

TEST REPORT

Product Name : ADVANCED DIAGNOSTICIS & ANALYSIS SYSTEM
Model Number : MaxiSys MS909, MaxiSys MS919, MaxiSys MS909CV
FCC ID : WQ8-MS909DV2125

Prepared for : Autel Intelligent Technology Corp.,Ltd.
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Report Number : ENS2201200055W00503R
Date(s) of Tests : January 27, 2022 to April 13, 2022
Date of issue : April 13, 2022

§二维码§

1 TEST RESULT CERTIFICATION

Applicant : Autel Intelligent Technology Corp.,Ltd.
Address : 7th-8th,10th Floor, Building B1, Zhiyuan, Xueyuan Rd, Xili, Nanshan, Shenzhen,518055 China
Manufacturer : Autel Intelligent Technology Corp.,Ltd.
Address : 7th-8th,10th Floor, Building B1, Zhiyuan, Xueyuan Rd, Xili, Nanshan, Shenzhen,518055 China
EUT : ADVANCED DIAGNOSTICIS & ANALYSIS SYSTEM
Model Name : MaxiSys MS909, MaxiSys MS919, MaxiSys MS909CV
(Note: all models are different for model name, the others are the same.)
Trademark : AUTEL

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2 and Part 15.407

The test results of this report relate only to the tested sample identified in this report.

Date of Test : January 27, 2022 to April 13, 2022

Prepared by : 
Una Yu/Editor

Reviewer : 
Joe Xia/Supervisor

Approved & Authorized Signer : 
Lisa Wang/Manager

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2201200055W00503R	/	Original Report

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2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product	ADVANCED DIAGNOSTICIS & ANALYSIS SYSTEM
Model Number	MaxiSys MS909, MaxiSys MS919, MaxiSys MS909CV (Note: all models are different for model name, the others are the same.)
Wifi Type	☒ UNII-1: 5150MHz-5250MHz Band ☒ UNII-3 with 5725MHz-5850MHz Band
WLAN Supported	☒ 802.11a ☒ 802.11n(20MHz channel bandwidth) ☒ 802.11n(40MHz channel bandwidth) ☒ 802.11ac(20MHz channel bandwidth) ☒ 802.11ac(40MHz channel bandwidth) ☒ 802.11ac(80MHz channel bandwidth)
Data Rate	802.11a:54/48/36/24/18/12/9/6Mbps 802.11n:up to 600 Mbps 802.11ac:up to 1.733Gbps
Modulation	☒ OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n ☒ OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac
Frequency Range	☒ UNII-1: 5150MHz-5250MHz Band
	☒ 5180-5240MHz for 802.11a ☒ 5180-5240MHz for 802.11n(HT20) ☒ 5180-5240MHz for 802.11ac(HT20)
	☒ 5190-5230MHz for 802.11n(HT40) ☒ 5190-5230MHz for 802.11ac(HT40) ☒ 5210MHz for 802.11ac(HT80)
	☒ UNII-3 with 5725MHz-5850MHz Band
Frequency Range	☒ 5745-5825MHz for 802.11a ☒ 5745-5825MHz for 802.11n(HT20) ☒ 5745-5825MHz for 802.11ac(HT20)
	☒ 5755-5795MHz for 802.11n(HT40) ☒ 5755-5795MHz for 802.11ac(HT40) ☒ 5775MHz for 802.11ac(HT80)
	☐ Applicable
	☒ Not Applicable
TPC Function	☐ Applicable
Antenna Type	Chip 1: Integrated Antenna Chip 2: Integrated Antenna
Antenna Gain	Chip 1: ANT1: 3.6dBi, ANT2: 4.1dBi Chip 2: ANT1: 4.7dBi, ANT2: 4.2dBi
Power Supply	Battery 3.8V, 15000mAh, 57Wh Adapter : Model: GME36E-120300FDR Input: 100~240V, 50/60Hz, 1.2A Output: 12V, 3A, 36W

Note: for more details, please refer to the user's manual of the EUT.

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407(g)	Frequency Stability	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	

NOTE1: N/A (Not Applicable).

NOTE2: According to FCC OET KDB 789033 D2 General UNII Test Procedures New Rules v02r01, In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.

NOTE3: Since all models are different for model name, the others are the same, only MaxiSys MS909 is chosen for testing.

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: WQ8-MS909DV2125 filing to comply with Section 15.247 of the FCC Part 15, Subpart E Rules.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:

FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart E

FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

For Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2021/5/15	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2021/5/15	1Year
AMN	Rohde & Schwarz	ESH3-Z5	100191	2021/5/15	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100011	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100253	2021/5/16	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2021/5/15	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2021/5/15	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2021/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2020/7/4	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J1011131010 001	2021/5/15	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2021/6/12	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2021/6/12	2 Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2021/5/16	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Power Meter	\	PS-X10-100	\	2021/5/15	1Year
Temp/ Humidity Chamber	ESPEC	EL-02KA	12107166	2021/7/3	1Year

4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

☒ Wifi 5G with UNII Band I

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220		
40	5220	48	5240		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190				
46	5230				

Frequency and Channel list for 802.11ac Wave2 (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5220	48	5240

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

Test Frequency and channel for 802.11ac Wave2 (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	N/A	N/A	N/A	N/A

☒ Wifi 5G with UNII Band III

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755				
159	5795				

Frequency and Channel list for 802.11ac (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	N/A	N/A	159	5795

Test Frequency and channel for 802.11ac (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Multi-antenna correlation:

☒	Transmit Signals are Correlated
	Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi
☐	All Transmit Signals are Completely Uncorrelated
	Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi

Chip1 ANT1+ANT2: Directional gain = $10 \log [(10^{3.6/20} + 10^{4.1/20})^2 / 2]$ dBi=6.86 dBi

Chip2 ANT1+ANT2: Directional gain = $10 \log [(10^{4.7/20} + 10^{4.2/20})^2 / 2]$ dBi=7.46 dBi

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L2291

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

Accredited by FCC

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by A2LA

The Certificate Number is 4321.01

Accredited by Industry Canada

The Conformity Assessment Body Identifier is CN0008

Name of Firm

: EMTEK (SHENZHEN) CO., LTD.

Site Location

: Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

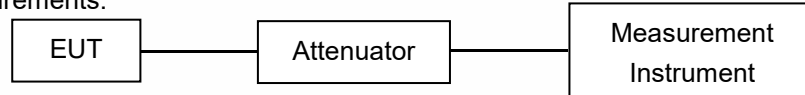
Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^\circ\text{C}$
Humidity	$\pm 3\%$

Measurement Uncertainty for a level of Confidence of 95%

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz:

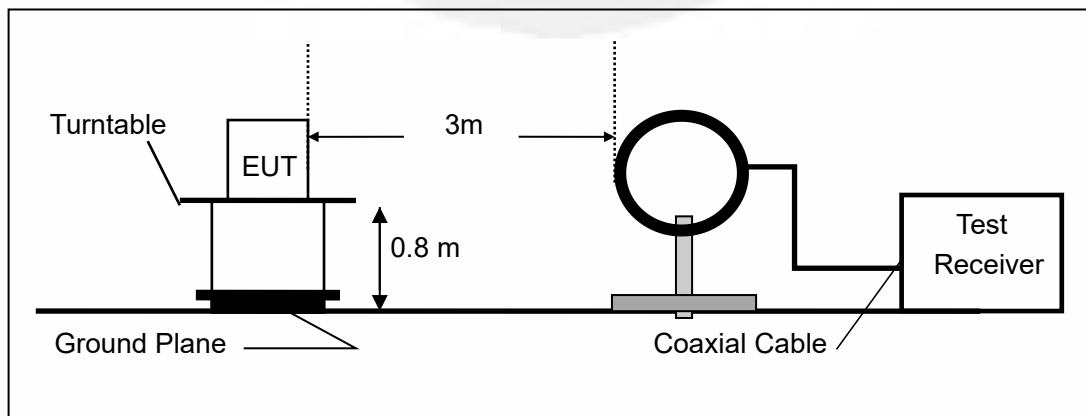
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz:

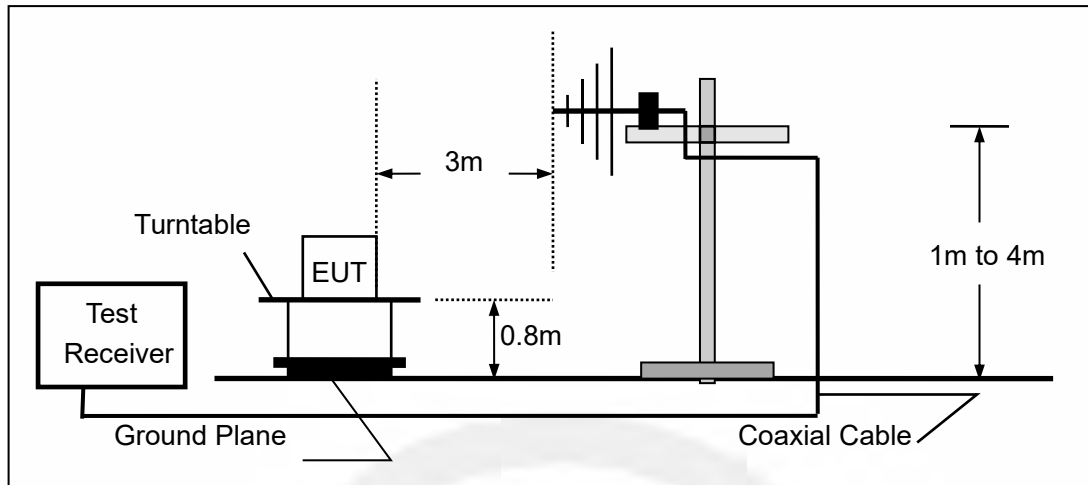
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

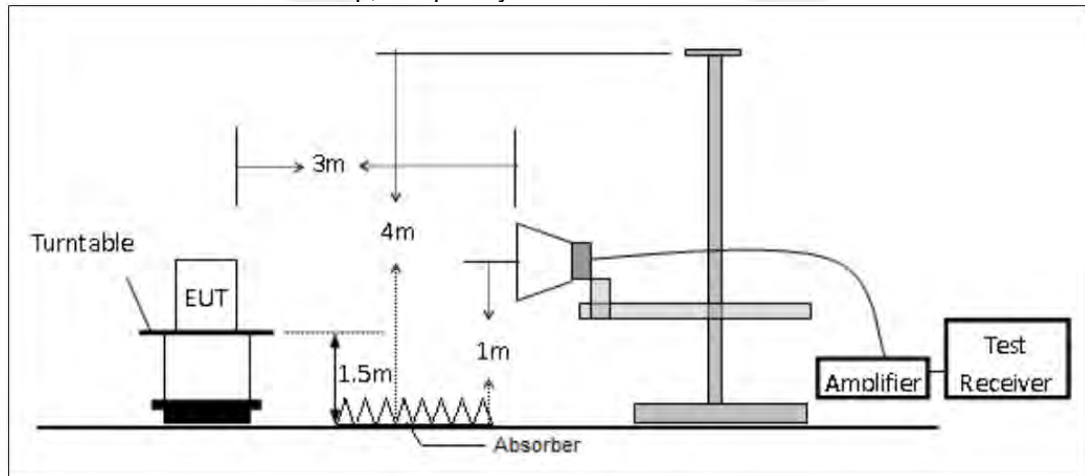
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

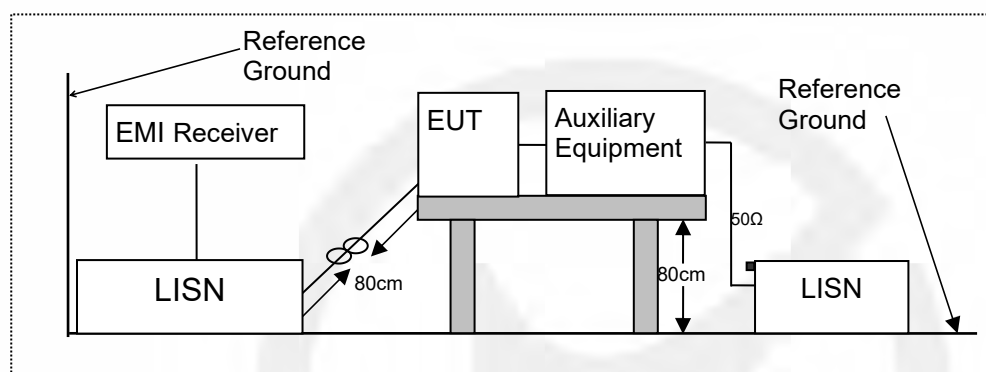


7.3 CONDUCTED EMISSION TEST SETUP

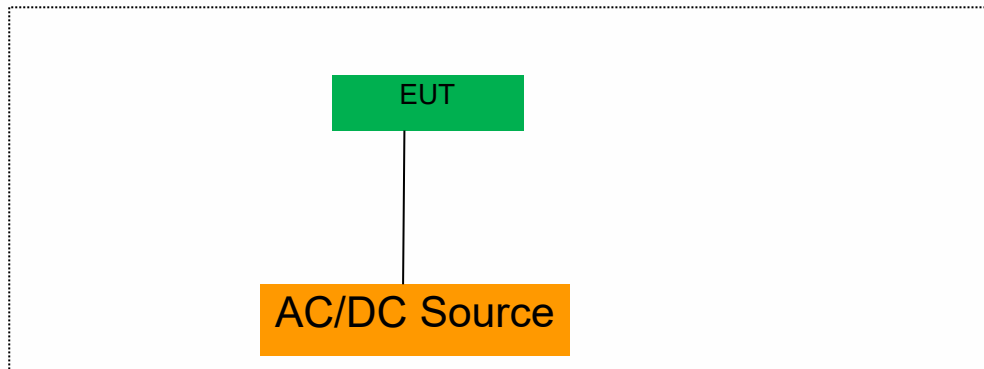
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH MEASUREMENT

8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to FCC Part 15.407(e) for UNII Band III
According to 789033 D02 Section II(C)
According to 789033 D02 Section II(D)

8.1.2 Conformance Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz 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.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot \text{RBW}$
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

8.1.5 Test Results

UNII Band I: 5150-5250MHz

All the chips and antennas were tested, only the worst chip 1 and antenna 1 were described in the table.

Test Mode	Test Channel MHz		26 dB Bandwidth MHz	99% Bandwidth MHz	Verdict
802.11a	CH36	5180	22.40	16.877	Pass
	CH40	5220	22.50	16.877	Pass
	CH48	5240	22.09	16.813	Pass
802.11n-HT20	CH36	5180	22.55	18.024	Pass
	CH40	5220	22.89	17.999	Pass
	CH48	5240	22.99	18.005	Pass
802.11ac(HT20)	CH36	5180	22.95	18.019	Pass
	CH40	5220	22.97	18.024	Pass
	CH48	5240	22.87	18.003	Pass
802.11n-HT40	CH38	5190	42.05	36.620	Pass
	CH46	5230	42.18	36.526	Pass
802.11ac(HT40)	CH38	5190	42.03	36.502	Pass
	CH46	5230	42.07	36.548	Pass
802.11ac(HT80)	CH42	5210	85.52	76.119	Pass

Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11a Frequency(MHz) 5180



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11a Frequency(MHz) 5220



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11a Frequency(MHz) 5240



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11n-HT20 Frequency(MHz) 5180



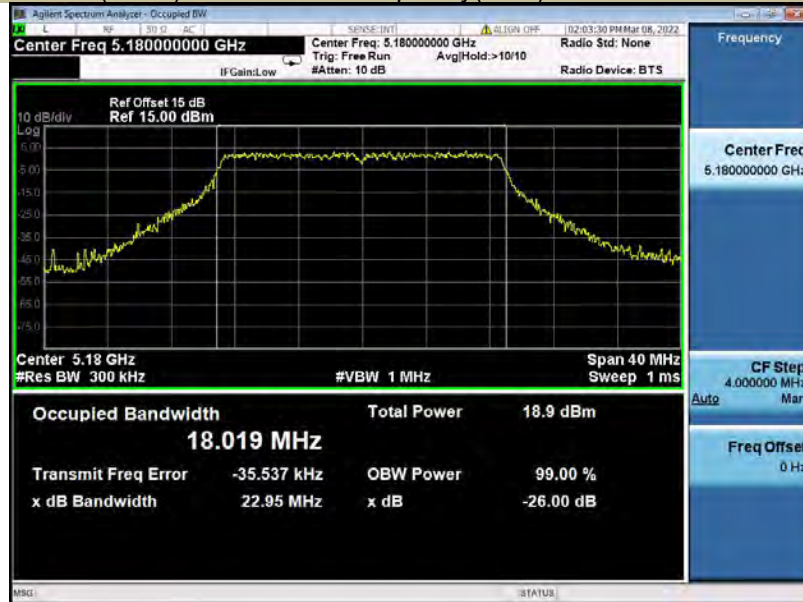
Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11n-HT20 Frequency(MHz) 5220



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11n-HT20 Frequency(MHz) 5240



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac(HT20) Frequency(MHz) 5180



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac(HT20) Frequency(MHz) 5220



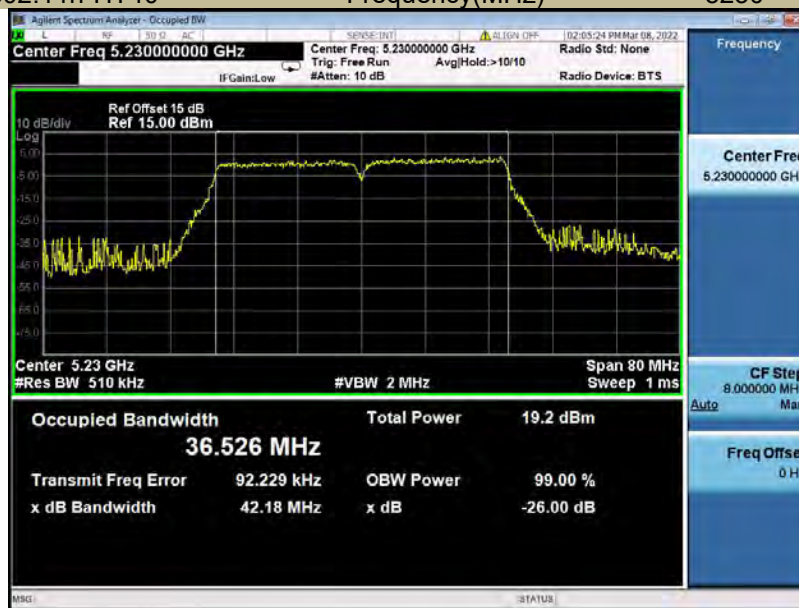
Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac(HT20) Frequency(MHz) 5240



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11n-HT40 Frequency(MHz) 5190



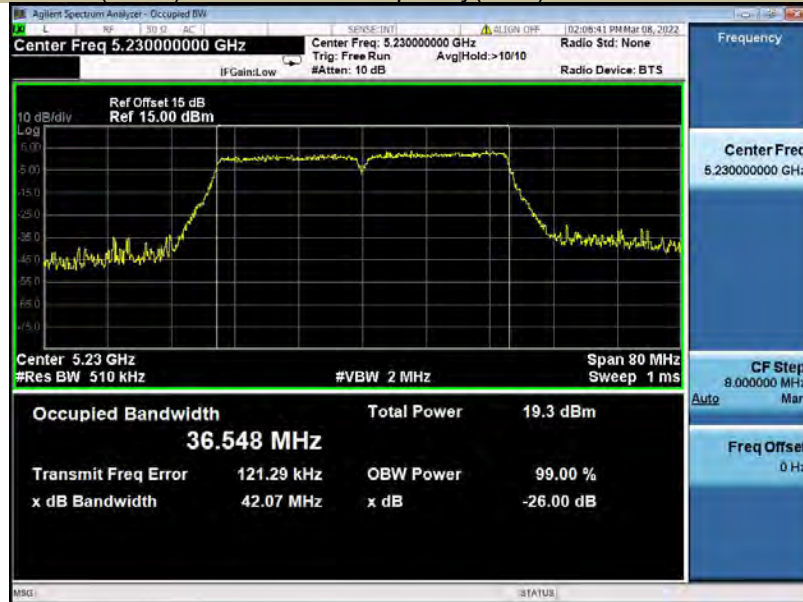
Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11n-HT40 Frequency(MHz) 5230



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac(HT40) Frequency(MHz) 5190



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac(HT40) Frequency(MHz) 5230



Emission Bandwidth&99% Occupied Bandwidth UNII Band I
Test Model 802.11ac 80 Frequency(MHz) 5210



UNII Band III: 5725-5850MHz

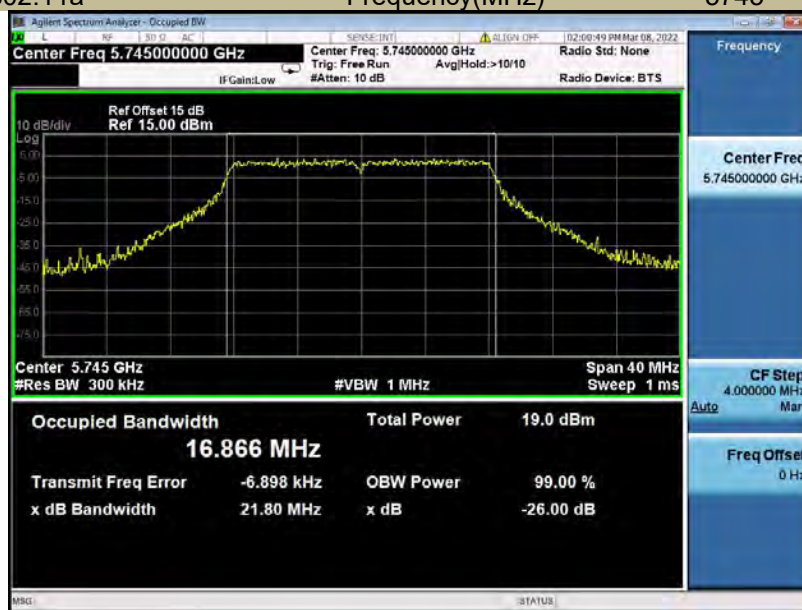
All the chips and antennas were tested, only the worst chip 1 and antenna 1 were described in the table.

Test Mode	Test Channel MHz		6 dB Bandwidth MHz	26dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11a	CH149	5745	16.41	21.80	16.866	≥500
	CH157	5785	16.41	22.00	16.821	≥500
	CH165	5825	16.42	22.35	16.800	≥500
802.11n-HT20	CH149	5745	17.63	22.75	17.993	≥500
	CH157	5785	17.66	22.99	18.017	≥500
	CH165	5825	17.63	22.55	17.991	≥500
802.11ac(HT20)	CH149	5745	17.64	23.12	17.938	≥500
	CH157	5785	17.65	22.18	17.996	≥500
	CH165	5825	17.66	22.99	18.003	≥500
802.11n-HT40	CH151	5755	36.43	41.10	36.551	≥500
	CH159	5795	36.42	42.48	36.592	≥500
802.11ac(HT40)	CH151	5755	36.36	41.86	36.612	≥500
	CH159	5795	36.43	42.00	36.552	≥500
802.11ac(HT80)	CH155	5775	75.87	85.40	75.810	≥500

26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

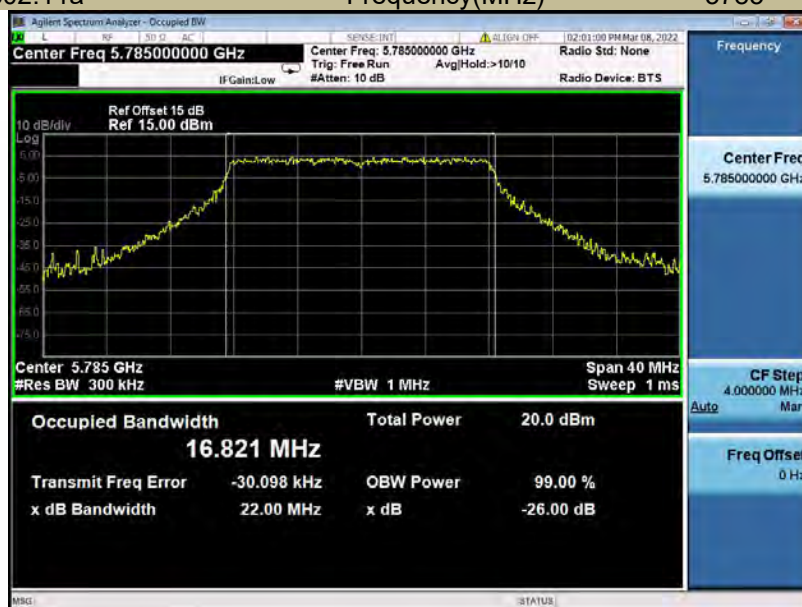
5745



26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

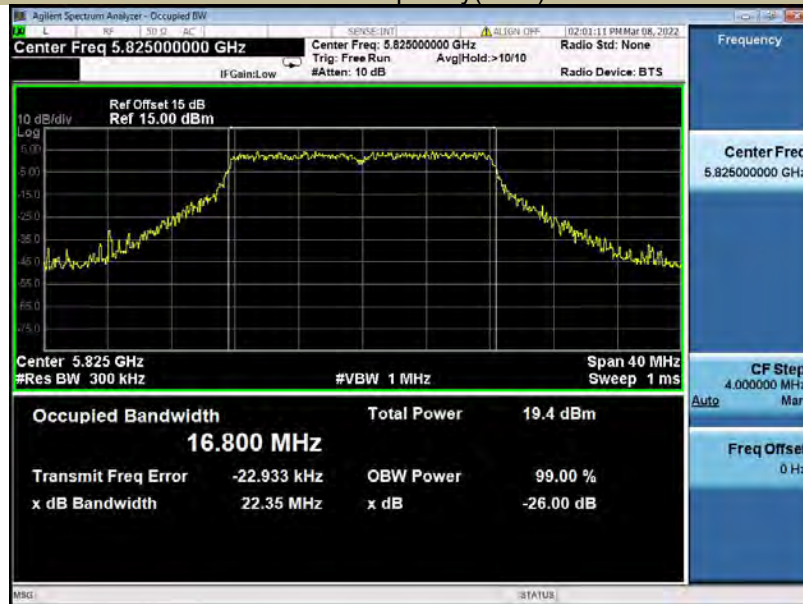
5785



26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

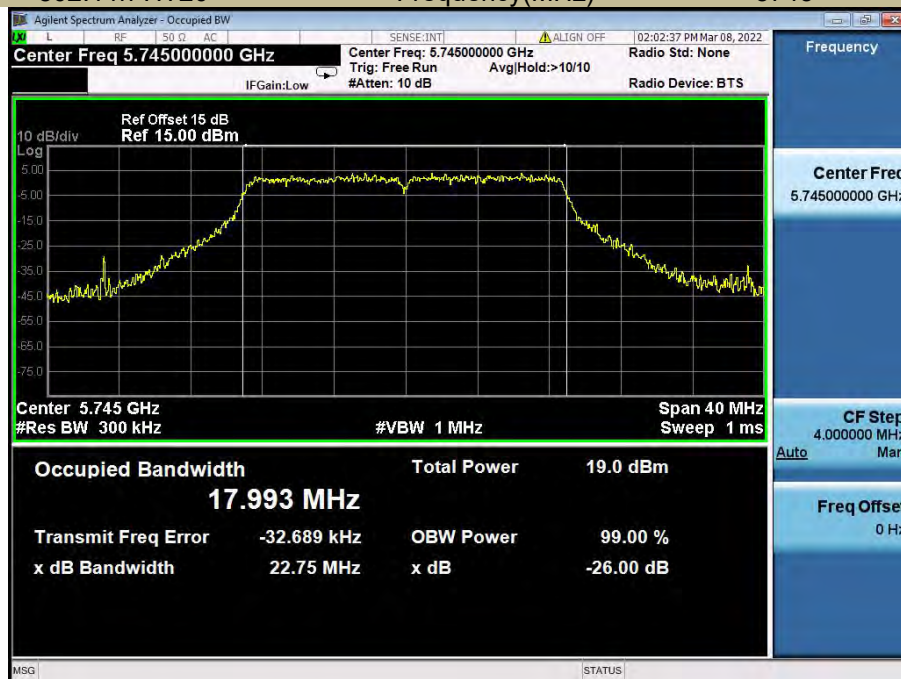
5825



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz)

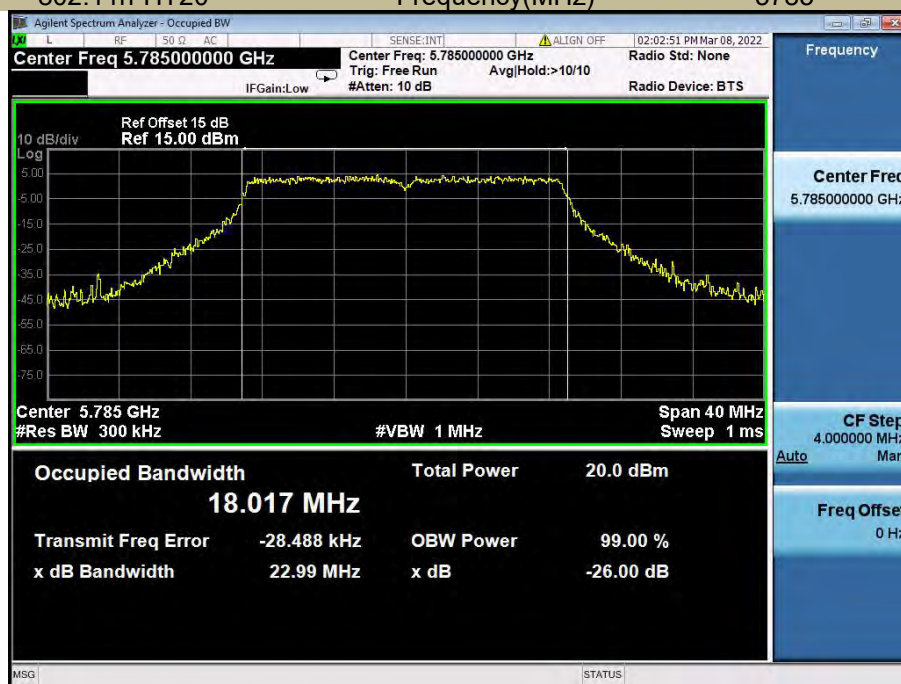
5745



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz)

5785



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz)

5825



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz)

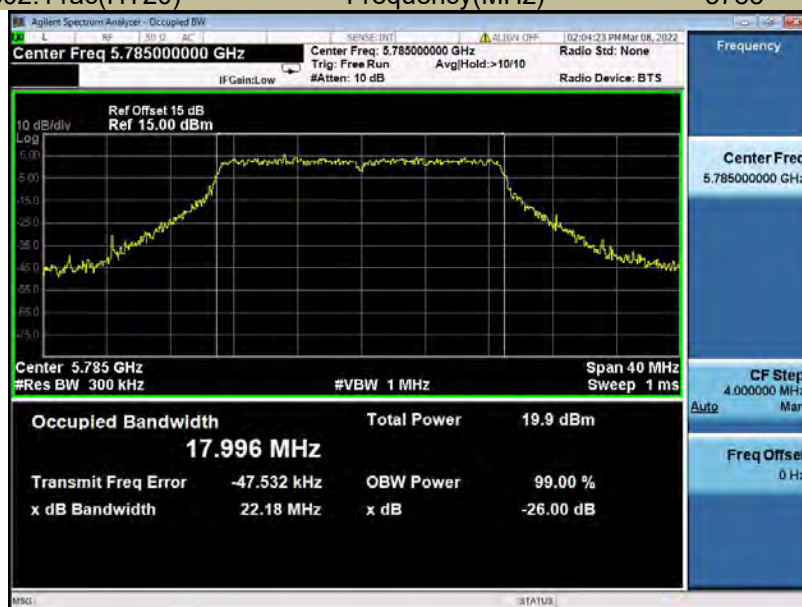
5745



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz)

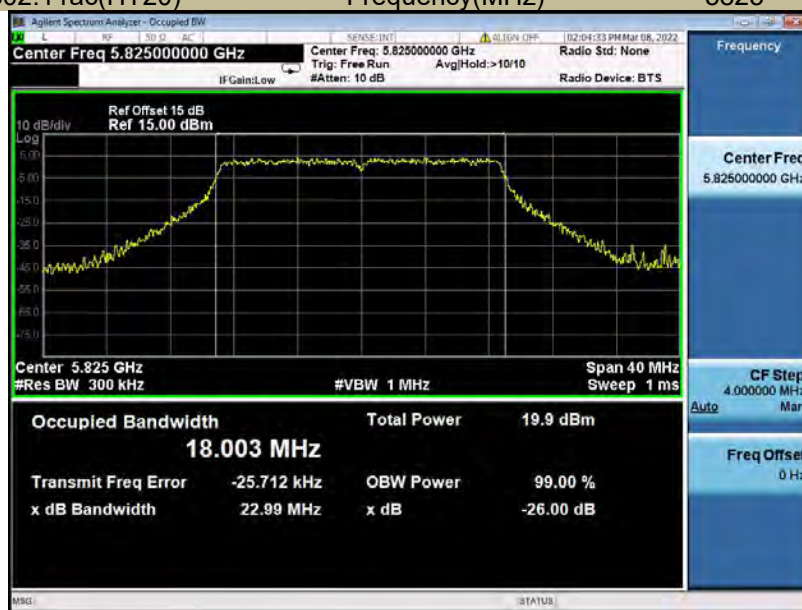
5785



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz)

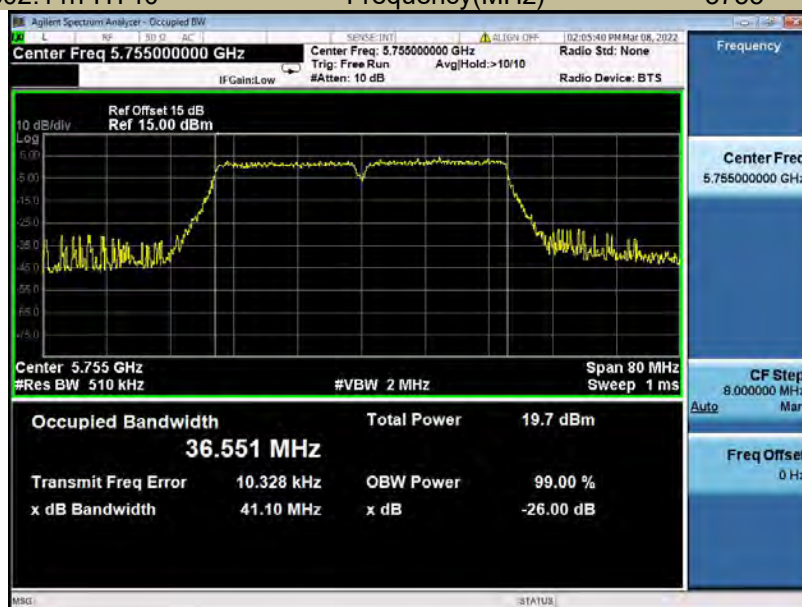
5825



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz)

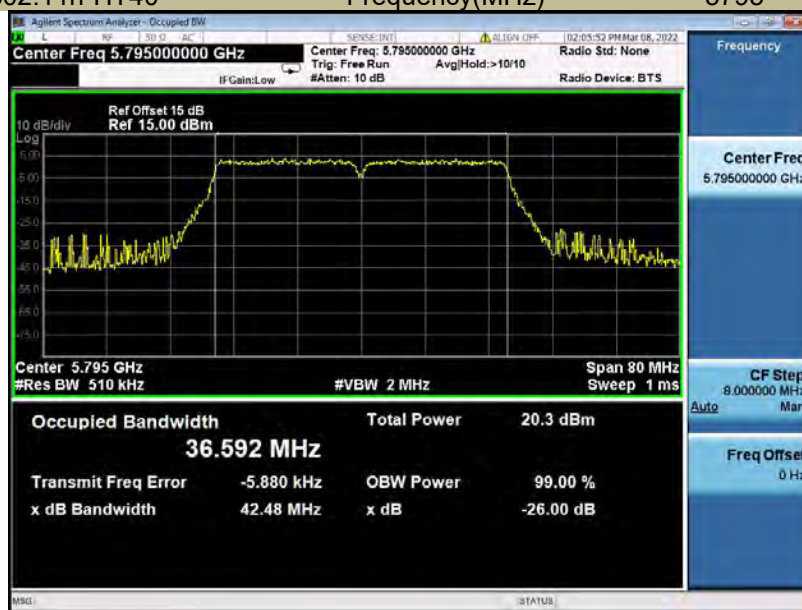
5755



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz)

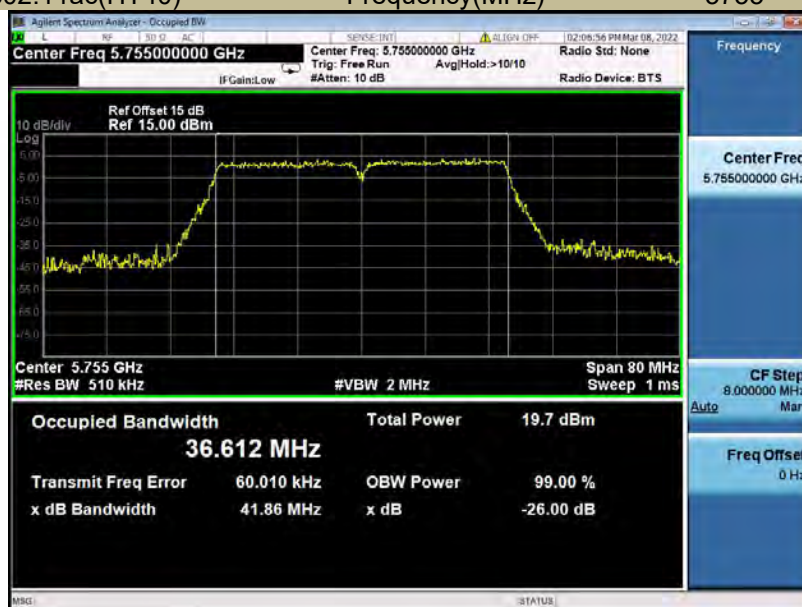
5795



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band III
Frequency(MHz)

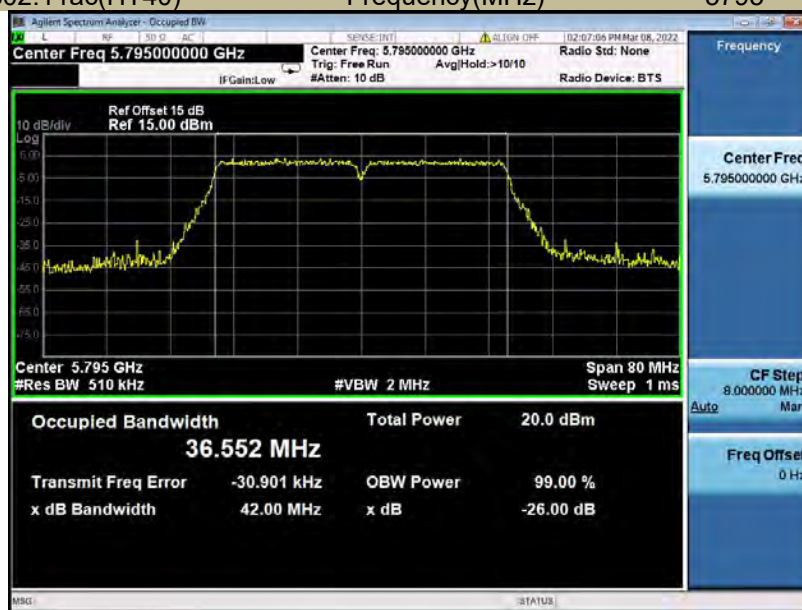
5755



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band III
Frequency(MHz)

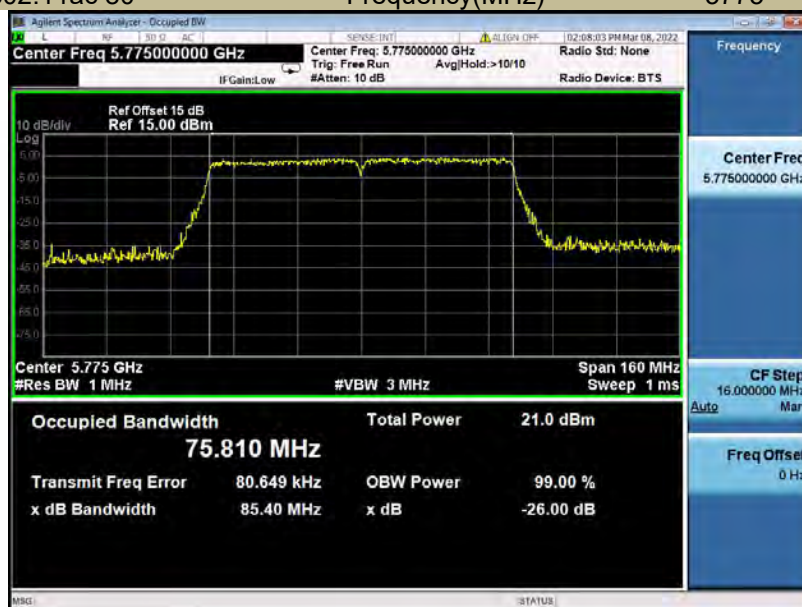
5795



26dB&99% Occupied Bandwidth
Test Model 802.11ac 80

UNII Band III
Frequency(MHz)

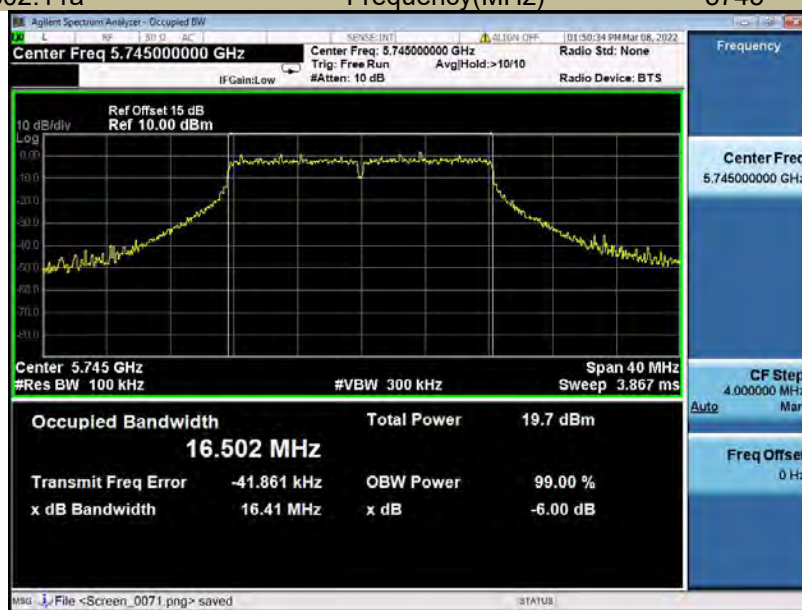
5775



6db Emission Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

5745



6db Emission Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

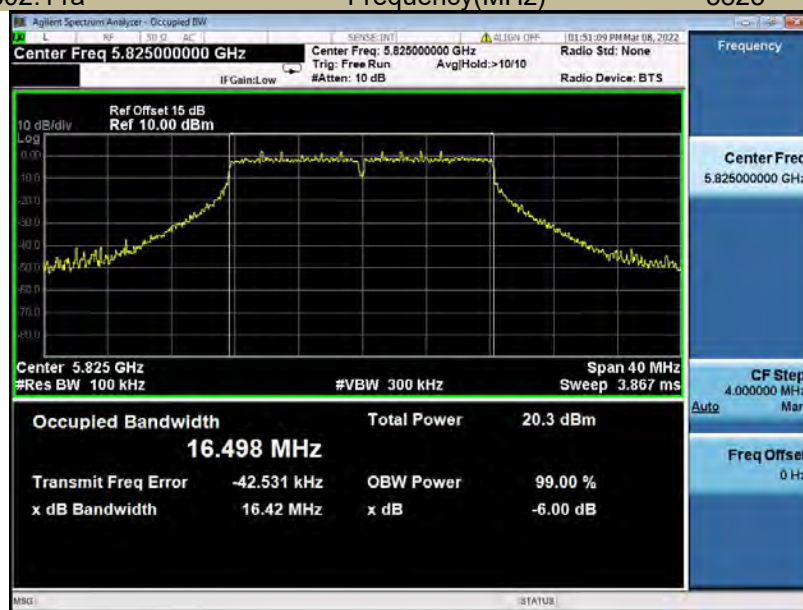
5785



6db Emission Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz)

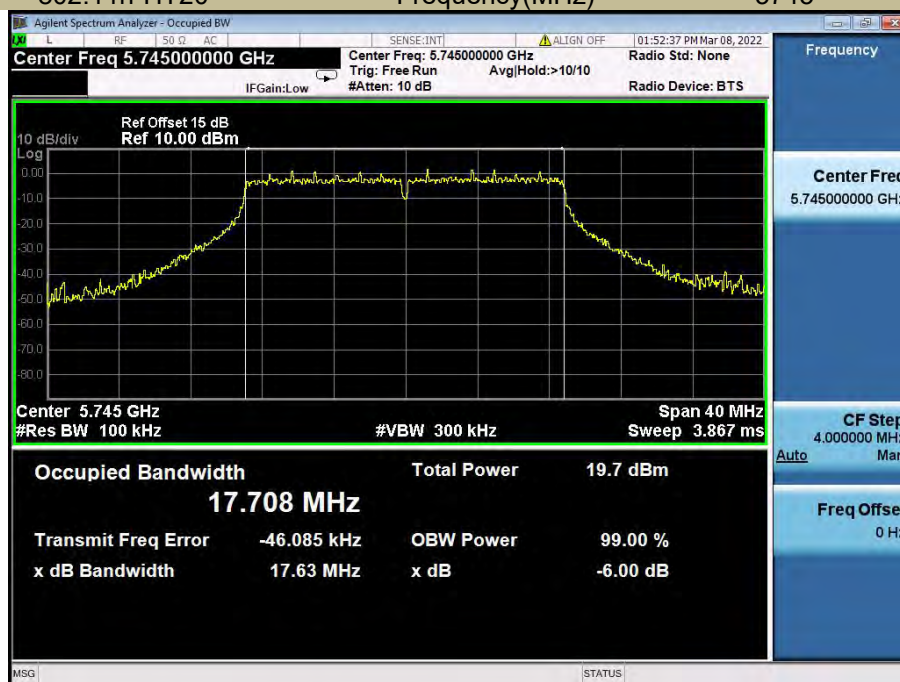
5825



6db Emission Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz)

5745



6db Emission Bandwidth

UNII Band III

Test Model 802.11n-HT20

Frequency(MHz)

5785



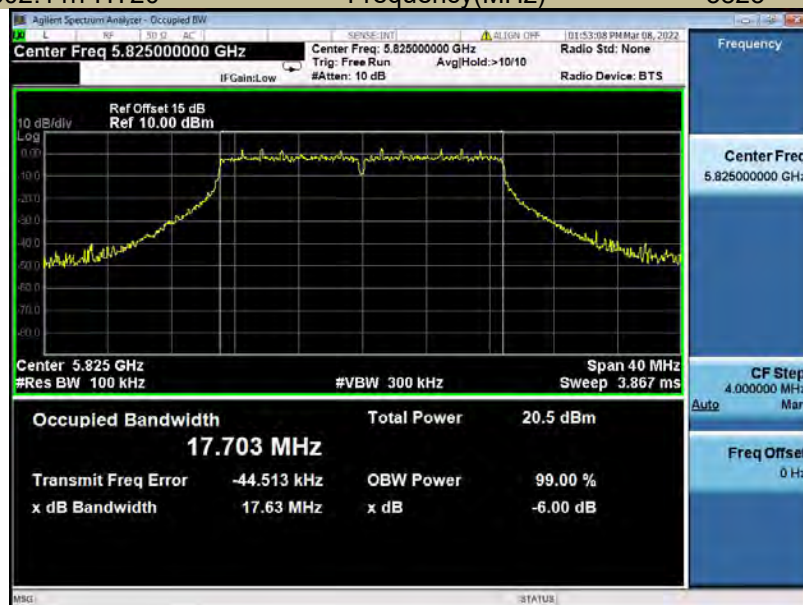
6db Emission Bandwidth

UNII Band III

Test Model 802.11n-HT20

Frequency(MHz)

5825



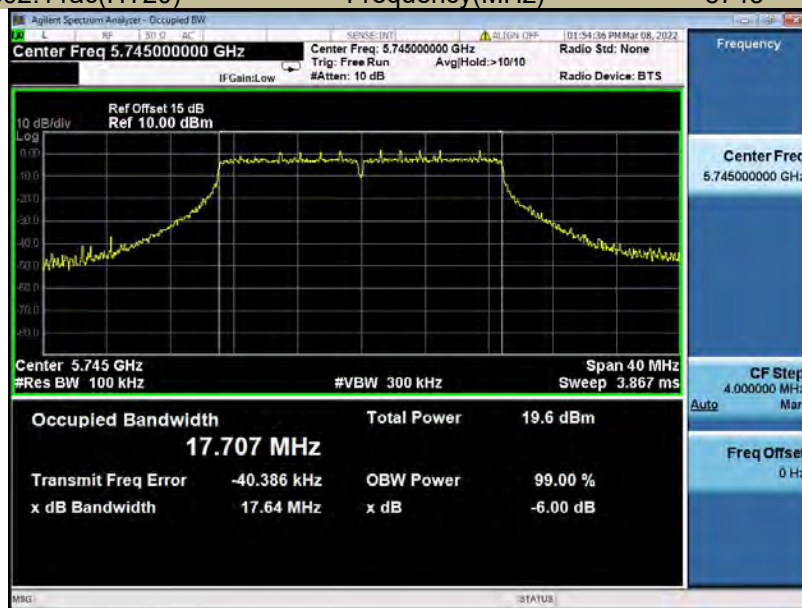
6db Emission Bandwidth

UNII Band III

Test Model 802.11ac(HT20)

Frequency(MHz)

5745



6db Emission Bandwidth

UNII Band III

Test Model 802.11ac(HT20)

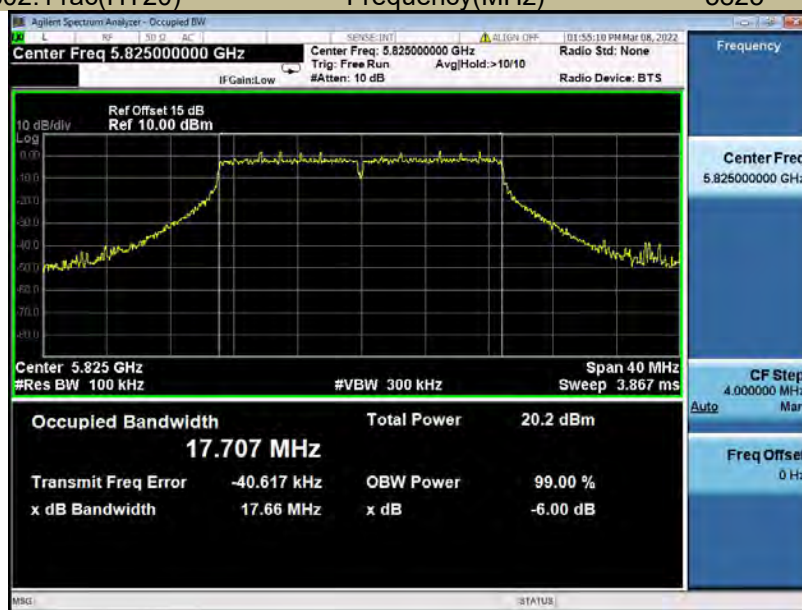
Frequency(MHz)

5785



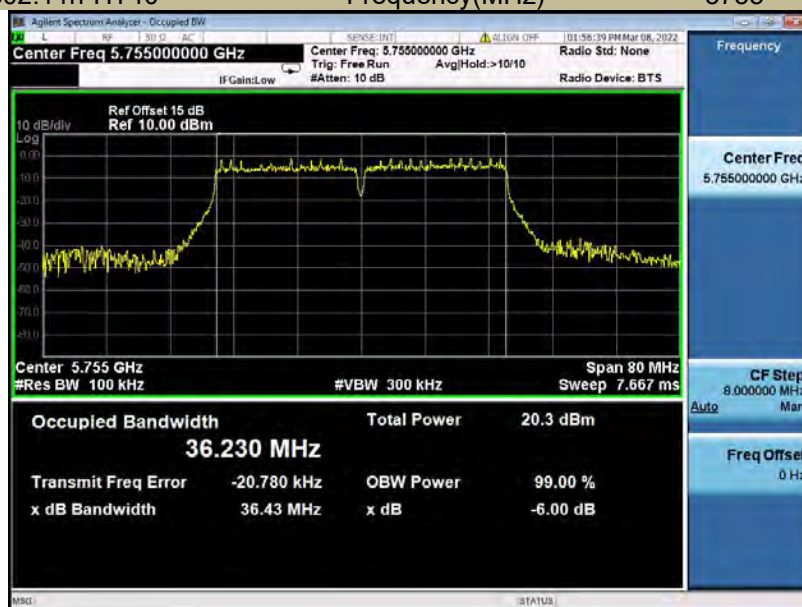
6db Emission Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz) 5825



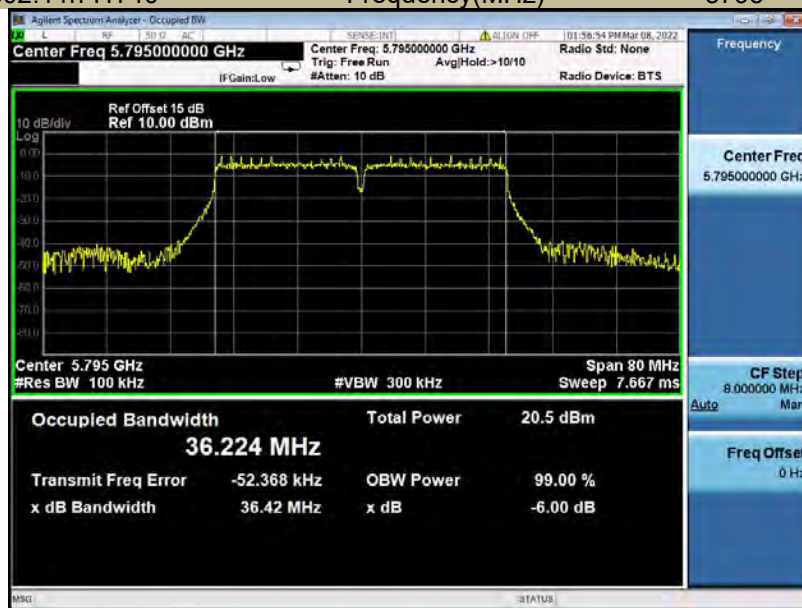
6db Emission Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz) 5755



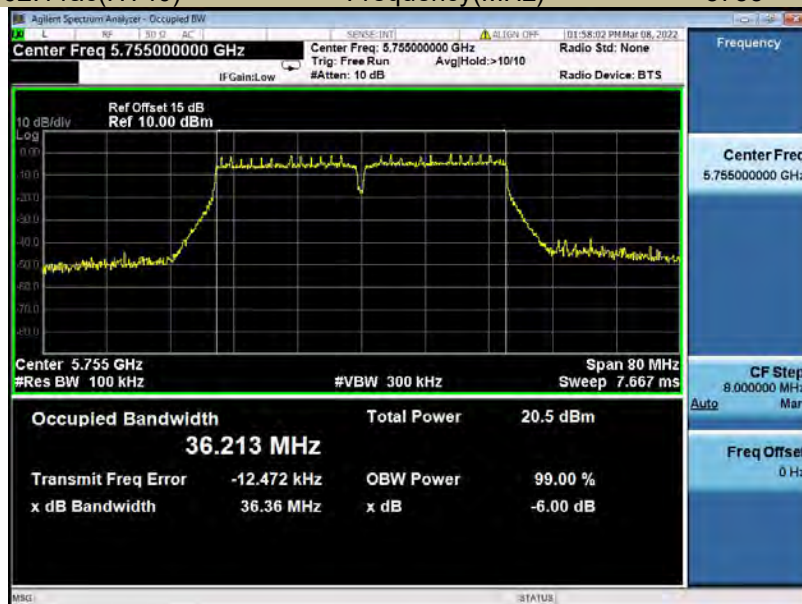
6db Emission Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz) 5795



6db Emission Bandwidth
Test Model 802.11ac(HT40)

UNII Band III
Frequency(MHz) 5755



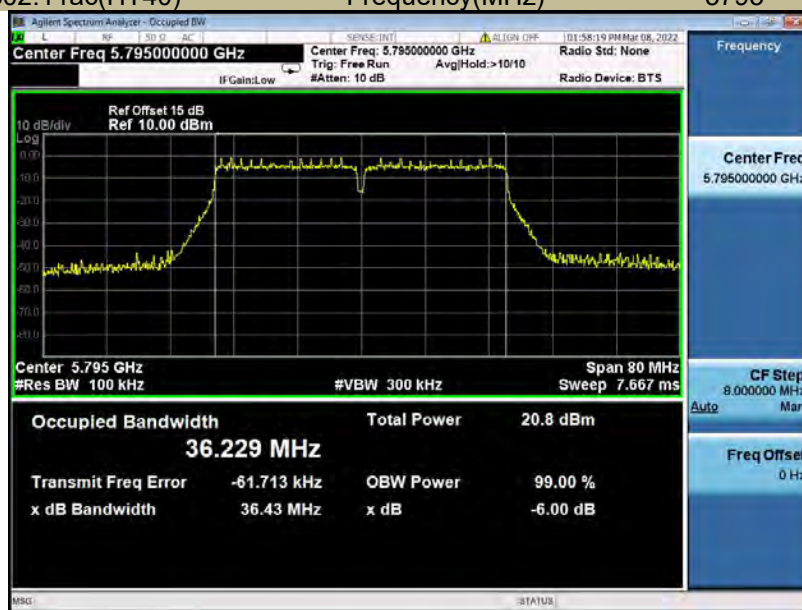
6db Emission Bandwidth

UNII Band III

Test Model 802.11ac(HT40)

Frequency(MHz)

5795



6db Emission Bandwidth

UNII Band III

Test Model 802.11ac 80

Frequency(MHz)

5775



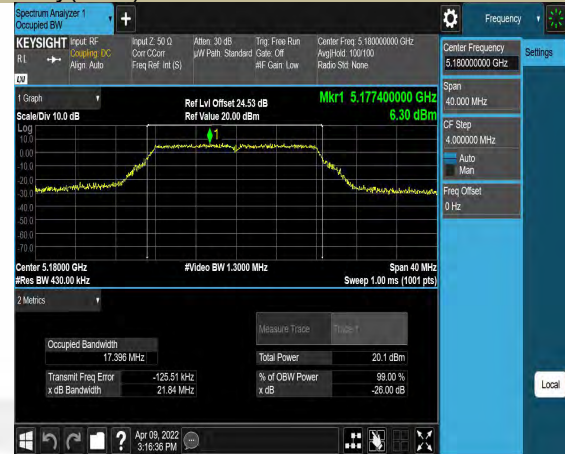
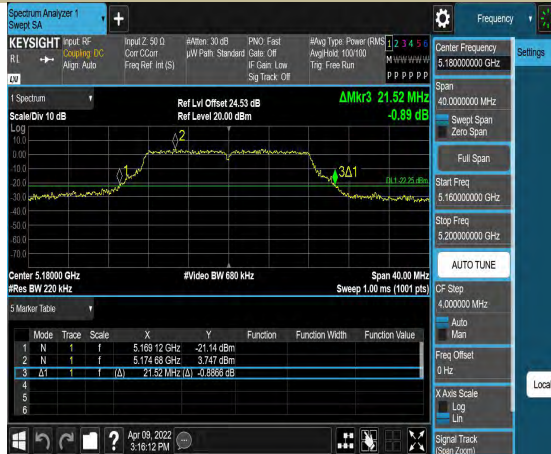
UNII Band I: 5150-5250MHz

All the chips and antennas were tested, only the worst chip 2 and antenna 1 were described in the table.

Test Mode	Test Channel MHz		26 dB Bandwidth MHz	99% Bandwidth MHz	Verdict
802.11a	CH36	5180	21.52	17.396	Pass
	CH40	5220	21.24	17.243	Pass
	CH48	5240	21.48	17.443	Pass
802.11n-HT20	CH36	5180	21.64	18.344	Pass
	CH40	5220	21.52	18.378	Pass
	CH48	5240	21.4	18.373	Pass
802.11ac(HT20)	CH36	5180	21.44	18.083	Pass
	CH40	5220	21.12	18.183	Pass
	CH48	5240	21.6	18.059	Pass
802.11n-HT40	CH38	5190	40.16	36.562	Pass
	CH46	5230	39.68	36.674	Pass
802.11ac(HT40)	CH38	5190	39.84	36.619	Pass
	CH46	5230	40.08	36.567	Pass
802.11ac(HT80)	CH42	5210	81.12	76.48	Pass

Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11a

UNII Band I
Frequency (MHz) 5180



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11a

UNII Band I
Frequency (MHz) 5220



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11a

UNII Band I
Frequency (MHz) 5240



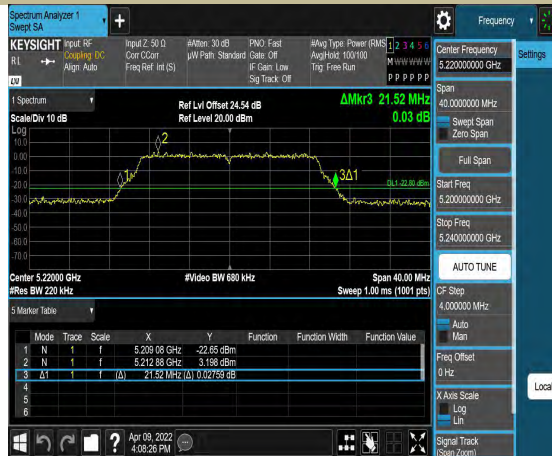
Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band I
Frequency (MHz) 5180



Emission Bandwidth&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band I
Frequency(MHz) 5220



Emission Bandwidth&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band I
Frequency(MHz) 5240



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band I
Frequency(MHz)

5180



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band I
Frequency(MHz)

5220



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band I
Frequency(MHz)

5240



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band I
Frequency(MHz)

5190



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band I
Frequency (MHz)

5230



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band I
Frequency (MHz)

5190



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band I
Frequency(MHz)

5230



Emission Bandwidth & 99% Occupied Bandwidth
Test Model 802.11ac 80

UNII Band I
Frequency(MHz)

5210



UNII Band III: 5725-5850MHz

All the chips and antennas were tested, only the worst chip 2 and antenna 1 were described in the table.

Test Mode	Test Channel MHz		6 dB Bandwidth MHz	26dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11a	CH149	5745	16.32	21.6	17.353	≥500
	CH157	5785	16.32	21.56	17.348	≥500
	CH165	5825	16.32	21.56	17.243	≥500
802.11n-HT20	CH149	5745	17.6	21.52	18.369	≥500
	CH157	5785	17.52	21.64	18.378	≥500
	CH165	5825	17.56	21.72	18.252	≥500
802.11ac(HT20)	CH149	5745	36.32	40.24	36.625	≥500
	CH157	5785	36	56.24	36.681	≥500
	CH165	5825	17.68	21.92	18.174	≥500
802.11n-HT40	CH151	5755	17.68	21.96	18.192	≥500
	CH159	5795	17.68	21.04	18.135	≥500
802.11ac(HT40)	CH151	5755	36.4	58	36.647	≥500
	CH159	5795	36.4	64.88	36.744	≥500
802.11ac(HT80)	CH155	5775	76.32	81.44	77.374	≥500

26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz) 5745



26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz) 5785



26dB&99% Occupied Bandwidth
Test Model 802.11a

UNII Band III
Frequency(MHz) 5825



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz) 5745



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz) 5785



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT20

UNII Band III
Frequency(MHz) 5825



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz) 5745



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz) 5785



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT20)

UNII Band III
Frequency(MHz) 5825



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz) 5755



26dB&99% Occupied Bandwidth
Test Model 802.11n-HT40

UNII Band III
Frequency(MHz) 5795



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band III
Frequency(MHz) 5755



26dB&99% Occupied Bandwidth
Test Model 802.11ac(HT40)

UNII Band III
Frequency(MHz) 5795



26dB&99% Occupied Bandwidth
Test Model 802.11ac 80

UNII Band III
Frequency(MHz) 5775

