

TEST REPORT

Reference No...... : WTH24X03062202W001
FCC ID..... : XOM-ETS-5000K
Applicant..... : Shenzhen Qiyue Optronics Company Limited
Address..... : Flat3,Tower 3, Excellence Meilin Center Plaza, Zhongkang Road 128,
Shangmeilin, Futian District, Shenzhen , China
Manufacturer..... : SHENZHEN QIYUE OPTRONICS COMPANY LIMITED BRANCH
Address..... : A/B/C/D Building, Xitian Industrial Park, Dashuikeng Community,Guanlan
Street, Longhua New District, Shenzhen City, China
Product Name..... : 50" Class Smart 4K UHD LED TV
Model No...... : ETS-5000K
Standards..... : FCC Part 15.407
Date of Receipt sample..... : 2024-03-25
Date of Test..... : 2024-03-25 to 2024-04-15
Date of Issue..... : 2024-04-15
Test Report Form No...... : WTX_Part 15_407W
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

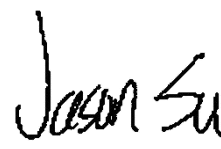
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Report version

Version No.	Date of issue	Description
Rev.00	2024-04-15	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Factory: YIBIN WANXIN Electronic Technology Co.,LTD
 Address of factory: Building 5, building6, Yibin Wanxin Electronic Technology
 Intelligent Terminal Industrial Park, Xinggang Road West 136,
 Lingang Economic Development Zone Yibin city, Sichuan province

General Description of EUT	
Product Name:	50" Class Smart 4K UHD LED TV
Trade Name:	Emerson
Model No.:	ETS-5000K
Adding Model(s):	D50A315d-U-A-W, XXXXXXXX50XXXXXXX(Where "X" can be any alphanumeric of A-Z or 0-9 or blank or -, indicates different client)
Rated Voltage:	AC120V/60Hz
Battery Capacity:	/
Power Adapter:	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model ETS-5000K, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11a, 802.11n-HT20, 802.11n-HT40, 802.11ac-VHT20, 802.11ac-VHT40,802.11ac-VHT80
Frequency Range:	5180-5240MHz, 5745-5825MHz
Max. RF Output Power:	5180-5240MHz: Antenna 0: 16.79dBm (Conducted) Antenna 1: 16.80dBm (Conducted) 5745-5825MHz: Antenna 0: 16.86dBm (Conducted) Antenna 1: 16.53dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM,256QAM
Type of Antenna:	Integral Antenna
Antenna Gain:	5180-5240MHz:1.93dBi 5745-5825MHz:1.73dBi
<i>Note The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.407: General technical requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

KDB789033 D02 v02r01: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-Nii) Devices Part 15, Subparte.

KDB662911 D01 Multiple Transmitter Output v02r01: Emissions Testing of Transmitters with Multiple Outputs in the Same Band.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB789033 D02 v02r01. The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Table for parameters of Test Software setting

Enter “3646631+=” into the calculator to enter the engineer mode, you can start to test. During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Mode ANT 0	Test Frequency (MHz)												
	NCB: 20MHz												
	518 0	520 0	524 0	526 0	528 0	532 0	550 0	558 0	570 0	572 0	574 5	578 5	582 5
802.11a 6Mbps	87	89	87	/	/	/	/	/	/	/	80	75	75
802.11n-HT20 MCS0	87	85	80	/	/	/	/	/	/	/	75	70	70
802.11ac-VHT2 0 MCS0	87	85	80	/	/	/	/	/	/	/	75	70	70
Mode ANT 0	NCB: 40MHz												
	5190	5230	5270	5310	5510	5550	5670	5710	5755	5795			
802.11ac-VHT4 0 MCS0	87	85	/	/	/	/	/	/	/	75	70		
802.11n-HT40 MCS0	87	85	/	/	/	/	/	/	/	75	70		

Mode ANT 0	NCB: 80MHz					
	5210	5290	5530	5610	/	5775
802.11ac-VH80 MCS0/Nss2	88	/	/	/	/	75

Mode ANT 1	Test Frequency (MHz)													
	NCB: 20MHz													
	5180	5200	5240	5260	5300	5320	5500	5580	5700	5720	5745	5785	5825	
802.11a 6Mbps	85	85	80	/	/	/	/	/	/	/	75	70	70	
802.11n-HT20 MCS0	78	78	75	/	/	/	/	/	/	/	70	65	65	
802.11ac-VHT20 MCS0	78	78	75	/	/	/	/	/	/	/	70	65	65	
Mode ANT 1	NCB: 40MHz													
	5190	5230	5270	5310	5510	5550	5670	5710	5755	5795				
802.11ac-VHT40 MCS0	80	75	/	/	/	/	/	/	70	68				
802.11n-HT40 MCS0	80	75	/	/	/	/	/	/	70	68				
Mode ANT 1	NCB: 80MHz													
	5210		5290		5530		5610		/		5775			
802.11ac-VH80 MCS0	80		/		/		/		/		70			

1.5 EUT Operating during test

EUT was programmed to be in continuously transmitting mode. During the test, EUT operation to normal function and programs under Android were executed.

1.6 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101)

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

1.7 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11a	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM2	802.11n-HT20	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM3	802.11ac-VHT20	5180MHz,5200MHz,5240MHz,5745MHz, 5785MHz,5825MHz
TM4	802.11n-HT40	5190MHz,5230MHz,5755MHz,5795MHz
TM5	802.11ac-VHT40	5190MHz,5230MHz,5755MHz,5795MHz
TM6	802.11ac-VHT80	5210MHz,5775 MHz
Note1 : All test modes (different data rate and different modulation) are performed, but only the worst case is recorded in this report; 802.11ac-VHT20, 802.11ac-VHT40 covered by 802.11n-HT20 and 802.11n-HT40. Note 2: The 5GHz WIFI has two antennas and support Multiple Outputs for 802.11n/ac mode for this report; For 5150-5250MHz: Antenna 0 Gain is 1.93dBi; Antenna 1 Gain is 1.93dBi; For 5725-5850MHz: Antenna 1 Gain is 1.73dBi; Antenna 1 Gain is 1.73dBi; According to KDB 662911, for same directional gain: For 5150-5250MHz: Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi = 1.93+10log(2) dBi=4.94dBi For 5725-5850MHz: Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi = 1.73+10log(2) dBi=4.74dBi		

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
AC Cable	1.5	Unshielded	Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
HDMI Cable	1.5	Shielded	With Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Computer	Lenovo	Legion R7000P ARH7	/

1.8 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

1.9 Test Equipment List and Details

Fixed asset Number	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041A 1001	Communication Tester	Rohde & Schwarz	CMW500	148650	2024-02-24	2025-02-23
WTXE1022A 1002	GSM Tester	Rohde & Schwarz	CMU200	114403	2024-02-27	2025-02-26
WTXE1005A 1005	Spectrum Analyzer	Agilent	N9020A	US471401 02	2024-03-19	2025-03-18
WTXE1084A 1001	Spectrum Analyzer	Agilent	N9020A	MY543205 48	2024-02-24	2025-02-23
WTXE1044A 1001	Signal Generator	Agilent	83752A	3610A014 53	2024-02-24	2025-02-23
WTXE1045A 1001	Vector Signal Generator	Agilent	N5182A	MY470702 02	2024-02-24	2025-02-23
WTXE1018A 1001	Power Divider	Weinschel	1506A	PM204	2024-02-29	2025-02-28
☐ Chamber A: Below 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2024-02-24	2025-02-23
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
WTXE1007A 1001	Amplifier	HP	8447F	2805A034 75	2024-02-24	2025-02-23
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
WTXE1010A 1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2024-02-24	2025-02-23
☐ Chamber A: Above 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2024-02-24	2025-02-23
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
WTXE1065A 1001	Amplifier	C&D	PAP-1G18	2002	2024-02-27	2025-02-26
WTXE1010A 1005	Horn Antenna	ETS	3117	00086197	2024-02-26	2025-02-25
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28

☐ Chamber B:Below 1GHz						
WTXE1010A 1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
WTXE1038A 1001	Amplifier	Agilent	8447D	2944A104 57	2024-02-24	2025-02-23
WTXE1001A 1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2024-02-24	2025-02-23
☒ Chamber C:Below 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
WTXE1010A 1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27
WTXE1007A 1002	Amplifier	HP	8447F	2944A038 69	2024-02-24	2025-02-23
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
☒ Chamber C: Above 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
WTXE1103A 1005	Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
WTXE1103A 1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2024-02-27	2025-02-26
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
☐ Conducted Room 1#						
WTXE1104A 1029	EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2023-12-12	2024-12-11
WTXE1002A 1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2024-02-24	2025-02-23
WTXE1003A 1001	AC LISN	Schwarz beck	NSLK8126	8126-279	2024-02-24	2025-02-23
☒ Conducted Room 2#						
WTXE1001A 1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2024-02-24	2025-02-23
WTXE1003A 1003	LISN	Rohde & Schwarz	ENV 216	100097	2024-02-24	2025-02-23

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 1#)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 2#)*	SKET	EMC-I	V2.0

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§15.203; §15.405	Antenna Requirement	Compliant
15.407 (c)	Automatically Discontinue Transmission	Compliant
§15.207; §15.407(b)(6)	Conducted Emission	Compliant
§15.407(a)(1),(2)	Power Spectral Density	Compliant
§15.407(e)	Emission Bandwidth and Occupied Bandwidth	Compliant
§15.407(a)(1),(2)	Maximum Conducted Output Power	Compliant
§15.407(b)(1),(2),(3),(4)	Undesirable emission	Compliant
§15.205; §15.407(b)(1),(2),(3)	Radiated Emission	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.407(h)	Dynamic Frequency Selection (DFS)	Compliant

N/A: Not applicable.

3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Evaluation Information

This product has two integral antennas, fulfill the requirement of this section.

4. Automatically Discontinue Transmission

4.1 Standard Applicable

According to FCC Part 15.407(c), the device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

4.2 Summary of Test Results

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

5. Power Spectral Density

5.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25GHz.

(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or $11\text{dBm} + 10 \log B$, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2 Test Procedure

According to 789033 D02 v02r01 General UNII Test Procedures New Rules v02, the following is the measurement procedure.

For devices operating in the bands 5.15-5.25GHz, 5.25-5.35GHz, and 5.47-5.725GHz, the above procedures make use of 1MHz RBW to satisfy directly the 1MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85GHz, the rules specify a measurement bandwidth of 500kHz. Many spectrum analyzers do not have 500kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1MHz, or 500kHz, "provided that the measured power is integrated over the full

reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1MHz, or 500kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500kHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500\text{kHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1\text{MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100kHz for the sections 5.c) and 5.d) above, since $RBW=100\text{kHz}$ is available on nearly all spectrum analyzers.

5.3 Summary of Test Results/Plots

Please refer to Appendix A

6. Emission Bandwidth and Occupied Bandwidth

6.1 Standard Applicable

According to 15.407(a) and (e):

(1) For the band 5.15-5.25GHz.

(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or $11\text{dBm} + 10 \log B$, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) Within the 5.725-5.85GHz band, the minimum 6dB bandwidth of U-NII devices shall be at least 500kHz.

6.2 Test Procedure

According to 789033 D02 v02r0r section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)

- 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 26dB down from the maximum 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%.

2. Minimum Emission Bandwidth for the band 5.725-5.85GHz

Section 15.407(e) specifies the minimum 6dB emission bandwidth of at least 500KHz for the band 5.715-5.85GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v02r01 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

- 1. Set center frequency to the nominal EUT channel center frequency.
- 2. Set span = 1.5 times to 5.0 times the OBW.
- 3. Set RBW = 1 % to 5 % of the OBW
- 4. Set VBW $\geq 3 \times$ RBW
- 5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- 6. Use the 99 % power bandwidth function of the instrument (if available).
- 7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency.

Reference No.: WTH24X03062202W001

The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

6.3 Summary of Test Results/Plots

Please refer to Appendix B

7. Maximum Conducted Output Power

7.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25GHz.

(iv) For mobile and portable client devices in the 5.15-5.25GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250mW provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35GHz and 5.47-5.725GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or $11\text{dBm} + 10 \log B$, where B is the 26dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(3) For the band 5.725-5.85GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

7.2 Test Procedure

According to KDB789033 D02 v02r01 section E, the following is the measurement procedure.

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1MHz.
- (iii) Set VBW $\geq$ 3MHz.
- (iv) Number of points in sweep $\geq$ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that

narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

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

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

7.3 Summary of Test Results/Plots

Please refer to Appendix C

8. Radiated Spurious Emissions

8.1 Standard Applicable

According to §15.407(b), undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25GHz band: All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35GHz band: All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725GHz band: All emissions outside of the 5.47-5.725GHz band shall not exceed an e.i.r.p. of -27dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85GHz band:
 - (i) All emissions shall be limited to a level of -27dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10dBm/MHz at 25MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6dBm/MHz at 5MHz above or below the band edge, and from 5MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

According to §15.407(b)(6), Unwanted emissions below 1GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

According to §15.407(b)(7), The provisions of §15.205 apply to intentional radiators operating under this section.

789033 D02 v02r01 General UNII Test Procedures New Rules v01

If radiated measurements are performed, field strength is then converted to EIRP as follows:

$$\text{EIRP} = ((E \cdot d)^2) / 30$$

where:

- E is the field strength in V/m;
- d is the measurement distance in meters;
- EIRP is the equivalent isotropically radiated power in watts.

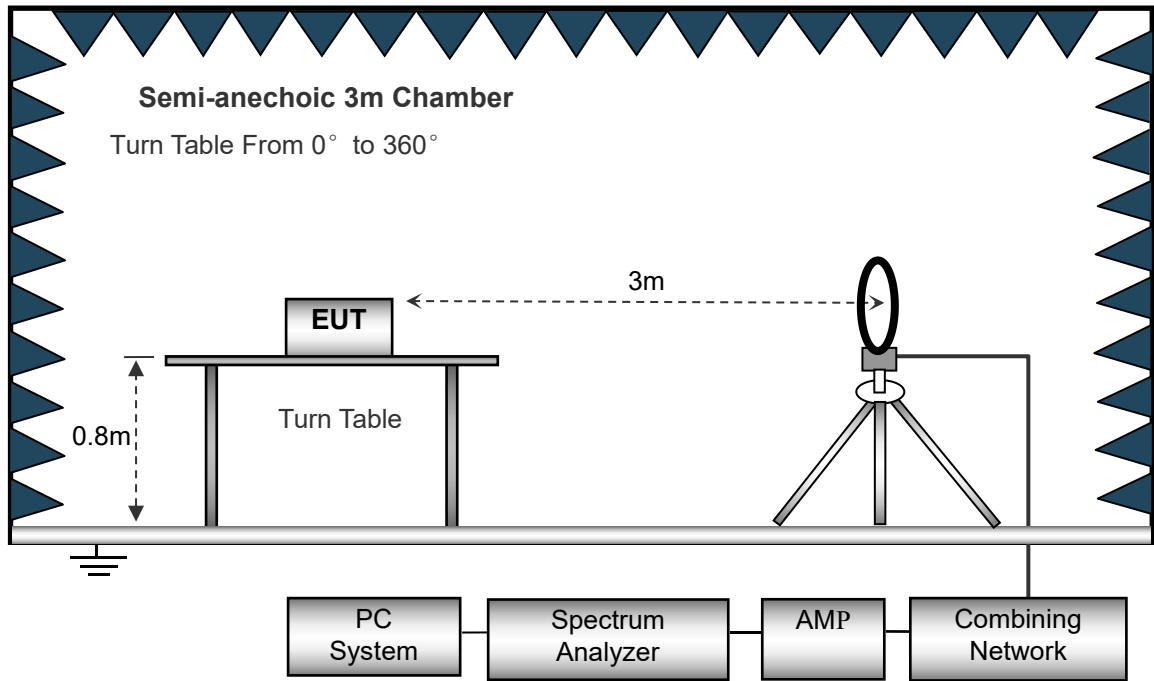
8.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.407(b)(6) and FCC Part 15.209 Limit..

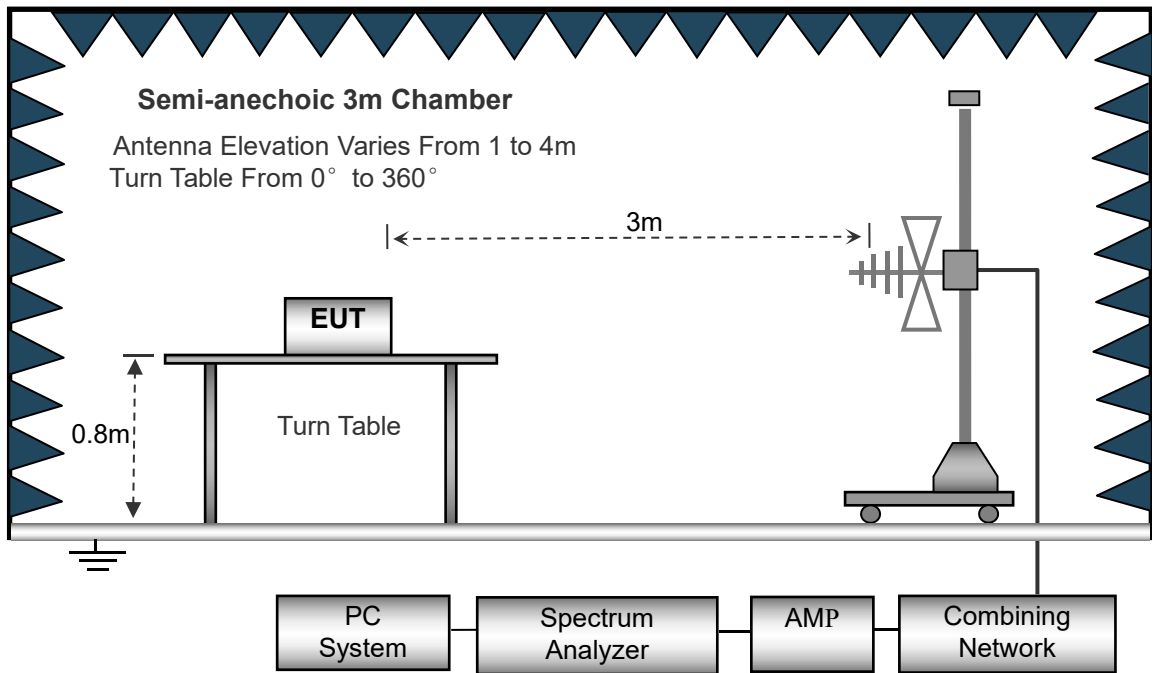
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

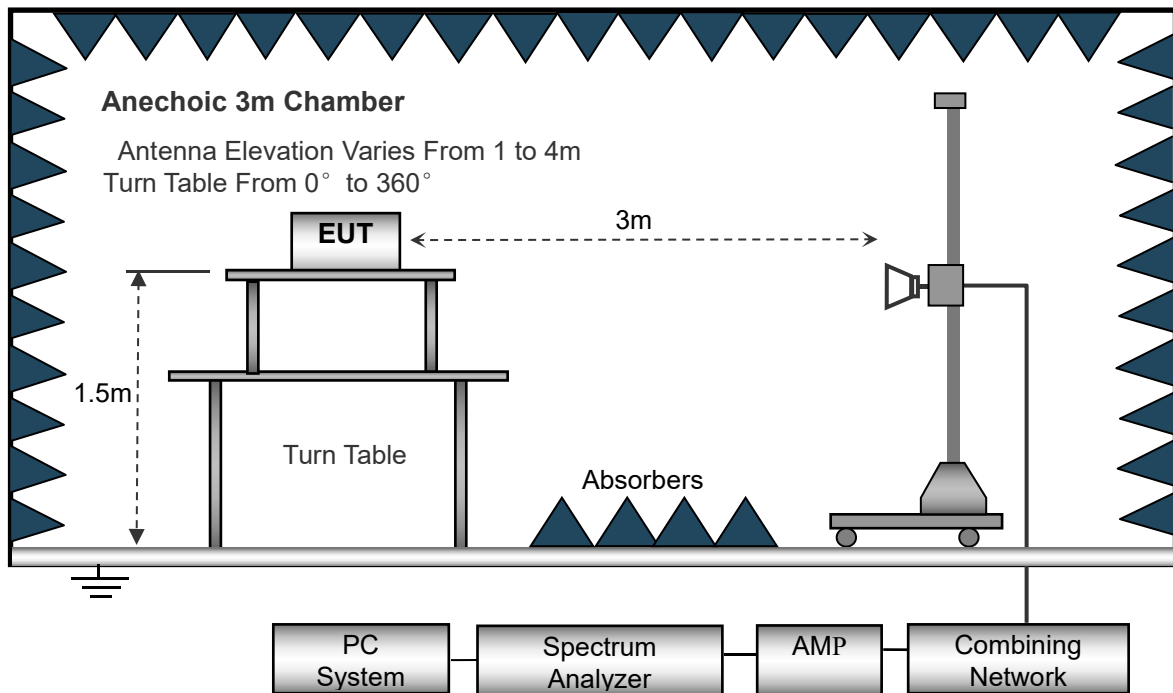
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1GHz.



8.3 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

8.5 Summary of Test Results/Plots

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

➤ Spurious Emission From 30MHz to 1GHz

➤ Antenna 0(worst case)

➤ 5150-5250MHz

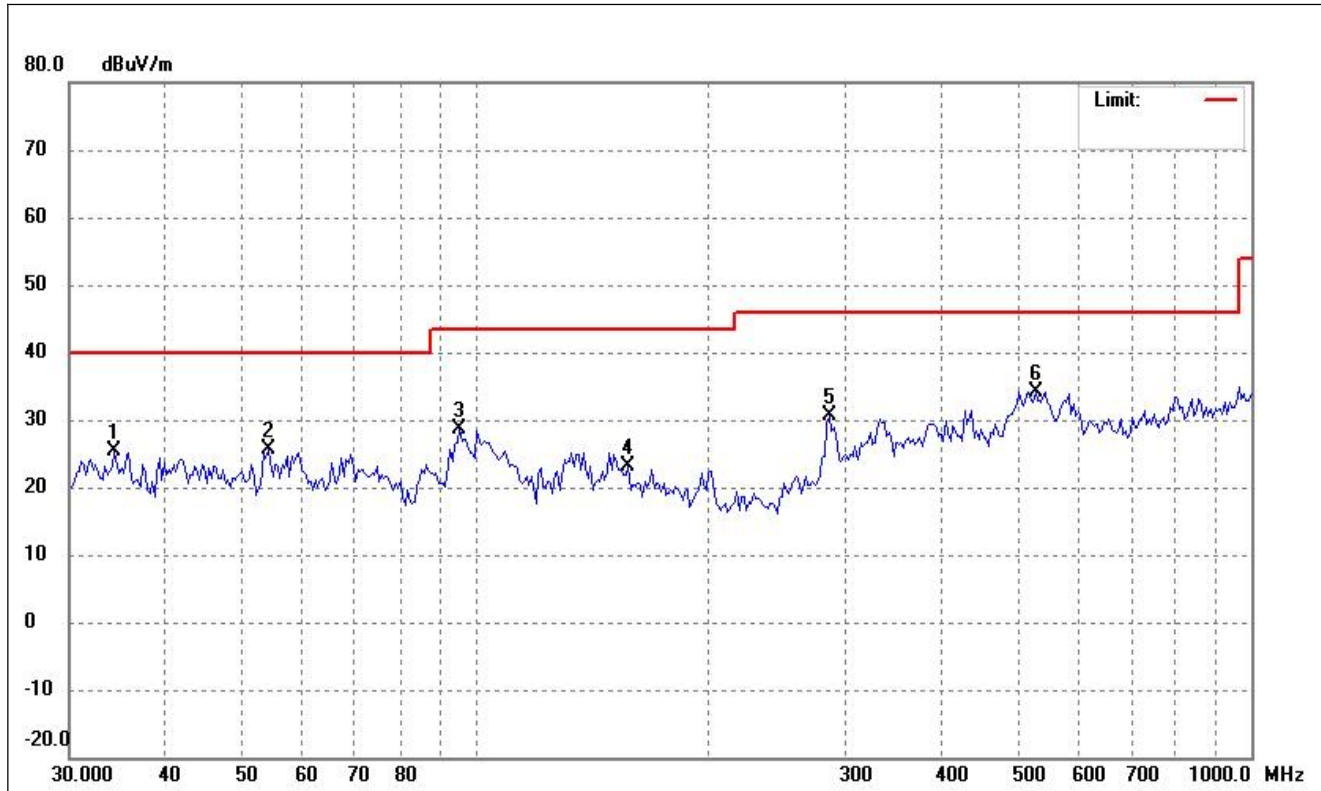
802.11a(Worst case)

Test Channel	5180MHz	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	47.3688	29.51	-8.29	21.22	40.00	-18.78	-	-	peak
2	100.4712	39.01	-12.45	26.56	43.50	-16.94	-	-	peak
3	170.1888	37.01	-8.91	28.10	43.50	-15.40	-	-	peak
4	282.2702	47.45	-8.86	38.59	46.00	-7.41	-	-	peak
5	334.1255	41.75	-7.39	34.36	46.00	-11.64	-	-	peak
6	723.7930	37.10	-0.65	36.45	46.00	-9.55	-	-	peak

802.11a(Worst case)			
Test Channel	5180MHz	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	34.2852	35.12	-9.65	25.47	40.00	-14.53	-	-	peak
2	54.1349	34.24	-8.54	25.70	40.00	-14.30	-	-	peak
3	95.6485	41.42	-12.75	28.67	43.50	-14.83	-	-	peak
4	157.5290	31.76	-8.61	23.15	43.50	-20.35	-	-	peak
5	286.2653	39.24	-8.72	30.52	46.00	-15.48	-	-	peak
6	527.5707	37.66	-3.45	34.21	46.00	-11.79	-	-	peak

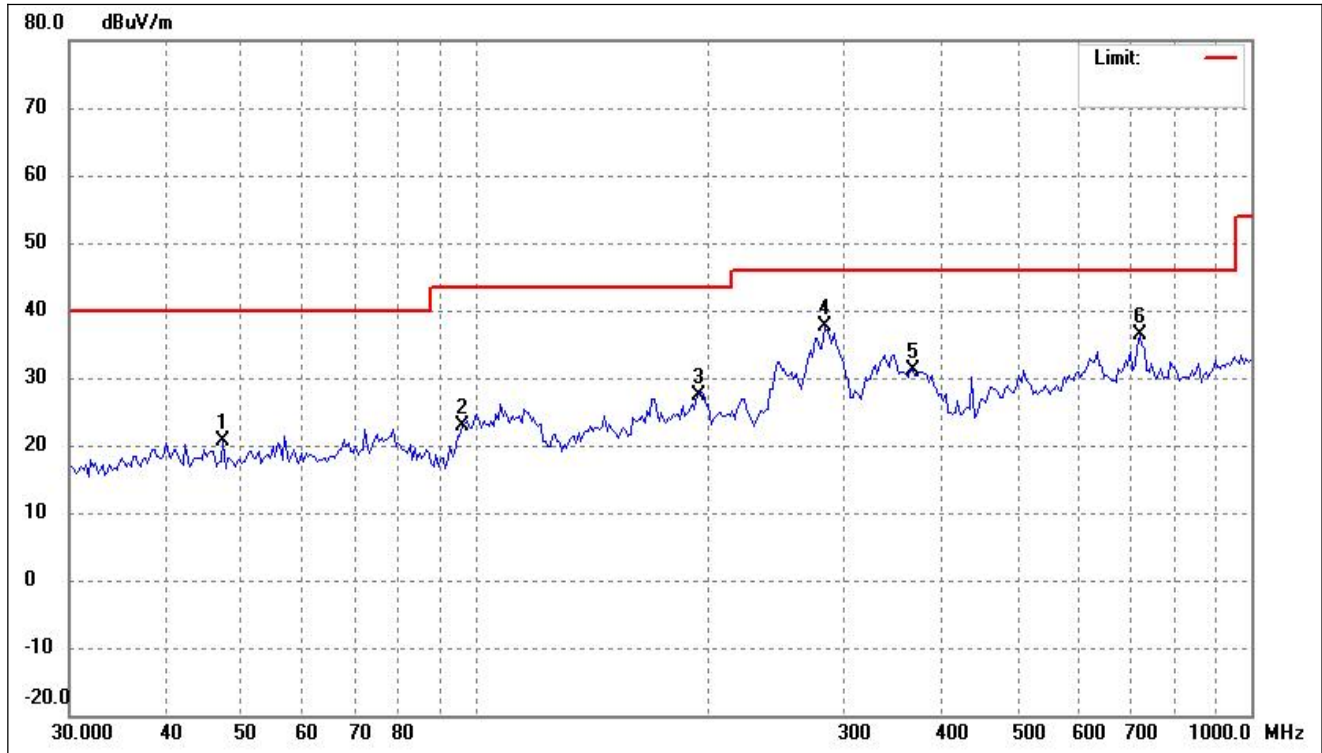
802.11a(Worst case)

Test Channel

5200MHz

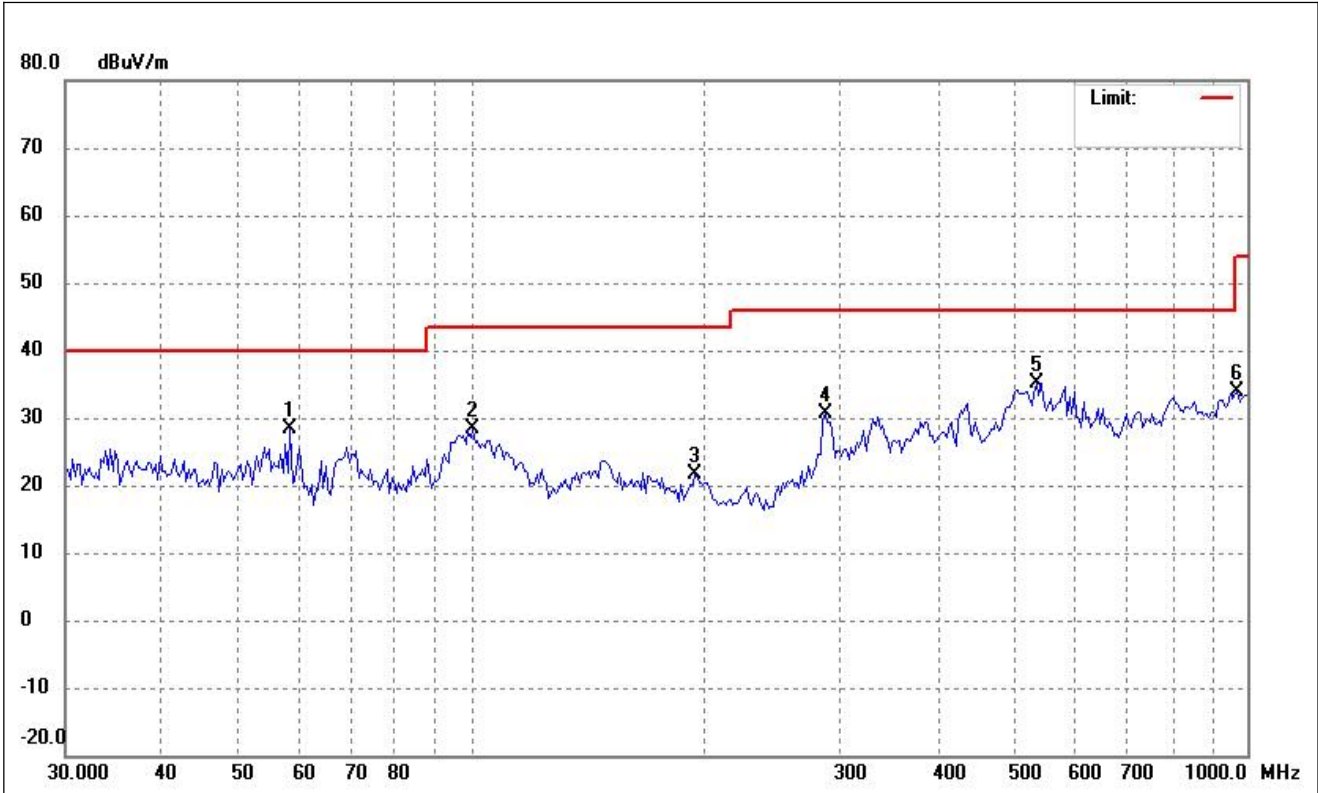
Polarity:

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	47.3688	28.83	-8.29	20.54	40.00	-19.46	-	-	peak
2	96.3230	35.67	-12.72	22.95	43.50	-20.55	-	-	peak
3	193.1366	39.02	-11.60	27.42	43.50	-16.08	-	-	peak
4	282.2702	46.39	-8.86	37.53	46.00	-8.47	-	-	peak
5	366.0866	37.93	-6.70	31.23	46.00	-14.77	-	-	peak
6	718.7246	37.01	-0.75	36.26	46.00	-9.74	-	-	peak

802.11a(Worst case)			
Test Channel	5200MHz	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	58.4855	37.14	-8.84	28.30	40.00	-11.70	-	-	peak
2	100.4712	40.85	-12.45	28.40	43.50	-15.10	-	-	peak
3	194.4985	33.24	-11.67	21.57	43.50	-21.93	-	-	peak
4	286.2653	39.25	-8.72	30.53	46.00	-15.47	-	-	peak
5	535.0377	38.30	-3.25	35.05	46.00	-10.95	-	-	peak
6	972.2827	31.52	2.27	33.79	54.00	-20.21	-	-	peak

802.11a(Worst case)			
Test Channel	5240MHz	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	59.3133	30.83	-8.90	21.93	40.00	-18.07	-	-	peak
2	107.7854	37.83	-11.78	26.05	43.50	-17.45	-	-	peak
3	195.8701	40.27	-11.75	28.52	43.50	-14.98	-	-	peak
4	282.2702	47.42	-8.86	38.56	46.00	-7.44	-	-	peak
5	338.8546	41.64	-7.31	34.33	46.00	-11.67	-	-	peak
6	718.7246	37.01	-0.75	36.26	46.00	-9.74	-	-	peak

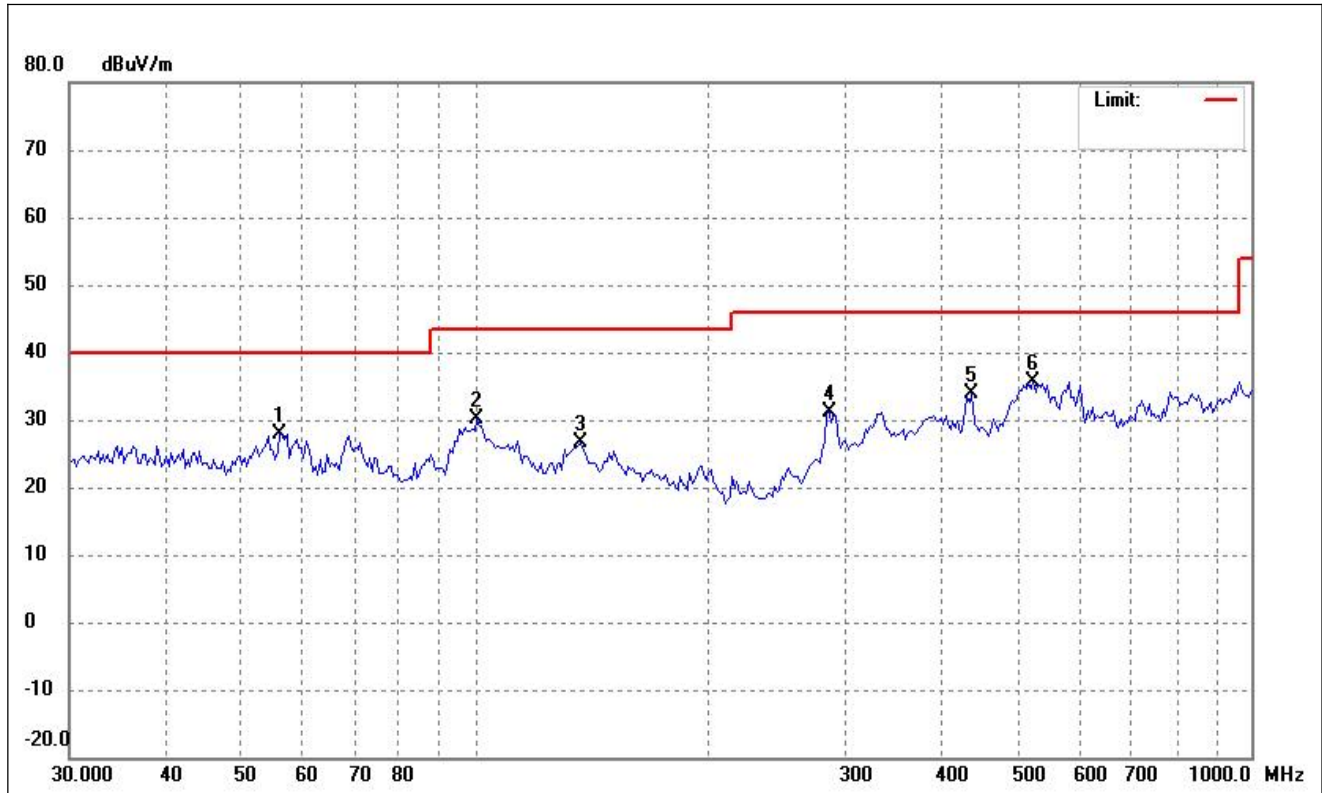
802.11a(Worst case)

Test Channel

5240MHz

Polarity:

Vertical

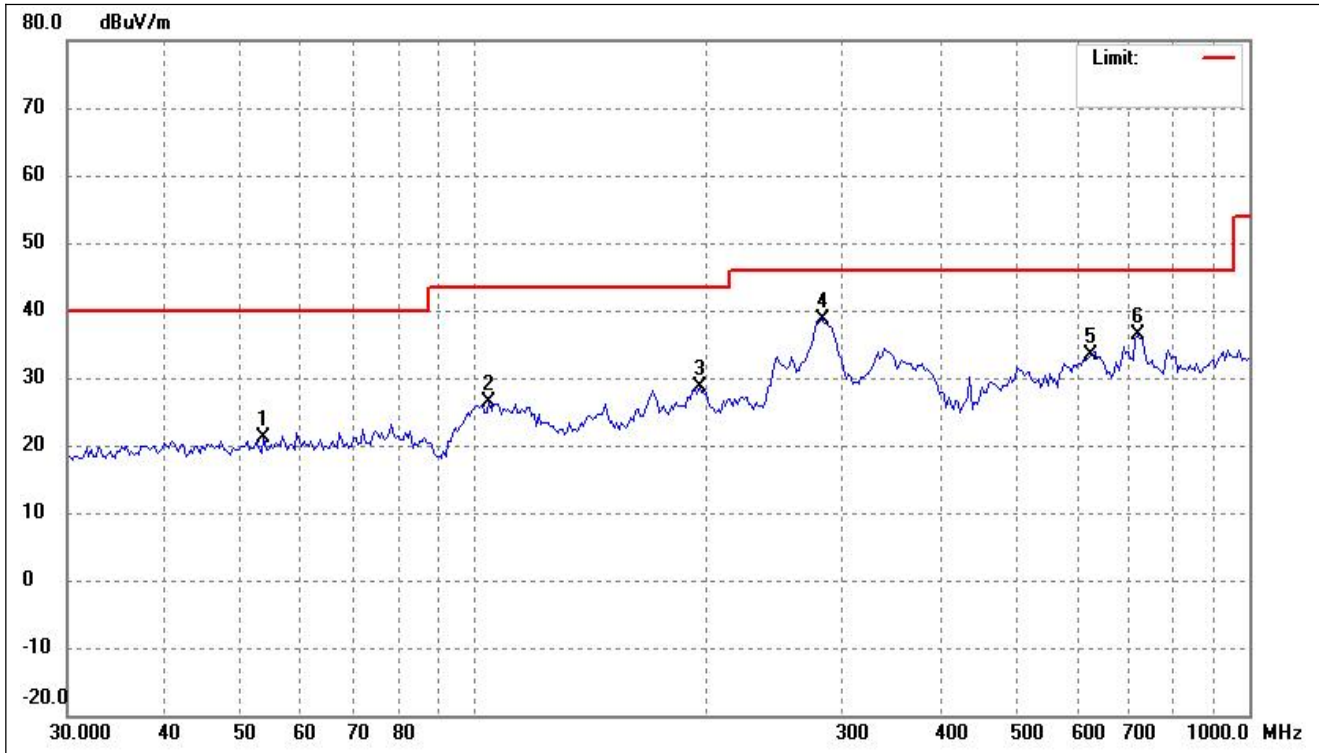


No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	56.0708	36.58	-8.70	27.88	40.00	-12.12	-	-	peak
2	100.4712	42.64	-12.45	30.19	43.50	-13.31	-	-	peak
3	136.8747	36.16	-9.56	26.60	43.50	-16.90	-	-	peak
4	286.2653	39.95	-8.72	31.23	46.00	-14.77	-	-	peak
5	436.3956	38.72	-4.96	33.76	46.00	-12.24	-	-	peak
6	523.8763	39.19	-3.53	35.66	46.00	-10.34	-	-	peak

➤ 5725-5850MHz

802.11a(worst case)

Test Channel	5745MHz	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	53.7559	29.72	-8.50	21.22	40.00	-18.78	-	-	peak
2	104.7979	38.46	-12.05	26.41	43.50	-17.09	-	-	peak
3	195.8701	40.27	-11.75	28.52	43.50	-14.98	-	-	peak
4	282.2702	47.42	-8.86	38.56	46.00	-7.44	-	-	peak
5	624.4897	34.80	-1.41	33.39	46.00	-12.61	-	-	peak
6	718.7246	37.01	-0.75	36.26	46.00	-9.74	-	-	peak

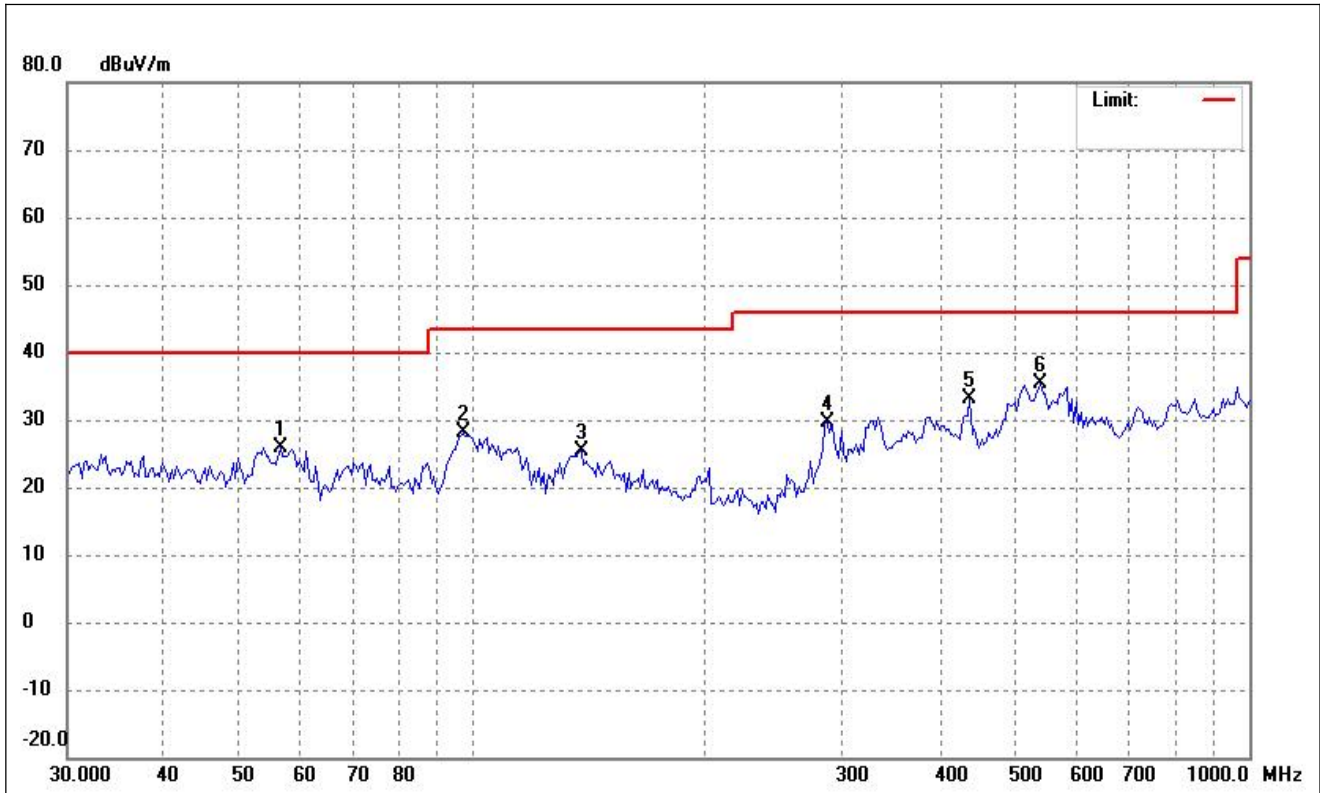
802.11a(worst case)

Test Channel

5745MHz

Polarity:

Vertical



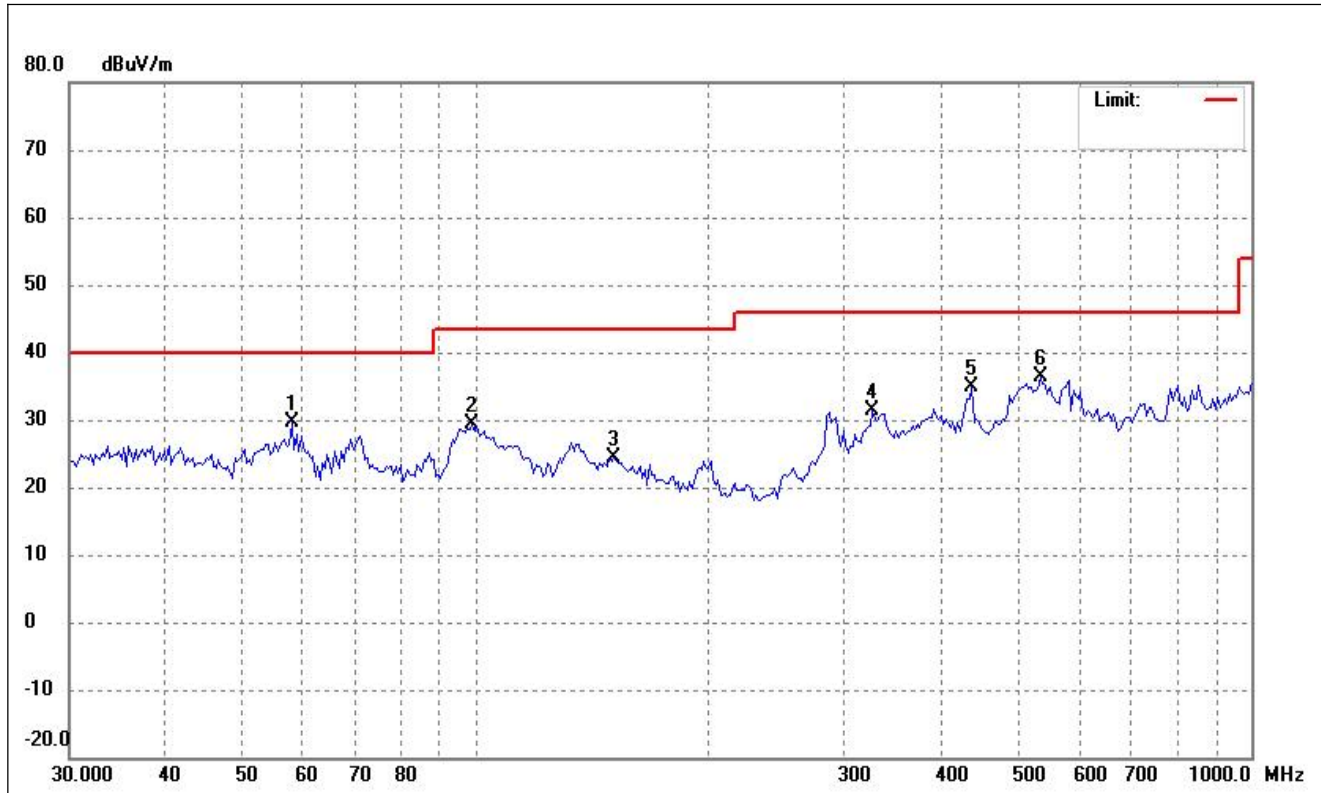
No.	Frequency	Reading	Corr.	Result	Limit	Margin	Deg.	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	56.4662	34.64	-8.72	25.92	40.00	-14.08	-	-	peak
2	97.0023	40.82	-12.67	28.15	43.50	-15.35	-	-	peak
3	137.8400	34.83	-9.52	25.31	43.50	-18.19	-	-	peak
4	286.2653	38.29	-8.72	29.57	46.00	-16.43	-	-	peak
5	436.3956	38.00	-4.96	33.04	46.00	-12.96	-	-	peak
6	538.8107	38.54	-3.15	35.39	46.00	-10.61	-	-	peak

802.11a(worst case)			
Test Channel	5785MHz	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	43.2333	29.24	-8.47	20.77	40.00	-19.23	-	-	peak
2	104.7979	38.46	-12.05	26.41	43.50	-17.09	-	-	peak
3	195.8701	40.27	-11.75	28.52	43.50	-14.98	-	-	peak
4	280.2936	48.16	-8.93	39.23	46.00	-6.77	-	-	peak
5	379.1780	38.41	-6.38	32.03	46.00	-13.97	-	-	peak
6	718.7246	37.01	-0.75	36.26	46.00	-9.74	-	-	peak

802.11a(worst case)			
Test Channel	5785MHz	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	58.0759	38.57	-8.82	29.75	40.00	-10.25	-	-	peak
2	99.0690	41.83	-12.54	29.29	43.50	-14.21	-	-	peak
3	151.0252	32.94	-8.61	24.33	43.50	-19.17	-	-	peak
4	324.8645	38.85	-7.55	31.30	46.00	-14.70	-	-	peak
5	436.3956	39.85	-4.96	34.89	46.00	-11.11	-	-	peak
6	535.0377	39.68	-3.25	36.43	46.00	-9.57	-	-	peak

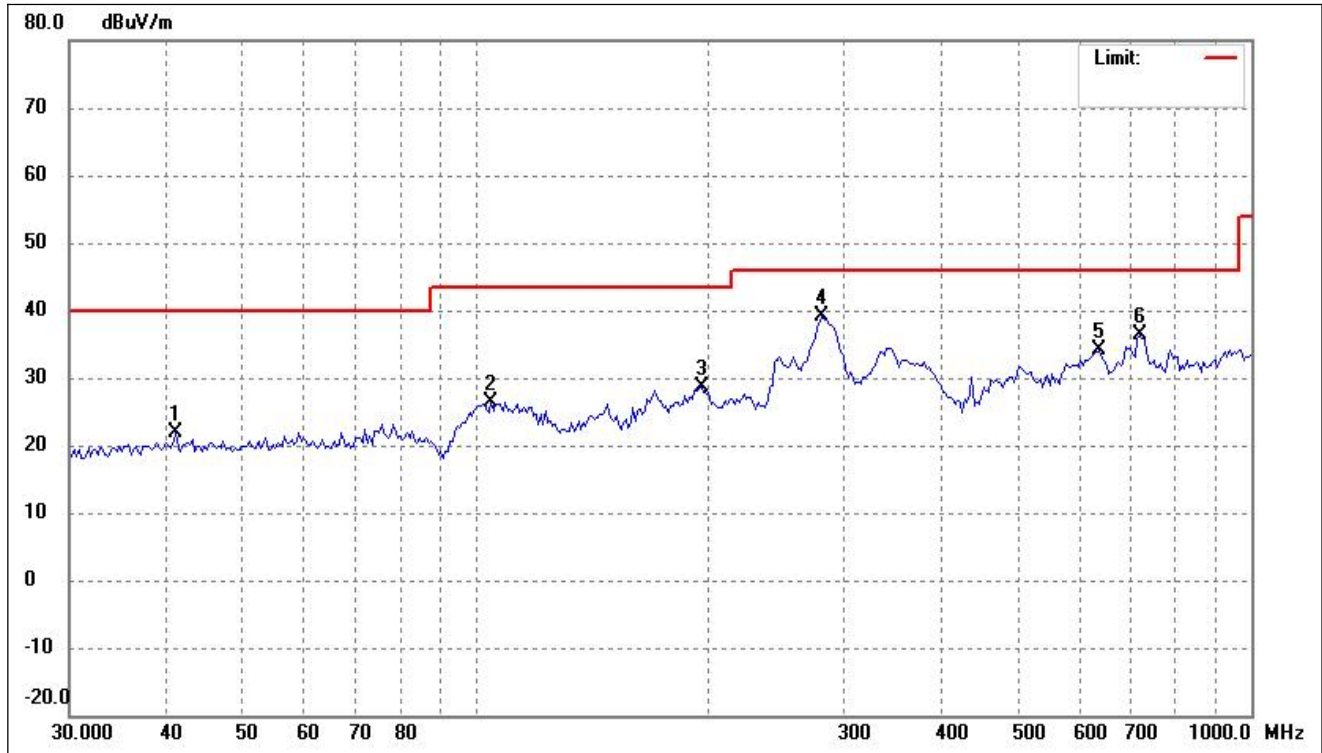
802.11a(worst case)

Test Channel

5825MHz

Polarity:

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	41.1581	30.26	-8.48	21.78	40.00	-18.22	-	-	peak
2	104.7979	38.46	-12.05	26.41	43.50	-17.09	-	-	peak
3	195.8701	40.27	-11.75	28.52	43.50	-14.98	-	-	peak
4	280.2936	48.16	-8.93	39.23	46.00	-6.77	-	-	peak
5	637.7947	35.59	-1.36	34.23	46.00	-11.77	-	-	peak
6	718.7246	37.01	-0.75	36.26	46.00	-9.74	-	-	peak

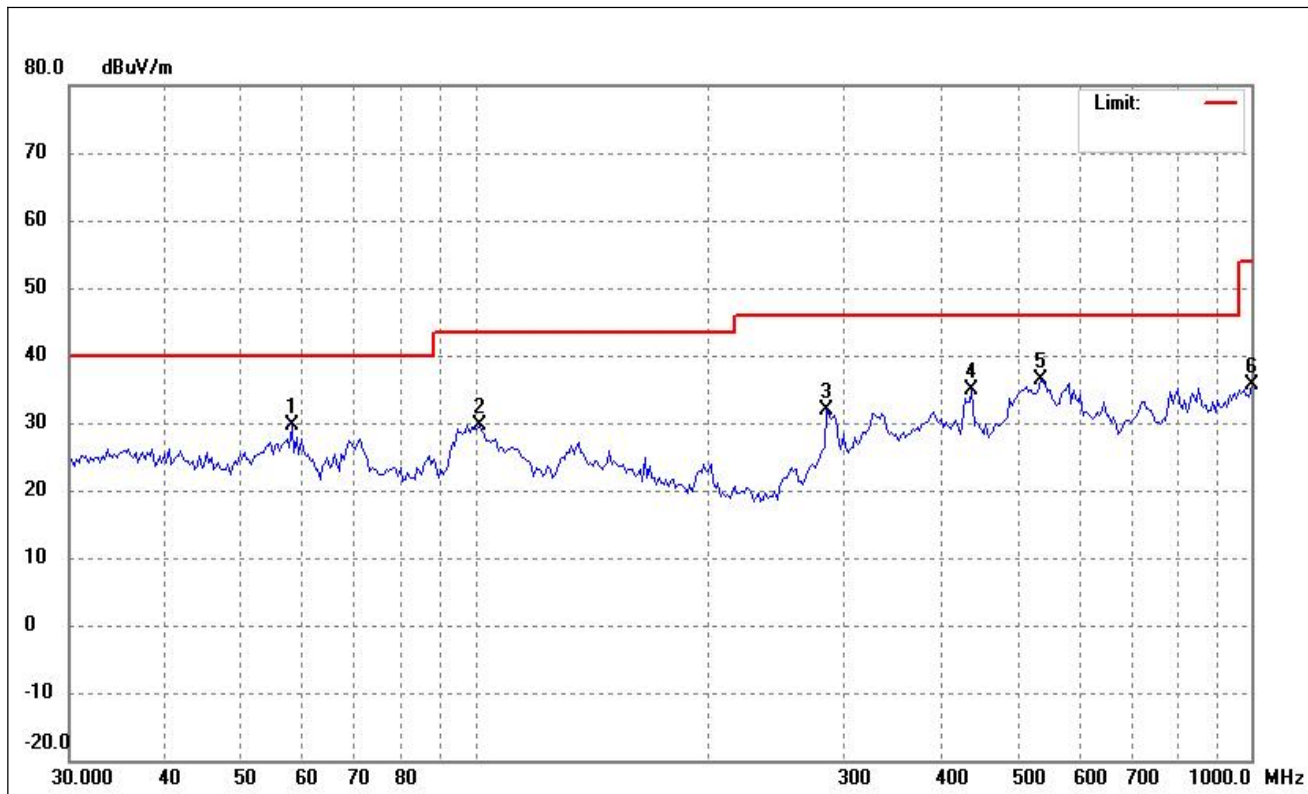
802.11a(worst case)

Test Channel

5825MHz

Polarity:

Vertical

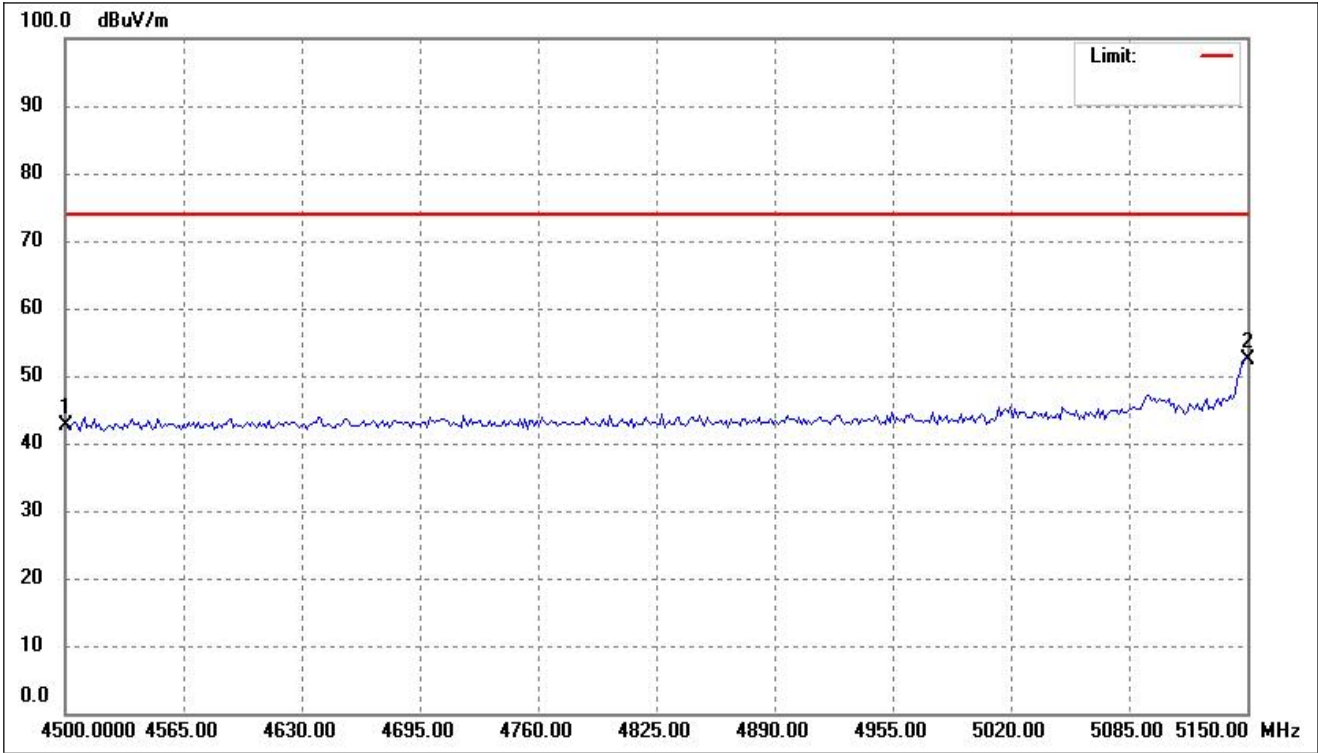


No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	58.0759	38.57	-8.82	29.75	40.00	-10.25	-	-	peak
2	101.1797	41.97	-12.39	29.58	43.50	-13.92	-	-	peak
3	284.2607	40.68	-8.79	31.89	46.00	-14.11	-	-	peak
4	436.3956	39.85	-4.96	34.89	46.00	-11.11	-	-	peak
5	535.0377	39.68	-3.25	36.43	46.00	-9.57	-	-	peak
6	1000.0000	33.44	2.30	35.74	54.00	-18.26	-	-	peak

Remark: '-'Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emission above 1GHz
- Antenna 0(worst case)

802.11a- Restricted Bandedge (worst case)			
Test Channel	band 5.15-5.25GHz	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. ()	Height (cm)	Remark
1	4500.000	55.82	-13.10	42.72	74.00	-31.28	-	-	peak
2	5150.000	64.02	-11.66	52.36	74.00	-21.64	-	-	peak

802.11a- Restricted Bandedge(worst case)			
Test Channel	band 5.15-5.25GHz	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	4500.000	44.26	-13.10	31.16	54.00	-22.84	-	-	AVG
2	5150.000	50.66	-11.66	39.00	54.00	-15.00	-	-	AVG

Note: The Restricted Bandedge was tested in Horizontal /Vertical and the worst case position data was reported.

Remark: '-'Means' the test Degree and Height is not recorded by the test software and only show the worst case in the test report.

- Antenna 0(worst case)
- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11a)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	45.22	7.11	52.33	74	-21.67	H	PK
10360	39.26	7.11	46.37	54	-7.63	H	AV
15540	40.32	8.22	48.54	74	-25.46	H	PK
15540	33.88	8.22	42.10	54	-11.90	H	AV
10360	44.98	7.11	52.09	74	-21.91	V	PK
10360	37.22	7.11	44.33	54	-9.67	V	AV
15540	37.00	8.22	45.22	74	-28.78	V	PK
15540	31.74	8.22	39.96	54	-14.04	V	AV
Middle Channel (5200MHz)							
10400	44.86	7.22	52.08	74	-21.92	H	PK
10400	37.38	7.22	44.60	54	-9.40	H	AV
15600	40.43	8.67	49.10	74	-24.90	H	PK
15600	34.70	8.67	43.37	54	-10.63	H	AV
10400	44.86	7.22	52.08	74	-21.92	V	PK
10400	37.61	7.22	44.83	54	-9.17	V	AV
15600	37.59	8.67	46.26	74	-27.74	V	PK
15600	30.92	8.67	39.59	54	-14.41	V	AV
High Channel (5240MHz)							
10480	44.82	7.69	52.51	74	-21.49	H	PK
10480	38.51	7.69	46.20	54	-7.80	H	AV
15720	39.67	8.93	48.60	74	-25.40	H	PK
15720	34.21	8.93	43.14	54	-10.86	H	AV
10480	44.87	7.69	52.56	74	-21.44	V	PK
10480	38.25	7.69	45.94	54	-8.06	V	AV
15720	38.27	8.93	47.20	74	-26.80	V	PK
15720	30.87	8.93	39.80	54	-14.20	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5745MHz)							
11490	44.69	9.45	54.14	74	-19.86	H	PK
11490	38.86	9.45	48.31	54	-5.69	H	AV
17235	40.26	10.36	50.62	74	-23.38	H	PK
17235	33.58	10.36	43.94	54	-10.06	H	AV
11490	44.69	9.45	54.14	74	-19.86	V	PK
11490	38.13	9.45	47.58	54	-6.42	V	AV
17235	38.43	10.36	48.79	74	-25.21	V	PK
17235	31.06	10.36	41.42	54	-12.58	V	AV
Middle Channel (5785MHz)							
11570	44.94	9.62	54.56	74	-19.44	H	PK
11570	37.45	9.62	47.07	54	-6.93	H	AV
17355	39.45	10.67	50.12	74	-23.88	H	PK
17355	35.05	10.67	45.72	54	-8.28	H	AV
11570	44.81	9.62	54.43	74	-19.57	V	PK
11570	37.00	9.62	46.62	54	-7.38	V	AV
17355	37.17	10.67	47.84	74	-26.16	V	PK
17355	30.80	10.67	41.47	54	-12.53	V	AV
High Channel (5825MHz)							
11650	45.12	9.84	54.96	74	-19.04	H	PK
11650	39.16	9.84	49.00	54	-5.00	H	AV
17475	39.72	10.95	50.67	74	-23.33	H	PK
17475	34.94	10.95	45.89	54	-8.11	H	AV
11650	45.17	9.84	55.01	74	-18.99	V	PK
11650	37.90	9.84	47.74	54	-6.26	V	AV
17475	38.56	10.95	49.51	74	-24.49	V	PK
17475	31.08	10.95	42.03	54	-11.97	V	AV

➤ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-34.78	-27
Highest	Above 5350	-41.98	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-46.24	-27
	5650 to 5700	-34.14	-27 to -17
	5700 to 5720	-28.18	-17 to 15.6
	5720 to 5725	-17.74	15.6 to 27
Highest	5850 to 5855	-15.57	27 to 15.6
	5855 to 5875	-23.07	15.6 to -17
	5875 to 5925	-33.49	-17 to -27
	Above 5925	-38.64	-27
Note: the data just list the worst cases			

- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11n HT20)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	45.21	7.11	52.32	74	-21.68	H	PK
10360	37.32	7.11	44.43	54	-9.57	H	AV
15540	38.80	8.22	47.02	74	-26.98	H	PK
15540	34.92	8.22	43.14	54	-10.86	H	AV
10360	44.68	7.11	51.79	74	-22.21	V	PK
10360	37.90	7.11	45.01	54	-8.99	V	AV
15540	37.43	8.22	45.65	74	-28.35	V	PK
15540	31.13	8.22	39.35	54	-14.65	V	AV
Middle Channel (5200MHz)							
10400	44.61	7.22	51.83	74	-22.17	H	PK
10400	38.21	7.22	45.43	54	-8.57	H	AV
15600	38.67	8.67	47.34	74	-26.66	H	PK
15600	35.37	8.67	44.04	54	-9.96	H	AV
10400	44.56	7.22	51.78	74	-22.22	V	PK
10400	36.01	7.22	43.23	54	-10.77	V	AV
15600	37.02	8.67	45.69	74	-28.31	V	PK
15600	30.28	8.67	38.95	54	-15.05	V	AV
High Channel (5240MHz)							
10480	44.24	7.69	51.93	74	-22.07	H	PK
10480	37.06	7.69	44.75	54	-9.25	H	AV
15720	38.98	8.93	47.91	74	-26.09	H	PK
15720	34.91	8.93	43.84	54	-10.16	H	AV
10480	44.15	7.69	51.84	74	-22.16	V	PK
10480	37.73	7.69	45.42	54	-8.58	V	AV
15720	36.21	8.93	45.14	74	-28.86	V	PK
15720	30.38	8.93	39.31	54	-14.69	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5745MHz)							
11490	44.52	9.45	53.97	74	-20.03	H	PK
11490	38.29	9.45	47.74	54	-6.26	H	AV
17235	38.81	10.36	49.17	74	-24.83	H	PK
17235	35.94	10.36	46.30	54	-7.70	H	AV
11490	44.34	9.45	53.79	74	-20.21	V	PK
11490	37.27	9.45	46.72	54	-7.28	V	AV
17235	37.97	10.36	48.33	74	-25.67	V	PK
17235	29.88	10.36	40.24	54	-13.76	V	AV
Middle Channel (5785MHz)							
11570	45.47	9.62	55.09	74	-18.91	H	PK
11570	38.24	9.62	47.86	54	-6.14	H	AV
17355	39.42	10.67	50.09	74	-23.91	H	PK
17355	34.12	10.67	44.79	54	-9.21	H	AV
11570	44.44	9.62	54.06	74	-19.94	V	PK
11570	37.96	9.62	47.58	54	-6.42	V	AV
17355	36.19	10.67	46.86	74	-27.14	V	PK
17355	31.45	10.67	42.12	54	-11.88	V	AV
High Channel (5825MHz)							
11650	44.04	9.84	53.88	74	-20.12	H	PK
11650	36.54	9.84	46.38	54	-7.62	H	AV
17475	38.50	10.95	49.45	74	-24.55	H	PK
17475	34.80	10.95	45.75	54	-8.25	H	AV
11650	44.03	9.84	53.87	74	-20.13	V	PK
11650	36.23	9.84	46.07	54	-7.93	V	AV
17475	36.51	10.95	47.46	74	-26.54	V	PK
17475	30.40	10.95	41.35	54	-12.65	V	AV

➤ Out of Band edge 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-30.48	-27
Highest	Above 5350	-39.78	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-49.64	-27
	5650 to 5700	-38.00	-27 to -17
	5700 to 5720	-26.68	-17 to 15.6
	5720 to 5725	-18.88	15.6 to 27
Highest	5850 to 5855	-14.84	27 to 15.6
	5855 to 5875	-27.97	15.6 to -17
	5875 to 5925	-34.71	-17 to -27
	Above 5925	-42.49	-27
Note: the data just list the worst cases			

- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11ac-VHT20)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	45.85	7.11	52.96	74	-21.04	H	PK
10360	38.27	7.11	45.38	54	-8.62	H	AV
15540	39.87	8.22	48.09	74	-25.91	H	PK
15540	35.89	8.22	44.11	54	-9.89	H	AV
10360	43.97	7.11	51.08	74	-22.92	V	PK
10360	37.93	7.11	45.04	54	-8.96	V	AV
15540	37.75	8.22	45.97	74	-28.03	V	PK
15540	29.80	8.22	38.02	54	-15.98	V	PK
Middle Channel (5200MHz)							
10400	45.44	7.22	52.66	74	-21.34	H	PK
10400	36.97	7.22	44.19	54	-9.81	H	AV
15600	40.29	8.67	48.96	74	-25.04	H	PK
15600	35.13	8.67	43.80	54	-10.20	H	AV
10400	45.27	7.22	52.49	74	-21.51	V	PK
10400	37.20	7.22	44.42	54	-9.58	V	AV
15600	37.26	8.67	45.93	74	-28.07	V	PK
15600	30.03	8.67	38.70	54	-15.30	V	PK
High Channel (5240MHz)							
10480	44.21	7.69	51.90	74	-22.10	H	PK
10480	38.25	7.69	45.94	54	-8.06	H	AV
15720	39.46	8.93	48.39	74	-25.61	H	PK
15720	34.16	8.93	43.09	54	-10.91	H	AV
10480	44.45	7.69	52.14	74	-21.86	V	PK
10480	37.31	7.69	45.00	54	-9.00	V	AV
15720	37.94	8.93	46.87	74	-27.13	V	PK
15720	31.26	8.93	40.19	54	-13.81	V	PK

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5745MHz)							
11490	44.11	9.45	53.56	74	-20.44	H	PK
11490	37.37	9.45	46.82	54	-7.18	H	AV
17235	39.93	10.36	50.29	74	-23.71	H	PK
17235	35.80	10.36	46.16	54	-7.84	H	AV
11490	44.80	9.45	54.25	74	-19.75	V	PK
11490	36.88	9.45	46.33	54	-7.67	V	AV
11490	37.89	9.45	47.34	74	-26.66	V	PK
17235	30.14	10.36	40.50	54	-13.50	V	PK
Middle Channel (5785MHz)							
11570	45.57	9.62	55.19	74	-18.81	H	PK
11570	38.08	9.62	47.70	54	-6.30	H	AV
17355	39.43	10.67	50.10	74	-23.90	H	PK
17355	34.93	10.67	45.60	54	-8.40	H	AV
11570	45.66	9.62	55.28	74	-18.72	V	PK
11570	36.60	9.62	46.22	54	-7.78	V	AV
17355	36.59	10.67	47.26	74	-26.74	V	PK
17355	31.78	10.67	42.45	54	-11.55	V	PK
High Channel (5825MHz)							
11650	44.63	9.84	54.47	74	-19.53	H	PK
11650	36.93	9.84	46.77	54	-7.23	H	AV
17475	39.61	10.95	50.56	74	-23.44	H	PK
17475	35.88	10.95	46.83	54	-7.17	H	AV
11650	44.85	9.84	54.69	74	-19.31	V	PK
11650	37.88	9.84	47.72	54	-6.28	V	AV
17475	36.77	10.95	47.72	74	-26.28	V	PK
17475	31.75	10.95	42.70	54	-11.30	V	PK

➤ Out of Band edge 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-29.44	-27
Highest	Above 5350	-37.72	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-46.07	-27
	5650 to 5700	-40.22	-27 to -17
	5700 to 5720	-25.33	-17 to 15.6
	5720 to 5725	-18.62	15.6 to 27
Highest	5850 to 5855	-13.03	27 to 15.6
	5855 to 5875	-24.03	15.6 to -17
	5875 to 5925	-37.34	-17 to -27
	Above 5925	-39.12	-27
Note: the data just list the worst cases			

- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11n HT40)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5190MHz)							
10380	44.34	7.25	51.59	74	-22.41	H	PK
10380	37.92	7.25	45.17	54	-8.83	H	AV
15570	39.39	8.33	47.72	74	-26.28	H	PK
15570	34.61	8.33	42.94	54	-11.06	H	AV
10380	44.27	7.25	51.52	74	-22.48	V	PK
10380	37.17	7.25	44.42	54	-9.58	V	AV
15570	37.45	8.33	45.78	74	-28.22	V	PK
15570	31.00	8.33	39.33	54	-14.67	V	PK
High Channel (5230MHz)							
10460	44.76	7.54	52.30	74	-21.70	H	PK
10460	37.31	7.54	44.85	54	-9.15	H	AV
15690	39.81	8.86	48.67	74	-25.33	H	PK
15690	34.86	8.86	43.72	54	-10.28	H	AV
10460	45.70	7.54	53.24	74	-20.76	V	PK
10460	37.79	7.54	45.33	54	-8.67	V	AV
15690	36.22	8.86	45.08	74	-28.92	V	PK
15690	30.75	8.86	39.61	54	-14.39	V	PK

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5755MHz)							
11510	45.01	9.65	54.66	74	-19.34	H	PK
11510	38.10	9.65	47.75	54	-6.25	H	AV
17265	38.51	10.87	49.38	74	-24.62	H	PK
17265	34.74	10.87	45.61	54	-8.39	H	AV
11510	45.35	9.65	55.00	74	-19.00	V	PK
11510	37.05	9.65	46.70	54	-7.30	V	AV
17265	37.00	10.87	47.87	74	-26.13	V	PK
17265	30.08	10.87	40.95	54	-13.05	V	AV
High Channel (5795MHz)							
11590	44.03	9.81	53.84	74	-20.16	H	PK
11590	37.23	9.81	47.04	54	-6.96	H	AV
17385	39.57	10.89	50.46	74	-23.54	H	PK
17385	35.60	10.89	46.49	54	-7.51	H	AV
11590	44.51	9.81	54.32	74	-19.68	V	PK
11590	36.91	9.81	46.72	54	-7.28	V	AV
17385	37.07	10.89	47.96	74	-26.04	V	PK
17385	30.50	10.89	41.39	54	-12.61	V	AV

➤ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-38.24	-27
Highest	Above 5350	-41.15	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-48.83	-27
	5650 to 5700	-36.96	-27 to -17
	5700 to 5720	-23.52	-17 to 15.6
	5720 to 5725	-16.34	15.6 to 27
Highest	5850 to 5855	-13.81	27 to 15.6
	5855 to 5875	-25.31	15.6 to -17
	5875 to 5925	-35.32	-17 to -27
	Above 5925	-38.33	-27
Note: the data just list the worst cases			

- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11ac-VHT40)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5190MHz)							
10380	44.18	7.25	51.43	74	-22.57	H	PK
10380	38.18	7.25	45.43	54	-8.57	H	AV
15570	39.55	8.33	47.88	74	-26.12	H	PK
15570	34.91	8.33	43.24	54	-10.76	H	AV
10380	44.44	7.25	51.69	74	-22.31	V	PK
10380	36.29	7.25	43.54	54	-10.46	V	AV
15570	37.18	8.33	45.51	74	-28.49	V	PK
15570	30.27	8.33	38.60	54	-15.40	V	AV
High Channel (5230MHz)							
10460	45.04	7.54	52.58	74	-21.42	H	PK
10460	37.56	7.54	45.10	54	-8.90	H	AV
15690	40.33	8.86	49.19	74	-24.81	H	PK
15690	35.93	8.86	44.79	54	-9.21	H	AV
10460	45.63	7.54	53.17	74	-20.83	V	PK
10460	36.95	7.54	44.49	54	-9.51	V	AV
15690	36.95	8.86	45.81	74	-28.19	V	PK
15690	30.96	8.86	39.82	54	-14.18	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5755MHz)							
11510	45.45	9.65	55.10	74	-18.90	H	PK
11510	36.69	9.65	46.34	54	-7.66	H	AV
17265	39.86	10.87	50.73	74	-23.27	H	PK
17265	34.98	10.87	45.85	54	-8.15	H	AV
11510	44.25	9.65	53.90	74	-20.10	V	PK
11510	36.03	9.65	45.68	54	-8.32	V	AV
17265	37.82	10.87	48.69	74	-25.31	V	PK
17265	30.71	10.87	41.58	54	-12.42	V	AV
High Channel (5795MHz)							
11590	44.89	9.81	54.70	74	-19.30	H	PK
11590	36.48	9.81	46.29	54	-7.71	H	AV
17385	40.13	10.89	51.02	74	-22.98	H	PK
17385	35.71	10.89	46.60	54	-7.40	H	AV
11590	45.03	9.81	54.84	74	-19.16	V	PK
11590	36.66	9.81	46.47	54	-7.53	V	AV
17385	37.91	10.89	48.80	74	-25.20	V	PK
17385	31.20	10.89	42.09	54	-11.91	V	AV

➤ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-36.90	-27
Highest	Above 5350	-41.25	-27

Note: the data just list the worst cases

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-50.64	-27
	5650 to 5700	-39.92	-27 to -17
	5700 to 5720	-28.24	-17 to 15.6
	5720 to 5725	-16.12	15.6 to 27
Highest	5850 to 5855	-12.00	27 to 15.6
	5855 to 5875	-26.11	15.6 to -17
	5875 to 5925	-35.12	-17 to -27
	Above 5925	-38.53	-27

Note: the data just list the worst cases

- For the frequency band 5.150-5.250GHz, 5.725-5.850GHz (802.11ac-VHT80)
- Harmonics And Spurious Emissions

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Middle Channel (5210MHz)							
10380	43.77	7.25	51.02	74	-22.98	H	PK
10380	36.84	7.25	44.09	54	-9.91	H	AV
15570	38.85	8.33	47.18	74	-26.82	H	PK
15570	33.65	8.33	41.98	54	-12.02	H	AV
10380	43.46	7.25	50.71	74	-23.29	V	PK
10380	36.71	7.25	43.96	54	-10.04	V	AV
15570	36.71	8.33	45.04	74	-28.96	V	PK
15570	30.38	8.33	38.71	54	-15.29	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Middle Channel (5775MHz)							
11510	43.27	9.65	52.92	74	-21.08	H	PK
11510	35.94	9.65	45.59	54	-8.41	H	AV
17265	39.27	10.87	50.14	74	-23.86	H	PK
17265	34.87	10.87	45.74	54	-8.26	H	AV
11510	43.79	9.65	53.44	74	-20.56	V	PK
11510	35.74	9.65	45.39	54	-8.61	V	AV
17265	37.12	10.87	47.99	74	-26.01	V	PK
17265	30.00	10.87	40.87	54	-13.13	V	AV

➤ Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-38.29	-27
Highest	Above 5350	-44.81	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5650	-43.04	-27
	5650 to 5700	-38.24	-27 to -17
	5700 to 5720	-30.91	-17 to 15.6
	5720 to 5725	-17.16	15.6 to 27
Highest	5850 to 5855	-14.66	27 to 15.6
	5855 to 5875	-23.94	15.6 to -17
	5875 to 5925	-35.79	-17 to -27
	Above 5925	-36.19	-27
Note: the data just list the worst cases			

Note: Testing is carried out with frequency rang 9kHz to 40GHz, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

9. Frequency Stability

9.1 Standard Applicable

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

9.2 Test Procedure

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode.

9.3 Summary of Test Results/Plots

Please refer to Appendix D

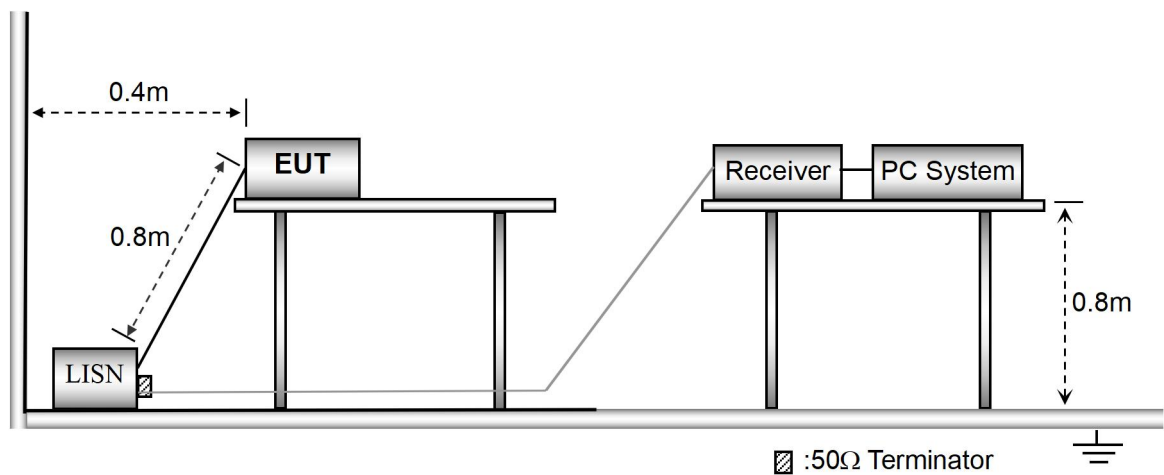
10 Conducted Emissions

10.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.

10.2 Basic Test Setup Block Diagram



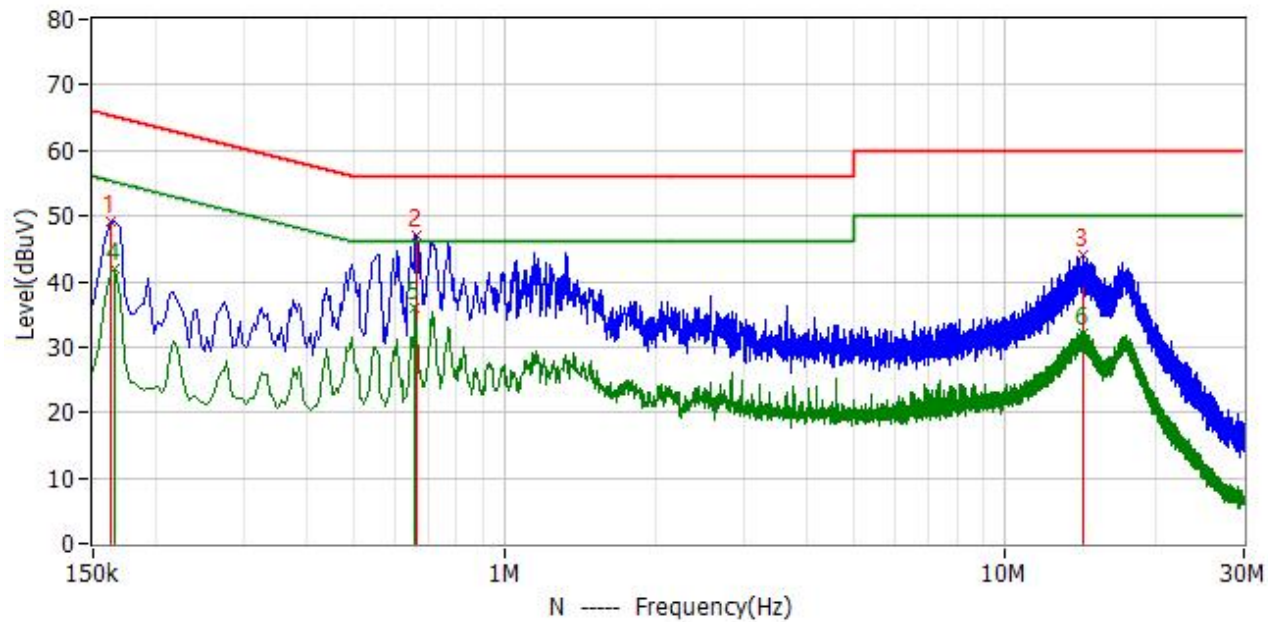
10.3 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency.....	150kHz
Stop Frequency.....	30MHz
Sweep Speed.....	Auto
IF Bandwidth.....	10kHz
Quasi-Peak Adapter Bandwidth.....	9kHz
Quasi-Peak Adapter Mode.....	Normal

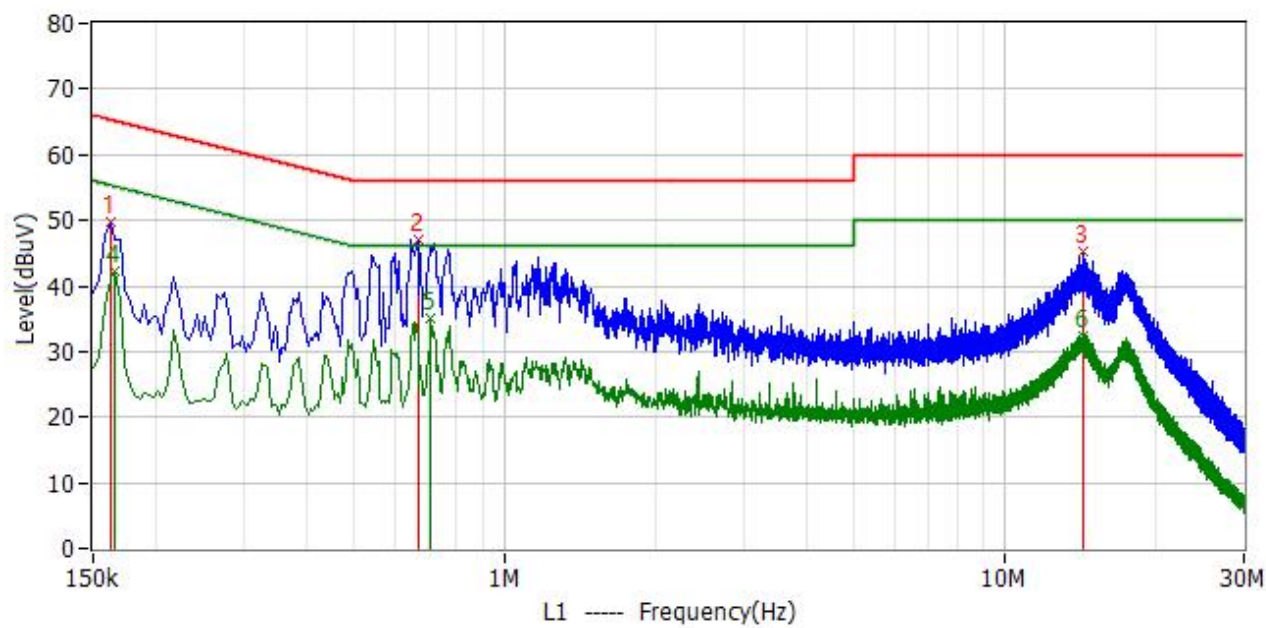
10.4 Summary of Test Results/Plots

Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
-----------	---------------	-------------	-----------	---------



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector
1*	162.000kHz	39.4	9.7	49.1	65.4	-16.3	PK
2*	666.000kHz	37.3	9.7	47.0	56.0	-9.0	PK
3*	14.374MHz	34.2	9.7	43.9	60.0	-16.1	PK
4*	166.000kHz	32.1	9.7	41.8	55.2	-13.3	AV
5*	662.000kHz	26.4	9.7	36.1	46.0	-9.9	AV
6*	14.374MHz	22.5	9.7	32.2	50.0	-17.8	AV

Test Mode	Communication	AC120V 60Hz	Polarity:	Line
-----------	---------------	-------------	-----------	------



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector
1*	162.000kHz	39.7	9.9	49.6	65.4	-15.8	PK
2*	670.000kHz	37.3	9.7	47.0	56.0	-9.0	PK
3*	14.302MHz	35.4	9.7	45.1	60.0	-14.9	PK
4*	166.000kHz	32.5	9.8	42.3	55.2	-12.9	AV
5*	710.000kHz	25.2	9.8	35.0	46.0	-11.0	AV
6*	14.302MHz	22.8	9.7	32.5	50.0	-17.5	AV

APPENDIX SUMMARY

Project No.	WTH24X03062202W	Test Engineer	Timi Huang
Start date	2024/4/13	Finish date	2024/4/13
Temperature	24℃	Humidity	52%
RF specifications	U-NII		

APPENDIX	Description of Test Item	Result
A	Power Spectral Density	Compliant
B	Emission Bandwidth and Occupied Bandwidth	Compliant
C	Maximum Conducted Output Power	Compliant
D	Frequency Stability	Compliant

APPENDIX A

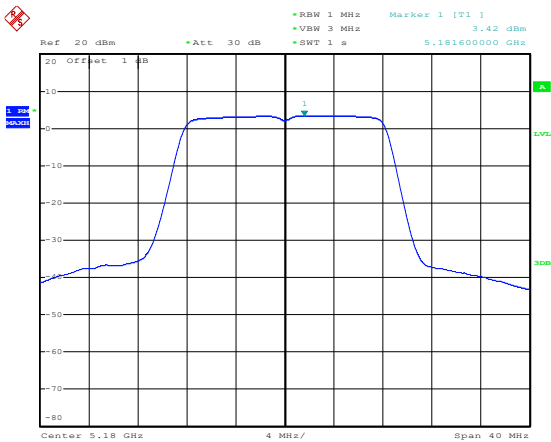
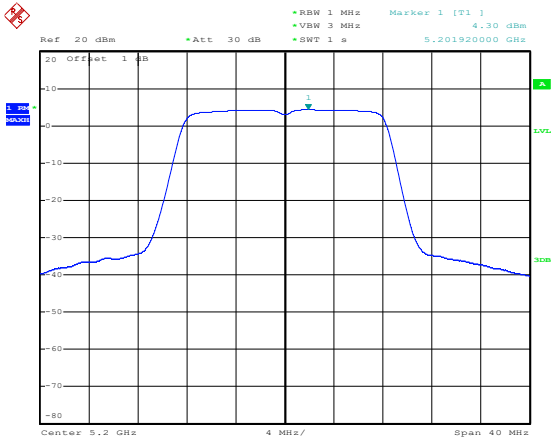
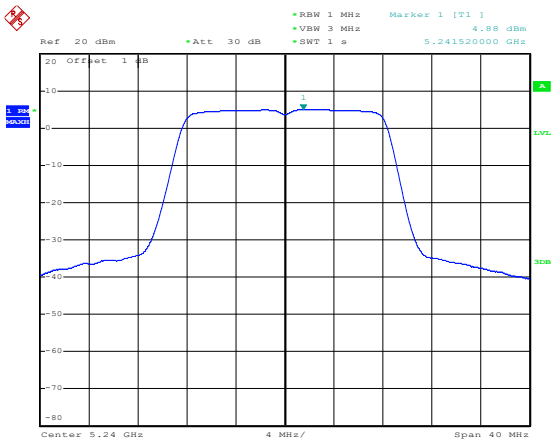
Power Spectral Density					
U-NII-1:5150-5250MHz					
Operating mode	Test Channel	ANT 0 dBm/MHz	ANT 1 dBm/MHz	Total dBm/MHz	Limit (dBm/MHz)
802.11a	5180	3.42	4.85	/	11
	5200	4.30	5.33	/	11
	5240	4.88	5.10	/	11
802.11n-HT20	5180	3.53	3.34	6.45	11
	5200	3.41	3.67	6.55	11
	5240	3.07	3.88	6.50	11
802.11n-HT40	5190	0.82	1.13	3.99	11
	5230	1.29	0.96	4.14	11
802.11ac-VHT20	5180	3.44	3.43	6.45	11
	5200	3.58	3.86	6.73	11
	5240	3.23	4.16	6.73	11
802.11ac-VHT40	5190	0.79	1.16	3.99	11
	5230	1.16	1.01	4.10	11
802.11ac-VHT80	5210	-1.60	-1.55	1.44	11

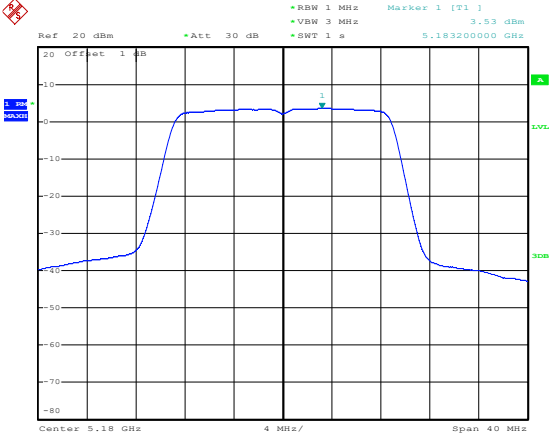
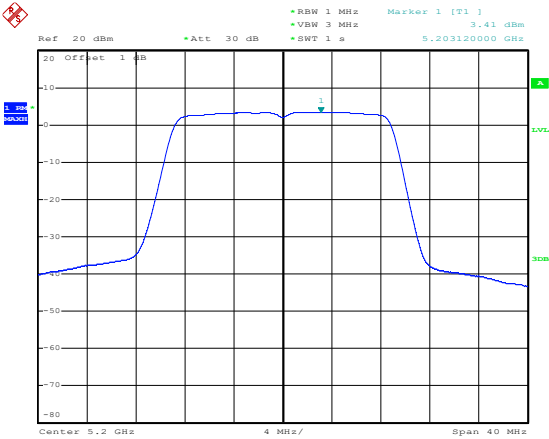
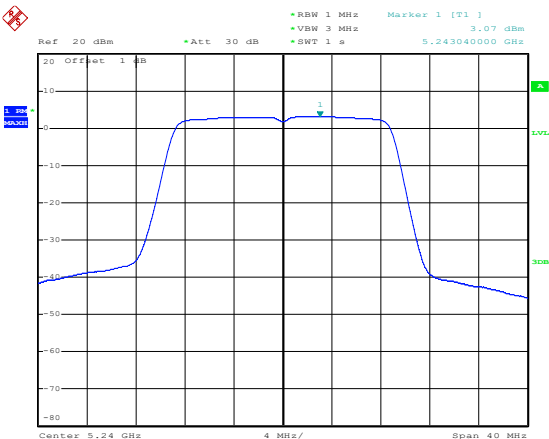
Power Spectral Density							
U-NII-3: 5725-5850MHz							
Operating mode	Test Channel	ANT 0 dBm/300kHz	ANT 1 dBm/300kHz	Factor	ANT 0 dBm/500kHz*	ANT 1 dBm/500kHz*	Limit dBm/500kHz
802.11a	5745	0.80	0.13	2.22	3.02	2.35	30
	5785	1.03	-0.30	2.22	3.25	1.92	30
	5825	-0.00	-0.11	2.22	2.22	2.11	30
*Note: Maximum PSD=PSD(dBm/300kHz)+10log(500kHz/300kHz)=2.22							

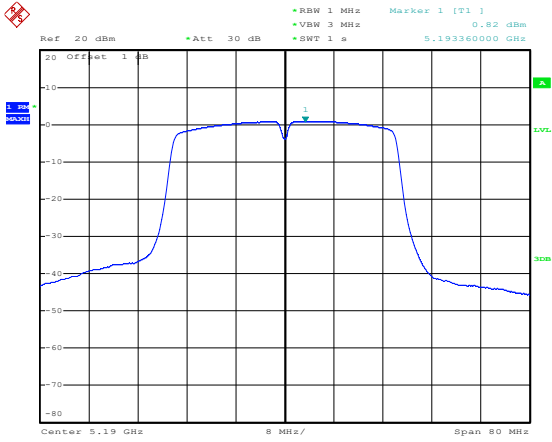
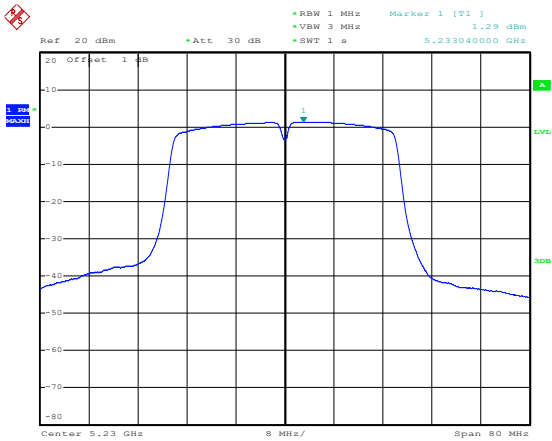
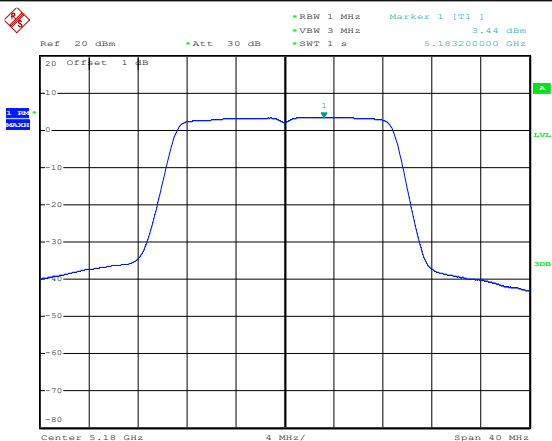
Power Spectral Density						
U-NII-3: 5725-5850MHz						
Operating mode	Test Channel	ANT 0 dBm/300kHz	ANT 1 dBm/300kHz	Factor	Total dBm/500kHz*	Limit dBm/500kHz
802.11n-HT20	5745	-0.61	-1.06	2.22	4.40	30
	5785	-1.45	-1.65	2.22	3.68	30
	5825	-1.58	-1.58	2.22	3.65	30
802.11n-HT40	5755	-3.27	-3.51	2.22	1.84	30
	5795	-3.26	-3.72	2.22	1.75	30

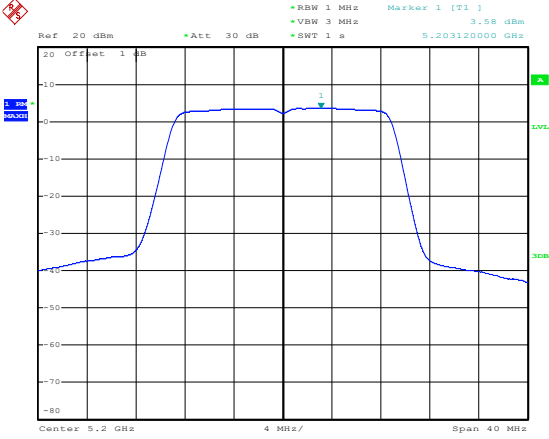
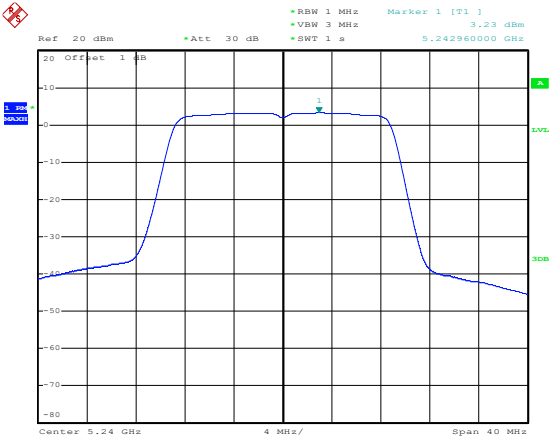
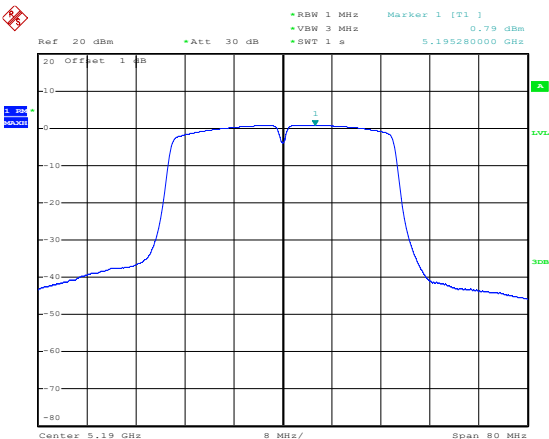
802.11ac-VHT 20	5745	-0.55	-0.91	2.22	4.50	30
	5785	-1.32	-1.57	2.22	3.79	30
	5825	-1.33	-1.44	2.22	3.85	30
802.11ac-VHT 40	5755	-3.28	-3.35	2.22	1.92	30
	5795	-3.26	-3.69	2.22	1.76	30
802.11ac-VHT 80	5775	-6.27	-6.45	2.22	-1.13	30
*Note: Maximum PSD=PSD(dBm/300kHz)+10log(500kHz/300kHz)=2.22						

ANT 0
5150-5250MHz

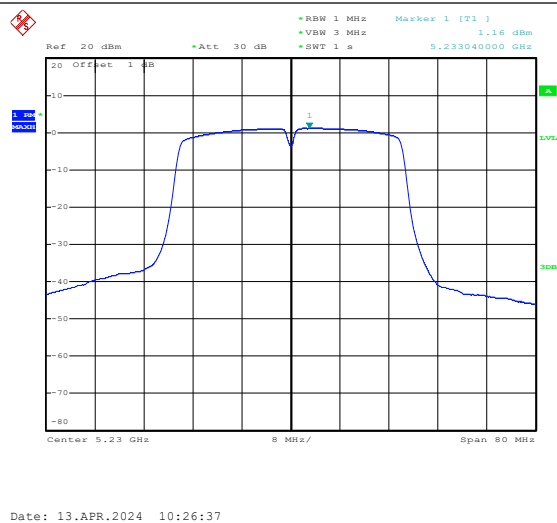
802.11a-Low	 Date: 13.APR.2024 10:19:57
802.11a-Middle	 Date: 13.APR.2024 10:21:24
802.11a-High	 Date: 13.APR.2024 10:21:48

802.11n-HT20-Low	 Date: 13.APR.2024 10:23:24
802.11n-HT20-Middle	 Date: 13.APR.2024 10:23:03
802.11n-HT20-High	 Date: 13.APR.2024 10:22:34

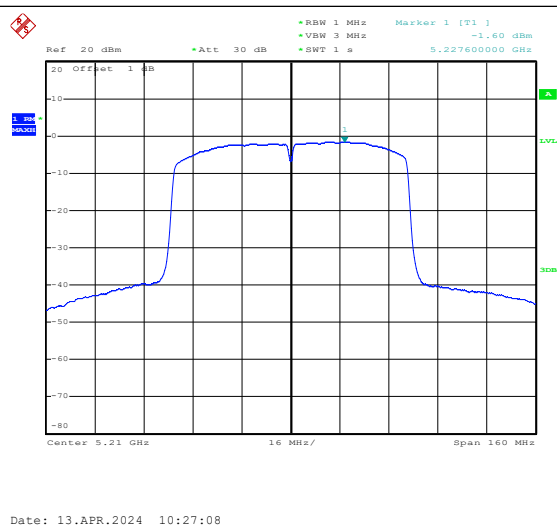
802.11n-HT40-Low	 Ref: 20 dBm *Att: 30 dB *RBW: 1 MHz *VBW: 3 MHz *SWT: 1 s Marker 1 [T1] 0.92 dBm 5.193360000 GHz Center 5.19 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 10:25:00
802.11n-HT40-High	 Ref: 20 dBm *Att: 30 dB *RBW: 1 MHz *VBW: 3 MHz *SWT: 1 s Marker 1 [T1] 1.29 dBm 5.233040000 GHz Center 5.23 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 10:25:28
802.11ac-VHT20-Low	 Ref: 20 dBm *Att: 30 dB *RBW: 1 MHz *VBW: 3 MHz *SWT: 1 s Marker 1 [T1] 3.44 dBm 5.183200000 GHz Center 5.18 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 10:23:41

802.11ac-VHT20-Middle	 Date: 13.APR.2024 10:24:04
802.11ac-VHT20-High	 Date: 13.APR.2024 10:24:25
802.11ac-VHT40-Low	 Date: 13.APR.2024 10:26:10

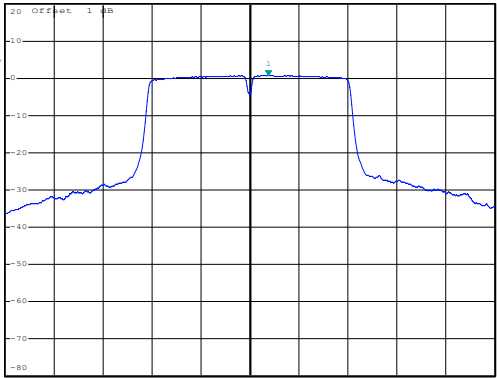
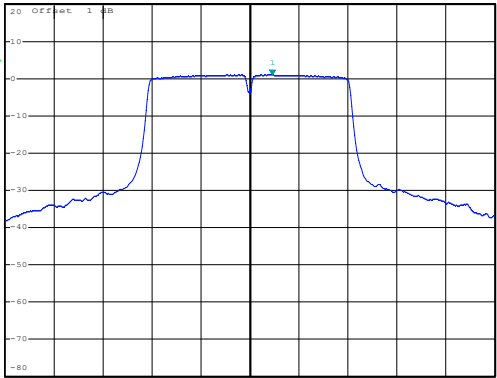
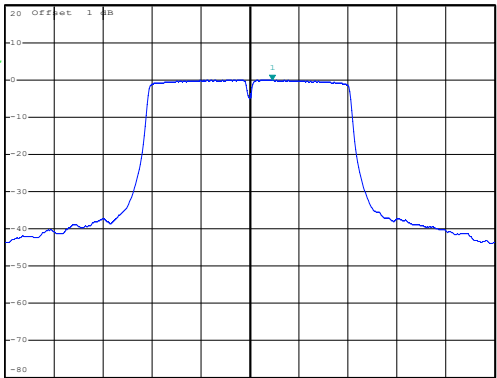
802.11ac-VHT40-High

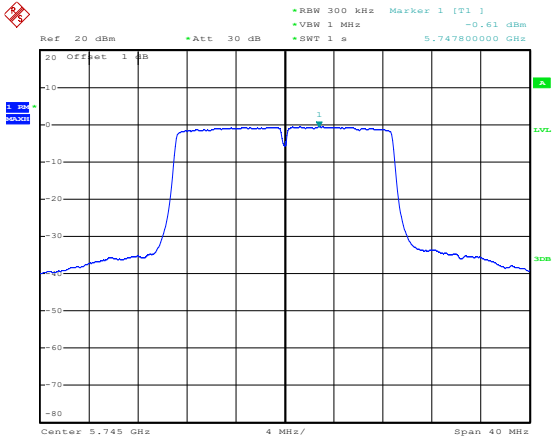
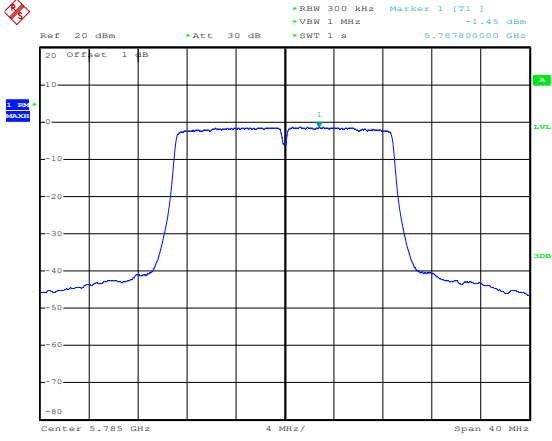
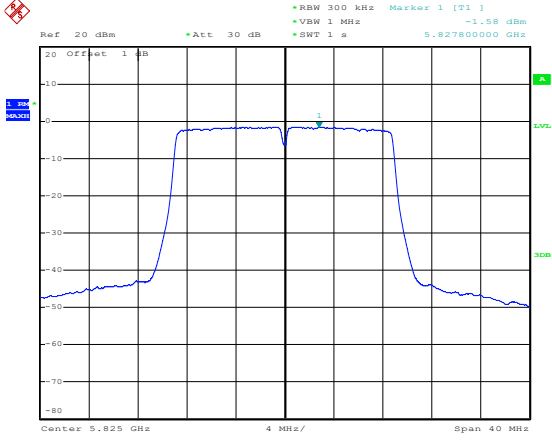


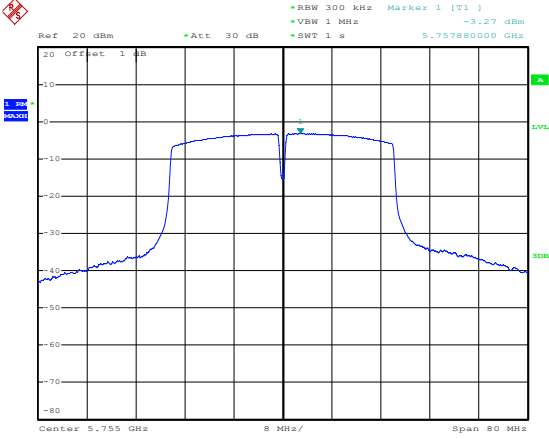
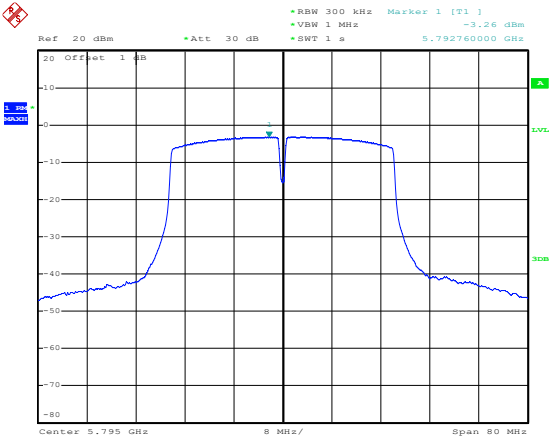
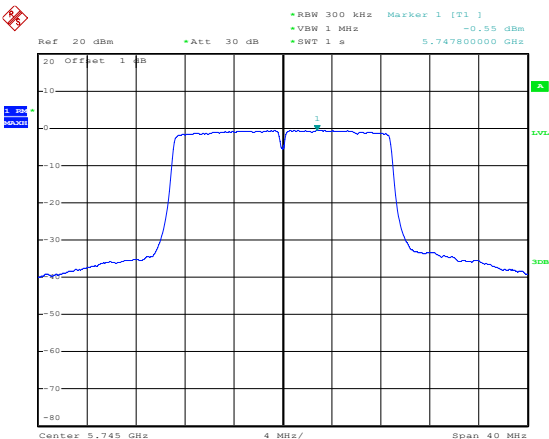
802.11ac-VHT80

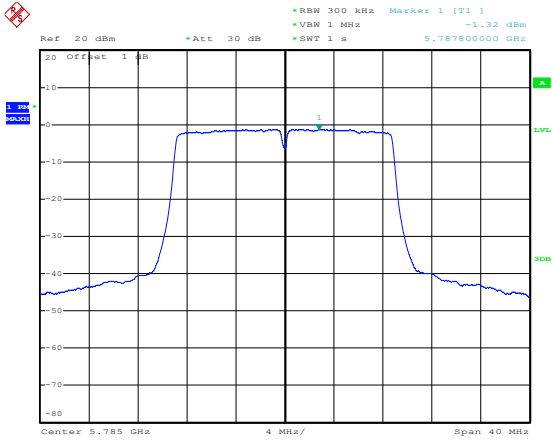
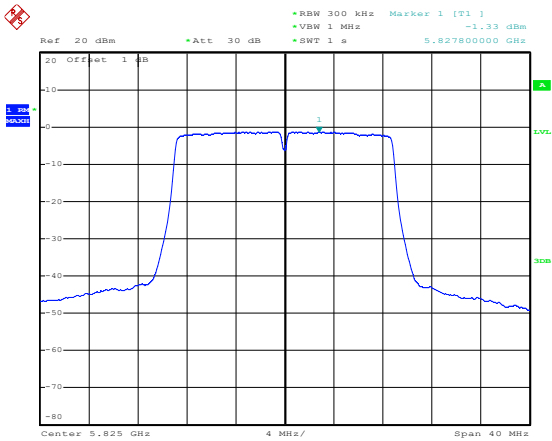
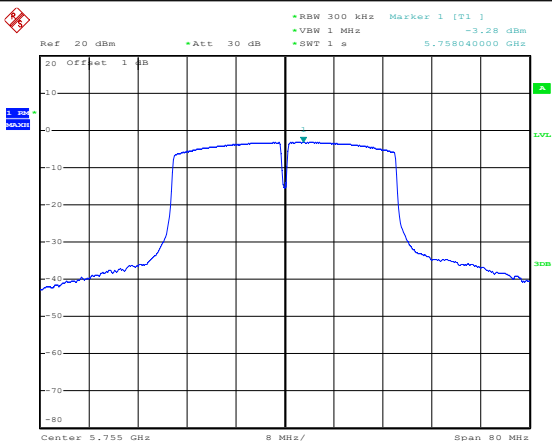


5725-5850MHz

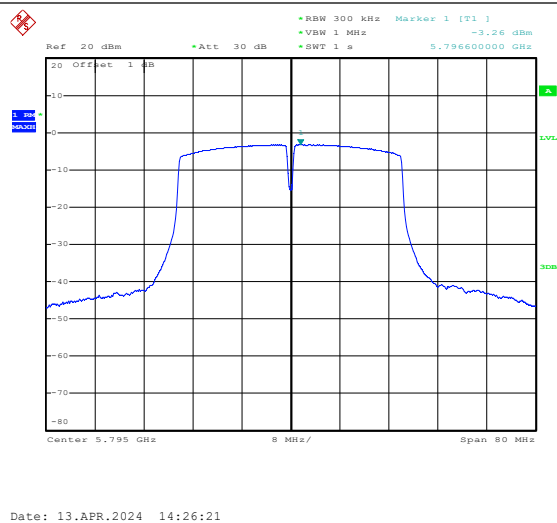
802.11a-Low	 Ref: 20 dBm *Att: 30 dB RBW: 300 kHz Marker 1 [T1]: 0.80 dBm VBW: 1 MHz *SWT: 1 s Center: 5.745 GHz Span: 40 MHz Date: 13.APR.2024 11:06:23
802.11a-Middle	 Ref: 20 dBm *Att: 30 dB RBW: 300 kHz Marker 1 [T1]: 1.03 dBm VBW: 1 MHz *SWT: 1 s Center: 5.785 GHz Span: 40 MHz Date: 13.APR.2024 14:20:34
802.11a-High	 Ref: 20 dBm *Att: 30 dB RBW: 300 kHz Marker 1 [T1]: -0.00 dBm VBW: 1 MHz *SWT: 1 s Center: 5.825 GHz Span: 40 MHz Date: 13.APR.2024 14:22:25

802.11n-HT20-Low	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -0.61 dBm *VSW 1 MHz *SWT 1 s 5.747800000 GHz 20 Offset 1 dB Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:23:40
802.11n-HT20-Middle	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -1.45 dBm *VSW 1 MHz *SWT 1 s 5.787800000 GHz 20 Offset 1 dB Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:23:16
802.11n-HT20-High	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -1.58 dBm *VSW 1 MHz *SWT 1 s 5.827800000 GHz 20 Offset 1 dB Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:22:51

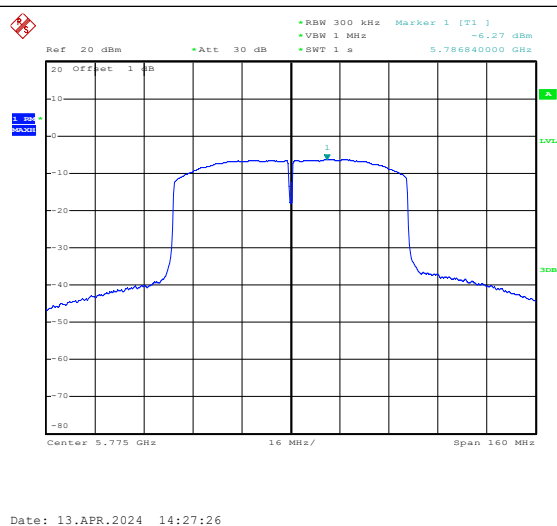
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802.11n-HT40-High	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -3.26 dBm *VSW 1 MHz *SWT 1 s 5.792760000 GHz 20 Offset 1 dB Center 5.795 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 14:26:02
802.11ac-VHT20-Low	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -0.55 dBm *VSW 1 MHz *SWT 1 s 5.747880000 GHz 20 Offset 1 dB Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:23:58

802.11ac-VHT20-Middle	 Ref: 20 dBm *Att: 30 dB *RBW: 300 kHz Marker 1 [T1] -1.32 dBm *VSW: 1 MHz *SWT: 1 s 5.787800000 GHz 20 Offset 1 dB Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:24:19
802.11ac-VHT20-High	 Ref: 20 dBm *Att: 30 dB *RBW: 300 kHz Marker 1 [T1] -1.33 dBm *VSW: 1 MHz *SWT: 1 s 5.827800000 GHz 20 Offset 1 dB Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:24:42
802.11ac-VHT40-Low	 Ref: 20 dBm *Att: 30 dB *RBW: 300 kHz Marker 1 [T1] -3.28 dBm *VSW: 1 MHz *SWT: 1 s 5.758040000 GHz 20 Offset 1 dB Center 5.755 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 14:26:48

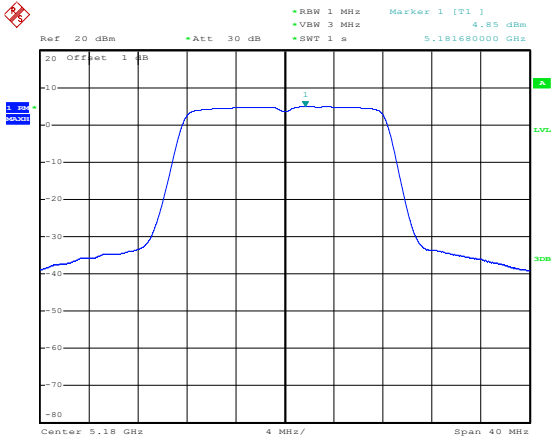
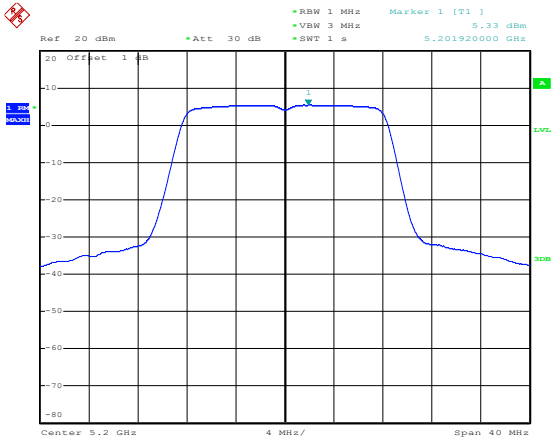
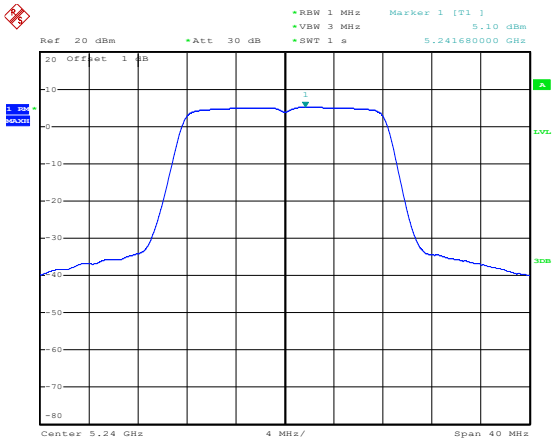
802.11ac-VHT40-High

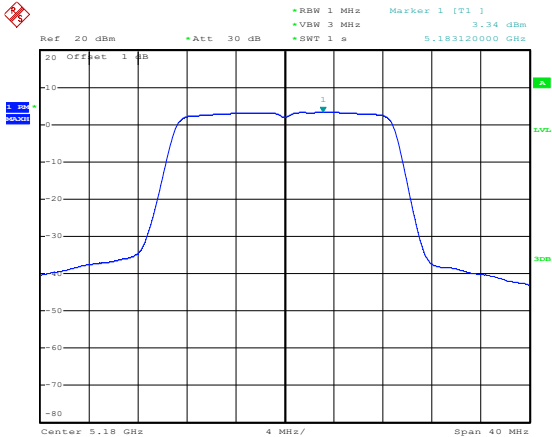
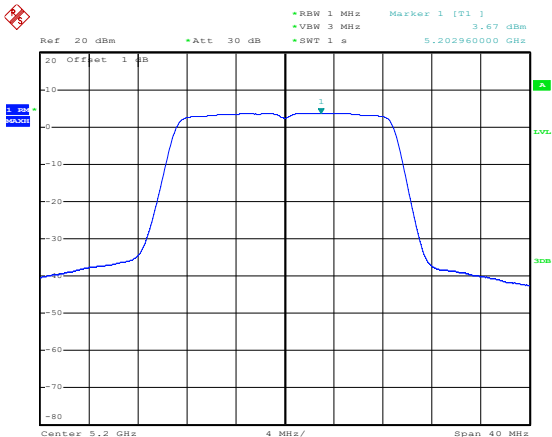
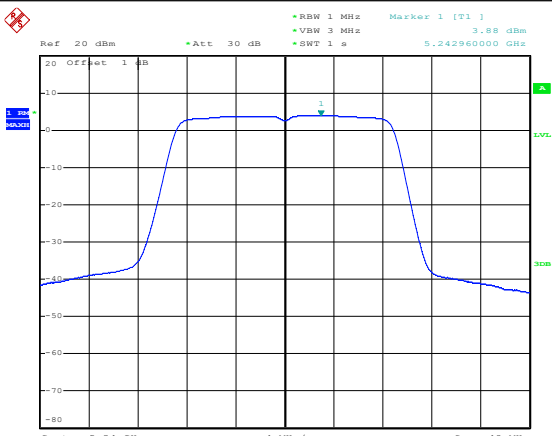


802.11ac-VHT80



ANT 1
5150-5250MHz

802.11a-Low	 Date: 13.APR.2024 15:16:43
802.11a-Middle	 Date: 13.APR.2024 15:17:14
802.11a-High	 Date: 13.APR.2024 15:17:33

802.11n-HT20-Low	 Date: 13.APR.2024 15:18:33
802.11n-HT20-Middle	 Date: 13.APR.2024 15:18:16
802.11n-HT20-High	 Date: 13.APR.2024 15:17:59

802.11n-HT40-Low

802.11n-HT40-High

802.11ac-VHT20-Low

Ref: 20 dBm *Att: 30 dB *RBW 1 MHz *VBW 3 MHz *SWT 1 s Marker 1 [T1] 1.13 dBm 5.19320000 GHz

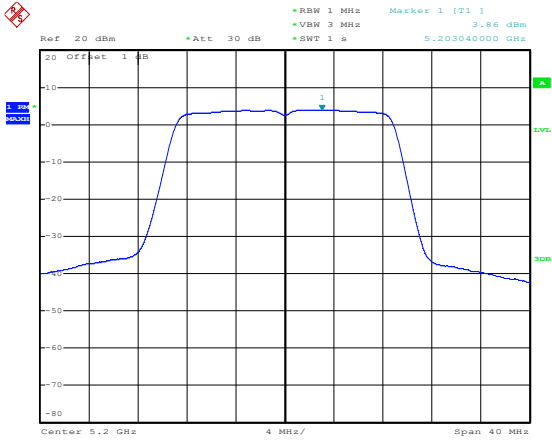
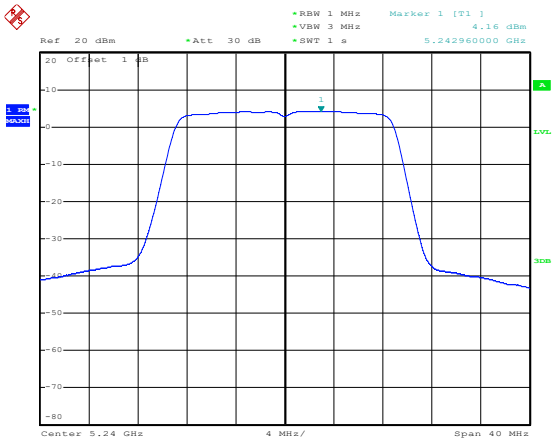
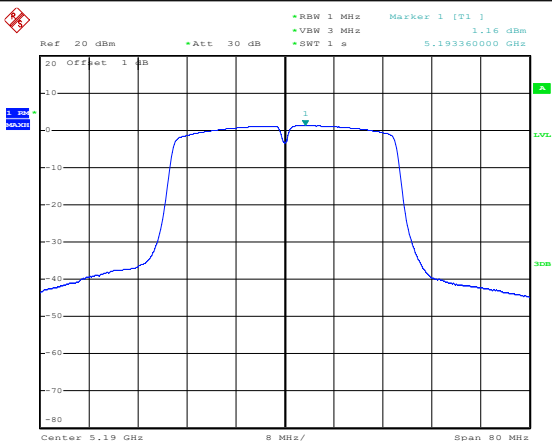
Ref: 20 dBm *Att: 30 dB *RBW 1 MHz *VBW 3 MHz *SWT 1 s Marker 1 [T1] 0.96 dBm 5.23304000 GHz

Ref: 20 dBm *Att: 30 dB *RBW 1 MHz *VBW 3 MHz *SWT 1 s Marker 1 [T1] 3.43 dBm 5.18304000 GHz

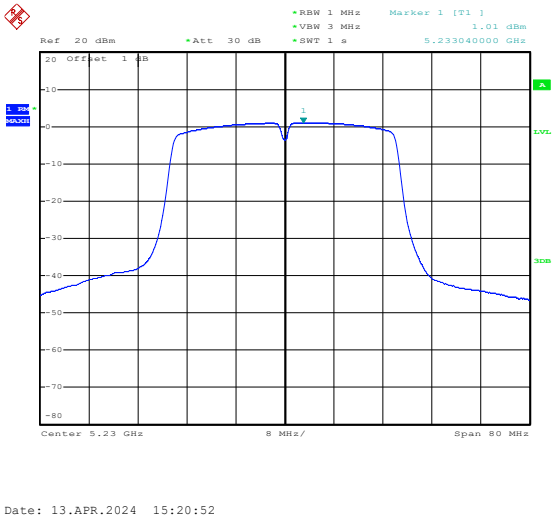
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Date: 13.APR.2024 15:20:33

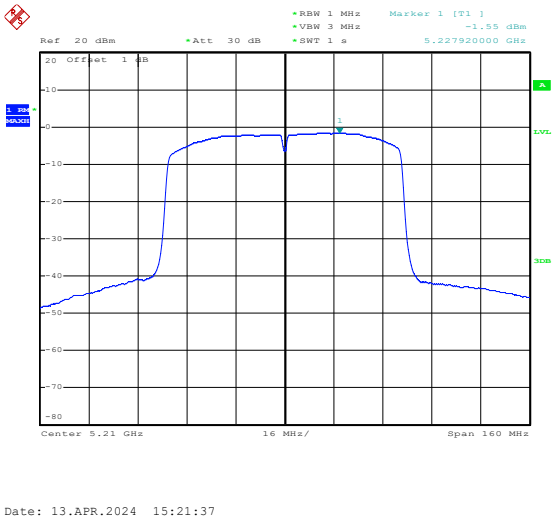
Date: 13.APR.2024 15:18:51

802.11ac-VHT20-Middle	 Date: 13.APR.2024 15:19:08
802.11ac-VHT20-High	 Date: 13.APR.2024 15:19:25
802.11ac-VHT40-Low	 Date: 13.APR.2024 15:21:10

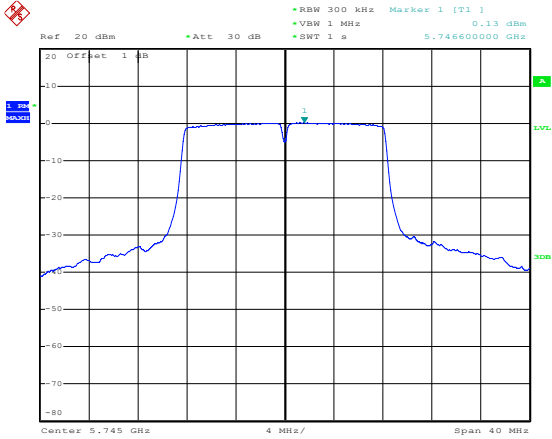
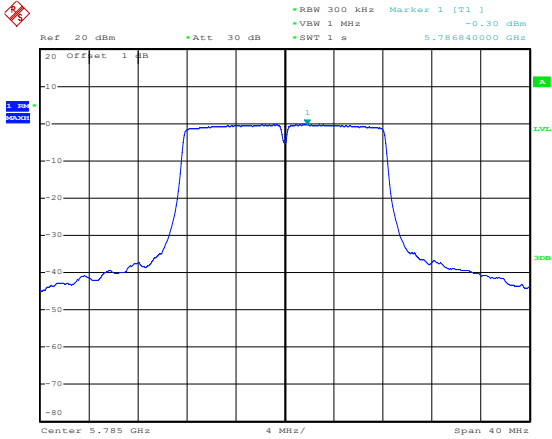
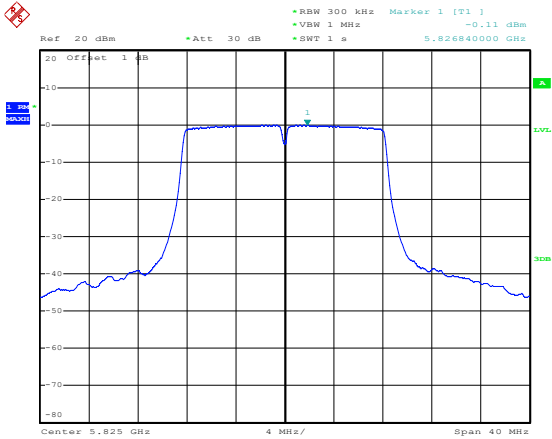
802.11ac-VHT40-High



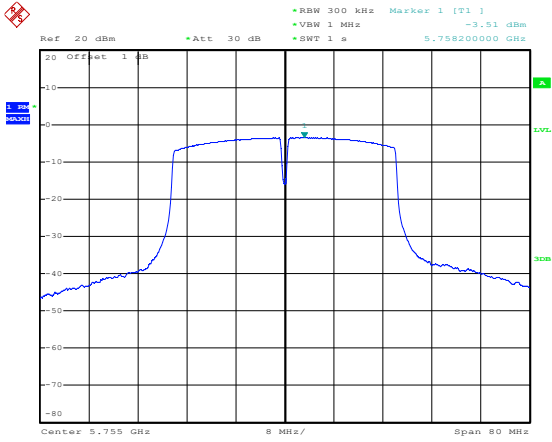
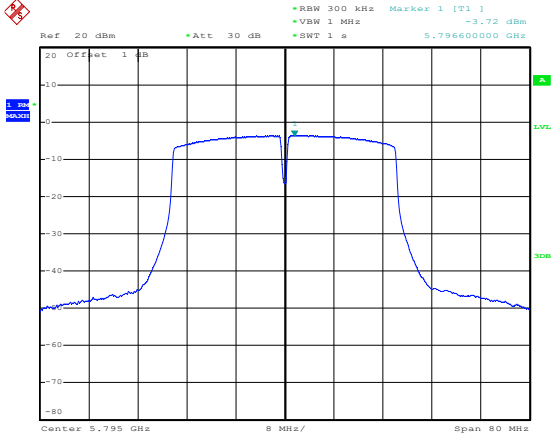
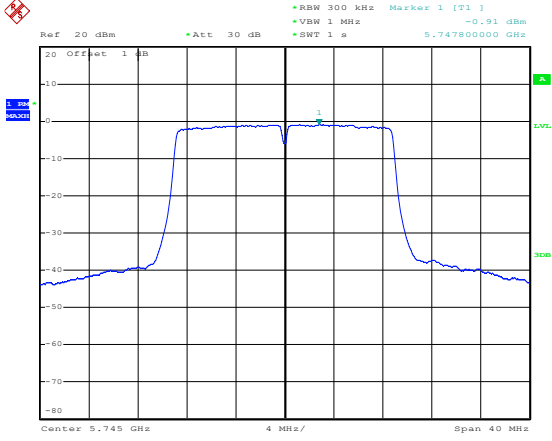
802.11ac-VHT80

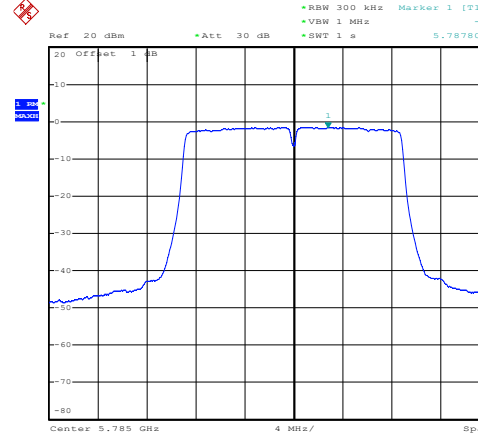
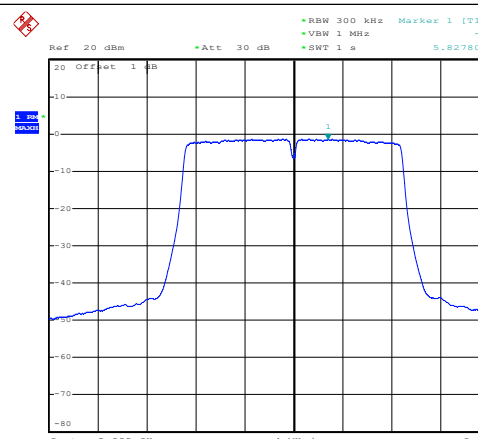
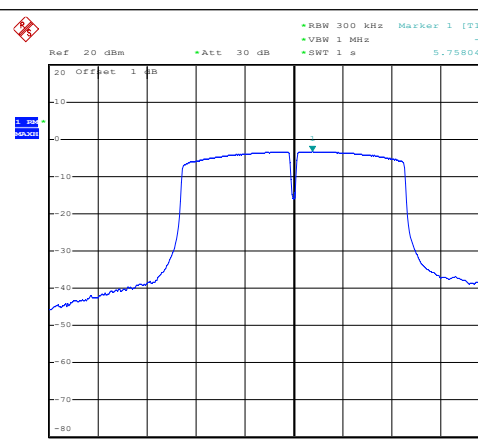


5725-5850MHz

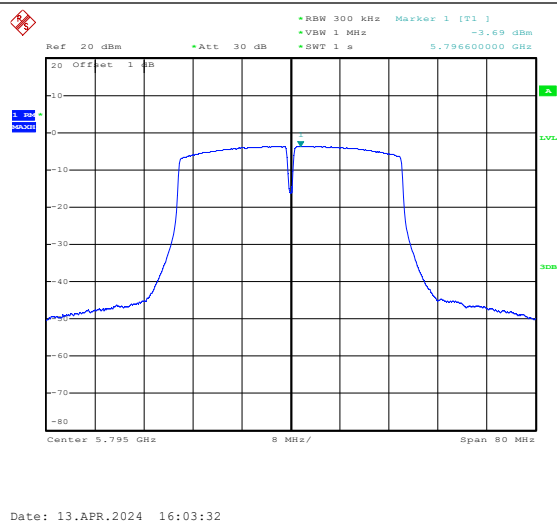
802.11a-Low	 Date: 13.APR.2024 15:59:47
802.11a-Middle	 Date: 13.APR.2024 16:00:16
802.11a-High	 Date: 13.APR.2024 16:00:33

802.11n-HT20-Low	• RBW 300 kHz Marker 1 [T1] -1.06 dBm • VBW 1 MHz • SWT 1 s 5.74780000 GHz Ref: 20 dBm Att: 30 dB 20 Offset 1 dB Center: 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:01:26
802.11n-HT20-Middle	• RBW 300 kHz Marker 1 [T1] -1.65 dBm • VBW 1 MHz • SWT 1 s 5.78780000 GHz Ref: 20 dBm Att: 30 dB 20 Offset 1 dB Center: 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:01:09
802.11n-HT20-High	• RBW 300 kHz Marker 1 [T1] -1.58 dBm • VBW 1 MHz • SWT 1 s 5.82780000 GHz Ref: 20 dBm Att: 30 dB 20 Offset 1 dB Center: 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:00:51

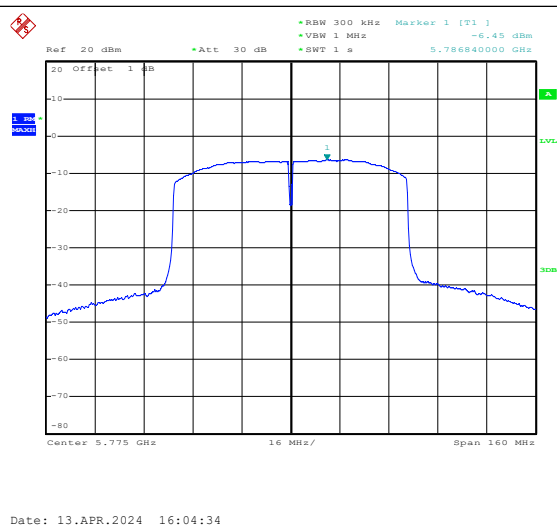
802.11n-HT40-Low	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -3.51 dBm *VSW 1 MHz *SWT 1 s 5.755200000 GHz 20 Offset 1 dB Center 5.755 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:02:55
802.11n-HT40-High	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -3.72 dBm *VSW 1 MHz *SWT 1 s 5.796600000 GHz 20 Offset 1 dB Center 5.795 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:03:14
802.11ac-VHT20-Low	 Ref 20 dBm *Att 30 dB *RBW 300 kHz Marker 1 [T1] -0.91 dBm *VSW 1 MHz *SWT 1 s 5.747800000 GHz 20 Offset 1 dB Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:01:44

802.11ac-VHT20-Middle	 Ref: 20 dBm Att: 30 dB RBW: 300 kHz Marker: 1 [T1] -1.57 dBm VSW: 1 MHz SWT: 1 s 5.787800000 GHz Center: 5.785 GHz Span: 40 MHz
802.11ac-VHT20-High	 Ref: 20 dBm Att: 30 dB RBW: 300 kHz Marker: 1 [T1] -1.44 dBm VSW: 1 MHz SWT: 1 s 5.827800000 GHz Center: 5.825 GHz Span: 40 MHz
802.11ac-VHT40-Low	 Ref: 20 dBm Att: 30 dB RBW: 300 kHz Marker: 1 [T1] -3.35 dBm VSW: 1 MHz SWT: 1 s 5.758040000 GHz Center: 5.755 GHz Span: 80 MHz

802.11ac-VHT40-High



802.11ac-VHT80



APPENDIX B

Emission Bandwidth and Occupied Bandwidth

U-NII-1:5150-5250MHz						
Test Mode	Test Channel MHz	ANT 0		ANT 1		Result
		26 dB Bandwidth MHz	99% Bandwidth MHz	26 dB Bandwidth MHz	99% Bandwidth MHz	
802.11a	5180	18.88	16.48	18.88	16.64	Pass
	5200	18.80	16.56	18.80	16.64	Pass
	5240	18.88	16.48	18.88	16.56	Pass
802.11n-HT20	5180	19.84	17.60	19.76	17.60	Pass
	5200	19.84	17.68	19.84	17.68	Pass
	5240	19.76	17.60	19.76	17.60	Pass
802.11n-HT40	5190	40.80	36.64	40.80	36.64	Pass
	5230	40.80	36.64	40.80	36.48	Pass
802.11ac-VHT20	5180	19.84	17.68	19.76	17.60	Pass
	5200	19.84	17.68	19.92	17.68	Pass
	5240	19.84	17.60	19.76	17.60	Pass
802.11ac-VHT40	5190	40.80	36.64	40.60	36.64	Pass
	5230	40.80	36.48	40.80	36.48	Pass
802.11ac-VHT80	5210	82.00	74.88	82.00	74.88	Pass

U-NII-3: 5725-5850MHz						
Test Mode	Test Channel MHz	ANT 0		ANT 1		Limit kHz
		6 dB Bandwidth MHz	99% Bandwidth MHz	6 dB Bandwidth MHz	99% Bandwidth MHz	
802.11a	5745	16.72	16.80	16.64	16.64	≥500
	5785	16.64	16.64	16.64	16.64	≥500
	5825	16.72	16.56	16.64	16.56	≥500
802.11n-HT20	5745	17.76	17.76	17.76	17.68	≥500
	5785	17.84	17.60	17.76	17.60	≥500
	5825	17.76	17.60	17.76	17.60	≥500
802.11n-HT40	5755	36.80	36.80	36.80	36.64	≥500
	5795	36.80	36.64	36.80	36.64	≥500
802.11ac-VHT20	5745	17.84	17.76	17.76	17.68	≥500
	5785	17.84	17.60	17.84	17.60	≥500
	5825	17.84	17.60	17.84	17.60	≥500

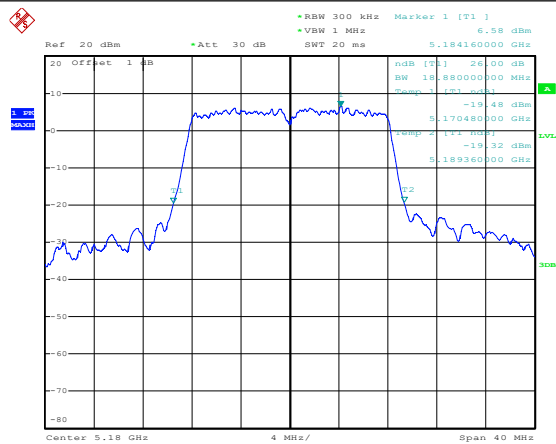
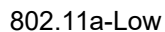
Reference No.: WTH24X03062202W001

802.11ac-VHT40	5755	36.80	36.80	36.80	36.64	≥500
	5795	36.80	36.64	36.80	36.64	≥500
802.11ac-VHT80	5775	76.48	75.20	76.48	74.88	≥500

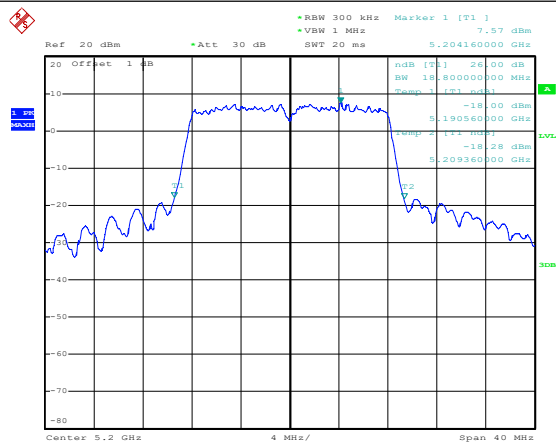
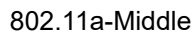
ANT 0

26 dB BandwidthMHz

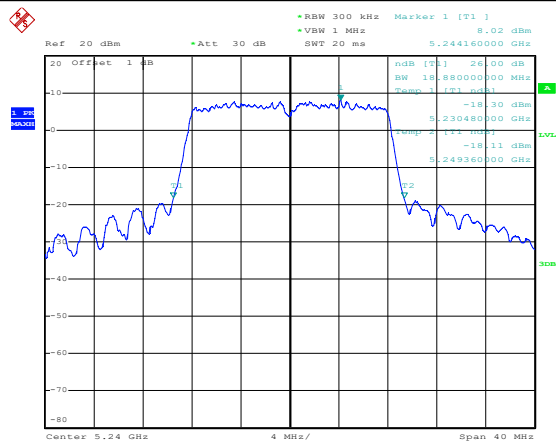
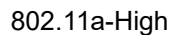
5150-5250MHz



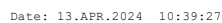
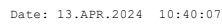
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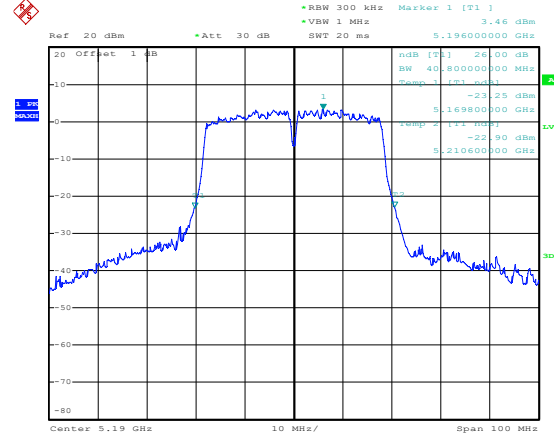
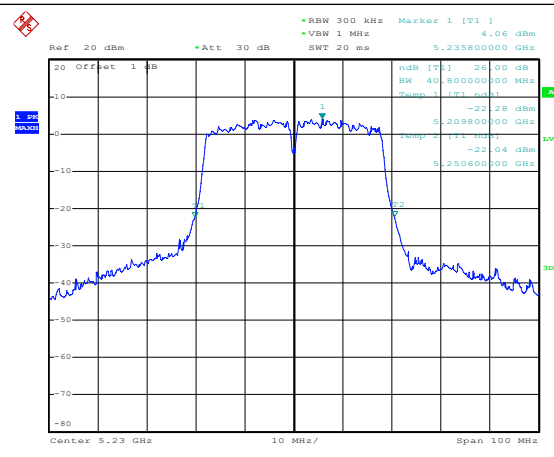
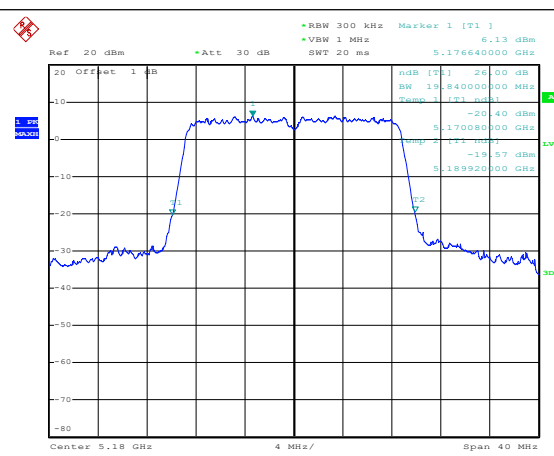


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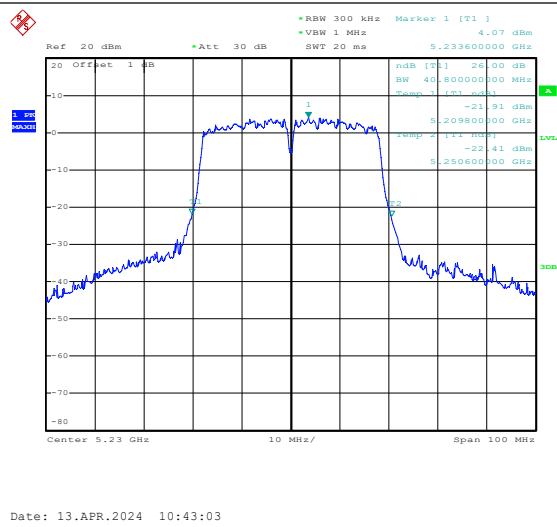
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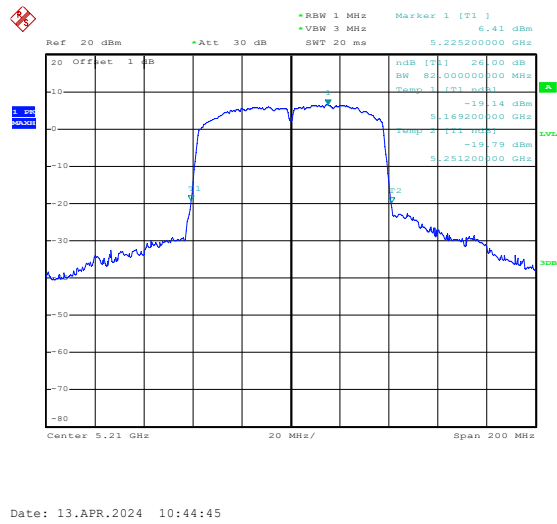
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802.11n-HT40-High	 Date: 13.APR.2024 10:42:41
802.11ac-VHT20-Low	 Date: 13.APR.2024 10:40:30

[illegible]

802.11ac-VHT40-High

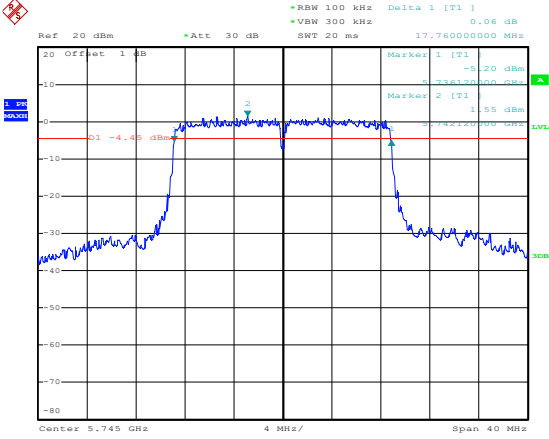
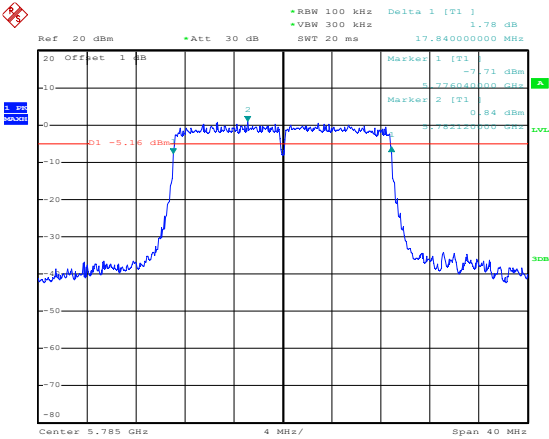
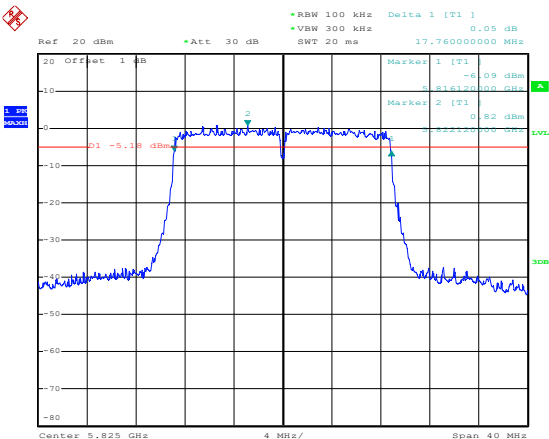


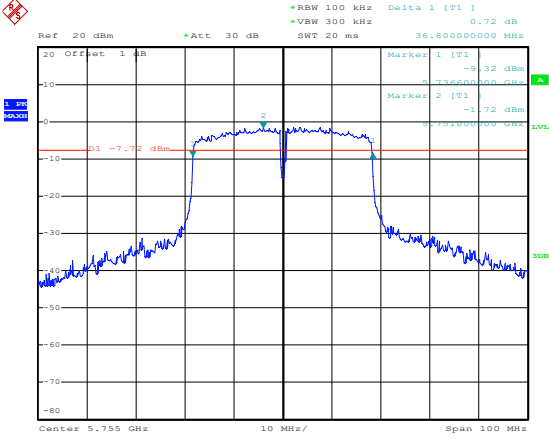
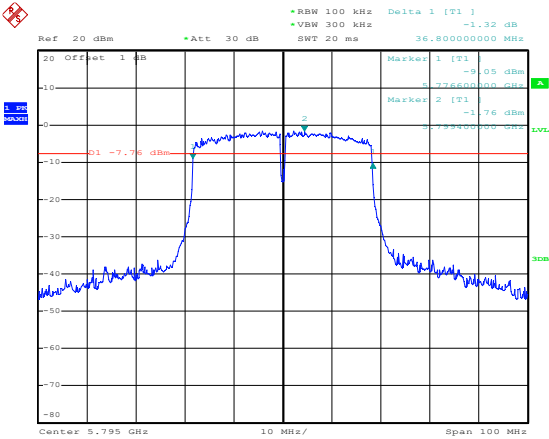
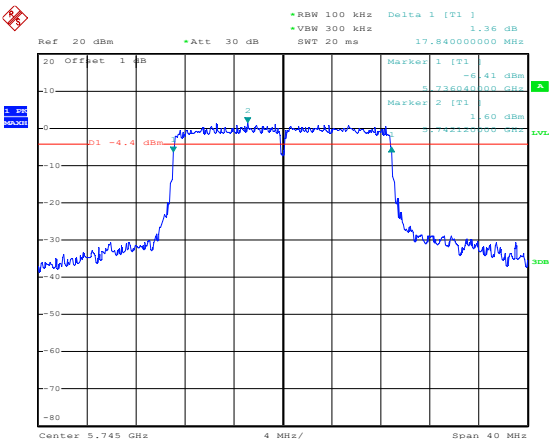
802.11ac-VHT80

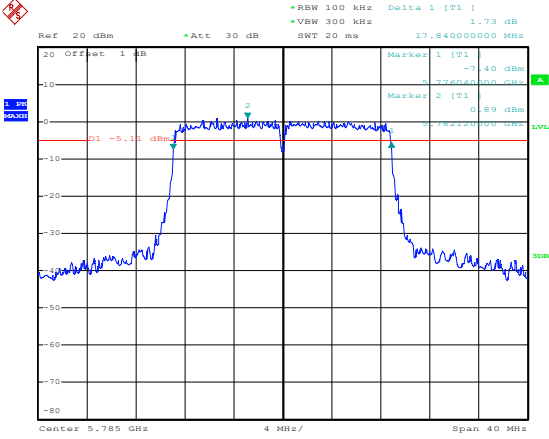
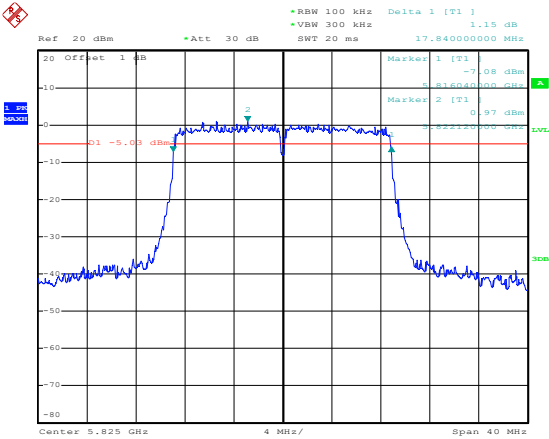
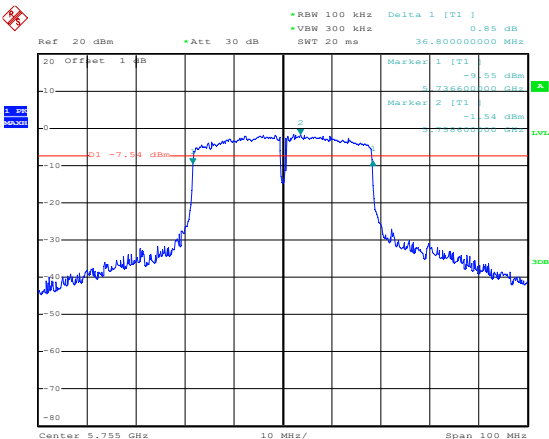


6 dB BandwidthMHz
5725-5850MHz

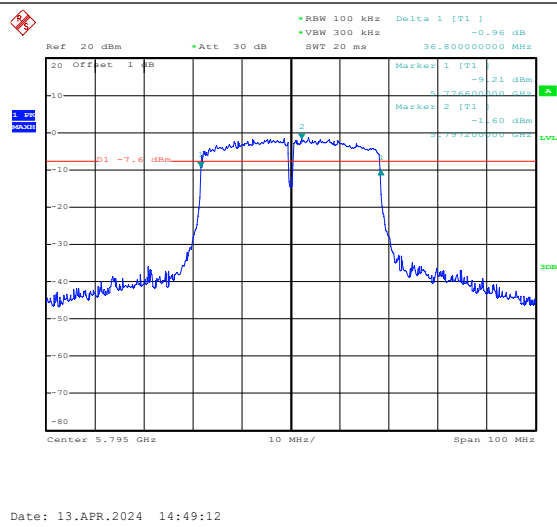
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802.11a-Middle	Date: 13.APR.2024 14:41:03
802.11a-High	Date: 13.APR.2024 14:41:52

802.11n-HT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -5.20 dBm Marker 2 [T1] 1.55 dBm D1 -4.45 dBm Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:44:18
802.11n-HT20-Middle	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.84000000 MHz Marker 1 [T1] -7.71 dBm Marker 2 [T1] 0.84 dBm D1 -5.16 dBm Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:43:22
802.11n-HT20-High	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -6.09 dBm Marker 2 [T1] 0.82 dBm D1 -5.18 dBm Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:42:38

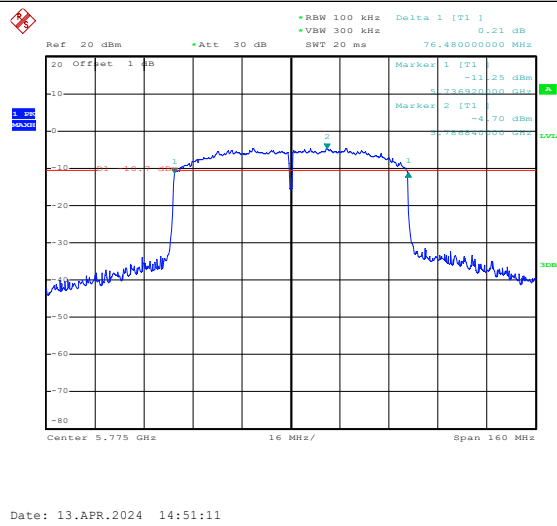
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802.11n-HT40-High	 Ref 20 dBm *Att 30 dB SWT 20 ms 36.80000000 MHz Marker 1 [T1] -9.05 dBm Marker 2 [T1] -1.76 dBm D1 -7.76 dBm Center 5.795 GHz 10 MHz/ Span 100 MHz Date: 13.APR.2024 14:48:37
802.11ac-VHT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.84000000 MHz Marker 1 [T1] -6.41 dBm Marker 2 [T1] -1.60 dBm D1 -4.4 dBm Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:45:00

802.11ac-VHT20-Middle	 Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 1.73 dB VSW 300 kHz SWT 20 ms 17.64000000 MHz Marker 1 [T1] -7.40 dBm 1.73600000 GHz Marker 2 [T1] 0.89 dBm 1.73600000 GHz D1 -5.15 dBm Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:45:59
802.11ac-VHT20-High	 Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 1.15 dB VSW 300 kHz SWT 20 ms 17.64000000 MHz Marker 1 [T1] -7.08 dBm 1.81600000 GHz Marker 2 [T1] 0.97 dBm 1.81600000 GHz D1 -5.03 dBm Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:46:48
802.11ac-VHT40-Low	 Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 0.85 dB VSW 300 kHz SWT 20 ms 36.80000000 MHz Marker 1 [T1] -9.55 dBm 0.73650000 GHz Marker 2 [T1] -1.54 dBm 0.73650000 GHz D1 -7.54 dBm Center 5.755 GHz 10 MHz/ Span 100 MHz Date: 13.APR.2024 14:50:04

802.11ac-VHT40-High



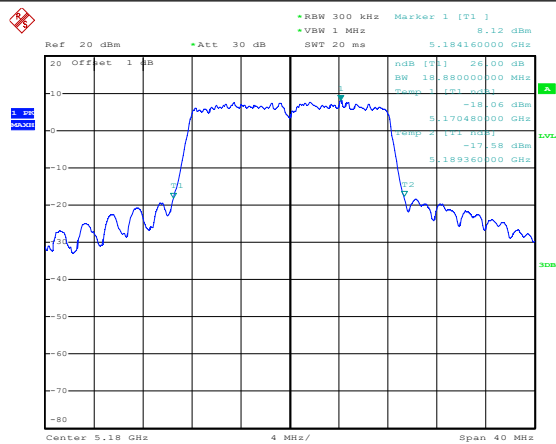
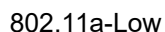
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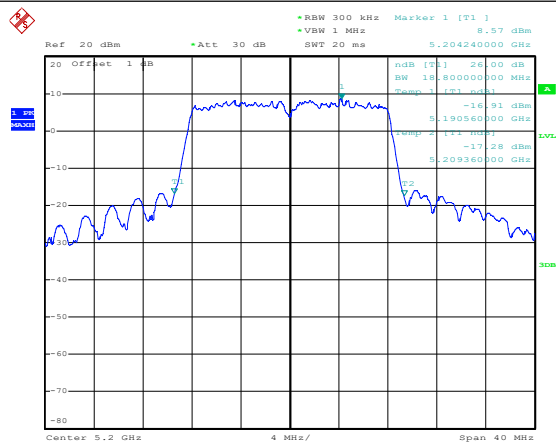
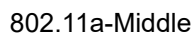
ANT 1

26 dB BandwidthMHz

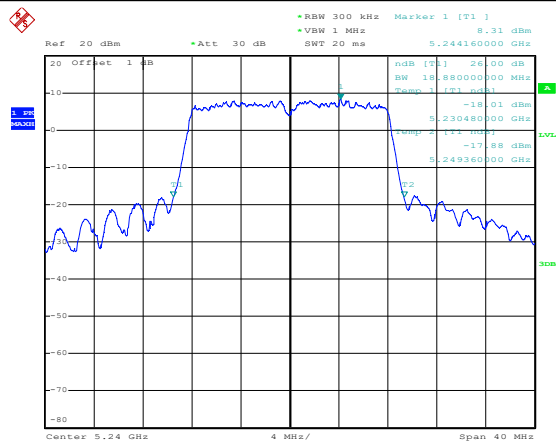
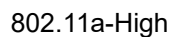
5150-5250MHz



Date: 13.APR.2024 15:40:45

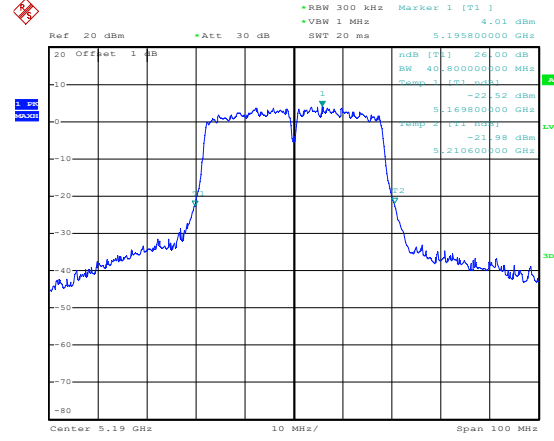
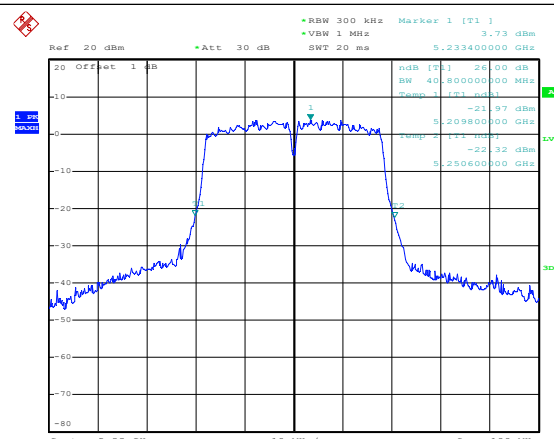
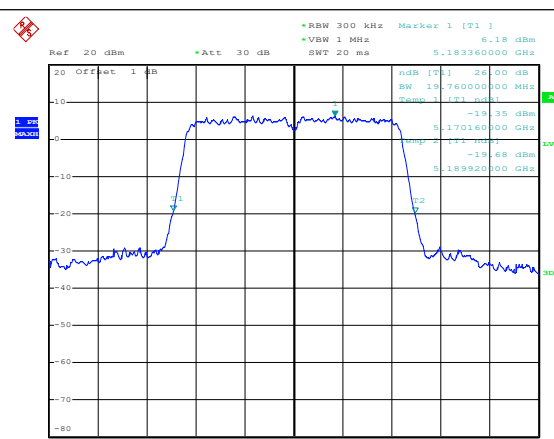


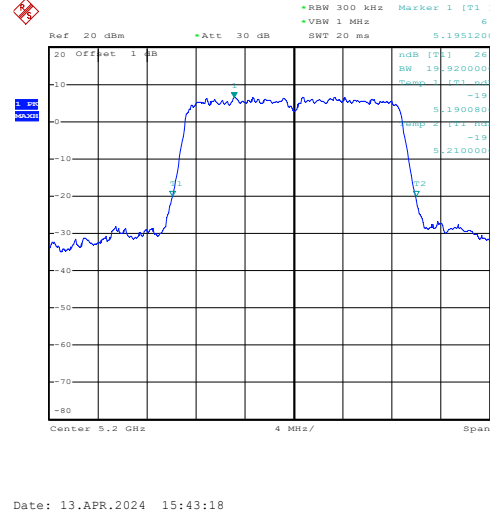
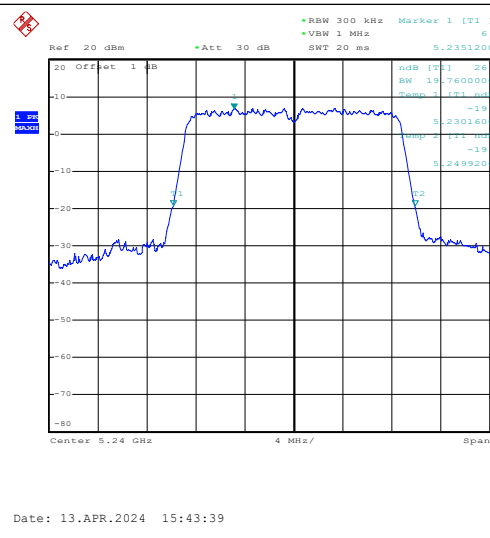
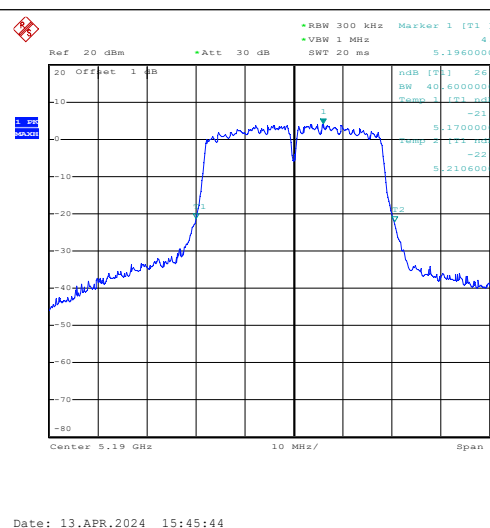
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Date: 13.APR.2024 15:41:27

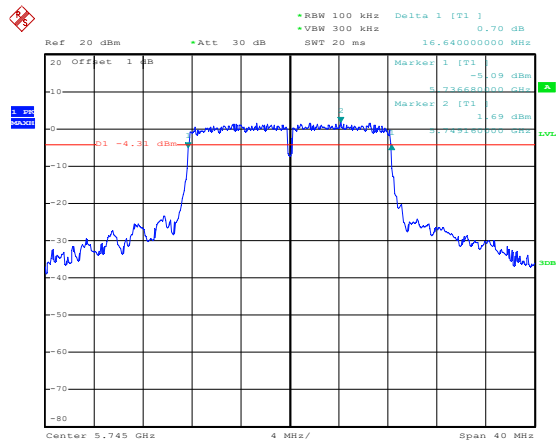
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802.11n-HT40-Low	 Date: 13.APR.2024 15:44:21
802.11n-HT40-High	 Date: 13.APR.2024 15:44:44
802.11ac-VHT20-Low	 Date: 13.APR.2024 15:42:55

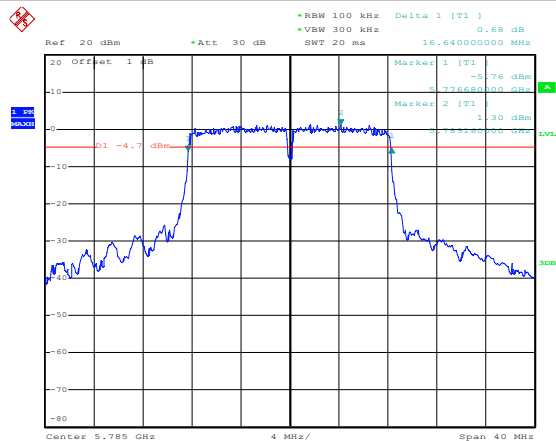
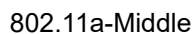
802.11ac-VHT20-Middle		
802.11ac-VHT20-High		
802.11ac-VHT40-Low		

[illegible]

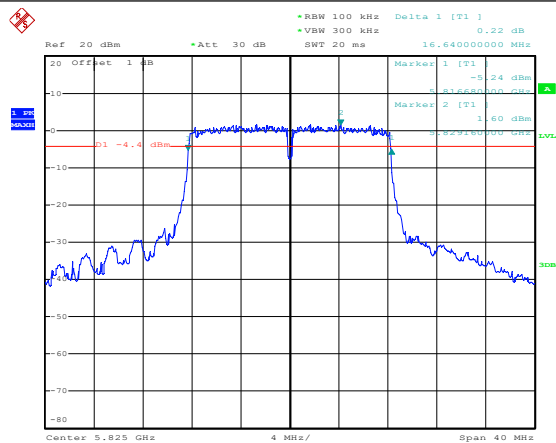
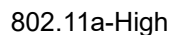
6 dB BandwidthMHz
5725-5850MHz



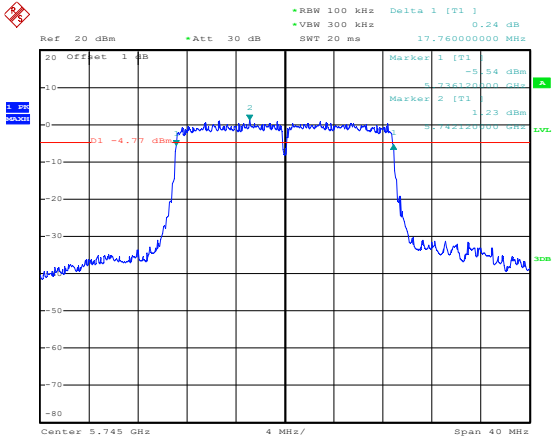
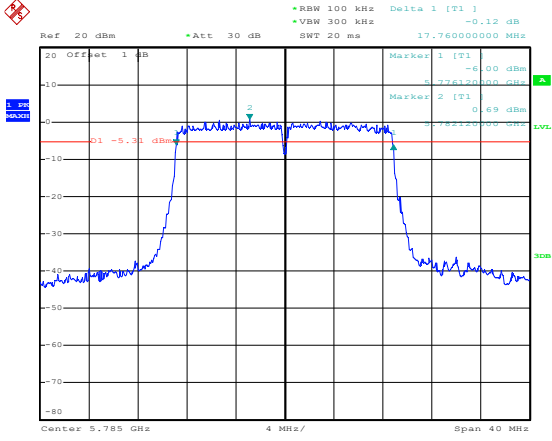
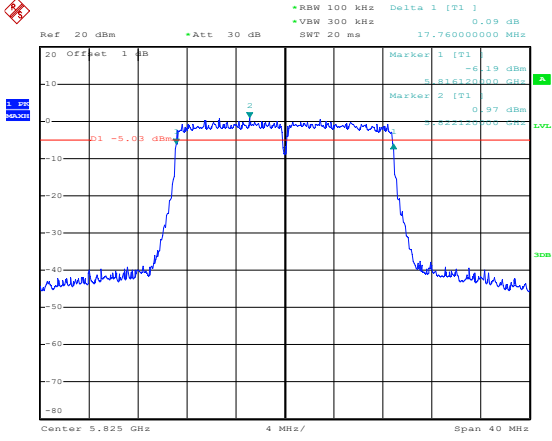
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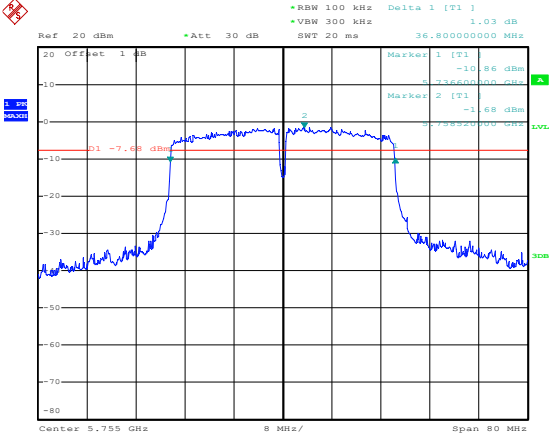
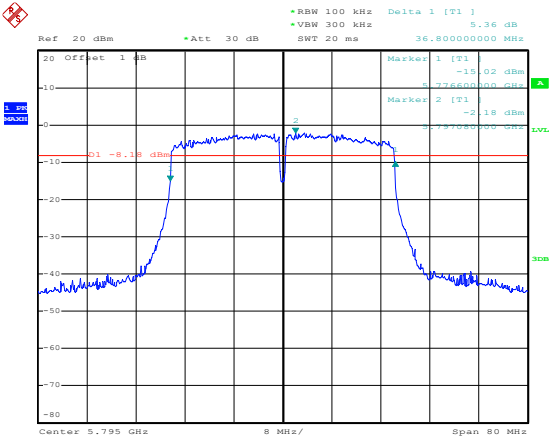
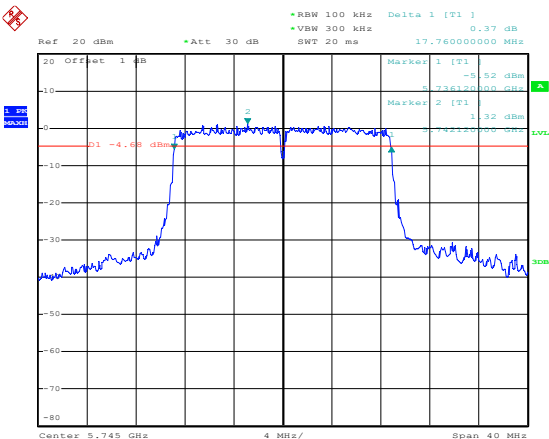


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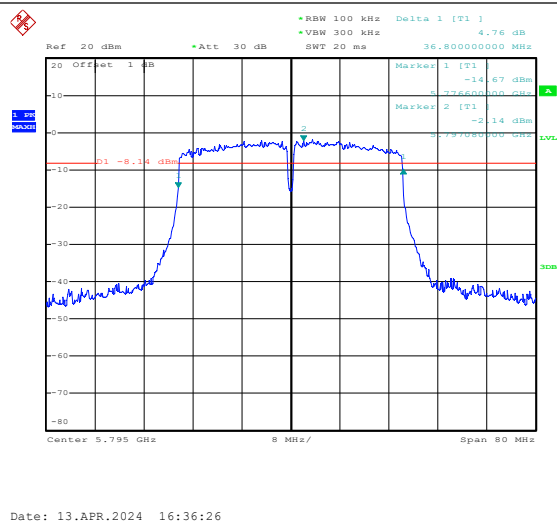
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802.11n-HT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -5.54 dBm Marker 2 [T1] 1.23 dBm D1 -4.77 dBm Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:27:37
802.11n-HT20-Middle	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -6.00 dBm Marker 2 [T1] 0.69 dBm D1 -5.31 dBm Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:26:51
802.11n-HT20-High	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -6.19 dBm Marker 2 [T1] 0.27 dBm D1 -5.03 dBm Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:23:56

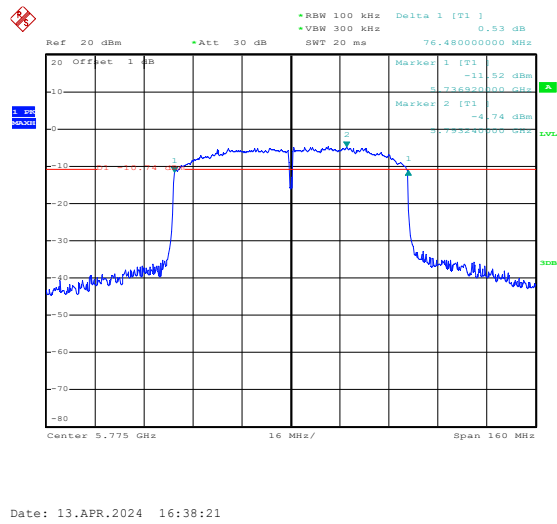
802.11n-HT40-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms 36.80000000 MHz Marker 1 [T1] -10.86 dBm 5.75500000 GHz Marker 2 [T1] -1.68 dBm 5.75500000 GHz D1 -7.68 dBm Center 5.755 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:33:19
802.11n-HT40-High	 Ref 20 dBm *Att 30 dB SWT 20 ms 36.80000000 MHz Marker 1 [T1] -15.02 dBm 5.75500000 GHz Marker 2 [T1] -2.18 dBm 5.75500000 GHz D1 -8.18 dBm Center 5.755 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:35:40
802.11ac-VHT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms 17.76000000 MHz Marker 1 [T1] -5.52 dBm 5.74500000 GHz Marker 2 [T1] 1.22 dBm 5.74500000 GHz D1 -4.68 dBm Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:28:56

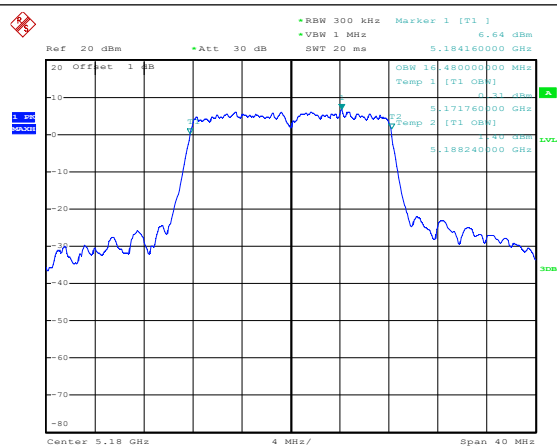
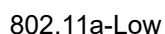
802.11ac-VHT20-Middle	Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 2.41 dB VSW 300 kHz SWT 20 ms 17.84000000 MHz Marker 1 [T1] -9.42 dBm 5.78500000 GHz Marker 2 [T1] 0.77 dBm 5.78500000 GHz D1 -5.23 dBm Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:30:03
802.11ac-VHT20-High	Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 1.14 dB VSW 300 kHz SWT 20 ms 17.84000000 MHz Marker 1 [T1] -7.20 dBm 5.81600000 GHz Marker 2 [T1] 0.86 dBm 5.82500000 GHz D1 -5.14 dBm Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 16:30:56
802.11ac-VHT40-Low	Ref 20 dBm *Att 30 dB RBW 100 kHz Delta 1 [T1] 1.26 dB VSW 300 kHz SWT 20 ms 36.80000000 MHz Marker 1 [T1] -11.09 dBm 5.73650000 GHz Marker 2 [T1] -1.64 dBm 5.75500000 GHz D1 -7.64 dBm Center 5.755 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:37:17

802.11ac-VHT40-High

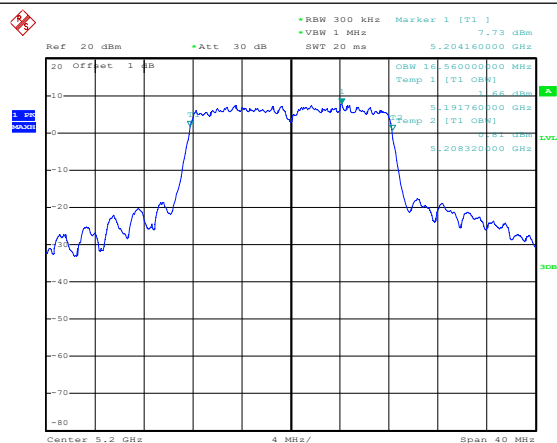
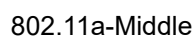


802.11ac-VHT80

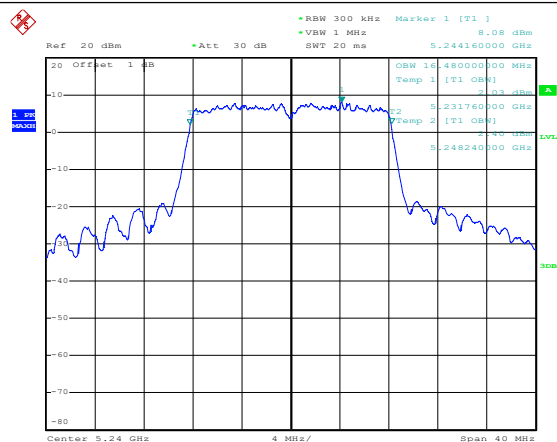
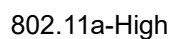




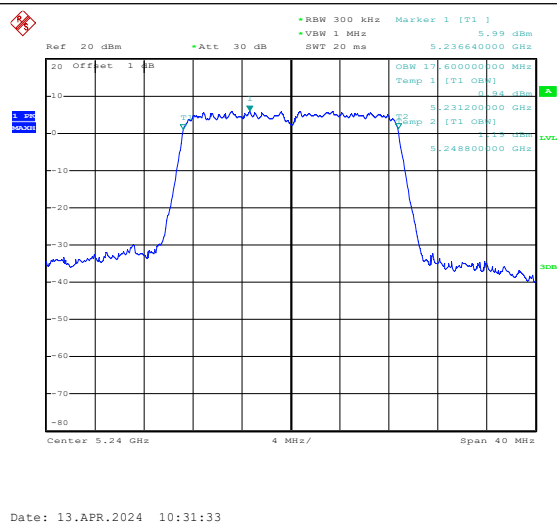
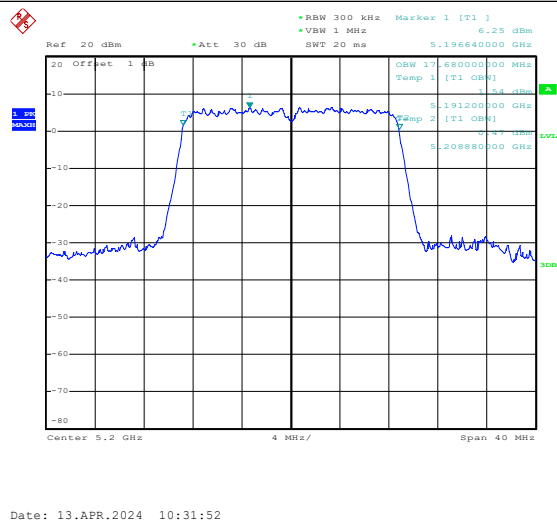
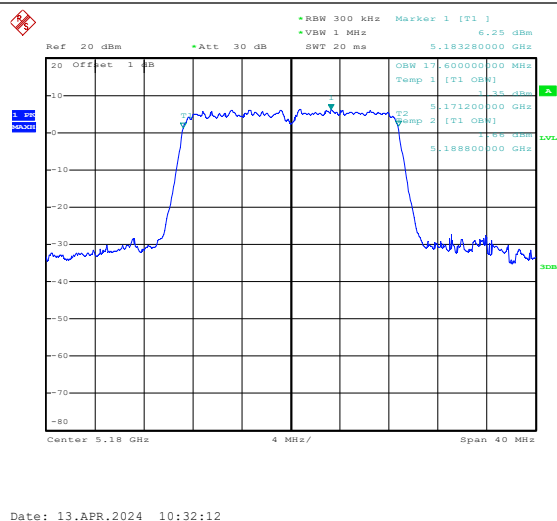
Date: 13.APR.2024 10:30:09

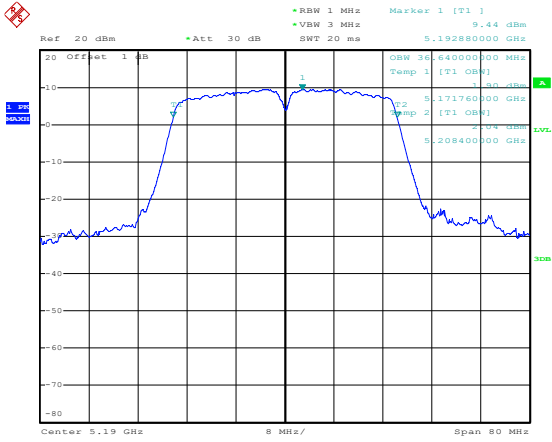
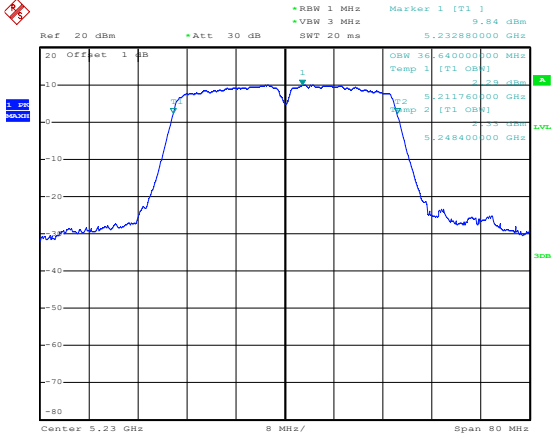
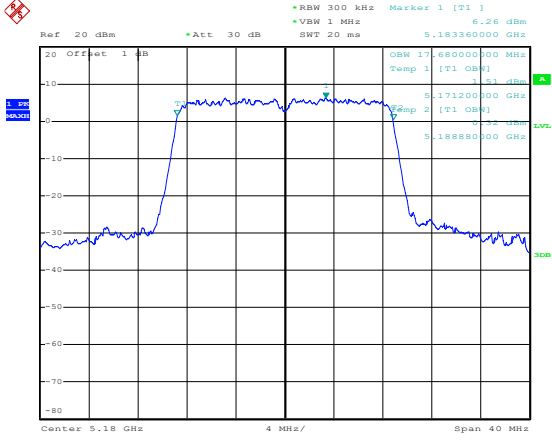


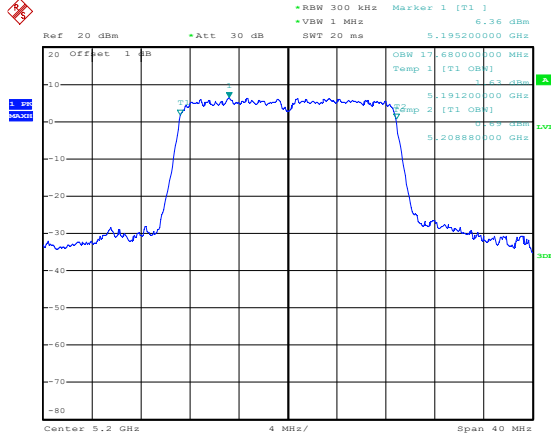
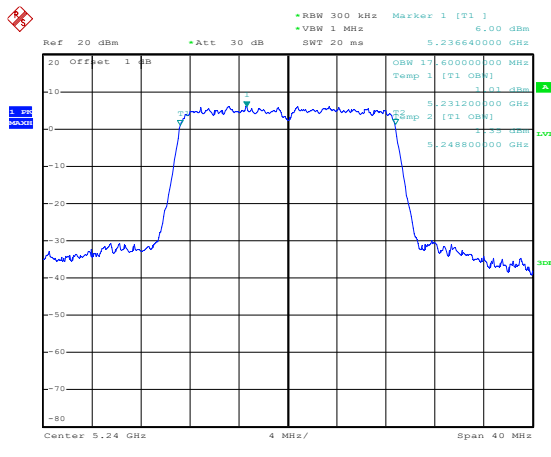
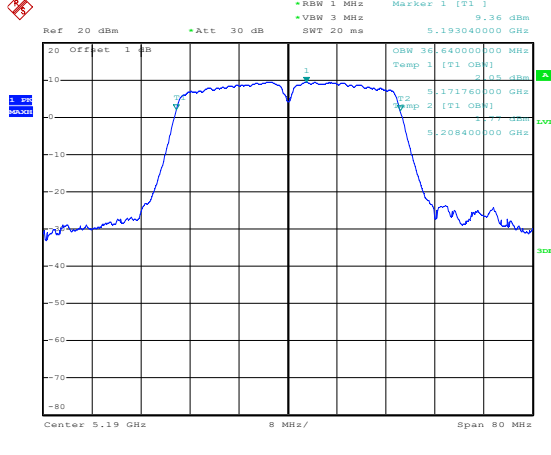
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Date: 13.APR.2024 10:31:12



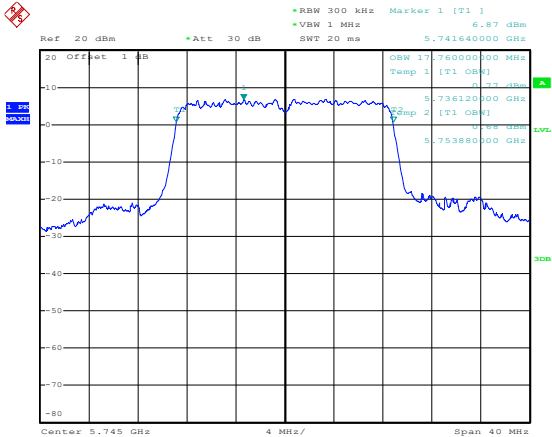
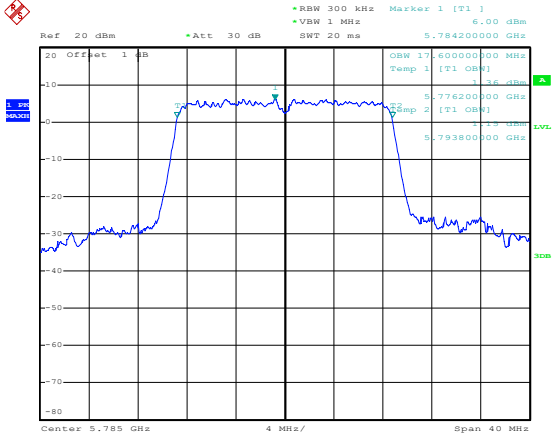
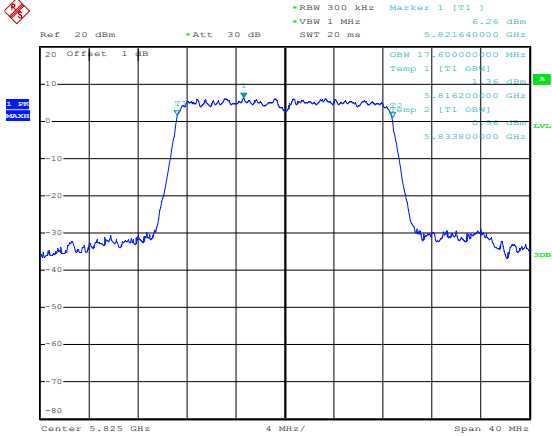
802.11n-HT40-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.192880000 GHz 9.44 dBm OSW 30.240000000 MHz Temp 1 [T1] 0.00 dBm Temp 2 [T1] 0.00 dBm Center 5.19 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 10:33:52
802.11n-HT40-High	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.232880000 GHz 9.54 dBm OSW 30.240000000 MHz Temp 1 [T1] 0.00 dBm Temp 2 [T1] 0.00 dBm Center 5.23 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 10:34:27
802.11ac-VHT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.183360000 GHz 6.26 dBm OSW 17.680000000 MHz Temp 1 [T1] 0.00 dBm Temp 2 [T1] 0.00 dBm Center 5.18 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 10:32:32

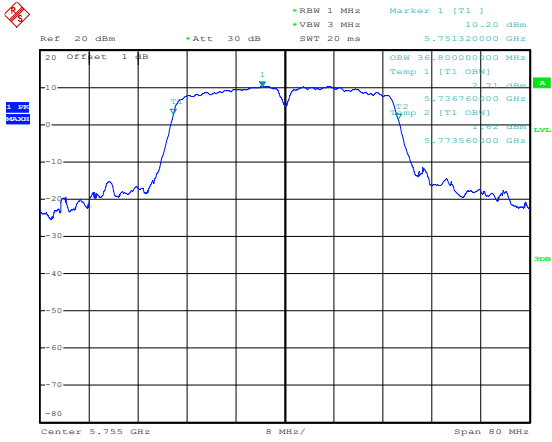
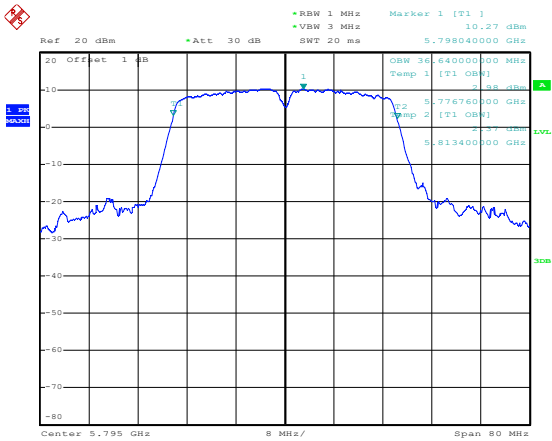
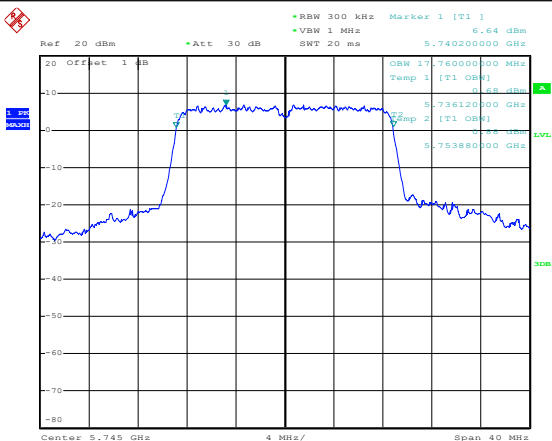
Channel	Plot	Ref	Att	RBW	VBW	SWT	Marker	OBW	Temp	Center	Span	Date
802.11ac-VHT20-Middle		20 dBm	30 dB	300 kHz	1 MHz	20 ms	1 [T1]	17.68000000 MHz	1 [T1 OBW]	5.2	40 MHz	13.APR.2024 10:32:55
802.11ac-VHT20-High		20 dBm	30 dB	300 kHz	1 MHz	20 ms	1 [T1]	17.60000000 MHz	1 [T1 OBW]	5.24	40 MHz	13.APR.2024 10:33:14
802.11ac-VHT40-Low		20 dBm	30 dB	1 MHz	3 MHz	20 ms	1 [T1]	36.64000000 MHz	1 [T1 OBW]	5.19	80 MHz	13.APR.2024 10:35:15

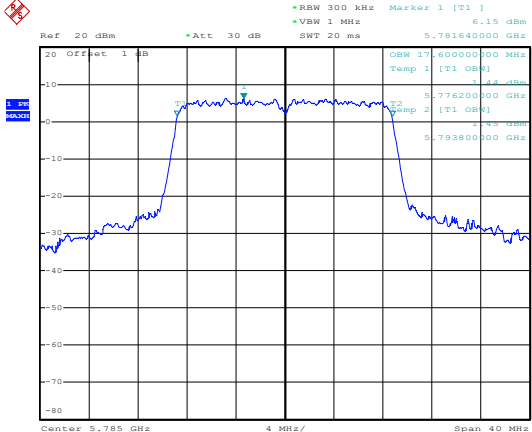
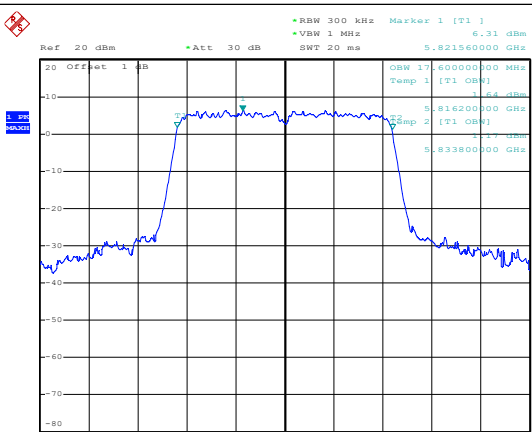
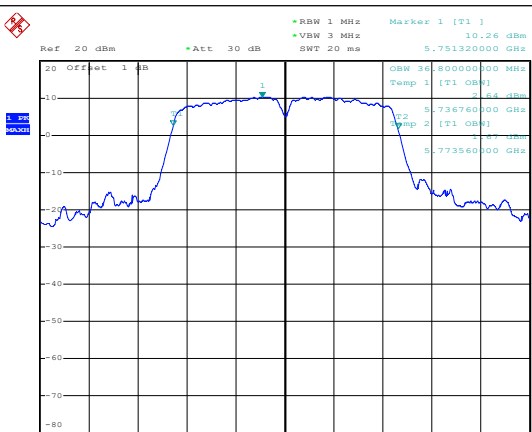
802.11ac-VHT40-High	Ref 20 dBm *Att 30 dB SWT 20 ms RBW 1 MHz VBW 3 MHz Marker 1 [T1] 10.04 dBm 5.233200000 GHz 20 Offset 1 dB 10 0 -10 -20 -30 -40 -50 -60 -70 -80 1 2 OSW 30.480000000 MHz Temp 1 [T1 OBW] 0.22 dBm 5.211920000 GHz Temp 2 [T1 OBW] 0.22 dBm 5.248400000 GHz Center 5.23 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 10:34:47
802.11ac-VHT80	Ref 20 dBm *Att 30 dB SWT 20 ms RBW 1 MHz VBW 3 MHz Marker 1 [T1] 6.74 dBm 5.224720000 GHz 20 Offset 1 dB 10 0 -10 -20 -30 -40 -50 -60 -70 -80 1 2 OSW 74.880000000 MHz Temp 1 [T1 OBW] 0.25 dBm 5.172880000 GHz Temp 2 [T1 OBW] 0.25 dBm 5.247760000 GHz Center 5.21 GHz 16 MHz/ Span 160 MHz Date: 13.APR.2024 10:35:52

99% BandwidthMHz
5725-5850MHz

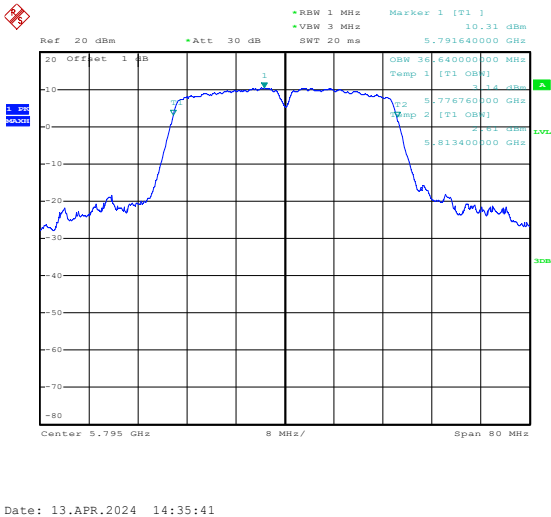
802.11a-Low	Date: 13.APR.2024 14:30:52
802.11a-Middle	Date: 13.APR.2024 14:31:22
802.11a-High	Date: 13.APR.2024 14:31:47

802.11n-HT20-Low	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.741640000 GHz 6.97 dBm OSW 17.600000000 MHz Temp 1 [T1 OSW] 0.17 dBm 5.736120000 GHz 0.88 dBm 5.753880000 GHz Center 5.745 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:32:54
802.11n-HT20-Middle	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.784200000 GHz 6.00 dBm OSW 17.600000000 MHz Temp 1 [T1 OSW] 1.16 dBm 5.776200000 GHz 1.18 dBm 5.793800000 GHz Center 5.785 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:32:27
802.11n-HT20-High	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.821640000 GHz 6.26 dBm OSW 17.600000000 MHz Temp 1 [T1 OSW] 1.16 dBm 5.816200000 GHz 1.18 dBm 5.833800000 GHz Center 5.825 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 14:32:06

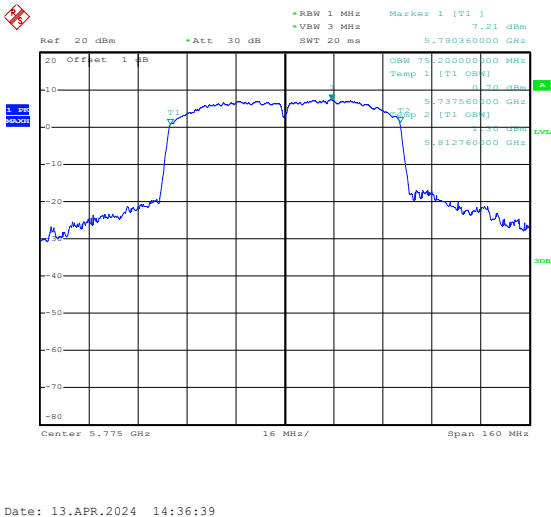
802.11n-HT40-Low	 Date: 13.APR.2024 14:34:53
802.11n-HT40-High	 Date: 13.APR.2024 14:35:17
802.11ac-VHT20-Low	 Date: 13.APR.2024 14:33:17

802.11ac-VHT20-Middle	 Date: 13.APR.2024 14:33:40
802.11ac-VHT20-High	 Date: 13.APR.2024 14:34:02
802.11ac-VHT40-Low	 Date: 13.APR.2024 14:36:04

802.11ac-VHT40-High



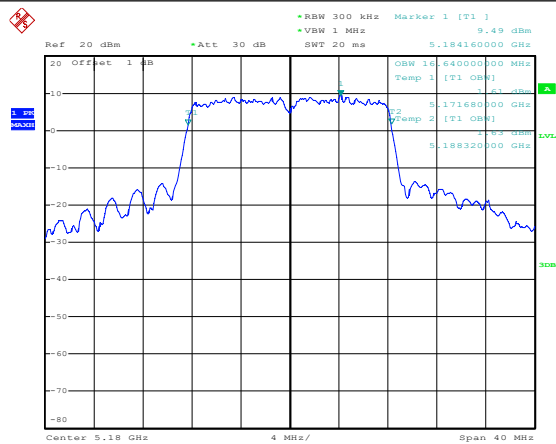
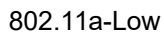
802.11ac-VHT80



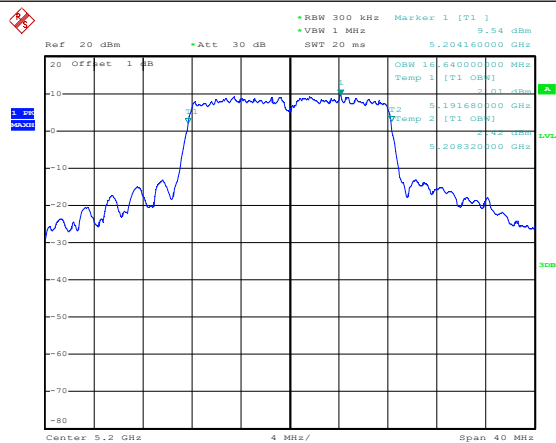
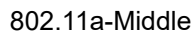
ANT 1

99% BandwidthMHz

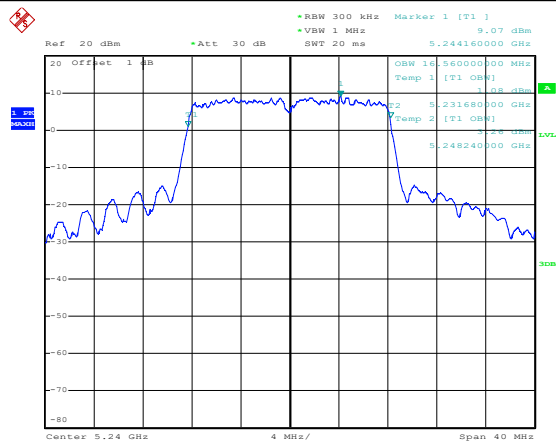
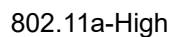
5150-5250MHz



Date: 13.APR.2024 15:32:44



Date: 13.APR.2024 15:33:02



Date: 13.APR.2024 15:33:27

802.11n-HT20-Low

Ref 20 dBm Att 30 dB SWT 20 ms 5.183280000 GHz

OSW 17.60000000 MHz
Temp 1 [T1 OSW]
Temp 2 [T1 OSW]

5.171200000 GHz
5.188800000 GHz

Center 5.18 GHz 4 MHz/ Span 40 MHz

Date: 13.APR.2024 15:34:36

802.11n-HT20-Middle

Ref 20 dBm Att 30 dB SWT 20 ms 5.196640000 GHz

OSW 17.60000000 MHz
Temp 1 [T1 OSW]
Temp 2 [T1 OSW]

5.191200000 GHz
5.208800000 GHz

Center 5.2 GHz 4 MHz/ Span 40 MHz

Date: 13.APR.2024 15:34:16

802.11n-HT20-High

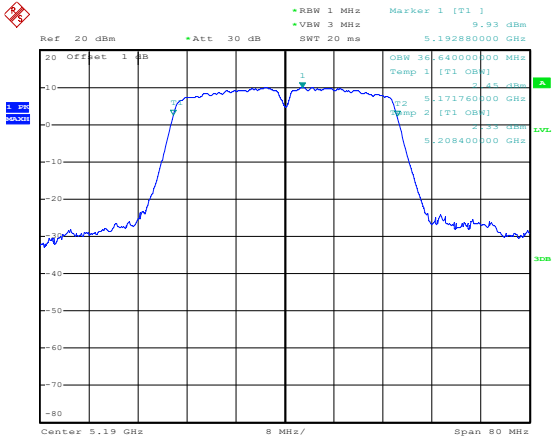
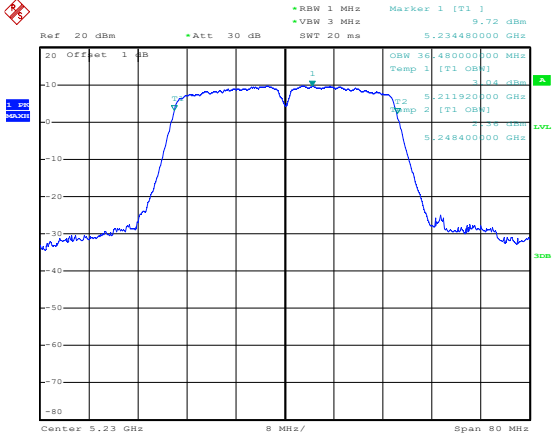
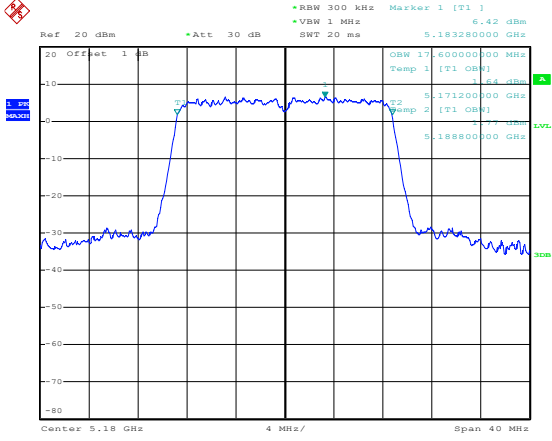
Ref 20 dBm Att 30 dB SWT 20 ms 5.240720000 GHz

OSW 17.60000000 MHz
Temp 1 [T1 OSW]
Temp 2 [T1 OSW]

5.231200000 GHz
5.248800000 GHz

Center 5.24 GHz 4 MHz/ Span 40 MHz

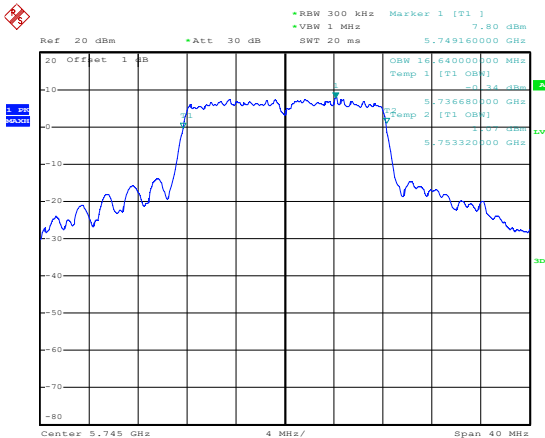
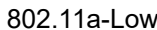
Date: 13.APR.2024 15:33:52

802.11n-HT40-Low	 Ref 20 dBm Att 30 dB RBW 1 MHz VSW 3 MHz SWT 20 ms Marker 1 [T1] 9.93 dBm 5.192880000 GHz OSW 30.240000000 MHz Temp 1 [T1] 9.93 dBm 5.192880000 GHz Temp 2 [T1] 9.93 dBm 5.192880000 GHz Center 5.19 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 15:36:15
802.11n-HT40-High	 Ref 20 dBm Att 30 dB RBW 1 MHz VSW 3 MHz SWT 20 ms Marker 1 [T1] 9.72 dBm 5.234480000 GHz OSW 30.240000000 MHz Temp 1 [T1] 9.72 dBm 5.234480000 GHz Temp 2 [T1] 9.72 dBm 5.234480000 GHz Center 5.23 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 15:36:37
802.11ac-VHT20-Low	 Ref 20 dBm Att 30 dB RBW 300 kHz VSW 1 MHz SWT 20 ms Marker 1 [T1] 6.42 dBm 5.183280000 GHz OSW 17.600000000 MHz Temp 1 [T1] 6.42 dBm 5.183280000 GHz Temp 2 [T1] 6.42 dBm 5.183280000 GHz Center 5.18 GHz 4 MHz/ Span 40 MHz Date: 13.APR.2024 15:34:56

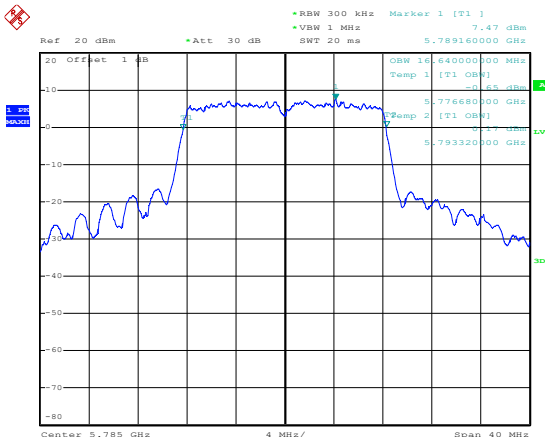
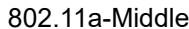
802.11ac-VHT20-Middle	Date: 13.APR.2024 15:35:19
802.11ac-VHT20-High	Date: 13.APR.2024 15:35:39
802.11ac-VHT40-Low	Date: 13.APR.2024 15:37:25

802.11ac-VHT40-High	Ref 20 dBm *Att 30 dB SWT 20 ms RBW 1 MHz VBW 3 MHz Marker 1 [T1] 5.232880000 GHz 9.90 dBm 20 Offset 1 dB 10 0 -10 -20 -30 -40 -50 -60 -70 -80 Center 5.23 GHz 8 MHz/ Span 80 MHz OSW 30.48000000 MHz Temp 1 [T1] 0.87 dBm 5.211920000 GHz Temp 2 [T1] 1.43 dBm 5.248400000 GHz LVL 30m Date: 13.APR.2024 15:37:01
802.11ac-VHT80	Ref 20 dBm *Att 30 dB SWT 20 ms RBW 1 MHz VBW 3 MHz Marker 1 [T1] 5.225360000 GHz 7.09 dBm 20 Offset 1 dB 10 0 -10 -20 -30 -40 -50 -60 -70 -80 Center 5.21 GHz 16 MHz/ Span 160 MHz OSW 74.88000000 MHz Temp 1 [T1] 0.28 dBm 5.172880000 GHz Temp 2 [T1] 1.83 dBm 5.247760000 GHz LVL 30m Date: 13.APR.2024 15:38:03

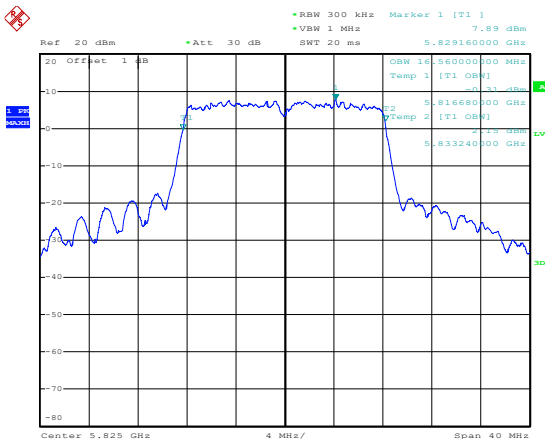
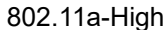
99% BandwidthMHz
5725-5850MHz



Date: 13.APR.2024 16:08:5

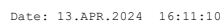
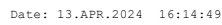


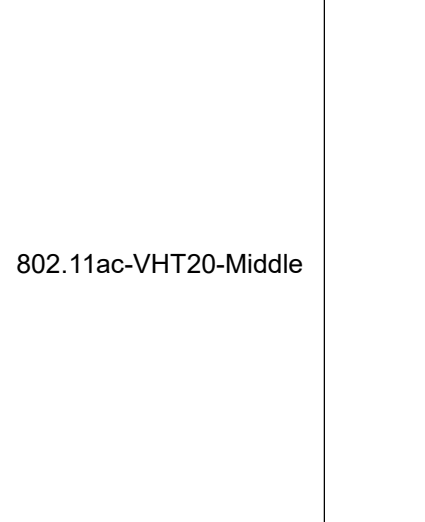
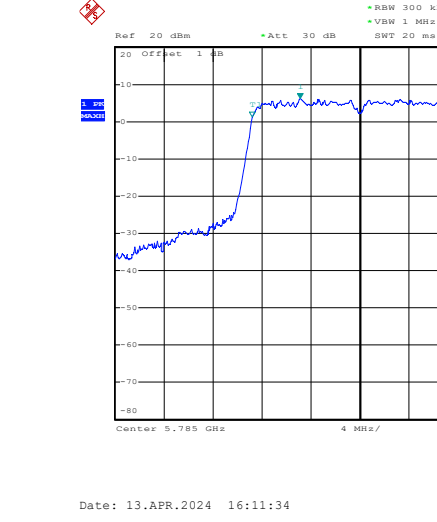
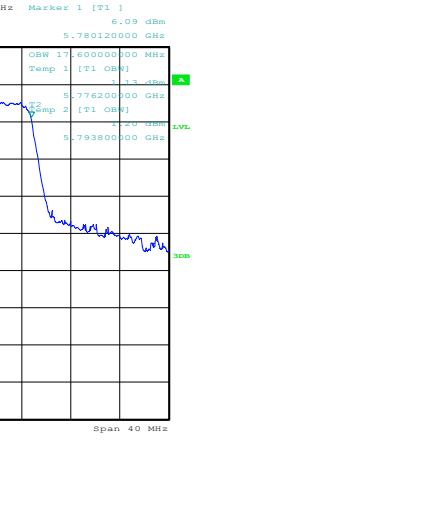
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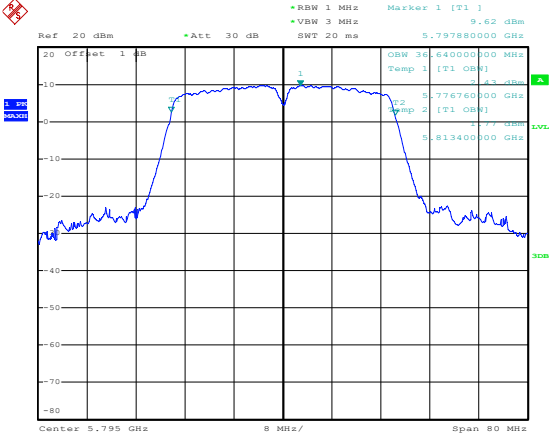
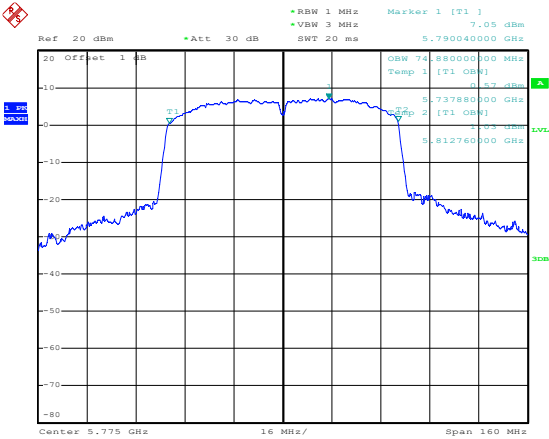


Date: 13.APR.2024 16:09:4

802.11n-HT20-Low	Date: 13.APR.2024 16:10:47
802.11n-HT20-Middle	Date: 13.APR.2024 16:10:26
802.11n-HT20-High	Date: 13.APR.2024 16:10:05



Channel	Plot	Settings	Marker 1 [T1]	OBW	Temp 1 [T1]	Temp 2 [T1]	OBW	Temp 1 [T1]	Temp 2 [T1]	OBW	Temp 1 [T1]	Temp 2 [T1]
802.11ac-VHT20-Middle		Ref 20 dBm *Att 30 dB *RBW 300 kHz *VBW 1 MHz *Span 40 MHz *Center 5.785 GHz	6.09 dBm	5.780120000 GHz	17.600000000 MHz	1.13 dBm	5.776200000 GHz	17.600000000 MHz	1.20 dBm	5.793800000 GHz	17.600000000 MHz	1.20 dBm
802.11ac-VHT20-High		Ref 20 dBm *Att 30 dB *RBW 300 kHz *VBW 1 MHz *Span 40 MHz *Center 5.825 GHz	6.33 dBm	5.821640000 GHz	17.600000000 MHz	1.13 dBm	5.816200000 GHz	17.600000000 MHz	1.20 dBm	5.833800000 GHz	17.600000000 MHz	1.20 dBm
802.11ac-VHT40-Low		Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz *Span 80 MHz *Center 5.755 GHz	10.03 dBm	5.762040000 GHz	36.640000000 MHz	1.22 dBm	5.736760000 GHz	36.640000000 MHz	1.20 dBm	5.773400000 GHz	36.640000000 MHz	1.20 dBm

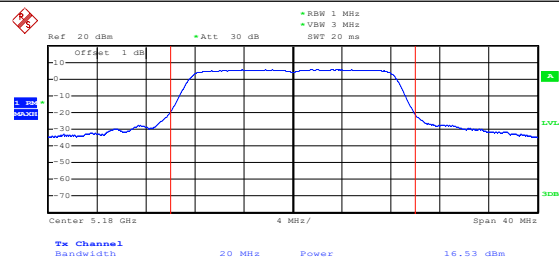
802.11ac-VHT40-High	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.797880000 GHz 9.62 dBm OSW 30.240000000 MHz Temp 1 [T1] 0.43 dBm 5.776760000 GHz Temp 2 [T1] 0.77 dBm 5.813400000 GHz Center 5.795 GHz 8 MHz/ Span 80 MHz Date: 13.APR.2024 16:15:28
802.11ac-VHT80	 Ref 20 dBm *Att 30 dB SWT 20 ms Marker 1 [T1] 5.790040000 GHz 7.05 dBm OSW 74.280000000 MHz Temp 1 [T1] 0.57 dBm 5.737880000 GHz Temp 2 [T1] 0.73 dBm 5.812760000 GHz Center 5.775 GHz 16 MHz/ Span 160 MHz Date: 13.APR.2024 16:16:25

APPENDIX C

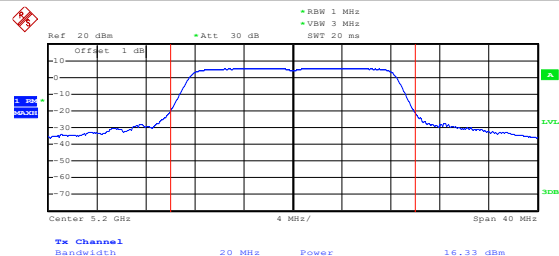
Maximum Conducted Output Power

U-NII-1:5150-5250MHz					
Test mode	Frequency MHz	Output Power dBm		Total dBm	Limit dBm
		ANT 0	ANT 1		
802.11a	5180	16.53	16.48	/	23.98
	5200	16.33	16.80	/	23.98
	5240	16.79	16.59	/	23.98
802.11n-HT20	5180	15.59	15.07	18.35	23.98
	5200	15.61	15.64	18.64	23.98
	5240	15.31	15.67	18.50	23.98
802.11n-HT40	5190	15.16	15.32	18.25	23.98
	5230	15.63	15.19	18.43	23.98
802.11ac-VHT20	5180	15.66	15.16	18.43	23.98
	5200	15.72	15.62	18.68	23.98
	5240	15.23	15.93	18.60	23.98
802.11ac-VHT40	5190	15.10	15.42	18.27	23.98
	5230	15.74	15.31	18.54	23.98
802.11ac-VHT80	5210	15.46	15.56	18.52	23.98

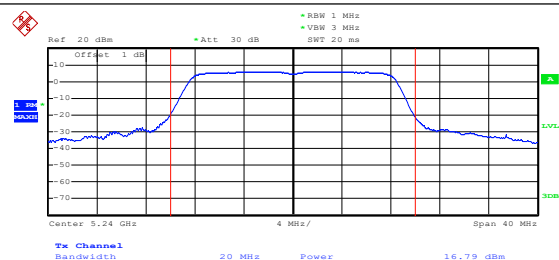
U-NII-3: 5725-5850MHz					
Test mode	Frequency MHz	Output Power dBm		Total dBm	Limit dBm
		ANT 0	ANT 1		
802.11a	5745	16.86	16.53	/	30.00
	5785	16.30	16.15	/	30.00
	5825	16.38	16.40	/	30.00
802.11n-HT20	5745	15.93	15.72	18.84	30.00
	5785	15.20	15.02	18.12	30.00
	5825	15.21	15.25	18.24	30.00
802.11n-HT40	5755	15.76	15.81	18.80	30.00
	5795	15.91	15.55	18.74	30.00
802.11ac-VHT20	5745	15.93	15.78	18.87	30.00
	5785	15.19	15.06	18.14	30.00
	5825	15.25	15.30	18.29	30.00
802.11ac-VHT40	5755	15.92	15.72	18.83	30.00
	5795	15.93	15.69	18.82	30.00
802.11ac-VHT80	5775	15.62	15.72	18.68	30.00



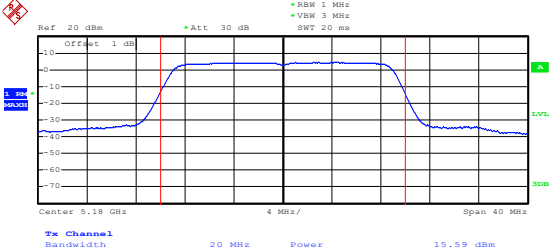
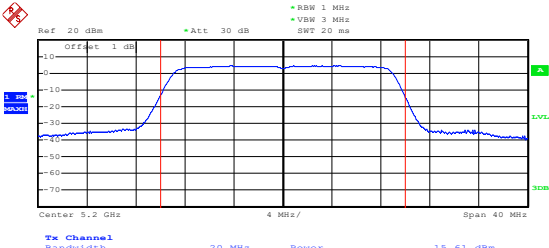
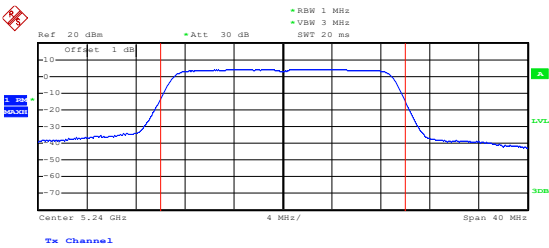
802.11a-Middle

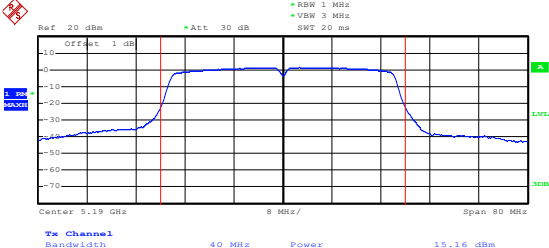
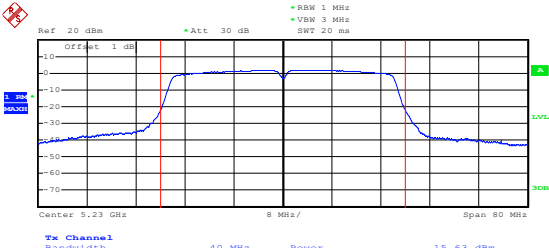
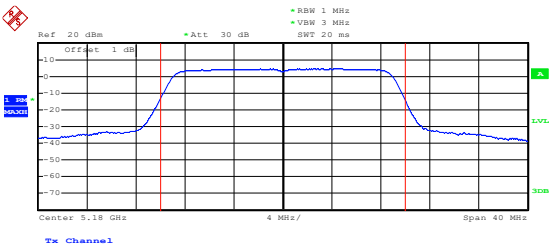


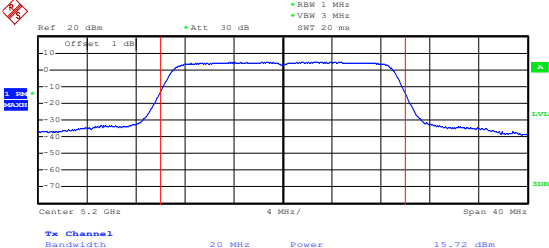
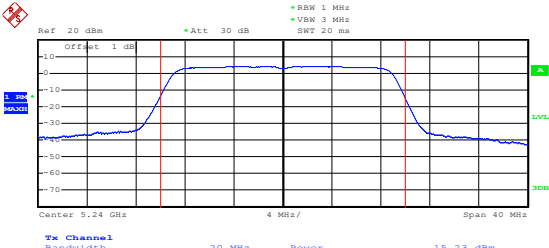
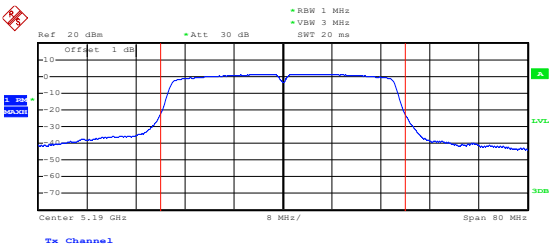
802.11a-High



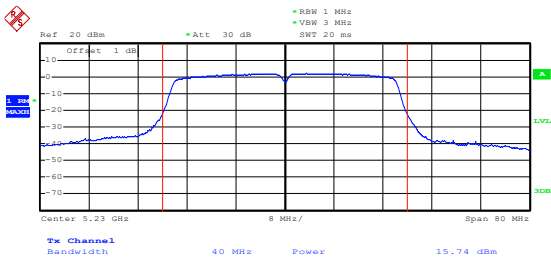
Date: 13.APR.2024 10:02:26

802.11n-HT20-Low	 Date: 13.APR.2024 10:04:58
802.11n-HT20-Middle	 Date: 13.APR.2024 10:04:26
802.11n-HT20-High	 Date: 13.APR.2024 10:03:50

802.11n-HT40-Low	 Date: 13.APR.2024 10:08:08
802.11n-HT40-High	 Date: 13.APR.2024 10:08:44
802.11ac-VHT20-Low	 Date: 13.APR.2024 10:05:38

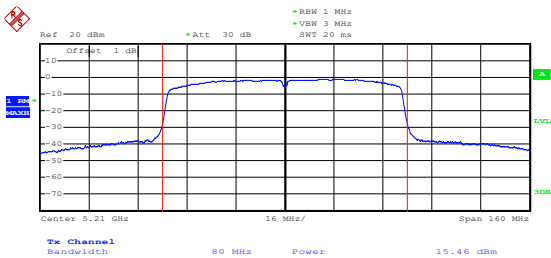
802.11ac-VHT20-Middle	 Date: 13.APR.2024 10:06:11
802.11ac-VHT20-High	 Date: 13.APR.2024 10:06:56
802.11ac-VHT40-Low	 Date: 13.APR.2024 10:09:50

802.11ac-VHT40-High



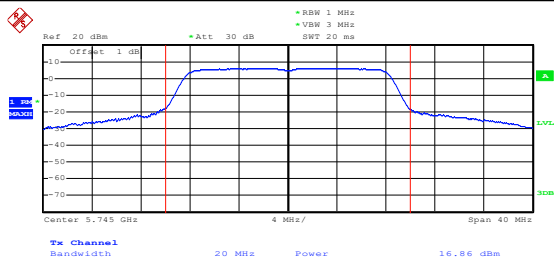
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802.11ac-VHT80

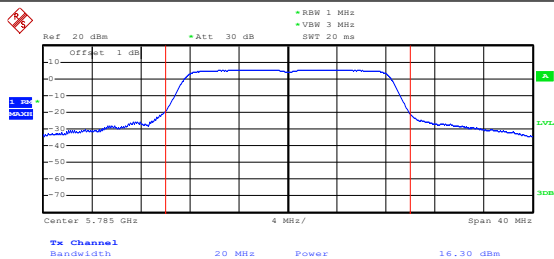
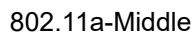


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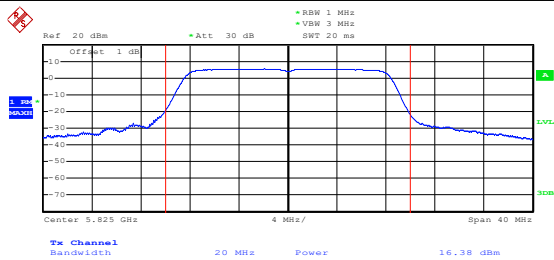
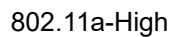
5725-5850MHz



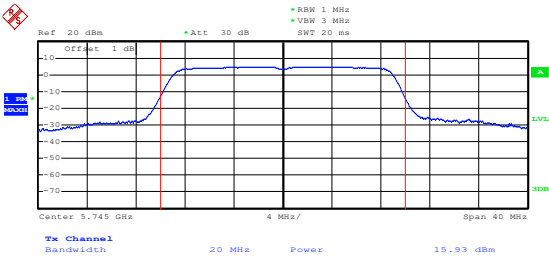
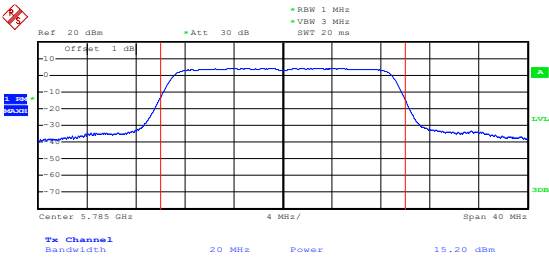
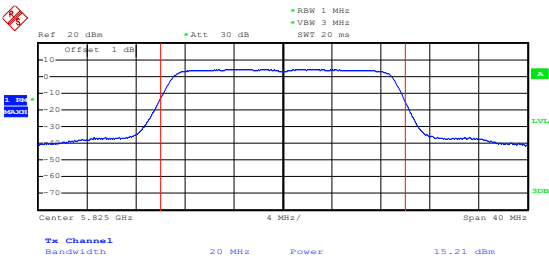
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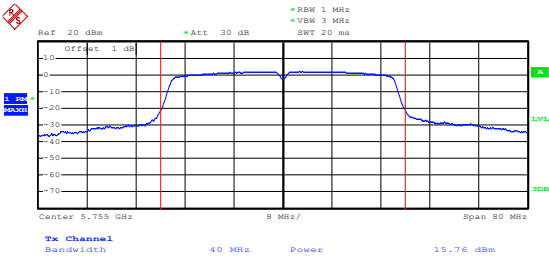
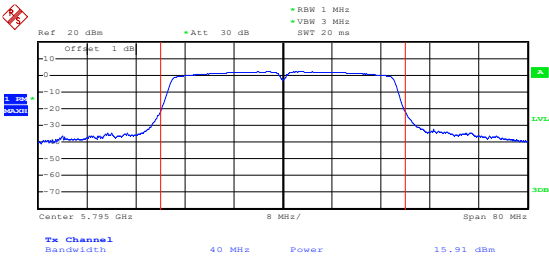
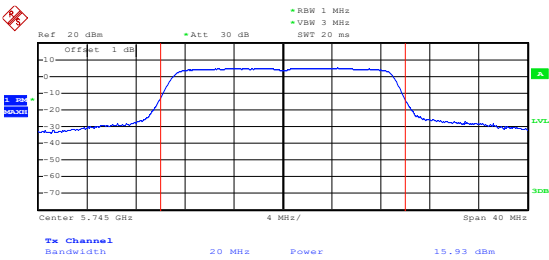


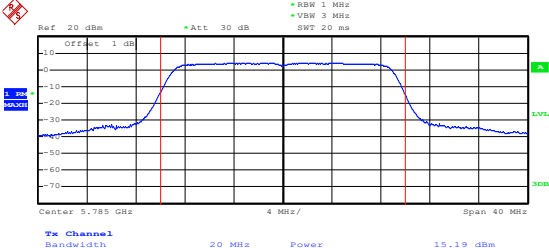
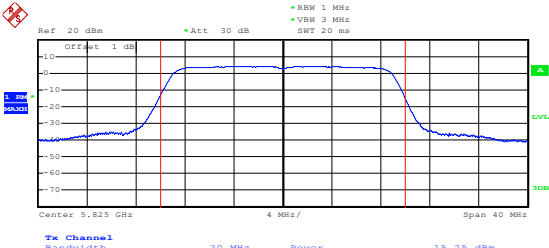
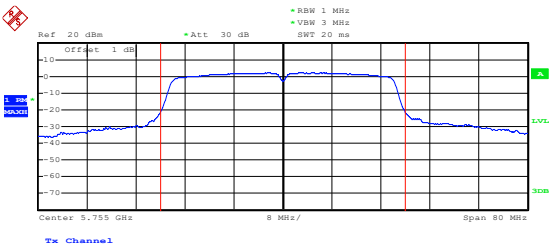
Date: 13.APR.2024 10:56:36



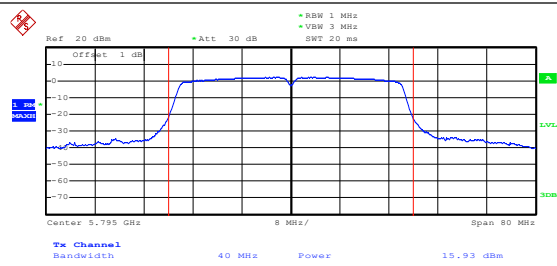
Date: 13.APR.2024 10:57:19

802.11n-HT20-Low	 Date: 13.APR.2024 10:58:45
802.11n-HT20-Middle	 Date: 13.APR.2024 10:58:09
802.11n-HT20-High	 Date: 13.APR.2024 10:57:48

802.11n-HT40-Low	 Date: 13.APR.2024 11:00:38
802.11n-HT40-High	 Date: 13.APR.2024 11:01:01
802.11ac-VHT20-Low	 Date: 13.APR.2024 10:59:09

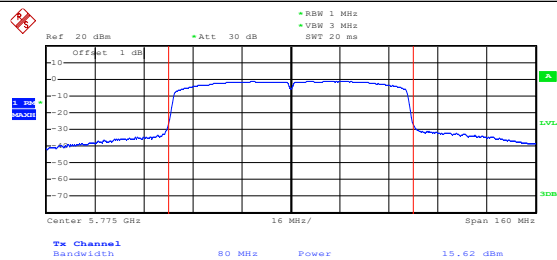
802.11ac-VHT20-Middle	 Date: 13.APR.2024 10:59:32
802.11ac-VHT20-High	 Date: 13.APR.2024 10:59:59
802.11ac-VHT40-Low	 Date: 13.APR.2024 11:01:39

802.11ac-VHT40-High



Date: 13.APR.2024 11:01:17

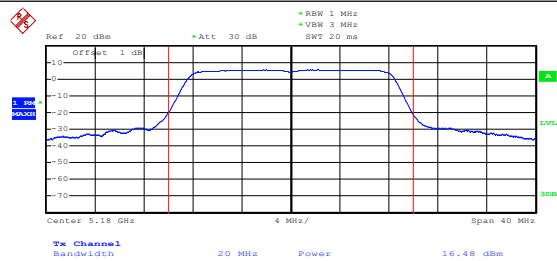
802.11ac-VHT80



Date: 13.APR.2024 11:02:20

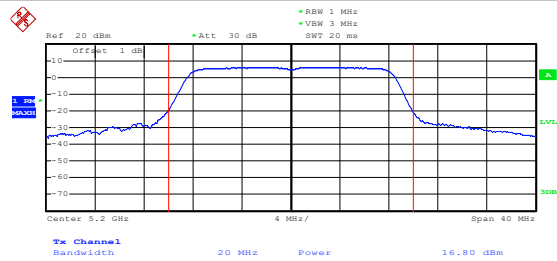
ANT 1
5150-5250MHz

802.11a-Low



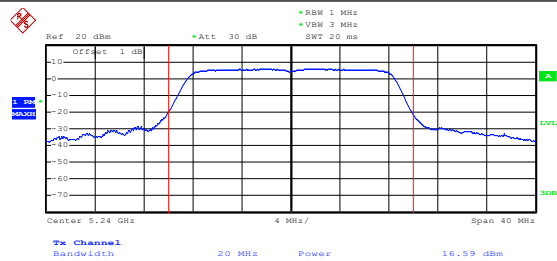
Date: 13.APR.2024 15:00:27

802.11a-Middle



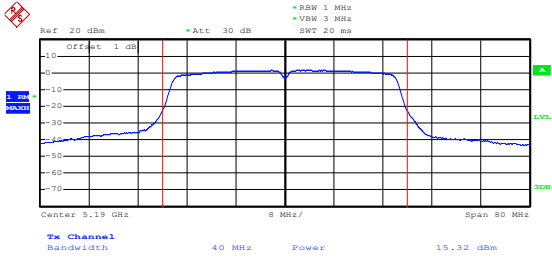
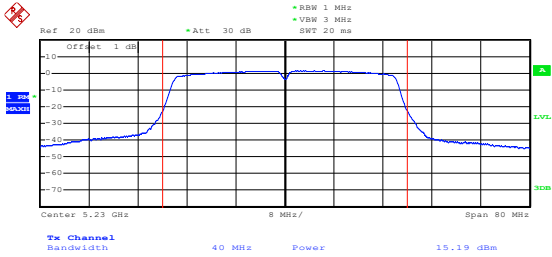
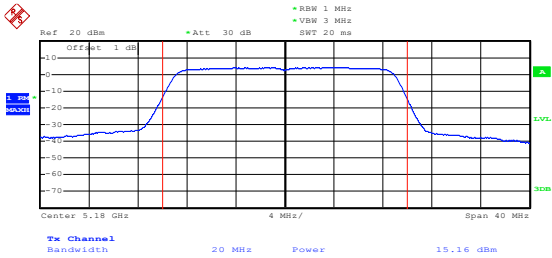
Date: 13.APR.2024 15:01:29

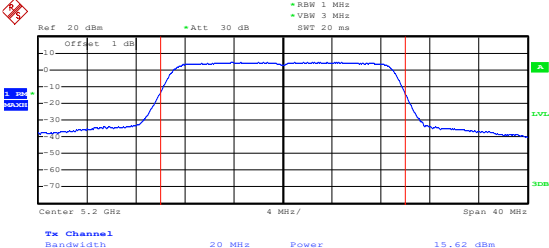
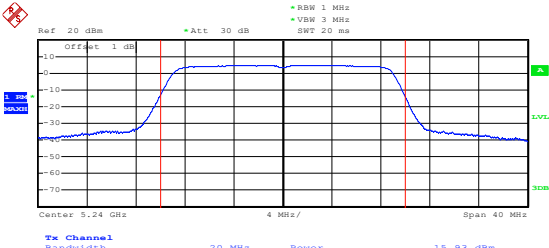
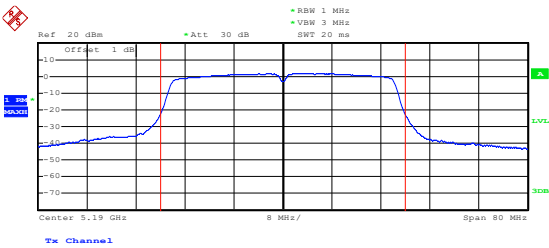
802.11a-High



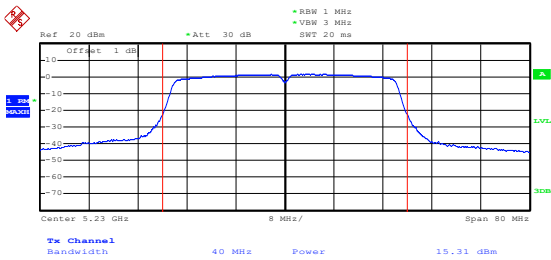
Date: 13.APR.2024 15:02:09

[illegible]

802.11n-HT40-Low	 Ref: 20 dBm Offset: 1 dB Att: 30 dB RBW: 1 MHz VBW: 3 MHz SWT: 20 ms Center: 5.19 GHz Span: 80 MHz Tx Channel Bandwidth: 40 MHz Power: 15.32 dBm Date: 13.APR.2024 15:06:45
802.11n-HT40-High	 Ref: 20 dBm Offset: 1 dB Att: 30 dB RBW: 1 MHz VBW: 3 MHz SWT: 20 ms Center: 5.23 GHz Span: 80 MHz Tx Channel Bandwidth: 40 MHz Power: 15.19 dBm Date: 13.APR.2024 15:07:14
802.11ac-VHT20-Low	 Ref: 20 dBm Offset: 1 dB Att: 30 dB RBW: 1 MHz VBW: 3 MHz SWT: 20 ms Center: 5.18 GHz Span: 40 MHz Tx Channel Bandwidth: 20 MHz Power: 15.16 dBm Date: 13.APR.2024 15:04:20

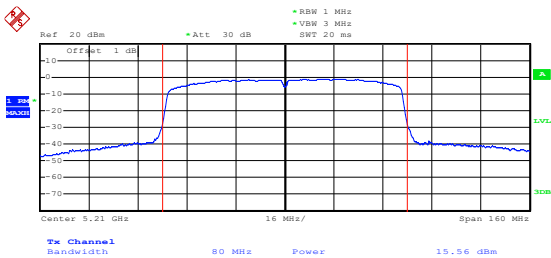
802.11ac-VHT20-Middle	 Date: 13.APR.2024 15:04:38
802.11ac-VHT20-High	 Date: 13.APR.2024 15:05:19
802.11ac-VHT40-Low	 Date: 13.APR.2024 15:07:54

802.11ac-VHT40-High



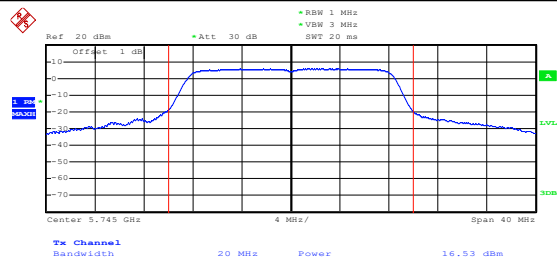
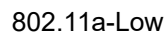
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802.11ac-VHT80

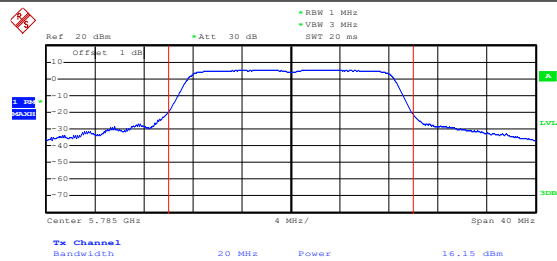
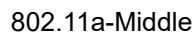


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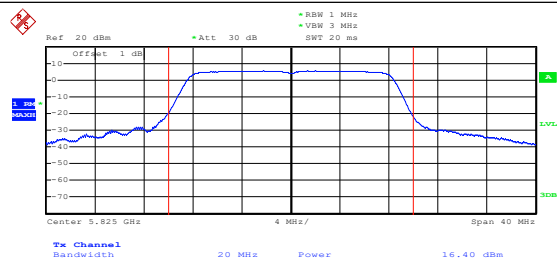
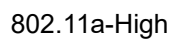
5725-5850MHz



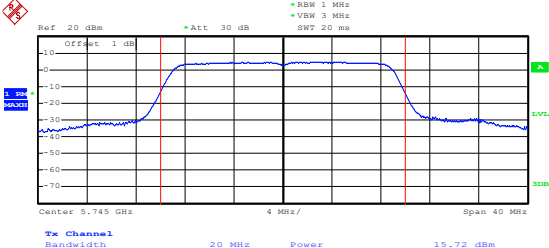
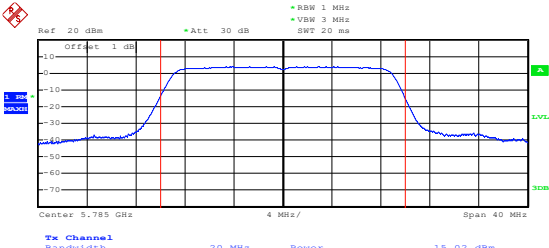
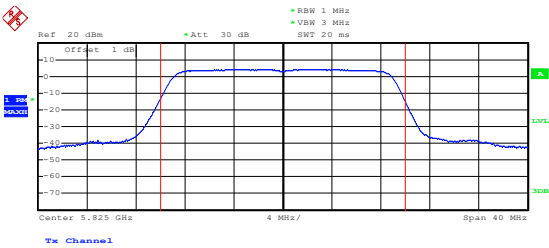
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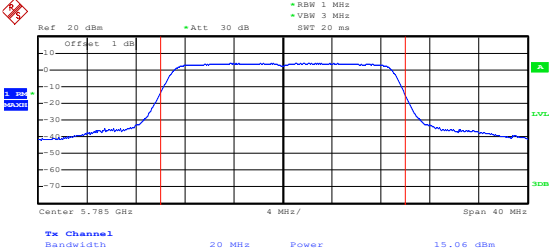
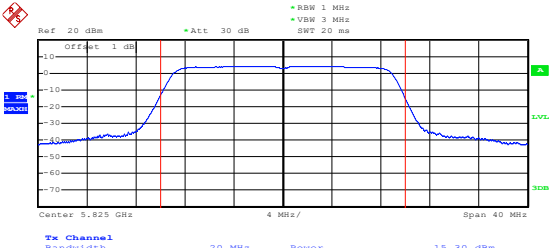
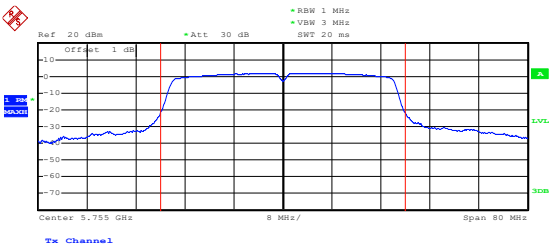
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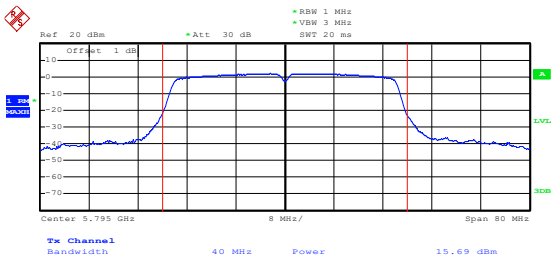
Date: 13.APR.2024 15:50:34

802.11n-HT20-Low	 Date: 13.APR.2024 15:51:55
802.11n-HT20-Middle	 Date: 13.APR.2024 15:51:23
802.11n-HT20-High	 Date: 13.APR.2024 15:51:00

802.11n-HT40-Low	Date: 13.APR.2024 15:54:05
802.11n-HT40-High	Date: 13.APR.2024 15:54:43
802.11ac-VHT20-Low	Date: 13.APR.2024 15:52:15

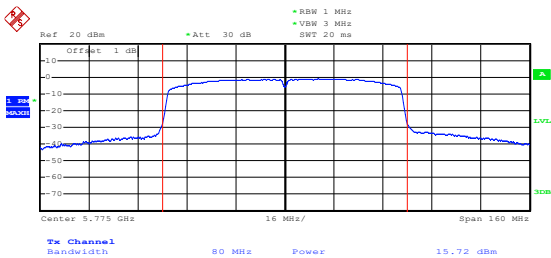
802.11ac-VHT20-Middle	 Date: 13.APR.2024 15:52:45
802.11ac-VHT20-High	 Date: 13.APR.2024 15:53:13
802.11ac-VHT40-Low	 Date: 13.APR.2024 15:55:42

802.11ac-VHT40-High



Date: 13.APR.2024 15:55:19

802.11ac-VHT80



Date: 13.APR.2024 15:56:21

APPENDIX D

Frequency Stability

U-NII-1:5150-5250MHz worst case at 802.11a middle channel				
Voltage(%)	Power(VAC)	TEMP(°C)	Freq.Dev(Hz)	Deviation
100%	120	-30	1602	0.3081
100%		-20	1592	0.3061
100%		-10	1585	0.3048
100%		0	1594	0.3066
100%		+10	1609	0.3094
100%		+20	1592	0.3061
100%		+30	1596	0.3069
100%		+40	1595	0.3067
100%		+50	1588	0.3053
Low Battery power	108	+20	1602	0.3080
High Battery power	132	+20	1599	0.3076

U-NII-1:5725-5850MHz worst case at 802.11a middle channel				
Voltage(%)	Power(VAC)	TEMP(°C)	Freq.Dev(Hz)	Deviation
100%	120	-30	1594	0.2756
100%		-20	1596	0.2759
100%		-10	1585	0.2741
100%		0	1597	0.2761
100%		+10	1604	0.2773
100%		+20	1594	0.2756
100%		+30	1594	0.2756
100%		+40	1596	0.2759
100%		+50	1590	0.2749
Low Battery power	108	+20	1596	0.2760
High Battery power	132	+20	1599	0.2763

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

***** END OF REPORT *****