Test Report

FCC ID: XX2-UBIO-TABLET5

Date of issue: June 20, 2019

Report Number:	MTi190611E069
Sample Description:	UBio Tablet5
Model(s):	UBio Tablet5
Applicant:	UNION COMMUNITY
Address:	12F, Munjeong Daemyeong Valeon bldg, 127 Beobwon-ro Songpa-gu, Seoul, South Korea
Date of Test:	May 05, 2019 to June 20, 2019

Shenzhen Microtest Co., Ltd.
http://www.mtitest.com

This test report is valid for the tested samples only. It cannot be reproduced except in full without prior written consent of Shenzhen Microtest Co., Ltd.

Tel:(86-755)88850135 Fax: (86-755) 88850136 Web: http://www.mtitest.com E-mail: mti@51mti.com
Address: No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

Table of Contents

Test Result Certification

Applicant's name:	UNION COMMUNITY
Address:	12F, Munjeong Daemyeong Valeon bldg, 127 Beobwon-ro Songpa-gu, Seoul, South Korea
Manufacture's Name:	SHENZHEN HEROFUN BIO-TECH., LTD
Address:	7001B, 7th Floor, LaoBing Building, East Block 2, No. 3012 XingYe Road, BaoAn District, Shenzhen, China
Product name:	UBio Tablet5
Trademark:	UNION COMMUNITY
Model name:	UBio Tablet5
Standards:	FCC Part 15.407
Test Procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This deIVce 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:	Jone Lee	June 20, 2019
Reviewed by:	Blue Zheng	June 20, 2019
Approved by:	Smith Chen	June 20, 2019

1 General information

1.1 Description of EUT

Equipment:	UBio Tablet5
Model name:	UBio Tablet5
Serial Model:	N/A
Model difference:	N/A
Frequency range:	Band I: 5150 MHz to 5250 MHz, Band III: 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
Channel bandwidth:	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz
Antenna type:	FPC antenna
Antenna gain:	1.1dBi
Max. output power:	Band I: 10.21 dBm Band IV: 11.38dBm
Hardware version:	HYF_BH502G_V4.0_20190415
Software version:	SW01_H_BH502G_20190420
Power supply:	DC 3.7V from Battery or DC 5V from adapter
Adapter information:	N/A
Battery:	DC 3.7V 6000mAh

1.2 Operation channel list

For band I:

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 band III:

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

For 802.11a/n/ac (HT20)

Band I (5150 - 5250 MHz)			Band IV (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

For 802.11n/ac (HT40)

Band I (5150 - 5250 MHz)			Band IV (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

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
Adapter	/	/	/	/

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	Pass	
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 EnIVronmental conditions

Temperature:	15ºC~35ºC
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 · proIVding 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°C
7	Humidity	±2%

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2018/09/18	2019/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2018/09/18	2019/09/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2018/09/18	2019/09/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2018/09/18	2019/09/17
MTI-E014	amplifier	America	8447D	3113A06150	2018/09/18	2019/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2018/09/18	2019/09/17
MTI-E016	Coupled decoupling network	Schloder	CND M2/M3	A2210332/2015	2018/09/18	2019/09/17
MTI-E034	amplifier	Agilent	8449B	3008A02400	2018/09/18	2019/09/17
MTI-E037	Artificial power network	Schwarzbeck	NSLK8127	#841	2018/09/18	2019/09/17
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2018/09/18	2019/09/17
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2018/09/18	2019/09/17
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/09/18	2019/09/17
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SNO16	2018/09/18	2019/09/17
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/09/18	2019/09/17
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2018/09/18	2019/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/09/18	2019/09/17
MTI-E061	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/09/18	2019/09/17
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2018/09/18	2019/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2018/09/18	2019/09/17
MTI-E058	Artificial power network	Schwarzbeck	NSLK8127	#841	2018/09/18	2019/09/17
MTI-E081	EPM Series Power Meter	Agilent	E4419B	MY50000438	2019/4/16	2021/4/15
MTI-E092	DC power source	shenzhen tongyuan	TY-500V 100A	201710190325689	2019/4/16	2020/4/15
MTI-E093	High and low temperature box	Heron	JHY-HT-80L	LGD-GDW-80	2019/4/16	2020/4/15
Note: the calibration interval of the above test instruments is 12 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 FPC antenna, which was permanently affixed to the deivce and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 1.1dBi.

5.2 RF output power

5.2.1 Limit

For the 5.15-5.25 GHz band

For client deIVces in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW proIVded the maximum antenna gain does not exceed 6 dBi.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

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.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.

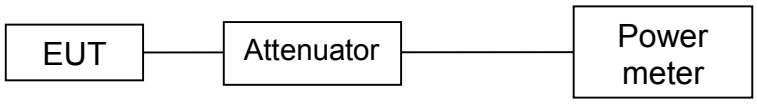
For the band 5.725-5.85 GHz

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 IVdeo 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 Band I

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH36	5180	9.79	9.53	250
11a	CH40	5200	9.93	9.84	250
11a	CH48	5240	10.19	10.45	250
11n (HT20)	CH36	5180	10.01	10.02	250
11n (HT20)	CH40	5200	9.92	9.82	250
11n (HT20)	CH48	5240	10.21	10.50	250
11n (HT40)	CH38	5190	9.49	8.89	250
11n (HT40)	CH46	5230	9.84	9.64	250

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH36	5180	9.78	9.51	250
11ac (HT20)	CH40	5200	9.88	9.73	250
11ac (HT20)	CH48	5240	10.18	10.42	250
11ac (HT40)	CH38	5190	8.62	7.28	250
11ac (HT40)	CH46	5230	9.93	9.84	250

For Band III

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH149	5745	10.10	10.23	1000
11a	CH157	5785	11.32	13.55	1000
11a	CH165	5825	11.38	13.74	1000
11n (HT20)	CH149	5745	9.34	8.59	1000
11n (HT20)	CH157	5785	10.43	11.04	1000
11n (HT20)	CH165	5825	10.53	11.30	1000
11n (HT40)	CH151	5755	9.12	8.17	1000
11n (HT40)	CH159	5795	10.19	10.45	1000

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH149	5745	8.27	6.71	1000
11ac (HT20)	CH157	5785	9.43	8.77	1000
11ac (HT20)	CH165	5825	10.50	11.22	1000
11ac (HT40)	CH151	5755	9.06	8.05	1000
11ac (HT40)	CH159	5795	10.11	10.26	1000

5.3 Power line conducted emission

5.3.1 Limits

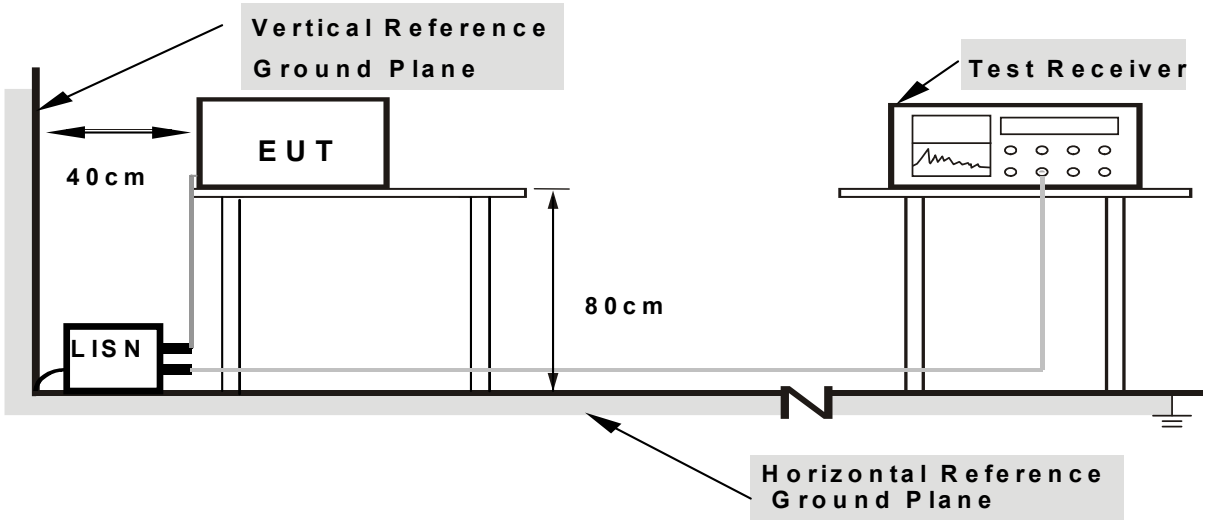
FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

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 proIVde 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.

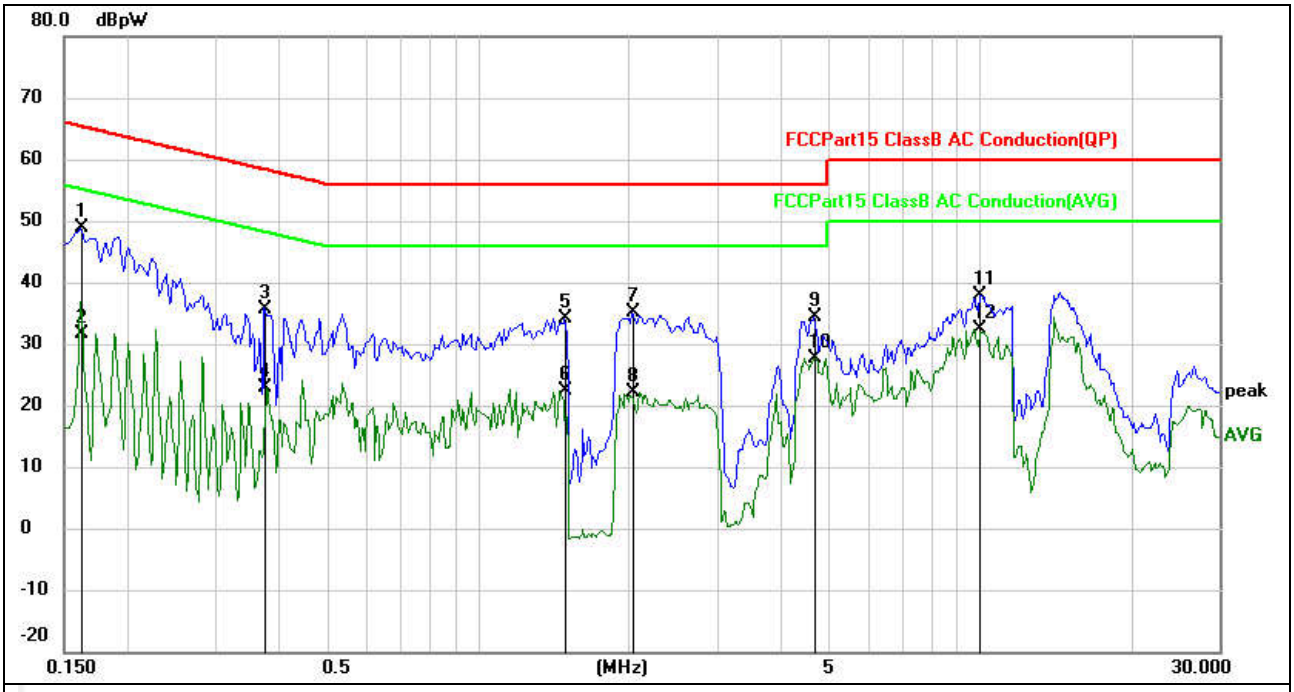
e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

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.

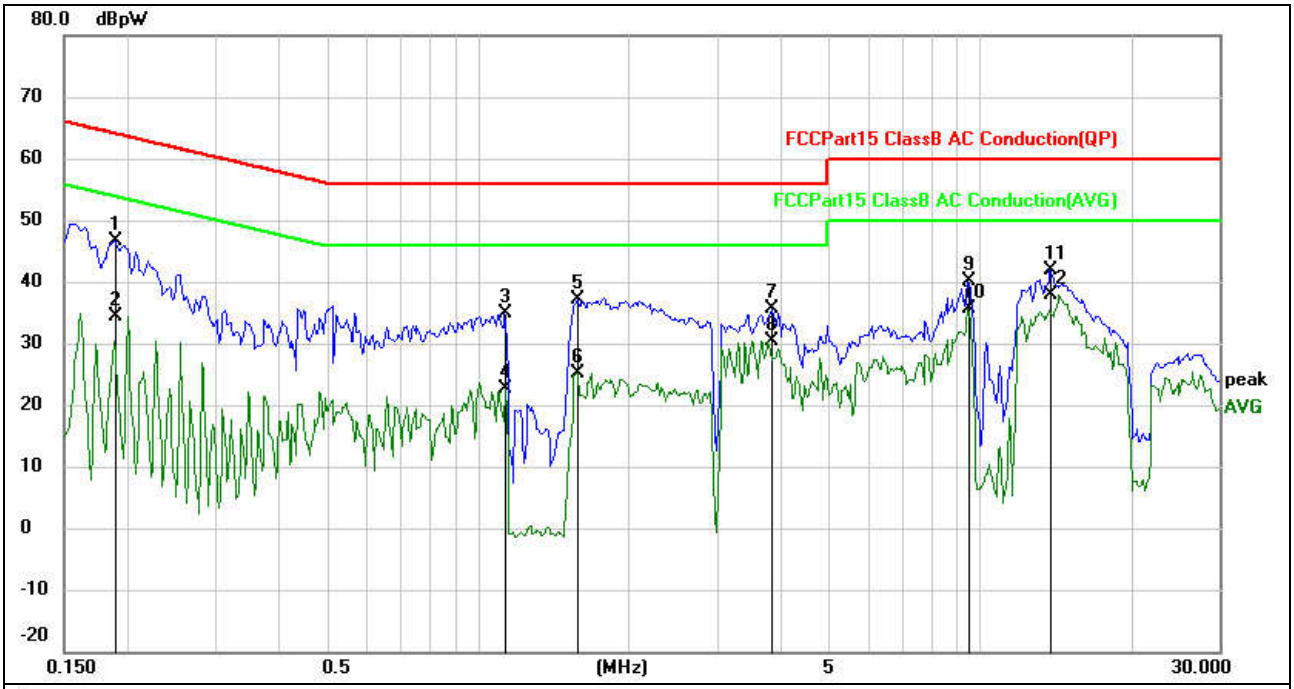
5.3.4 Test results

EUT：	UBio Tablet5	Model Name. ：	UBio Tablet5
Temperature：	24.9 ℃	Relative Humidity：	69%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from adapter AC 120V/60Hz	Test Mode：	Normal link



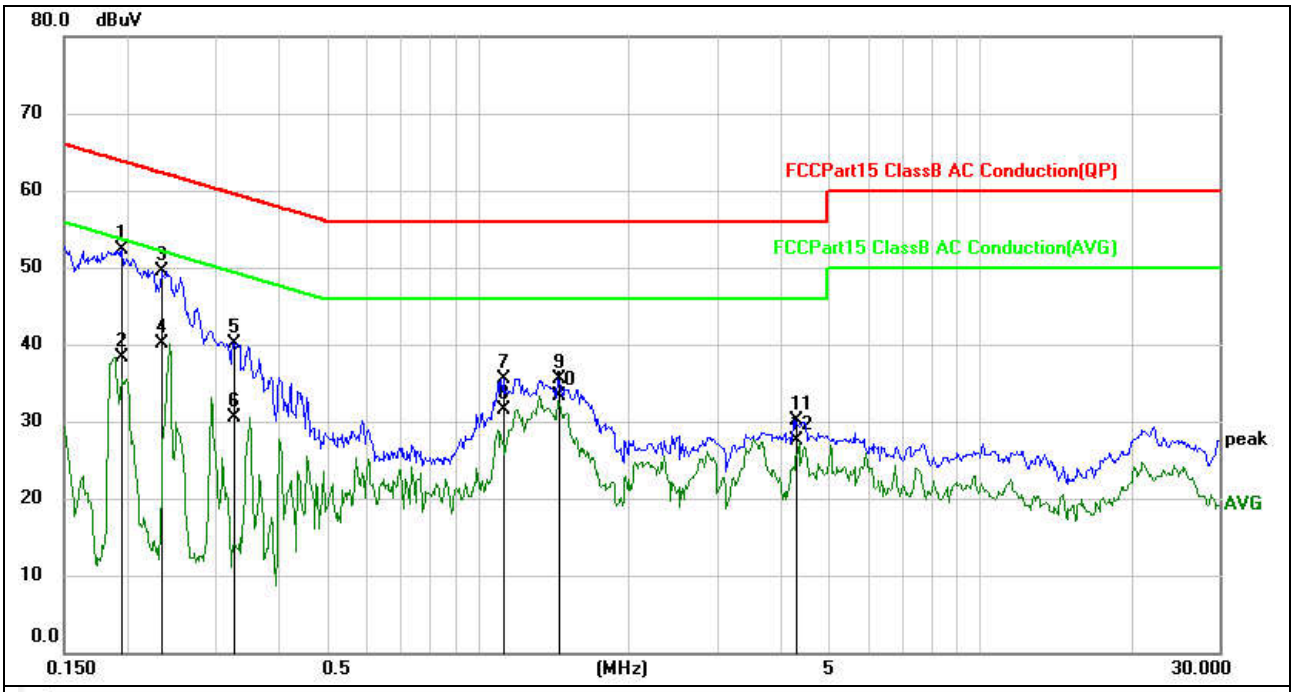
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBpW	dB	dBpW	dBpW	dB	Detector	Comment
1	*	0.1617	39.14	9.73	48.87	65.38	-16.51	QP	
2		0.1617	21.88	9.73	31.61	55.38	-23.77	AVG	
3		0.3771	25.82	9.81	35.63	58.34	-22.71	QP	
4		0.3771	13.00	9.81	22.81	48.34	-25.53	AVG	
5		1.4898	24.16	9.96	34.12	56.00	-21.88	QP	
6		1.4898	12.52	9.96	22.48	46.00	-23.52	AVG	
7		2.0288	25.08	9.97	35.05	56.00	-20.95	QP	
8		2.0288	12.13	9.97	22.10	46.00	-23.90	AVG	
9		4.6719	24.28	10.04	34.32	56.00	-21.68	QP	
10		4.6719	17.68	10.04	27.72	46.00	-18.28	AVG	
11		9.9961	27.61	10.29	37.90	60.00	-22.10	QP	
12		9.9961	22.11	10.29	32.40	50.00	-17.60	AVG	

EUT：	UBio Tablet5	Model Name. ：	UBio Tablet5
Temperature：	24.9 ℃	Relative Humidity：	69%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from adapter AC 120V/60Hz	Test Mode：	Normal link



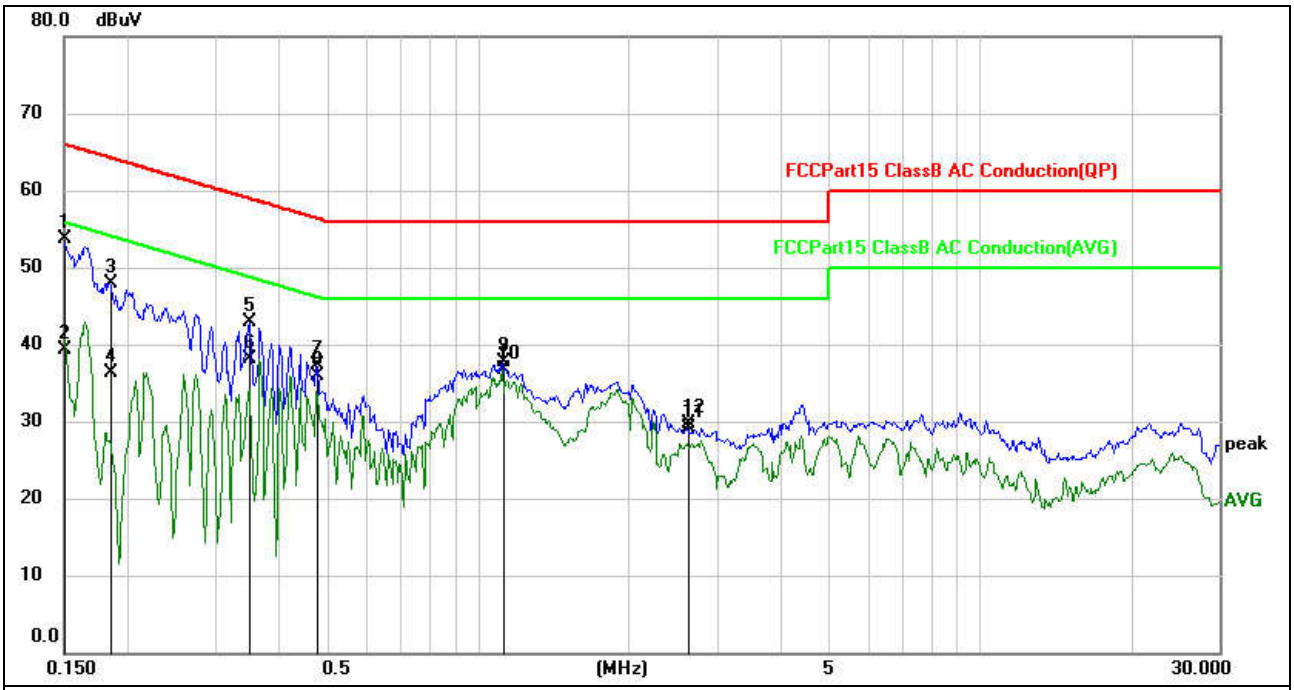
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBpW	dB	dBpW	dBpW	dB	Detector	Comment
1		0.1891	36.99	9.73	46.72	64.08	-17.36	QP	
2		0.1891	24.61	9.73	34.34	54.08	-19.74	AVG	
3		1.1344	24.85	9.95	34.80	56.00	-21.20	QP	
4		1.1344	12.64	9.95	22.59	46.00	-23.41	AVG	
5		1.5836	27.24	9.96	37.20	56.00	-18.80	QP	
6		1.5836	15.19	9.96	25.15	46.00	-20.85	AVG	
7		3.8555	25.50	10.02	35.52	56.00	-20.48	QP	
8		3.8555	20.39	10.02	30.41	46.00	-15.59	AVG	
9		9.4766	29.76	10.26	40.02	60.00	-19.98	QP	
10		9.4766	25.31	10.26	35.57	50.00	-14.43	AVG	
11		13.7813	31.77	10.22	41.99	60.00	-18.01	QP	
12	*	13.7813	27.65	10.22	37.87	50.00	-12.13	AVG	

EUT：	UBio Tablet5	Model Name. ：	UBio Tablet5
Temperature：	24.9 ℃	Relative Humidity：	69%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from adapter AC 240V/60Hz	Test Mode：	Normal link



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1955	42.51	9.73	52.24	63.80	-11.56	QP	
2		0.1955	28.63	9.73	38.36	53.80	-15.44	AVG	
3		0.2341	39.80	9.73	49.53	62.30	-12.77	QP	
4		0.2341	30.44	9.73	40.17	52.30	-12.13	AVG	
5		0.3256	30.39	9.78	40.17	59.56	-19.39	QP	
6		0.3256	20.76	9.78	30.54	49.56	-19.02	AVG	
7		1.1265	25.63	9.95	35.58	56.00	-20.42	QP	
8		1.1265	21.64	9.95	31.59	46.00	-14.41	AVG	
9		1.4409	25.62	9.96	35.58	56.00	-20.42	QP	
10		1.4409	23.25	9.96	33.21	46.00	-12.79	AVG	
11		4.3085	20.10	10.03	30.13	56.00	-25.87	QP	
12		4.3085	17.54	10.03	27.57	46.00	-18.43	AVG	

EUT：	UBio Tablet5	Model Name. ：	UBio Tablet5
Temperature：	24.9 ℃	Relative Humidity：	69%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from adapter AC 240V/60Hz	Test Mode：	Normal link



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	44.01	9.73	53.74	66.00	-12.26	QP	
2		0.1500	29.66	9.73	39.39	56.00	-16.61	AVG	
3		0.1849	38.19	9.73	47.92	64.26	-16.34	QP	
4		0.1849	26.65	9.73	36.38	54.26	-17.88	AVG	
5		0.3502	33.12	9.79	42.91	58.96	-16.05	QP	
6		0.3502	28.40	9.79	38.19	48.96	-10.77	AVG	
7		0.4781	27.52	9.86	37.38	56.37	-18.99	QP	
8		0.4781	26.08	9.86	35.94	46.37	-10.43	AVG	
9		1.1226	27.83	9.95	37.78	56.00	-18.22	QP	
10	*	1.1226	26.84	9.95	36.79	46.00	-9.21	AVG	
11		2.6147	19.11	9.99	29.10	56.00	-26.90	QP	
12		2.6147	19.78	9.99	29.77	46.00	-16.23	AVG	

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

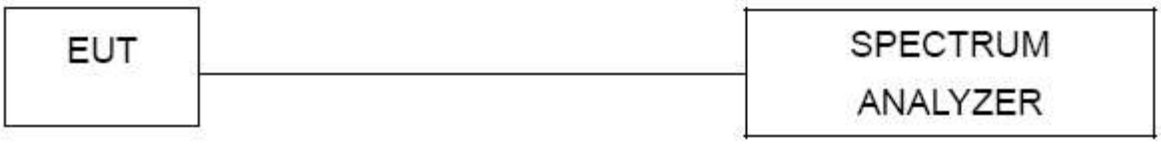
Set RBW = 1% to 5% of the OBW.

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 Band I

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH36	5180	19.69	17.708	/	Pass
11a	CH40	5200	19.70	17.700	/	Pass
11a	CH48	5240	19.63	17.707	/	Pass
11n (HT20)	CH36	5180	19.49	17.711	/	Pass
11n (HT20)	CH40	5200	19.53	17.737	/	Pass
11n (HT20)	CH48	5240	19.49	17.707	/	Pass
11n (HT40)	CH38	5190	39.13	36.036	/	Pass
11n (HT40)	CH46	5230	38.48	35.992	/	Pass

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH36	5180	19.53	17.721	/	Pass
11ac (HT20)	CH40	5200	19.53	17.703	/	Pass
11ac (HT20)	CH48	5240	19.70	17.729	/	Pass
11ac (HT40)	CH38	5190	38.47	35.953	/	Pass
11ac (HT40)	CH46	5230	38.57	35.971	/	Pass

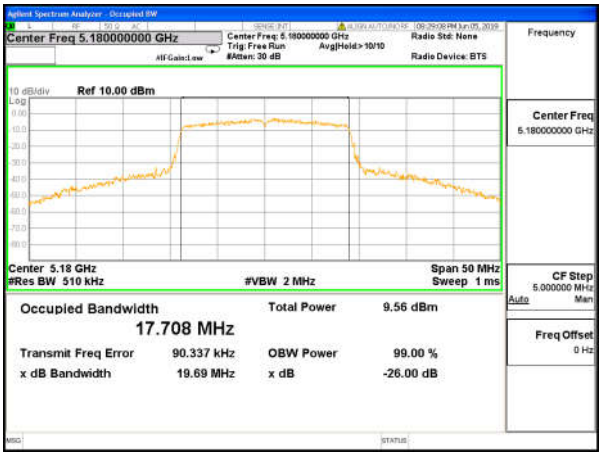
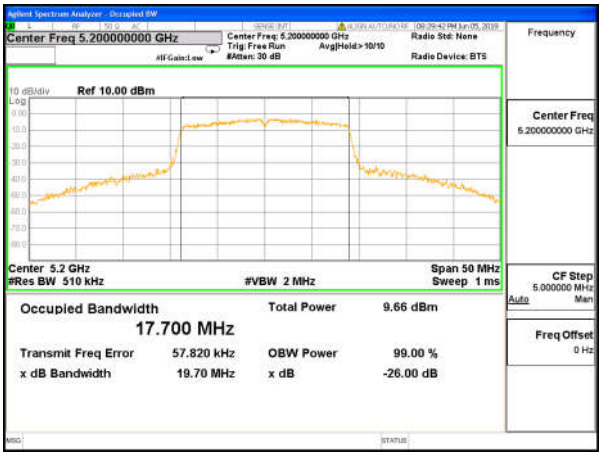
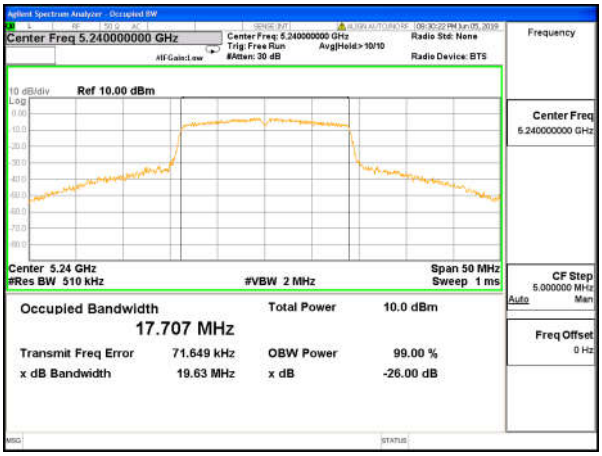
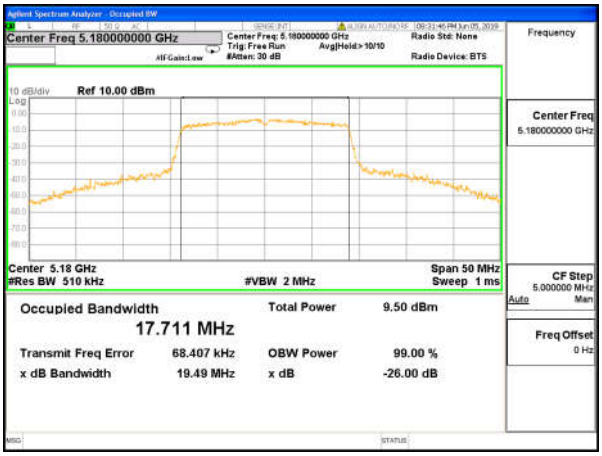
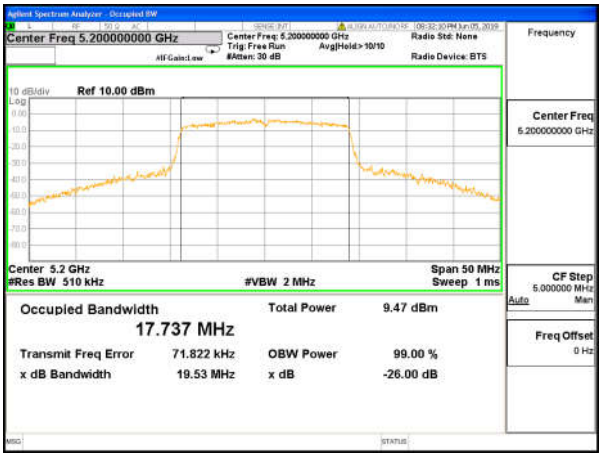
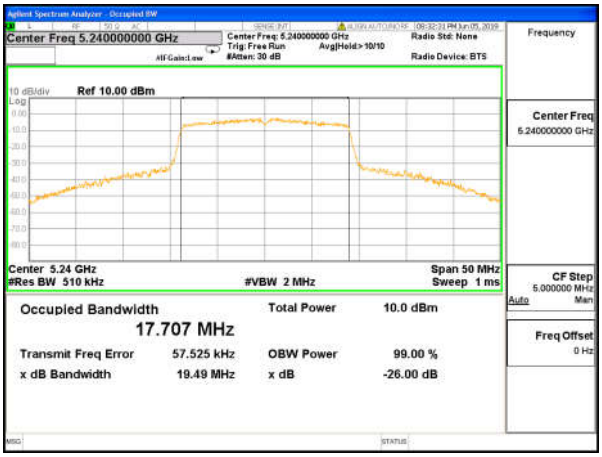
For Band III

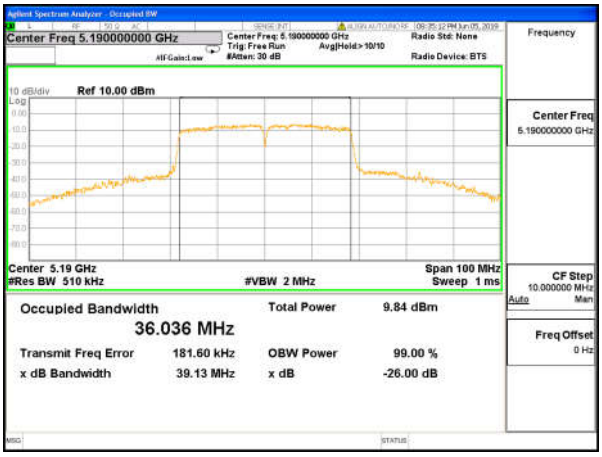
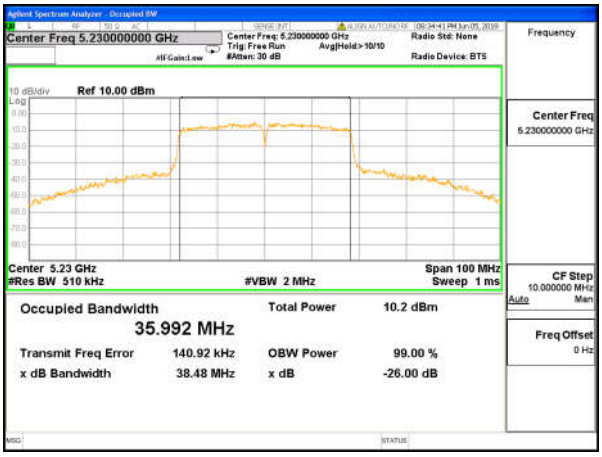
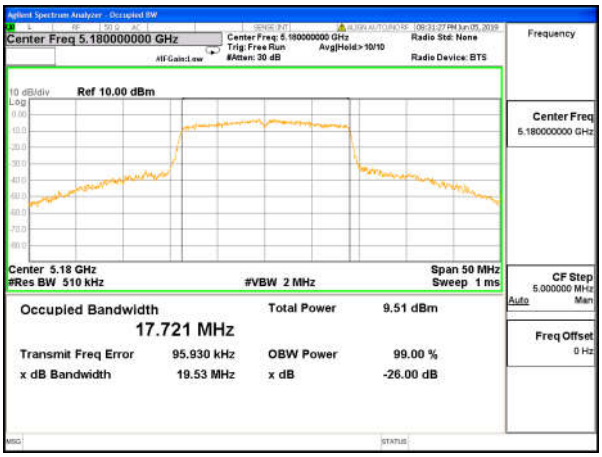
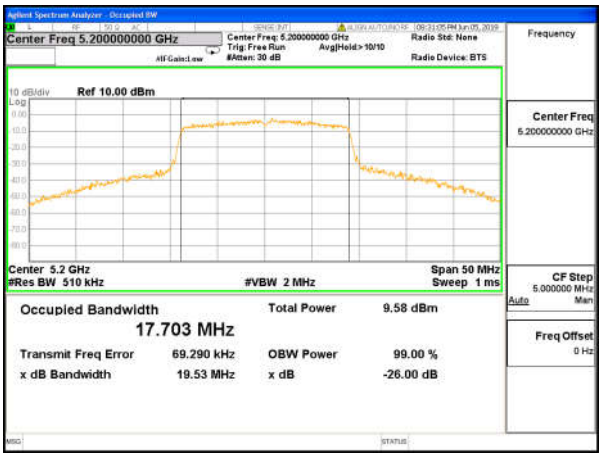
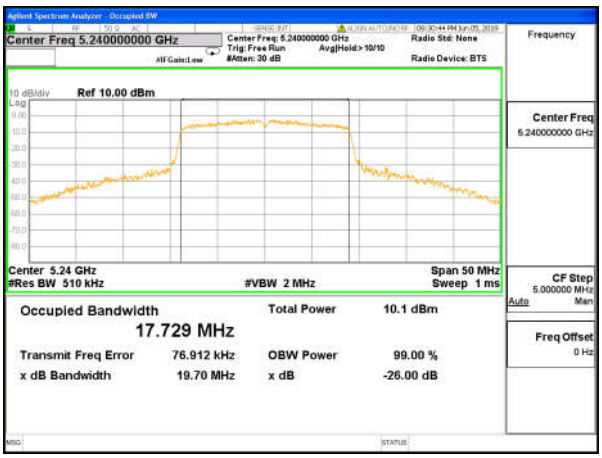
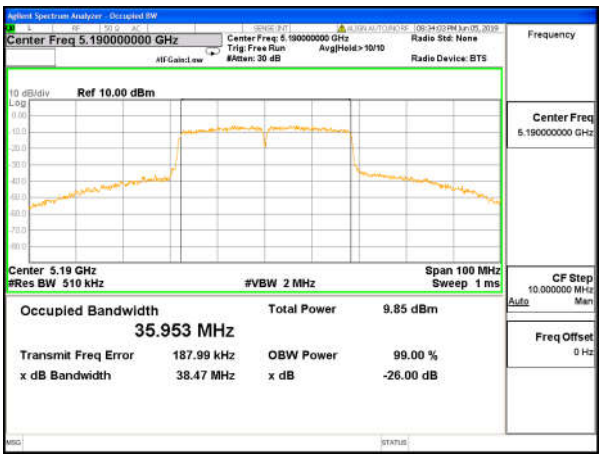
Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH149	5745	18.027	/	Pass
11a	CH157	5785	17.944	/	Pass
11a	CH165	5825	17.802	/	Pass
11n (HT20)	CH149	5745	17.981	/	Pass
11n (HT20)	CH157	5785	17.853	/	Pass
11n (HT20)	CH165	5825	17.785	/	Pass
11n (HT40)	CH151	5755	36.348	/	Pass
11n (HT40)	CH159	5795	36.248	/	Pass

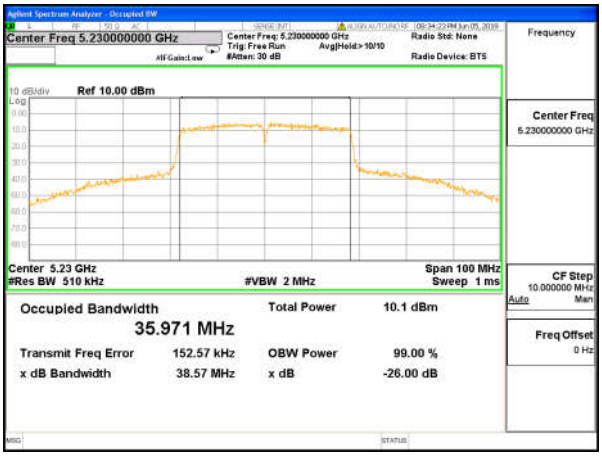
Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH149	5745	17.985	/	Pass
11ac (HT20)	CH157	5785	17.849	/	Pass
11ac (HT20)	CH165	5825	17.820	/	Pass
11ac (HT40)	CH151	5755	36.346	/	Pass
11ac (HT40)	CH159	5795	36.252	/	Pass

Test plots:

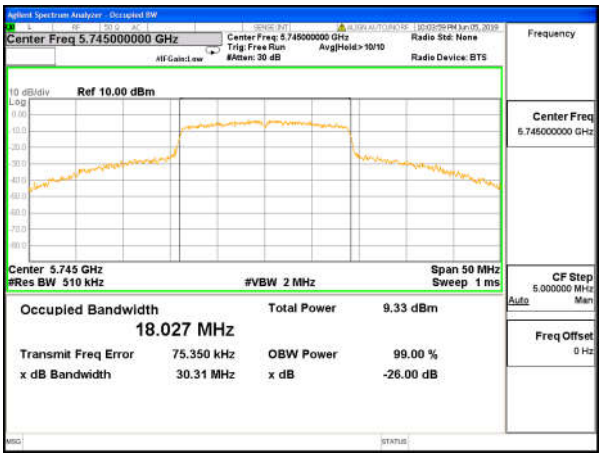
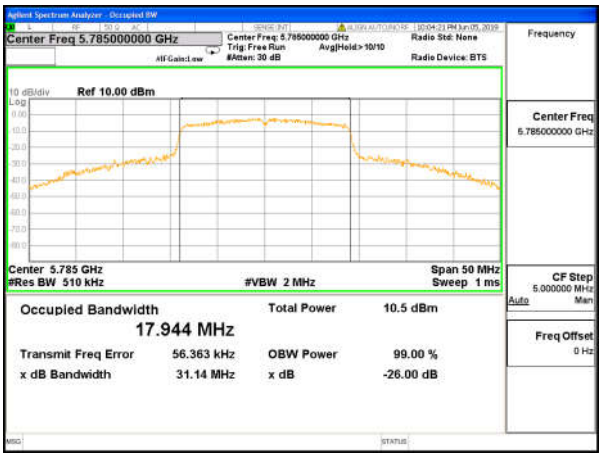
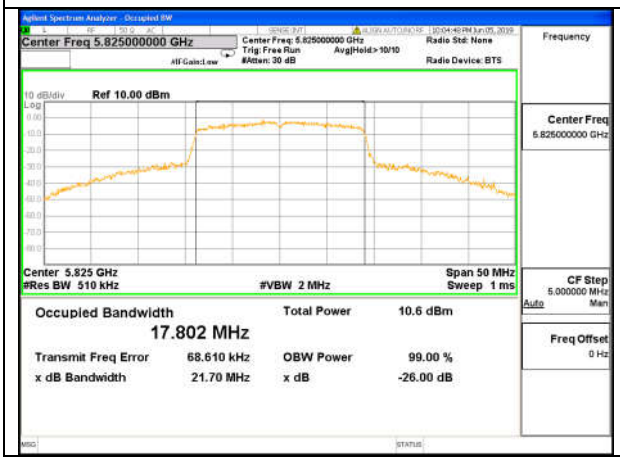
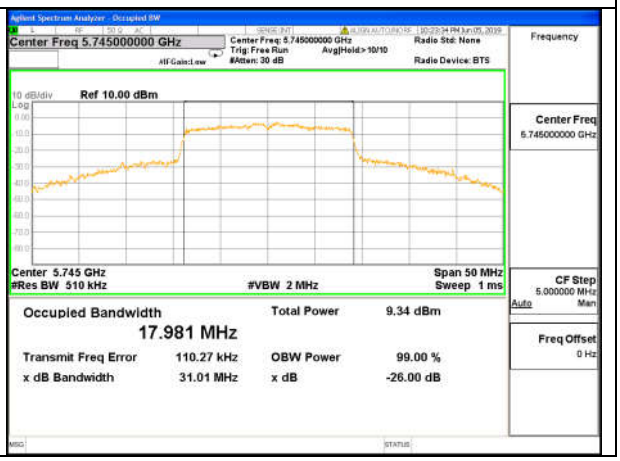
For Band I

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

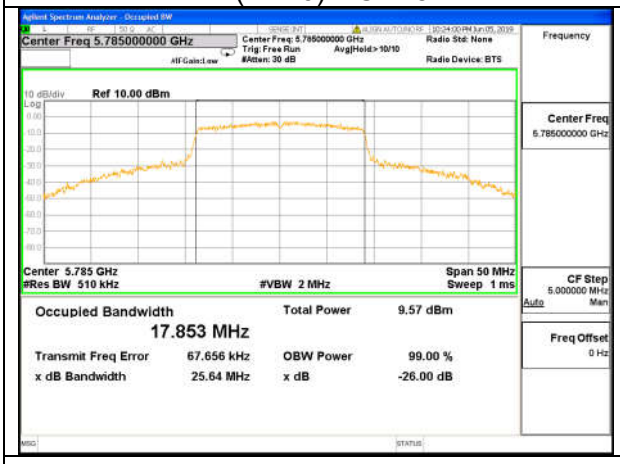
11n (HT40) CH38	11n (HT40) CH46
	
11ac (HT20) CH36	**11ac (HT20) CH40**
	
11ac (HT20) CH48	**11ac (HT40) CH38**
	

11ac (HT40) CH46	/
	

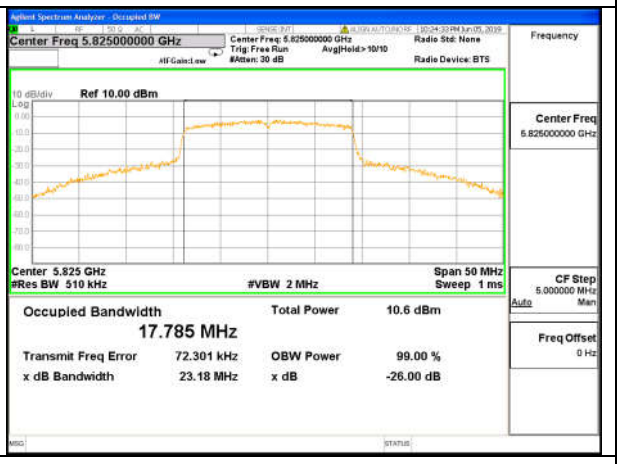
For Band III

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

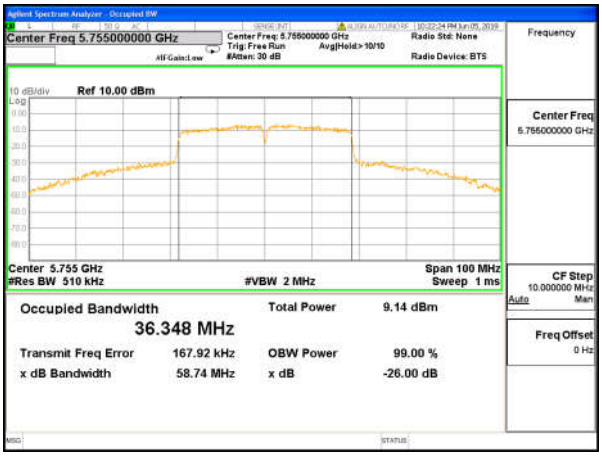
11n(HT20) CH157



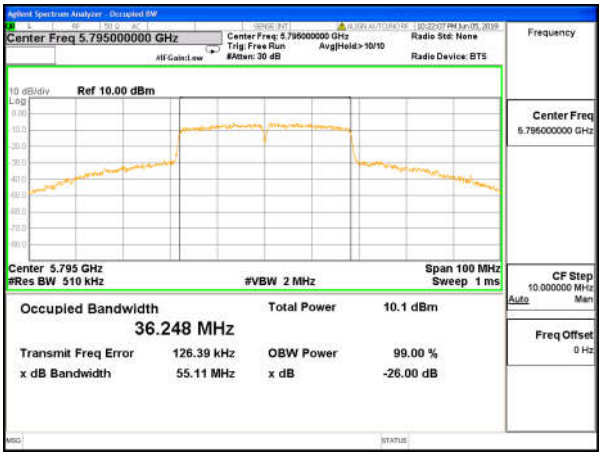
11n(HT20) CH165



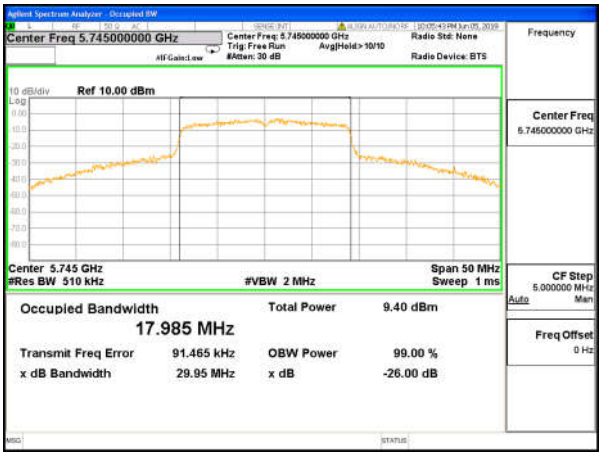
11n (HT40) CH151



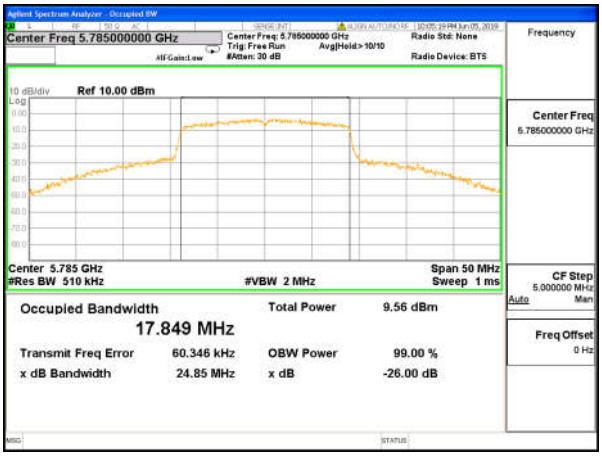
11n (HT40) CH159

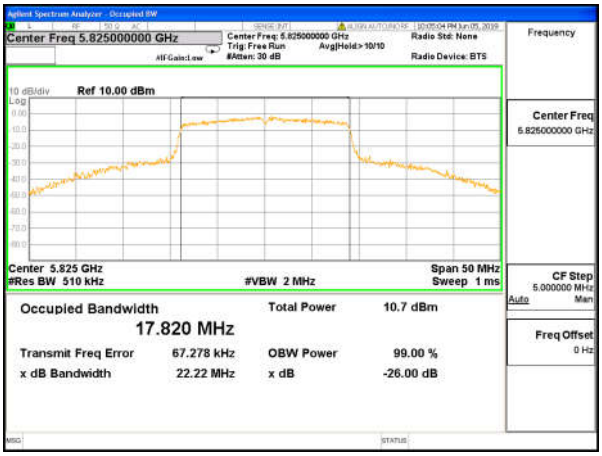
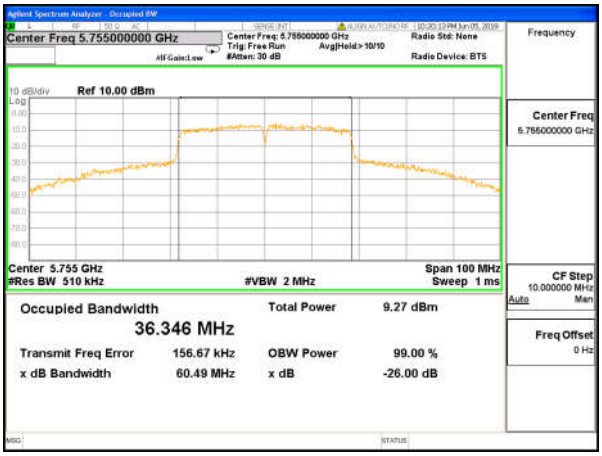
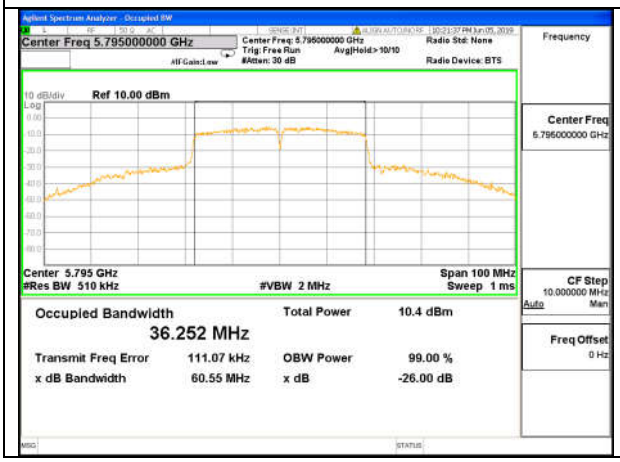


11ac (HT20) CH149



11ac (HT20) CH157



11ac(HT20) CH165	11ac(HT40) CH151
	
11ac(HT40) CH159	**/**
	

5.5 6dB Bandwidth

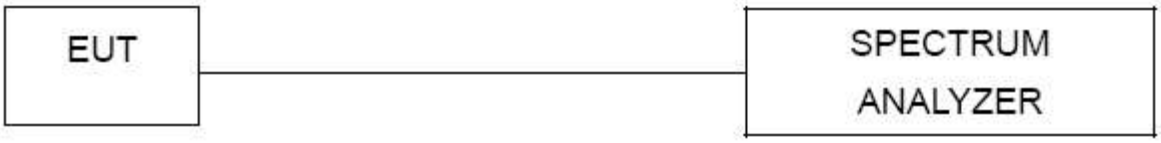
5.5.1 Limit

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 IVdeo 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

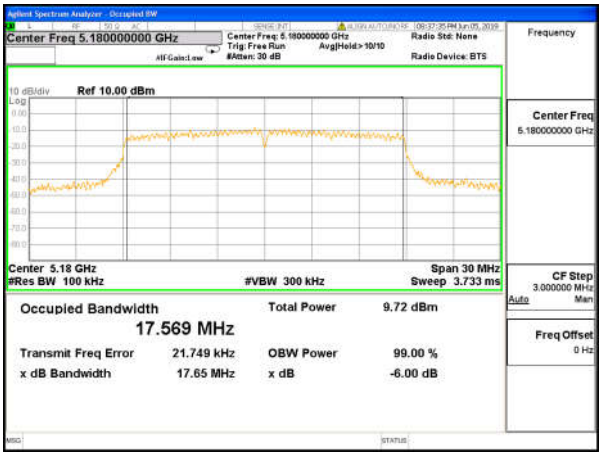
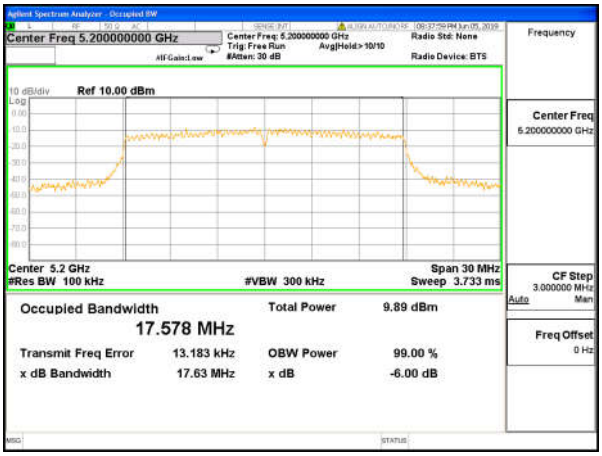
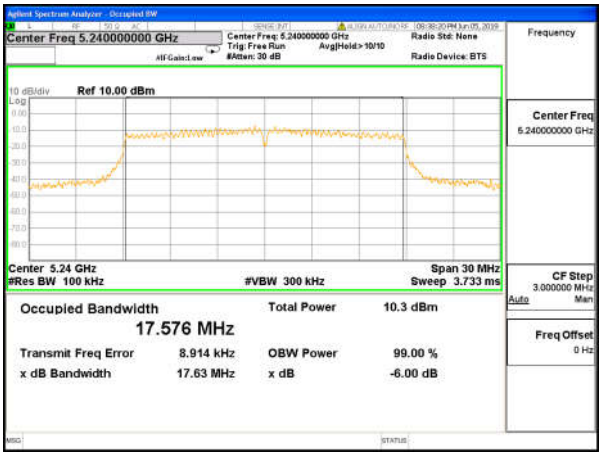
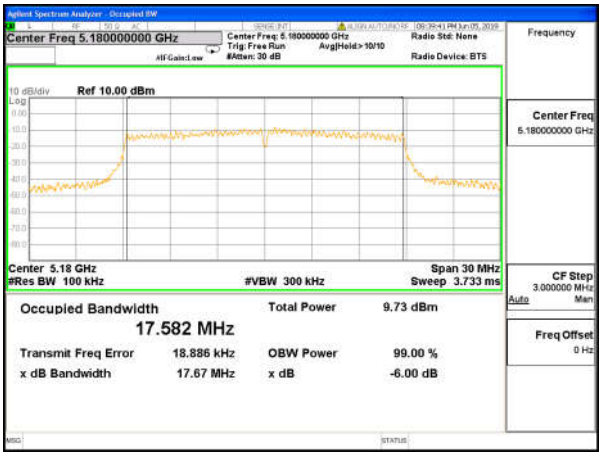
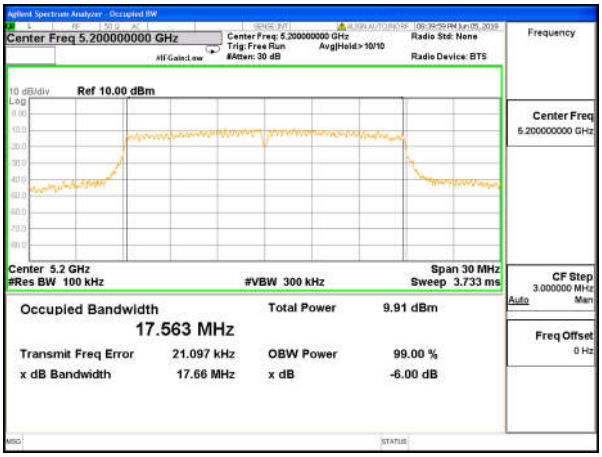
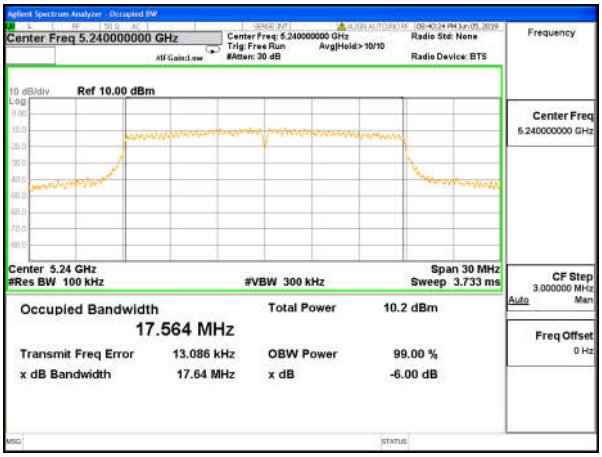
For Band III

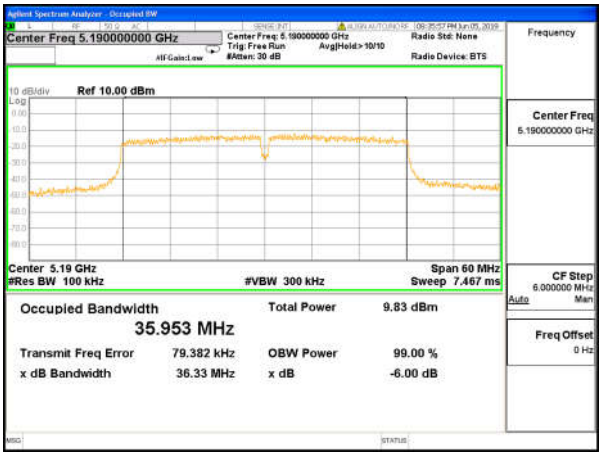
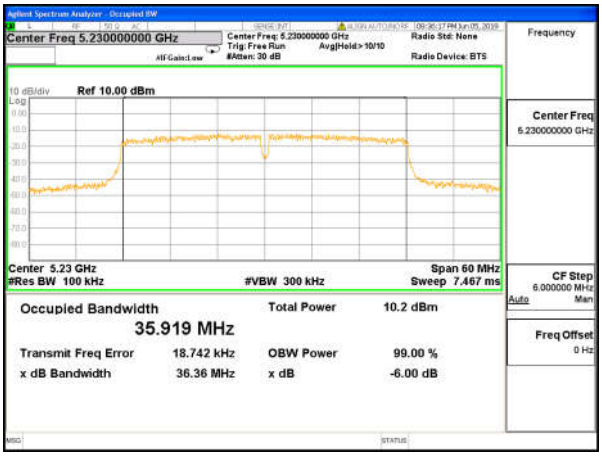
Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11a	CH149	5745	17.67	500	Pass
11a	CH157	5785	17.66	500	Pass
11a	CH165	5825	17.63	500	Pass
11n (HT20)	CH149	5745	17.65	500	Pass
11n (HT20)	CH157	5785	17.68	500	Pass
11n (HT20)	CH165	5825	17.64	500	Pass
11n (HT40)	CH151	5755	36.35	500	Pass
11n (HT40)	CH159	5795	36.08	500	Pass

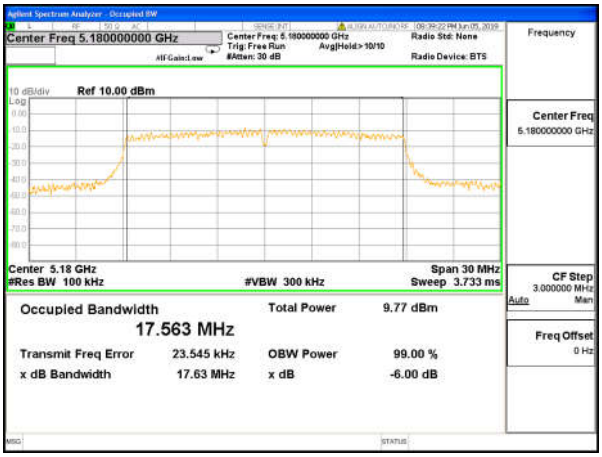
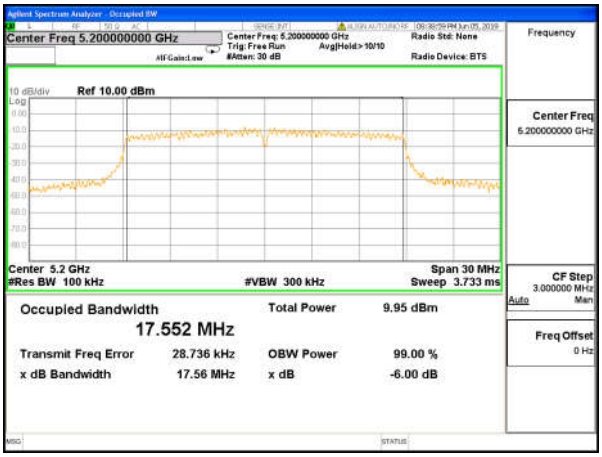
Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11ac (HT20)	CH149	5745	17.60	500	Pass
11ac (HT20)	CH157	5785	17.68	500	Pass
11ac (HT20)	CH165	5825	17.60	500	Pass
11ac (HT40)	CH151	5755	36.39	500	Pass
11ac (HT40)	CH159	5795	36.33	500	Pass

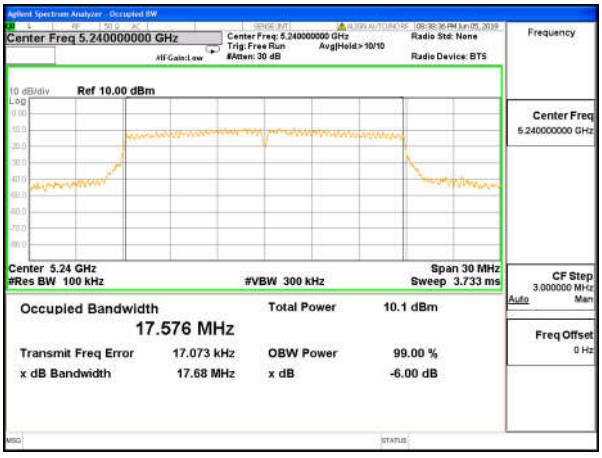
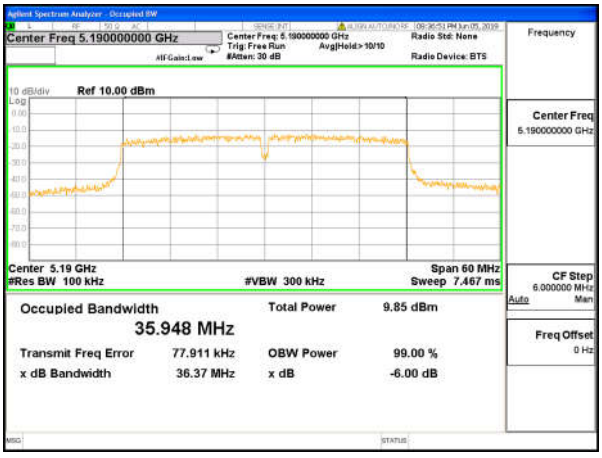
Test plots:

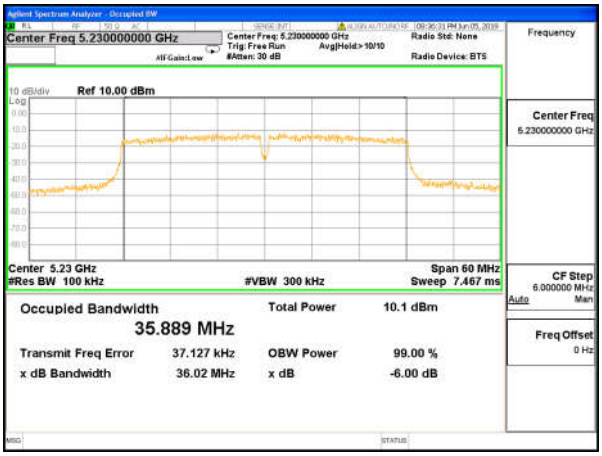
For Band I

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

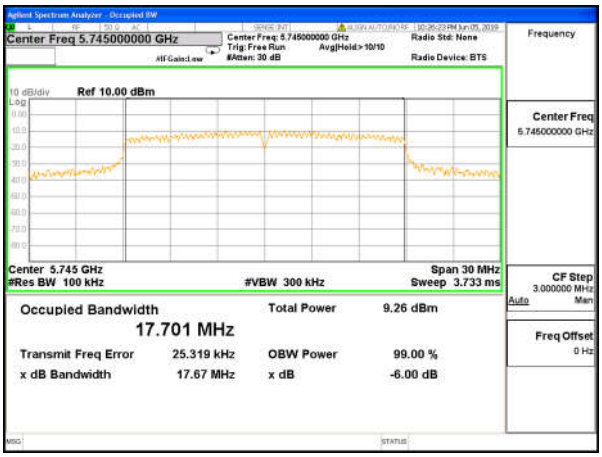
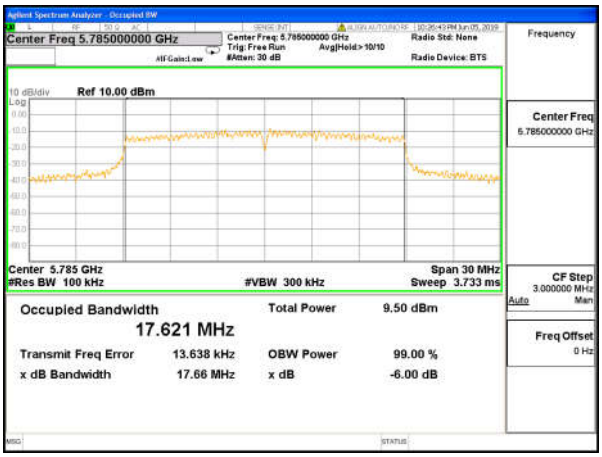
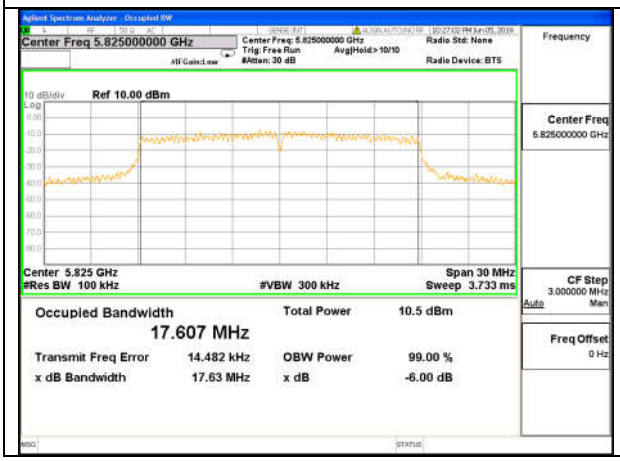
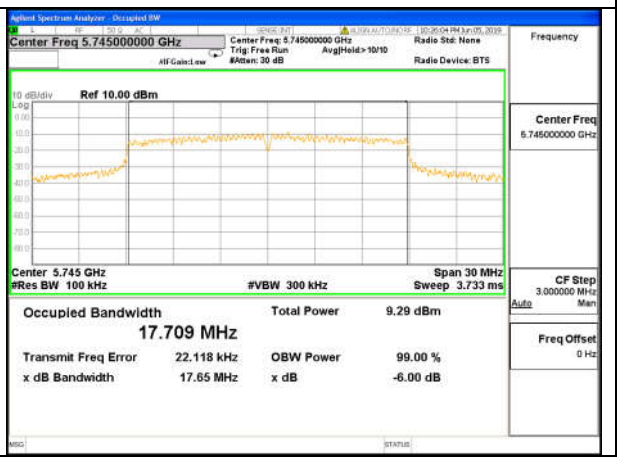
11n (HT40) CH38	11n (HT40) CH46
	

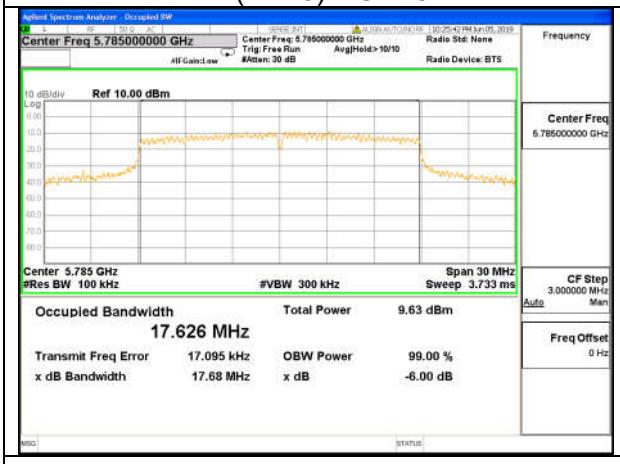
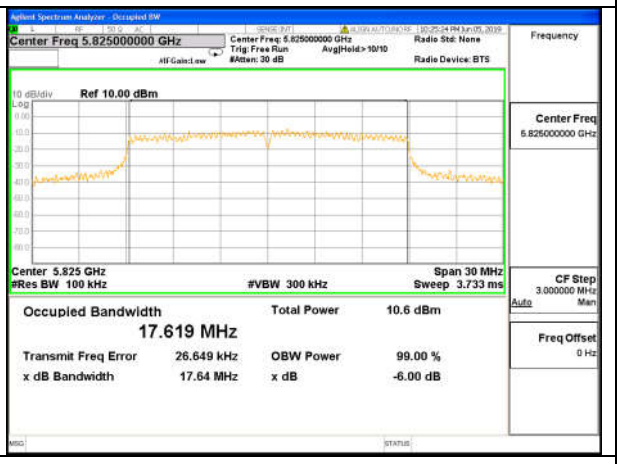
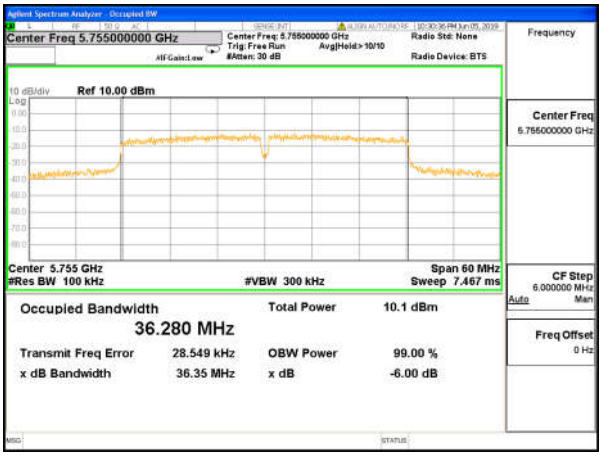
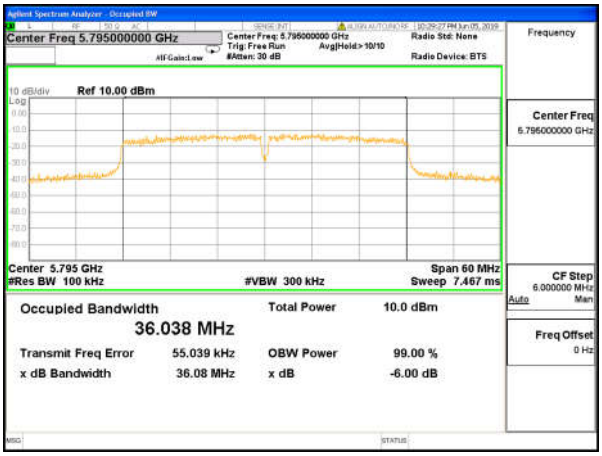
11ac (HT20) CH36	11ac (HT20) CH40
	

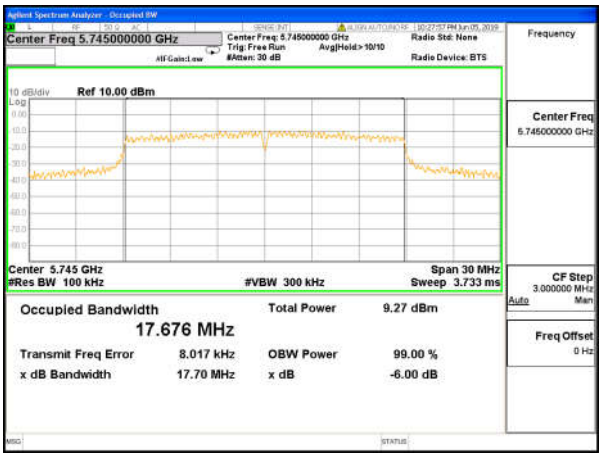
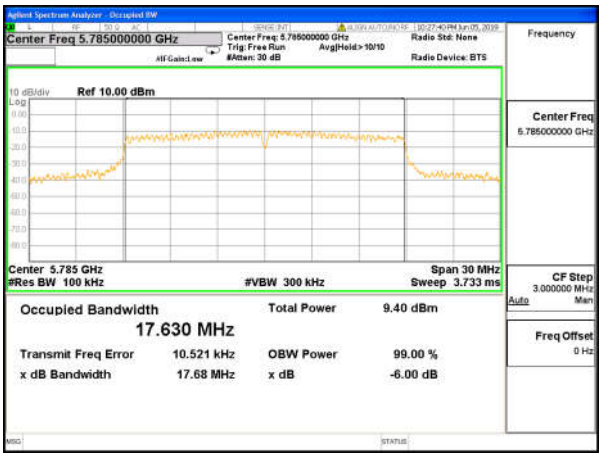
11ac (HT20) CH48	11ac (HT40) CH38
	

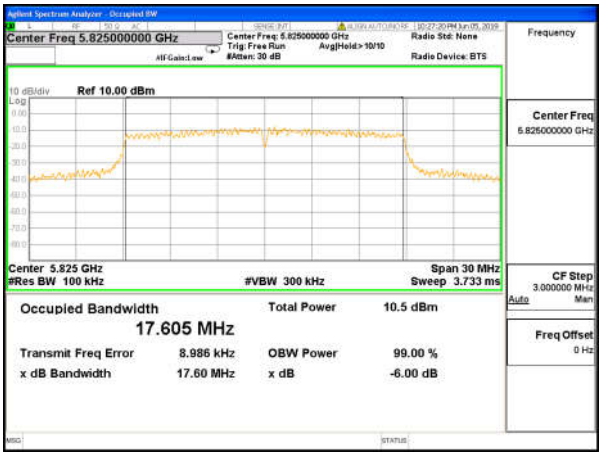
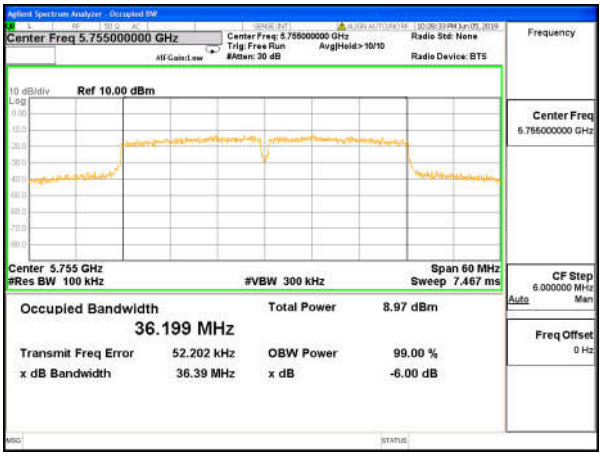
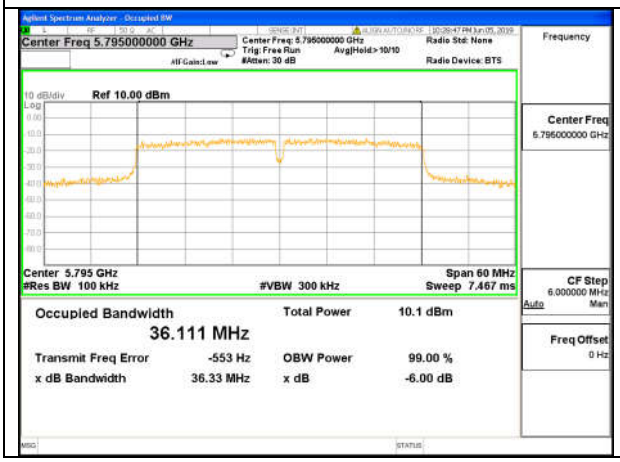
11ac (HT40) CH46	/
	

For Band III

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	**/**
	

5.6 Radiated spurious emission

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 (micorvolts/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

5.6.1 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.

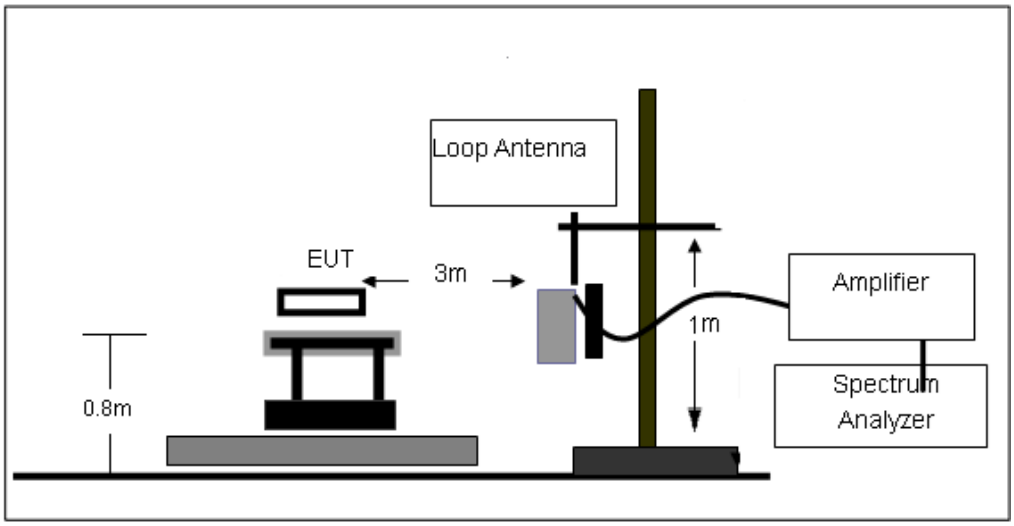
The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

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.

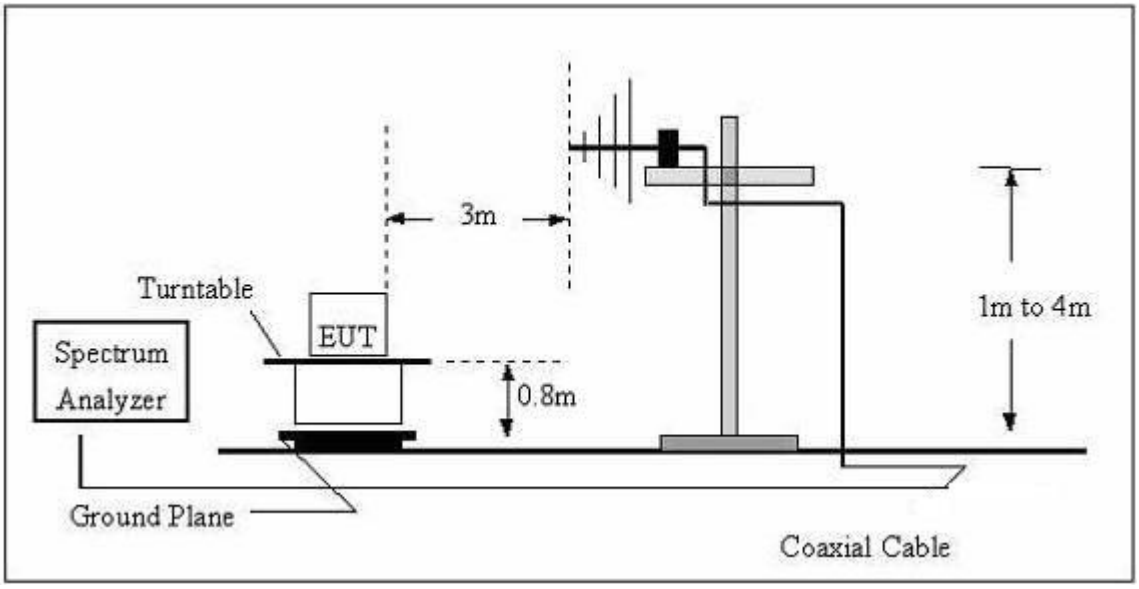
Note:Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.6.2 Test setup

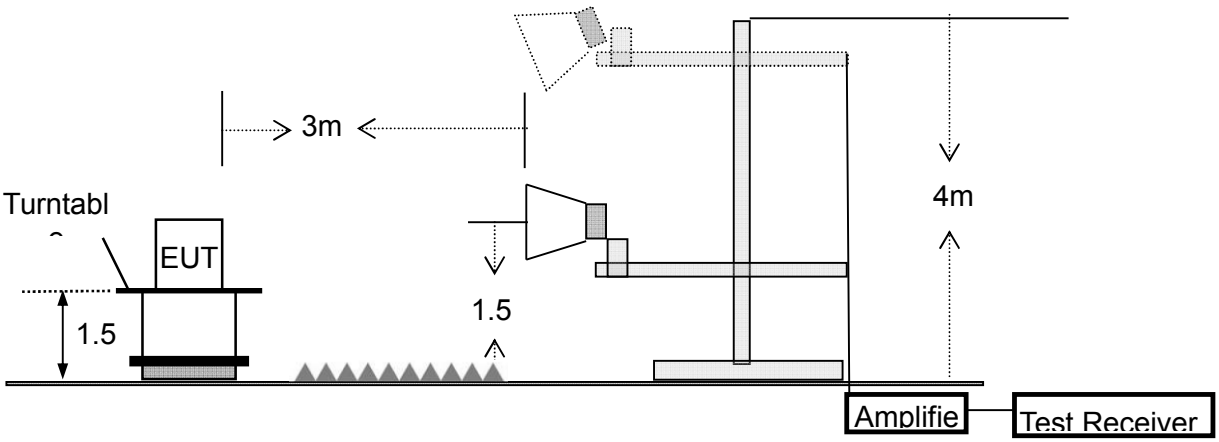
（A）Radiated Emission test-up Frequency Below 30MHz



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



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



5.6.3 Test results

EUT：	UBio Tablet5	Model Name：	UBio Tablet5
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage：	DC 5V from adapter AC 120V/60Hz
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.

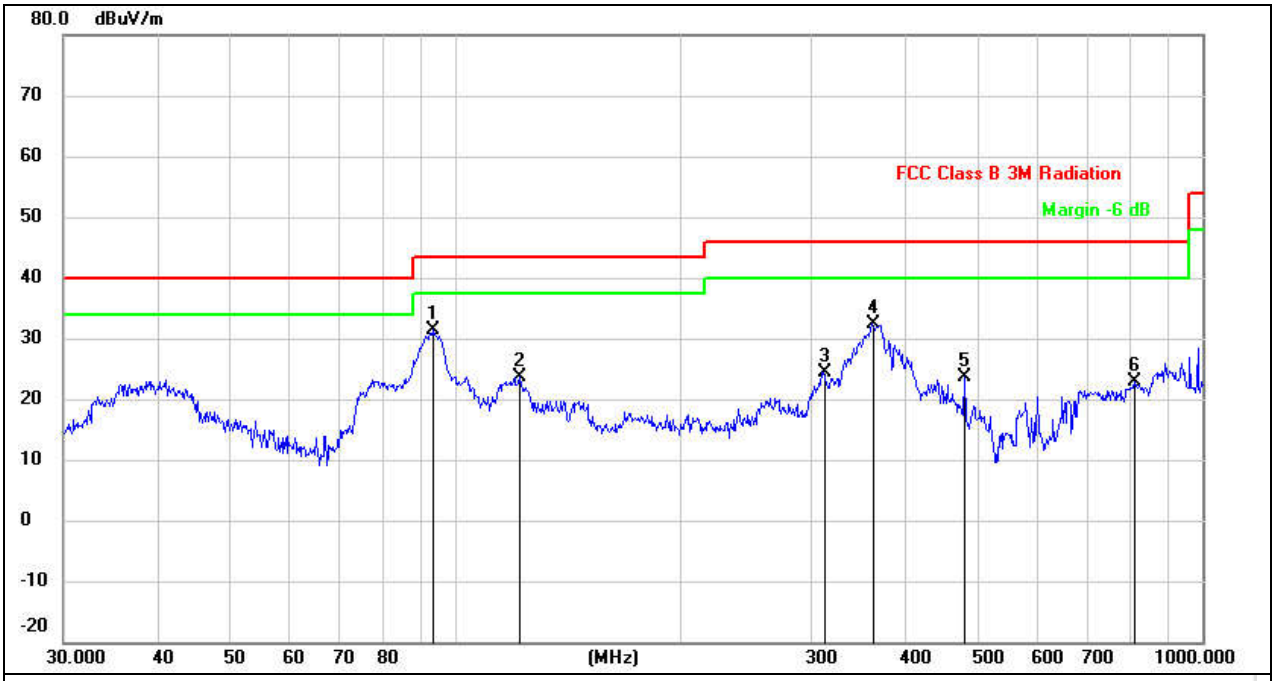
Between 30MHz – 1GHz

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.

EUT：	UBio Tablet5	Model Name ：	UBio Tablet5
Temperature：	24.3 ℃	Relative Humidity：	59%
Pressure：	1010 hPa	Phase：	H
Test Voltage ：	DC 12V from adapter AC 120V/60Hz	Mode:	TX+Charging

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		94.0978	45.21	-14.98	30.23	43.50	-13.27	QP
2		239.9874	44.52	-12.19	32.33	46.00	-13.67	QP
3		601.4265	38.24	-6.52	31.72	46.00	-14.28	QP
4		842.1295	36.97	-3.32	33.65	46.00	-12.35	QP
5	*	890.7278	38.77	-2.79	35.98	46.00	-10.02	QP
6		938.8324	34.63	-2.29	32.34	46.00	-13.66	QP

EUT：	UBio Tablet5	Model Name ：	UBio Tablet5
Temperature：	24.3 ℃	Relative Humidity：	59%
Pressure：	1010 hPa	Phase：	V
Test Voltage：	DC 12V from adapter AC 120V/60Hz	Mode:	TX+Charging



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1	*	93.4402	46.40	-15.11	31.29	43.50	-12.21	QP
2		121.9753	38.75	-15.08	23.67	43.50	-19.83	QP
3		311.0867	35.25	-10.81	24.44	46.00	-21.56	QP
4		361.7139	42.22	-9.82	32.40	46.00	-13.60	QP
5		480.5276	32.86	-9.11	23.75	46.00	-22.25	QP
6		810.2653	27.03	-4.10	22.93	46.00	-23.07	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 Band I

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	4434.205	56.38	5.94	35.40	44.00	53.72	74.00	-20.28	Pk
Vertical	4434.205	43.34	5.94	35.40	44.00	40.68	54.00	-13.32	AV
Vertical	10370.169	62.68	8.46	39.75	44.50	66.39	74.00	-7.61	Pk
Vertical	10370.169	43.91	8.46	39.75	44.50	47.62	54.00	-6.38	AV
Vertical	15540.124	56.93	10.12	38.80	44.10	61.75	74.00	-12.25	Pk
Vertical	15540.124	42.72	10.12	38.80	42.70	48.94	54.00	-5.06	AV
Horizontal	4434.249	59.00	5.94	35.18	44.00	56.12	74.00	-17.88	Pk
Horizontal	4434.249	43.68	5.94	35.18	44.00	40.80	54.00	-13.20	AV
Horizontal	10370.126	62.06	8.46	38.71	44.50	64.73	74.00	-9.27	Pk
Horizontal	10730.126	46.36	8.46	38.71	44.50	49.03	54.00	-4.97	AV
Horizontal	15540.103	56.15	10.12	38.38	44.10	60.55	74.00	-13.45	Pk
Horizontal	15540.103	43.75	10.12	38.38	44.10	48.15	54.00	-5.85	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.154	56.48	6.48	36.35	44.05	55.26	74.00	-18.74	Pk
Vertical	4592.154	42.72	6.48	36.35	44.05	41.50	54.00	-12.50	AV
Vertical	10401.223	61.56	8.47	37.88	44.51	63.40	74.00	-10.60	Pk
Vertical	10401.223	46.48	8.47	37.88	44.51	48.32	54.00	-5.68	AV
Vertical	15600.182	57.96	10.12	38.8	44.10	62.78	74.00	-11.22	Pk
Vertical	15600.182	40.99	10.12	38.8	42.70	47.21	54.00	-6.79	AV
Horizontal	4592.315	60.43	6.48	36.37	44.05	59.23	74.00	-14.77	Pk
Horizontal	4592.315	42.43	6.48	36.37	44.05	41.23	54.00	-12.77	AV
Horizontal	10400.206	60.49	8.47	38.64	44.50	63.10	74.00	-10.90	Pk
Horizontal	10400.206	47.62	8.47	38.64	44.50	50.23	54.00	-3.77	AV
Horizontal	15600.179	58.16	10.12	38.38	44.10	62.56	74.00	-11.44	Pk
Horizontal	15600.179	43.10	10.12	38.38	44.10	47.50	54.00	-6.50	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.216	59.19	7.10	37.24	43.50	60.03	74.00	-13.97	Pk
Vertical	4739.216	45.52	7.10	37.24	43.50	46.36	54.00	-7.64	AV
Vertical	10480.274	61.86	8.46	37.68	44.50	63.50	74.00	-10.50	Pk

Vertical	10480.274	46.52	8.46	37.68	44.50	48.16	54.00	-5.84	AV
Vertical	15720.189	58.64	10.12	38.8	44.10	63.46	74.00	-10.54	Pk
Vertical	15720.189	43.66	10.12	38.8	42.70	49.88	54.00	-4.12	AV
Horizontal	4739.116	60.28	7.10	37.24	43.50	61.12	74.00	-12.88	Pk
Horizontal	4739.116	44.11	7.10	37.24	43.50	44.95	54.00	-9.05	AV
Horizontal	10481.402	58.98	8.46	38.57	44.50	61.51	74.00	-12.49	Pk
Horizontal	10481.402	43.19	8.46	38.57	44.50	45.72	54.00	-8.28	AV
Horizontal	15720.263	57.43	10.12	38.38	44.10	61.83	74.00	-12.17	Pk
Horizontal	15720.263	43.01	10.12	38.38	44.10	47.41	54.00	-6.59	AV

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

For Band III

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	4434.205	55.89	5.94	35.40	44.00	53.23	74.00	-20.77	Pk
Vertical	4434.205	43.19	5.94	35.40	44.00	40.53	54.00	-13.47	AV
Vertical	10370.169	62.40	8.46	39.75	44.50	66.11	74.00	-7.89	Pk
Vertical	10370.169	42.99	8.46	39.75	44.50	46.70	54.00	-7.30	AV
Vertical	15540.124	55.87	10.12	38.80	44.10	60.69	74.00	-13.31	Pk
Vertical	15540.124	43.33	10.12	38.80	42.70	49.55	54.00	-4.45	AV
Horizontal	4434.249	59.49	5.94	35.18	44.00	56.61	74.00	-17.39	Pk
Horizontal	4434.249	42.43	5.94	35.18	44.00	39.55	54.00	-14.45	AV
Horizontal	10370.126	62.11	8.46	38.71	44.50	64.78	74.00	-9.22	Pk
Horizontal	10730.126	44.90	8.46	38.71	44.50	47.57	54.00	-6.43	AV
Horizontal	15540.103	56.25	10.12	38.38	44.10	60.65	74.00	-13.35	Pk
Horizontal	15540.103	42.46	10.12	38.38	44.10	46.86	54.00	-7.14	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.154	57.14	6.48	36.35	44.05	55.92	74.00	-18.08	Pk
Vertical	4592.154	43.42	6.48	36.35	44.05	42.20	54.00	-11.80	AV
Vertical	10401.223	62.38	8.47	37.88	44.51	64.22	74.00	-9.78	Pk
Vertical	10401.223	46.85	8.47	37.88	44.51	48.69	54.00	-5.31	AV
Vertical	15600.182	56.58	10.12	38.8	44.10	61.40	74.00	-12.60	Pk
Vertical	15600.182	42.86	10.12	38.8	42.70	49.08	54.00	-4.92	AV
Horizontal	4592.315	59.45	6.48	36.37	44.05	58.25	74.00	-15.75	Pk
Horizontal	4592.315	41.76	6.48	36.37	44.05	40.56	54.00	-13.44	AV
Horizontal	10400.206	60.63	8.47	38.64	44.50	63.24	74.00	-10.76	Pk
Horizontal	10400.206	47.94	8.47	38.64	44.50	50.55	54.00	-3.45	AV
Horizontal	15600.179	58.69	10.12	38.38	44.10	63.09	74.00	-10.91	Pk
Horizontal	15600.179	43.23	10.12	38.38	44.10	47.63	54.00	-6.37	AV
High Channel (5825 MHz)-Above 1G									
Vertical	4739.216	60.28	7.10	37.24	43.50	61.12	74.00	-12.88	Pk
Vertical	4739.216	45.32	7.10	37.24	43.50	46.16	54.00	-7.84	AV
Vertical	10480.274	61.26	8.46	37.68	44.50	62.90	74.00	-11.10	Pk
Vertical	10480.274	46.15	8.46	37.68	44.50	47.79	54.00	-6.21	AV
Vertical	15720.189	57.08	10.12	38.8	44.10	61.90	74.00	-12.10	Pk
Vertical	15720.189	42.52	10.12	38.8	42.70	48.74	54.00	-5.26	AV
Horizontal	4739.116	59.95	7.10	37.24	43.50	60.79	74.00	-13.21	Pk
Horizontal	4739.116	44.48	7.10	37.24	43.50	45.32	54.00	-8.68	AV

Horizontal	10481.402	59.21	8.46	38.57	44.50	61.74	74.00	-12.26	Pk
Horizontal	10481.402	44.19	8.46	38.57	44.50	46.72	54.00	-7.28	AV
Horizontal	15720.263	57.86	10.12	38.38	44.10	62.26	74.00	-11.74	Pk
Horizontal	15720.263	42.89	10.12	38.38	44.10	47.29	54.00	-6.71	AV

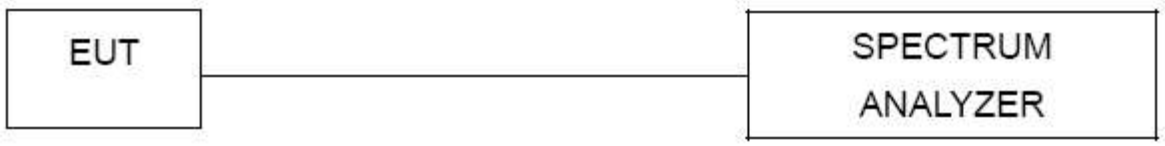
5.7 Conduction spurious emission

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



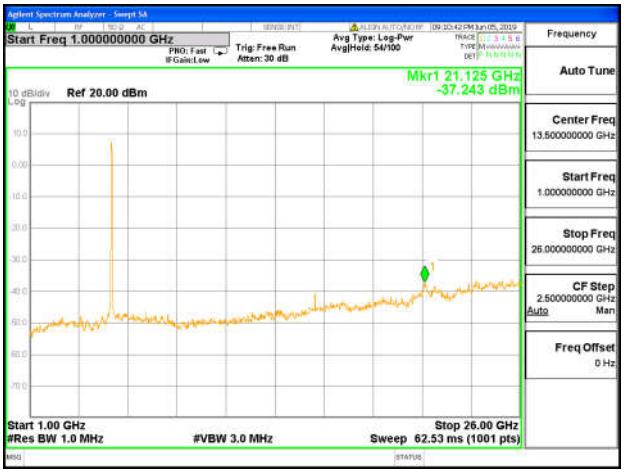
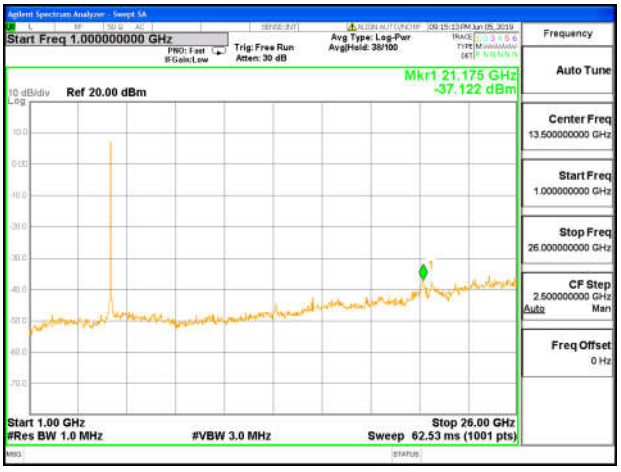
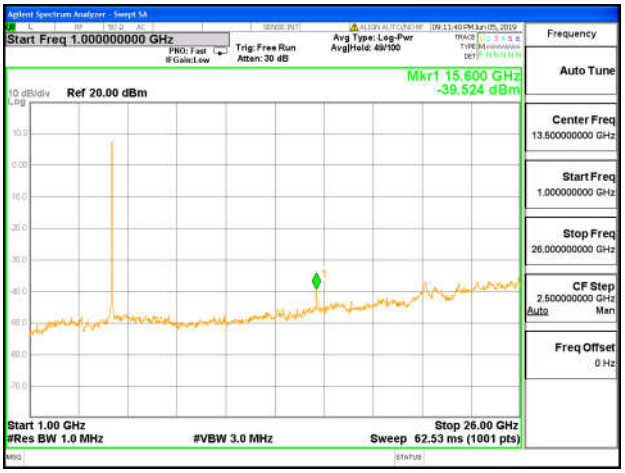
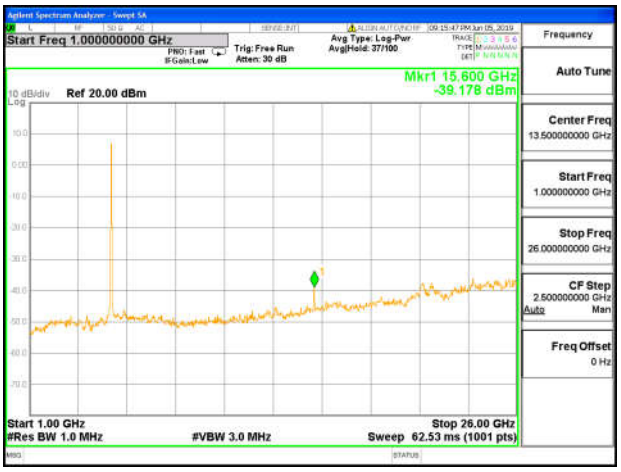
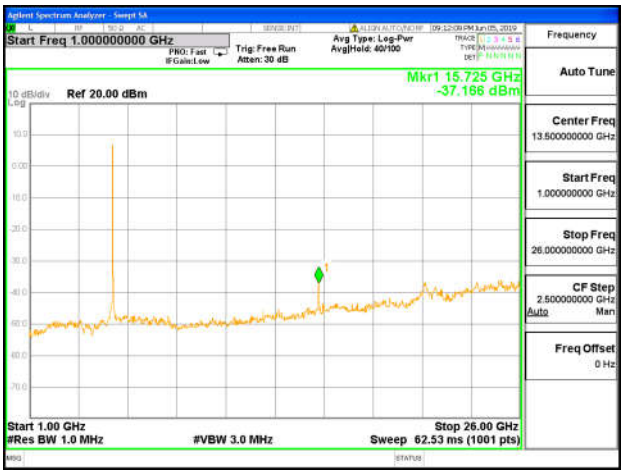
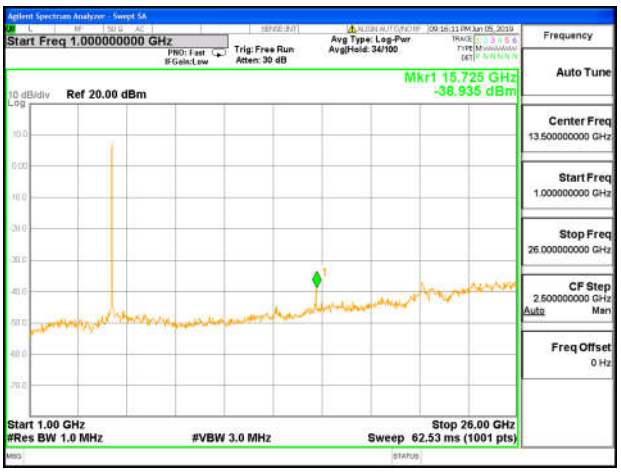
5.7.3 Test procedure

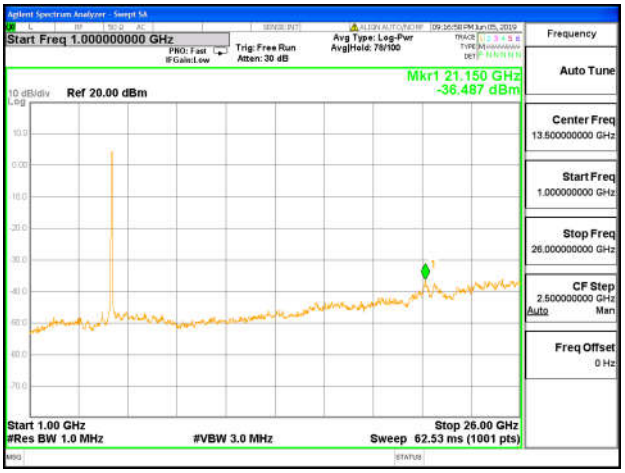
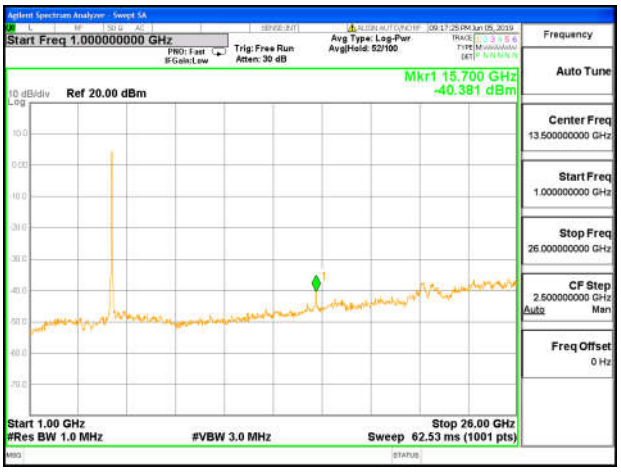
Use the following spectrum analyzer settings:

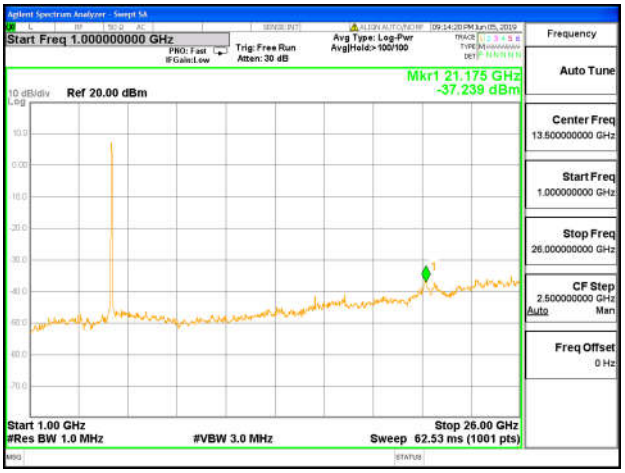
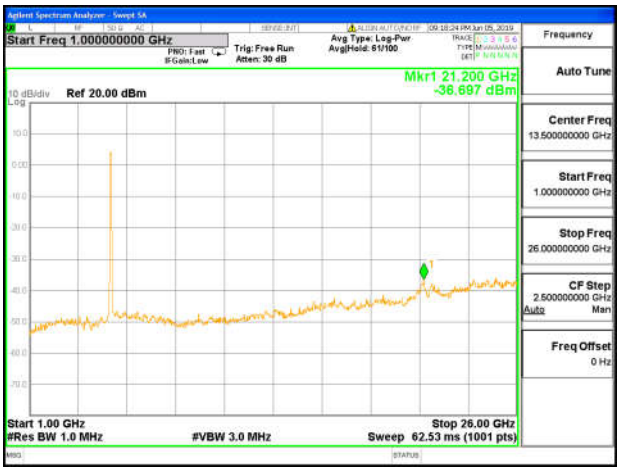
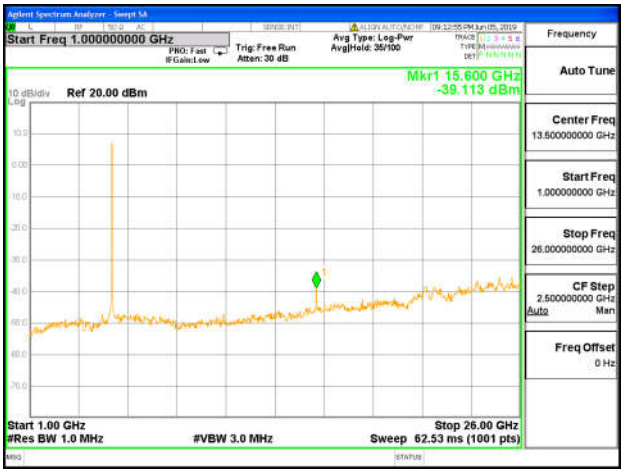
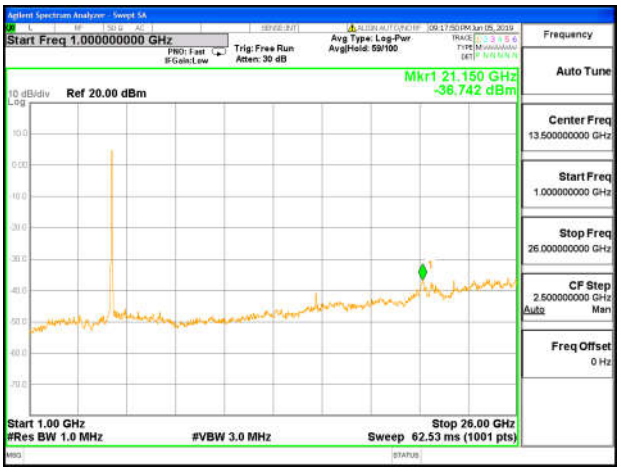
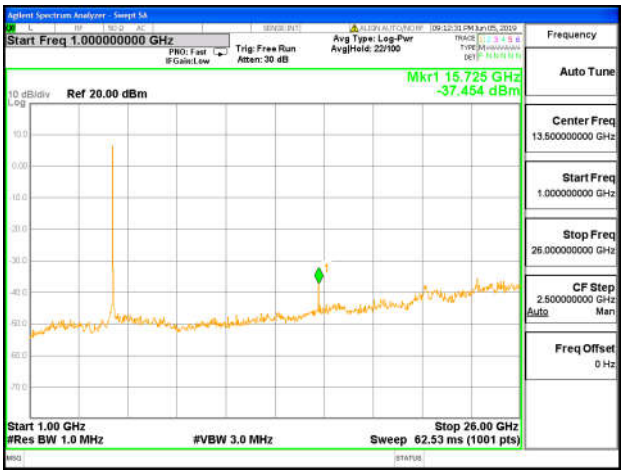
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1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

5.7.4 Test results

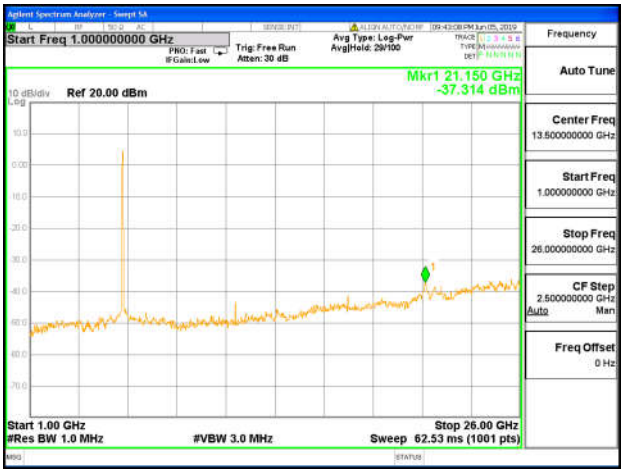
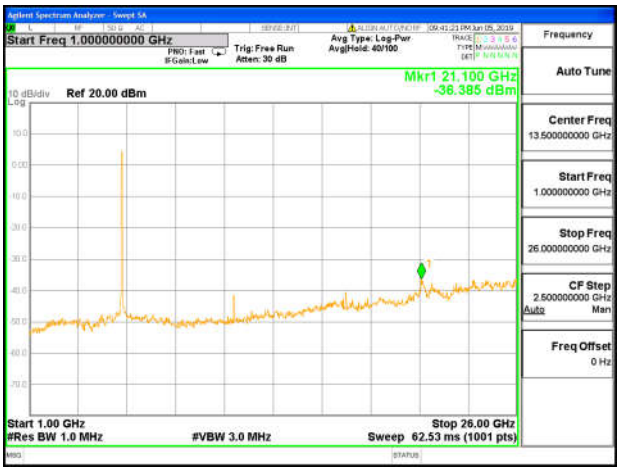
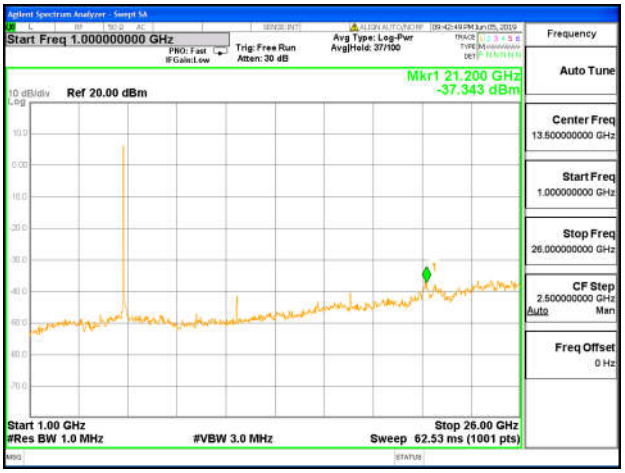
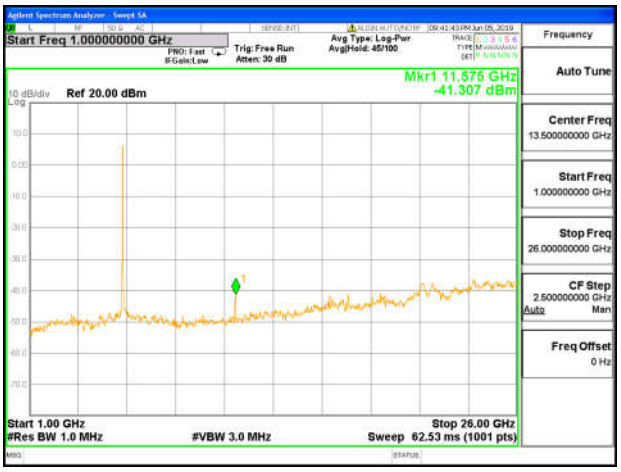
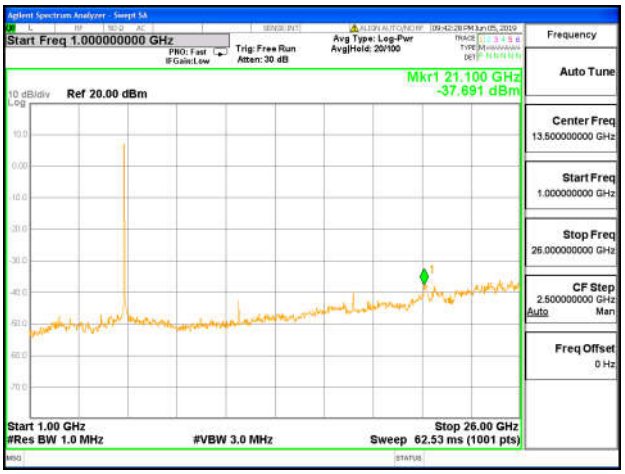
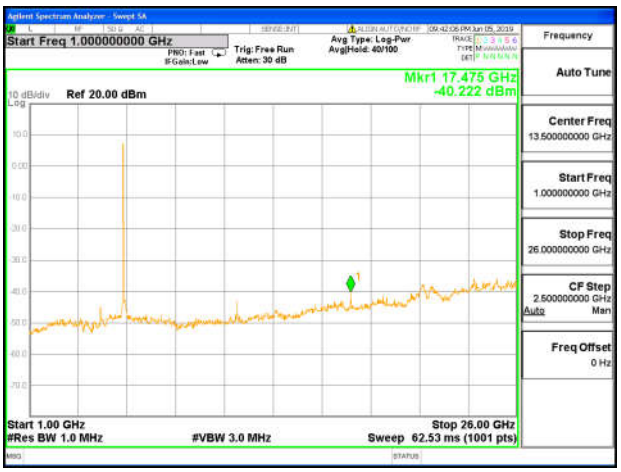
For band I

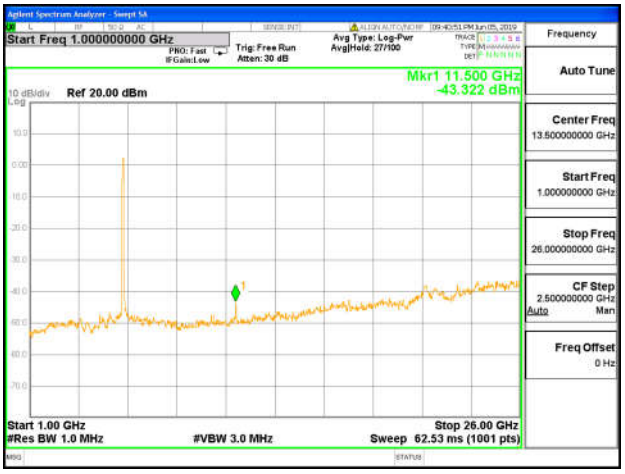
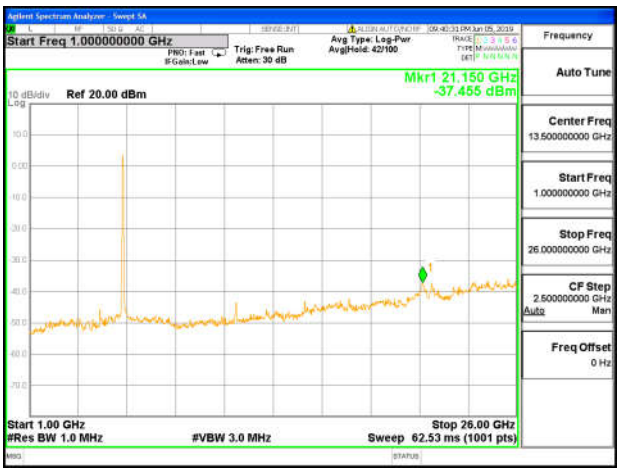
11a	11n20
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

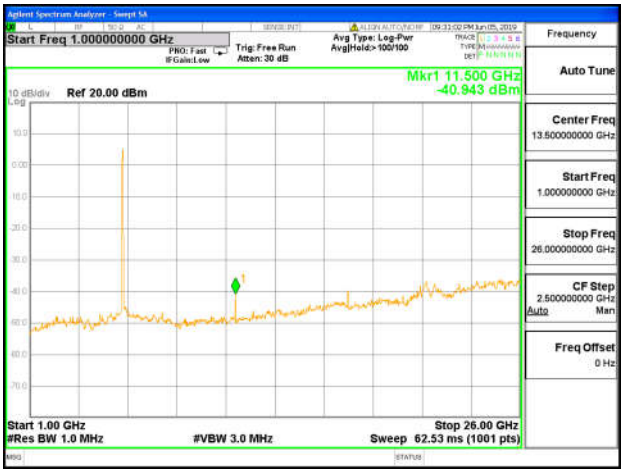
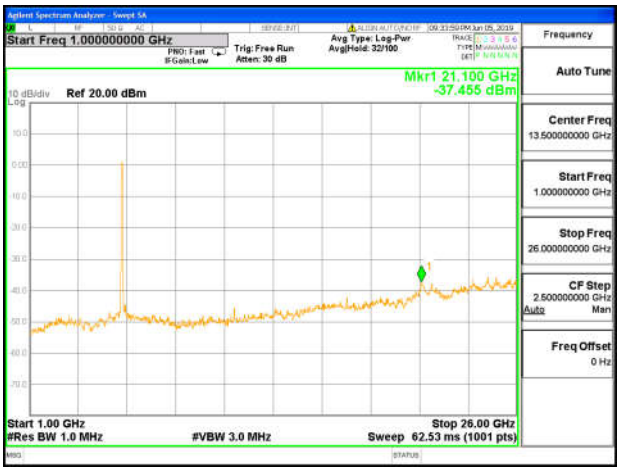
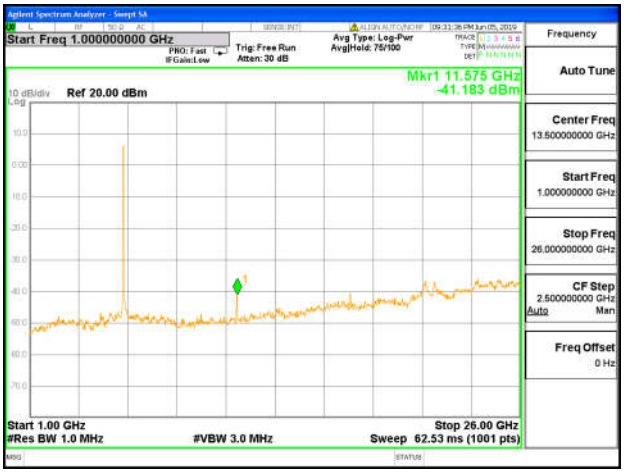
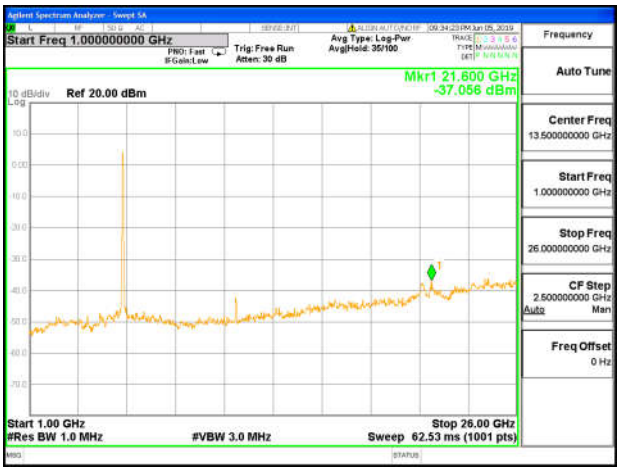
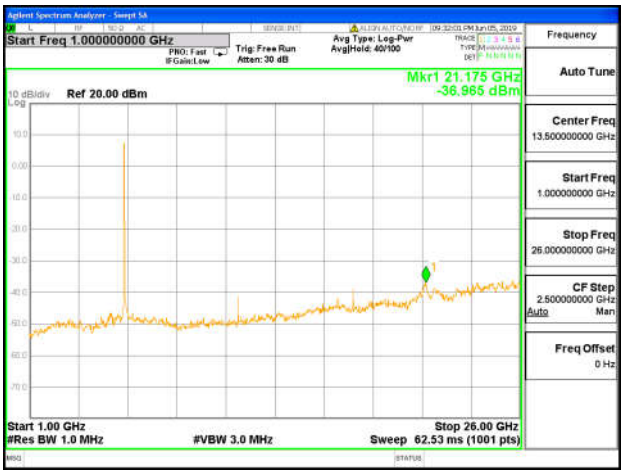
11n40	
Low channel	High channel
	

11ac20	11ac40
Low channel	Low channel
	
Middle channel	High channel
	
High channel	
	

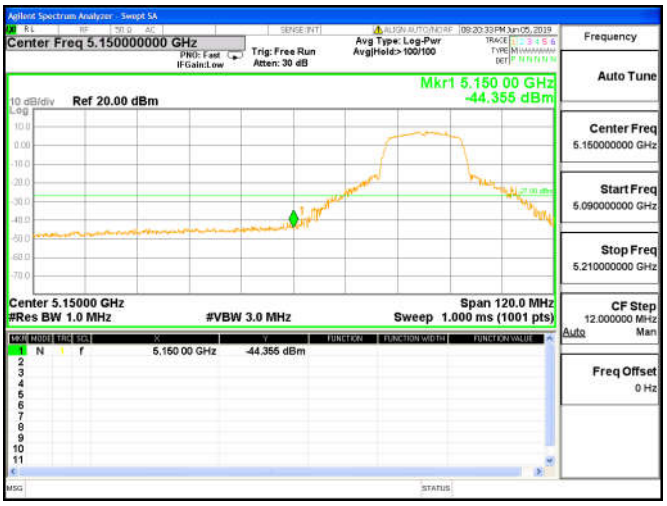
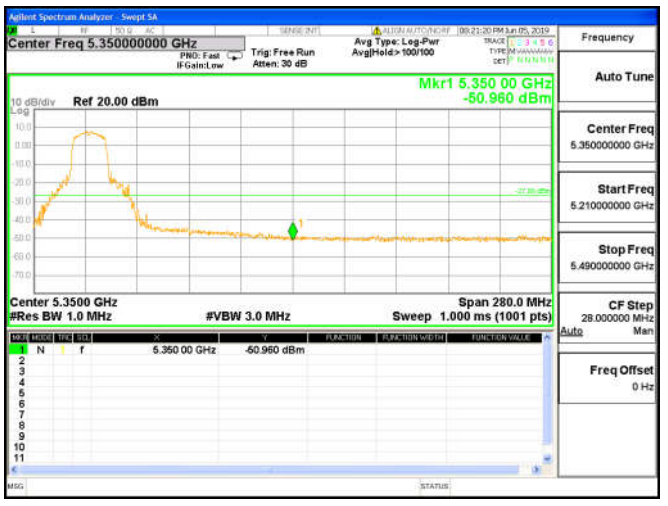
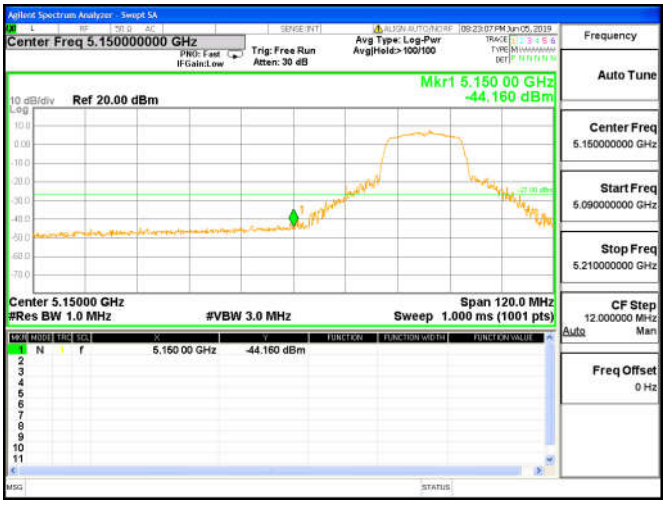
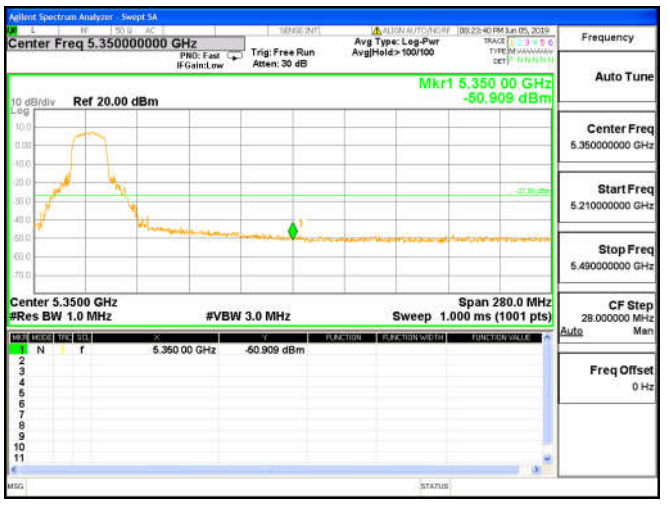
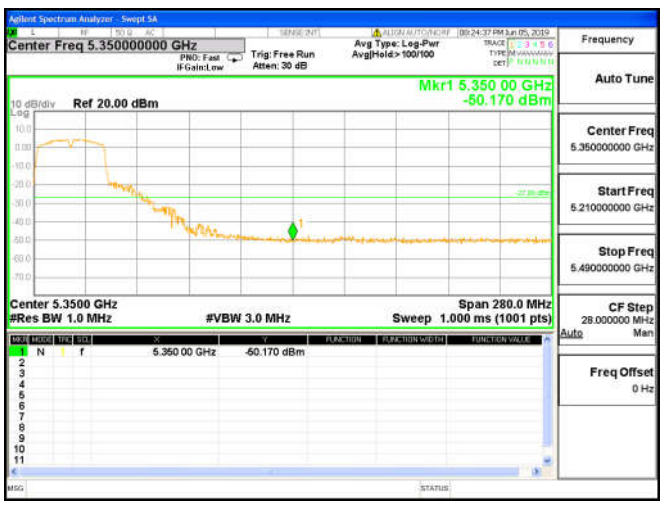
For band III

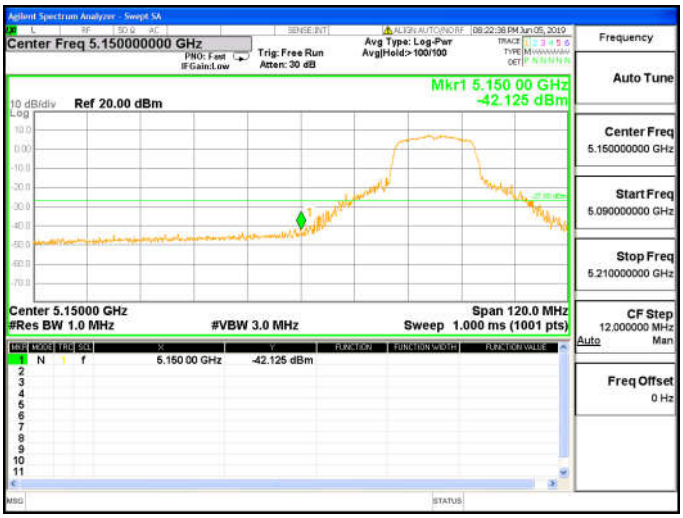
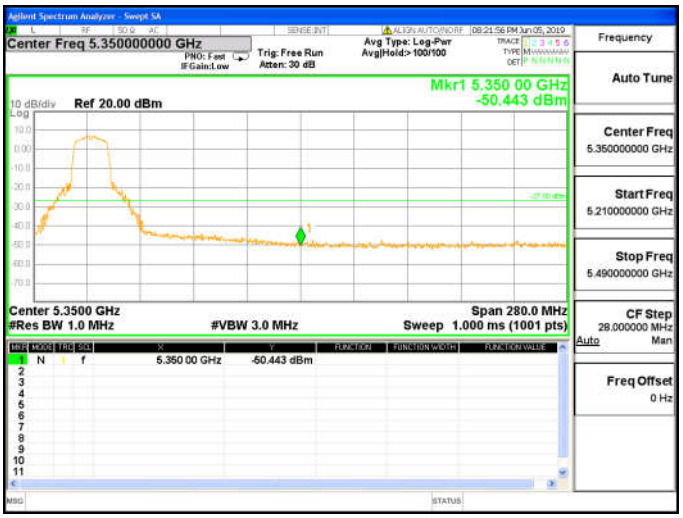
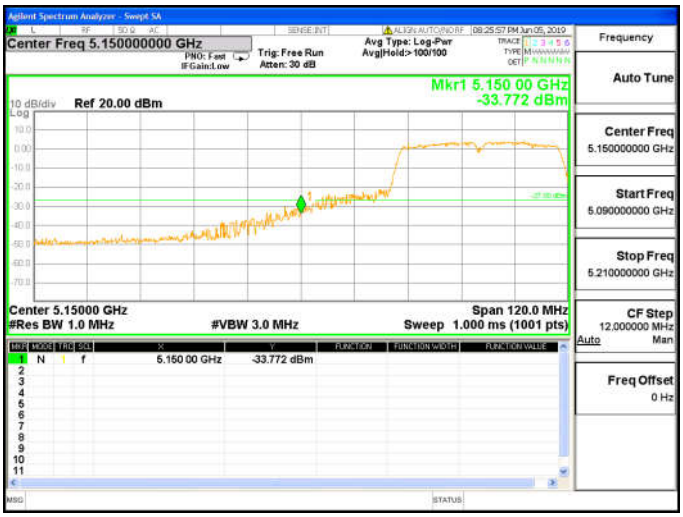
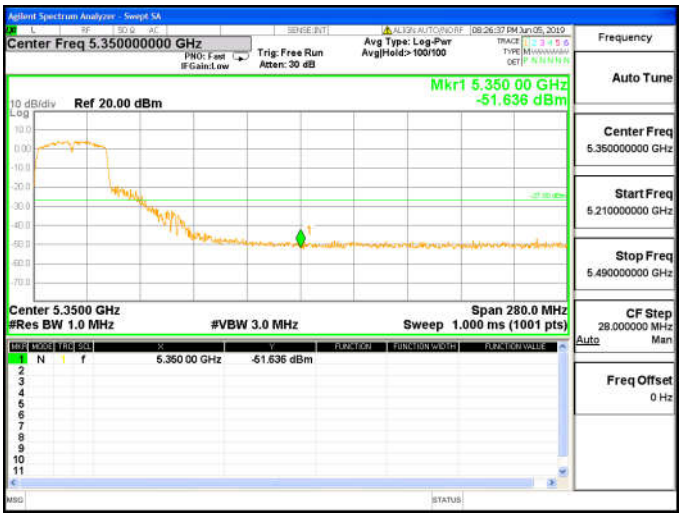
11a	11n20
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

11n40	
Low channel	High channel
	

11ac20	11ac40
Low channel	Low channel
	
Middle channel	High channel
	
High channel	
	

Conduction Band adge For band I

11a	
Bandedge-Left	Bandedge-Right
	
11n20	
Bandedge-Left	Bandedge-Right
	
11n40	
Bandedge-Left	Bandedge-Right
	

11ac20	
Bandedge-Left	Bandedge-Right
	
11ac40	
Bandedge-Left	Bandedge-Right
	

Conduction Band adge For band III

11a	
Bandedge-Left	Bandedge-Right
	
11n20	
Bandedge-Left	Bandedge-Right
	
11n40	
Bandedge-Left	Bandedge-Right
	

11ac20	
Bandedge-Left	Bandedge-Right
	
11ac40	
Bandedge-Left	Bandedge-Right
	

5.8 Power spectral density

5.8.1 Limit

For the band 5.15-5.25 GHz

For client deIVces 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

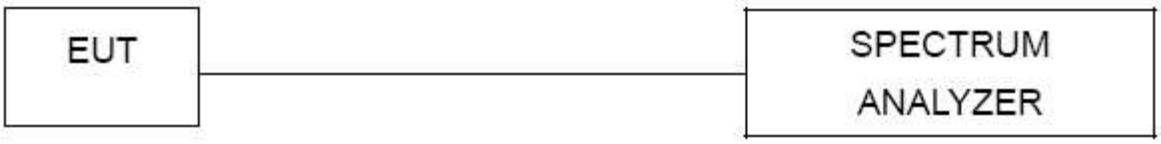
For Band I

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 Band III

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



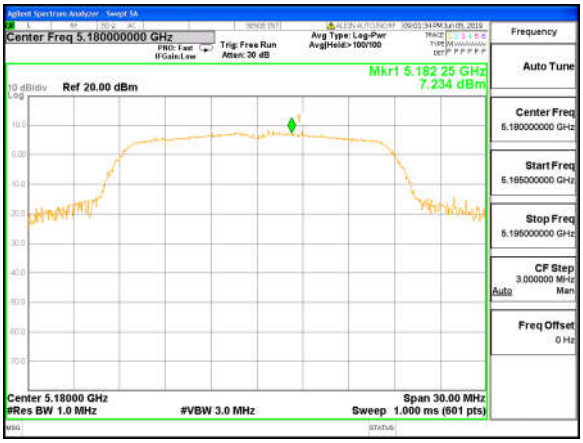
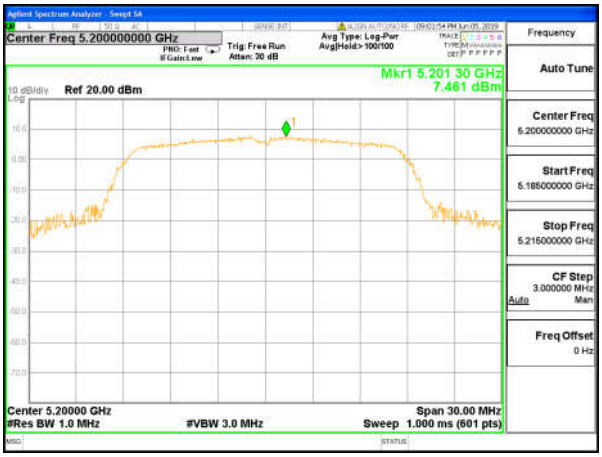
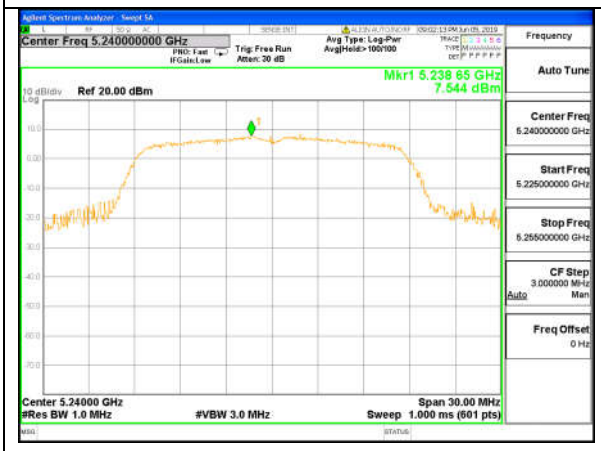
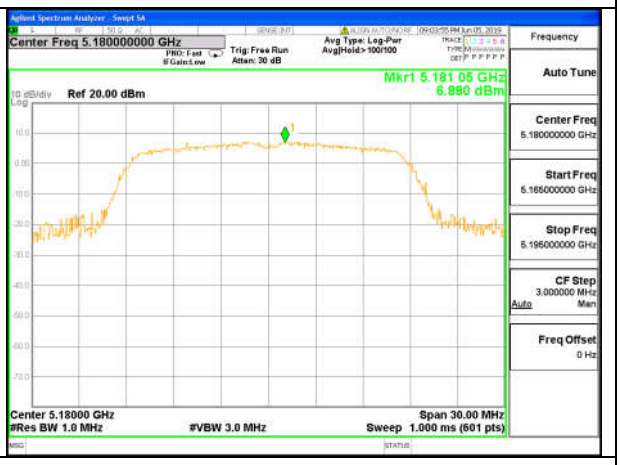
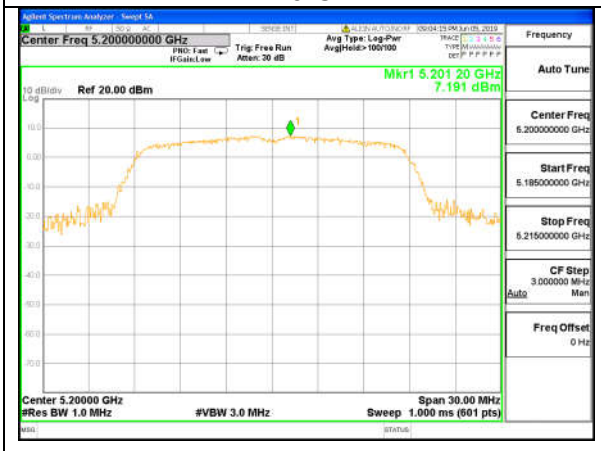
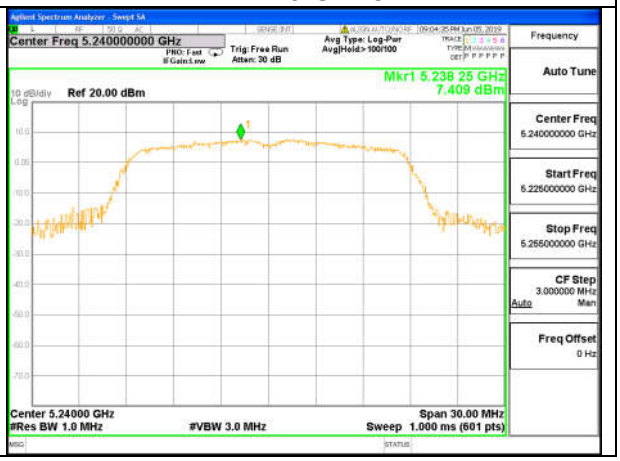
5.8.4 Test results

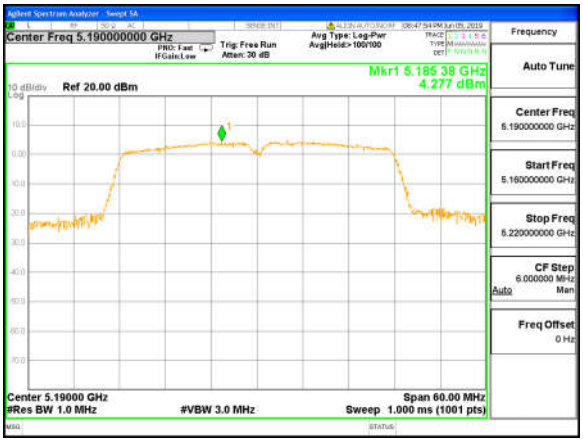
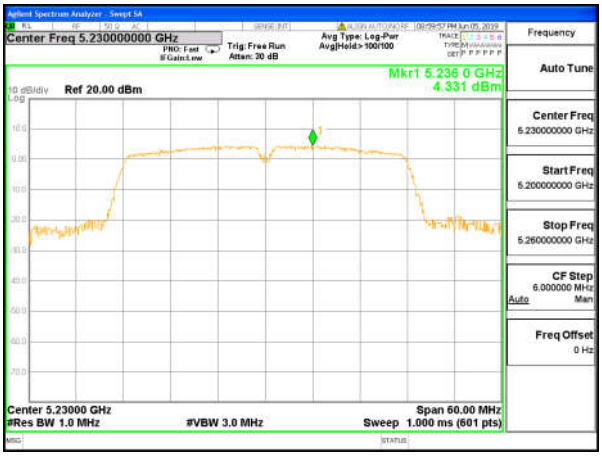
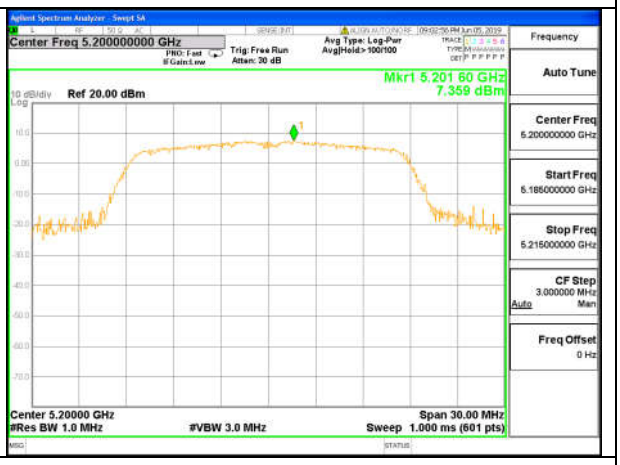
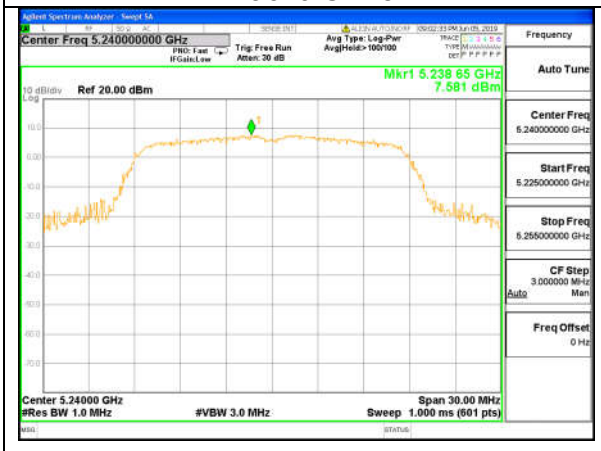
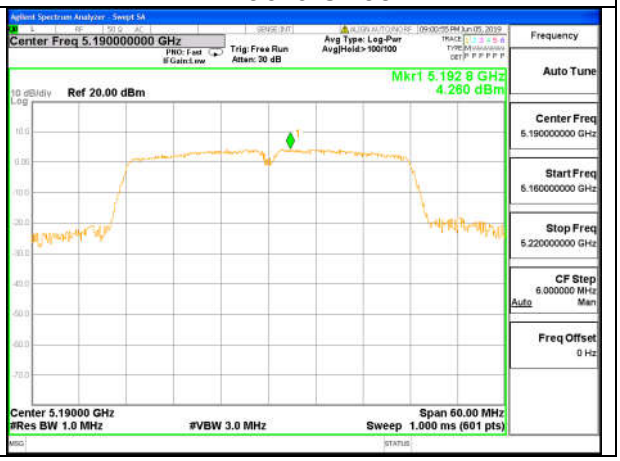
For Band I

Mode	Channel	Frequency(MHz)	Measurement PSD (dBm/MHz)	Limit (dBm/MHz)	Result
11a	CH36	5180	7.234	11	Pass
11a	CH44	5220	7.461	11	Pass
11a	CH48	5240	7.544	11	Pass
11n(HT20)	CH36	5180	6.880	11	Pass
11n(HT20)	CH44	5220	7.191	11	Pass
11n(HT20)	CH48	5240	7.409	11	Pass
11n(HT40)	CH38	5190	4.277	11	Pass
11n(HT40)	CH46	5230	4.331	11	Pass
11ac(HT20)	CH36	5180	7.534	11	Pass
11ac (HT20)	CH40	5200	7.359	11	Pass
11ac (HT20)	CH48	5240	7.581	11	Pass
11ac (HT40)	CH38	5190	4.260	11	Pass
11ac (HT40)	CH46	5230	4.354	11	Pass

Test plots

For Band I

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	/
	

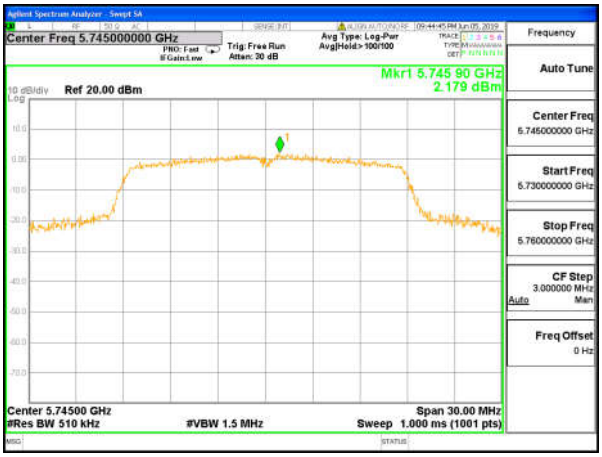
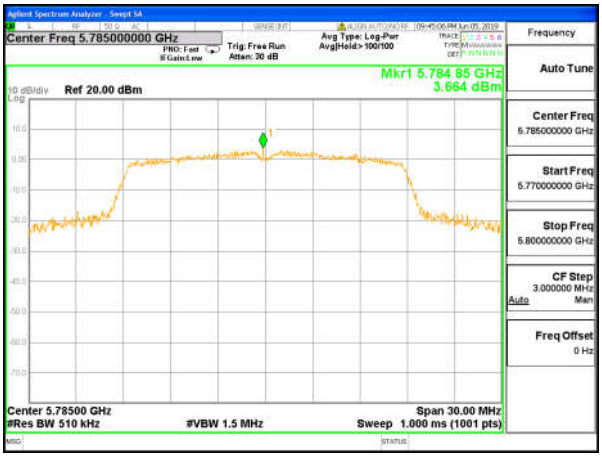
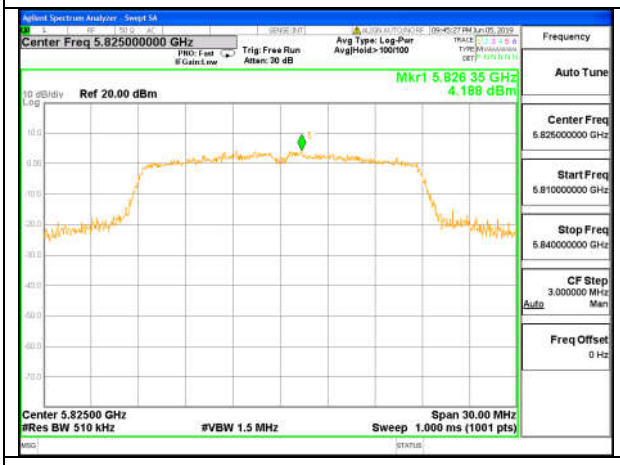
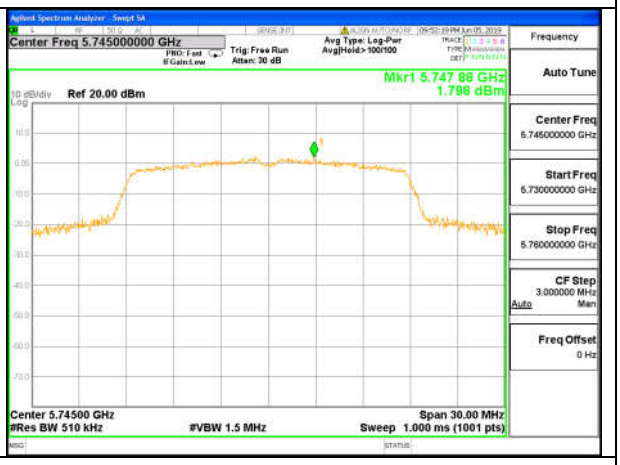
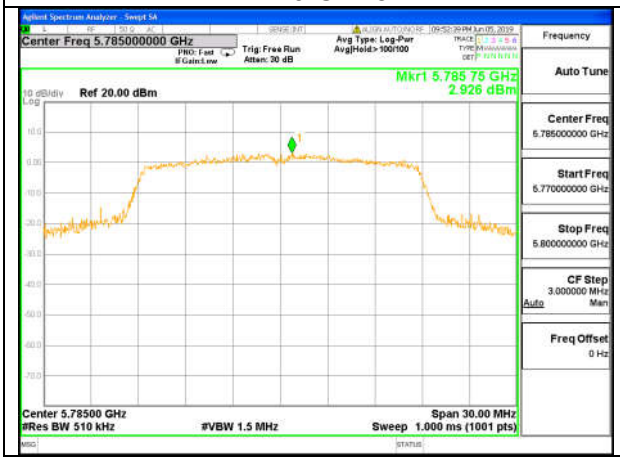
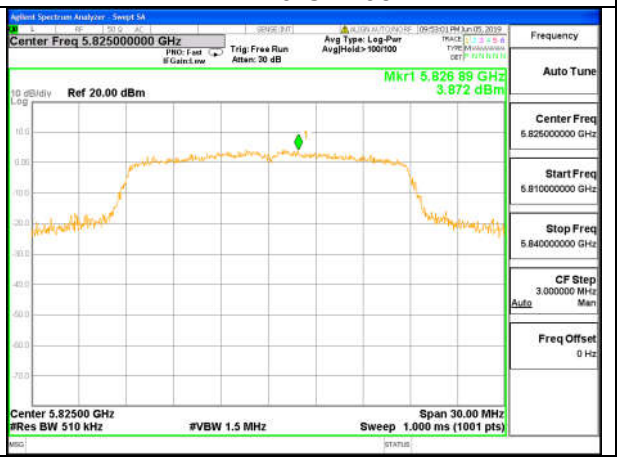
Agilent Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.232 6 GHz
4.354 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 5.23000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 60.00 MHz
Sweep 1.000 ms (601 pts)
Frequency
Auto Tune
Center Freq
5.230000000 GHz
Start Freq
5.200000000 GHz
Stop Freq
5.260000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz

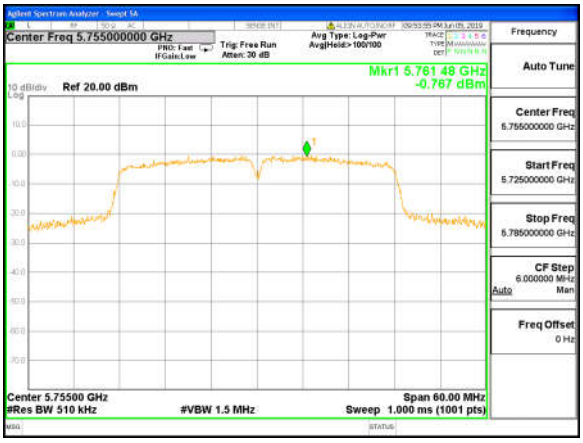
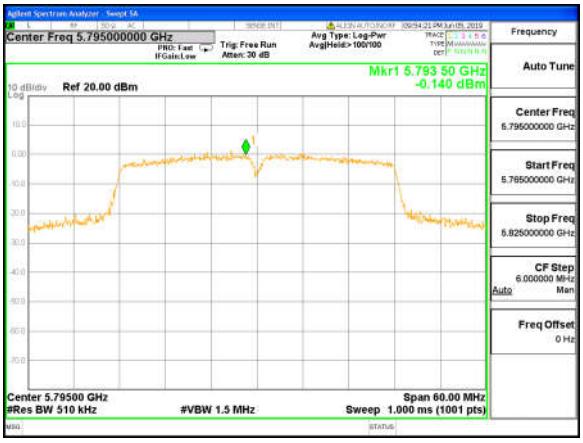
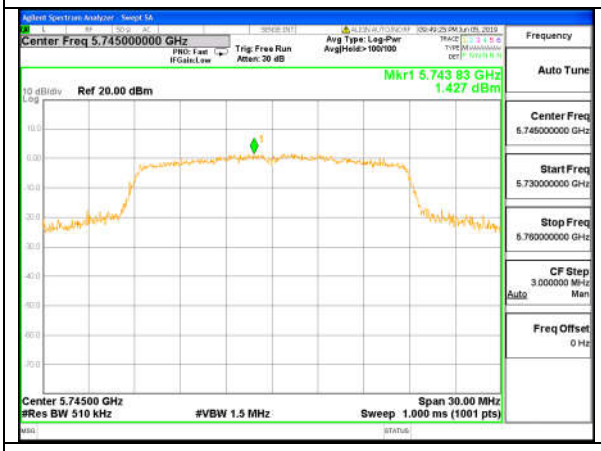
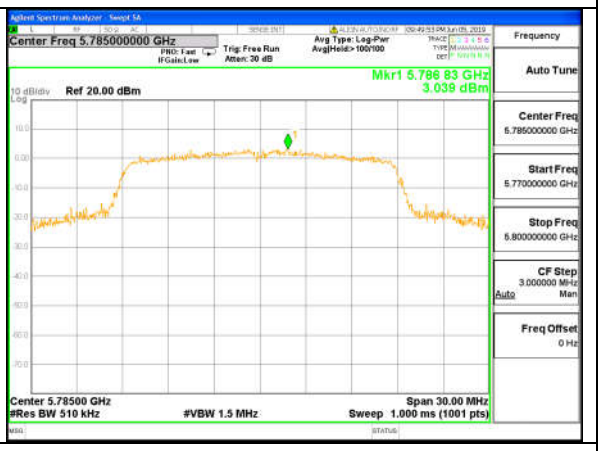
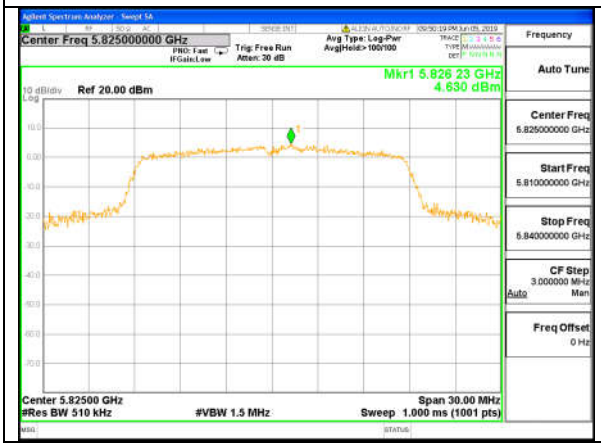
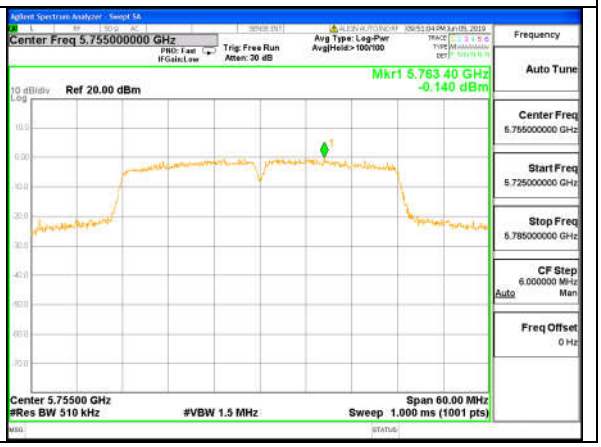
For Band III

Mode	Channel	Frequency(MHz)	PSD (dBm/510kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
11a	CH149	5745	2.179	1.619	30	Pass
11a	CH157	5785	3.664	2.279	30	Pass
11a	CH165	5825	4.188	2.572	30	Pass
11n20	CH149	5745	1.798	1.483	30	Pass
11n20	CH157	5785	2.926	1.923	30	Pass
11n20	CH165	5825	3.872	2.391	30	Pass
11n40	CH151	5755	-0.767	0.822	30	Pass
11n40	CH159	5795	-0.14	0.949	30	Pass
11ac20	CH149	5745	1.427	1.362	30	Pass
11ac20	CH157	5785	3.039	1.974	30	Pass
11ac20	CH165	5825	4.63	2.847	30	Pass
11ac40	CH151	5755	-0.14	0.949	30	Pass
11ac40	CH159	5795	1.035	1.244	30	Pass
Note:If the measurement is X dBm/510kHz, thus X dBm/510kHz = $(10^{X/10})$*(500 / 510) dBm/500kHz						

Test plots

For Band III

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	/
	

5.9 Frequency Stability Measurement

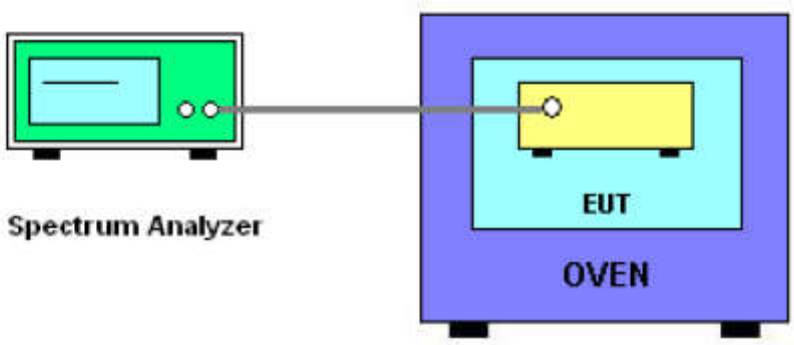
5.9.1 Limit

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 maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10_6 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	5180.0142	5180	0.0142	-2.7413
		V max (V)	5.75	5180.0196	5180	0.0196	-3.7838
		V min (V)	4.25	5180.0113	5180	0.0113	-2.1815
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)	3.7	T (°C)	-20	5180.0126	5180	0.0126	-2.4344
		T (°C)	-10	5180.0142	5180	0.0142	-2.7413
		T (°C)	0	5180.0116	5180	0.0116	-2.2394
		T (°C)	10	5180.0132	5180	0.0132	-2.5483
		T (°C)	20	5180.0126	5180	0.0126	-2.4324
		T (°C)	30	5180.0137	5180	0.0137	-2.6448
		T (°C)	40	5180.0120	5180	0.0120	-2.3166
		T (°C)	50	5180.0124	5180	0.0124	-2.3938
		T (°C)	60	5180.0141	5180	0.0141	-2.7220
		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)	3.70	5200.0124	5200	0.0124	-2.3846
		V max (V)	4.26	5200.0113	5200	0.0113	-2.1731
		V min (V)	3.15	5200.0124	5200	0.0124	-2.3846
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)	3.7	T (°C)	-20	5200.0110	5200	0.0110	-2.1154
		T (°C)	-10	5200.0125	5200	0.0125	-2.4038
		T (°C)	0	5200.0134	5200	0.0134	-2.5769
		T (°C)	10	5200.0132	5200	0.0132	-2.5385
		T (°C)	20	5200.0147	5200	0.0147	-2.8269
		T (°C)	30	5200.0141	5200	0.0141	-2.7115
		T (°C)	40	5200.0140	5200	0.0140	-2.6923
		T (°C)	50	5200.0132	5200	0.0132	-2.5385
		T (°C)	60	5200.0129	5200	0.0129	-2.4808
		T (°C)	70	5200.0119	5200	0.0119	-2.2885
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)	3.70	5240.0124	5240	0.0124	-2.3664
		V max (V)	4.26	5240.0119	5240	0.0119	-2.2710
		V min (V)	3.15	5240.0134	5240	0.0134	-2.5573
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)	3.7	T (°C)	-20	5240.0133	5240	0.0133	-2.5382
		T (°C)	-10	5240.0134	5240	0.0134	-2.5573
		T (°C)	0	5240.0117	5240	0.0117	-2.2328
		T (°C)	10	5240.0124	5240	0.0124	-2.3664
		T (°C)	20	5240.0142	5240	0.0142	-2.7099
		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	5240.0131	5240	0.0131	-2.5000
		T (°C)	70	5240.0129	5240	0.0129	-2.4618
Limits				within 5150-5250MHz			
Result				Complies			

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (° C)	20	V nom (V)	3.70	5745.00124	5745	0.00124	-0.2163
		V max (V)	4.26	5745.00972	5745	0.00972	-1.6917
		V min (V)	3.15	5745.00924	5745	0.00924	-1.6090
Limits				within 5725-5850MHz			
Result				Complies			

Voltage vs. Frequency Stability

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.7	T (°C)	-20	5745.01086	5745	0.01086	-1.8899
		T (°C)	-10	5745.01226	5745	0.01226	-2.1347
		T (°C)	0	5745.00797	5745	0.00797	-1.3864
		T (°C)	10	5745.00086	5745	0.00086	-0.1500
		T (°C)	20	5745.00009	5745	0.00009	-0.0157
		T (°C)	30	5745.01064	5745	0.01064	-1.8524
		T (°C)	40	5745.00857	5745	0.00857	-1.4914
		T (°C)	50	5745.00581	5745	0.00581	-1.0121
		T (°C)	60	5745.00808	5745	0.00808	-1.4061
		T (°C)	70	5745.00691	5745	0.00691	-1.2023
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)	3.70	5785.01072	5785	0.01072	-1.8526
		V max (V)	4.26	5785.01233	5785	0.01233	-2.1312
		V min (V)	3.15	5785.00867	5785	0.00867	-1.4988
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)	3.7	T (°C)	-20	5785.00385	5785	0.00385	-0.6656
		T (°C)	-10	5785.00987	5785	0.00987	-1.7068
		T (°C)	0	5785.00719	5785	0.00719	-1.2430
		T (°C)	10	5785.00856	5785	0.00856	-1.4804
		T (°C)	20	5785.01258	5785	0.01258	-2.1750
		T (°C)	30	5785.00609	5785	0.00609	-1.0522
		T (°C)	40	5785.01151	5785	0.01151	-1.9905
		T (°C)	50	5785.00860	5785	0.00860	-1.4860
		T (°C)	60	5785.00249	5785	0.00249	-0.4311
		T (°C)	70	5785.00565	5785	0.00565	-0.9765
Limits				within 5725-5850MHz			
Result				Complies			

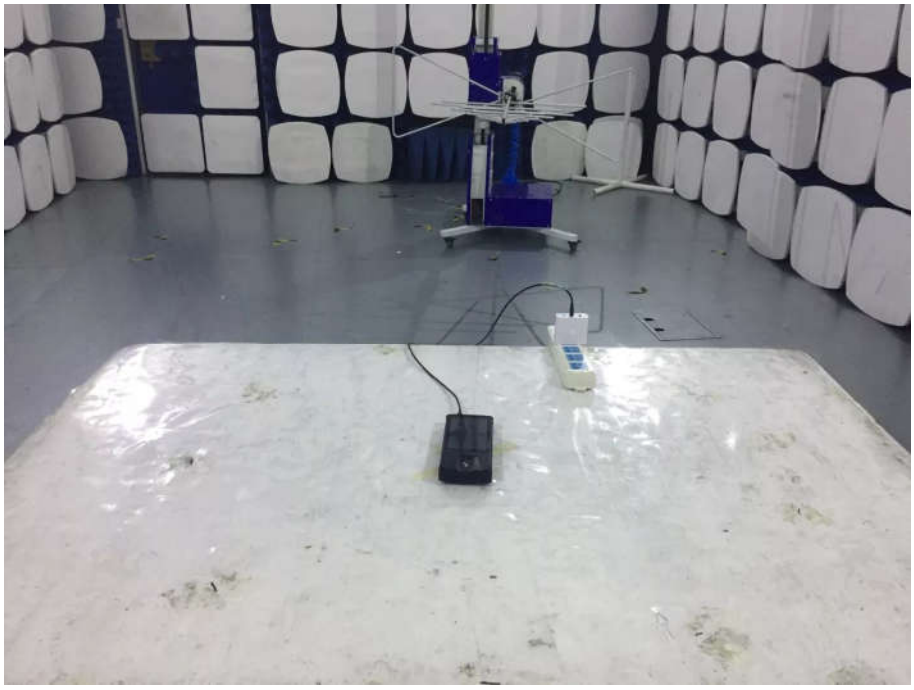
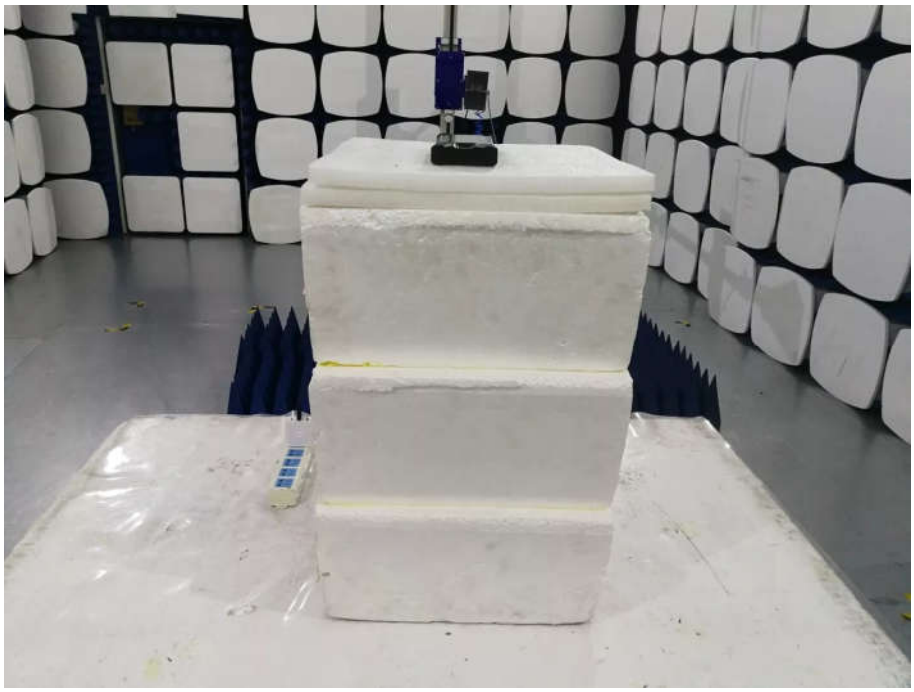
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (° C)	20	V nom (V)	3.70	5825.00502	5825	0.00502	-0.8610
		V max (V)	4.26	5825.00085	5825	0.00085	-0.1454
		V min (V)	3.15	5825.01016	5825	0.01016	-1.7436
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)	3.7	T (°C)	-20	5825.00077	5825	0.00077	-0.1330
		T (°C)	-10	5825.00293	5825	0.00293	-0.5037
		T (°C)	0	5825.01186	5825	0.01186	-2.0360
		T (°C)	10	5825.00544	5825	0.00544	-0.9347
		T (°C)	20	5825.01309	5825	0.01309	-2.2470
		T (°C)	30	5825.00539	5825	0.00539	-0.9258
		T (°C)	40	5825.00473	5825	0.00473	-0.8127
		T (°C)	50	5825.00736	5825	0.00736	-1.2643
		T (°C)	60	5825.00591	5825	0.00591	-1.0150
		T (°C)	70	5825.01182	5825	0.01182	-2.0291
Limits				within 5725-5850MHz			
Result				Complies			

Photographs of the Test Setup

Radiated emission



Conducted emission


Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi190611E067-1.

----END OF REPORT----