FCC RADIO TEST REPORT

FCC ID	:	**A4RG8HHN**
Equipment	:	**Phone**
Model Name	:	**G8HHN**
Applicant	:	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Jul. 12, 2023 and testing was performed from Jul. 26, 2023 to Dec. 05, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

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History of this test report

Report No.	Version	Description	Issue Date
FR380306F	01	Initial issue of report	Nov. 15, 2023
FR380306F	02	Revise Conducted, Radiated Spurious Emission and CBP verify with frequency domain plots This report is an updated version, replacing the report issued on Nov. 15, 2023.	Dec. 06, 2023
FR380306F	03	Revise Conducted and In-Band Emissions (Channel Mask) This report is an updated version, replacing the report issued on Dec. 06, 2023.	Dec. 08, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(a)(10)	26dB Emission Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)(8)	Fundamental Maximum EIRP	Pass	-
3.3	15.407(a)(8)	Fundamental Power Spectral Density	Pass	-
3.4	15.407(b)(6)	In-Band Emissions (Channel Mask)	Pass	-
3.5	15.407(d)(6)	Contention Based Protocol	Pass	
3.6	15.407(b)	Unwanted Emissions	Pass	8.49 dB under the limit at 56.19 MHz
3.7	15.207	AC Conducted Emission	Pass	19.59 dB under the limit at 0.43 MHz
3.8	15.203 15.407(a)	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: William Chen

Report Producer: Clio Lo

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs GSM/WCDMA/LTE/5G NR, Bluetooth, BLE, BLE channel sounding, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, Wi-Fi 6GHz 802.11a/ax, NFC, WPC Rx and GNSS Rx. **Antenna Type** WLAN: **<Ant. 4>:** ILA Antenna **<Ant. 3>:** IFA Antenna

EUT Information List	
S/N	**Performed Test Item**
38011JEKB00249	RF Conducted Measurement
36161JEKB08227	Radiated Spurious Emission
38031JEKB01575	Conducted Emission
38011JEKB00248	Contention Based Protocol

Antenna information		
5925 MHz ~ 6425 MHz	Peak Gain (dBi)	Ant. 4: -2.9 Ant. 3: -3.8
6425 MHz ~ 6525 MHz	Peak Gain (dBi)	Ant. 4: -4.7 Ant. 3: -4.4
6525 MHz ~ 6875 MHz	Peak Gain (dBi)	Ant. 4: -4.8 Ant. 3: -4.1
6875 MHz ~ 7125 MHz	Peak Gain (dBi)	Ant. 4: -4.3 Ant. 3: -4.5

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.1.1 Antenna Directional Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)ii)

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \le 4$.

G_{ANT} is set equal to the gain of the antenna having the highest gain.

For PSD measurements, the directional gain calculation.

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;
N_{SS} = the number of independent spatial streams of data;
N_{ANT} = the total number of antennas
$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

As minimum N_{SS}=1 is supported by EUT, the formula can be simplified as:

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Where G1, G2….GN denote single antenna gain.

The directional gain “DG” is calculated as following table.

	Ant 4 (dBi)	Ant 3 (dBi)	DG for Power (dBi)	DG for PSD (dBi)
5925 MHz ~ 6425 MHz	-2.90	-3.80	-2.90	-0.33
6425 MHz ~ 6525 MHz	-4.70	-4.40	-4.40	-1.54
6525 MHz ~ 6875 MHz	-4.80	-4.10	-4.10	-1.43
6875 MHz ~ 7125 MHz	-4.30	-4.50	-4.30	-1.39

Calculation example:

If a device has two antenna, G_{ANT1}= -2.9dBi; G_{ANT2}= -3.8dBi

Directional gain of power measurement = max(-2.9, -3.8) + 0 = -2.9 dBi

Directional gain of PSD derived from formula which is

10 x log { { [10^ (-2.9 dBi / 20) + 10^ (-3.8 dBi / 20)] ^ 2 } / 2 }

= -0.33 dBi

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	DF02-HY (TAF Code: 1190)
Remark	The Contention Based Protocol test item is subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY, CO07-HY, 03CH22-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, , the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and accessory (Adapter or Earphone), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find X plane with Adapter as worst plane.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

BW 20M	**Channel**	1	5	9	13	17	21	25	29
	Freq. (MHz)	5955	5975	5995	6015	6035	6055	6075	6095
BW 40M	**Channel**	3		11		19		27	
	Freq. (MHz)	5965		6005		6045		6085	
BW 80M	**Channel**	7				23			
	Freq. (MHz)	5985				6065			

BW 20M	**Channel**	33	37	41	45	49	53	57	61
	Freq. (MHz)	6115	6135	6155	6175	6195	6215	6235	6255
BW 40M	**Channel**	35		43		51		59	
	Freq. (MHz)	6125		6165		6205		6245	
BW 80M	**Channel**	39				55			
	Freq. (MHz)	6145				6225			

BW 20M	Channel	65	69	73	77	81	85	89	93
	Freq. (MHz)	6275	6295	6315	6335	6355	6375	6395	6415
BW 40M	Channel	67		75		83		91	
	Freq. (MHz)	6285		6325		6365		6405	
BW 80M	Channel	71				87			
	Freq. (MHz)	6305				6385			

BW 20M	Channel	97	101	105	109	113	117	121	125
	Freq. (MHz)	6435	6455	6475	6495	6515	6535	6555	6575
BW 40M	Channel	99		107		115		123	
	Freq. (MHz)	6445		6485		6525		6565	
BW 80M	Channel	103				119			
	Freq. (MHz)	6465				6545			

BW 20M	Channel	129	133	137	141	145	149	153	157
	Freq. (MHz)	6595	6615	6635	6655	6675	6695	6715	6735
BW 40M	Channel	131		139		147		155	
	Freq. (MHz)	6605		6645		6685		6725	
BW 80M	Channel	135				151			
	Freq. (MHz)	6625				6705			

BW 20M	Channel	161	165	169	173	177	181	185	189
	Freq. (MHz)	6755	6775	6795	6815	6835	6855	6875	6895
BW 40M	Channel	163		171		179		187	
	Freq. (MHz)	6765		6805		6845		6885	
BW 80M	Channel	167				183			
	Freq. (MHz)	6785				6865			

BW 20M	Channel	193	197	201	205	209	213	217	221
	Freq. (MHz)	6915	6935	6955	6975	6995	7015	7035	7055
BW 40M	Channel	195		203		211		219	
	Freq. (MHz)	6925		6965		7005		7045	
BW 80M	Channel	199				215			
	Freq. (MHz)	6945				7025			

BW 20M	Channel	225	229
	Freq. (MHz)	7075	7095
BW 40M	Channel	227	
	Freq. (MHz)	7085	

2.2 Test Mode

This device support 26/52/106/242/484/996-tone RU channel.

The PSD of partial RU is reduced to be smaller than full RU according to TCB workshop interim guidance Oct. 2022.

The 802.11ax mode is investigated among different tones, full resource units (RU), partial resource units. The partial RU has no higher power than full RU's, thus the full RU is chosen as main test configuration.

The partial RU modes in HE40/HE80 are covered by modes in HE20 because the power setting is identical

The 242-tone RU is covered by 20MHz channel, 484-tone RU is covered by 40MHz channel and 996-tone RU is covered by 80MHz channel.

The SISO mode conducted power is covered by MIMO mode per chain, so only the MIMO mode is tested.

The final test modes include the worst data rates for each modulation shown in the table below.

MIMO Mode

Modulation	Data Rate
802.11a	**6 Mbps**
802.11ax HE20	**MCS0**
802.11ax HE40	**MCS0**
802.11ax HE80	**MCS0**

Remark: The conducted power level of each chain in MIMO mode is equal or higher than SISO mode.

Test Cases	
AC Conducted Emission	Mode 1 : 5G NR n5 Link + WLAN (6GHz) Link + Bluetooth on + NFC on + USB Cable 3 (Charging from AC Adapter 2) + Handset mode ; Battery < 50%
Remark: **1.** For Radiated Test Cases, the tests were performed with Adapter 1 and USB Cable 3. **2.** During the preliminary test, both charging modes (Adapter mode and WPT Client mode) were verified. It is determined that the adaptor mode is the worst case for official test.	

Based on ANSI C63.10 clause 5.6.2.2, b) spurious emissions,

Measure the mode with the highest output power and the mode with highest output power spectral density for each modulation family.

		5.6.2.2 (b) Spurious Emissions
UNII-5	20MHz	Covered by 80MHz
	40MHz	Covered by 80MHz
	80MHz	Test
UNII-6	20MHz	Covered by 80MHz
	40MHz	Covered by 80MHz
	80MHz	Test
UNII-7	20MHz	Covered by 80MHz
	40MHz	Covered by 80MHz
	80MHz	Test
UNII-8	20MHz	Covered by 80MHz
	40MHz	Covered by 80MHz
	80MHz	Test

Ch. #		UNII-5 (5925-6425 MHz)	UNII-6 (6425-6525 MHz)	UNII-7 (6525-6875 MHz)	UNII-8 (6875-7125 MHz)
		802.11a	802.11a	802.11a	802.11a
L	Low	001	-	-	-
M	Middle	-	-	-	-
H	High	-	-	-	229
Straddle		-	-	-	-

Ch. #		UNII-5 (5925-6425 MHz)	UNII-6 (6425-6525 MHz)	UNII-7 (6525-6875 MHz)	UNII-8 (6875-7125 MHz)
		802.11ax HE20	802.11ax HE20	802.11ax HE20	802.11ax HE20
L	Low	001	-	-	-
M	Middle	-	-	-	-
H	High	-	-	-	229
Straddle		-	-	-	-

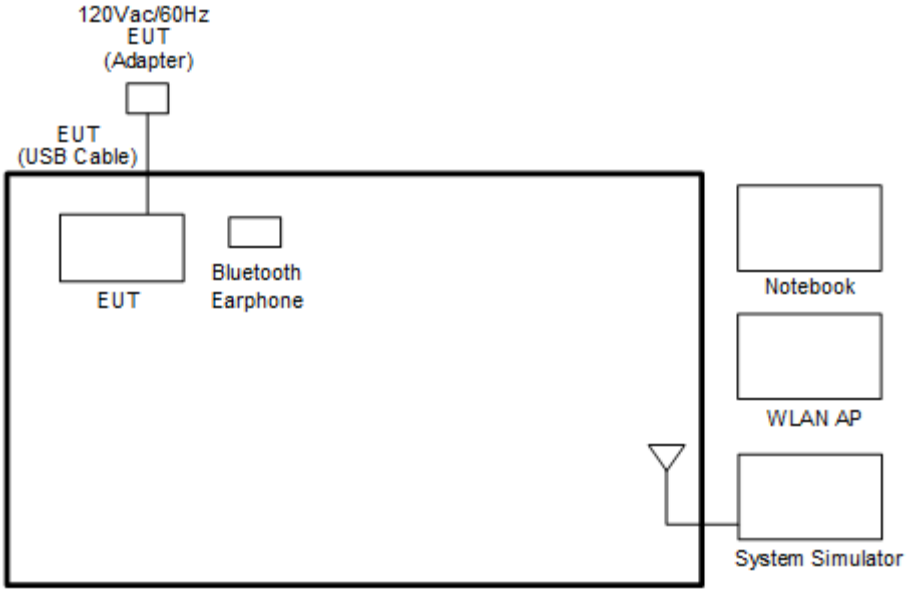
Ch. #		UNII-5 (5925-6425 MHz)	UNII-6 (6425-6525 MHz)	UNII-7 (6525-6875 MHz)	UNII-8 (6875-7125 MHz)
		802.11ax HE40	802.11ax HE40	802.11ax HE40	802.11ax HE40
L	Low	003	-	-	-
M	Middle	-	-	-	-
H	High	-	-	-	227
Straddle		-	-	-	-

Ch. #		UNII-5 (5925-6425 MHz)	UNII-6 (6425-6525 MHz)	UNII-7 (6525-6875 MHz)	UNII-8 (6875-7125 MHz)
		802.11ax HE80	802.11ax HE80	802.11ax HE80	802.11ax HE80
L	Low	007	103	135	199
M	Middle	055		151	-
H	High	087		167	215
Straddle		-	119	183	-

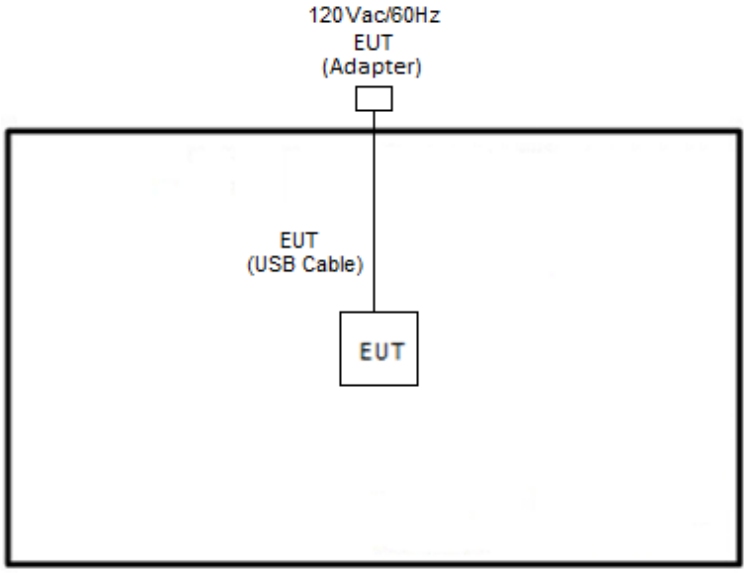
Remark: Based on ANSI C63.10 clause 5.6.2.2, b) Spurious emissions, measure the mode with the highest output power and the mode with highest output power spectral density for each modulation family.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
3.	WLAN AP	netgear	RAXE500	PY320300508	N/A	Unshielded,1.8m
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “CMD v.10.0.18362.1256” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Limit of 26dB & 99% Occupied Bandwidth

<FCC 14-30 CFR 15.407>

(a)(10) The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak 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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

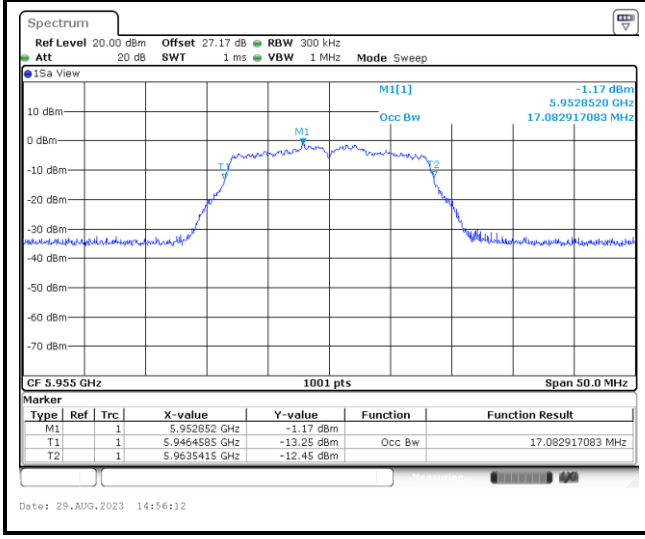
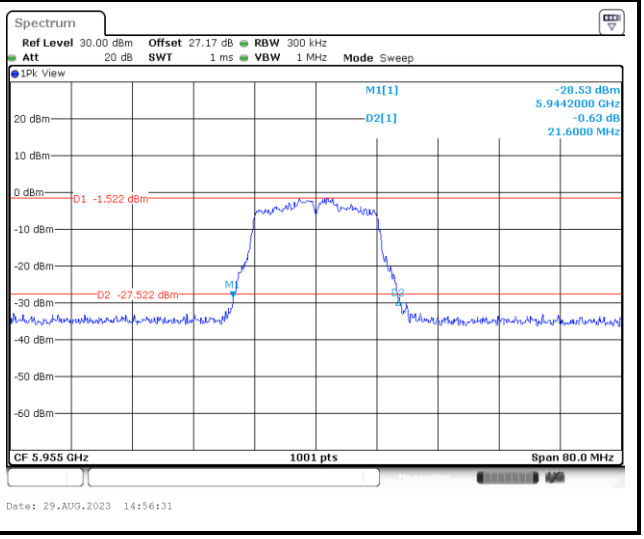
3.1.4 Test Setup

3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

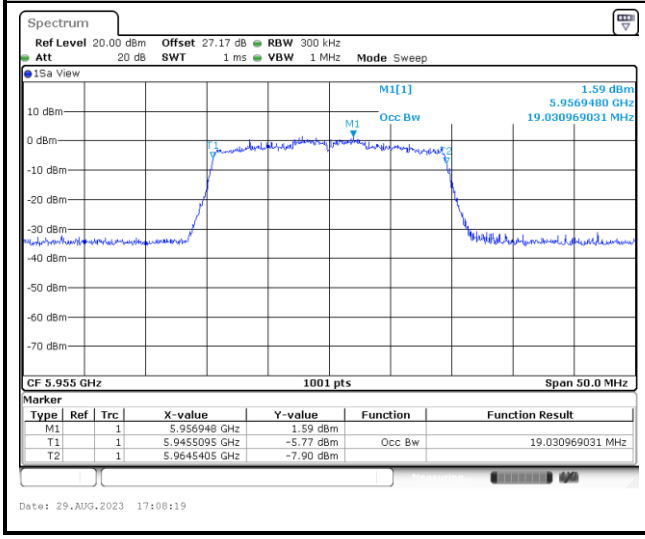
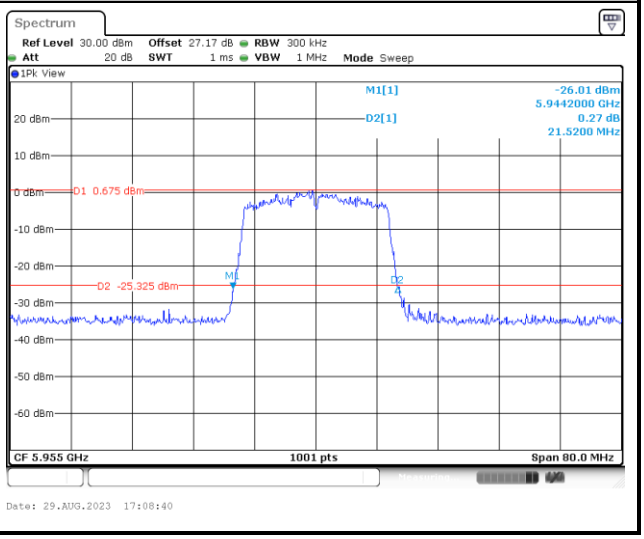
MIMO <Ant. 4+3>

<802.11a>

99% Occupied Bandwidth	26dB Bandwidth
	

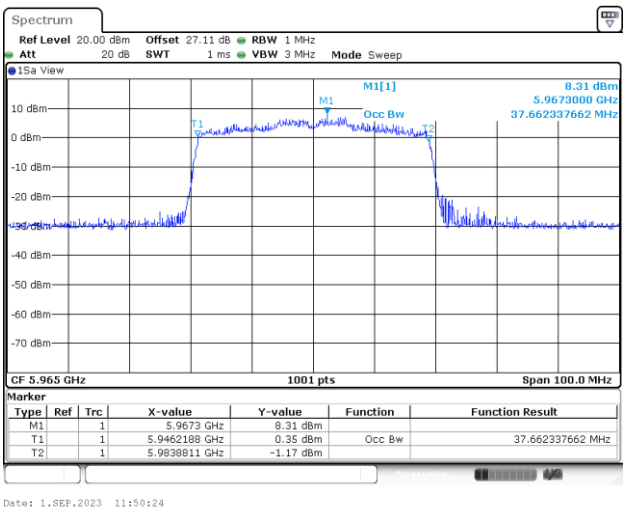
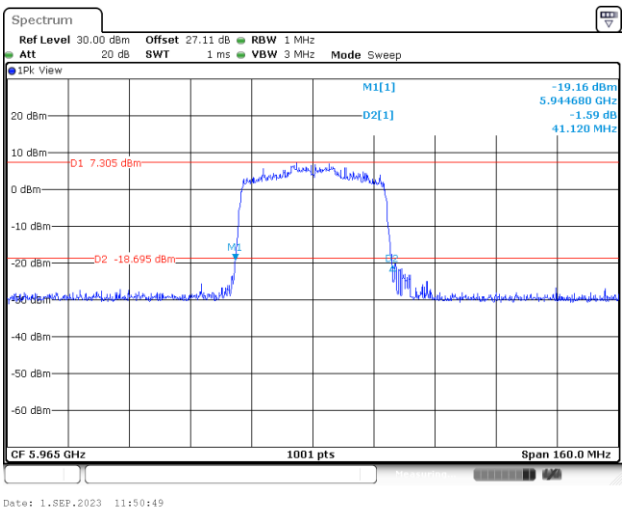
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE20>

99% Occupied Bandwidth	26dB Bandwidth
	

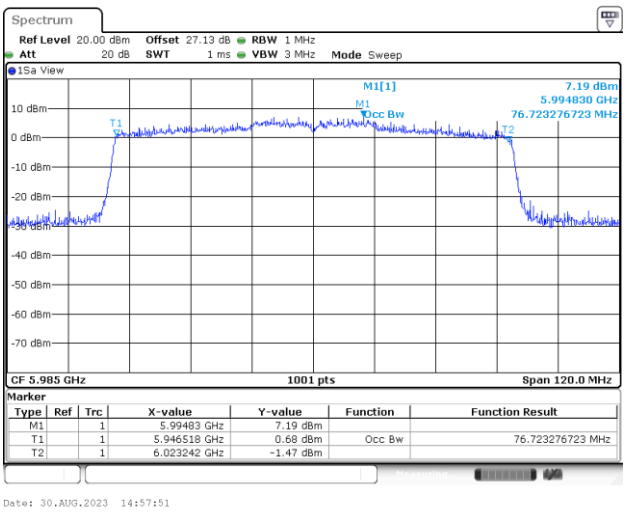
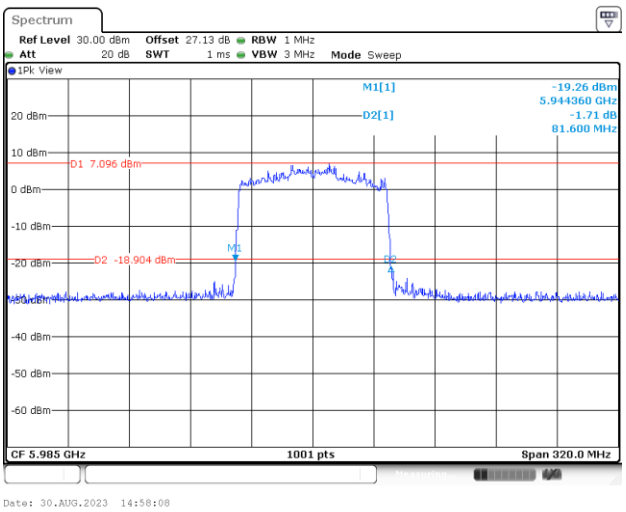
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE40>

99% Occupied Bandwidth	26dB Bandwidth
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<802.11ax HE80>

99% Occupied Bandwidth	26dB Bandwidth
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Fundamental Maximum EIRP Measurement

3.2.1 Limit of Fundamental Maximum EIRP

<FCC 14-30 CFR 15.407>

(a)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

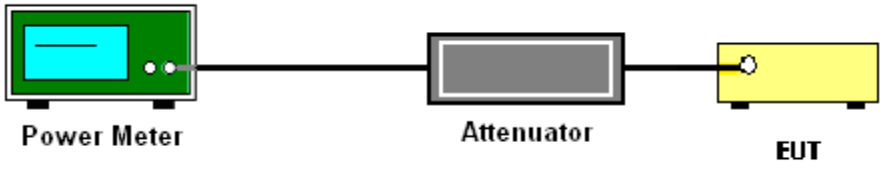
3.2.3 Test Procedures

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter.
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Fundamental Maximum EIRP

Please refer to Appendix A.

3.3 Fundamental Power Spectral Density Measurement

3.3.1 Limit of Fundamental Power Spectral Density

<FCC 14-30 CFR 15.407>

(a)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed −1 dBm e.i.r.p. in any 1-megahertz band.

3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Section F) Maximum power spectral density.

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

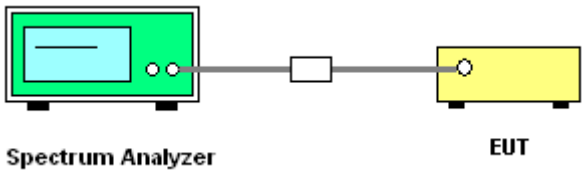
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (a): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points; the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

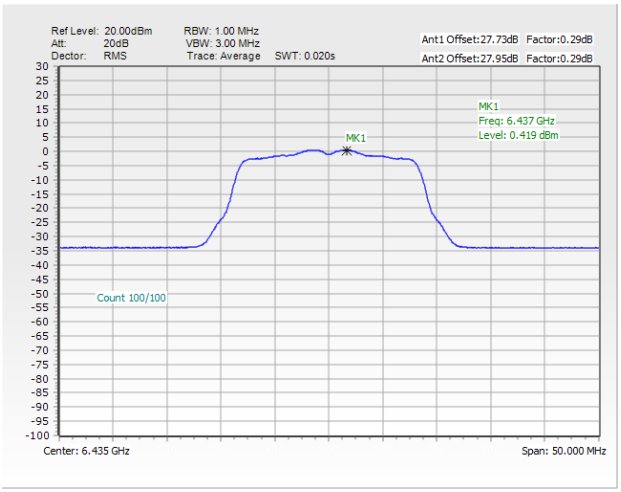
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

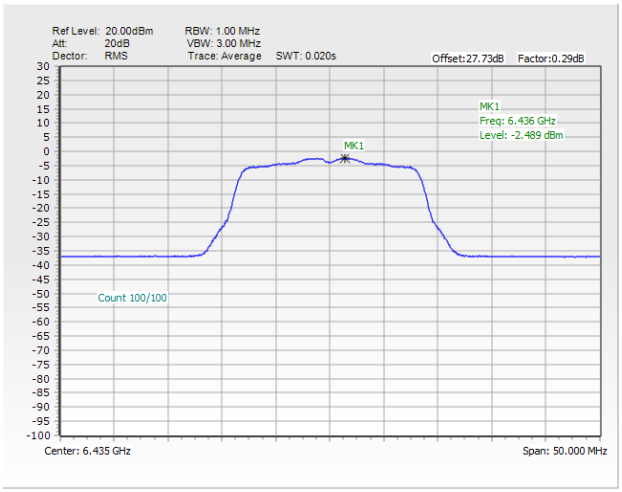
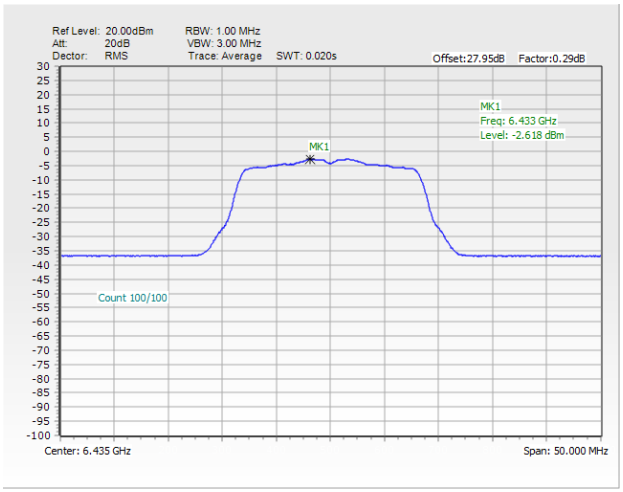
Please refer to Appendix A.

<802.11a>

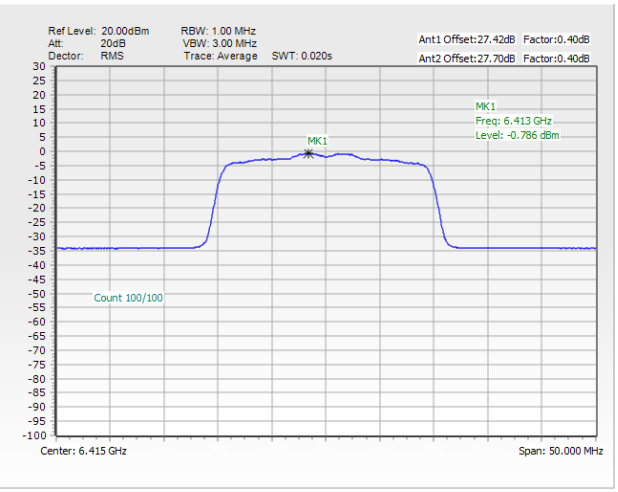
Maximum Power Density Plot (dBm/MHz)


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

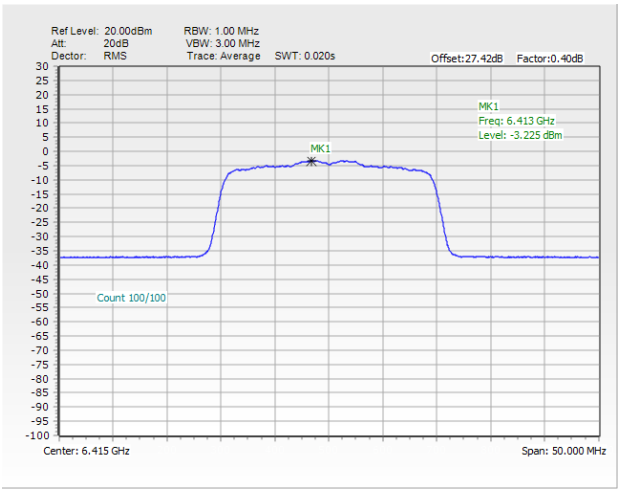
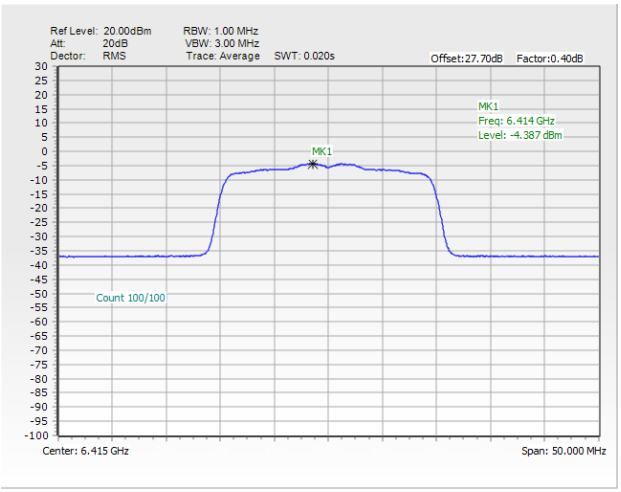
Power Density Plot Trace 1 (Ant 4)	Power Density Plot Trace 2 (Ant 3)
	

<802.11ax HE20 Full RU>

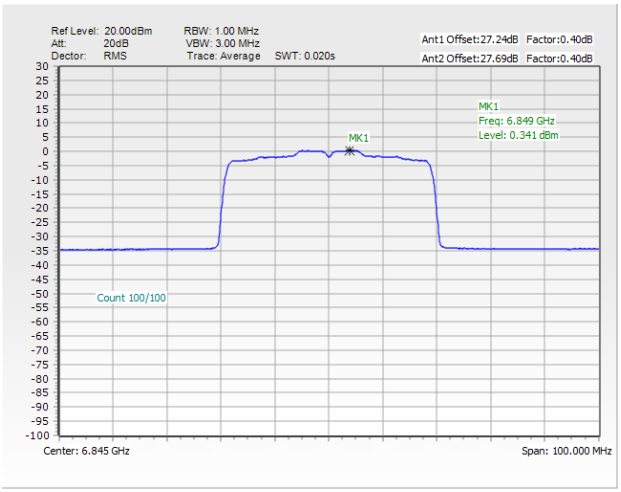
Maximum Power Density Plot (dBm/MHz)


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

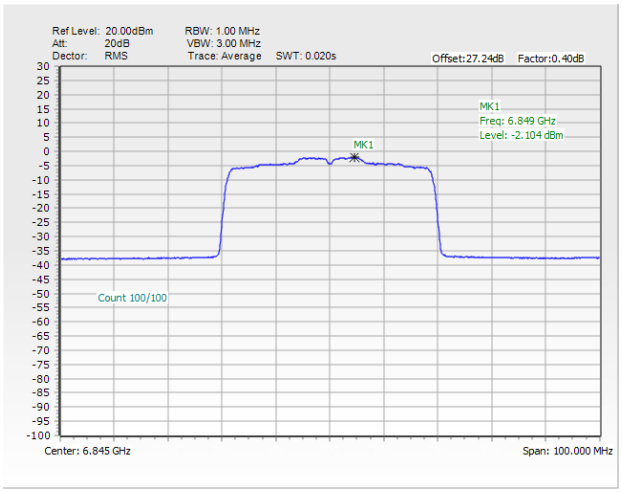
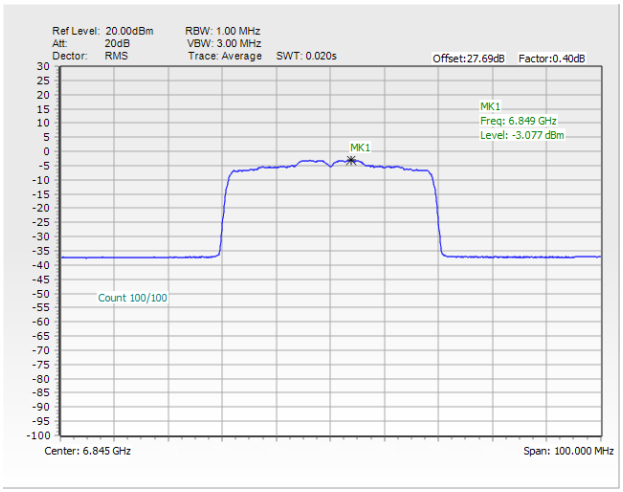
Power Density Plot Trace 1 (Ant 4)	Power Density Plot Trace 2 (Ant 3)
	

<802.11ax HE40 Full RU>

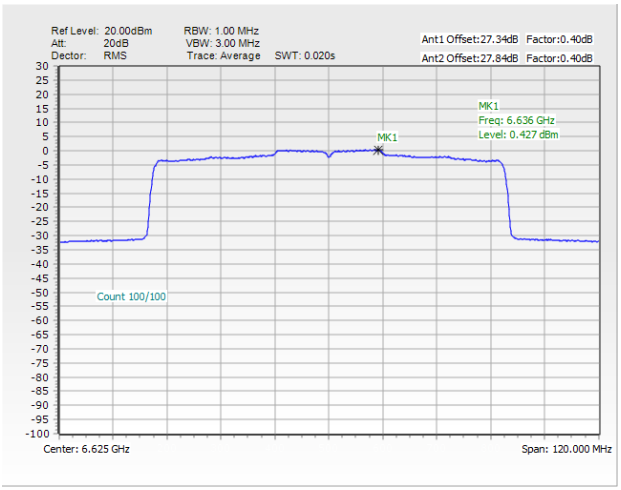
Maximum Power Density Plot (dBm/MHz)


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

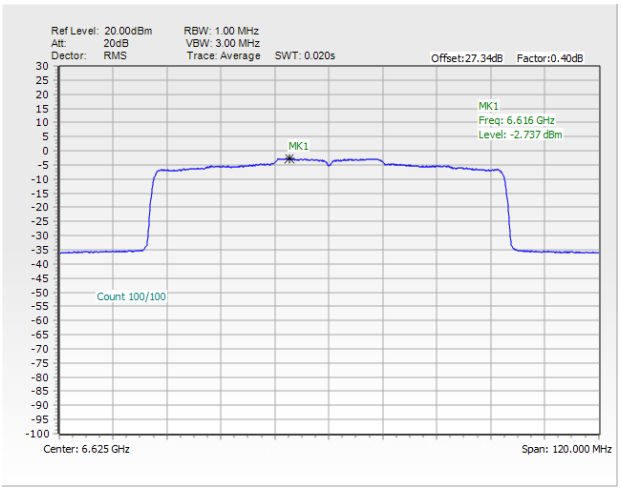
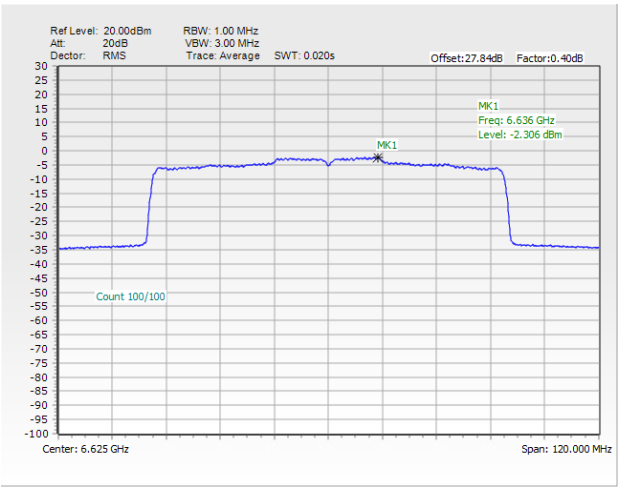
Power Density Plot Trace 1 (Ant 4)	Power Density Plot Trace 2 (Ant 3)
	

<802.11ax HE80 Full RU>

Maximum Power Density Plot (dBm/MHz)


Note:

1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

Power Density Plot Trace 1 (Ant 4)	Power Density Plot Trace 2 (Ant 3)
	

3.4 In-Band Emissions (Channel Mask)

3.4.1 Limit of Unwanted Emissions

<FCC 14-30 CFR 15.407>

(a)(6) For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v01.

Section J) In-Band Emissions.

1. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth
2. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
   a) Set the span to encompass the entire 26 dB EBW of the signal.
   b) Set RBW = same RBW used for 26 dB EBW measurement.
   c) Set VBW ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / RBW].
   e) Sweep time = auto.
   f) Detector = RMS (i.e., power averaging)
   g) Trace average at least 100 traces in power averaging (rms) mode.
   h) Use the peak search function on the instrument to find the peak of the spectrum.
3. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
   a. Suppressed by 20 dB at 1 MHz outside of the channel edge.
   b. Suppressed by 28 dB at one channel bandwidth from the channel center.
   c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
4. Adjust the span to encompass the entire mask as necessary.
5. Clear trace.
6. Trace average at least 100 traces in power averaging (rms) mode.
7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

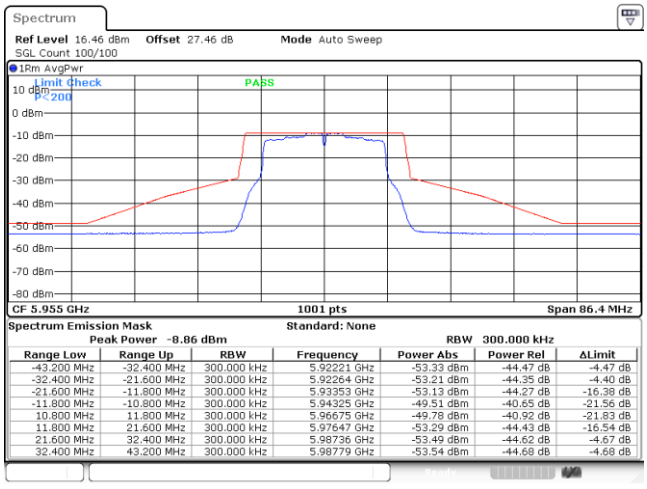
3.4.4 Test Setup

3.4.5 Test Result

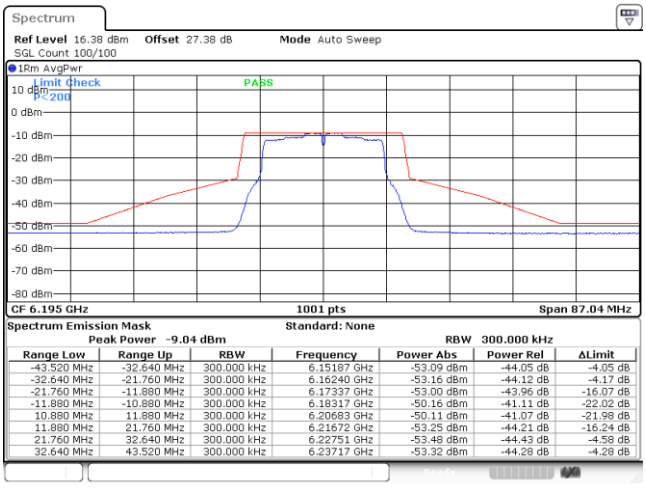
MIMO <Ant. 3+4(3)>

EUT Mode	802.11a

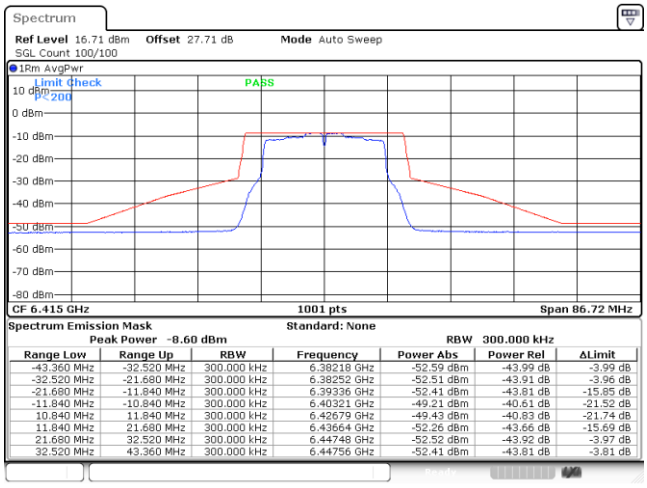
Plot on Channel 5955 MHz



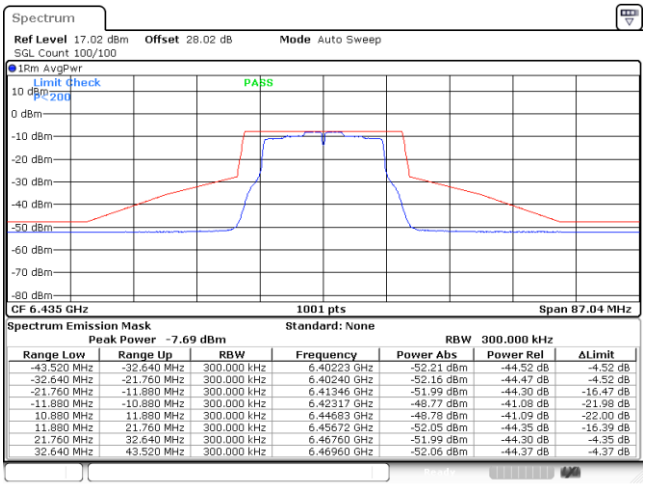
Plot on Channel 6195 MHz



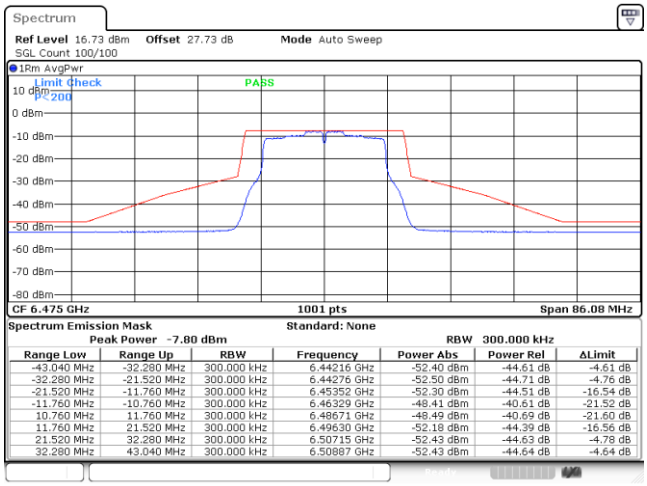
Plot on Channel 6415 MHz



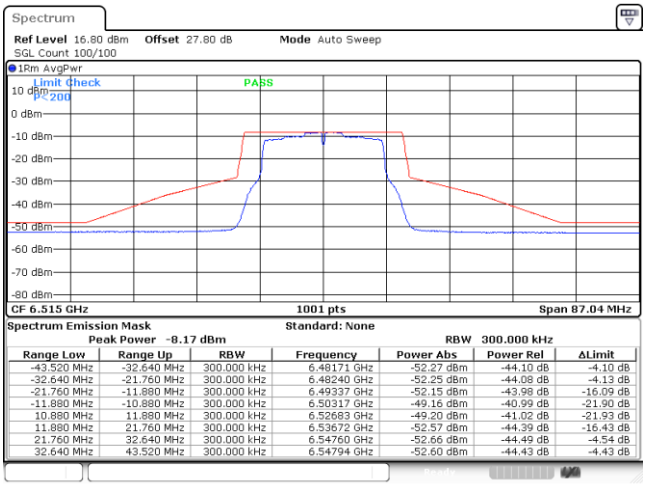
Plot on Channel 6435 MHz



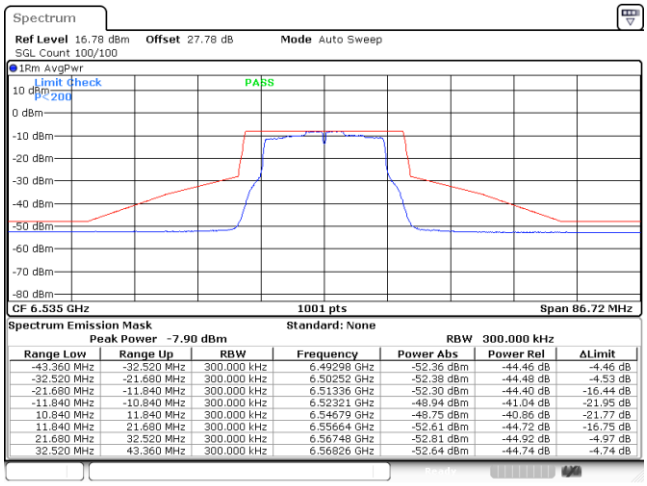
Plot on Channel 6475 MHz



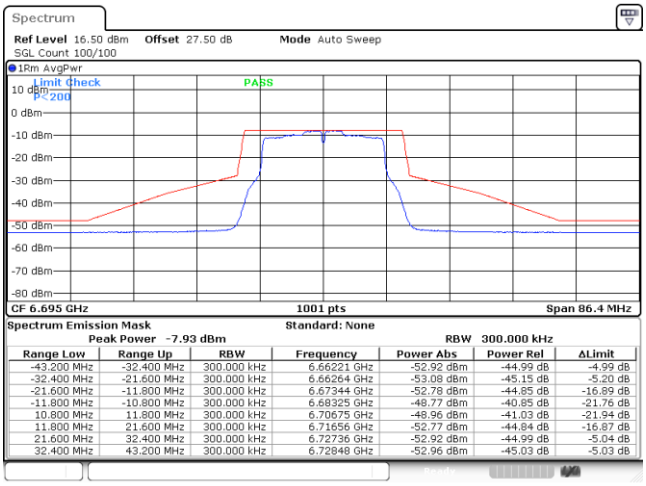
Plot on Channel 6515 MHz



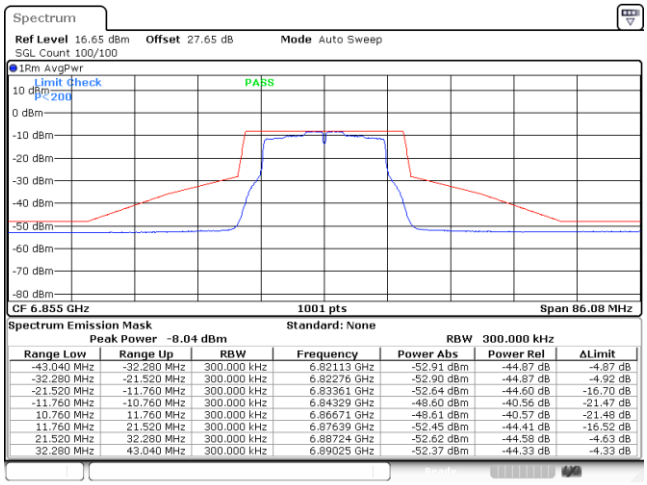
Plot on Channel 6535 MHz



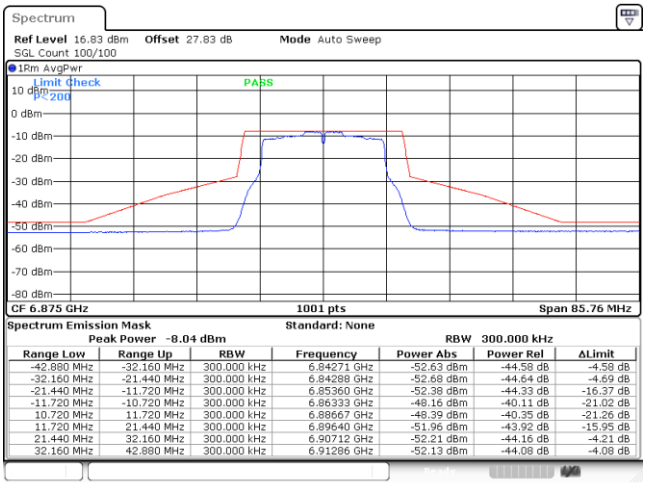
Plot on Channel 6695 MHz



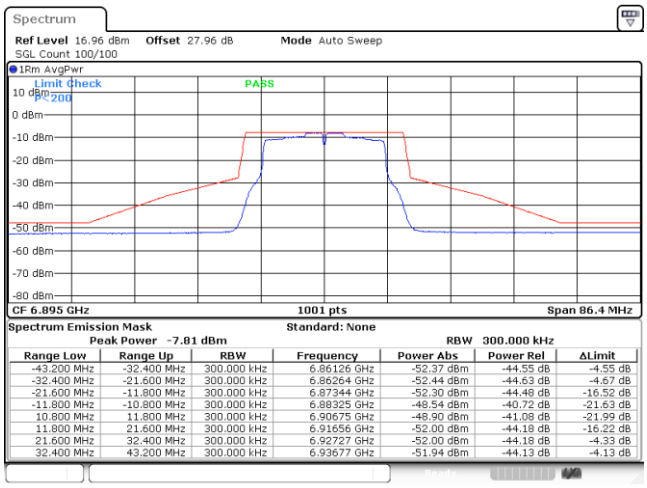
Plot on Channel 6855 MHz



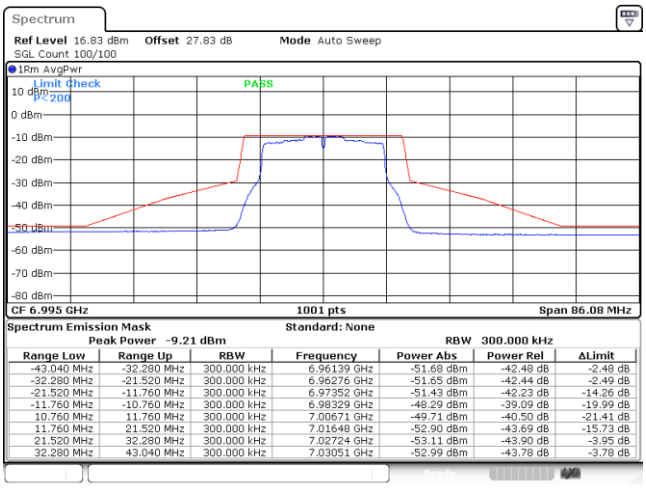
Plot on Channel 6875 MHz



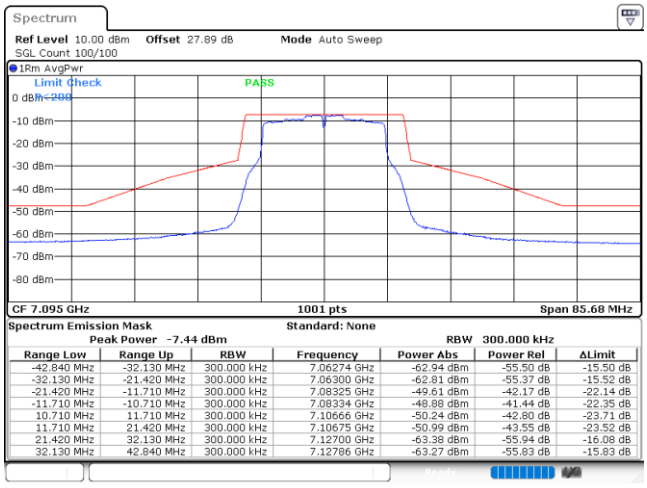
Plot on Channel 6895 MHz



Plot on Channel 6995 MHz

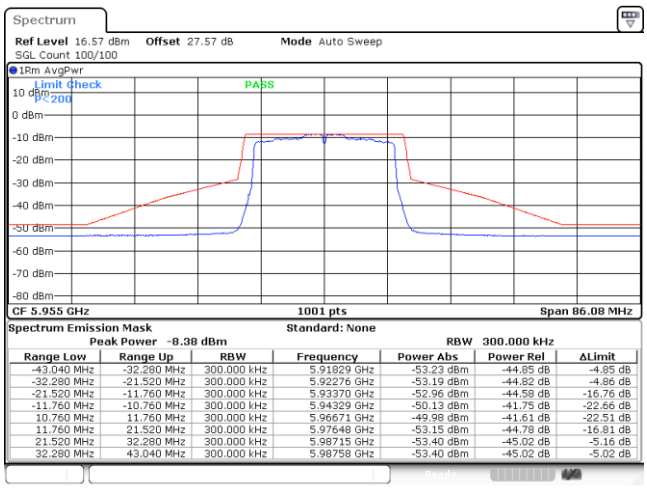


Plot on Channel 7095 MHz

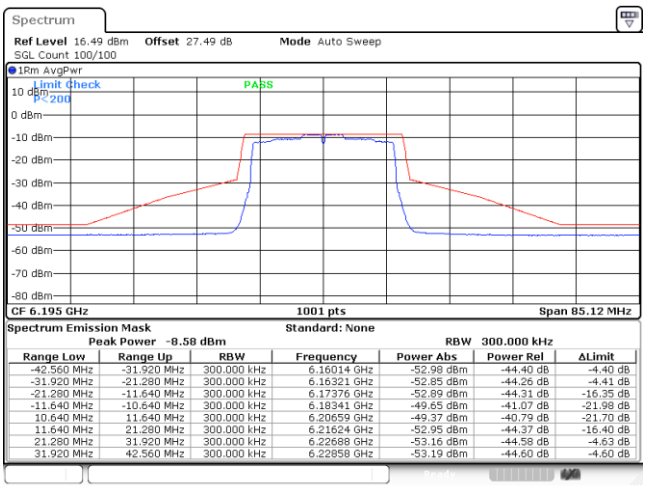


EUT Mode	802.11ax HE20 Full RU

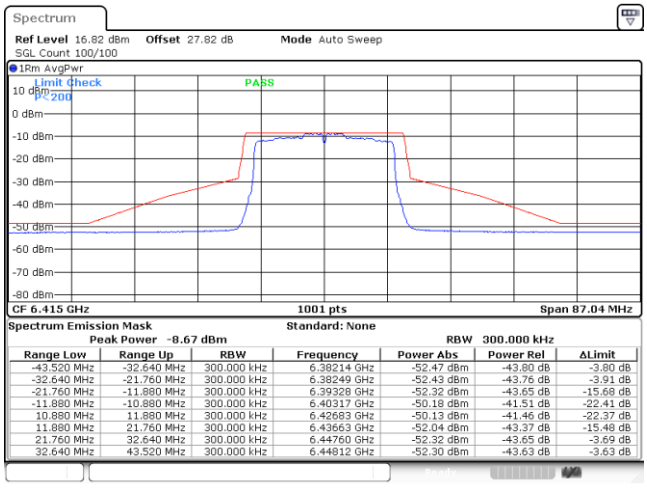
Plot on Channel 5955 MHz



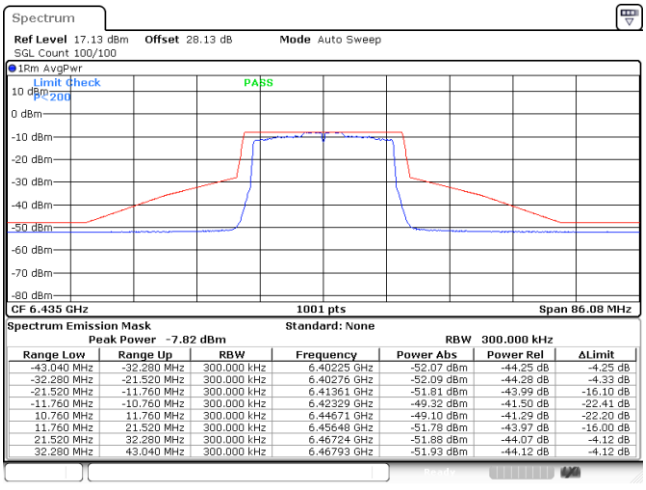
Plot on Channel 6195 MHz



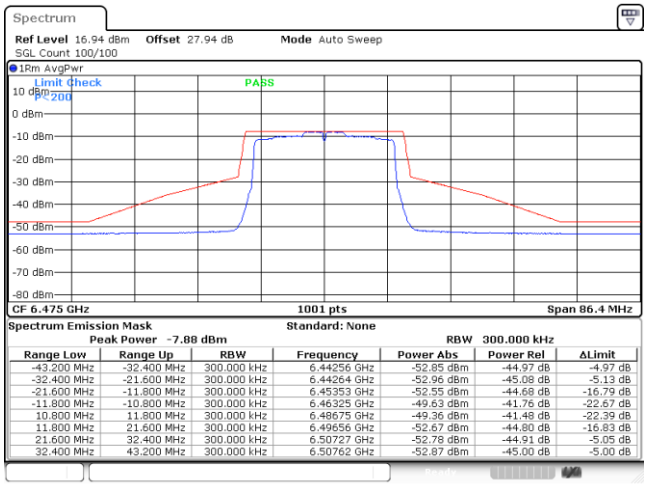
Plot on Channel 6415 MHz



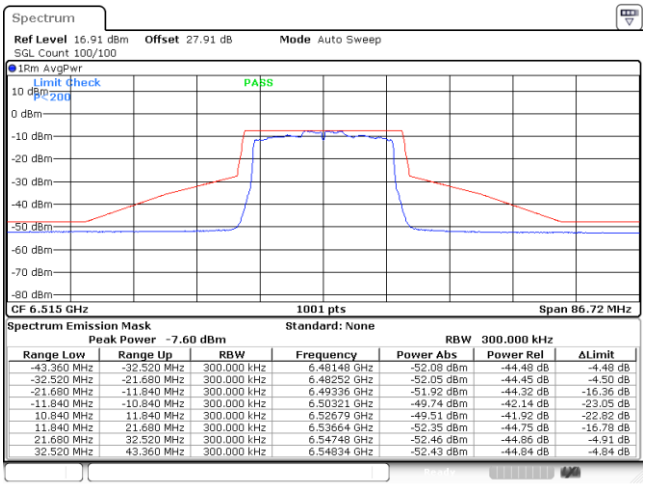
Plot on Channel 6435 MHz



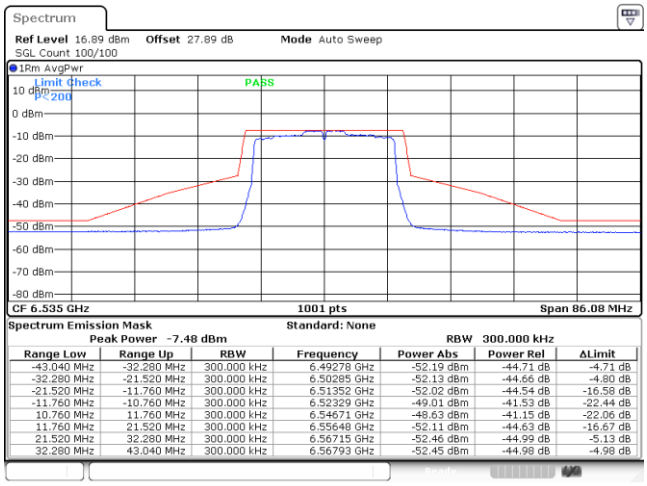
Plot on Channel 6475 MHz



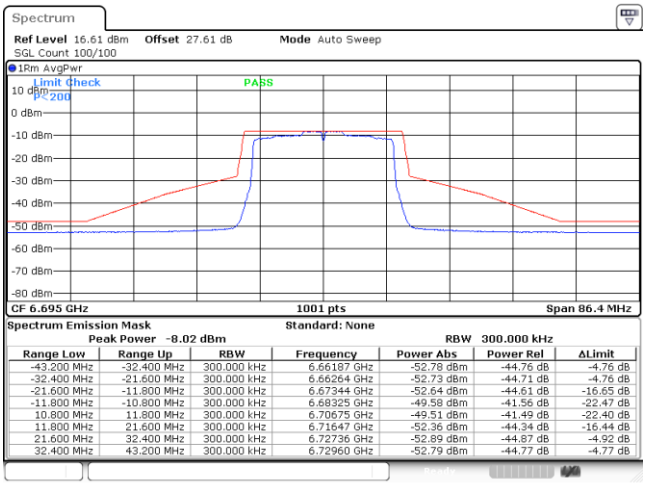
Plot on Channel 6515 MHz



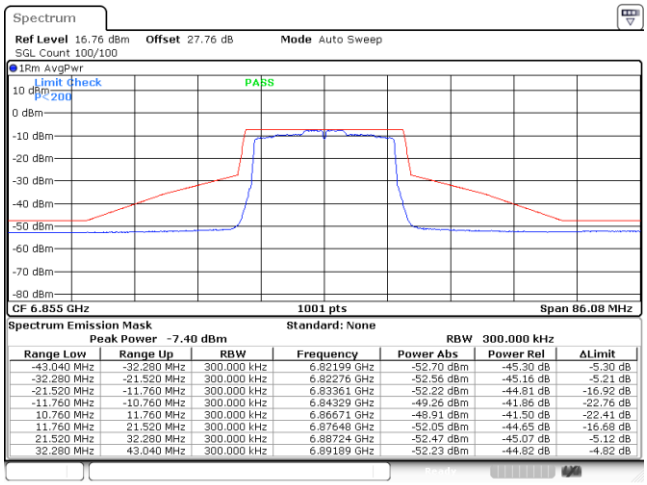
Plot on Channel 6535 MHz



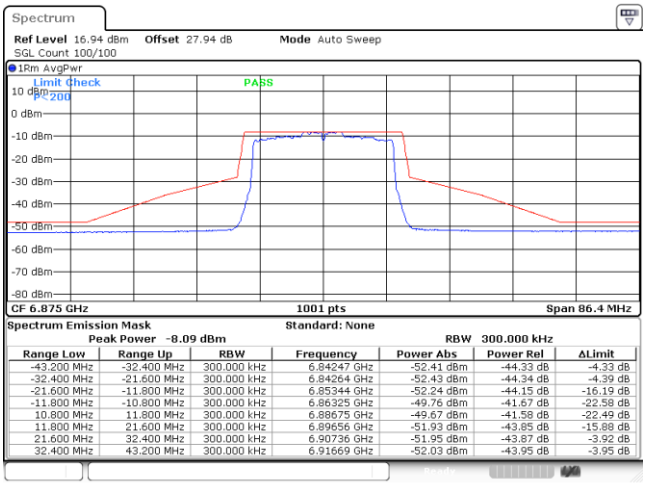
Plot on Channel 6695 MHz



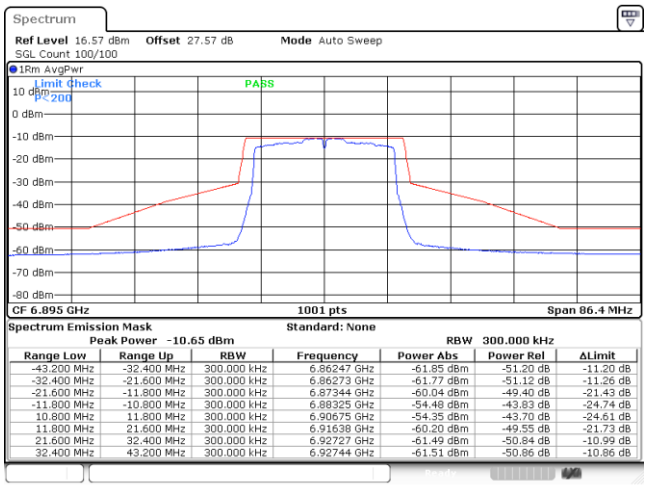
Plot on Channel 6855 MHz



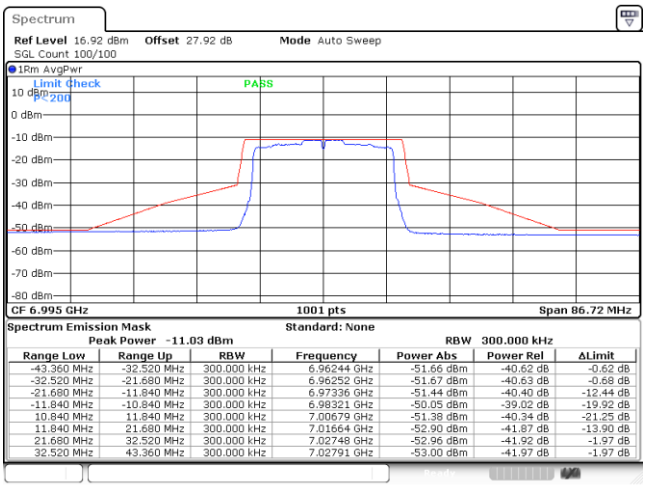
Plot on Channel 6875 MHz



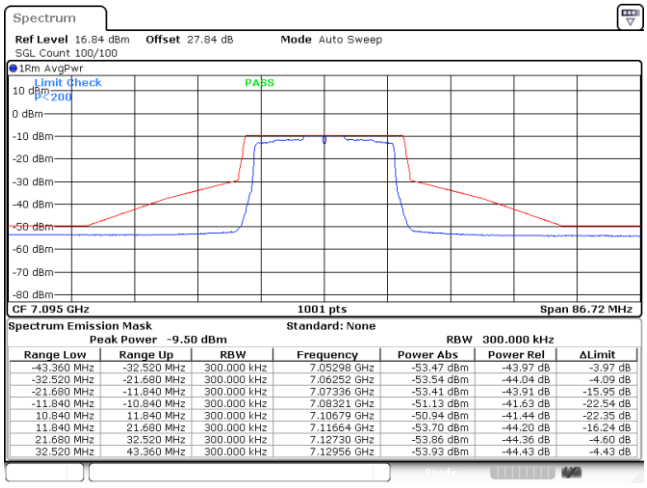
Plot on Channel 6895 MHz



Plot on Channel 6995 MHz

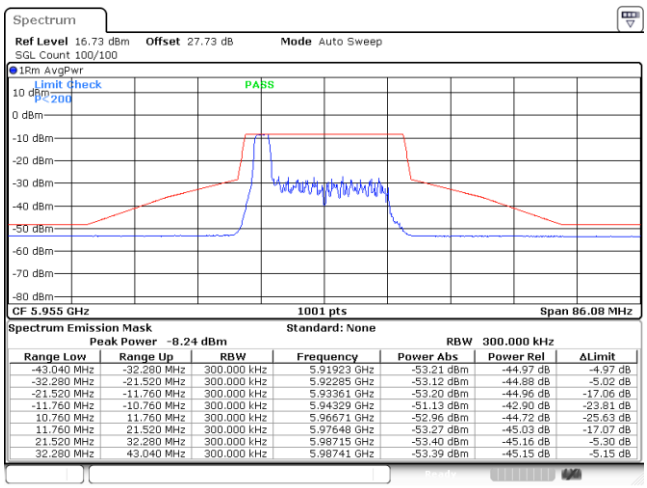


Plot on Channel 7095 MHz

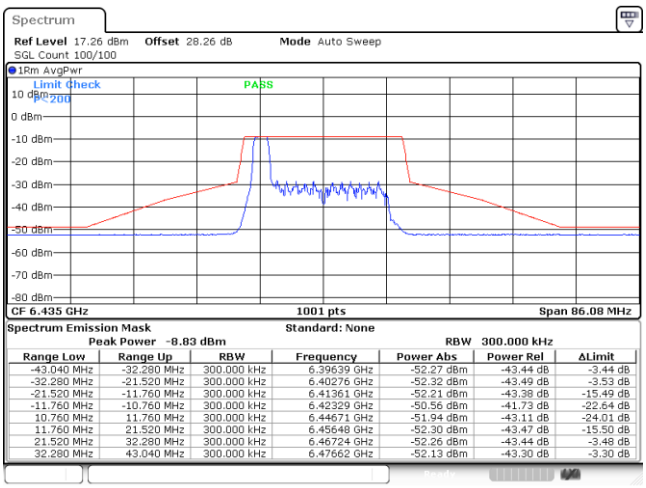


EUT Mode	802.11ax HE20 26RU0

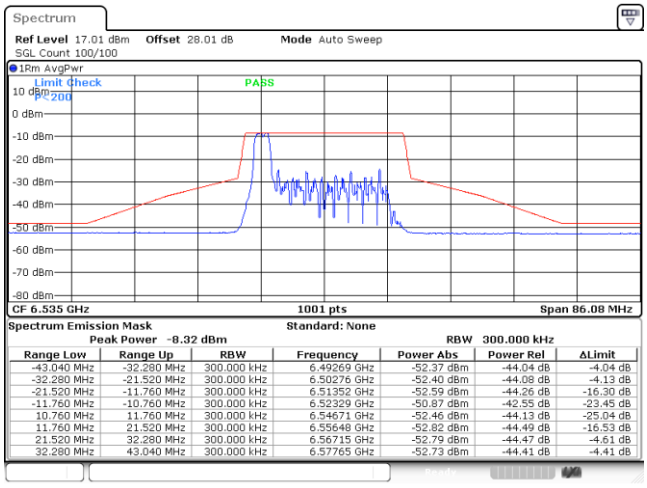
Plot on Channel 5955 MHz



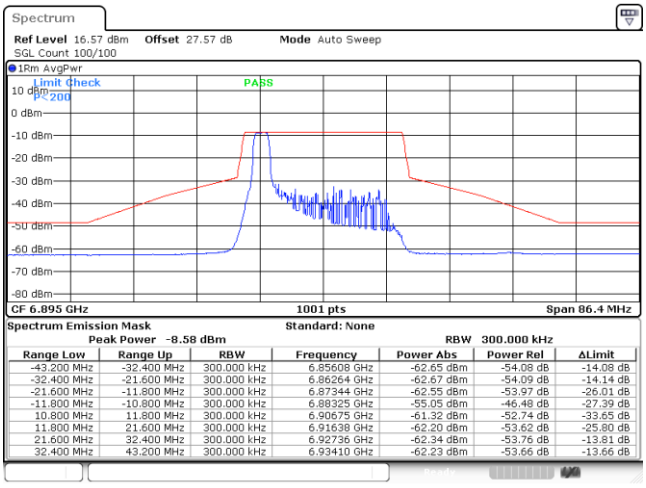
Plot on Channel 6435 MHz



Plot on Channel 6535 MHz

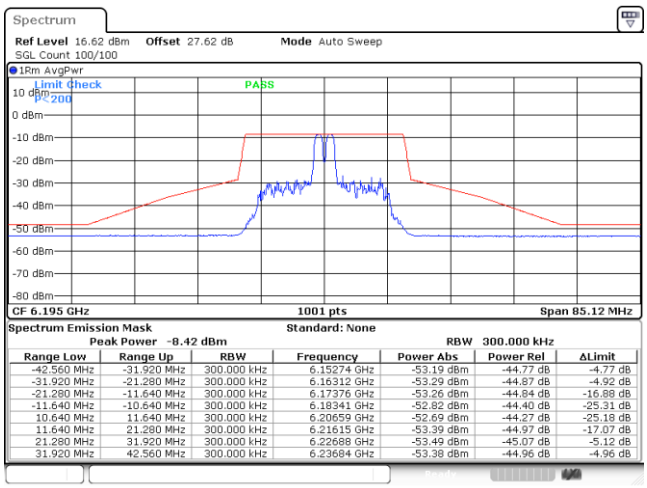


Plot on Channel 6895 MHz

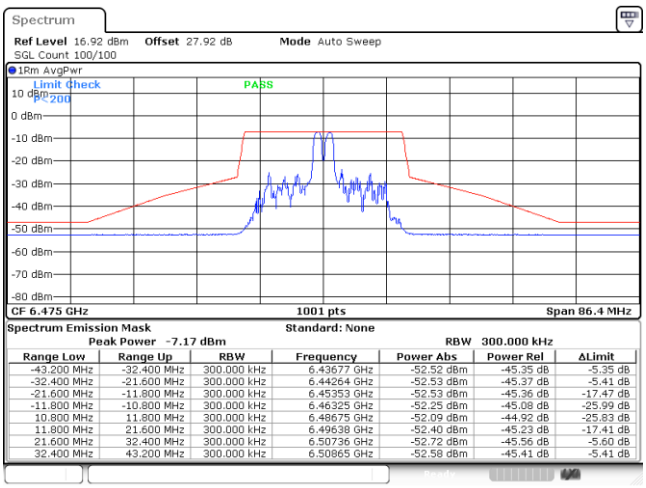


EUT Mode	802.11ax HE20 26RU4

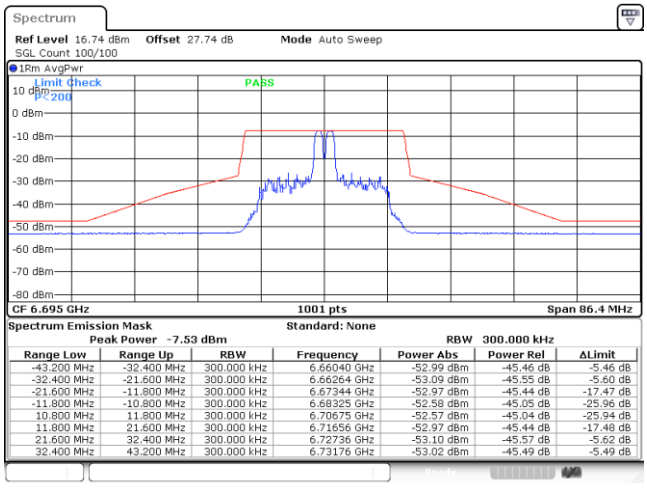
Plot on Channel 6195 MHz



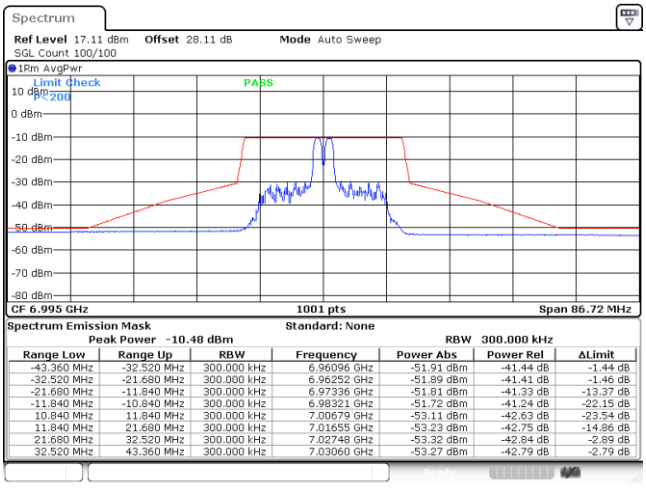
Plot on Channel 6475 MHz



Plot on Channel 6695 MHz

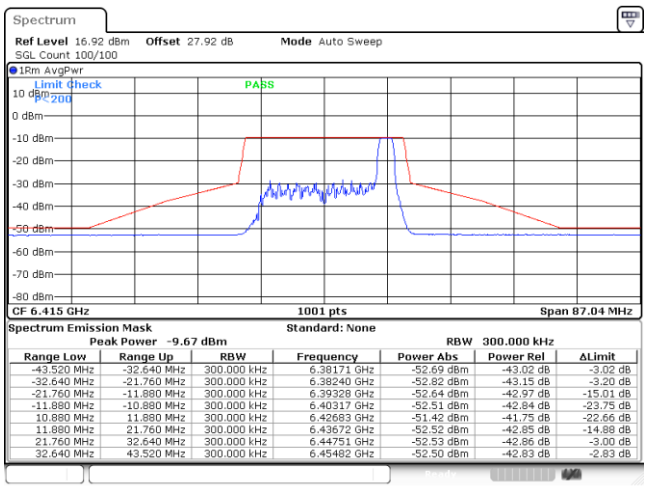


Plot on Channel 6995 MHz

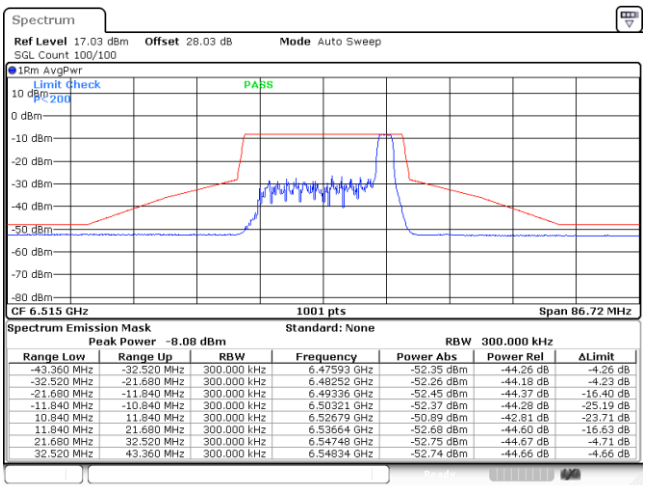


EUT Mode	802.11ax HE20 26RU8

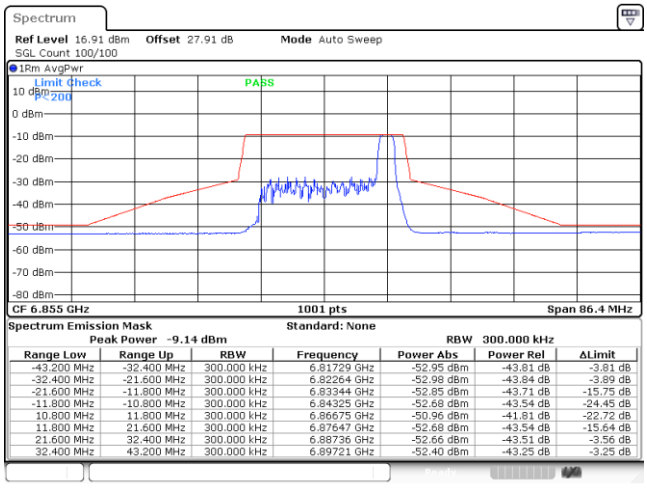
Plot on Channel 6415 MHz



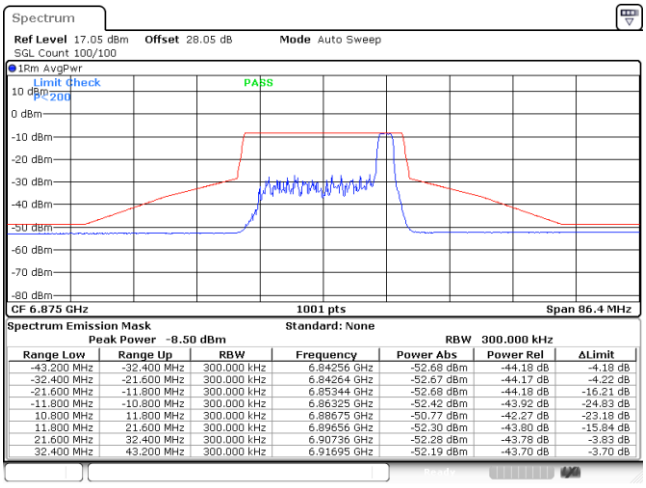
Plot on Channel 6515 MHz



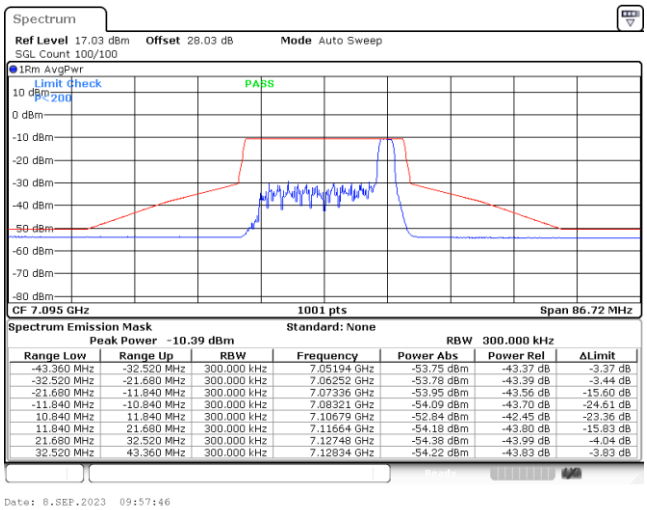
Plot on Channel 6855 MHz



Plot on Channel 6875 MHz

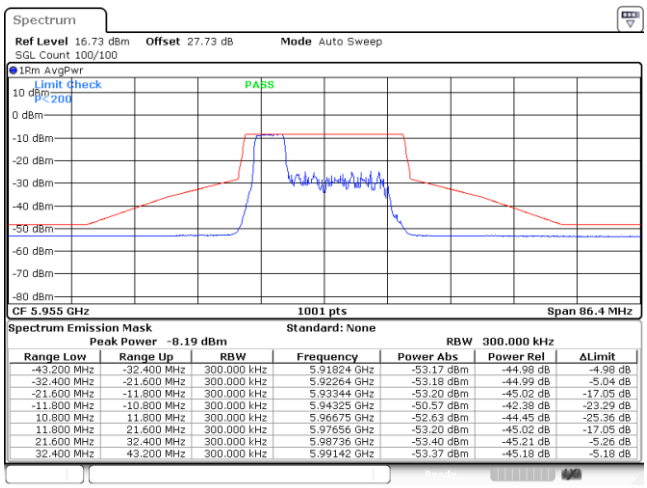


Plot on Channel 7095 MHz



EUT Mode	802.11ax HE20 52RU37

Plot on Channel 5955 MHz



Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-43.200 MHz	-32.400 MHz	300.000 kHz	5.91824 GHz	-53.17 dBm	-44.98 dB	-4.98 dB
-32.400 MHz	-21.600 MHz	300.000 kHz	5.92264 GHz	-53.18 dBm	-44.99 dB	-5.04 dB
-21.600 MHz	-11.800 MHz	300.000 kHz	5.93344 GHz	-53.20 dBm	-45.02 dB	-17.05 dB
-11.800 MHz	-10.800 MHz	300.000 kHz	5.94325 GHz	-50.57 dBm	-42.38 dB	-23.29 dB
10.800 MHz	11.800 MHz	300.000 kHz	5.96675 GHz	-52.63 dBm	-44.45 dB	-25.36 dB
11.800 MHz	21.600 MHz	300.000 kHz	5.97656 GHz	-53.20 dBm	-45.02 dB	-17.05 dB
21.600 MHz	32.400 MHz	300.000 kHz	5.98736 GHz	-53.40 dBm	-45.21 dB	-5.26 dB
32.400 MHz	43.200 MHz	300.000 kHz	5.99142 GHz	-53.37 dBm	-45.18 dB	-5.18 dB

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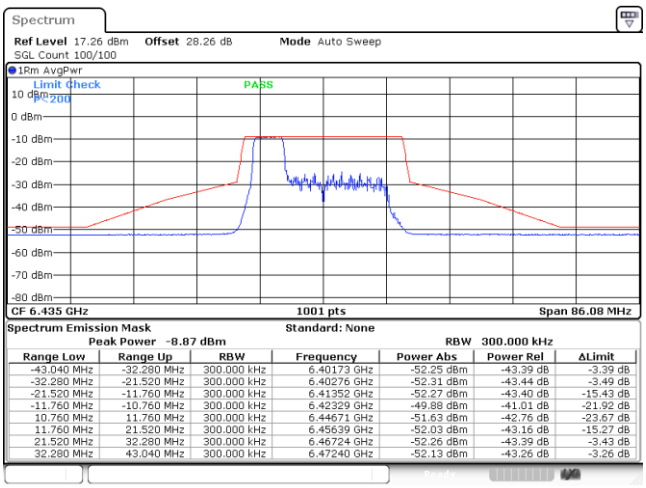
Plot on Channel 6435 MHz



Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-43.040 MHz	-32.280 MHz	300.000 kHz	6.40173 GHz	-52.25 dBm	-43.39 dB	-3.39 dB
-32.280 MHz	-21.520 MHz	300.000 kHz	6.40276 GHz	-52.31 dBm	-43.44 dB	-3.49 dB
-21.520 MHz	-11.760 MHz	300.000 kHz	6.41352 GHz	-52.27 dBm	-43.40 dB	-15.43 dB
-11.760 MHz	-10.760 MHz	300.000 kHz	6.42329 GHz	-49.88 dBm	-41.01 dB	-21.92 dB
10.760 MHz	11.760 MHz	300.000 kHz	6.44671 GHz	-51.63 dBm	-42.76 dB	-23.67 dB
11.760 MHz	21.520 MHz	300.000 kHz	6.45639 GHz	-52.03 dBm	-43.16 dB	-15.27 dB
21.520 MHz	32.280 MHz	300.000 kHz	6.46724 GHz	-52.26 dBm	-43.39 dB	-3.43 dB
32.280 MHz	43.040 MHz	300.000 kHz	6.47240 GHz	-52.13 dBm	-43.26 dB	-3.26 dB

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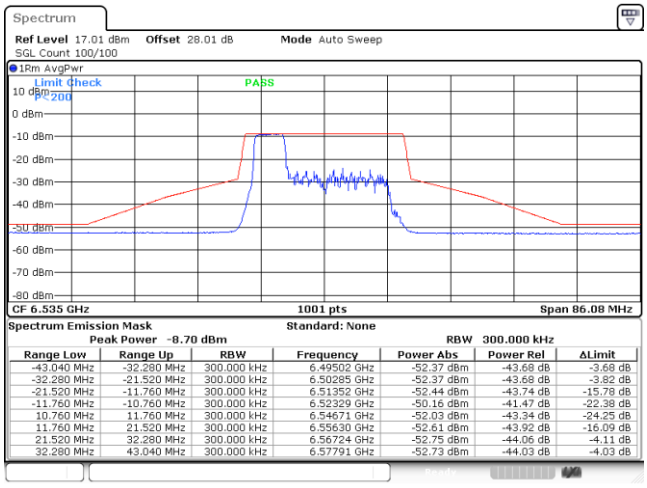
Plot on Channel 6535 MHz



Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-43.040 MHz	-32.280 MHz	300.000 kHz	6.49502 GHz	-52.37 dBm	-43.68 dB	-3.68 dB
-32.280 MHz	-21.520 MHz	300.000 kHz	6.50285 GHz	-52.37 dBm	-43.68 dB	-3.82 dB
-21.520 MHz	-11.760 MHz	300.000 kHz	6.51352 GHz	-52.44 dBm	-43.74 dB	-15.78 dB
-11.760 MHz	-10.760 MHz	300.000 kHz	6.52329 GHz	-50.16 dBm	-41.47 dB	-22.38 dB
10.760 MHz	11.760 MHz	300.000 kHz	6.54671 GHz	-52.03 dBm	-43.34 dB	-24.25 dB
11.760 MHz	21.520 MHz	300.000 kHz	6.55630 GHz	-52.61 dBm	-43.92 dB	-16.09 dB
21.520 MHz	32.280 MHz	300.000 kHz	6.56724 GHz	-52.75 dBm	-44.06 dB	-4.11 dB
32.280 MHz	43.040 MHz	300.000 kHz	6.57791 GHz	-52.73 dBm	-44.03 dB	-4.03 dB

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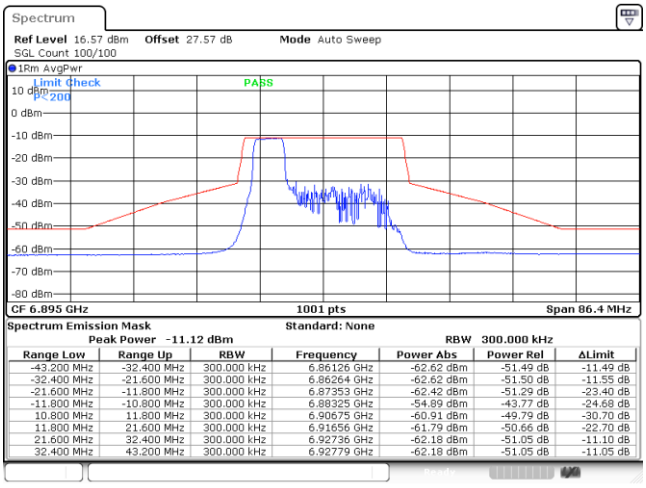
Plot on Channel 6895 MHz

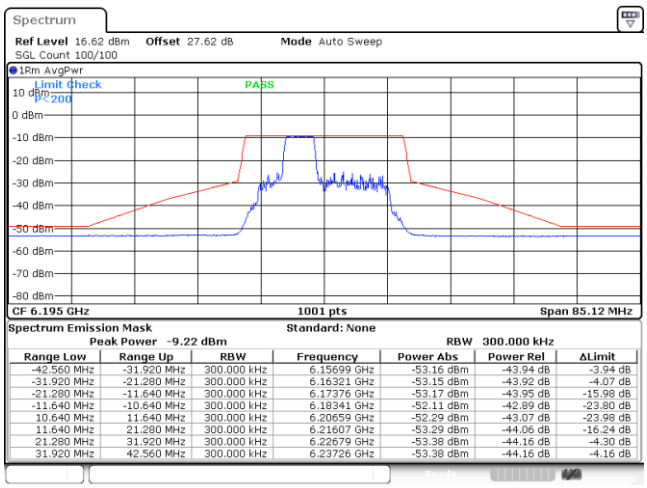


Range Low	Range Up	RBW	Frequency	Power Abs	Power Rel	ΔLimit
-43.200 MHz	-32.400 MHz	300.000 kHz	6.86126 GHz	-62.62 dBm	-51.49 dB	-11.49 dB
-32.400 MHz	-21.600 MHz	300.000 kHz	6.86264 GHz	-62.62 dBm	-51.50 dB	-11.55 dB
-21.600 MHz	-11.800 MHz	300.000 kHz	6.87353 GHz	-62.42 dBm	-51.29 dB	-23.40 dB
-11.800 MHz	-10.800 MHz	300.000 kHz	6.88325 GHz	-54.89 dBm	-43.77 dB	-24.68 dB
10.800 MHz	11.800 MHz	300.000 kHz	6.90675 GHz	-60.91 dBm	-49.79 dB	-30.70 dB
11.800 MHz	21.600 MHz	300.000 kHz	6.91656 GHz	-61.79 dBm	-50.66 dB	-22.70 dB
21.600 MHz	32.400 MHz	300.000 kHz	6.92736 GHz	-62.18 dBm	-51.05 dB	-11.10 dB
32.400 MHz	43.200 MHz	300.000 kHz	6.92779 GHz	-62.18 dBm	-51.05 dB	-11.05 dB

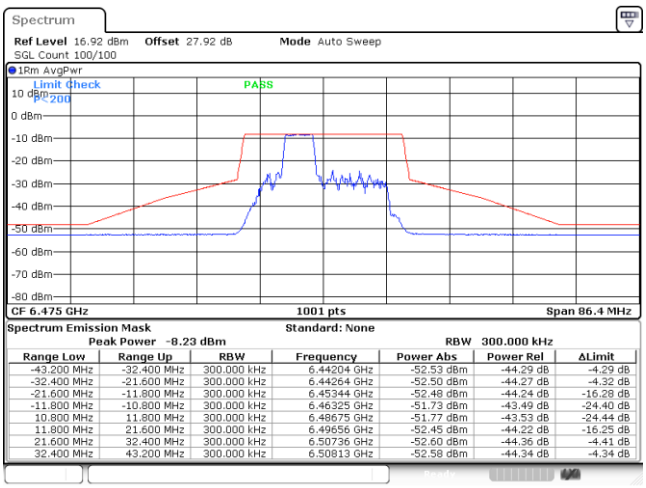
Date: 4.DEC.2023 23:05:54

EUT Mode	802.11ax HE20 52RU38

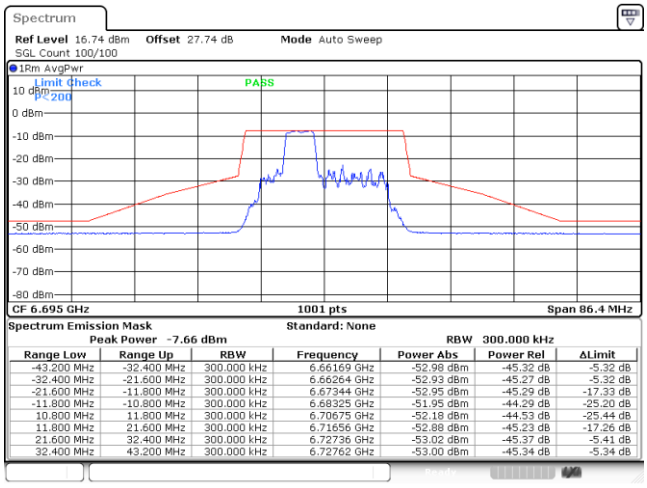
Plot on Channel 6195 MHz



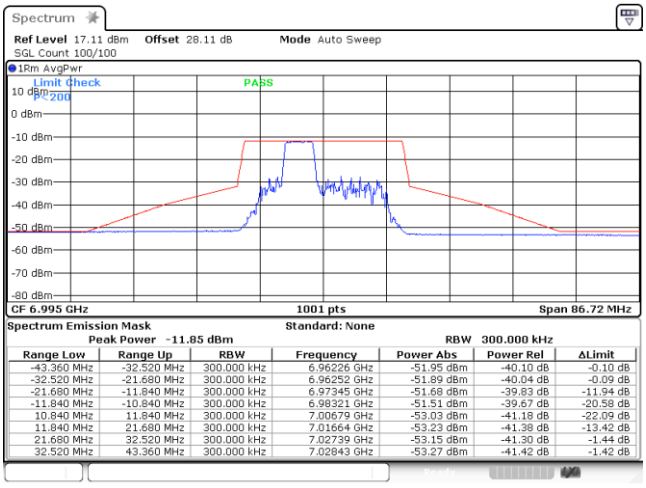
Plot on Channel 6475 MHz



Plot on Channel 6695 MHz

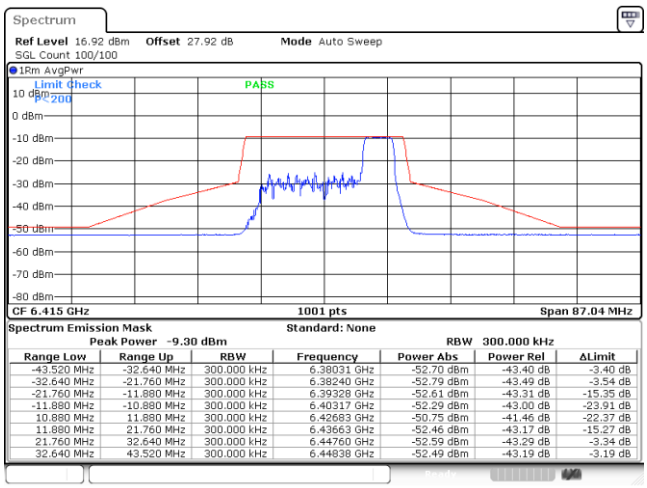


Plot on Channel 6995 MHz

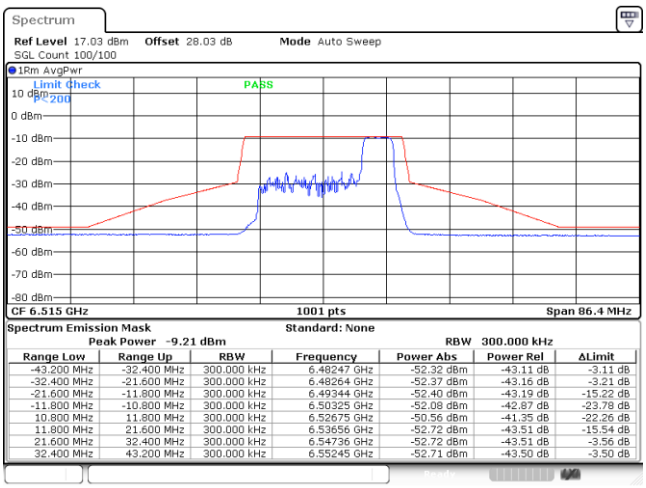


EUT Mode	802.11ax HE20 52RU40

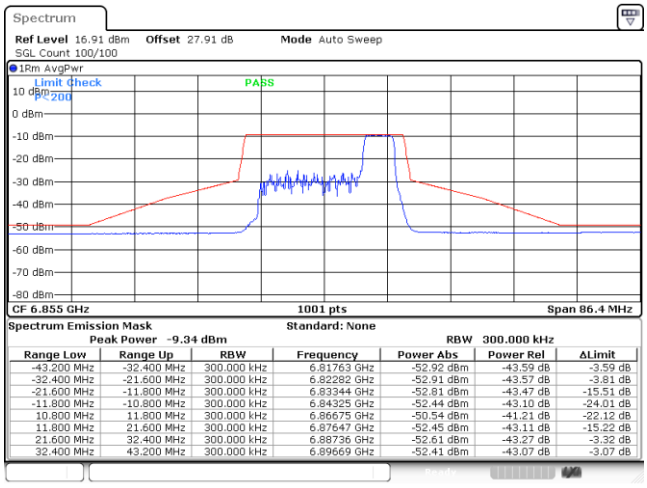
Plot on Channel 6415 MHz



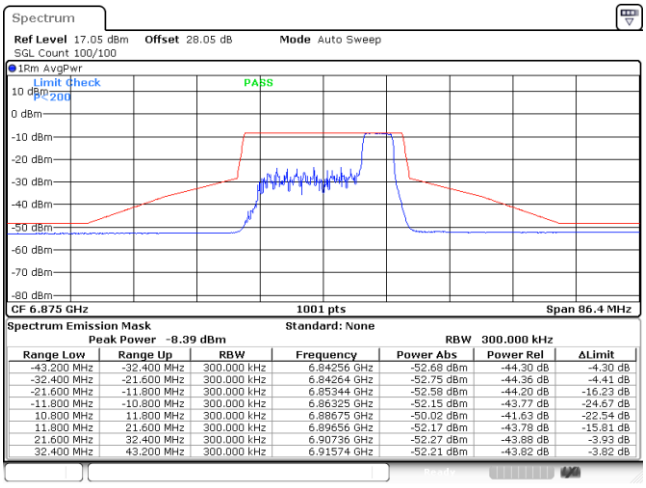
Plot on Channel 6515 MHz



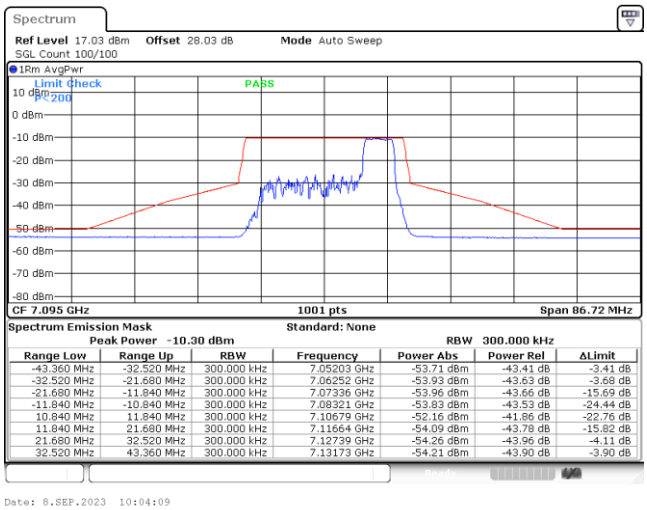
Plot on Channel 6855 MHz



Plot on Channel 6875 MHz

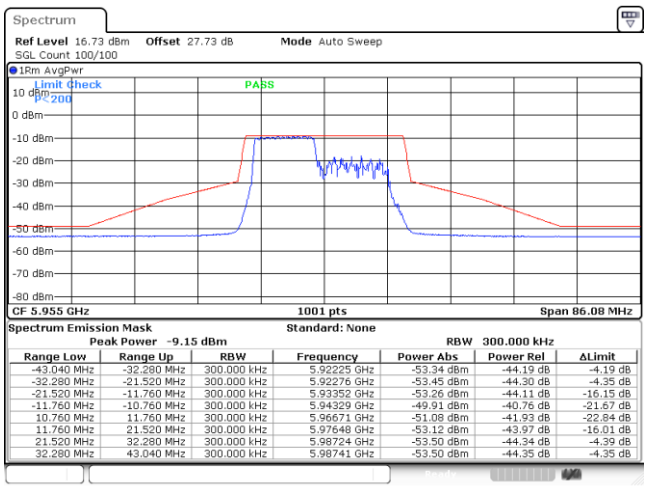


Plot on Channel 7095 MHz

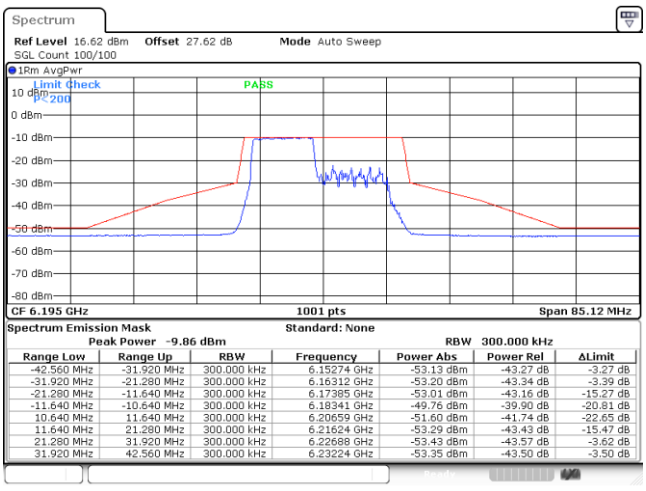


EUT Mode	802.11ax HE20 106RU53

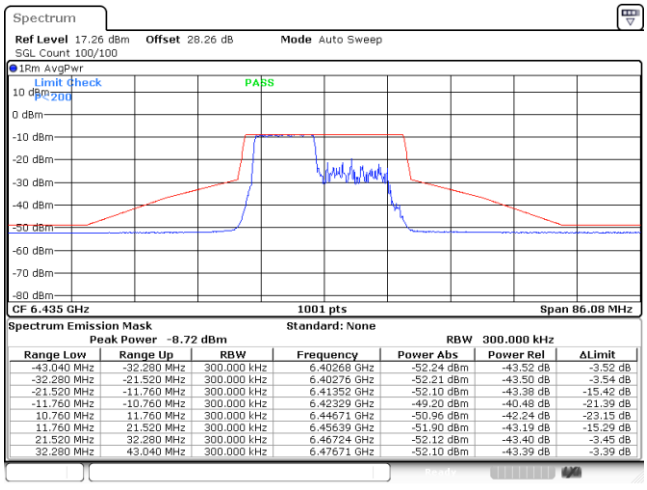
Plot on Channel 5955 MHz



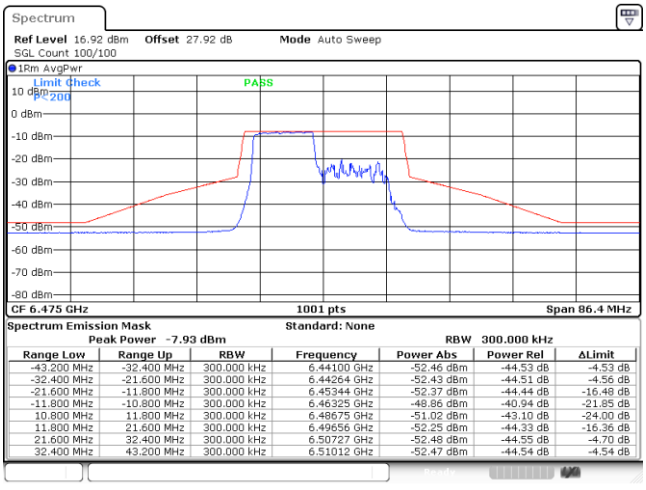
Plot on Channel 6195 MHz



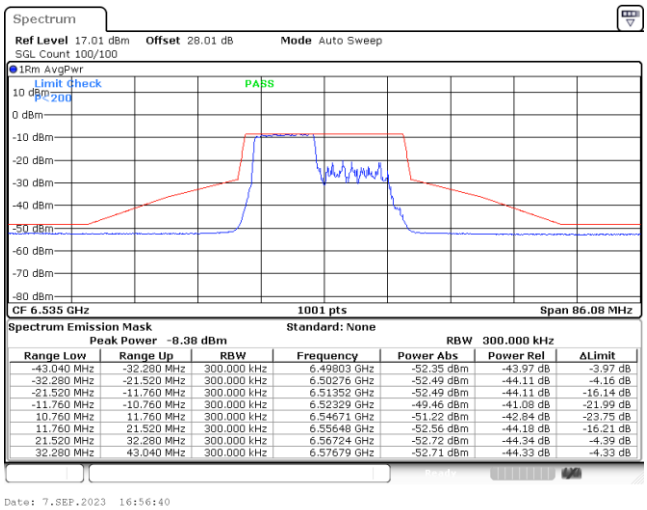
Plot on Channel 6435 MHz



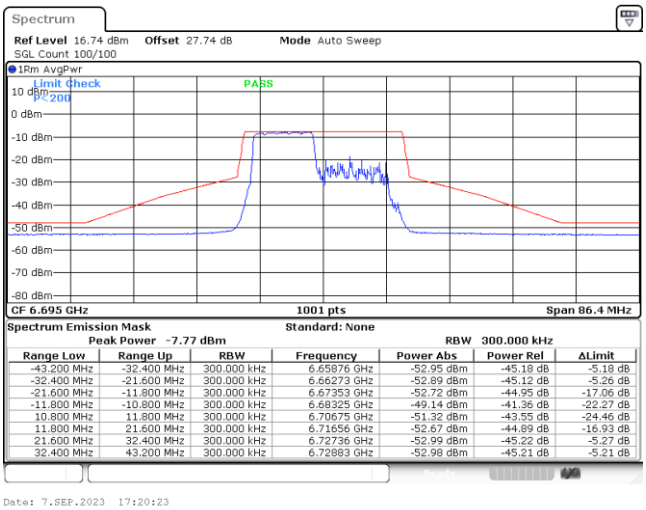
Plot on Channel 6475 MHz



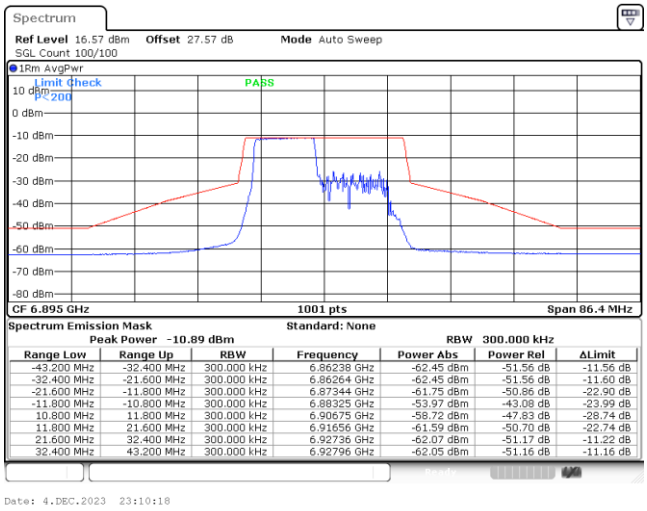
Plot on Channel 6535 MHz



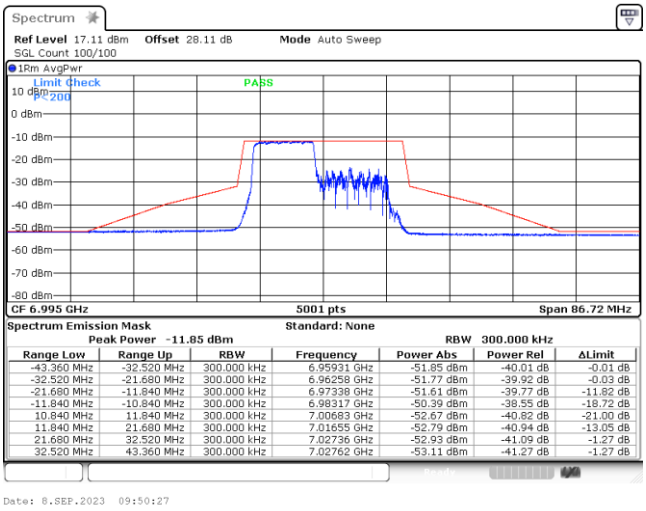
Plot on Channel 6695 MHz



Plot on Channel 6895 MHz

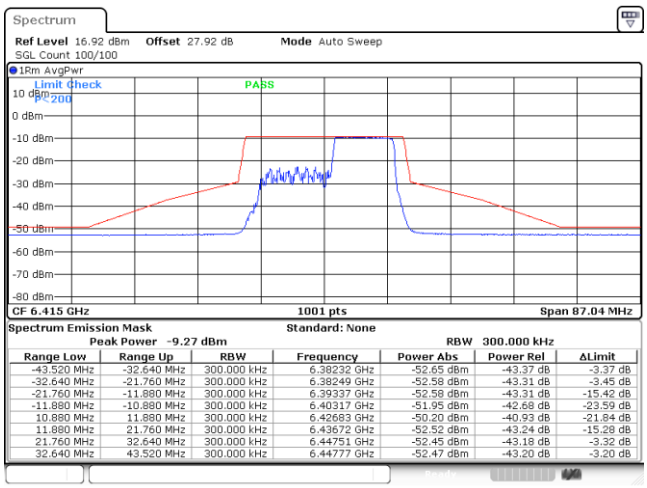


Plot on Channel 6995 MHz

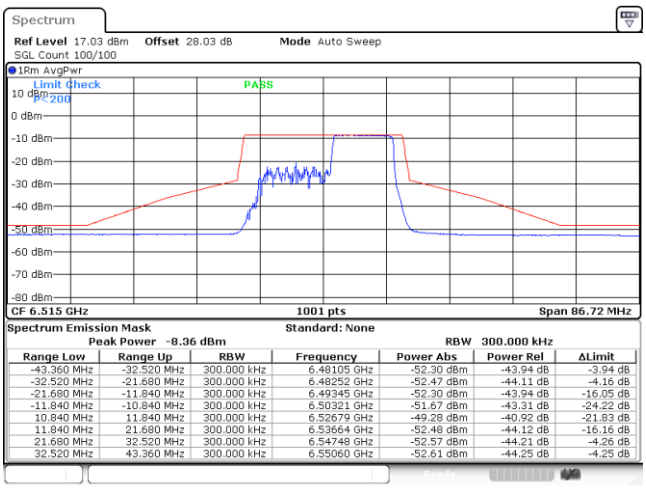


EUT Mode	802.11ax HE20 106RU54

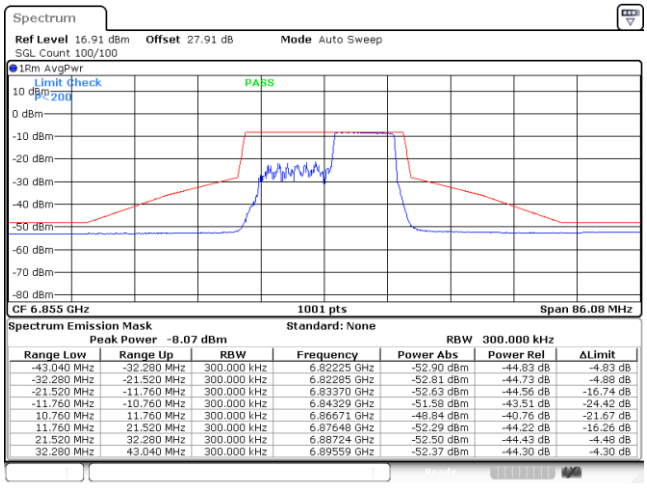
Plot on Channel 6415 MHz



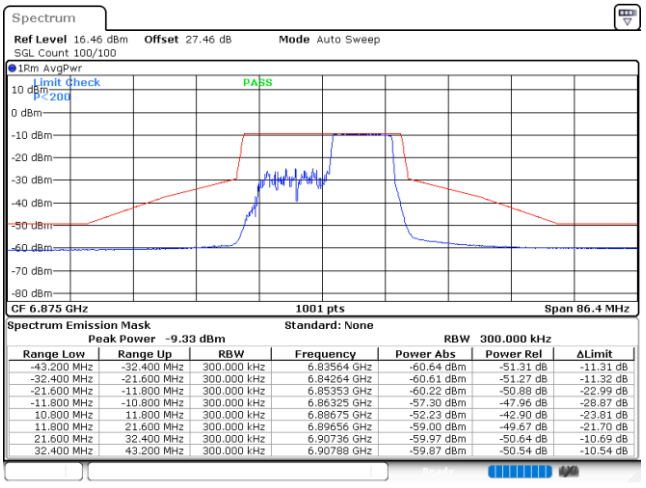
Plot on Channel 6515 MHz



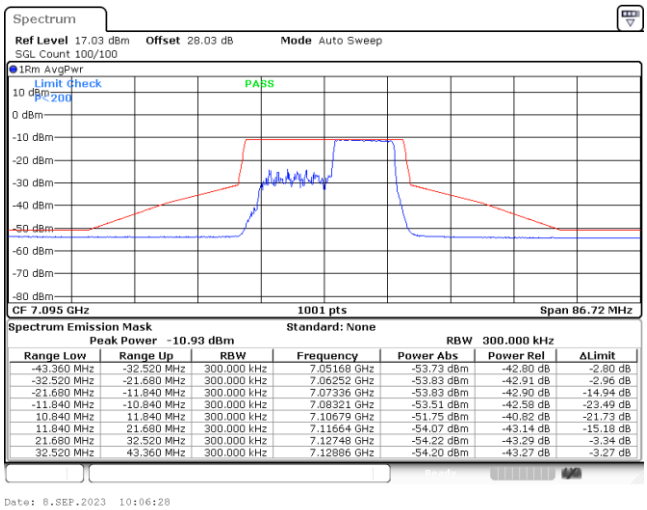
Plot on Channel 6855 MHz



Plot on Channel 6875 MHz

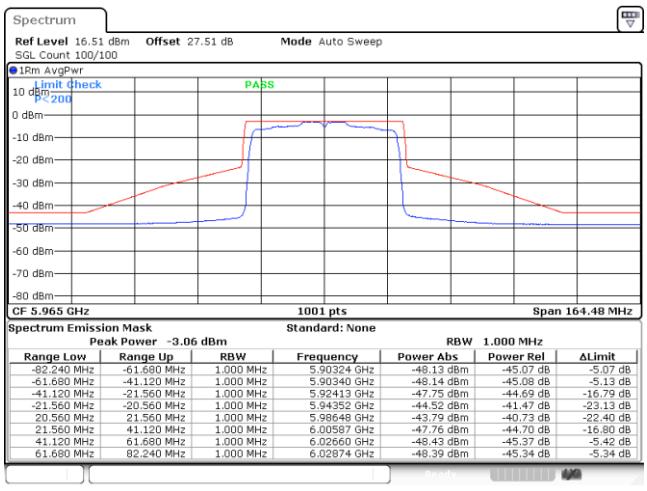


Plot on Channel 7095 MHz

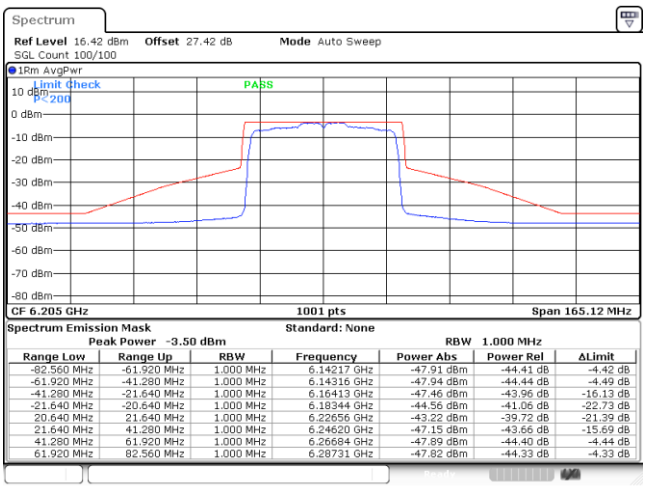


EUT Mode	802.11ax HE40 Full RU

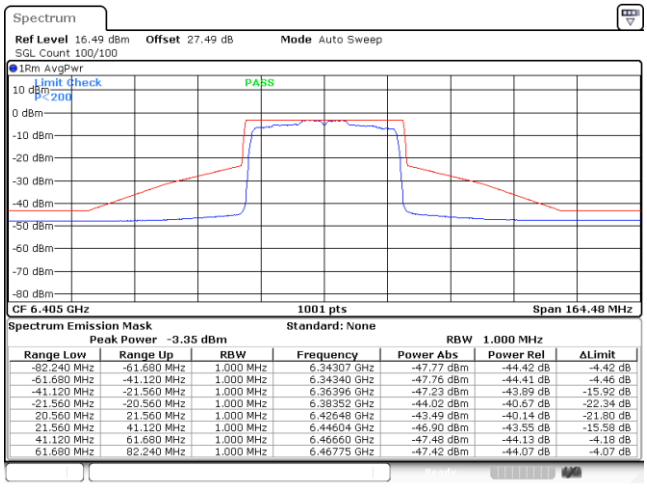
Plot on Channel 5965 MHz



Plot on Channel 6205 MHz



Plot on Channel 6405 MHz



Plot on Channel 6445 MHz