TEST REPORT

ETSI EN 300 440 V2.2.1 (2018-07)

Report Reference No. ..... :	**HK2109153520-4ER**
Compiled by (position+printed name+signature)..:	Testing engineer Len Liao
Supervised by (position+printed name+signature)..:	Technique principal Sliver Wan
Approved by (position+printed name+signature)..:	Manager Jason Zhou
Date of issue ..... :	2021/09/18

Representative Laboratory Name .:	**Shenzhen HUAK Testing Technology Co., Ltd.**
Address ..... :	1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Applicant's name ..... :	XonTel Technology Trd. Co. W.LL
Address ..... :	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait

Test specification ..... :	
Standard ..... :	**ETSI EN 300 440 V2.2.1 (2018-07)**
TRF Originator ..... :	Shenzhen HUAK Testing Technology Co., Ltd.
Master TRF ..... :	Dated 2017-12

Test item description..... :	Wireless Access Point
Trade Mark ..... :	N/A
Model/Type reference ..... :	XT-1800AX
List Model ..... :	N/A
Hardware version ..... :	V2.0
Software version ..... :	V2.0
Operation Frequency ..... :	IEEE 802.11a/ IEEE 802.11n HT20/802.11ac HT20/ 802.11ax HT20:5745MHz-5825MHz IEEE 802.11n HT40/ IEEE 802.11ac HT40/ IEEE 802.11ax HT40:5755-5795MHz IEEE 802.11ac HT80/ IEEE 802.11ax HT80:5775MHz
Ratings ..... :	DC 48V From POE power or DC 12V From DC Power
Result ..... :	**PASS**

TEST REPORT

Test Report No. :	HK2109153520-4ER	2021/09/18 Date of issue

Equipment under Test	:	Wireless Access Point
Model /Type	:	XT-1800AX
Listed Models	:	N/A
Applicant	:	XonTel Technology Trd. Co. W.LL
Address	:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait
Manufacturer	:	XonTel Technology Trd. Co. W.LL
Address	:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	2021/09/18	Jason Zhou

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

ETSI EN 300 440 V2.2.1 (2018-07) : Short Range Devices (SRD);Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	2021/09/06
Testing commenced on	:	2021/09/06
Testing concluded on	:	2021/09/18

2.2. Product Description

Product Name:	Wireless Access Point
Model/Type reference:	XT-1800AX
List Model:	N/A
Model diff:	N/A
Power supply:	DC 48V From POE power or DC 12V From DC Power
POE information:	N/A
Antenna Type	Internal antenna
Antenna gain	3.0dBi
WLAN	Supported 802.11a/ 802.11n HT20/ 802.11n HT40/ 802.11ac HT20/ 802.11ac HT40/ 802.11ac HT80/ 802.11ax HT20/ 802.11ax HT40/ 802.11ax HT80
Operation frequency	IEEE 802.11a/ IEEE 802.11n HT20/802.11ac HT20/802.11ax HT20:5745MHz-5825MHz IEEE 802.11n HT40/ IEEE 802.11ac HT40/ IEEE 802.11ax HT40:5755-5795MHz IEEE 802.11ac HT80/ IEEE 802.11ax HT80:5775MHz
Modulation Type	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ac HT20: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac HT40: OFDM (256QAM, 64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ac HT80: OFDM (256QAM, 64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ax HT20: OFDM(1024AAM, 256QAM,64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax HT40: OFDM (1024AAM, 256QAM,64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ax HT80: OFDM (1024AAM, 256QAM,64QAM, 16QAM, QPSK,BPSK)
Receiver category	Receiver category 2
Remark: The products are identical in interior structure, electrical circuits and components, just model names are different.	

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 48V From POE power or DC 12V From DC Power

Description of the test mode

Channel	Frequency (MHz)
149	5745
151	5755
153	5765
157	5785
159	5795
161	5805
165	5825

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	/	M/N:	/
		Manufacturer:	/

2.5. Test summary

ETSI EN 300 440 Requirements		
Equivalent isotropic radiated power(Radiated)	ETSI EN 300 440 Sub-clause 4.2.2	Pass
Permitted range of operating frequencies	ETSI EN 300 440 Sub-clause 4.2.3	Pass
Spurious emissions	ETSI EN 300 440 Sub-clause 4.2.4	Pass
Duty cycle	ETSI EN 300 440 Sub-clause 4.2.5	Pass
Additional requirements for FHSS equipment	ETSI EN 300 440 Sub-clause 4.2.6	$N/A_{Note\ 1}$
Adjacent channel selectivity	ETSI EN 300 440 Sub-clause 4.3.3	Pass
Blocking or desensitization	ETSI EN 300 440 Sub-clause 4.3.4	Pass
Receiver Spurious emissions	ETSI EN 300 440 Sub-clause 4.3.5	Pass
Spectrum access techniques	ETSI EN 300 440 Sub-clause 4.4	$Pass_{Note\ 2}$

Note 1: Which only applicable to FHSS system device.
Note 2: The manufacturer declares compliance with Section 4.4(Spectrum access techniques)

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.
1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：
A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature: 25 °C
High Temperature: 40 °C
Low Temperature: -10 °C
Normal Voltage :DC 48.0V
High Voltage:DC 52.8V
Low Voltage:DC 43.2V
Relative Humidity: 55 %
Air Pressure: 989 hPa

3.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen HUAK laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Conducted spurious emission	1.60 dB	(1)
Radiated spurious emission	2.20 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	2020/12/10	2021/12/09
Horn antenna	Schwarzbeck	9120D	HKE-013	2020/12/10	2021/12/09
Receiver	R&S	ESR-7	HKE-010	2020/12/10	2021/12/09
Spectrum analyzer	Agilent	N9020A	HKE-048	2020/12/10	2021/12/09
Spectrum analyzer	R&S	FSP40	HKE-025	2020/12/10	2021/12/09
Preamplifier	EMCI	EMC051845SE	HKE-015	2020/12/10	2021/12/09
Preamplifier	Agilent	83051A	HKE-016	2020/12/10	2021/12/09
High pass filter unit	Tonscend	JS0806-F	HKE-055	2020/12/10	2021/12/09
Signal generator	Agilent	83630A	HKE-028	2020/12/10	2021/12/09
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	2020/12/10	2021/12/09
Power Sensor	Agilent	E9300A	HKE-086	2020/12/10	2021/12/09
RF automatic control unit	Tonscend	JS0806-2	HKE-060	2020/12/10	2021/12/09
Signal generator	Agilent	N5182A	HKE-029	2020/12/10	2021/12/09
Wireless Communication Test Set	R&S	CMW500	HKE-027	2020/12/10	2021/12/09

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. 6dB Bandwidth

Limit

N/A

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

Test Configuration

Test Results

Ant 1

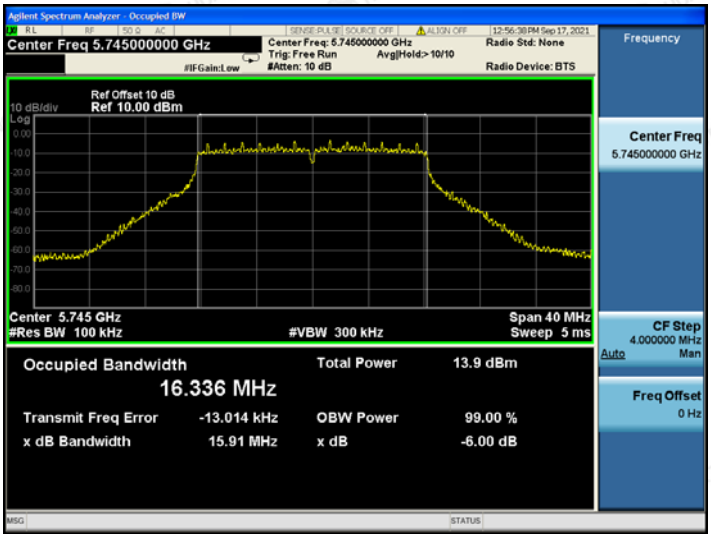
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	149	16.34	N/A	N/A
	157	16.35		
	165	16.35		
802.11 n HT 20	149	17.57	N/A	N/A
	157	17.56		
	165	17.53		
802.11 n HT 40	151	36.02	N/A	N/A
	159	36.04		
802.11 ac HT 20	149	17.58	N/A	N/A
	157	17.58		
	165	17.57		
802.11 ac HT 40	151	36.04	N/A	N/A
	159	36.05		
802.11 ac HT 80	155	75.44	N/A	N/A
802.11 ax HT 20	149	18.89	N/A	N/A
	157	18.88		
	165	18.92		
802.11 ax HT 40	151	37.67	N/A	N/A
	159	37.67		
802.11 ax HT 80	155	77.02	N/A	N/A

Ant2

Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	149	16.35	N/A	N/A
	157	16.34		
	165	16.36		
802.11 n HT 20	149	17.56	N/A	N/A
	157	17.57		
	165	17.54		
802.11 n HT 40	151	36.06	N/A	N/A
	159	36.02		
802.11 ac HT 20	149	17.57	N/A	N/A
	157	17.57		
	165	17.54		
802.11 ac HT 40	151	36.06	N/A	N/A
	159	36.05		
802.11 ac HT 80	155	75.38	N/A	N/A
802.11 ax HT 20	149	18.91	N/A	N/A
	157	18.89		
	165	18.90		
802.11 ax HT 40	151	37.69	N/A	N/A
	159	37.63		
802.11 ax HT 80	155	77.04	N/A	N/A

Ant 1

802.11a-5745



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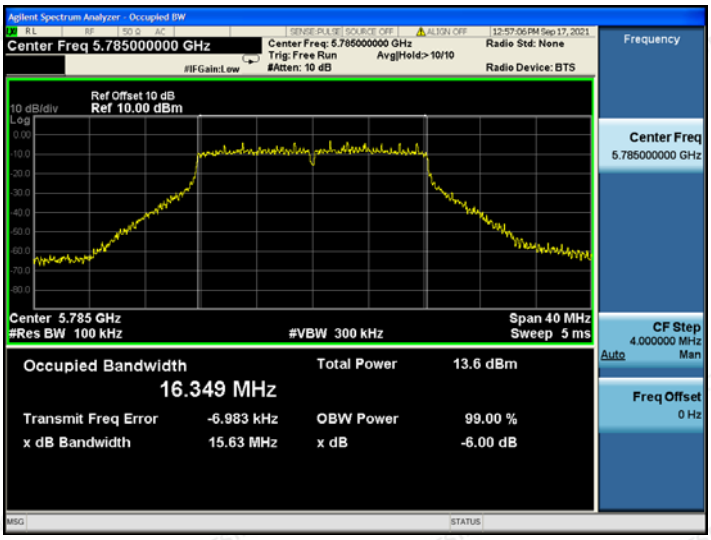

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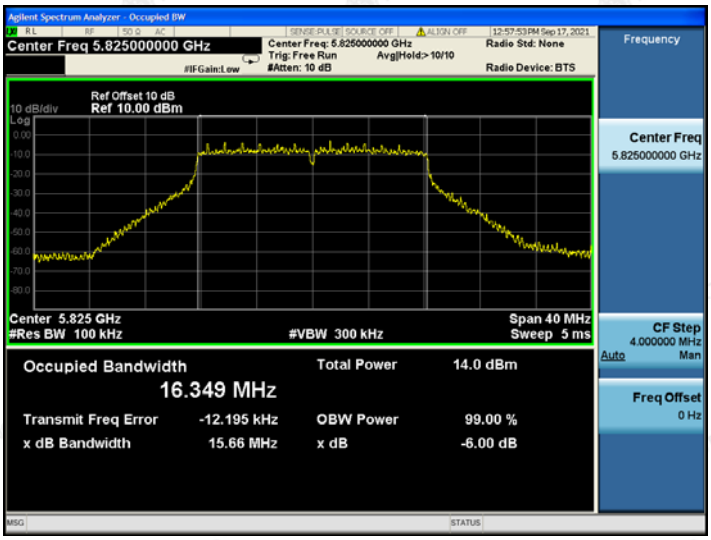

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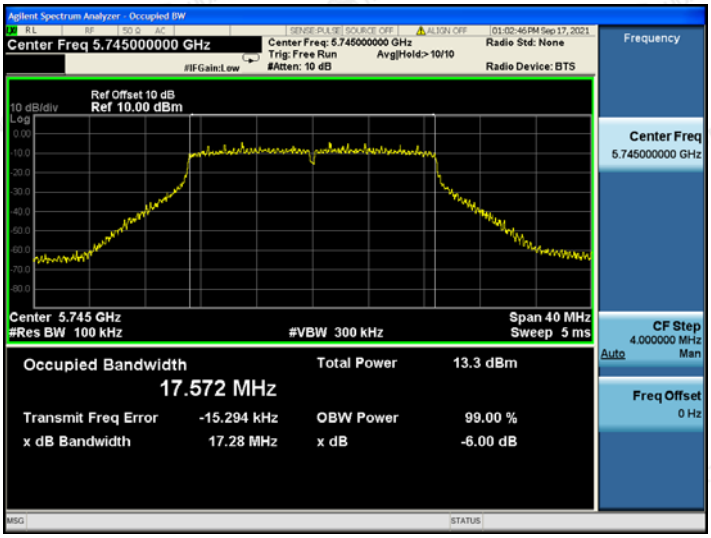

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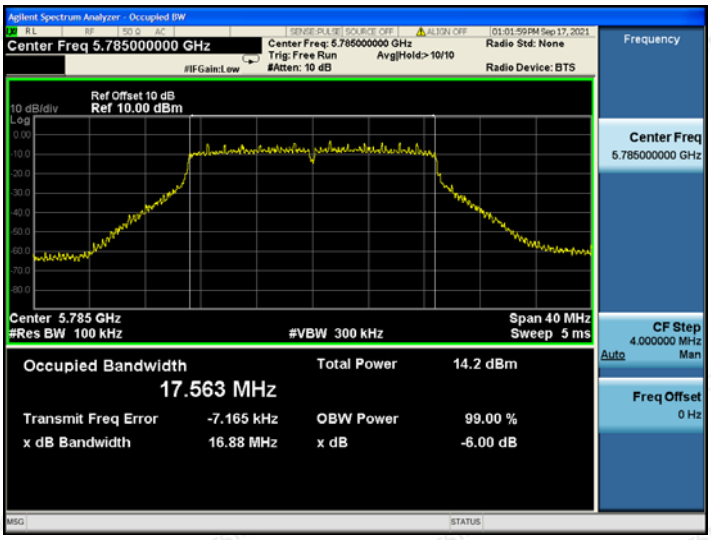

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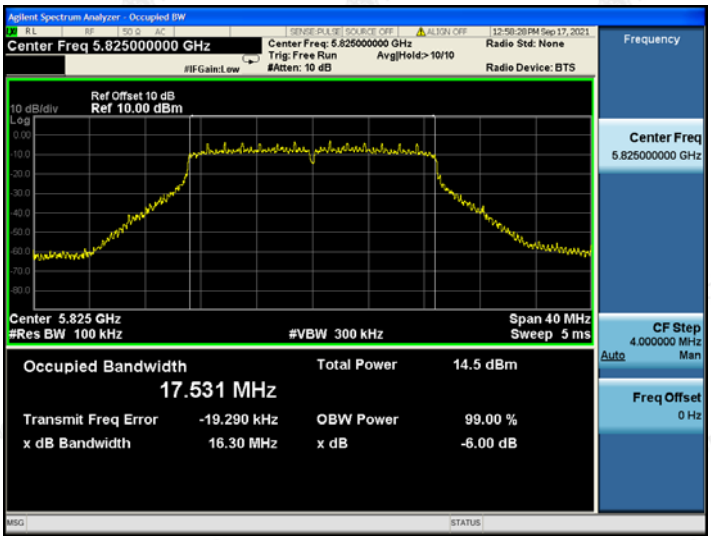

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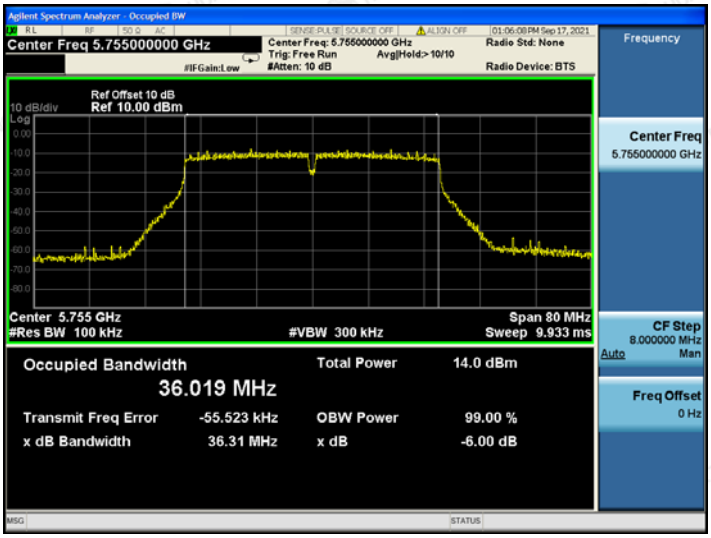

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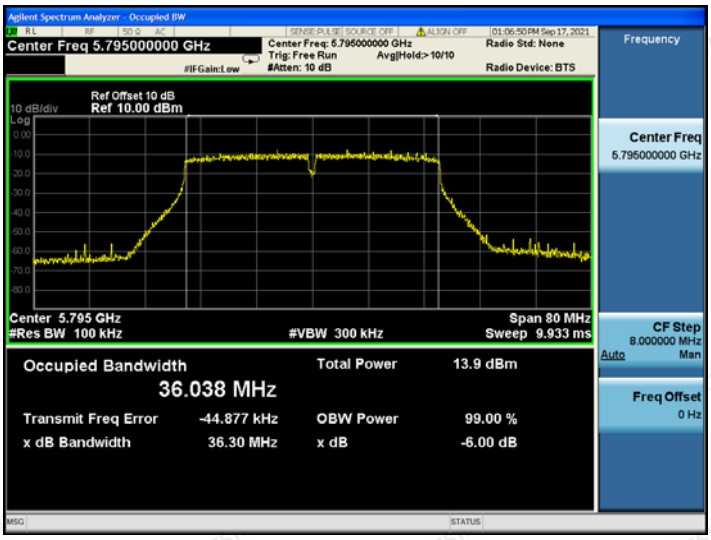

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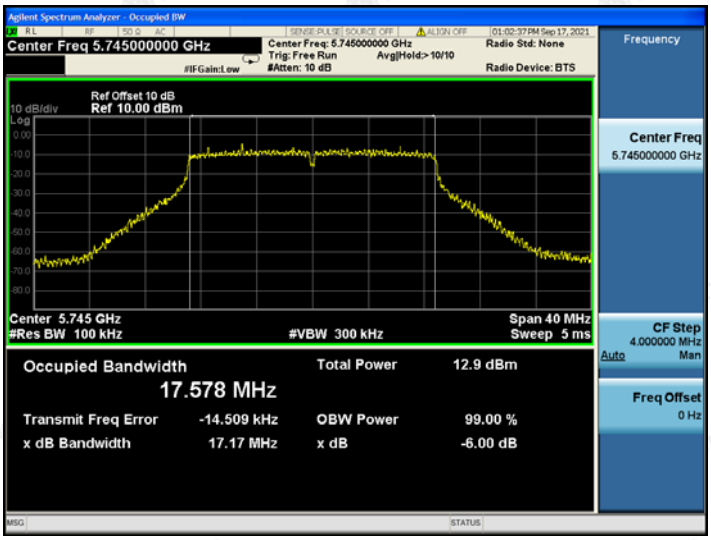

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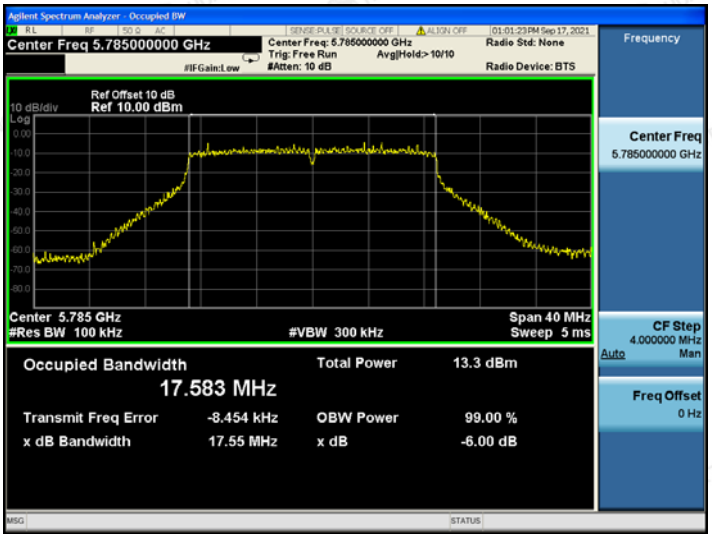

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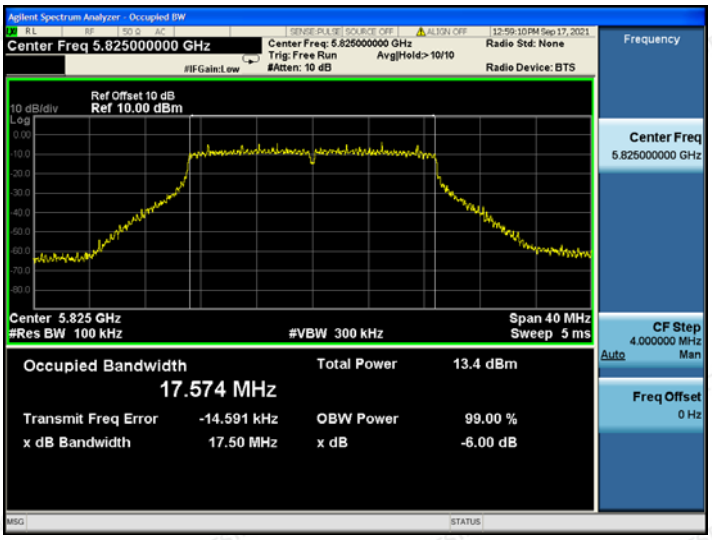

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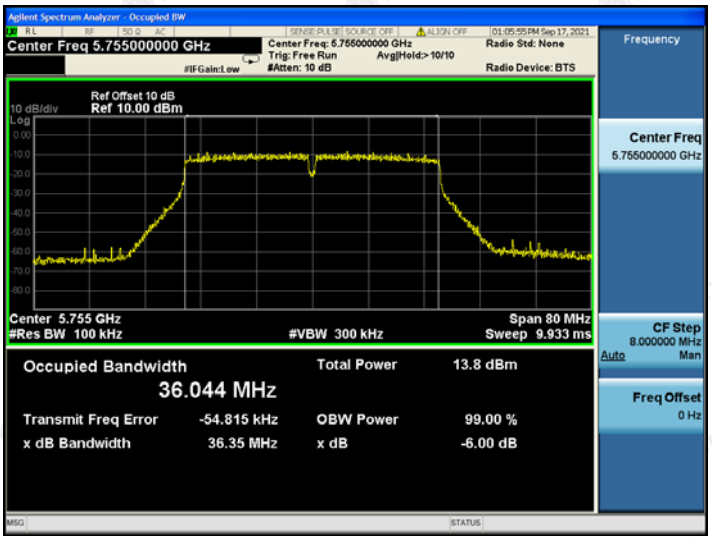

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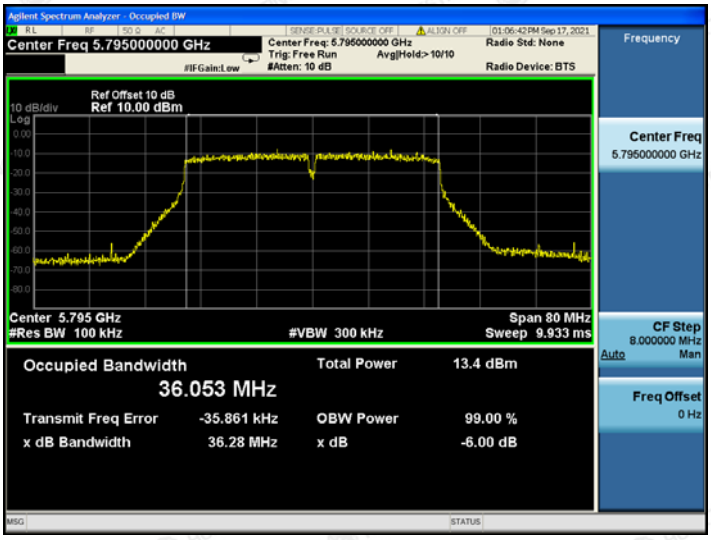

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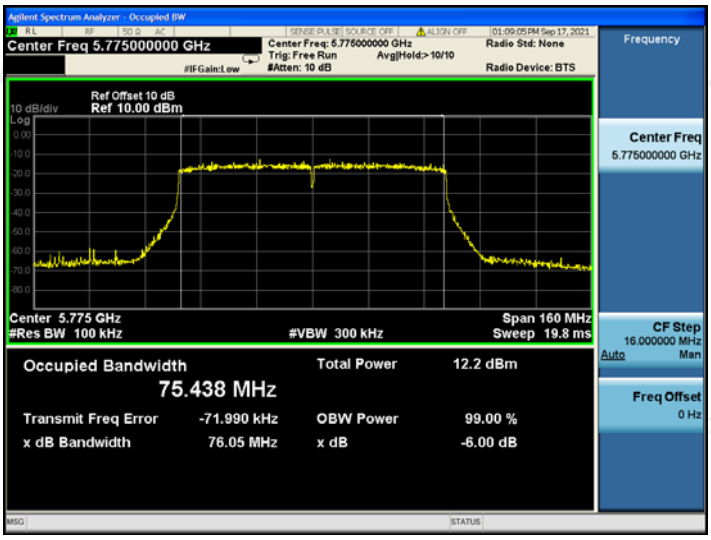

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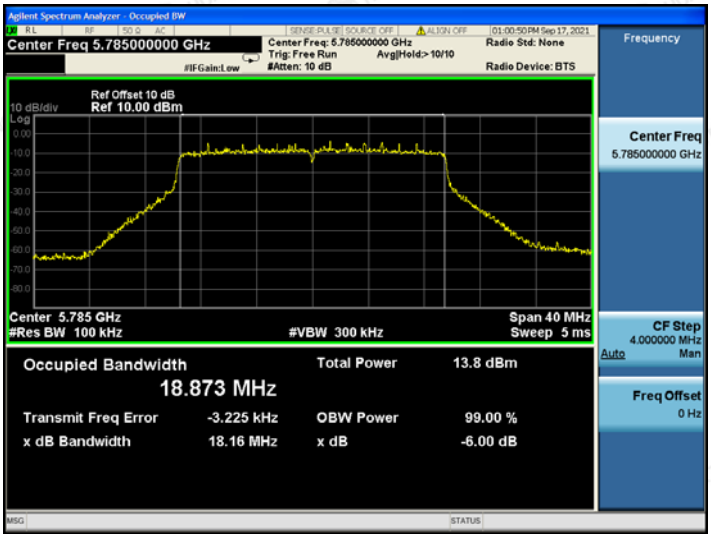

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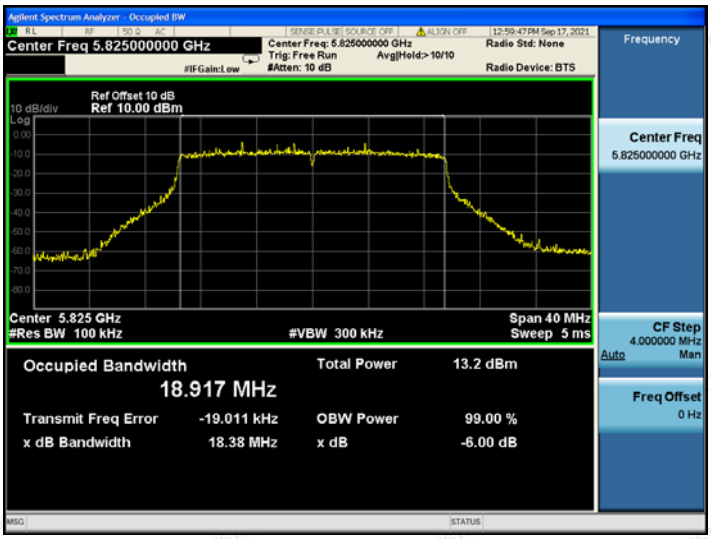

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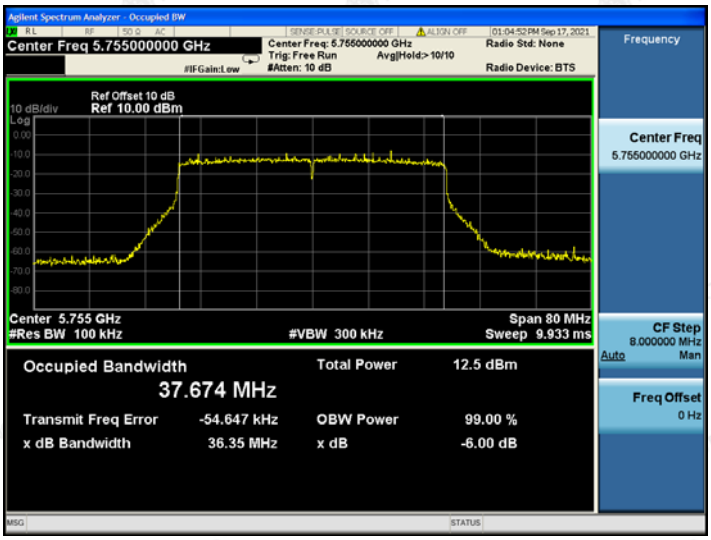

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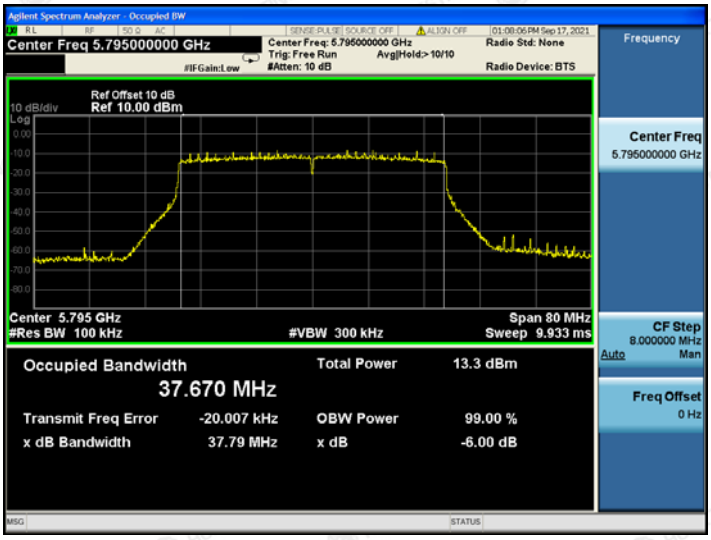

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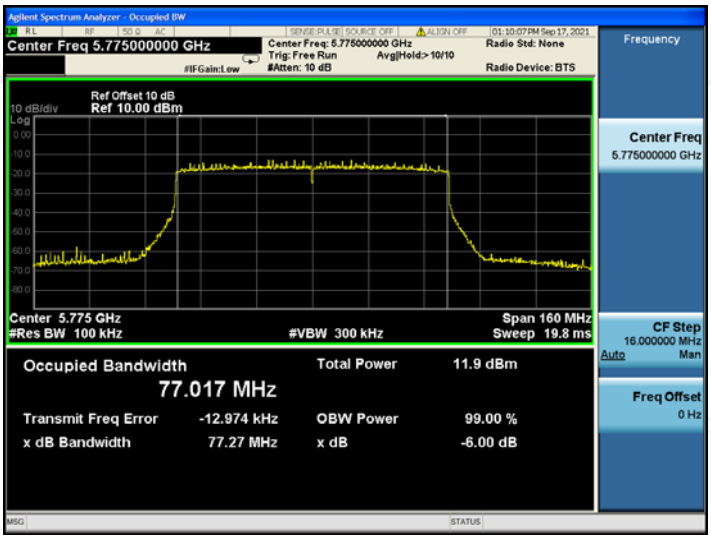

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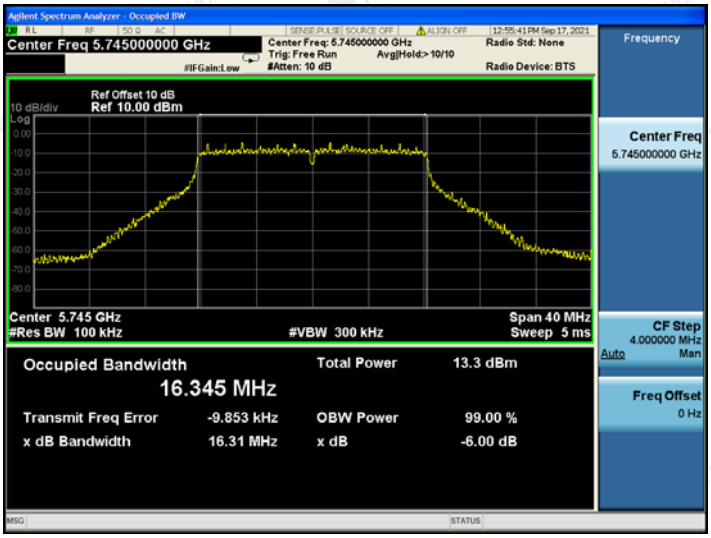

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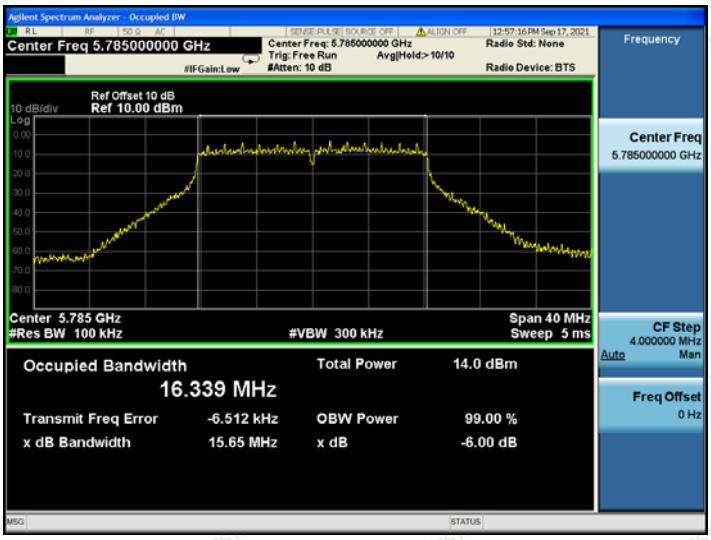

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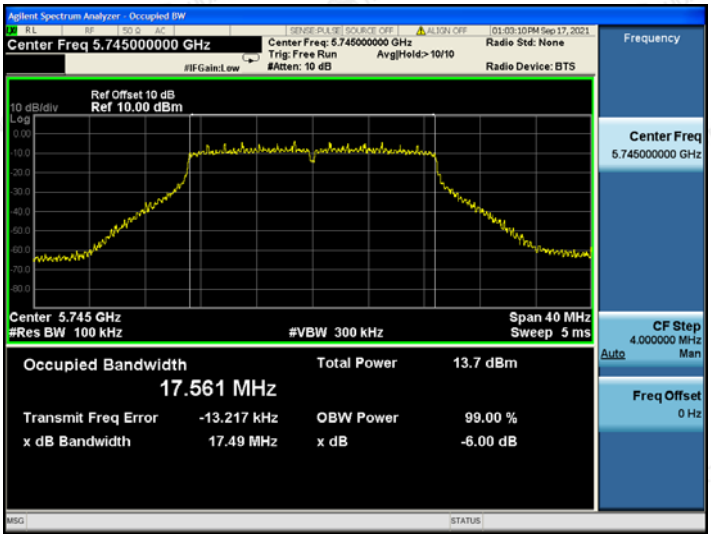

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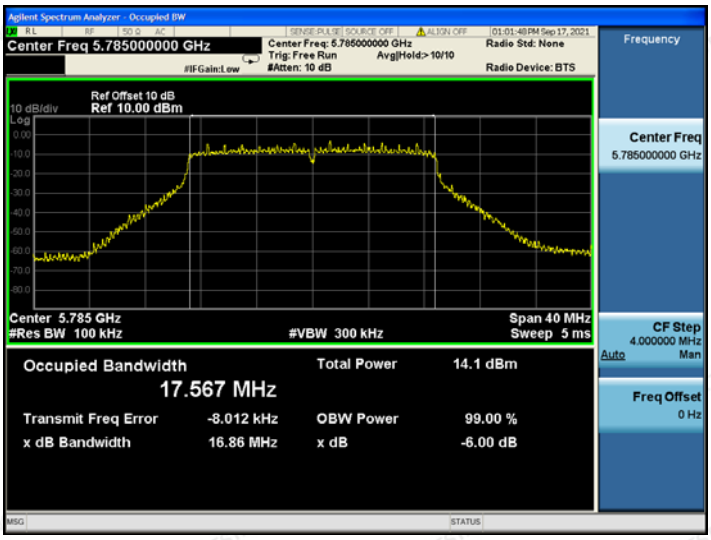

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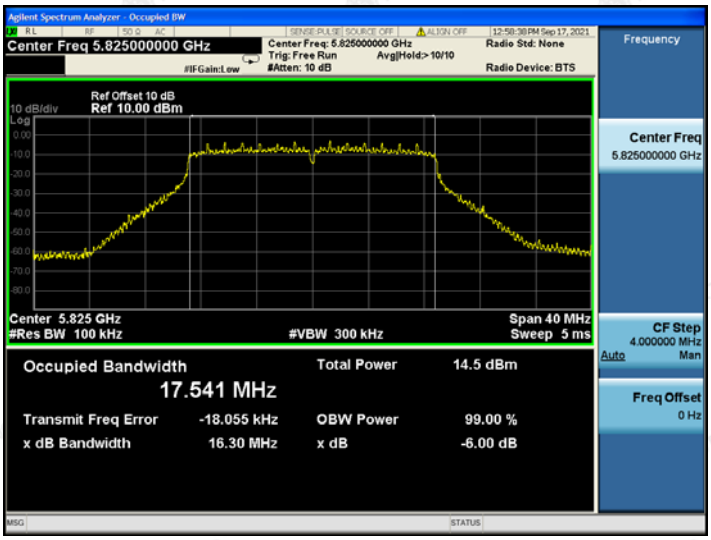

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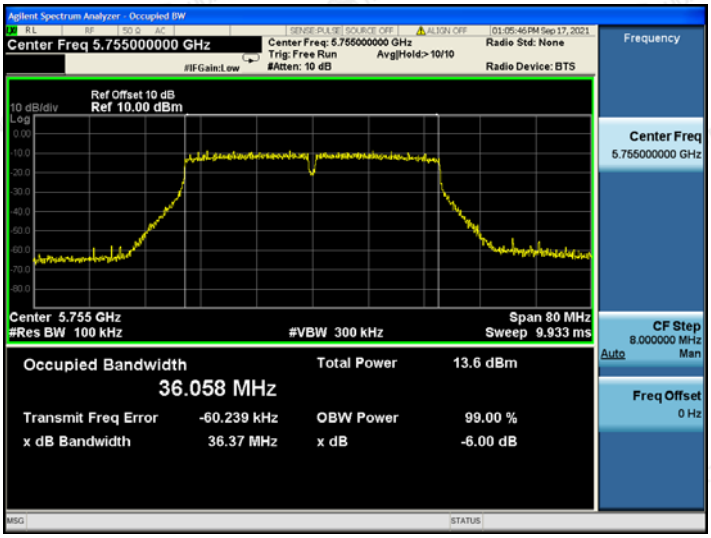

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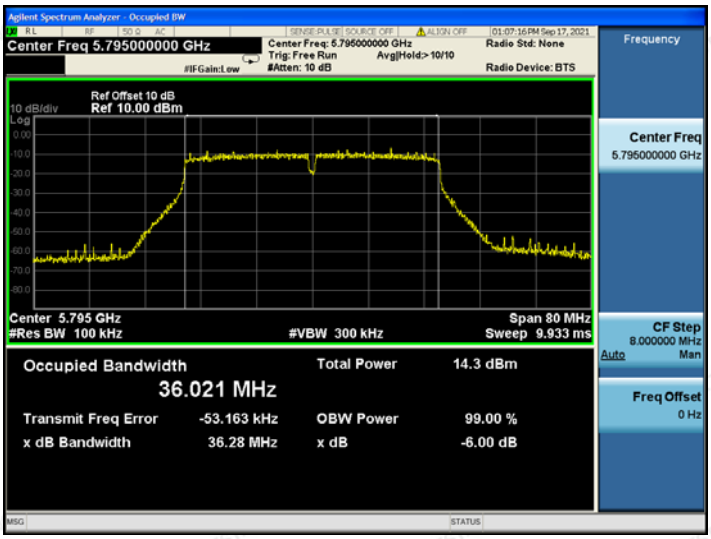

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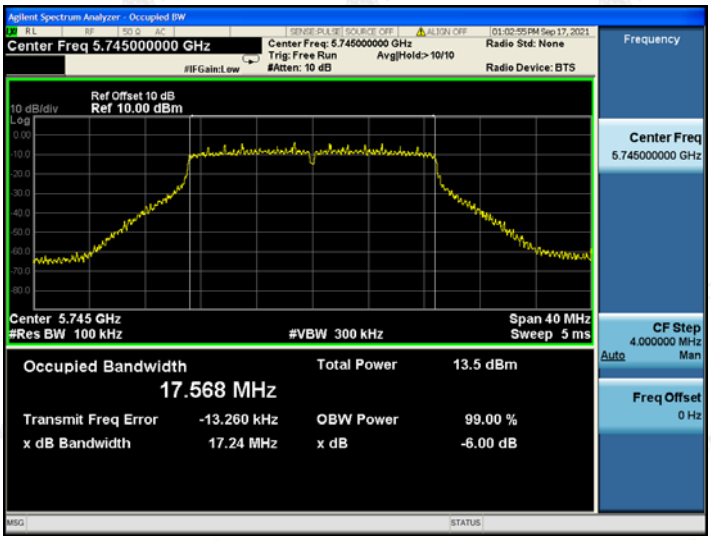

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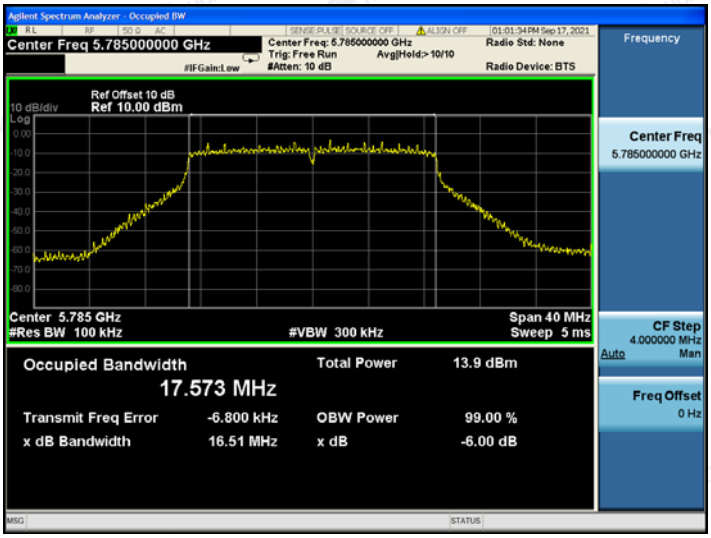

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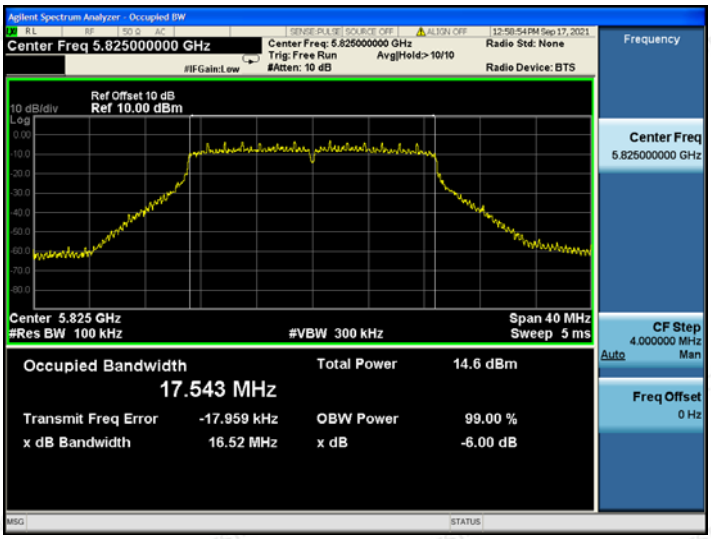

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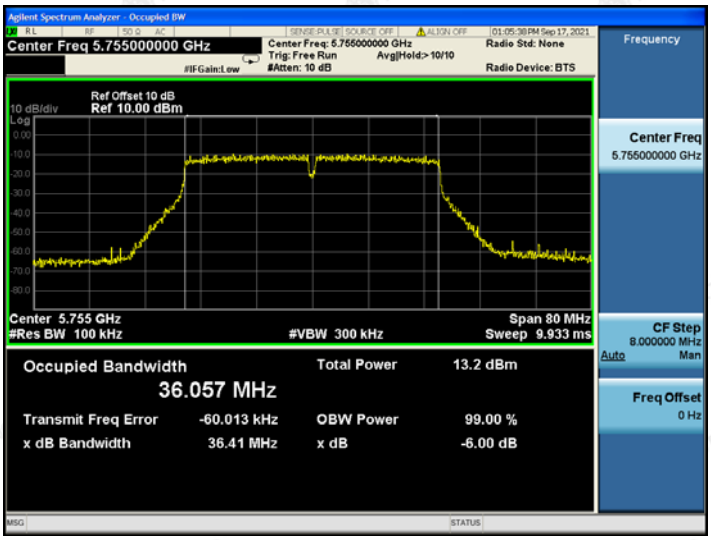

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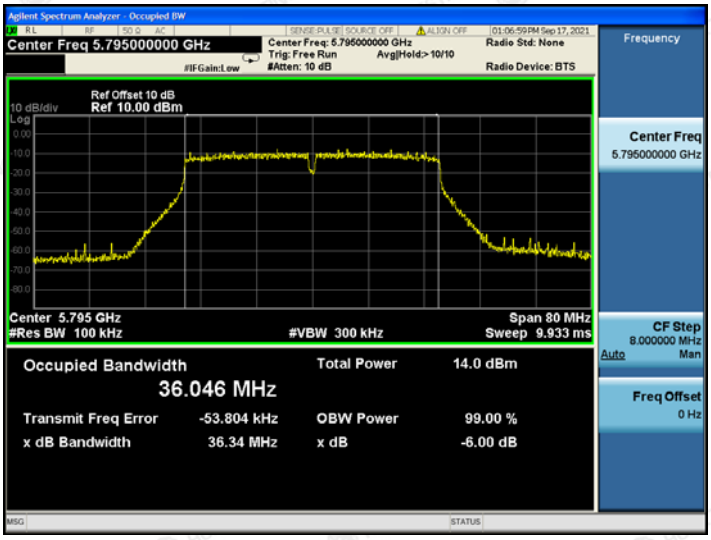
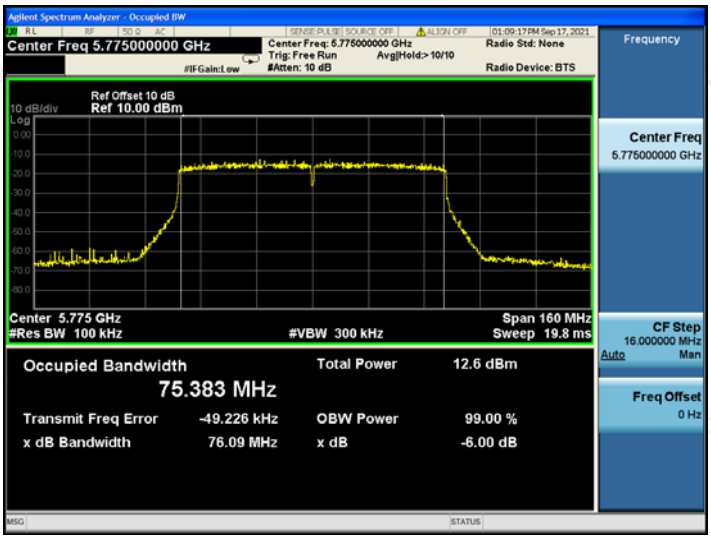
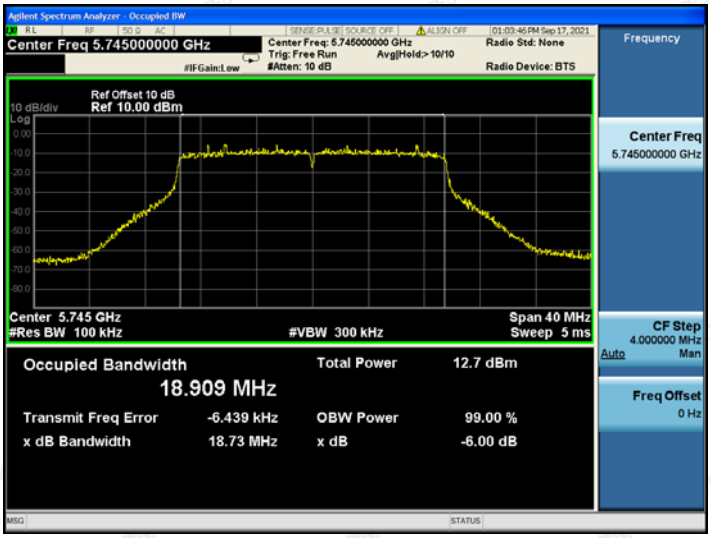


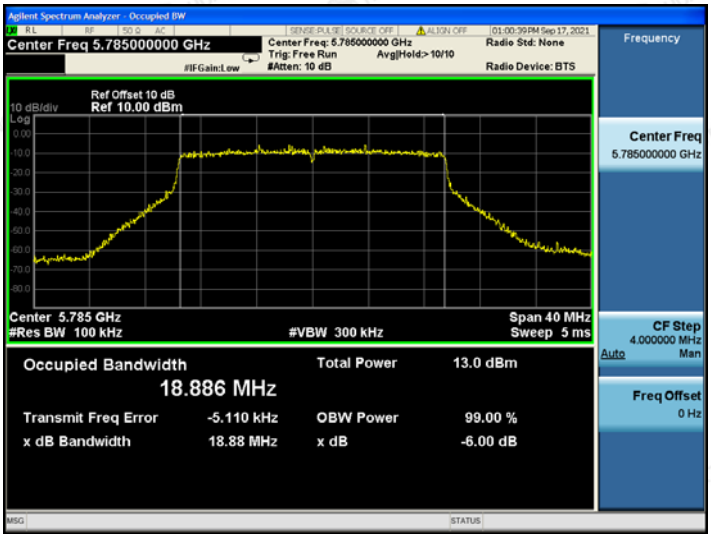
802.11ac HT80-5775



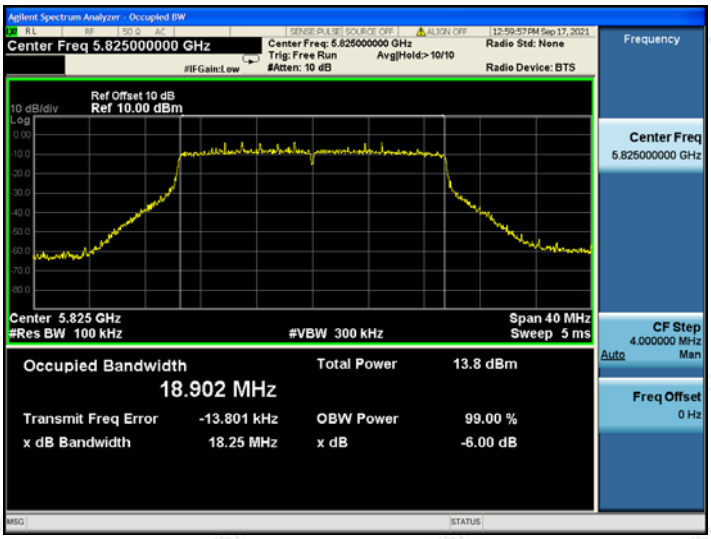
802.11ax HT20-5745



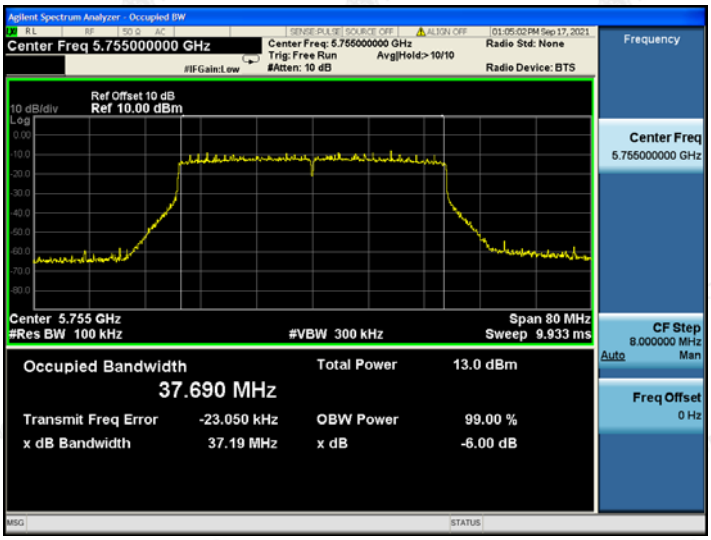
802.11ax HT20-5785



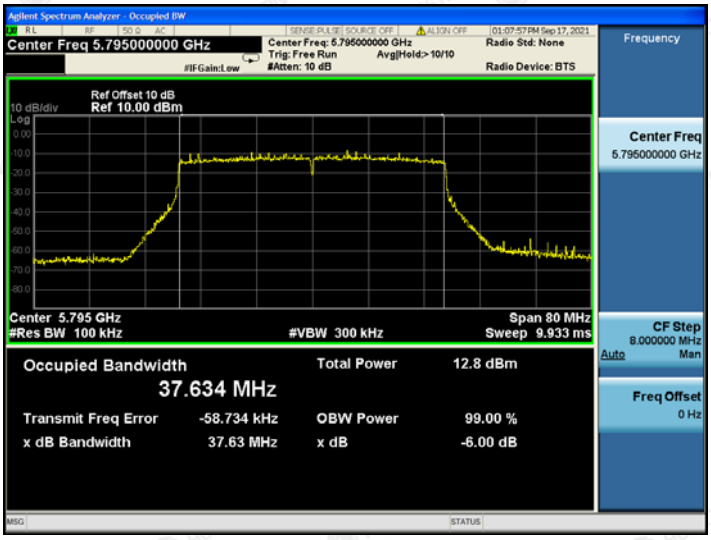
802.11ax HT20-5825



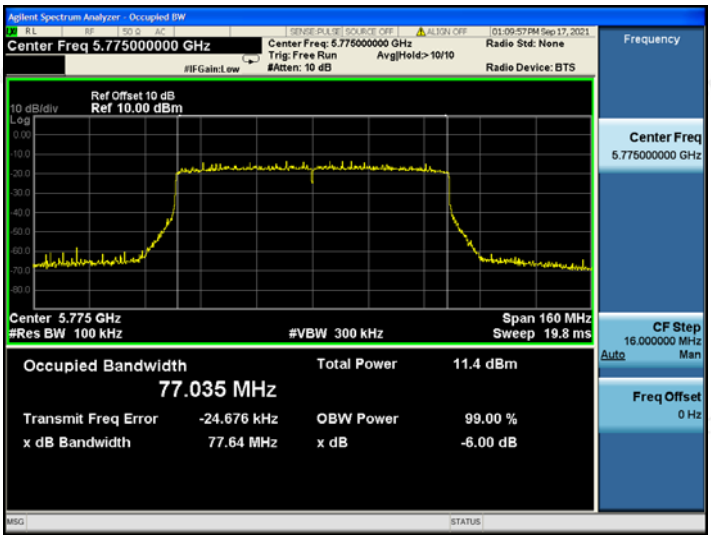
802.11ax HT40-5755



802.11ax HT40-5795



802.11ax HT80-5775



4.2. Equivalent Isotropically Radiated Power (e.i.r.p)

LIMIT

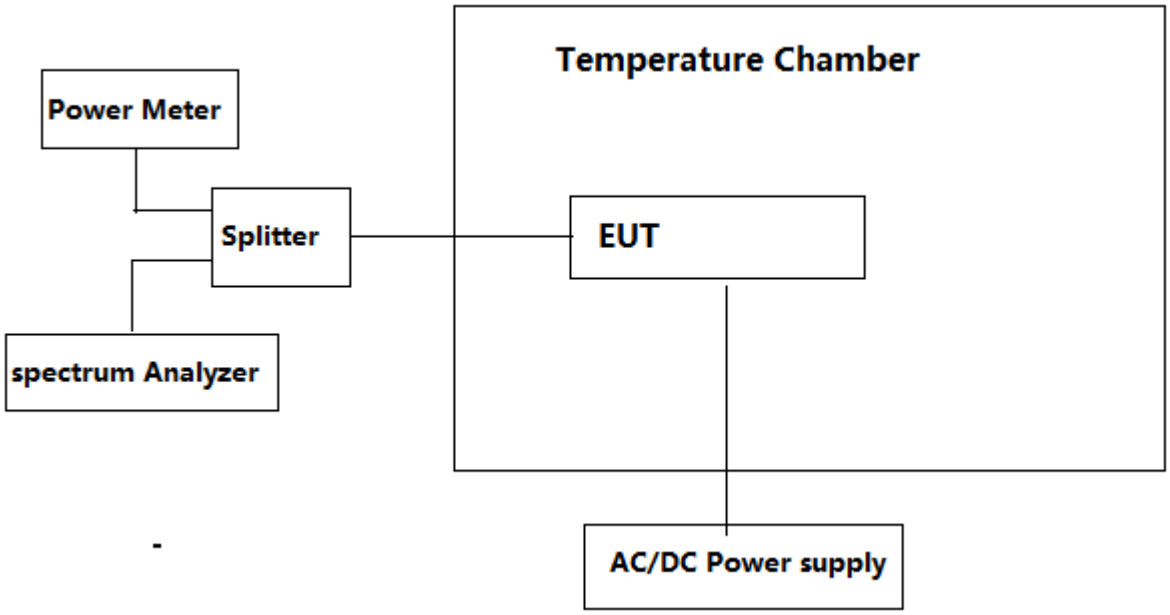
According to ETSI EN 300 440 clause 4.2.2.3.2

The transmitter maximum e.i.r.p. under normal and extreme test conditions shall not exceed the values given in table 2.

Table 2: Maximum radiated peak power (e.i.r.p.)

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 440 clause 5 for the test conditions.
2. Please refer to ETSI EN 300 440 clause 4.2.2.3 for the measurement method.
3. According to the -6 dB channel bandwidth measurement result, the test procedure define in Sub-clause clause 4.2.2.3.2 is used for 802.11a HT20/802.11n HT20 test.

TEST RESULTS

802.11a							
Test conditions		Channel/ Frequency	Ant 1	Ant 2	Mimo	Limit (dBm)	Result
Temperature (℃)	Voltage (V)		power (dBm)	power (dBm)	power (dBm)		
+25℃	48.0V	149/5745	8.09	9.02	/	13.98	Pass
-10℃	52.8V		8.84	9.00	/		Pass
	43.2V		9.19	7.80	/		Pass
+40℃	52.8V		8.96	8.43	/		Pass
	43.2V		9.56	9.30	/		Pass
+25℃	48.0V	157/5785	8.84	9.68	/		Pass
-10℃	52.8V		8.84	7.83	/		Pass
	43.2V		9.12	9.54	/		Pass
+40℃	52.8V		7.09	9.30	/		Pass
	43.2V		8.12	8.65	/		Pass
+25℃	48.0V	165/5825	8.50	7.97	/		Pass
-10℃	52.8V		8.46	8.77	/		Pass
	43.2V		9.06	8.83	/		Pass
+40℃	52.8V		8.19	9.66	/		Pass
	43.2V		7.42	8.23	/		Pass

802.11 n HT 20							
Test conditions		Channel/ Frequency	Ant 1	Ant 2	Mimo	Limit (dBm)	Result
Temperature (℃)	Voltage (V)		power (dBm)	power (dBm)	power (dBm)		
+25℃	48.0V	149/5745	7.32	7.32	10.33	13.98	Pass
-10℃	52.8V		7.90	7.90	10.91		Pass
	43.2V		7.86	7.86	10.87		Pass
+40℃	52.8V		8.14	8.14	11.15		Pass
	43.2V		6.92	6.92	9.93		Pass
+25℃	48.0V	157/5785	7.68	7.68	10.69		Pass
-10℃	52.8V		7.62	7.62	10.63		Pass
	43.2V		7.32	7.32	10.33		Pass
+40℃	52.8V		7.90	7.90	10.91		Pass
	43.2V		7.86	7.86	10.87		Pass
+25℃	48.0V	165/5825	8.14	8.14	11.15		Pass
-10℃	52.8V		6.92	6.92	9.93		Pass
	43.2V		7.68	7.68	10.69		Pass
+40℃	52.8V		7.62	7.62	10.63		Pass
	43.2V		7.32	7.32	10.33		Pass

802.11 n HT 40							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	151/5755	7.77	6.26	10.09	13.98	Pass
-10℃	52.8V		6.28	5.67	9.00		Pass
	43.2V		6.92	6.37	9.66		Pass
+40℃	52.8V		7.60	7.32	10.47		Pass
	43.2V		5.69	7.50	9.70		Pass
+25℃	48.0V	159/5795	7.38	5.84	9.69		Pass
-10℃	52.8V		6.60	6.87	9.75		Pass
	43.2V		5.53	7.62	9.71		Pass
+40℃	52.8V		7.50	5.32	9.56		Pass
	43.2V		7.83	6.70	10.31		Pass

802.11 ac HT 20							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	149/5745	5.74	6.55	9.17	13.98	Pass
-10℃	52.8V		6.67	5.52	9.14		Pass
	43.2V		5.63	5.64	8.65		Pass
+40℃	52.8V		5.04	7.51	9.46		Pass
	43.2V		6.47	6.04	9.27		Pass
+25℃	48.0V	157/5785	6.36	8.10	10.33		Pass
-10℃	52.8V		6.72	7.42	10.09		Pass
	43.2V		7.17	6.86	10.03		Pass
+40℃	52.8V		6.85	6.91	9.89		Pass
	43.2V		6.93	7.05	10.00		Pass
+25℃	48.0V	165/5825	6.41	5.03	8.78		Pass
-10℃	52.8V		7.45	7.52	10.50		Pass
	43.2V		5.31	6.81	9.13		Pass
+40℃	52.8V		6.72	6.40	9.57		Pass
	43.2V		6.04	5.57	8.82		Pass

802.11 ac HT 40							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	151/5755	6.86	5.60	9.29	13.98	Pass
-10℃	52.8V		6.29	6.67	9.49		Pass
	43.2V		5.79	5.21	8.52		Pass
+40℃	52.8V		6.43	6.28	9.37		Pass
	43.2V		6.44	5.72	9.11		Pass
+25℃	48.0V	159/5795	5.80	6.49	9.17		Pass
-10℃	52.8V		5.70	5.89	8.81		Pass
	43.2V		5.54	5.77	8.67		Pass
+40℃	52.8V		6.35	6.08	9.23		Pass
	43.2V		8.61	6.14	10.56		Pass

802.11 ac HT 80							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	155/5775	4.88	4.94	7.92	13.98	Pass
-10℃	52.8V		5.02	4.95	8.00		Pass
	43.2V		5.88	5.41	8.66		Pass
+40℃	52.8V		4.59	4.87	7.74		Pass
	43.2V		4.33	5.66	8.06		Pass

802.11 ax HT 20							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	149/5745	5.86	6.77	9.35	13.98	Pass
-10℃	52.8V		6.24	5.57	8.93		Pass
	43.2V		5.93	5.08	8.54		Pass
+40℃	52.8V		5.19	7.47	9.49		Pass
	43.2V		6.64	6.09	9.38		Pass
+25℃	48.0V	157/5785	6.15	8.07	10.23		Pass
-10℃	52.8V		7.32	7.28	10.31		Pass
	43.2V		7.07	6.71	9.90		Pass
+40℃	52.8V		7.00	6.75	9.89		Pass
	43.2V		7.25	6.70	9.99		Pass
+25℃	48.0V	165/5825	6.12	5.38	8.78		Pass
-10℃	52.8V		7.19	7.35	10.28		Pass
	43.2V		5.46	6.44	8.99		Pass
+40℃	52.8V		6.51	6.46	9.50		Pass
	43.2V		6.06	5.43	8.77		Pass

802.11 ax HT 40							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	151/5755	7.22	5.82	9.59	13.98	Pass
-10℃	52.8V		6.22	6.32	9.28		Pass
	43.2V		5.38	5.60	8.50		Pass
+40℃	52.8V		6.50	6.04	9.29		Pass
	43.2V		6.05	5.54	8.81		Pass
+25℃	48.0V	159/5795	5.85	6.35	9.12		Pass
-10℃	52.8V		5.56	6.19	8.90		Pass
	43.2V		6.08	5.69	8.90		Pass
+40℃	52.8V		6.03	6.35	9.20		Pass
	43.2V		8.26	5.79	10.21		Pass

802.11 ax HT 80							
Test conditions		**Channel/ Frequency**	**Ant 1**	**Ant 2**	**Mimo**	**Limit (dBm)**	**Result**
Temperature (℃)	**Voltage (V)**		**power (dBm)**	**power (dBm)**	**power (dBm)**		
+25℃	48.0V	155/5775	5.00	4.84	7.93	13.98	Pass
-10℃	52.8V		5.02	4.78	7.91		Pass
	43.2V		5.75	5.60	8.69		Pass
+40℃	52.8V		4.30	4.63	7.48		Pass
	43.2V		4.19	6.02	8.21		Pass

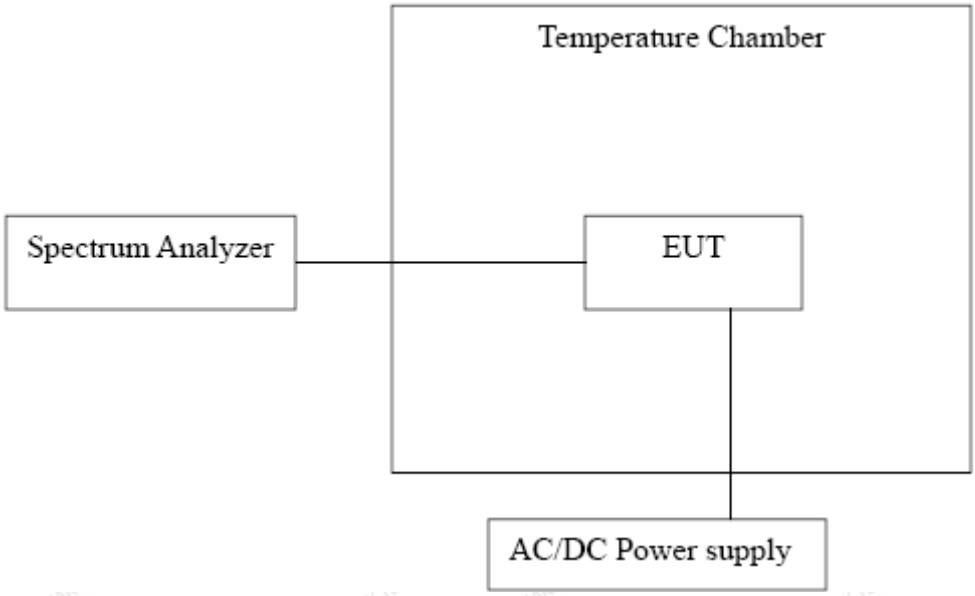
4.3. Permitted Range of Operating Frequencies

LIMIT

According to ETSI EN 300 440 clause 4.2.3.5

Frequency range Limit	
F_{Low} > 5725G	F_{High} < 5875GHz

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 440 clause 5 for the test conditions.
2. Please refer to ETSI EN 300 440 clause 4.2.3.3 for the measurement method.

TEST RESULTS

Ant 1

802.11a					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5736.08	5833.88	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5736.08	5833.99		
	43.2V	5736.21	5833.72		
+40℃	52.8V	5736.10	5833.81		
	43.2V	5736.07	5833.90		

802.11n HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.60	5834.56	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.63	5834.71		
	43.2V	5735.42	5834.72		
+40℃	52.8V	5735.41	5834.62		
	43.2V	5735.64	5834.39		

802.11n HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.72	5814.12	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.54	5814.18		
	43.2V	5735.60	5814.21		
+40℃	52.8V	5735.73	5814.18		
	43.2V	5735.81	5814.02		

802.11ac HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.52	5834.52	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.58	5834.40		
	43.2V	5735.72	5834.47		
+40℃	52.8V	5735.49	5834.37		
	43.2V	5735.69	5834.43		

802.11ac HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.64	5814.44	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.77	5814.61		
	43.2V	5735.81	5814.40		
+40℃	52.8V	5735.68	5814.61		
	43.2V	5735.53	5814.46		

802.11ac HT80					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.96	5813.88	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5736.15	5813.69		
	43.2V	5736.04	5813.74		
+40℃	52.8V	5735.92	5813.85		
	43.2V	5735.79	5813.99		

802.11ax HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5734.96	5834.92	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.13	5834.89		
	43.2V	5735.15	5834.83		
+40℃	52.8V	5735.07	5834.98		
	43.2V	5735.09	5834.80		

802.11ax HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.16	5814.68	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.11	5814.88		
	43.2V	5735.10	5814.54		
+40℃	52.8V	5735.17	5814.88		
	43.2V	5735.05	5814.67		

802.11ax HT80					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.68	5814.68	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.53	5814.49		
	43.2V	5735.59	5814.54		
+40℃	52.8V	5735.76	5814.58		
	43.2V	5735.56	5814.49		

Ant 2

802.11a					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5736.12	5833.92	$f_L \geqq$ 5725MHz and $f_H \leqq$ 5875MHzGHz	Pass
-10℃	52.8V	5736.01	5834.09		
	43.2V	5736.21	5833.72		
+40℃	52.8V	5736.10	5833.76		
	43.2V	5735.93	5833.88		

802.11n HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.12	5834.52	$f_L \geqq$ 5725MHz and $f_H \leqq$ 5875MHzGHz	Pass
-10℃	52.8V	5734.93	5834.55		
	43.2V	5735.17	5834.57		
+40℃	52.8V	5735.12	5834.44		
	43.2V	5735.21	5834.71		

802.11n HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.64	5813.20	$f_L \geqq$ 5725MHz and $f_H \leqq$ 5875MHzGHz	Pass
-10℃	52.8V	5735.73	5813.34		
	43.2V	5735.46	5813.04		
+40℃	52.8V	5735.70	5813.30		
	43.2V	5735.51	5813.20		

802.11ac HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.48	5834.48	$f_L \geqq 5725MHz$ and $f_H \leqq 5875MHzGHz$	Pass
-10℃	52.8V	5735.30	5834.38		
	43.2V	5735.59	5834.46		
+40℃	52.8V	5735.31	5834.64		
	43.2V	5735.44	5834.32		

802.11ac HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.56	5813.88	$f_L \geqq 5725MHz$ and $f_H \leqq 5875MHzGHz$	Pass
-10℃	52.8V	5735.65	5814.07		
	43.2V	5735.44	5813.86		
+40℃	52.8V	5735.42	5813.97		
	43.2V	5735.47	5813.76		

802.11ac HT80					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5736.12	5813.72	$f_L \geqq 5725MHz$ and $f_H \leqq 5875MHzGHz$	Pass
-10℃	52.8V	5736.09	5813.75		
	43.2V	5736.05	5813.71		
+40℃	52.8V	5736.08	5813.68		
	43.2V	5736.24	5813.76		

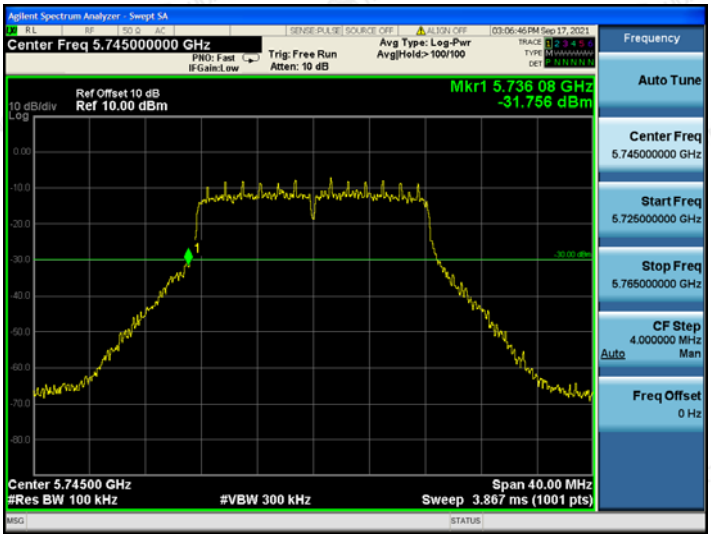
802.11ax HT20					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5734.96	5834.92	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5734.95	5834.79		
	43.2V	5735.12	5834.81		
+40℃	52.8V	5734.98	5835.09		
	43.2V	5734.77	5834.85		

802.11ax HT40					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.24	5814.76	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.40	5814.65		
	43.2V	5735.05	5814.85		
+40℃	52.8V	5735.22	5814.66		
	43.2V	5735.32	5814.81		

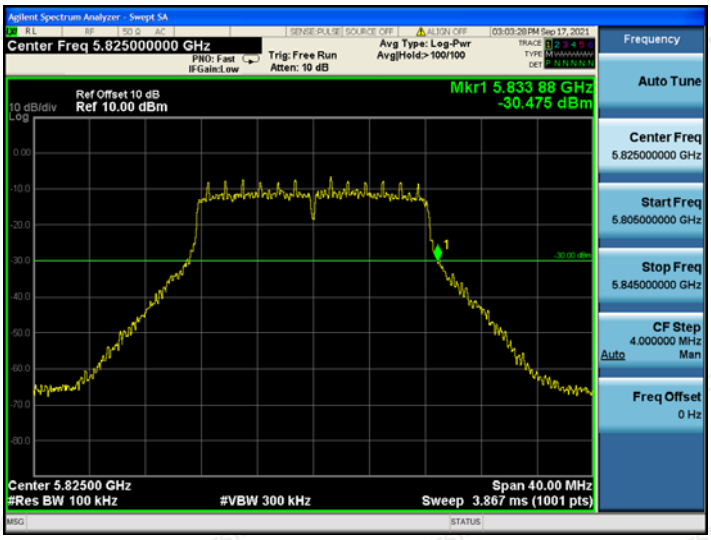
802.11ax HT80					
Test Condition		f_L (MHz)	f_H (MHz)	Limit	Result
Temperature (℃)	Voltage (V)				
+25℃	48.0V	5735.32	5814.52	$f_L \geqq 5725$MHz and $f_H \leqq 5875$MHzGHz	Pass
-10℃	52.8V	5735.33	5814.46		
	43.2V	5735.39	5814.42		
+40℃	52.8V	5735.32	5814.69		
	43.2V	5735.17	5814.33		

Ant 1

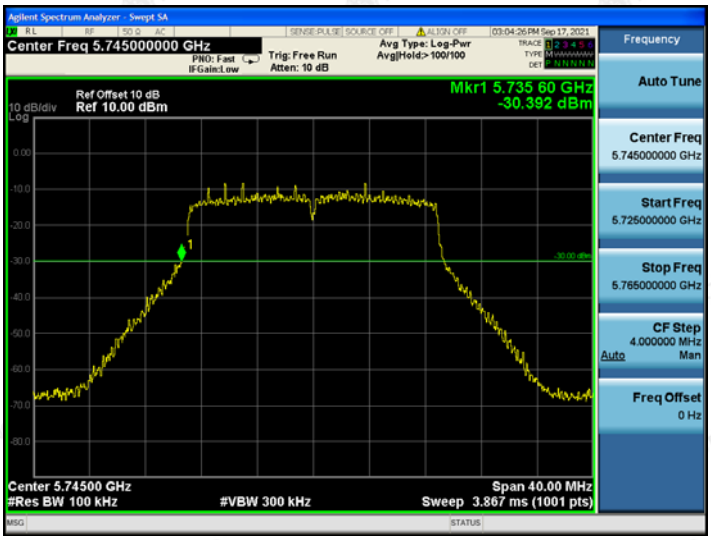
802.11a 5745



802.11a 5825



802.11n HT20 5745



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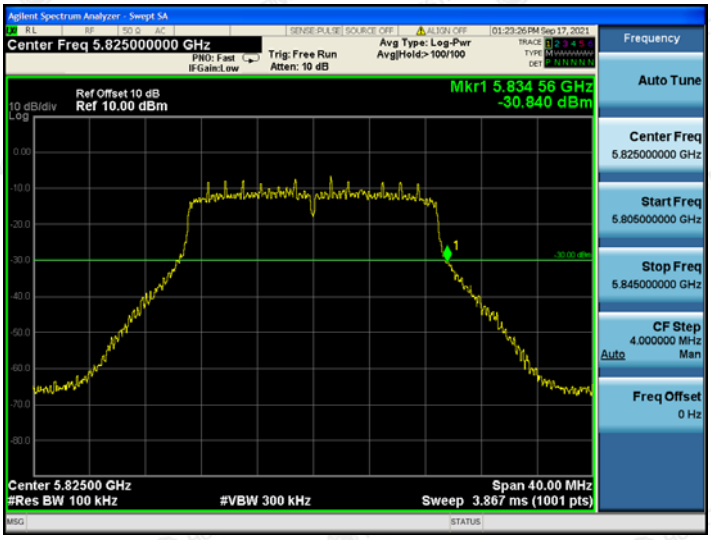
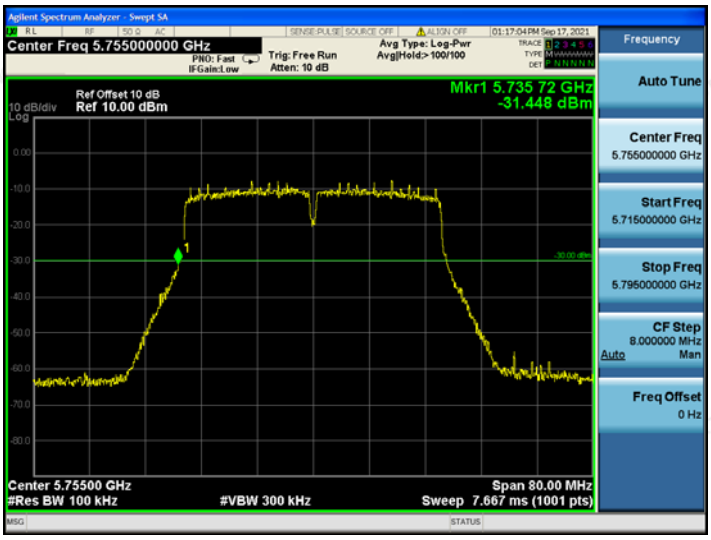
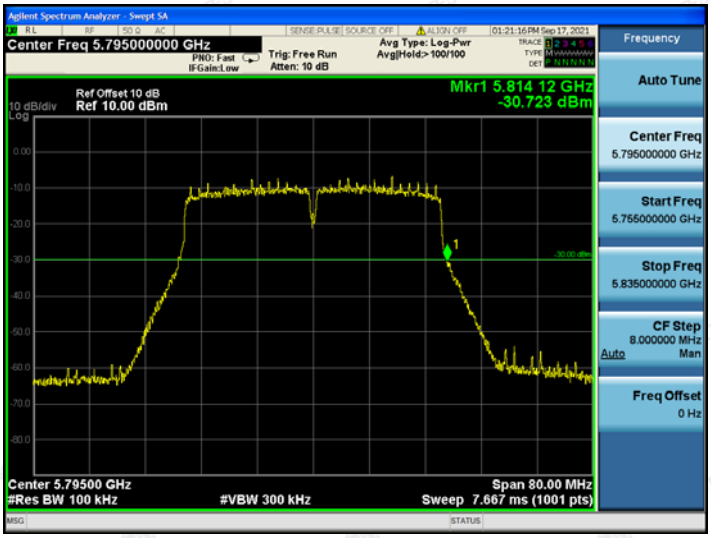


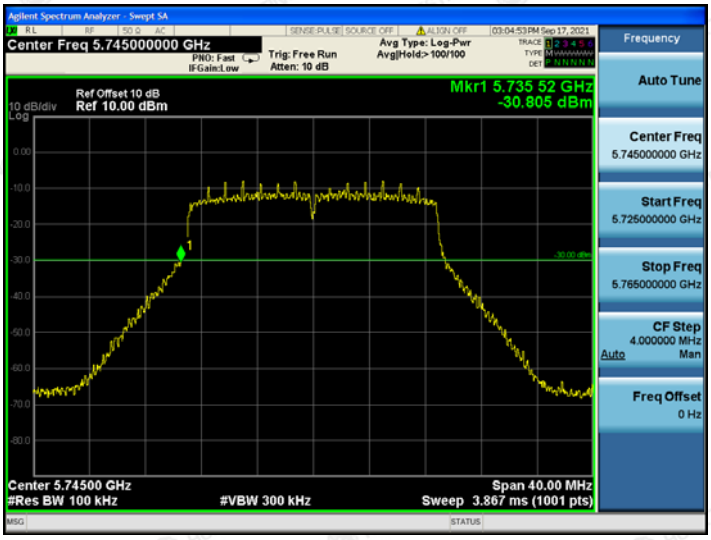
802.11n HT40 5755



802.11n HT40 5795



802.11ac HT20 5745



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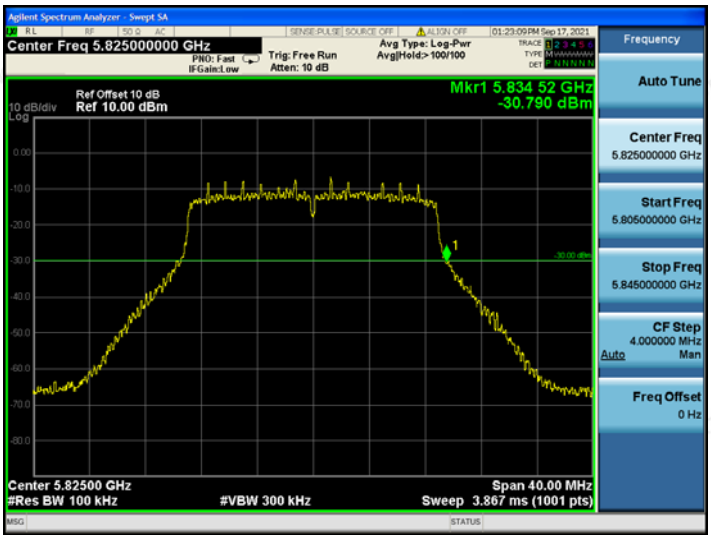

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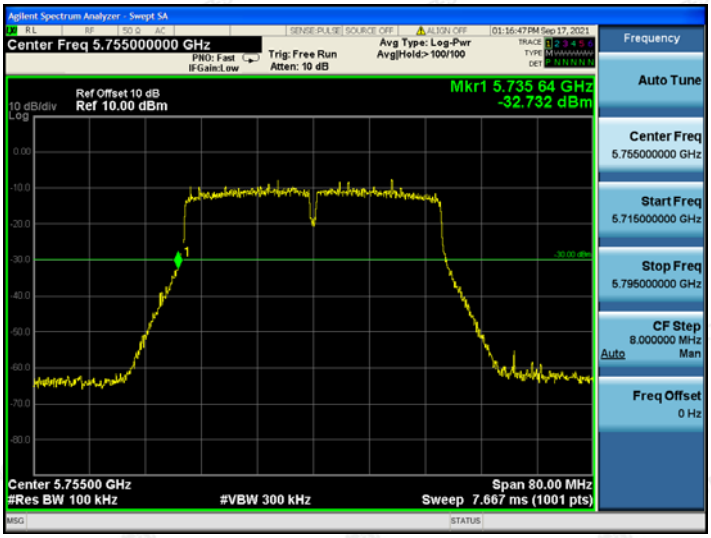

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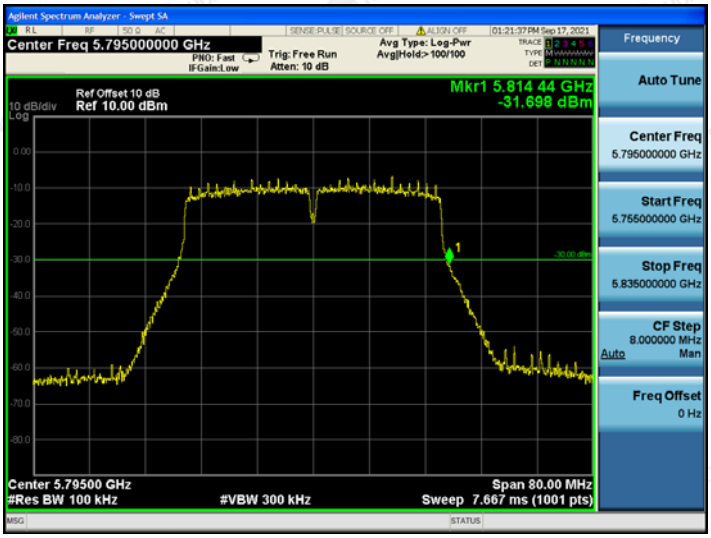
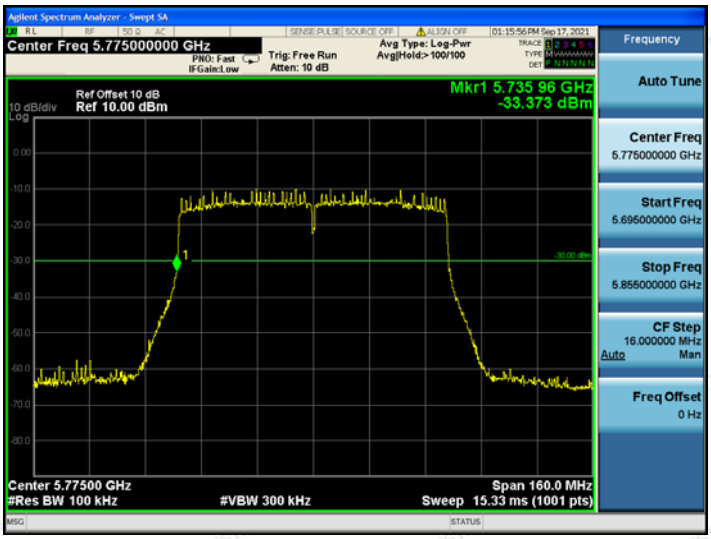
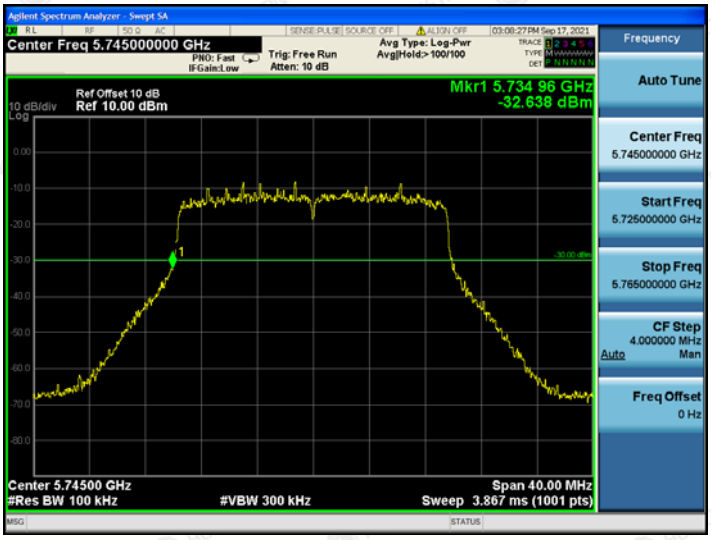


802.11ac HT80 5775



802.11ax HT20 5745



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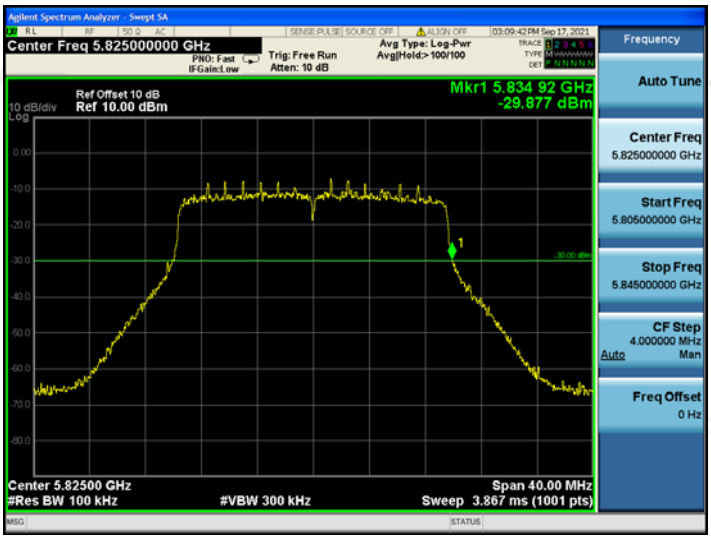

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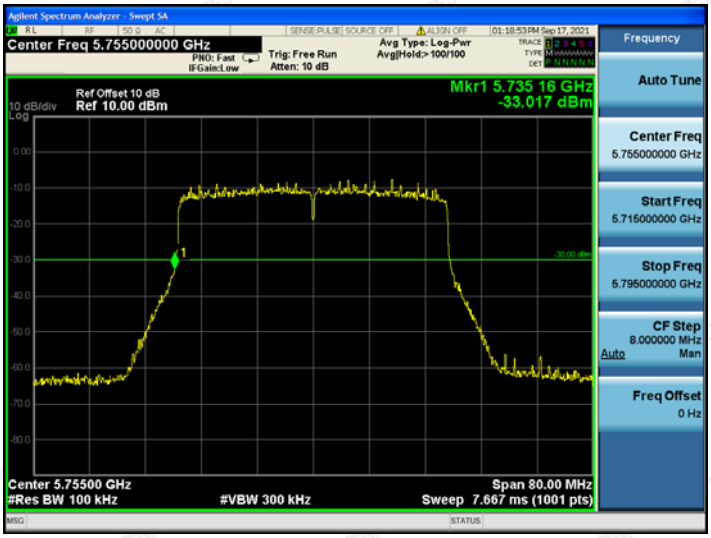

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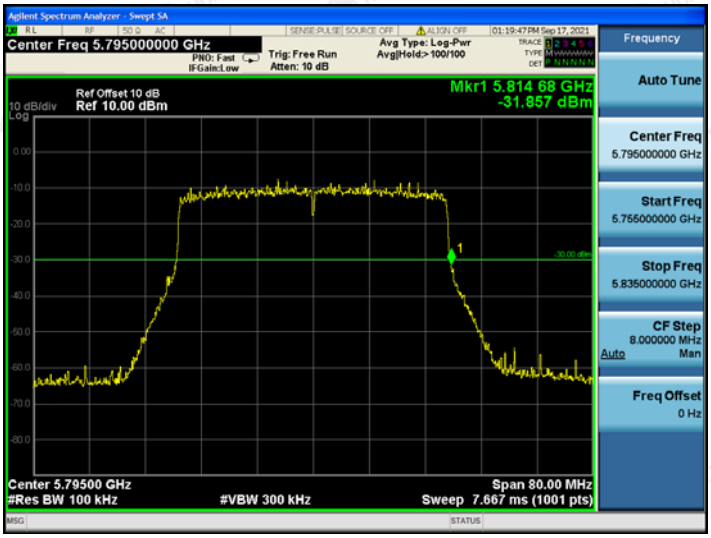
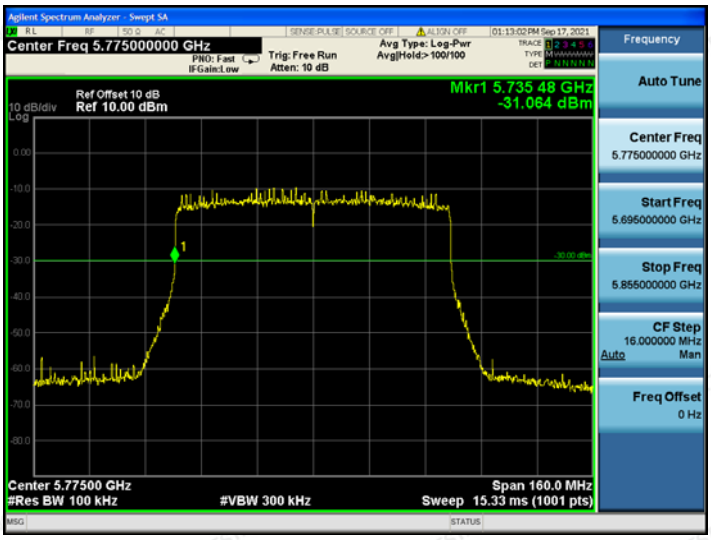
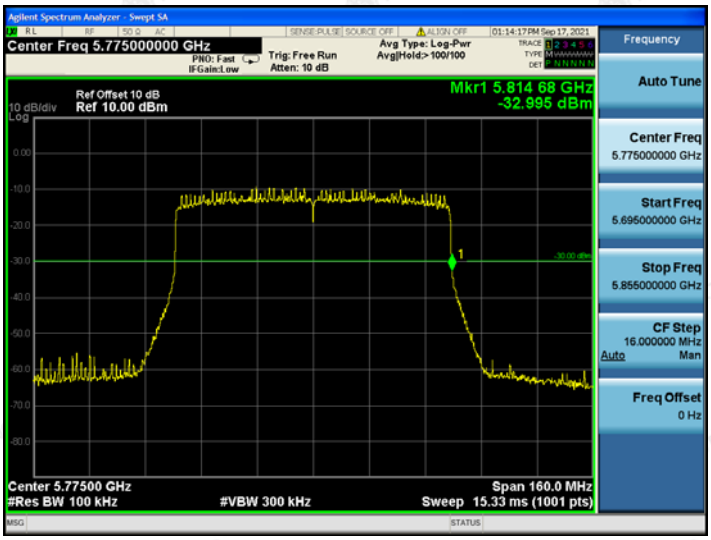


802.11ax HT80 5775





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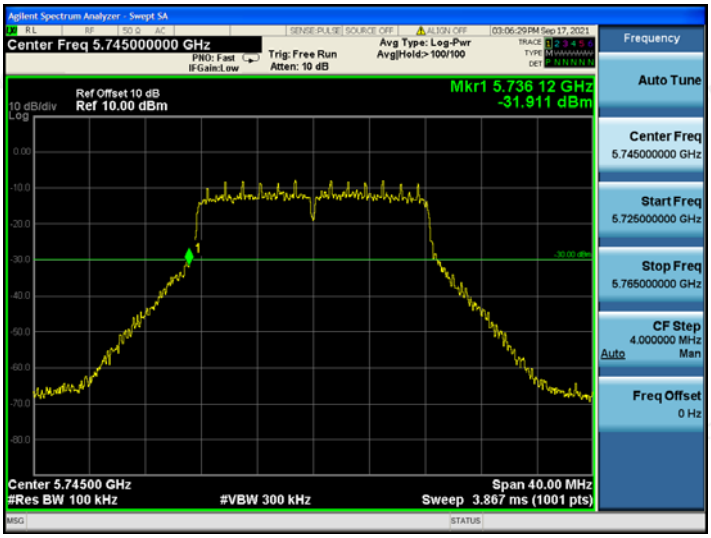
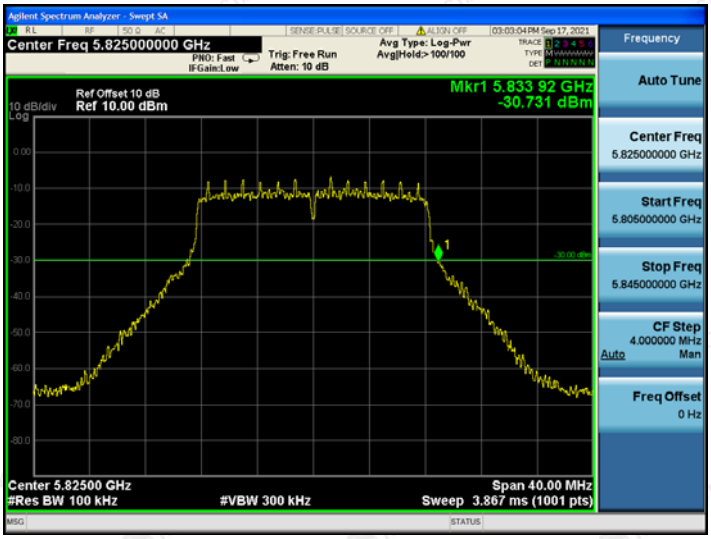
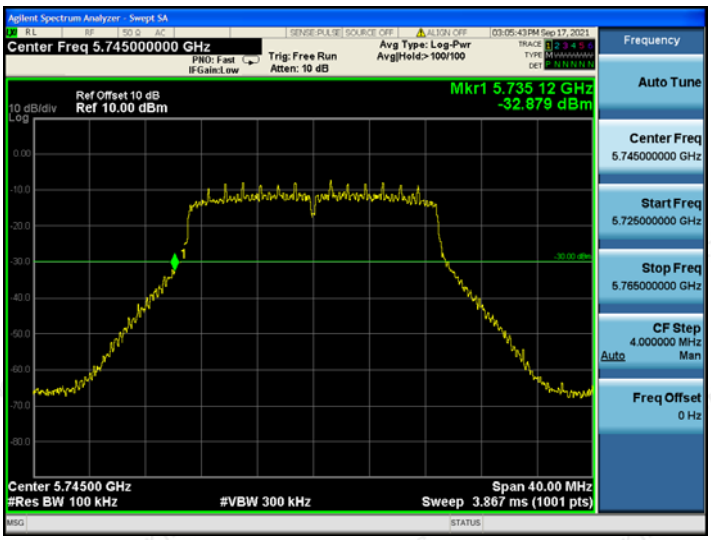
802.11a 5745



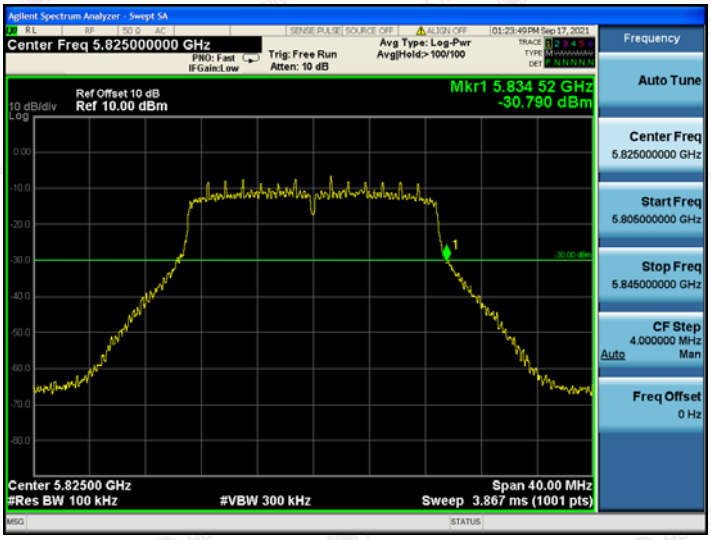
802.11a 5825



802.11n HT20 5745



802.11n HT20 5825



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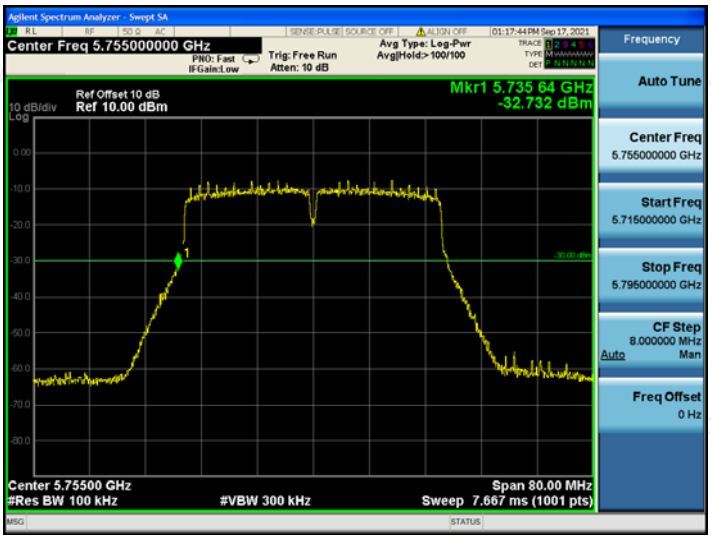

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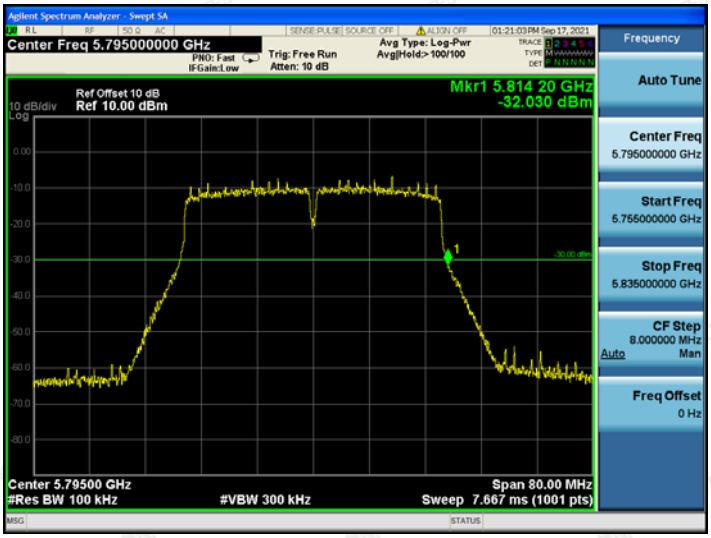
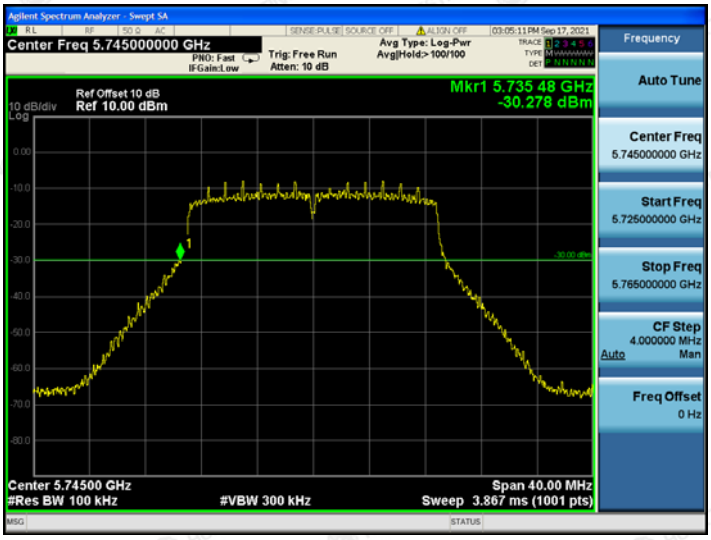


802.11ac HT20 5745



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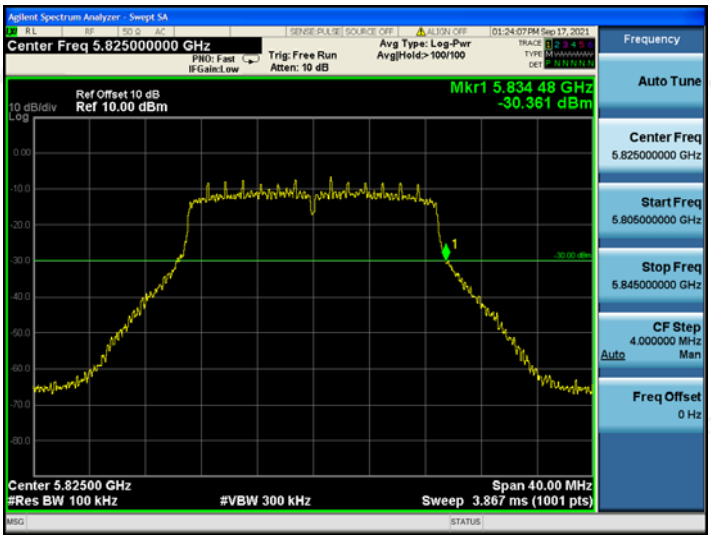

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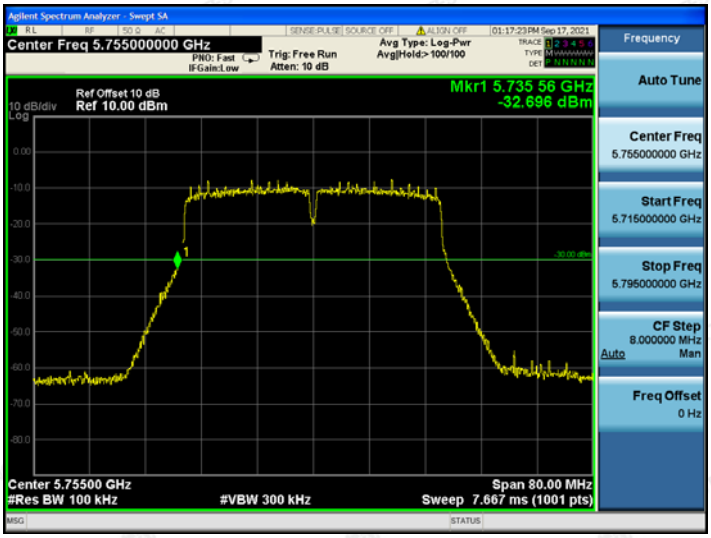

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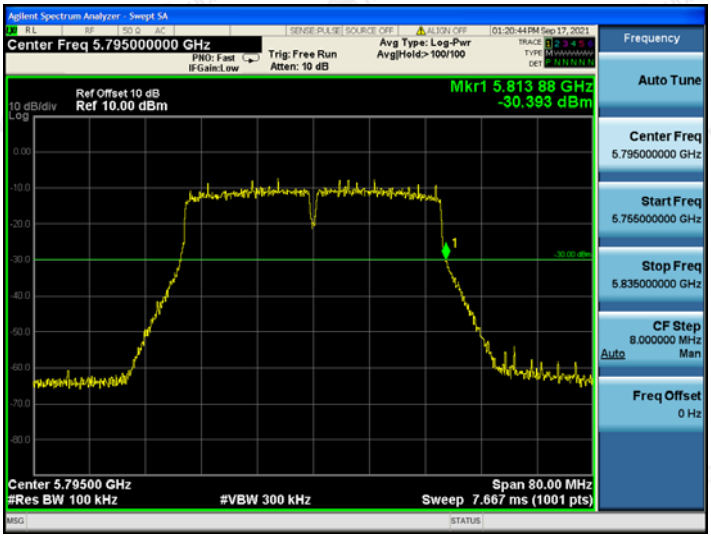
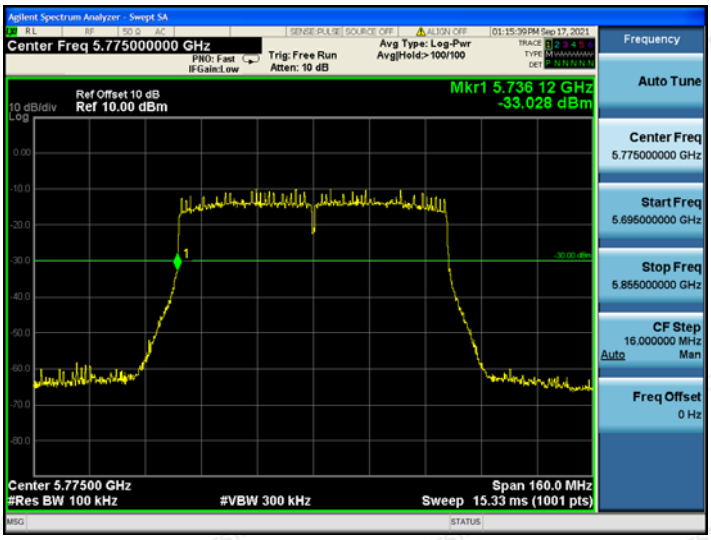
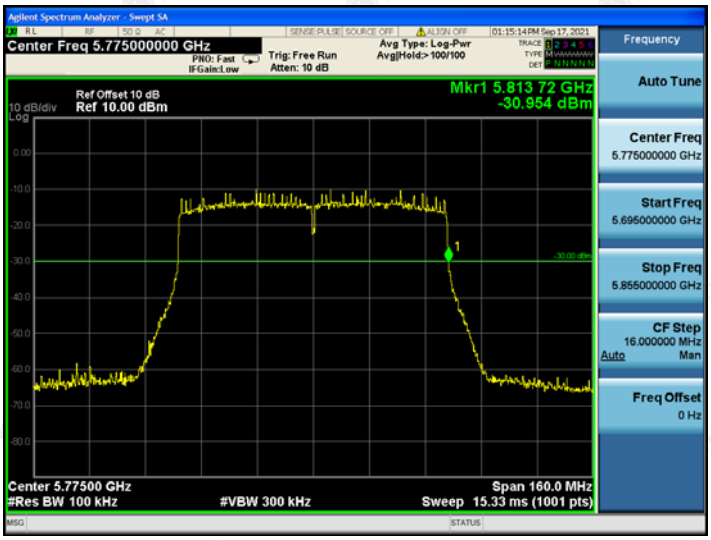
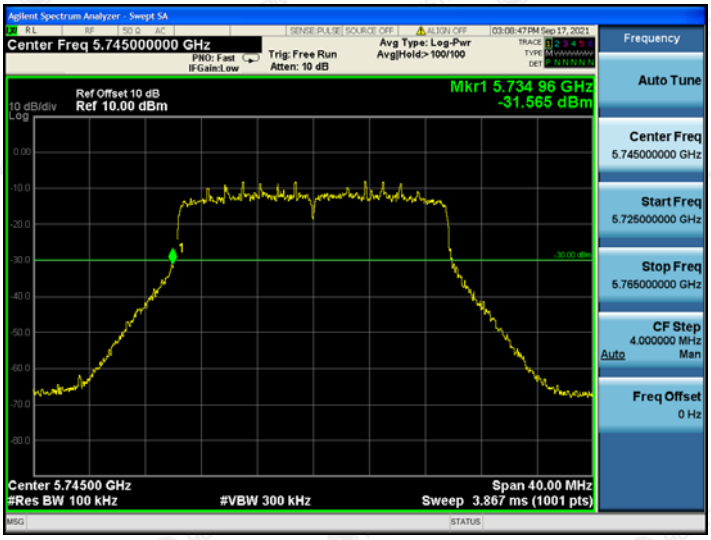


802.11ac HT80 5775

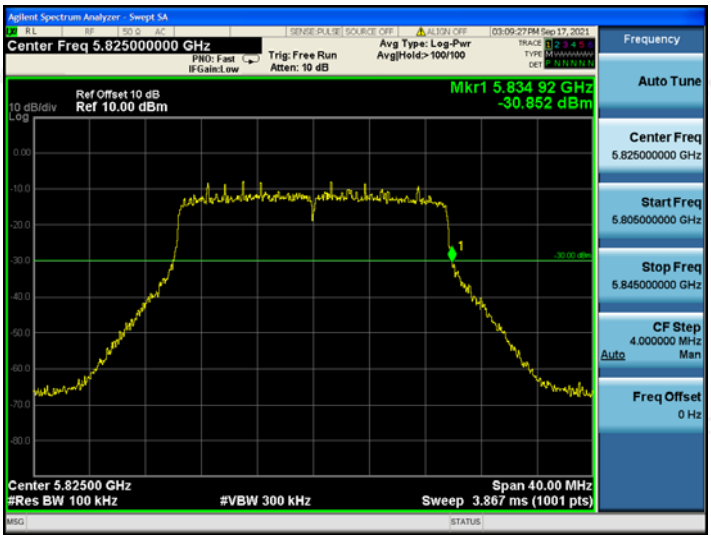




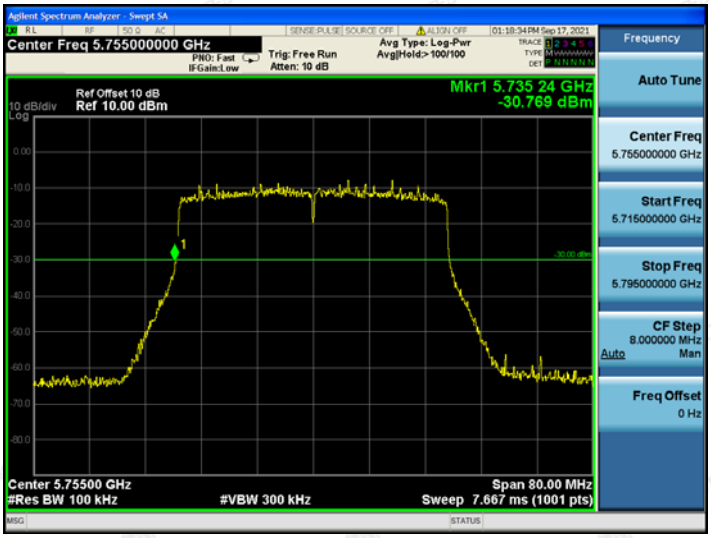
802.11ax HT20 5745



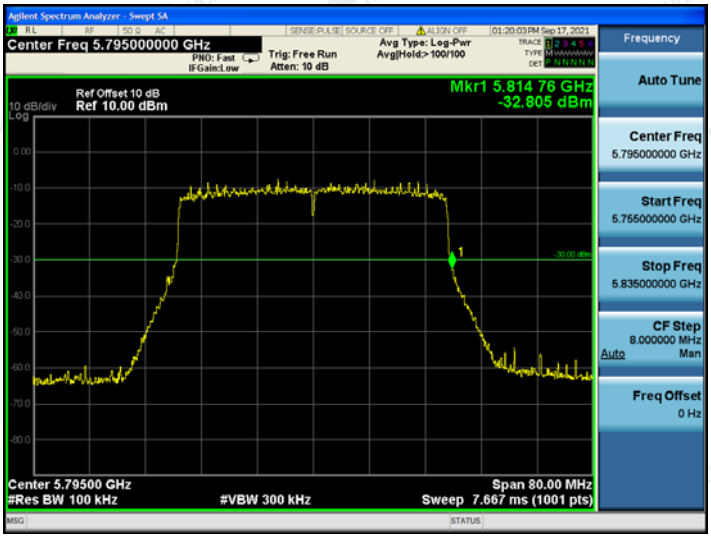
802.11ax HT20 5825



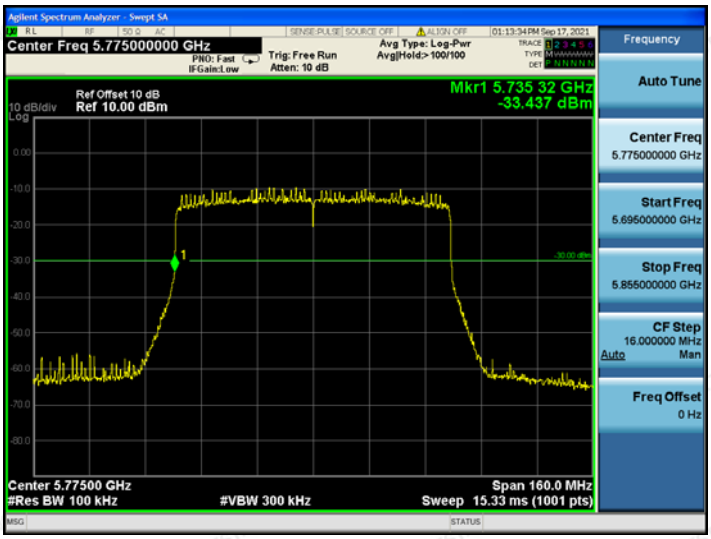
802.11ax HT40 5755

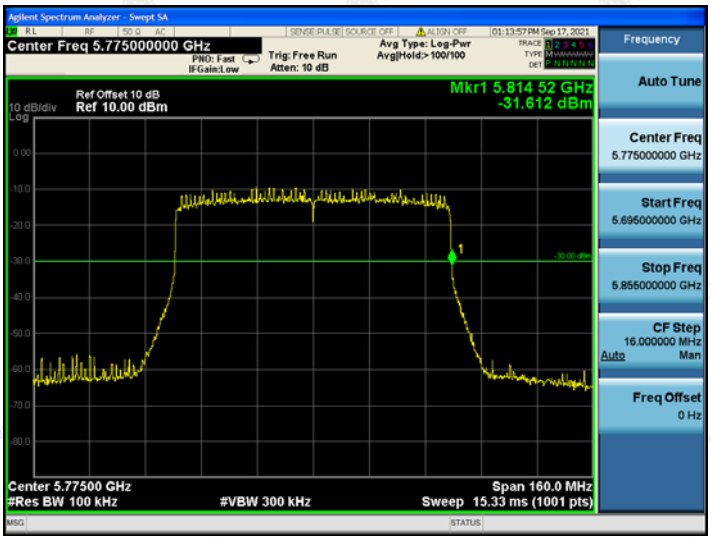


802.11ax HT40 5795



802.11ax HT80 5775





4.4. Spurious emissions and cabinet

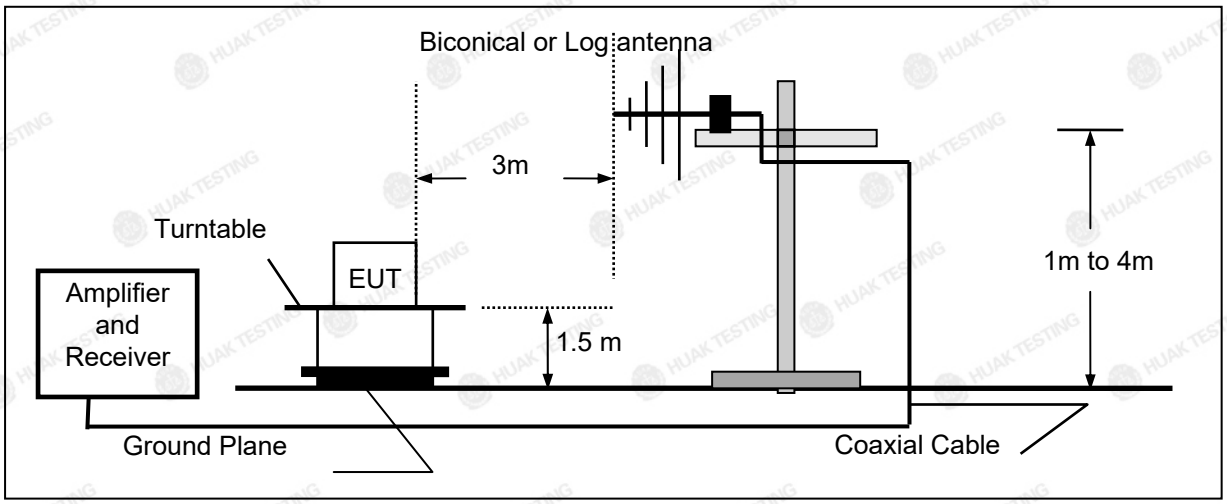
LIMIT

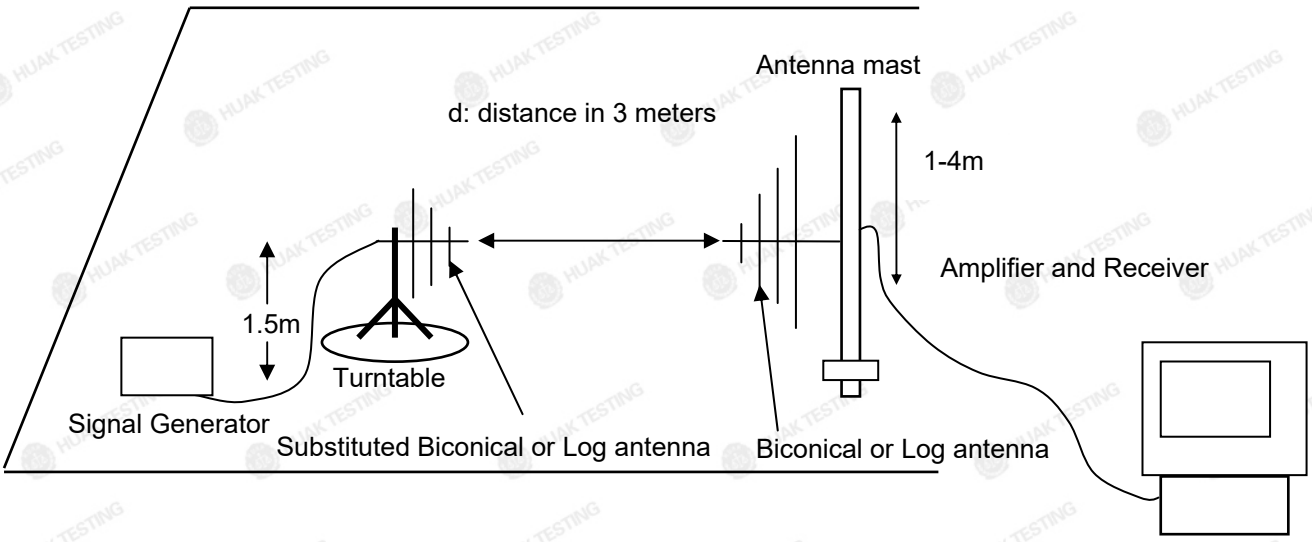
The power of the spurious emissions shall not exceed the limits of table

State	47 MHz to 74 MHz 87.5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤1 000 MHz	Frequencies > 1 000 MHz
Operating	4 nW /-54dBm	250 nW/-36dBm	1 µW /-30dBm
Standby	2 nW /-57dBm	2 nW /-57dBm	20 nW /-47dBm

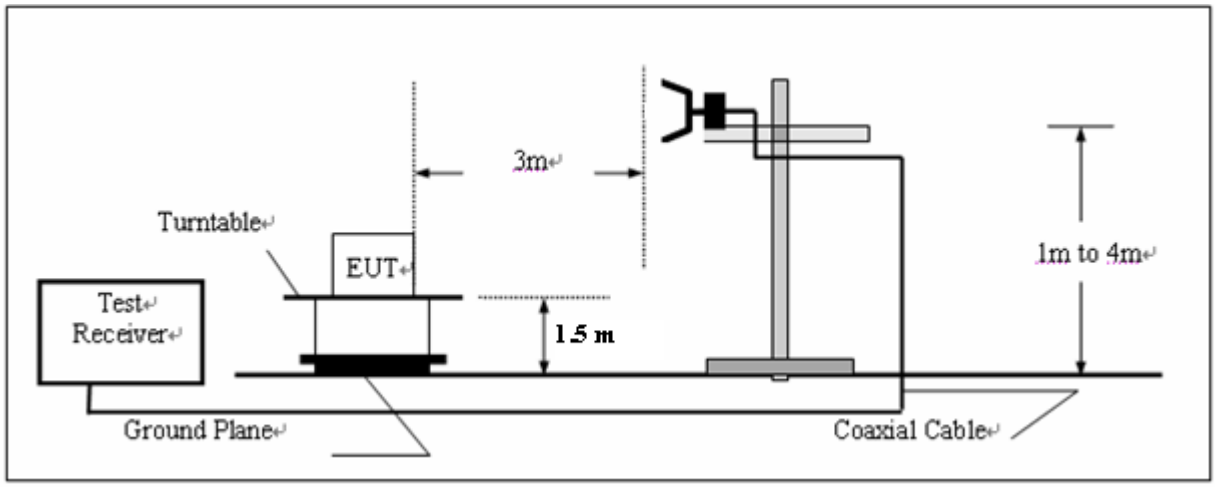
TEST CONFIGURATION

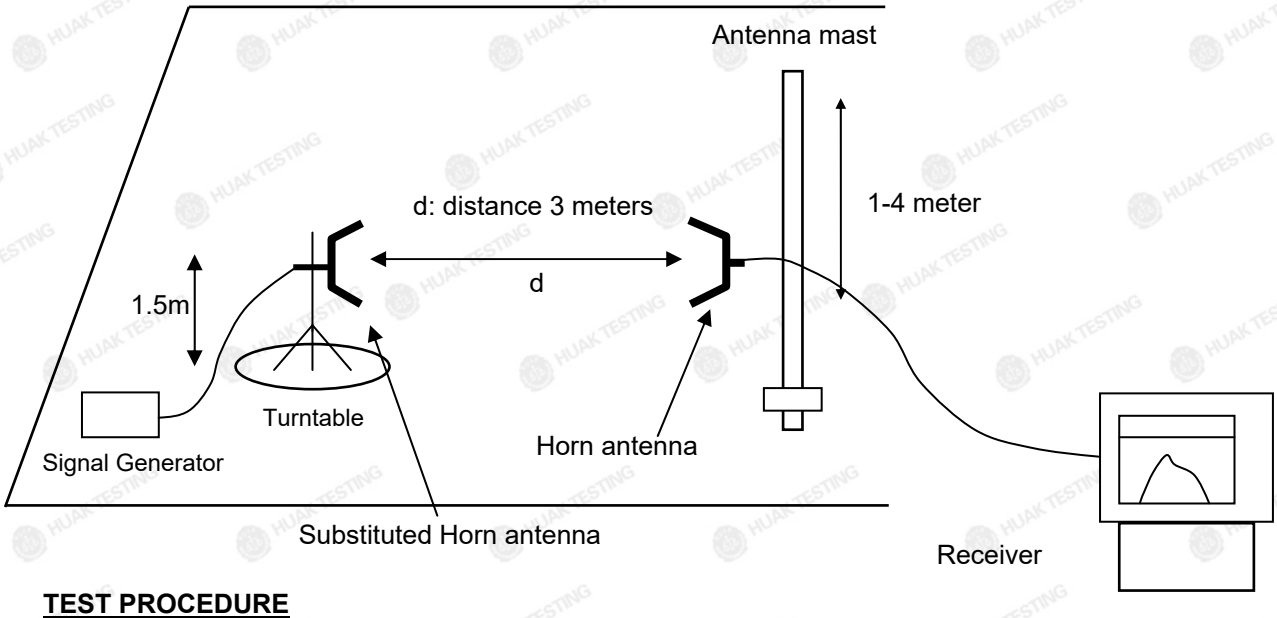
Below 1GHz





Above 1GHz





TEST PROCEDURE

1. Please refer to ETSI EN 300 440 clause 5 for the test conditions.
2. Please refer to ETSI EN 300 440 clause 4.2.4.3 for the measurement method.

TEST RESULTS

Note:We tested at 802.11a/802.11n HT20/802.11n HT40/802.11ac HT20/802.11ac HT40/802.11ac HT80/802.11ax HT20/802.11ax HT40/802.11ax HT80 mode at the antenna single transmitting mode and the Mimo mode, and recorded the worst case 802.11n HT 20 mode at the Mimo mode. The measurement frequency range is from 25MHz to the 10th harmonic of the fundamental frequency, not exceeding 40GHz.18GHz-40GHz not recorded for no spurious point have a margin of less than 6 dB with respect to the limits.

802.11n HT 20, CH 149, Horizontal/Vertical

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
181.06	V	-77.04	-36	-41.04	PASS
228.45	V	-79.30	-54	-25.30	PASS
312.71	V	-77.35	-36	-41.35	PASS
384.91	V	-75.19	-36	-39.19	PASS
492.22	V	-73.16	-36	-37.16	PASS
800.77	V	-78.14	-54	-24.14	PASS
166.65	H	-76.66	-36	-40.66	PASS
214.59	H	-77.32	-54	-23.32	PASS
329.61	H	-72.94	-36	-36.94	PASS
436.27	H	-78.27	-36	-42.27	PASS
555.45	H	-70.94	-54	-16.94	PASS
822.05	H	-79.04	-54	-25.04	PASS
Note: 1.Cable loss and antenna gain was combined in the calculated result. 2. Other point of the measurements are below 20dB from the limit.					

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
1622.45	V	-53.86	-30	-23.86	PASS
1484.91	V	-54.45	-30	-24.45	PASS
2481.80	V	-50.33	-30	-20.33	PASS
2528.66	V	-54.47	-30	-24.47	PASS
3805.08	V	-47.92	-30	-17.92	PASS
4058.12	V	-53.80	-30	-23.80	PASS
4424.39	H	-54.87	-30	-24.87	PASS
4454.73	H	-50.90	-30	-20.90	PASS
4502.12	H	-51.33	-30	-21.33	PASS
4880.34	H	-46.57	-30	-16.57	PASS
6017.86	H	-59.14	-30	-29.14	PASS
6357.83	H	-50.46	-30	-20.46	PASS

Note:
1.Cable loss and antenna gain was combined in the calculated result.
2. Other point of the measurements are below 20dB from the limit.

802.11n HT 20, CH 165, Horizontal/Vertical

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
174.56	V	-78.19	-36	-42.19	PASS
221.36	V	-77.15	-54	-23.15	PASS
299.12	V	-75.65	-36	-39.65	PASS
388.30	V	-78.10	-36	-42.10	PASS
503.37	V	-70.55	-36	-34.55	PASS
811.68	V	-78.11	-54	-24.11	PASS
143.60	H	-73.87	-36	-37.87	PASS
223.66	H	-78.20	-54	-24.20	PASS
352.84	H	-72.82	-36	-36.82	PASS
433.93	H	-74.27	-36	-38.27	PASS
558.23	H	-74.40	-54	-20.40	PASS
847.83	H	-78.40	-54	-24.40	PASS

Note:
1.Cable loss and antenna gain was combined in the calculated result.
2. Other point of the measurements are below 20dB from the limit.

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
1631.24	V	-50.68	-30	-20.68	PASS
1480.94	V	-53.01	-30	-23.01	PASS
2669.88	V	-48.23	-30	-18.23	PASS
2845.75	V	-53.30	-30	-23.30	PASS
3820.04	V	-50.38	-30	-20.38	PASS
4095.84	V	-54.80	-30	-24.80	PASS
4583.18	H	-51.98	-30	-21.98	PASS
4545.22	H	-51.96	-30	-21.96	PASS
4623.30	H	-51.55	-30	-21.55	PASS
4696.50	H	-51.39	-30	-21.39	PASS
5762.73	H	-59.63	-30	-29.63	PASS
6087.53	H	-50.41	-30	-20.41	PASS

Note:
1.Cable loss and antenna gain was combined in the calculated result.
2. Other point of the measurements are below 20dB from the limit.

4.5. Duty cycle

According to ETSI EN 300 440 clause 4.2.5.4

Table 4 defines the maximum duty cycle within a 1 hour period.

Table 4: Duty cycle limits

Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in annex D shall apply
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in annex D shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications	Limits shown in annex F shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

TEST RESULTS

For device working in frequency band 5725MHz to 5875MHz, no duty cycle restricted.

4.6. Adjacent channel selectivity

LIMIT

Receiver category	Limit
1	-30dBm+k
2	-45dBm+k
3	-60dBm+k

The correction factor, k, is as follows:

K=-20logf-10logBW

Where:

-f is the frequency in GHz;

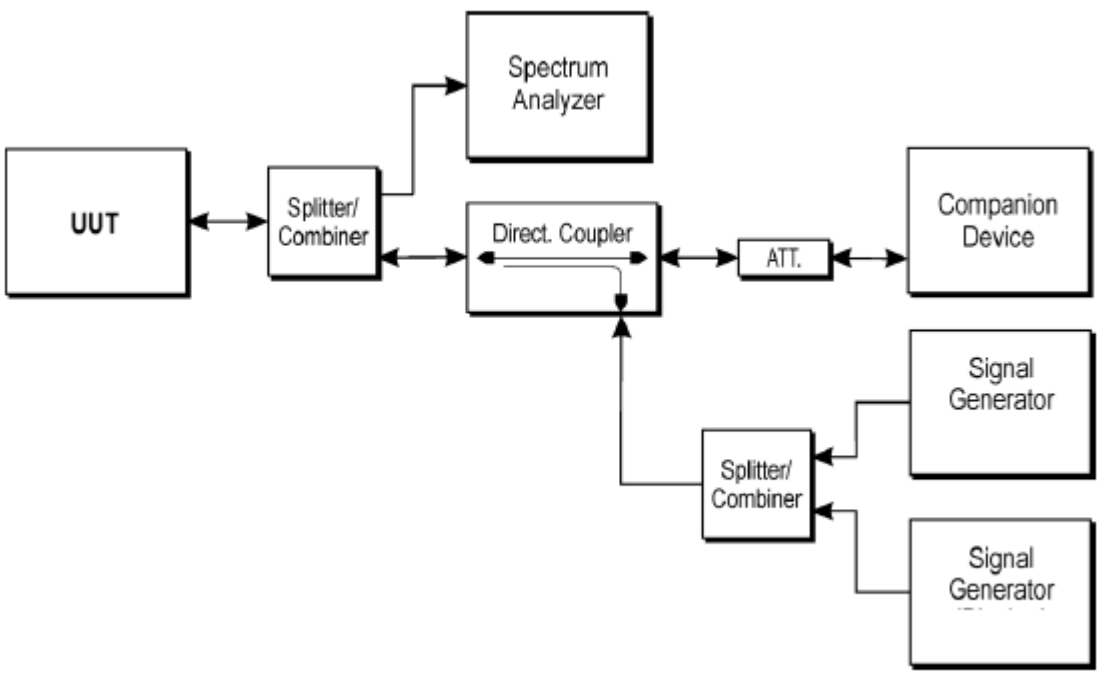
-BW is the channel bandwidth in MHz.

The factor k is limited within the following:

-40 dB < k < 0 dB

The manufacturer declare the BW is 20MHz,K=-20logf(Unwanted Signal Frequency)-13.01.

TEST PROCEDURE



TEST CONFIGURATION

1.Please refer to ETSI EN 300 440 clause 5 for the test conditions.
2.Please refer to ETSI EN 300 440 clause 4.3.3.3 for the measurement method.

TEST RESULTS

Ant 1

802.11a

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-46.81	-58.20	PASS
	20	5785	-46.42	-58.26	PASS
161	20	5785	-43.76	-58.26	PASS
	20	5825	-46.07	-58.32	PASS

802.11 n HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-49.17	-58.20	PASS
	20	5785	-43.74	-58.26	PASS
161	20	5785	-43.34	-58.26	PASS
	20	5825	-44.59	-58.32	PASS

802.11 n HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-43.82	-61.22	PASS
	40	5795	-44.58	-61.28	PASS

802.11 ac HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-48.00	-58.20	PASS
	20	5785	-44.08	-58.26	PASS
161	20	5785	-41.49	-58.26	PASS
	20	5825	-38.84	-58.32	PASS

802.11 ac HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-48.05	-61.22	PASS
	40	5795	-48.62	-61.28	PASS

802.11 ac HT 80

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	80	5775	-45.06	-64.26	PASS

802.11 ax HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-48.56	-58.20	PASS
	20	5785	-43.33	-58.26	PASS
161	20	5785	-40.88	-58.26	PASS
	20	5825	-40.89	-58.32	PASS

802.11 ax HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-48.47	-61.22	PASS
	40	5795	-49.04	-61.28	PASS

802.11 ax HT 80

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	80	5775	-45.17	-64.26	PASS

Ant 2

802.11a

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-45.88	-58.20	PASS
	20	5785	-44.74	-58.26	PASS
161	20	5785	-38.85	-58.26	PASS
	20	5825	-44.42	-58.32	PASS

802.11 n HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-50.32	-58.20	PASS
	20	5785	-41.40	-58.26	PASS
161	20	5785	-43.20	-58.26	PASS
	20	5825	-40.02	-58.32	PASS

802.11 n HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-44.29	-61.22	PASS
	40	5795	-42.55	-61.28	PASS

802.11 ac HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-47.00	-58.20	PASS
	20	5785	-45.87	-58.26	PASS
161	20	5785	-41.54	-58.26	PASS
	20	5825	-44.15	-58.32	PASS

802.11 ac HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-44.62	-61.22	PASS
	40	5795	-49.18	-61.28	PASS

802.11 ac HT 80

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	80	5775	-45.09	-64.26	PASS

802.11 ax HT 20

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
153	20	5745	-50.40	-58.20	PASS
	20	5785	-45.45	-58.26	PASS
161	20	5785	-42.78	-58.26	PASS
	20	5825	-41.62	-58.32	PASS

802.11 ax HT 40

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	40	5755	-47.17	-61.22	PASS
	40	5795	-49.29	-61.28	PASS

802.11 ax HT 80

Test Channel	BW(MHz)	Unwanted Signal Frequency(MHz)	Adjacent Frequency Signal Power Level (dBm)	Limit (dBm)	Result
155	80	5775	-44.09	-64.26	PASS

4.7. Blocking or desensitization

LIMIT

Receiver category	Limit
1	-30dBm+k
2	-45dBm+k
3	-60dBm+k

The correction factor, k, is as follows:

K=-20logf-10logBW

Where:

-f is the frequency in GHz;

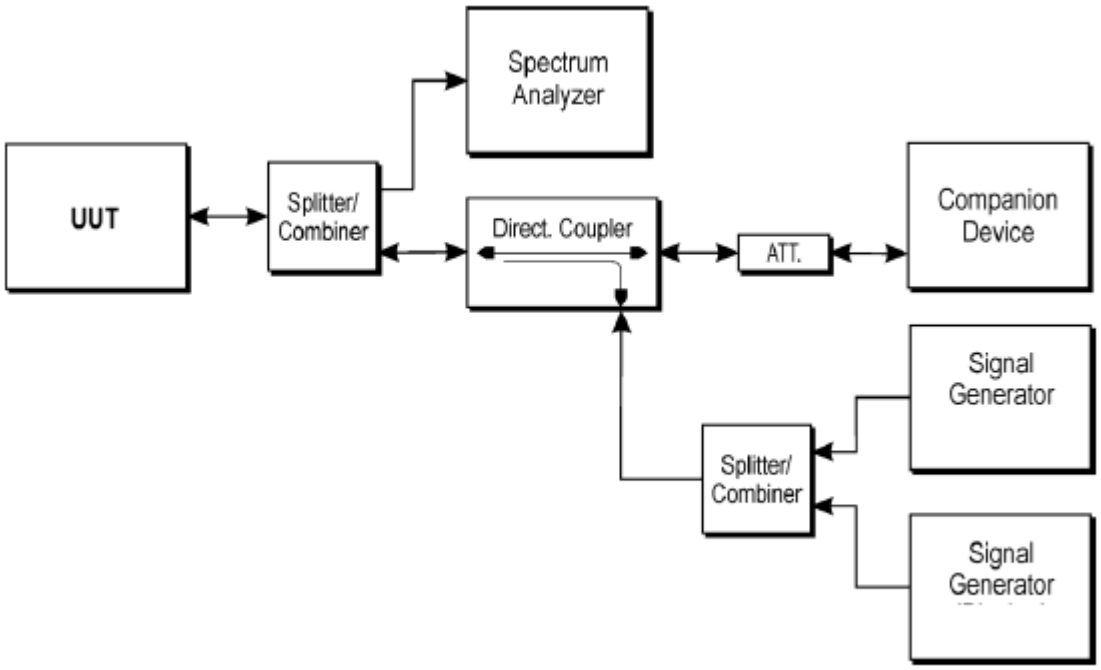
-BW is the channel bandwidth in MHz.

The factor k is limited within the following:

-40 dB < k < 0dB

The manufacturer declare the BW is 20MHz,K=-20logf(Blocking Signal Frequency)-13.01.

TEST PROCEDURE



TEST CONFIGURATION

1.Please refer to ETSI EN 300 440 clause 5 for the test conditions.
2.Please refer to ETSI EN 300 440 clause 4.3.4.3 for the measurement method.

TEST RESULTS

Ant 1

802.11a

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-47.65	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-52.86	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-47.71	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-49.23	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-50.18	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-50.35	-74.69	PASS

802.11 n HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-50.95	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-52.28	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-42.59	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-48.69	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-49.31	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-46.10	-74.69	PASS

802.11 n HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-49.80	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-50.47	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-50.13	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-47.68	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-47.32	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-46.81	-77.66	PASS

802.11 ac HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-45.95	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-48.42	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-56.29	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-48.65	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-49.15	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-52.77	-74.69	PASS

802.11 ac HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-57.41	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-49.47	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-46.95	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-50.06	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-54.24	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-49.89	-77.66	PASS

802.11 ac HT 80

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
155	80	4975(10 time channel bandwidth frequency offset)	-52.29	-77.97	PASS
		4175(20 time channel bandwidth frequency offset)	-45.68	-76.44	PASS
		1775(50 time channel bandwidth frequency offset)	-44.09	-69.01	PASS
		6575(10 time channel bandwidth frequency offset)	-54.22	-79.87	PASS
		7375(20 time channel bandwidth frequency offset)	-43.12	-80.42	PASS
		9775(50 time channel bandwidth frequency offset)	-44.76	-80.67	PASS

802.11 ax HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-46.47	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-49.62	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-58.27	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-47.96	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-48.17	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-51.13	-74.69	PASS

802.11 ax HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-57.60	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-50.73	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-48.28	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-50.69	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-53.66	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-51.02	-77.66	PASS

802.11 ax HT 80

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
155	80	4975(10 time channel bandwidth frequency offset)	-54.28	-77.97	PASS
		4175(20 time channel bandwidth frequency offset)	-46.86	-76.44	PASS
		1775(50 time channel bandwidth frequency offset)	-41.13	-69.01	PASS
		6575(10 time channel bandwidth frequency offset)	-51.97	-79.87	PASS
		7375(20 time channel bandwidth frequency offset)	-44.48	-80.42	PASS
		9775(50 time channel bandwidth frequency offset)	-46.86	-80.67	PASS

Ant 2
802.11a

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-50.86	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-47.15	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-45.35	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-49.88	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-49.79	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-50.77	-74.69	PASS

802.11 n HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-51.42	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-48.45	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-46.84	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-49.57	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-46.18	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-47.93	-74.69	PASS

802.11 n HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-48.29	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-46.32	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-50.73	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-48.92	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-49.17	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-46.70	-77.66	PASS

802.11 ac HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-46.66	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-49.77	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-52.02	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-50.29	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-50.66	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-49.90	-74.69	PASS

802.11 ac HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-52.02	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-49.67	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-46.49	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-49.13	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-49.66	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-50.55	-77.66	PASS

802.11 ac HT 80

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
155	80	4975(10 time channel bandwidth frequency offset)	-54.97	-77.97	PASS
		4175(20 time channel bandwidth frequency offset)	-46.84	-76.44	PASS
		1775(50 time channel bandwidth frequency offset)	-46.21	-69.01	PASS
		6575(10 time channel bandwidth frequency offset)	-51.86	-79.87	PASS
		7375(20 time channel bandwidth frequency offset)	-46.74	-80.42	PASS
		9775(50 time channel bandwidth frequency offset)	-46.94	-80.67	PASS

802.11 ax HT 20

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
149	20	5545(10 time channel bandwidth frequency offset)	-48.76	-72.88	PASS
		5345(20 time channel bandwidth frequency offset)	-50.84	-72.56	PASS
		4745(50 time channel bandwidth frequency offset)	-51.65	-71.53	PASS
165	20	6025(10 time channel bandwidth frequency offset)	-47.42	-73.60	PASS
		6225(20 time channel bandwidth frequency offset)	-48.25	-73.89	PASS
		6825(50 time channel bandwidth frequency offset)	-48.80	-74.69	PASS

802.11 ax HT 40

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
151	40	5355(10 time channel bandwidth frequency offset)	-55.51	-75.59	PASS
		4955(20 time channel bandwidth frequency offset)	-47.61	-74.92	PASS
		3755(50 time channel bandwidth frequency offset)	-47.53	-72.51	PASS
159	40	6195(10 time channel bandwidth frequency offset)	-49.99	-76.86	PASS
		6595(20 time channel bandwidth frequency offset)	-50.28	-77.40	PASS
		7795(50 time channel bandwidth frequency offset)	-50.51	-77.66	PASS

802.11 ax HT 80

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
155	80	4975(10 time channel bandwidth frequency offset)	-54.98	-77.97	PASS
		4175(20 time channel bandwidth frequency offset)	-46.66	-76.44	PASS
		1775(50 time channel bandwidth frequency offset)	-44.89	-69.01	PASS
		6575(10 time channel bandwidth frequency offset)	-52.98	-79.87	PASS
		7375(20 time channel bandwidth frequency offset)	-45.05	-80.42	PASS
		9775(50 time channel bandwidth frequency offset)	-46.82	-80.67	PASS

4.8. Receiver Emissions

LIMIT

The power of any spurious emission shall not exceed 2 nW in the range 25 MHz to 1 GHz and shall not exceed 20 nW on frequencies above 1 GHz.

TEST CONFIGURATION

The same as described in section 4.4

TEST PROCEDURE

1. Please refer to ETSI EN 300 440 Sub-clause 5 for the test conditions.
2. Please refer to ETSI EN 300 440 Sub-clause 4.3.5.4 for the measurement method.

TEST RESULTS

Note:We tested at 802.11a/802.11n HT20/802.11n HT40/802.11ac HT20/802.11ac HT40/802.11ac HT80/802.11ax HT20/802.11ax HT40/802.11ax HT80 mode at the antenna single transmitting mode and the Mimo mode, and recorded the worst case 802.11n HT 20 mode at the Mimo mode. The measurement frequency range is from 25MHz to the 10^{th} harmonic of the fundamental frequency, not exceeding 40GHz.18GHz-40GHz not recorded for no spurious point have a margin of less than 6 dB with respect to the limits.

802.11n HT 20, CH 149, Horizontal/Vertical

Fre. (MHz)	ANT. Pol.	ERP (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
204.20	V	-75.10	-57	-18.10	PASS
229.37	V	-75.73	-57	-18.73	PASS
279.24	V	-78.69	-57	-21.69	PASS
352.44	V	-79.07	-57	-22.07	PASS
454.63	V	-80.16	-57	-23.16	PASS
837.57	V	-76.22	-57	-19.22	PASS
182.04	H	-77.87	-57	-20.87	PASS
306.05	H	-75.06	-57	-18.06	PASS
315.10	H	-76.56	-57	-19.56	PASS
416.96	H	-77.36	-57	-20.36	PASS
578.49	H	-75.73	-57	-18.73	PASS
806.21	H	-73.73	-57	-16.73	PASS
Note: 1.Cable loss and antenna gain was combined in the calculated result. 2.Other point of the measurements are below 20dB from the limit.					

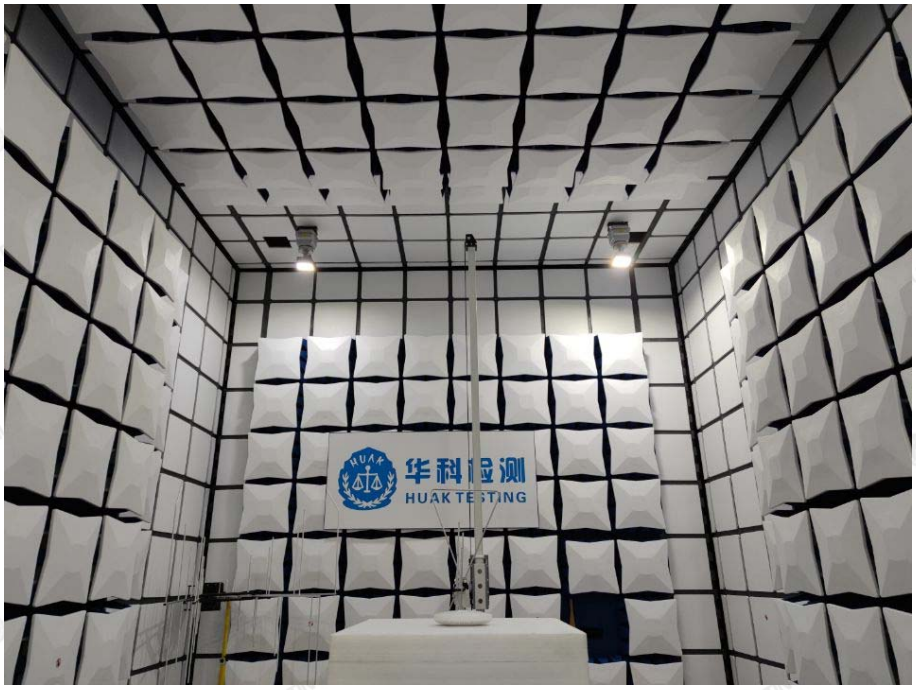
Fre. (MHz)	ANT. Pol.	ERP (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
1285.06	V	-61.13	-47	-14.13	PASS
1579.80	V	-69.49	-47	-22.49	PASS
2623.25	V	-65.07	-47	-18.07	PASS
2717.23	V	-62.98	-47	-15.98	PASS
2823.19	V	-66.33	-47	-19.33	PASS
3188.65	V	-63.68	-47	-16.68	PASS
3543.60	H	-60.35	-47	-13.35	PASS
3555.55	H	-65.45	-47	-18.45	PASS
4736.30	H	-65.74	-47	-18.74	PASS
4857.40	H	-65.68	-47	-18.68	PASS
5923.91	H	-64.67	-47	-17.67	PASS
6174.41	H	-65.30	-47	-18.30	PASS
Note: 1.Cable loss and antenna gain was combined in the calculated result. 2.Other point of the measurements are below 20dB from the limit.					

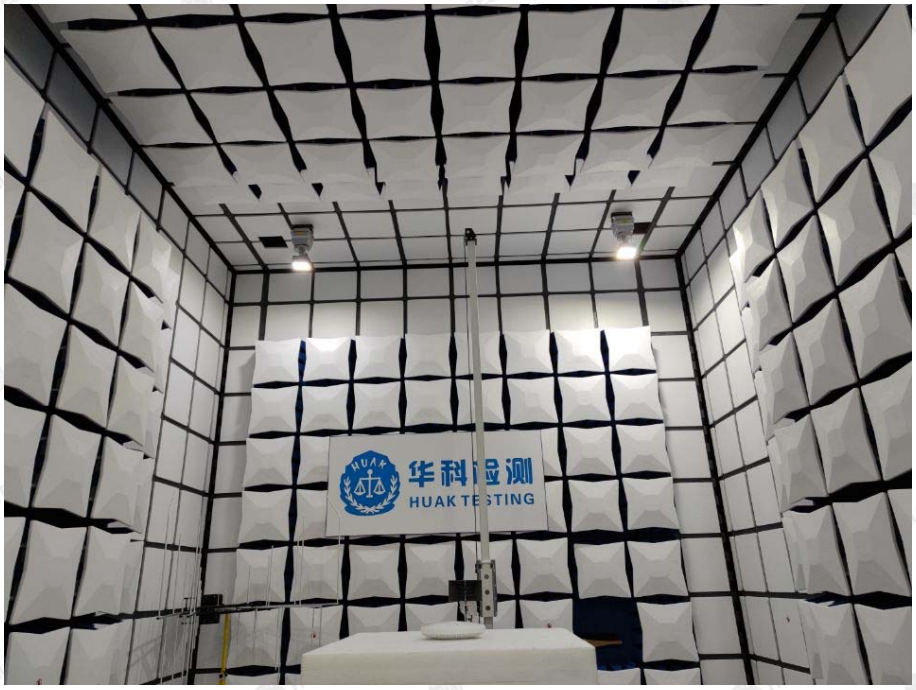
802.11n HT 20, CH 165, Horizontal/Vertical

Fre. (MHz)	ANT. Pol.	ERP (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
215.36	V	-79.48	-57	-22.48	PASS
243.48	V	-78.86	-57	-21.86	PASS
289.91	V	-79.74	-57	-22.74	PASS
363.12	V	-76.34	-57	-19.34	PASS
468.74	V	-75.46	-57	-18.46	PASS
839.99	V	-79.21	-57	-22.21	PASS
177.17	H	-74.59	-57	-17.59	PASS
299.93	H	-73.64	-57	-16.64	PASS
337.93	H	-76.33	-57	-19.33	PASS
438.12	H	-72.32	-57	-15.32	PASS
574.26	H	-72.61	-57	-15.61	PASS
808.70	H	-76.46	-57	-19.46	PASS
Note: 1.Cable loss and antenna gain was combined in the calculated result. 2.Other point of the measurements are below 20dB from the limit.					

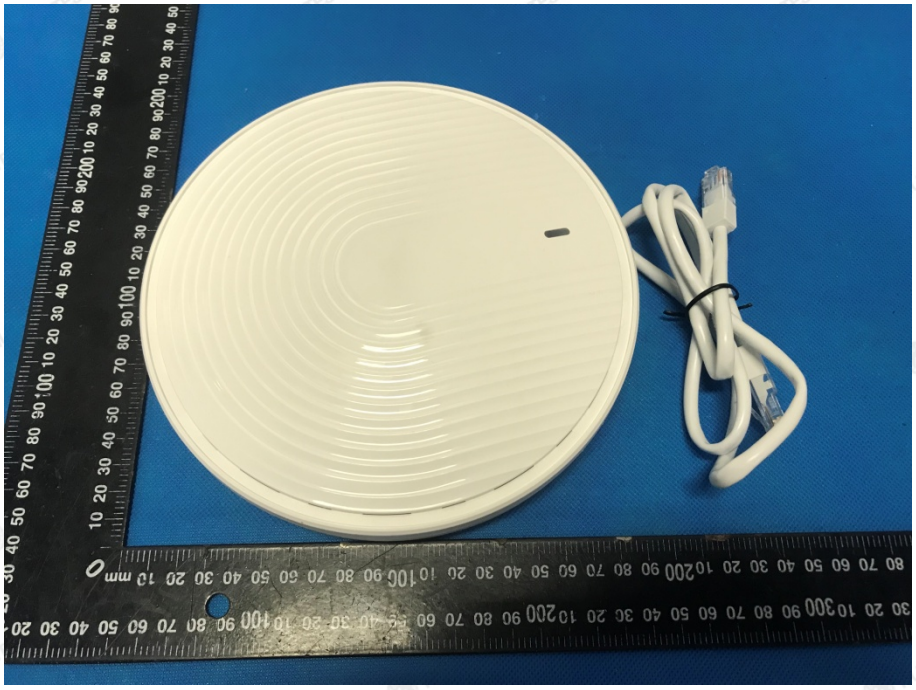
Fre. (MHz)	ANT. Pol.	ERP (dBm)	Limit	Margin	Conclusion
Below 1GHz:					
1430.84	V	-65.66	-47	-18.66	PASS
1629.77	V	-65.48	-47	-18.48	PASS
2673.58	V	-64.07	-47	-17.07	PASS
2733.96	V	-69.07	-47	-22.07	PASS
2869.67	V	-67.81	-47	-20.81	PASS
3099.11	V	-60.85	-47	-13.85	PASS
3421.25	H	-60.05	-47	-13.05	PASS
3630.51	H	-65.48	-47	-18.48	PASS
4438.46	H	-61.69	-47	-14.69	PASS
4852.97	H	-66.09	-47	-19.09	PASS
5913.24	H	-63.96	-47	-16.96	PASS
5990.28	H	-63.91	-47	-16.91	PASS
Note: 1.Cable loss and antenna gain was combined in the calculated result. 2.Other point of the measurements are below 20dB from the limit.					

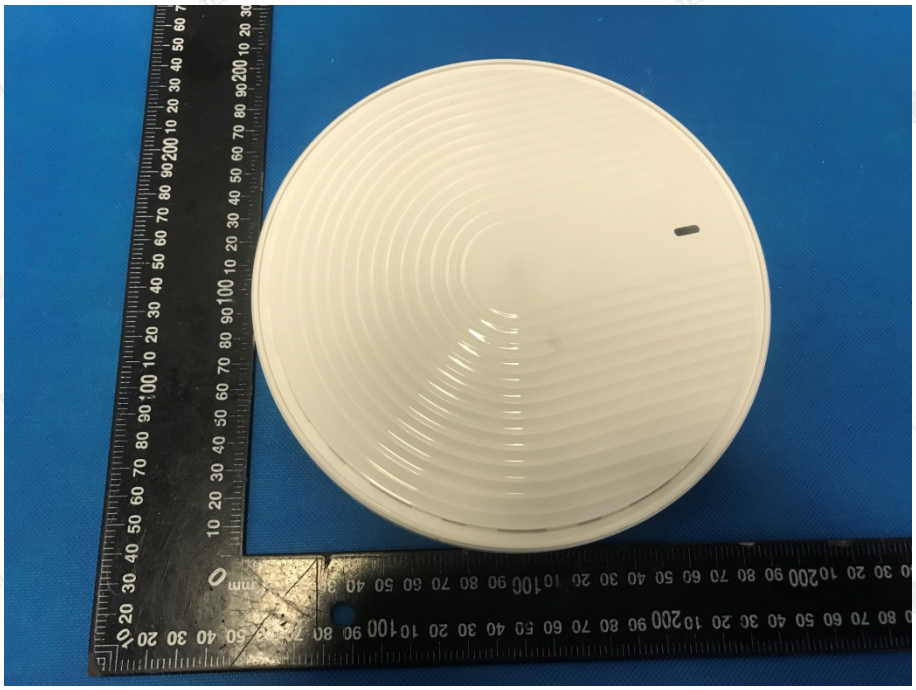
5. Test Setup Photos of the EUT

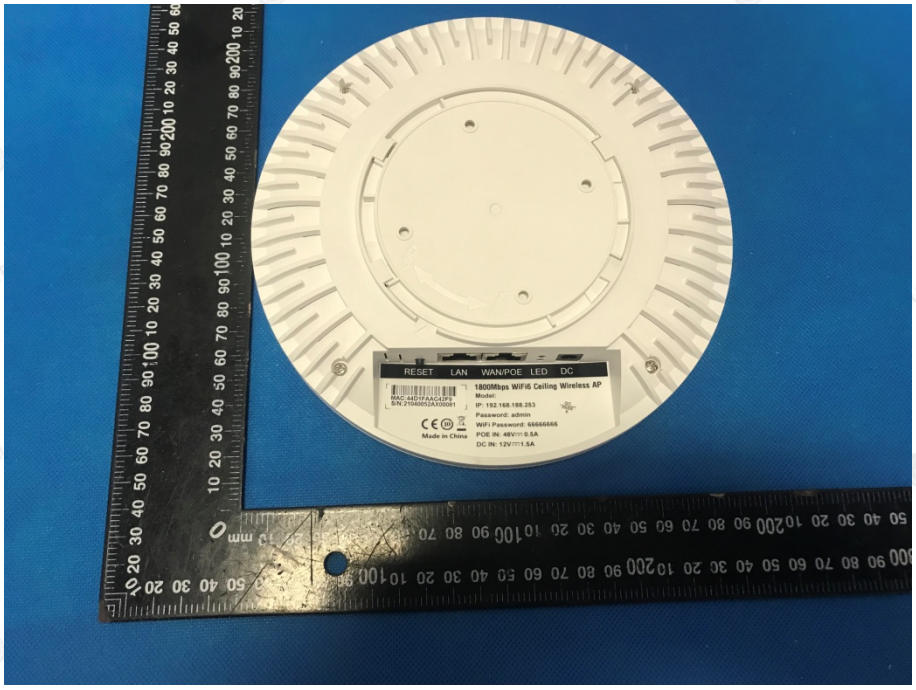


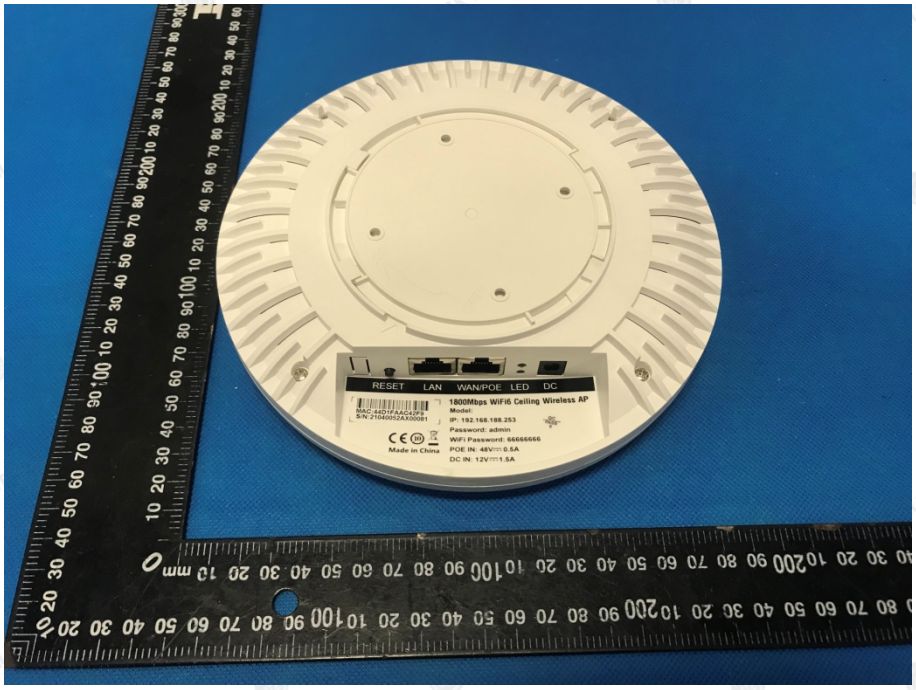


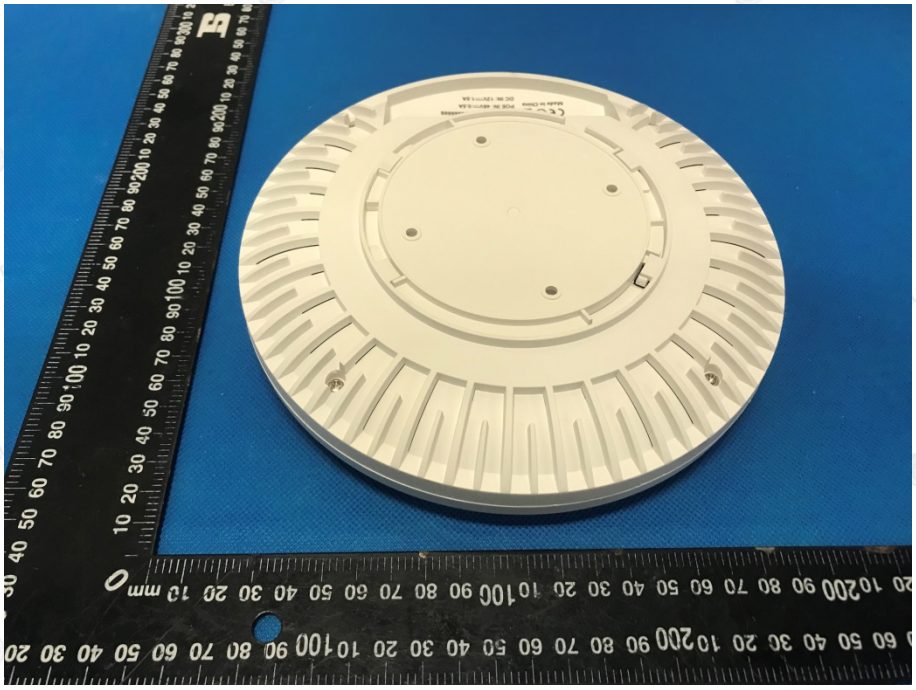
6. External and Internal Photos of the EUT

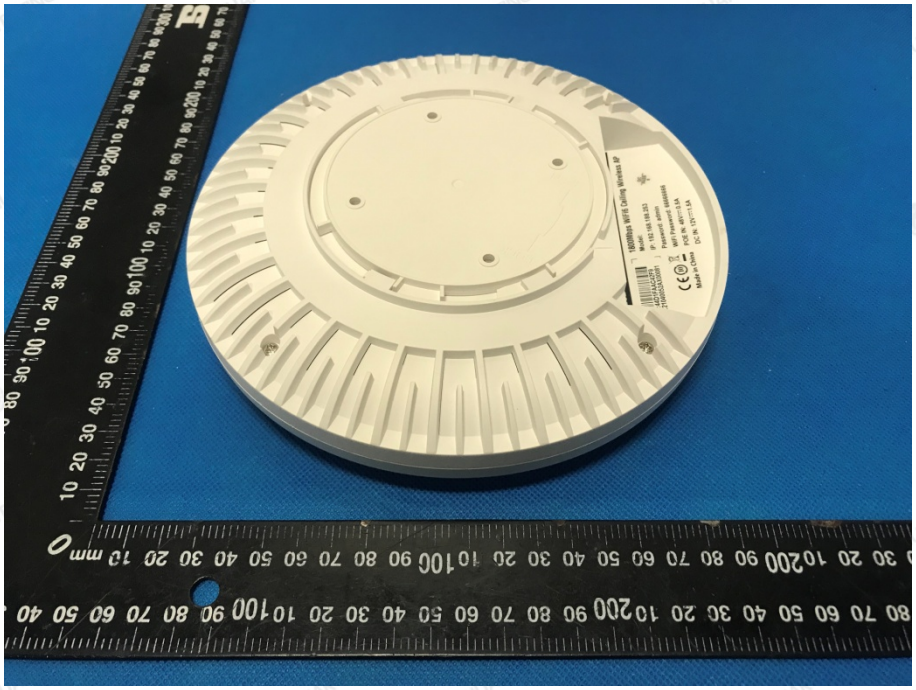


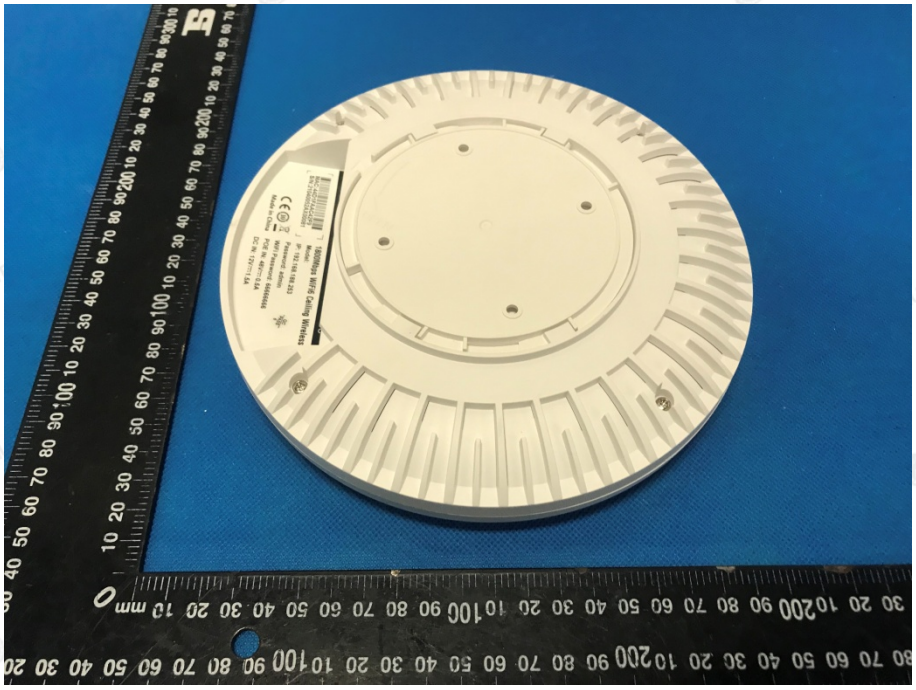


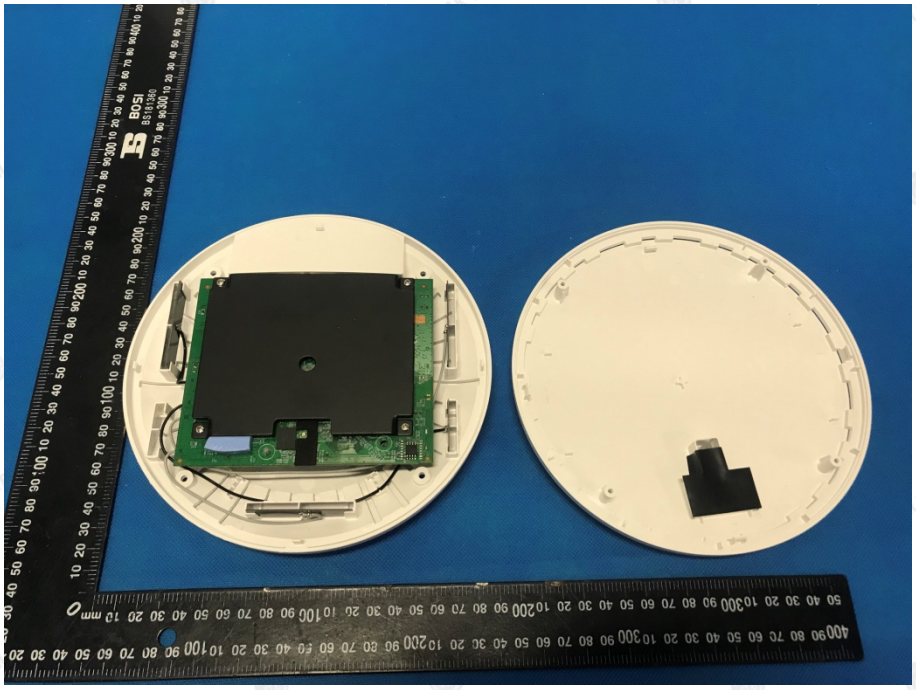


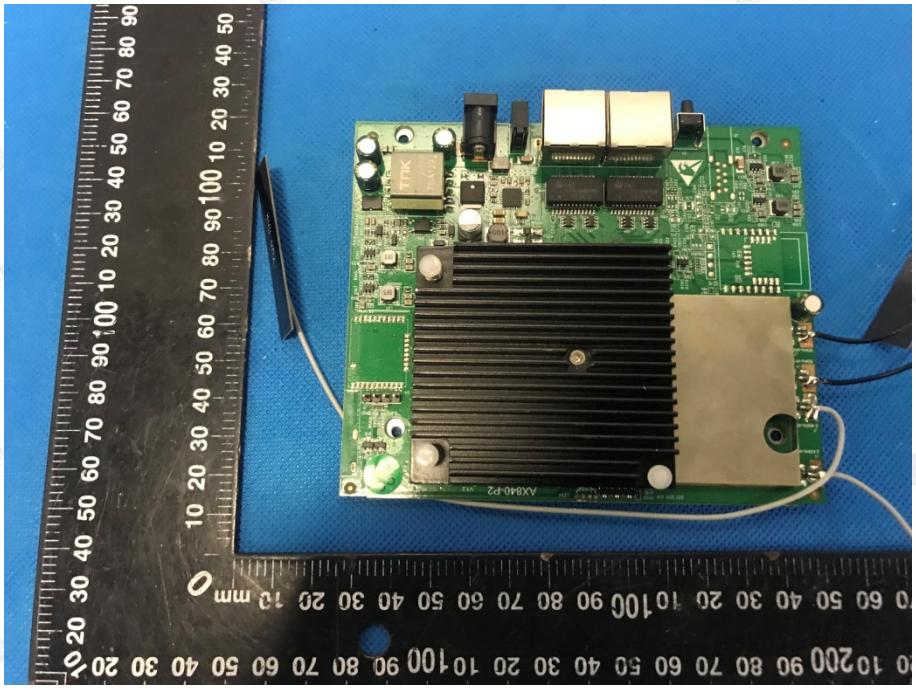


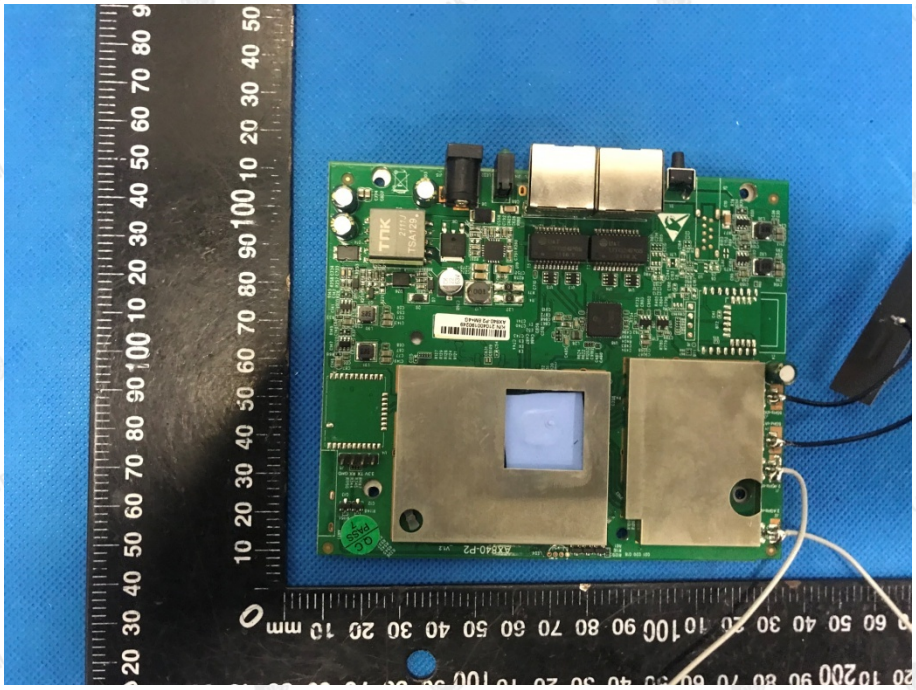


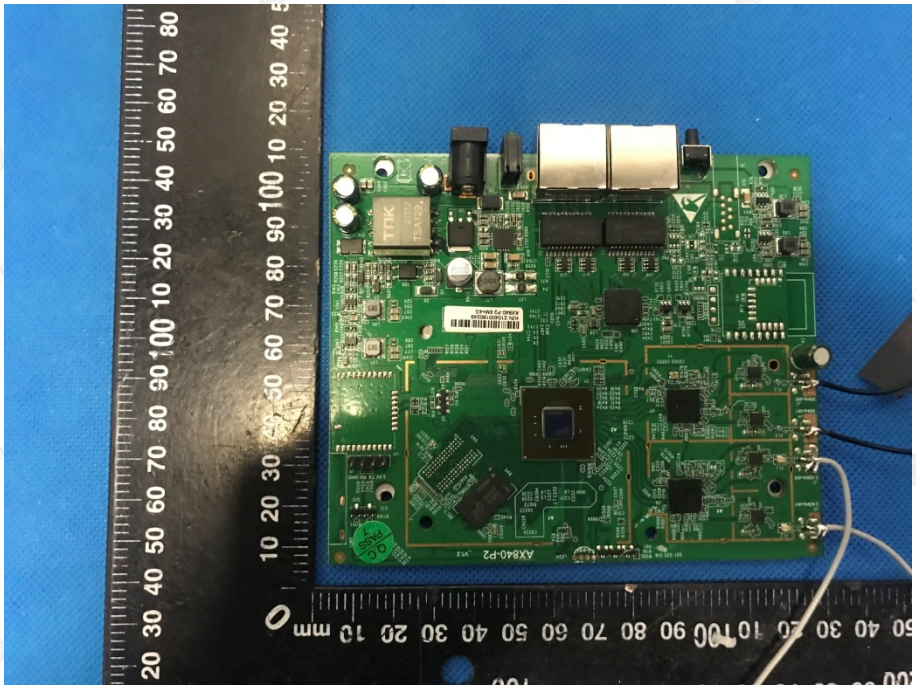


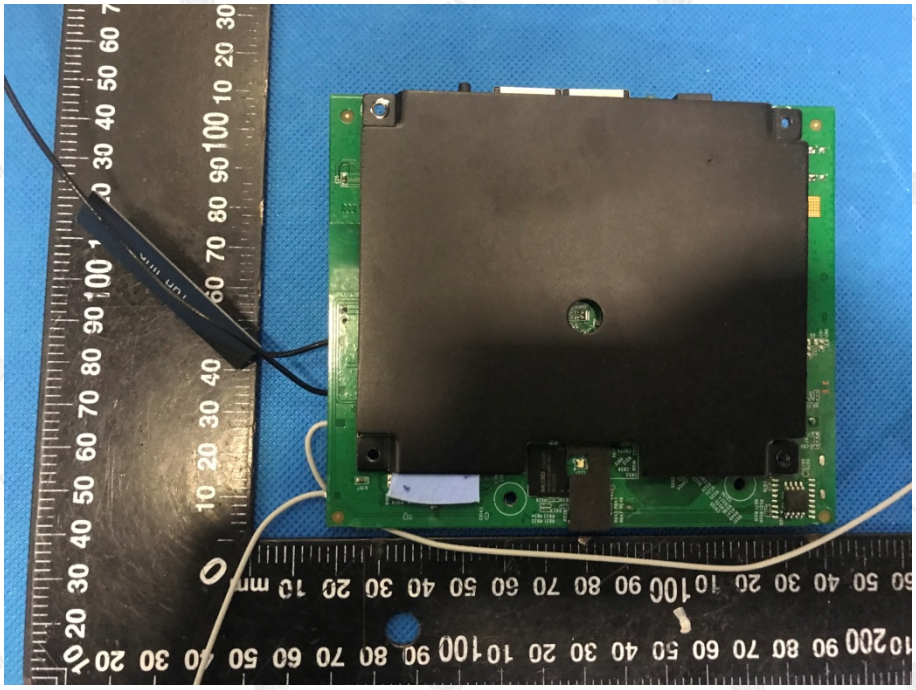












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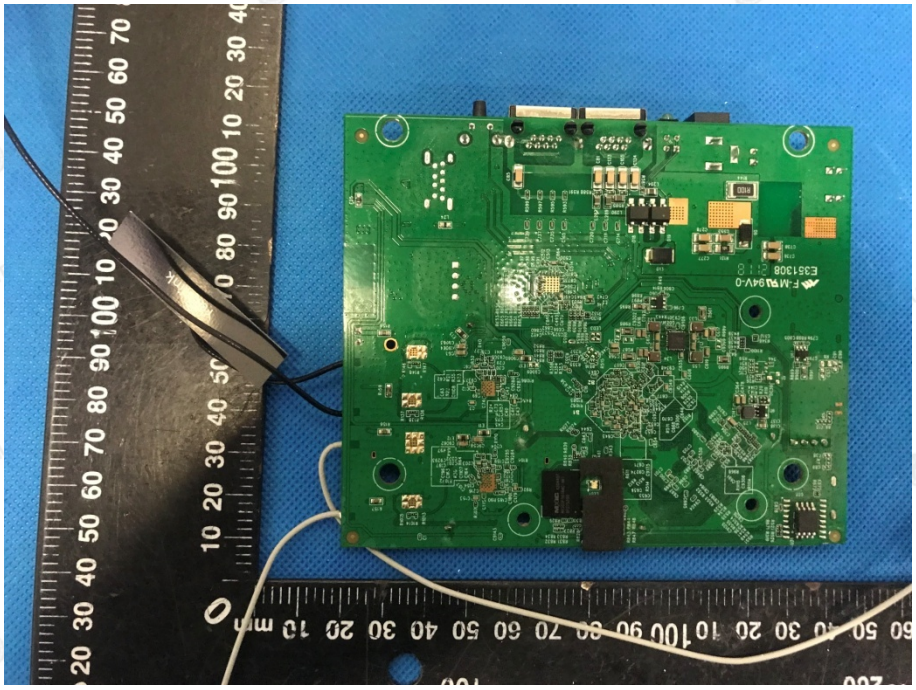

.....End of Report.....

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