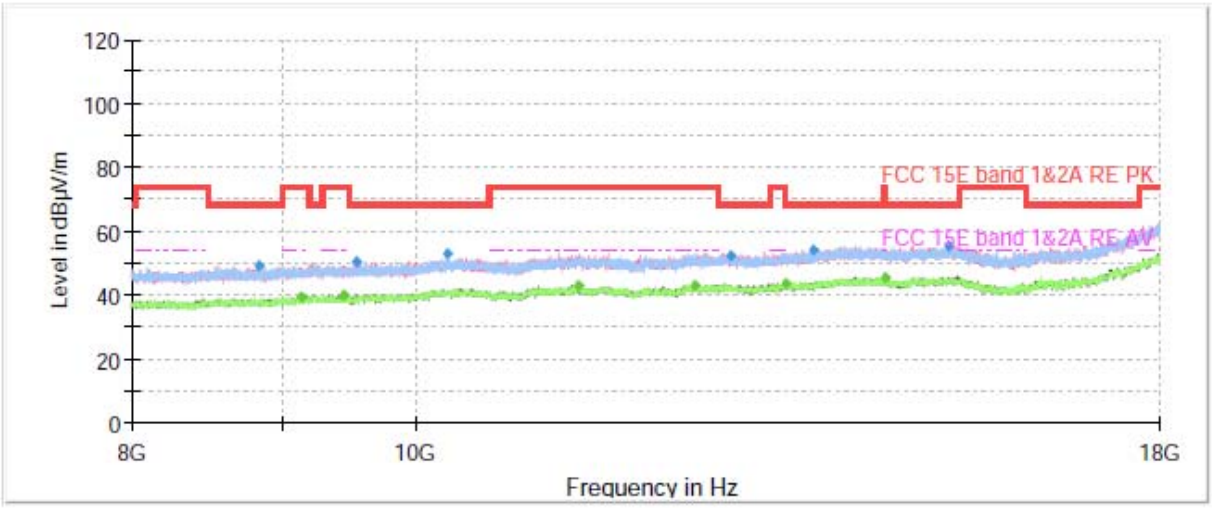
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH40



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

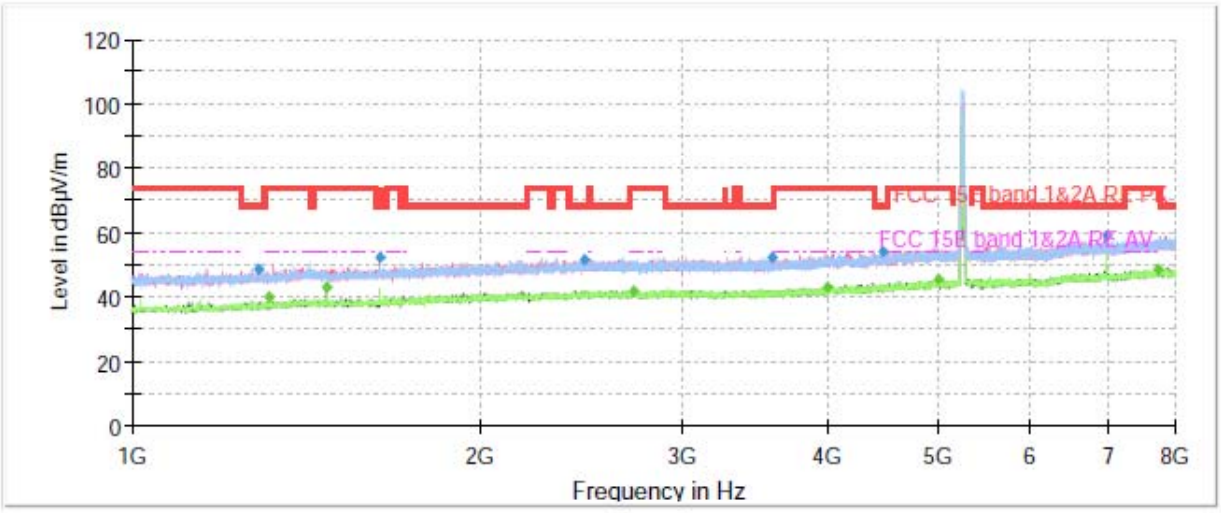


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.100000	---	40.44	54.00	13.56	100.0	H	7.0	-10
1247.800000	48.52	---	68.20	19.68	200.0	V	20.0	-8
1474.366667	---	41.54	54.00	12.46	200.0	V	151.0	-7
1637.700000	51.46	---	68.20	16.74	200.0	V	204.0	-6
2496.833333	---	41.99	54.00	12.01	100.0	H	163.0	-4
2613.033333	51.77	---	68.20	16.43	100.0	H	288.0	-4
3558.033333	52.30	---	68.20	15.90	200.0	H	108.0	-3
3998.800000	---	43.88	54.00	10.12	200.0	H	343.0	-1
4484.366667	54.57	---	68.20	13.63	200.0	H	122.0	0
5004.700000	---	44.69	54.00	9.31	100.0	V	176.0	2
7735.866667	---	48.99	54.00	5.01	200.0	V	0.0	7
7889.633333	59.34	---	68.20	8.86	100.0	V	109.0	7

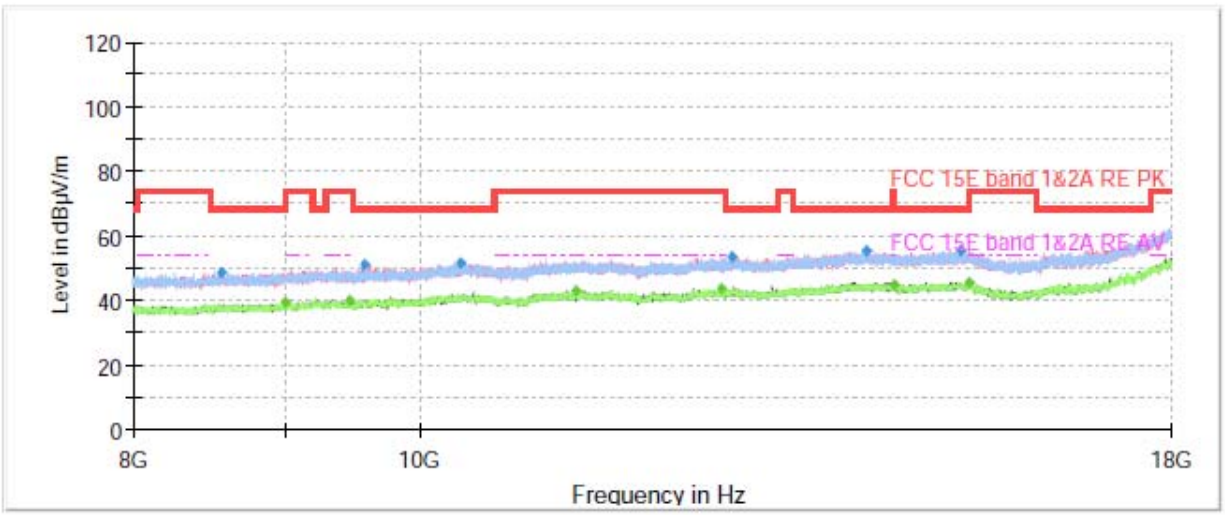
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH48



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

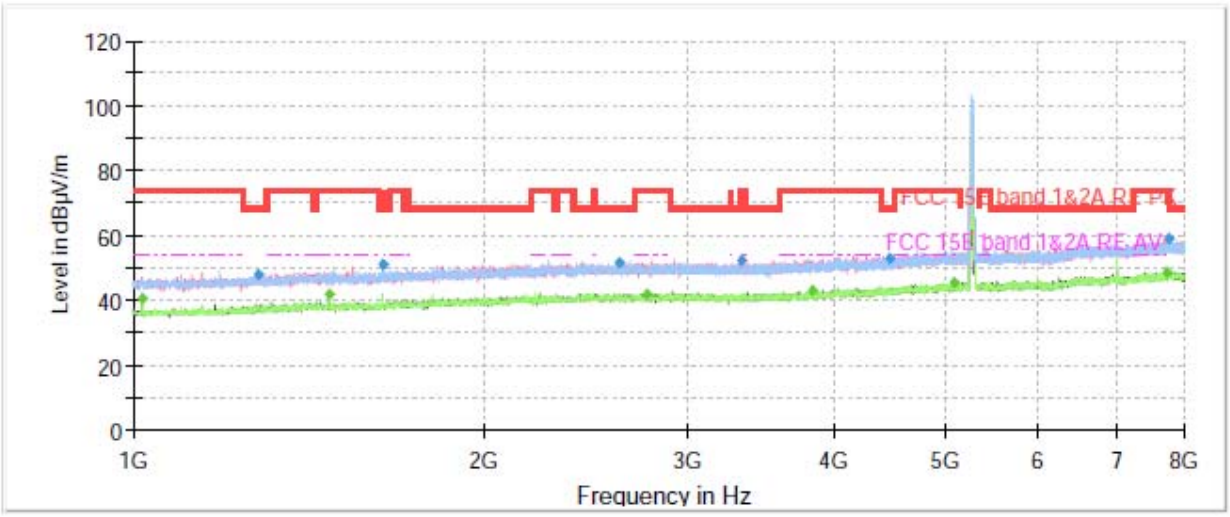


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1283.266667	48.66	---	68.20	19.54	100.0	V	339.0	-8
1311.033333	---	39.89	54.00	14.11	100.0	V	221.0	-8
1474.833333	---	42.86	54.00	11.14	100.0	H	291.0	-7
1638.400000	52.18	---	68.20	16.02	200.0	V	9.0	-6
2458.333333	51.91	---	68.20	16.29	100.0	V	289.0	-4
2712.666667	---	42.06	54.00	11.94	100.0	V	221.0	-4
3588.133333	52.09	---	68.20	16.11	100.0	V	168.0	-3
3999.733333	---	43.21	54.00	10.79	100.0	H	45.0	-1
4465.700000	53.95	---	68.20	14.25	100.0	V	81.0	0
4985.100000	---	45.40	54.00	8.60	200.0	V	102.0	2
6986.400000	58.96	---	68.20	9.24	100.0	H	99.0	7
7720.700000	---	48.67	54.00	5.33	200.0	V	0.0	7

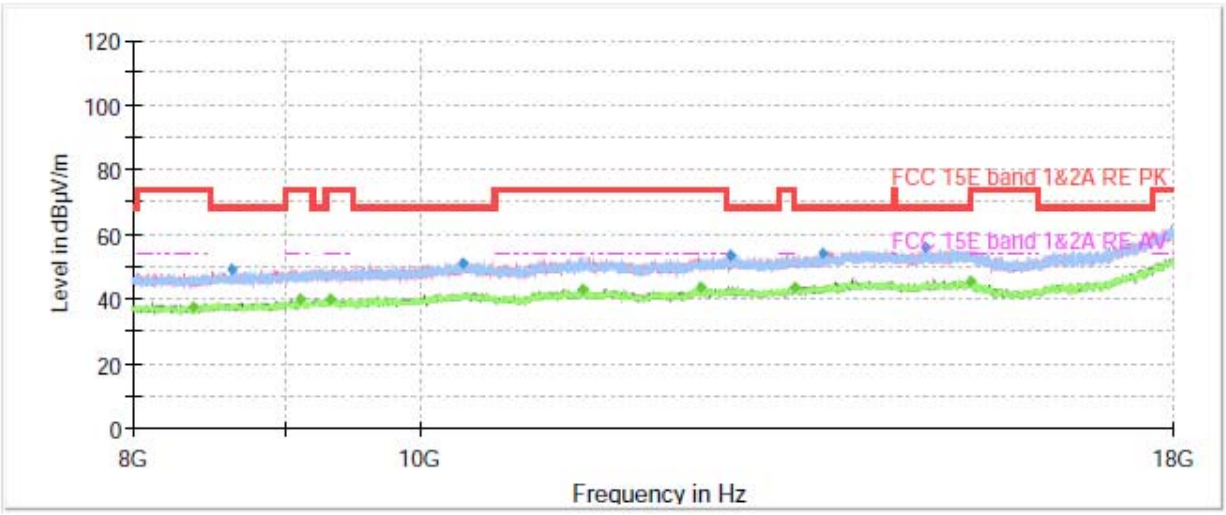
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH52



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

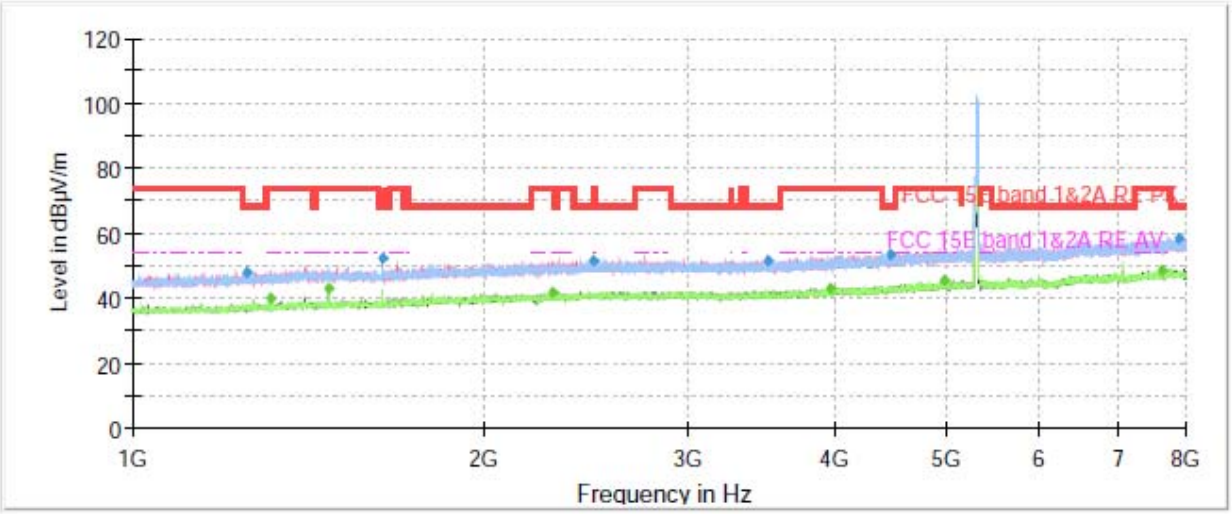


Radiates Emission from 8GHz to 18GHz

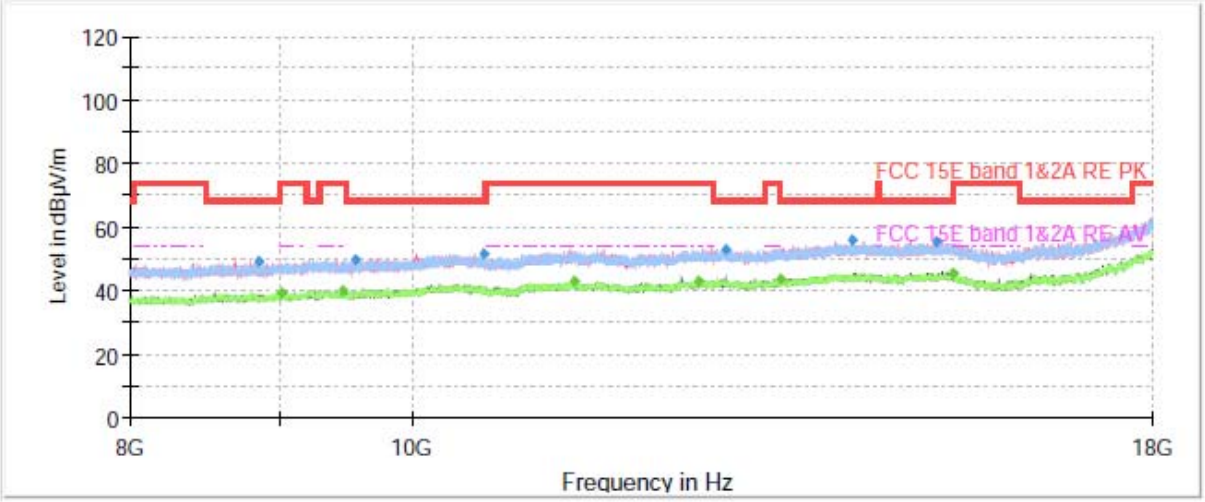
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.333333	---	40.70	54.00	13.30	100.0	H	0.0	-10
1277.200000	47.93	---	68.20	20.27	100.0	H	165.0	-8
1474.833333	---	42.07	54.00	11.93	200.0	V	263.0	-7
1639.100000	51.10	---	68.20	17.10	200.0	V	6.0	-6
2610.000000	51.82	---	68.20	16.38	200.0	V	263.0	-4
2764.466667	---	42.02	54.00	11.98	200.0	H	82.0	-4
3326.800000	52.23	---	68.20	15.97	200.0	V	115.0	-3
3836.400000	---	42.97	54.00	11.03	200.0	H	276.0	-2
4469.666667	53.07	---	68.20	15.13	100.0	V	39.0	0
5065.133333	---	45.61	54.00	8.39	100.0	V	355.0	2
7725.133333	---	48.47	54.00	5.53	100.0	V	352.0	7
7780.433333	58.95	---	68.20	9.25	200.0	V	49.0	7

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

802.11n (HT20) CH60



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

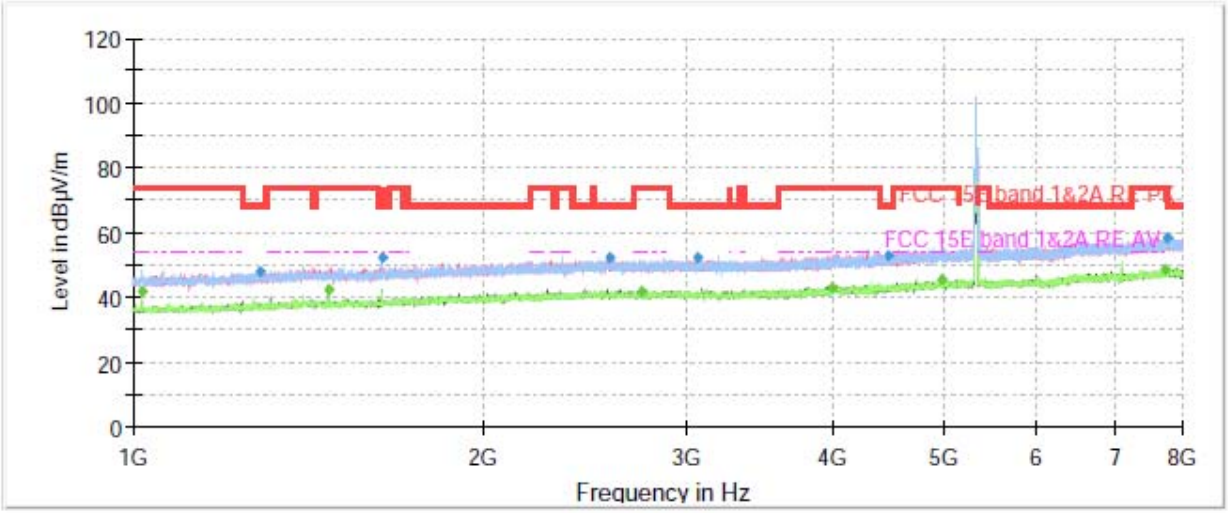


Radiates Emission from 8GHz to 18GHz

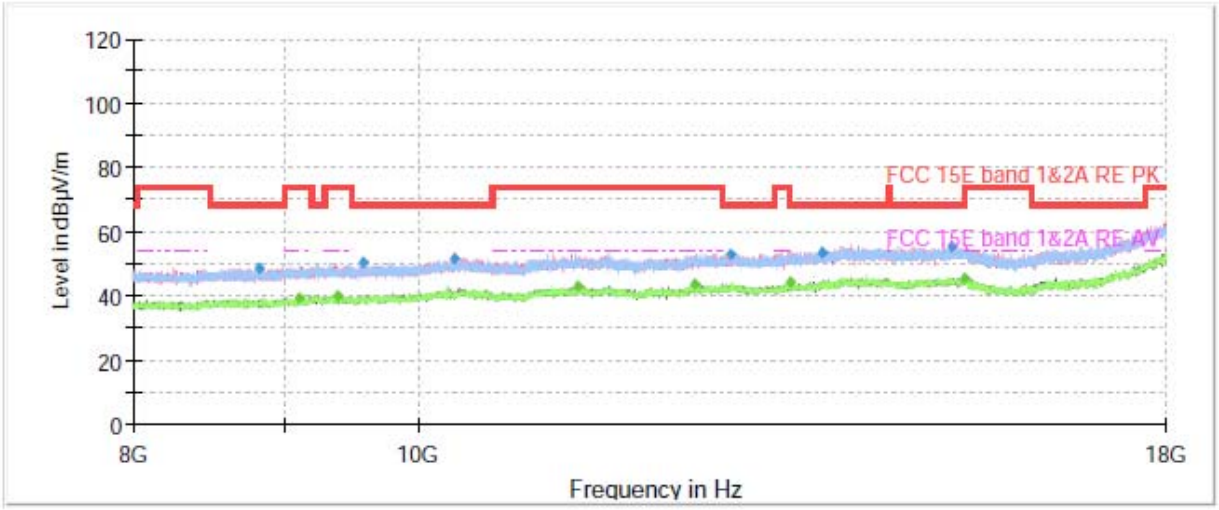
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1254.800000	48.01	---	68.20	20.19	200.0	V	5.0	-8
1310.566667	---	39.77	54.00	14.23	200.0	V	13.0	-8
1474.833333	---	43.33	54.00	10.67	200.0	V	260.0	-7
1638.633333	52.15	---	68.20	16.05	200.0	V	3.0	-6
2287.300000	---	42.07	54.00	11.93	100.0	V	246.0	-4
2479.333333	51.76	---	68.20	16.44	100.0	V	359.0	-4
3506.933333	51.79	---	68.20	16.41	200.0	H	0.0	-3
3963.333333	---	43.09	54.00	10.91	100.0	V	353.0	-1
4467.566667	53.62	---	68.20	14.58	100.0	H	291.0	0
4972.033333	---	45.65	54.00	8.35	200.0	V	0.0	2
7643.233333	---	48.44	54.00	5.56	100.0	V	330.0	7
7899.666667	58.74	---	68.20	9.46	200.0	H	111.0	7

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

802.11n (HT20) CH64



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

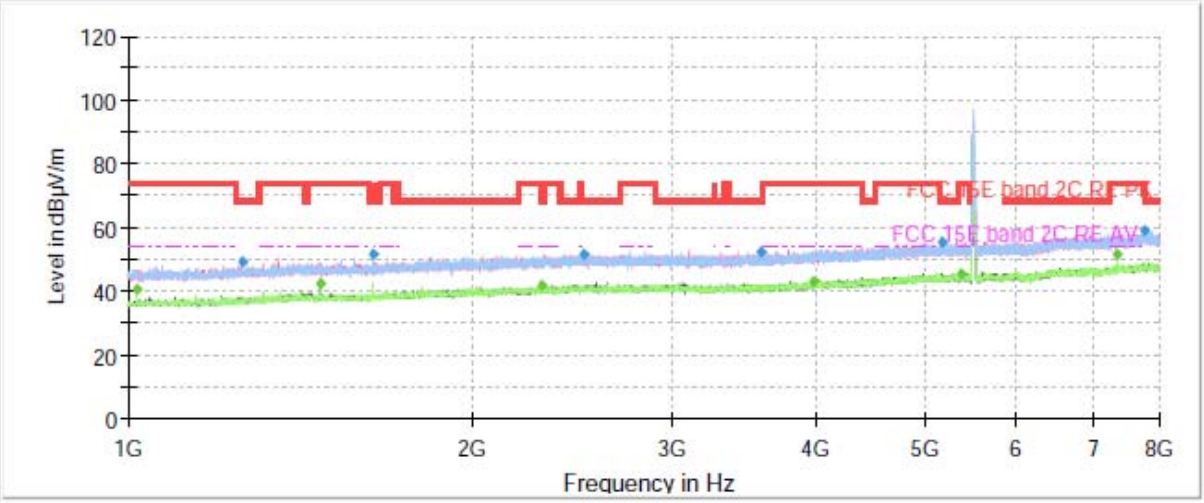


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.333333	---	41.94	54.00	12.06	200.0	H	10.0	-10
1283.733333	48.21	---	68.20	19.99	100.0	H	123.0	-8
1474.366667	---	42.44	54.00	11.56	200.0	H	287.0	-7
1638.166667	52.03	---	68.20	16.17	200.0	H	248.0	-6
2564.966667	52.18	---	68.20	16.02	200.0	V	42.0	-4
2735.766667	---	42.01	54.00	11.99	100.0	V	285.0	-4
3061.733333	52.22	---	68.20	15.98	100.0	V	53.0	-3
3995.066667	---	43.04	54.00	10.96	200.0	V	220.0	-1
4470.133333	53.05	---	68.20	15.15	200.0	H	287.0	0
4969.000000	---	45.36	54.00	8.64	100.0	V	176.0	2
7727.233333	---	48.54	54.00	5.46	100.0	V	176.0	7
7758.033333	58.51	---	68.20	9.69	200.0	V	56.0	7

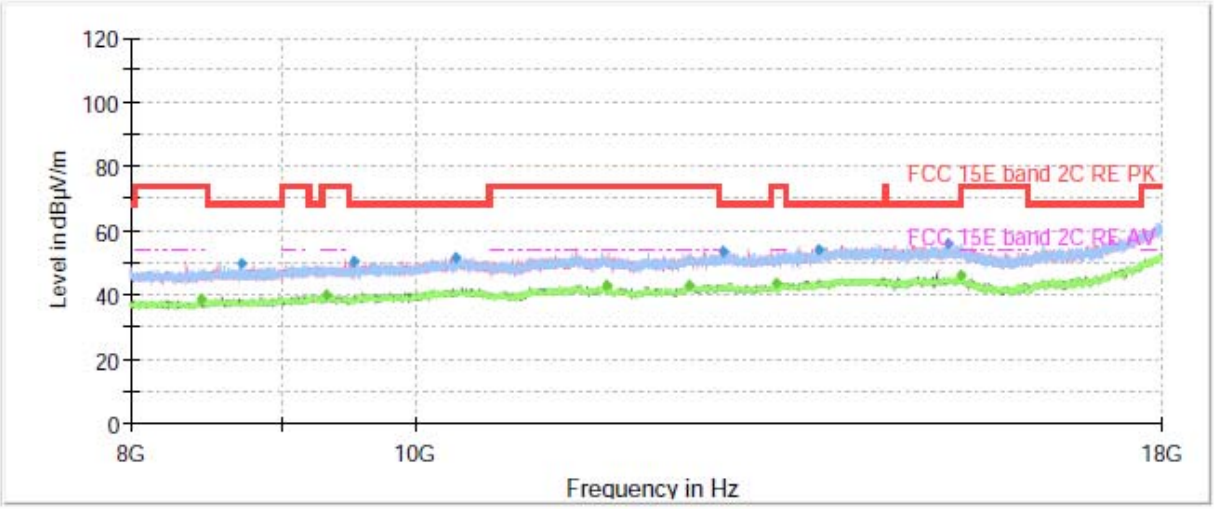
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH100



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

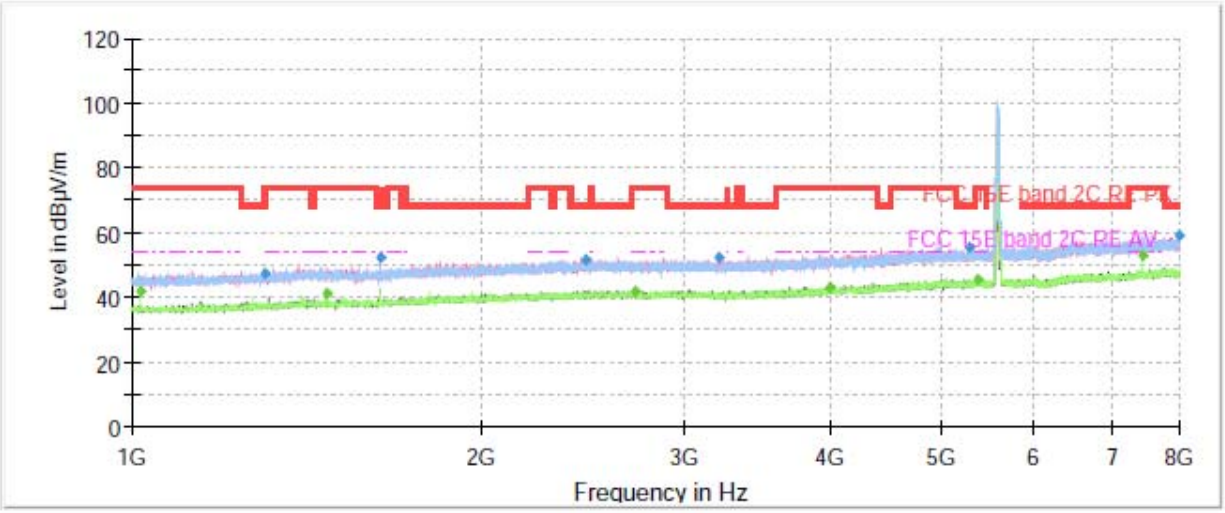


Radiates Emission from 8GHz to 18GHz

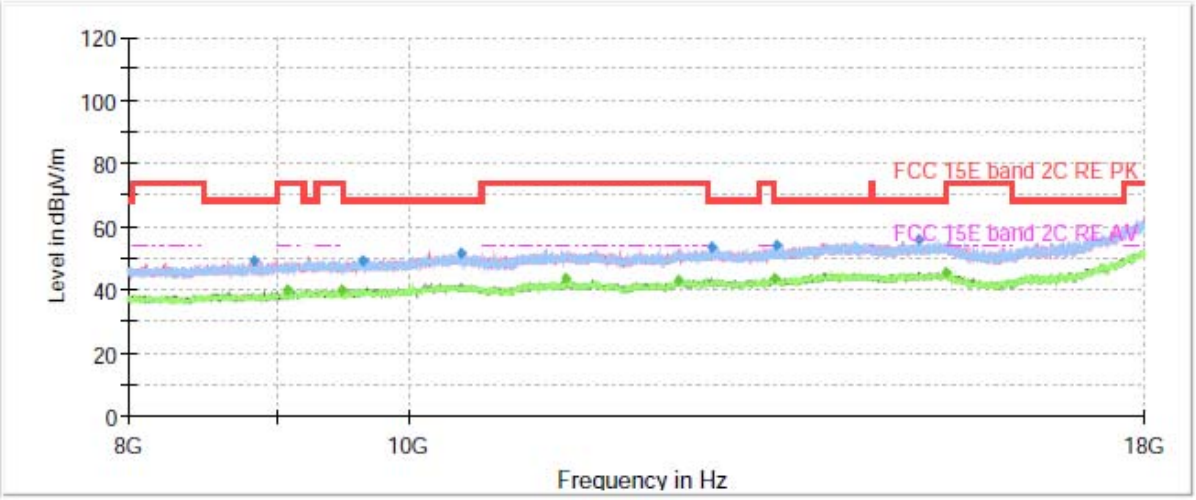
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.800000	---	40.66	54.00	13.34	200.0	H	10.0	-10
1257.833333	49.50	---	68.20	18.70	100.0	H	261.0	-8
1474.833333	---	42.23	54.00	11.77	100.0	V	260.0	-7
1638.400000	51.63	---	68.20	16.57	200.0	V	2.0	-6
2298.033333	---	41.89	54.00	12.11	200.0	V	246.0	-4
2509.433333	51.53	---	68.20	16.67	200.0	H	122.0	-4
3574.133333	52.29	---	68.20	15.91	200.0	V	1.0	-3
3987.600000	---	43.16	54.00	10.84	200.0	V	136.0	-1
5173.400000	55.15	---	68.20	13.05	200.0	V	30.0	2
5374.533333	---	45.75	54.00	8.25	100.0	H	335.0	3
7333.133333	---	51.65	54.00	2.35	100.0	H	7.0	7
7766.200000	58.82	---	68.20	9.38	100.0	V	0.0	7

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

802.11n (HT20) CH116



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

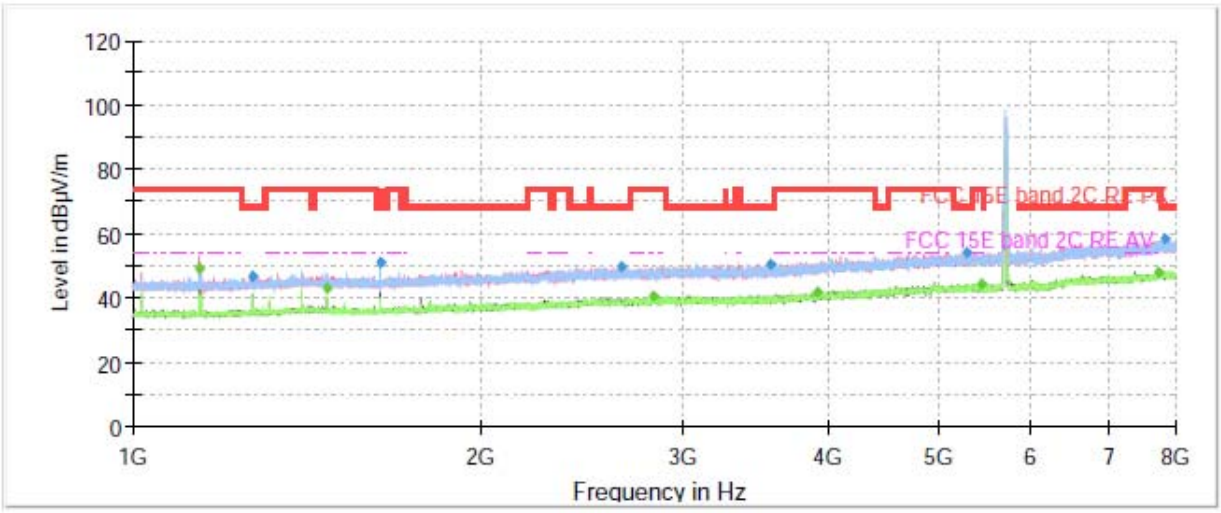


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	41.59	54.00	12.41	100.0	H	66.0	-10
1299.600000	47.57	---	68.20	20.63	100.0	V	348.0	-8
1474.600000	---	41.04	54.00	12.96	100.0	V	305.0	-7
1638.400000	52.29	---	68.20	15.91	200.0	V	264.0	-6
2464.866667	51.94	---	68.20	16.26	200.0	V	0.0	-4
2716.166667	---	41.93	54.00	12.07	200.0	V	26.0	-4
3210.366667	52.06	---	68.20	16.14	200.0	H	350.0	-3
3999.966667	---	43.23	54.00	10.77	100.0	H	2.0	-1
5278.400000	55.26	---	68.20	12.94	100.0	V	0.0	2
5368.466667	---	45.61	54.00	8.39	100.0	V	202.0	3
7440.233333	---	52.72	54.00	1.28	100.0	H	7.0	7
7988.333333	58.97	---	68.20	9.23	200.0	H	258.0	8

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

802.11n (HT20) CH140



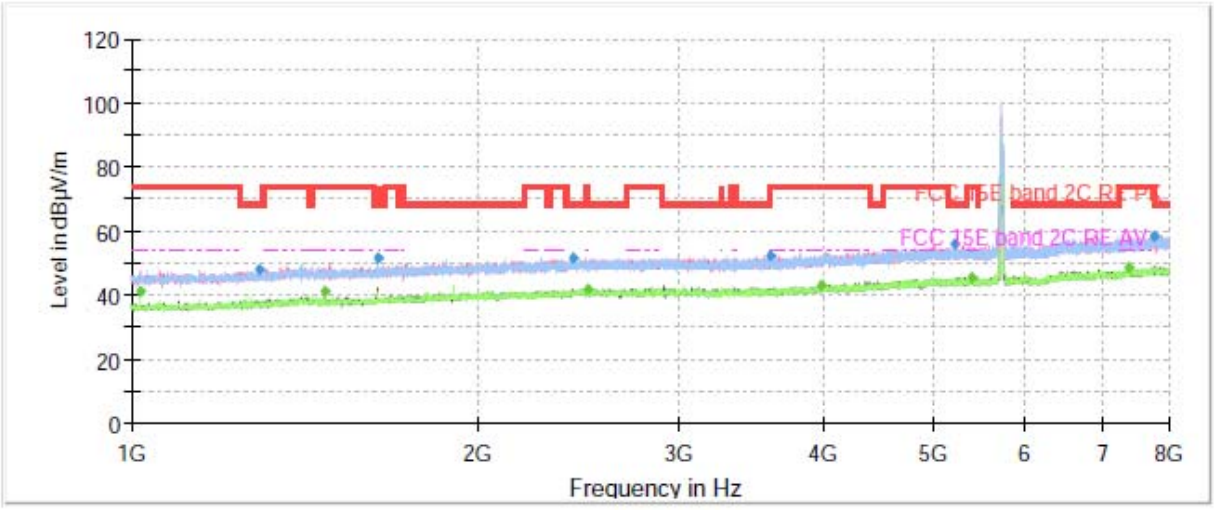
Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 8GHz

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)
1143.27	---	49.11	54.00	4.89	100.0	V	24.00	-9
1270.20	46.74	---	68.20	21.46	100.0	V	24.00	-8
1474.60	---	42.78	54.00	11.22	100.0	H	294.00	-7
1638.87	51.27	---	68.20	16.93	200.0	H	94.00	-6
2642.90	49.82	---	68.20	18.38	200.0	V	2.00	-4
2824.20	---	40.32	54.00	13.68	200.0	V	359.00	-3
3568.77	50.41	---	68.20	17.79	200.0	H	329.00	-3
3923.90	---	41.82	54.00	12.18	200.0	H	206.00	-2
5272.57	54.22	---	68.20	13.98	100.0	V	0.00	2
5424.23	---	44.59	54.00	9.41	200.0	V	171.00	3
7741.70	---	48.17	54.00	5.83	200.0	V	49.00	7
7843.43	58.26	---	68.20	9.94	200.0	V	76.00	7

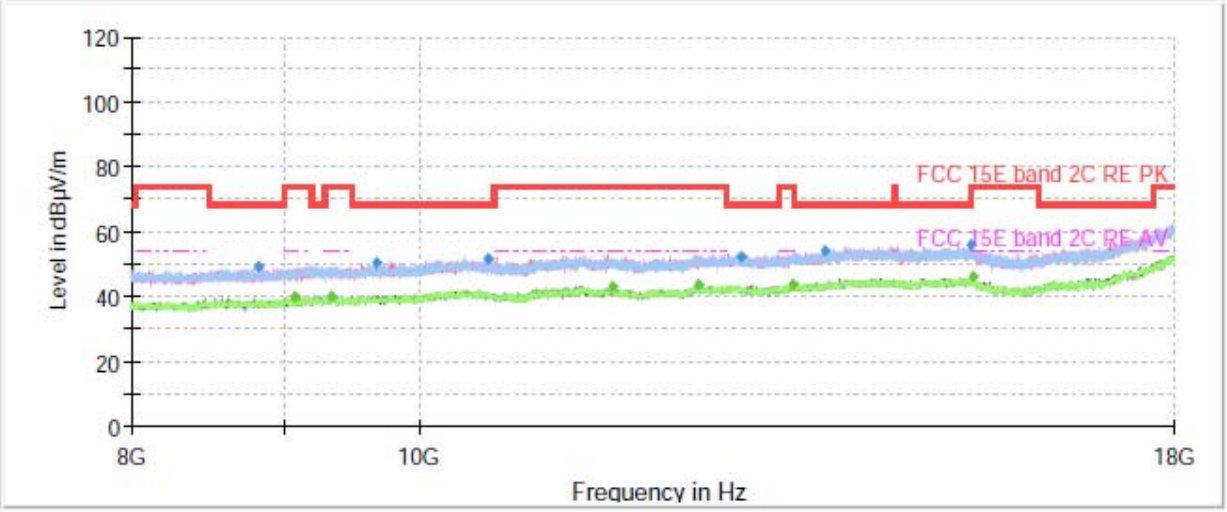
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH144



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

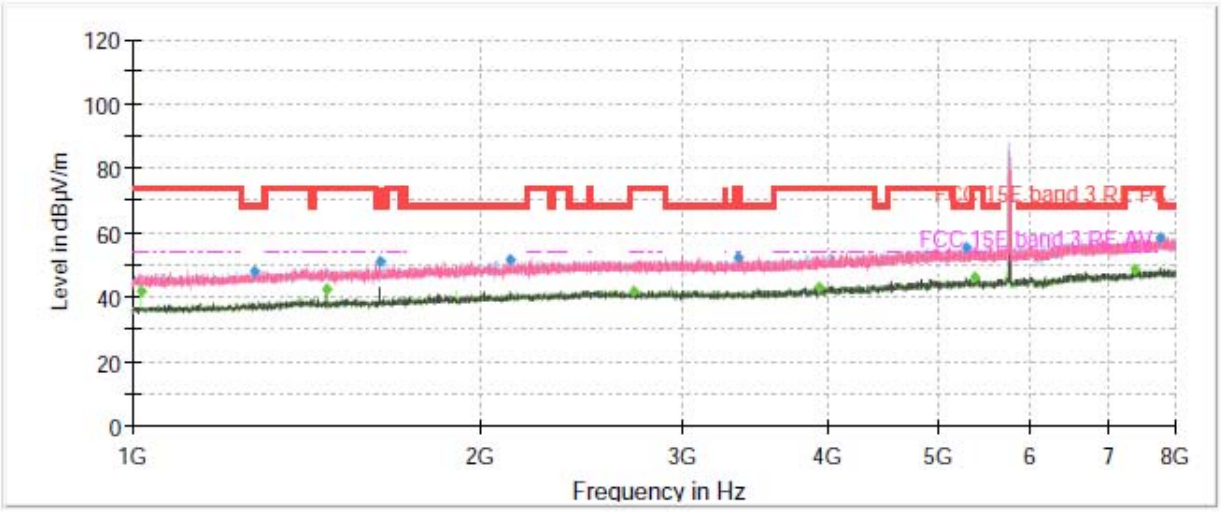


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.333333	---	41.07	54.00	12.93	100.0	H	49.0	-10
1292.366667	47.73	---	68.20	20.47	100.0	V	348.0	-8
1474.600000	---	41.36	54.00	12.64	100.0	H	294.0	-7
1638.633333	51.94	---	68.20	16.26	100.0	V	348.0	-6
2422.400000	51.74	---	68.20	16.46	100.0	V	186.0	-4
2490.766667	---	42.04	54.00	11.96	100.0	V	304.0	-4
3593.733333	52.19	---	68.20	16.01	200.0	V	79.0	-3
3984.800000	---	42.86	54.00	11.14	100.0	V	330.0	-1
5196.033333	55.71	---	68.20	12.49	100.0	H	36.0	2
5378.500000	---	45.65	54.00	8.35	200.0	H	241.0	3
7363.700000	---	48.73	54.00	5.27	100.0	V	340.0	7
7752.200000	58.47	---	68.20	9.73	200.0	V	307.0	7

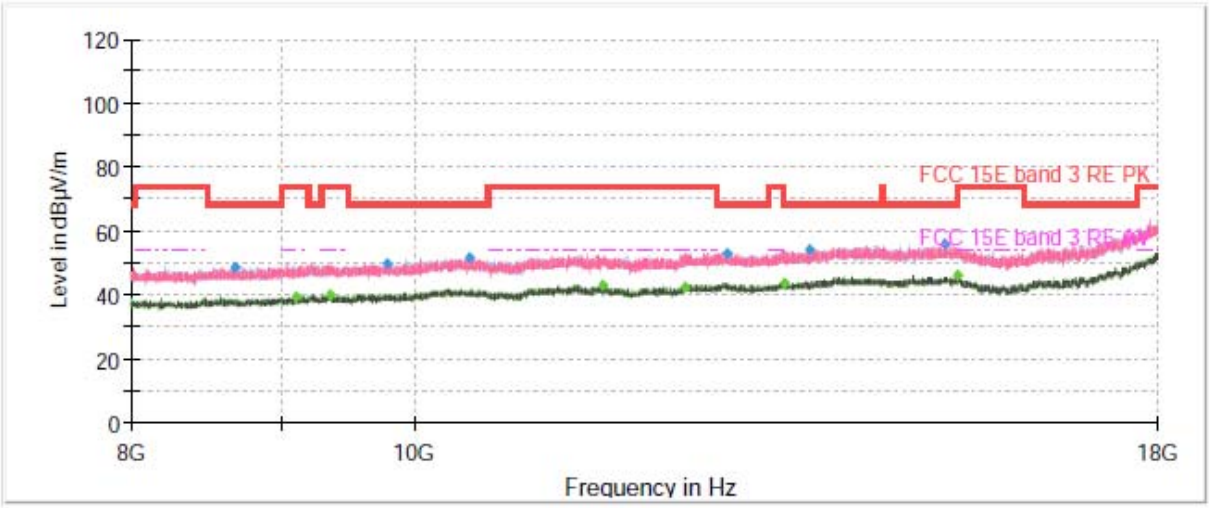
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH149



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

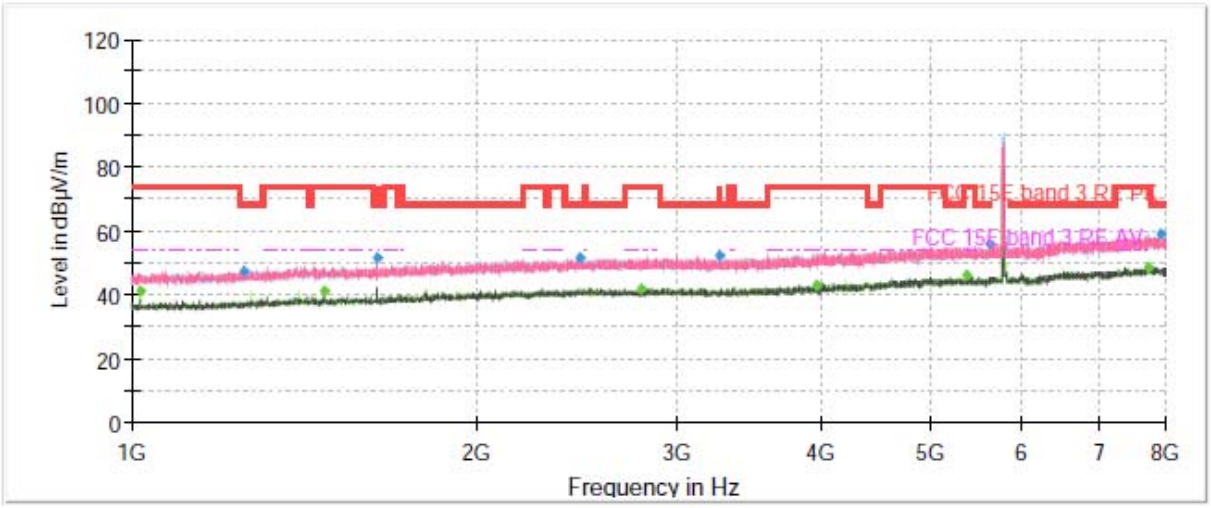


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	41.63	54.00	12.37	200.0	H	0.0	-10
1274.400000	48.12	---	68.20	20.08	100.0	H	0.0	-8
1474.833333	---	42.73	54.00	11.27	200.0	H	292.0	-7
1638.866667	51.37	---	68.20	16.83	200.0	V	267.0	-6
2122.566667	51.72	---	68.20	16.48	100.0	H	251.0	-4
2712.900000	---	41.89	54.00	12.11	200.0	H	322.0	-4
3344.766667	52.16	---	68.20	16.04	200.0	H	99.0	-3
3926.700000	---	43.04	54.00	10.96	200.0	H	138.0	-2
5267.900000	55.55	---	68.20	12.65	200.0	V	306.0	2
5364.733333	---	45.97	54.00	8.03	200.0	H	210.0	3
7372.100000	---	48.33	54.00	5.67	100.0	H	328.0	7
7765.266667	58.52	---	68.20	9.68	200.0	V	0.0	7

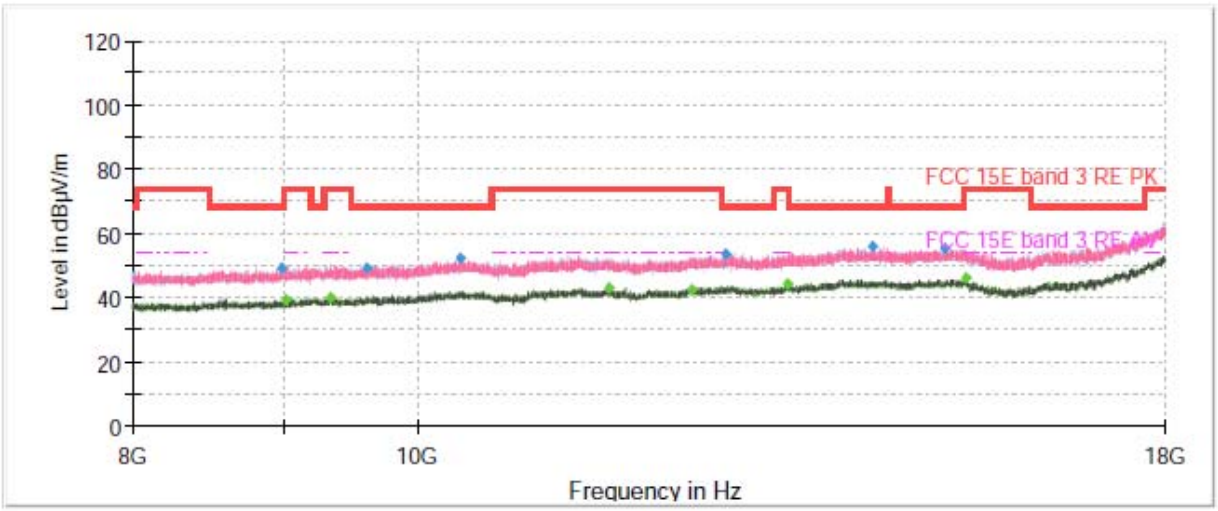
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH157



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

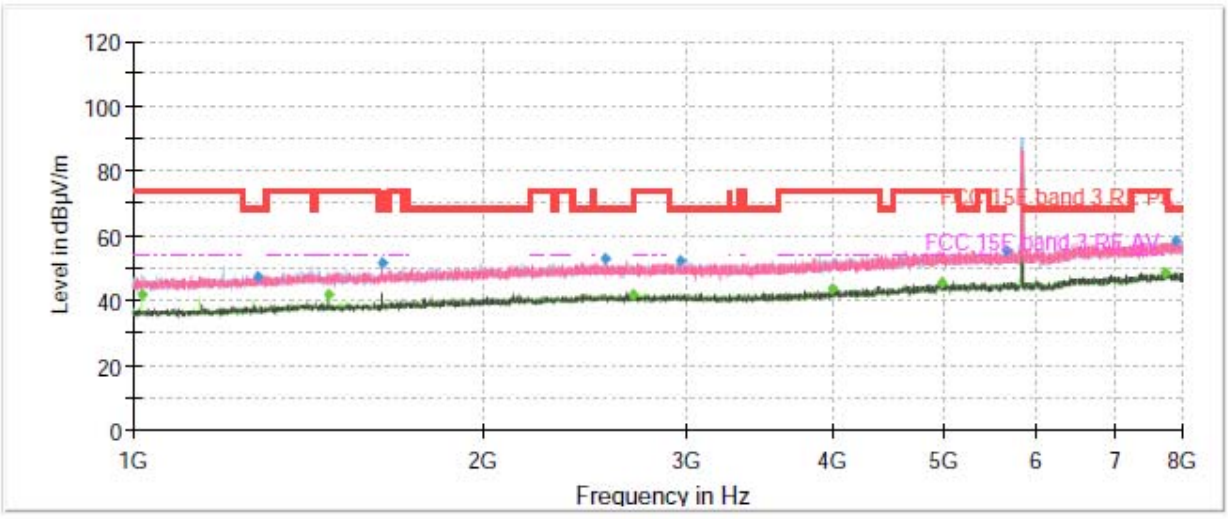


Radiates Emission from 8GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.100000	---	41.26	54.00	12.74	200.0	H	4.0	-10
1252.000000	47.67	---	68.20	20.53	200.0	V	240.0	-8
1474.833333	---	41.10	54.00	12.90	200.0	H	291.0	-7
1638.866667	51.75	---	68.20	16.45	200.0	V	0.0	-6
2467.433333	51.79	---	68.20	16.41	200.0	V	340.0	-4
2780.800000	---	41.68	54.00	12.32	200.0	V	347.0	-4
3256.333333	52.02	---	68.20	16.18	200.0	H	166.0	-3
3961.466667	---	42.93	54.00	11.07	100.0	H	358.0	-1
5359.133333	---	45.89	54.00	8.11	100.0	H	0.0	3
5632.600000	55.88	---	68.20	12.32	100.0	V	194.0	3
7719.533333	---	48.76	54.00	5.24	100.0	V	140.0	7
7922.300000	59.15	---	68.20	9.05	100.0	V	207.0	7

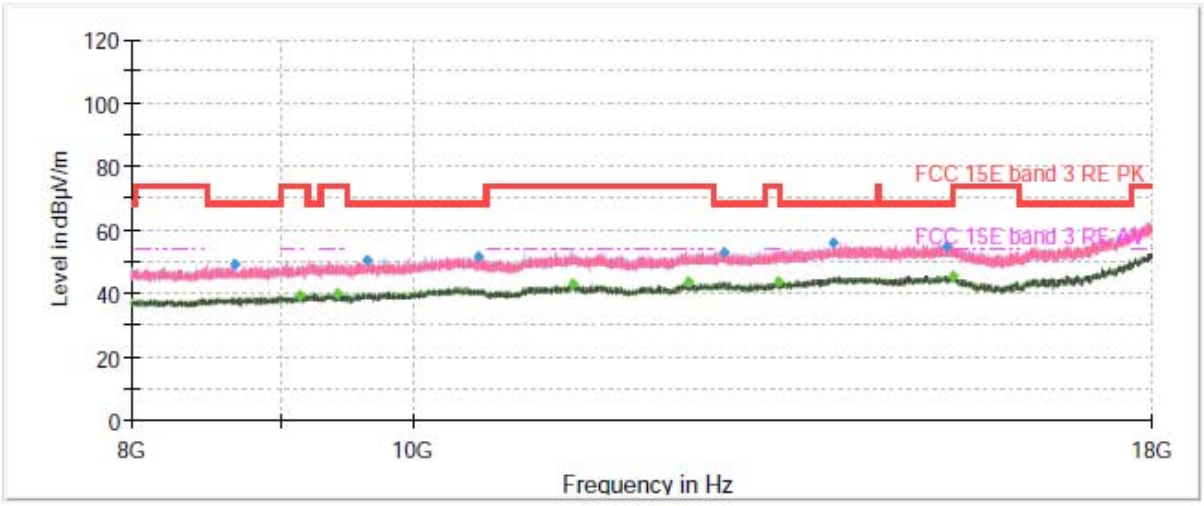
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH165



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz

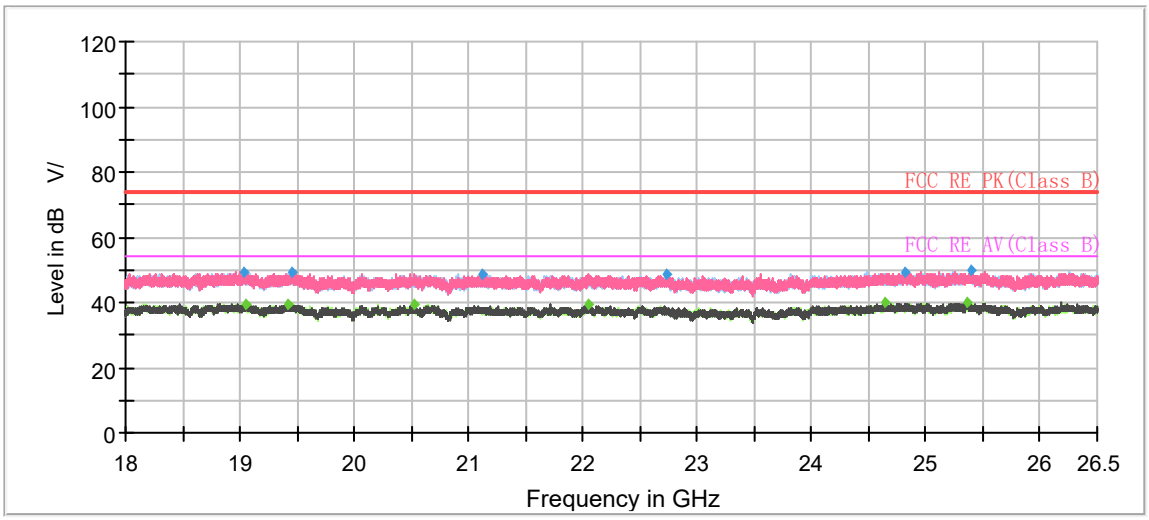


Radiates Emission from 8GHz to 18GHz

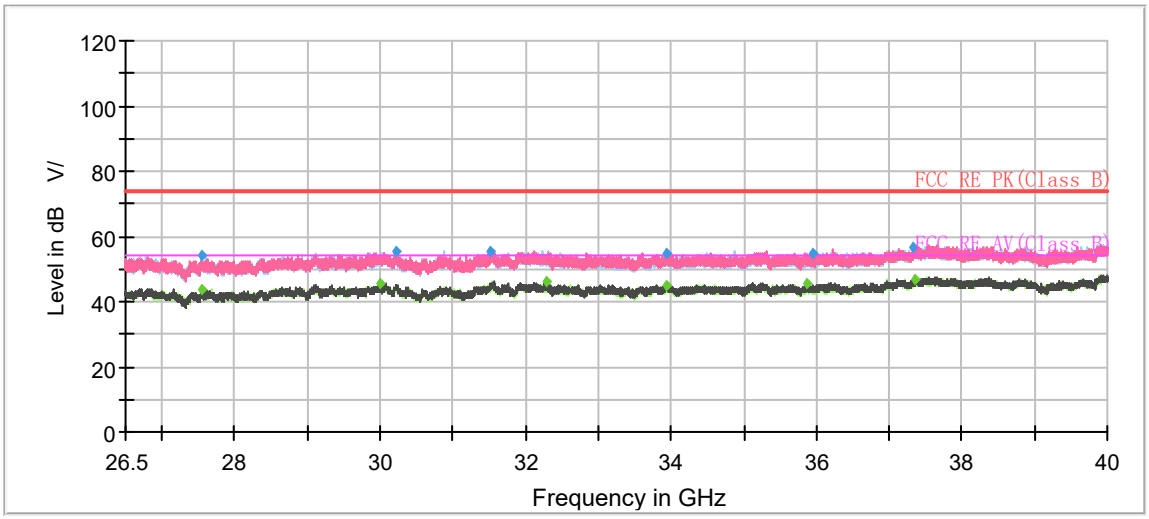
Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1016.566667	---	41.62	54.00	12.38	200.0	H	28.0	-10
1277.666667	47.56	---	68.20	20.64	200.0	H	54.0	-8
1474.833333	---	41.95	54.00	12.05	200.0	V	258.0	-7
1638.866667	51.77	---	68.20	16.43	200.0	V	0.0	-6
2549.100000	52.73	---	68.20	15.47	100.0	V	350.0	-4
2690.733333	---	42.13	54.00	11.87	100.0	V	0.0	-4
2954.166667	52.06	---	68.20	16.14	200.0	V	134.0	-3
3996.233333	---	43.45	54.00	10.55	200.0	V	108.0	-1
4969.000000	---	45.54	54.00	8.46	200.0	V	205.0	2
5637.033333	55.46	---	68.20	12.74	100.0	H	122.0	3
7730.500000	---	48.84	54.00	5.16	100.0	H	163.0	7
7898.500000	58.46	---	68.20	9.74	100.0	H	0.0	7

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 100 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)
19037.85	49.50	---	74.00	24.50	100.0	V	57.00	-1
19054.57	---	39.54	54.00	14.46	100.0	H	0.00	-1
19421.48	---	39.59	54.00	14.41	100.0	V	349.00	-1
19449.25	49.18	---	74.00	24.82	100.0	H	356.00	-1
20523.37	---	39.48	54.00	14.52	100.0	V	293.00	0
21117.80	48.70	---	74.00	25.30	100.0	V	340.00	0
22047.42	---	39.09	54.00	14.91	100.0	V	48.00	1
22727.98	48.42	---	74.00	25.58	200.0	H	268.00	2
24648.13	---	39.88	54.00	14.12	100.0	H	104.00	3
24822.67	49.21	---	74.00	24.79	200.0	V	244.00	3
25366.38	---	39.99	54.00	14.01	100.0	V	228.00	3
25402.65	49.96	---	74.00	24.04	100.0	V	358.00	3

5.6. Conducted Emission

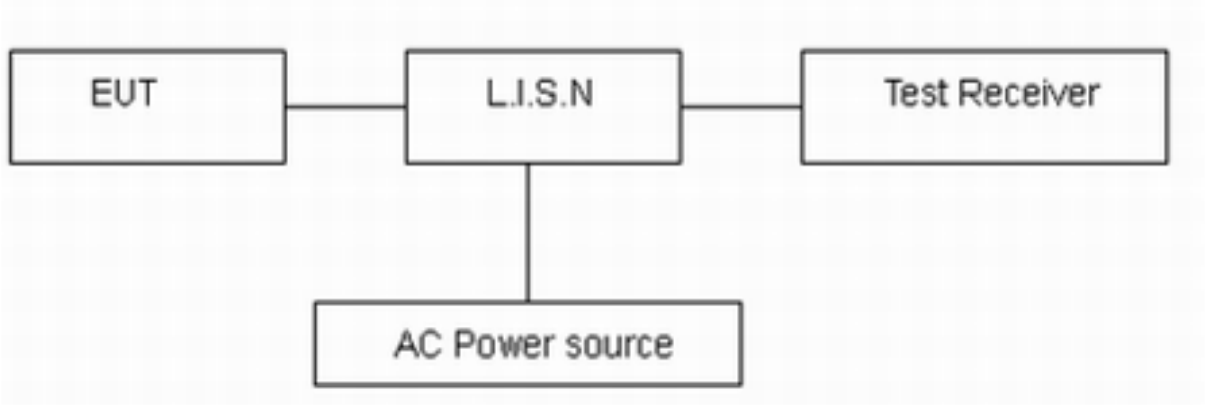
Ambient condition

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

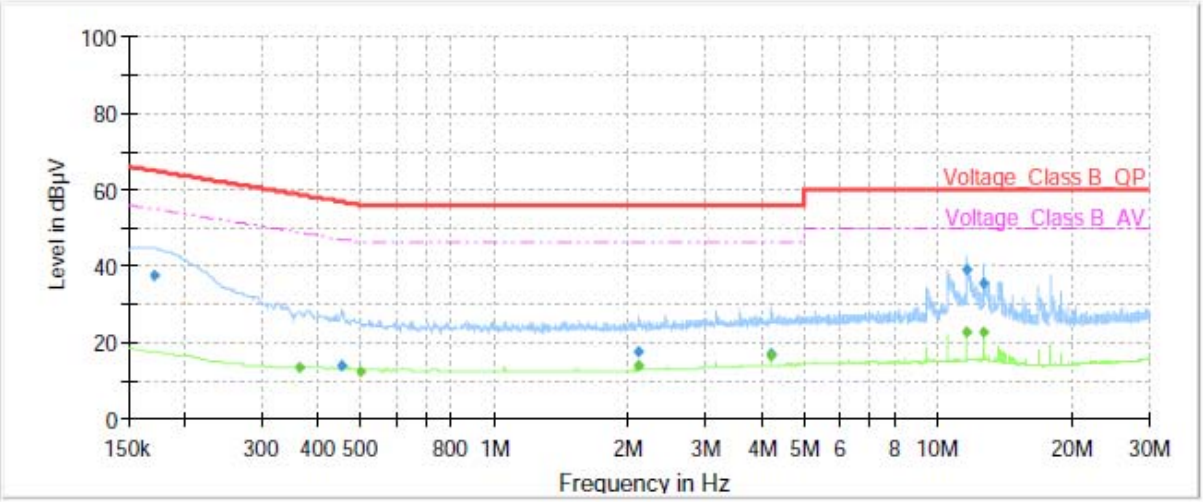
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

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:

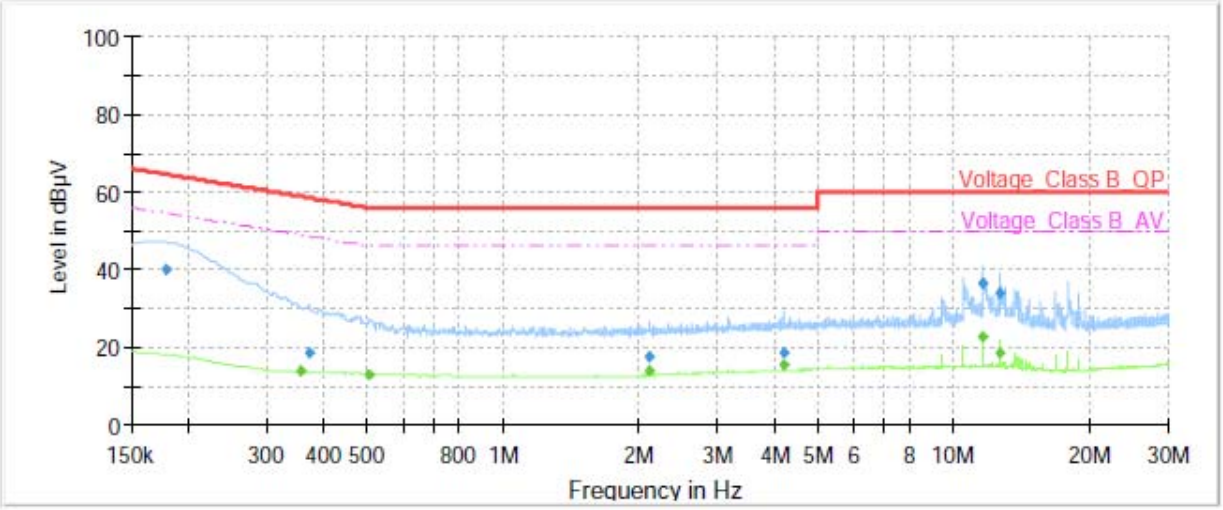
Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes with all channels, 802.11a, Channel 100 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.17	37.55	---	64.95	27.40	70.0	9.000	L1	ON	21
0.36	---	13.19	48.69	35.50	70.0	9.000	L1	ON	21
0.45	13.86	---	56.81	42.95	70.0	9.000	L1	ON	20
0.50	---	12.43	46.00	33.57	70.0	9.000	L1	ON	20
2.10	---	14.01	46.00	31.99	70.0	9.000	L1	ON	20
2.11	17.20	---	56.00	38.80	70.0	9.000	L1	ON	20
4.21	---	16.19	46.00	29.81	70.0	9.000	L1	ON	19
4.21	16.70	---	56.00	39.30	70.0	9.000	L1	ON	19
11.57	38.95	---	60.00	21.05	70.0	9.000	L1	ON	20
11.57	---	22.51	50.00	27.49	70.0	9.000	L1	ON	20
12.62	35.62	---	60.00	24.38	70.0	9.000	L1	ON	20
12.62	---	22.65	50.00	27.35	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)
0.18	40.11	---	64.52	24.41	70.0	9.000	N	ON	21
0.36	---	13.64	48.80	35.16	70.0	9.000	N	ON	21
0.37	18.58	---	58.49	39.91	70.0	9.000	N	ON	21
0.51	---	12.97	46.00	33.03	70.0	9.000	N	ON	20
2.10	---	13.93	46.00	32.07	70.0	9.000	N	ON	20
2.10	17.54	---	56.00	38.46	70.0	9.000	N	ON	20
4.21	18.34	---	56.00	37.66	70.0	9.000	N	ON	19
4.21	---	15.29	46.00	30.71	70.0	9.000	N	ON	19
11.57	36.45	---	60.00	23.55	70.0	9.000	N	ON	20
11.57	---	22.42	50.00	27.58	70.0	9.000	N	ON	20
12.62	---	18.44	50.00	31.56	70.0	9.000	N	ON	20
12.62	33.97	---	60.00	26.03	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	100816	2021-05-15	2022-05-14
Thermostat	ESPEC	SU-242	93000506	2021-12-12	2022-12-11
EMI Test Receiver	R&S	ESCI7	100936	2021-12-12	2022-12-11
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	2020-08-11	2023-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Horn Antenna	STEATITE	QSH-SL-26 -40-K-15	16779	2019-12-24	2022-12-23
EMI Test Receiver	R&S	ESR	101667	2021-05-16	2022-05-15
LISN	R&S	ENV216	102191	2020-12-13	2022-12-12
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2021-12-12	2022-12-11
Power Sensor	R&S	NRP18S	101955	2021-05-15	2022-05-14
DC power supply	GWINSTEK	GPS-3030 D	GEP882653	2021-05-15	2022-05-14
Software	R&S	EMC32	10.35.10	/	/

********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.

ANNEX C: Product Change Description

The Product Change Description are submitted separately.