



FCC RADIO TEST REPORT

FCC ID : A4RGTF7P
Equipment : Phone
Model Name : GTF7P, G3Y12
Applicant : Google LLC
1600 Amphitheatre Parkway,
Mountain View, California, 94043 USA
Standard : FCC Part 15 Subpart E §15.407

The product was received on May 23, 2024 and testing was performed from May 23, 2024 to Oct. 04, 2024. 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.

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR451607H	01	Initial issue of report.	Nov. 01, 2024



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	Pass	-
3.2	15.407(a)(7)	Fundamental Maximum EIRP	Pass	-
3.3	15.407(a)(7)	Fundamental Power Spectral Density	Pass	-
3.4	15.407(b)(6)	In-Band Emissions (Channel Mask)	Pass	-
-	15.407(d)(6)	Contention Based Protocol	Pass	See Note
3.5	15.407 KDB 987594 D02 Section II. L.	Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point(APC)	Pass	-
3.6	15.407 KDB 987594 D02 Section II. K.	Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP	Pass	-
3.5	15.407(b)	Unwanted Emissions	Pass	1.89 dB under the limit at 5924.71 and 5924.32 MHz
3.8	15.207	AC Conducted Emission	Pass	13.60 dB under the limit at 0.15 MHz
3.9	15.203 15.407(a)	Antenna Requirement	Pass	-

Note: The receiver circuitry is the same for the CBP mechanism so testing can be performed once based on LPI report to show compliance

**Conformity Assessment Condition:**

1. ECR inquiry for data referencing from A4RGXQ96 has been approved by FCC. The ECR inquiry and the associated document are submitted in the confidential exhibit.
2. A4RGTF7P is different from FCC ID: A4RGXQ96 (Reference model), in the following:
 - The only difference between A4RGXQ96 and A4RGTF7P are the WWAN support bands, which is controlled by software.
3. All the test results are referenced from A4RGXQ96 (Sporton Test Report FR451606H), and spot check results to justify data referencing is presented in the Appendix E.
4. 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/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
5. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

1. 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.
2. The GTF7P and G3Y12 are 100% identical in Hardware / Software to each other, and only have different model names for marketing segmentation.

Reviewed by: William Chen**Report Producer: Ming Chen**



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 802.11ax, NFC, WPC Rx and GNSS.
Antenna Type WLAN: <Ant. 4>: IFA Antenna <Ant. 3>: IFA Antenna

Remark: The EUT's information above is declared by manufacturer.

EUT Information List	
S/N	Performed Test Item
46181JEBF10528	RF Conducted Measurement
46181JEBF10894	Radiated Spurious Emission
44291JEBF05116	Conducted Emission

Antenna information		
5925 MHz ~ 6425 MHz	Peak Gain (dBi)	Ant. 4: -1.8 Ant. 3: -4.9
6525 MHz ~ 6875 MHz	Peak Gain (dBi)	Ant. 4: -0.9 Ant. 3: -2.6

Antenna information for Directional Gain		
5925 MHz ~ 6425 MHz	Peak Gain (dBi)	<6G_Ant4 + 6G_Ant3> Correlated: -2.83 Uncorrelated: -1.80
6525 MHz ~ 6875 MHz	Peak Gain (dBi)	<6G_Ant4 + 6G_Ant3> Correlated: -0.33 Uncorrelated: -0.90

Remark:

1. The correlated antenna gain is provided by the MIMO antenna report using KDB 662911 D01 from manufacturer.
2. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.



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. CO07-HY (TAF Code: 1190)
Remark	The Conducted Emission, Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point(APC) and Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP test items 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, 03CH12-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 Z 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	117			121			125	
	Freq. (MHz)	6535			6555			6575	
BW 40M	Channel	-				123			
	Freq. (MHz)	-				6565			

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
	Freq. (MHz)	6755	6775	6795	6815	6835	6855
BW 40M	Channel	163		171		179	
	Freq. (MHz)	6765		6805		6845	
BW 80M	Channel	167					
	Freq. (MHz)	6785					

2.2 Test Mode

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

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 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 : LTE Band 26 Idle + WLAN (6GHz) Link + Bluetooth Link + USB Cable 1 (Charging from Adapter) + Recording mode; Battery < 50% + Rear Camera
Remark: - For Radiated Test Cases, the tests were performed with USB Cable 1. - During the preliminary test, both charging modes (Adapter mode and WPC Rx mode) were verified. It is determined that the adaptor mode is the worst case for official test.	



Ch. #		UNII-5 (5925-6425 MHz)	UNII-7 (6525-6875 MHz)
		802.11a	802.11a
L	Low	001	117
M	Middle	049	149
H	High	093	181

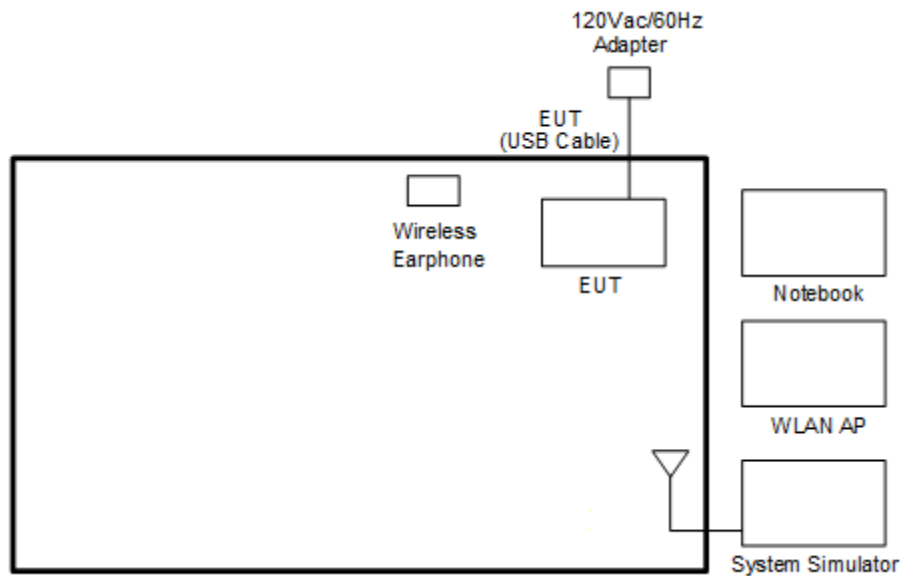
Ch. #		UNII-5 (5925-6425 MHz)		
		802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	001	003	007
M	Middle	049	051	055
H	High	093	091	087

Ch. #		UNII-7 (6525-6875 MHz)		
		802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	117	123	135
M	Middle	149	147	151
H	High	181	179	167

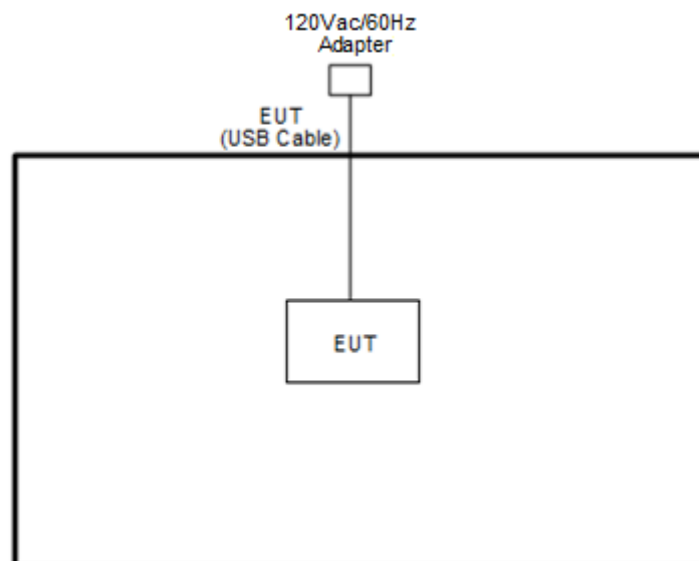
Remark: Based on ANSI C63.10 clause 5.6.2.2, b) Spurious emissions, measure the mode with the highest output power and the mode with highest output power spectral density for each modulation family.

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.	WLAN AP	ASUS	GT-AXE11000	FCC DoC	N/A	Unshielded,1.8m
3.	Notebook	Dell	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Wireless Earphone	Google	G1007/G1008	A4RG1007/ A4RG1008	N/A	N/A
5.	Adapter	N/A	GW8L7	N/A	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “Cmd Version 1.0.32” 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).

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$

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.

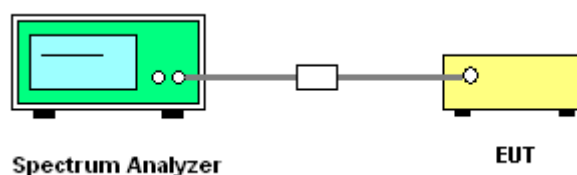
3.1.2 Measuring Instruments

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) $\geq 3 * RBW$.
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.

3.2 Fundamental Maximum EIRP Measurement

3.2.1 Limit of Fundamental Maximum EIRP

<FCC 14-30 CFR 15.407>

(a)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access

point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm and the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.

3.2.2 Measuring Instruments

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

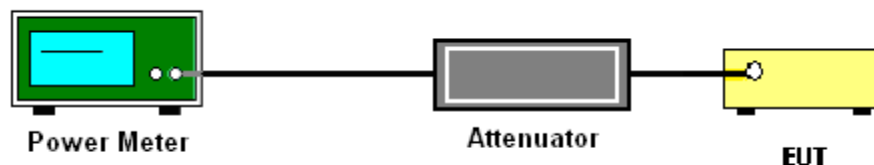
3.2.3 Test Procedures

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)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 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

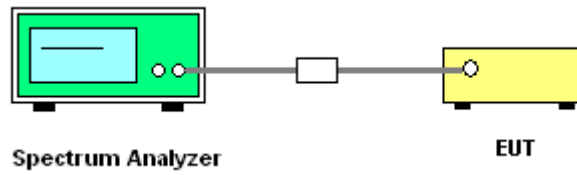
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 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.



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.

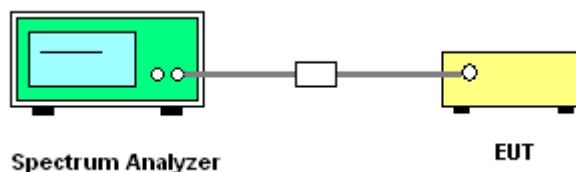
3.4.3 Test Procedures

The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v02r01.

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 $\geq 3 \times$ RBW
 - d) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$.
 - 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 of In-Band Emissions (Channel Mask)

Please refer to Appendix A.



3.5 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point (APC)

3.5.1 Limit of Standard Client Proper Power Adjustment

15.407 KDB 987594 D02 Section II. L. Power limits for standard client devices

c) The maximum power limits shall remain at least 6 dB below the power levels authorized for the associated standard-power access point

3.5.2 Test Procedures of Standard Client Proper Power Adjustment

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v3.

Section L. Proper Power Adjustment

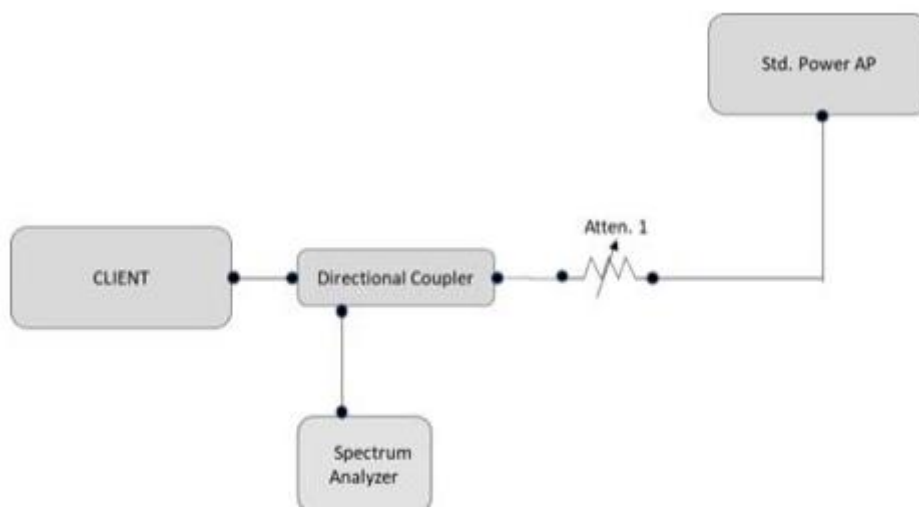
3.5.3 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point

A client device that connects to a Standard Power AP must limit its power to a minimum of 6 dB lower than its associated Standard Power access point's authorized transmit power. The term "authorized" means the AFC-approved power level for the AP to use on a particular channel.

Test procedure to show that the client device can lower its power accordingly.

3.5.4 Test Procedure:

1. Connect equipment as shown in Figure 7 below.
2. Adjust Atten 1 to Std Power AP so as to facilitate error free communication with the Client but protect the Client receiver from overload or damage.
3. Configure the Client and AP so that they associate and start sending data (stream data). The AP should be configured such that its registered power is 36 dBm EIRP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Use this power, along with its antenna gain, to calculate the Client EIRP.
6. The Client EIRP should be minimally 6 dB lower than that of the AP.
7. Repeat Steps 2 through 5 at two other selected measurement points – the first at the midpoint and the second at the lowest rated power of the client as declared by the manufacturer.


Figure 7. Test setup for conducted testing

3.5.5 Test Result Summary

Companion Standard Power AP: Brand name: Broadcom, Model name: RT-BE96U

802.11ax 20MHz bandwidth

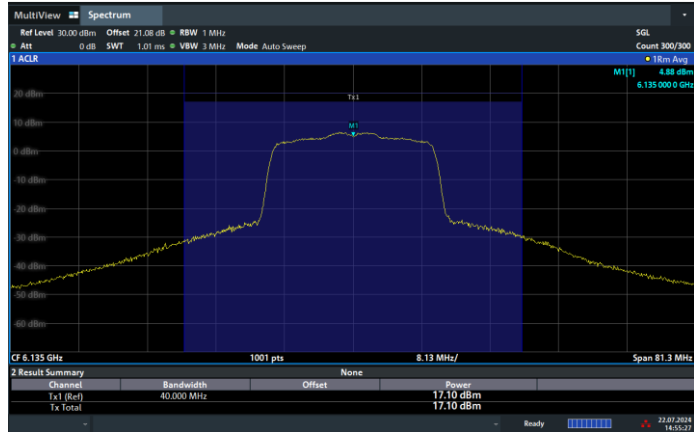
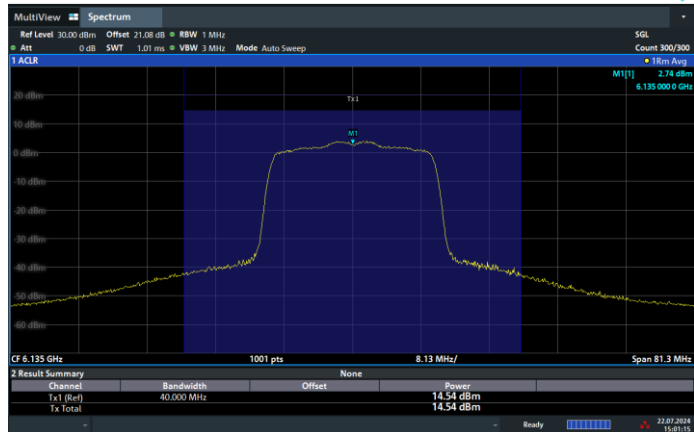
Test channel 37

	Client single conducted Power (dBm)	Client EIRP (dBm)	AP EIRP (dBm)	AP to client EIRP Delta (dB)
Maximum EIRP	17.10	18.30	36.00	17.7
Midpoint EIRP	14.54	15.74	24.00	8.26
Lowest EIRP	12.21	14.41	21.00	6.59
Requirement				At least 6 dB
Result				Pass

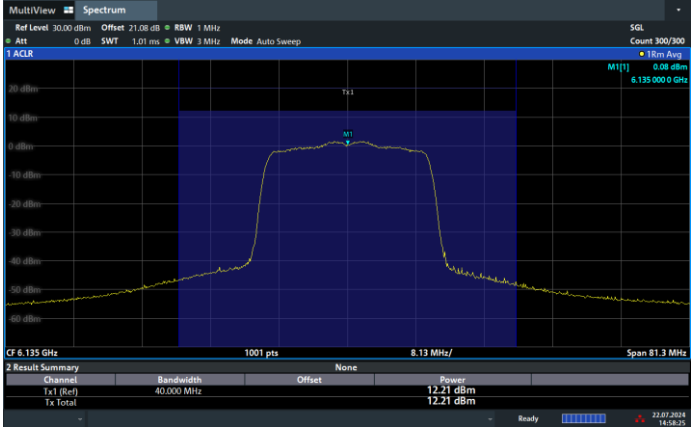
Note: Client EIRP = Client single conducted power + MIMO Factor 3dBr + antenna gain -1.8dBi



3.5.6 Test Result Plot

AP EIRP 36dBm	Measured highest power Client single conducted power 17.10dBm
Center-ch EIRPc PSDf Example chanspec 37 / 0x25 +36.00 +23.00 0x5025 : 6g37	 14:55:27 22.07.2024
AP EIRP 24dBm	Measured mid-point power Client single conducted power 14.54dBm
Center-ch EIRPc PSDf Example chanspec 37 / 0x25 +24.00 +11.00 0x5025 : 6g37	 15:01:15 22.07.2024



AP EIRP 21dBm	Measured lowest power Client single conducted power 12.21dBm
Center-ch EIRPc PSDf Example chanspec 37 / 0x25 +21.00 +8.00 0x5025 : 6g37	



3.6 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

3.6.1 Limit of Proper Power Adjustment

15.407 KDB 987594 D02 Section II. K. Power limits for standard client devices

A client device may connect to a Standard Power AP with a maximum power level of 30 dBm EIRP. A client may also connect to a Low Power indoor AP, but the power level is limited to a maximum of 24 dBm EIRP.

3.6.2 Test Procedures of Standard Client Proper Power Adjustment

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v03.

Section K. Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

3.6.3 Test Procedure:

1. Connect equipment as shown in Figure 6 below..
2. Adjust Atten 2 to Std Power AP so as to facilitate error free communication with the Client (Atten 1 should be set to High on the RF path to the Low Power AP)
3. Configure the Client and APs so that they associate and start sending data (stream data). It is important that the client is configured to transmit at its highest power level. Initially, because the attenuation on Atten 1 is set high, the Client will only associate with the Std Power AP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Gradually increase Atten 2 while at the same time decreasing Atten 1. This simulates the Client moving from outdoors to indoors. At some level of attenuation the Client should associate with the Low Power indoor AP.
6. Verify transmission between Client and Low Power AP.
7. Measure the RF power of the Client device using the same method as in step 4. Verify the power is no more than 24 dBm EIRP

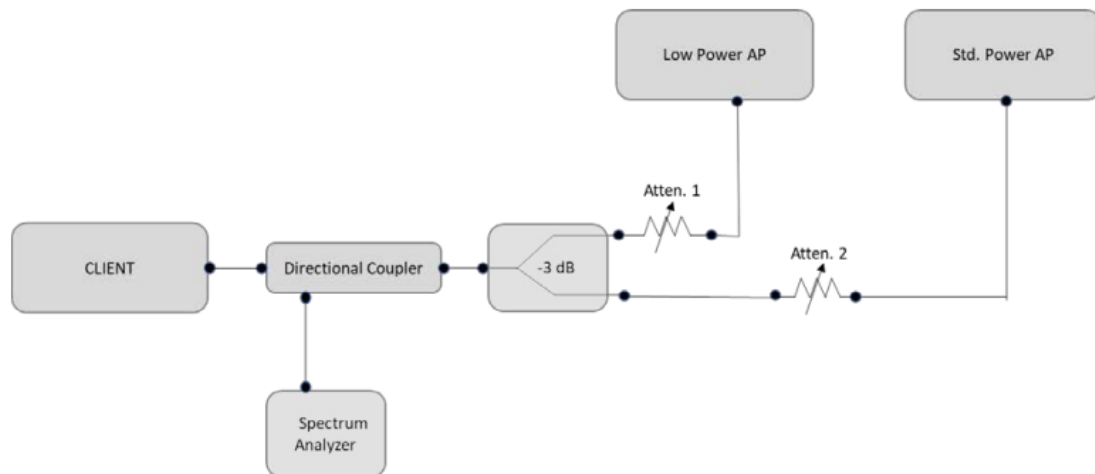


Figure 6. Test setup for conducted testing

3.6.4 Test Result Summary

Companion Standard Power AP: Brand name: Broadcom, Model name: RT-BE96U

Companion Indoor Power AP: Brand name: Broadcom, Model name: RT-BE96U

802.11ax 20MHz bandwidth

Test channel 37

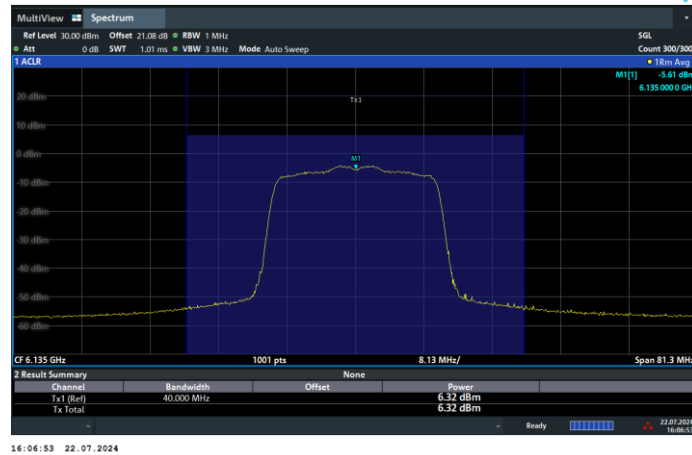
	Client single conducted Power (dBm)	Client EIRP (dBm)	Limit EIRP (dBm)	Result
Indoor EIRP	6.32	7.52	24	Pass
Standard EIRP	17.10	18.30	30	Pass

Note: Client EIRP = Client single conducted power + MIMO Factor 3dB + antenna gain -1.8dBi

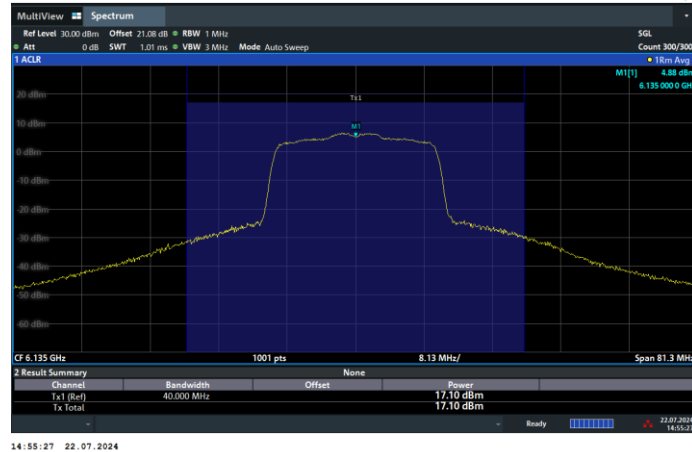


3.6.5 Test Result Plot

Measured Indoor power
Client single conducted power
6.32dBm



Measured Standard power
Client single conducted power
17.10dBm



3.7 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.7.1 Limit of Unwanted Emissions

- (1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz.

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27 (RMS)	68.3
- 7 (Peak)	88.3

According 987594 D02 U-NII 6GHz EMC Measurement v02r01 section G:

Unwanted emissions outside of restricted bands are measured with a RMS detector.

In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

3.7.2 Measuring Instruments

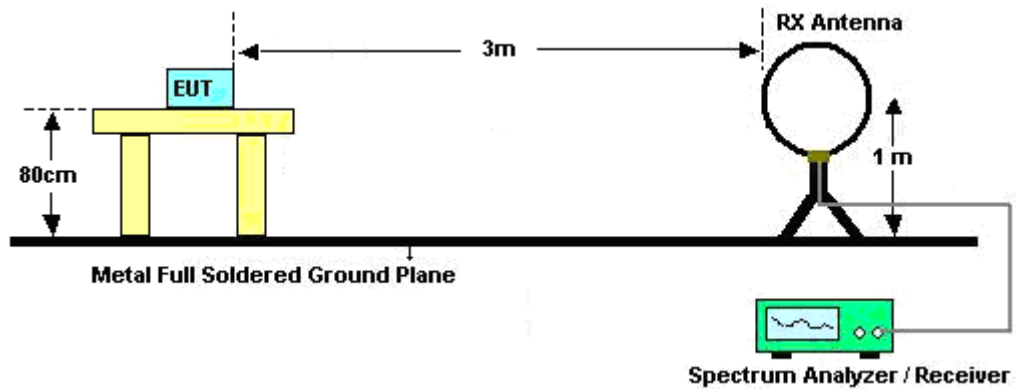
Please refer to the measuring equipment list in this test report.

3.7.3 Test Procedures

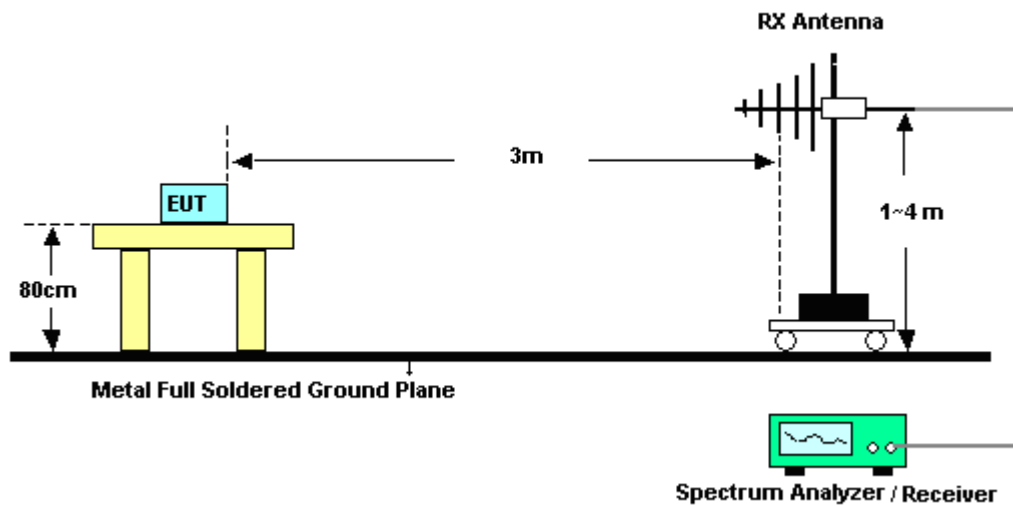
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT is set 3 meters away from the receiving antenna which is mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT is arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.

3.7.4 Test Setup

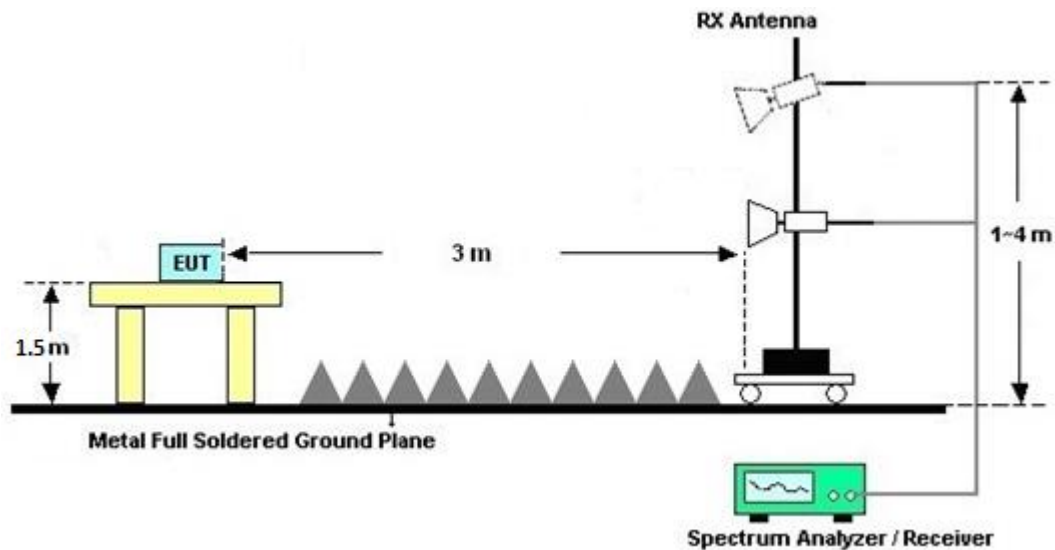
For radiated emissions below 30MHz



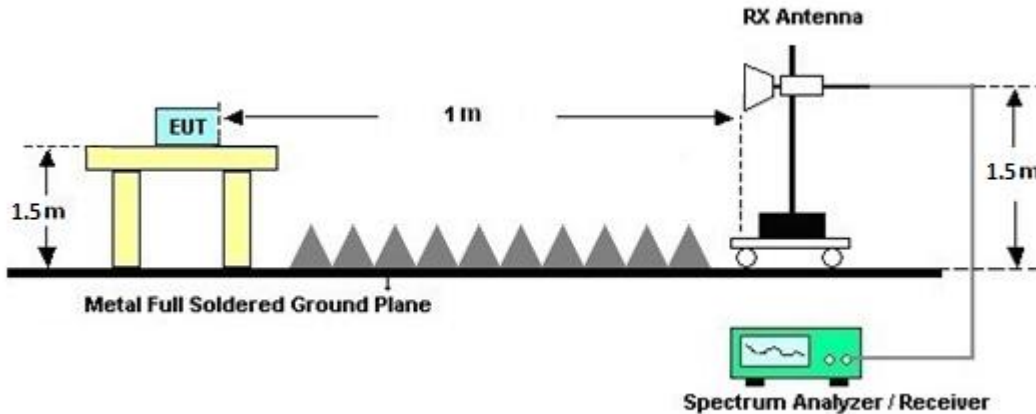
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.7.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.7.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.7.7 Duty Cycle

Please refer to Appendix D.

3.7.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.8 AC Conducted Emission Measurement

3.8.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

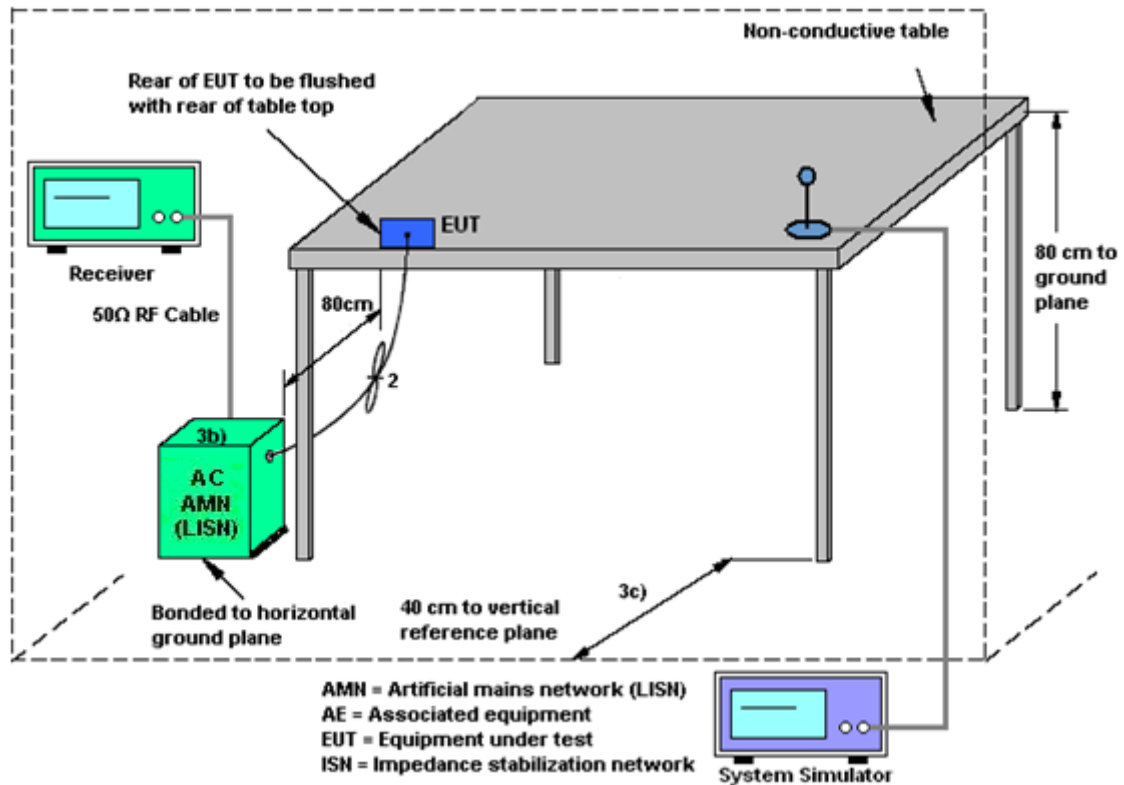
3.8.2 Measuring Instruments

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

3.8.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.8.4 Test Setup



3.8.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.9 Antenna Requirements

3.9.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.9.2 Antenna Anti-Replacement Construction

- b) Unique (non-standard) antenna connector.
- (3) Use of a standard connector is also allowed if the connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter, where such disassembly is not normally required. The user manual must not show that user has access to the connector.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 07, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Aug. 07, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 26, 2023	Aug. 07, 2024	Oct. 25, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 22, 2023	Aug. 07, 2024	Nov. 21, 2024	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Aug. 07, 2024	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 30, 2024	Aug. 07, 2024	Jul. 29, 2025	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 28, 2023	Aug. 07, 2024	Dec. 27, 2024	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9kHz~30MHz	Feb. 23, 2024	Jul. 11, 2024~Sep. 06, 2024	Feb. 22, 2025	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Nov. 03, 2023	Jul. 11, 2024~Sep. 06, 2024	Nov. 02, 2024	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02114	1GHz~18GHz	Jul. 11, 2024	Jul. 11, 2024~Sep. 06, 2024	Jul. 10, 2025	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz~40GHz	Nov. 24, 2023	Jul. 11, 2024~Sep. 06, 2024	Nov. 23, 2024	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 20, 2024	Jul. 11, 2024~Sep. 06, 2024	Mar. 19, 2025	Radiation (03CH12-HY)
Preamplifier	Agilent	8449B	3008A02375	1GHz~26.5GHz	May 22, 2024	Jul. 11, 2024~Sep. 06, 2024	May 21, 2025	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18G-56-01-A70	EC1900249	1GHz~18GHz	Dec. 20, 2023	Jul. 11, 2024~Sep. 06, 2024	Dec. 19, 2024	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 07, 2023	Jul. 11, 2024~Sep. 06, 2024	Dec. 06, 2024	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Jan. 10, 2024	Jul. 11, 2024~Aug. 08, 2024	Jan. 09, 2025	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Aug. 09, 2024	Aug. 09, 2024~Sep. 06, 2024	Aug. 08, 2025	Radiation (03CH12-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Aug. 29, 2023	Jul. 11, 2024~Aug. 27, 2024	Aug. 28, 2024	Radiation (03CH12-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290045	20Hz~8.4GHz	Apr. 17, 2024	Aug. 28, 2024~Sep. 06, 2024	Apr. 16, 2025	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12SS	SN2	1.2GHz Low Pass Filter	Mar. 13, 2024	Jul. 11, 2024~Sep. 06, 2024	Mar. 12, 2025	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 13, 2024	Jul. 11, 2024~Sep. 06, 2024	Mar. 12, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WRCQV14-5425-5825-6525-6925-60SS	SN1	N/A	Jan. 05, 2024	Jul. 11, 2024~Sep. 06, 2024	Jan. 04, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WRCQV14-6025-6425-7125-7525-60SS	SN2	N/A	Jan. 05, 2024	Jul. 11, 2024~Sep. 06, 2024	Jan. 04, 2025	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Jul. 11, 2024~Sep. 06, 2024	Mar. 05, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 18, 2023	Jul. 11, 2024~Sep. 06, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 18, 2023	Jul. 11, 2024~Sep. 06, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Dec. 18, 2023	Jul. 11, 2024~Sep. 06, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP210117	N/A	Oct. 19, 2023	Jul. 11, 2024~Sep. 06, 2024	Oct. 18, 2024	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 11, 2024~Sep. 06, 2024	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jul. 11, 2024~Sep. 06, 2024	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jul. 11, 2024~Sep. 06, 2024	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Jul. 11, 2024~Sep. 06, 2024	N/A	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	May 23, 2024~Oct. 04, 2024	Nov. 06, 2024	Conducted (TH05-HY)
USB Power Sensor	DARE	RPR3008W	RPR8W-2301001(NO:146)	10MHz~8GHz	Jan. 29, 2024	May 23, 2024~Oct. 04, 2024	Jan. 28, 2025	Conducted (TH05-HY)
Switch Box & RF Cable	E-Instument	ETF-058	EC1208382 (BOX1)	N/A	Apr. 01, 2024	May 23, 2024~Oct. 04, 2024	Mar. 31, 2025	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_version1.0	N/A	N/A	N/A	May 23, 2024~Oct. 04, 2024	N/A	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101565	10Hz~40GHz	Dec. 19, 2023	May 23, 2024~Oct. 04, 2024	Dec. 18, 2024	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV3013	101549	10Hz~13.6GHz	Jan. 30, 2024	Jul. 22, 2024	Jan. 29, 2025	AFC (DF02-HY)

5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.50 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.10 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.30 dB
--	---------

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.80 dB
--	---------

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.30 dB
--	---------

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2024/05/23~2024/10/04	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

U-NII-5 MIMO										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		Emission Bandwidth Limit (MHz)	Pass /Fail
					Ant 4	Ant 3	Ant 4	Ant 3		
11a	6Mbps	2	001	5955	29.17	28.07	43.22	47.13	320.00	Pass
11a	6Mbps	2	049	6195	28.27	28.62	43.08	42.67	320.00	Pass
11a	6Mbps	2	093	6415	27.77	28.62	45.48	47.41	320.00	Pass

TEST RESULTS DATA
EIRP Power Table

U-NII-5 MIMO												
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 4	Ant 3	SUM	Ant 4	Ant 3			
11a	6Mbps	2	001	5955	17.45	17.20	20.34	-1.80		18.54	30.00	Pass
11a	6Mbps	2	049	6195	18.85	18.50	21.69	-1.80		19.89	30.00	Pass
11a	6Mbps	2	093	6415	18.85	18.00	21.46	-1.80		19.66	30.00	Pass

TEST RESULTS DATA
EIRP Power Spectral Density

U-NII-5 MIMO														
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			DG (dBi)		EIRP Power Density (dBm/MHz)	EIRP Power Density Limit (dBm/MHz)	Pass /Fail
					Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
11a	6Mbps	2	001	5955	0.28	0.29			9.06	-2.83	6.23	17.00	Pass	
11a	6Mbps	2	049	6195	0.28	0.29			10.41	-2.83	7.58	17.00	Pass	
11a	6Mbps	2	093	6415	0.28	0.29			10.16	-2.83	7.33	17.00	Pass	

TEST RESULTS DATA
26dB and 99% OBW

U-NII-7 MIMO										
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		Emission Bandwidth Limit (MHz)	Pass /Fail
					Ant 4	Ant 3	Ant 4	Ant 3		
11a	6Mbps	2	117	6535	27.32	29.72	49.62	49.34	320.00	Pass
11a	6Mbps	2	149	6695	27.32	29.72	49.54	48.91	320.00	Pass
11a	6Mbps	2	181	6855	26.77	29.67	49.12	49.08	320.00	Pass

TEST RESULTS DATA
EIRP Power Table

U-NII-7 MIMO												
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 4	Ant 3	SUM	Ant 4	Ant 3			
11a	6Mbps	2	117	6535	18.85	17.87	21.40	-0.90		20.50	30.00	Pass
11a	6Mbps	2	149	6695	18.65	17.77	21.24	-0.90		20.34	30.00	Pass
11a	6Mbps	2	181	6855	17.25	17.67	20.48	-0.90		19.58	30.00	Pass

TEST RESULTS DATA
EIRP Power Spectral Density

U-NII-7 MIMO														
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			DG (dBi)		EIRP Power Density (dBm/MHz)	EIRP Power Density Limit (dBm/MHz)	Pass /Fail
					Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
11a	6Mbps	2	117	6535	0.28	0.29			10.25	-0.33	9.92	17.00	Pass	
11a	6Mbps	2	149	6695	0.28	0.29			9.75	-0.33	9.42	17.00	Pass	
11a	6Mbps	2	181	6855	0.28	0.29			9.04	-0.33	8.71	17.00	Pass	

TEST RESULTS DATA
26dB and 99% OBW

U-NII-5 MIMO											
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		Emission Bandwidth Limit (MHz)	Pass /Fail
						Ant 4	Ant 3	Ant 4	Ant 3		
HE20	MCS0	2	001	5955	Full	22.78	29.02	49.66	49.90	320.00	Pass
HE20	MCS0	2	049	6195	Full	26.47	25.92	46.05	43.35	320.00	Pass
HE20	MCS0	2	093	6415	Full	29.97	29.82	46.46	48.70	320.00	Pass
HE40	MCS0	2	003	5965	Full	45.75	51.95	80.66	88.88	320.00	Pass
HE40	MCS0	2	051	6205	Full	39.76	41.86	78.69	84.03	320.00	Pass
HE40	MCS0	2	091	6405	Full	42.86	50.75	77.95	87.14	320.00	Pass
HE80	MCS0	2	007	5985	Full	77.44	78.04	141.63	144.13	320.00	Pass
HE80	MCS0	2	055	6225	Full	77.56	77.68	146.11	139.39	320.00	Pass
HE80	MCS0	2	087	6385	Full	77.44	78.16	135.30	163.58	320.00	Pass

TEST RESULTS DATA
EIRP Power Table

U-NII-5 MIMO													
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config.	Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
						Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
HE20	MCS0	2	001	5955	Full	17.45	16.90	20.19	-1.80		18.39	30.00	Pass
HE20	MCS0	2	001	5955	26/0	8.85	7.40	11.20	-1.80		9.40	30.00	Pass
HE20	MCS0	2	001	5955	52/37	11.65	10.10	13.95	-1.80		12.15	30.00	Pass
HE20	MCS0	2	001	5955	106/53	14.65	14.20	17.44	-1.80		15.64	30.00	Pass
HE20	MCS0	2	049	6195	Full	18.85	18.50	21.69	-1.80		19.89	30.00	Pass
HE20	MCS0	2	049	6195	26/4	11.95	11.20	14.60	-1.80		12.80	30.00	Pass
HE20	MCS0	2	049	6195	52/38	13.55	13.10	16.34	-1.80		14.54	30.00	Pass
HE20	MCS0	2	049	6195	106/53	16.15	15.90	19.04	-1.80		17.24	30.00	Pass
HE20	MCS0	2	093	6415	Full	18.95	18.00	21.51	-1.80		19.71	30.00	Pass
HE20	MCS0	2	093	6415	26/8	10.35	9.70	13.05	-1.80		11.25	30.00	Pass
HE20	MCS0	2	093	6415	52/40	12.35	12.40	15.39	-1.80		13.59	30.00	Pass
HE20	MCS0	2	093	6415	106/54	15.55	15.70	18.64	-1.80		16.84	30.00	Pass
HE40	MCS0	2	003	5965	Full	15.85	15.10	18.50	-1.80		16.70	30.00	Pass
HE40	MCS0	2	051	6205	Full	18.75	18.40	21.59	-1.80		19.79	30.00	Pass
HE40	MCS0	2	091	6405	Full	18.65	18.30	21.49	-1.80		19.69	30.00	Pass
HE80	MCS0	2	007	5985	Full	14.85	14.90	17.89	-1.80		16.09	30.00	Pass
HE80	MCS0	2	055	6225	Full	18.85	18.50	21.69	-1.80		19.89	30.00	Pass
HE80	MCS0	2	087	6385	Full	18.55	18.20	21.39	-1.80		19.59	30.00	Pass

TEST RESULTS DATA
EIRP Power Spectral Density

U-NII-5 MIMO															
Mod.	Data Rate	N _{rx}	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			DG (dBi)		EIRP Power Density (dBm/MHz)	EIRP Power Density Limit (dBm/MHz)	Pass. /Fail
						Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
HE20	MCS0	2	001	5955	Full	0.40	0.40			8.37	-2.83		5.54	17.00	Pass
HE20	MCS0	2	001	5955	26/0	0.48	0.48			7.84	-2.83		5.01	17.00	Pass
HE20	MCS0	2	001	5955	52/37	0.53	0.53			7.77	-2.83		4.94	17.00	Pass
HE20	MCS0	2	001	5955	106/53	0.58	0.59			8.18	-2.83		5.35	17.00	Pass
HE20	MCS0	2	049	6195	Full	0.40	0.40			9.99	-2.83		7.16	17.00	Pass
HE20	MCS0	2	049	6195	26/4	0.48	0.48			9.98	-2.83		7.15	17.00	Pass
HE20	MCS0	2	049	6195	52/38	0.53	0.53			9.82	-2.83		6.99	17.00	Pass
HE20	MCS0	2	049	6195	106/53	0.58	0.59			9.57	-2.83		6.74	17.00	Pass
HE20	MCS0	2	093	6415	Full	0.40	0.40			9.84	-2.83		7.01	17.00	Pass
HE20	MCS0	2	093	6415	26/8	0.48	0.48			9.76	-2.83		6.93	17.00	Pass
HE20	MCS0	2	093	6415	52/40	0.53	0.53			9.34	-2.83		6.51	17.00	Pass
HE20	MCS0	2	093	6415	106/54	0.58	0.59			9.58	-2.83		6.75	17.00	Pass
HE40	MCS0	2	003	5965	Full	0.40	0.40			4.11	-2.83		1.28	17.00	Pass
HE40	MCS0	2	051	6205	Full	0.40	0.40			7.32	-2.83		4.49	17.00	Pass
HE40	MCS0	2	091	6405	Full	0.40	0.40			6.81	-2.83		3.98	17.00	Pass
HE80	MCS0	2	007	5985	Full	0.54	0.54			0.69	-2.83		-2.14	17.00	Pass
HE80	MCS0	2	055	6225	Full	0.54	0.54		3.95	-2.83		1.12	17.00	Pass	
HE80	MCS0	2	087	6385	Full	0.54	0.54		3.68	-2.83		0.85	17.00	Pass	

TEST RESULTS DATA
26dB and 99% OBW

U-NII-7 MIMO											
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		Emission Bandwidth Limit (MHz)	Pass /Fail
						Ant 4	Ant 3	Ant 4	Ant 3		
HE20	MCS0	2	117	6535	Full	28.42	28.52	47.95	51.00	320.00	Pass
HE20	MCS0	2	149	6695	Full	28.22	28.62	53.46	57.73	320.00	Pass
HE20	MCS0	2	181	6855	Full	29.47	29.87	53.35	53.98	320.00	Pass
HE40	MCS0	2	123	6565	Full	44.66	39.66	87.34	77.86	320.00	Pass
HE40	MCS0	2	147	6685	Full	49.65	42.36	88.02	76.96	320.00	Pass
HE40	MCS0	2	179	6845	Full	60.84	53.05	97.89	89.41	320.00	Pass
HE80	MCS0	2	135	6625	Full	78.40	78.04	152.10	160.06	320.00	Pass
HE80	MCS0	2	151	6705	Full	84.76	79.12	173.34	157.54	320.00	Pass
HE80	MCS0	2	167	6785	Full	85.95	82.96	180.96	173.02	320.00	Pass

TEST RESULTS DATA
EIRP Power Table

U-NII-7 MIMO													
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	RU Config.	Conducted Power (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
						Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
HE20	MCS0	2	117	6535	Full	18.95	18.07	21.54	-0.90		20.64	30.00	Pass
HE20	MCS0	2	117	6535	26/0	10.35	9.67	13.03	-0.90		12.13	30.00	Pass
HE20	MCS0	2	117	6535	52/37	12.55	11.97	15.28	-0.90		14.38	30.00	Pass
HE20	MCS0	2	117	6535	106/53	16.15	15.77	18.97	-0.90		18.07	30.00	Pass
HE20	MCS0	2	149	6695	Full	18.85	17.87	21.40	-0.90		20.50	30.00	Pass
HE20	MCS0	2	149	6695	26/4	11.25	10.37	13.84	-0.90		12.94	30.00	Pass
HE20	MCS0	2	149	6695	52/38	12.75	11.57	15.21	-0.90		14.31	30.00	Pass
HE20	MCS0	2	149	6695	106/53	15.65	14.87	18.29	-0.90		17.39	30.00	Pass
HE20	MCS0	2	181	6855	Full	17.25	17.87	20.58	-0.90		19.68	30.00	Pass
HE20	MCS0	2	181	6855	26/8	9.15	8.97	12.07	-0.90		11.17	30.00	Pass
HE20	MCS0	2	181	6855	52/40	12.45	11.57	15.04	-0.90		14.14	30.00	Pass
HE20	MCS0	2	181	6855	106/54	14.75	14.57	17.67	-0.90		16.77	30.00	Pass
HE40	MCS0	2	123	6565	Full	18.95	17.97	21.50	-0.90		20.60	30.00	Pass
HE40	MCS0	2	147	6685	Full	18.55	17.67	21.14	-0.90		20.24	30.00	Pass
HE40	MCS0	2	179	6845	Full	17.15	17.77	20.48	-0.90		19.58	30.00	Pass
HE80	MCS0	2	135	6625	Full	18.95	18.07	21.54	-0.90		20.64	30.00	Pass
HE80	MCS0	2	151	6705	Full	18.65	18.27	21.47	-0.90		20.57	30.00	Pass
HE80	MCS0	2	167	6785	Full	18.15	17.77	20.97	-0.90		20.07	30.00	Pass

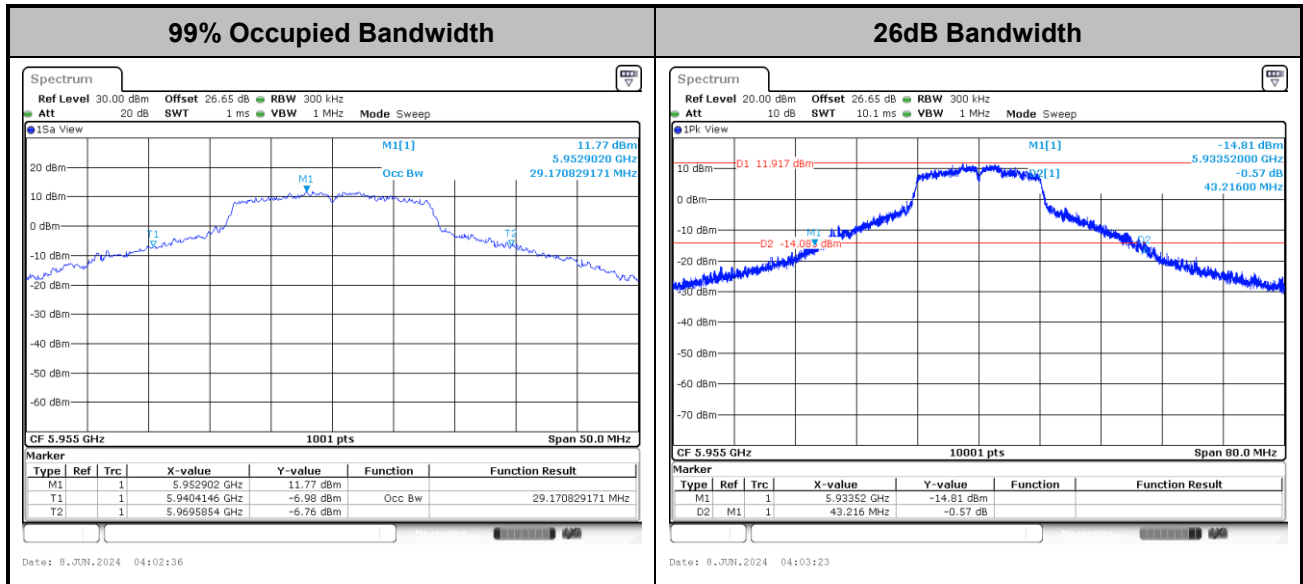
TEST RESULTS DATA
EIRP Power Spectral Density

U-NII-7 MIMO															
Mod.	Data Rate	N _{rx}	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			DG (dBi)		EIRP Power Density (dBm/MHz)	EIRP Power Density Limit (dBm/MHz)	Pass. /Fail
						Ant 4	Ant 3	Ant 4	Ant 3	SUM	Ant 4	Ant 3	SUM		
HE20	MCS0	2	117	6535	Full	0.40	0.40			9.95	-0.33		9.62	17.00	Pass
HE20	MCS0	2	117	6535	26/0	0.48	0.48			9.81	-0.33		9.48	17.00	Pass
HE20	MCS0	2	117	6535	52/37	0.53	0.53			9.58	-0.33		9.25	17.00	Pass
HE20	MCS0	2	117	6535	106/53	0.58	0.59			9.67	-0.33		9.34	17.00	Pass
HE20	MCS0	2	149	6695	Full	0.40	0.40			9.41	-0.33		9.08	17.00	Pass
HE20	MCS0	2	149	6695	26/4	0.48	0.48			9.38	-0.33		9.05	17.00	Pass
HE20	MCS0	2	149	6695	52/38	0.53	0.53			8.98	-0.33		8.65	17.00	Pass
HE20	MCS0	2	149	6695	106/53	0.58	0.59			9.11	-0.33		8.78	17.00	Pass
HE20	MCS0	2	181	6855	Full	0.40	0.40			8.66	-0.33		8.33	17.00	Pass
HE20	MCS0	2	181	6855	26/8	0.48	0.48			8.62	-0.33		8.29	17.00	Pass
HE20	MCS0	2	181	6855	52/40	0.53	0.53			8.55	-0.33		8.22	17.00	Pass
HE20	MCS0	2	181	6855	106/54	0.58	0.59			8.28	-0.33		7.95	17.00	Pass
HE40	MCS0	2	123	6565	Full	0.40	0.40			6.72	-0.33		6.39	17.00	Pass
HE40	MCS0	2	147	6685	Full	0.40	0.40			6.28	-0.33		5.95	17.00	Pass
HE40	MCS0	2	179	6845	Full	0.40	0.40			5.60	-0.33		5.27	17.00	Pass
HE80	MCS0	2	135	6625	Full	0.54	0.54			3.95	-0.33		3.62	17.00	Pass
HE80	MCS0	2	151	6705	Full	0.54	0.54		3.64	-0.33		3.31	17.00	Pass	
HE80	MCS0	2	167	6785	Full	0.54	0.54		3.36	-0.33		3.03	17.00	Pass	

**Test Result of 26dB & 99% Occupied Bandwidth**

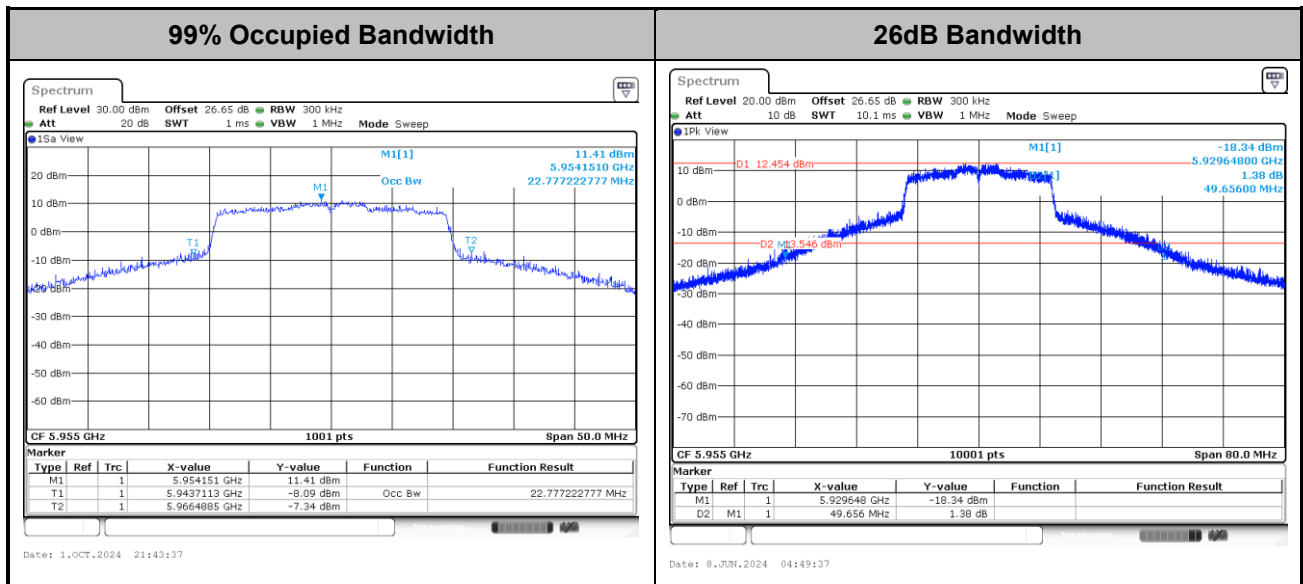
MIMO <Ant. 4+3>

<802.11a>



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

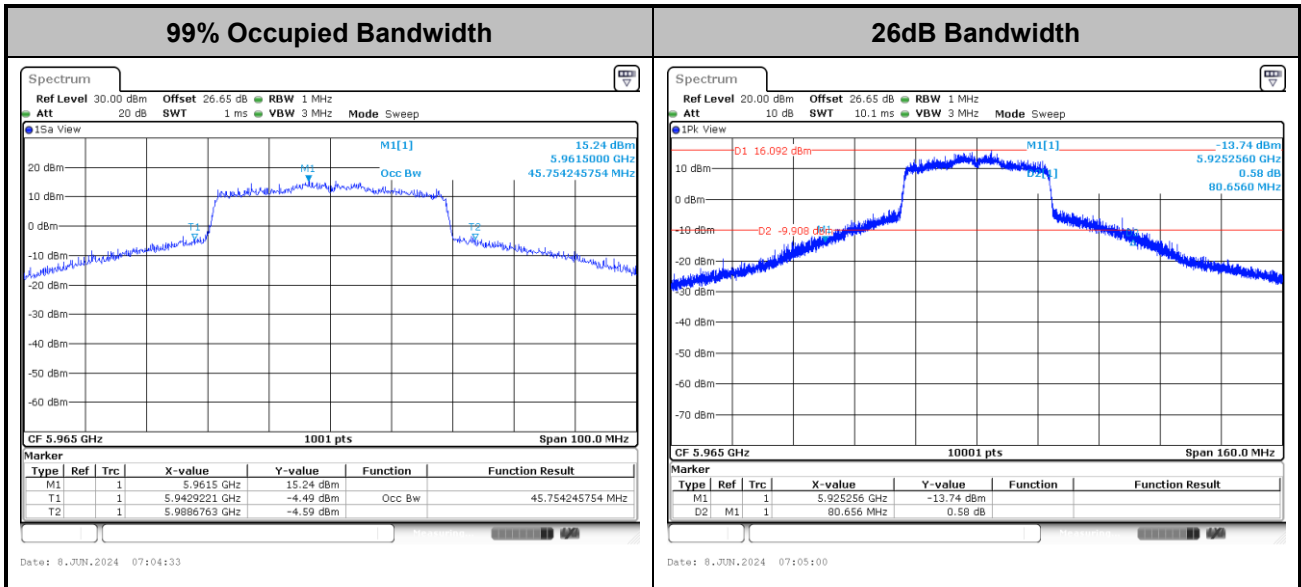
<802.11ax HE20>



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

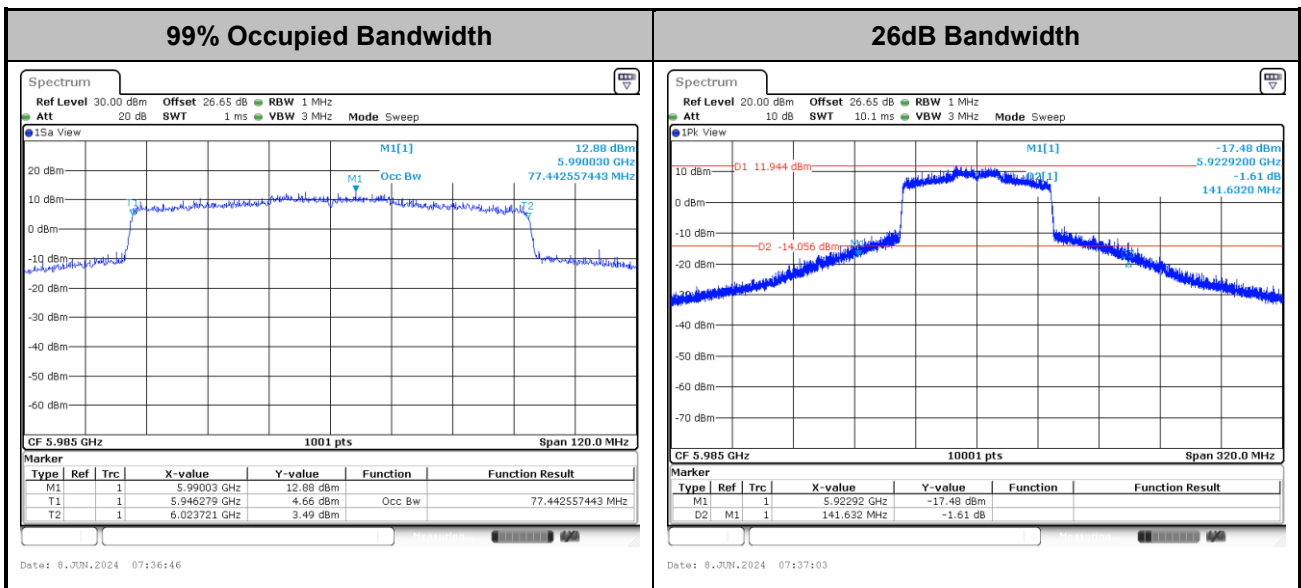


<802.11ax HE40>



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

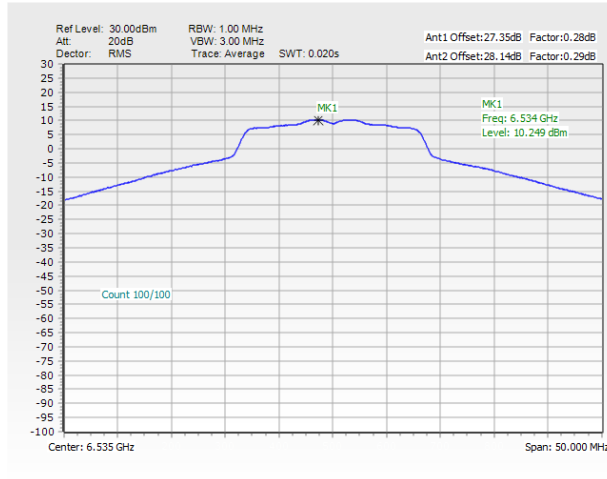
<802.11ax HE80>



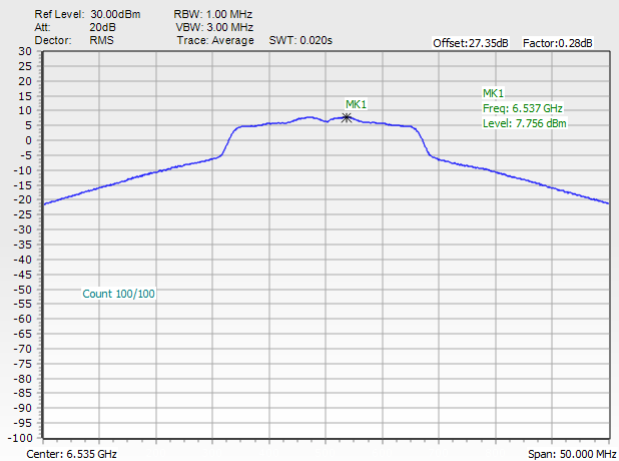
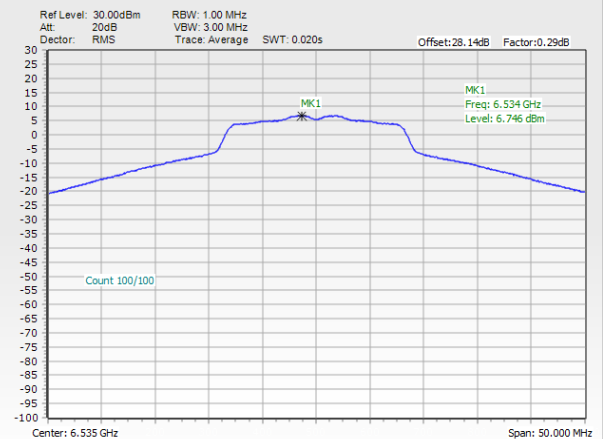
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

**Test Result of Power Spectral Density**

<802.11a>

Maximum Power Density Plot (dBm/MHz)**Note:**

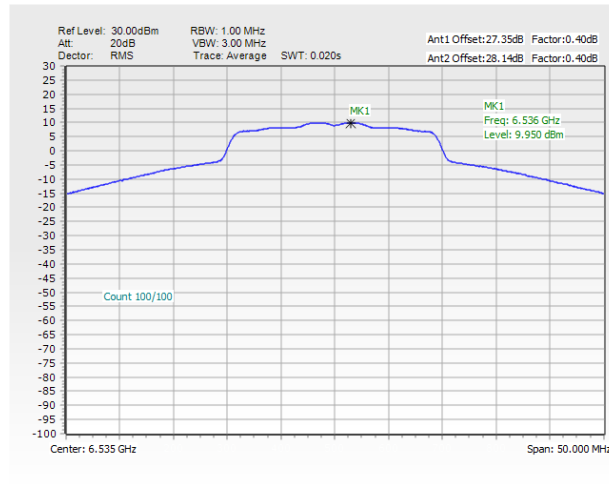
1. EIRP Power Density (dBm/MHz) = Measured value + Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

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



<802.11ax HE20>

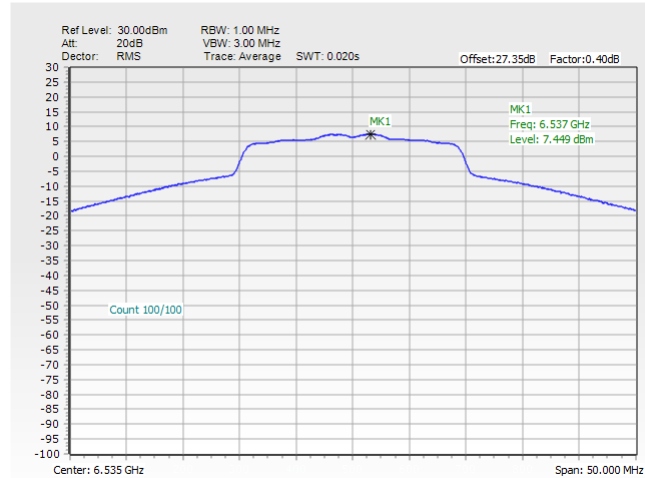
Maximum Power Density Plot (dBm/MHz)



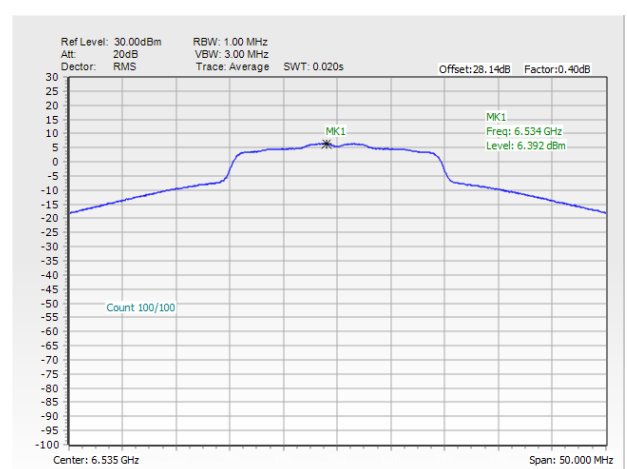
Note:

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)



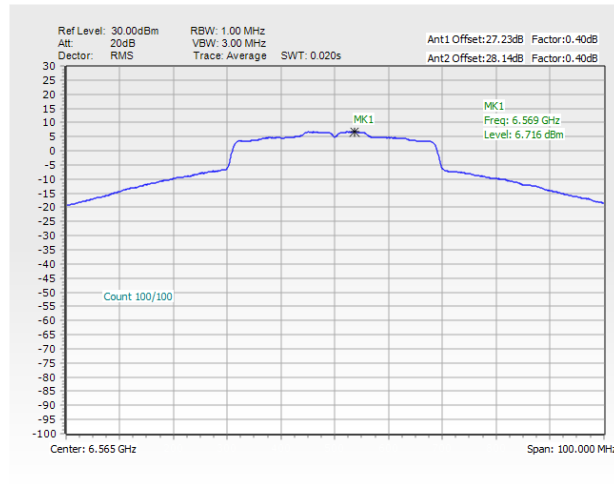
Power Density Plot Trace 2 (Ant 3)





<802.11ax HE40>

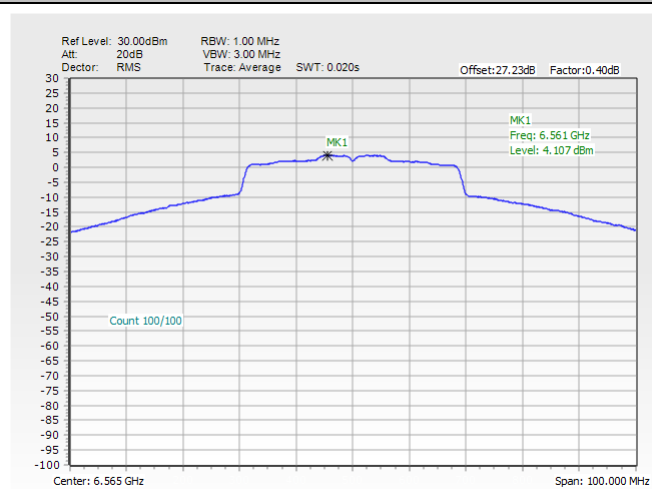
Maximum Power Density Plot (dBm/MHz)



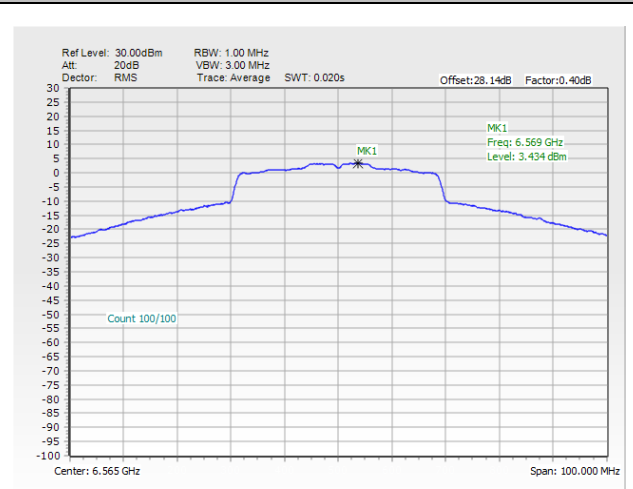
Note:

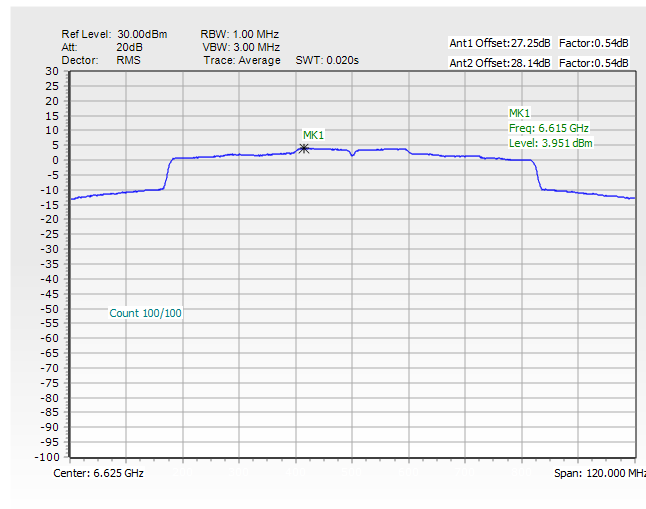
1. EIRP Power Density (dBm/MHz) = Measured value+ Duty Factor + Directional Gain
2. The test plot is showing a bin by bin combined result mathematically adds two traces.

Power Density Plot Trace 1 (Ant 4)

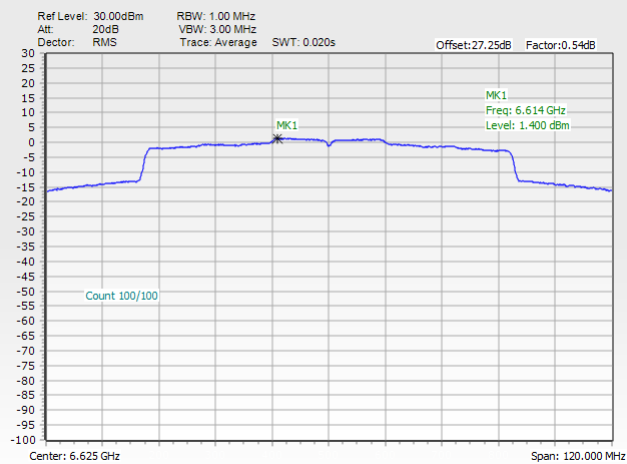
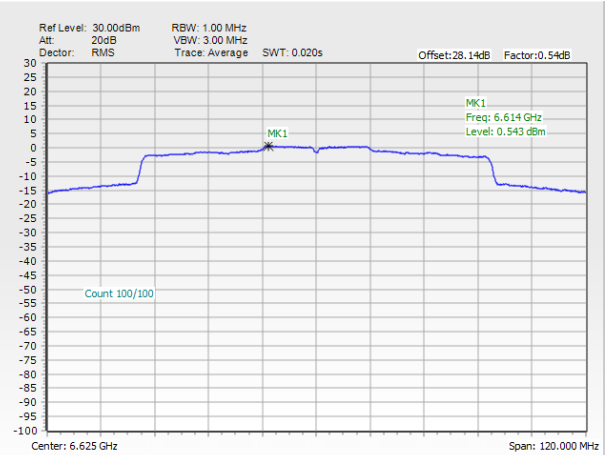


Power Density Plot Trace 2 (Ant 3)



**<802.11ax HE80>****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)**



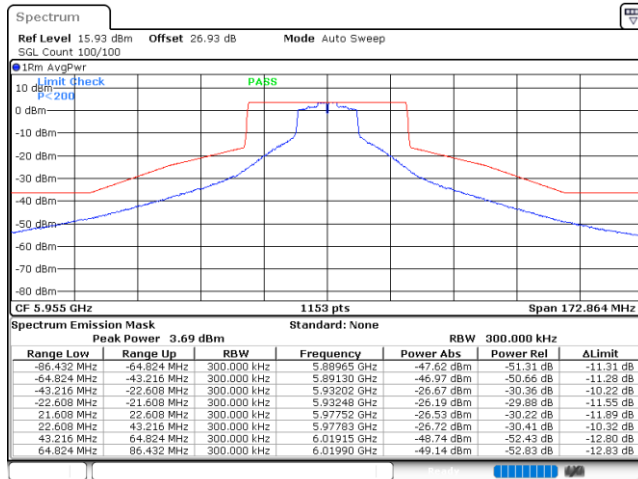
In-Band Emissions (Channel Mask)

MIMO <Ant. 4+3(4)>

EUT Mode

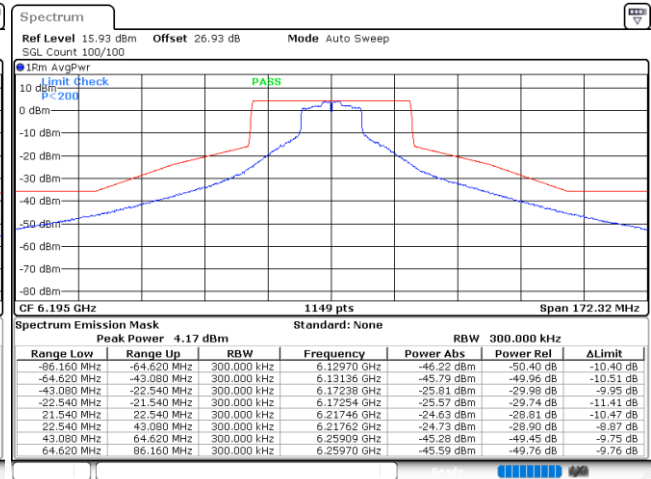
802.11a

Plot on Channel 5955 MHz



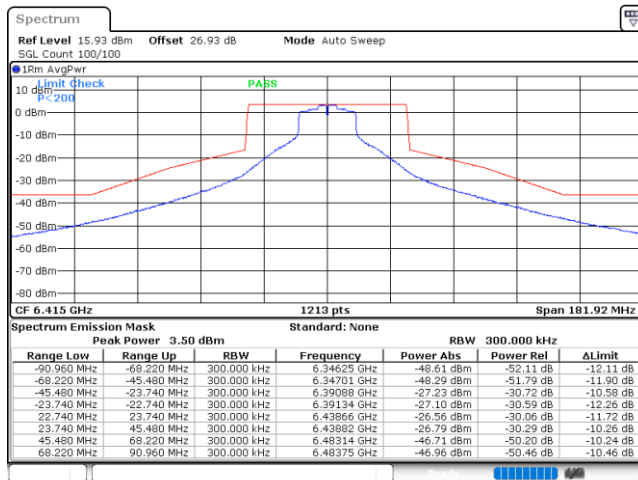
Date: 8.JUN.2024 04:04:29

Plot on Channel 6195 MHz



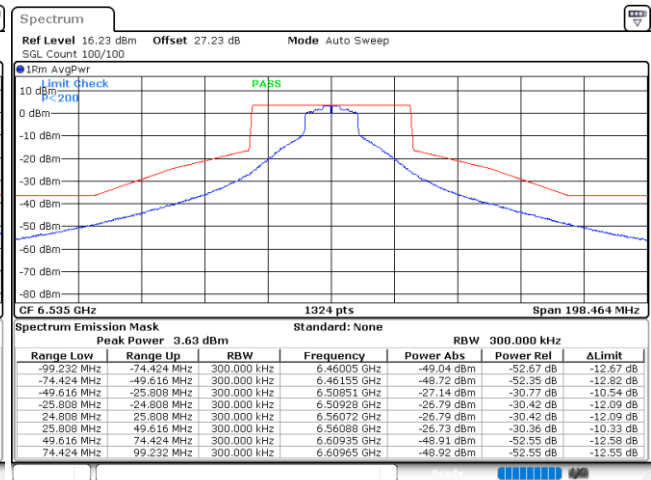
Date: 8.JUN.2024 04:19:46

Plot on Channel 6415 MHz



Date: 8.JUN.2024 04:26:38

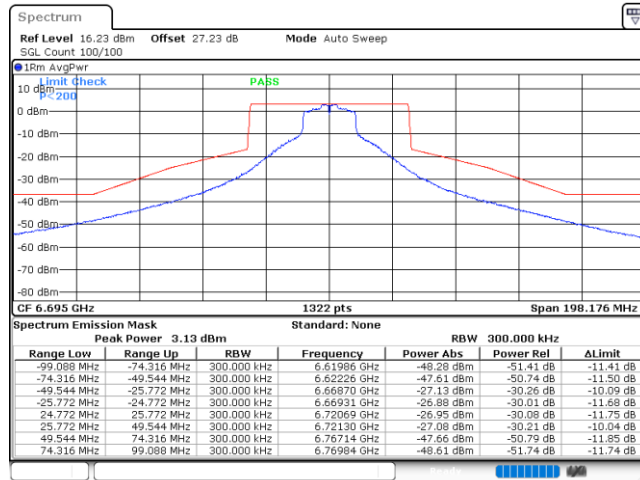
Plot on Channel 6535 MHz



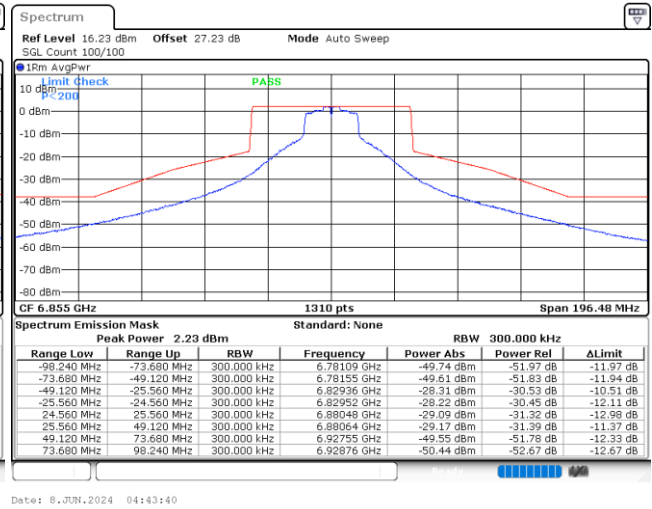
Date: 8.JUN.2024 04:31:58



Plot on Channel 6695 MHz



Plot on Channel 6855 MHz



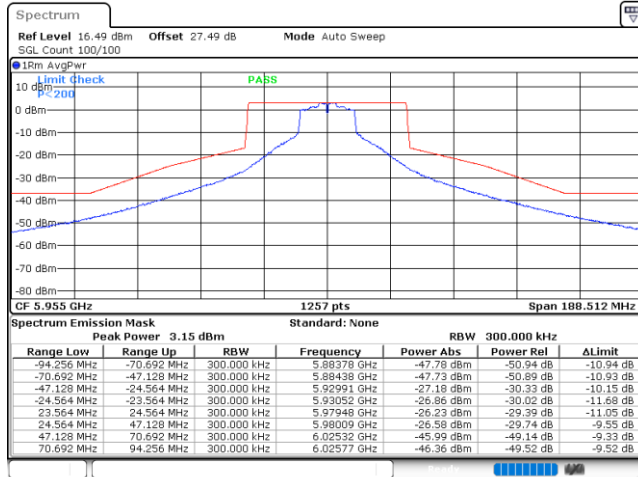


MIMO <Ant. 4+3(3)>

EUT Mode

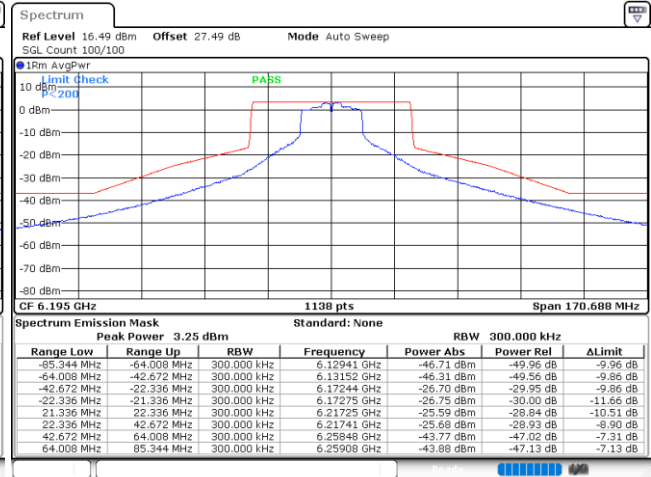
802.11a

Plot on Channel 5955 MHz



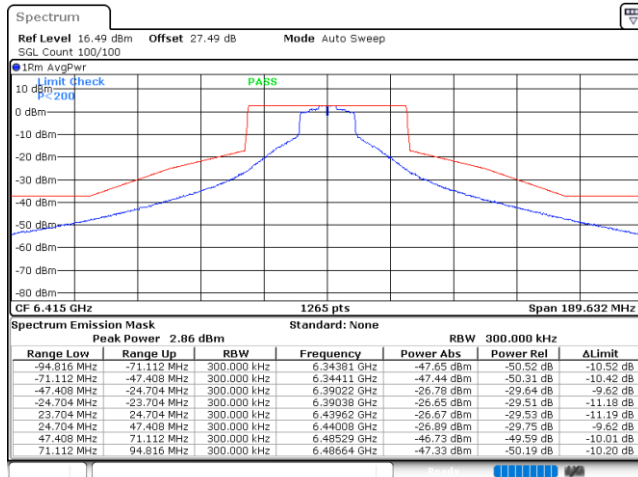
Date: 8.JUN.2024 04:06:38

Plot on Channel 6195 MHz



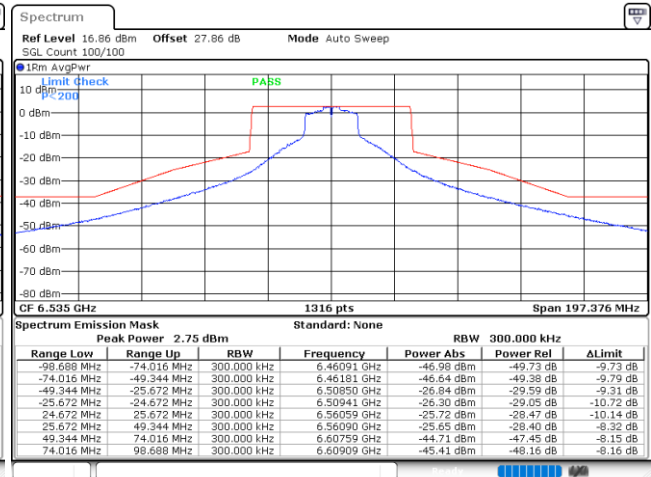
Date: 8.JUN.2024 04:23:43

Plot on Channel 6415 MHz



Date: 8.JUN.2024 04:30:01

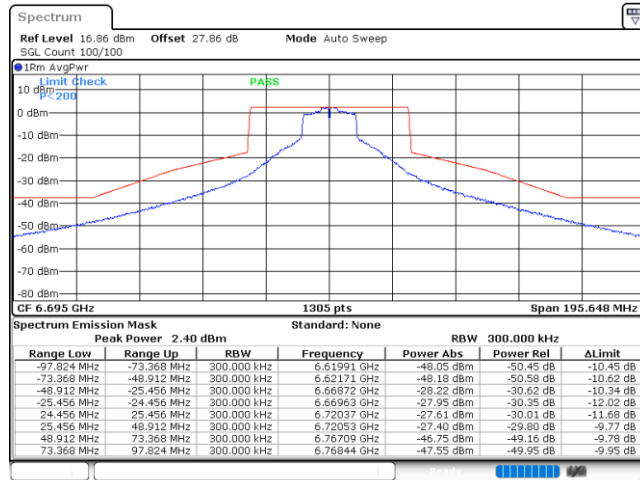
Plot on Channel 6535 MHz



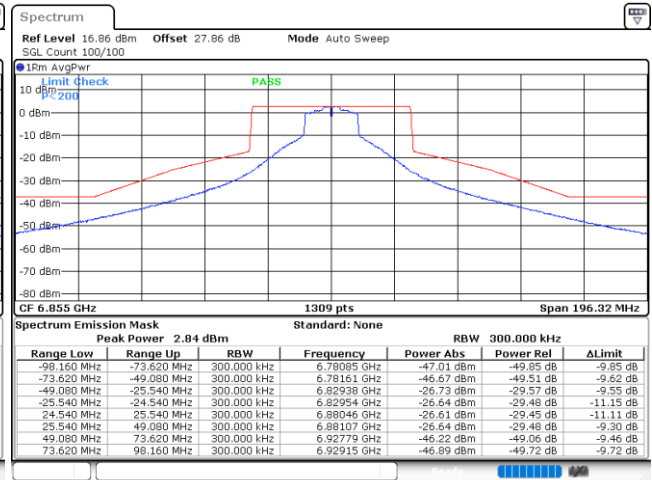
Date: 8.JUN.2024 04:34:28



Plot on Channel 6695 MHz



Plot on Channel 6855 MHz



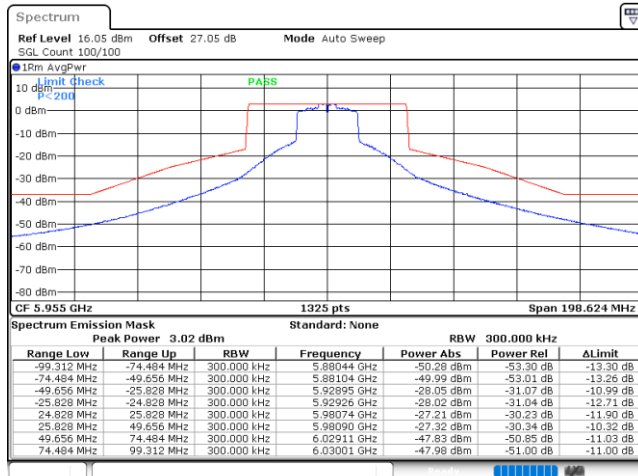


MIMO <Ant. 4+3(4)>

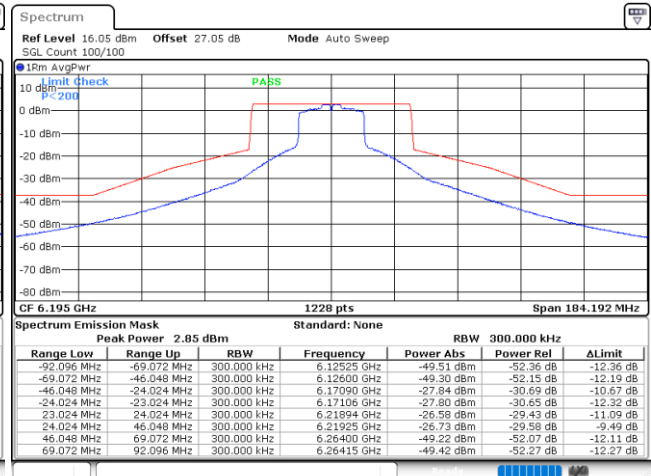
EUT Mode

802.11ax HE20 Full RU

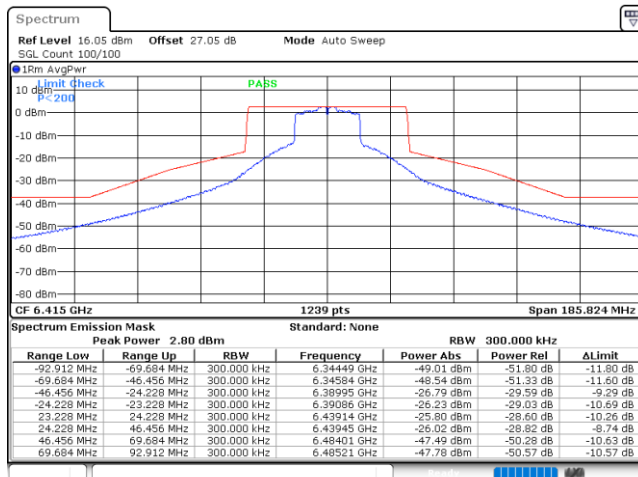
Plot on Channel 5955 MHz



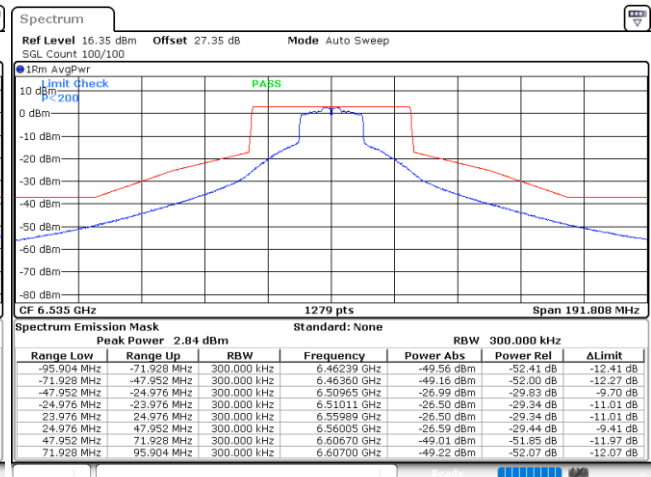
Plot on Channel 6195 MHz



Plot on Channel 6415 MHz

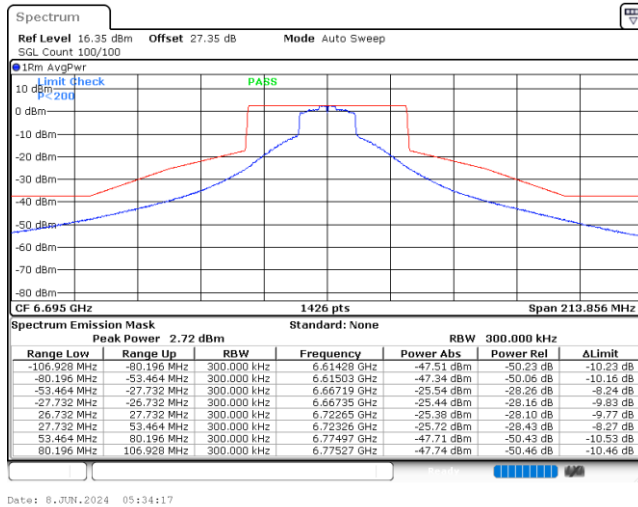


Plot on Channel 6535 MHz

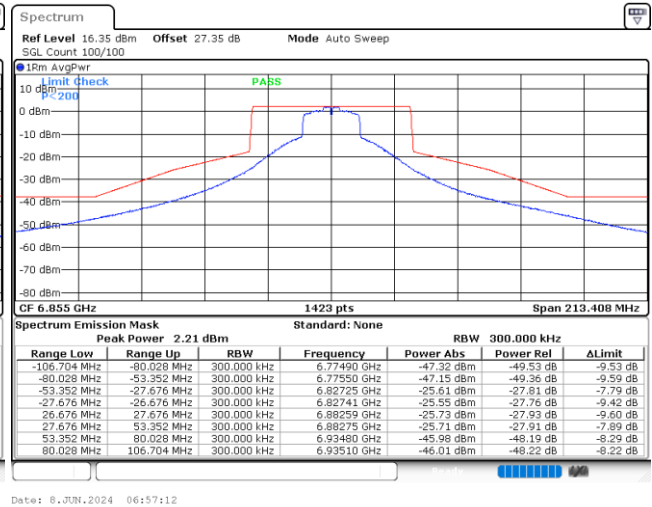




Plot on Channel 6695 MHz



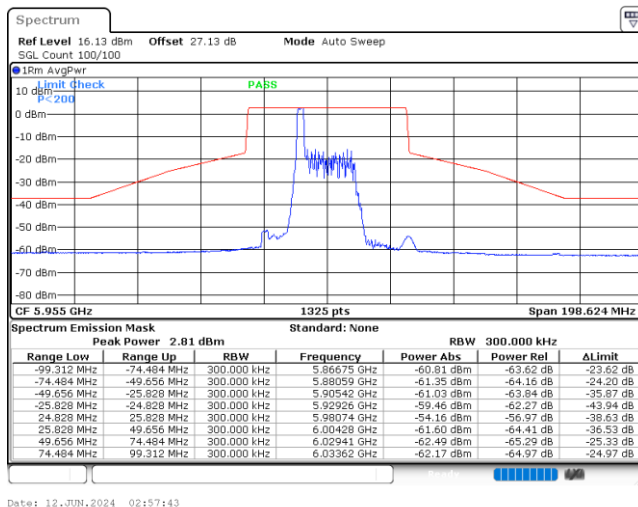
Plot on Channel 6855 MHz



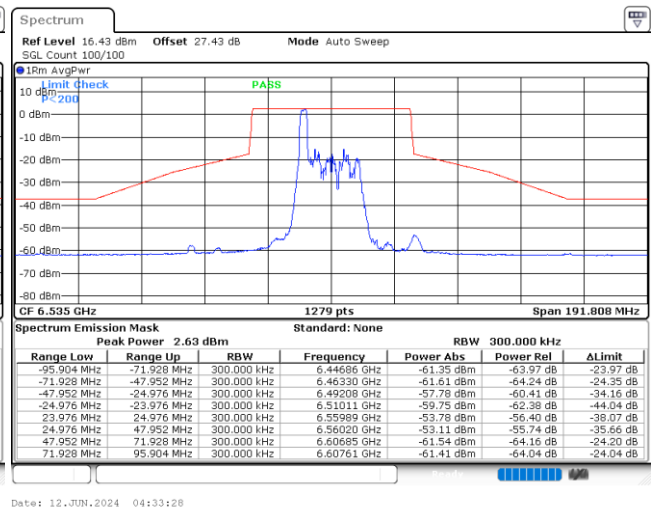
EUT Mode

802.11ax HE20 26RU0

Plot on Channel 5955 MHz



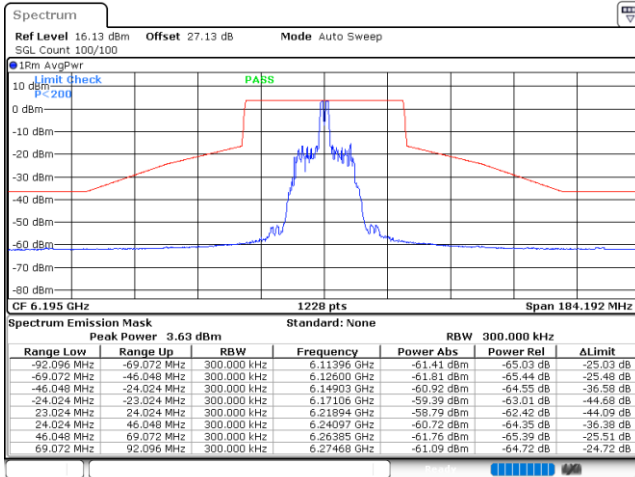
Plot on Channel 6535 MHz





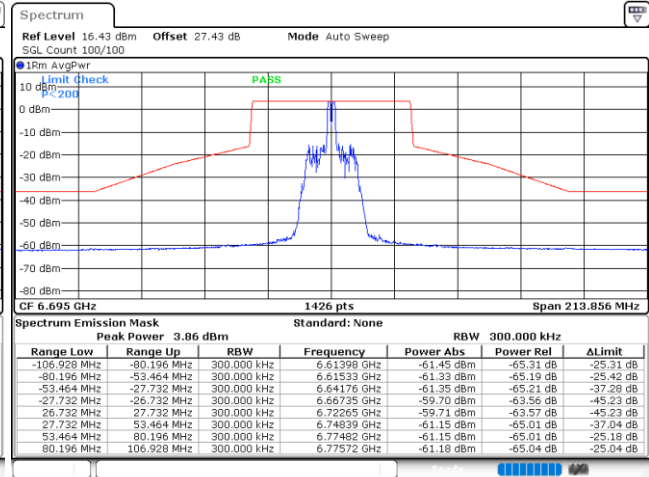
EUT Mode 802.11ax HE20 26RU4

Plot on Channel 6195 MHz



Date: 12.JUN.2024 03:16:37

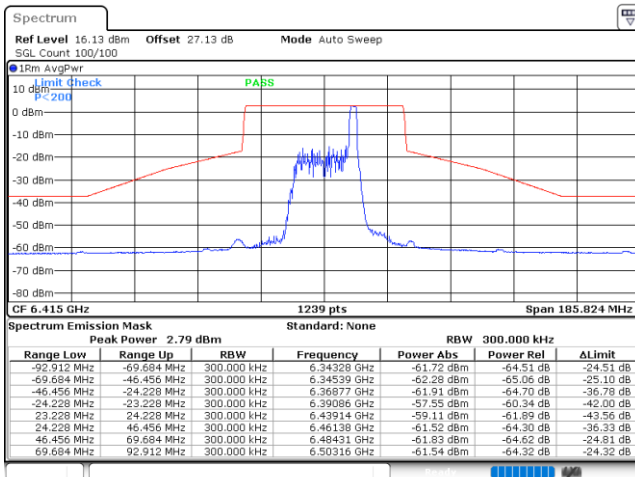
Plot on Channel 6695 MHz



Date: 12.JUN.2024 05:25:03

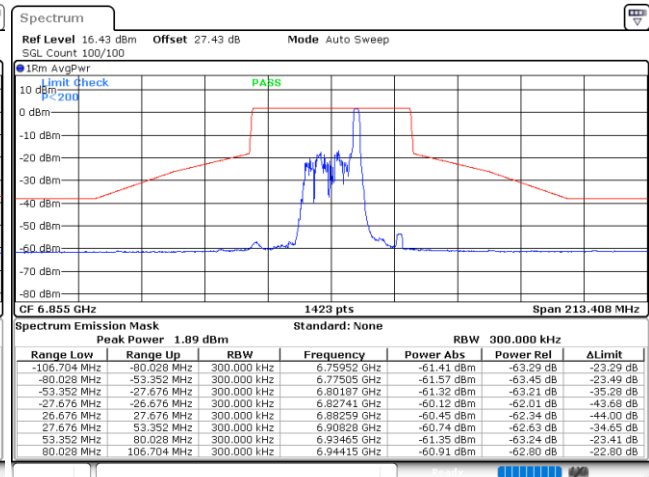
EUT Mode 802.11ax HE20 26RU8

Plot on Channel 6415 MHz



Date: 12.JUN.2024 04:01:18

Plot on Channel 6855 MHz

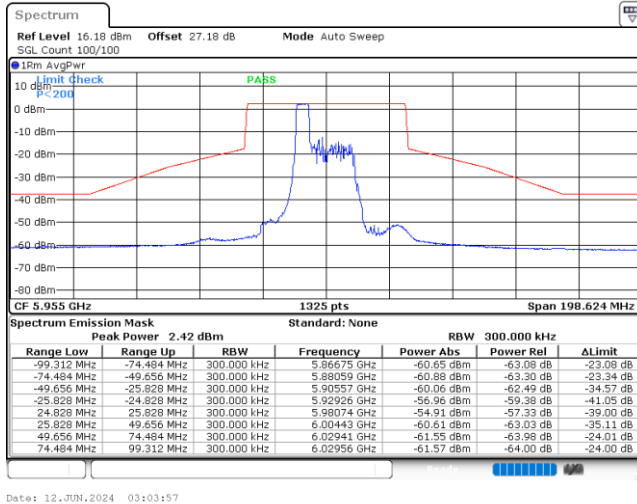


Date: 12.JUN.2024 06:25:47



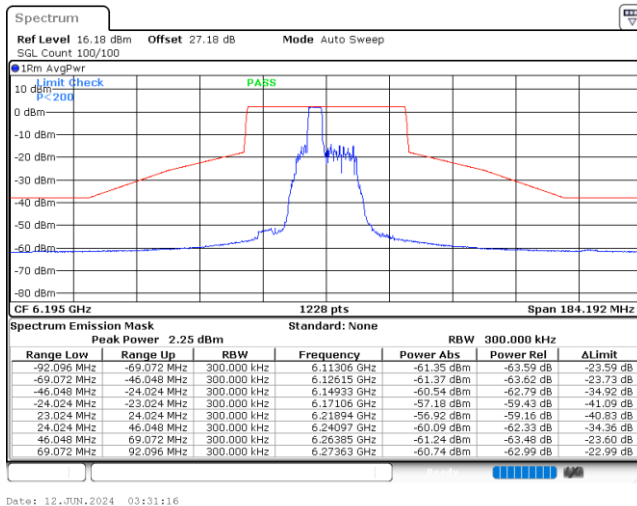
EUT Mode 802.11ax HE20 52RU37

Plot on Channel 5955 MHz

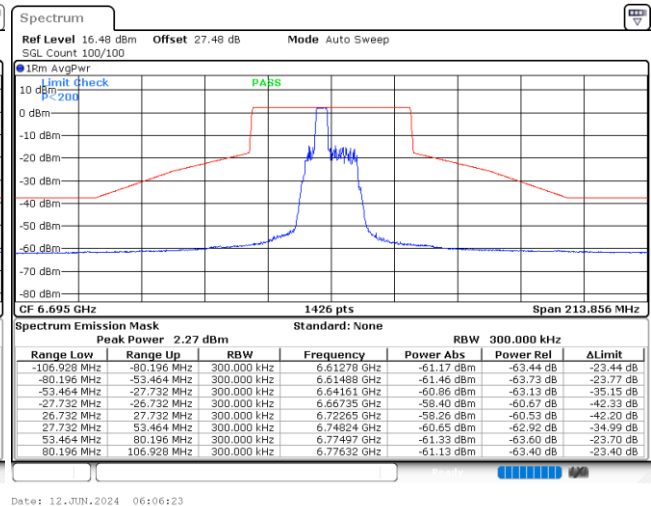


EUT Mode 802.11ax HE20 52RU38

Plot on Channel 6195 MHz



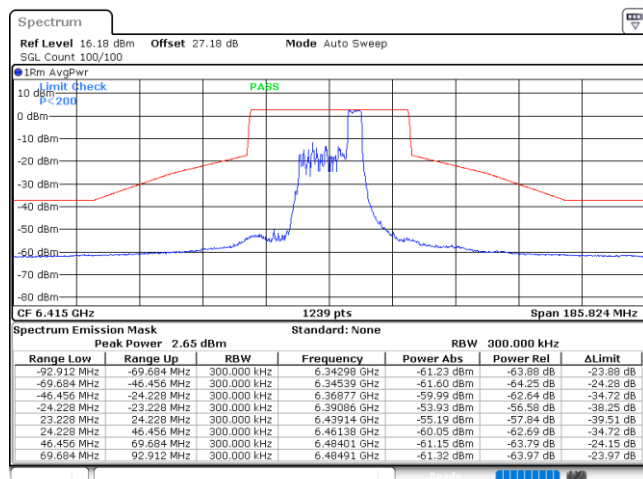
Plot on Channel 6695 MHz





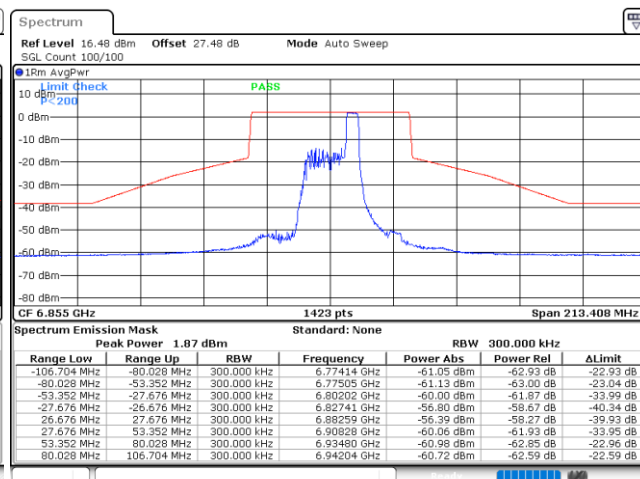
EUT Mode 802.11ax HE20 52RU40

Plot on Channel 6415 MHz



Date: 12.JUN.2024 04:13:45

Plot on Channel 6855 MHz



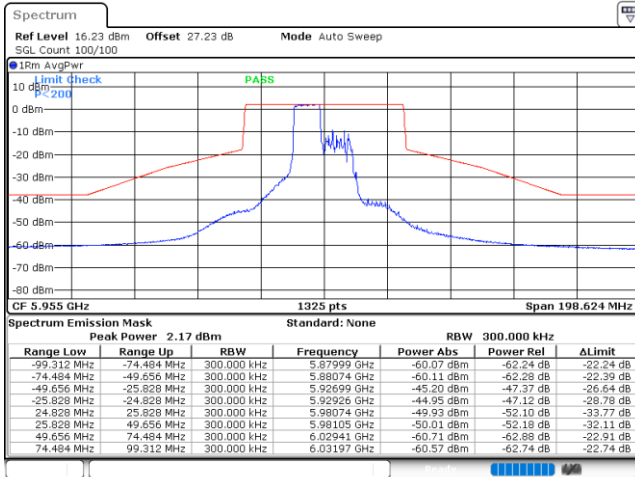
Date: 12.JUN.2024 06:32:36



EUT Mode

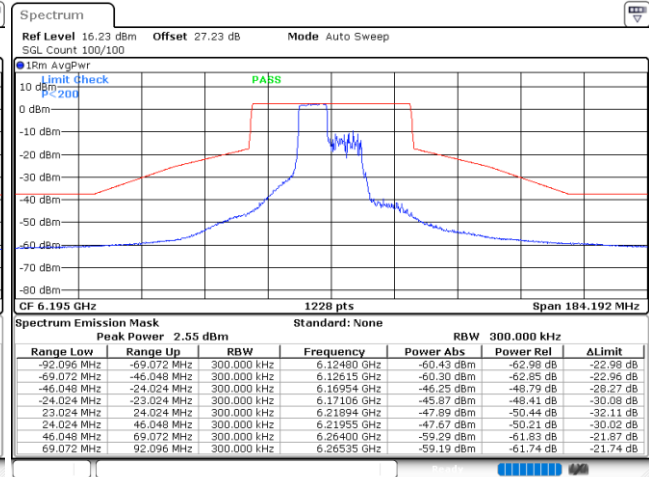
802.11ax HE20 106RU53

Plot on Channel 5955 MHz



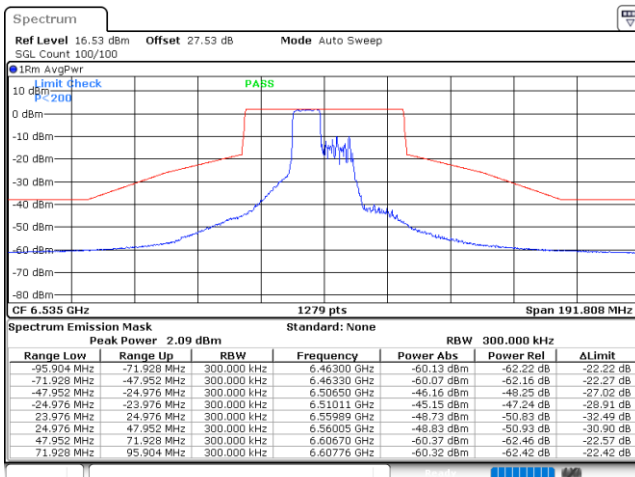
Date: 12.JUN.2024 03:09:43

Plot on Channel 6195 MHz



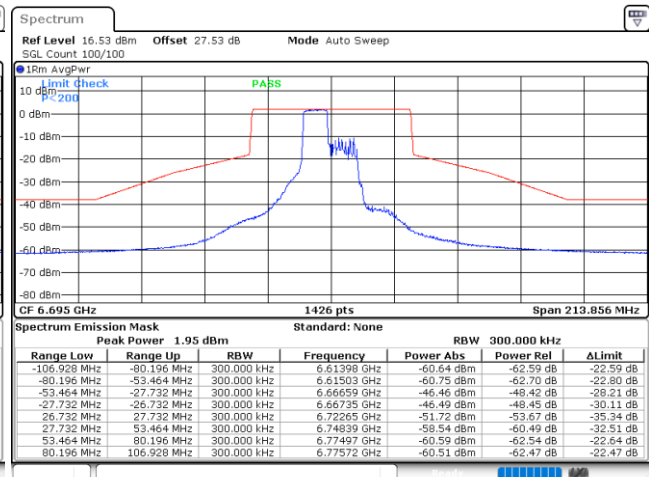
Date: 12.JUN.2024 03:43:20

Plot on Channel 6535 MHz



Date: 12.JUN.2024 05:04:03

Plot on Channel 6695 MHz



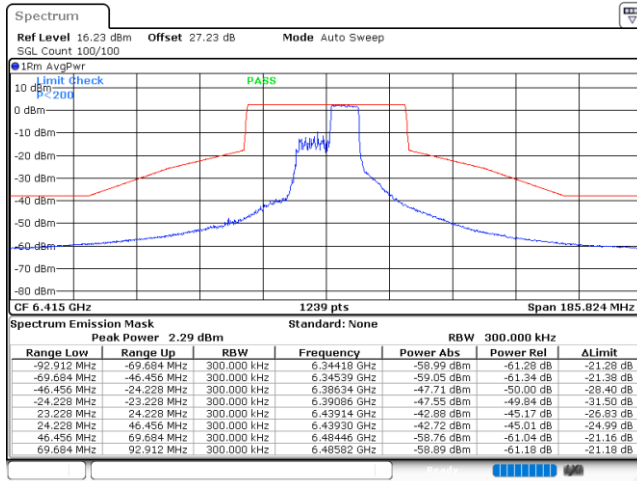
Date: 12.JUN.2024 06:16:15



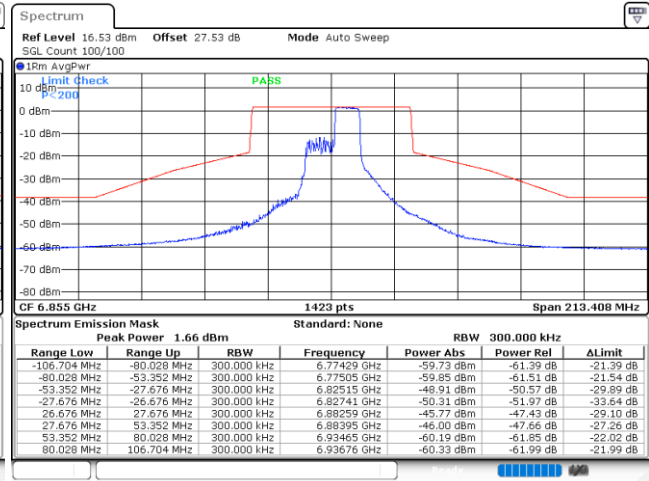
EUT Mode

802.11ax HE20 106RU54

Plot on Channel 6415 MHz



Plot on Channel 6855 MHz



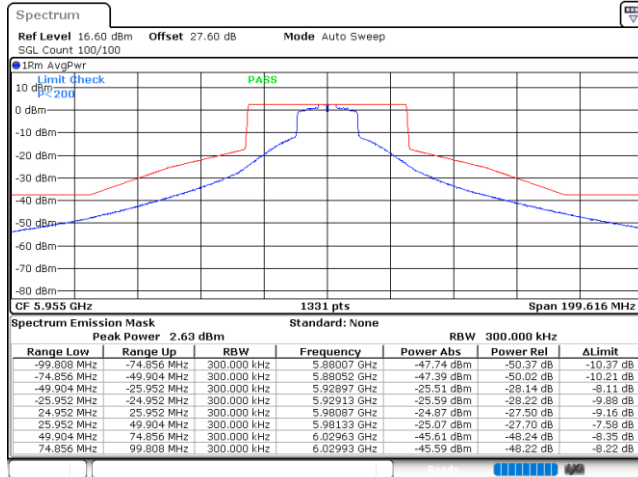


MIMO <Ant. 4+3(3)>

EUT Mode

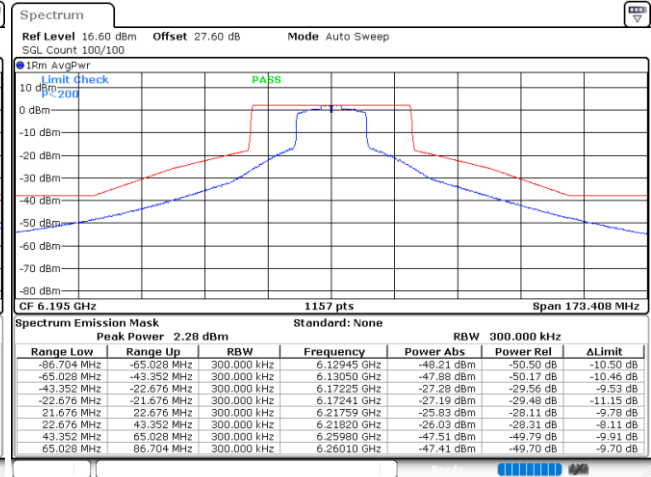
802.11ax HE20 Full RU

Plot on Channel 5955 MHz



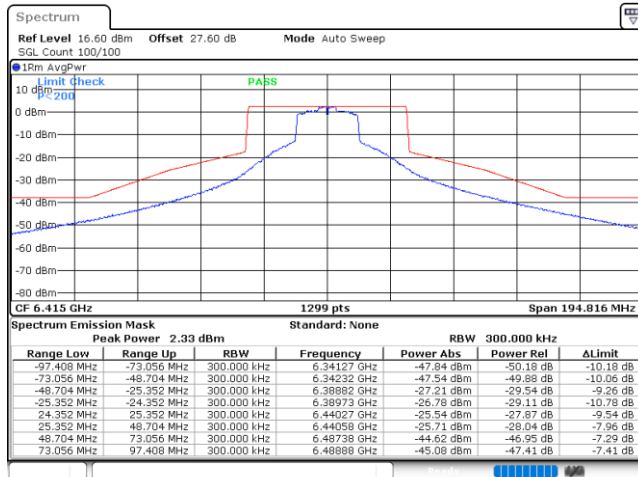
Date: 8.JUN.2024 05:00:54

Plot on Channel 6195 MHz



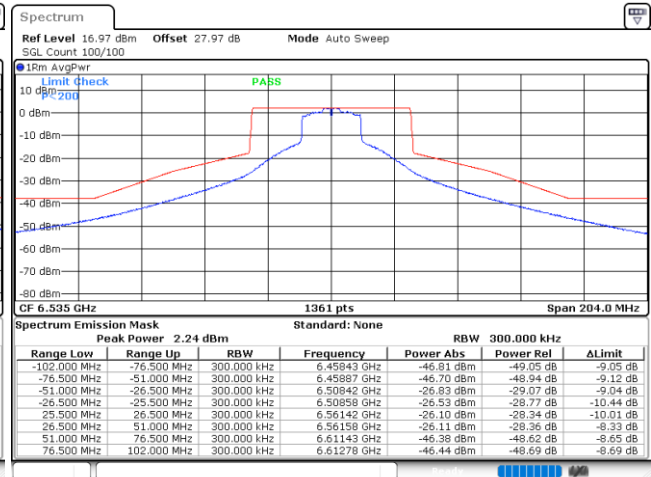
Date: 8.JUN.2024 05:15:00

Plot on Channel 6415 MHz



Date: 8.JUN.2024 05:23:19

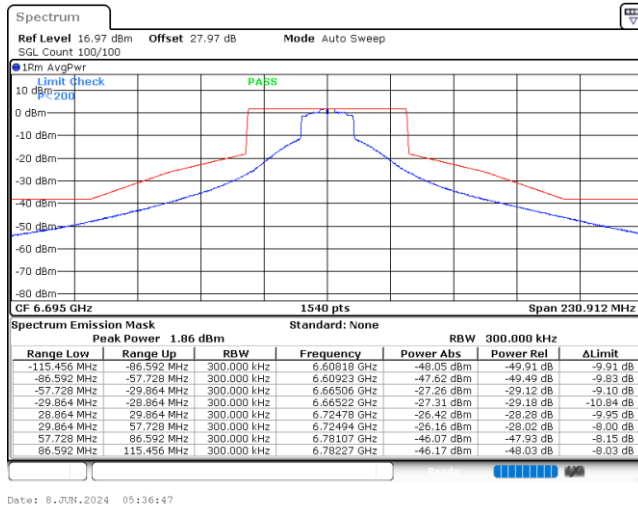
Plot on Channel 6535 MHz



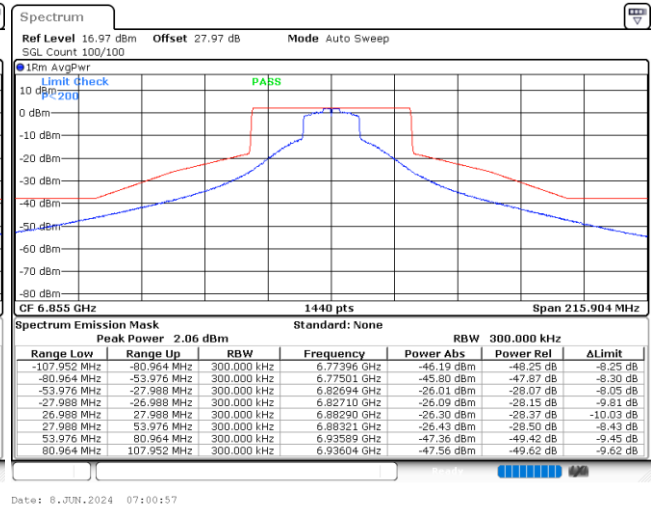
Date: 8.JUN.2024 05:30:46



Plot on Channel 6695 MHz



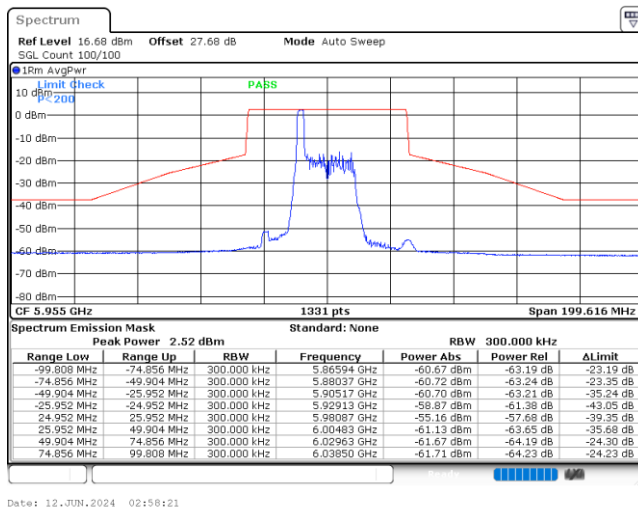
Plot on Channel 6855 MHz



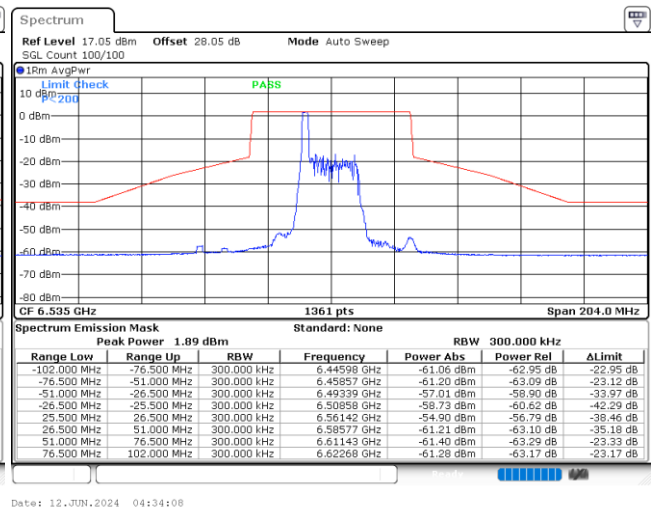
EUT Mode

802.11ax HE20 26RU0

Plot on Channel 5955 MHz



Plot on Channel 6535 MHz

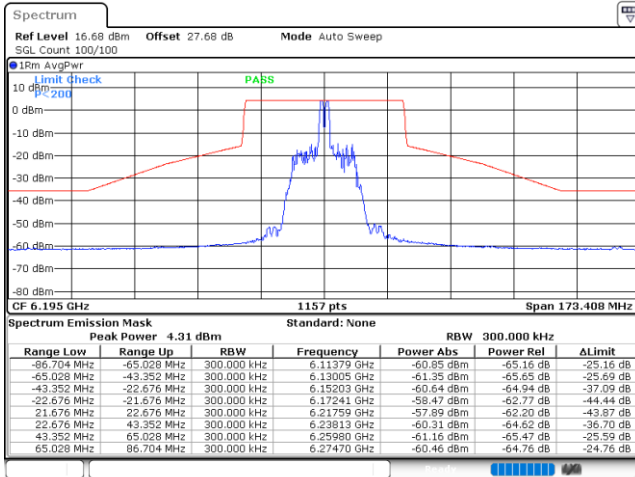




EUT Mode

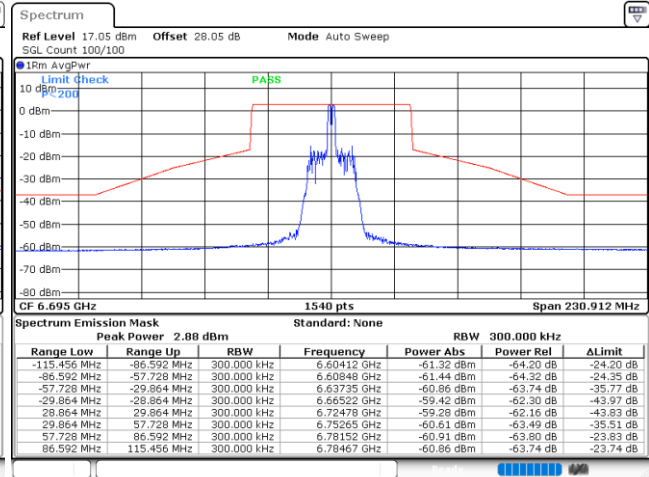
802.11ax HE20 26RU4

Plot on Channel 6195 MHz



Date: 12 JUN. 2024 03:17:24

Plot on Channel 6695 MHz

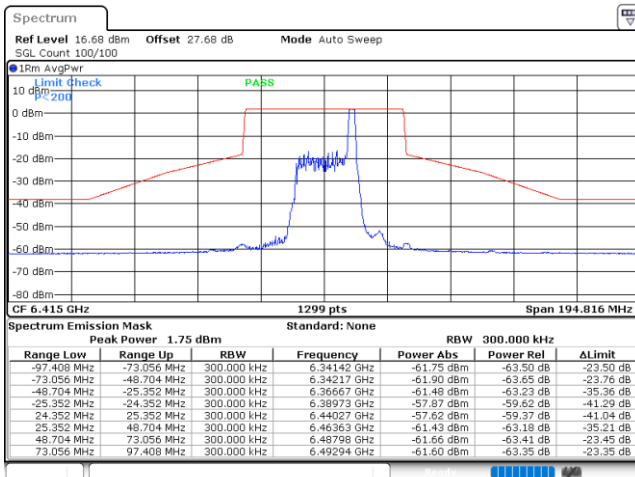


Date: 12 JUN. 2024 05:27:58

EUT Mode

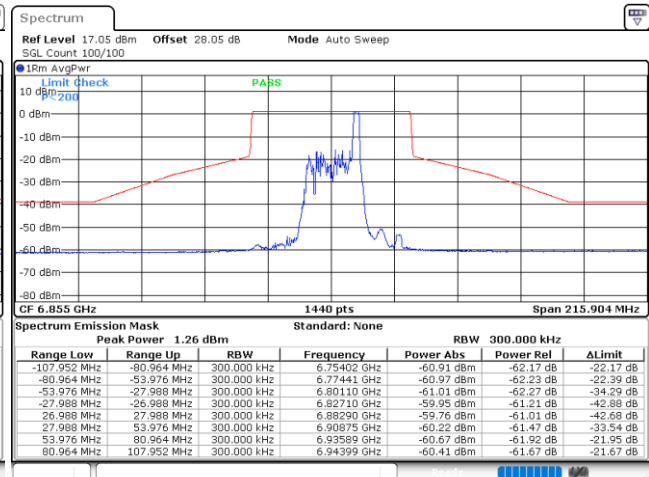
802.11ax HE20 26RU8

Plot on Channel 6415 MHz



Date: 12 JUN. 2024 04:02:12

Plot on Channel 6855 MHz



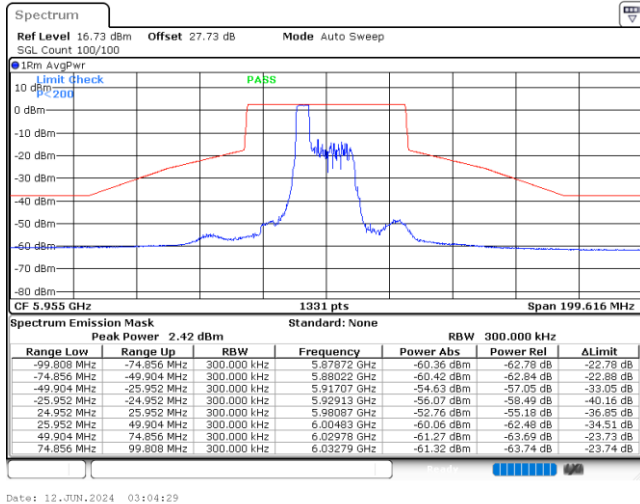
Date: 12 JUN. 2024 06:26:29



EUT Mode

802.11ax HE20 52RU37

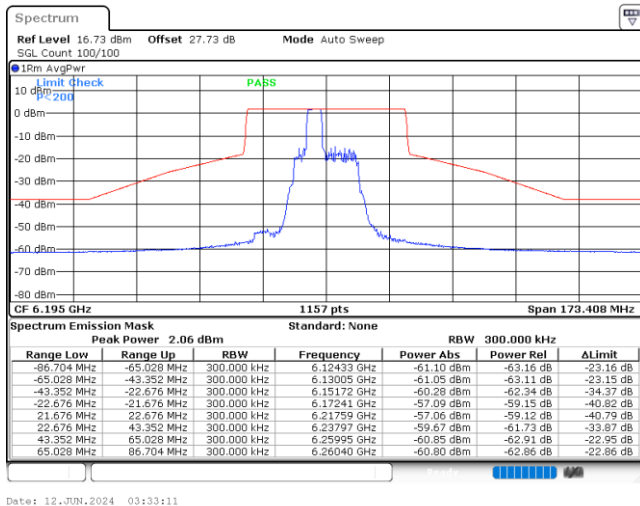
Plot on Channel 5955 MHz



EUT Mode

802.11ax HE20 52RU38

Plot on Channel 6195 MHz



Plot on Channel 6695 MHz

