RADIO TEST REPORT

Product	:	WLAN and BT Wireless Module
Model Name	:	WBU058-BGA-V11
Series Model	:	WBU058-BGA-V13, WBU058-BGA-V15
FCC ID	:	RX3-WBU058BGA
Test Regulation	:	FCC 47 CFR Part 15 Subpart E (Section 15.407)
Received Date	:	2024/8/9
Test Date	:	2024/08/13 ~ 2024/10/14
Issued Date	:	2024/10/14

Applicant	:	No.151, Sec. 1, Nankan Rd., Lujhu Dist.,Taoyuan City 33859, Taiwan
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Testing Laboratory
3398

The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report are responsible of the test sample(s) provided by the client only and are not to be used to indicate applicability to other similar products.

REVISION HISTORY

Original Test Report No.: 4791426387A-US-R2-V0

Revision	Test report No.	Date	Page revised	Contents
Original	4791426387A-US-R2-V0	2024/10/14	-	Initial issue

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1. Attestation of Test Results

APPLICANT:	Hon Hai Precision Industry Co., Ltd. No.151, Sec. 1, Nankan Rd., Lujhu Dist.,Taoyuan City 33859, Taiwan
MANUFACTURER:	HON HAI PRECISION IND. CO., LTD No.151, Sec. 1, Nankan Rd., Lujhu Dist.,Taoyuan City 33859, Taiwan
EUT DESCRIPTION:	WLAN and BT Wireless Module
BRAND:	FOXCONN
MODEL:	WBU058-BGA-V11
SERIES MODEL:	WBU058-BGA-V13, WBU058-BGA-V15
SAMPLE STAGE:	Engineering Verification Test Sample
DATE of TESTED:	2024/08/13 ~ 2024/10/14

APPLICABLE STANDARDS	
STANDARD	**Test Results**
FCC 47 CFR PART 15 Subpart E (Section 15.407)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Cindy Hsin Date : 2024/10/14
Project Handler

Approved and Authorized By:

Eric Lee Date : 2024/10/14
Senior Laboratory Engineer

2. Summary of Test Results

Summary of Test Results		
FCC Clause	**Test Items**	**Result**
15.407(b)(9)	AC Power Conducted Emissions	PASS
15.407(b)(6)(9)	Radiated Emissions	PASS
15.407(b)(7)	In-Band Emission (Mask)	PASS
15.407(a)(4/5/6/7/8/9)	Max Average Transmit Power	PASS
15.407(a)(11)	Emission Bandwidth Measurement	PASS
15.407(a)(4/5/6/7/8/9)	Peak Power Spectral Density	PASS
15.407 (d)(6)	Contention-based Protocol.	PASS
15.407(g)	Frequency Stability	PASS
15.407(d)(4/5)	Operational restrictions for 6 GHz U-NII devices	PASS
15.203	Antenna Requirement	PASS

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB 789033 D02 General UNII Test Procedure New Rules v02r01, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01 and KDB 662911 D01 Multiple Transmitter Output v02r01.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

5. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 3.1.4 of IEC Guide 115) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	3.1 dB
RF Conducted	9 kHz - 40GHz	2.3 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	3.2 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	6.1 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	5.1 dB

6. Equipment under Test

6.1. Description of EUT

Product	WLAN and BT Wireless Module
Brand Name	FOXCONN
Model Name	WBU058-BGA-V11
Series Model	WBU058-BGA-V13, WBU058-BGA-V15
Normal Voltage	3.3Vdc from Host

Operating Frequency	5955 ~ 6415MHz, 6435 ~ 6515MHz, 6535 ~ 6855MHz, 6875 ~ 7115MHz
Modulation	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Transfer Rate	802.11ax: up to MCS11
CBP for Channel Puncturing Function	Not Support
CBP for Bandwidth Reduction Function	Support (See page 121-122 test plots)
Maximum EIRP Power	5955 ~ 6415MHz: 12.17 dBm
	6435 ~ 6515 MHz: 12.08 dBm
	6535 ~ 6855 MHz: 13.73 dBm
	6875 ~ 7115 MHz: 13.48 dBm
Sample ID	Conducted Test:7472206
	Radiated Test:7528177

Note:
1. The differences between the models are shown in the table below:

Model	Light Sensor	IR	Power Switch	Thermal Sensor	MIC
WBU058-BGA-V11	V	V	V	-	-
WBU058-BGA-V13	V	V	V	V	-
WBU058-BGA-V15	V	V	V	-	V

2. EUT provides a complete 2Tx port and 2Rx port. Please refer to the following working transmission conditions:

Modulation Mode	Tx/Rx Function	
802.11ax (HE20)	2Tx	2Rx
802.11ax (HE40)	2Tx	2Rx
802.11ax (HE80)	2Tx	2Rx

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual, the laboratory shall not be held responsible

6.2. Channel List

FOR 5925 ~ 6425MHz (U-NII-5 band)

24 channels are provided for 6G WLAN 20MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	5955 MHz	25	6075 MHz	49	6195 MHz	73	6315 MHz
5	5975 MHz	29	6095 MHz	53	6215 MHz	77	6335 MHz
9	5995 MHz	33	6115 MHz	57	6235 MHz	81	6355 MHz
13	6015 MHz	37	6135 MHz	61	6255 MHz	85	6375 MHz
17	6035 MHz	41	6155 MHz	65	6275 MHz	89	6395 MHz
21	6055 MHz	45	6175 MHz	69	6295 MHz	93	6415 MHz

12 channels are provided for 6G WLAN 40MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
3	5965 MHz	27	6085 MHz	51	6205 MHz	75	6325 MHz
11	6005 MHz	35	6125 MHz	59	6245 MHz	83	6365 MHz
19	6045 MHz	43	6165 MHz	67	6285 MHz	91	6405 MHz

6 channels are provided for 6G WLAN 80MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
7	5985 MHz	39	6145 MHz	71	6305 MHz
23	6065 MHz	55	6225 MHz	87	6385 MHz

FOR 6425 ~ 6525MHz (U-NII-6 band)

5 channels are provided for 6G WLAN 20MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
97	6435 MHz	105	6475 MHz	113	6515 MHz
101	6455 MHz	109	6495 MHz	-	-

3 channels are provided for 6G WLAN 40MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
99	6445 MHz	107	6485 MHz	*115	6525 MHz

2 channels are provided for 6G WLAN 80MHz bandwidth system:

Channel	Frequency	Channel	Frequency
103	6465 MHz	*119	6545 MHz

FOR 6525 ~ 6875MHz (U-NII-7 band)

17 channels are provided for 6G WLAN 20MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
117	6535 MHz	137	6635 MHz	153	6715 MHz	169	6795 MHz
121	6555 MHz	141	6655 MHz	157	6735 MHz	173	6815 MHz
125	6575 MHz	145	6675 MHz	161	6755 MHz	177	6835 MHz
129	6595 MHz	149	6695 MHz	165	6775 MHz	181	6855 MHz
133	6615 MHz	-	-	-	-	-	-

8 channels are provided for 6G WLAN 40MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
123	6565 MHz	139	6645 MHz	155	6725 MHz	171	6805 MHz
131	6605 MHz	147	6685 MHz	163	6765 MHz	179	6845 MHz

3 channels are provided for 6G WLAN 80MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
135	6625 MHz	151	6705 MHz	167	6785 MHz

FOR 6875 ~ 7125MHz (U-NII-8 band)

13 channels are provided for 6G WLAN 20MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
185	6875 MHz	201	6955 MHz	213	7015 MHz	225	7075 MHz
189	6895 MHz	205	6975 MHz	217	7035 MHz	229	7095 MHz
193	6915 MHz	209	6995 MHz	221	7055 MHz	233	7115 MHz
197	6935 MHz	-	-	-	-	-	-

6 channels are provided for 6G WLAN 40MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
*187	6885 MHz	203	6965 MHz	219	7045 MHz
195	6925 MHz	211	7005 MHz	227	7085 MHz

3 channels are provided for 6G WLAN 80MHz bandwidth system:

Channel	Frequency	Channel	Frequency	Channel	Frequency
*183	6865 MHz	199	6945 MHz	215	7025 MHz

Note:* mean this's straddle channel.

6.3. Test Condition

Test Item	Test Site No.	Environmental	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	23~25°C/ 63~67%RH	3.3Vdc	2024/08/20~ 2024/10/14	Rex Chen/ Jubo Shen
Radiated Spurious Emission	966-2	22~26°C/ 62~68%RH	3.3Vdc	2024/08/13~ 2024/08/28	Rex Chen
AC power Line Conducted Emission	SR1	24°C/ 62%RH	120Vac/ 60Hz	2024/08/21	Rex Chen

Sample Calculation:

Antenna Port Conducted Measurement:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBm) = Reading Value (dBm) +Attenuator Factor (dB) + Cable Loss (dB).
  Example: Result Value (10dBm) = Reading Value (-2dBm) +Attenuator Factor (10dB) + Cable Loss(2dB).
  *Test plot only shown the "Result Value".

Radiated Spurious Emission:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
  Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
  Example: Result Value (34.5dBuV/m) = Reading Value (40.1dBuV) + Antenna Factor (18.7dB/m) + Cable Loss (4.2dB) - Preamp Factor (28.5dB).

AC power Line Conducted Emission:

- Where relevant, the follow sample calculation is provided:
  Result Value (dBuV) = Reading Value (dBuV) + Correction Factor (dB).
  Correction Factor (dB) = Insertion loss(dB) + Cable loss(dB).
  Example: Result Value (53.7dBuV) = Reading Value (35.1dBuV) + Insertion loss(18.1dB) + Cable loss(0.5dB).

6.4. Description of Available Antennas

Ant. No.	Transmitter Circuit	Frequency Range	Brand Name	Model Name	Maximum Gain (dBi)	Ant. Type	Connector Type
WLAN ANT1	Chain0	2.412~2.472GHz 5.15~5.25GHz 5.25~5.35GHz 5.47~5.725GHz 5.725~5.85GHz 5.925~6.425GHz 6.425~6.525GHz 6.525~6.875GHz 6.875~7.125GHz	FOXCONN	WBU058-BGA	2.412~2.472GHz: 3.91 5.15~5.25GHz: 4.11 5.25~5.35GHz: 5.18 5.47~5.725GHz: 4.62 5.725~5.85GHz: 4.28 5.925~6.425GHz: 3.34 6.425~6.525GHz: 3.35 6.525~6.875GHz: 4.88 6.875~7.125GHz: 4.72	Printing	N/A
WLAN ANT2	Chain1	2.412~2.472GHz 5.15~5.25GHz 5.25~5.35GHz 5.47~5.725GHz 5.725~5.85GHz 5.925~6.425GHz 6.425~6.525GHz 6.525~6.875GHz 6.875~7.125GHz	FOXCONN	WBU058-BGA	2.412~2.472GHz: 4.94 5.15~5.25GHz: 3.8 5.25~5.35GHz: 3.76 5.47~5.725GHz: 3.36 5.725~5.85GHz: 3.34 5.925~6.425GHz: 3.07 6.425~6.525GHz: 3.39 6.525~6.875GHz: 4.01 6.875~7.125GHz: 2.97	Printing	N/A

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual, the laboratory shall not be held responsible.

6.5. Test Mode Applicability and Tested Channel Detail

Test Item	Mode	Frequency Range(MHz)	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Bandedge	802.11ax20	5955-6415	OFDM	1 to 93	1, 45, 93	MCS0 Nss1
	802.11ax40			3 to 91	3, 43, 91	MCS0 Nss1
	802.11ax80			7 to 87	7, 39, 87	MCS0 Nss1
	802.11ax20	6435-6515	OFDM	97 to 113	97, 105, 113	MCS0 Nss1
	802.11ax40			99 to 115	99, 107, 115	MCS0 Nss1
	802.11ax80			103 to 119	103, 119	MCS0 Nss1
	802.11ax20	6535-6875	OFDM	117 to 181	117, 149, 181	MCS0 Nss1
	802.11ax40			123 to 179	123, 155, 179	MCS0 Nss1
	802.11ax80			135 to 167	135, 151, 167	MCS0 Nss1
	802.11ax20	6875-7115	OFDM	185 to 233	185, 209, 229, 233	MCS0 Nss1
	802.11ax40			187 to 227	187, 211, 227	MCS0 Nss1
	802.11ax80			183 to 215	183, 199, 215	MCS0 Nss1
Radiated Emissions (Above 1GHz)	802.11ax20	5955-6415	OFDM	1 to 93	1, 45, 93	MCS0 Nss1
	802.11ax20	6435-6515	OFDM	97 to 113	97, 105, 113	MCS0 Nss1
	802.11ax20	6535-6875	OFDM	117 to 181	117, 149, 181	MCS0 Nss1
	802.11ax20	6875-7115	OFDM	185 to 233	185, 209, 229, 233	MCS0 Nss1
Radiated Emissions (Below 1GHz)	802.11ax20	5955-6415	OFDM	1 to 93	149	MCS0 Nss1
AC Power Line Conducted Emission	802.11ax80	6535-6875	OFDM	135 to 167	135	MCS0 Nss1
Antenna Port Conducted Measurement	802.11ax20	5955-6415	OFDM	1 to 93	1, 45, 93	MCS0 Nss1
	802.11ax40			3 to 91	3, 43, 91	MCS0 Nss1
	802.11ax80			7 to 87	7, 39, 87	MCS0 Nss1
	802.11ax20	6435-6515	OFDM	97 to 113	97, 105, 113	MCS0 Nss1
	802.11ax40			99 to 115	99, 107, 115	MCS0 Nss1
	802.11ax80			103 to 119	103, 119	MCS0 Nss1
	802.11ax20	6875-7115	OFDM	117 to 181	117, 149, 181	MCS0 Nss1
	802.11ax40			123 to 179	123, 155, 179	MCS0 Nss1
	802.11ax80			135 to 167	135, 151, 167	MCS0 Nss1
	802.11ax20	6875-7115	OFDM	185 to 233	185, 209, 229, 233	MCS0 Nss1
	802.11ax40			187 to 227	187, 211, 227	MCS0 Nss1
	802.11ax80			183 to 215	183, 199, 215	MCS0 Nss1

Test Item	Mode	Frequency Range(MHz)	Modulation Type	Available Channel	Test Channel	Data Rate
Contention Based Protocol Measurement	802.11ax20	5955-6415	OFDM	1 to 93	1	MCS0 Nss1
	802.11ax80			7 to 87	87	MCS0 Nss1
	802.11ax20	6435-6515	OFDM	97 to 113	97	MCS0 Nss1
	802.11ax80			103 to 119	119	MCS0 Nss1
	802.11ax20	6535-6875	OFDM	117 to 181	153	MCS0 Nss1
	802.11ax80			135 to 167	167	MCS0 Nss1
	802.11ax20	6875-7115	OFDM	185 to 233	213	MCS0 Nss1
	802.11ax80			183 to 215	215	MCS0 Nss1

- The fundamental of the EUT was investigated in three orthogonal axes X-Y/Y-Z/X-Z, it was determined that X-Y plane was worst-case. Therefore, all final radiated testing was performed with the EUT in X-Y plane.

- The EUT has 3 types of Models: WBU058-BGA-V11, WBU058-BGA-V13 and WBU058-BGA-V15, above Models was pre-tested radiated emission, the worst case was found in the Model: WBU058-BGA-V11 , and therefore only the worst case test data was recorded in this report.

- The radiated spurious emission test was performed in all test modes. The worst case was 802.11ax20, and therefore, only the worst case data is shown in this report to represent all test modes.

- In the transmit mode, 802.11ax80 channel 135 has the highest RF output power. Therefore, the AC conduction were performed using this worst-case mode.

- In the transmit mode, 802.11ax20 channel 1 has the worst case of Tx spurious emission (above 1GHz). Therefore, all final tests for the spurious emission (below 1GHz) were performed using this worst-case mode.

- For Antenna Port Conducted Measurement, this item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Simultaneously transmission condition:

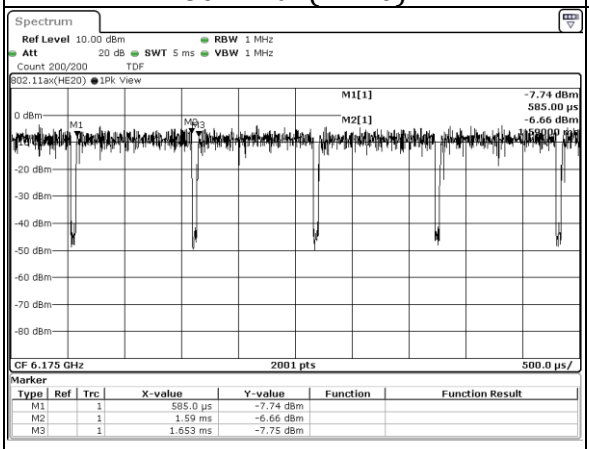
Condition	Technology	
1	WLAN (6GHz)	BT LE
2	WLAN (6GHz)	BT EDR

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

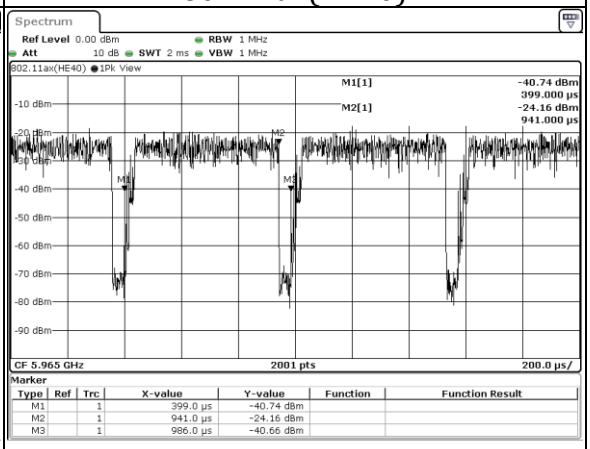
6.6. Duty cycle

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle	Duty Factor(dB)	VBW(for AV at Freq above 1GHz)
802.11ax(HE20)	1.005	1.068	0.9410	0.26	1kHz
802.11ax(HE40)	0.542	0.587	0.9233	0.35	2kHz
802.11ax(HE80)	0.295	0.340	0.8676	0.62	3kHz

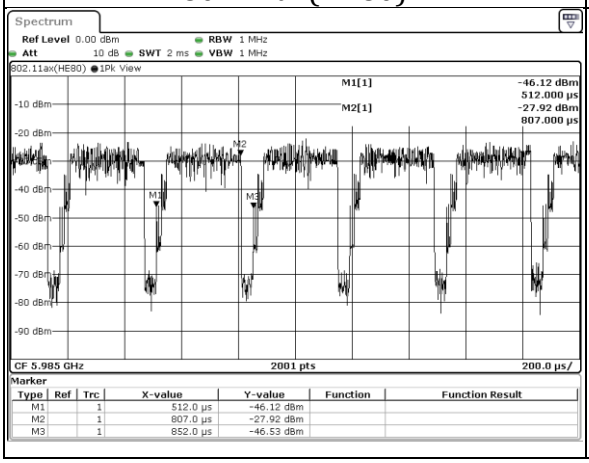
802.11ax(HE20)



802.11ax(HE40)



802.11ax(HE80)



7. Test Equipment

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2024/3/29	2025/3/28
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2023/11/22	2024/11/21
Loop Antenna	ETS lindgren	6502	00213440	2023/12/13	2024/12/12
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2024/1/5	2025/1/4
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2023/12/8	2024/12/7
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2023/12/27	2024/12/26
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2024/5/28	2025/5/27
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2024/1/23	2025/1/22
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2024/4/16	2025/4/15
Cables (9k-18 GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2023/11/29	2024/11/28
Cables (18-40GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2023/11/29	2024/11/28

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Antenna Port Conducted Measurement					
Signal Analyzer	Rohde & Schwarz	FSVA3044	101281	2024/3/18	2025/3/17
Signal Analyzer	Rohde & Schwarz	FSV40	101490	2023/9/13	2024/9/12
				2024/7/1	2025/6/30
Attenuator	EMCI	EMC-40ATK2W10	17002	2023/11/15	2024/11/14
USB Power Sensor	Anritsu	MA24408A	12031	2024/7/13	2025/7/12
Temperature &Humidity Test Chamber	GIANT FORCE	GTH-150- 40-CP-AR	MAA1701-010	2024/3/6	2025/3/5
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2023/10/23	2024/10/22
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2024/5/14	2025/5/13
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2023/9/7	2024/9/6
Cables	TITAN	CFD200	T0732ACFD 20020A300-2	2024/5/14	2025/5/13
Contention Based Protocol Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070818	2024/3/25	2025/3/24
Spectrum Analyzer	Keysight	N9010A	MY56070827	2024/3/29	2025/3/28
Signal Generator	Keysight	N5182B	MY57300028	2023/10/23	2024/10/22

UL Software		
Description	**Name**	**Version**
Radiated measurement	e3	6.191211 (V6)
Conducted measurement	RF-Conducted-WiFi6e	ver 1.1
AC power Line Conducted Emission	EZ_EMC	UL-3A1.2

8. Description of Test Setup

Tx Mode

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Laptop	DELL	Latitude E5470	3JFKWF2	Provided by Lab
B	DC Power Supply	Gwinstek	GPD-2303S	N/A	Provided by Lab

I/O Cables

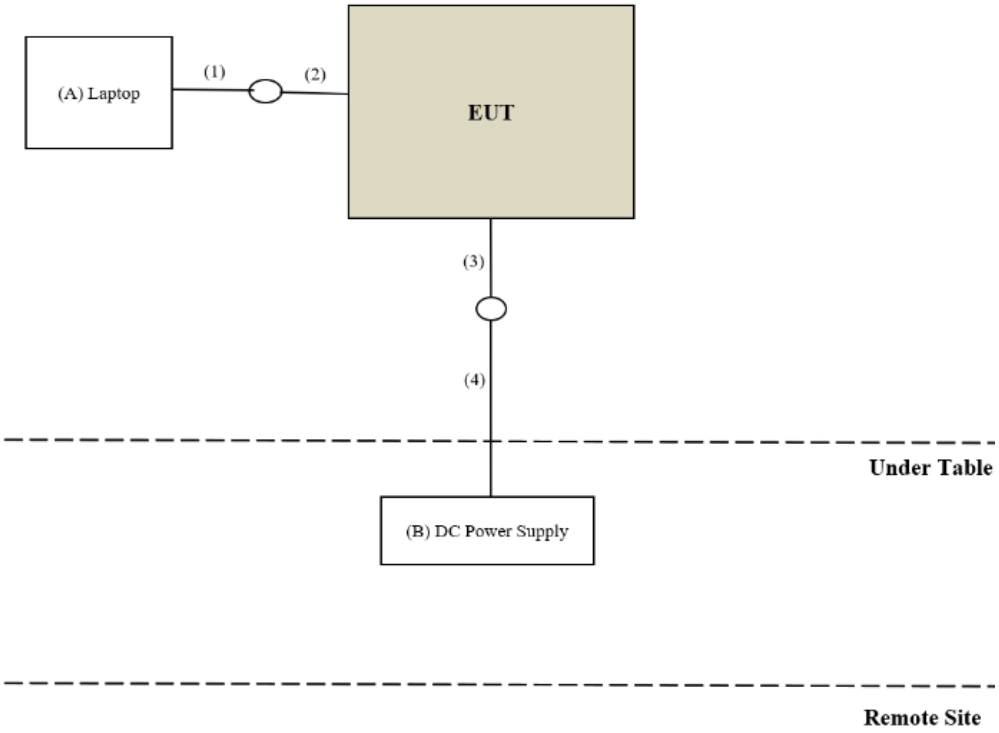
ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	USB Cable	UGREEN	VW-1	0.53	Supplied by client
2	DC Cable	TAYA	PT0020-2	0.1	Supplied by client
3	DC Cable	TAYA	PT0020-2	0.1	Supplied by client
4	DC Cable	TAYA	PT0020-2	2	Provided by Lab

Test Setup

Controlled using a bespoke application (MT7961 QA 0.0.2.39) on a test Notebook. The application was used to enable a continuous transmission mode and to select the test channels, data rates, modulation schemes and power setting as required.

Setup Diagram for Test

Tx Mode



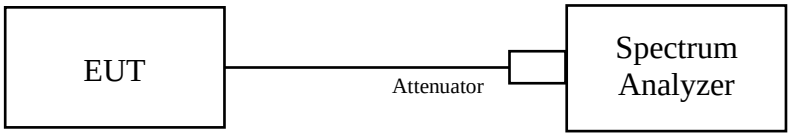
9. Test Results

9.1. 26dB Bandwidth

Test procedure

a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. 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%.

Test Setup

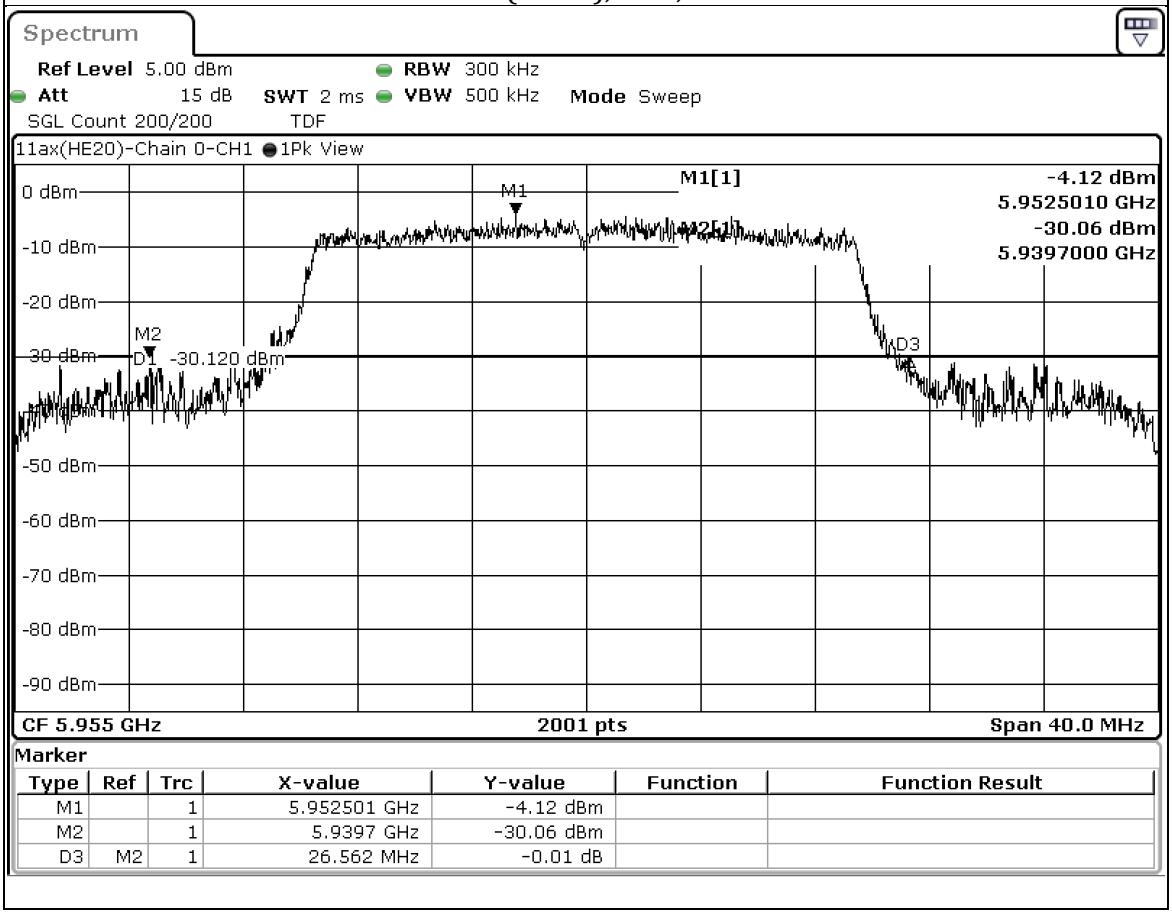


The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

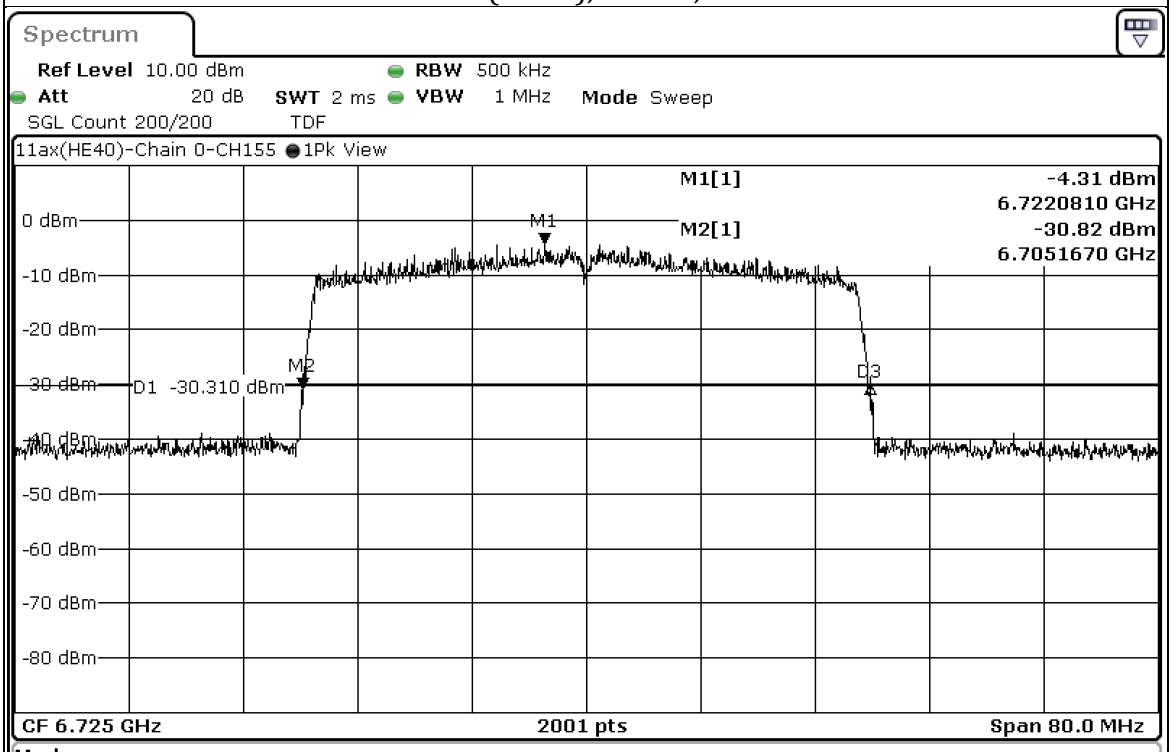
Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ax(HE20)	1	5955	26.563	22.332	320	PASS
	45	6175	26.024	23.035	320	PASS
	93	6415	22.186	22.163	320	PASS
	97	6435	22.235	22.793	320	PASS
	105	6475	22.253	23.425	320	PASS
	113	6515	25.275	22.938	320	PASS
	117	6535	21.303	23.328	320	PASS
	149	6695	25.085	21.608	320	PASS
	181	6855	23.475	22.438	320	PASS
	185	6875	22.64	22.041	320	PASS
	209	6995	21.732	22.12	320	PASS
	229	7095	22.568	25.223	320	PASS
	233	7115	22.751	23.986	320	PASS
	185	6875	22.64	22.041	320	PASS
	209	6995	21.732	22.12	320	PASS
	229	7095	22.568	25.223	320	PASS
	233	7115	22.751	23.986	320	PASS

802.11ax(HE20), CH1, Chain 0



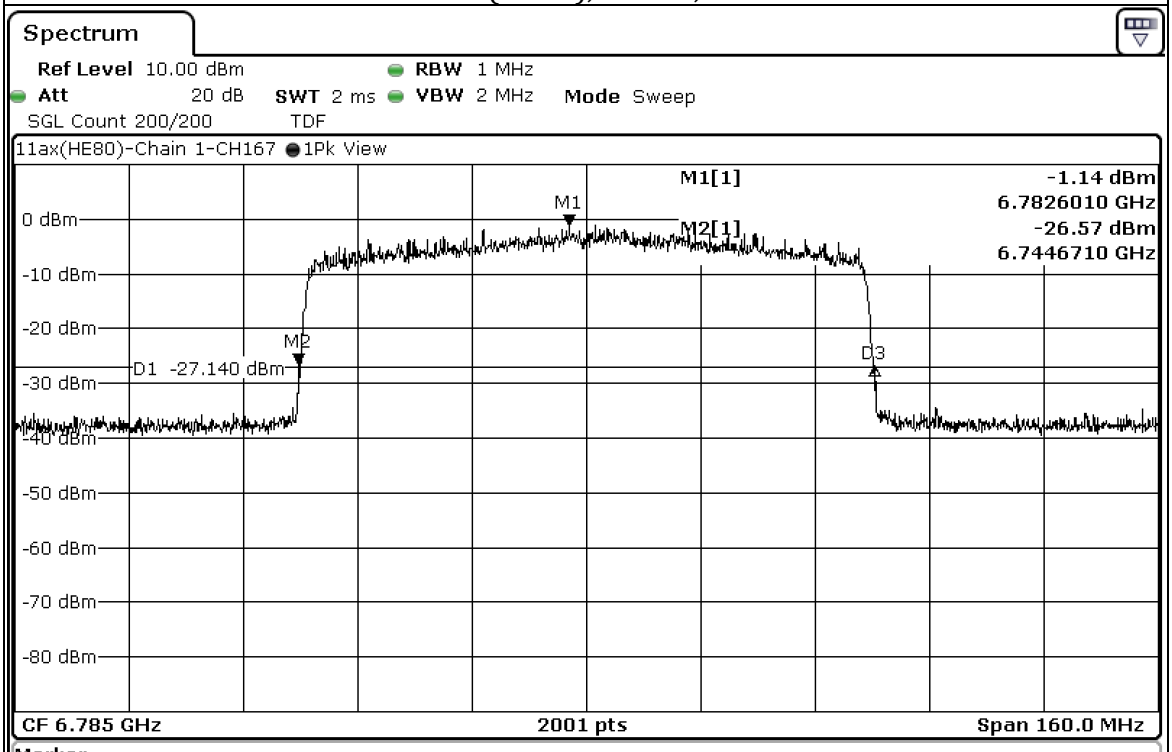
Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ax(HE40)	3	5965	39.628	39.468	320	PASS
	43	6165	39.537	39.557	320	PASS
	91	6405	39.405	39.598	320	PASS
	99	6445	39.647	39.561	320	PASS
	107	6485	39.545	39.673	320	PASS
	115	6525	39.648	39.527	320	PASS
	123	6565	39.57	39.463	320	PASS
	155	6725	39.677	39.501	320	PASS
	179	6845	39.538	39.598	320	PASS
	187	6885	39.646	39.458	320	PASS
	211	7005	39.562	39.542	320	PASS
	227	7085	39.374	39.565	320	PASS

802.11ax(HE40), CH155, Chain 0



Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ax(HE80)	7	5985	80.307	80.38	320	PASS
	39	6145	80.454	80.242	320	PASS
	87	6385	80.393	80.321	320	PASS
	103	6465	80.241	80.426	320	PASS
	119	6545	80.397	80.129	320	PASS
	135	6625	80.418	80.307	320	PASS
	151	6705	80.152	80.222	320	PASS
	167	6785	80.111	80.576	320	PASS
	183	6865	80.493	80.316	320	PASS
	199	6945	80.188	80.453	320	PASS
	215	7025	80.187	80.147	320	PASS

802.11ax(HE80), CH167, Chain 1

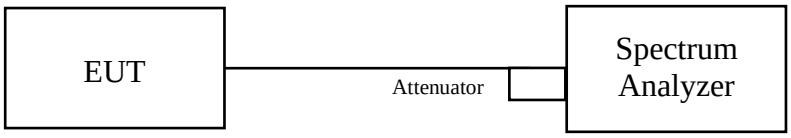


9.2. Occupied Bandwidth

Test procedure

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

Test Setup

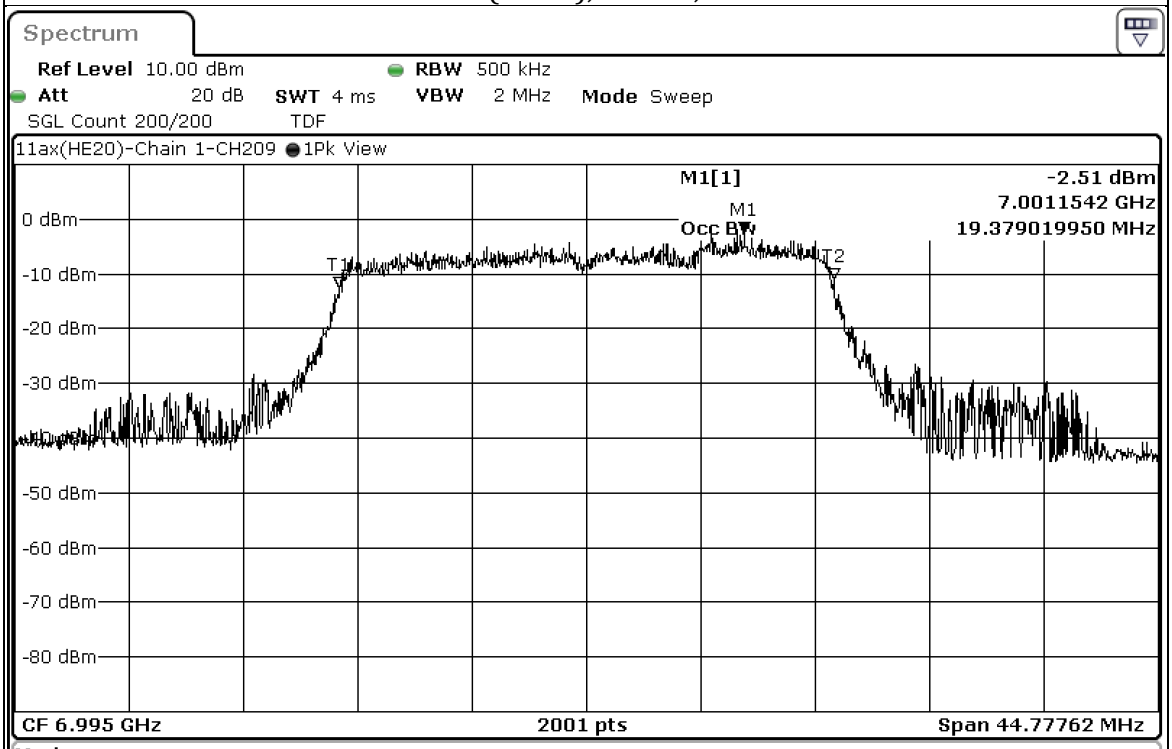


The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

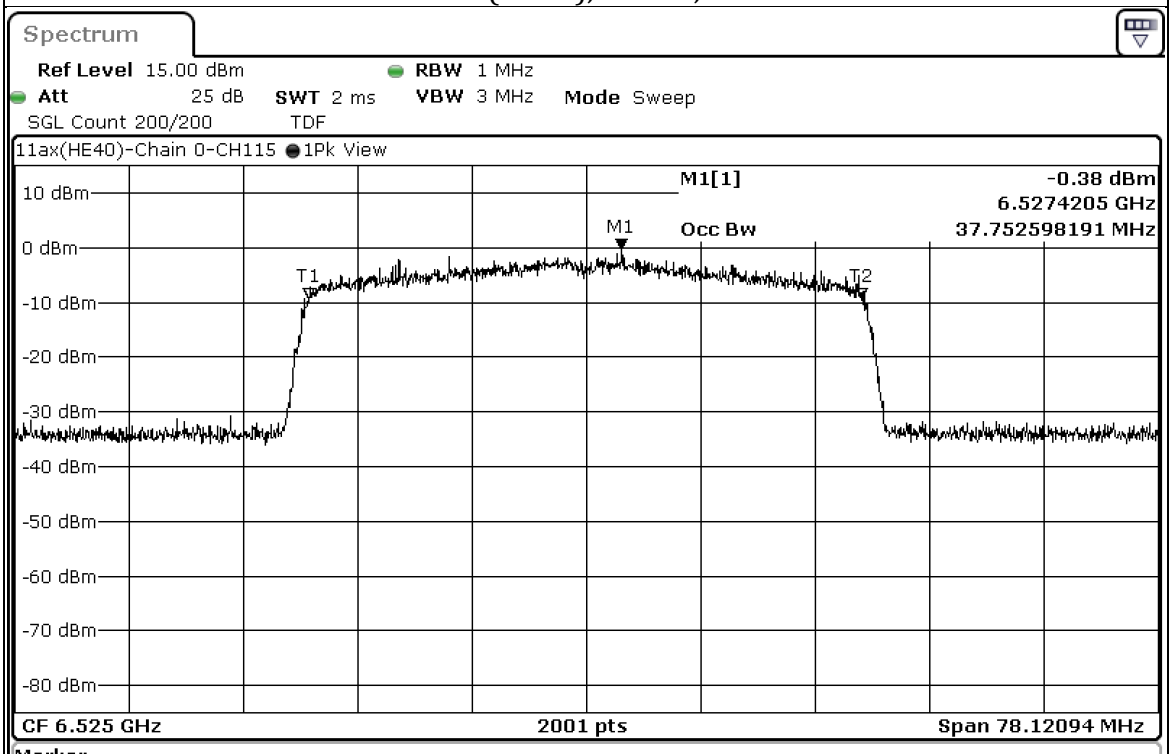
Mode	CH	Freq (MHz)	OBW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ax(HE20)	1	5955	19.263	19.244	320	PASS
	45	6175	19.292	19.227	320	PASS
	93	6415	19.209	19.227	320	PASS
	97	6435	19.204	19.213	320	PASS
	105	6475	19.204	19.2	320	PASS
	113	6515	19.226	19.213	320	PASS
	117	6535	19.31	19.196	320	PASS
	149	6695	19.222	19.196	320	PASS
	181	6855	19.213	19.222	320	PASS
	185	6875	19.222	19.203	320	PASS
	209	6995	19.353	19.379	320	PASS
	229	7095	19.218	19.239	320	PASS
	233	7115	19.27	19.238	320	PASS
	185	6875	19.222	19.203	320	PASS
	209	6995	19.353	19.379	320	PASS
	229	7095	19.218	19.239	320	PASS
	233	7115	19.27	19.238	320	PASS

802.11ax(HE20), CH209, Chain 1



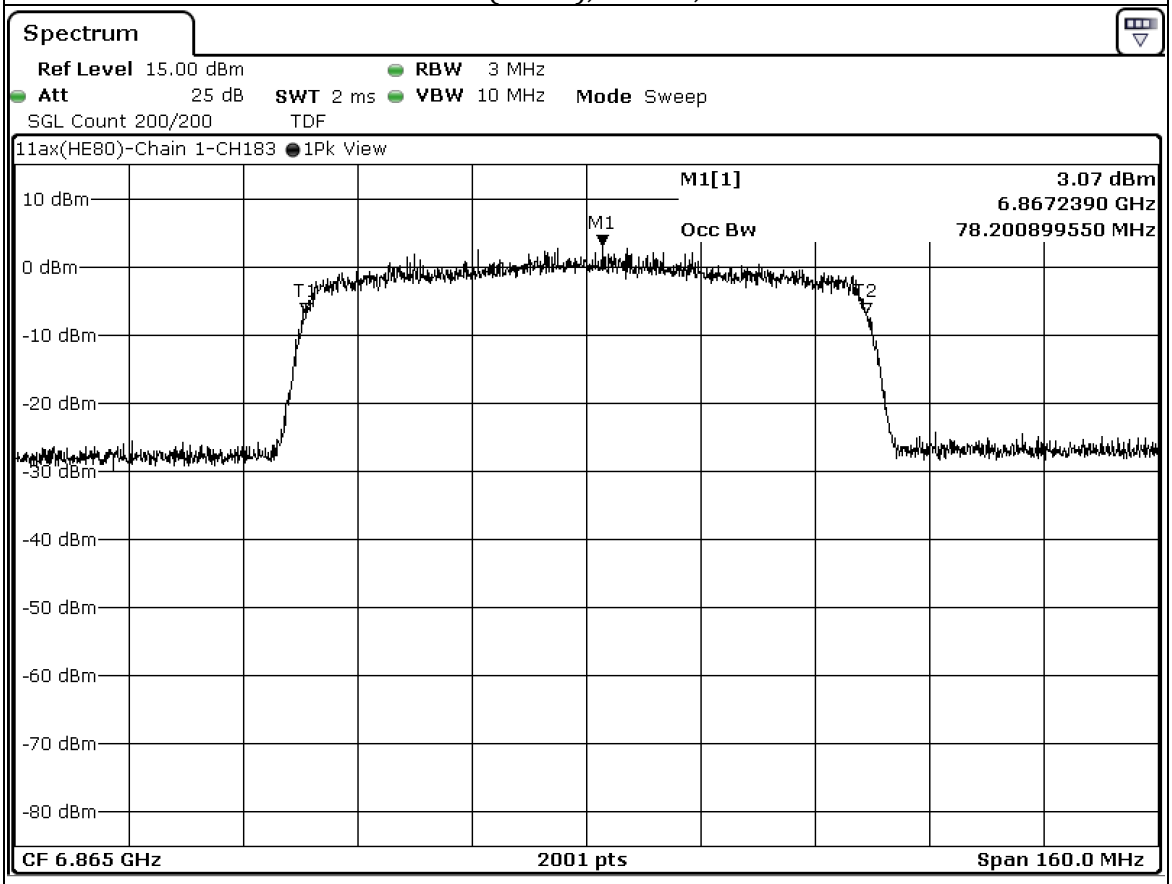
Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	OBW (MHz) Chain 1	Limit (MHz)	Result
802.11ax(HE40)	3	5965	37.637	37.674	320	PASS
	43	6165	37.714	37.598	320	PASS
	91	6405	37.676	37.559	320	PASS
	99	6445	37.559	37.636	320	PASS
	107	6485	37.637	37.559	320	PASS
	115	6525	37.753	37.519	320	PASS
	123	6565	37.675	37.598	320	PASS
	155	6725	37.675	37.596	320	PASS
	179	6845	37.675	37.675	320	PASS
	187	6885	37.674	37.634	320	PASS
	211	7005	37.482	37.366	320	PASS
	227	7085	37.676	37.598	320	PASS

802.11ax(HE40), CH115, Chain 0



Mode	CH	Freq (MHz)	OBW (MHz) Chain 0	OBW (MHz) Chain 1	Limit (MHz)	Result
802.11ax(HE80)	7	5985	77.641	77.721	320	PASS
	39	6145	77.561	77.561	320	PASS
	87	6385	77.801	77.321	320	PASS
	103	6465	77.801	77.561	320	PASS
	119	6545	77.801	77.801	320	PASS
	135	6625	78.041	77.641	320	PASS
	151	6705	77.721	77.881	320	PASS
	167	6785	78.041	77.641	320	PASS
	183	6865	78.121	78.201	320	PASS
	199	6945	77.641	77.481	320	PASS
	215	7025	77.161	77.161	320	PASS

802.11ax(HE80), CH183, Chain 1



9.3. Transmit Power Measurement

Requirements

EUT Category		Operation Band	Limit
			Max Average Power
	Standard Power AP (6SD)	U-NII-5 U-NII-7	EIRP ≤ 36 dBm
			Outdoor device and any elevation angle above 30 degrees: EIRP ≤ 21 dBm
	Fixed Client (6FC)	U-NII-5 U-NII-7	EIRP ≤ 36 dBm
			Any elevation angle above 30 degrees: EIRP ≤ 21 dBm
	Standard Client (6FX)	U-NII-5 U-NII-7	EIRP ≤ 30 dBm
	Indoor AP (6ID)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 30 dBm
	Subordinate (6PP)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 30 dBm
√	Indoor Client (6XD)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 24 dBm
	Dual Client (6CD)	Control of a low power indoor AP: U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 24 dBm
		Control of a standard power AP: U-NII-5 U-NII-7	EIRP ≤ 30 dBm
	Very Low Power (6VL)	U-NII-5 U-NII-7	EIRP ≤ 14 dBm

Note:

1. P_{Out} = maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi, B is the 26 dB emission bandwidth in megahertz
2. If EUT with Multiple Transmitter Output:
   a. Directional Gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ +...+$10^{Gn/20}$)^2 / Nant] dBi.
   Nant: Number of Transmit Antennas
   G1, G2,..., Gn: Gain of Individual Antennas
   Example: two antenna and gain 5 dBi / 3dBi, so if it was used for TxBF power measurement
   Directional Gain = 10 log[(105/20 + 103/20)2 / 2] dBi = 7.07 dBi
   b. Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices, CDD
   Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
   Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
   Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.
   Example: Maximum antenna gain = 5 dBi and NANT ≤ 4, so if it was used for CDD power measurement
   Directional Gain = 5 dBi + Array Gain = 5 dBi + 0 dB = 5 dBi
   c. For power measurement of KDB 662911 is used with multiple transmitter output. Total conducted power is the sum of the conducted power levels measured at the various output ports.

Test Procedure

For EIRP Power Measurement

Test method PM

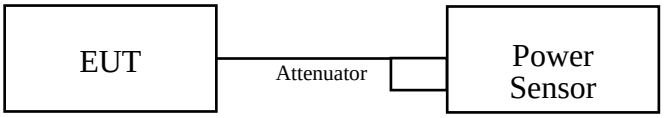
Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

* If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."

EIRP = Maximum Conducted Power + Directional Gain

Test Setup

For Conducted Power Measurement



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq. (MHz)	AVG Power (dBm)		Total Power (mW)	Total Power (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
			Chain0	Chain1						
802.11ax (HE20)	1	5955	3.94	2.33	4.188	6.22	3.34	9.56	24	PASS
	45	6175	0.96	4.67	4.178	6.21	3.34	9.55	24	PASS
	93	6415	2.37	4.6	4.613	6.64	3.34	9.98	24	PASS
	97	6435	1.66	4.25	4.13	6.16	3.39	9.55	24	PASS
	105	6475	2.53	4.17	4.406	6.44	3.39	9.83	24	PASS
	113	6515	2.72	4.45	4.656	6.68	3.39	10.07	24	PASS
	117	6535	1.78	3.16	3.573	5.53	4.88	10.41	24	PASS
	149	6695	1.19	3.08	3.35	5.25	4.88	10.13	24	PASS
	181	6855	1.9	2.48	3.319	5.21	4.88	10.09	24	PASS
	185	6875	2.68	2.81	3.767	5.76	4.88	10.64	24	PASS
	209	6995	2.05	1.23	2.931	4.67	4.72	9.39	24	PASS
	229	7095	1.79	0.37	2.6	4.15	4.72	8.87	24	PASS
	233	7115	1.94	0.51	2.685	4.29	4.72	9.01	24	PASS
802.11ax (HE40)	3	5965	6.15	4.3	6.808	8.33	3.34	11.67	24	PASS
	43	6165	4.05	6.76	7.278	8.62	3.34	11.96	24	PASS
	91	6405	4.36	6.72	7.43	8.71	3.34	12.05	24	PASS
	99	6445	3.58	6.23	6.471	8.11	3.39	11.50	24	PASS
	107	6485	4.4	6.41	7.129	8.53	3.39	11.92	24	PASS
	115	6525	3.75	5.56	5.97	7.76	4.88	12.64	24	PASS
	123	6565	3.88	5.45	5.957	7.75	4.88	12.63	24	PASS
	155	6725	3.21	4.63	5	6.99	4.88	11.87	24	PASS
	179	6845	4.19	5.17	5.916	7.72	4.88	12.60	24	PASS
	187	6885	4.77	4.74	5.984	7.77	4.88	12.65	24	PASS
	211	7005	3.74	2.4	4.102	6.13	4.72	10.85	24	PASS
	227	7085	4.32	2.58	4.519	6.55	4.72	11.27	24	PASS
802.11ax (HE80)	7	5985	6.28	4.85	7.295	8.63	3.34	11.97	24	PASS
	39	6145	4.28	6.88	7.551	8.78	3.34	12.12	24	PASS
	87	6385	4.52	6.82	7.638	8.83	3.34	12.17	24	PASS
	103	6465	4.58	6.56	7.396	8.69	3.39	12.08	24	PASS
	119	6545	4.7	6.09	7.015	8.46	4.88	13.34	24	PASS
	135	6625	5.31	6.31	7.674	8.85	4.88	13.73	24	PASS
	151	6705	4.65	6.28	7.161	8.55	4.88	13.43	24	PASS
	167	6785	4.63	6.62	7.499	8.75	4.88	13.63	24	PASS
	183	6865	5.61	5.89	7.516	8.76	4.88	13.64	24	PASS
	199	6945	6.11	5.29	7.464	8.73	4.72	13.45	24	PASS
	215	7025	5.6	3.62	5.929	7.73	4.72	12.45	24	PASS

9.4. Power Spectral Density

Requirements

EUT Category		Operation Band	Limit
			Max Average Power Density
	Standard Power AP (6SD)	U-NII-5 U-NII-7	EIRP ≤ 23 dBm/MHz
	Fixed Client (6FC)	U-NII-5 U-NII-7	EIRP ≤ 23 dBm/MHz
	Standard Client (6FX)	U-NII-5 U-NII-7	EIRP ≤ 17 dBm/MHz
	Indoor AP (6ID)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 5 dBm/MHz
	Subordinate (6PP)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ 5 dBm/MHz
√	Indoor Client (6XD)	U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ -1 dBm/MHz
	Dual Client (6CD)	Control of a low power indoor AP: U-NII-5, U-NII-6 U-NII-7, U-NII-8	EIRP ≤ -1 dBm/MHz
		Control of a standard power AP: U-NII-5 U-NII-7	EIRP ≤ 17 dBm/MHz
	Very Low Power (6VL)	U-NII-5 U-NII-7	EIRP ≤ -5 dBm/MHz

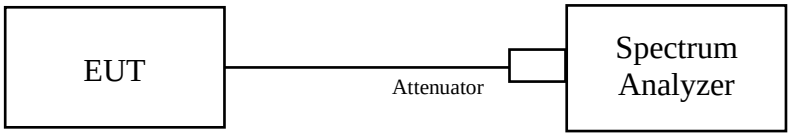
Note:
1. PSD = power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. If EUT with Multiple Transmitter Output:
   a. Directional Gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{Gn/20})^2$ / Nant] dBi.
   Nant: Number of Transmit Antennas
   G1, G2,..., Gn: Gain of Individual Antennas
   Example: two antenna and gain 5 dBi / 3dBi, so if it was used for power density measurement
   Directional Gain = 10 log[$(10^{5/20} + 10^{3/20})^2$ / 2] dBi = 7.07 dBi
   b. "PSD per chain" of the report shown is maximum value for each chain, at the "Total PSD" is summing entire spectra across corresponding frequency bins on the various outputs by computer, refer KDB 662911 Method a) for calculating total power density.
   c. Method a) of power density measurement of KDB 662911 is used for calculating total power density with multiple transmitter output. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
4. EIRP Power Density = Sum of the conducted power density levels + Directional Gain
5. Refer to section 6.6 for duty cycle spectrum plot. (If duty cycle<98%)

Test procedure

Using method:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
c. Sweep time = auto, trigger set to “free run”.
d. Trace average at least 100 traces in power averaging mode.
e. Record the max value and add 10 log (1/duty cycle) *If duty cycle<98%

Test Setup



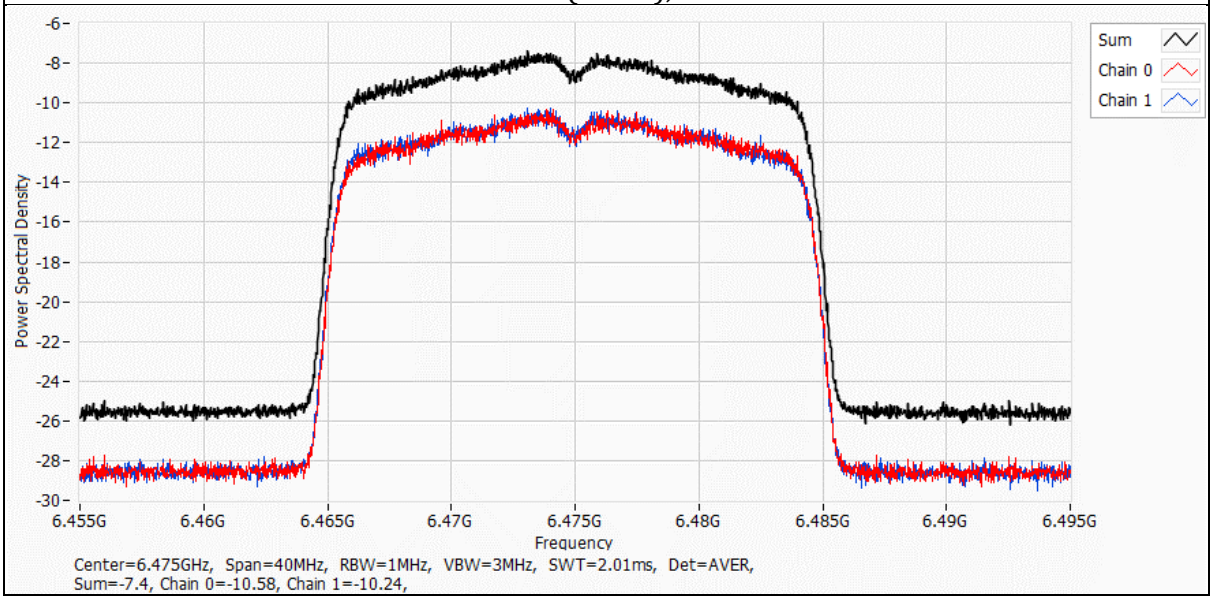
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ax(HE20)	1	5955	6.22	-1.512	-1	PASS
	45	6175	6.22	-1.467	-1	PASS
	93	6415	6.22	-1.071	-1	PASS
	97	6435	6.38	-1.196	-1	PASS
	105	6475	6.38	-1.016	-1	PASS
	113	6515	6.38	-1.567	-1	PASS
	117	6535	7.47	-1.065	-1	PASS
	149	6695	7.47	-1.429	-1	PASS
	181	6855	7.47	-1.567	-1	PASS
	185	6875	7.47	-1.249	-1	PASS
	209	6995	6.9	-1.267	-1	PASS
	229	7095	6.9	-1.536	-1	PASS
	233	7115	6.9	-1.687	-1	PASS

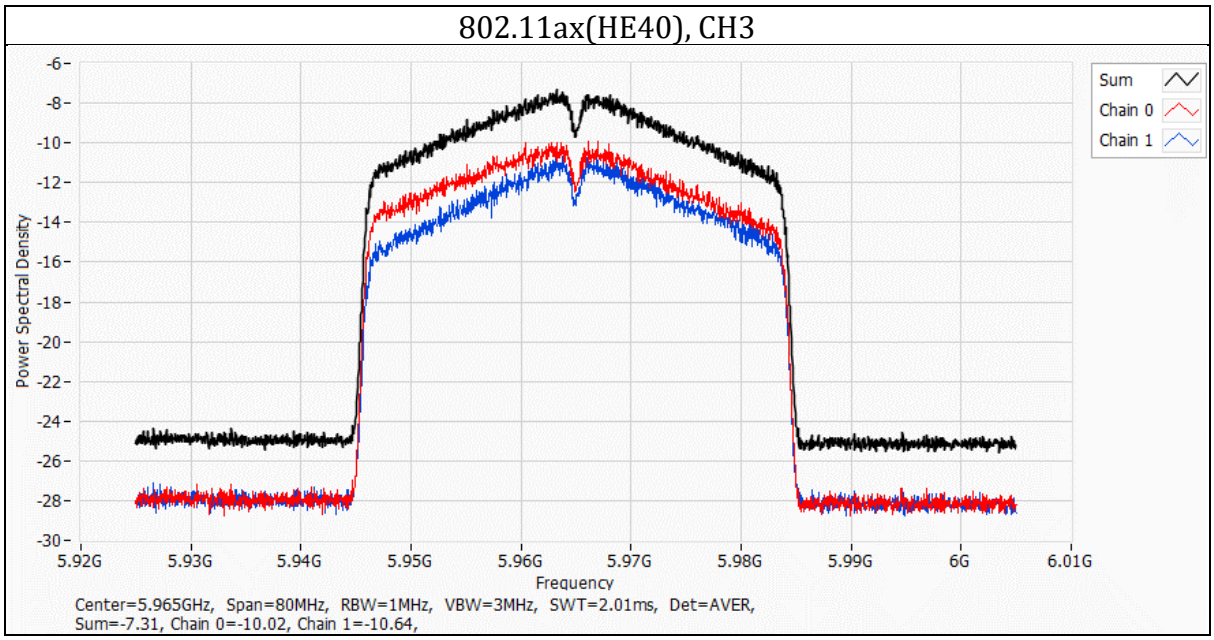
Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ax(HE20)	1	5955	-9.37	-12.34
	45	6175	-10.65	-10.34
	93	6415	-10.15	-10.28
	97	6435	-10.45	-10.57
	105	6475	-10.32	-10.24
	113	6515	-10.52	-11.06
	117	6535	-10.84	-12.04
	149	6695	-13.75	-10.24
	181	6855	-13.68	-10.52
	185	6875	-13.12	-10.4
	209	6995	-13.1	-9.81
	229	7095	-13.06	-10.08
	233	7115	-13.57	-10.13

802.11ax(HE20), CH105



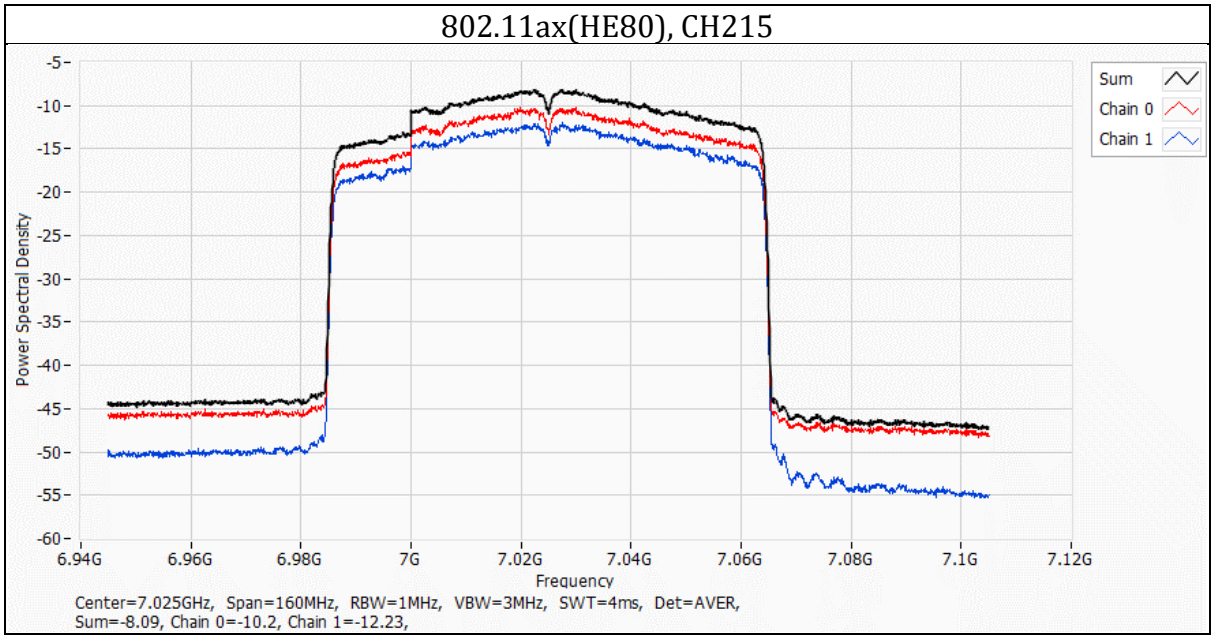
Mode	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ax(HE40)	3	5965	6.22	-1.09	-1	PASS
	43	6165	6.22	-1.389	-1	PASS
	91	6405	6.22	-1.301	-1	PASS
	99	6445	6.38	-1.193	-1	PASS
	107	6485	6.38	-1.151	-1	PASS
	115	6525	7.47	-1.538	-1	PASS
	123	6565	7.47	-1.47	-1	PASS
	155	6725	7.47	-1.359	-1	PASS
	179	6845	7.47	-1.273	-1	PASS
	187	6885	7.47	-1.182	-1	PASS
	211	7005	6.9	-1.661	-1	PASS
	227	7085	6.9	-1.633	-1	PASS

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ax(HE40)	3	5965	-9.89	-10.64
	43	6165	-11.84	-9.3
	91	6405	-13.26	-8.76
	99	6445	-13.2	-8.88
	107	6485	-13.04	-8.81
	115	6525	-14.14	-10.31
	123	6565	-14.01	-10.41
	155	6725	-13.99	-10.33
	179	6845	-13.18	-10.53
	187	6885	-13.11	-10.46
	211	7005	-12.96	-10.25
	227	7085	-13.01	-10.21



Mode	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ax(HE80)	7	5985	6.22	-3.357	-1	PASS
	39	6145	6.22	-3.127	-1	PASS
	87	6385	6.22	-3.043	-1	PASS
	103	6465	6.38	-2.819	-1	PASS
	119	6545	7.47	-2.055	-1	PASS
	135	6625	7.47	-1.472	-1	PASS
	151	6705	7.47	-1.409	-1	PASS
	167	6785	7.47	-1.774	-1	PASS
	183	6865	7.47	-2.783	-1	PASS
	199	6945	6.9	-2.499	-1	PASS
	215	7025	6.9	-1.189	-1	PASS

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ax(HE80)	7	5985	-12.4	-12.55
	39	6145	-14.47	-10.59
	87	6385	-14.6	-10.72
	103	6465	-13.55	-11
	119	6545	-13.41	-11.66
	135	6625	-13.46	-10.83
	151	6705	-12.44	-11.27
	167	6785	-12.85	-11.54
	183	6865	-13.06	-13.07
	199	6945	-11.61	-13.19
	215	7025	-10.2	-11.87



9.5. Frequency Stability

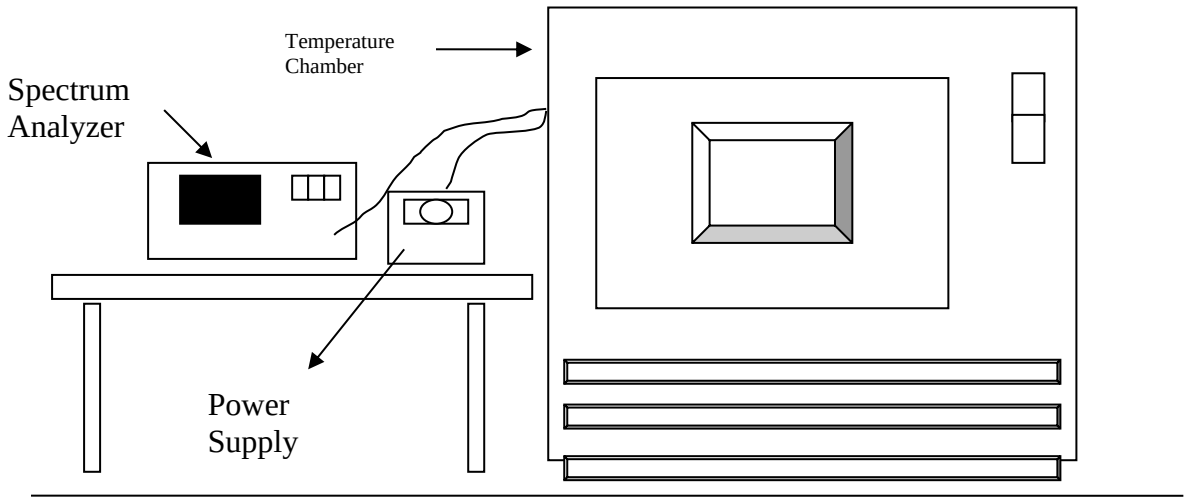
Requirements

The frequency of the carrier signal shall be maintained within band of operation.

Test procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Test Setup



Test Data

Frequency Stability Versus Temp.									
Operating Frequency: 5955 MHz									
TEMP. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
50	3.3	5954.9875	-2.10	5954.9856	-2.42	5954.9842	-2.65	5954.9851	-2.50
40	3.3	5955.0309	5.19	5955.0293	4.92	5955.0296	4.97	5955.0317	5.32
30	3.3	5955.0163	2.74	5955.0152	2.55	5955.0118	1.98	5955.0147	2.47
20	3.3	5955.0067	1.13	5955.0054	0.91	5955.0042	0.71	5955.0034	0.57
10	3.3	5955.0056	0.94	5955.0041	0.69	5955.0045	0.76	5955.0037	0.62
0	3.3	5955.0251	4.21	5955.0233	3.91	5955.0257	4.32	5955.0232	3.90
-10	3.3	5954.9896	-1.75	5954.9917	-1.39	5954.992	-1.34	5954.9914	-1.44
-20	3.3	5954.9902	-1.65	5954.9916	-1.41	5954.9897	-1.73	5954.992	-1.34
-30	3.3	5954.9913	-1.46	5954.9908	-1.54	5954.9878	-2.05	5954.9865	-2.27
TEMP. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
20	3.795	5955.0061	1.02	5955.0056	0.94	5955.0053	0.89	5955.0037	0.62
20	3.3	5955.0067	1.13	5955.0054	0.91	5955.0042	0.71	5955.0034	0.57
20	2.805	5955.0077	1.29	5955.0054	0.91	5955.0039	0.65	5955.0033	0.55

9.6. Radiated Spurious Emission

Requirements

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified 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:
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3m
5925MHz > F > 7125MHz	Peak:-7 (dBm/MHz)	88.2(dBµV/m)
	Average: -27 (dBm/MHz)	68.2(dBµV/m)

Note:
The following formula is used to convert the effective isotropic radiated power (eirp) to field strength:

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

Test Procedures

[For 9 kHz ~ 30 MHz]

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

Peak

Frequency	RBW	VBW
9 kHz~150 kHz	200 Hz	600 Hz
150 kHz~30 MHz	10 kHz	30 kHz
30 MHz~1 GHz	120 kHz	360 kHz
Above 1GHz	1 MHz	3 MHz

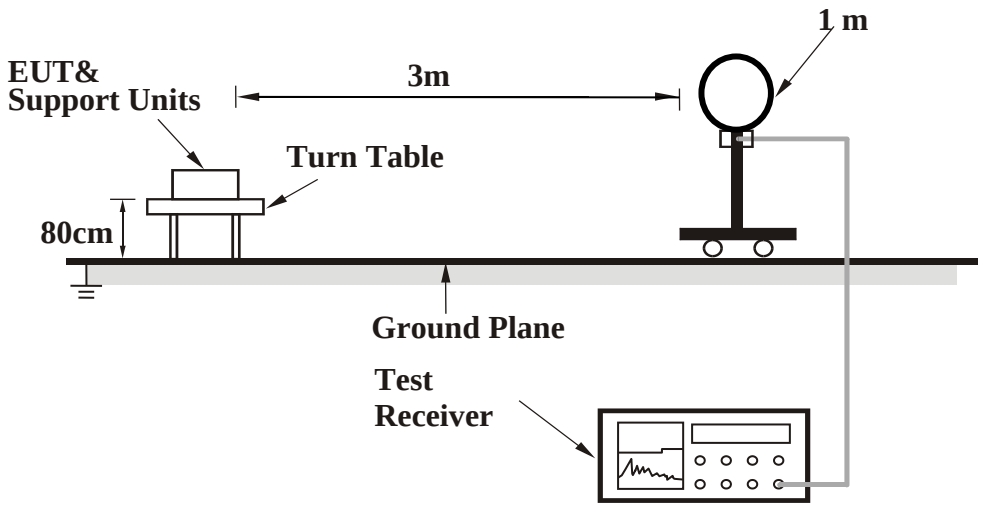
Average for above 1GHz

RBW	VBW
1MHz	Refer to section 6.6 for duty cycle.

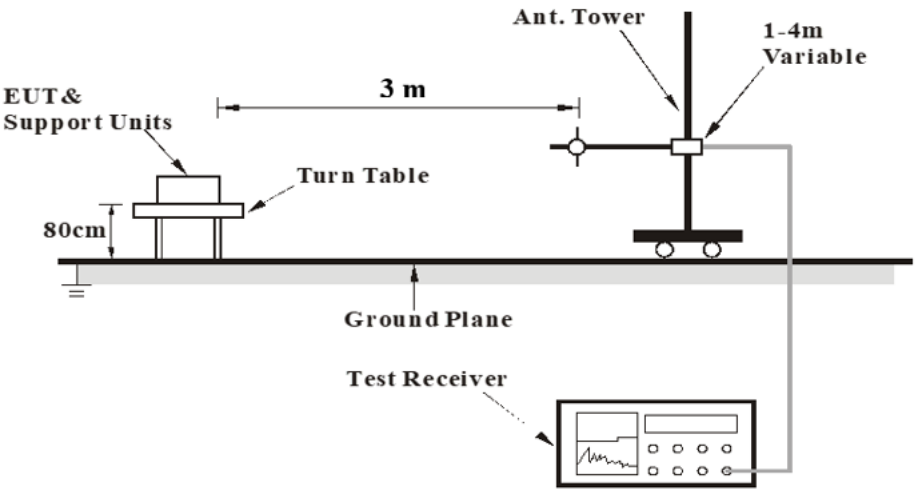
d. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
e. Test data of Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
f. Test data of Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
g. Test data of Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
h. Test data of Notation "@" = Fundamental Frequency
i. Test data of Notation " * " = The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

Test Setup

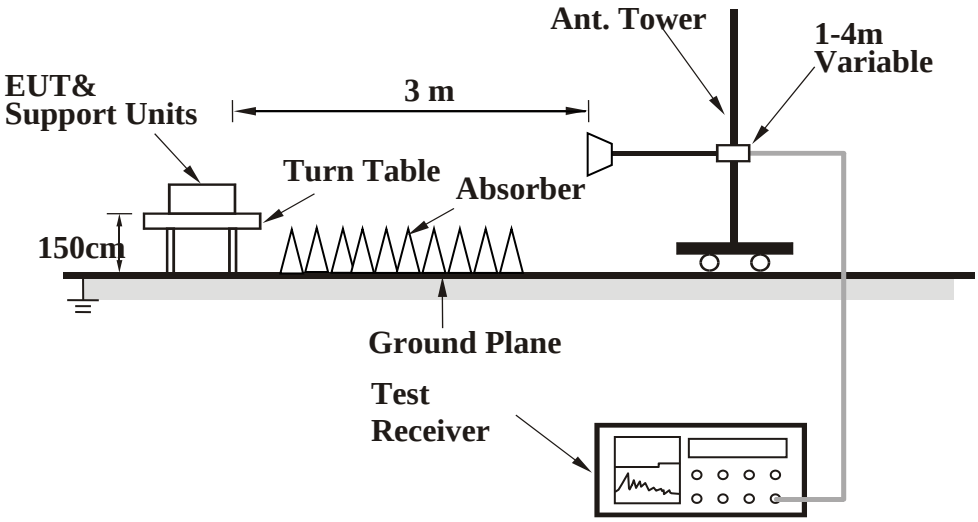
<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range 30 MHz ~ 1 GHz >



<Frequency Range above 1 GHz> 1 GHz ~ 40 GHz



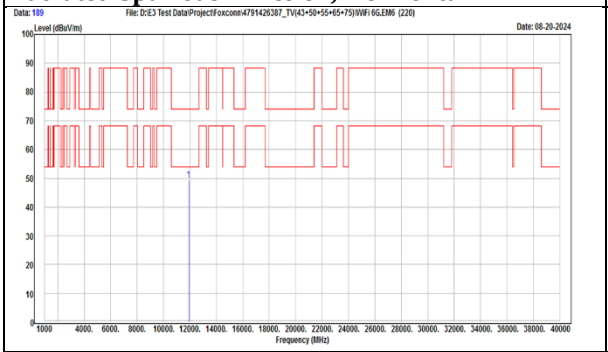
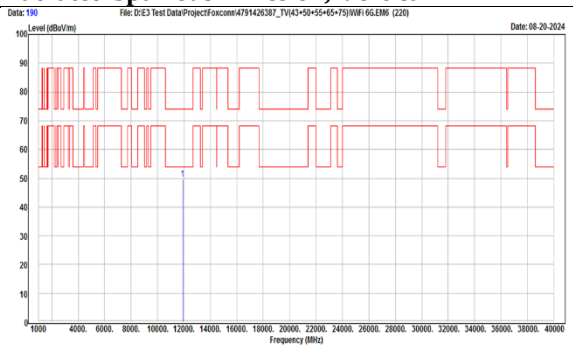
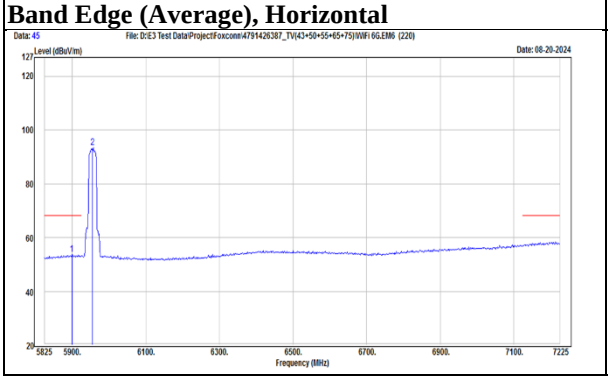
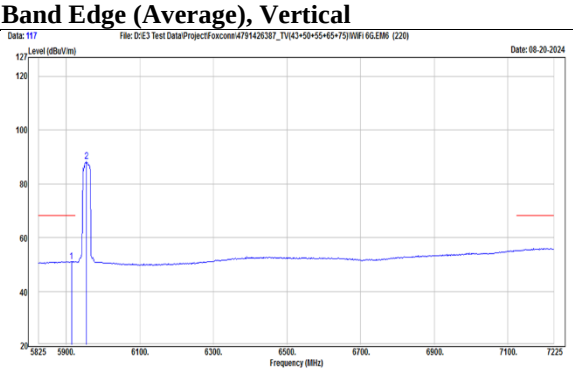
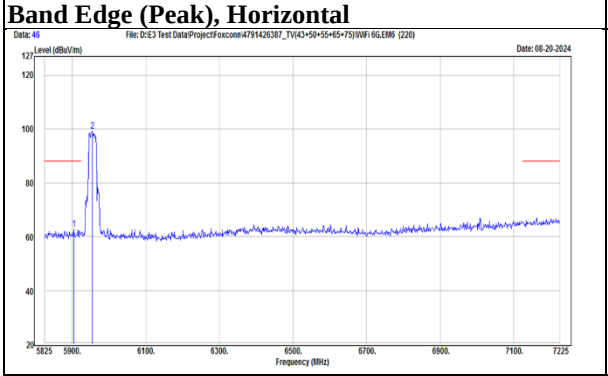
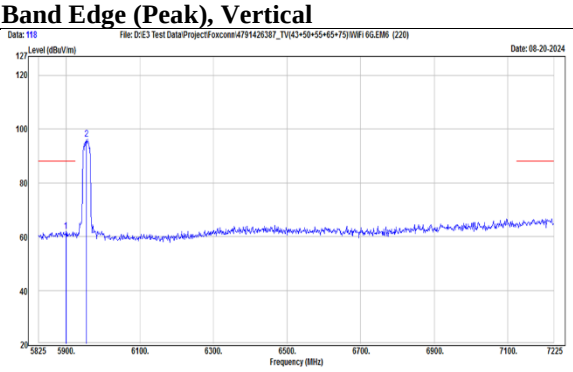
For the actual test configuration, please refer to the Setup Configurations.

Test Data

Above 1 GHz

Mode	802.11ax(HE20)	Channel	1

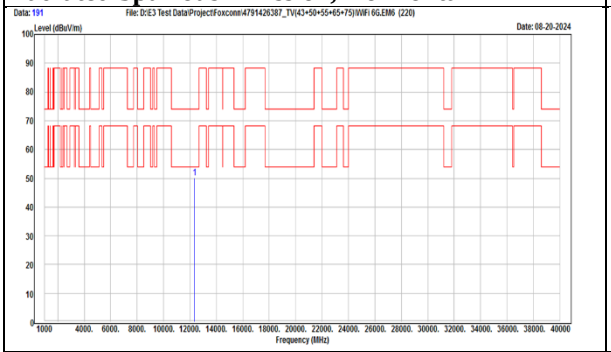
Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5899.2	32.11	21.52	53.63	68.2	-14.57	AVG
		5904.8	41.12	21.52	62.64	88.2	-25.56	PK
	@	5955	77.58	21.59	99.17	N/A	N/A	PK
	@	5955	71.79	21.59	93.38	N/A	N/A	AVG
	*	11910	30.28	19.09	49.37	74	-24.63	PK
Vertical		5899.2	40.42	21.52	61.94	88.2	-26.26	PK
		5914.6	29.53	21.53	51.06	68.2	-17.14	AVG
	@	5955	74.52	21.59	96.11	N/A	N/A	PK
	@	5955	66.73	21.59	88.32	N/A	N/A	AVG
	*	11910	30.64	19.09	49.73	74	-24.27	PK

TX, 802.11ax(HE20) (Ch 1) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 1)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 1) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 1)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 1) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 1)** **Band Edge (Peak), Vertical**
	

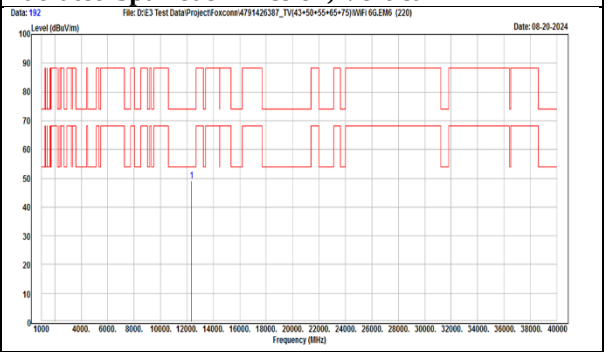
Mode	802.11ax(HE20)	Channel	45

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5903.4	41.58	21.53	63.11	88.2	-25.09	PK
		5910.4	31.76	21.53	53.29	68.2	-14.91	AVG
	@	6175	75.6	22.06	97.66	N/A	N/A	PK
	@	6175	67.92	22.06	89.98	N/A	N/A	AVG
	*	12350	30.39	19.67	50.06	74	-23.94	PK
Vertical		5896.4	29.5	21.52	51.02	68.2	-17.18	AVG
		5907.6	40.21	21.52	61.73	88.2	-26.47	PK
	@	6175	69.98	22.06	92.04	N/A	N/A	PK
	@	6175	62.41	22.06	84.47	N/A	N/A	AVG
	*	12350	29.38	19.67	49.05	74	-24.95	PK

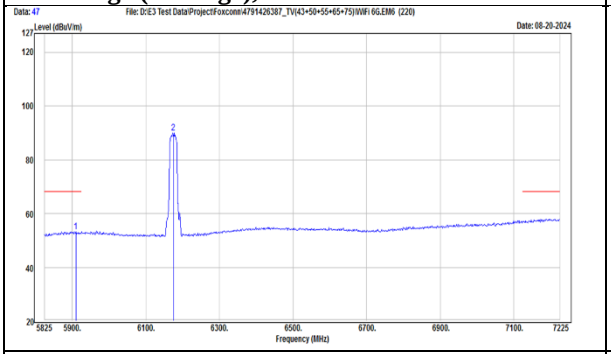
TX, 802.11ax(HE20) (Ch 45)
Radiated Spurious Emission, Horizontal



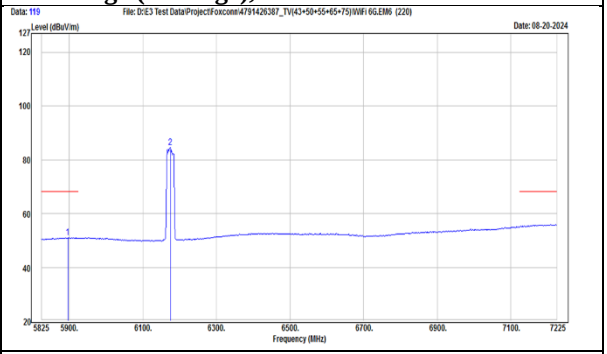
TX, 802.11ax(HE20) (Ch 45)
Radiated Spurious Emission, Vertical



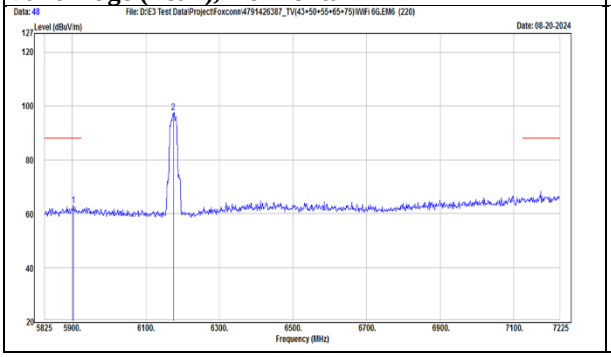
TX, 802.11ax(HE20) (Ch 45)
Band Edge (Average), Horizontal



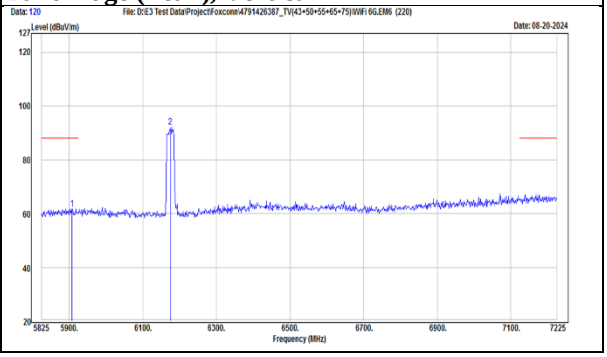
TX, 802.11ax(HE20) (Ch 45)
Band Edge (Average), Vertical



TX, 802.11ax(HE20) (Ch 45)
Band Edge (Peak), Horizontal

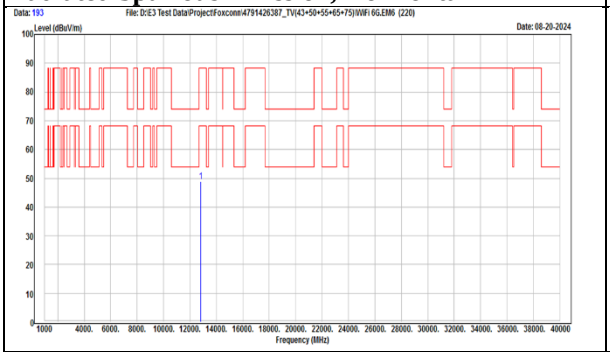
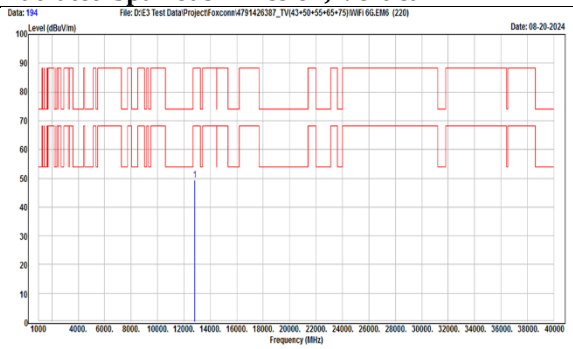
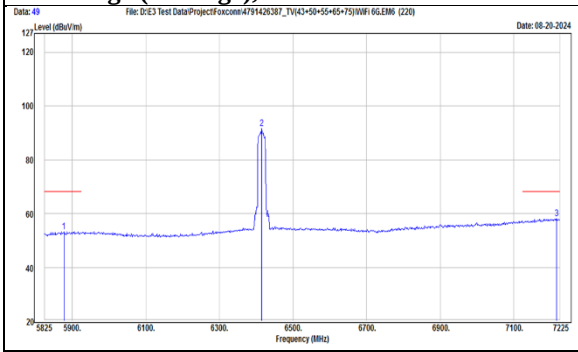
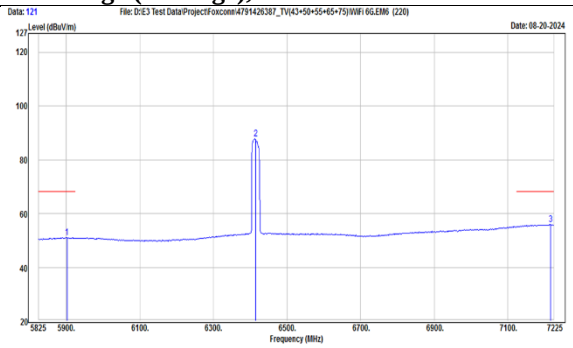
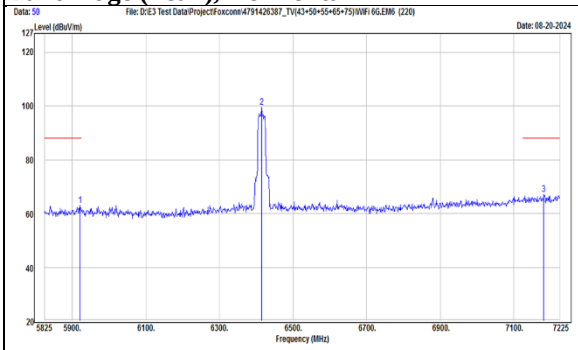
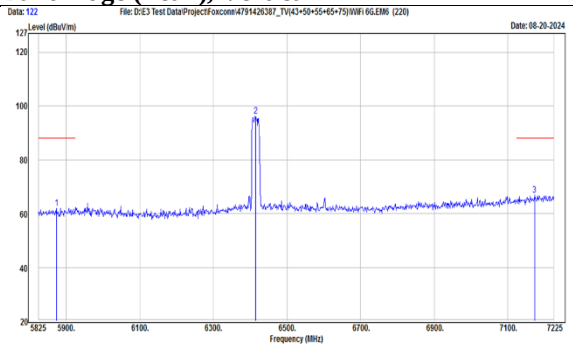


TX, 802.11ax(HE20) (Ch 45)
Band Edge (Peak), Vertical



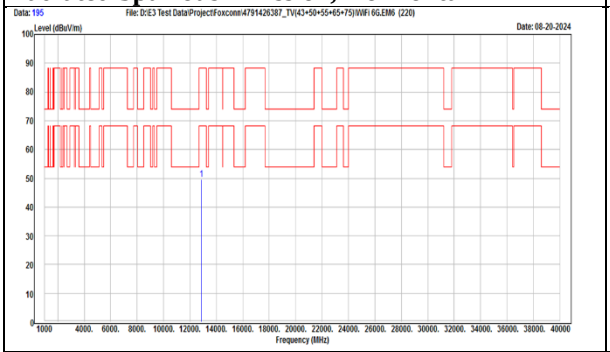
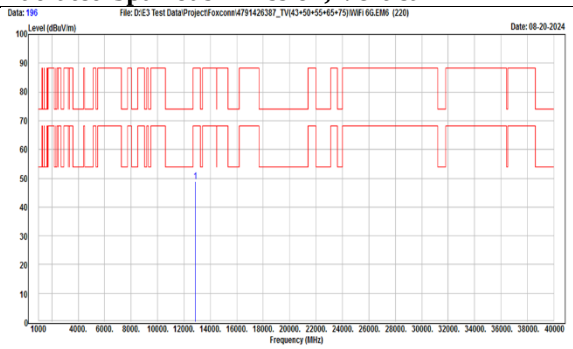
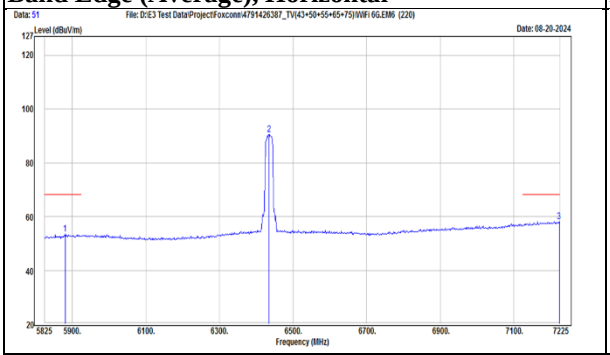
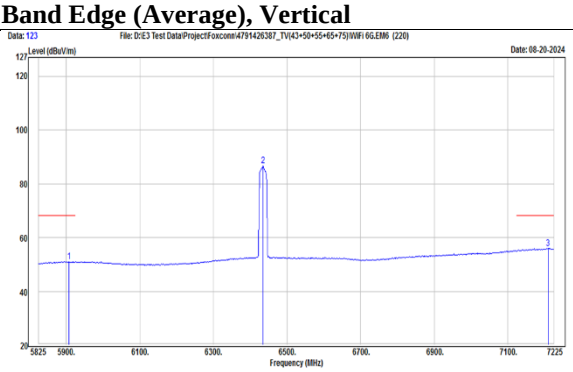
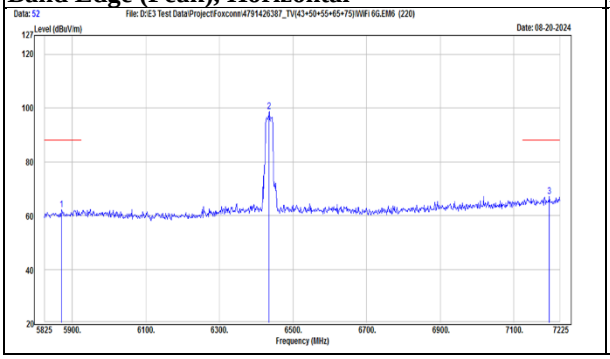
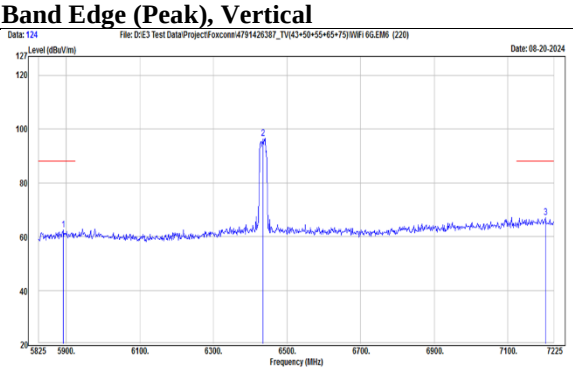
Mode	802.11ax(HE20)	Channel	93

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5878.2	31.72	21.49	53.21	68.2	-14.99	AVG
		5921.6	41.36	21.54	62.9	88.2	-25.3	PK
	@	6415	75.99	23.4	99.39	N/A	N/A	PK
	@	6415	68.23	23.4	91.63	N/A	N/A	AVG
		7181.6	40.42	26.77	67.19	88.2	-21.01	PK
		7216.6	31.02	27	58.02	68.2	-10.18	AVG
	*	12830	27.87	21.1	48.97	88.2	-39.23	PK
Vertical		5874	40.55	21.49	62.04	88.2	-26.16	PK
		5902	29.52	21.53	51.05	68.2	-17.15	AVG
	@	6415	72.94	23.4	96.34	N/A	N/A	PK
	@	6415	64.34	23.4	87.74	N/A	N/A	AVG
		7173.2	40.05	26.66	66.71	88.2	-21.49	PK
		7216.6	28.88	27	55.88	68.2	-12.32	AVG
	*	12830	28.17	21.1	49.27	88.2	-38.93	PK

TX, 802.11ax(HE20) (Ch 93) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 93)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 93) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 93)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 93) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 93)** **Band Edge (Peak), Vertical**
	

Mode	802.11ax(HE20)	Channel	97

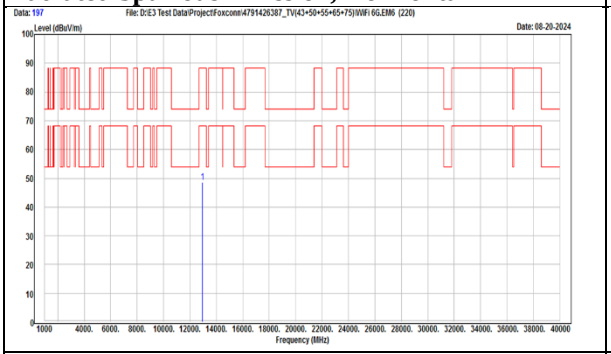
Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5871.2	40.83	21.48	62.31	88.2	-25.89	PK
		5881	32.09	21.5	53.59	68.2	-14.61	AVG
	@	6435	75.19	23.5	98.69	N/A	N/A	PK
	@	6435	67.15	23.5	90.65	N/A	N/A	AVG
		7197	40.18	26.94	67.12	88.2	-21.08	PK
		7223.6	31.05	27.01	58.06	68.2	-10.14	AVG
	*	12870	28.4	21.33	49.73	88.2	-38.47	PK
Vertical		5892.2	40.87	21.51	62.38	88.2	-25.82	PK
		5907.6	29.48	21.52	51	68.2	-17.2	AVG
	@	6435	72.97	23.5	96.47	N/A	N/A	PK
	@	6435	63.18	23.5	86.68	N/A	N/A	AVG
		7202.6	40.16	26.98	67.14	88.2	-21.06	PK
		7209.6	28.93	26.99	55.92	68.2	-12.28	AVG
	*	12870	27.6	21.33	48.93	88.2	-39.27	PK

TX, 802.11ax(HE20) (Ch 97) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 97)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 97) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 97)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 97) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 97)** **Band Edge (Peak), Vertical**
	

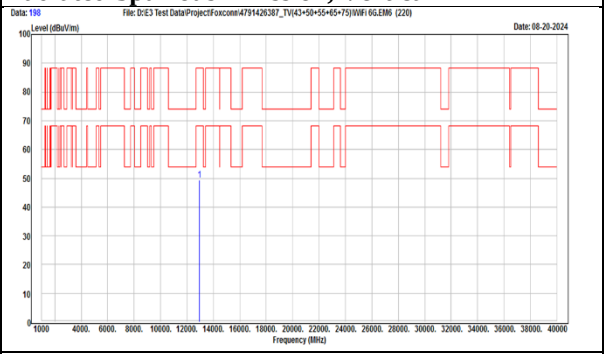
Mode	802.11ax(HE20)	Channel	105

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5897.8	40.61	21.52	62.13	88.2	-26.07	PK
		5916	31.91	21.53	53.44	68.2	-14.76	AVG
	@	6475	77.38	23.59	100.97	N/A	N/A	PK
	@	6475	70.02	23.59	93.61	N/A	N/A	AVG
		7167.6	31.37	26.6	57.97	68.2	-10.23	AVG
		7206.8	40.25	26.99	67.24	88.2	-20.96	PK
	*	12950	27.16	21.44	48.6	88.2	-39.6	PK
Vertical		5886.6	40.98	21.5	62.48	88.2	-25.72	PK
		5909	29.59	21.53	51.12	68.2	-17.08	AVG
	@	6475	72.96	23.59	96.55	N/A	N/A	PK
	@	6475	62.86	23.59	86.45	N/A	N/A	AVG
		7169	40.5	26.62	67.12	88.2	-21.08	PK
		7192.8	29.02	26.9	55.92	68.2	-12.28	AVG
	*	12950	27.86	21.44	49.3	88.2	-38.9	PK

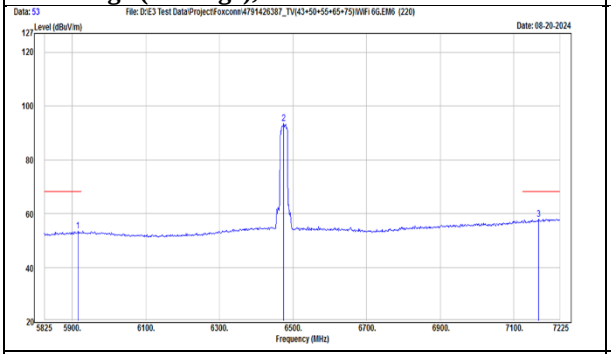
TX, 802.11ax(HE20) (Ch 105)
Radiated Spurious Emission, Horizontal



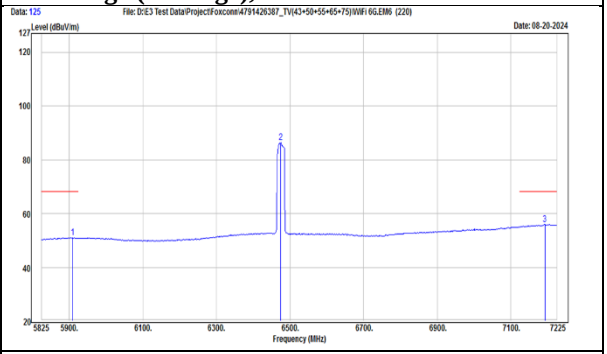
TX, 802.11ax(HE20) (Ch 105)
Radiated Spurious Emission, Vertical



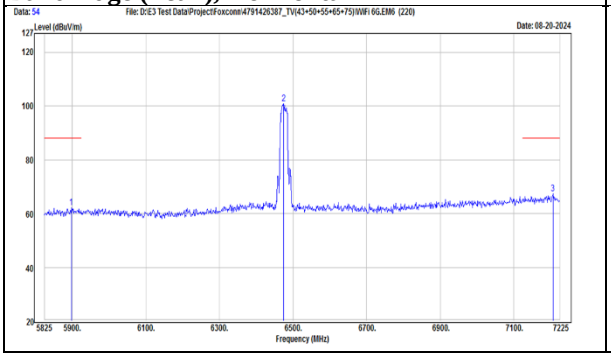
TX, 802.11ax(HE20) (Ch 105)
Band Edge (Average), Horizontal



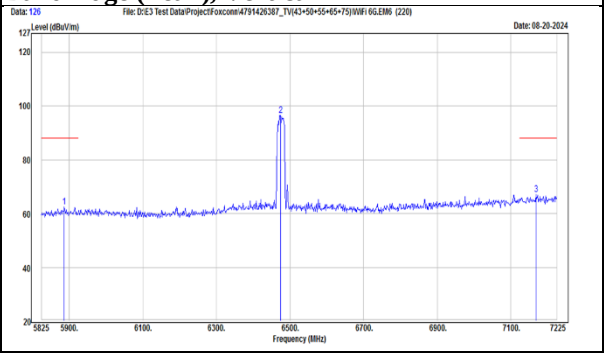
TX, 802.11ax(HE20) (Ch 105)
Band Edge (Average), Vertical



TX, 802.11ax(HE20) (Ch 105)
Band Edge (Peak), Horizontal

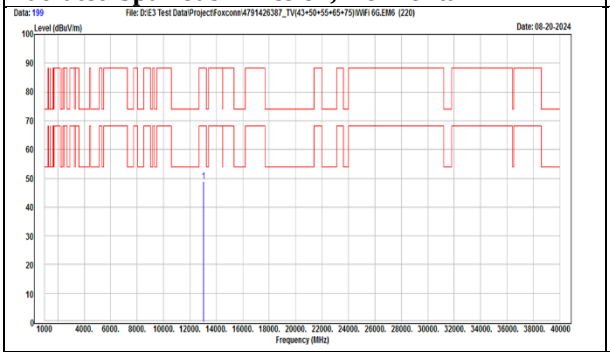
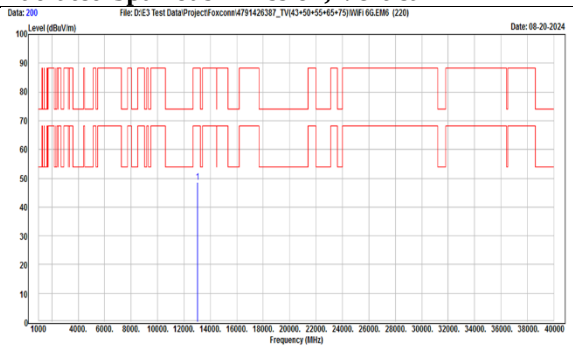
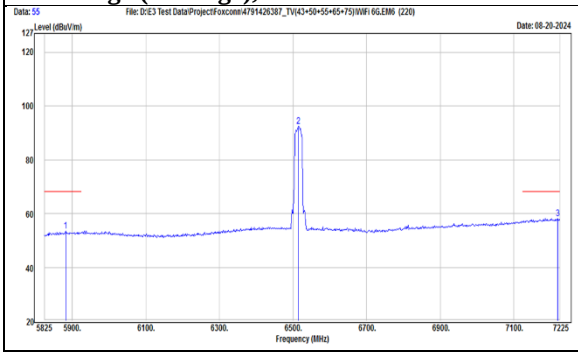
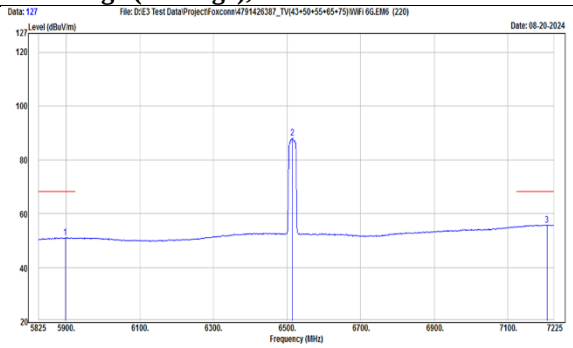
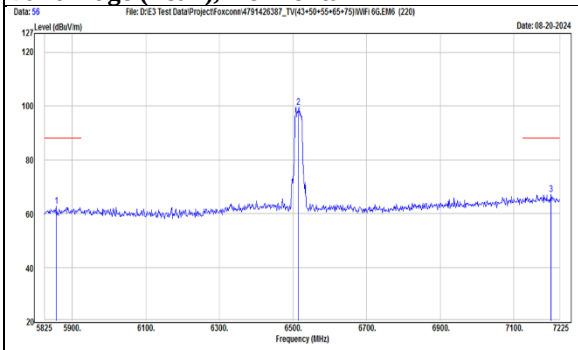
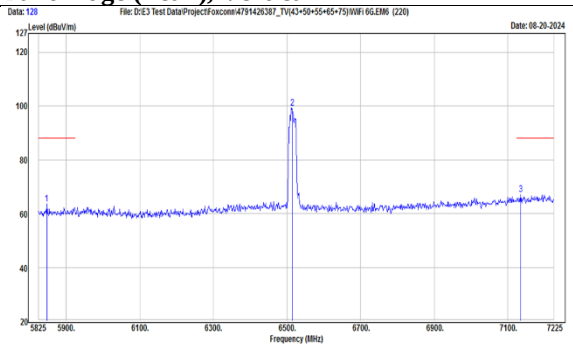


TX, 802.11ax(HE20) (Ch 105)
Band Edge (Peak), Vertical



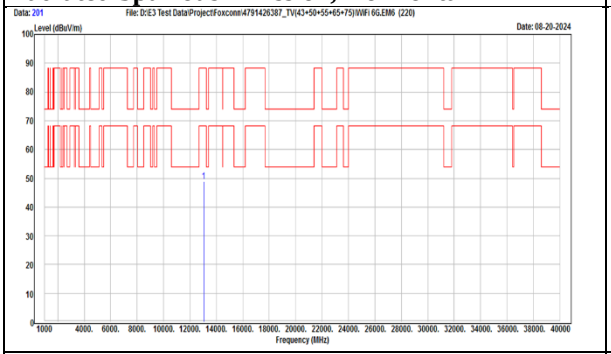
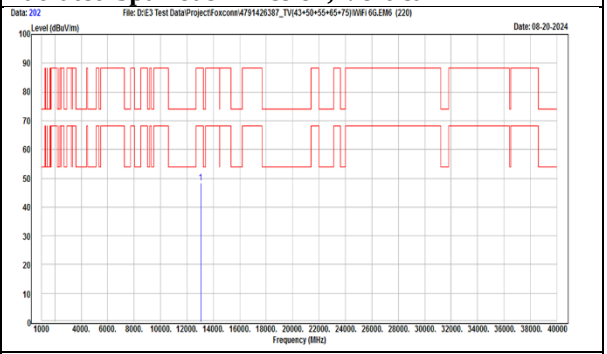
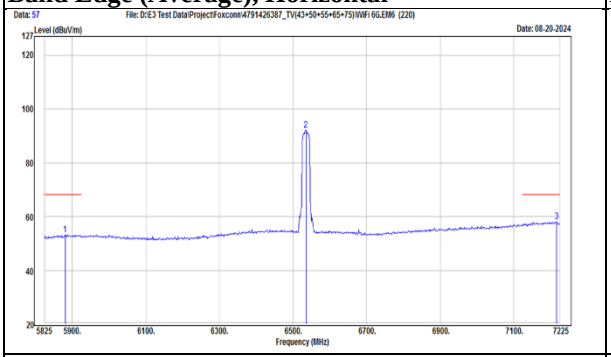
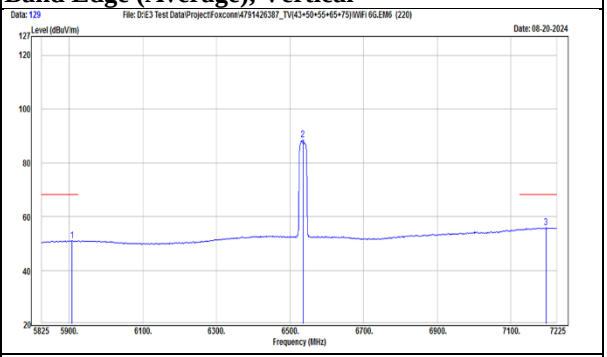
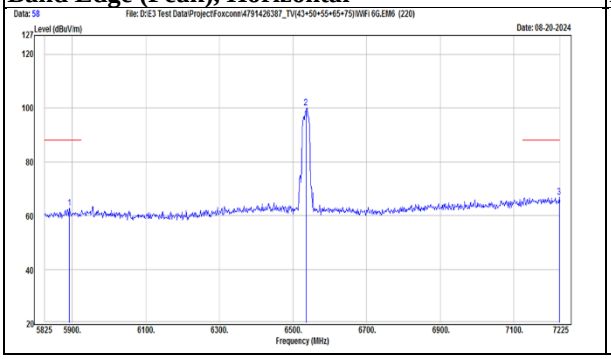
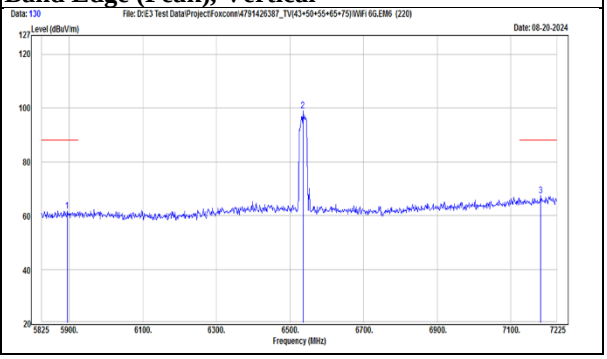
Mode	802.11ax(HE20)	Channel	113

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5857.2	41.3	21.47	62.77	88.2	-25.43	PK
		5882.4	32	21.5	53.5	68.2	-14.7	AVG
	@	6515	75.77	23.73	99.5	N/A	N/A	PK
	@	6515	68.78	23.73	92.51	N/A	N/A	AVG
		7201.2	40.13	26.98	67.11	88.2	-21.09	PK
		7219.4	31.18	27.01	58.19	68.2	-10.01	AVG
	*	13030	27.29	21.46	48.75	88.2	-39.45	PK
Vertical		5847.4	42.24	21.44	63.68	88.2	-24.52	PK
		5897.8	29.54	21.52	51.06	68.2	-17.14	AVG
	@	6515	75.48	23.73	99.21	N/A	N/A	PK
	@	6515	64.24	23.73	87.97	N/A	N/A	AVG
		7135.4	40.79	26.31	67.1	88.2	-21.1	PK
		7206.8	28.8	26.99	55.79	68.2	-12.41	AVG
	*	13030	27.09	21.46	48.55	88.2	-39.65	PK

TX, 802.11ax(HE20) (Ch 113) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 113)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 113) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 113)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 113) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 113)** **Band Edge (Peak), Vertical**
	

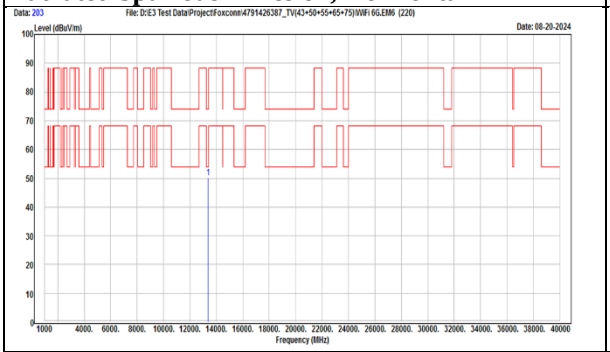
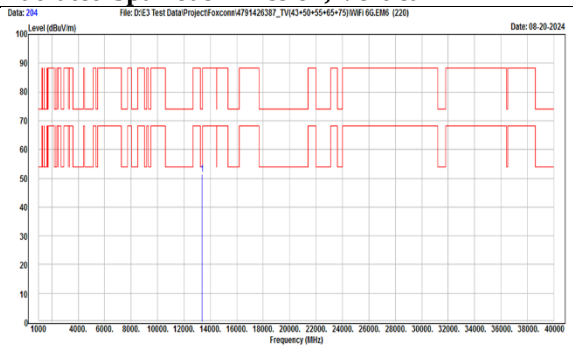
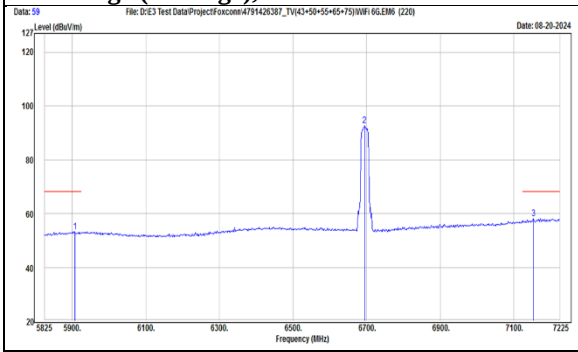
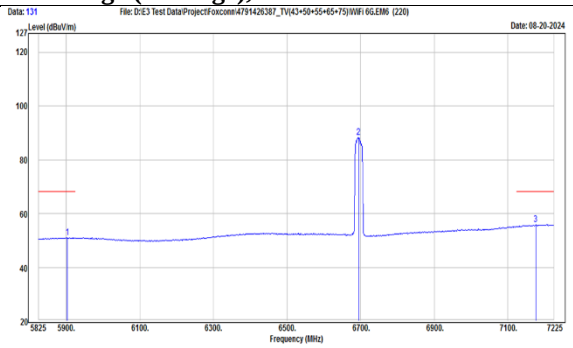
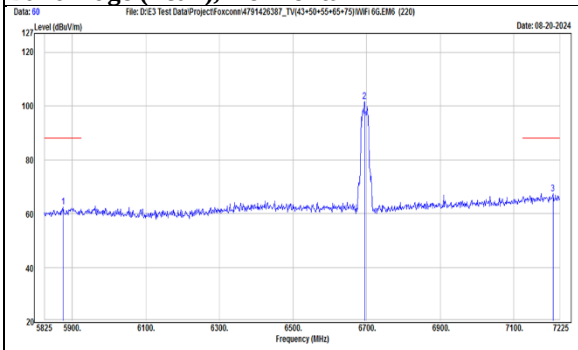
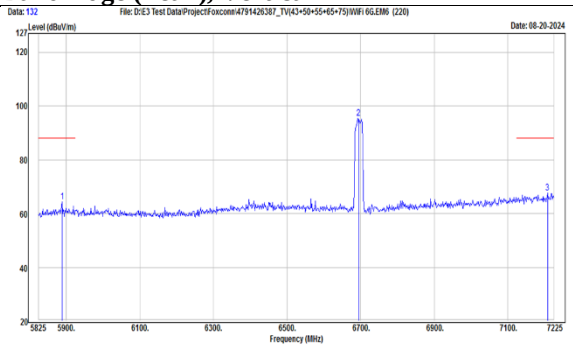
Mode	802.11ax(HE20)	Channel	117

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5881	31.68	21.5	53.18	68.2	-15.02	AVG
		5892.2	41.14	21.51	62.65	88.2	-25.55	PK
	@	6535	76.11	23.88	99.99	N/A	N/A	PK
	@	6535	68.23	23.88	92.11	N/A	N/A	AVG
		7216.6	31.06	27	58.06	68.2	-10.14	AVG
		7223.6	39.77	27.01	66.78	88.2	-21.42	PK
	*	13070	27.19	21.57	48.76	88.2	-39.44	PK
Vertical		5895	40.17	21.52	61.69	88.2	-26.51	PK
		5907.6	29.46	21.52	50.98	68.2	-17.22	AVG
	@	6535	75.07	23.88	98.95	N/A	N/A	PK
	@	6535	64.62	23.88	88.5	N/A	N/A	AVG
		7181.6	40.58	26.77	67.35	88.2	-20.85	PK
		7195.6	28.91	26.93	55.84	68.2	-12.36	AVG
	*	13070	26.9	21.57	48.47	88.2	-39.73	PK

TX, 802.11ax(HE20) (Ch 117) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 117)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 117) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 117)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 117) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 117)** **Band Edge (Peak), Vertical**
	

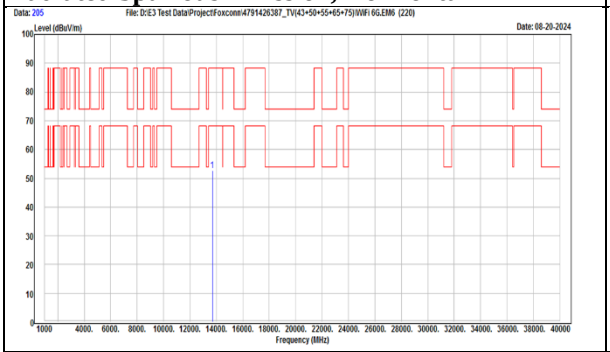
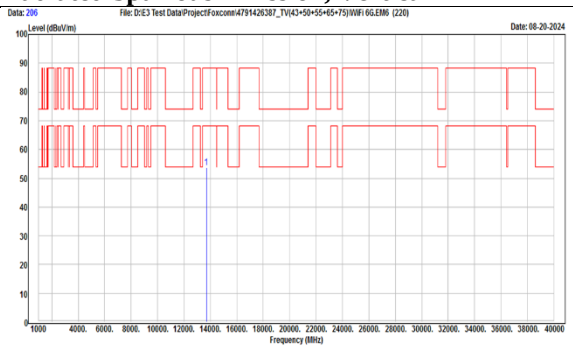
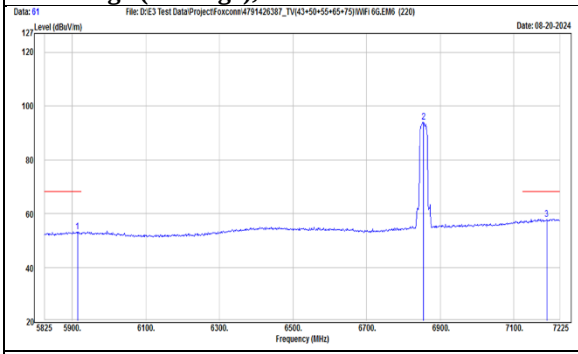
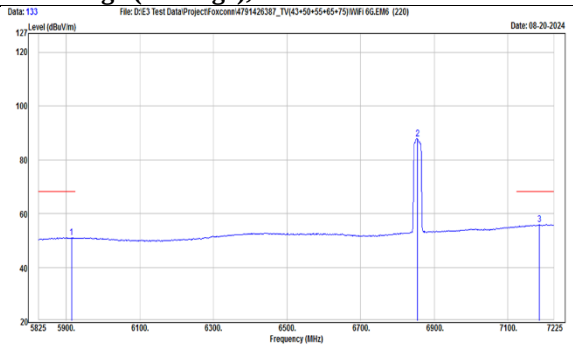
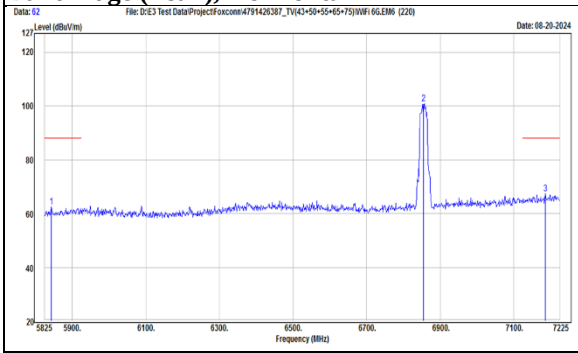
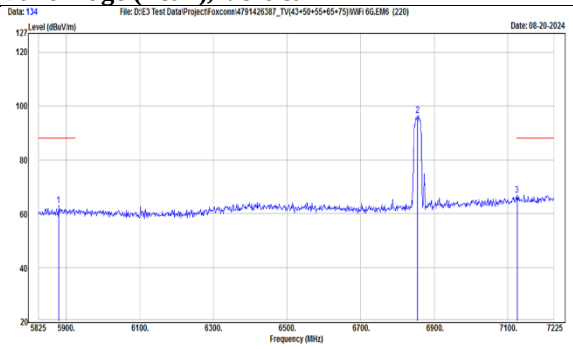
Mode	802.11ax(HE20)	Channel	149

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5875.4	40.86	21.49	62.35	88.2	-25.85	PK
		5907.6	31.66	21.52	53.18	68.2	-15.02	AVG
	@	6695	77.62	23.99	101.61	N/A	N/A	PK
	@	6695	68.69	23.99	92.68	N/A	N/A	AVG
		7153.6	31.65	26.44	58.09	68.2	-10.11	AVG
		7206.8	40.28	26.99	67.27	88.2	-20.93	PK
	*	13390	27.39	22.81	50.2	74	-23.8	PK
Vertical		5889.4	42.93	21.51	64.44	88.2	-23.76	PK
		5903.4	29.48	21.53	51.01	68.2	-17.19	AVG
	@	6695	71.51	23.99	95.5	N/A	N/A	PK
	@	6695	64.34	23.99	88.33	N/A	N/A	AVG
		7176	29.24	26.7	55.94	68.2	-12.26	AVG
		7208.2	40.68	26.99	67.67	88.2	-20.53	PK
	*	13390	28.52	22.81	51.33	74	-22.67	PK

TX, 802.11ax(HE20) (Ch 149) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 149)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 149) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 149)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 149) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 149)** **Band Edge (Peak), Vertical**
	

Mode	802.11ax(HE20)	Channel	181

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5843.2	41.02	21.4	62.42	88.2	-25.78	PK
		5914.6	31.59	21.53	53.12	68.2	-15.08	AVG
	@	6855	76.04	24.78	100.82	N/A	N/A	PK
	@	6855	69.16	24.78	93.94	N/A	N/A	AVG
		7185.8	40.55	26.81	67.36	88.2	-20.84	PK
		7190	31.11	26.86	57.97	68.2	-10.23	AVG
	*	13710	29.07	23.73	52.8	88.2	-35.4	PK
Vertical		5879.6	41.42	21.49	62.91	88.2	-25.29	PK
		5914.6	29.61	21.53	51.14	68.2	-17.06	AVG
	@	6855	71.64	24.78	96.42	N/A	N/A	PK
	@	6855	63.09	24.78	87.87	N/A	N/A	AVG
		7125.6	40.69	26.26	66.95	88.2	-21.25	PK
		7185.8	29.12	26.81	55.93	68.2	-12.27	AVG
	*	13710	29.87	23.73	53.6	88.2	-34.6	PK

TX, 802.11ax(HE20) (Ch 181) **Radiated Spurious Emission, Horizontal**	**TX, 802.11ax(HE20) (Ch 181)** **Radiated Spurious Emission, Vertical**
	
TX, 802.11ax(HE20) (Ch 181) **Band Edge (Average), Horizontal**	**TX, 802.11ax(HE20) (Ch 181)** **Band Edge (Average), Vertical**
	
TX, 802.11ax(HE20) (Ch 181) **Band Edge (Peak), Horizontal**	**TX, 802.11ax(HE20) (Ch 181)** **Band Edge (Peak), Vertical**
	

Mode	802.11ax(HE20)	Channel	185

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5883.8	31.66	21.5	53.16	68.2	-15.04	AVG
		5899.2	41.71	21.52	63.23	88.2	-24.97	PK
	@	6875	76.49	24.85	101.34	N/A	N/A	PK
	@	6875	70.96	24.85	95.81	N/A	N/A	AVG
		7174.6	40.71	26.69	67.4	88.2	-20.8	PK
		7192.8	31.11	26.9	58.01	68.2	-10.19	AVG
	*	13750	30.12	23.86	53.98	88.2	-34.22	PK
Vertical		5843.2	41.51	21.4	62.91	88.2	-25.29	PK
		5910.4	29.5	21.53	51.03	68.2	-17.17	AVG
	@	6875	71.52	24.85	96.37	N/A	N/A	PK
	@	6875	63.72	24.85	88.57	N/A	N/A	AVG
		7191.4	40.91	26.87	67.78	88.2	-20.42	PK
		7213.8	29.05	27	56.05	68.2	-12.15	AVG
	*	13750	29.24	23.86	53.1	88.2	-35.1	PK