



Microtest
微 测 检 测

Test Report

Report No.: MTi210526002-01E2

Date of issue: Aug. 13, 2021

Applicant: Shenzhen Junyong Technology
Co., Ltd

Product name: Model smart box

Model(s): Y2, A2, A3, Y1, Y3

FCC ID: 2A2DL-Y2

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



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Table of Contents

1	GENERAL INFORMATION	6
1.1	DESCRIPTION OF EUT	6
1.2	OPERATION CHANNEL LIST	7
1.3	TEST CHANNEL LIST	7
1.4	ANCILLARY EQUIPMENT LIST	8
1.5	DESCRIPTION OF SUPPORT UNITS	8
2	SUMMARY OF THE TEST RESULTS	9
3	TEST FACILITIES AND ACCREDITATIONS	10
3.1	TEST LABORATORY	10
3.2	ENVIRONMENTAL CONDITIONS	10
3.3	MEASUREMENT UNCERTAINTY	11
3.4	TEST SOFTWARE	11
4	EQUIPMENT LIST	12
5	TEST RESULTS	13
5.1	ANTENNA REQUIREMENT	13
5.1.1	<i>Standard requirement</i>	13
5.1.2	<i>EUT Antenna</i>	13
5.2	RF OUTPUT POWER	14
5.2.1	<i>Limit</i>	14
5.2.2	<i>Test procedure</i>	14
5.2.3	<i>Test setup</i>	14
5.2.4	<i>Test results</i>	15
5.3	POWER LINE CONDUCTED EMISSION	17
5.3.1	<i>Limits</i>	17
5.3.2	<i>Test setup</i>	17
5.3.3	<i>Test procedure</i>	18
5.3.4	<i>Test results</i>	19
5.4	26dB EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH	23
5.4.1	<i>Limit</i>	23
5.4.2	<i>Test procedure</i>	23
5.4.3	<i>Test setup</i>	23
5.4.4	<i>Test results</i>	24
5.5	6dB BANDWIDTH	31
5.5.1	<i>Limit</i>	31
5.5.2	<i>Test procedure</i>	31
5.5.3	<i>Test setup</i>	31
5.5.4	<i>Test results</i>	31
5.6	CONDUCTED SPURIOUS EMISSION	36
5.6.1	<i>Limits</i>	36
5.6.2	<i>Test setup</i>	36
5.6.3	<i>Test procedure</i>	36
5.6.4	<i>Test results</i>	37
5.7	RADIATED SPURIOUS EMISSION	52
5.7.1	<i>Radiated Emission Limits</i>	52
5.7.2	<i>Test procedure</i>	54
5.7.3	<i>Test setup</i>	54
5.7.4	<i>Test results</i>	56
5.8	POWER SPECTRAL DENSITY	68



5.8.1	Limit	68
5.8.2	Test procedure.....	68
5.8.3	Test setup	69
5.8.4	Test results.....	69
5.9	FREQUENCY STABILITY MEASUREMENT	83
5.9.1	Limit	83
5.9.2	Test Procedures	83
5.9.3	Test Setup Layout	83
5.9.4	EUT Operation during Test	83
5.9.5	TEST RESULTS	84
PHOTOGRAPHS OF THE EUT.....		92



TEST RESULT CERTIFICATION

Applicant's name	Shenzhen Junyong Technology Co., Ltd
Address	No.35, Fuyuan 1st Road, Xinhe community, Fuhai street, Bao'an District, Shenzhen, China
Manufacturer's Name	Shenzhen Junyong Technology Co., Ltd
Address	No.35, Fuyuan 1st Road, Xinhe community, Fuhai street, Bao'an District, Shenzhen, China

Product description

Product name	Model smart box
Trademark	BROxiongdi
Model Name	Y2
Serial Model	A2, A3, Y1, Y3
Standards	FCC Part 15.407
Test procedure	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Date of Test

Date (s) of performance of tests.....	June 17, 2021 ~July 13, 2021
Test Result	Pass

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

Testing Engineer

:

Cindy Qin

(Cindy Qin)

Technical Manager

:

Leo Su

(Leo Su)

Authorized Signatory

:

Tom Xue

(Tom Xue)

1 General information

1.1 Description of EUT

Equipment:	Model smart box
Model name:	Y2
Serial model:	A2, A3, Y1, Y3
Model difference:	All the models are the same circuit and RF module, except the software version and model No.
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:	FPC antenna
Antenna gain:	For 802.11a, working in SISO mode, then the antenna gain as below: 802.11a: Antenna A :3dBi 802.11a: Antenna B :3dBi
	For 802.11n/ac, working in MIMO mode, the antenna gains should be calculated by the formula: Directional Gain = $G_{ANT} + 10 \cdot \log(N_{ANT})$ dBi = 3 dBi + $10 \cdot \log(2)$ dBi = 6.01 dBi
Max. output power:	U-NII-1: 10.46dBm U-NII-3: 9.95dBm
Hardware version:	V02
Software version:	V1.0
Power supply:	DC 5V 0.5A
Adapter information:	N/A
Battery:	N/A
Serial number:	MTi210526002-01-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	42	5210
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	155	5775
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
Laptop	E485	/	Lenovo	/

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	

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	15°C~35°C
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa



3.3 Measurement uncertainty

The reported uncertainty of measurement $y \pm U$ where expanded 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	$\pm 1.38\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

3.4 Test software

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

4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E043	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2021/06/02	2022/06/01
MTI-E044	TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-1338	2021/05/30	2023/05/29
MTI-E047	Amplifier	Hewlett-Packard	8447F	3113A06150	2021/06/02	2022/06/01
MTI-E089	ESG Vector Signal Generator	Agilent	N5182A	MY49060455	2021/06/02	2022/06/01
MTI-E058	ESG Series Analog Signal Generator	Agilent	E4421B	GB40051240	2021/06/02	2022/06/01
MTI-E062	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2021/06/02	2022/06/01
MTI-E066	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2021/06/02	2022/06/01
MTI-E078	Synthesized Sweeper	Agilent	83752A	3610A01957	2021/06/02	2022/06/01
MTI-E079	DC Power Supply	Agilent	E3632A	MY40027695	2021/06/02	2022/06/01
MTI-E045	Double Ridged Broadband Horn Antenna	schwarzbeck	BBHA 9120D	9120D-2278	2021/05/30	2023/05/29
MTI-E021	EMI Test Receiver	Rohde&schwarz	ESCS30	100210	2021/06/02	2022/06/01
MTI-E022	Pulse Limiter	Schwarzbeck	VSTD 9561-F	00679	2021/06/02	2022/06/01
MTI-E023	Artificial mains network	Schwarzbeck	NSLK 8127	NSLK 8127 #841	2021/06/02	2022/06/01
MTI-E046	Active Loop Antenna	Schwarzbeck	FMZB 1519B	00044	2021/05/30	2023/05/29
MTI-E048	Amplifier	Agilent	8449B	3008A02400	2021/06/02	2022/06/01
MTI-E072	Thermometer Clock Humidity Monitor	-	HTC-1	/	2021/06/02	2022/06/01

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 FPC antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 3dBi.

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 $11 \text{ dBm} + 10 \log B$, 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.

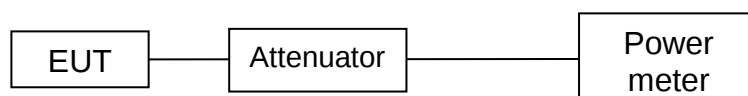
For the band 5.725-5.85 GHz

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

Test Channel	Frequency (MHz)	Output Power (ANT A)		Output Power (ANT B)		Output Power (ANT Total)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW	dBm	mW
802.11a mode									
CH36	5180	7.44	5.55	6.19	4.16	N/A	N/A	24	250
CH40	5200	8.27	6.71	6.75	4.73	N/A	N/A		
CH48	5240	7.86	6.11	8.01	6.32	N/A	N/A		
802.11n20 mode									
CH36	5180	5.80	3.80	5.95	3.94	8.89	7.74	24	250
CH40	5200	6.39	4.36	6.58	4.55	9.50	8.90		
CH48	5240	7.64	5.81	7.04	5.06	10.36	10.87		
802.11ac20 mode									
CH36	5180	5.66	3.68	6.59	4.56	9.16	8.24	24	250
CH40	5200	6.98	4.99	7.01	5.02	10.01	10.01		
CH48	5240	7.67	5.85	6.65	4.62	10.2	10.47		
802.11n40 mode									
CH38	5190	6.42	4.39	6.17	4.14	9.31	8.53	24	250
CH46	5230	7.72	5.92	6.67	4.65	9.92	9.82		
802.11ac40 mode									
CH38	5190	7.35	5.43	6.74	4.72	10.07	10.15	24	250
CH46	5230	7.87	6.12	6.30	4.27	10.17	10.39		
802.11ac80 mode									
CH42	5210	7.17	5.21	7.71	5.90	10.46	11.11	24	250



For U-NII-3

Test Channel	Frequency (MHz)	Output Power (ANT A)		Output Power (ANT B)		Output Power (ANT Total)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW	dBm	mW
802.11a mode									
CH149	5745	5.33	3.41	6.18	4.15	N/A	N/A	30	1000
CH157	5785	4.61	2.89	7.08	5.11	N/A	N/A		
CH165	5825	5.87	3.86	6.93	4.93	N/A	N/A		
802.11n20 mode									
CH149	5745	5.35	3.43	6.29	4.26	8.86	7.68	30	1000
CH157	5785	4.56	2.86	6.97	4.98	8.94	7.83		
CH165	5825	5.92	3.91	7.75	5.96	9.94	9.87		
802.11ac20 mode									
CH149	5745	4.86	3.06	6.75	4.73	8.85	7.67	30	1000
CH157	5785	5.68	3.70	6.98	4.99	9.39	8.69		
CH165	5825	5.87	3.86	7.79	6.01	9.95	9.88		
802.11n40 mode									
CH151	5755	4.29	2.69	6.74	4.72	8.70	7.41	30	1000
CH159	5795	4.97	3.14	7.30	5.37	9.30	8.51		
802.11ac40 mode									
CH151	5755	4.21	2.64	7.18	5.22	8.95	7.86	30	1000
CH159	5795	5.04	3.19	7.32	5.40	9.34	8.59		
802.11ac80 mode									
CH155	5775	4.63	2.90	6.76	4.74	8.83	7.65	30	1000



5.3 Power line conducted emission

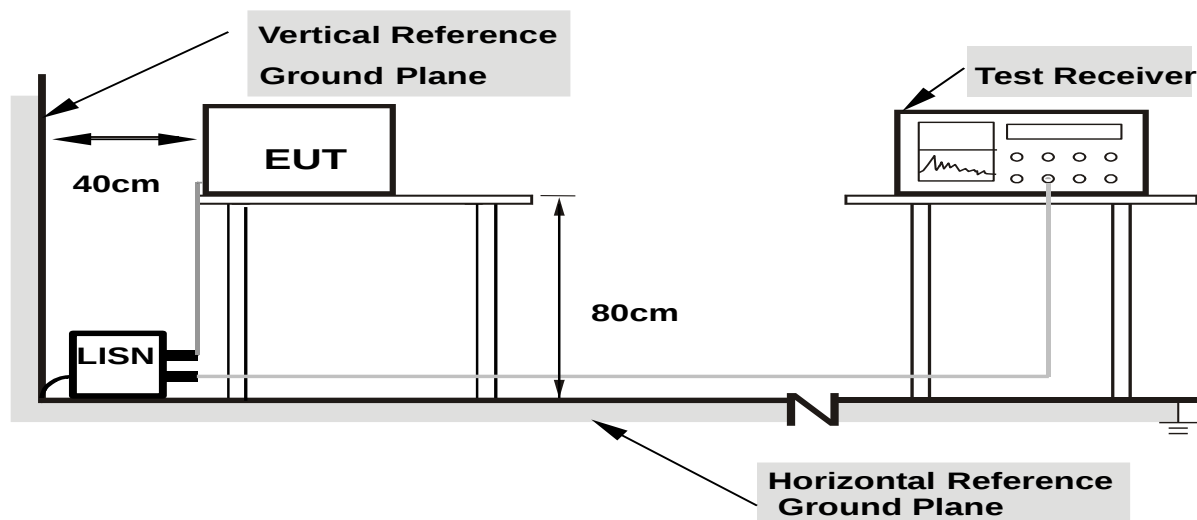
5.3.1 Limits

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

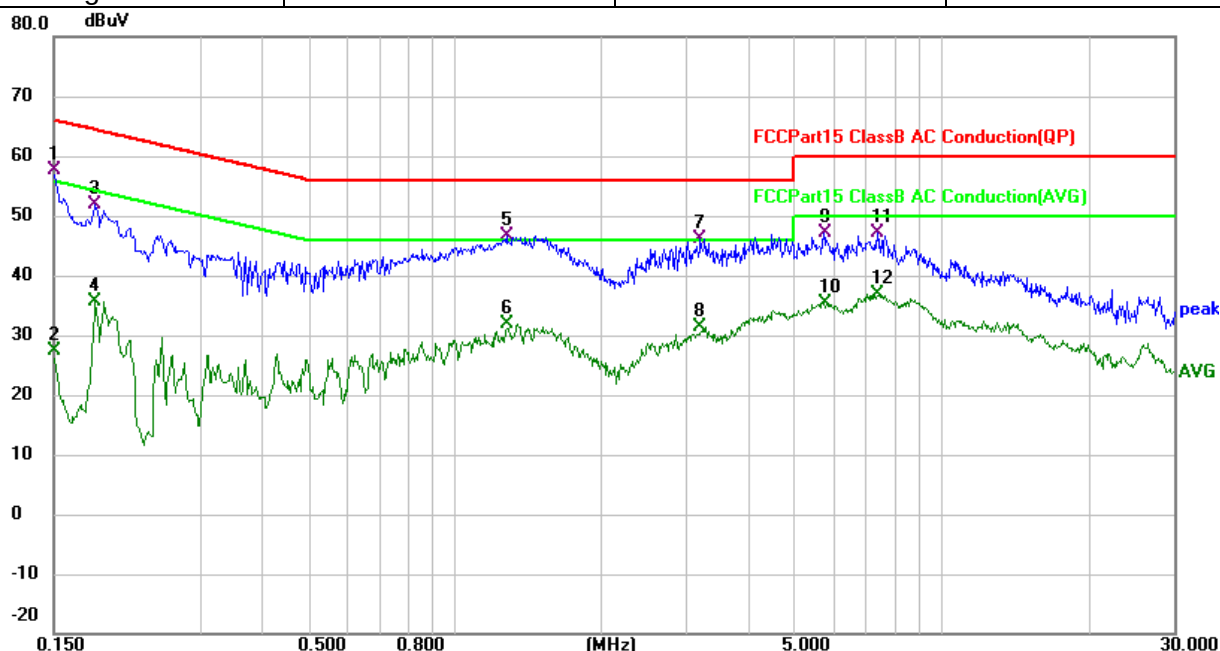
- c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.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

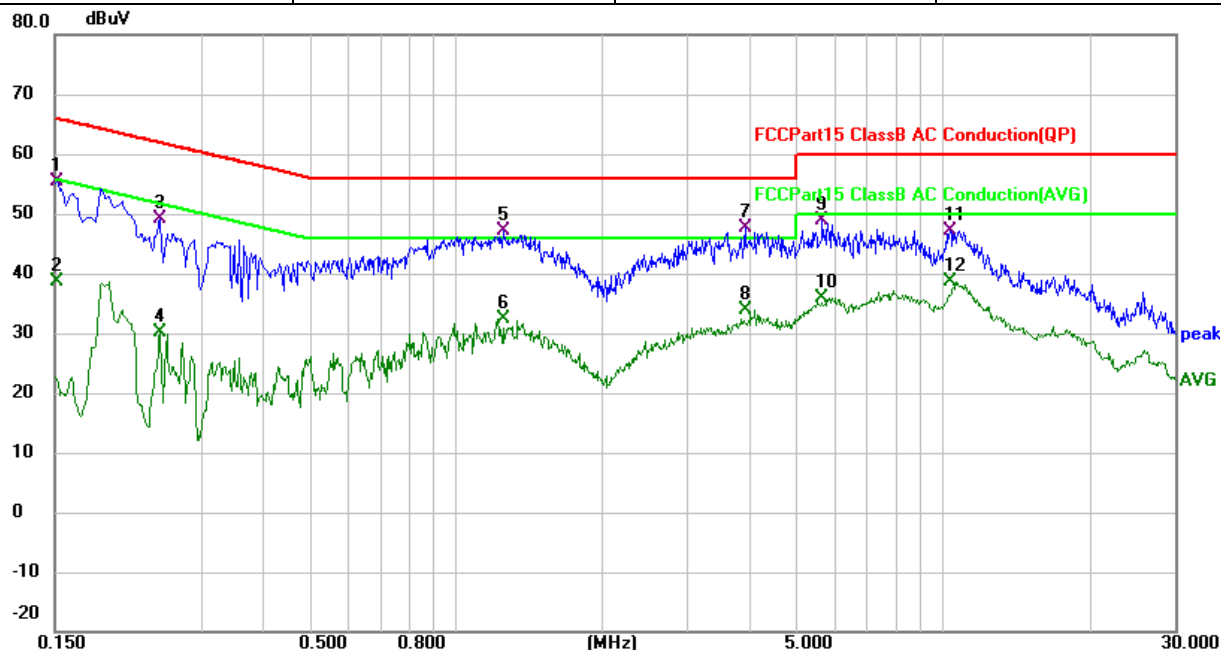
EUT:	Model smart box	Model Name:	Y2
Pressure:	1010hPa	Phase:	L
Test Voltage:	DC 5V 0.7A	Test Mode:	TX



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1500	46.57	10.99	57.56	66.00	-8.44	QP
2		0.1500	16.30	10.99	27.29	56.00	-28.71	AVG
3		0.1819	41.03	10.97	52.00	64.40	-12.40	QP
4		0.1819	24.57	10.97	35.54	54.40	-18.86	AVG
5		1.2780	32.83	13.88	46.71	56.00	-9.29	QP
6		1.2780	17.98	13.88	31.86	46.00	-14.14	AVG
7		3.1939	34.83	11.39	46.22	56.00	-9.78	QP
8		3.1939	19.87	11.39	31.26	46.00	-14.74	AVG
9		5.7218	35.62	11.54	47.16	60.00	-12.84	QP
10		5.7218	23.88	11.54	35.42	50.00	-14.58	AVG
11		7.3900	35.60	11.64	47.24	60.00	-12.76	QP
12		7.3900	25.29	11.64	36.93	50.00	-13.07	AVG



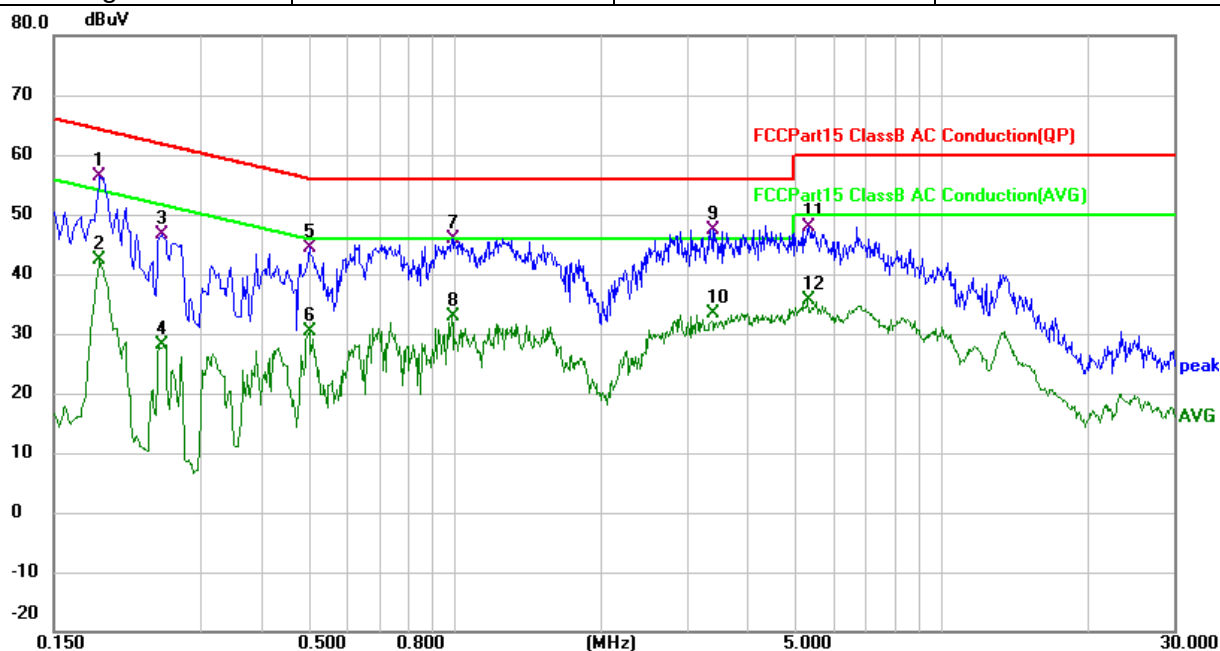
EUT:	Model smart box	Model Name:	Y2
Pressure:	1010hPa	Phase:	N
Test Voltage:	DC 5V 0.7A	Test Mode:	TX



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1514	44.47	10.94	55.41	65.92	-10.51	QP
2		0.1514	27.58	10.94	38.52	55.92	-17.40	AVG
3		0.2459	38.20	10.93	49.13	61.89	-12.76	QP
4		0.2459	19.19	10.93	30.12	51.89	-21.77	AVG
5		1.2500	33.32	13.76	47.08	56.00	-8.92	QP
6		1.2500	18.52	13.76	32.28	46.00	-13.72	AVG
7	*	3.9420	36.25	11.39	47.64	56.00	-8.36	QP
8		3.9420	22.59	11.39	33.98	46.00	-12.02	AVG
9		5.6736	37.41	11.40	48.81	60.00	-11.19	QP
10		5.6736	24.47	11.40	35.87	50.00	-14.13	AVG
11		10.3658	35.61	11.54	47.15	60.00	-12.85	QP
12		10.3658	27.05	11.54	38.59	50.00	-11.41	AVG



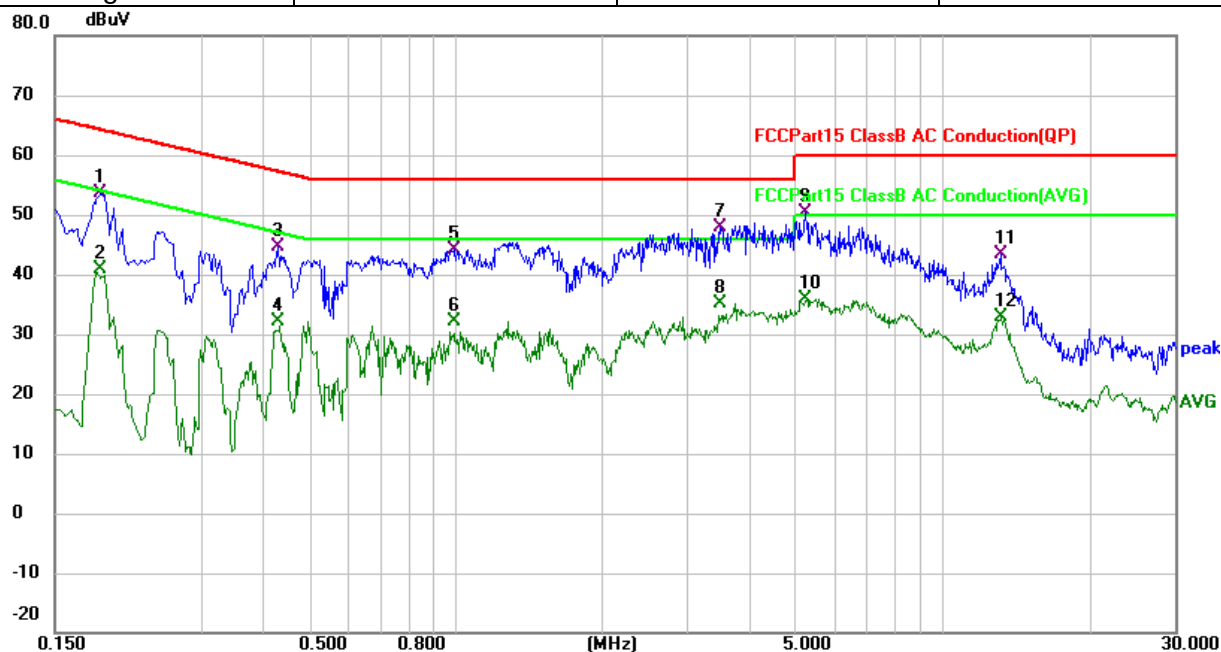
EUT:	Model smart box	Model Name:	Y2
Pressure:	1010hPa	Phase:	L
Test Voltage:	DC 5V 0.7A	Test Mode:	TX



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1859	45.34	10.98	56.32	64.22	-7.90	QP
2		0.1859	31.50	10.98	42.48	54.22	-11.74	AVG
3		0.2500	35.59	10.99	46.58	61.76	-15.18	QP
4		0.2500	17.14	10.99	28.13	51.76	-23.63	AVG
5		0.5020	33.19	11.07	44.26	56.00	-11.74	QP
6		0.5020	19.32	11.07	30.39	46.00	-15.61	AVG
7		0.9900	32.67	13.25	45.92	56.00	-10.08	QP
8		0.9900	19.73	13.25	32.98	46.00	-13.02	AVG
9		3.3860	36.04	11.40	47.44	56.00	-8.56	QP
10		3.3860	21.87	11.40	33.27	46.00	-12.73	AVG
11		5.3338	36.37	11.50	47.87	60.00	-12.13	QP
12		5.3338	24.01	11.50	35.51	50.00	-14.49	AVG



EUT:	Model smart box	Model Name:	Y2
Pressure:	1010hPa	Phase:	N
Test Voltage:	DC 5V 0.7A	Test Mode:	TX



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1859	42.70	10.92	53.62	64.22	-10.60	QP
2		0.1859	29.96	10.92	40.88	54.22	-13.34	AVG
3		0.4300	33.65	10.89	44.54	57.25	-12.71	QP
4		0.4300	21.14	10.89	32.03	47.25	-15.22	AVG
5		0.9900	30.90	13.18	44.08	56.00	-11.92	QP
6		0.9900	19.02	13.18	32.20	46.00	-13.80	AVG
7	*	3.4980	36.41	11.39	47.80	56.00	-8.20	QP
8		3.4980	23.74	11.39	35.13	46.00	-10.87	AVG
9		5.2339	38.97	11.40	50.37	60.00	-9.63	QP
10		5.2339	24.46	11.40	35.86	50.00	-14.14	AVG
11		13.1418	31.68	11.62	43.30	60.00	-16.70	QP
12		13.1418	21.17	11.62	32.79	50.00	-17.21	AVG

Note:

1. All the mode has been tested for this test, just incarnate report the worst mode 11a CH40 data.
2. Emission Level = Reading Level + Factor, Margin = Emission Level - Limit, Factor = LISN modulus + Cable Loss.

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 $\geq 3 \times \text{RBW}$

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 $\geq 3 \times \text{RBW}$, 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

Note1: The antenna A and antenna B have been tested. The report only shows the worst antenna. The worst case is ANT A.

ANT A

For U-NII-1

Channel	Test Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% bandwidth	Limit (kHz)	Result
11a	CH36	5180	20.90	16.579	/	Pass
11a	CH40	5200	20.44	16.592	/	Pass
11a	CH48	5240	20.69	16.593	/	Pass
11n (HT20)	CH36	5180	22.13	17.725	/	Pass
11n (HT20)	CH40	5200	21.72	17.717	/	Pass
11n (HT20)	CH48	5240	21.19	17.709	/	Pass
11n (HT40)	CH38	5190	43.17	36.521	/	Pass
11n (HT40)	CH46	5230	42.87	36.443	/	Pass

Channel	Test Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% bandwidth	Limit (kHz)	Result
11ac (HT20)	CH36	5180	20.67	17.913	/	Pass
11ac (HT20)	CH40	5200	20.87	17.925	/	Pass
11ac (HT20)	CH48	5240	20.58	17.885	/	Pass
11ac (HT40)	CH38	5190	42.54	36.462	/	Pass
11ac (HT40)	CH46	5230	42.35	36.438	/	Pass
11ac (HT80)	CH42	5210	83.08	75.721	/	Pass

For U-NII-3

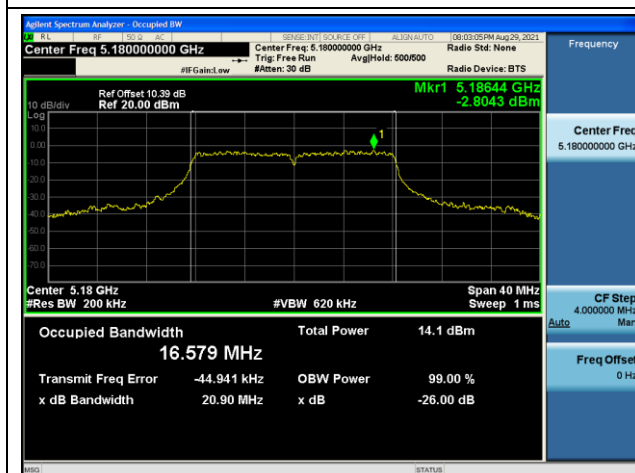
Channel	Test Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% bandwidth	Limit (kHz)	Result
11a	CH149	5745	21.37	17.701	/	Pass
11a	CH157	5785	21.06	17.664	/	Pass
11a	CH165	5825	21.06	17.651	/	Pass
11n (HT20)	CH149	5745	21.41	17.705	/	Pass
11n (HT20)	CH157	5785	20.96	17.649	/	Pass
11n (HT20)	CH165	5825	20.78	17.640	/	Pass
11n (HT40)	CH151	5755	42.76	36.519	/	Pass
11n (HT40)	CH159	5795	42.57	36.467	/	Pass

Channel	Test Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% bandwidth	Limit (kHz)	Result
11ac (HT20)	CH149	5745	21.17	18.052	/	Pass
11ac (HT20)	CH157	5785	21.79	17.858	/	Pass
11ac (HT20)	CH165	5825	21.86	17.750	/	Pass
11ac (HT40)	CH151	5755	42.76	36.461	/	Pass
11ac (HT40)	CH159	5795	42.79	36.454	/	Pass
11ac (HT80)	CH155	5775	83.23	75.773	/	Pass

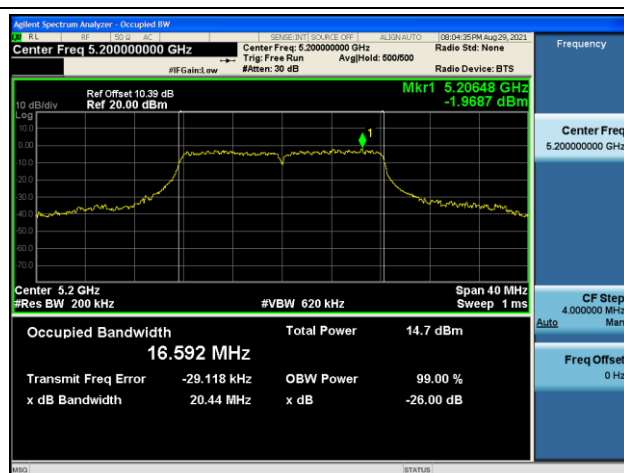
Test plots:

For U-NII-1

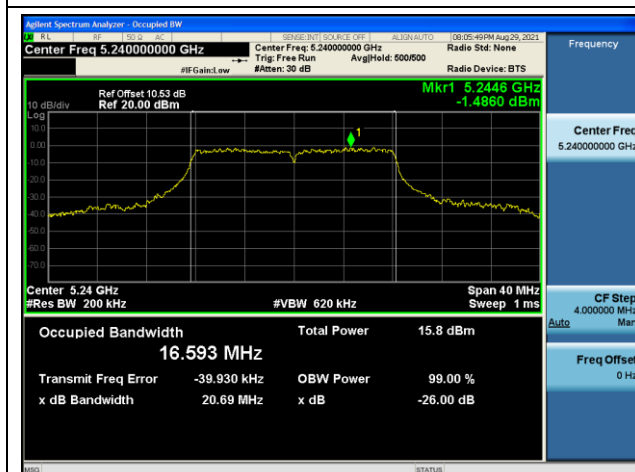
11a CH36



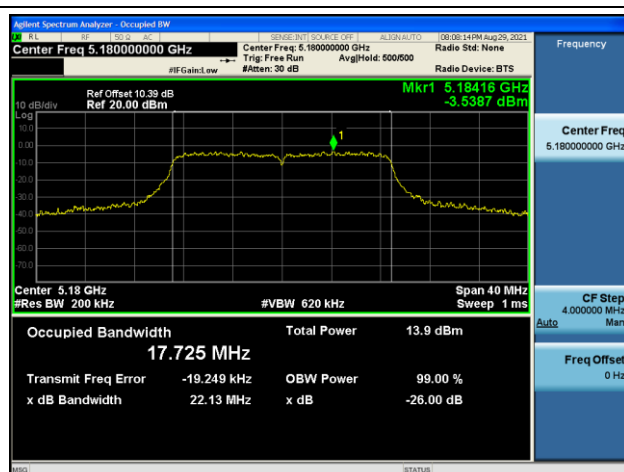
11a CH40



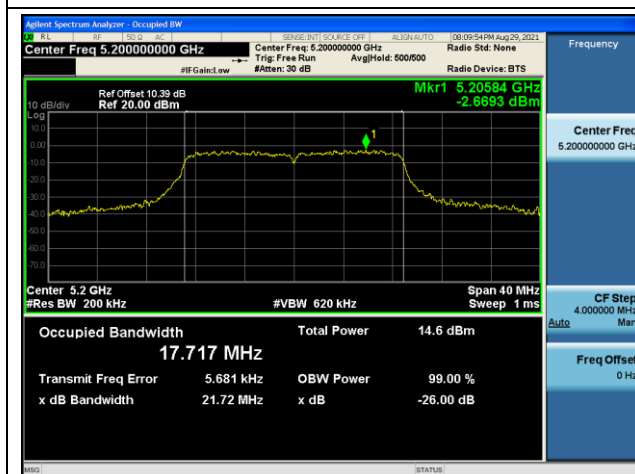
11a CH48



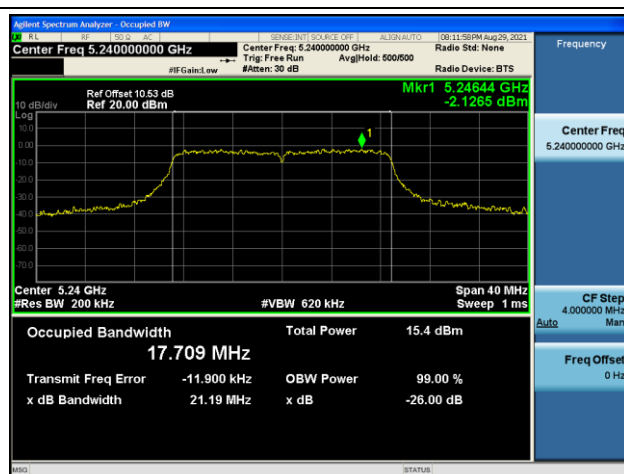
11n (HT20) CH36



11n (HT20) CH40

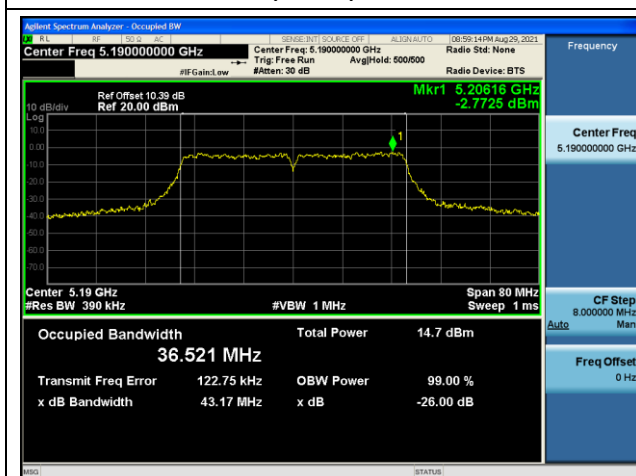


11n (HT20) CH48

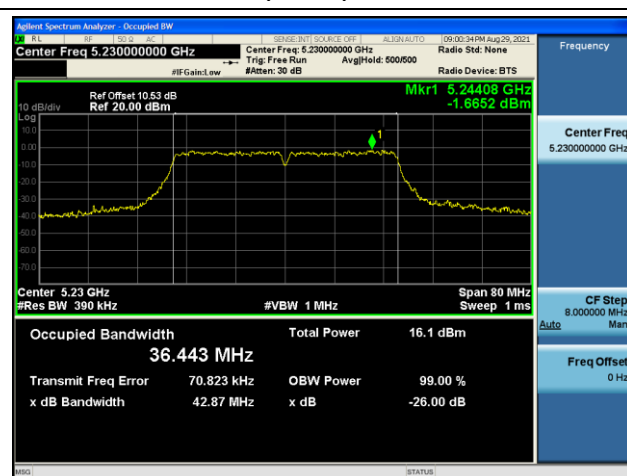




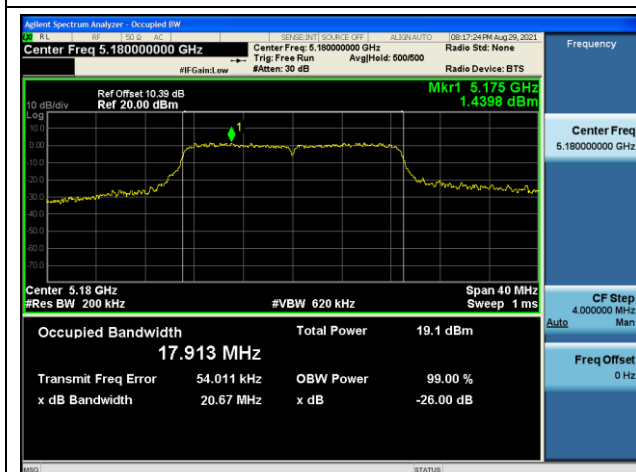
11n (HT40) CH38



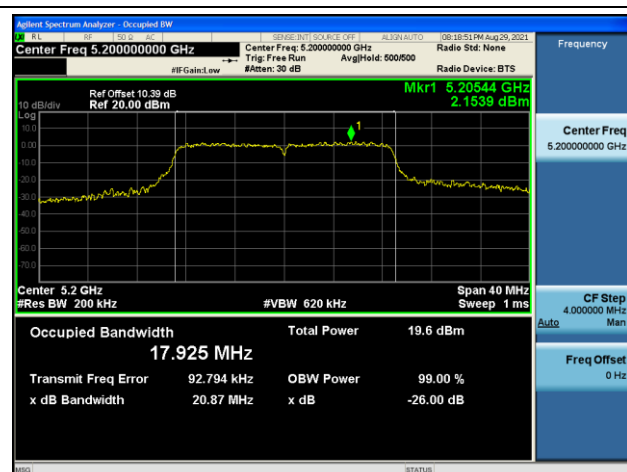
11n (HT40) CH46



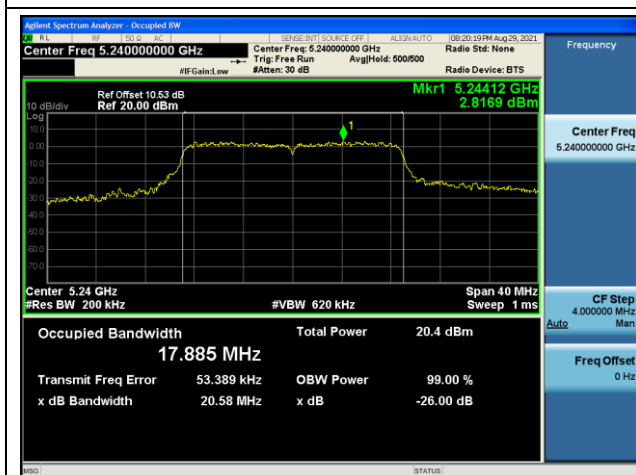
11ac (HT20) CH36



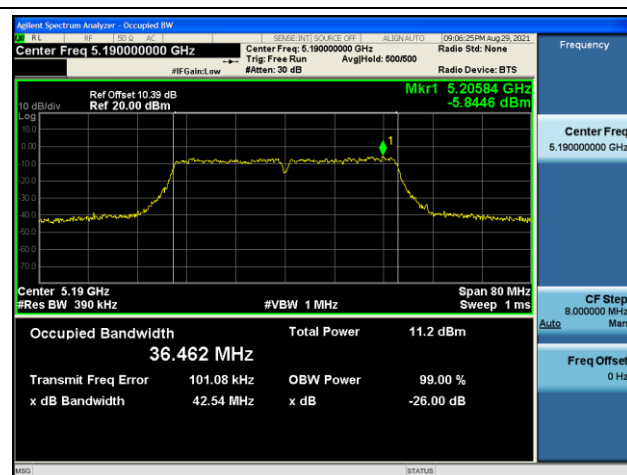
11ac (HT20) CH40



11ac (HT20) CH48

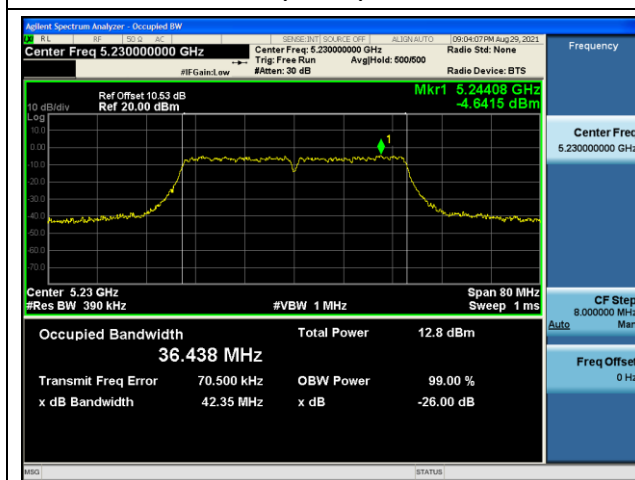


11ac (HT40) CH38

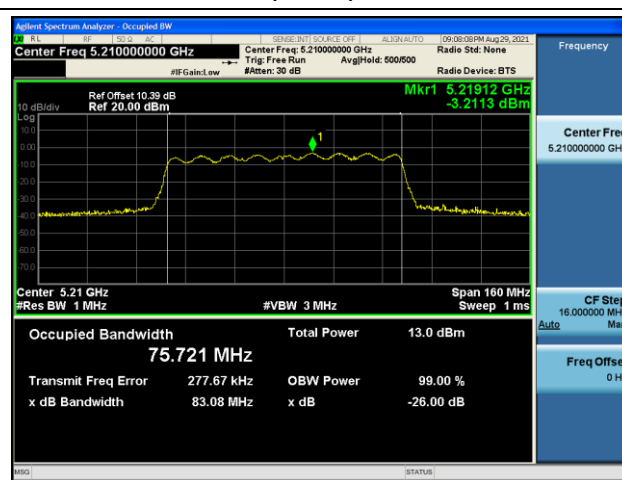




11ac (HT40) CH46

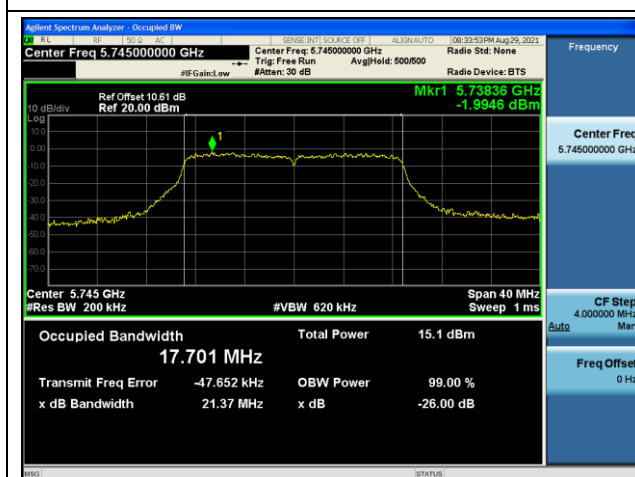


11ac (HT80) CH42

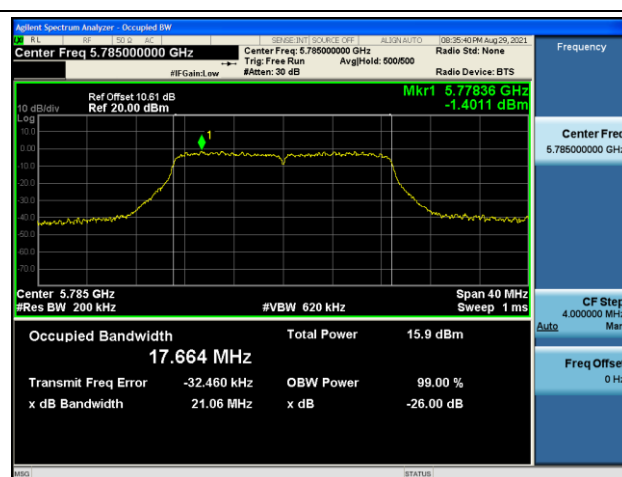


For U-NII-3

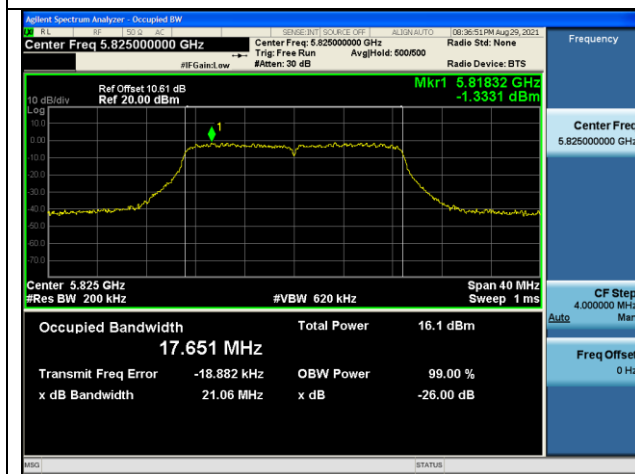
11a CH149



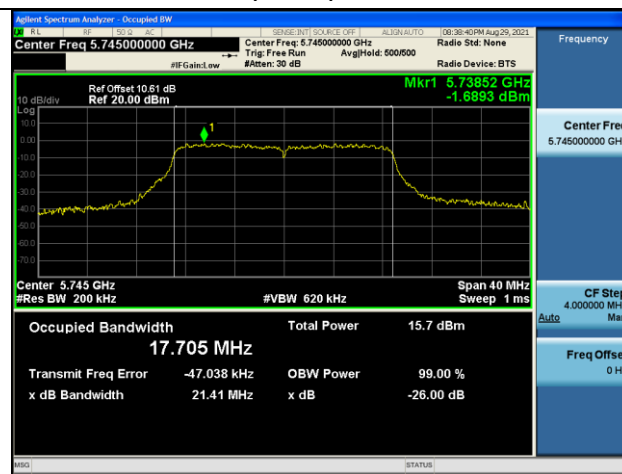
11a CH157



11a CH165

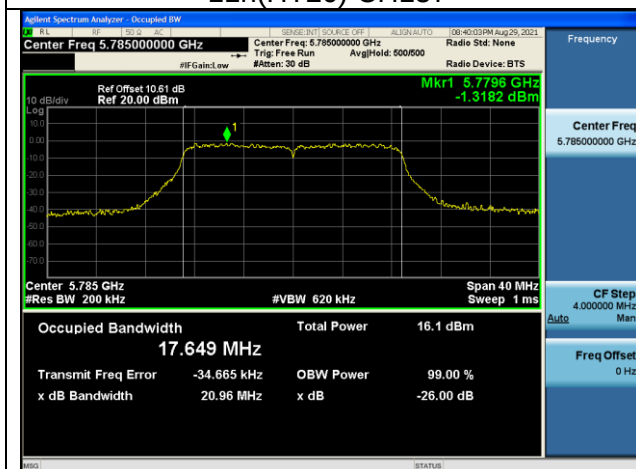


11n(HT20) CH149

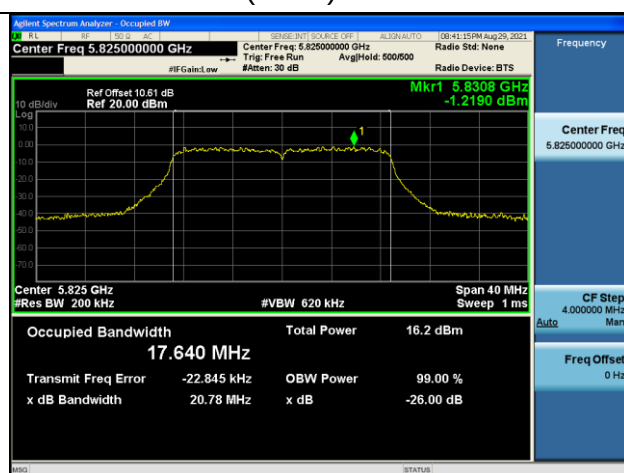




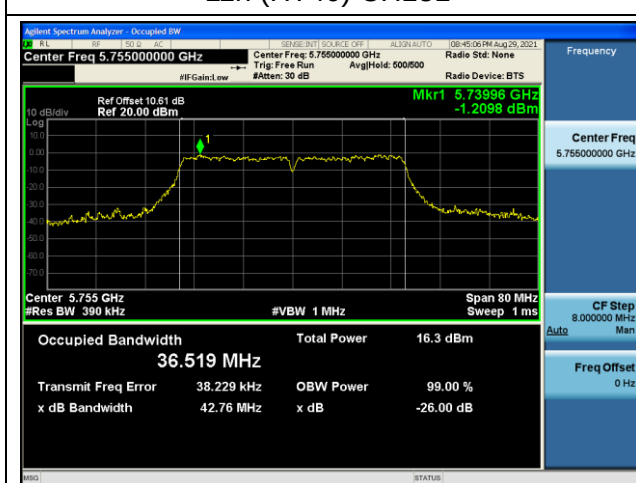
11n(HT20) CH157



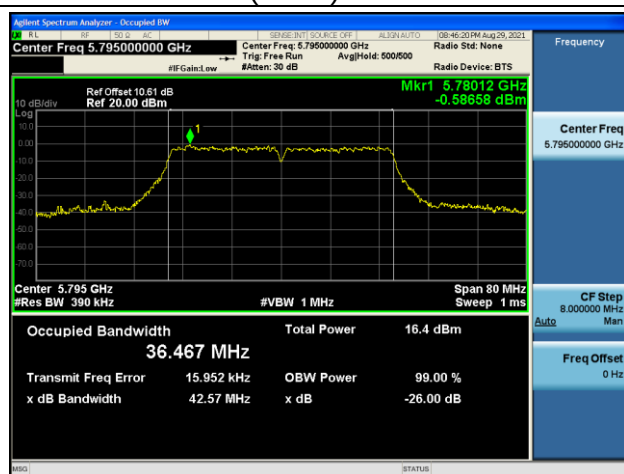
11n(HT20) CH165



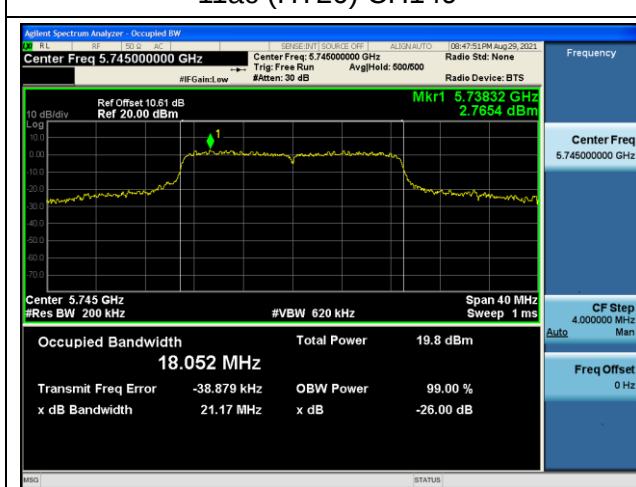
11n (HT40) CH151



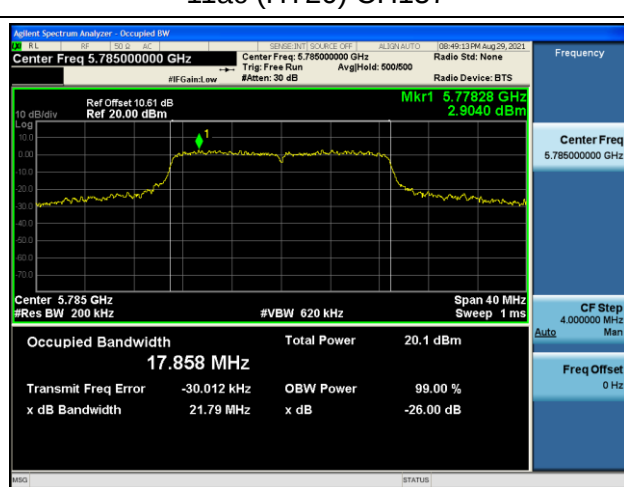
11n (HT40) CH159



11ac (HT20) CH149

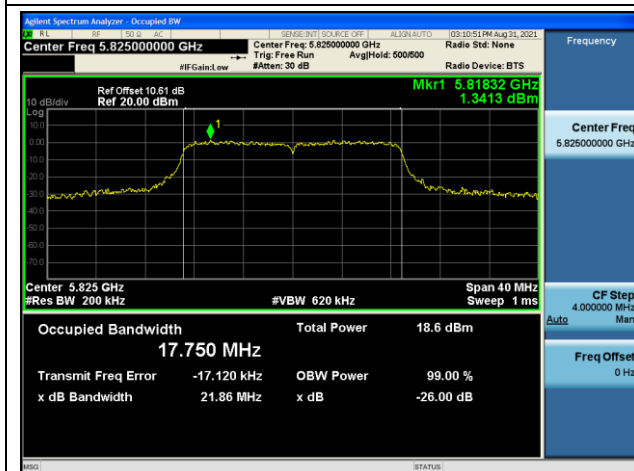


11ac (HT20) CH157

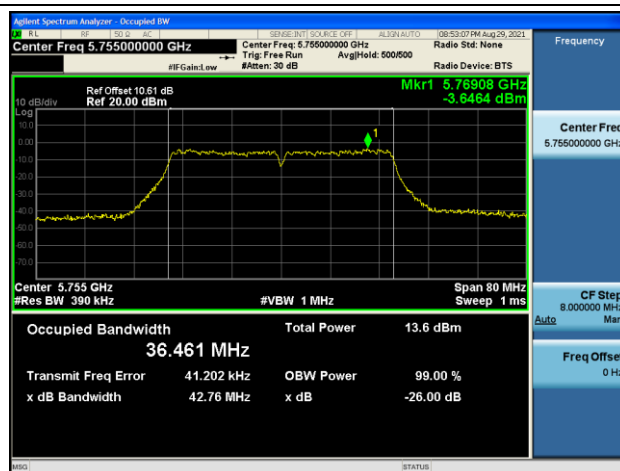




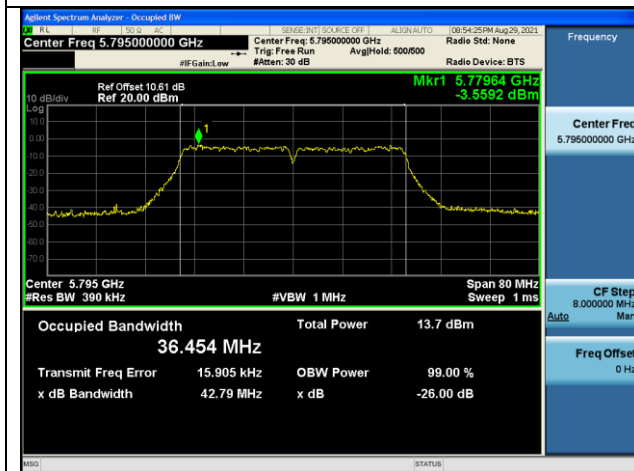
11ac(HT20) CH165



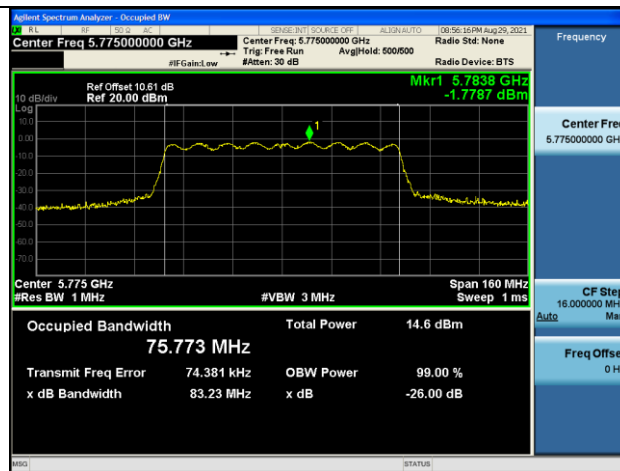
11ac(HT40) CH151



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) $\geq 3 \times$ 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



Note1: The antenna A and antenna B have been tested. The report only shows the worst antenna. The worst case is ANT A.

For U-NII-3

Channel	Test Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
11a	CH149	5745	16.56	500	Pass
11a	CH157	5785	16.56	500	Pass
11a	CH165	5825	16.57	500	Pass
11n (HT20)	CH149	5745	17.74	500	Pass
11n (HT20)	CH157	5785	17.69	500	Pass
11n (HT20)	CH165	5825	17.71	500	Pass
11n (HT40)	CH151	5755	36.56	500	Pass
11n (HT40)	CH159	5795	36.56	500	Pass

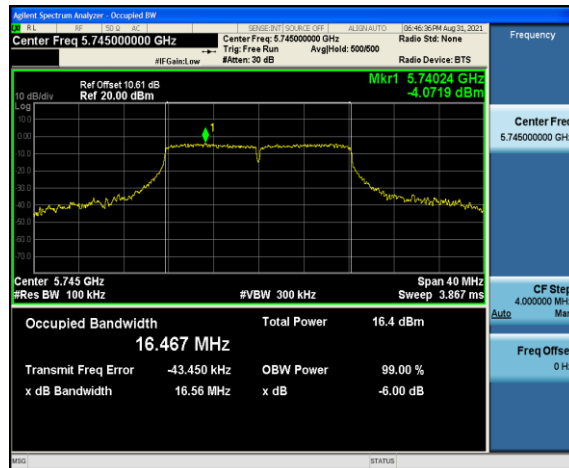
Channel	Test Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
11ac (HT20)	CH149	5745	17.71	500	Pass
11ac (HT20)	CH157	5785	17.73	500	Pass
11ac (HT20)	CH165	5825	17.70	500	Pass
11ac (HT40)	CH151	5755	36.57	500	Pass
11ac (HT40)	CH159	5795	36.57	500	Pass
11ac (HT80)	CH155	5775	76.46	500	Pass



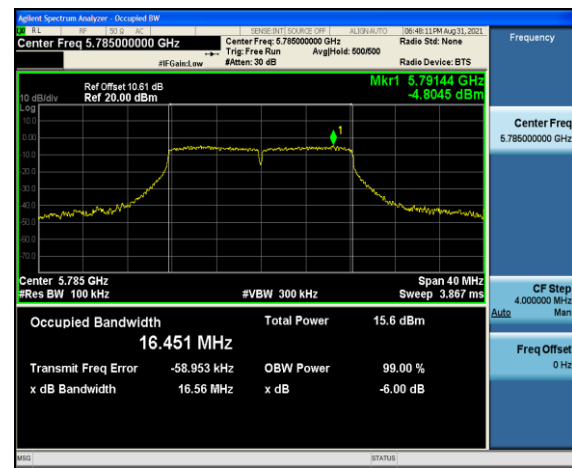
Test plots:

For U-NII-3

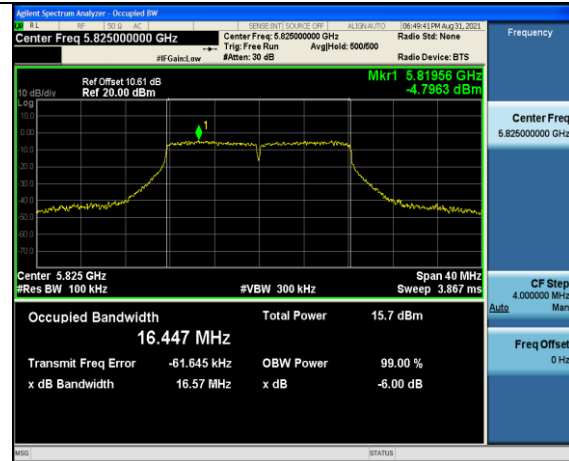
11a CH149



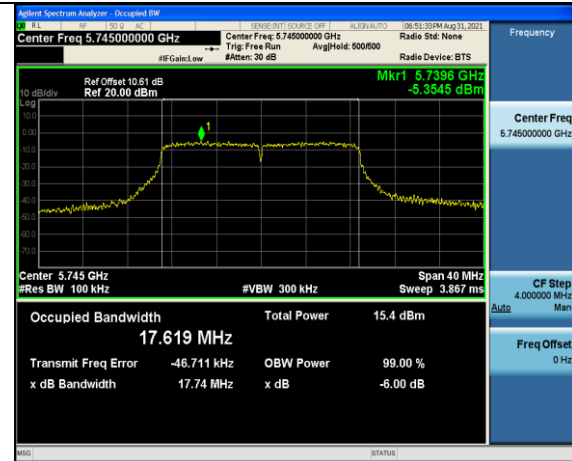
11a CH157



11a CH165

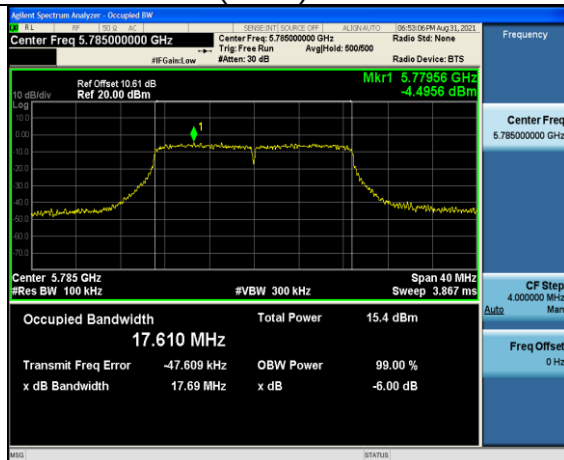


11n(HT20) CH149

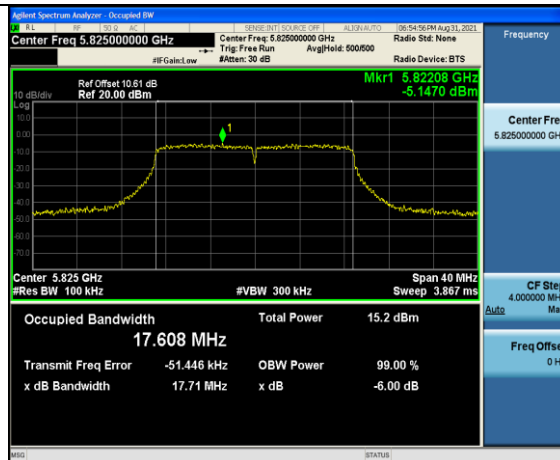




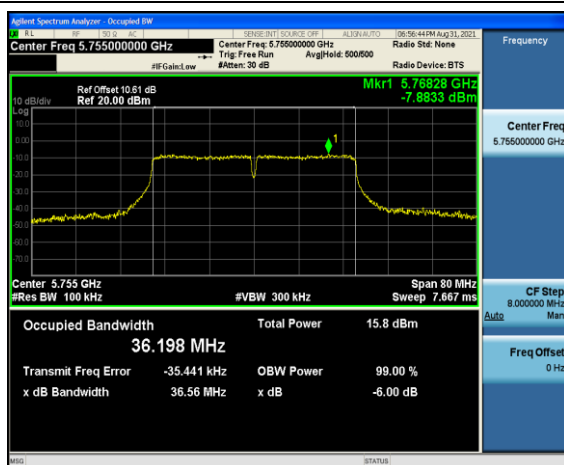
11n(HT20) CH157



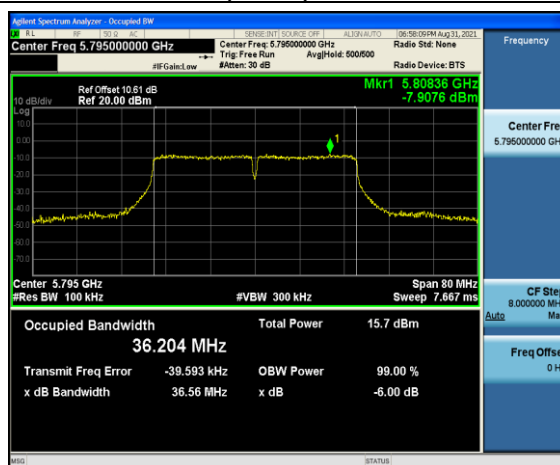
11n(HT20) CH165



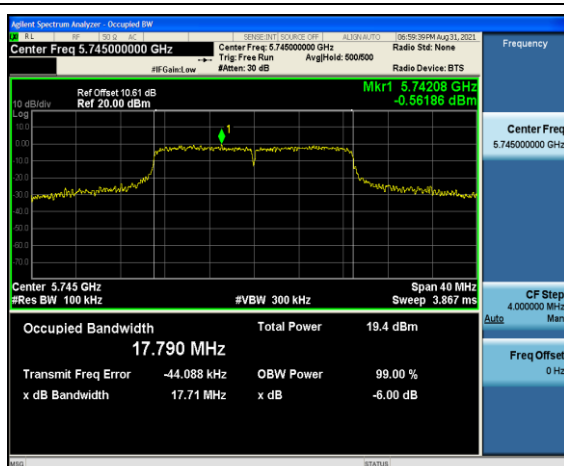
11n (HT40) CH151



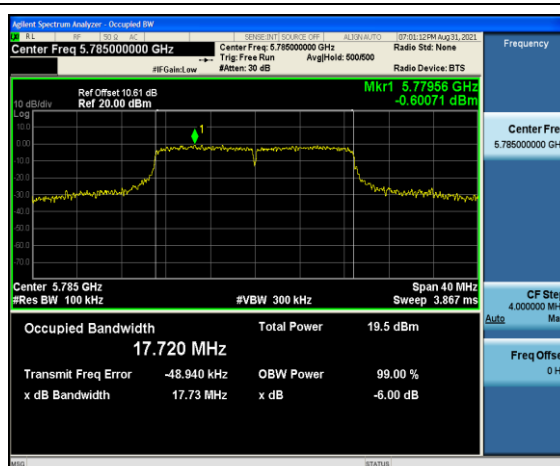
11n (HT40) CH159



11ac (HT20) CH149

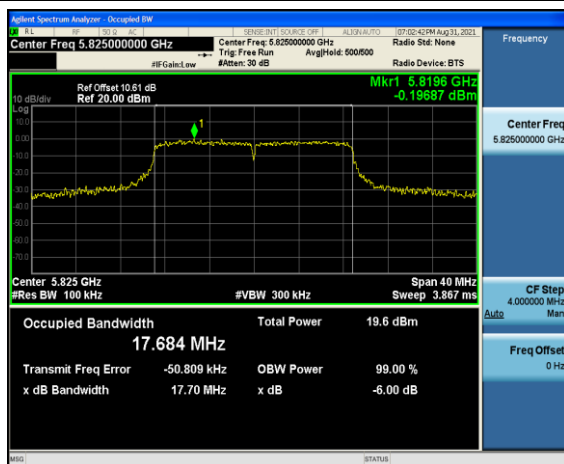


11ac (HT20) CH157

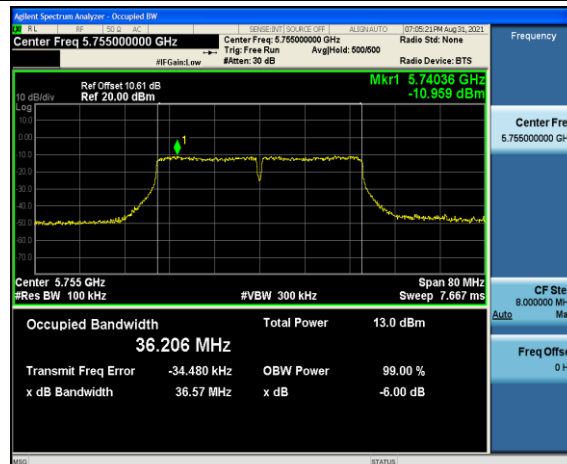




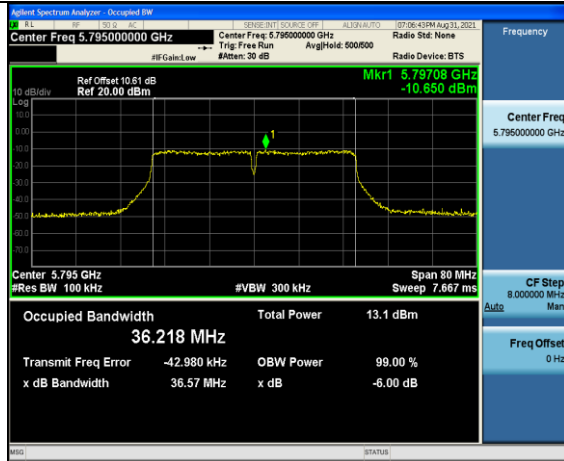
11ac(HT20) CH165



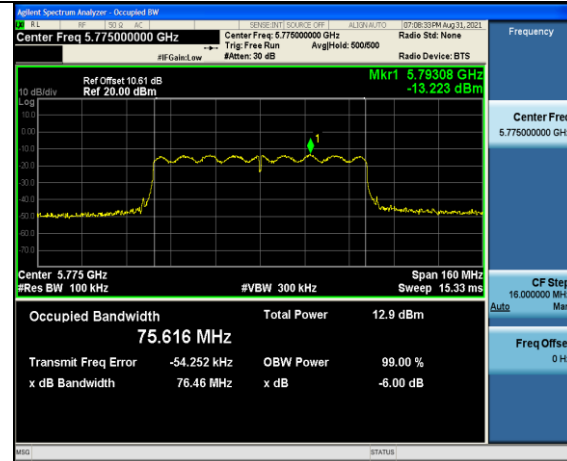
11ac(HT40) CH151



11ac(HT40) CH159



11ac(HT80) CH155





5.6 Conducted spurious emission

5.6.1 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.

5.6.2 Test setup



5.6.3 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 $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

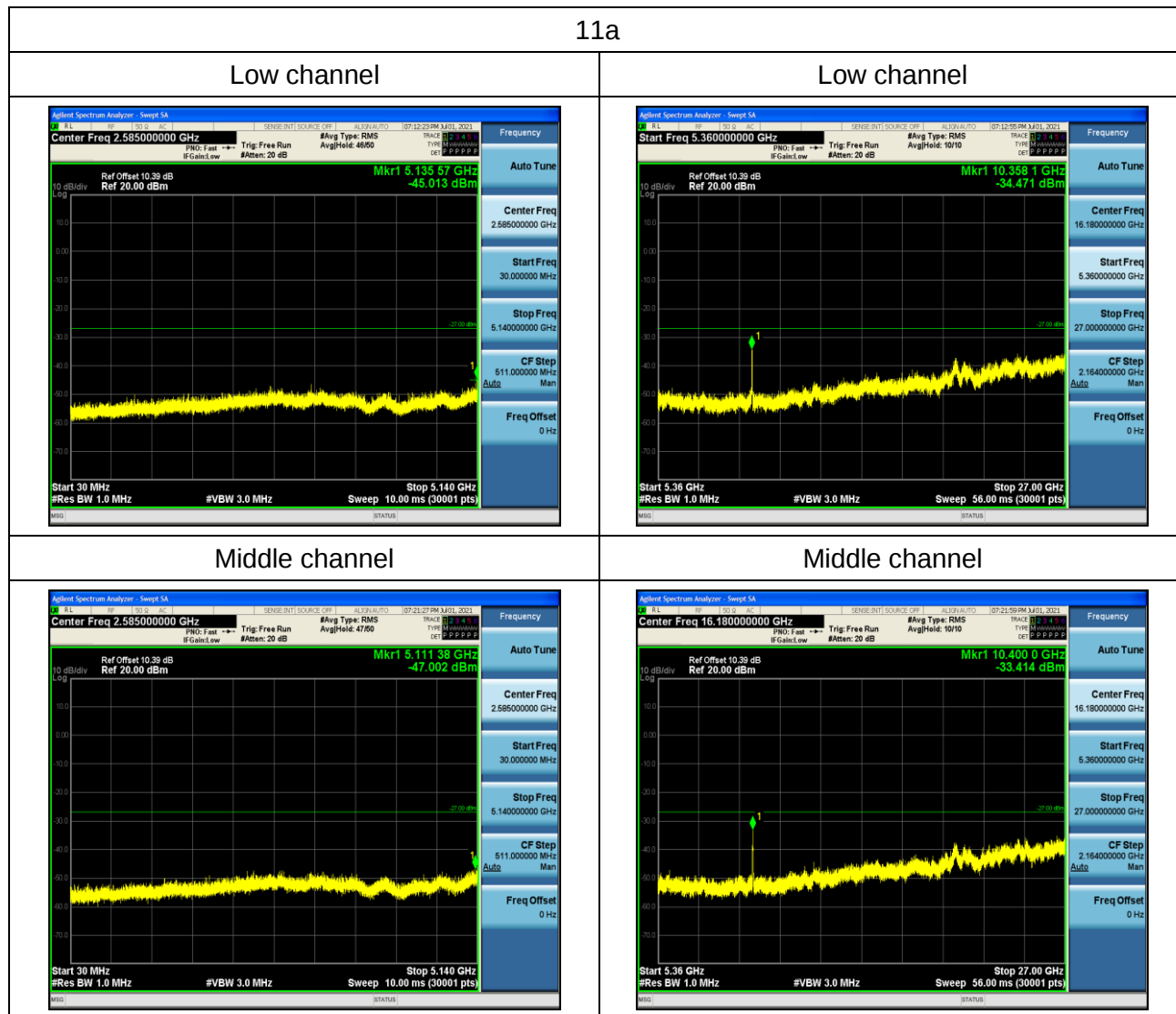
Allow the trace to stabilize

NOTE: Two transmit chains had been tested, the ANT A was the worst case and record in the test report.

5.6.4 Test results

Note1: The antenna A and antenna B have been tested. The report only shows the worst antenna. The worst case is ANT A.

For U-NII-1

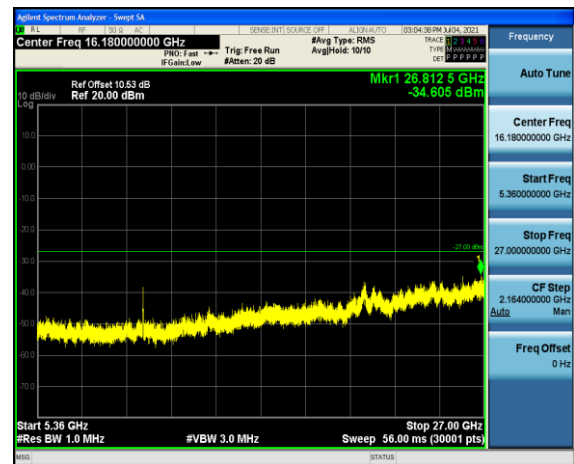




High channel

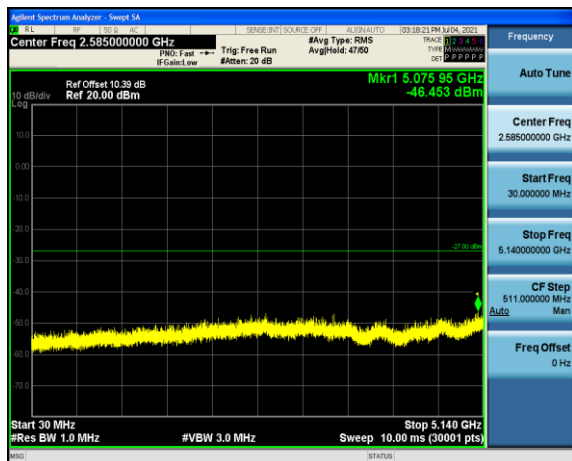


High channel

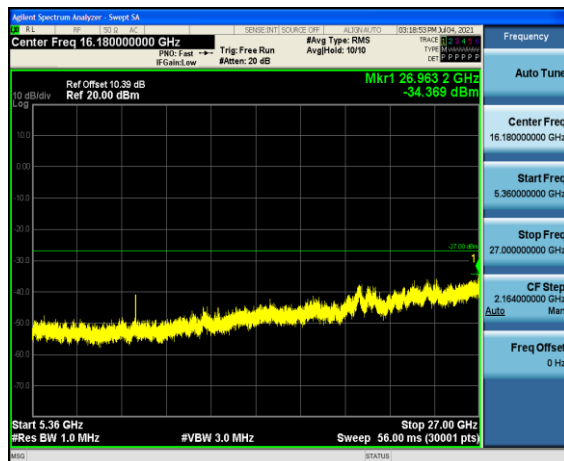


11n20

Low channel



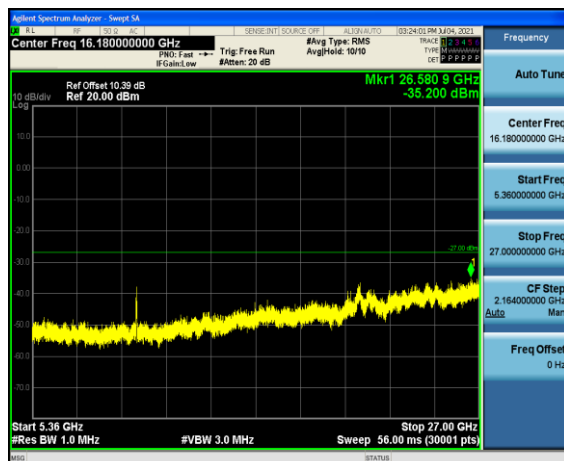
Low channel



Middle channel



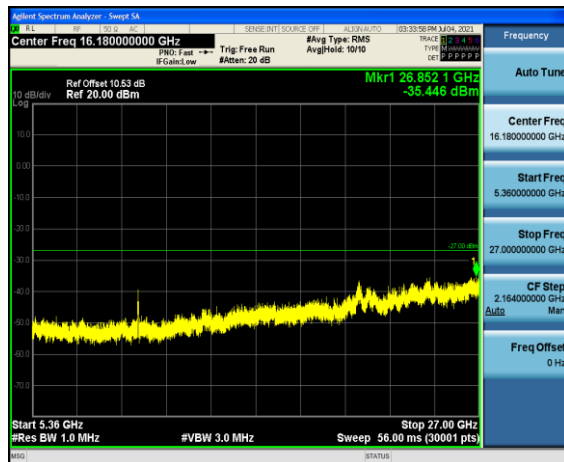
Middle channel



High channel

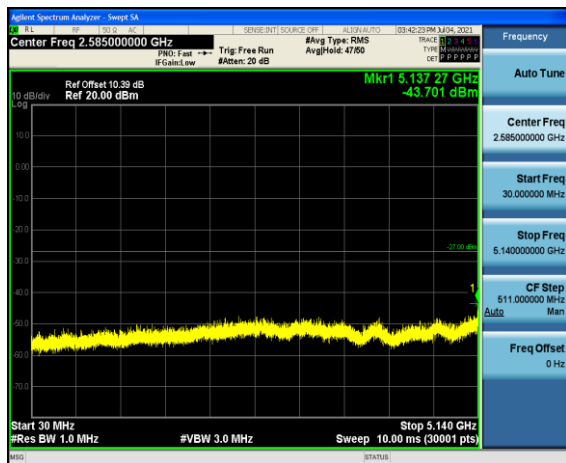


High channel

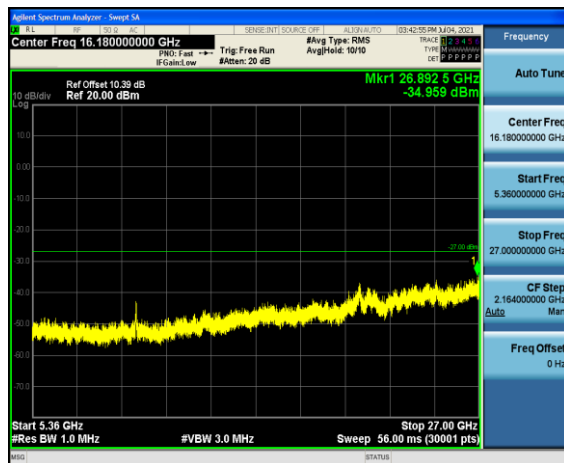


11n40

Low channel



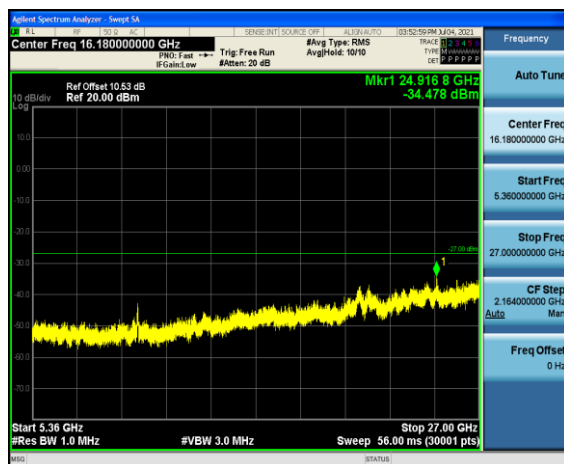
Low channel



High channel

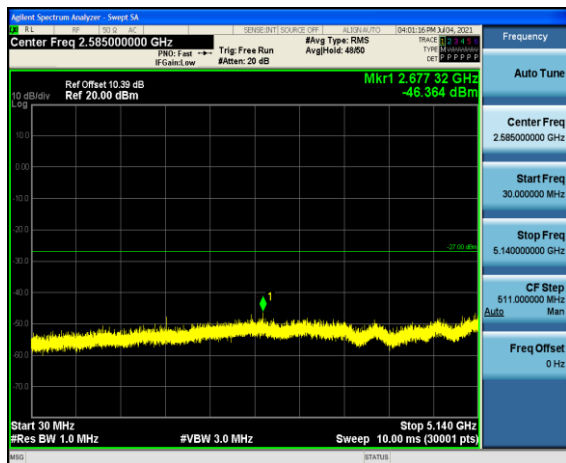


High channel

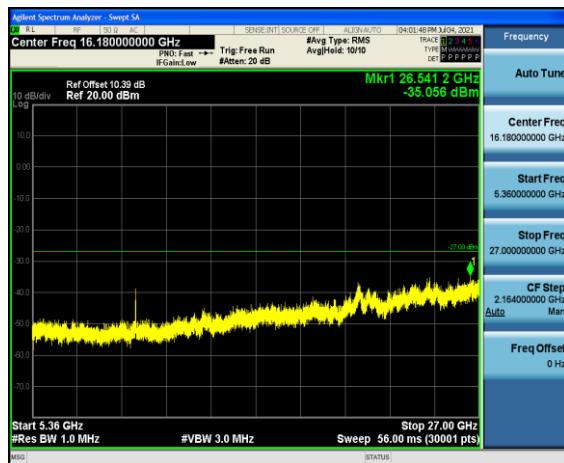


11ac20

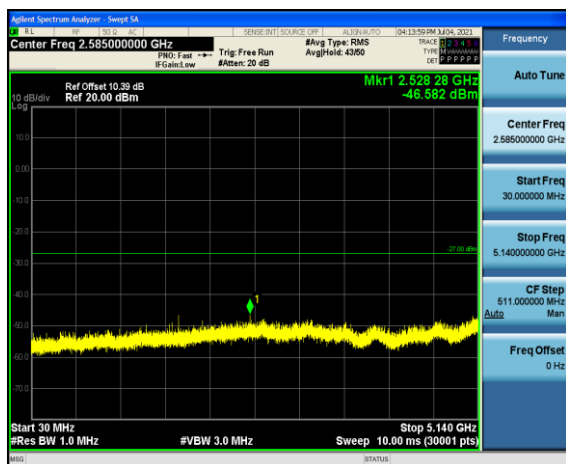
Low channel



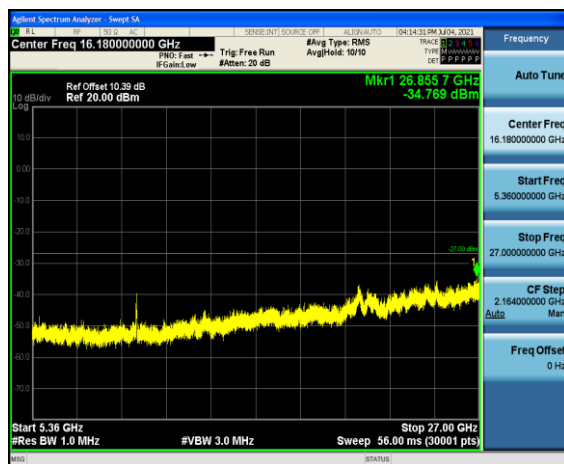
Low channel



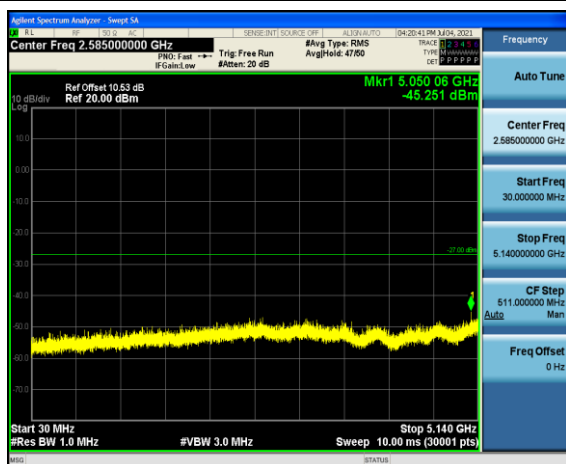
Middle channel



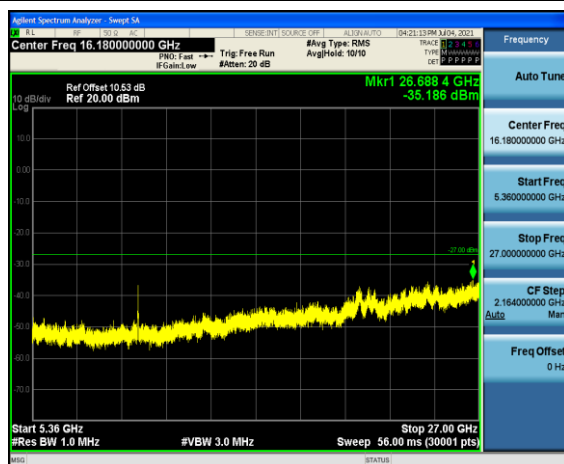
Middle channel



High channel

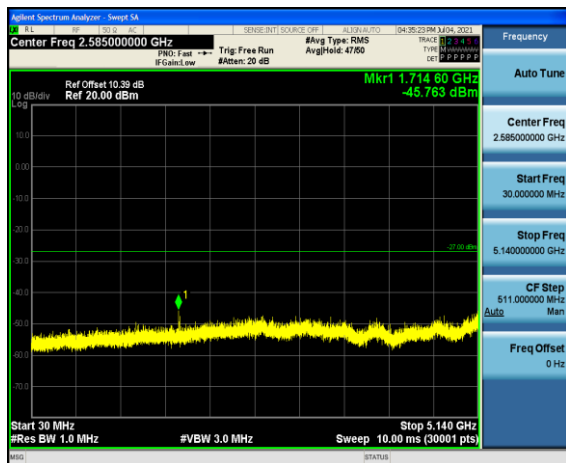


High channel

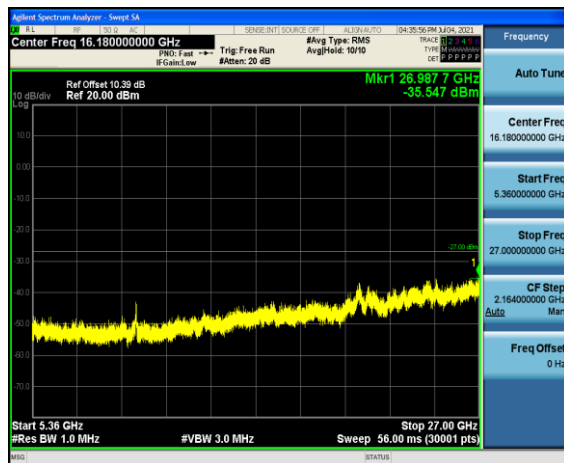


11ac40

Low channel



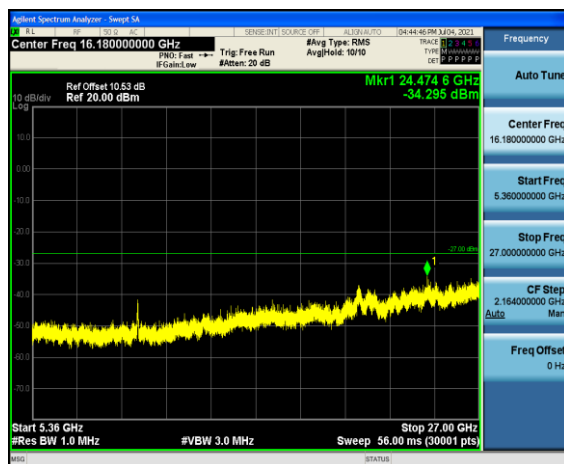
Low channel



High channel



High channel



11ac80

