RADIO TEST REPORT

Product	:	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module
Model Name	:	WNFB265AX
FCC ID	:	VPQ-WNFB265AXIBT
Test Regulation	:	FCC 47 CFR Part 15 Subpart E (Section 15.407)
Received Date	:	2023/6/29
Test Date	:	2023/7/17 ~ 2023/12/8
Issued Date	:	2023/12/11
Applicant	:	TRIXELL 460 Rue du Pommarin, 38430 Moirans
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

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REVISION HISTORY

Original Test Report No.: 4790860238-US-R1-V0

Revision	Test report No.	Date	Page revised	Contents
Original	4790860238-US-R1-V0	2023/12/11	-	Initial issue

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1. Attestation of Test Results

APPLICANT:	TRIXELL 460 Rue du Pommarin, 38430 Moirans
MANUFACTURER:	SparkLAN Communications, Inc. 8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan (R.O.C.)
EUT DESCRIPTION:	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module
BRAND:	TRIXELL
MODEL:	WNFB265AX
SAMPLE STAGE:	Engineering Verification Test sample
DATE of TESTED:	2023/7/17 ~ 2023/12/8

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 : 2023/12/11
Project Handler

Approved and Authorized By:

Eric Lee Date : 2023/12/11
Senior Laboratory Engineer

2. Summary of Test Results

Summary of Test Results		
FCC Clause	**Test Items**	**Result**
15.407(e)	6dB Bandwidth	See Note 3
15.403(i)	26dB Bandwidth	See Note 3
2.1049	Occupied Bandwidth	See Note 1
15.407(a)(1/2/3)	Conducted Output Power	PASS
15.407(a)(1/2/3)	Power Spectral Density	See Note 3
15.407(g)	Frequency Stability	See Note 3
15.407(b) (1/2/3/4(i/ii)/9)	Radiated Emissions and Band Edge Measurement	PASS
15.407(b)(9)	AC Power Conducted Emission	See Note 3
15.203	Antenna Requirement	See Note 3
15.407(h)	Dynamic Frequency Selection & Transmit power control	See Note 2

Note:
1. The Occupied Bandwidth was reference only.
2. The "Dynamic Frequency Selection & Transmit power control measurement" was recorded in Report No.: 4789558390-US-R2-V0.
3. This report is as a supplementary report of report no.: 4789558390-US-R1-V0.

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 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	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module	
Brand Name	TRIXELL	
Model Name	WNFB265AX	
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz	
Modulation	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK	
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to MCS15 802.11ac: up to MCS9 802.11ax: up to HE11	
Number of Channel	5180 ~ 5240 MHz	4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20)
		2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40)
		1 for 802.11ac (VHT80), 802.11ax (HE80)
	5260 ~ 5320 MHz	4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20)
		2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40)
		1 for 802.11ac (VHT80), 802.11ax (HE80)
	5500 ~ 5720 MHz	12 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20)
		6 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40)
		3 for 802.11ac (VHT80), 802.11ax (HE80),
	5745 ~ 5825 MHz	5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20)
		2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40)
		1 for 802.11ac (VHT80), 802.11ax (HE80)

Maximum Output Power	Non-Beamforming mode: 5180 ~ 5240 MHz: 4.91 dBm 5260 ~ 5320 MHz: 4.86 dBm 5500 ~ 5720 MHz: 3.80 dBm 5745 ~ 5825 MHz: 3.74 dBm Beamforming Mode: 5180 ~ 5240 MHz: 4.75 dBm 5260 ~ 5320 MHz: 4.73 dBm 5500 ~ 5720 MHz: 3.66 dBm 5745 ~ 5825 MHz: 3.59 dBm
Normal Voltage	3.3Vdc
Sample ID	6110881

Note:

1. The model number of this application: WNFB265AX, based on original FCC ID: RYK-WNFB265AXIBT, Model: WNFB-265AXI(BT) whose RF circuit are identical, only the RF antenna, applicant, brand and model number have been changed. According to the above changed, the radiated emission and conducted output power need to be performed, other test results are referred to the original report (Report No.: 4789558390-US-R1-V0).

2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx,Rx Function
802.11a	2TX,2RX
802.11n (HT20)	2TX,2RX
802.11n (HT40)	2TX,2RX
802.11ac (VHT20)	2TX,2RX
802.11ac (VHT40)	2TX,2RX
802.11ac (VHT80)	2TX,2RX
802.11ax (HE20)	2TX,2RX
802.11ax (HE40)	2TX,2RX
802.11ax (HE80)	2TX,2RX

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40 / VHT80 and 802.11ax mode for HE20 / HE40 / HE80, therefore investigated worst case to representative mode in test report.

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Antenna	TAOGLAS	FXP831.07.0100C	2.4GHz: 3dBi 5GHz: 5.5dBi I-PEX

4. 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 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
42	5210MHz

FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
58	5290MHz

FOR 5500 ~ 5720MHz

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
106	5530MHz	138	5690MHz
122	5610MHz	-	-

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775MHz

6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Radiated Spurious Emission	966-2	21~27°C/ 51~69%RH	3.3Vdc	2023/07/17~ 2023/12/8	Rex Chen
Antenna Port Conducted Measurement	SR4	21~27°C/ 51~69%RH	3.3Vdc	2023/07/17~ 2023/11/22	Rex Chen

FCC Test Firm Registration Number: 498077

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).

6.4. Description of Available Antennas

Ant. No.	Transmitter Circuit	Brand Name	Model Name	Ant. Type	Maximum Gain (dBi)
1	Chain (0)+(1)	TAOGLAS	FXP831.07.0100C	Dipole	2.4GHz: 3 5GHz: 5.5

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

- The model number of this application: WNFB265AX, based on original FCC ID: RYK-WNFB265AXIBT, Model: WNFB-265AXI(BT) whose RF circuit are identical, only the RF antenna, applicant, brand and model number have been changed. According to the above changed, the radiated emission and conducted output power need to be performed, other test results are referred to the original report (Report No.: 4789558390-US-R1-V0).

Non-Beamforming Mode:

Test Item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Above 1GHz)	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6Mbps
	802.11ax20		OFDM/OFDMA	36 to 48	36, 44, 48	MCS0
	802.11ax40			38 to 46	38, 46	MCS0
	802.11ax80			42	42	MCS0
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6Mbps
	802.11ax20		OFDMA	52 to 64	52, 60, 64	MCS0
	802.11ax40			54 to 62	54, 62	MCS0
	802.11ax80			58	58	MCS0
	802.11a	5500-5720	OFDM	100 to 144	100, 116, 140, 144	6Mbps
	802.11ax20		OFDM/OFDMA	100 to 144	100, 116, 140, 144	MCS0
	802.11ax40			102 to 142	102, 110, 134,142	MCS0
	802.11ax80			106, 122,138	106, 122, 138	MCS0
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6Mbps
	802.11ax20		OFDM/OFDMA	149 to 165	149, 157, 165	MCS0
	802.11ax40			151 to 159	151, 159	MCS0
	802.11ax80			155	155	MCS0
Radiated Emissions (Below 1GHz)	802.11ax80	5180-5240	OFDM	58	58	MCS0

Test Item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Antenna Port Conducted Measurement	802.11a	5180-5240	OFDM/ OFDMA	36 to 48	36, 44, 48	6Mbps
	802.11ax20			36 to 48	36, 44, 48	MCS0
	802.11ax40			38 to 46	38, 46	MCS0
	802.11ax80			42	42	MCS0
	802.11a	5260-5320	OFDM/ OFDMA	52 to 64	52, 60, 64	6Mbps
	802.11ax20			52 to 64	52, 60, 64	MCS0
	802.11ax40			54 to 62	54, 62	MCS0
	802.11ax80			58	58	MCS0
	802.11a	5500-5720	OFDM/ OFDMA	100 to 144	100,116,140, 144	6Mbps
	802.11ax20			100 to 144	100,116,140, 144	MCS0
	802.11ax40			102 to 142	102, 110, 134,142	MCS0
	802.11ax80			106, 122,138	106, 122,138	MCS0
	802.11a	5745-5825	OFDM/ OFDMA	149 to 165	149, 157, 165	6Mbps
	802.11ax20			149 to 165	149, 157, 165	MCS0
	802.11ax40			151 to 159	151, 159	MCS0
	802.11ax80			155	155	MCS0

Beamforming Mode:

Test item	Mode	Frequency Band (MHz)	Modulation Technology	Available Channel	Test Channel	Data Rate
Antenna Port Conducted Measurement	802.11ax20	5180-5240	OFDM/ OFDMA	36 to 48	36, 44, 48	MCS0
	802.11ax40			38 to 46	38, 46	MCS0
	802.11ax80			42	42	MCS0
	802.11ax20	5260-5320	OFDM/ OFDMA	52 to 64	52, 60, 64	MCS0
	802.11ax40			54 to 62	54, 62	MCS0
	802.11ax80			58	58	MCS0
	802.11ax20	5500-5720	OFDM/ OFDMA	100 to 144	100,116,140,144	MCS0
	802.11ax40			102 to 142	102, 110, 134,142	MCS0
	802.11ax80			106, 122,138	106, 122,138	MCS0
	802.11ax20	5745-5825	OFDM/ OFDMA	149 to 165	149, 157, 165	MCS0
	802.11ax40			151 to 159	151, 159	MCS0
	802.11ax80			155	155	MCS0

*Note: The worse spurious emissions test and maximum output power was found in Non-Beamforming mode. Therefore Beamforming mode only the test data of the RF output power were recorded in this report.

7. Test Equipment

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2023/4/7	2024/4/6
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2022/12/13	2023/12/12
Loop Antenna	ETS lindgren	6502	00213440	2023/1/4	2024/1/3
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2023/2/13	2024/2/12
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2023/6/7	2024/6/6
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2022/12/1	2023/11/30
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2023/11/29	2024/11/28
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070818	2023/4/10	2024/4/9
Attenuator	EMCI	EMC-40ATK2W10	17002	2022/12/9	2023/12/8
Pulse Power Sensor	Anritsu	MA2411B	1531202	2023/1/4	2024/1/3
Power Meter	Anritsu	ML2495A	1645002	2023/1/4	2024/1/3

UL Software		
Description	**Name**	**Version**
Radiated measurement	e3	6.191211 (V6)
Conducted measurement	RF-Conducted-FCC 15407	ver 1.1

8. Description of Test Setup

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Test Tool	Broadcom	Bluetool	NA	Supplied by client
B	Monitor	Dell	SE2417HG	NA	Provide by lab
C	Computer	Gigabyte	H310M-S2P	BC00049	Supplied by client
D	Keyboard	Dell	KB216I	CH2-WD050	Provide by lab

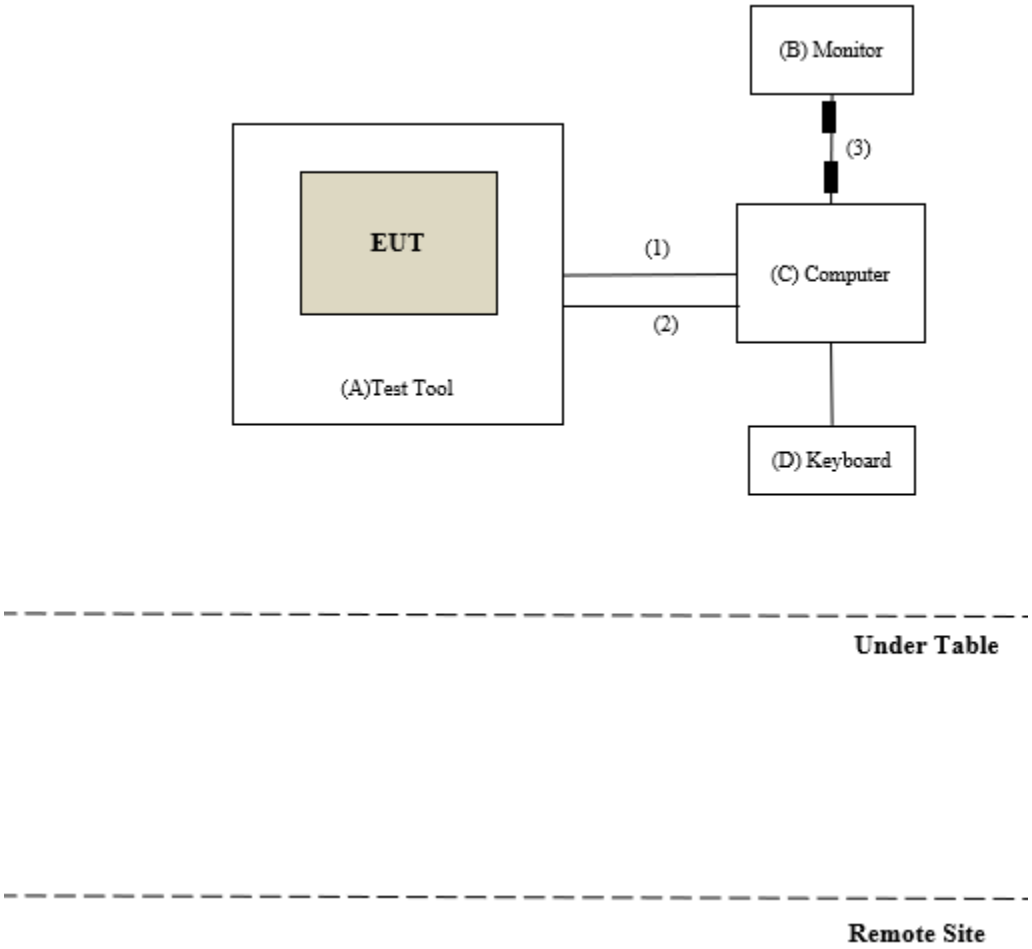
I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	Flexible Cable	Soliton	PEM-1LC	0.47	Supplied by client
2	Micro USB Cable	Centenary	US-26	1.8	Supplied by client
3	HDMI Cable	EATON	P568010	1.44	Provide by lab with two core

Test Setup

The EUT was worked in engineering mode to transmit signal.

Setup Diagram for Test



9. Test Results

9.1. Conducted output power

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
		Fixed point-to-point Access Point	1 Watt (30 dBm) If G_{TX} > 23 dBi, then P_{Out} = 30 – (G_{TX} – 23)
	√	Indoor Access Point	1 Watt (30 dBm) If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
		Client device	250mW (24 dBm) If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B* If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B* If G_{TX} > 6 dBi, then P_{Out} = 23.98 – (G_{TX} – 6)
U-NII-3	√		For Point-to-multipoint systems (P2M): 1 Watt (30 dBm). If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6) For Point-to-point systems (P2P): 1 Watt (30 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. Straddle Channel Power in each band = Straddle Channel Total Power * (Each band EBW / Straddle Channel Total EBW).
   Example: if CH144 EBW (Total) = 20MHz, within UNII-2C Band is 15MHz, within UNII-3 Band is 5MHz, Total Power = 20dBm.
   Calculation for UNII-2C Band Power= 20dBm * (5/20) = 13.97 dBm
   Calculation for UNII-3 Band Power= 20dBm * (15/20) = 18.75 dBm.

Test Procedure

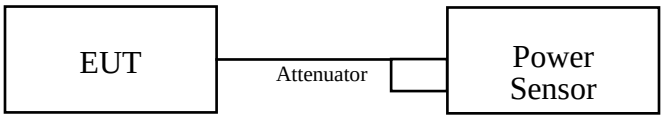
For Average Power Measurement

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.

Test Setup

For Average Power Measurement



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

Test Data

Non-Beamforming Mode

802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
36	5180	1.58	1.37	2.812	4.49	23.98	PASS
44	5220	1.58	1.38	2.812	4.49	23.98	PASS
48	5240	1.58	1.46	2.838	4.53	23.98	PASS
52	5260	1.37	1.48	2.78	4.44	23.98	PASS
60	5300	1.57	1.47	2.838	4.53	23.98	PASS
64	5320	1.27	1.56	2.773	4.43	23.98	PASS
100	5500	0.51	0.12	2.153	3.33	23.98	PASS
116	5580	0.69	0.62	2.328	3.67	23.98	PASS
140	5700	0.75	0.57	2.328	3.67	23.98	PASS
144 (U-NII-2c Band)	5720	-0.68	-1.01	1.648	2.17	22.9	PASS
144 (U-NII-3 Band)	5720	-5.30	-5.44	0.581	-2.36	30	PASS
149	5745	0.55	0.15	2.168	3.36	30	PASS
157	5785	0.75	0.36	2.275	3.57	30	PASS
165	5825	0.51	0.49	2.244	3.51	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	0.61	0.33	2.228	3.48
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE20)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
36	5180	1.62	1.49	2.864	4.57	23.98	PASS
44	5220	1.70	1.61	2.931	4.67	23.98	PASS
48	5240	1.67	1.52	2.891	4.61	23.98	PASS
52	5260	1.19	1.65	2.78	4.44	23.98	PASS
60	5300	1.62	1.64	2.911	4.64	23.98	PASS
64	5320	1.37	1.53	2.793	4.46	23.98	PASS
100	5500	0.49	0.60	2.27	3.56	23.98	PASS
116	5580	0.49	0.41	2.218	3.46	23.98	PASS
140	5700	0.48	0.59	2.265	3.55	23.98	PASS
144 (U-NII-2c Band)	5720	-0.88	-0.76	1.656	2.19	23.01	PASS
144 (U-NII-3 Band)	5720	-5.23	-5.21	0.601	-2.21	30	PASS
149	5745	0.48	0.55	2.254	3.53	30	PASS
157	5785	0.24	0.61	2.208	3.44	30	PASS
165	5825	0.45	0.54	2.244	3.51	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	0.48	0.57	2.259	3.54
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE20)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
36	5180	1.84	1.69	3.006	4.78	23.98	PASS
44	5220	1.89	1.81	3.062	4.86	23.98	PASS
48	5240	1.91	1.72	3.041	4.83	23.98	PASS
52	5260	1.41	1.87	2.924	4.66	23.98	PASS
60	5300	1.85	1.85	3.062	4.86	23.98	PASS
64	5320	1.59	1.74	2.938	4.68	23.98	PASS
100	5500	0.73	0.84	2.399	3.80	23.98	PASS
116	5580	0.68	0.60	2.317	3.65	23.98	PASS
140	5700	0.71	0.81	2.382	3.77	23.98	PASS
144 (U-NII-2c Band)	5720	-0.65	-0.55	1.742	2.41	23.01	PASS
144 (U-NII-3 Band)	5720	-5.00	-5.00	0.632	-1.99	30	PASS
149	5745	0.70	0.75	2.366	3.74	30	PASS
157	5785	0.45	0.83	2.317	3.65	30	PASS
165	5825	0.64	0.73	2.344	3.70	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	0.71	0.78	2.377	3.76
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE40)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
38	5190	1.53	1.53	2.844	4.54	23.98	PASS
46	5230	1.63	1.70	2.938	4.68	23.98	PASS
54	5270	1.59	1.68	2.917	4.65	23.98	PASS
62	5310	1.43	1.77	2.891	4.61	23.98	PASS
102	5510	0.58	0.27	2.208	3.44	23.98	PASS
110	5550	0.51	0.52	2.254	3.53	23.98	PASS
134	5670	0.64	0.33	2.239	3.50	23.98	PASS
142 (U-NII-2c Band)	5710	-0.26	-0.23	1.888	2.76	23.98	PASS
142 (U-NII-3 Band)	5710	-8.55	-8.58	0.278	-5.56	30	PASS
151	5755	0.29	0.52	2.198	3.42	30	PASS
159	5795	0.53	0.35	2.213	3.45	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	0.34	0.36	2.168	3.36
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE40)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
38	5190	1.76	1.72	2.985	4.75	23.98	PASS
46	5230	1.87	1.93	3.097	4.91	23.98	PASS
54	5270	1.78	1.87	3.048	4.84	23.98	PASS
62	5310	1.64	1.96	3.027	4.81	23.98	PASS
102	5510	0.77	0.48	2.312	3.64	23.98	PASS
110	5550	0.71	0.71	2.355	3.72	23.98	PASS
134	5670	0.83	0.58	2.355	3.72	23.98	PASS
142 (U-NII-2c Band)	5710	-0.06	0.00	1.986	2.98	23.98	PASS
142 (U-NII-3 Band)	5710	-8.35	-8.35	0.292	-5.34	30	PASS
151	5755	0.50	0.77	2.317	3.65	30	PASS
159	5795	0.77	0.58	2.339	3.69	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	0.54	0.59	2.28	3.58
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE80)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
42	5210	1.61	1.51	2.864	4.57	23.98	PASS
58	5290	1.63	1.66	2.924	4.66	23.98	PASS
106	5530	0.34	0.32	2.158	3.34	23.98	PASS
122	5610	0.34	0.25	2.143	3.31	23.98	PASS
138 (U-NII-2c Band)	5690	0.10	0.28	2.089	3.20	23.98	PASS
138 (U-NII-3 Band)	5690	-11.10	-10.67	0.163	-7.87	30	PASS
155	5775	0.44	0.54	2.239	3.50	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	0.42	0.62	2.254	3.53
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE80)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
42	5210	1.83	1.75	3.02	4.80	23.98	PASS
58	5290	1.86	1.87	3.076	4.88	23.98	PASS
106	5530	0.55	0.51	2.259	3.54	23.98	PASS
122	5610	0.59	0.49	2.265	3.55	23.98	PASS
138 (U-NII-2c Band)	5690	0.28	0.50	2.188	3.40	23.98	PASS
138 (U-NII-3 Band)	5690	-10.92	-10.45	0.171	-7.67	30	PASS
155	5775	0.68	0.73	2.355	3.72	30	PASS

Note:
The directional gain = 5.5 dBi < 6 dBi, so the power limit shall not be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	0.60	0.84	2.36	3.73
Note: The total power was calculated through formula and record the value for reference only.					

Beamforming Mode

802.11ax (HE20)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
36	5180	1.42	1.35	2.754	4.40	21.47	PASS
44	5220	1.56	1.49	2.844	4.54	21.47	PASS
48	5240	1.56	1.41	2.818	4.50	21.47	PASS
52	5260	1.05	1.47	2.679	4.28	21.47	PASS
60	5300	1.47	1.52	2.825	4.51	21.47	PASS
64	5320	1.21	1.37	2.692	4.30	21.47	PASS
100	5500	0.31	0.40	2.173	3.37	21.47	PASS
116	5580	0.30	0.24	2.128	3.28	21.47	PASS
140	5700	0.36	0.42	2.188	3.40	21.47	PASS
144 (U-NII-2c Band)	5720	-0.98	-0.96	1.6	2.04	20.5	PASS
144 (U-NII-3 Band)	5720	-5.33	-5.41	0.581	-2.36	27.49	PASS
149	5745	0.29	0.37	2.158	3.34	27.49	PASS
157	5785	0.11	0.45	2.133	3.29	27.49	PASS
165	5825	0.32	0.42	2.178	3.38	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	0.38	0.37	2.183	3.39
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE20)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
36	5180	1.65	1.53	2.884	4.60	21.47	PASS
44	5220	1.78	1.70	2.985	4.75	21.47	PASS
48	5240	1.77	1.57	2.938	4.68	21.47	PASS
52	5260	1.28	1.76	2.844	4.54	21.47	PASS
60	5300	1.71	1.70	2.965	4.72	21.47	PASS
64	5320	1.48	1.56	2.838	4.53	21.47	PASS
100	5500	0.58	0.65	2.307	3.63	21.47	PASS
116	5580	0.56	0.42	2.239	3.50	21.47	PASS
140	5700	0.60	0.70	2.323	3.66	21.47	PASS
144 (U-NII-2c Band)	5720	-0.76	-0.71	1.687	2.27	20.5	PASS
144 (U-NII-3 Band)	5720	-5.11	-5.16	0.612	-2.13	27.49	PASS
149	5745	0.55	0.58	2.28	3.58	27.49	PASS
157	5785	0.35	0.64	2.244	3.51	27.49	PASS
165	5825	0.49	0.60	2.27	3.56	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
144	5720	0.60	0.62	2.301	3.62
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE40)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
38	5190	1.42	1.40	2.767	4.42	21.47	PASS
46	5230	1.51	1.55	2.844	4.54	21.47	PASS
54	5270	1.44	1.57	2.831	4.52	21.47	PASS
62	5310	1.28	1.62	2.793	4.46	21.47	PASS
102	5510	0.40	0.09	2.118	3.26	21.47	PASS
110	5550	0.40	0.41	2.198	3.42	21.47	PASS
134	5670	0.45	0.18	2.153	3.33	21.47	PASS
142 (U-NII-2c Band)	5710	-0.39	-0.40	1.828	2.62	21.47	PASS
142 (U-NII-3 Band)	5710	-8.68	-8.75	0.269	-5.70	27.49	PASS
151	5755	0.19	0.38	2.138	3.30	27.49	PASS
159	5795	0.41	0.19	2.143	3.31	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	0.21	0.19	2.094	3.21
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE40)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
38	5190	1.58	1.60	2.884	4.60	21.47	PASS
46	5230	1.70	1.75	2.979	4.74	21.47	PASS
54	5270	1.61	1.76	2.951	4.70	21.47	PASS
62	5310	1.48	1.82	2.924	4.66	21.47	PASS
102	5510	0.59	0.34	2.228	3.48	21.47	PASS
110	5550	0.54	0.58	2.275	3.57	21.47	PASS
134	5670	0.72	0.46	2.291	3.60	21.47	PASS
142 (U-NII-2c Band)	5710	-0.20	-0.12	1.928	2.85	21.47	PASS
142 (U-NII-3 Band)	5710	-8.49	-8.47	0.284	-5.47	27.49	PASS
151	5755	0.38	0.58	2.234	3.49	27.49	PASS
159	5795	0.61	0.39	2.244	3.51	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
142	5710	0.40	0.47	2.213	3.45
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE80)

OFDM

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
42	5210	1.47	1.40	2.786	4.45	21.47	PASS
58	5290	1.43	1.56	2.825	4.51	21.47	PASS
106	5530	0.14	0.17	2.075	3.17	21.47	PASS
122	5610	0.24	0.14	2.089	3.20	21.47	PASS
138 (U-NII-2c Band)	5690	-0.05	0.18	2.032	3.08	21.47	PASS
138 (U-NII-3 Band)	5690	-11.25	-10.78	0.158	-8.00	27.49	PASS
155	5775	0.30	0.38	2.163	3.35	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	0.27	0.51	2.188	3.40
Note: The total power was calculated through formula and record the value for reference only.					

802.11ax (HE80)

OFDMA

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass/Fail
		Chain 0	Chain 1				
42	5210	1.66	1.55	2.897	4.62	21.47	PASS
58	5290	1.72	1.71	2.972	4.73	21.47	PASS
106	5530	0.40	0.40	2.193	3.41	21.47	PASS
122	5610	0.43	0.32	2.183	3.39	21.47	PASS
138 (U-NII-2c Band)	5690	0.11	0.38	2.118	3.26	21.47	PASS
138 (U-NII-3 Band)	5690	-11.09	-10.58	0.165	-7.82	27.49	PASS
155	5775	0.53	0.62	2.286	3.59	27.49	PASS

Note:
The directional gain = 8.51 dBi > 6 dBi, so the power limit shall be reduced.

For Reference only – Straddle Channels Total Power

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
138	5690	0.43	0.71	2.28	3.58
Note: The total power was calculated through formula and record the value for reference only.					

9.2. 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

Applicable To		Limit	
789033 D02 General UNII Test Procedure New Rules v02r01		Field Strength at 3m	
		PK:74 (dBµV/m)	AV:54 (dBµV/m)
Frequency Band	**Applicable To**	**EIRP Limit**	**Equivalent Field Strength at 3m**
5150~5250 MHz	15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBµV/m) *1 PK:105.2 (dBµV/m) *2 PK: 110.8(dBµV/m) *3 PK:122.2 (dBµV/m) *4
*1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			

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:

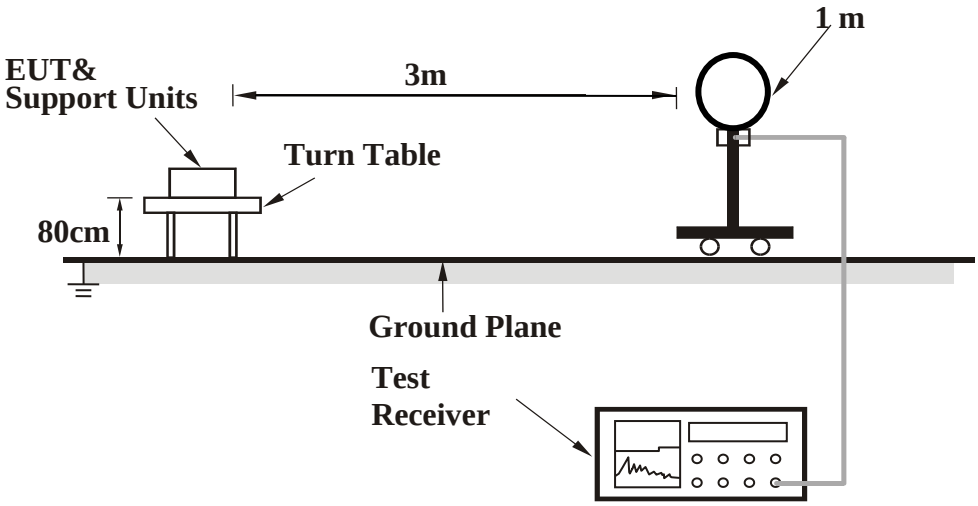
a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.

Configuration	Average	
	RBW	VBW
802.11ax (HE80)_OFDM	1MHz	Duty cycle refer to original report

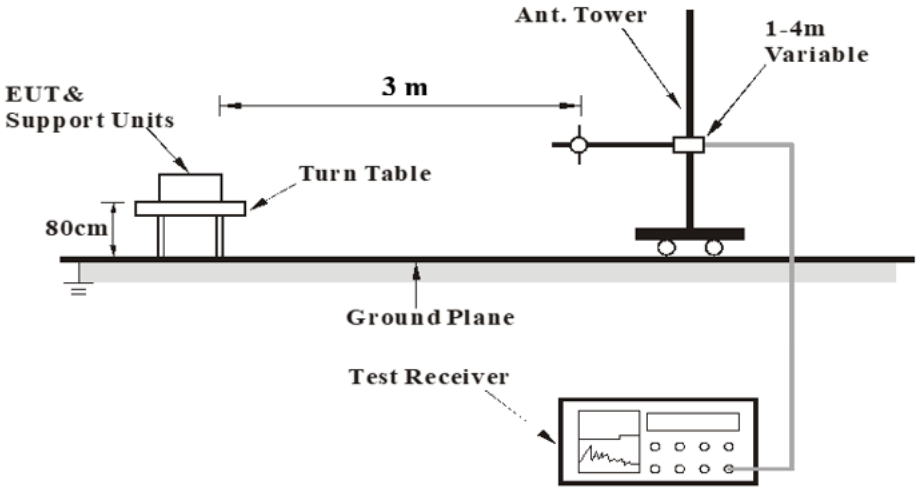
d. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
e. Test data of Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
f. Test data of Margin(dB) = Result 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 " * " = Only required peak limit or the peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

Test Setup

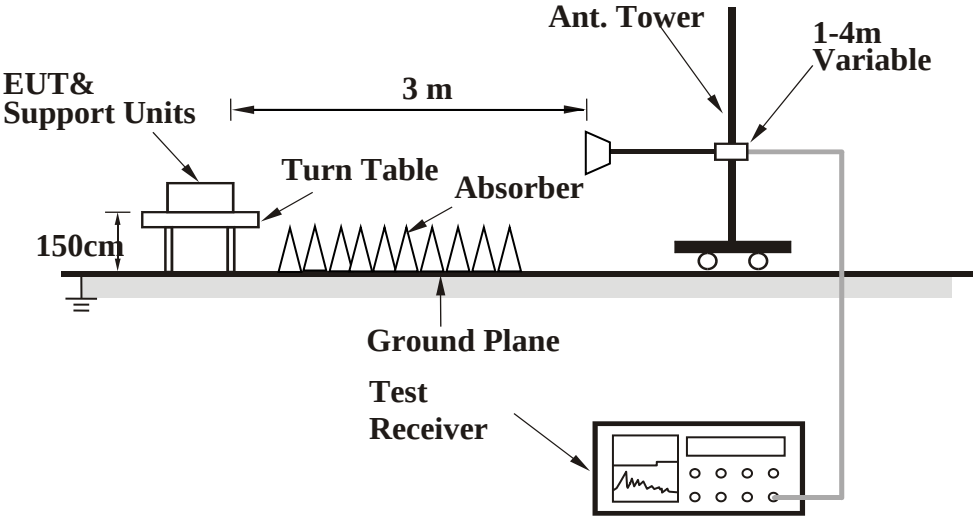
<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range 30 MHz ~ 1 GHz >



<Frequency Range above 1 GHz>



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

Test Data

Non-Beamforming Mode

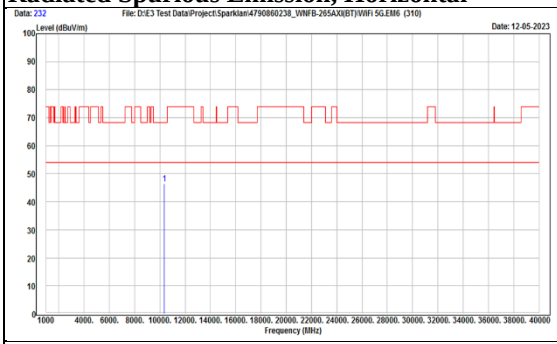
OFDM

Above 1 GHz

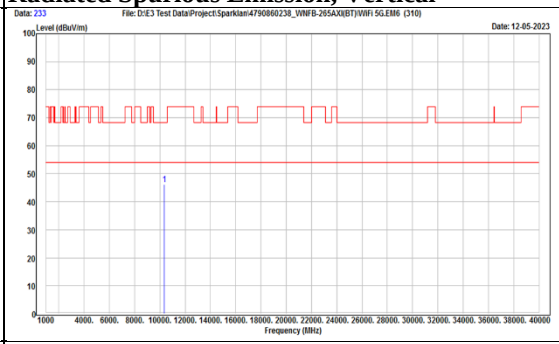
Mode	802.11a	Channel	36

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5028.35	41.88	21.47	63.35	74	-10.65	PK
		5040.25	29.75	21.51	51.26	54	-2.74	AVG
	@	5180	70.86	21.82	92.68	N/A	N/A	PK
	@	5180	62.86	21.82	84.68	N/A	N/A	AVG
	*	10360	30.98	15.51	46.49	68.2	-21.71	PK
Vertical		5032.2	42	21.48	63.48	74	-10.52	PK
		5064.4	29.63	21.59	51.22	54	-2.78	AVG
	@	5180	71.39	21.82	93.21	N/A	N/A	PK
	@	5180	65.09	21.82	86.91	N/A	N/A	AVG
	*	10360	30.67	15.51	46.18	68.2	-22.02	PK

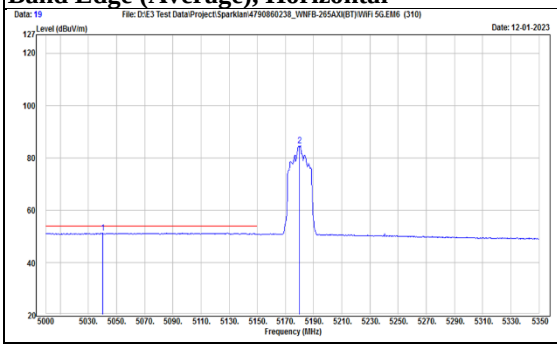
TX, 802.11a (Ch 36)
Radiated Spurious Emission, Horizontal



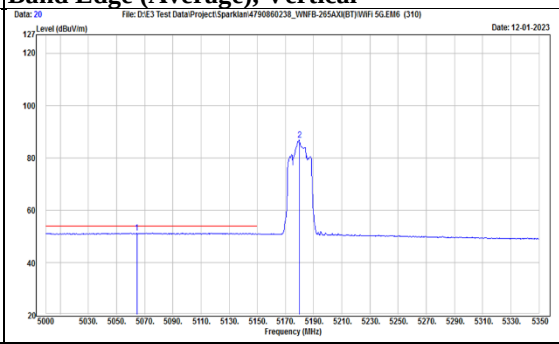
TX, 802.11a (Ch 36)
Radiated Spurious Emission, Vertical



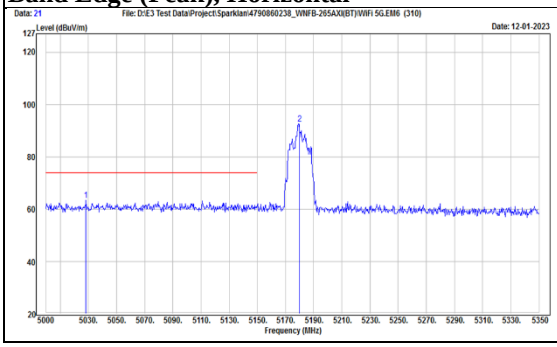
TX, 802.11a (Ch 36)
Band Edge (Average), Horizontal



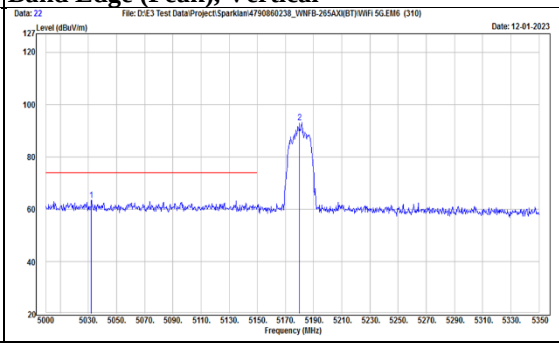
TX, 802.11a (Ch 36)
Band Edge (Average), Vertical



TX, 802.11a (Ch 36)
Band Edge (Peak), Horizontal



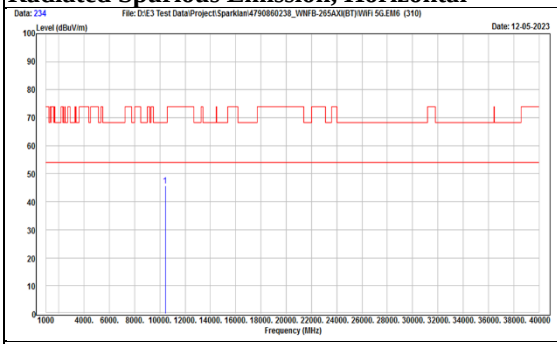
TX, 802.11a (Ch 36)
Band Edge (Peak), Vertical



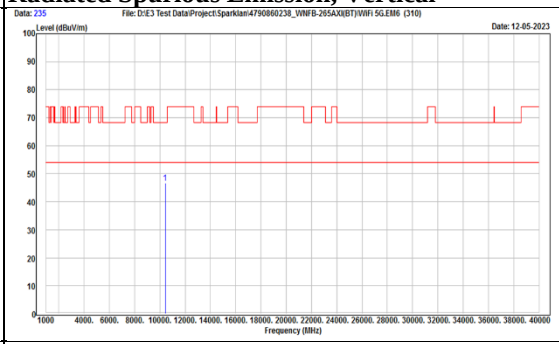
Mode	802.11a	Channel	44

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5030.45	42	21.48	63.48	74	-10.52	PK
		5040.95	29.81	21.51	51.32	54	-2.68	AVG
	@	5220	74.2	21.99	96.19	N/A	N/A	PK
	@	5220	67.07	21.99	89.06	N/A	N/A	AVG
	*	10440	29.98	15.7	45.68	68.2	-22.52	PK
Vertical		5073.85	29.69	21.62	51.31	54	-2.69	AVG
		5092.75	42.26	21.69	63.95	74	-10.05	PK
	@	5220	78.35	21.99	100.34	N/A	N/A	PK
	@	5220	70.05	21.99	92.04	N/A	N/A	AVG
	*	10440	31.06	15.7	46.76	68.2	-21.44	PK

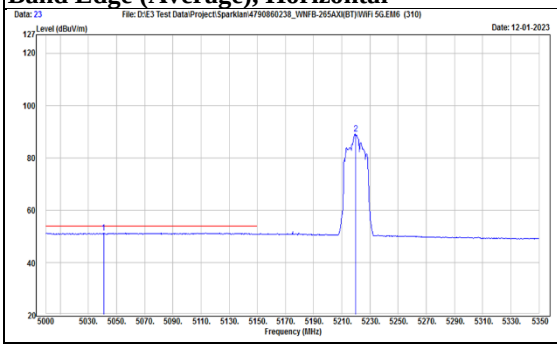
TX, 802.11a (Ch 44)
Radiated Spurious Emission, Horizontal



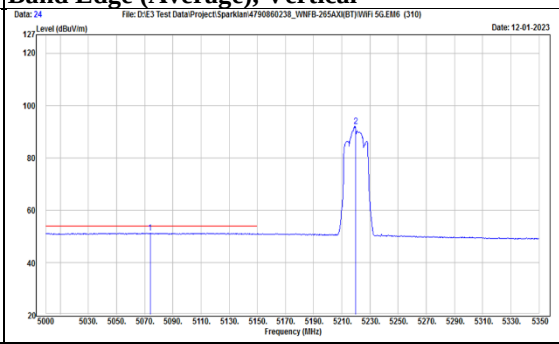
TX, 802.11a (Ch 44)
Radiated Spurious Emission, Vertical



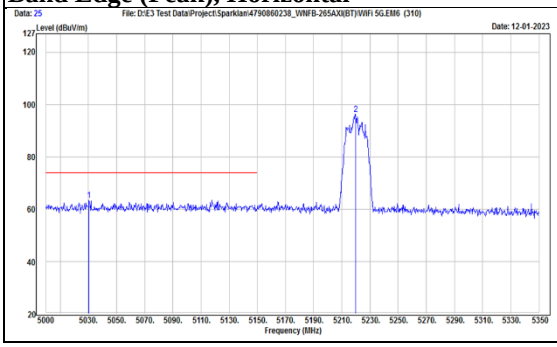
TX, 802.11a (Ch 44)
Band Edge (Average), Horizontal



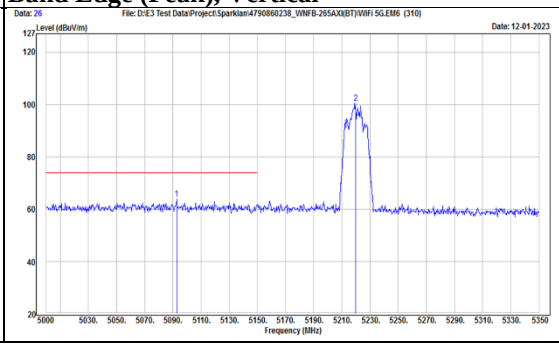
TX, 802.11a (Ch 44)
Band Edge (Average), Vertical



TX, 802.11a (Ch 44)
Band Edge (Peak), Horizontal



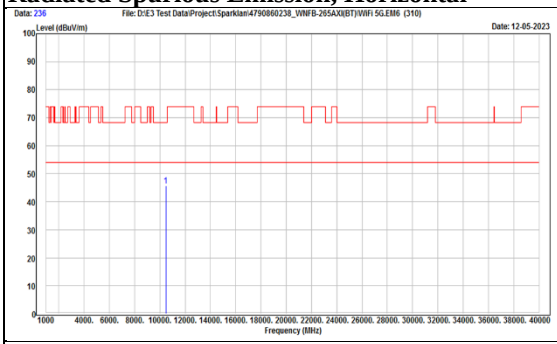
TX, 802.11a (Ch 44)
Band Edge (Peak), Vertical



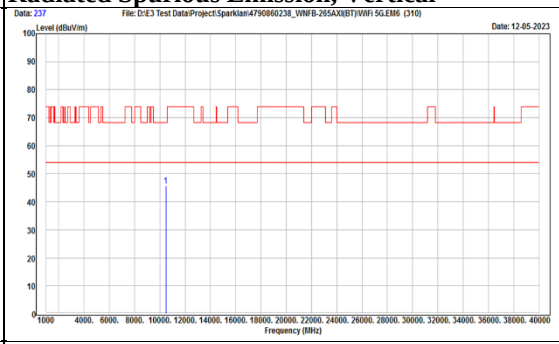
Mode	802.11a	Channel	48

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5058.45	29.61	21.57	51.18	54	-2.82	AVG
		5103.95	41.45	21.7	63.15	74	-10.85	PK
	@	5240	76.55	22.06	98.61	N/A	N/A	PK
	@	5240	66.73	22.06	88.79	N/A	N/A	AVG
	*	10480	29.79	15.84	45.63	68.2	-22.57	PK
Vertical		5103.6	42.1	21.7	63.8	74	-10.2	PK
		5128.45	29.57	21.69	51.26	54	-2.74	AVG
	@	5240	79.78	22.06	101.84	N/A	N/A	PK
	@	5240	71.46	22.06	93.52	N/A	N/A	AVG
	*	10480	29.8	15.84	45.64	68.2	-22.56	PK

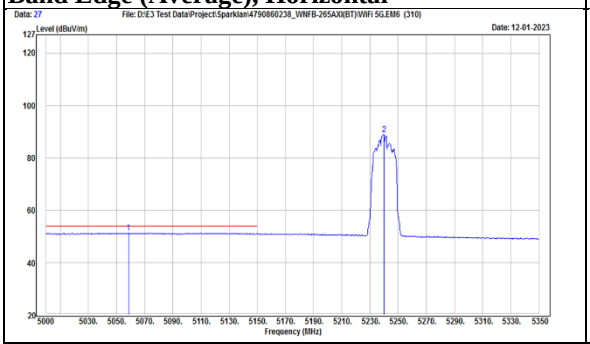
TX, 802.11a (Ch 48)
Radiated Spurious Emission, Horizontal



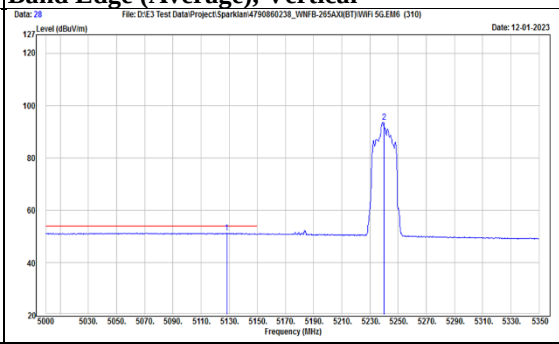
TX, 802.11a (Ch 48)
Radiated Spurious Emission, Vertical



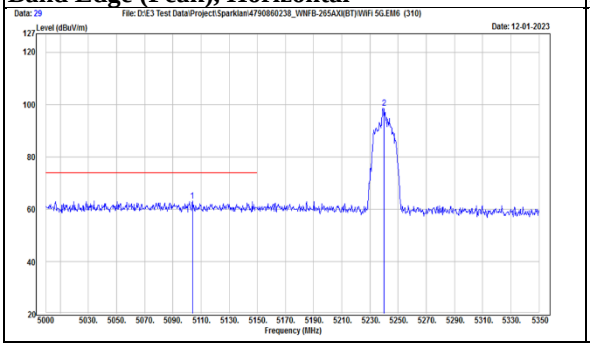
TX, 802.11a (Ch 48)
Band Edge (Average), Horizontal



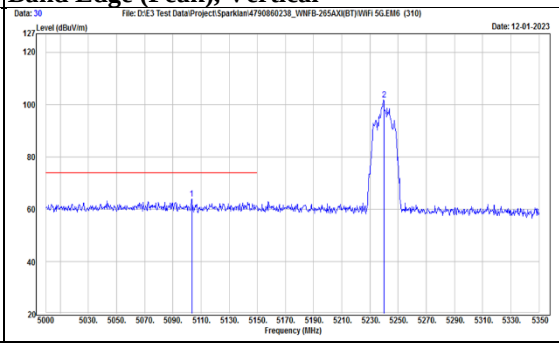
TX, 802.11a (Ch 48)
Band Edge (Average), Vertical



TX, 802.11a (Ch 48)
Band Edge (Peak), Horizontal



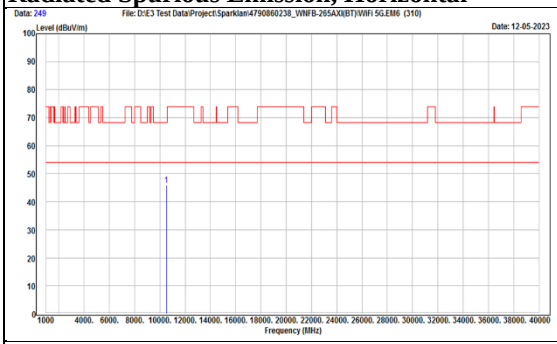
TX, 802.11a (Ch 48)
Band Edge (Peak), Vertical



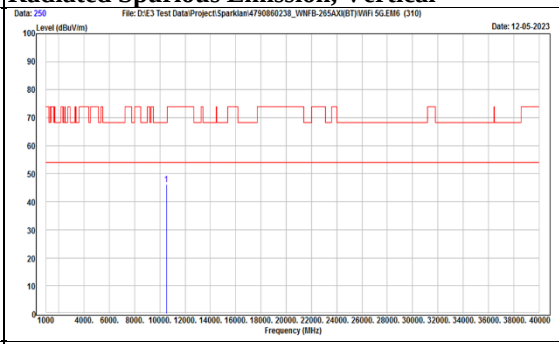
Mode	802.11a	Channel	52

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5260	76.05	22.08	98.13	N/A	N/A	PK
	@	5260	67.35	22.08	89.43	N/A	N/A	AVG
		5354.1	40.19	22.04	62.23	74	-11.77	PK
		5457.3	27.65	22.65	50.3	54	-3.7	AVG
	*	10520	30.13	15.9	46.03	68.2	-22.17	PK
Vertical	@	5260	76.09	22.08	98.17	N/A	N/A	PK
	@	5260	69.75	22.08	91.83	N/A	N/A	AVG
		5384.7	39.71	22.27	61.98	74	-12.02	PK
		5457	27.62	22.65	50.27	54	-3.73	AVG
	*	10520	30.28	15.9	46.18	68.2	-22.02	PK

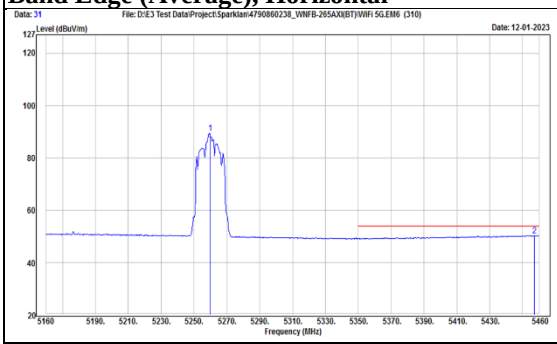
TX, 802.11a (Ch 52)
Radiated Spurious Emission, Horizontal



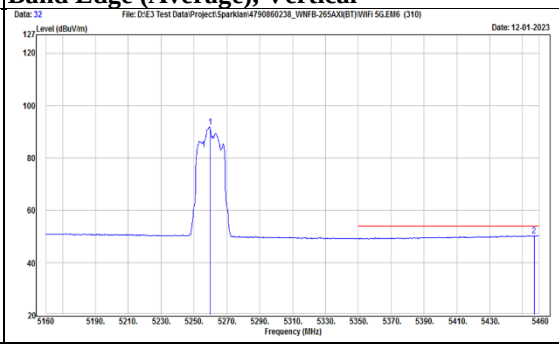
TX, 802.11a (Ch 52)
Radiated Spurious Emission, Vertical



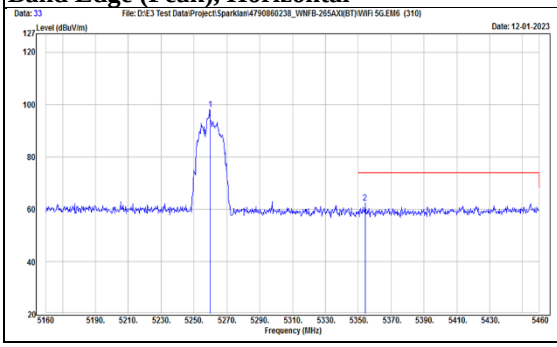
TX, 802.11a (Ch 52)
Band Edge (Average), Horizontal



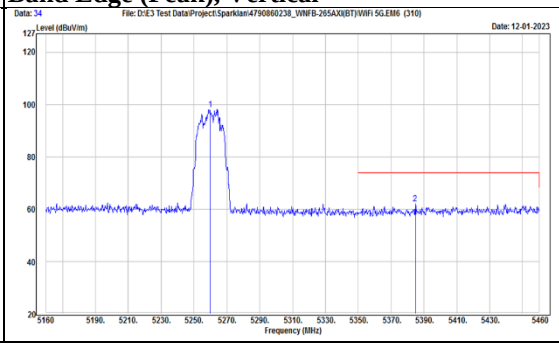
TX, 802.11a (Ch 52)
Band Edge (Average), Vertical



TX, 802.11a (Ch 52)
Band Edge (Peak), Horizontal



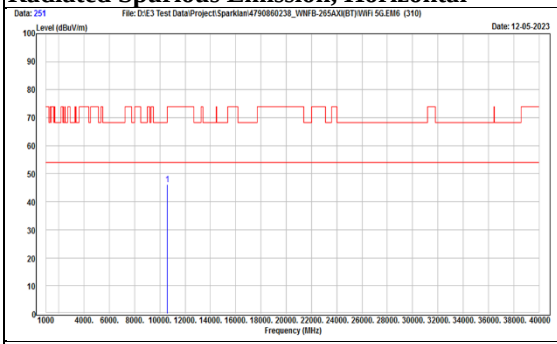
TX, 802.11a (Ch 52)
Band Edge (Peak), Vertical



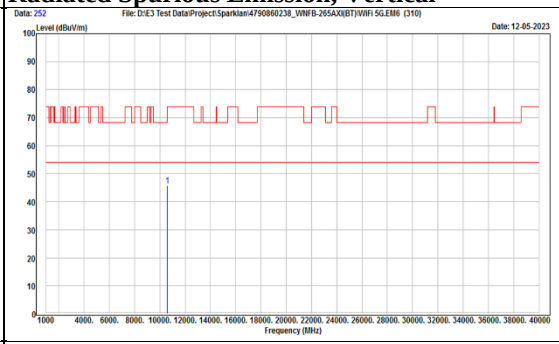
Mode	802.11a	Channel	60

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5300	74.42	22.05	96.47	N/A	N/A	PK
	@	5300	66.71	22.05	88.76	N/A	N/A	AVG
		5423.7	39.81	22.49	62.3	74	-11.7	PK
		5458.2	27.69	22.66	50.35	54	-3.65	AVG
	*	10600	30.26	15.83	46.09	74	-27.91	PK
Vertical	@	5300	76.85	22.05	98.9	N/A	N/A	PK
	@	5300	68.5	22.05	90.55	N/A	N/A	AVG
		5440.5	39.78	22.59	62.37	74	-11.63	PK
		5459.4	27.69	22.66	50.35	54	-3.65	AVG
	*	10600	29.9	15.83	45.73	74	-28.27	PK

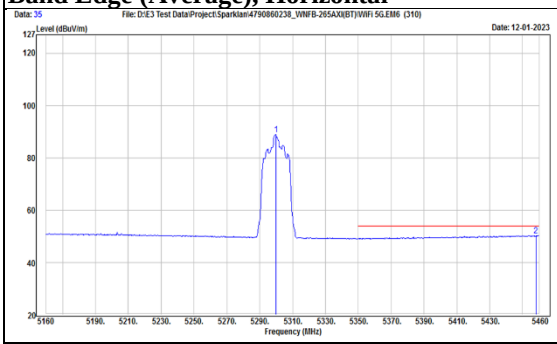
TX, 802.11a (Ch 60)
Radiated Spurious Emission, Horizontal



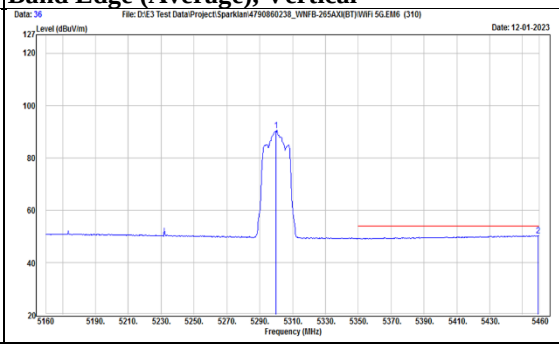
TX, 802.11a (Ch 60)
Radiated Spurious Emission, Vertical



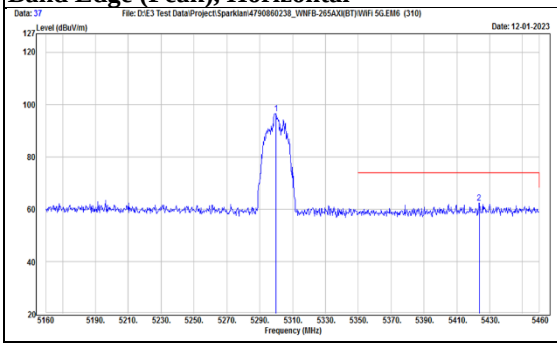
TX, 802.11a (Ch 60)
Band Edge (Average), Horizontal



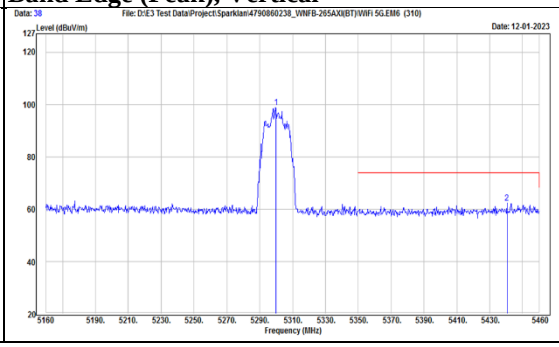
TX, 802.11a (Ch 60)
Band Edge (Average), Vertical



TX, 802.11a (Ch 60)
Band Edge (Peak), Horizontal



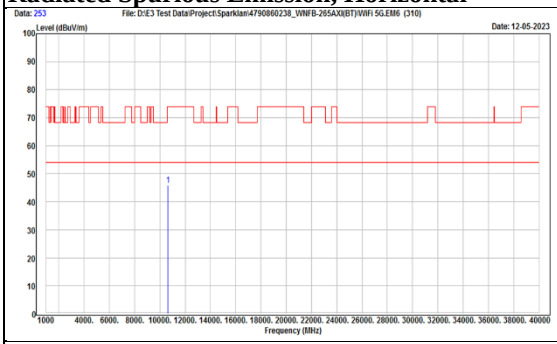
TX, 802.11a (Ch 60)
Band Edge (Peak), Vertical



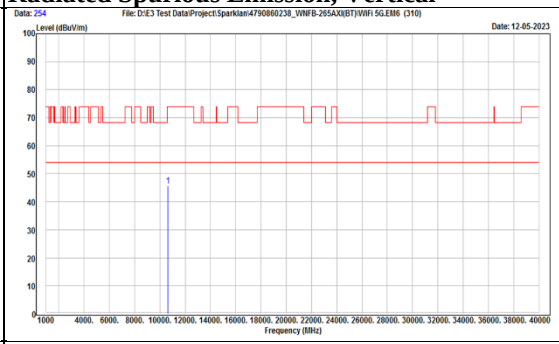
Mode	802.11a	Channel	64

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5320	74.28	22.04	96.32	N/A	N/A	PK
	@	5320	66.1	22.04	88.14	N/A	N/A	AVG
		5446.2	39.12	22.6	61.72	74	-12.28	PK
		5453.4	27.75	22.64	50.39	54	-3.61	AVG
	*	10640	30.13	15.91	46.04	74	-27.96	PK
Vertical	@	5320	76.75	22.04	98.79	N/A	N/A	PK
	@	5320	68.98	22.04	91.02	N/A	N/A	AVG
		5459.1	39.77	22.66	62.43	74	-11.57	PK
		5460	27.67	22.66	50.33	54	-3.67	AVG
	*	10640	29.82	15.91	45.73	74	-28.27	PK

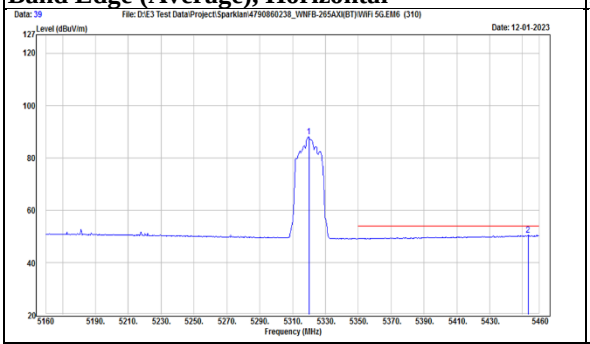
TX, 802.11a (Ch 64)
Radiated Spurious Emission, Horizontal



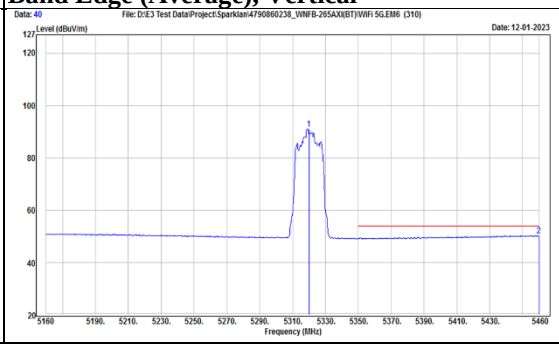
TX, 802.11a (Ch 64)
Radiated Spurious Emission, Vertical



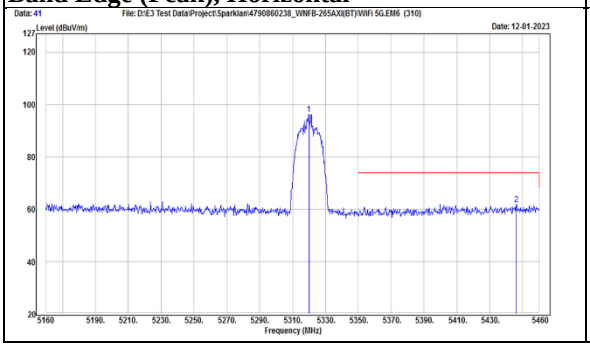
TX, 802.11a (Ch 64)
Band Edge (Average), Horizontal



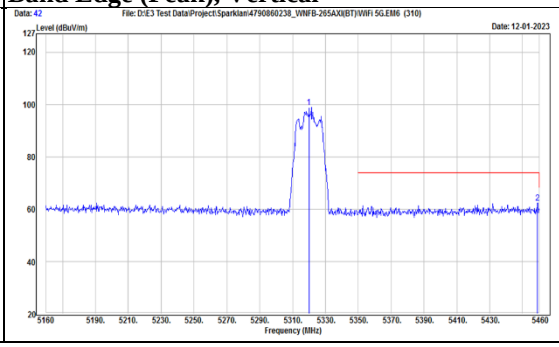
TX, 802.11a (Ch 64)
Band Edge (Average), Vertical



TX, 802.11a (Ch 64)
Band Edge (Peak), Horizontal



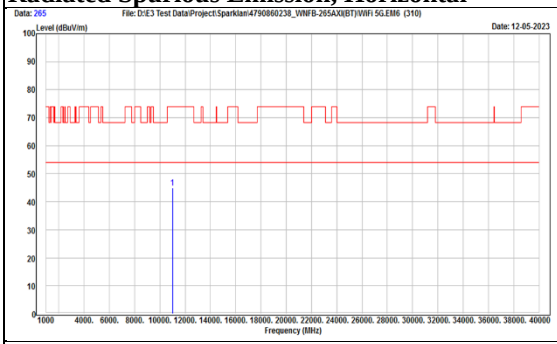
TX, 802.11a (Ch 64)
Band Edge (Peak), Vertical



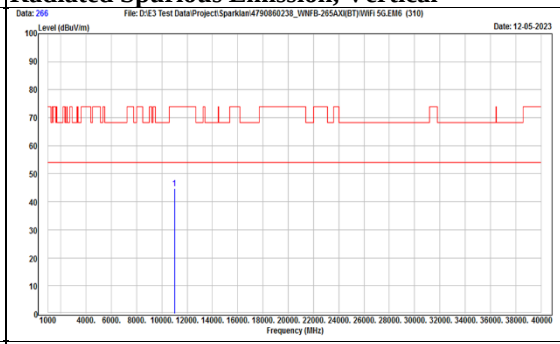
Mode	802.11a	Channel	100

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5439.9	40.06	22.58	62.64	74	-11.36	PK
		5459.15	27.67	22.66	50.33	54	-3.67	AVG
		5469.65	38.69	22.7	61.39	68.2	-6.81	PK
	@	5500	73.46	22.79	96.25	N/A	N/A	PK
	@	5500	66.43	22.79	89.22	N/A	N/A	AVG
	*	11000	28.92	16.08	45	74	-29	PK
Vertical		5443.75	39.66	22.59	62.25	74	-11.75	PK
		5454.95	27.72	22.65	50.37	54	-3.63	AVG
		5467.2	39.22	22.68	61.9	68.2	-6.3	PK
	@	5500	74.72	22.79	97.51	N/A	N/A	PK
	@	5500	67.78	22.79	90.57	N/A	N/A	AVG
	*	11000	28.67	16.08	44.75	74	-29.25	PK

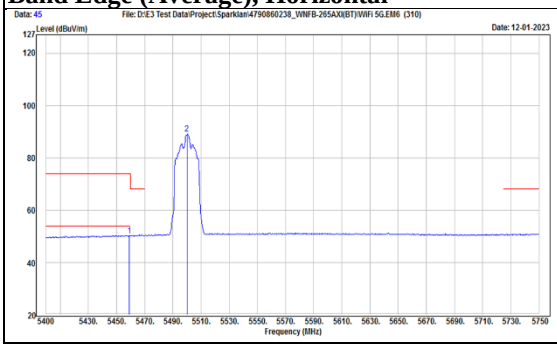
TX, 802.11a (Ch 100)
Radiated Spurious Emission, Horizontal



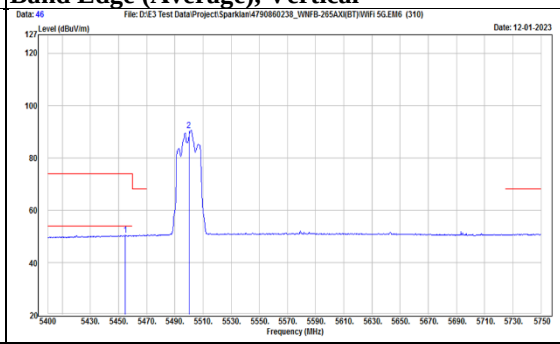
TX, 802.11a (Ch 100)
Radiated Spurious Emission, Vertical



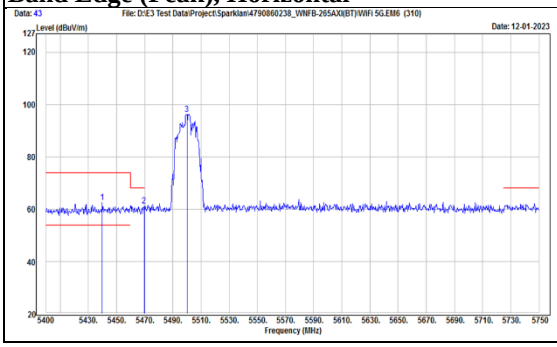
TX, 802.11a (Ch 100)
Band Edge (Average), Horizontal



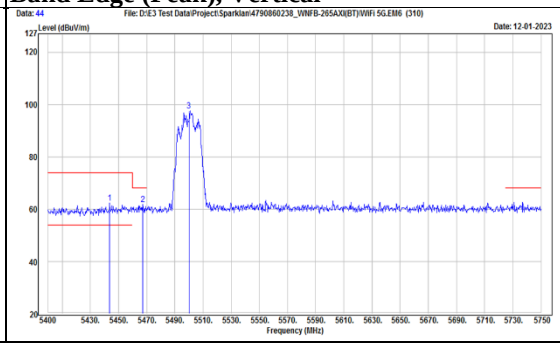
TX, 802.11a (Ch 100)
Band Edge (Average), Vertical



TX, 802.11a (Ch 100)
Band Edge (Peak), Horizontal



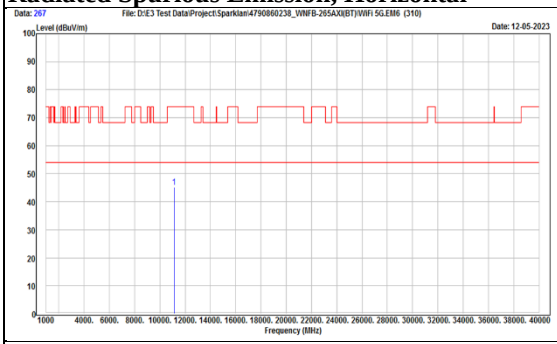
TX, 802.11a (Ch 100)
Band Edge (Peak), Vertical



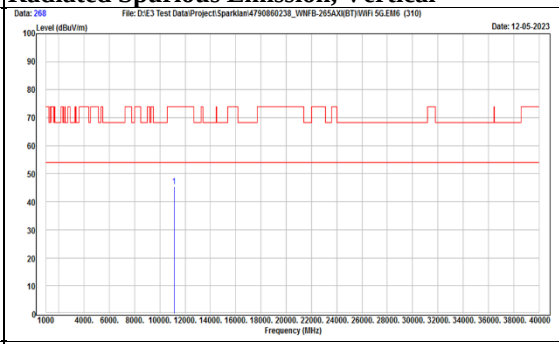
Mode	802.11a	Channel	116

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5448.3	40.3	22.62	62.92	74	-11.08	PK
		5455.3	27.66	22.65	50.31	54	-3.69	AVG
		5468.25	38.96	22.7	61.66	68.2	-6.54	PK
	@	5580	73.07	22.64	95.71	N/A	N/A	PK
	@	5580	65.13	22.64	87.77	N/A	N/A	AVG
		5734.6	40.24	22.78	63.02	68.2	-5.18	PK
	*	11160	28.66	16.67	45.33	74	-28.67	PK
Vertical		5443.4	39	22.59	61.59	74	-12.41	PK
		5457.4	27.69	22.65	50.34	54	-3.66	AVG
		5464.4	38.6	22.68	61.28	68.2	-6.92	PK
	@	5580	75.33	22.64	97.97	N/A	N/A	PK
	@	5580	64.97	22.64	87.61	N/A	N/A	AVG
		5744.4	39.92	22.87	62.79	68.2	-5.41	PK
	*	11160	28.81	16.67	45.48	74	-28.52	PK

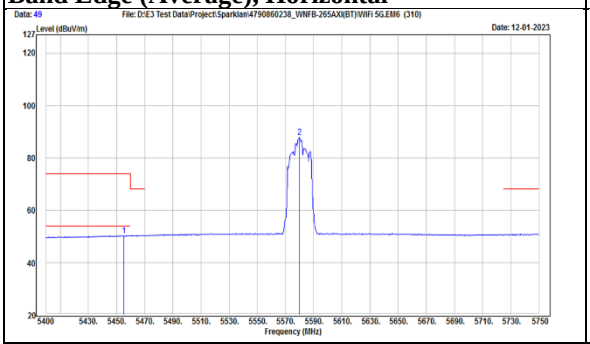
TX, 802.11a (Ch 116)
Radiated Spurious Emission, Horizontal



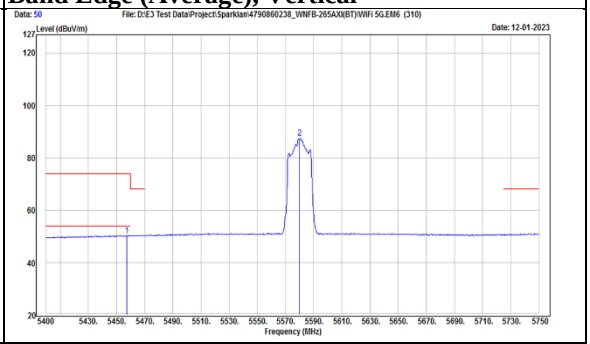
TX, 802.11a (Ch 116)
Radiated Spurious Emission, Vertical



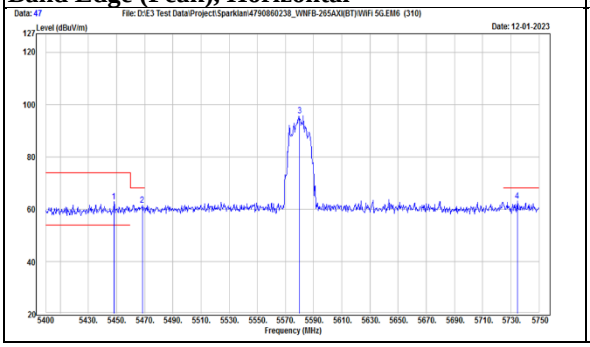
TX, 802.11a (Ch 116)
Band Edge (Average), Horizontal



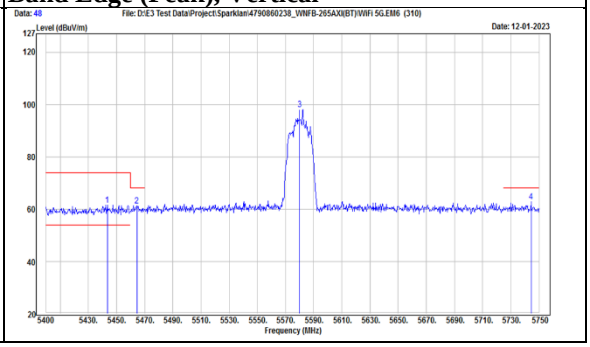
TX, 802.11a (Ch 116)
Band Edge (Average), Vertical



TX, 802.11a (Ch 116)
Band Edge (Peak), Horizontal



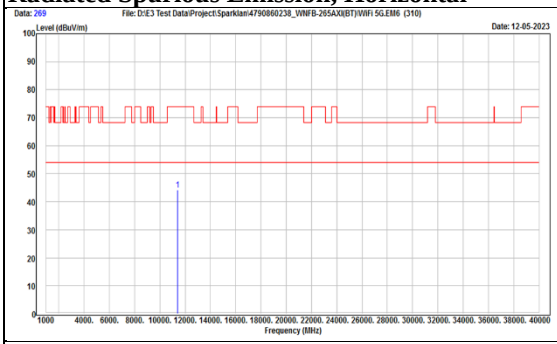
TX, 802.11a (Ch 116)
Band Edge (Peak), Vertical



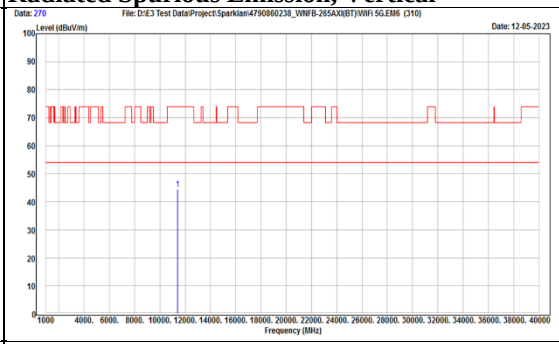
Mode	802.11a	Channel	140

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5453.55	27.65	22.64	50.29	54	-3.71	AVG
		5456.35	40.18	22.65	62.83	74	-11.17	PK
		5468.95	39.26	22.7	61.96	68.2	-6.24	PK
	@	5700	73.36	22.45	95.81	N/A	N/A	PK
	@	5700	66.26	22.45	88.71	N/A	N/A	AVG
		5737.75	39.61	22.81	62.42	68.2	-5.78	PK
	*	11400	26.67	17.5	44.17	74	-29.83	PK
Vertical		5435.7	38.85	22.56	61.41	74	-12.59	PK
		5458.45	27.63	22.66	50.29	54	-3.71	AVG
		5465.8	38.9	22.68	61.58	68.2	-6.62	PK
	@	5700	77.35	22.45	99.8	N/A	N/A	PK
	@	5700	69.74	22.45	92.19	N/A	N/A	AVG
		5744.4	39.47	22.87	62.34	68.2	-5.86	PK
	*	11400	27.03	17.5	44.53	74	-29.47	PK

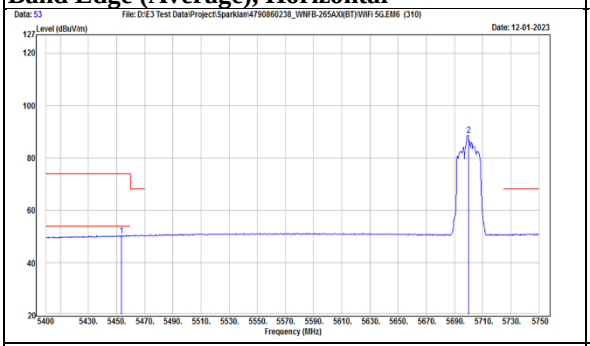
TX, 802.11a (Ch 140)
Radiated Spurious Emission, Horizontal



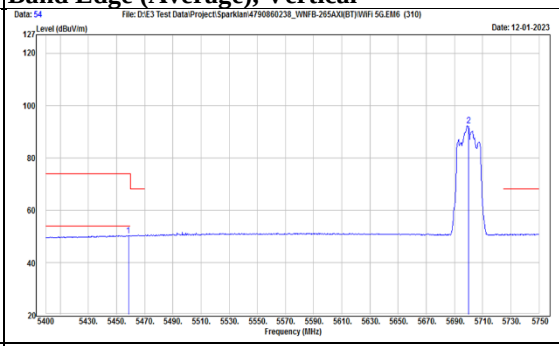
TX, 802.11a (Ch 140)
Radiated Spurious Emission, Vertical



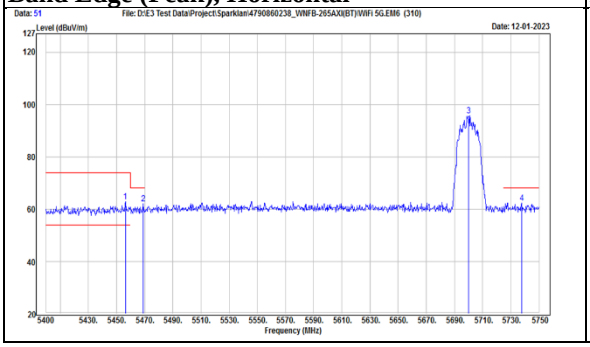
TX, 802.11a (Ch 140)
Band Edge (Average), Horizontal



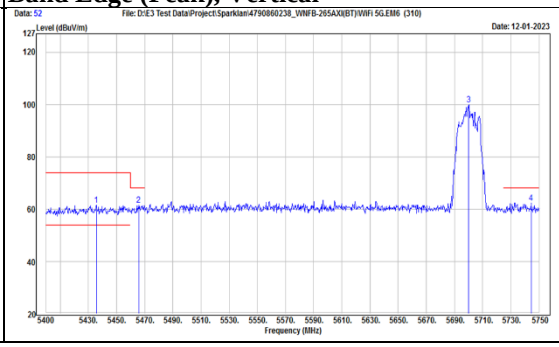
TX, 802.11a (Ch 140)
Band Edge (Average), Vertical



TX, 802.11a (Ch 140)
Band Edge (Peak), Horizontal



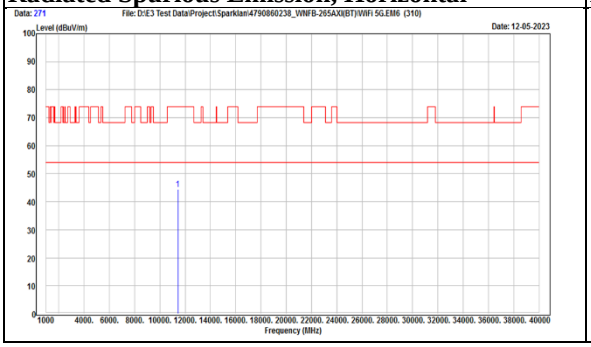
TX, 802.11a (Ch 140)
Band Edge (Peak), Vertical



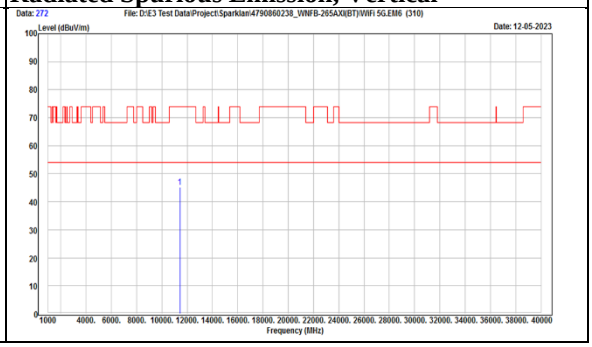
Mode	802.11a	Channel	144

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	11440	27.07	17.46	44.53	74	-29.47	PK
Vertical	*	11440	27.82	17.46	45.28	74	-28.72	PK

TX, 802.11a (Ch 144)
Radiated Spurious Emission, Horizontal



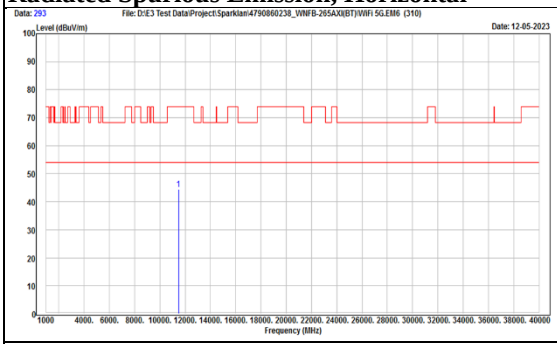
TX, 802.11a (Ch 144)
Radiated Spurious Emission, Vertical



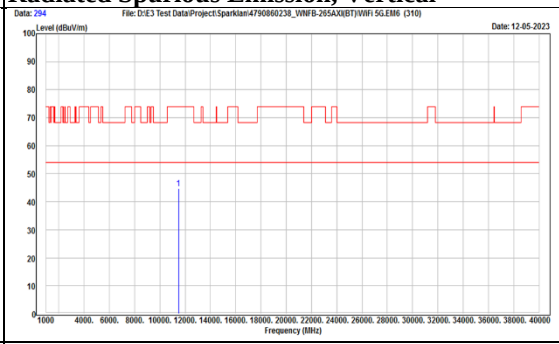
Mode	802.11a	Channel	149

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5588	40.61	22.63	63.24	68.2	-4.96	PK
		5667.5	39.79	22.54	62.33	81.19	-18.86	PK
	@	5745	71.76	22.88	94.64	N/A	N/A	PK
	*	11490	27.13	17.43	44.56	74	-29.44	PK
Vertical		5558	39.62	22.65	62.27	68.2	-5.93	PK
		5650	39.16	22.59	61.75	68.2	-6.45	PK
	@	5745	74.15	22.88	97.03	N/A	N/A	PK
	*	11490	27.4	17.43	44.83	74	-29.17	PK

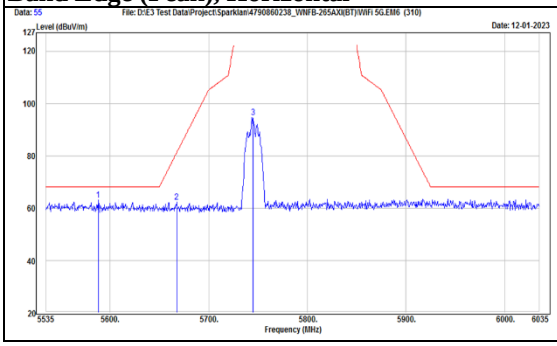
TX, 802.11a (Ch 149)
Radiated Spurious Emission, Horizontal



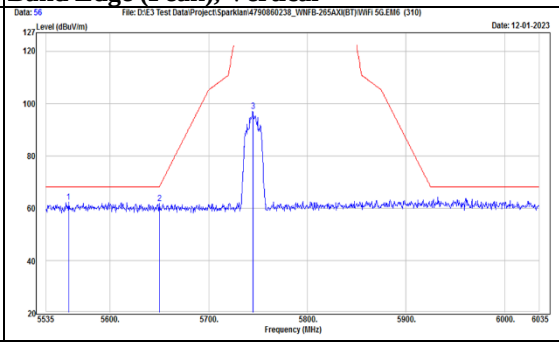
TX, 802.11a (Ch 149)
Radiated Spurious Emission, Vertical



TX, 802.11a (Ch 149)
Band Edge (Peak), Horizontal



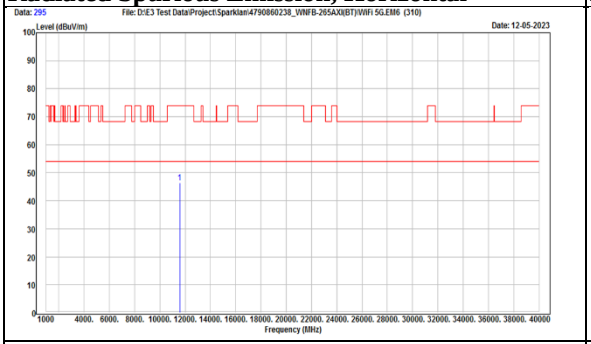
TX, 802.11a (Ch 149)
Band Edge (Peak), Vertical



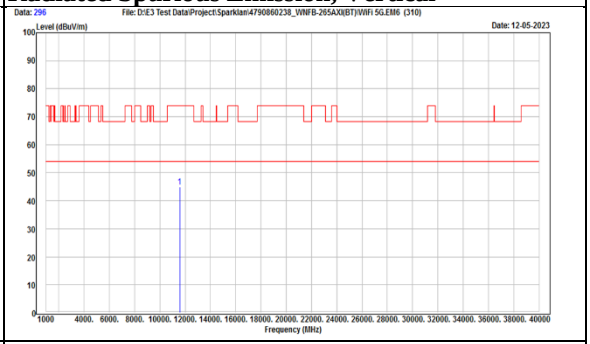
Mode	802.11a	Channel	157

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5611	40.32	22.61	62.93	68.2	-5.27	PK
		5670	39.44	22.54	61.98	83.04	-21.06	PK
	@	5785	72.64	23.24	95.88	N/A	N/A	PK
		5898	40.1	23.78	63.88	88.14	-24.26	PK
		5941	39.96	23.86	63.82	68.2	-4.38	PK
	*	11570	28.62	17.78	46.4	74	-27.6	PK
Vertical		5573	39.59	22.64	62.23	68.2	-5.97	PK
		5650	39.26	22.59	61.85	68.2	-6.35	PK
	@	5785	73.84	23.24	97.08	N/A	N/A	PK
		5890.5	40.29	23.7	63.99	93.7	-29.71	PK
		6006	40.45	23.64	64.09	68.2	-4.11	PK
	*	11570	27.29	17.78	45.07	74	-28.93	PK

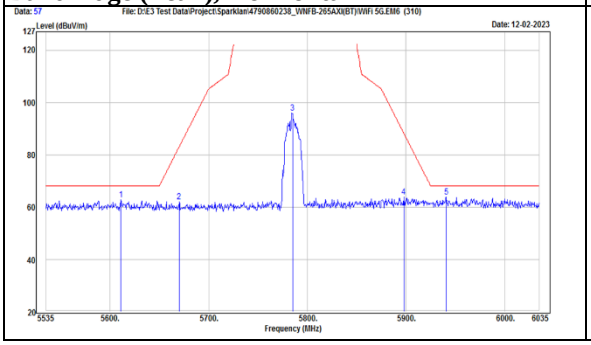
TX, 802.11a (Ch 157)
Radiated Spurious Emission, Horizontal



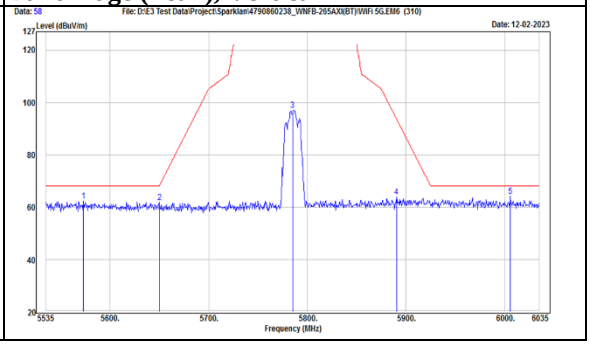
TX, 802.11a (Ch 157)
Radiated Spurious Emission, Vertical



TX, 802.11a (Ch 157)
Band Edge (Peak), Horizontal



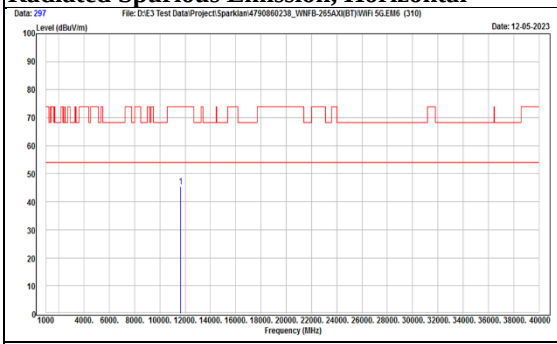
TX, 802.11a (Ch 157)
Band Edge (Peak), Vertical



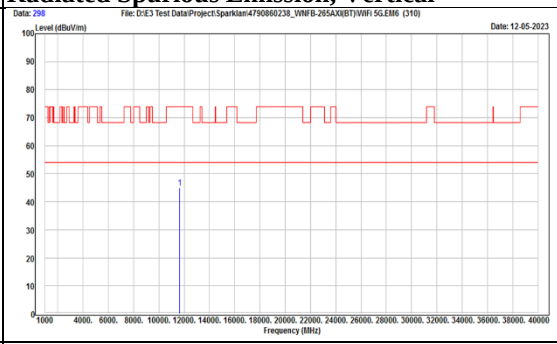
Mode	802.11a	Channel	165

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5825	72.94	23.31	96.25	N/A	N/A	PK
		5921.5	40.32	23.83	64.15	70.78	-6.63	PK
		5972.5	39.97	23.76	63.73	68.2	-4.47	PK
	*	11650	27.47	18	45.47	74	-28.53	PK
Vertical	@	5825	75.63	23.31	98.94	N/A	N/A	PK
		5891.5	40.82	23.72	64.54	92.96	-28.42	PK
		5949.5	40.08	23.87	63.95	68.2	-4.25	PK
	*	11650	26.9	18	44.9	74	-29.1	PK

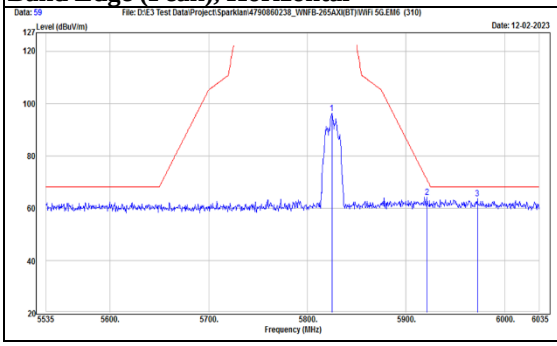
TX, 802.11a (Ch 165)
Radiated Spurious Emission, Horizontal



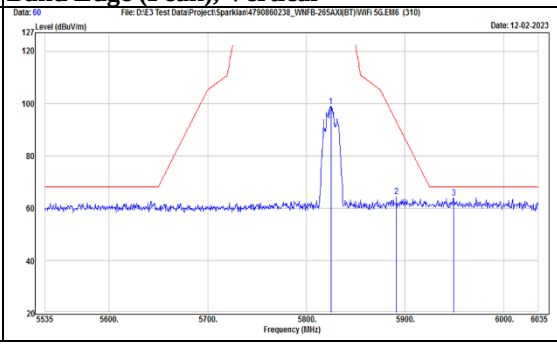
TX, 802.11a (Ch 165)
Radiated Spurious Emission, Vertical



TX, 802.11a (Ch 165)
Band Edge (Peak), Horizontal



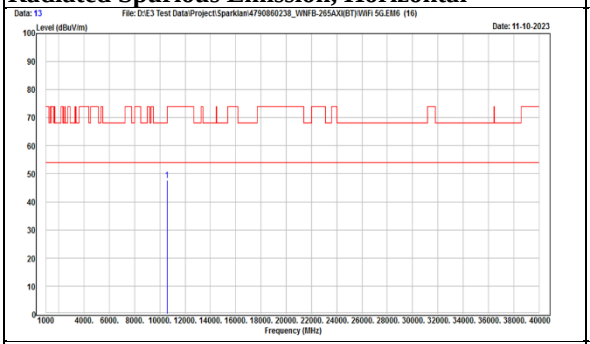
TX, 802.11a (Ch 165)
Band Edge (Peak), Vertical



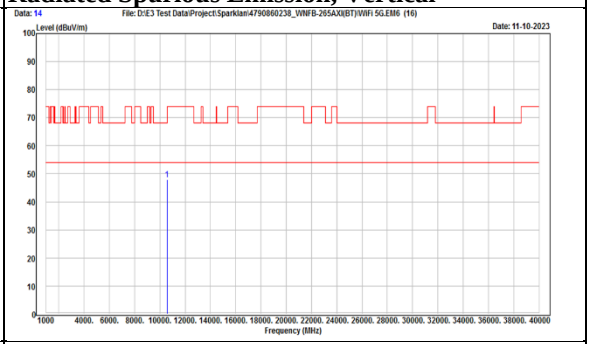
Mode	802.11ac(VHT80)	Channel	58

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5290	66.21	18.77	84.98	N/A	N/A	PK
	@	5290	59.86	18.77	78.63	N/A	N/A	AVG
		5365.8	40.02	18.84	58.86	74	-15.14	PK
		5445.9	28.59	19.59	48.18	54	-5.82	AVG
	*	10580	30	17.68	47.68	68.2	-20.52	PK
Vertical	@	5290	71.45	18.77	90.22	N/A	N/A	PK
	@	5290	62.45	18.77	81.22	N/A	N/A	AVG
		5437.5	38.67	19.51	58.18	74	-15.82	PK
		5454	28.55	19.63	48.18	54	-5.82	AVG
	*	10580	30.18	17.68	47.86	68.2	-20.34	PK

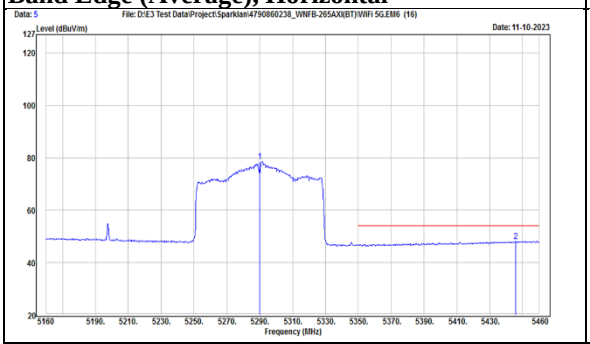
TX, 802.11ac(VHT80) (Ch 58)
Radiated Spurious Emission, Horizontal



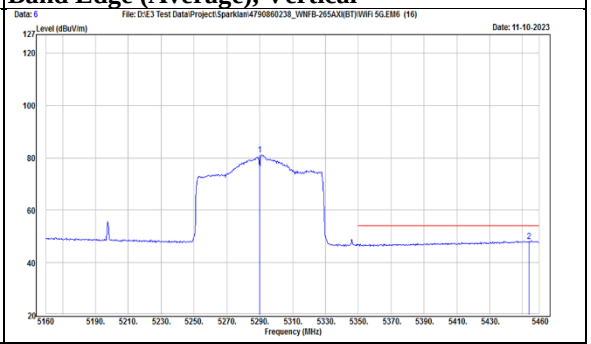
TX, 802.11ac(VHT80) (Ch 58)
Radiated Spurious Emission, Vertical



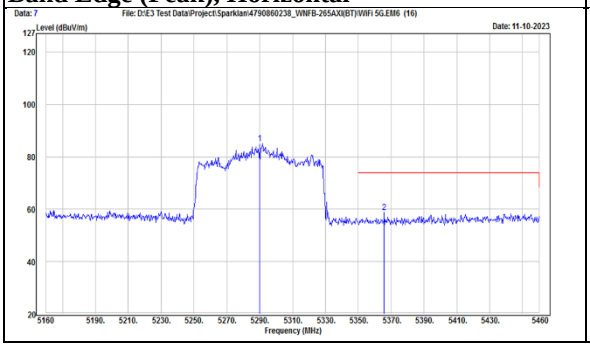
TX, 802.11ac(VHT80) (Ch 58)
Band Edge (Average), Horizontal



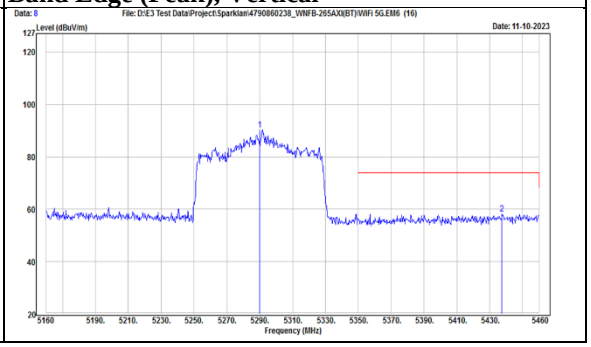
TX, 802.11ac(VHT80) (Ch 58)
Band Edge (Average), Vertical



TX, 802.11ac(VHT80) (Ch 58)
Band Edge (Peak), Horizontal



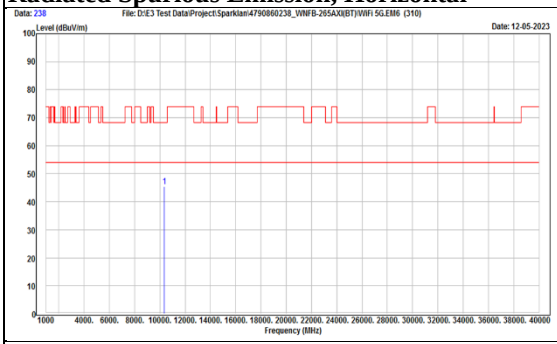
TX, 802.11ac(VHT80) (Ch 58)
Band Edge (Peak), Vertical



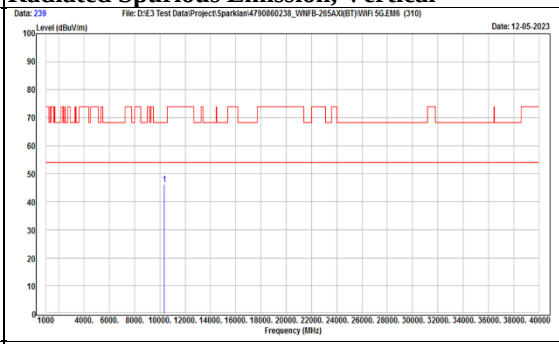
Mode	802.11ax(HE20)	Channel	36

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5000	30.23	21.38	51.61	54	-2.39	AVG
		5144.55	41.67	21.67	63.34	74	-10.66	PK
	@	5180	68.93	21.82	90.75	N/A	N/A	PK
	@	5180	61.99	21.82	83.81	N/A	N/A	AVG
	*	10360	29.87	15.51	45.38	68.2	-22.82	PK
Vertical		5021.35	42.92	21.44	64.36	74	-9.64	PK
		5077.7	29.93	21.64	51.57	54	-2.43	AVG
	@	5180	73.75	21.82	95.57	N/A	N/A	PK
	@	5180	64.75	21.82	86.57	N/A	N/A	AVG
	*	10360	30.56	15.51	46.07	68.2	-22.13	PK

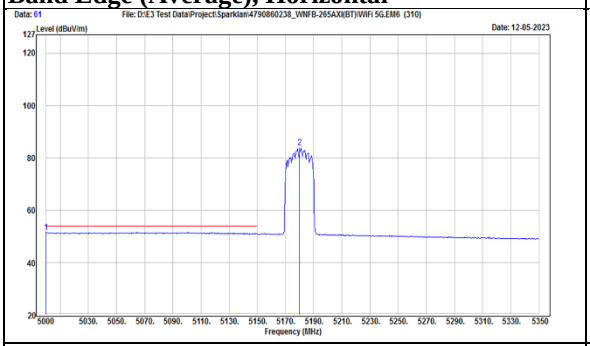
TX, 802.11ax(HE20) (Ch 36)
Radiated Spurious Emission, Horizontal



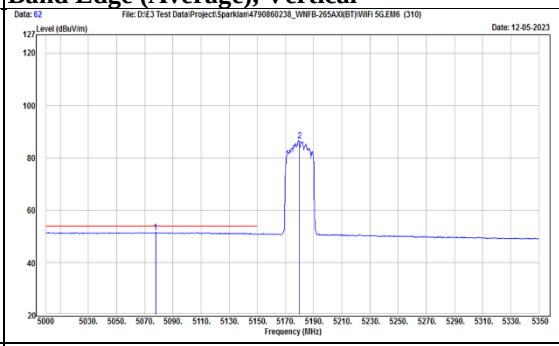
TX, 802.11ax(HE20) (Ch 36)
Radiated Spurious Emission, Vertical



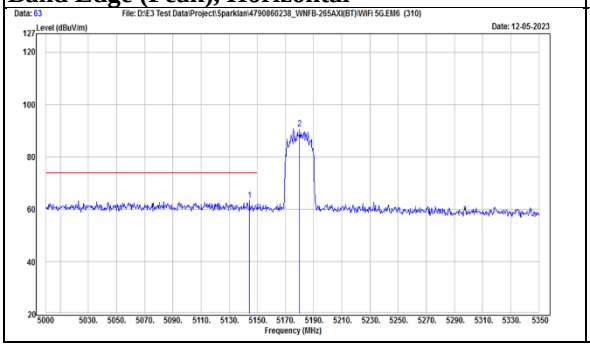
TX, 802.11ax(HE20) (Ch 36)
Band Edge (Average), Horizontal



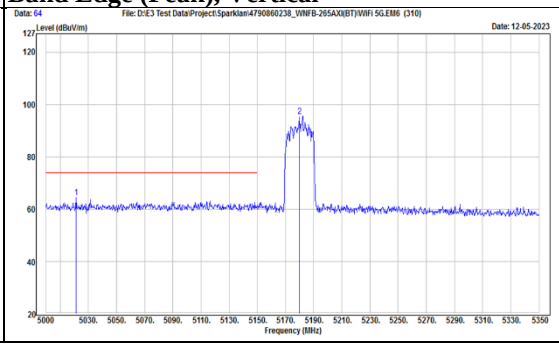
TX, 802.11ax(HE20) (Ch 36)
Band Edge (Average), Vertical



TX, 802.11ax(HE20) (Ch 36)
Band Edge (Peak), Horizontal



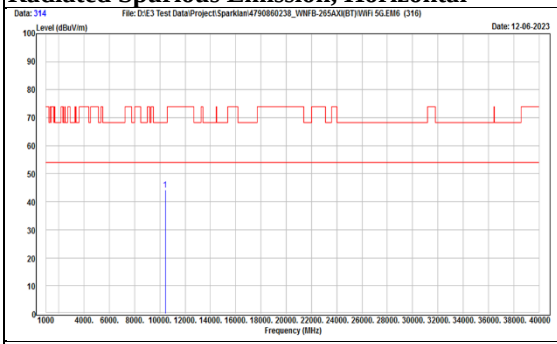
TX, 802.11ax(HE20) (Ch 36)
Band Edge (Peak), Vertical



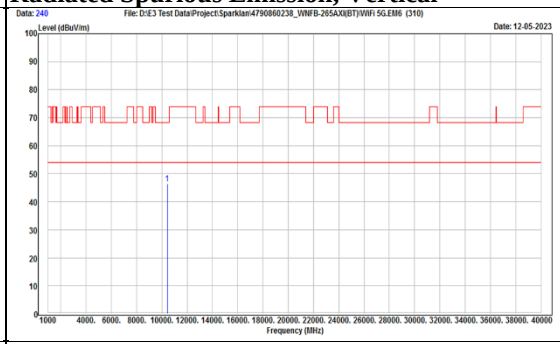
Mode	802.11ax(HE20)	Channel	44

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5000.7	30.17	21.38	51.55	54	-2.45	AVG
		5019.25	41.81	21.44	63.25	74	-10.75	PK
	@	5220	71.53	21.99	93.52	N/A	N/A	PK
	@	5220	64.87	21.99	86.86	N/A	N/A	AVG
	*	10440	28.61	15.7	44.31	68.2	-23.89	PK
Vertical		5000	30.18	21.38	51.56	54	-2.44	AVG
		5066.85	42.03	21.59	63.62	74	-10.38	PK
	@	5220	77.92	21.99	99.91	N/A	N/A	PK
	@	5220	69.11	21.99	91.1	N/A	N/A	AVG
	*	10440	30.8	15.7	46.5	68.2	-21.7	PK

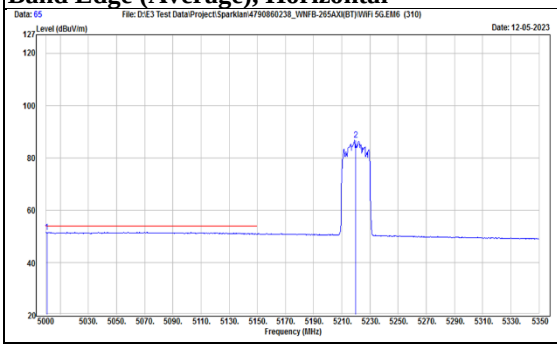
TX, 802.11ax(HE20) (Ch 44)
Radiated Spurious Emission, Horizontal



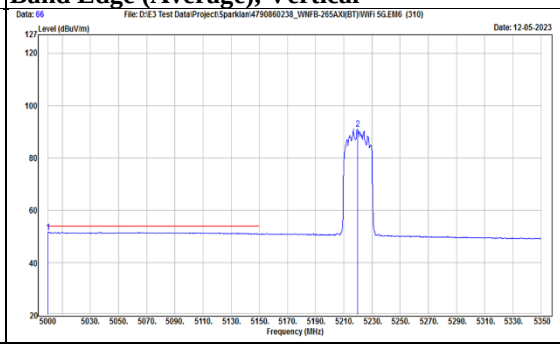
TX, 802.11ax(HE20) (Ch 44)
Radiated Spurious Emission, Vertical



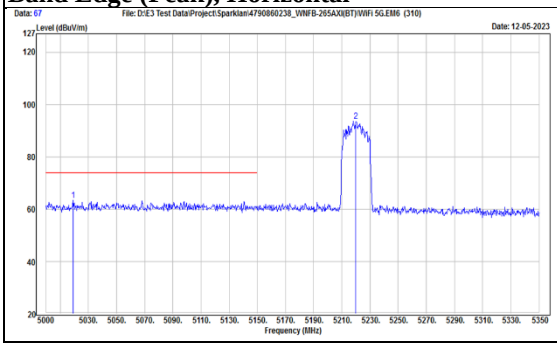
TX, 802.11ax(HE20) (Ch 44)
Band Edge (Average), Horizontal



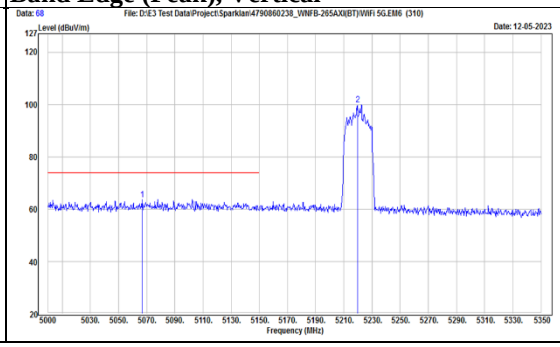
TX, 802.11ax(HE20) (Ch 44)
Band Edge (Average), Vertical



TX, 802.11ax(HE20) (Ch 44)
Band Edge (Peak), Horizontal



TX, 802.11ax(HE20) (Ch 44)
Band Edge (Peak), Vertical



Mode	802.11ax(HE20)	Channel	48

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5000.35	30.25	21.38	51.63	54	-2.37	AVG
		5030.8	42.25	21.48	63.73	74	-10.27	PK
	@	5240	72.39	22.06	94.45	N/A	N/A	PK
	@	5240	64.37	22.06	86.43	N/A	N/A	AVG
	*	10480	29.43	15.84	45.27	68.2	-22.93	PK
Vertical		5000.7	30.16	21.38	51.54	54	-2.46	AVG
		5031.5	42.03	21.48	63.51	74	-10.49	PK
	@	5240	78.39	22.06	100.45	N/A	N/A	PK
	@	5240	69.08	22.06	91.14	N/A	N/A	AVG
	*	10480	31.57	15.84	47.41	68.2	-20.79	PK