RF TEST REPORT

Applicant	XCHENG TECH CO., LIMITED
FCC ID	2AZ4F-T0511-T5
Product	PDA
Brand	Kobile
Model	T0511; T5; T05; T05_ROW
Report No.	R2111A1062-R6V1
Issue Date	April 28, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, 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.	April 2, 2022
Rev.1	Update Applicant.	April 28, 2022
Note: This revised report (Report No. R2111A1062-R6V1) supersedes and replaces the previously issued report (Report No. R2111A1062-R6). 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: January 4, 2022 ~ March 10, 2022 Date of Sample Received: November 25, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1. Test Laboratory

1.1. Notes of the test report

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

1.2. Test facility

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

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

A2LA (Certificate Number: 3857.01)

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

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
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	XCHENG TECH CO., LIMITED
Applicant address	ROOM 401F, Building 5, No.3000 LONG DONG Avenue, Pudong New District, Shanghai, China
Manufacturer	XCHENG TECH CO., LIMITED
Manufacturer Factory	ROOM 401F, Building 5, No.3000 LONG DONG Avenue, Pudong New District, Shanghai, China

2.2. General information

EUT Description	
Model	T0511; T5; T05; T05_ROW
IMEI	IMEI1:354721087287473 IMEI2:354721087288026
Hardware Version	MT6761
Software Version	V01
Power Supply	Battery / AC adapter
Antenna Type	PIFA Antenna
Antenna Gain	2dBi
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-2A:5250MHz -5350MHz U-NII-3: 5725MHz -5850MHz
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM
Max. Conducted Power	15.65dBm
Testing temperature range:	-20 ° C to 50° C
Operating temperature range:	0 ° C to 54° C
Operating voltage range:	3.5V to 5V
State DC voltage:	4V
EUT Accessory	
Adapter 1	Manufacturer: SHENZHENG EAST SUN ELECTRONIC CO.,LTD Model: WI-RD-191105-001
Adapter 2	Manufacturer: SHENZHENG EAST SUN ELECTRONIC CO.,LTD Model: TPA-59050200BU01-C

Adapter 3	Manufacturer: SHENZHENG EAST SUN ELECTRONIC CO.,LTD Model: TPA-23A050200UU02-C
Battery	Manufacturer: Zhongshan Tianmao Battery Co.,Ltd Model: BP1826-3
USB Cable	Manufacturer: Shenzhen HuaJiaShengMing Technology Co.,Ltd Model: 262202110B0011
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. There is more than one Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 2) will be recorded in this report. 4. Customer declaration, The four products are the same, except for model. Only T0511 will be recorded in this report.	

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 (2021) 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
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	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
		40 MHz	38	5190MHz
			46	5230MHz
		80 MHz	42	5210MHz
	U-NII-2A	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
		40 MHz	54	5270MHz
			62	5310MHz
		80 MHz	58	5290MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz
			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
		80 MHz	155	5775MHz
Does this device support TPC Function? ☒Yes ☐No				

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.

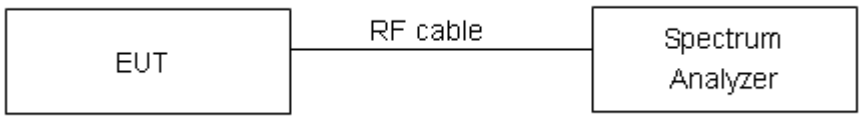
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the 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	16.84	20.04	PASS
	5200	16.92	19.92	PASS
	5240	16.94	20.12	PASS
802.11n HT20	5180	17.97	20.08	PASS
	5200	17.94	20.32	PASS
	5240	17.94	20.24	PASS
802.11n HT40	5190	36.50	40.32	PASS
	5230	36.45	40.96	PASS
802.11ac VHT20	5180	17.90	20.36	PASS
	5200	17.88	20.28	PASS
	5240	17.89	20.44	PASS
802.11ac VHT40	5190	36.24	40.40	PASS
	5230	36.25	40.40	PASS
802.11ac VHT80	5210	75.31	81.28	PASS

U-NII-2A

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.88	19.88	PASS
	5300	16.96	19.72	PASS
	5320	16.95	19.68	PASS
802.11n HT20	5260	17.91	20.16	PASS
	5300	17.95	20.20	PASS
	5320	17.90	20.04	PASS
802.11n HT40	5270	36.57	48.96	PASS
	5310	36.51	40.96	PASS
802.11ac VHT20	5260	17.83	20.28	PASS
	5300	17.91	20.24	PASS
	5320	17.85	20.24	PASS
802.11ac VHT40	5270	36.27	40.40	PASS
	5310	36.26	40.40	PASS
802.11ac VHT80	5290	75.28	80.32	PASS

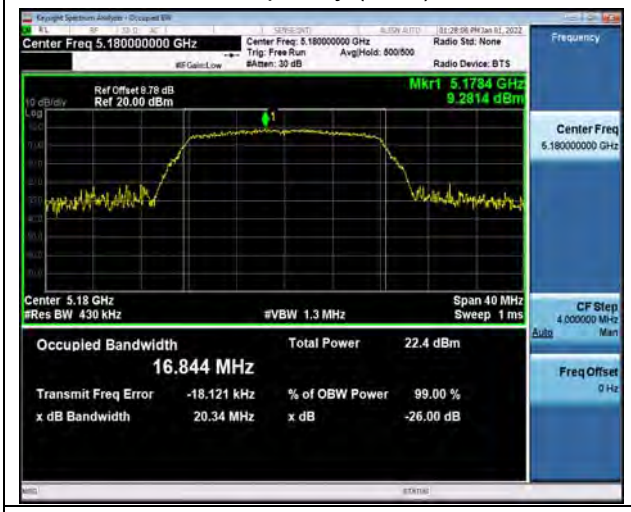
U-NII-3

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	17.01	15.04	500	PASS
	5785	16.91	15.08	500	PASS
	5825	17.01	15.12	500	PASS
802.11n HT20	5745	18.02	15.44	500	PASS
	5785	18.04	15.04	500	PASS
	5825	18.11	15.04	500	PASS
802.11n HT40	5755	36.51	35.04	500	PASS
	5795	36.56	35.04	500	PASS
802.11ac VHT20	5745	17.89	15.08	500	PASS
	5785	17.96	15.08	500	PASS
	5825	17.97	15.08	500	PASS
802.11ac VHT40	5755	36.33	35.04	500	PASS
	5795	36.29	35.04	500	PASS
802.11ac VHT80	5775	75.57	75.20	500	PASS

99% bandwidth

U-NII-1, 802.11a

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11a

Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

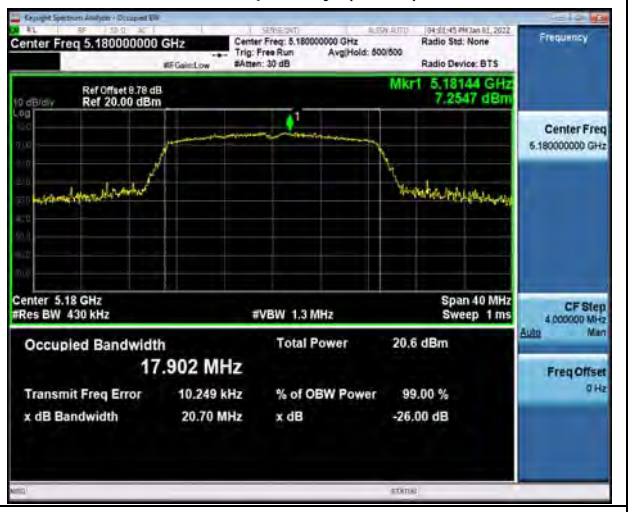
Carrier frequency (MHz):5240

U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

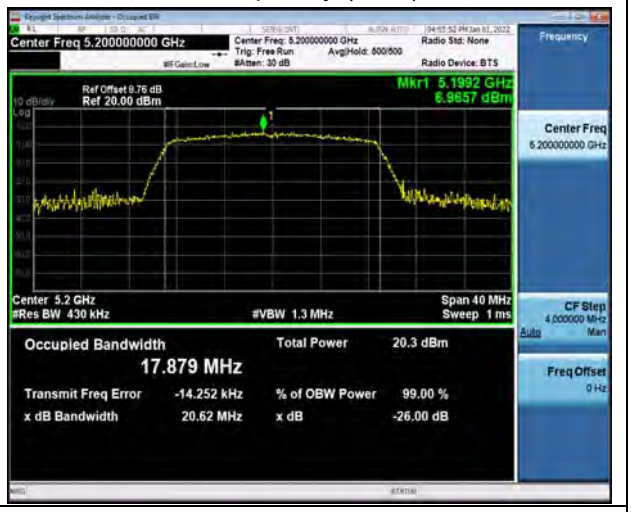
U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5190

U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5180

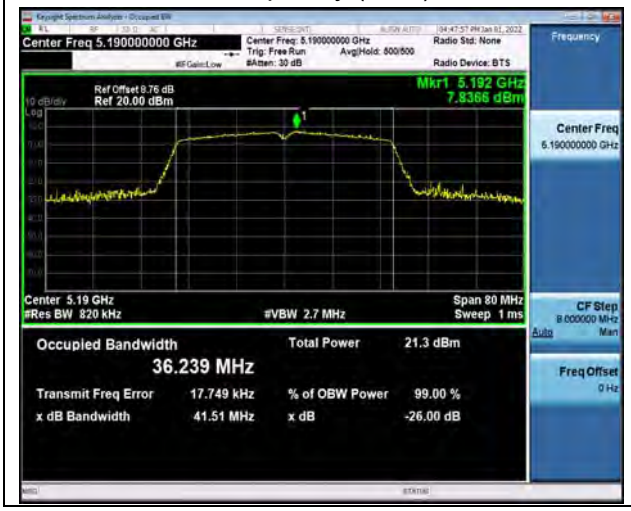


U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5200



U-NII-1, 802.11ac VHT40
Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20
Carrier frequency (MHz):5240

U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT80

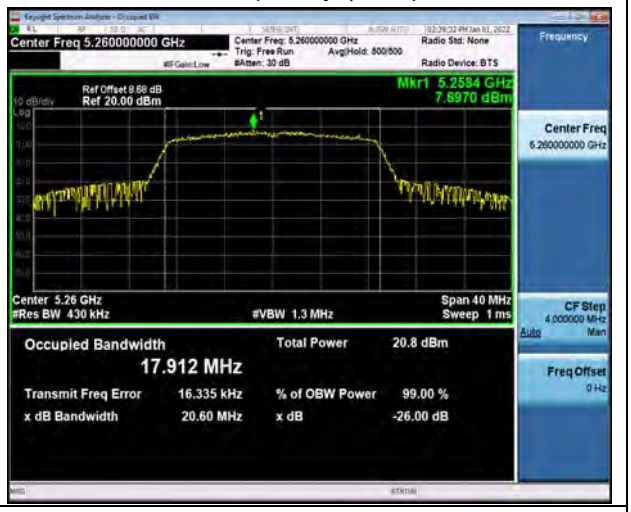
Carrier frequency (MHz): 5210

U-NII-2A, 802.11a

Carrier frequency (MHz): 5260

U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

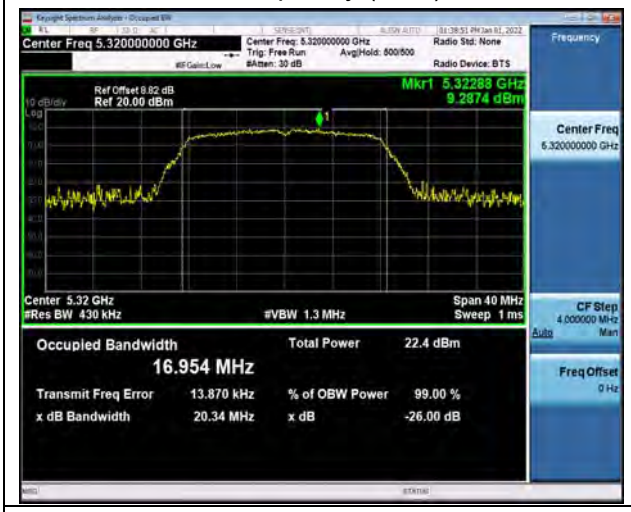
Carrier frequency (MHz): 5300

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

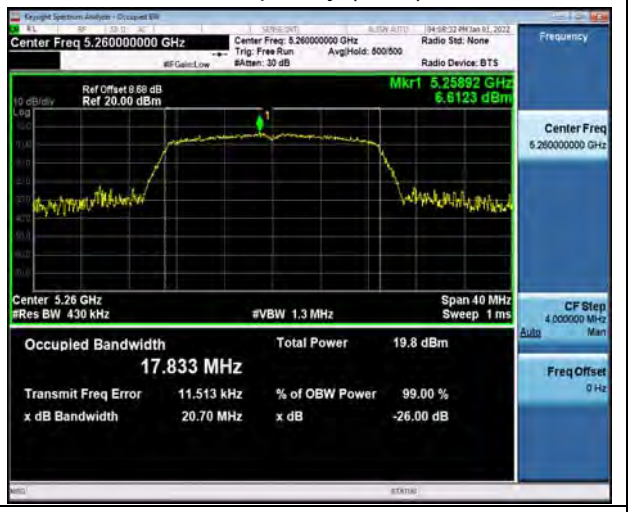
Carrier frequency (MHz):5320

U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5270

U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5260

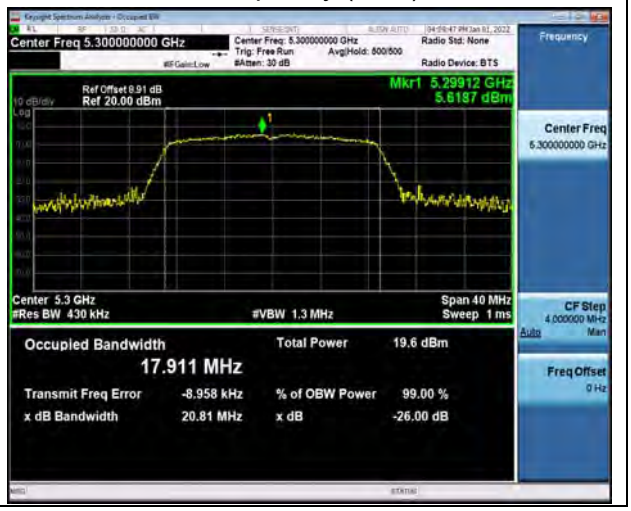


U-NII-2A, 802.11n HT40

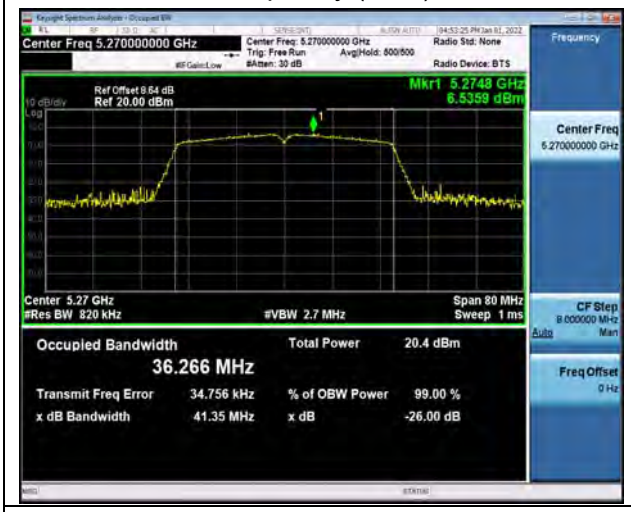
Carrier frequency (MHz): 5310

U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5300

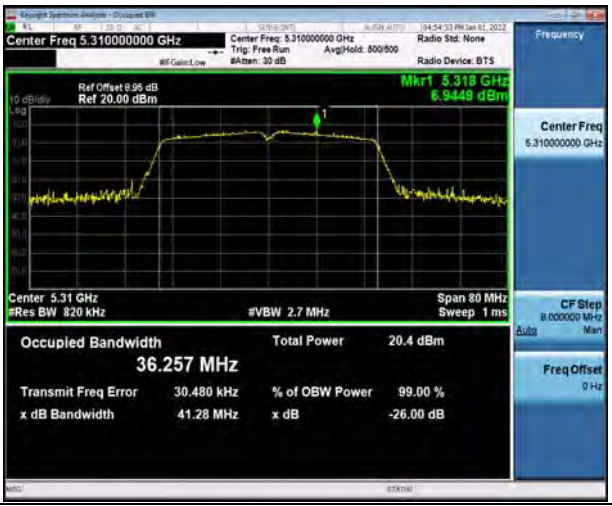


U-NII-2A, 802.11ac VHT40
Carrier frequency (MHz): 5270

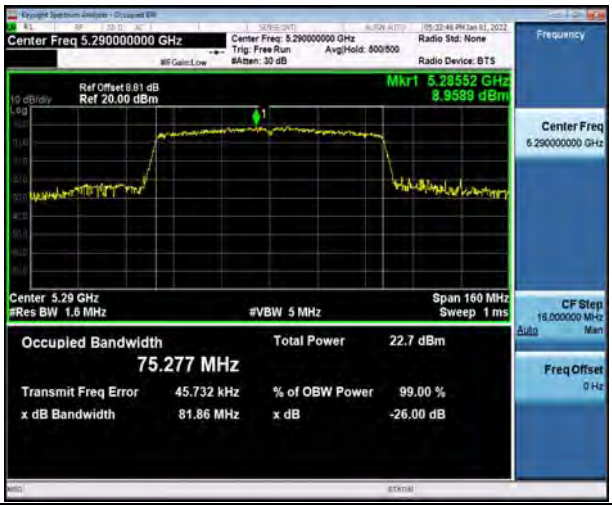


U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz):5320

U-NII-2A, 802.11ac VHT40
Carrier frequency (MHz): 5310



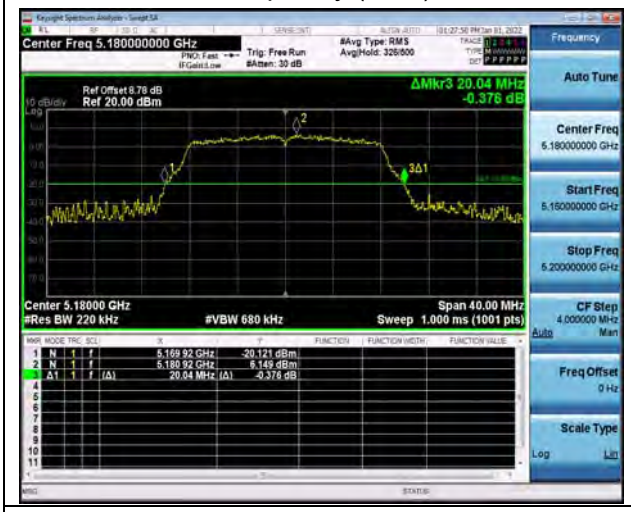
U-NII-2A, 802.11ac VHT80
Carrier frequency (MHz): 5290



Minimum 26 dB bandwidth

U-NII-1, 802.11a

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11a

Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

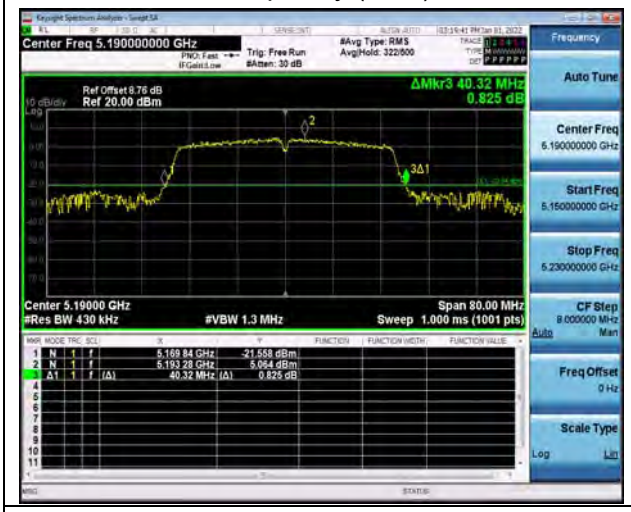
U-NII-1, 802.11a

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5230

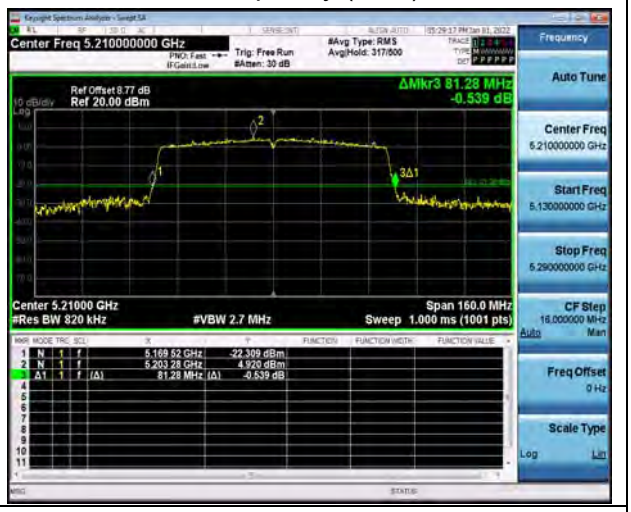
U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5200

U-NII-1, 802.11ac VHT40
Carrier frequency (MHz): 5190

U-NII-1, 802.11ac VHT20
Carrier frequency (MHz):5240

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

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



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-2A, 802.11n HT40

Carrier frequency (MHz): 5270

U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5260

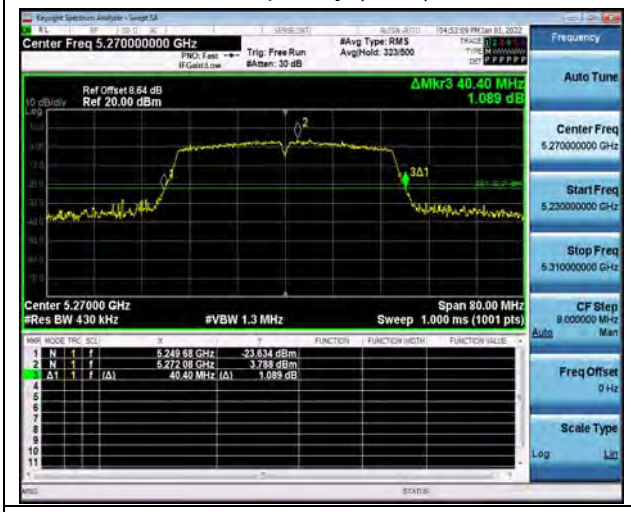
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5310

U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5300

U-NII-2A, 802.11ac VHT40
Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz):5320

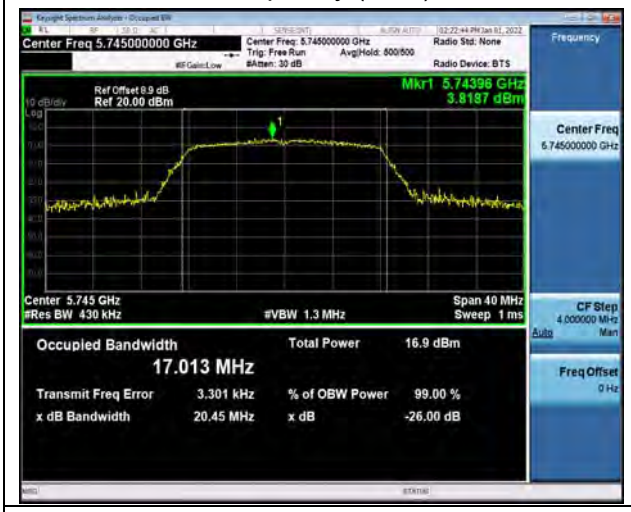
U-NII-2A, 802.11ac VHT40
Carrier frequency (MHz): 5310

U-NII-2A, 802.11ac VHT80
Carrier frequency (MHz): 5290

99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11a

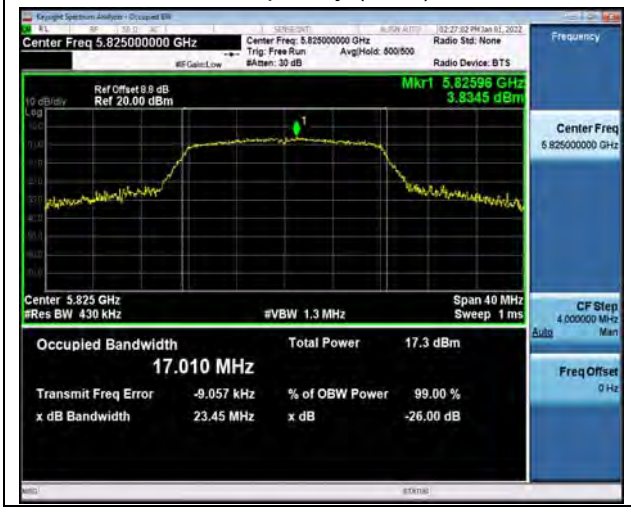
Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11a

Carrier frequency (MHz): 5825

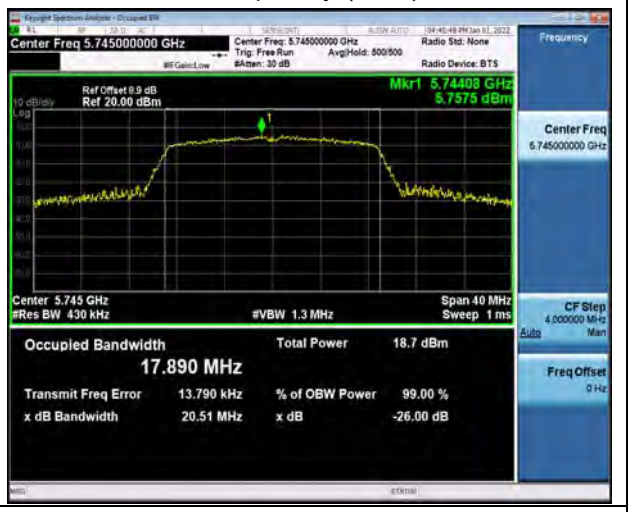


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5785

U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755

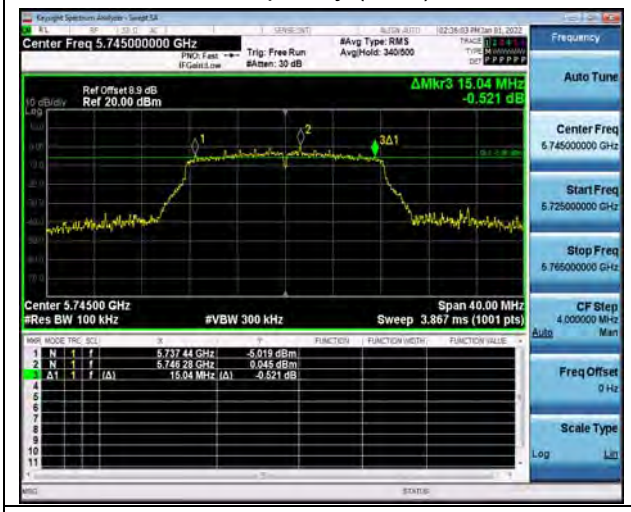
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825

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

Minimum 6 dB bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

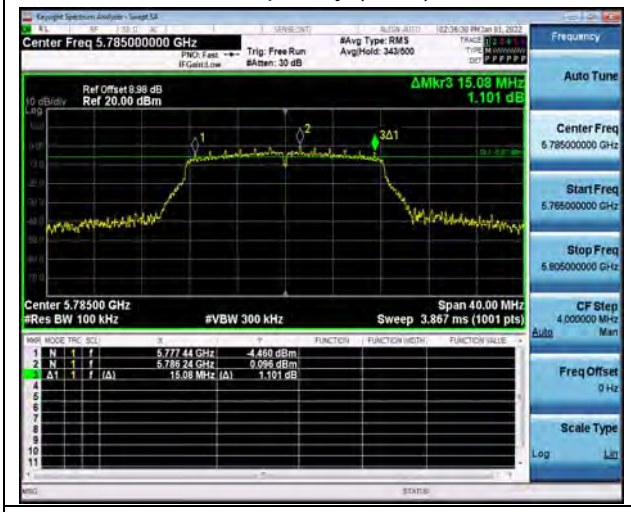


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11a

Carrier frequency (MHz): 5785

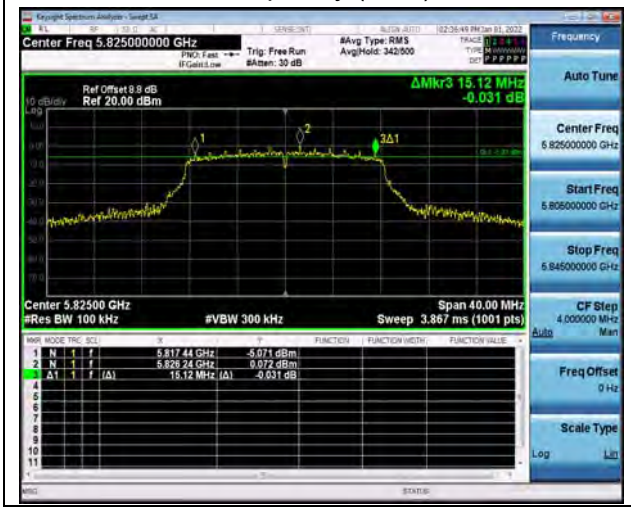


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11a

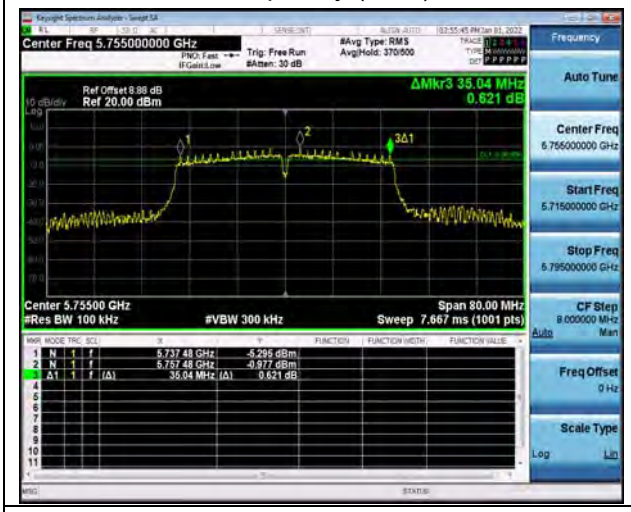
Carrier frequency (MHz): 5825



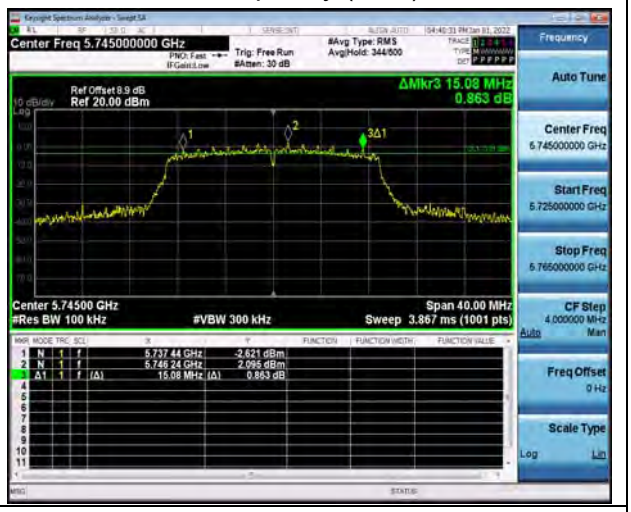
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

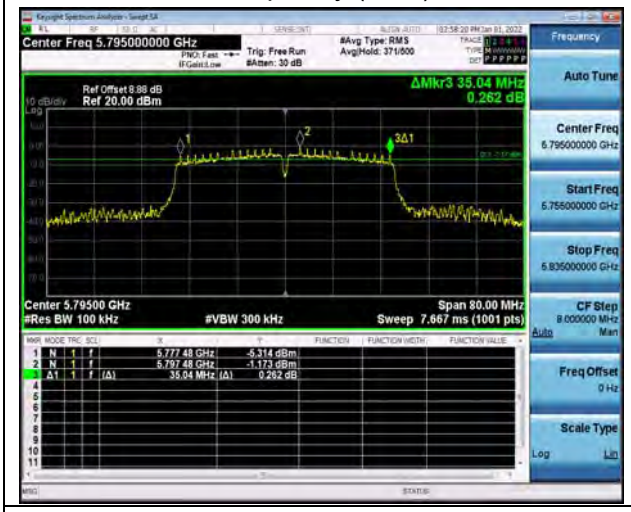
U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5755



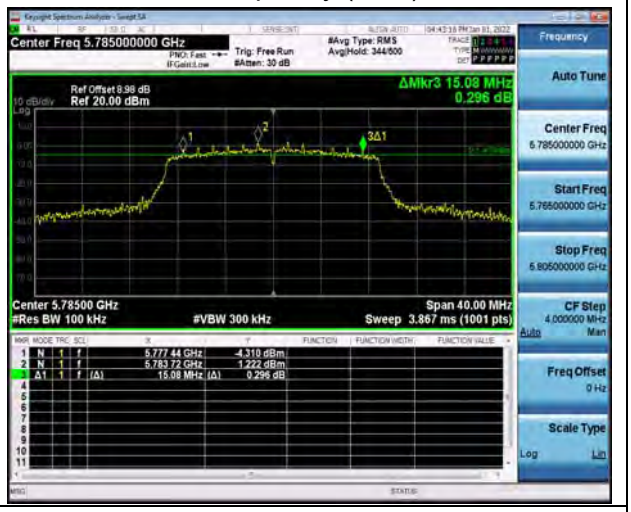
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5785



U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825

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

5.2. Average Power Output

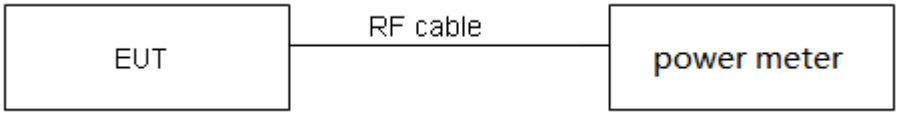
Ambient condition

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 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	1.39	1.44	0.97	0.15
802.11n HT20	1.30	1.35	0.96	0.16
802.11n HT40	0.64	0.69	0.93	0.33
802.11ac VHT20	1.31	1.36	0.96	0.16
802.11ac VHT40	0.65	0.70	0.93	0.33
802.11ac VHT80	0.32	0.37	0.86	0.63
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.				

Power Index								
Channel	802.11a	802.11n HT20	802.11ac VHT20	Channel	802.11n HT40	802.11ac VHT40	Channel	802.11ac VHT80
CH36	16.00	16.00	16.00	CH38	16.00	16.00	CH42	16.00
CH40	16.00	16.00	16.00	CH46	16.00	16.00	/	/
CH48	16.00	16.00	16.00	/	/	/	/	/
CH52	16.00	16.00	16.00	CH54	16.00	16.00	CH58	16.00
CH60	16.00	16.00	16.00	CH62	16.00	16.00	/	/
CH64	16.00	16.00	16.00	/	/	/	/	/
CH149	16.00	16.00	16.00	CH151	16.00	16.00	CH155	16.00
CH157	16.00	16.00	16.00	CH159	16.00	16.00	/	/
CH165	16.00	16.00	16.00	/	/	/	/	/

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	52/5260	19.88	23.98<24	23.98
		60/5300	19.72	23.95<24	23.95
		64/5320	19.68	23.94<24	23.94
	802.11n HT20	52/5260	20.16	24.04>24	24.00
		60/5300	20.20	24.05>24	24.00
		64/5320	20.04	24.02>24	24.00
	802.11n HT40	54/5270	48.96	27.90>24	24.00
		62/5310	40.96	27.12>24	24.00
	802.11ac VHT20	52/5260	20.28	24.07>24	24.00
		60/5300	20.24	24.06>24	24.00
		64/5320	20.24	24.06>24	24.00
	802.11ac VHT40	54/5270	40.40	27.06>24	24.00
		62/5310	40.40	27.06>24	24.00
	802.11ac VHT80	58/5290	80.32	30.05>24	24.00
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	15.30	15.45	24.00	PASS
	40/5200	15.41	15.56	24.00	PASS
	48/5240	15.50	15.65	24.00	PASS
802.11n HT20	36/5180	14.26	14.42	24.00	PASS
	40/5200	14.24	14.40	24.00	PASS
	48/5240	14.34	14.50	24.00	PASS
802.11n HT40	38/5190	13.92	14.25	24.00	PASS
	46/5230	13.18	13.51	24.00	PASS
802.11ac VHT20	36/5180	13.63	13.79	24.00	PASS
	40/5200	13.55	13.71	24.00	PASS
	48/5240	13.29	13.45	24.00	PASS
802.11ac VHT40	38/5190	13.57	13.90	24.00	PASS
	46/5230	13.32	13.65	24.00	PASS
802.11ac VHT80	42/5210	13.83	14.46	24.00	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	15.22	15.37	23.98	PASS
	60/5300	15.41	15.56	23.95	PASS
	64/5320	15.43	15.58	23.94	PASS
802.11n HT20	52/5260	13.90	14.06	24.00	PASS
	60/5300	13.91	14.07	24.00	PASS
	64/5320	14.00	14.16	24.00	PASS
802.11n HT40	54/5270	12.10	12.43	24.00	PASS
	62/5310	11.96	12.29	24.00	PASS
802.11ac VHT20	52/5260	12.85	13.01	24.00	PASS
	60/5300	12.69	12.85	24.00	PASS
	64/5320	12.70	12.86	24.00	PASS
802.11ac VHT40	54/5270	12.73	13.06	24.00	PASS
	62/5310	12.67	13.00	24.00	PASS
802.11ac VHT80	58/5290	13.16	13.79	24.00	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	9.86	10.01	30.00	PASS
	157/5785	9.87	10.02	30.00	PASS
	165/5825	10.19	10.34	30.00	PASS
802.11n HT20	149/5745	10.29	10.45	30.00	PASS
	157/5785	11.77	11.93	30.00	PASS
	165/5825	11.01	11.17	30.00	PASS
802.11n HT40	151/5755	11.70	12.03	30.00	PASS
	159/5795	11.67	12.00	30.00	PASS
802.11ac VHT20	149/5745	11.78	11.94	30.00	PASS
	157/5785	11.78	11.94	30.00	PASS
	165/5825	11.24	11.40	30.00	PASS
802.11ac VHT40	151/5755	10.24	10.57	30.00	PASS
	159/5795	10.43	10.76	30.00	PASS
802.11ac VHT80	155/5775	11.39	12.02	30.00	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
4.00	-20	5199.998865	5199.997304	5199.993949	5199.984288
4.00	-10	5199.998204	5199.990908	5199.991059	5199.981056
4.00	0	5199.993066	5199.988888	5199.987380	5199.976332
4.00	10	5199.989977	5199.987645	5199.986595	5199.970136
4.00	20	5199.985265	5199.980173	5199.980751	5199.964065
4.00	30	5199.976863	5199.972595	5199.974950	5199.961681
4.00	40	5199.969117	5199.967266	5199.965354	5199.955642
4.00	50	5199.965952	5199.959946	5199.962863	5199.955096
3.50	25	5199.956096	5199.950355	5199.958711	5199.945677
5.00	25	5199.946266	5199.941035	5199.949468	5199.937333
Max. ΔMHz		-0.053734	-0.058965	-0.050532	-0.062667
PPM		-10.333552	-11.339518	-9.717624	-12.051426

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
4.00	-20	5300.006215	5299.999023	5299.996160	5299.988340
4.00	-10	5299.996684	5299.990399	5299.994871	5299.979105
4.00	0	5299.987367	5299.988500	5299.988263	5299.973930
4.00	10	5299.978862	5299.979612	5299.984216	5299.972177
4.00	20	5299.969212	5299.976920	5299.983514	5299.967846
4.00	30	5299.962094	5299.974562	5299.975409	5299.964666
4.00	40	5299.958252	5299.967901	5299.971067	5299.960663
4.00	50	5299.956099	5299.967278	5299.963286	5299.951933
3.50	20	5299.953151	5299.966586	5299.962291	5299.947873
5.00	20	5299.947157	5299.964542	5299.958080	5299.941064
Max. ΔMHz		-0.052843	-0.035458	-0.041920	-0.058936
PPM		-9.970354	-6.690099	-7.909478	-11.119926

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
4.00	-20	5784.993508	5784.993299	5784.985740	5784.984576
4.00	-10	5784.986841	5784.991264	5784.983083	5784.982219
4.00	0	5784.985750	5784.987378	5784.982395	5784.980459
4.00	10	5784.979796	5784.985541	5784.972498	5784.979214
4.00	20	5784.975888	5784.985256	5784.967611	5784.972975
4.00	30	5784.968929	5784.977637	5784.959571	5784.968372
4.00	40	5784.959026	5784.967995	5784.949817	5784.964780
4.00	50	5784.954637	5784.962204	5784.941434	5784.956924
3.50	20	5784.948247	5784.960718	5784.936388	5784.949999
5.00	20	5784.938832	5784.957108	5784.935717	5784.943397
4.00	-20	5784.993508	5784.993299	5784.985740	5784.984576
Max. ΔMHz		-0.061168	-0.042892	-0.064283	-0.056603
PPM		-10.573583	-7.414265	-11.112029	-9.784486

5.4. Power Spectral Density

Ambient condition

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

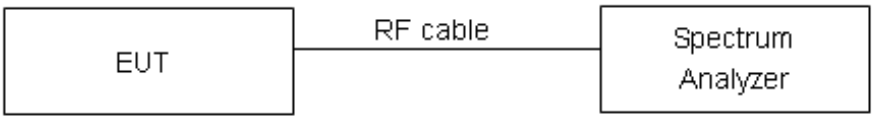
Method of Measurement

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.
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 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
5250-5350	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:

U-NII-1

Mode	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	5.46	11	PASS
	40	5.31	11	PASS
	48	5.59	11	PASS
802.11n HT20	36	4.13	11	PASS
	40	4.13	11	PASS
	48	4.21	11	PASS
802.11n HT40	38	1.26	11	PASS
	46	0.58	11	PASS
802.11ac VHT20	36	3.42	11	PASS
	40	3.38	11	PASS
	48	3.04	11	PASS
802.11ac VHT40	38	0.84	11	PASS
	46	0.47	11	PASS
802.11ac VHT80	42	-1.98	11	PASS
Note: Offset already includes Duty cycle correction factor, so all read value in test plots are already the final results of the Power Spectral Density.				

U-NII-2A

Mode	Channel Number	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	5.21	11	PASS
	60	5.31	11	PASS
	64	5.41	11	PASS
802.11n HT20	52	3.82	11	PASS
	60	3.77	11	PASS
	64	3.88	11	PASS
802.11n HT40	54	-0.88	11	PASS
	62	-0.75	11	PASS
802.11ac VHT20	52	2.91	11	PASS
	60	2.55	11	PASS
	64	2.58	11	PASS
802.11ac VHT40	54	-0.22	11	PASS
	62	-0.33	11	PASS
802.11ac VHT80	58	-2.17	11	PASS
Note: Offset already includes Duty cycle correction factor, so all read value in test plots are already the final results of the Power Spectral Density.				

U-NII-3

Mode	Channel Number	Power Spectral Density (dBm/470kHz	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	1.71	1.98	30	PASS
	157	1.43	1.70	30	PASS
	165	1.16	1.43	30	PASS
802.11n HT20	149	1.20	1.47	30	PASS
	157	1.08	1.35	30	PASS
	165	0.84	1.11	30	PASS
802.11n HT40	151	-1.76	-1.49	30	PASS
	159	-2.06	-1.79	30	PASS
802.11ac VHT20	149	1.27	1.54	30	PASS
	157	1.12	1.39	30	PASS
	165	0.60	0.87	30	PASS
802.11ac VHT40	151	-1.81	-1.54	30	PASS
	159	-2.14	-1.87	30	PASS
802.11ac VHT80	155	-4.40	-4.13	30	PASS

Note:1. Offset already includes Duty cycle correction factor, so all read value in test plots are already the final results of the Power Spectral Density.
2.PSD(dBm/500kHz)=RSD(dBm/470kHz)+10*LOG10(500/470)
10*LOG10(500/470)=0.27

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

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

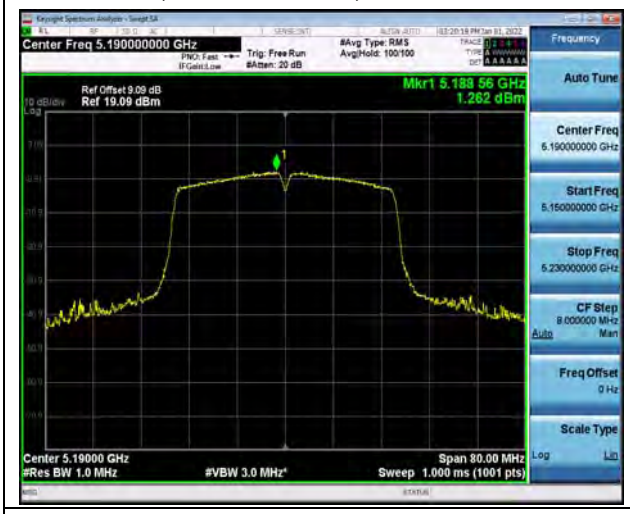
U-NII-1, 802.11a, Channel No.: 40

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

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

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

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



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

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

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

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

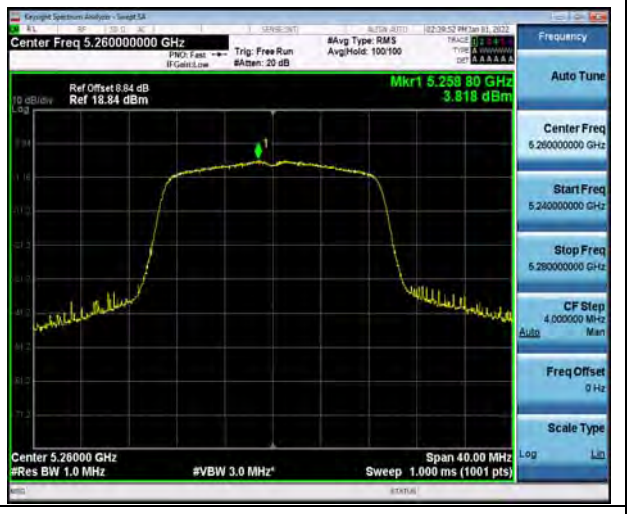
U-NII-1, 802.11ac VHT20, Channel No.: 48

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

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

U-NII-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-2A, 802.11n HT40, Channel No.: 54

U-NII-2A, 802.11ac VHT20, Channel No.:52

U-NII-2A, 802.11n HT40, Channel No.: 62

U-NII-2A, 802.11ac VHT20, Channel No.: 60

U-NII-2A, 802.11ac VHT40, Channel No.: 54

U-NII-2A, 802.11ac VHT20, Channel No.: 64

U-NII-2A, 802.11ac VHT40, Channel No.: 62

U-NII-2A, 802.11ac VHT80, Channel No.: 58

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.5. Unwanted Emission

Ambient condition

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

Method of Measurement

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

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9KHz, VBW=30KHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
a) Peak emission levels are measured by setting the instrument as follows:
Above 1GHz
PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
b) Average emission levels are measured by setting the instrument as follows:
Above 1GHz
AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific

emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

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

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

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

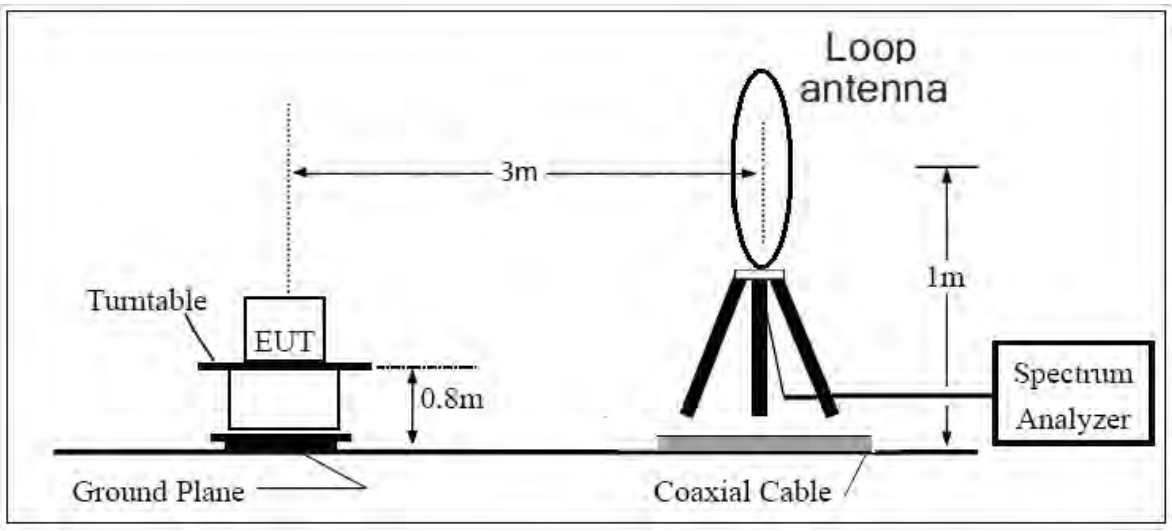
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

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

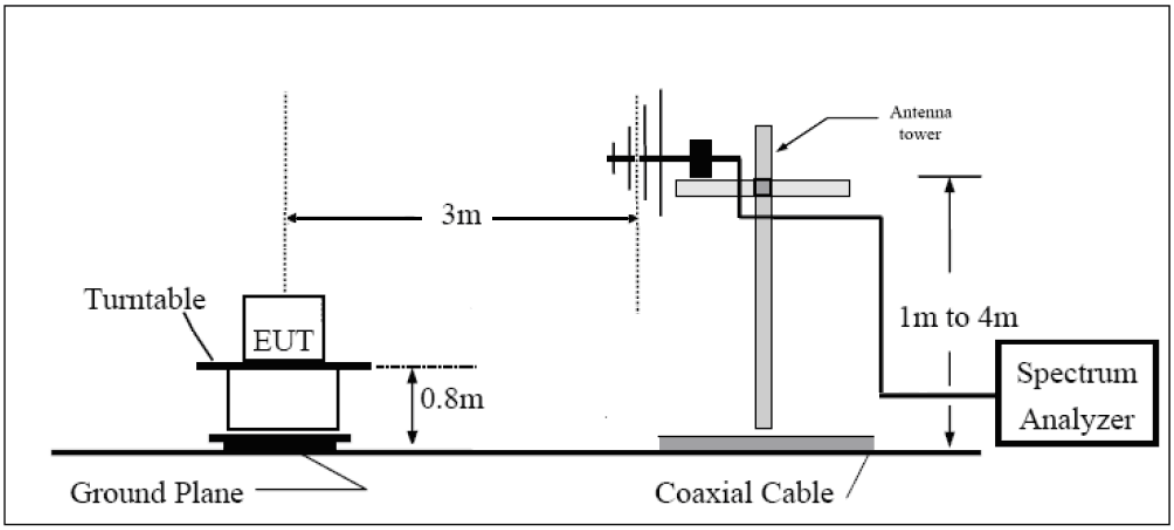
The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

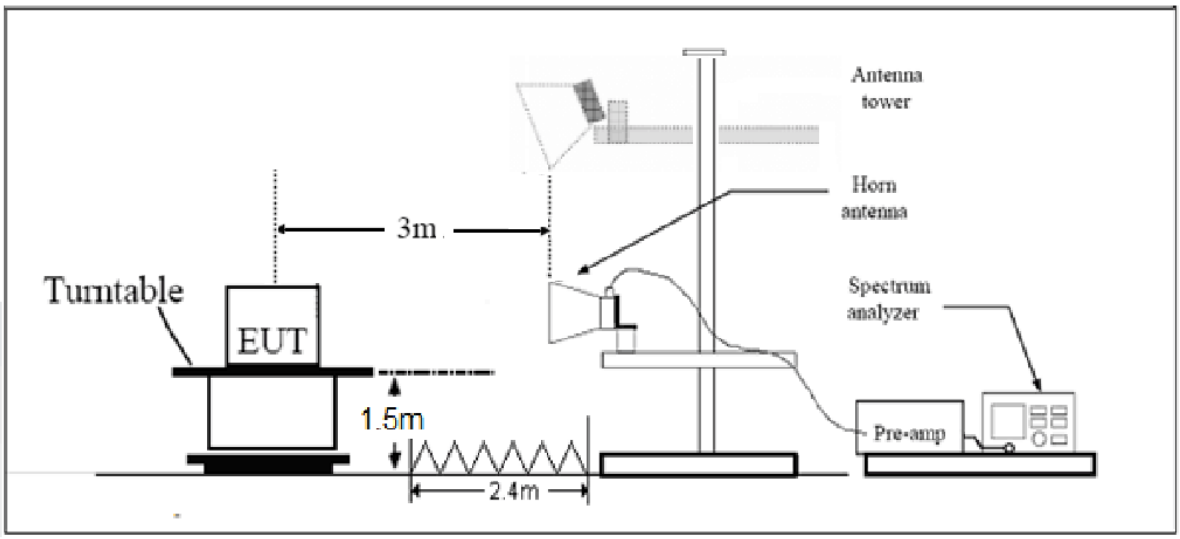
9KHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

(1) For transmitters operating in the 5725-5850 MHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

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

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

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

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

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

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

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

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

Measurement Uncertainty

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

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

Test Results:

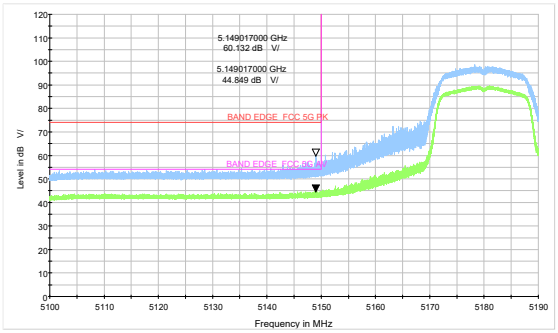
The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for V20MHz/V40MHz, therefore investigated worst case to representative mode in test report.

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

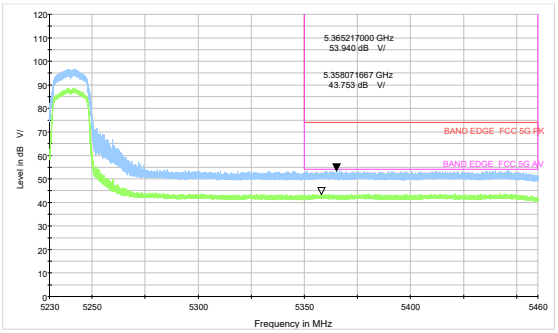
The signal beyond the limit is carrier.

U-NII-1

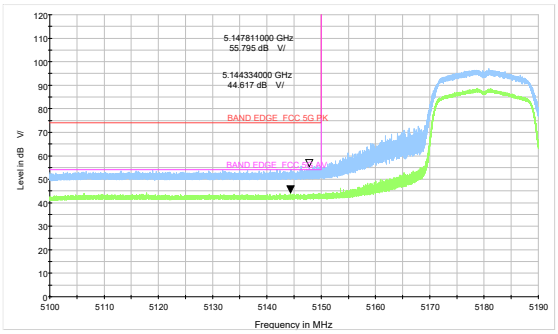
802.11a-Channel 36: Peak + Average



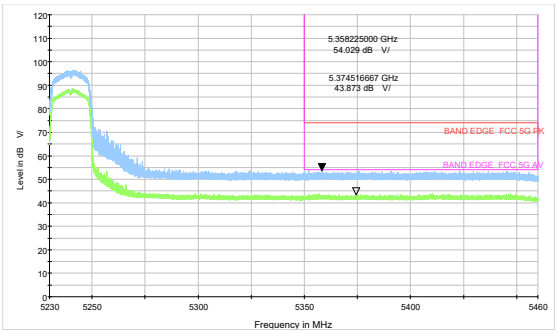
802.11a-Channel 48: Average



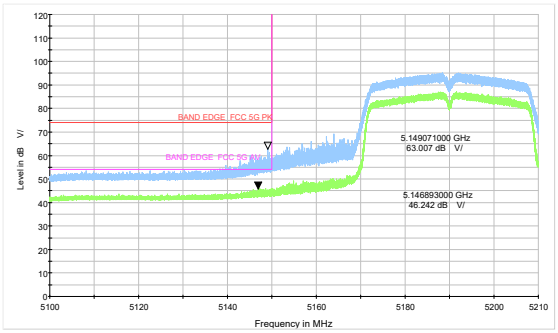
802.11ac VHT20 -Channel 36: Peak + Average



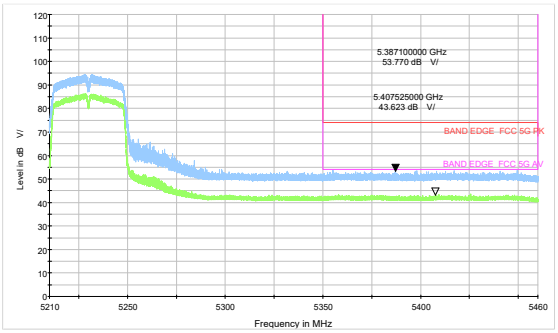
802.11ac VHT20 -Channel 48: Peak + Average



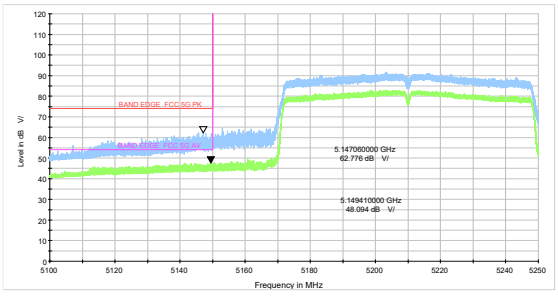
802.11ac VHT40-Channel 38: Peak + Average



802.11ac VHT40-Channel 46: Peak + Average

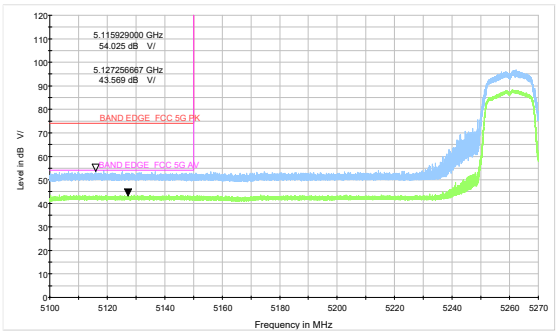


802.11ac VHT80 –Channel 42: Peak + Average

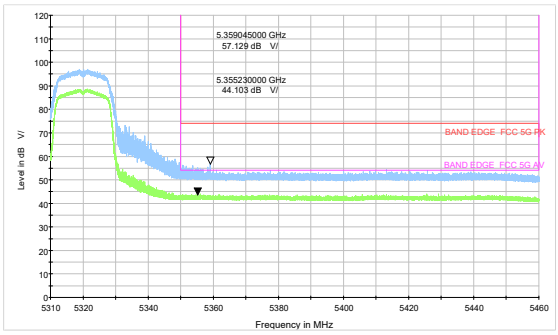


U-NII-2A

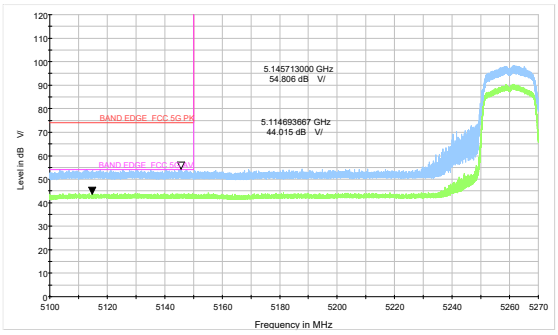
802.11a-Channel 52: Peak + Average



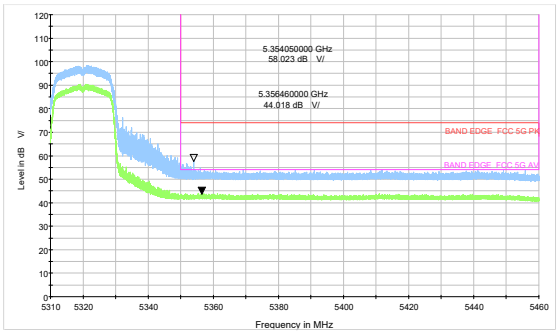
802.11a-Channel 64: Peak + Average



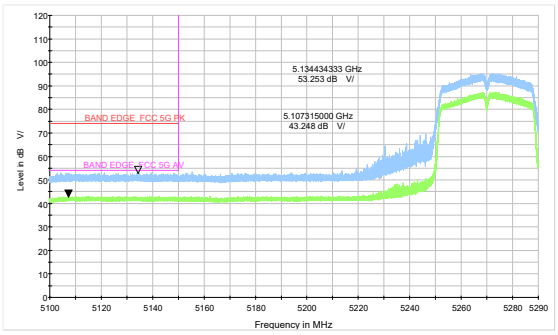
802.11ac VHT20 -Channel 52: Peak + Average



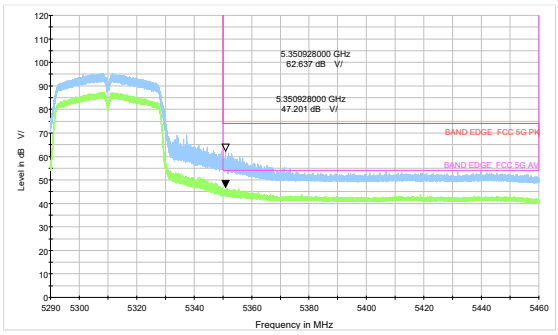
802.11ac VHT20 -Channel 64: Peak + Average



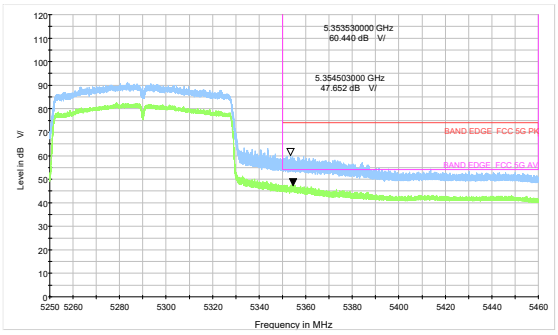
802.11ac VHT40-Channel 54: Peak + Average



802.11ac VHT40-Channel 62: Peak + Average

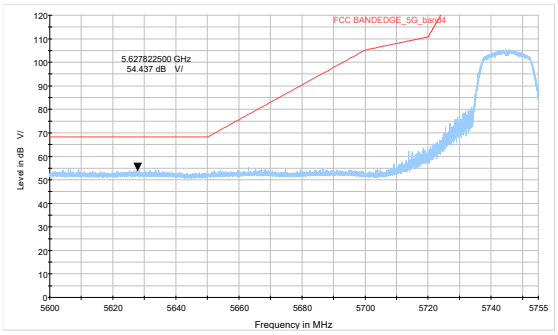


802.11ac VHT80 –Channel 58: Peak

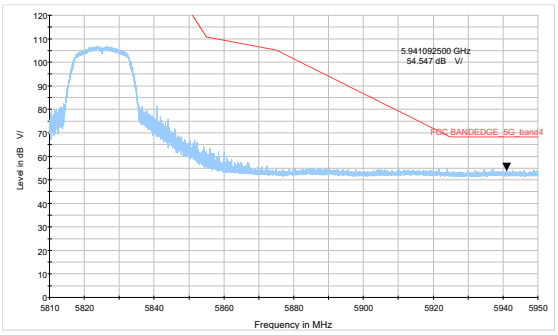


U-NII-3

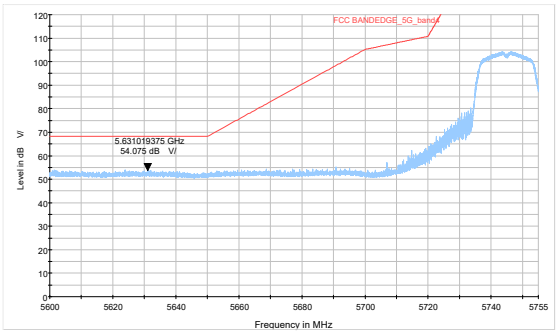
802.11a-Channel 149: Peak



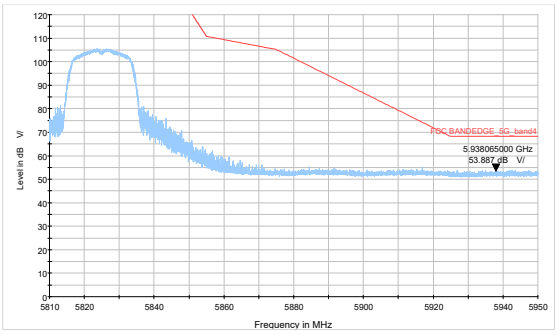
802.11a-Channel 165: Peak



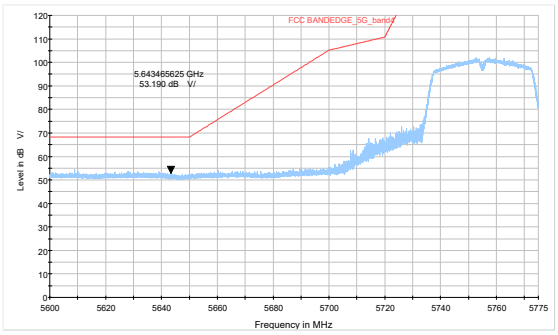
802.11ac VHT20-Channel 149: Peak



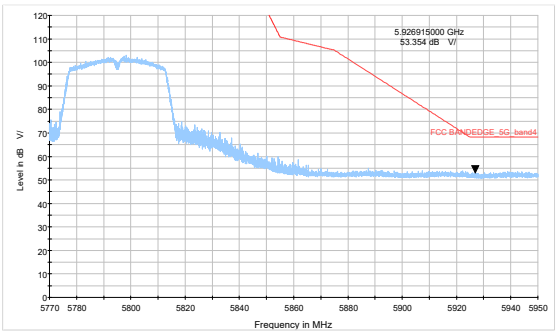
802.11ac VHT20-Channel 165: Peak



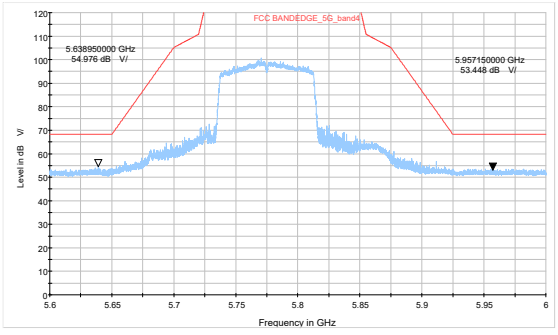
802.11ac VHT40-Channel 151: Peak



802.11ac VHT40-Channel 159: Peak



802.11ac VHT80- Channel 155: Peak



Result of RE

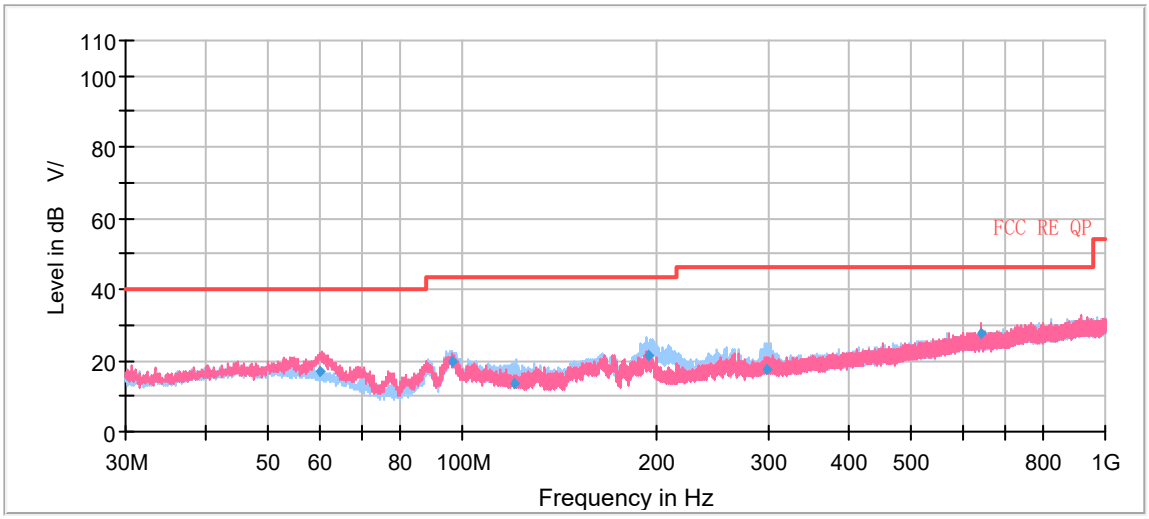
Test result

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

A font (Level in dB V/)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, 802.11ac (VHT20) CH48 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Continuous TX mode:



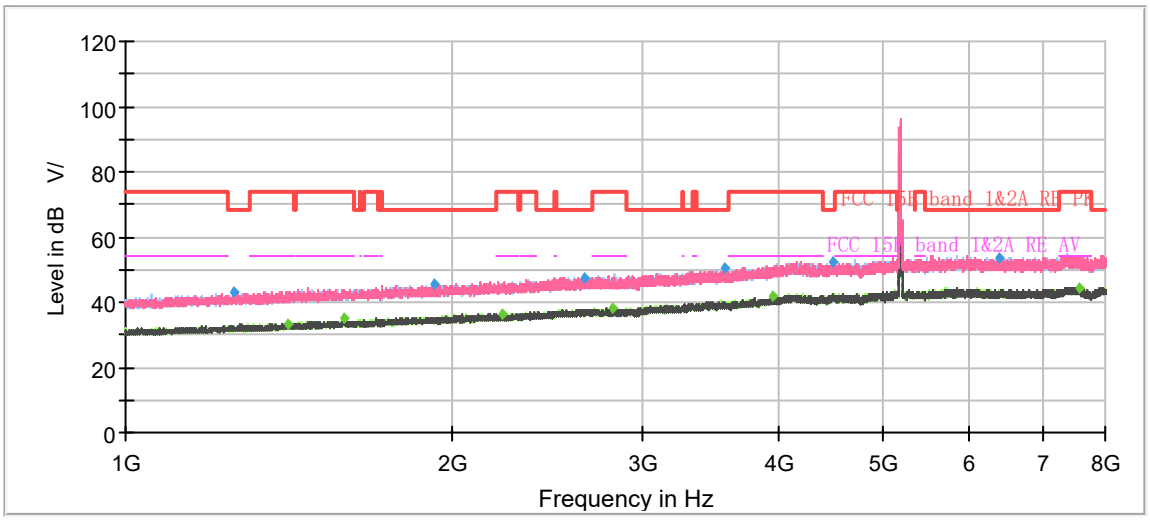
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
60.221333	16.99	100.0	V	311.0	19	23.01	40.00
96.233000	19.58	225.0	H	280.0	18	23.92	43.50
120.450667	13.30	175.0	H	277.0	16	30.20	43.50
194.621000	21.60	100.0	H	194.0	19	21.90	43.50
297.317667	17.53	100.0	H	136.0	20	28.47	46.00
640.000667	27.42	100.0	V	34.0	27	18.58	46.00

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

2. Margin = Limit – Quasi-Peak

802.11a CH36

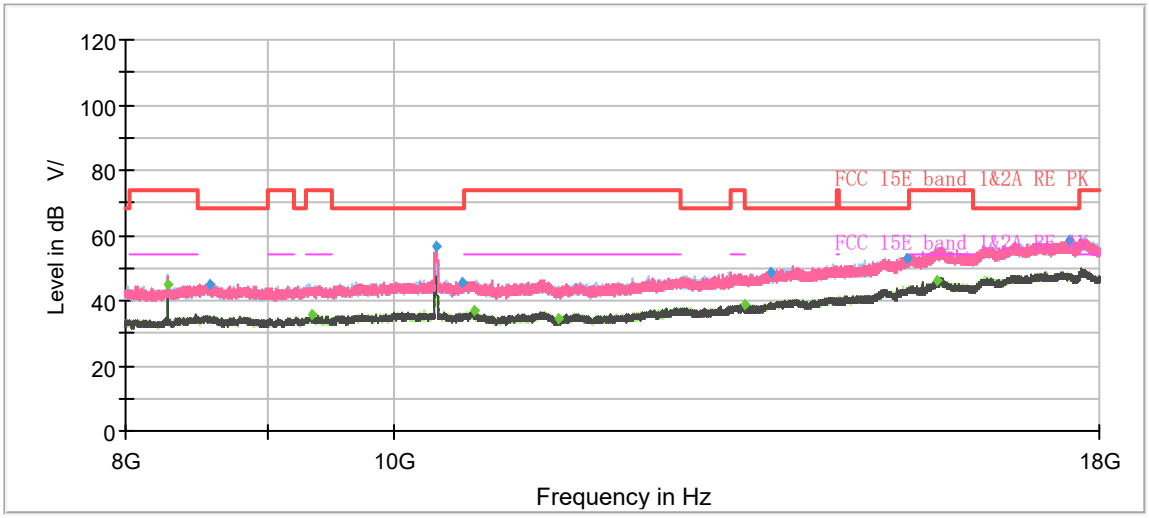


Radiates Emission from 1GHz to 8GHz

Note: The signal beyond the limit is carrier.

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1255.733333	43.07	---	68.20	25.13	100.0	V	0.0	-7
1410.433333	---	33.23	54.00	20.77	100.0	H	271.0	-6
1592.433333	---	34.94	54.00	19.06	200.0	H	267.0	-5
1924.700000	45.46	---	68.20	22.74	200.0	H	359.0	-3
2224.766667	---	36.20	54.00	17.80	200.0	H	345.0	-2
2652.933333	47.69	---	68.20	20.51	100.0	H	77.0	0
2813.700000	---	38.40	54.00	15.60	200.0	V	54.0	1
3571.100000	50.33	---	68.20	17.87	200.0	H	310.0	4
3947.233333	---	41.54	54.00	12.46	100.0	H	117.0	6
4479.000000	52.12	---	68.20	16.08	100.0	H	140.0	7
6391.633333	53.51	---	68.20	14.69	100.0	H	92.0	10
7567.633333	---	44.47	54.00	9.53	100.0	H	185.0	11

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



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)
8288.00	---	45.13	54.00	8.87	100.0	H	246.00	3
8579.00	44.97	---	68.20	23.23	100.0	V	285.00	4
9350.00	---	35.63	54.00	18.37	200.0	H	199.00	4
10362.33	56.73	---	68.20	11.47	100.0	V	232.00	6
10594.67	45.37	---	68.20	22.83	100.0	V	270.00	5
10702.00	---	36.81	54.00	17.19	100.0	V	177.00	5
11472.00	---	34.45	54.00	19.55	100.0	V	240.00	6
13392.00	---	39.06	54.00	14.94	100.0	H	136.00	9
13698.33	48.81	---	68.20	19.39	200.0	H	79.00	10
15347.33	53.13	---	68.20	15.07	100.0	V	30.00	13
15717.33	---	46.41	54.00	7.59	200.0	V	337.00	14
17558.33	58.20	---	68.20	10.00	100.0	H	67.00	18

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