TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBWIN-WTW-P22110682-1
FCC ID:	J9C-QCNCM865
Product:	Qualcomm WiFi 7/BT Combo module
Brand:	Qualcomm
Model No.:	QCNCM865
Received Date:	2022/11/24
Test Date:	2023/1/11 ~ 2023/2/21
Issued Date:	2023/3/21
Applicant:	Qualcomm Technologies, Inc.
Address:	5775 Morehouse Drive, San Diego, CA 92121-1714
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Approved by: _____ , **Date:** 2023/3/21

May Chen / Manager

This test report consists of 798 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Vivian Huang / Specialist

Table of Contents

Release Control Record 4

1 Certificate 5

2 Summary of Test Results 6

2.1 Measurement Uncertainty 6
2.2 Supplementary Information 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Antenna Description of EUT 9
3.3 Channel List 10
3.4 Test Mode Applicability and Tested Channel Detail 12
3.5 Duty Cycle of Test Signal 21
3.6 Test Program Used and Operation Descriptions 25
3.7 Connection Diagram of EUT and Peripheral Devices 25
3.8 Configuration of Peripheral Devices and Cable Connections 27

4 Test Instruments 28

4.1 26 dB Bandwidth 28
4.2 RF Output Power 28
4.3 Power Spectral Density 28
4.4 6 dB Bandwidth 28
4.5 Occupied Bandwidth 28
4.6 Frequency Stability 29
4.7 AC Power Conducted Emissions 29
4.8 Unwanted Emissions below 1 GHz 30
4.9 Unwanted Emissions above 1 GHz 31

5 Limits of Test Items 32

5.1 26 dB Bandwidth 32
5.2 RF Output Power 32
5.3 Power Spectral Density 32
5.4 6 dB Bandwidth 32
5.5 Occupied Bandwidth 32
5.6 Frequency Stability 33
5.7 AC Power Conducted Emissions 33
5.8 Unwanted Emissions below 1 GHz 33
5.9 Unwanted Emissions above 1 GHz 34

6 Test Arrangements 35

6.1 26 dB Bandwidth 35
6.1.1 Test Setup 35
6.1.2 Test Procedure 35
6.2 RF Output Power 36
6.2.1 Test Setup 36
6.2.2 Test Procedure 36
6.3 Power Spectral Density 37
6.3.1 Test Setup 37
6.3.2 Test Procedure 37
6.4 6 dB Bandwidth 37
6.4.1 Test Setup 37
6.4.2 Test Procedure 37
6.5 Occupied Bandwidth 38
6.5.1 Test Setup 38
6.5.2 Test Procedure 38
6.6 Frequency Stability 38
6.6.1 Test Setup 38
6.6.2 Test Procedure 38
6.7 AC Power Conducted Emissions 39

6.7.1 Test Setup 39
6.7.2 Test Procedure 39
6.8 Unwanted Emissions below 1 GHz 40
6.8.1 Test Setup 40
6.8.2 Test Procedure 41
6.9 Unwanted Emissions above 1 GHz 42
6.9.1 Test Setup 42
6.9.2 Test Procedure 43

7 Test Results of Test Item 44

7.1 26 dB Bandwidth 44
7.2 RF Output Power 54
7.3 Power Spectral Density 79
7.4 6 dB Bandwidth 101
7.5 Occupied Bandwidth 105
7.6 Frequency Stability 118
7.7 AC Power Conducted Emissions 119
7.8 Unwanted Emissions below 1 GHz 121
7.9 Unwanted Emissions above 1 GHz 125

8 Pictures of Test Arrangements 784

9 Appendix A – Information of the Testing Laboratories 785

10 Appendix B – Radiated Emission Measurement 786

10.1.1 Limits of Radiated Emission and Bandedge Measurement 786
10.1.2 Test Instruments 787
10.1.3 Test Procedure 787
10.1.4 Deviation from Test Standard 787
10.1.5 Test Setup 788
10.1.6 EUT Operating Condition 788
10.1.7 Test Results 789

Release Control Record

Issue No.	Description	Date Issued
RFBWIN-WTW-P22110682-1	Original release.	2023/3/21

1 Certificate

Product:	Qualcomm WiFi 7/BT Combo module
Brand:	Qualcomm
Test Model:	QCNCM865
Sample Status:	Engineering sample
Applicant:	Qualcomm Technologies, Inc.
Test Date:	2023/1/11 ~ 2023/2/21
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(2)	26 dB Bandwidth	-	For U-NII-2A U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
---	Occupied Bandwidth	-	Reference only.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -9.75 dB at 0.56795 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.4 dB at 295.42 MHz
15.407(b) (1/10) 15.407(b) (2/10) 15.407(b) (3/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -2.0 dB at 5351.90, 5355.57 MHz
15.203	Antenna Requirement	Pass	Antenna connector is MHF 4L not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Qualcomm WiFi 7/BT Combo module
Brand	Qualcomm
Test Model	QCNCM865
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDM in 11ac mode 4096QAM for OFDMA in 11ax mode 4096QAM for OFDMA in 11be mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps 802.11be: up to 2882.4 Mbps
Operating Frequency	5.18 GHz ~ 5.25 GHz 5.25 GHz ~ 5.32 GHz 5.5 GHz ~ 5.72 GHz 5.745 GHz ~ 5.825 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20), 802.11be (EHT20): 25 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40), 802.11be (EHT40): 12 802.11ac (VHT80), 802.11ax (HE80), 802.11be (EHT80): 6 802.11ac (VHT160), 802.11ax (HE160), 802.11be (EHT160): 2
Resource Unit (RU)	Single RU: 26-tone, 52-tone, 106-tone, 242-tone, 484-tone, 996-tone Multi-RU(Small RU): 52-tone + 26-tone, 106-tone + 26-tone Multi-RU (Large RU): 484-tone + 242-tone, 996-tone + 484-tone, 2 * 996-tone
Channel Puncturing (Large RU)	80 MHz punctured by 20 MHz ; 160 MHz punctured by 20 MHz 160 MHz punctured by 40 MHz
Output Power	5.18 GHz ~ 5.25 GHz : 93.237 mW (19.7 dBm) 5.25 GHz ~ 5.32 GHz : 90.476 mW (19.57 dBm) 5.5 GHz ~ 5.72 GHz : 95.477 mW (19.8 dBm) 5.745 GHz ~ 5.825 GHz : 89.606 mW (19.52 dBm)
EUT Category	Client device

Note:

1. There are Bluetooth and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.
2. Simultaneously transmission condition.

DBS			
Condition	Technology		
1	WLAN(2.4GHz)_Ant 0+1	WLAN(5GHz) _Ant 0+1	
2	WLAN(2.4GHz) _Ant 0+1	WLAN(6GHz) _Ant 0+1	
HBS+BT			
Condition	Technology		
3	Bluetooth_Ant 0+1	WLAN(5GHz) _Ant 0+1	
4	Bluetooth_Ant 0+1	WLAN(6GHz) _Ant 0+1	
5	WLAN(5GHz_U-NII-1, U-NII-2A) _Ant 0+1	WLAN(5GHz_U-NII-2C, U-NII-3, U-NII-4) _Ant 0+1	Bluetooth
6	WLAN(5GHz_U-NII-1, U-NII-2A) _Ant 0+1	WLAN(6GHz) _Ant 0+1	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

3. QCNCM865 has HW variant SKUs below to support different Microsoft Windows platform system and feature:

SKU	Support platform system and feature
NCM865	**X86 platform, support DBS and HBS**
NCM865A	Qualcomm platform, support DBS and HBS
NCM835	X86 platform, support DBS
NCM835A	Qualcomm platform, support DBS
Note: From the above SKUs, the worst was found in **SKU (NCM865)**. Therefore only the test data of the modes were recorded in this report.	

4. The EUT support OFDMA and Partial RU mode, therefore partial RU combination were investigated and the worst case scenario was identified. (The worst case data were presented in section 3.4)
5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length
1	Chain0/1	Hong-Bo	260-25094	3.53 3.06 3.07 4.81 4.2	2.4~2.4835GHz 5.15~5.25GHz 5.25~5.35GHz 5.47~5.725GHz 5.725~5.850GHz	0.74 1.16 1.18 1.26 1.28	PIFA	MHF 4L	300mm
2	Chain0/1	Hong-Bo	260-25083	5.09 5.14 5.09 5.16 5.12	5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	1.29 1.35 1.38 1.45 1.50	PIFA	MHF 4L	300mm
3	Chain0/1	Hong-Bo	260-25084	3.22 3.35 3.42 4.77 4.72 4.71 4.75 4.29 4.81 4.74	2.4~2.4835 GHz 5.150~5.250 GHz 5.250~5.350 GHz 5.470~5.725 GHz 5.725~5.850 GHz 5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	0.49 0.76 0.77 0.80 0.84 0.84 0.86 0.91 0.96 0.98	Monopole	MHF 4L	200mm

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	**TX & RX Configuration**	
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
802.11ac (VHT160)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX
802.11ax (HE160)	2TX	2RX
802.11be (EHT20)	2TX	2RX
802.11be (EHT40)	2TX	2RX
802.11be (EHT80)	2TX	2RX
802.11be (EHT160)	2TX	2RX
802.11ax (RU26/52/106/242/484/996/2x996)	2TX	2RX
802.11be (RU26/52/106/242/484/996/2x996 MRU52+26/106+26/ 484+242/996+484/996+484+242)	2TX	2RX

Note:

1. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), 802.11ac mode for 20MHz (40MHz, 80MHz, 160MHz), 802.11ax mode for 20MHz (40MHz, 80MHz, 160MHz) and 802.11be mode for 20MHz (40MHz, 80MHz, 160MHz) therefore the manufacturer will control the power for 802.11n/ac/ax mode is same as the 802.11be mode or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

FOR 5180 ~ 5320 MHz

8 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20), 802.11be (EHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

4 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40), 802.11be (EHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

2 channels are provided for 802.11ac (VHT80), 802.11ax (HE80), 802.11be (EHT80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz

1 straddle channel is provided for 802.11ac (VHT160), 802.11ax (HE160), 802.11be (EHT160):

Channel	Frequency
50	5250 MHz

FOR 5500 ~ 5720 MHz

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20), 802.11be (EHT20):

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), 802.11be (EHT40):

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), 802.11be (EHT80):

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

1 channels are provided for 802.11ac (VHT160), 802.11ax (HE160), 802.11be (EHT160):

Channel	Frequency
114	5570 MHz

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20), 802.11be (EHT20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40), 802.11be (EHT40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80), 802.11be (EHT80):

Channel	Frequency
155	5775 MHz

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. 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).

Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter	RU/MRU Index
26 dB Bandwidth	A	802.11a	CDD	52, 60, 64	BPSK	6Mb/s	NA
				100, 116, 140, 144			
		802.11be (EHT20)	CDD	52, 60, 64	BPSK	MCS0	NA
				100, 116, 140, 144			
		802.11be (EHT40)	CDD	54, 62,	BPSK	MCS0	NA
				102, 110, 134, 142			
		802.11be (EHT80)	CDD	58	BPSK	MCS0	NA
				106, 122, 138			
		802.11be (EHT160)	CDD	50	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 26-tone RU	CDD	52, 60, 64	BPSK	MCS0	0, 0, 8
				100, 116, 140, 144			0, 0, 8, 8
		802.11be (EHT20) 52-tone RU	CDD	52, 60, 64	BPSK	MCS0	37, 37, 40
				100, 116, 140, 144			37, 37, 40, 40
		802.11be (EHT20) 106-tone RU	CDD	52, 60, 64	BPSK	MCS0	53, 53, 54
				100, 116, 140, 144			53, 53, 54, 54
		802.11be (EHT80) 484+242-tone MRU	CDD	138	BPSK	MCS0	UL_RU484+242_Punc 20_91_MCS0
		802.11be (EHT160) 996+484-tone MRU	CDD	50	BPSK	MCS0	UL_RU996+484_Punc 40_MCS0
		802.11be (EHT80) Punctured by 20 MHz	CDD	138	BPSK	MCS0	EHT80_SU_Punct20_ Mid2
		802.11be (EHT160) Punctured by 20 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct20_ Mid3
		802.11be (EHT160) Punctured by 40 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct40_ Mid2

RF Output Power	A	802.11a	CDD	36, 40, 48	BPSK	6Mb/s	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT20)	CDD	36, 40, 48	BPSK	MCS0	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT40)	CDD	38, 46	BPSK	MCS0	NA
				54, 62			
				102, 110, 134, 142			
				151, 159			
		802.11be (EHT80)	CDD	42	BPSK	MCS0	NA
				58			
				106, 122, 138			
				155			
		802.11be (EHT160)	CDD	50	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 26-tone RU	CDD	36, 40, 48	BPSK	MCS0	0, 0, 8
				52, 60, 64			0, 0, 8
				100, 116, 140, 144			0, 0, 8, 8
				149, 157, 165			0, 0, 8
		802.11be (EHT20) 52-tone RU	CDD	36, 40, 48	BPSK	MCS0	37, 37, 40
				52, 60, 64			37, 37, 40
				100, 116, 140, 144			37, 37, 40, 40
				149, 157, 165			37, 37, 40
		802.11be (EHT20) 106-tone RU	CDD	36, 40, 48	BPSK	MCS0	53, 53, 54
				52, 60, 64			53, 53, 54
				100, 116, 140, 144			53, 53, 54, 54
				149, 157, 165			53, 53, 54
		802.11be (EHT20) 242-tone RU	CDD	40	BPSK	MCS0	NA
				64			
				116			
				165			
		802.11be (EHT40) 484-tone RU	CDD	46	BPSK	MCS0	NA
				62			
				110			
				159			
		802.11be (EHT80) 996-tone RU	CDD	42	BPSK	MCS0	NA
				58			
				138			
				155			
		802.11be (EHT160) 2x996-tone RU	CDD	50	BPSK	MCS0	NA
				114			

RF Output Power	A	802.11be (EHT20) 52+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU52+26_Low_70_MCS0
				64			UL_RU52+26_High_72_MCS0
				116			UL_RU52+26_Low_70_MCS0
				165			UL_RU52+26_High_72_MCS0
		802.11be (EHT20) 106+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU106+26_Low_82_MCS0
				64			UL_RU106+26_High_83_MCS0
				116			UL_RU106+26_Low_82_MCS0
				165			UL_RU106+26_High_83_MCS0
		802.11be (EHT80) 484+242-tone MRU	CDD	42	BPSK	MCS0	UL_RU484+242_Punc20_91_MCS0
				58			
				138			
				155			
		802.11be (EHT160) 996+484-tone MRU	CDD	50	BPSK	MCS0	UL_RU996+484_Punc40_MCS0 UL_RU996+484_Low_MCS0
				114			
		802.11be (EHT80) Punctured by 20 MHz	CDD	42	BPSK	MCS0	EHT80_SU_Punct20_Mid2
				58			
				138			
				155			
		802.11be (EHT160) Punctured by 20 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct20_Mid3
				114			EHT160_SU_Punct20_High
		802.11be (EHT160) Punctured by 40 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct40_Mid2
				114			EHT160_SU_Punct40_High
	C	802.11be (EHT20) 26-tone RU	CDD	36, 40, 48	BPSK	MCS0	0, 0, 8
				52, 60, 64			0, 0, 8
				100, 116, 140, 144			0, 0, 8, 8
		802.11be (EHT20) 52-tone RU	CDD	36, 40, 48	BPSK	MCS0	37, 37, 40
				52, 60, 64			37, 37, 40
				100, 116, 140, 144			37, 37, 40, 40
		802.11be (EHT20) 52+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU52+26_Low_70_MCS0
				64			UL_RU52+26_High_72_MCS0
				116			UL_RU52+26_Low_70_MCS0

Power Spectral Density	A	802.11a	CDD	36, 40, 48	BPSK	6Mb/s	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT20)	CDD	36, 40, 48	BPSK	MCS0	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT40)	CDD	38, 46	BPSK	MCS0	NA
				54, 62			
				102, 110, 134, 142			
				151, 159			
		802.11be (EHT80)	CDD	42	BPSK	MCS0	NA
				58			
				106, 122, 138			
				155			
		802.11be (EHT160)	CDD	50	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 26-tone RU	CDD	36, 40, 48	BPSK	MCS0	0, 0, 8
				52, 60, 64			0, 0, 8
				100, 116, 140, 144			0, 0, 8, 8
				149, 157, 165			0, 0, 8
		802.11be (EHT20) 52-tone RU	CDD	36, 40, 48	BPSK	MCS0	37, 37, 40
				52, 60, 64			37, 37, 40
				100, 116, 140, 144			37, 37, 40, 40
				149, 157, 165			37, 37, 40
		802.11be (EHT20) 106-tone RU	CDD	36, 40, 48	BPSK	MCS0	53, 53, 54
				52, 60, 64			53, 53, 54
				100, 116, 140, 144			53, 53, 54, 54
				149, 157, 165			53, 53, 54
		802.11be (EHT20) 242-tone RU	CDD	40	BPSK	MCS0	NA
				64			
				116			
				165			
		802.11be (EHT40) 484-tone RU	CDD	46	BPSK	MCS0	NA
				62			
				110			
				159			
		802.11be (EHT80) 996-tone RU	CDD	42	BPSK	MCS0	NA
				58			
				138			
				155			
		802.11be (EHT160) 2x996-tone RU	CDD	50	BPSK	MCS0	NA
				114			

Power Spectral Density	A	802.11be (EHT20) 52+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU52+26_Low_70_MCS0
				64			UL_RU52+26_High_72_MCS0
				116			UL_RU52+26_Low_70_MCS0
				165			UL_RU52+26_High_72_MCS0
		802.11be (EHT20) 106+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU106+26_Low_82_MCS0
				64			UL_RU106+26_High_83_MCS0
				116			UL_RU106+26_Low_82_MCS0
				165			UL_RU106+26_High_83_MCS0
		802.11be (EHT80) 484+242-tone MRU	CDD	42	BPSK	MCS0	UL_RU484+242_Punc20_91_MCS0
				58			
				138			
				155			
		802.11be (EHT160) 996+484-tone MRU	CDD	50	BPSK	MCS0	UL_RU996+484_Punc40_MCS0 UL_RU996+484_Low_MCS0
				114			
		802.11be (EHT80) Punctured by 20 MHz	CDD	42	BPSK	MCS0	EHT80_SU_Punct20_Mid2
				58			
				138			
				155			
		802.11be (EHT160) Punctured by 20 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct20_Mid3
				114			EHT160_SU_Punct20_High
		802.11be (EHT160) Punctured by 40 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct40_Mid2
				114			EHT160_SU_Punct40_High

6 dB Bandwidth	A	802.11a	CDD	144	BPSK	6Mb/s	NA
				149, 157, 165			
		802.11be (EHT20)	CDD	144	BPSK	MCS0	NA
				149, 157, 165			
		802.11be (EHT40)	CDD	142	BPSK	MCS0	NA
				151, 159			
		802.11be (EHT80)	CDD	138	BPSK	MCS0	NA
				155			
		802.11be (EHT20) 26-tone RU	CDD	149, 157, 165	BPSK	MCS0	0, 0, 8
		802.11be (EHT20) 52-tone RU	CDD	149, 157, 165	BPSK	MCS0	37, 37, 40
		802.11be (EHT20) 106-tone RU	CDD	149, 157, 165	BPSK	MCS0	53, 53, 54
		802.11be (EHT80) 484+242-tone MRU	CDD	138, 155	BPSK	MCS0	UL_RU484+242_Punc 20_91_MCS0
		802.11be (EHT80) Punctured by 20 MHz	CDD	138, 155	BPSK	MCS0	EHT80_SU_Punct20_ Mid2
Occupied Bandwidth	A	802.11a	CDD	36, 40, 48	BPSK	6Mb/s	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT20)	CDD	36, 40, 48	BPSK	MCS0	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT40)	CDD	38, 46,	BPSK	MCS0	NA
				54, 62,			
				102, 110, 134, 142,			
				151, 159			
		802.11be (EHT80)	CDD	42,	BPSK	MCS0	NA
				58,			
				106, 122, 138,			
				155			
		802.11be (EHT160)	CDD	50,	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 26-tone RU	CDD	36, 40, 48,	BPSK	MCS0	0, 0, 8
				52, 60, 64,			0, 0, 8
				100, 116, 140, 144,			0, 0, 8, 8
				149, 157, 165			0, 0, 8

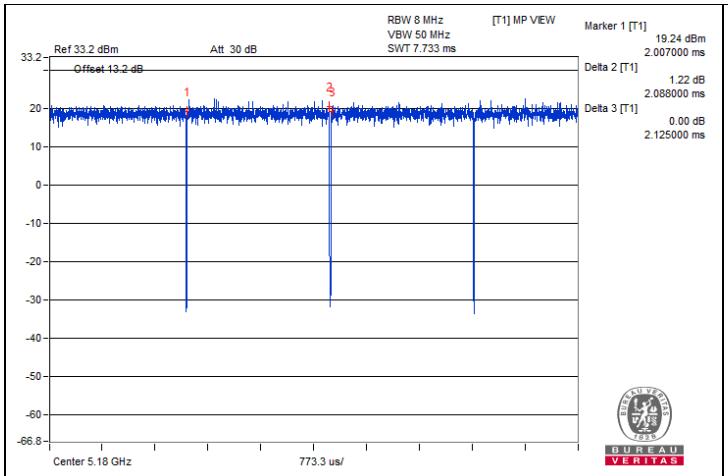
Occupied Bandwidth	A	802.11be (EHT20) 52-tone RU	CDD	36, 40, 48,	BPSK	MCS0	37, 37, 40
				52, 60, 64,			37, 37, 40
				100, 116, 140, 144,			37, 37, 40, 40
				149, 157, 165			37, 37, 40
		802.11be (EHT20) 106-tone RU	CDD	36, 40, 48,	BPSK	MCS0	53, 53, 54
				52, 60, 64,			53, 53, 54
				100, 116, 140, 144,			53, 53, 54, 54
				149, 157, 165			53, 53, 54
		802.11be (EHT80) 484+242-tone MRU	CDD	138	BPSK	MCS0	UL_RU484+242_Punc 20_91_MCS0
				155			
		802.11be (EHT160) 996+484-tone MRU	CDD	50	BPSK	MCS0	UL_RU996+484_Punc 40_MCS0
		802.11be (EHT80) Punctured by 20 MHz	CDD	42	BPSK	MCS0	EHT80_SU_Punct20_ Mid2
				58			
				138			
				155			
		802.11be (EHT160) Punctured by 20 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct20_ Mid3
		802.11be (EHT160) Punctured by 40 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct40_ Mid2
Frequency Stability	A	802.11a	-	36	BPSK	6Mb/s	NA
AC Power Conducted Emissions	B	802.11be (EHT20)	CDD	116	BPSK	MCS0	NA
Unwanted Emissions below 1 GHz	A, B	802.11be (EHT20)	CDD	116	BPSK	MCS0	NA
Unwanted Emissions above 1 GHz	A, B	802.11a	CDD	36, 40, 48	BPSK	6Mb/s	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT20)	CDD	36, 40, 48	BPSK	MCS0	NA
				52, 60, 64			
				100, 116, 140, 144			
				149, 157, 165			
		802.11be (EHT40)	CDD	38, 46	BPSK	MCS0	NA
				54, 62			
				102, 110, 134, 142			
				151, 159			

Unwanted Emissions above 1 GHz	A, B	802.11be (EHT80)	CDD	42	BPSK	MCS0	NA
				58			
				106, 122, 138			
				155			
		802.11be (EHT160)	CDD	50,	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 26-tone RU	CDD	36, 40, 48	BPSK	MCS0	0, 0, 8
				52, 60, 64			0, 0, 8
				100, 116, 140, 144			0, 0, 8, 8
				149, 157, 165			0, 0, 8
		802.11be (EHT20) 52-tone RU	CDD	36, 40, 48	BPSK	MCS0	37, 37, 40
				52, 60, 64			37, 37, 40
				100, 116, 140, 144			37, 37, 40, 40
				149, 157, 165			37, 37, 40
		802.11be (EHT20) 106-tone RU	CDD	36, 40, 48,	BPSK	MCS0	53, 53, 54
				52, 60, 64,			53, 53, 54
				100, 116, 140, 144,			53, 53, 54, 54
				149, 157, 165			53, 53, 54
		802.11be (EHT20) 242-tone RU	CDD	40	BPSK	MCS0	NA
				64			
				116			
				165			
		802.11be (EHT40) 484-tone RU	CDD	46	BPSK	MCS0	NA
				62			
				110			
				159			
		802.11be (EHT80) 996-tone RU	CDD	42	BPSK	MCS0	NA
				58			
				138			
				155			
		802.11be (EHT160) 2x996-tone RU	CDD	50	BPSK	MCS0	NA
				114			
		802.11be (EHT20) 52+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU52+26_Low_70_MCS0
				64			UL_RU52+26_High_72_MCS0
				116			UL_RU52+26_Low_70_MCS0
				165			UL_RU52+26_High_72_MCS0
		802.11be (EHT20) 106+26-tone MRU	CDD	40	BPSK	MCS0	UL_RU106+26_Low_82_MCS0
				64			UL_RU106+26_High_83_MCS0
				116			UL_RU106+26_Low_82_MCS0
				165			UL_RU106+26_High_83_MCS0

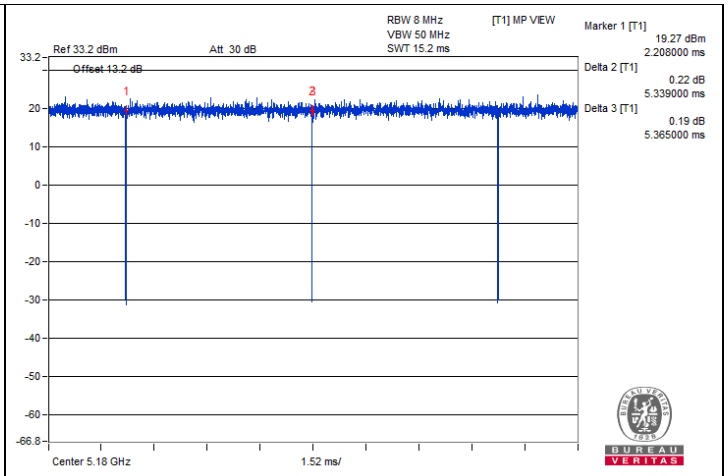
Unwanted Emissions above 1 GHz	A, B	802.11be (EHT80) 484+242-tone MRU	CDD	42	BPSK	MCS0	UL_RU484+242_Punc 20_91_MCS0
				58			
				138			
				155			
		802.11be (EHT160) 996+484-tone MRU	CDD	50	BPSK	MCS0	UL_RU996+484_Punc 40_MCS0 UL_RU996+484_Low_ MCS0
				114			
		802.11be (EHT80) Punctured by 20 MHz	CDD	42	BPSK	MCS0	EHT80_SU_Punct20_ Mid2
				58			
				138			
				155			
		802.11be (EHT160) Punctured by 20 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct20_ Mid3
				114			EHT160_SU_Punct20_ High
		802.11be (EHT160) Punctured by 40 MHz	CDD	50	BPSK	MCS0	EHT160_SU_Punct40_ Mid2
				114			EHT160_SU_Punct40_ High
EUT Configure Mode:	A	EUT only (w/o antenna)_Nss 1					
	B	EUT with 50 ohm terminator_Nss 1					
	C	EUT only (w/o antenna)_Nss 2					

3.5 Duty Cycle of Test Signal

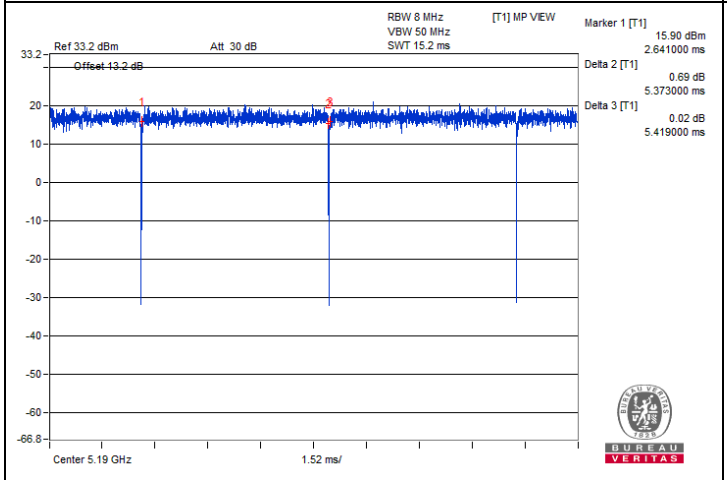
802.11a: Duty cycle = 2.088 ms / 2.125 ms x 100% = 98.3%
802.11be (EHT20): Duty cycle = 5.339 ms / 5.365 ms x 100% = 99.5%
802.11be (EHT40): Duty cycle = 5.373 ms / 5.419 ms x 100% = 99.2%
802.11be (EHT80): Duty cycle = 5.256 ms / 5.301 ms x 100% = 99.2%
802.11be (EHT160): Duty cycle = 4.405 ms / 4.458 ms x 100% = 98.8%
802.11be (EHT20) 26-tone RU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT20) 52-tone RU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT20) 106-tone RU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT20) 242-tone RU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT40) 484-tone RU: Duty cycle = 3.319 ms / 3.357 ms x 100% = 98.9%
802.11be (EHT80) 996-tone RU: Duty cycle = 1.622 ms / 1.654 ms x 100% = 98.1%
802.11be (EHT160) 2x996-tone RU: Duty cycle = 2.148 ms / 2.185 ms x 100% = 98.3%
802.11be (EHT20) 52+26-tone MRU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT20) 106+26-tone MRU: Duty cycle = 5.077 ms / 5.13 ms x 100% = 99.0%
802.11be (EHT80) 484+242-tone MRU: Duty cycle = 1.622 ms / 1.654 ms x 100% = 98.1%
802.11be (EHT160) 996+484-tone MRU: Duty cycle = 2.148 ms / 2.185 ms x 100% = 98.3%
802.11be (EHT80) Punctured by 20 MHz: Duty cycle = 5.256 ms / 5.301 ms x 100% = 99.2%
802.11be (EHT160) Punctured by 20 MHz: Duty cycle = 4.405 ms / 4.458 ms x 100% = 98.8%
802.11be (EHT160) Punctured by 40 MHz: Duty cycle = 4.405 ms / 4.458 ms x 100% = 98.8%



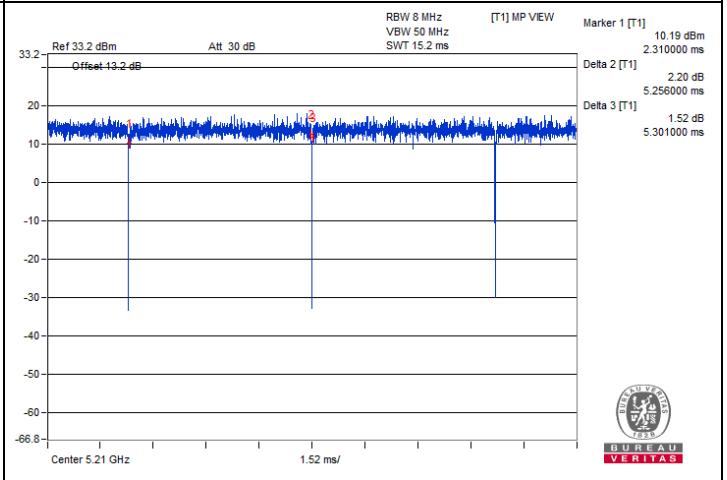
802.11a



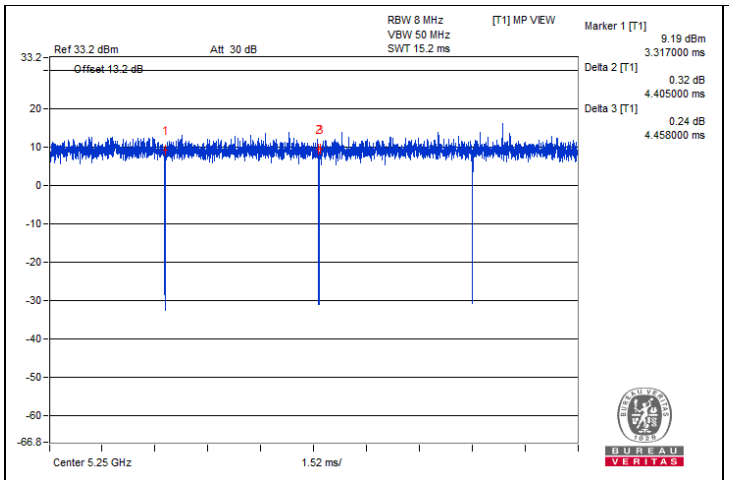
802.11be (EHT20)



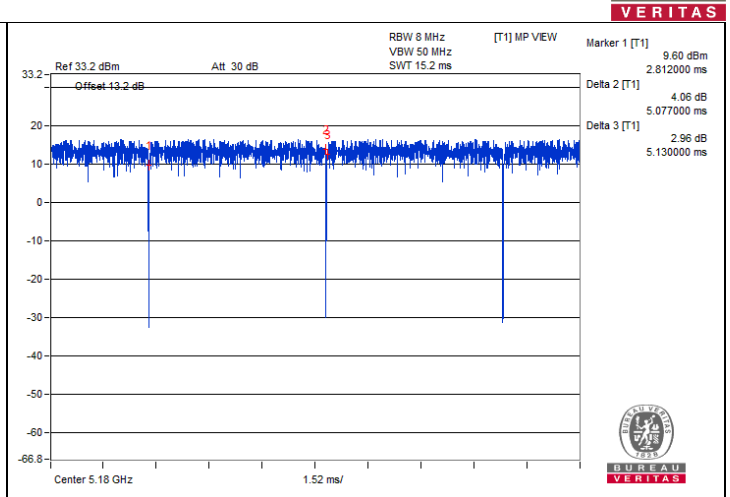
802.11be (EHT40)



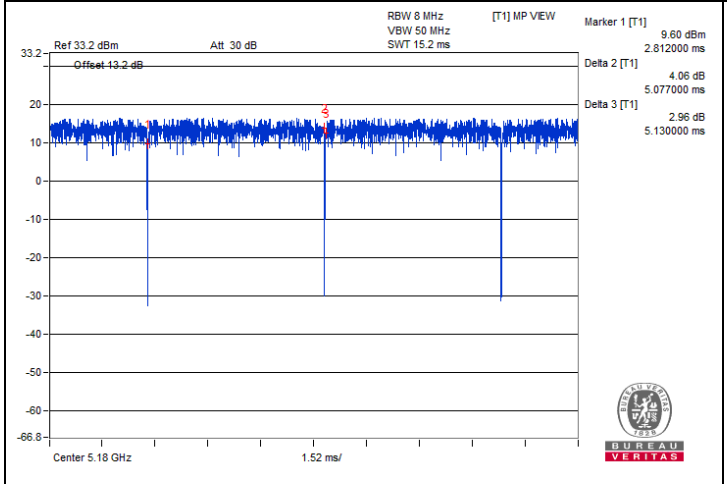
802.11be (EHT80)



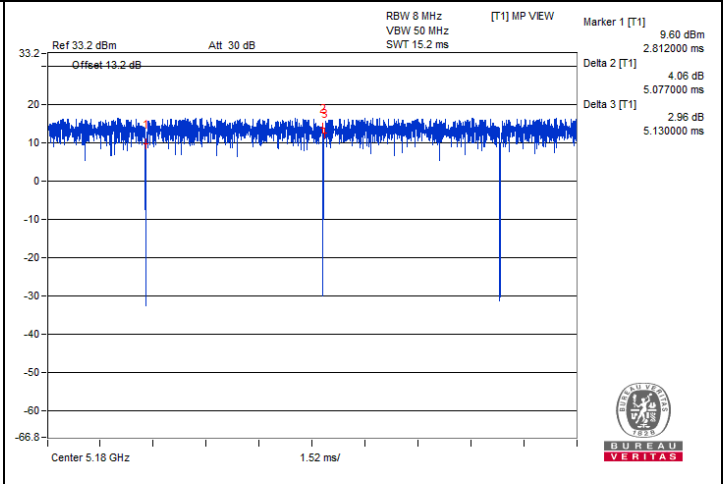
802.11be (EHT160)



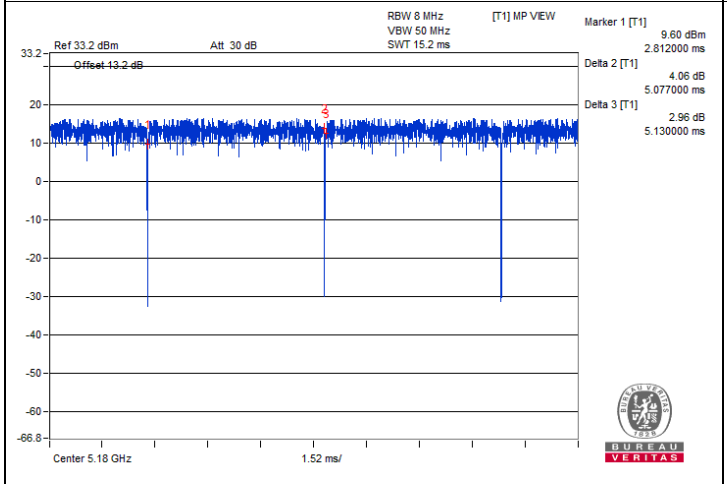
802.11be (EHT20) 26-tone RU



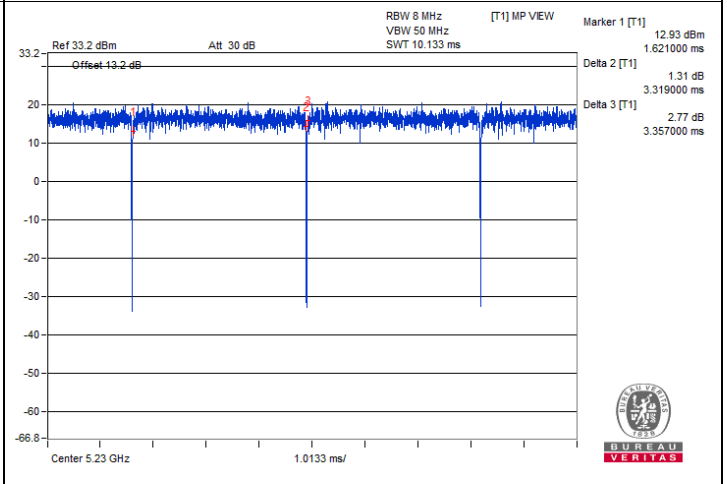
802.11be (EHT20) 52-tone RU



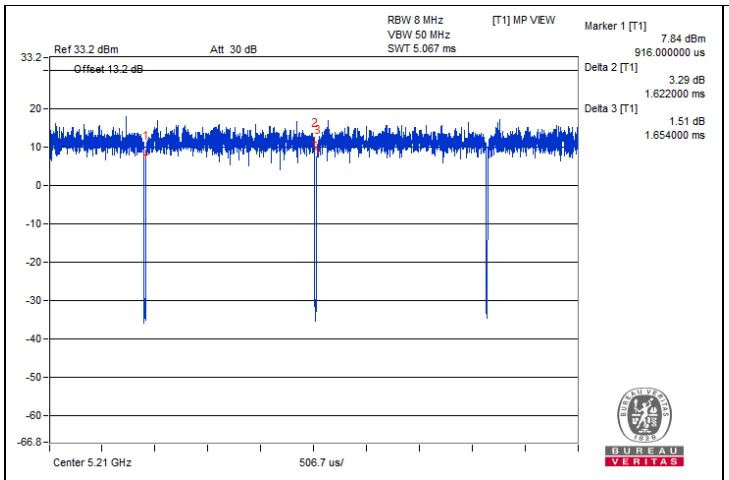
802.11be (EHT20) 106-tone RU



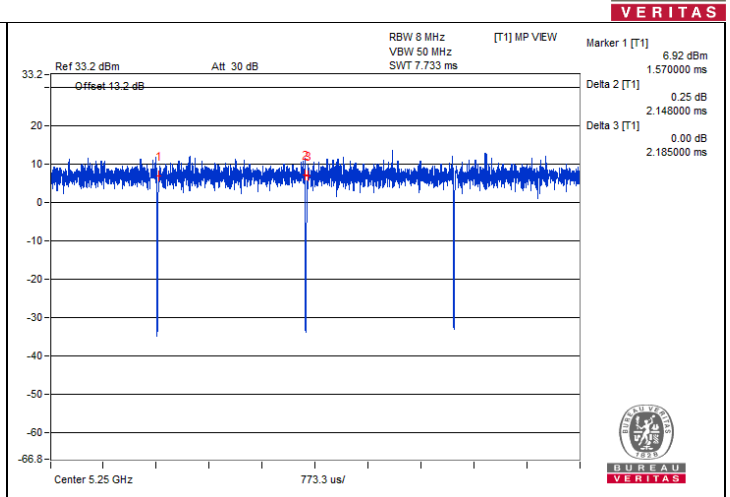
802.11be (EHT20) 242-tone RU



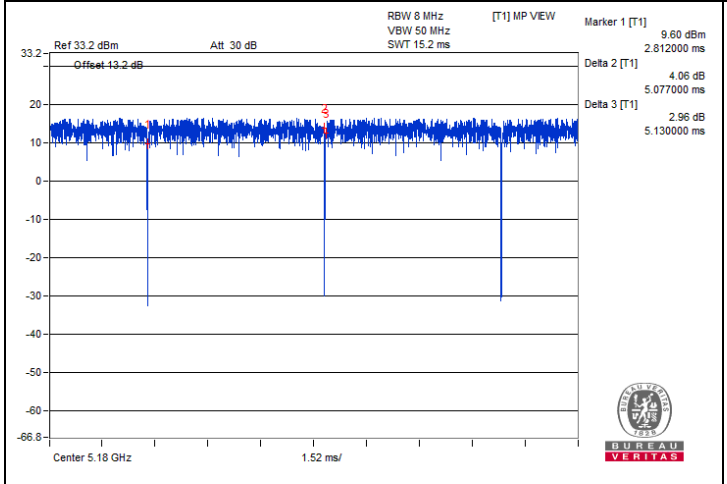
802.11be (EHT40) 484-tone RU



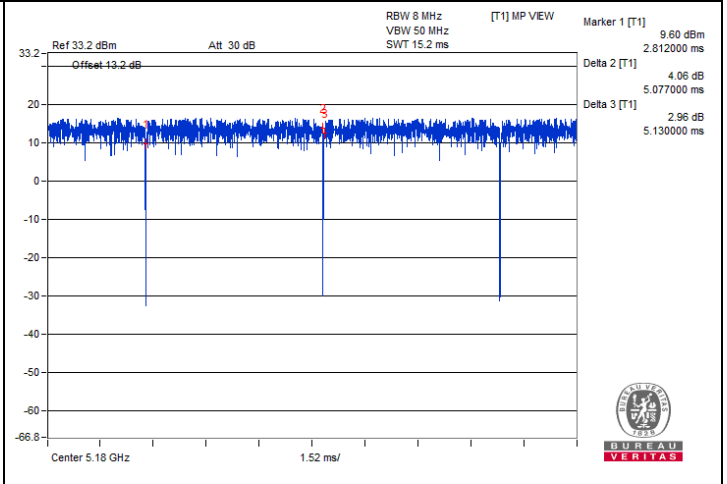
802.11be (EHT80) 996-tone RU



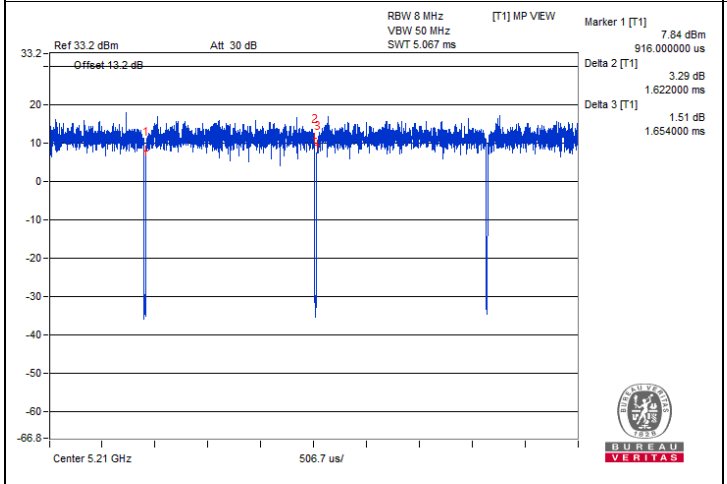
802.11be (EHT160) 2x996-tone RU



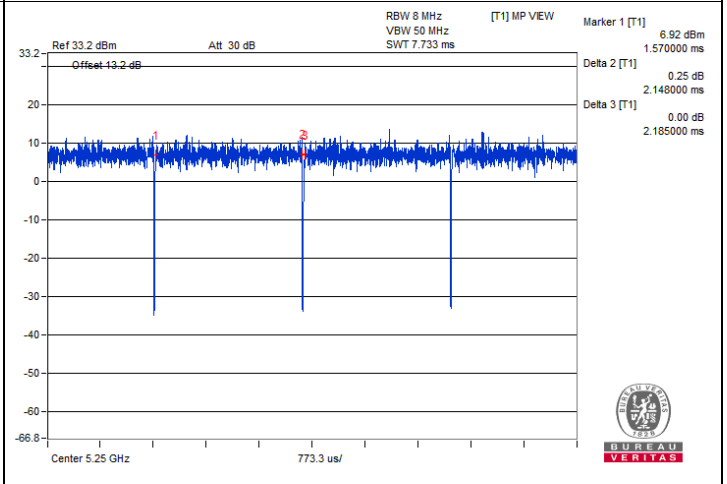
802.11be (EHT20) 52+26-tone MRU



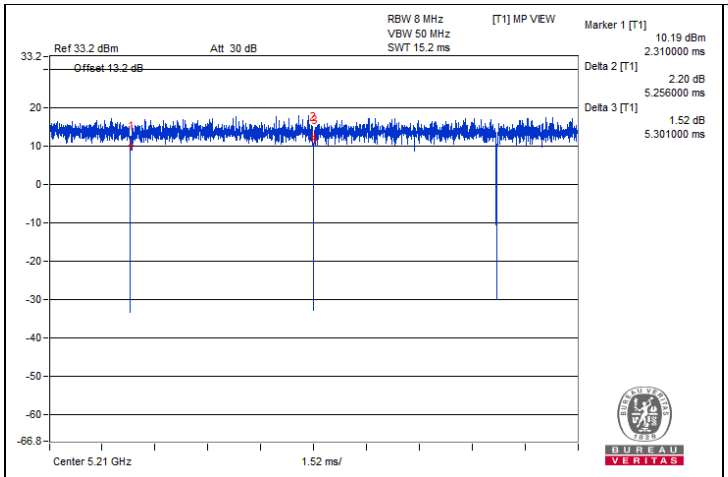
802.11be (EHT20) 106+26-tone MRU



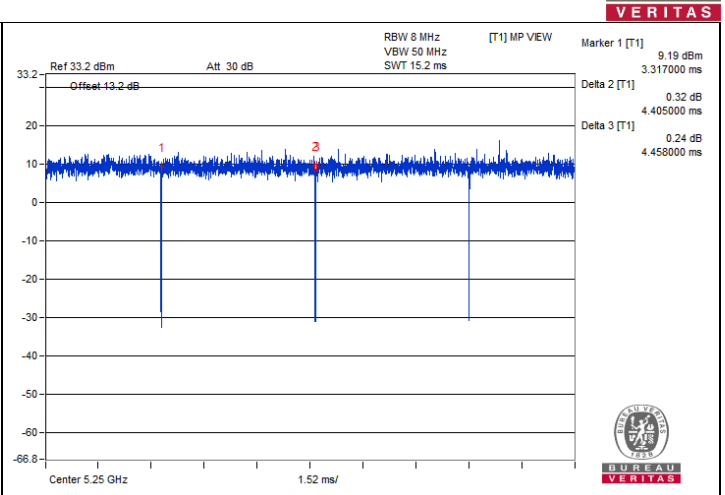
802.11be (EHT80) 484+242-tone MRU



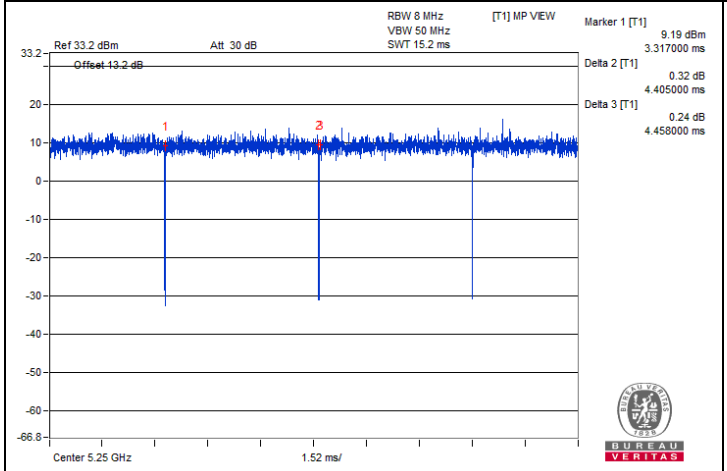
802.11be (EHT160) 996+484-tone MRU



802.11be (EHT80) Punctured by 20 MHz



802.11be (EHT160) Punctured by 20 MHz



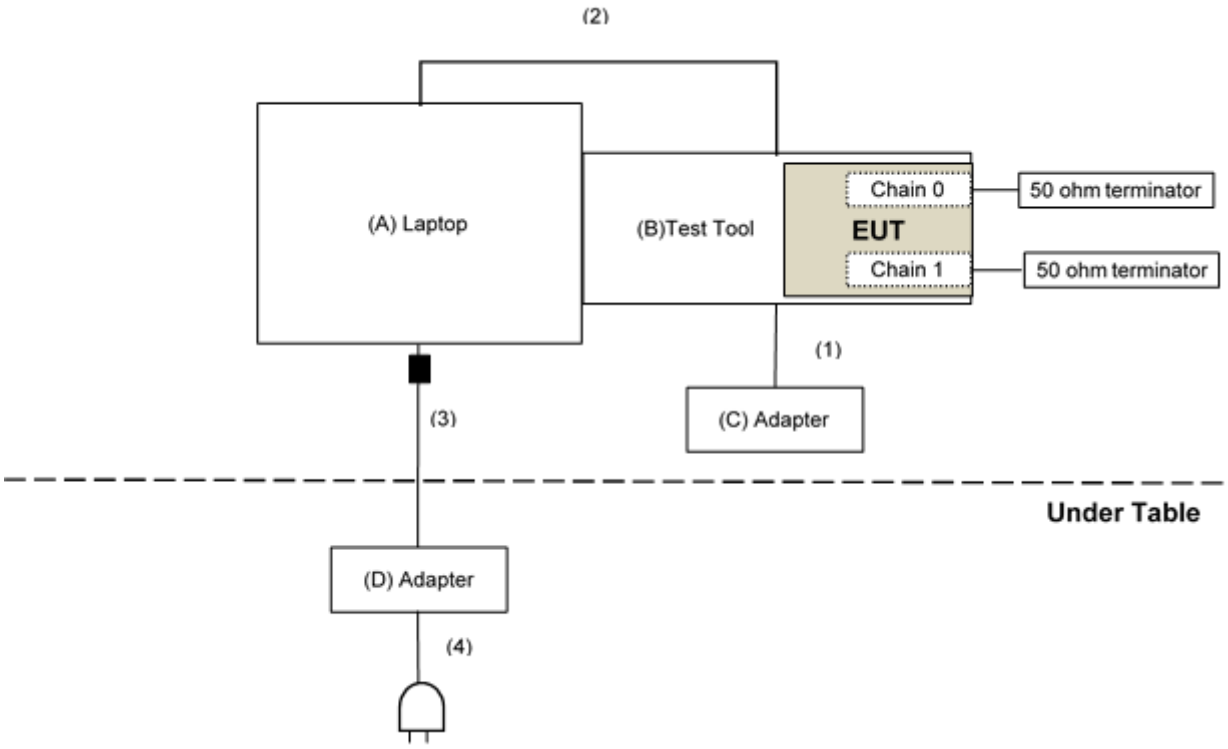
802.11be (EHT160) Punctured by 40 MHz

3.6 Test Program Used and Operation Descriptions

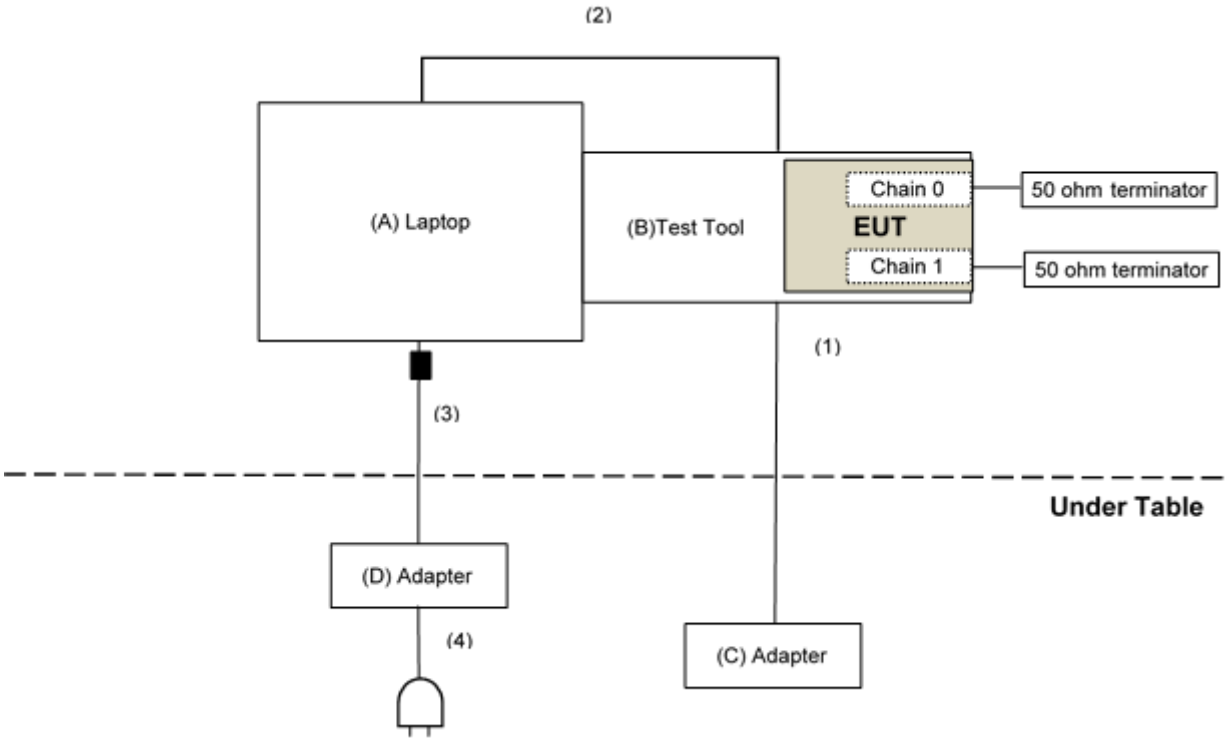
Controlling software (QRCT 4.0.00159.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

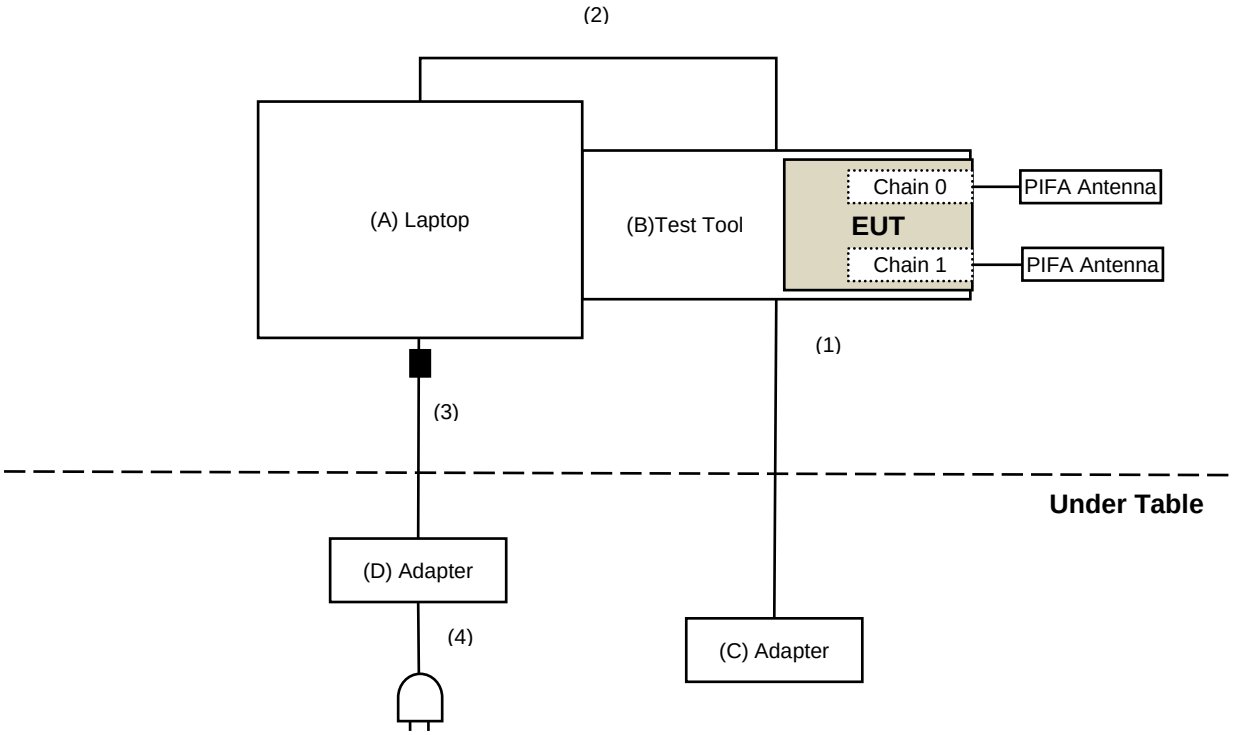
For AC Power Conducted Emission test



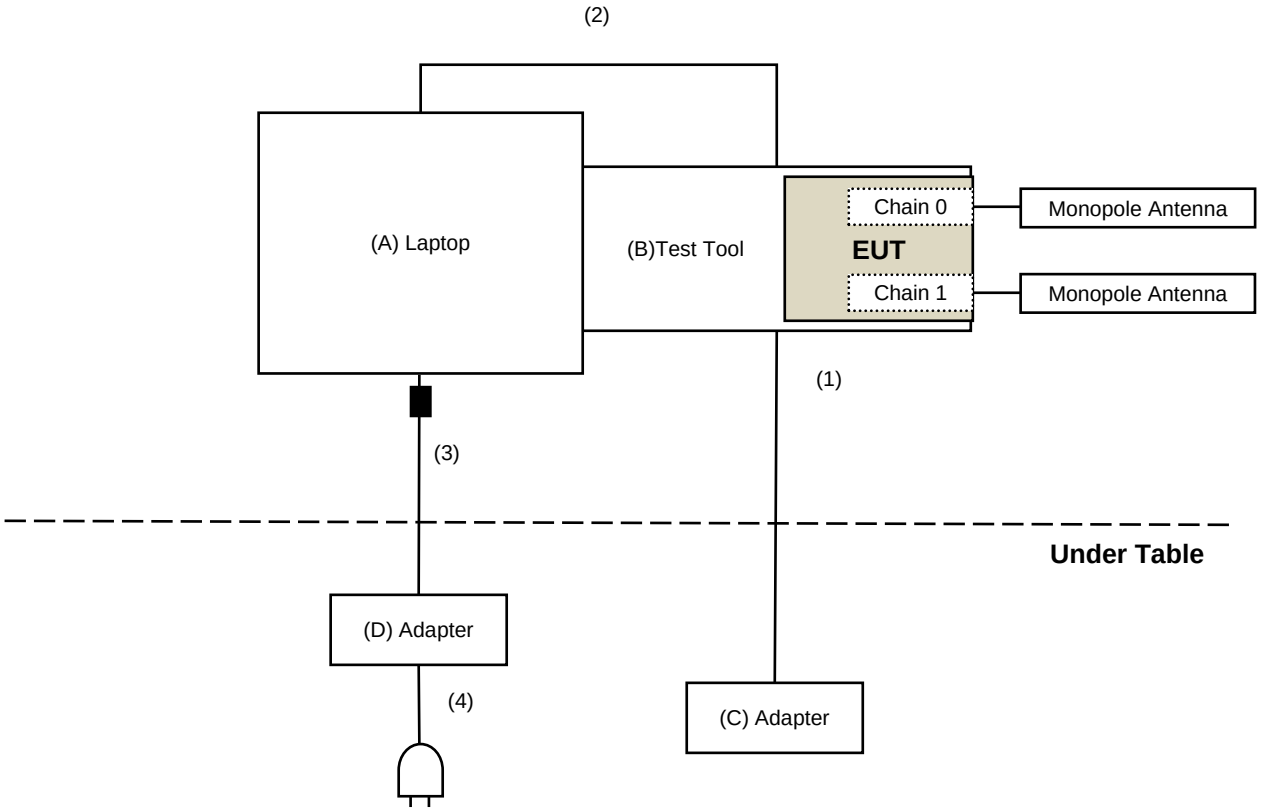
For Unwanted Emission test



For Unwanted Emission Above 1GHz with Antenna Set 1 test



For Unwanted Emission Above 1GHz with Antenna Set 3 test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Dell	E5420	6FGHKV1	N/A	Provided by Lab
B	Test Tool	Qualcomm	N/A	N/A	N/A	Supplied by applicant
C	Adapter	PHIHONG	PSAA12A-120L6	N/A	N/A	Supplied by applicant
D	Adapter	Dell	LLA65NS2-01	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.2	NO	0	Supplied by applicant
2	USB Cable	1	0.6	Yes	0	Provided by Lab
3	DC Cable	1	1.8	NO	1	Provided by Lab
4	AC Cable	1	1.5	NO	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 26 dB Bandwidth

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/11

4.2 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/11

4.3 Power Spectral Density

Refer to section 4.1 to get information of the instruments.

4.4 6 dB Bandwidth

Refer to section 4.1 to get information of the instruments.

4.5 Occupied Bandwidth

Refer to section 4.1 to get information of the instruments.

4.6 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
DC POWER SUPPLY Topward	6603D	795558	N/A	N/A
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2022/1/14	2023/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/11

4.7 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/2/20

4.8 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2022/10/24	2023/10/23
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2022/12/28	2023/12/27
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier EMCI	EMC330N	980538	2022/4/25	2023/4/24
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2022/4/25	2023/4/24
		966-5-2	2022/4/25	2023/4/24
		966-5-3	2022/4/25	2023/4/24
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/2/15

4.9 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2022/11/13	2023/11/12
	BBHA 9170	9170-739	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980509	2022/4/25	2023/4/24
	EMC184045SE	980387	2022/12/28	2023/12/27
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/12/28	2023/12/27
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-1500	180503	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180501	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	180506	2022/4/25	2023/4/24
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/2/17 ~ 2023/2/21

5 Limits of Test Items

5.1 26 dB Bandwidth

The results are for reference only.

5.2 RF Output Power

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)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250mW (24 dBm)

Operation Band	Limit
U-NII-2A	250 mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	250 mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

5.3 Power Spectral Density

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	17 dBm/MHz
	Fixed point-to-point Access Point	
	Indoor Access Point	
	Mobile and Portable client device	11 dBm/MHz

Operation Band	Limit
U-NII-2A	11 dBm/MHz
U-NII-2C	11 dBm/MHz
U-NII-3	30 dBm/500 kHz

5.4 6 dB Bandwidth

Within the 5.725-5.850 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.5 Occupied Bandwidth

The results are for reference only.

5.6 Frequency Stability

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

5.7 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.8 Unwanted Emissions below 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.9 Unwanted Emissions above 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

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 1000 MHz, 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 20 dB 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 3 m	
	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)

For transmitters operating in the 5.15-5.25 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.25-5.35 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.47-5.725 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
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.		

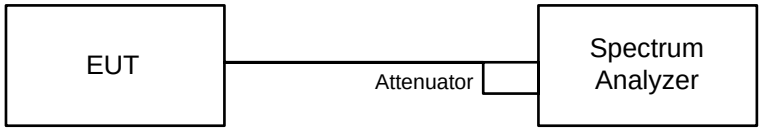
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

6 Test Arrangements

6.1 26 dB Bandwidth

6.1.1 Test Setup

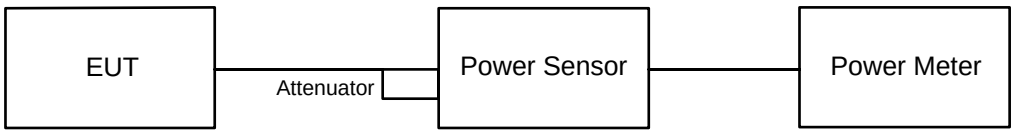


6.1.2 Test Procedure

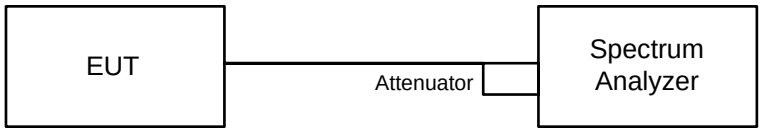
a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.2 RF Output Power

6.2.1 Test Setup



For channel straddling:



6.2.2 Test Procedure

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.

For channel straddling:

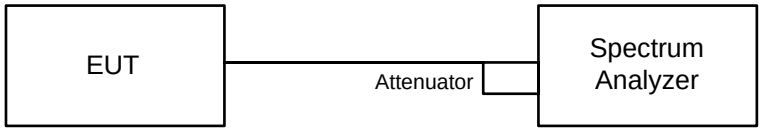
Method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Record the max value

Note: When measuring straddle channel power, use compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.

6.3 Power Spectral Density

6.3.1 Test Setup



6.3.2 Test Procedure

For specified measurement bandwidth 1 MHz:
Method SA-1

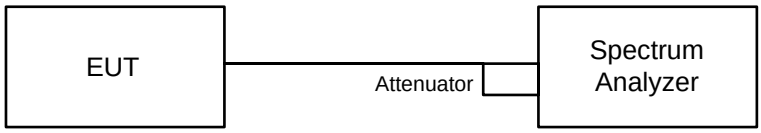
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Record the max value

For specified measurement bandwidth 500 kHz:
Method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
c. Scale the observed power level to an equivalent value in 500 kHz by adjusting (increasing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300 kHz)
d. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
e. Sweep time = auto, trigger set to “free run”.
f. Trace average at least 100 traces in power averaging mode.
g. Record the max value

6.4 6 dB Bandwidth

6.4.1 Test Setup

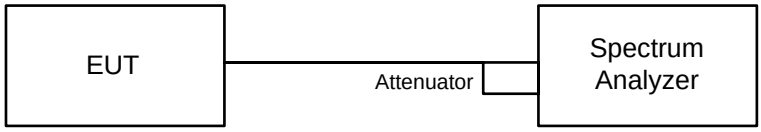


6.4.2 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz.
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.5 Occupied Bandwidth

6.5.1 Test Setup

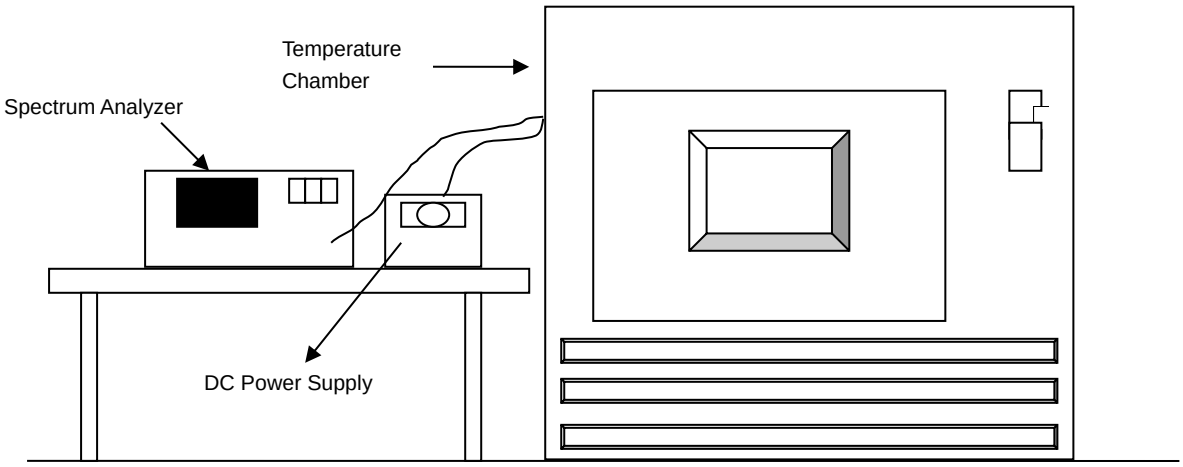


6.5.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to Sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

6.6 Frequency Stability

6.6.1 Test Setup

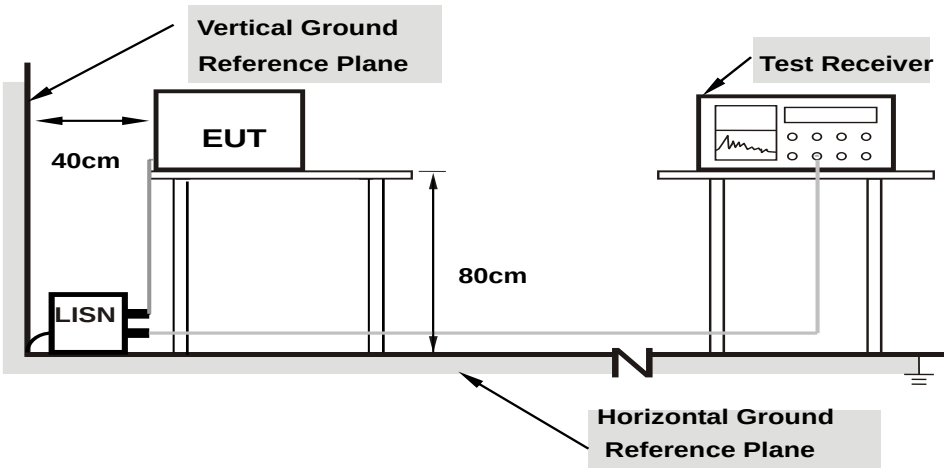


6.6.2 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal DC 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 (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
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.

6.7 AC Power Conducted Emissions

6.7.1 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

a. The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

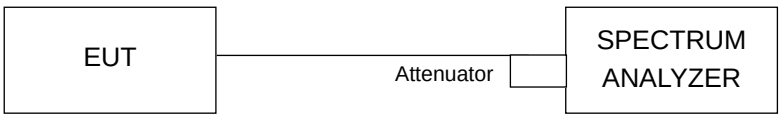
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

6.8 Unwanted Emissions below 1 GHz

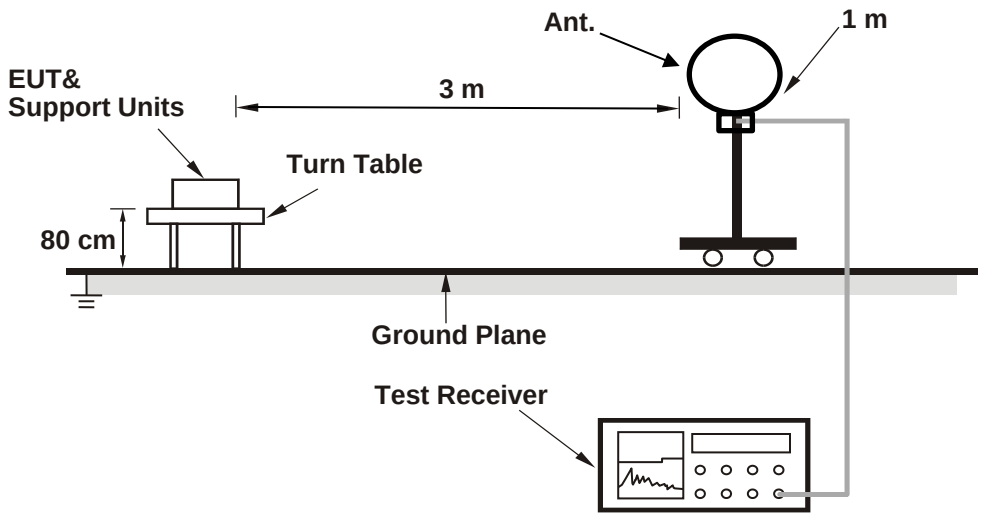
6.8.1 Test Setup

For Conducted Configuration:

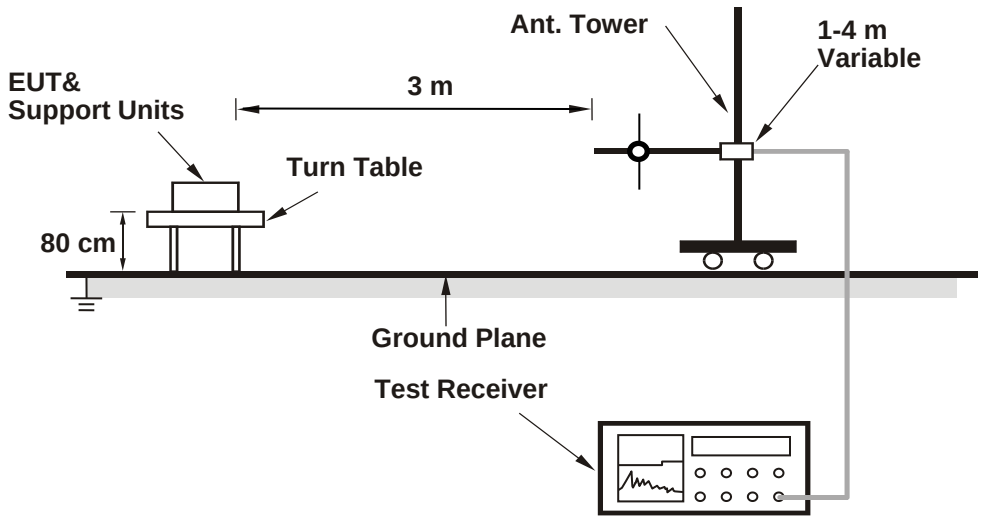


For Radiated Configuration:

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.8.2 Test Procedure

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.

b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.

c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.

d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

For Radiated emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters 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. 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. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters 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. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

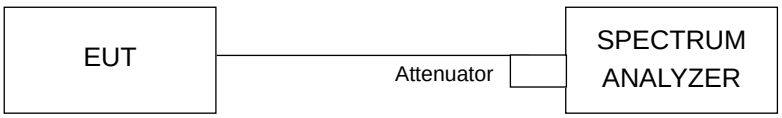
Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

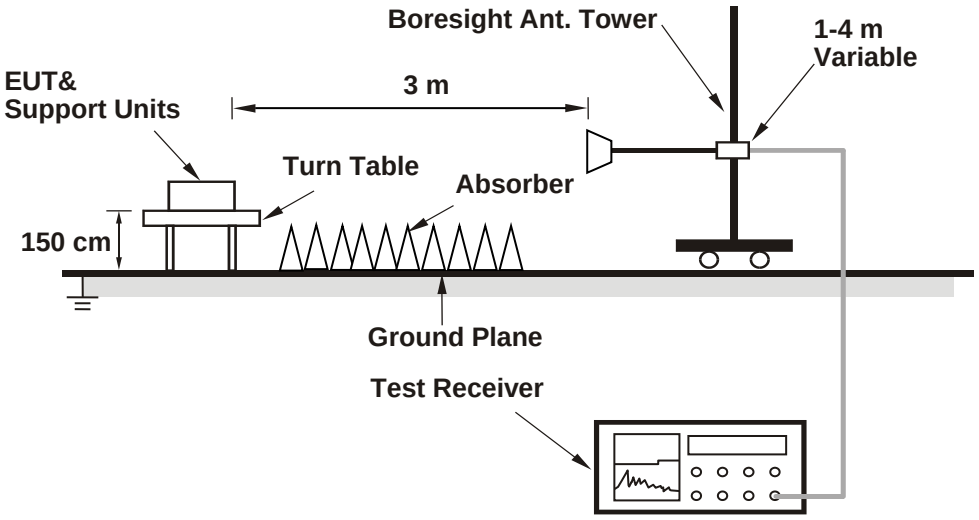
6.9 Unwanted Emissions above 1 GHz

6.9.1 Test Setup

For Conducted Configuration:



For Radiated Configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.9.2 Test Procedure

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.

b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.

c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.

d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

For Radiated emission above 1 GHz

a. The EUT was placed on the top of a rotating table 1.5 meters 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. 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.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 26 dB Bandwidth

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	24°C, 65% RH	Tested By:	Eric Peng

802.11a

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	22.32	22.46
60	5300	22.30	22.06
64	5320	22.25	22.03
100	5500	22.20	22.39
116	5580	22.17	21.90
140	5700	22.30	21.94
144 (U-NII-2C)	5720	15.88	16.12
144 (U-NII-3)	5720	6.11	6.16

Determined Output Power Limit					
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)		
52	5260	22.32	24.48	>	24
60	5300	22.06	24.43	>	24
64	5320	22.03	24.43	>	24
100	5500	22.20	24.46	>	24
116	5580	21.90	24.4	>	24
140	5700	21.94	24.41	>	24
144 (U-NII-2C)	5720	15.88	23	<	24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT20)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	22.33	22.14
60	5300	22.66	22.12
64	5320	22.41	21.95
100	5500	22.30	21.82
116	5580	22.54	21.94
140	5700	22.49	22.41
144 (U-NII-2C)	5720	16.46	15.61
144 (U-NII-3)	5720	5.88	5.37

Determined Output Power Limit					
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)		
52	5260	22.14	24.45	>	24
60	5300	22.12	24.44	>	24
64	5320	21.95	24.41	>	24
100	5500	21.82	24.38	>	24
116	5580	21.94	24.41	>	24
140	5700	22.41	24.5	>	24
144 (U-NII-2C)	5720	15.61	22.93	<	24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT40)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	43.71	45.05
62	5310	45.03	44.18
102	5510	44.06	44.36
110	5550	44.20	44.20
134	5670	43.59	44.15
142 (U-NII-2C)	5710	36.95	37.26
142 (U-NII-3)	5710	6.91	6.64

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
54	5270	43.71	27.4 > 24
62	5310	44.18	27.45 > 24
102	5510	44.06	27.44 > 24
110	5550	44.20	27.45 > 24
134	5670	43.59	27.39 > 24
142 (U-NII-2C)	5710	36.95	26.67 > 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT80)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.24	83.79
106	5530	84.90	83.83
122	5610	84.61	83.59
138 (U-NII-2C)	5690	76.65	76.21
138 (U-NII-3)	5690	7.07	6.39

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
58	5290	83.79	30.23 > 24
106	5530	83.83	30.23 > 24
122	5610	83.59	30.22 > 24
138 (U-NII-2C)	5690	76.21	29.82 > 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT160)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1)	5250	86.04	87.03
50 (U-NII-2A)	5250	86.31	87.47
114	5570	174.44	173.33

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
50 (U-NII-2A)	5250	86.31	30.36 > 24
114	5570	173.33	33.38 > 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT20) 26-tone RU

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.33	20.12
60	5300	20.17	20.13
64	5320	20.53	20.28
100	5500	20.21	20.12
116	5580	20.28	20.18
140	5700	20.56	20.30
144 (U-NII-2C)	5720	14.42	14.03
144 (U-NII-3)	5720	6.09	6.01

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	20.12	24.03 > 24
60	5300	20.13	24.03 > 24
64	5320	20.28	24.07 > 24
100	5500	20.12	24.03 > 24
116	5580	20.18	24.04 > 24
140	5700	20.30	24.07 > 24
144 (U-NII-2C)	5720	14.03	22.47 < 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT20) 52-tone RU

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.18	20.42
60	5300	20.35	20.69
64	5320	20.75	20.20
100	5500	20.31	20.69
116	5580	20.32	20.63
140	5700	20.88	20.37
144 (U-NII-2C)	5720	14.76	14.34
144 (U-NII-3)	5720	6.20	5.96

Determined Output Power Limit					
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)		
52	5260	20.18	24.04	>	24
60	5300	20.35	24.08	>	24
64	5320	20.20	24.05	>	24
100	5500	20.31	24.07	>	24
116	5580	20.32	24.07	>	24
140	5700	20.37	24.08	>	24
144 (U-NII-2C)	5720	14.34	22.56	<	24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT20) 106-tone RU

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.20	20.73
60	5300	20.19	20.70
64	5320	20.92	20.61
100	5500	20.18	20.59
116	5580	20.13	20.40
140	5700	20.85	20.23
144 (U-NII-2C)	5720	14.93	14.29
144 (U-NII-3)	5720	6.10	5.89

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	20.20	24.05 > 24
60	5300	20.19	24.05 > 24
64	5320	20.61	24.14 > 24
100	5500	20.18	24.04 > 24
116	5580	20.13	24.03 > 24
140	5700	20.23	24.05 > 24
144 (U-NII-2C)	5720	14.29	22.55 < 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT80) 484+242-tone MRU

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
138 (U-NII-2C)	5690	76.18	29.81 > 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT160) 996+484-tone MRU

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1)	5250	87.46	87.43

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT80) Punctured by 20 MHz

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
138 (U-NII-2C)	5690	77.93	76.70
138 (U-NII-3)	5690	7.08	6.39

Determined Output Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
138 (U-NII-2C)	5690	76.70	29.84 > 24

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT160) Punctured by 20 MHz

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1)	5250	87.41	86.10

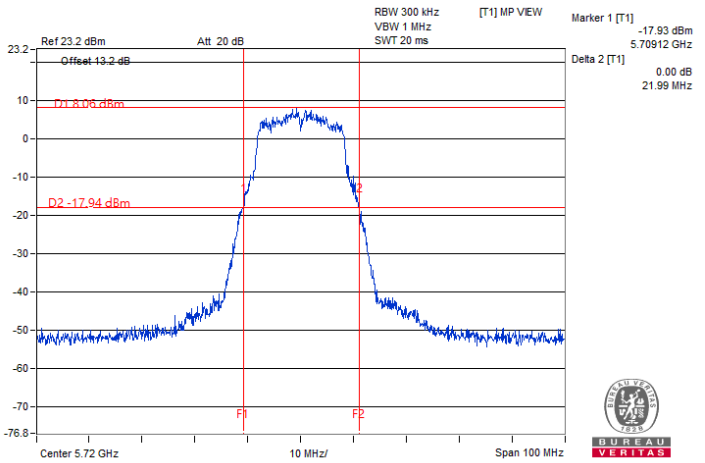
Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

802.11be (EHT160) Punctured by 40 MHz

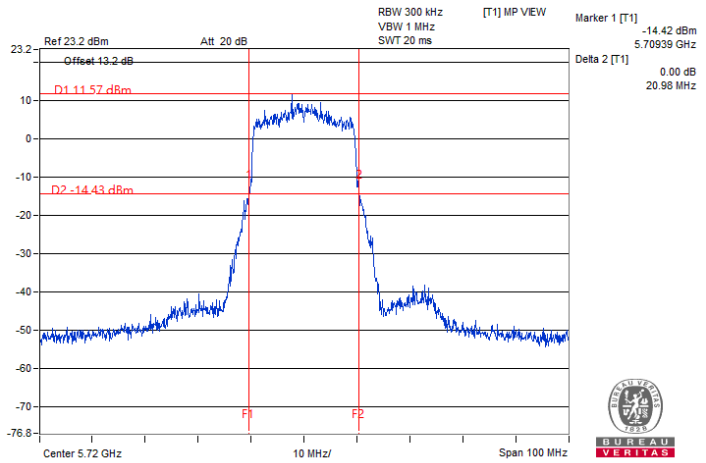
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1)	5250	85.85	87.43

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.

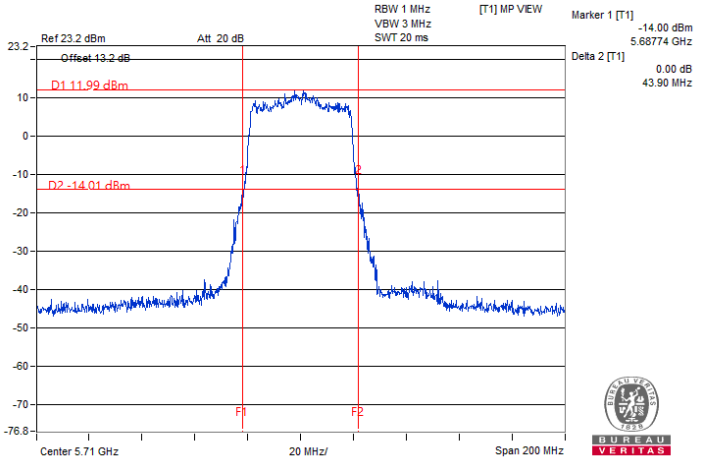
Spectrum Plot of Minimum Value



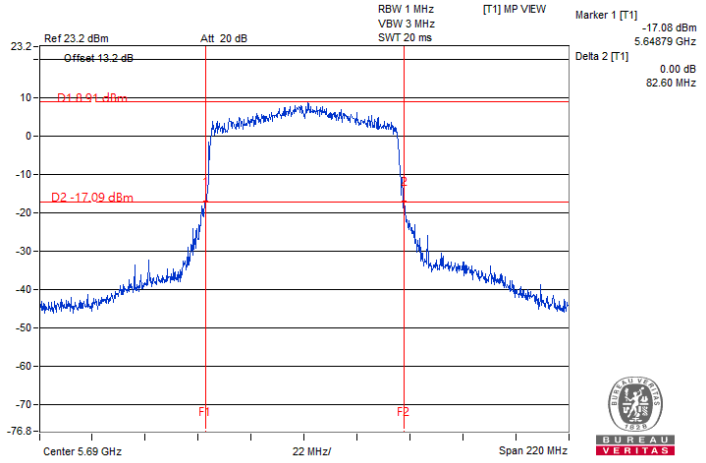
802.11a / Chain 0 : CH 144 (U-NII-3)



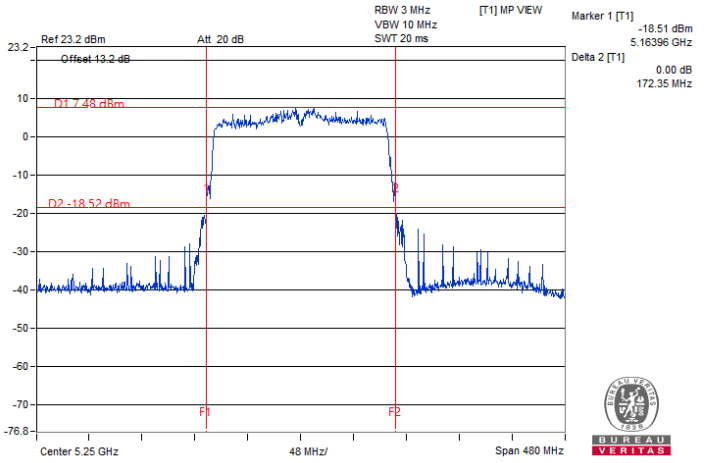
802.11be (EHT20) / Chain 1 : CH 144 (U-NII-3)



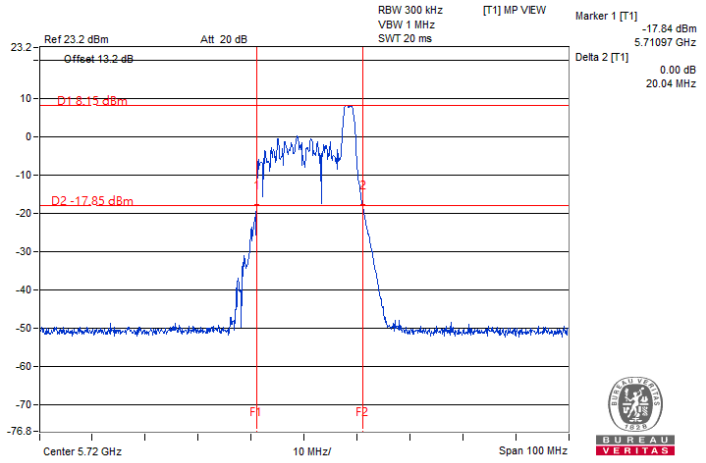
802.11be (EHT40) / Chain 1 : CH 142 (U-NII-3)



802.11be (EHT80) / Chain 1 : CH 138 (U-NII-3)

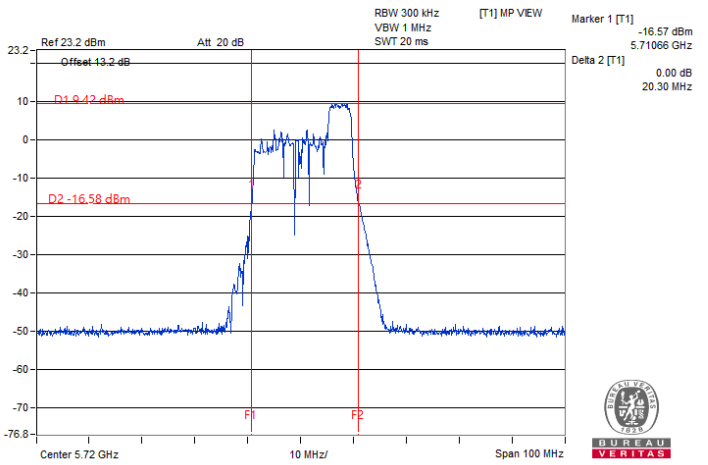


802.11be (EHT160) / Chain 0 : CH 50 (U-NII-1)

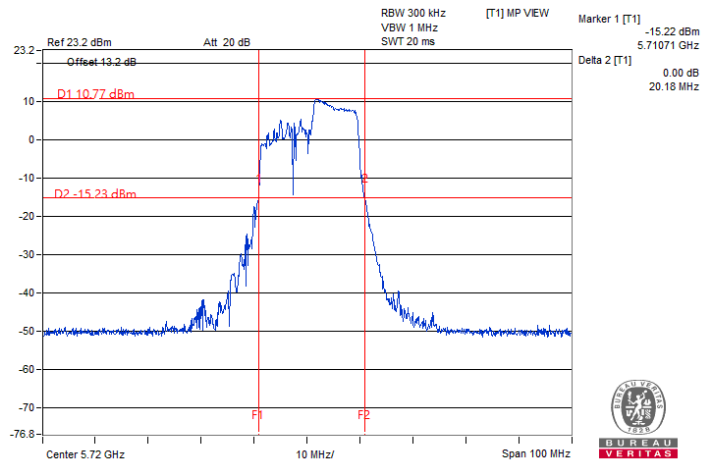


802.11be (EHT20) 26-tone RU / Chain 1 : CH 144@8 (U-NII-3)

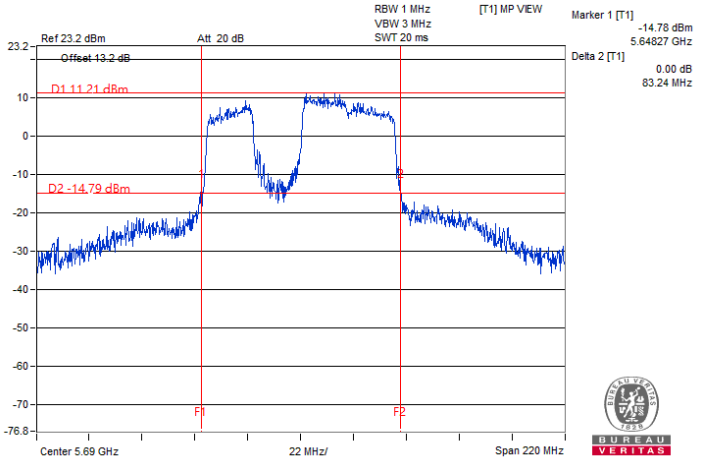
Spectrum Plot of Minimum Value



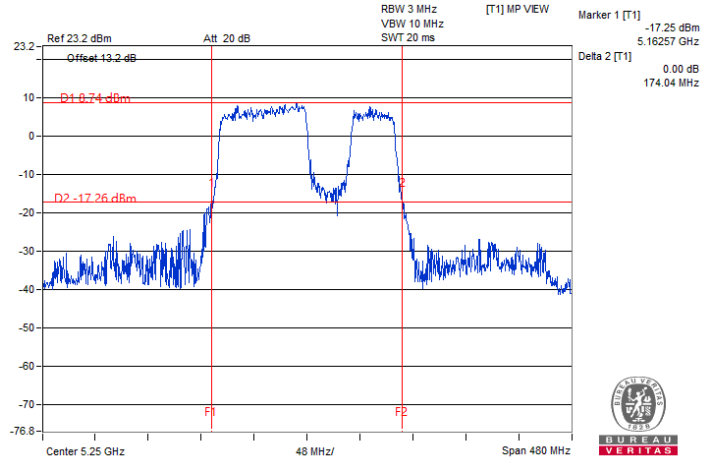
802.11be (EHT20) 52-tone RU / Chain 1 : CH 144@40 (U-NII-3)



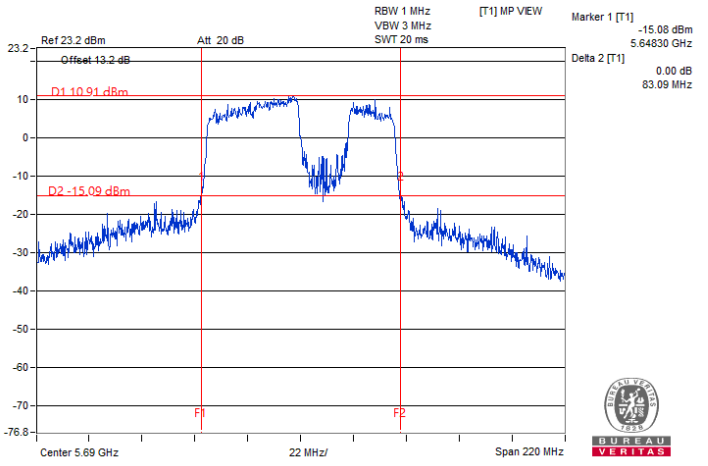
802.11be (EHT20) 106-tone RU / Chain 1 : CH 144@54 (U-NII-3)



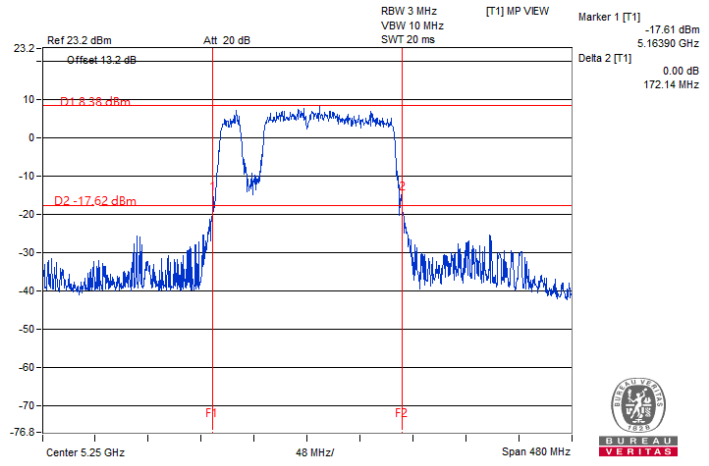
802.11be (EHT80) 484+242-tone MRU / Chain 1 : CH 138@2 (U-NII-3)



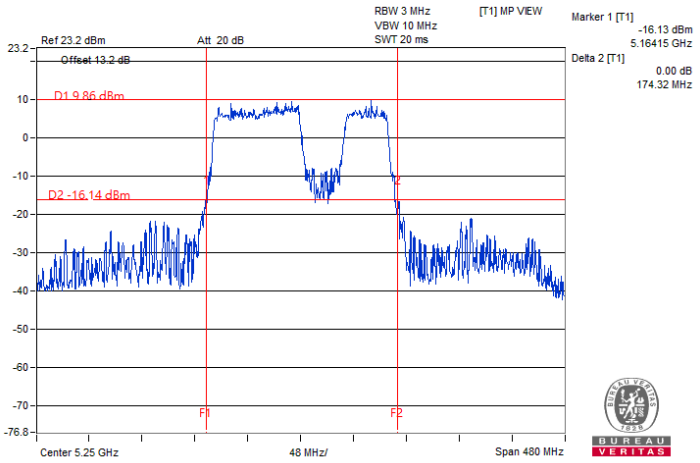
802.11be (EHT160) 996+484-tone MRU / Chain 1 : CH 50@2 (U-NII-1)



802.11be (EHT80) Punctured by 20 MHz / Chain 1 : CH 138@2 (U-NII-3)



802.11be (EHT160) Punctured by 20 MHz / Chain 1 : CH 50@4 (U-NII-1)

Spectrum Plot of Minimum Value	
	
802.11be (EHT160) Punctured by 40 MHz / Chain 0 : CH 50@10 (U-NII-1)	

Notes:

1. For U-NII-2C straddle channel = 5725 MHz - Marker 1
2. For U-NII-3 straddle channel = Marker 1 + Delta 2 - 5725 MHz

7.2 RF Output Power

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	24°C, 65% RH	Tested By:	Eric Peng

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	15.64	16.28	79.106	18.98	24	Pass
40	5200	15.73	16.22	79.29	18.99	24	Pass
48	5240	15.76	15.96	77.116	18.87	24	Pass
52	5260	15.56	16.04	76.154	18.82	24	Pass
60	5300	15.52	16.16	76.95	18.86	24	Pass
64	5320	15.66	16.38	80.264	19.05	24	Pass
100	5500	15.42	15.83	73.116	18.64	24	Pass
116	5580	15.79	16.36	81.183	19.09	24	Pass
140	5700	15.43	15.98	74.542	18.72	24	Pass
*144 (U-NII-2C)	5720	15.44	15.67	71.892	18.57	23	Pass
*144 (U-NII-3)	5720	7.67	7.69	11.723	10.69	30	Pass
149	5745	15.54	15.88	74.535	18.72	30	Pass
157	5785	15.30	15.77	71.642	18.55	30	Pass
165	5825	15.40	16.02	74.668	18.73	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	15.68	16.26	79.25	18.99	24	Pass
40	5200	16.46	16.90	93.237	19.70	24	Pass
48	5240	16.27	16.65	88.602	19.47	24	Pass
52	5260	16.26	16.82	90.351	19.56	24	Pass
60	5300	16.25	16.84	90.476	19.57	24	Pass
64	5320	16.03	16.83	88.281	19.46	24	Pass
100	5500	16.22	16.55	87.065	19.40	24	Pass
116	5580	16.43	17.12	95.477	19.80	24	Pass
140	5700	16.22	16.75	89.194	19.50	24	Pass
*144 (U-NII-2C)	5720	15.82	16.17	79.594	19.01	22.93	Pass
*144 (U-NII-3)	5720	9.02	9.46	16.811	12.26	30	Pass
149	5745	16.25	16.64	88.301	19.46	30	Pass
157	5785	16.01	16.58	85.401	19.31	30	Pass
165	5825	16.24	16.77	89.606	19.52	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	15.37	15.34	68.633	18.37	24	Pass
46	5230	15.90	16.22	80.784	19.07	24	Pass
54	5270	15.58	16.14	77.256	18.88	24	Pass
62	5310	15.96	16.34	82.498	19.16	24	Pass
102	5510	15.68	16.12	77.909	18.92	24	Pass
110	5550	16.03	16.43	84.041	19.24	24	Pass
134	5670	15.63	16.13	77.58	18.90	24	Pass
*142 (U-NII-2C)	5710	15.24	15.64	70.063	18.45	24	Pass
*142 (U-NII-3)	5710	4.77	5.01	6.169	7.90	30	Pass
151	5755	15.64	15.99	76.363	18.83	30	Pass
159	5795	15.49	16.05	75.671	18.79	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	13.79	14.18	50.115	17.00	24	Pass
58	5290	14.29	14.75	56.707	17.54	24	Pass
106	5530	13.87	14.40	51.92	17.15	24	Pass
122	5610	14.87	15.56	66.665	18.24	24	Pass
*138 (U-NII-2C)	5690	14.40	15.09	59.827	17.77	24	Pass
*138 (U-NII-3)	5690	-0.59	0.07	1.8892	2.76	30	Pass
155	5775	14.75	15.32	63.895	18.05	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
*50 (U-NII-1)	5250	9.12	9.53	17.14	12.34	24	Pass
*50 (U-NII-2A)	5250	9.56	9.78	18.543	12.68	24	Pass
114	5570	10.72	11.23	25.077	13.99	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	8.98	9.57	16.964	12.30	24	Pass
40	5200	8.91	9.56	16.817	12.26	24	Pass
48	5240	8.96	9.35	16.48	12.17	24	Pass
52	5260	8.83	9.30	16.15	12.08	24	Pass
60	5300	9.01	9.34	16.552	12.19	24	Pass
64	5320	8.94	9.70	17.167	12.35	24	Pass
100	5500	7.53	7.51	11.299	10.53	24	Pass
116	5580	7.90	8.03	12.519	10.98	24	Pass
140	5700	7.15	7.48	10.786	10.33	24	Pass
*144 (U-NII-2C)	5720	-13.59	-13.60	0.0874	-10.58	22.47	Pass
*144 (U-NII-3)	5720	7.01	7.08	10.128	10.06	30	Pass
149	5745	15.11	15.17	65.319	18.15	30	Pass
157	5785	14.83	15.15	63.143	18.00	30	Pass
165	5825	14.67	15.37	63.744	18.04	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	12.30	12.80	36.037	15.57	24	Pass
40	5200	12.23	12.84	35.942	15.56	24	Pass
48	5240	12.28	12.76	35.784	15.54	24	Pass
52	5260	12.01	12.47	33.546	15.26	24	Pass
60	5300	12.10	12.50	34.001	15.31	24	Pass
64	5320	11.98	12.54	33.723	15.28	24	Pass
100	5500	10.67	10.91	23.999	13.80	24	Pass
116	5580	11.16	11.40	26.866	14.29	24	Pass
140	5700	10.81	11.39	25.822	14.12	24	Pass
*144 (U-NII-2C)	5720	-6.37	-6.06	0.4784	-3.20	22.56	Pass
*144 (U-NII-3)	5720	10.46	10.66	22.759	13.57	30	Pass
149	5745	15.24	15.38	67.934	18.32	30	Pass
157	5785	15.06	15.28	65.791	18.18	30	Pass
165	5825	15.09	15.26	65.859	18.19	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	16.06	16.70	87.138	19.40	24	Pass
40	5200	16.15	16.45	85.367	19.31	24	Pass
48	5240	16.02	16.37	83.346	19.21	24	Pass
52	5260	15.84	16.12	79.297	18.99	24	Pass
60	5300	15.97	16.36	82.788	19.18	24	Pass
64	5320	15.53	16.28	78.189	18.93	24	Pass
100	5500	14.02	14.28	52.026	17.16	24	Pass
116	5580	14.32	14.69	56.484	17.52	24	Pass
140	5700	13.76	14.41	51.374	17.11	24	Pass
*144 (U-NII-2C)	5720	11.00	11.36	26.267	14.19	22.55	Pass
*144 (U-NII-3)	5720	9.99	10.14	20.305	13.08	30	Pass
149	5745	15.90	16.38	82.356	19.16	30	Pass
157	5785	15.83	16.23	80.258	19.04	30	Pass
165	5825	15.76	16.41	81.423	19.11	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 242-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
40	5200	16.24	16.76	89.497	19.52	24	Pass
64	5320	16.12	16.73	88.024	19.45	24	Pass
116	5580	16.26	17.01	92.501	19.66	24	Pass
165	5825	15.89	16.59	84.419	19.26	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT40) 484-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
46	5230	12.71	13.35	40.291	16.05	24	Pass
62	5310	13.18	13.66	44.024	16.44	24	Pass
110	5550	16.08	16.48	85.014	19.29	24	Pass
159	5795	16.03	16.49	84.652	19.28	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT80) 996-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	12.66	13.34	40.028	16.02	24	Pass
58	5290	12.20	12.83	35.783	15.54	24	Pass
*138 (U-NII-2C)	5690	14.51	15.00	59.872	17.77	24	Pass
*138 (U-NII-3)	5690	0.07	0.80	2.219	3.46	30	Pass
155	5775	14.63	15.27	62.691	17.97	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT160) 2x996-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
*50 (U-NII-1)	5250	8.98	9.72	17.282	12.38	24	Pass
*50 (U-NII-2A)	5250	9.39	9.89	18.44	12.66	24	Pass
114	5570	12.64	12.66	36.816	15.66	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 52+26-tone MRU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
40	5200	12.53	13.20	38.799	15.89	24	Pass
64	5320	12.15	12.48	34.107	15.33	23.75	Pass
116	5580	11.23	11.39	27.046	14.32	24	Pass
165	5825	15.27	15.60	69.959	18.45	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 106+26-tone MRU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
40	5200	16.18	16.63	87.521	19.42	24	Pass
64	5320	15.94	16.70	86.038	19.35	24	Pass
116	5580	14.27	14.74	56.515	17.52	24	Pass
165	5825	15.94	16.35	82.416	19.16	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT80) 484+242-tone MRU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	12.60	13.20	39.09	15.92	24	Pass
58	5290	12.89	13.48	41.738	16.21	24	Pass
*138 (U-NII-2C)	5690	15.80	16.37	81.37	19.10	24	Pass
*138 (U-NII-3)	5690	2.46	2.93	3.725	5.71	30	Pass
155	5775	15.97	16.55	84.722	19.28	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT160) 996+484-tone MRU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
*50 (U-NII-1)	5250	11.89	12.16	31.896	15.04	24	Pass
*50 (U-NII-2A)	5250	8.53	8.30	13.889	11.43	24	Pass
114	5570	12.18	12.72	35.226	15.47	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT80) Punctured by 20 MHz

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	12.85	13.47	41.508	16.18	24	Pass
58	5290	13.26	13.68	44.518	16.49	24	Pass
*138 (U-NII-2C)	5690	14.83	15.37	64.844	18.12	24	Pass
*138 (U-NII-3)	5690	1.33	1.87	2.896	4.62	30	Pass
155	5775	15.12	15.76	70.179	18.46	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 4.72 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT160) Punctured by 20 MHz

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
*50 (U-NII-1)	5250	8.93	8.93	15.633	11.94	24	Pass
*50 (U-NII-2A)	5250	10.97	11.71	27.328	14.37	24	Pass
114	5570	10.70	11.18	24.871	13.96	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.

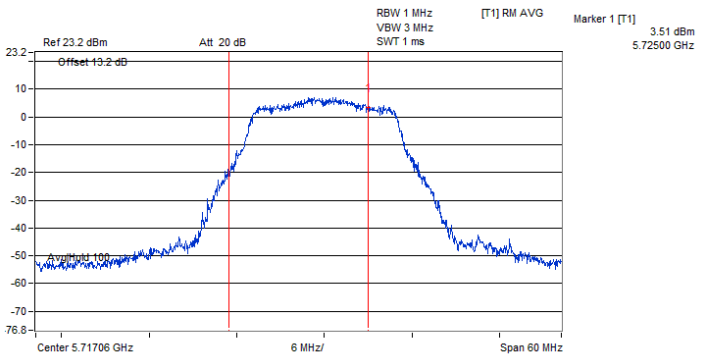
802.11be (EHT160) Punctured by 40 MHz

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
*50 (U-NII-1)	5250	11.21	11.50	27.338	14.37	24	Pass
*50 (U-NII-2A)	5250	7.81	7.66	11.874	10.75	24	Pass
114	5570	10.63	11.06	24.326	13.86	24	Pass

Notes:

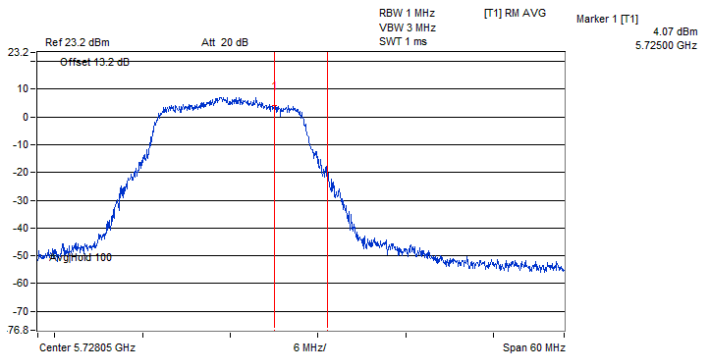
1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is 3.35 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is 3.42 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is 4.81 dBi < 6 dBi, so the output power limit shall not be reduced.

Spectrum Plot for channel straddling



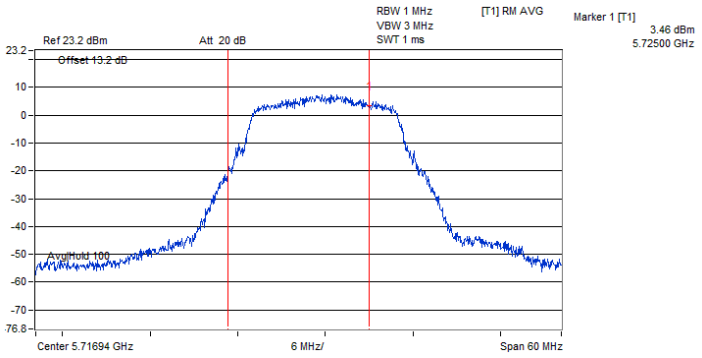
TX Channel Bandwidth 15.88 MHz Power 15.44 dBm

802.11a / Chain 0 : CH 144 (U-NII-2C)



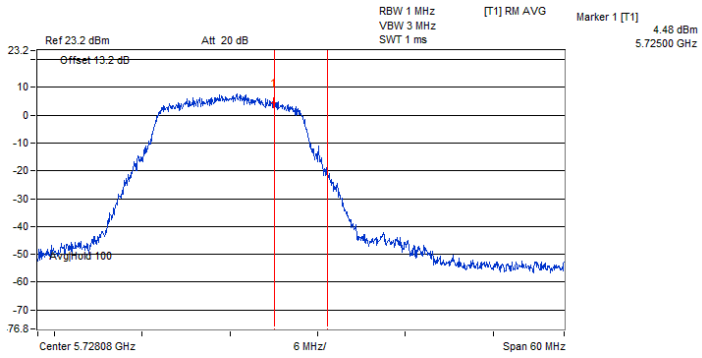
TX Channel Bandwidth 6.11 MHz Power 7.67 dBm

802.11a / Chain 0 : CH 144 (U-NII-3)



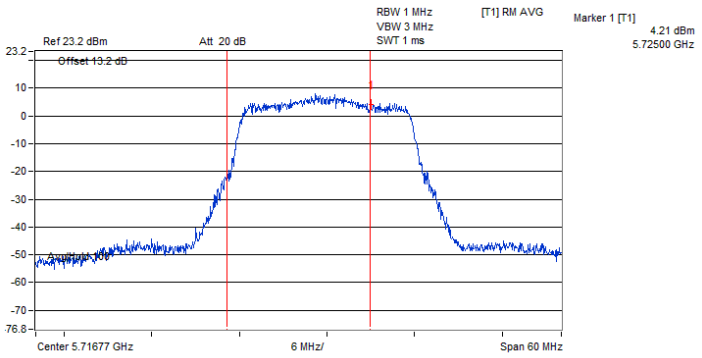
TX Channel Bandwidth 16.12 MHz Power 15.67 dBm

802.11a / Chain 1 : CH 144 (U-NII-2C)



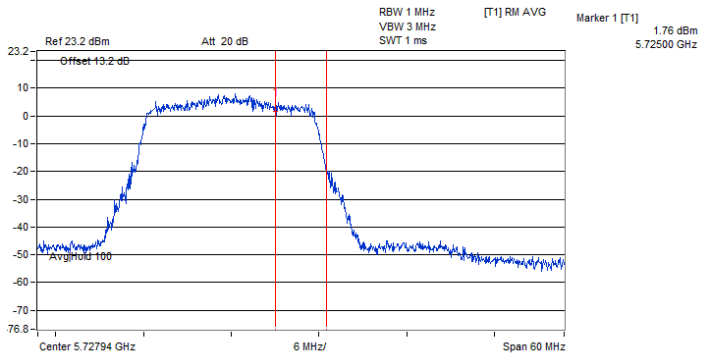
TX Channel Bandwidth 6.16 MHz Power 7.69 dBm

802.11a / Chain 1 : CH 144 (U-NII-3)



TX Channel Bandwidth 16.46 MHz Power 15.82 dBm

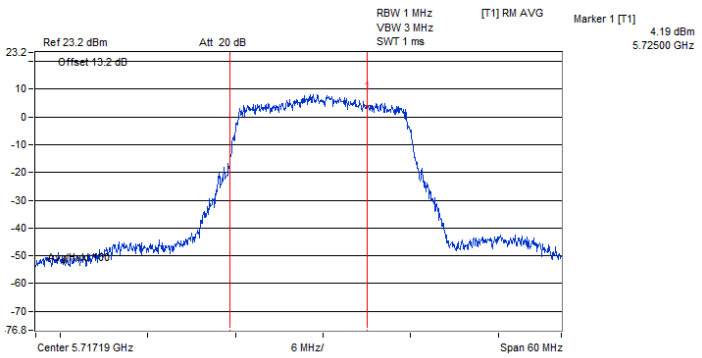
802.11be (EHT20) / Chain 0 : CH 144 (U-NII-2C)



TX Channel Bandwidth 5.88 MHz Power 9.02 dBm

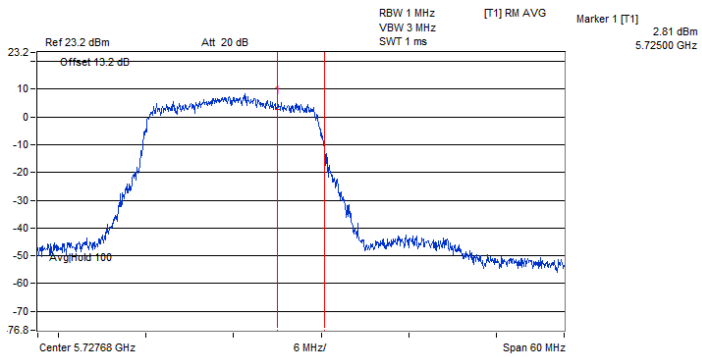
802.11be (EHT20) / Chain 0 : CH 144 (U-NII-3)

Spectrum Plot for channel straddling



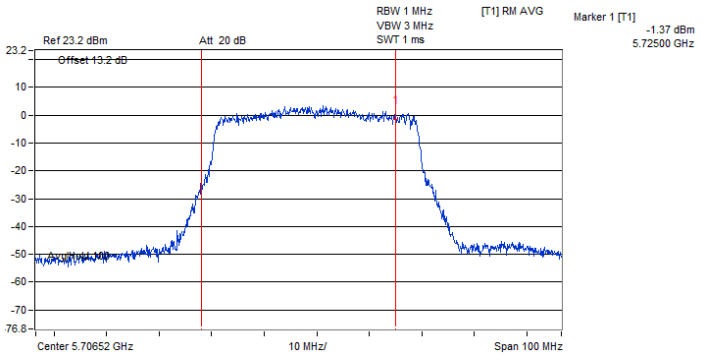
TX Channel Bandwidth 15.61 MHz Power 16.17 dBm

802.11be (EHT20) / Chain 1 : CH 144 (U-NII-2C)



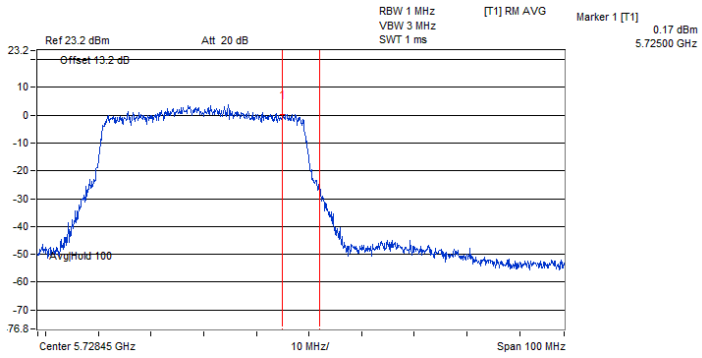
TX Channel Bandwidth 5.37 MHz Power 9.46 dBm

802.11be (EHT20) / Chain 1 : CH 144 (U-NII-3)



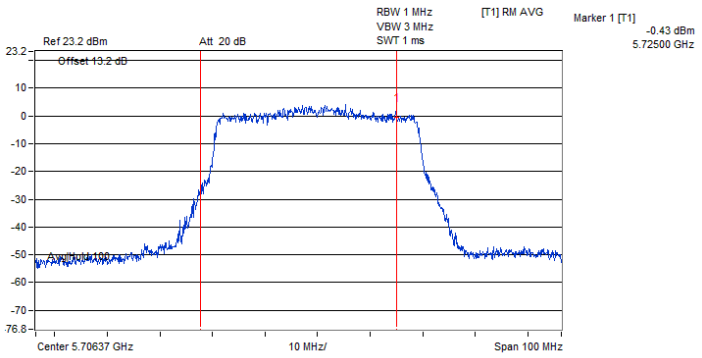
TX Channel Bandwidth 36.95 MHz Power 15.24 dBm

802.11be (EHT40) / Chain 0 : CH 142 (U-NII-2C)



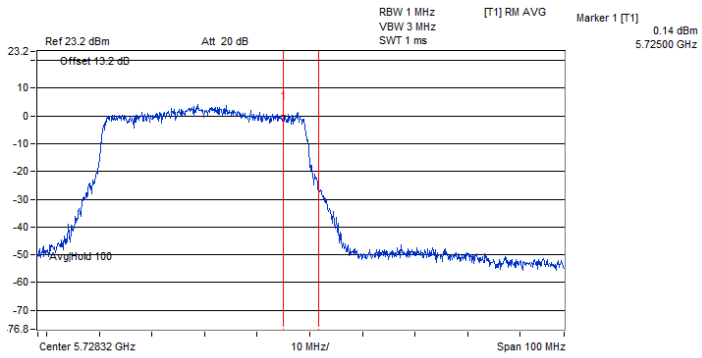
TX Channel Bandwidth 6.91 MHz Power 4.77 dBm

802.11be (EHT40) / Chain 0 : CH 142 (U-NII-3)



TX Channel Bandwidth 37.26 MHz Power 15.64 dBm

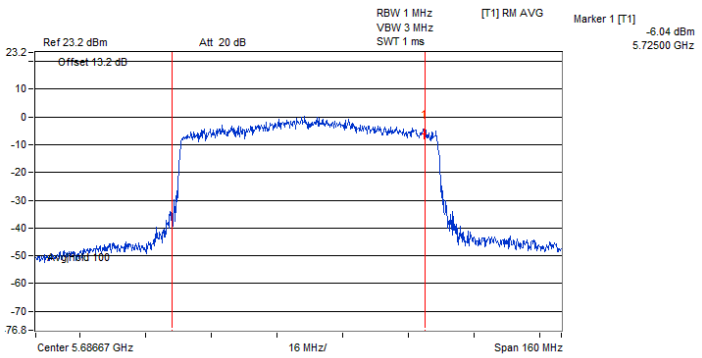
802.11be (EHT40) / Chain 1 : CH 142 (U-NII-2C)



TX Channel Bandwidth 6.64 MHz Power 5.01 dBm

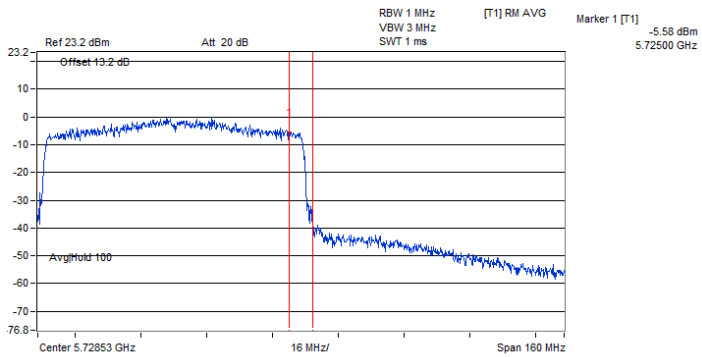
802.11be (EHT40) / Chain 1 : CH 142 (U-NII-3)

Spectrum Plot for channel straddling



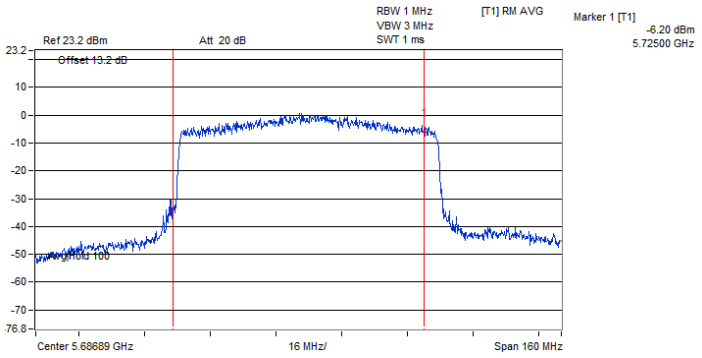
TX Channel Bandwidth 76.65 MHz Power 14.4 dBm

802.11be (EHT80) / Chain 0 : CH 138 (U-NII-2C)



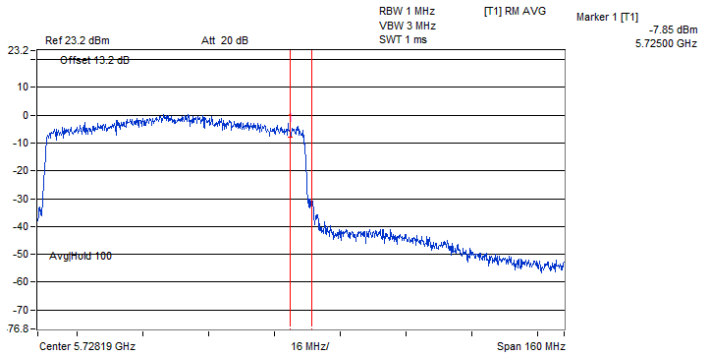
TX Channel Bandwidth 7.07 MHz Power -0.59 dBm

802.11be (EHT80) / Chain 0 : CH 138 (U-NII-3)



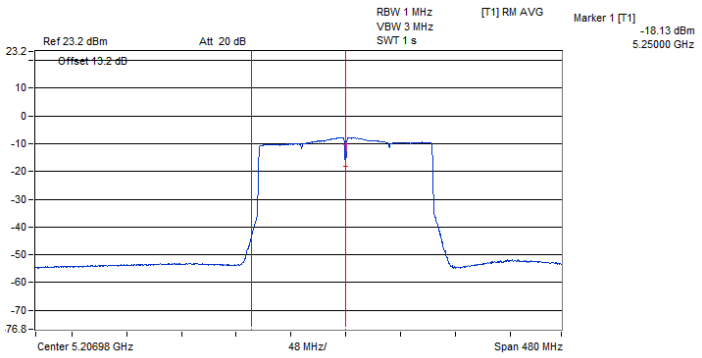
TX Channel Bandwidth 76.21 MHz Power 15.09 dBm

802.11be (EHT80) / Chain 1 : CH 138 (U-NII-2C)



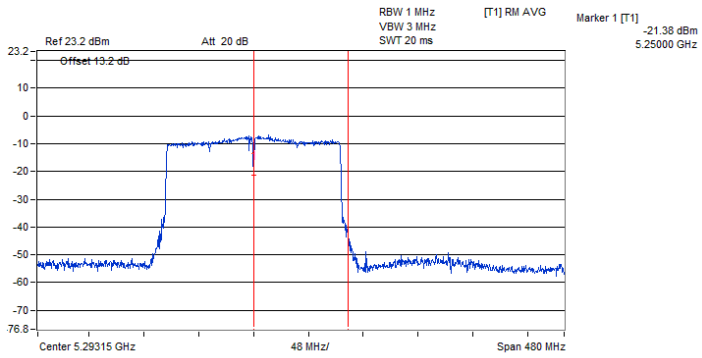
TX Channel Bandwidth 6.39 MHz Power 0.07 dBm

802.11be (EHT80) / Chain 1 : CH 138 (U-NII-3)



TX Channel Bandwidth 86.04 MHz Power 9.12 dBm

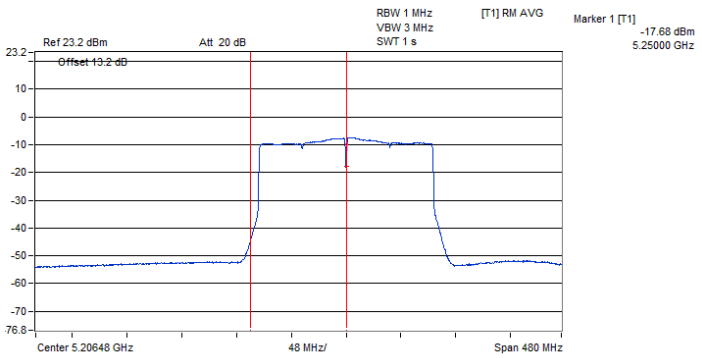
802.11be (EHT160) / Chain 0 : CH 50 (U-NII-1)



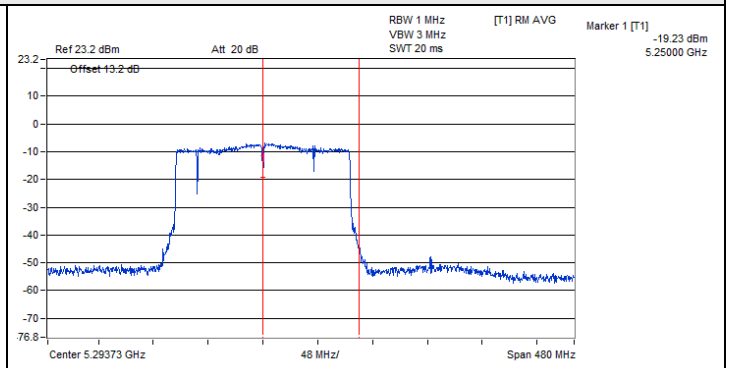
TX Channel Bandwidth 86.31 MHz Power 9.56 dBm

802.11be (EHT160) / Chain 0 : CH 50 (U-NII-2A)

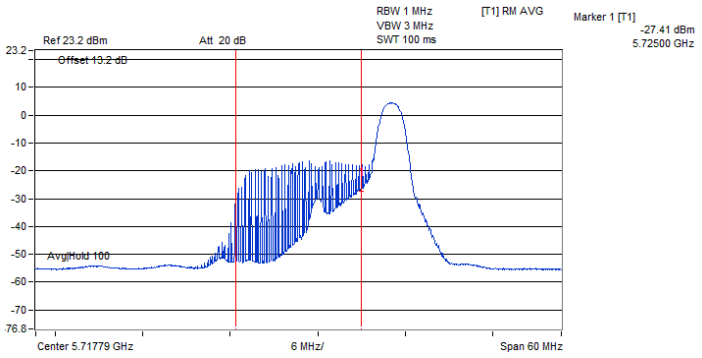
Spectrum Plot for channel straddling



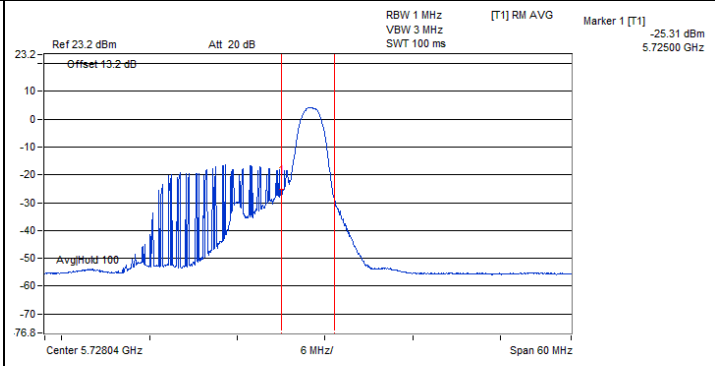
802.11be (EHT160) / Chain 1 : CH 50 (U-NII-1)



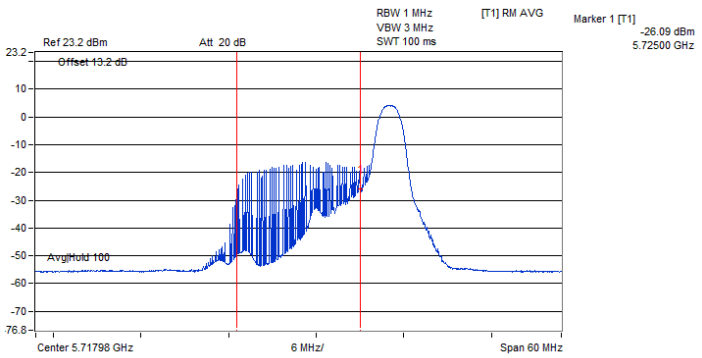
802.11be (EHT160) / Chain 1 : CH 50 (U-NII-2A)



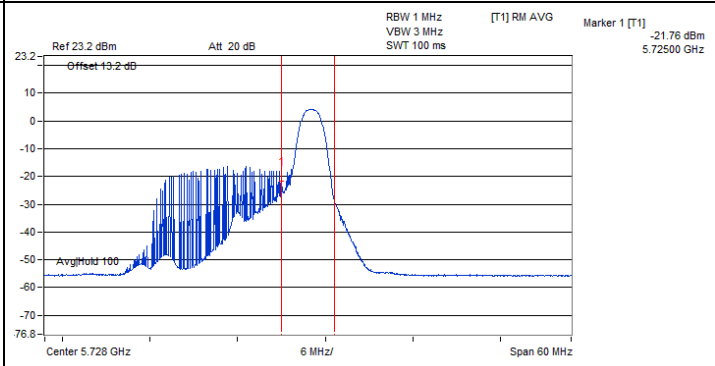
802.11be (EHT20) 26-tone RU / Chain 0 : CH 144@8 (U-NII-2C)



802.11be (EHT20) 26-tone RU / Chain 0 : CH 144@8 (U-NII-3)

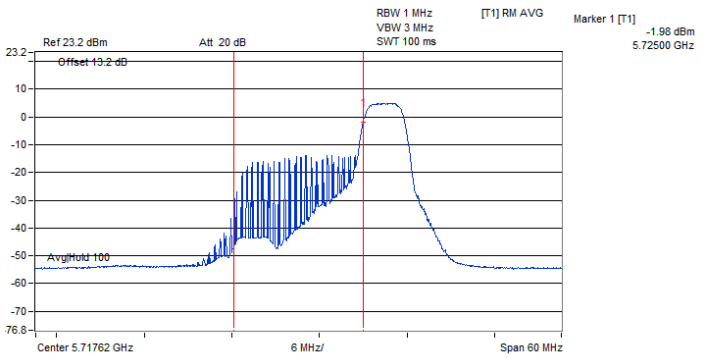


802.11be (EHT20) 26-tone RU / Chain 1 : CH 144@8 (U-NII-2C)



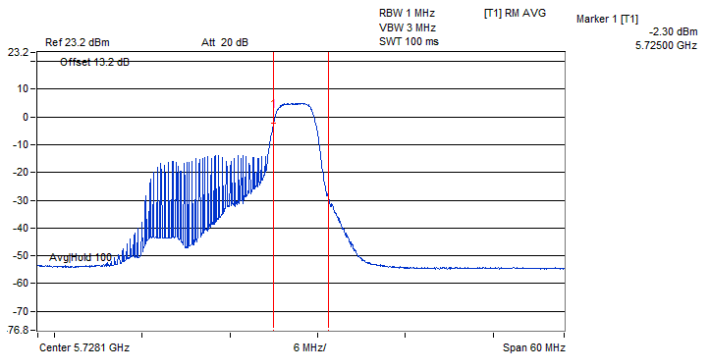
802.11be (EHT20) 26-tone RU / Chain 1 : CH 144@8 (U-NII-3)

Spectrum Plot for channel straddling



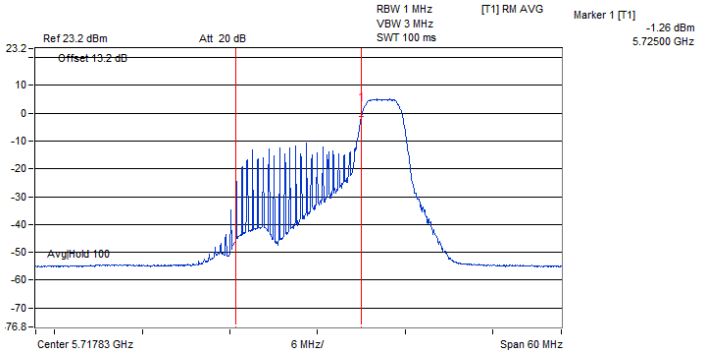
TX Channel Bandwidth 14.76 MHz Power -6.37 dBm

802.11be (EHT20) 52-tone RU / Chain 0 : CH 144@40 (U-NII-2C)



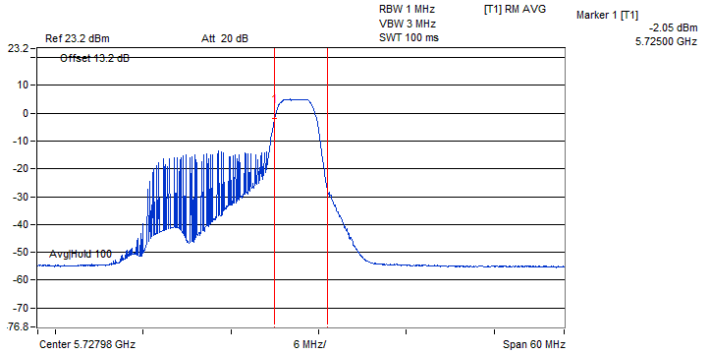
TX Channel Bandwidth 6.2 MHz Power 10.46 dBm

802.11be (EHT20) 52-tone RU / Chain 0 : CH 144@40 (U-NII-3)



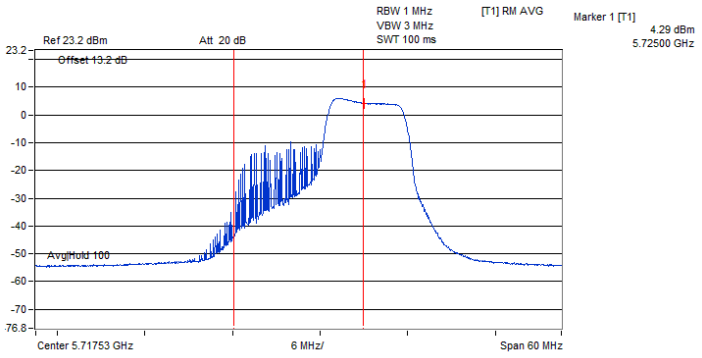
TX Channel Bandwidth 14.34 MHz Power -6.06 dBm

802.11be (EHT20) 52-tone RU / Chain 1 : CH 144@40 (U-NII-2C)



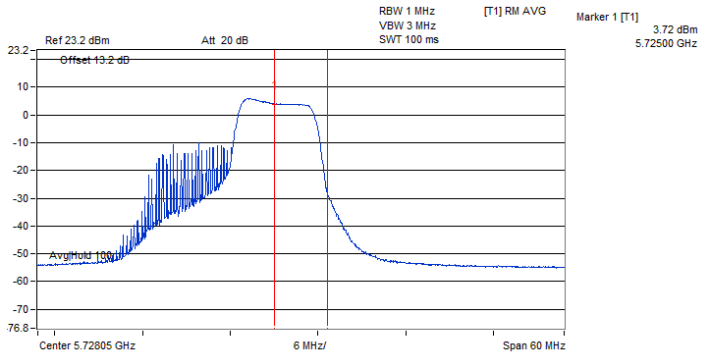
TX Channel Bandwidth 5.96 MHz Power 10.66 dBm

802.11be (EHT20) 52-tone RU / Chain 1 : CH 144@40 (U-NII-3)



TX Channel Bandwidth 14.93 MHz Power 11 dBm

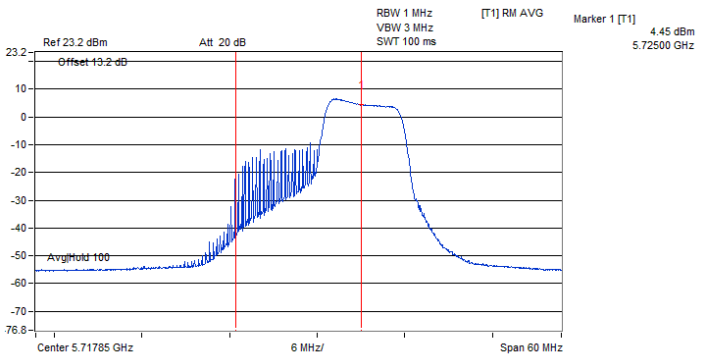
802.11be (EHT20) 106-tone RU / Chain 0 : CH 144@54 (U-NII-2C)



TX Channel Bandwidth 6.1 MHz Power 9.99 dBm

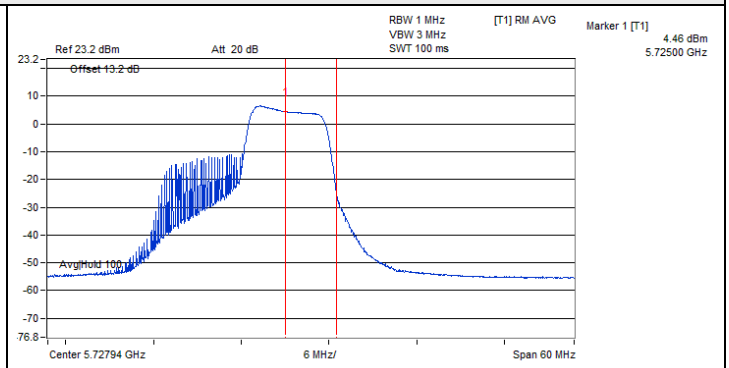
802.11be (EHT20) 106-tone RU / Chain 0 : CH 144@54 (U-NII-3)

Spectrum Plot for channel straddling



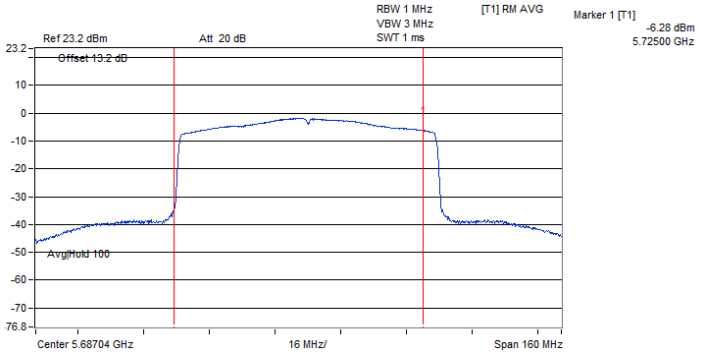
TX Channel Bandwidth 14.29 MHz Power 11.36 dBm

802.11be (EHT20) 106-tone RU / Chain 1 : CH 144@54 (U-NII-2C)



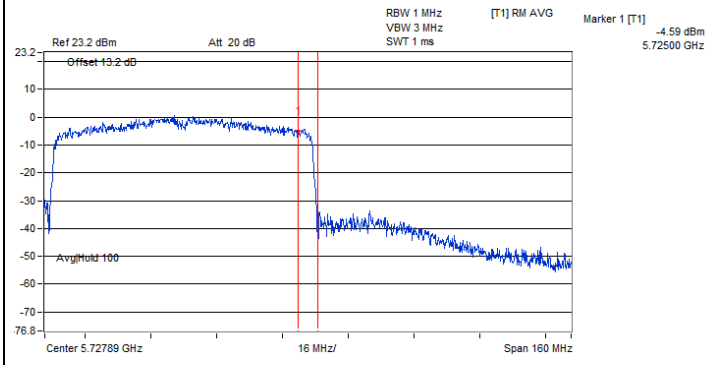
TX Channel Bandwidth 5.89 MHz Power 10.14 dBm

802.11be (EHT20) 106-tone RU / Chain 1 : CH 144@54 (U-NII-3)



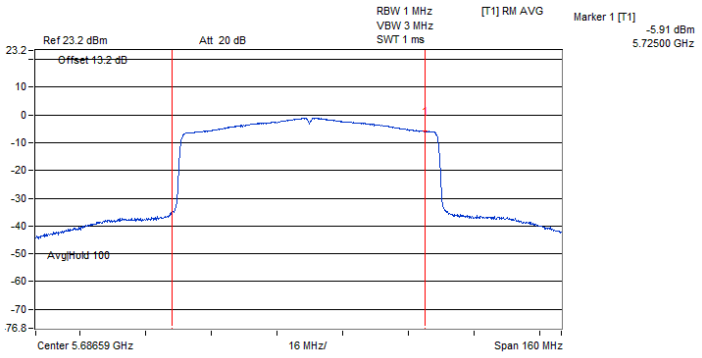
TX Channel Bandwidth 75.91 MHz Power 14.51 dBm

802.11be (EHT80) 996-tone RU / Chain 0 : CH 138 (U-NII-2C)



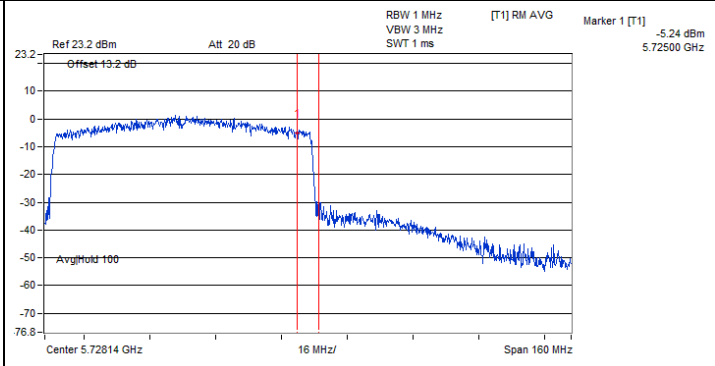
TX Channel Bandwidth 5.78 MHz Power 0.07 dBm

802.11be (EHT80) 996-tone RU / Chain 0 : CH 138 (U-NII-3)



TX Channel Bandwidth 76.81 MHz Power 15 dBm

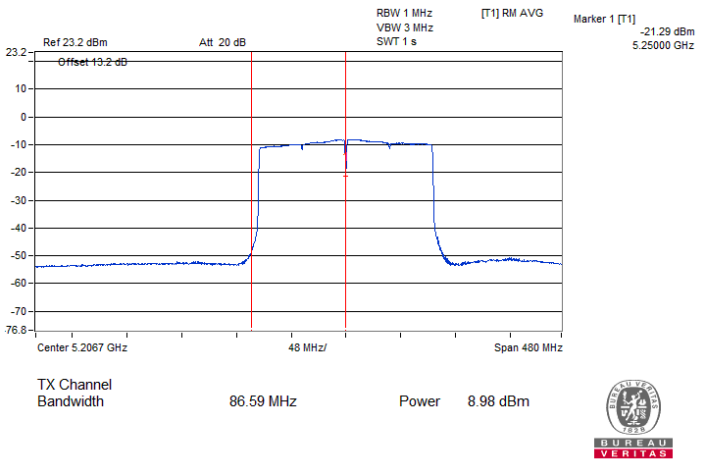
802.11be (EHT80) 996-tone RU / Chain 1 : CH 138 (U-NII-2C)



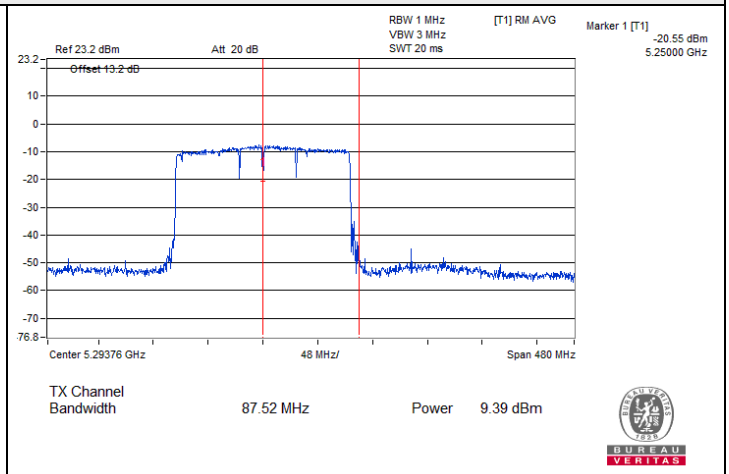
TX Channel Bandwidth 6.28 MHz Power 0.8 dBm

802.11be (EHT80) 996-tone RU / Chain 1 : CH 138 (U-NII-3)

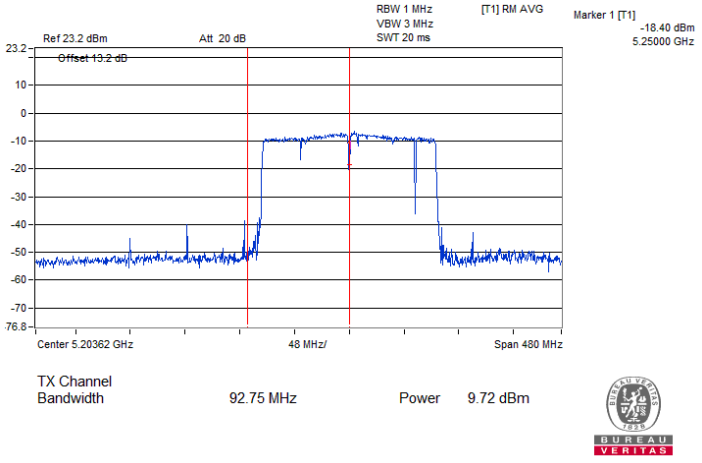
Spectrum Plot for channel straddling



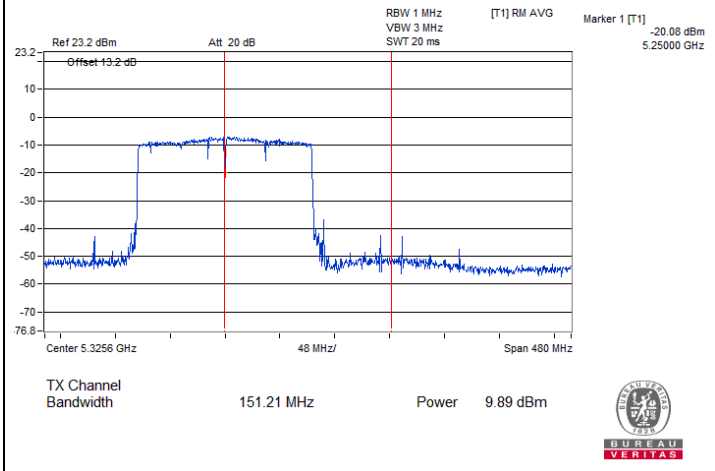
802.11be (EHT160) 2x996-tone RU / Chain 0 : CH 50 (U-NII-1)



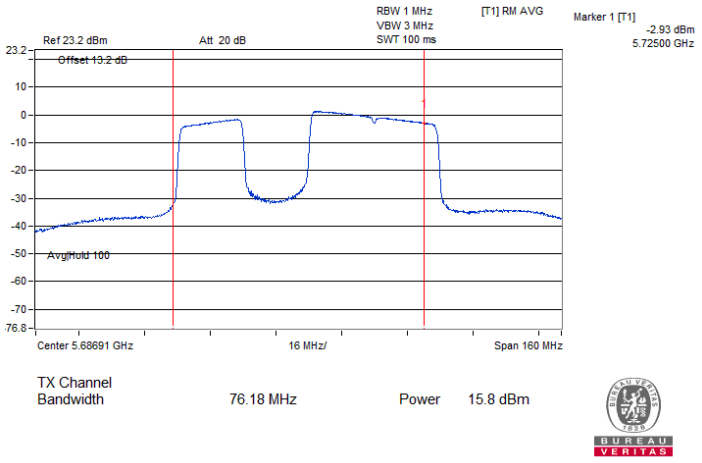
802.11be (EHT160) 2x996-tone RU / Chain 0 : CH 50 (U-NII-2A)



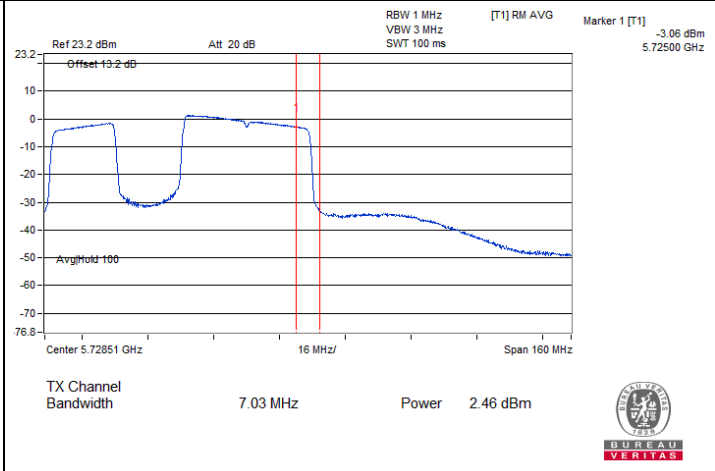
802.11be (EHT160) 2x996-tone RU / Chain 1 : CH 50 (U-NII-1)



802.11be (EHT160) 2x996-tone RU / Chain 1 : CH 50 (U-NII-2A)

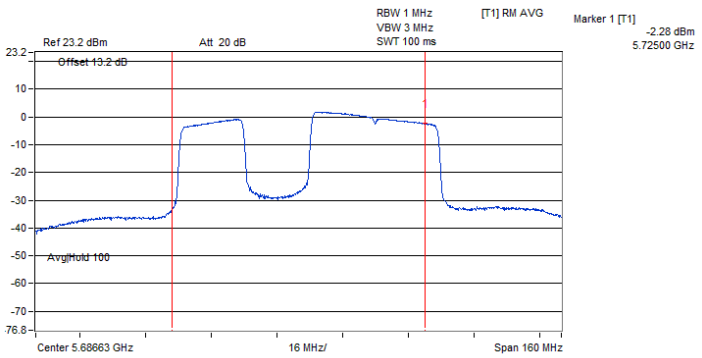


802.11be (EHT80) 484+242-tone MRU / Chain 0 : CH 138@2 (U-NII-2C)



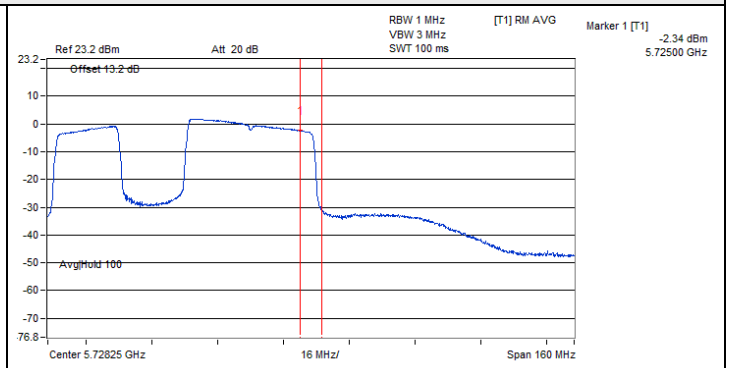
802.11be (EHT80) 484+242-tone MRU / Chain 0 : CH 138@2 (U-NII-3)

Spectrum Plot for channel straddling



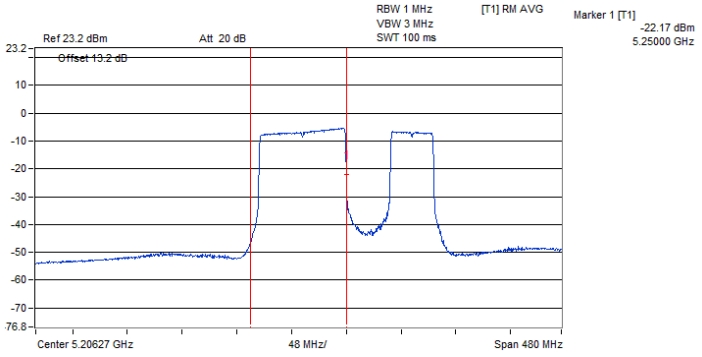
TX Channel Bandwidth 76.73 MHz Power 16.37 dBm

802.11be (EHT80) 484+242-tone MRU / Chain 1 : CH 138@2 (U-NII-2C)



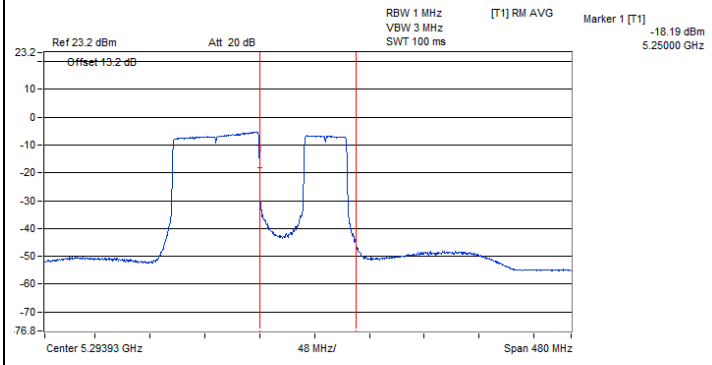
TX Channel Bandwidth 6.51 MHz Power 2.93 dBm

802.11be (EHT80) 484+242-tone MRU / Chain 1 : CH 138@2 (U-NII-3)



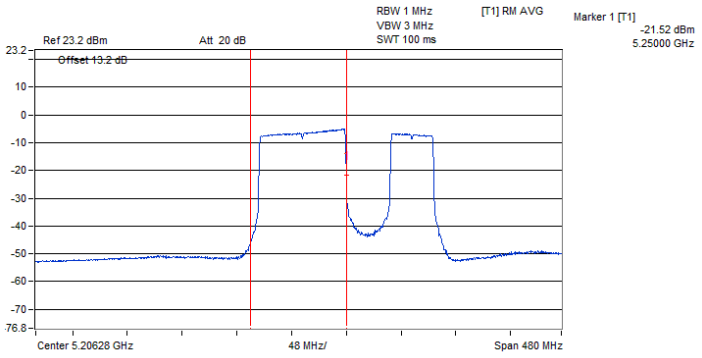
TX Channel Bandwidth 87.46 MHz Power 11.89 dBm

802.11be (EHT160) 996+484-tone MRU / Chain 0 : CH 50@2 (U-NII-1)



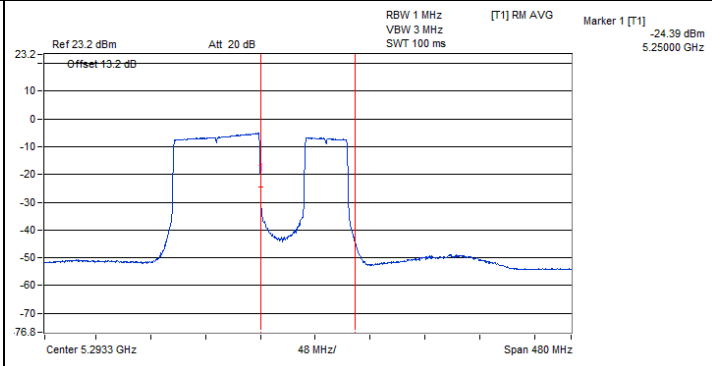
TX Channel Bandwidth 87.87 MHz Power 8.53 dBm

802.11be (EHT160) 996+484-tone MRU / Chain 0 : CH 50@2 (U-NII-2A)



TX Channel Bandwidth 87.43 MHz Power 12.16 dBm

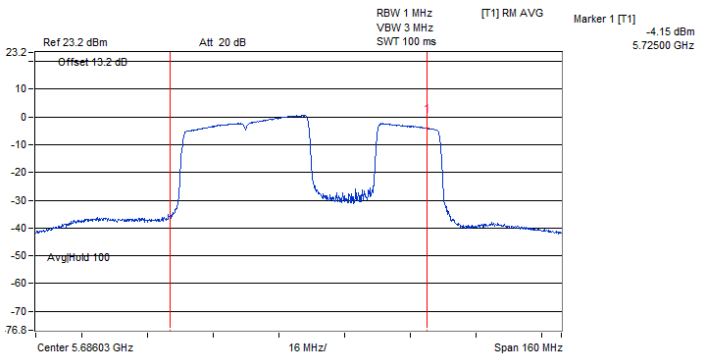
802.11be (EHT160) 996+484-tone MRU / Chain 1 : CH 50@2 (U-NII-1)



TX Channel Bandwidth 86.61 MHz Power 8.3 dBm

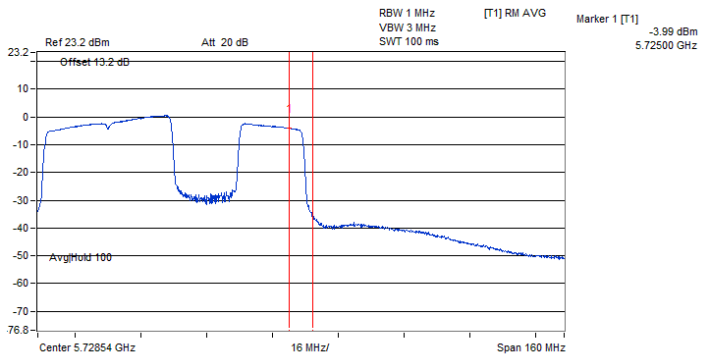
802.11be (EHT160) 996+484-tone MRU / Chain 1 : CH 50@2 (U-NII-2A)

Spectrum Plot for channel straddling



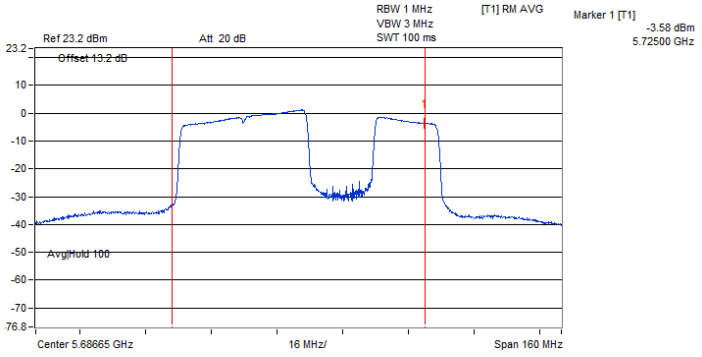
TX Channel Bandwidth 77.93 MHz Power 14.83 dBm

802.11be (EHT80) Punctured by 20 MHz / Chain 0 : CH 138@2 (U-NII-2C)



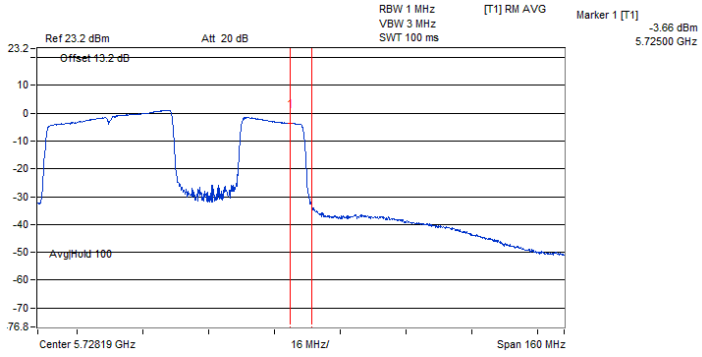
TX Channel Bandwidth 7.08 MHz Power 1.33 dBm

802.11be (EHT80) Punctured by 20 MHz / Chain 0 : CH 138@2 (U-NII-3)



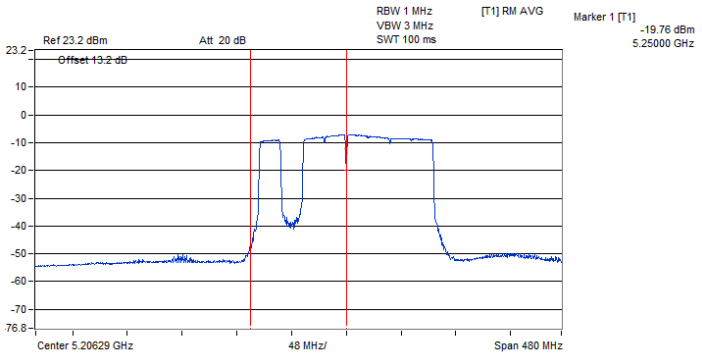
TX Channel Bandwidth 76.7 MHz Power 15.37 dBm

802.11be (EHT80) Punctured by 20 MHz / Chain 1 : CH 138@2 (U-NII-2C)



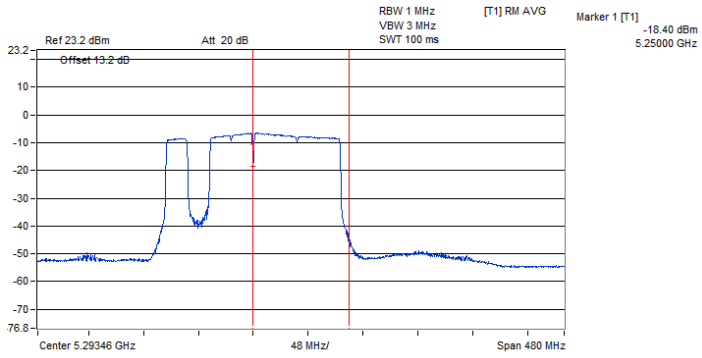
TX Channel Bandwidth 6.39 MHz Power 1.87 dBm

802.11be (EHT80) Punctured by 20 MHz / Chain 1 : CH 138@2 (U-NII-3)



TX Channel Bandwidth 87.41 MHz Power 8.93 dBm

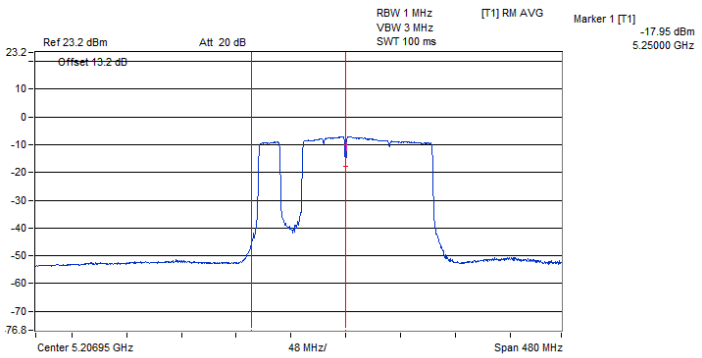
802.11be (EHT160) Punctured by 20 MHz / Chain 0 : CH 50@4 (U-NII-1)



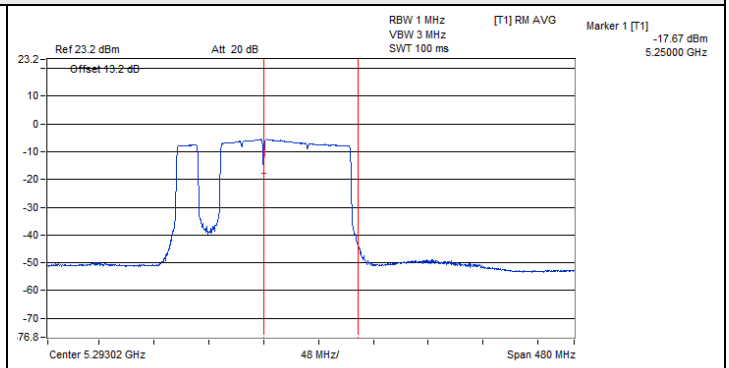
TX Channel Bandwidth 86.93 MHz Power 10.97 dBm

802.11be (EHT160) Punctured by 20 MHz / Chain 0 : CH 50@4 (U-NII-2A)

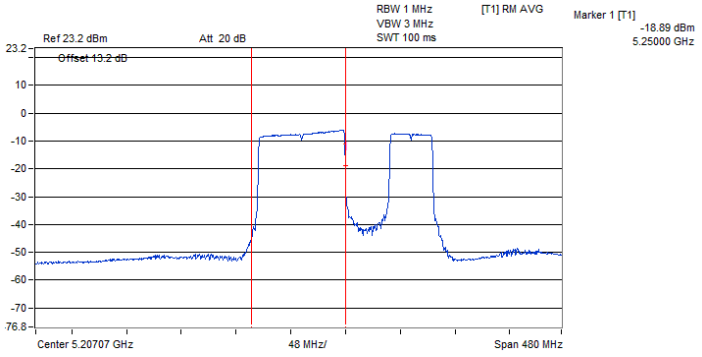
Spectrum Plot for channel straddling



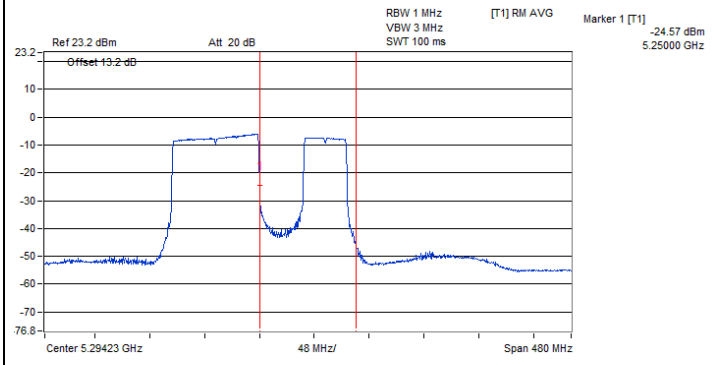
802.11be (EHT160) Punctured by 20 MHz / Chain 1 : CH 50@4 (U-NII-1)



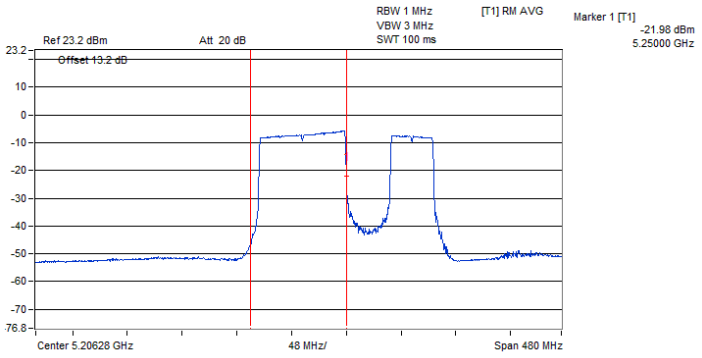
802.11be (EHT160) Punctured by 20 MHz / Chain 1 : CH 50@4 (U-NII-2A)



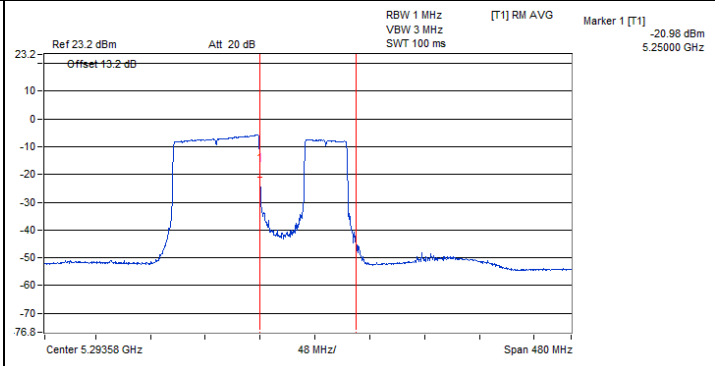
802.11be (EHT160) Punctured by 40 MHz / Chain 0 : CH 50@10 (U-NII-1)



802.11be (EHT160) Punctured by 40 MHz / Chain 0 : CH 50@10 (U-NII-2A)



802.11be (EHT160) Punctured by 40 MHz / Chain 1 : CH 50@10 (U-NII-1)



802.11be (EHT160) Punctured by 40 MHz / Chain 1 : CH 50@10 (U-NII-2A)