Test Report

FCC ID:2AWOC-GOC-BA440

Date of issue: June 28, 2020

Report number:	MTi20022514-4E4
Sample description:	GOC-BA440
Model(s):	GOC-BA440
Applicant:	Shenzhen Goodocom Information Technology Co., Ltd
Address:	XiaGu F3, Meishenghuigu, No.83 Dabao Road, Xin'an Street, 33 District, Bao'an District, Shenzhen
Date of test:	Mar. 19, 2020 to June 16, 2020

Shenzhen Microtest Co., Ltd.
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Test Result Certification

Applicant's name:	Shenzhen Goodocom Information Technology Co., Ltd
Address:	XiaGu F3, Meishenghuigu, No.83 Dabao Road, Xin'an Street, 33 District, Bao'an District, Shenzhen
Manufacture's name:	Shenzhen Goodocom Information Technology Co., Ltd
Address:	XiaGu F3, Meishenghuigu, No.83 Dabao Road, Xin'an Street, 33 District, Bao'an District, Shenzhen
Product name:	GOC-BA440
Trademark:	N/A
Model name:	GOC-BA440
Standards:	FCC Part 15.407
Test procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:	Demi Mu	June 16, 2020
Reviewed by:	Leo Su	June 28, 2020
Approved by:	Tom Xue	June 28, 2020

1 General information

1.1 Description of EUT

Equipment:	GOC-BA440
Model name:	GOC-BA440
Serial model:	N/A
Model difference:	N/A
Frequency range:	U-NII-1: 5150 MHz to 5250 MHz, U-NII-3: 5725 MHz to 5850 MHz
Modulation type:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Transfer rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40): MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40):NSS1, MCS0-MCS9 802.11ac(VHT80):NSS1, MCS0-MCS9
Channel bandwidth:	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz, 80MHz
Antenna type:	PCB antenna
Antenna gain:	2.5dBi
Max. output power:	U-NII-1: 14.45dBm U-NII-3: 12.28dBm
Hardware version:	V1.0
Software version:	1.363
Power supply:	DC 5V from control board
Adapter information:	N/A
Battery:	N/A
EUT serial number:	MTi20022514-4-S0001

1.2 Operation channel list

For U-NII-1:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	--	--
40	5200	46	5230	--	--
44	5220	--	--	--	--
48	5240	--	--	--	--

For U-NII-3:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
149	5745	151	5755	--	--
153	5765	159	5795	--	--
157	5785	--	--	--	--
161	5805	--	--	--	--
165	5825	--	--	--	--

1.3 Test channel list

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

80 MHz	
Channel Number	Frequency (MHz)
42	5210

For 802.11n/ac (HT40)

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

80 MHz	
Channel Number	Frequency (MHz)
155	5775

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
Host computer	/	/	/	/
Control board	/	/	/	/

1.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
/	/	/	/	/	/
/	/	/	/	/	/

Note:

(1)The support equipment was authorized by Declaration of Confirmation.

(2)For detachable type I/O cable should be specified the length in cm in『Length』column.

2 Summary of the Test Results

Test procedures according to the technical standards:

No.	Standard Section	Test Item	Result	Remark
1	15.203/15.407	Antenna Requirement	Pass	
2	15.407(a)	RF Output Power	Pass	
3	15.207	Power Line Conducted Emission	N/A	
4	15.407(a)	26dB Emission Bandwidth and Occupied bandwidth	Pass	
5	15.407(e)	6 dB bandwidth	Pass	
6	15.407(a)	Power Spectral Density	Pass	
7	15.407(b) 15.209	Radiation Spurious Emission	Pass	
8	15.407(b) 15.209	Conducted Spurious Emission	Pass	
9	15.407(g)	Frequency stability	Pass	

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	15ºC~35℃
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

The reported uncertainty of measurement y ± U · where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2 · providing a level of confidence of approximately 95 %

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power, conducted	±0.16dB
3	Spurious emissions, conducted	±0.21dB
4	All emissions, radiated(<1G)	±4.68dB
5	All emissions, radiated(>1G)	±4.89dB
6	Temperature	±0.5℃
7	Humidity	±2%

3.4 Test software

Software Name	Manufacturer	Model	Version
Bluetooth and WiFi Test System	Shenzhen JS tonscend co., ltd	JS1120-3	2.5.77.0418

4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI7	100314	2019/10/09	2020/10/08
MTI-E006	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-872	2019/10/15	2020/10/14
MTI-E007	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	9120D-1145	2019/10/13	2020/10/12
MTI-E014	Amplifier	Hewlett-Packard	8447D	3113A06150	2019/10/09	2020/10/08
MTI-E036	Single path vehicle AMN(LISN)	Schwarzbeck	NNBM 8124	01175	2019/10/09	2020/10/08
MTI-E038	Low noise active vertical monopole antenna	Schwarzbeck	VAMP 9243	#565	2019/10/16	2020/10/15
MTI-E039	Biconical antenna	Schwarzbeck	BBA 9106	#164	2019/10/15	2020/10/14
MTI-E041	MXG Vector Signal Generator	Agilent	N5182A	MY49060455	2020/04/16	2021/04/15
MTI-E042	ESG Series Analog signal generator	Agilent	E4421B	GB40051240	2020/05/21	2021/05/20
MTI-E044	Thermometer clock humidity monitor	-	HTC-1	/	2020/04/17	2021/04/16
MTI-E065	Amplifier	EMtrace	RP06A	00117	2020/04/29	2021/04/28
MTI-E071	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2019/10/25	2020/10/24
MTI-E076	EMI Test Receiver	Rohde&schwarz	ESIB26	100273	2020/04/16	2021/04/15
MTI-E078	Synthesized Sweeper	Agilent	83752A	3610A01957	2020/04/16	2021/04/15
MTI-E079	DC Power Supply	Agilent	E3632A	MY40027695	2020/04/16	2021/04/15
MTI-E092	DC power source	shenzhen tongyuan	TY-500V 100A	201710190325689	2020/04/16	2021/04/15
MTI-E093	Artificial mains network	3ctest	LISN J50	ES3911805	2020/04/16	2021/04/15
MTI-E096	Power amplifier	Space-Dtroniccs	EWLNA0118G-P40	1852001	2020/04/29	2021/04/28
MTI-E097	Current Probe	SOLAR ELECTRONICS CO.	9207-1	220095-1	2020/04/17	2021/04/16
MTI-E098	Loop Sensor	SOLAR ELECTRONICS CO.	7334-1	220095-2	2020/04/21	2021/04/20
MTI-E0123	High and low temperature box	Heron	JHY-HT-80L	LGD-GDW-80	2020/04/16	2021/04/15
Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).						

5 Test Results

5.1 Antenna requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.1.2 EUT Antenna

The antenna is PCB antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 2.5dBi.

5.2 RF output power

5.2.1 Limit

For the 5.15-5.25 GHz band

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 band

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.

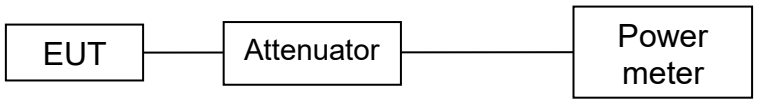
For the band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2.2 Test procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

5.2.3 Test setup



5.2.4 Test results

For U-NII-1

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH36	5180	13.98	25.00	250
11a	CH40	5200	14.30	26.92	250
11a	CH48	5240	14.45	27.86	250
11n (HT20)	CH36	5180	13.63	23.07	250
11n (HT20)	CH40	5200	13.93	24.72	250
11n (HT20)	CH48	5240	14.39	27.48	250
11n (HT40)	CH38	5190	12.63	18.32	250
11n (HT40)	CH46	5230	13.06	20.23	250

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH36	5180	13.78	23.88	250
11ac (HT20)	CH40	5200	14.02	25.23	250
11ac (HT20)	CH48	5240	14.44	27.80	250
11ac (HT40)	CH38	5190	12.66	18.45	250
11ac (HT40)	CH46	5230	13.28	21.28	250
11ac (HT80)	CH42	5210	12.85	19.28	250

For U-NII-3

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH149	5745	12.18	16.52	1000
11a	CH157	5785	11.78	15.07	1000
11a	CH165	5825	12.28	16.90	1000
11n (HT20)	CH149	5745	12.16	16.44	1000
11n (HT20)	CH157	5785	11.48	14.06	1000
11n (HT20)	CH165	5825	11.92	15.56	1000
11n (HT40)	CH151	5755	11.12	12.94	1000
11n (HT40)	CH159	5795	10.72	11.80	1000

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH149	5745	12.02	15.92	1000
11ac (HT20)	CH157	5785	11.44	13.93	1000
11ac (HT20)	CH165	5825	11.85	15.31	1000
11ac (HT40)	CH151	5755	10.94	12.42	1000
11ac (HT40)	CH159	5795	10.54	11.32	1000
11ac (HT80)	CH155	5775	10.81	12.05	1000

5.3 Power line conducted emission

5.3.1 Limits

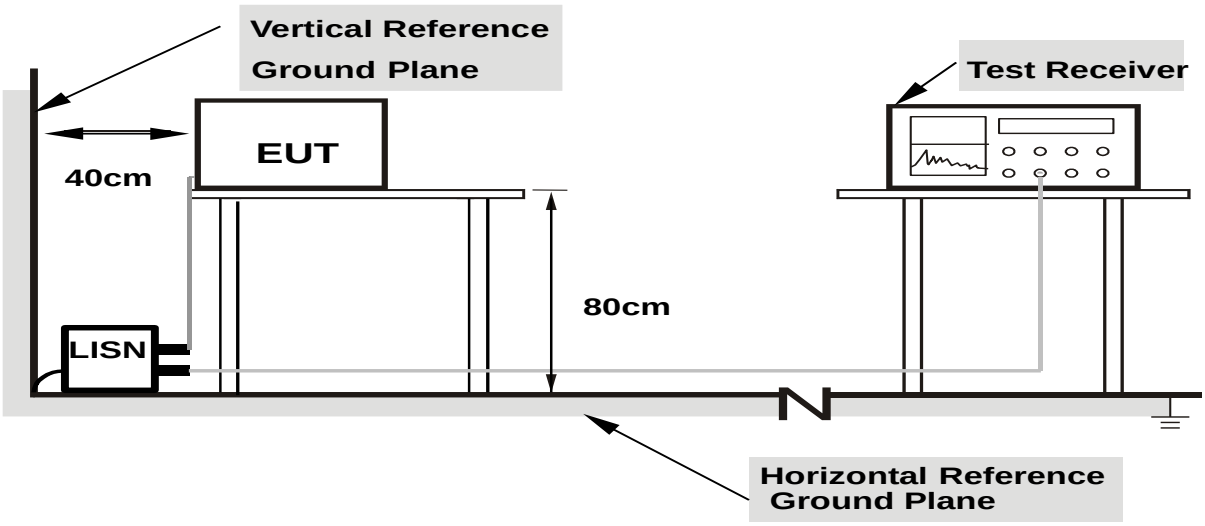
FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note

(1)The tighter limit applies at the band edges.

(2)The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.3.2 Test setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.3.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b. The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

f. LISN at least 80 cm from nearest part of EUT chassis.

For the actual test configuration, please refer to the related Item –EUT Test Photos.

5.3.4 Test results

Note: The device is a DC power supply and does not apply to conducted emissions.

5.4 26dB Emission Bandwidth and Occupied bandwidth

5.4.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.4.2 Test procedure

26d Emission bandwidth

Set RBW = approximately 1% of the emission bandwidth.

Set VBW ≥ 3*RBW

Detector = Peak.

Trace mode = Max hold.

Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

Set Span = 1.5 times to 5.0 times the OBW

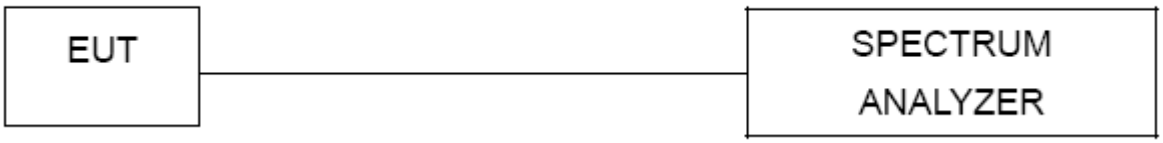
Set RBW = 1% to 5% of the OBW.

Set VBW ≥ 3*RBW, Detector = Peak.

Trace mode = Max hold.

Use the 99% power bandwidth function of the instrument.

5.4.3 Test setup



5.4.4 Test results

For U-NII-1

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH36	5180	20.78	16.474	/	Pass
11a	CH40	5200	20.57	16.480	/	Pass
11a	CH48	5240	20.82	16.478	/	Pass
11n (HT20)	CH36	5180	20.80	17.678	/	Pass
11n (HT20)	CH40	5200	21.32	17.680	/	Pass
11n (HT20)	CH48	5240	21.08	17.687	/	Pass
11n (HT40)	CH38	5190	38.69	36.057	/	Pass
11n (HT40)	CH46	5230	38.79	36.047	/	Pass

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH36	5180	20.81	17.669	/	Pass
11ac (HT20)	CH40	5200	21.21	17.650	/	Pass
11ac (HT20)	CH48	5240	21.20	17.667	/	Pass
11ac (HT40)	CH38	5190	38.58	36.063	/	Pass
11ac (HT40)	CH46	5230	38.72	36.029	/	Pass
11ac (HT80)	CH42	5210	78.55	75.243	/	Pass

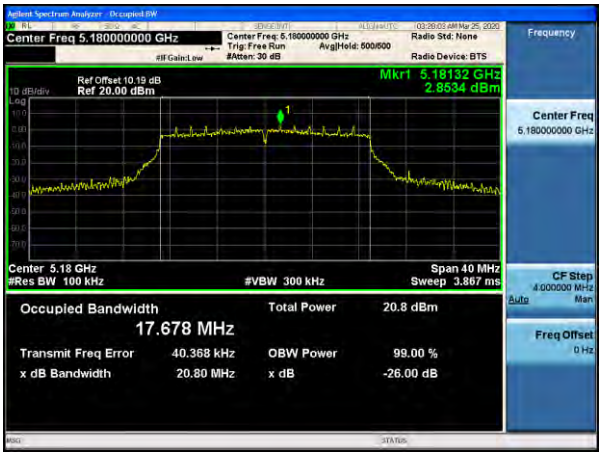
For U-NII-3

Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH149	5745	17.474	/	Pass
11a	CH157	5785	17.486	/	Pass
11a	CH165	5825	17.459	/	Pass
11n (HT20)	CH149	5745	18.427	/	Pass
11n (HT20)	CH157	5785	18.402	/	Pass
11n (HT20)	CH165	5825	18.335	/	Pass
11n (HT40)	CH151	5755	36.630	/	Pass
11n (HT40)	CH159	5795	36.738	/	Pass

Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH149	5745	18.418	/	Pass
11ac (HT20)	CH157	5785	18.390	/	Pass
11ac (HT20)	CH165	5825	18.393	/	Pass
11ac (HT40)	CH151	5755	36.600	/	Pass
11ac (HT40)	CH159	5795	36.661	/	Pass
11ac (HT80)	CH155	5775	75.864	/	Pass

Test plots:

For U-NII-1

11a CH36	11a CH40
	
11a CH48	**11n (HT20) CH36**
	
11n (HT20) CH40	**11n (HT20) CH48**
	

11n (HT40) CH38	11n (HT40) CH46
	
11ac (HT20) CH36	**11ac (HT20) CH40**
	
11ac (HT20) CH48	**11ac (HT40) CH38**
	

11ac (HT40) CH46	11ac (HT80) CH42
	

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n(HT20) CH149**
	

11n(HT20) CH157	11n(HT20) CH165
	
11n (HT40) CH151	**11n (HT40) CH159**
	
11ac (HT20) CH149	**11ac (HT20) CH157**
	

11ac(HT20) CH165	11ac(HT40) CH151
	
11ac(HT40) CH159	**11ac (HT80) CH155**
	

5.5 6dB Bandwidth

5.5.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.5.2 Test procedure

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

5.5.3 Test setup

5.5.4 Test results

For U-NII-3

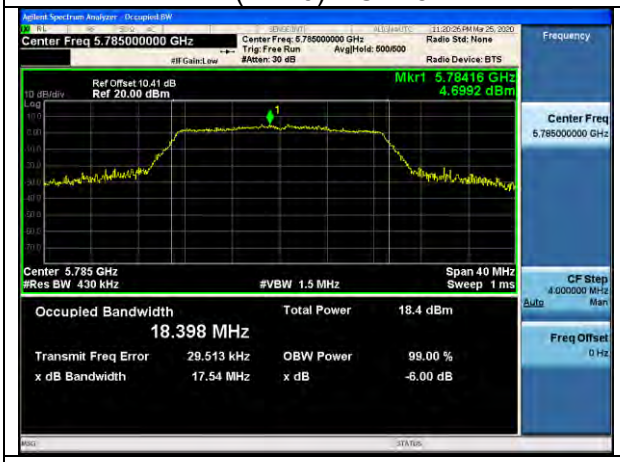
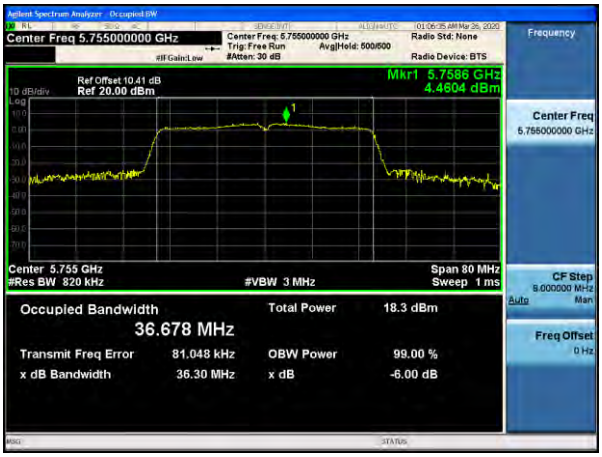
Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11a	CH149	5745	16.27	500	Pass
11a	CH157	5785	16.42	500	Pass
11a	CH165	5825	16.13	500	Pass
11n (HT20)	CH149	5745	17.60	500	Pass
11n (HT20)	CH157	5785	17.54	500	Pass
11n (HT20)	CH165	5825	17.51	500	Pass
11n (HT40)	CH151	5755	36.30	500	Pass
11n (HT40)	CH159	5795	36.56	500	Pass

Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11ac (HT20)	CH149	5745	17.59	500	Pass
11ac (HT20)	CH157	5785	17.57	500	Pass
11ac (HT20)	CH165	5825	17.60	500	Pass
11ac (HT40)	CH151	5755	35.86	500	Pass
11ac (HT40)	CH159	5795	36.13	500	Pass
11ac (HT80)	CH155	5775	75.32	500	Pass

Test plots:

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n(HT20) CH149**
	

11n(HT20) CH157	11n(HT20) CH165
	
11n (HT40) CH151	**11n (HT40) CH159**
	
11ac (HT20) CH149	**11ac (HT20) CH157**
	

11ac(HT20) CH165	11ac(HT40) CH151
	
11ac(HT40) CH159	**11ac(HT80) CH155**
	

5.6 Radiated spurious emission

5.6.1 Radiated Emission Limits

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.6.2 Test procedure

The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the floor on a support that is RF transparent for the frequencies of interest. Final measurements for the EUT require a measurement antenna height scan of 1 m to 4 m.

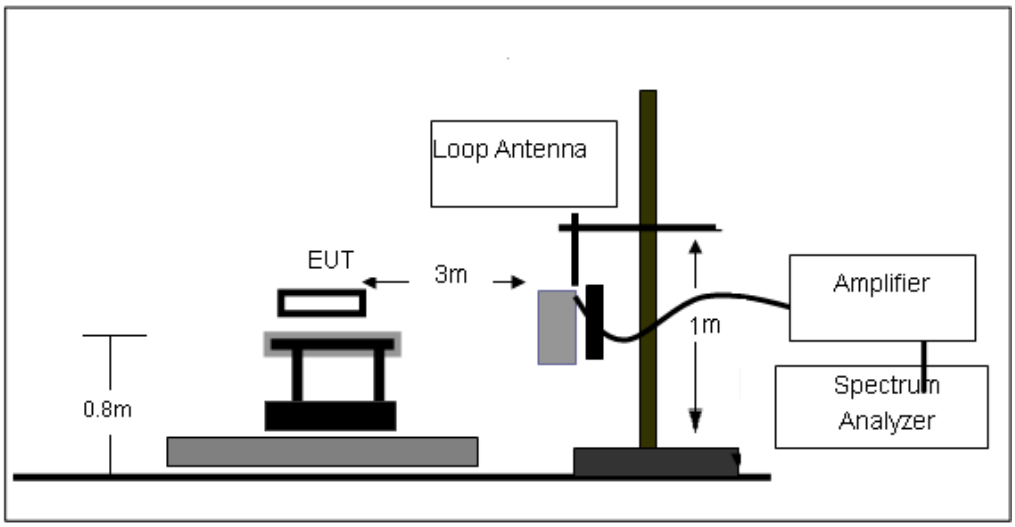
The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
For the actual test configuration, please refer to the related Item –EUT Test Photos.

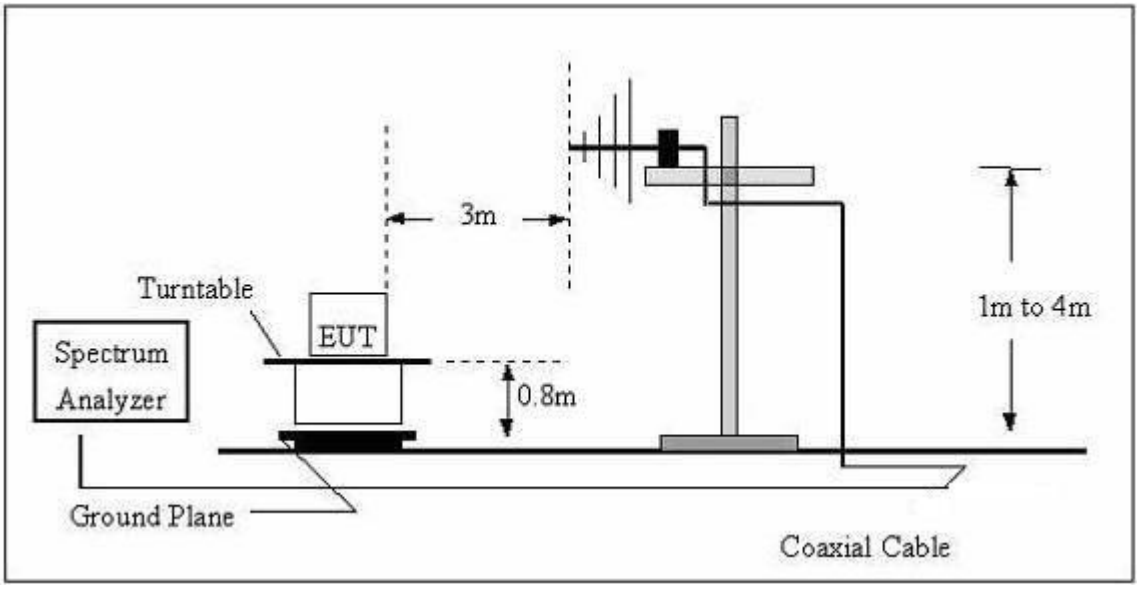
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.6.3 Test setup

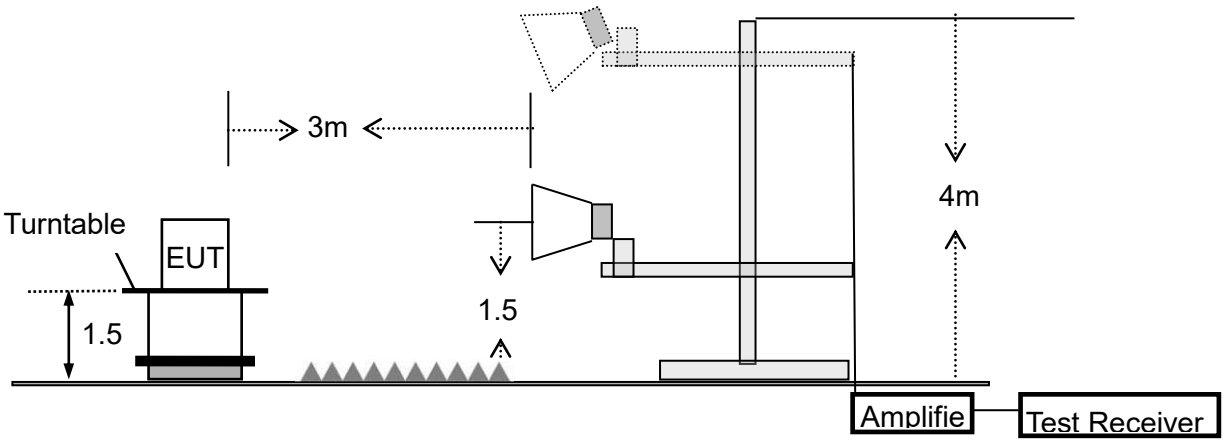
（A）Radiated Emission test-up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



5.6.4 Test results

EUT:	GOC-BA440	Model Name:	GOC-BA440
Pressure:	1010 hPa	Test Voltage:	DC 5V from control board
Test Mode:	TX	Polarization:	--

Below 30MHz

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

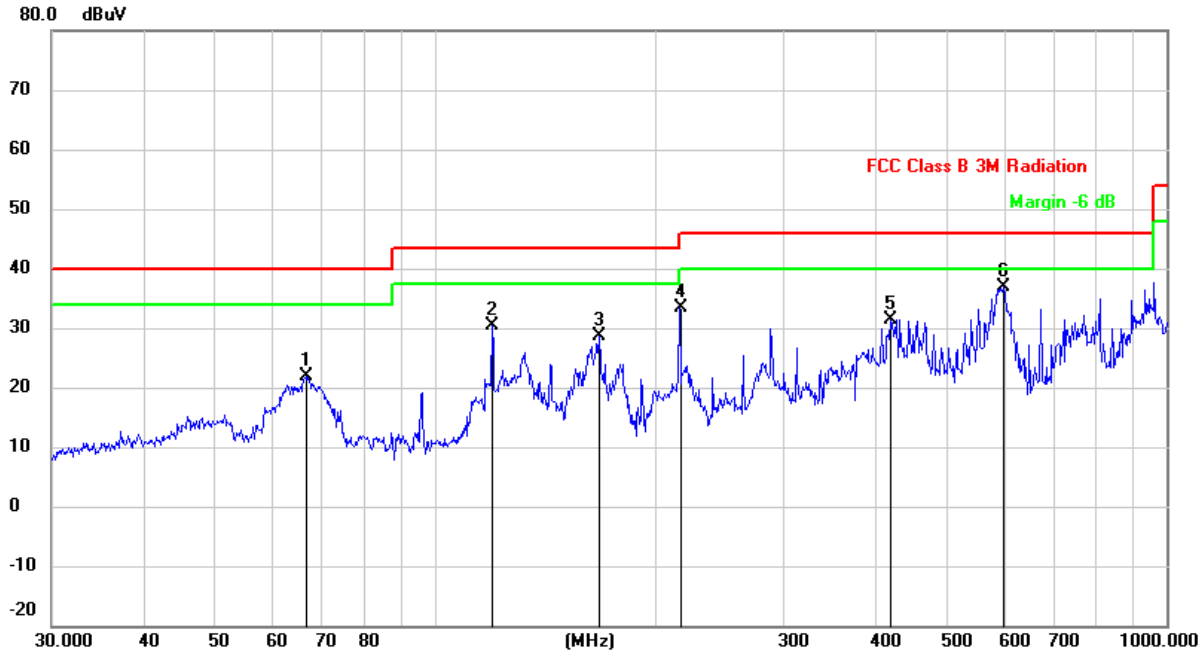
Note1: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Note2: Distance extrapolation factor =40 log (specific distance/test distance)(dB);Limit line = specific limits (dBuV) + distance extrapolation factor.

Between 30MHz – 1GHz

Note 1: Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

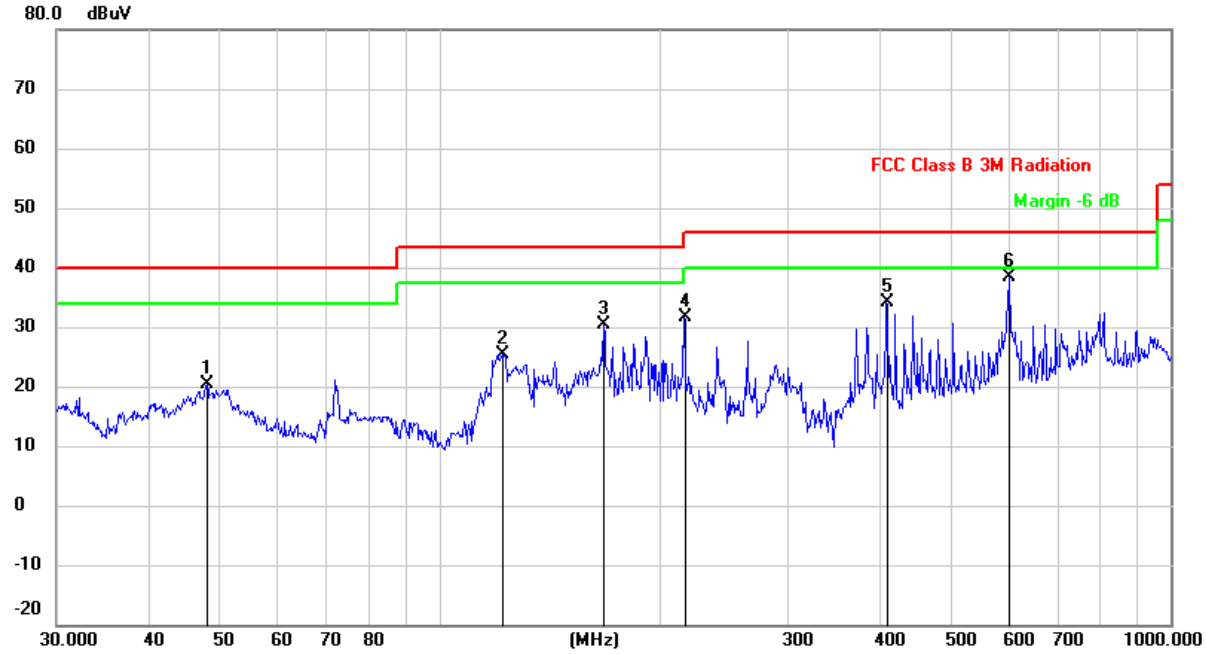
Note 2: The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

EUT:	GOC-BA440	Model Name:	GOC-BA440
Pressure:	1010 hPa	Phase:	H
Test Voltage:	DC 5V from control board	Mode:	TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV	dBuV	dBuV	dB	Detector
1		66.9668	36.87	-15.03	21.84	40.00	-18.16	QP
2		119.8555	44.82	-14.33	30.49	43.50	-13.01	QP
3		167.8240	43.93	-15.34	28.59	43.50	-14.91	QP
4		216.0240	46.05	-12.65	33.40	46.00	-12.60	QP
5		420.5803	39.56	-8.08	31.48	46.00	-14.52	QP
6	*	599.3211	42.54	-5.60	36.94	46.00	-9.06	QP

EUT:	GOC-BA440	Model Name:	GOC-BA440
Pressure:	1010 hPa	Phase:	V
Test Voltage:	DC 5V from control board	Mode:	TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV	dBuV	dBuV	dB	Detector
1		48.1625	32.75	-12.26	20.49	40.00	-19.51	QP
2		121.9753	40.24	-14.84	25.40	43.50	-18.10	QP
3		167.8240	45.67	-15.34	30.33	43.50	-13.17	QP
4		216.0240	44.29	-12.65	31.64	46.00	-14.36	QP
5		408.9460	42.73	-8.65	34.08	46.00	-11.92	QP
6	*	601.4265	44.05	-5.59	38.46	46.00	-7.54	QP

1G-40GHz:

Note1: Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Note2: The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

Note3: The spurious emission of 25GHz – 40GHz band which the margin is lower more than 20dB, So that it is not reported in this test report.

For U-NII-1

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5185 MHz)-Above 1G									
Vertical	4434.212	56.28	5.94	35.40	44.00	53.62	74.00	-20.38	Pk
Vertical	4434.212	43.17	5.94	35.40	44.00	40.51	54.00	-13.49	AV
Vertical	10370.154	61.54	8.46	39.75	44.50	65.25	74.00	-8.75	Pk
Vertical	10370.154	44.10	8.46	39.75	44.50	47.81	54.00	-6.19	AV
Vertical	15540.126	56.21	10.12	38.80	44.10	61.03	74.00	-12.97	Pk
Vertical	15540.126	41.88	10.12	38.80	42.70	48.10	54.00	-5.90	AV
Horizontal	4434.242	58.26	5.94	35.18	44.00	55.38	74.00	-18.62	Pk
Horizontal	4434.242	44.23	5.94	35.18	44.00	41.35	54.00	-12.65	AV
Horizontal	10370.121	60.57	8.46	38.71	44.50	63.24	74.00	-10.76	Pk
Horizontal	10730.121	45.25	8.46	38.71	44.50	47.92	54.00	-6.08	AV
Horizontal	15540.115	58.05	10.12	38.38	44.10	62.45	74.00	-11.55	Pk
Horizontal	15540.115	43.39	10.12	38.38	44.10	47.79	54.00	-6.21	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.142	57.53	6.48	36.35	44.05	56.31	74.00	-17.69	Pk
Vertical	4592.142	41.58	6.48	36.35	44.05	40.36	54.00	-13.64	AV
Vertical	10401.205	61.68	8.47	37.88	44.51	63.52	74.00	-10.48	Pk
Vertical	10401.205	46.28	8.47	37.88	44.51	48.12	54.00	-5.88	AV
Vertical	15600.176	56.67	10.12	38.8	44.10	61.49	74.00	-12.51	Pk
Vertical	15600.176	42.89	10.12	38.8	42.70	49.11	54.00	-4.89	AV
Horizontal	4592.313	59.96	6.48	36.37	44.05	58.76	74.00	-15.24	Pk
Horizontal	4592.313	42.81	6.48	36.37	44.05	41.61	54.00	-12.39	AV
Horizontal	10400.215	60.51	8.47	38.64	44.50	63.12	74.00	-10.88	Pk
Horizontal	10400.215	48.06	8.47	38.64	44.50	50.67	54.00	-3.33	AV
Horizontal	15600.175	57.71	10.12	38.38	44.10	62.11	74.00	-11.89	Pk
Horizontal	15600.175	42.47	10.12	38.38	44.10	46.87	54.00	-7.13	AV

High Channel (5240 MHz)-Above 1G									
Vertical	4739.216	59.15	7.10	37.24	43.50	59.99	74.00	-14.01	Pk
Vertical	4739.216	46.52	7.10	37.24	43.50	47.36	54.00	-6.64	AV
Vertical	10480.274	60.79	8.46	37.68	44.50	62.43	74.00	-11.57	Pk
Vertical	10480.274	45.73	8.46	37.68	44.50	47.37	54.00	-6.63	AV
Vertical	15720.189	58.52	10.12	38.8	44.10	63.34	74.00	-10.66	Pk
Vertical	15720.189	42.73	10.12	38.8	42.70	48.95	54.00	-5.05	AV
Horizontal	4739.116	59.01	7.10	37.24	43.50	59.85	74.00	-14.15	Pk
Horizontal	4739.116	43.89	7.10	37.24	43.50	44.73	54.00	-9.27	AV
Horizontal	10481.402	59.36	8.46	38.57	44.50	61.89	74.00	-12.11	Pk
Horizontal	10481.402	43.56	8.46	38.57	44.50	46.09	54.00	-7.91	AV
Horizontal	15720.263	57.16	10.12	38.38	44.10	61.56	74.00	-12.44	Pk
Horizontal	15720.263	42.94	10.12	38.38	44.10	47.34	54.00	-6.66	AV

Note: Both horizontal and vertical antenna polarities were tested and only the worst case (horizontal) emissions were reported.

For U-NII-3

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4679.136	59.55	5.94	35.40	44.00	56.89	74.00	-17.11	Pk
Vertical	4679.136	47.02	5.94	35.40	44.00	44.36	54.00	-9.64	AV
Vertical	11490.052	60.53	8.46	39.75	44.50	64.24	74.00	-9.76	Pk
Vertical	11490.052	45.54	8.46	39.75	44.50	49.25	54.00	-4.75	AV
Vertical	17235.261	57.94	10.12	38.80	44.10	62.76	74.00	-11.24	Pk
Vertical	17235.261	41.80	10.12	38.80	42.70	48.02	54.00	-5.98	AV
Horizontal	4679.135	59.24	5.94	35.18	44.00	56.36	74.00	-17.64	Pk
Horizontal	4679.135	44.34	5.94	35.18	44.00	41.46	54.00	-12.54	AV
Horizontal	11490.302	59.37	8.46	38.71	44.50	62.04	74.00	-11.96	Pk
Horizontal	11490.302	44.73	8.46	38.71	44.50	47.40	54.00	-6.60	AV
Horizontal	17235.246	60.59	10.12	38.38	44.10	64.99	74.00	-9.01	Pk
Horizontal	17235.246	44.10	10.12	38.38	44.10	48.50	54.00	-5.50	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.208	59.14	6.48	36.35	44.05	57.92	74.00	-16.08	Pk
Vertical	4592.208	43.39	6.48	36.35	44.05	42.17	54.00	-11.83	AV
Vertical	11570.136	60.71	8.47	37.88	44.51	62.55	74.00	-11.45	Pk
Vertical	11570.136	44.50	8.47	37.88	44.51	46.34	54.00	-7.66	AV
Vertical	17355.249	57.93	10.12	38.8	44.10	62.75	74.00	-11.25	Pk
Vertical	17355.249	42.70	10.12	38.8	42.70	48.92	54.00	-5.08	AV
Horizontal	4592.138	61.39	6.48	36.37	44.05	60.19	74.00	-13.81	Pk
Horizontal	4592.138	44.44	6.48	36.37	44.05	43.24	54.00	-10.76	AV
Horizontal	11570.256	60.62	8.47	38.64	44.50	63.23	74.00	-10.77	Pk
Horizontal	11570.256	47.75	8.47	38.64	44.50	50.36	54.00	-3.64	AV
Horizontal	17355.127	61.09	10.12	38.38	44.10	65.49	74.00	-8.51	Pk
Horizontal	17355.127	44.69	10.12	38.38	44.10	49.09	54.00	-4.91	AV

High Channel (5825 MHz)-Above 1G									
Vertical	5039.156	60.41	7.10	37.24	43.50	61.25	74.00	-12.75	Pk
Vertical	5039.156	47.83	7.10	37.24	43.50	48.67	54.00	-5.33	AV
Vertical	11650.131	56.43	8.46	37.68	44.50	58.07	74.00	-15.93	Pk
Vertical	11650.131	42.87	8.46	37.68	44.50	44.51	54.00	-9.49	AV
Vertical	17475.289	59.87	10.12	38.8	44.10	64.69	74.00	-9.31	Pk
Vertical	17475.289	40.35	10.12	38.8	42.70	46.57	54.00	-7.43	AV
Horizontal	5039.316	67.85	7.10	37.24	43.50	68.69	74.00	-5.31	Pk
Horizontal	5039.316	44.08	7.10	37.24	43.50	44.92	54.00	-9.08	AV
Horizontal	11650.203	58.32	8.46	38.57	44.50	60.85	74.00	-13.15	Pk
Horizontal	11650.203	45.07	8.46	38.57	44.50	47.60	54.00	-6.40	AV
Horizontal	17475.152	61.50	10.12	38.38	44.10	65.90	74.00	-8.10	Pk
Horizontal	17475.152	46.49	10.12	38.38	44.10	50.89	54.00	-3.11	AV

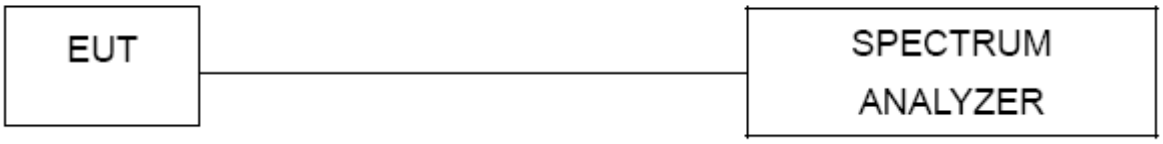
5.7 Conduction spurious emission

5.7.1 Limits

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	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.

5.7.2 Test setup



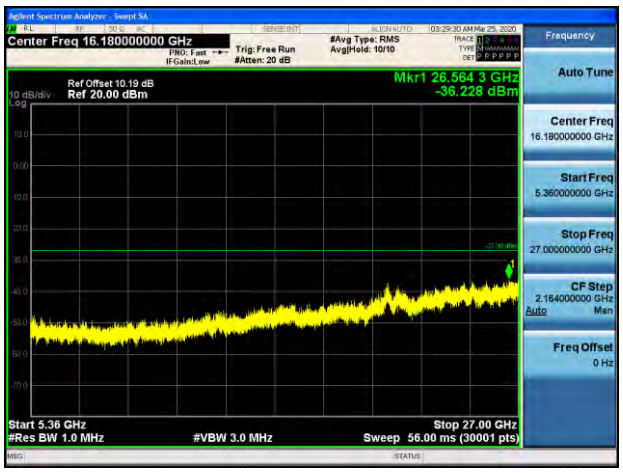
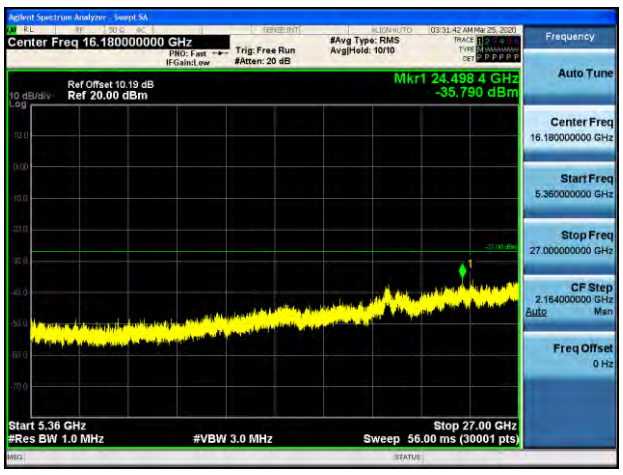
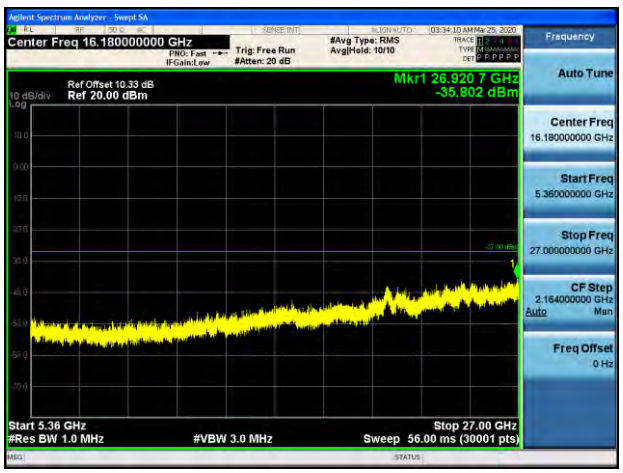
5.7.3 Test procedure

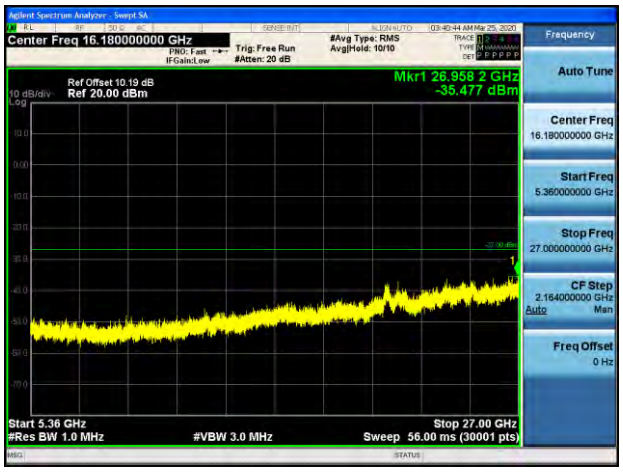
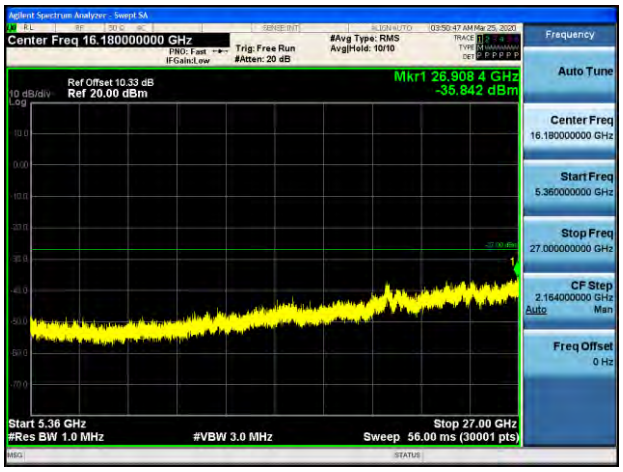
Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

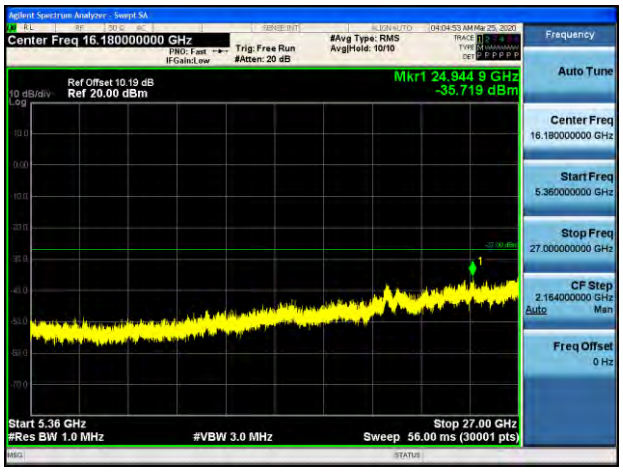
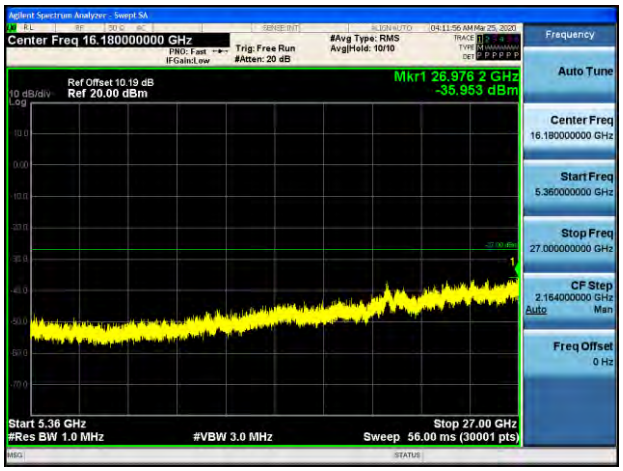
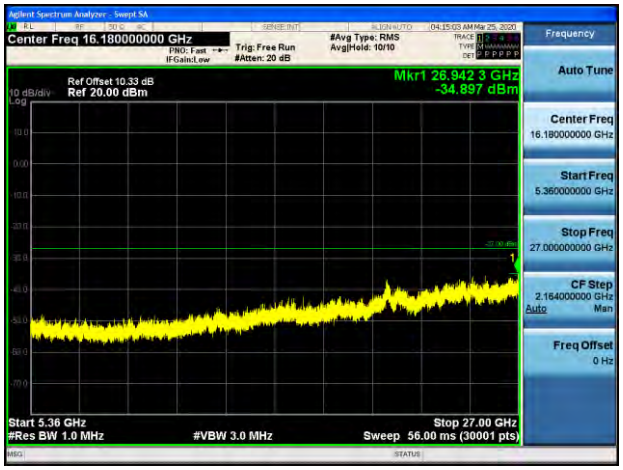
5.7.4 Test results

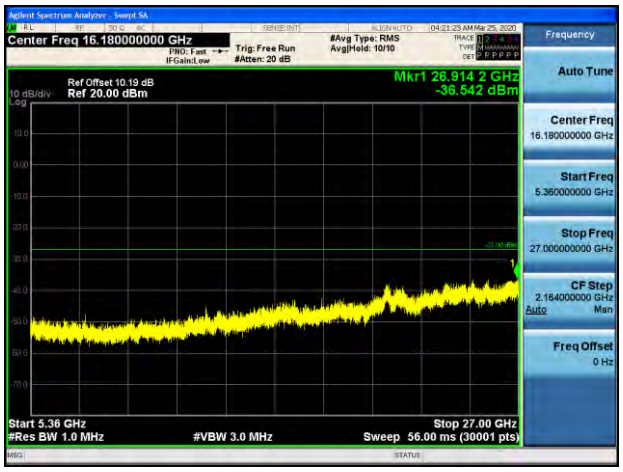
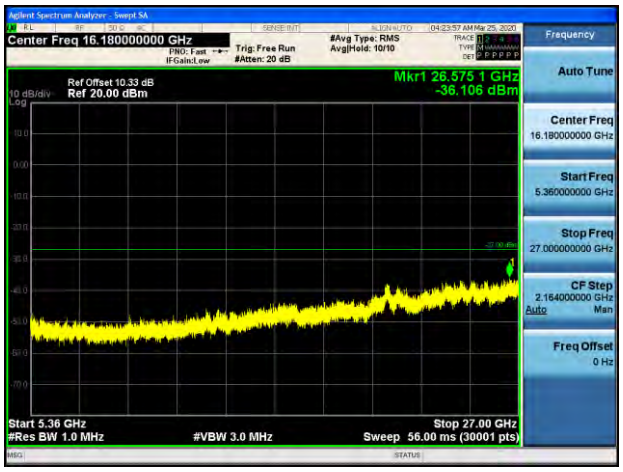
For U-NII-1

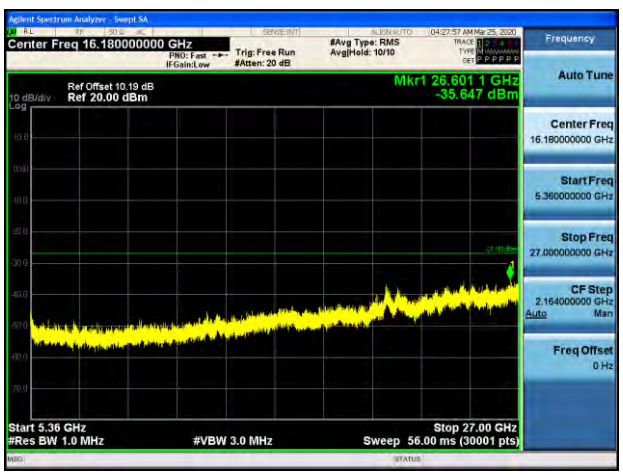
11a	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

11n20	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

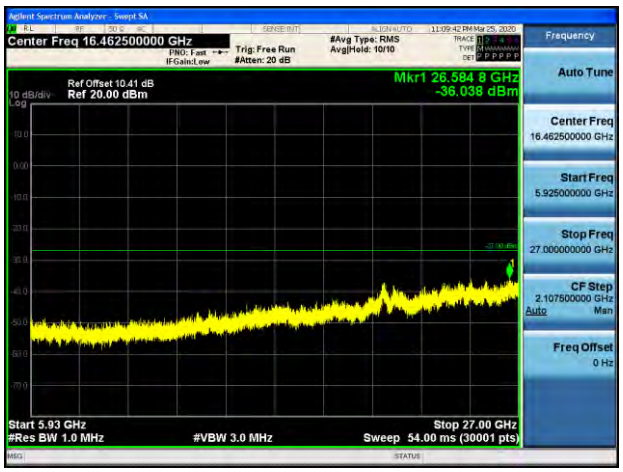
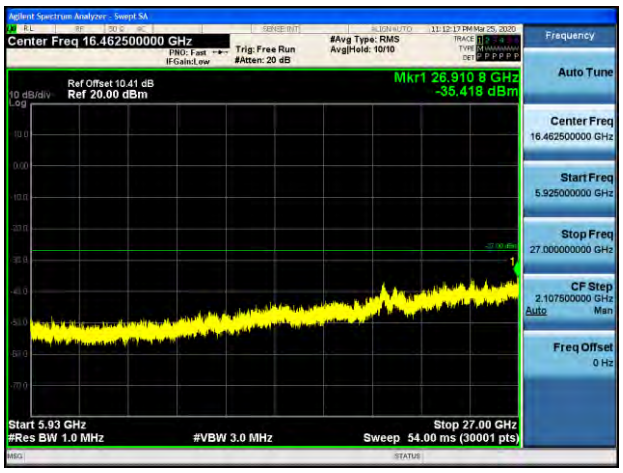
11n40	
Low channel	Low channel
	
High channel	High channel
	

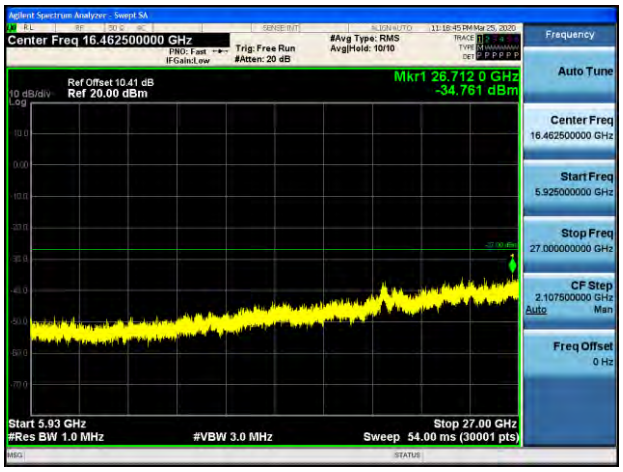
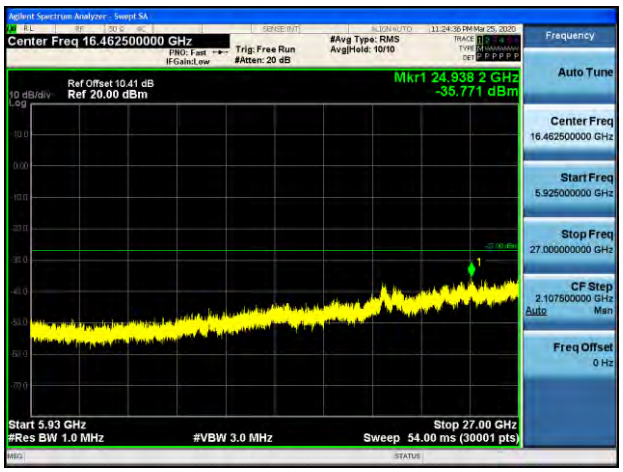
11ac20	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

11ac40	
Low channel	Low channel
	
High channel	High channel
	

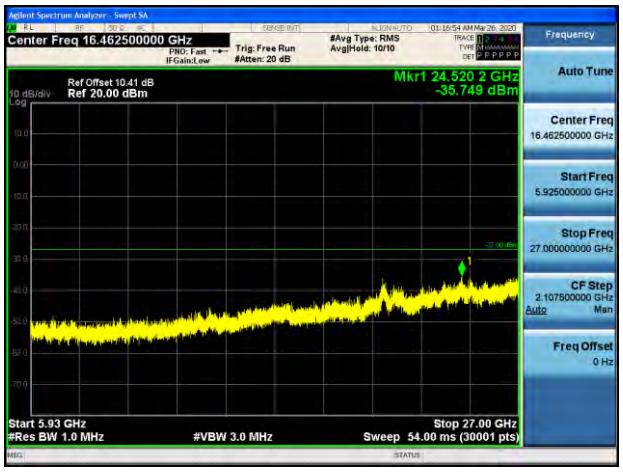
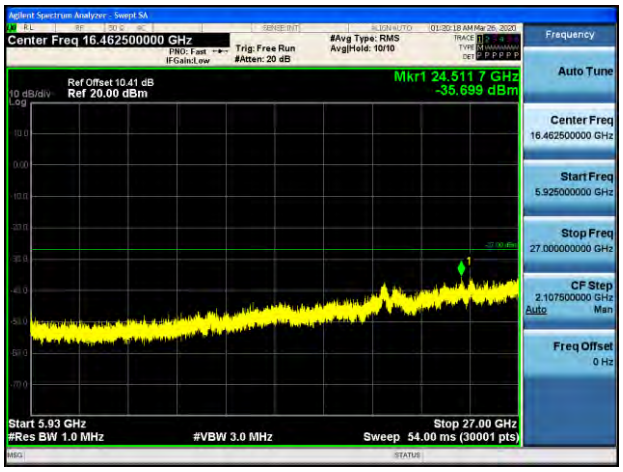
11ac80	
	

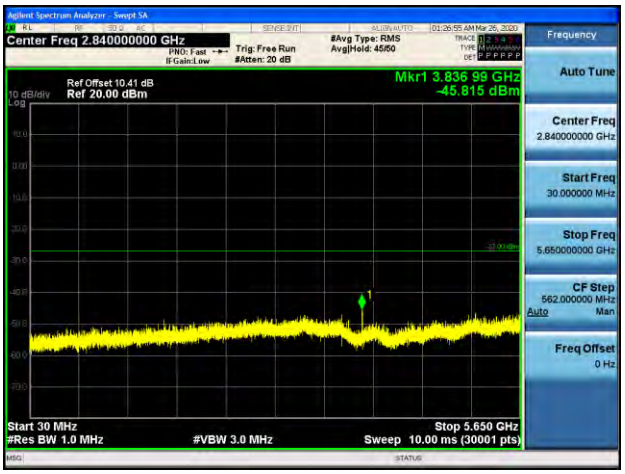
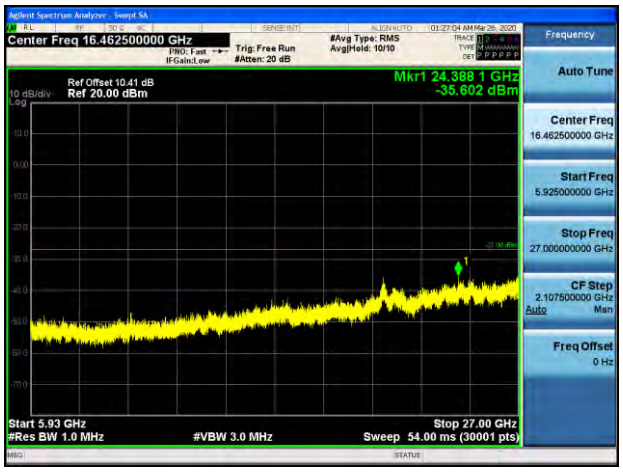
For U-NII-3

11a	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

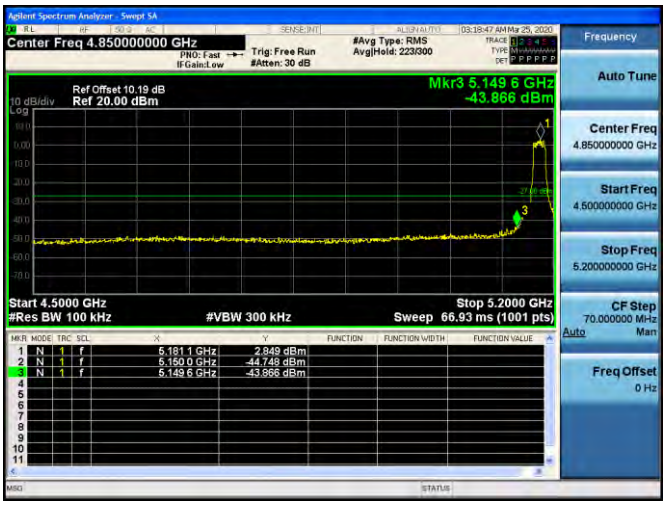
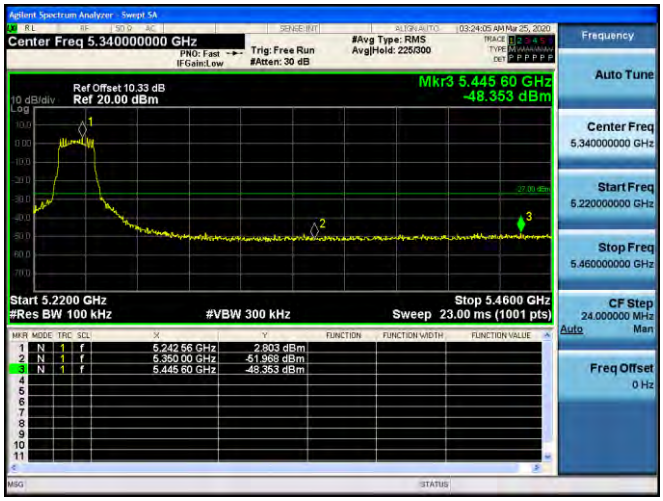
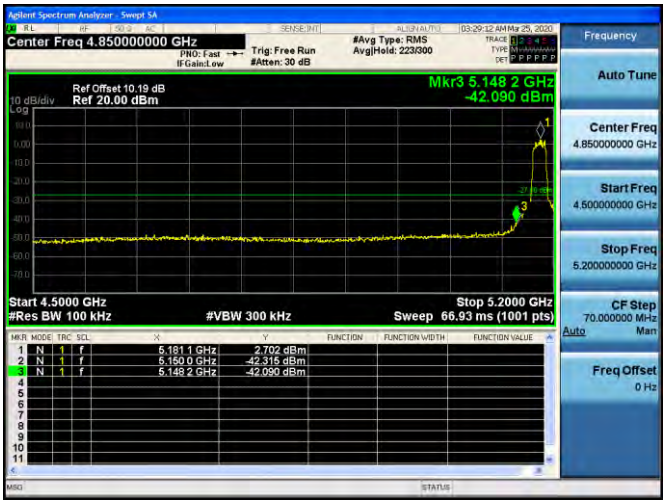
11n20	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

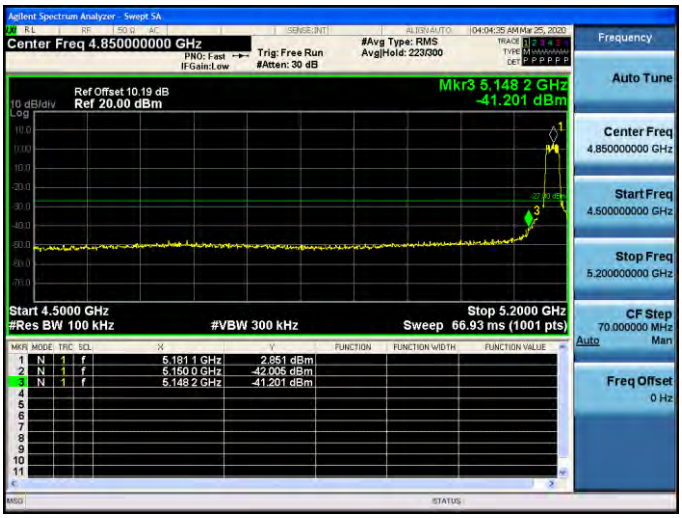
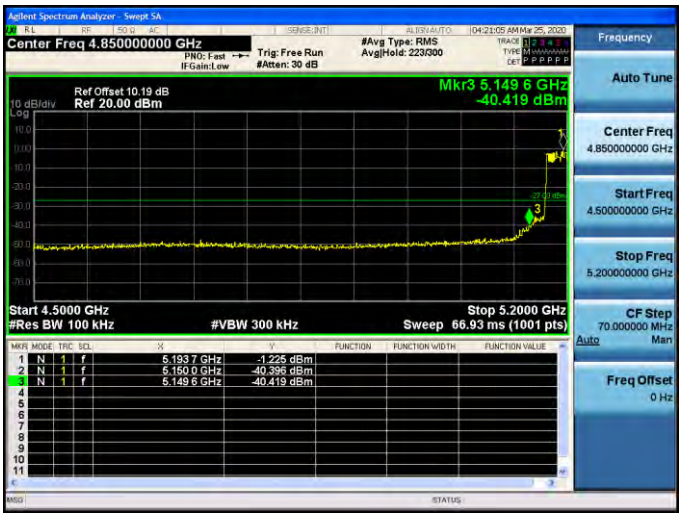
11n40	
Low channel	Low channel
	
High channel	High channel
	

11ac20	
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

11ac40	
Low channel	Low channel
	
High channel	High channel
	
11ac80	
	

Conduction Band edge For U-NII-1

11a	
Band edge-Left	Band edge-Right
	
11n20	
Band edge-Left	Band edge-Right
	
11n40	
Band edge-Left	Band edge-Right
	

11ac20	
Band edge-Left	Band edge-Right
	
11ac40	
Band edge-Left	Band edge-Right
	
11ac80	
Band edge-Left	Band edge-Right
	

Conduction Band edge For U-NII-3

11a

Band edge-Left

Band edge-Right

11n20

Band edge-Left

Band edge-Right

11n40

Band edge-Left

Band edge-Right

11ac20	
Band edge-Left	Band edge-Right
	
11ac40	
Band edge-Left	Band edge-Right
	
11ac80	
Band edge-Left	Band edge-Right
	

5.8 Power spectral density

5.8.1 Limit

For the band 5.15-5.25 GHz

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz

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, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.8.2 Test procedure

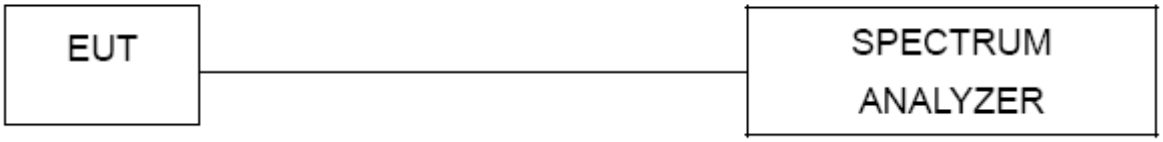
For U-NII-1

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW ≥ 1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

For U-NII-3

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW ≥ 510kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

5.8.3 Test setup



5.8.4 Test results

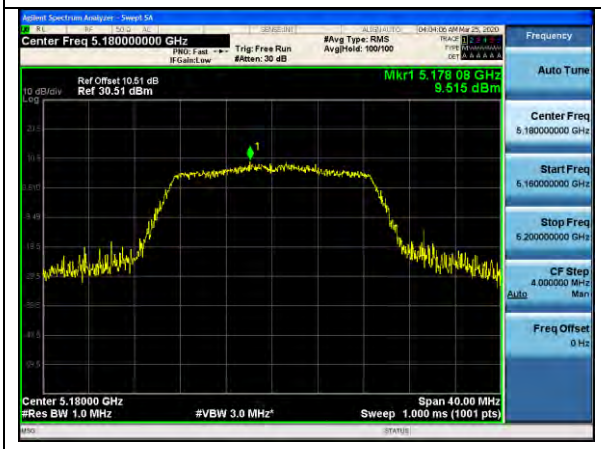
For U-NII-1

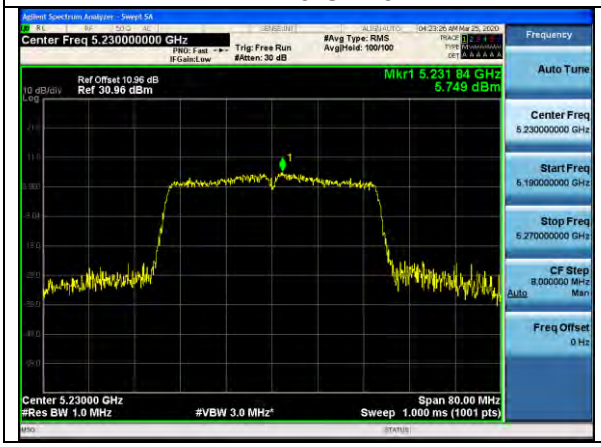
Mode	Channel	Frequency(MHz)	Measurement PSD (dBm/MHz)	Limit (dBm/MHz)	Result
11a	CH36	5180	9.646	11	Pass
11a	CH44	5220	9.520	11	Pass
11a	CH48	5240	9.821	11	Pass
11n(HT20)	CH36	5180	8.584	11	Pass
11n(HT20)	CH44	5220	8.969	11	Pass
11n(HT20)	CH48	5240	9.866	11	Pass
11n(HT40)	CH38	5190	4.401	11	Pass
11n(HT40)	CH46	5230	4.939	11	Pass
11ac(HT20)	CH36	5180	9.515	11	Pass
11ac (HT20)	CH40	5200	9.007	11	Pass
11ac (HT20)	CH48	5240	9.960	11	Pass
11ac (HT40)	CH38	5190	5.039	11	Pass
11ac (HT40)	CH46	5230	5.749	11	Pass
11ac (HT80)	CH42	5210	3.437	11	Pass

Test plots

For U-NII-1

11a CH36	11a CH44
	
11a CH48	**11n20 CH36**
	
11n20 CH44	**11n20 CH48**
	

11n40 CH38	11n40 CH46
	
11ac20 CH36	**11ac20 CH40**
	
11ac20 CH48	**11ac40 CH38**
	

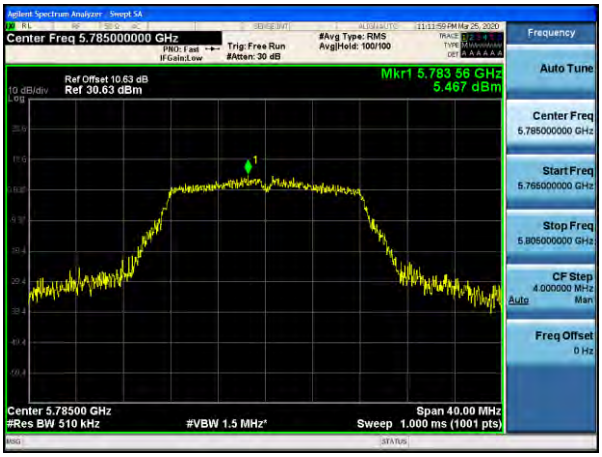
11ac40 CH46	11ac80 CH42
	

For U-NII-3

Mode	Channel	Frequency(MHz)	PSD (dBm/510kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
11a	CH149	5745	4.587	2.819	30	Pass
11a	CH157	5785	5.467	3.452	30	Pass
11a	CH165	5825	5.983	3.888	30	Pass
11n20	CH149	5745	5.223	3.264	30	Pass
11n20	CH157	5785	4.445	2.728	30	Pass
11n20	CH165	5825	5.126	3.192	30	Pass
11n40	CH151	5755	1.466	1.374	30	Pass
11n40	CH159	5795	0.810	1.181	30	Pass
11ac20	CH149	5745	5.270	3.299	30	Pass
11ac20	CH157	5785	4.136	2.541	30	Pass
11ac20	CH165	5825	4.426	2.716	30	Pass
11ac40	CH151	5755	1.037	1.245	30	Pass
11ac40	CH159	5795	0.610	1.128	30	Pass
11ac80	CH155	5775	-1.392	0.712	30	Pass
Note: If the measurement is X dBm/510kHz, thus X dBm/510kHz = $(10^{X/10})$*(500 / 510) mW/500kHz						

Test plots

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n20 CH149**
	
11n20 CH157	**11n20 CH165**
	

11n40 CH151	11n40 CH159
	
11ac20 CH149	**11ac20 CH157**
	
11ac20 CH165	**11ac40 CH151**
	

11ac40 CH159	11ac80 CH155
	

5.9 Frequency Stability Measurement

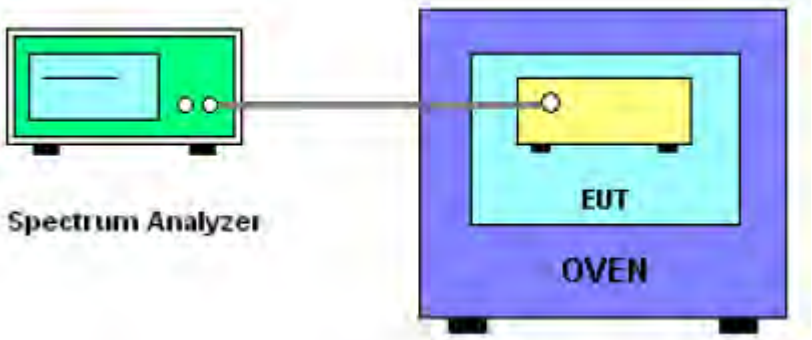
5.9.1 Limit

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

5.9.2 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and max hold settings.
5. Fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

5.9.3 Test Setup Layout



5.9.4 EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

5.9.5 TEST RESULTS

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5180.0133	5180	0.0133	-2.5676
		V max (V)	5.50	5180.0196	5180	0.0196	-3.7837
		V min (V)	4.50	5180.0110	5180	0.0110	-2.1236
Limits				within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5180.0126	5180	0.0126	-2.4344
		T (°C)	-10	5180.0142	5180	0.0142	-2.7413
		T (°C)	0	5180.0122	5180	0.0122	-2.3552
		T (°C)	10	5180.0132	5180	0.0132	-2.5483
		T (°C)	20	5180.0111	5180	0.0111	-2.1429
		T (°C)	30	5180.0137	5180	0.0137	-2.6448
		T (°C)	40	5180.0120	5180	0.0120	-2.3166
		T (°C)	50	5180.0126	5180	0.0126	-2.4324
		T (°C)	60	5180.0143	5180	0.0143	-2.7606
		T (°C)	70	5180.0145	5180	0.0145	-2.7992
Limits				within 5150-5250MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5200.0123	5200	0.0123	-2.3654
		V max (V)	5.50	5200.0120	5200	0.0120	-2.3077
		V min (V)	4.50	5200.0120	5200	0.0120	-2.3077
Limits				within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5200.0110	5200	0.0110	-2.1154
		T (°C)	-10	5200.0125	5200	0.0125	-2.4038
		T (°C)	0	5200.0133	5200	0.0133	-2.5577
		T (°C)	10	5200.0132	5200	0.0132	-2.5385
		T (°C)	20	5200.0147	5200	0.0147	-2.8269
		T (°C)	30	5200.0144	5200	0.0144	-2.7692
		T (°C)	40	5200.0140	5200	0.0140	-2.6923
		T (°C)	50	5200.0135	5200	0.0135	-2.5962
		T (°C)	60	5200.0130	5200	0.0130	-2.5000
		T (°C)	70	5200.0120	5200	0.0120	-2.3077
Limits				within 5150-5250MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5240.0120	5240	0.0120	-2.2901
		V max (V)	5.50	5240.0122	5240	0.0122	-2.3282
		V min (V)	4.50	5240.0117	5240	0.0117	-2.2328
Limits				within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5240.0130	5240	0.0130	-2.4809
		T (°C)	-10	5240.0135	5240	0.0135	-2.5763
		T (°C)	0	5240.0117	5240	0.0117	-2.2328
		T (°C)	10	5240.0126	5240	0.0126	-2.4046
		T (°C)	20	5240.0143	5240	0.0143	-2.7290
		T (°C)	30	5240.0147	5240	0.0147	-2.8053
		T (°C)	40	5240.0121	5240	0.0121	-2.3092
		T (°C)	50	5240.0116	5240	0.0116	-2.2137
		T (°C)	60	5240.0136	5240	0.0136	-2.5954
		T (°C)	70	5240.0128	5240	0.0128	-2.4427
Limits				within 5150-5250MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (° C)	20	V nom (V)	5.00	5745.00611	5745	0.00611	-1.0640
		V max (V)	5.50	5745.00074	5745	0.00074	-0.1281
		V min (V)	4.50	5745.00911	5745	0.00911	-1.5858
Limits				within 5725-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5745.00494	5745	0.00494	-0.8606
		T (°C)	-10	5745.01234	5745	0.01234	-2.1475
		T (°C)	0	5745.00341	5745	0.00341	-0.5929
		T (°C)	10	5745.00242	5745	0.00242	-0.4207
		T (°C)	20	5745.00365	5745	0.00365	-0.6362
		T (°C)	30	5745.00424	5745	0.00424	-0.7385
		T (°C)	40	5745.00587	5745	0.00587	-1.0219
		T (°C)	50	5745.00427	5745	0.00427	-0.7436
		T (°C)	60	5745.00831	5745	0.00831	-1.4461
		T (°C)	70	5745.00472	5745	0.00472	-0.8223
Limits				within 5725-5850MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5785.00371	5785	0.00371	-0.6413
		V max (V)	5.50	5785.00343	5785	0.00343	-0.5937
		V min (V)	4.50	5785.01321	5785	0.01321	-2.2829
Limits				within 5725-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5785.00824	5785	0.00824	-1.4252
		T (°C)	-10	5785.00068	5785	0.00068	-0.1168
		T (°C)	0	5785.00013	5785	0.00013	-0.0228
		T (°C)	10	5785.00063	5785	0.00063	-0.1085
		T (°C)	20	5785.01192	5785	0.01192	-2.0602
		T (°C)	30	5785.01166	5785	0.01166	-2.0147
		T (°C)	40	5785.00822	5785	0.00822	-1.4202
		T (°C)	50	5785.01311	5785	0.01311	-2.2670
		T (°C)	60	5785.00133	5785	0.00133	-0.2291
		T (°C)	70	5785.00876	5785	0.00876	-1.5139
Limits				within 5725-5850MHz			
Result				Complies			

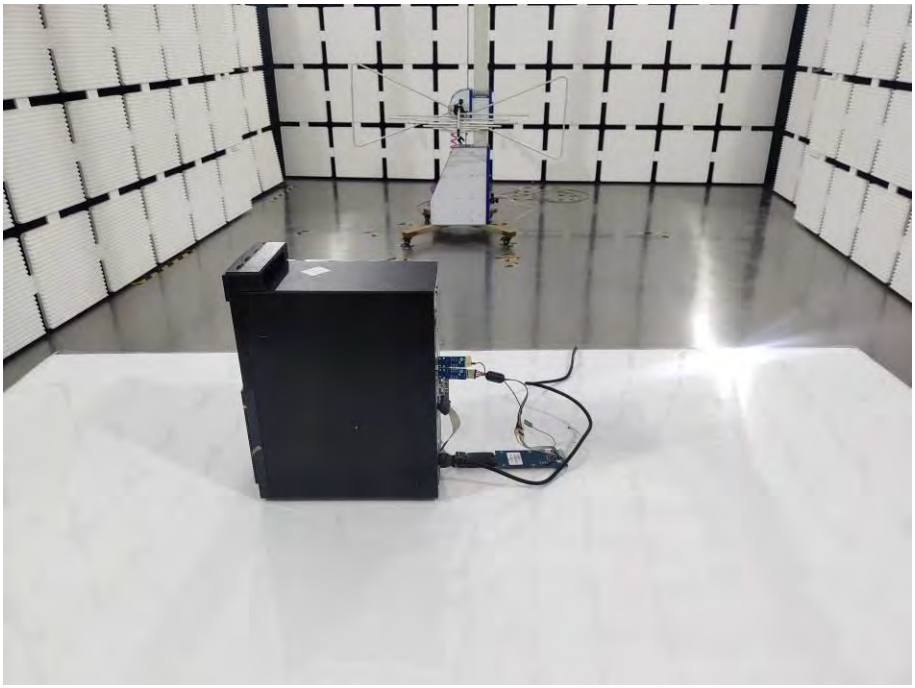
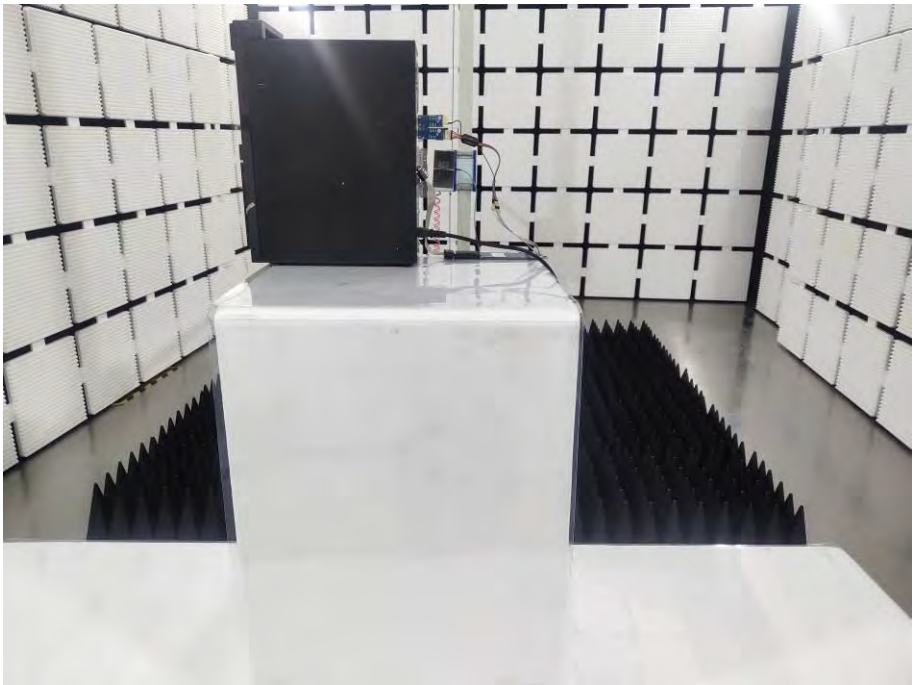
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5825.00489	5825	0.00489	-0.8402
		V max (V)	5.50	5825.00238	5825	0.00238	-0.4087
		V min (V)	4.50	5825.00739	5825	0.00739	-1.2682
Limits				within 5725-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5825.00563	5825	0.00563	-0.9663
		T (°C)	-10	5825.00392	5825	0.00392	-0.6735
		T (°C)	0	5825.00538	5825	0.00538	-0.9235
		T (°C)	10	5825.00800	5825	0.00800	-1.3734
		T (°C)	20	5825.00347	5825	0.00347	-0.5953
		T (°C)	30	5825.00097	5825	0.00097	-0.1666
		T (°C)	40	5825.00167	5825	0.00167	-0.2874
		T (°C)	50	5825.01135	5825	0.01135	-1.9483
		T (°C)	60	5825.00580	5825	0.00580	-0.9960
		T (°C)	70	5825.00561	5825	0.00561	-0.9623
Limits				within 5725-5850MHz			
Result				Complies			

Photographs of the Test Setup

Radiated emission



Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi20022514-4E1-1.

----END OF REPORT----