TEST REPORT

Applicant Name:	Shenzhen Ameta Technology Co., Ltd.
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Report Number:	2401X30305E-RF-00B
FCC ID:	2BHJX-ATS20BT2424

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	R/C QUADCOPTER
Model No.:	DR-ATS20B
Multiple Model(s) No.:	DR-UHF20B
Trade Mark:	N/A
Date Received:	2024/09/09
Issue Date:	2025/01/11

Test Result:	Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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Ekko Wu
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401X30305E-RF-00B	Original Report	2025/01/11

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	R/C QUADCOPTER
Tested Model	DR-ATS20B
Multiple Model(s)	DR-UHF20B
Frequency Range	5G Wi-Fi: 5725-5850MHz
Mode	802.11a
Maximum Conducted Average Output Power	5725-5850MHz: 15.37dBm
Modulation Technique	OFDM
Antenna Specification[#]	2.44dBi (provided by the applicant)
Voltage Range	DC3.7V from battery
Sample serial number	2RE6-2 for Radiated Emissions Test 2RE6-1 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	N/A
Note: The Multiple models are electrically identical with the test model except for model name and sales channels. Please refer to the declaration letter[#] for more detail, which was provided by manufacturer.	

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Frequency		213.55 Hz(k=2, 95% level of confidence)
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.75 dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.94dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.30dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

For 5725-5850MHz Band, 5 channels are provided to testing:

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

For 802.11a mode: channel 149, 157, 165 were tested.

EUT Exercise Software

"SecureCRT"# software was used and power level as below. The software and power level was provided by the applicant. The device was tested with the worst case was performed as below:

Mode	Data rate	Power Level#		
		Low Channel	Middle Channel	High Channel
802.11a	6Mbps	15	15	15

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

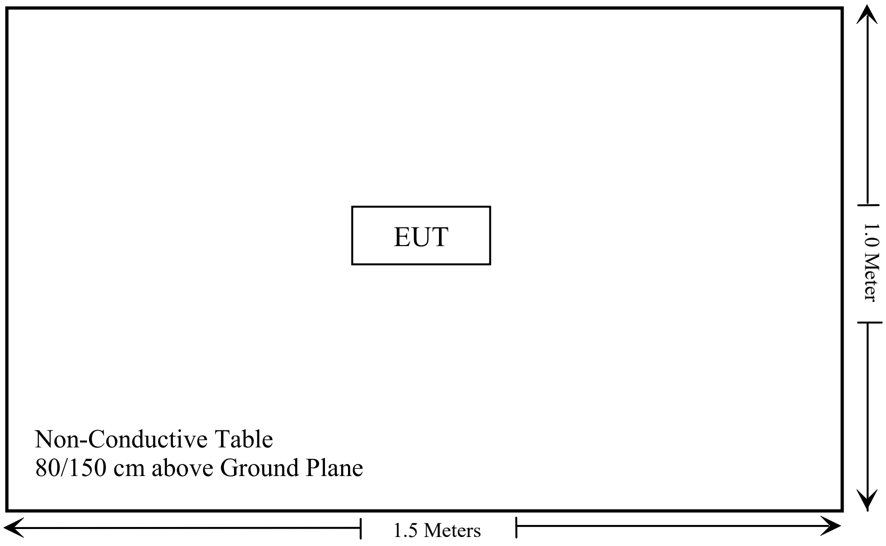
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
/	/	/	/

Block Diagram of Test Setup

For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Not Applicable*
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(e)	6 dB Emission Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Not Applicable
C63.10 §11.6	Duty Cycle	/

Not Applicable: The device operates only on 5725-5850MHz.

Not Applicable*: The device was powered by battery when operating.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test_ Below 1GHz					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Radiated Emission Test_ Above 1GHz					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
Unknown	RF Cable	XH750A-N	J-10M	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2024/06/18	2025/06/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Harmonics & other emissions					
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Band Edge					
A.H.System	Preamplifier	PAM-0118P	489	2024/11/15	2025/11/14

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Tonscend	RF control Unit	JS0806-2	19D8060154	2024/08/06	2025/08/05
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
Rohde &Schwarz	Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
Unknown	10dB Attenuator	Unknown	F-03-EM190	2024/06/27	2025/06/26
Narda	20dB Attenuator	99899	0107	2024/06/27	2025/06/26

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density
According to §1.1310 and §2.1091 RF exposure is calculated.

Result

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

For worst case:

Mode	Frequency (MHz)	Antenna Gain#		Max Tune-up Power#		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402-2480	-8.0	0.16	8.5	7.08	20	0.0002	1.0
5.8G Wi-Fi	5745-5825	2.44	1.75	15.5	35.48	20	0.0124	1.0

Note: 1) The tune up conducted power and antenna gain was declared by the applicant.
2) The BLE and 5G Wi-Fi cannot Simultaneous transmitting.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Antenna Connector Construction

The EUT has one internal antenna which was permanently attached, and the maximum antenna gain[#] is 2.44dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant

§15.205 & §15.209 & §15.407(B) - UNDESIRABLE EMISSION

Applicable Standard

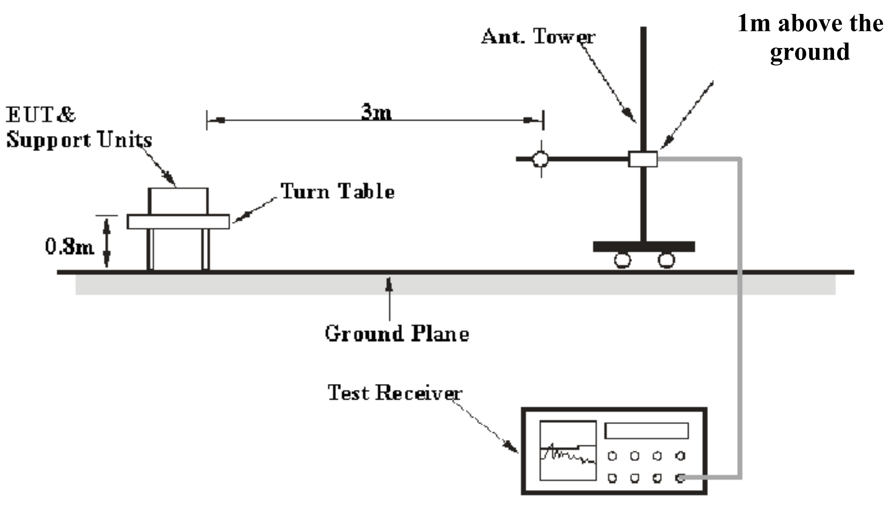
FCC §15.407 (b); §15.209; §15.205;

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

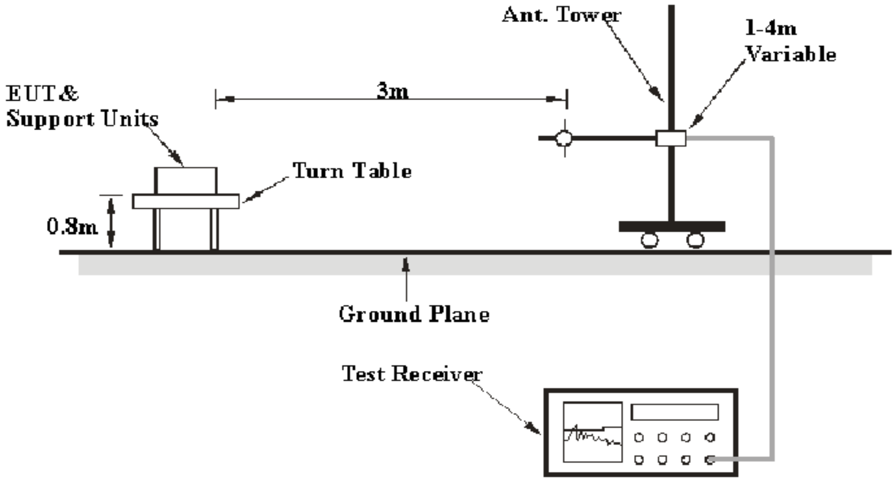
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

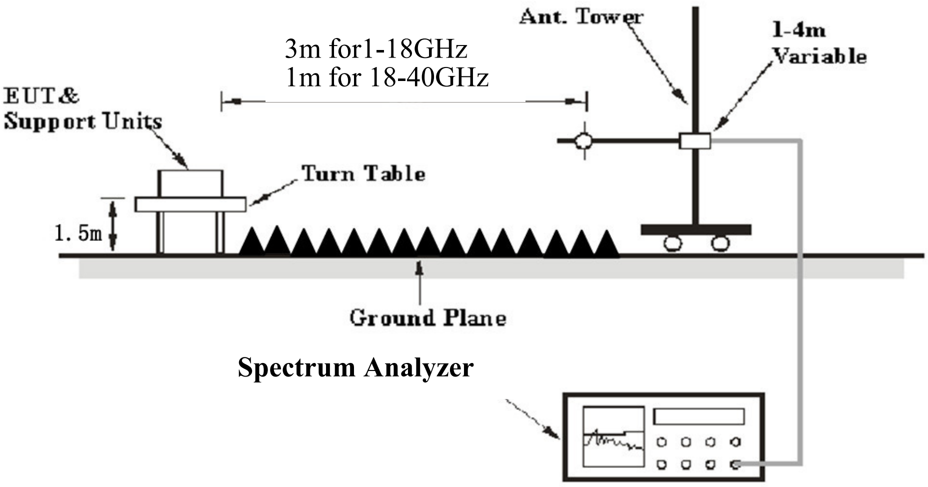
9 kHz-30MHz:



30MHz-1GHz:



Above 1 GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9 kHz-1GHz:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	/	/	200 Hz	QP
	300 Hz	1 kHz	/	PK
150 kHz – 30 MHz	/	/	9 kHz	QP
	10 kHz	30 kHz	/	PK
30 MHz – 1000 MHz	/	/	120 kHz	QP
	100 kHz	300 kHz	/	PK

1-40GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Average	>98%	1MHz	≥10 Hz Note 1
	<98%	1MHz	≥1/Ton Note 2
Note 1: The detail test parameters please refer to duty cycle section. Note 2: Ton is minimum transmission duration.			

Test Procedure

Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

All emissions under the average limit and under the noise floor have not recorded in the report.

According to ANSI C63.10-2013,9.4: For field strength measurements made at other than the distance at which the applicable limit is specified, extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance). In some cases, a different distance correction factor may be required;

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20\log\left(\frac{d_{\text{Meas}}}{d_{\text{SpecLimit}}}\right)$$

where

$E_{\text{SpecLimit}}$	is the field strength of the emission at the distance specified by the limit, in dBμV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBμV/m
d_{Meas}	is the measurement distance, in m
$d_{\text{SpecLimit}}$	is the distance specified by the limit, in m

So the extrapolation factor of 1m is 20*log(1/3)= -9.5 dB, for 18-40GHz range, the limit of 1m distance was added by 9.5dB from limit of 3m to compared with the result measurement at 1m distance.

Factor & Over Limit/Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit = Level – Limit; Margin = Limit–Corrected Amplitude
Level / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	22~25.3 ℃
Relative Humidity:	51~54 %
ATM Pressure:	101 kPa

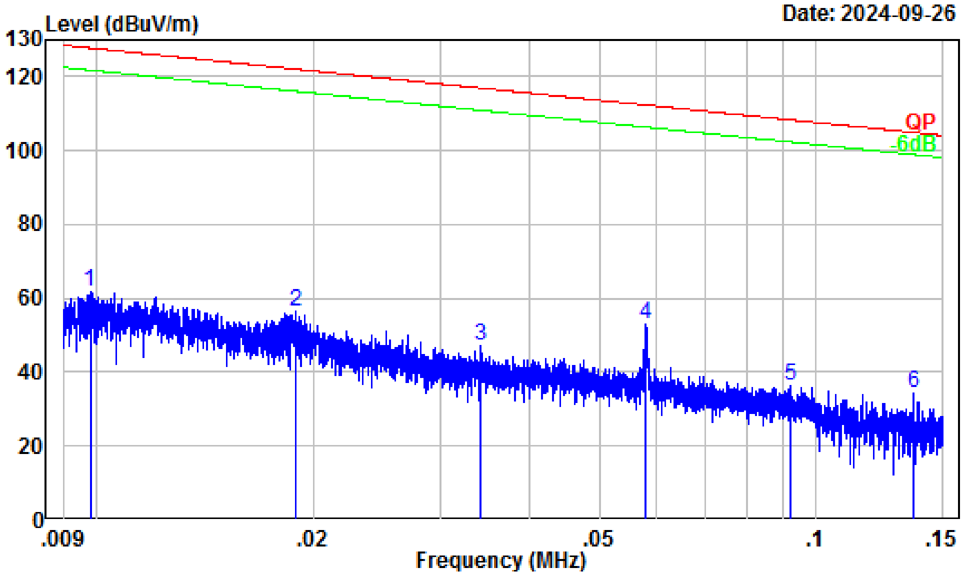
The testing was performed by Anson Su on 2024-09-26 for below 1GHz, Zenos Qiao on 2024-11-24 for above 1GHz harmonics & other emissions test, and Zenos Qiao on 2024-12-11 for above 1GHz band edge test.

EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation was recorded.

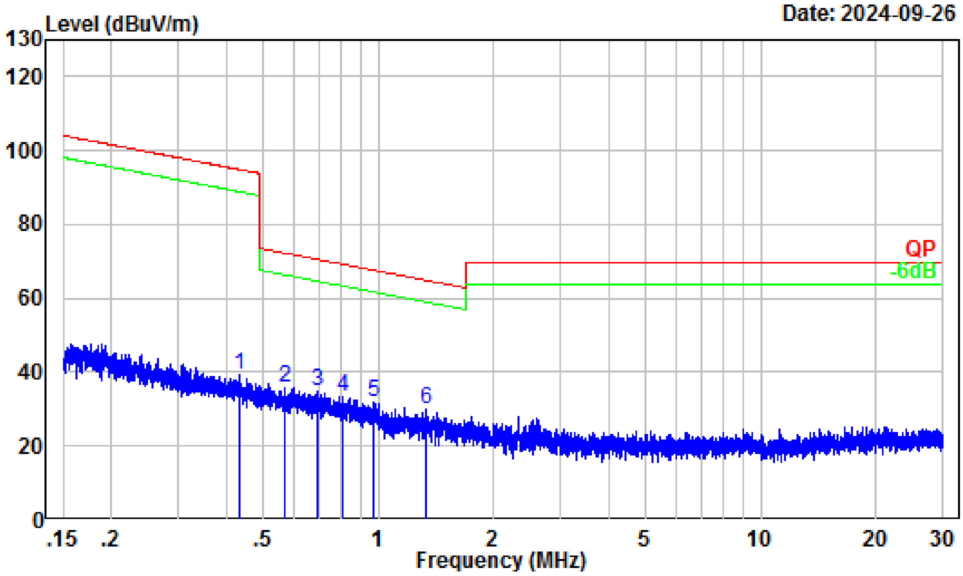
9 kHz-30MHz: *(Maximum output power mode, 802.11 a 5785MHz)*

Parallel (worst case)



Site : Chamber A
Condition : 3m
Project Number: 2401X30305E-RF
Test Mode : 5G WIFI Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	37.84	23.95	61.79	127.77	-65.98	Peak
2	0.02	33.14	23.07	56.21	122.07	-65.86	Peak
3	0.03	26.55	20.33	46.88	116.92	-70.04	Peak
4	0.06	21.99	31.19	53.18	112.34	-59.16	Peak
5	0.09	17.82	18.43	36.25	108.30	-72.05	Peak
6	0.14	15.34	19.00	34.34	104.89	-70.55	Peak

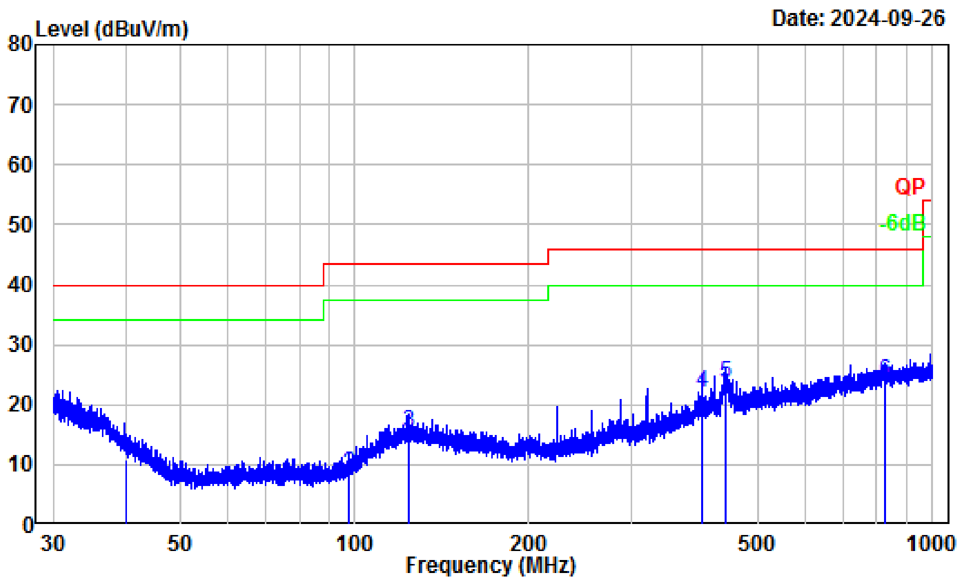


Site : Chamber A
Condition : 3m
Project Number: 2401X30305E-RF
Test Mode : 5G WIFI Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.43	4.87	34.19	39.06	94.84	-55.78	Peak
2	0.57	2.65	33.36	36.01	72.46	-36.45	Peak
3	0.69	1.21	33.76	34.97	70.77	-35.80	Peak
4	0.81	-0.15	33.42	33.27	69.40	-36.13	Peak
5	0.98	-1.42	33.09	31.67	67.68	-36.01	Peak
6	1.33	-2.75	32.64	29.89	64.91	-35.02	Peak

30 MHz–1 GHz: *(Maximum output power mode, 802.11 a 5785MHz)*

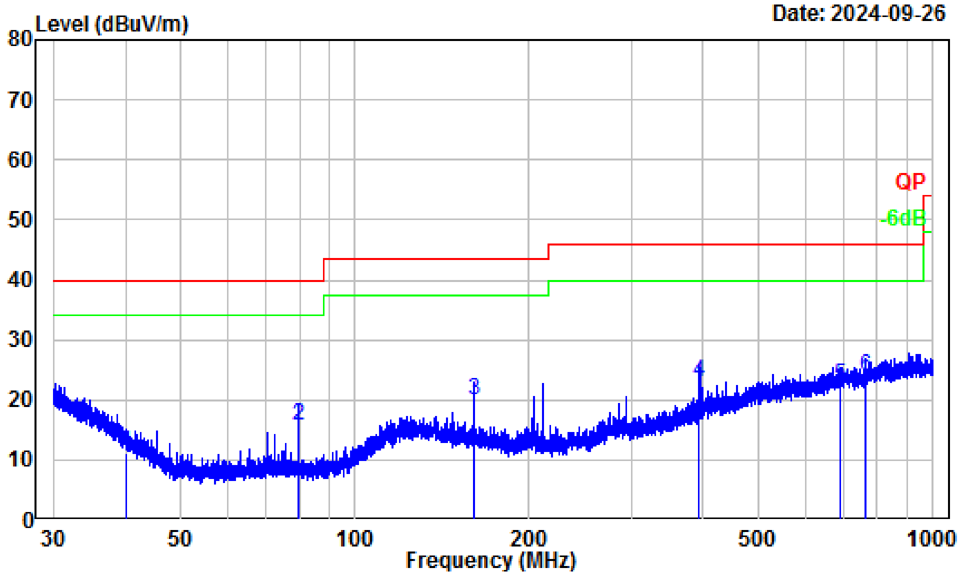
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401X30305E-RF
Test Mode : 5G WIFI Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.17	-12.49	23.46	10.97	40.00	-29.03	QP
2	97.63	-16.62	25.12	8.50	43.50	-35.00	QP
3	123.70	-11.14	26.39	15.25	43.50	-28.25	QP
4	400.08	-8.41	30.32	21.91	46.00	-24.09	QP
5	438.85	-7.69	31.10	23.41	46.00	-22.59	QP
6	829.31	-1.93	25.87	23.94	46.00	-22.06	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401X30305E-RF
Test Mode : 5G WIFI Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.05	-12.40	23.55	11.15	40.00	-28.85	QP
2	79.52	-17.90	33.71	15.81	40.00	-24.19	QP
3	160.14	-12.72	32.56	19.84	43.50	-23.66	QP
4	394.16	-8.68	31.70	23.02	46.00	-22.98	QP
5	691.99	-3.62	26.09	22.47	46.00	-23.53	QP
6	766.39	-2.57	26.33	23.76	46.00	-22.24	QP

Above 1GHz:

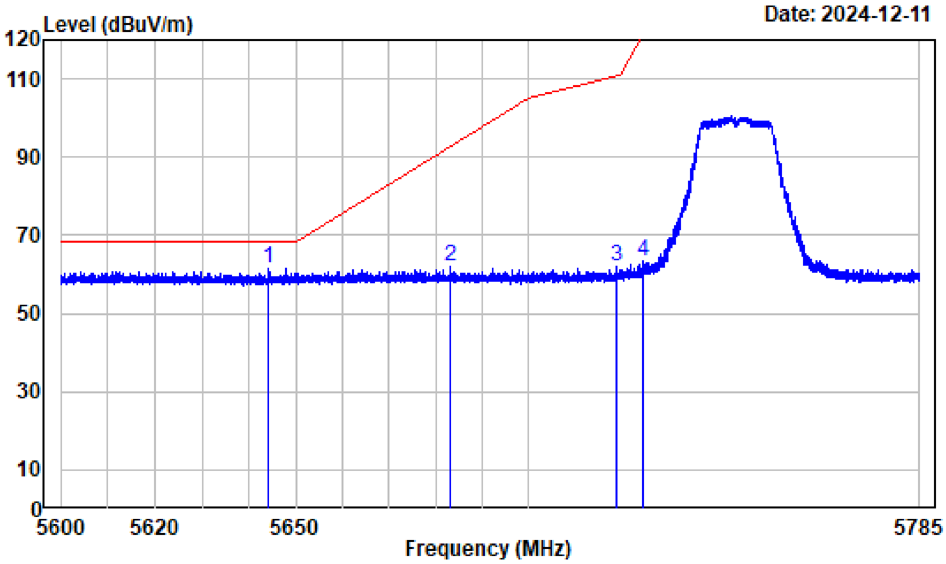
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/AV					
802.11a							
5725-5850 MHz							
5745MHz							
11490.00	45.57	PK	H	14.31	59.88	74	-14.12
11490.00	32.44	AV	H	14.31	46.75	54	-7.25
11490.00	46.12	PK	V	14.31	60.43	74	-13.57
11490.00	32.69	AV	V	14.31	47.00	54	-7.00
5785MHz							
11570.00	46.15	PK	H	14.05	60.20	74	-13.80
11570.00	32.78	AV	H	14.05	46.83	54	-7.17
11570.00	46.67	PK	V	14.05	60.72	74	-13.28
11570.00	33.03	AV	V	14.05	47.08	54	-6.92
5825MHz							
11650.00	46.86	PK	H	13.83	60.69	74	-13.31
11650.00	33.25	AV	H	13.83	47.08	54	-6.92
11650.00	47.38	PK	V	13.83	61.21	74	-12.79
11650.00	33.51	AV	V	13.83	47.34	54	-6.66

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Factor + Reading
Margin = Corrected. Amplitude - Limit
The other spurious emission which is in the noise floor level was not recorded.

Test plots for Band Edge Measurements (Radiated)

5725-5850 MHz:

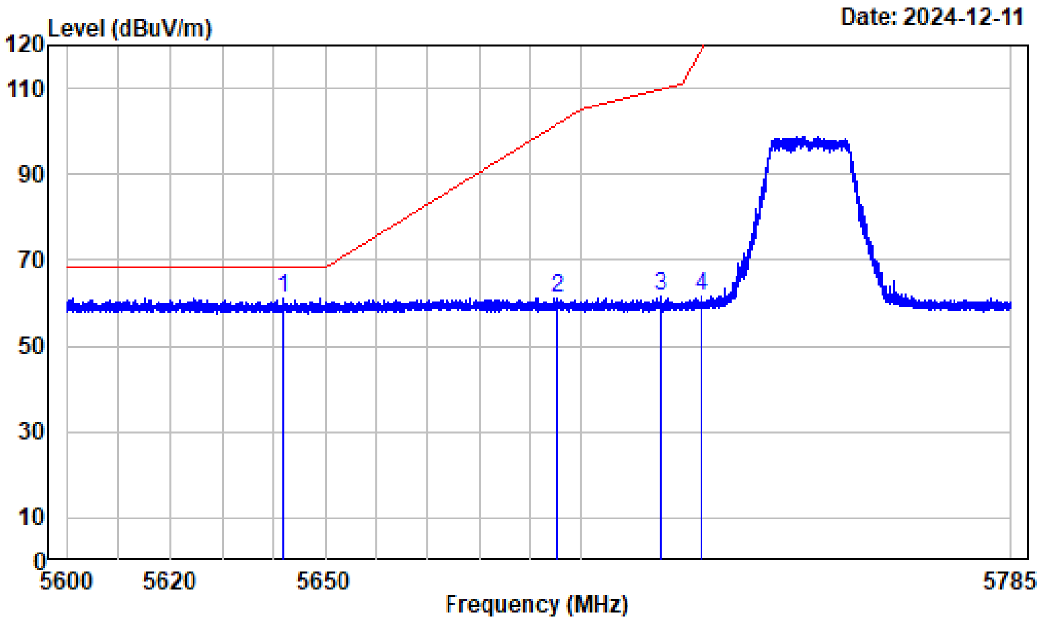
802.11a			
Test Channel:	5745MHz	Ant. Polar. :	Horizontal



Condition : Horizontal
Project No. : 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5745
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5644.313	-5.91	67.33	61.42	68.20	-6.78	Peak
2	5683.122	-5.77	67.85	62.08	92.75	-30.67	Peak
3	5719.155	-5.54	67.38	61.84	110.56	-48.72	Peak
4	5724.659	-5.49	68.75	63.26	121.42	-58.16	Peak

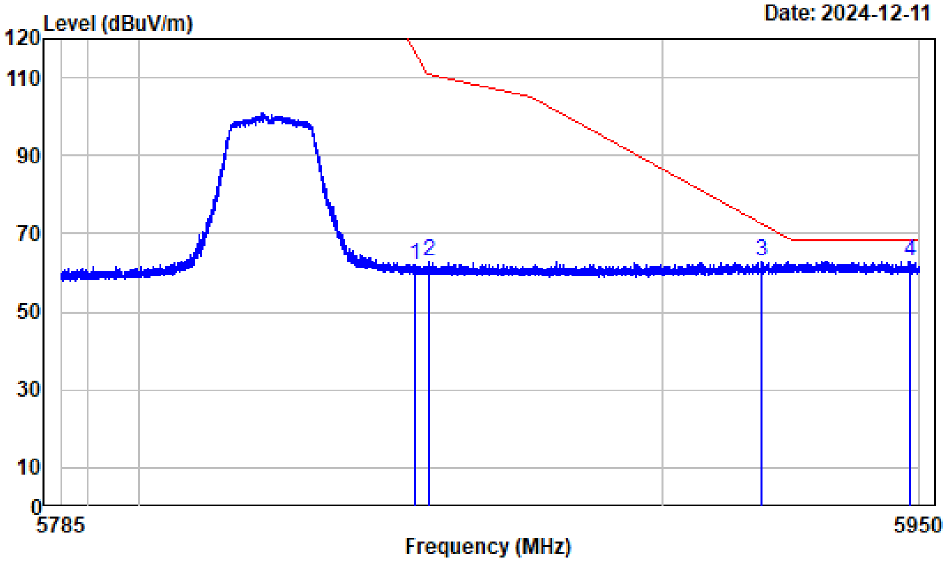
802.11a			
Test Channel:	5745MHz	Ant. Polar. :	Vertical



Condition : Vertical
Project No. : 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5745
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5642.023	-5.91	67.13	61.22	68.20	-6.98	Peak
2	5695.310	-5.73	66.95	61.22	101.74	-40.52	Peak
3	5715.616	-5.57	67.04	61.47	109.57	-48.10	Peak
4	5723.734	-5.49	66.99	61.50	119.32	-57.82	Peak

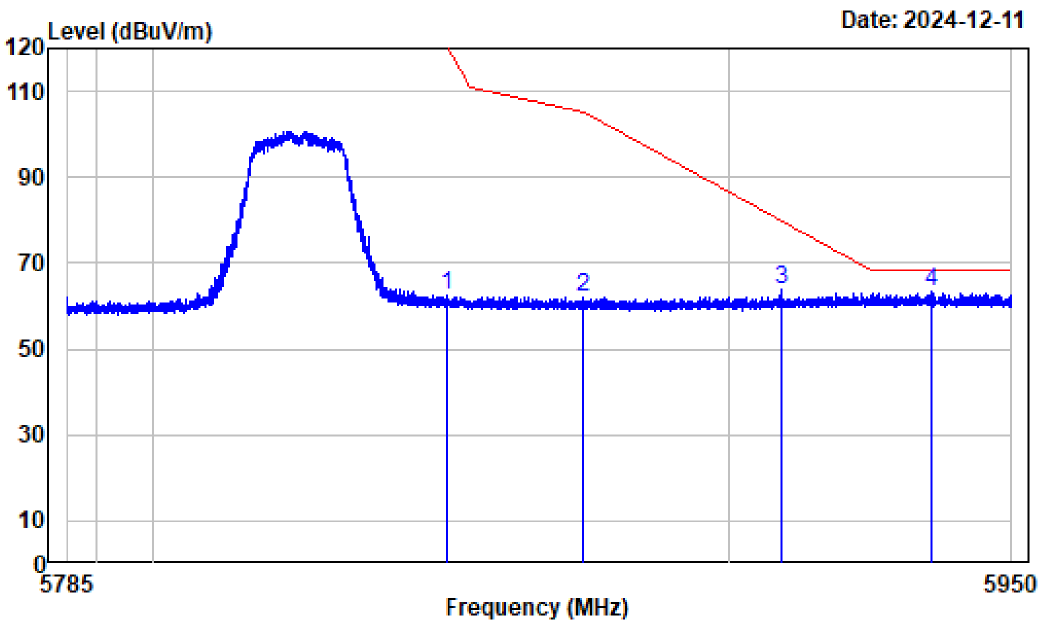
802.11a			
Test Channel:	5825MHz	Ant. Polar. :	Horizontal



Condition : Horizontal
Project No. : 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5852.514	-4.66	66.76	62.10	116.47	-54.37	Peak
2	5855.340	-4.66	67.52	62.86	110.70	-47.84	Peak
3	5919.368	-4.45	67.39	62.94	72.35	-9.41	Peak
4	5948.144	-4.45	67.60	63.15	68.20	-5.05	Peak

802.11a			
Test Channel:	5825MHz	Ant. Polar. :	Vertical



Condition : Vertical
Project No. : 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

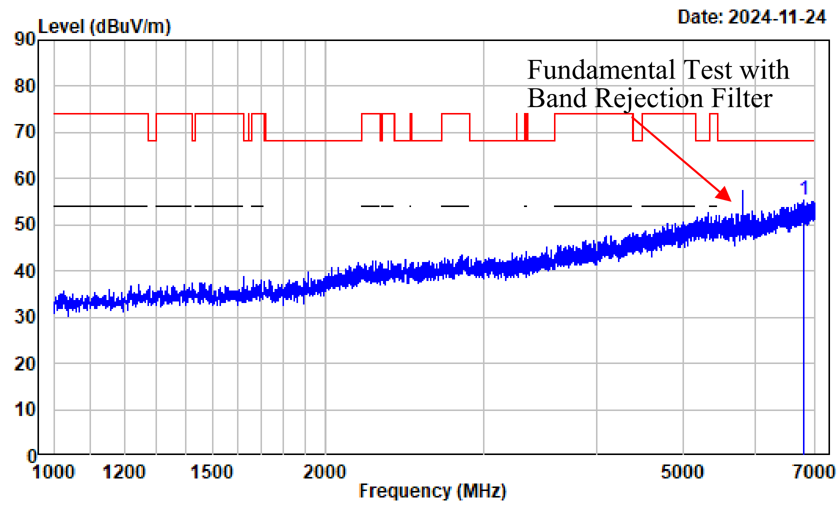
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5850.658	-4.68	67.03	62.35	120.70	-58.35	Peak
2	5874.668	-4.56	66.78	62.22	105.29	-43.07	Peak
3	5909.240	-4.46	68.29	63.83	79.83	-16.00	Peak
4	5935.850	-4.45	68.01	63.56	68.20	-4.64	Peak

Listed with the worst harmonic margin test plot:

802.11a, 5825MHz

Horizontal

1-7GHz

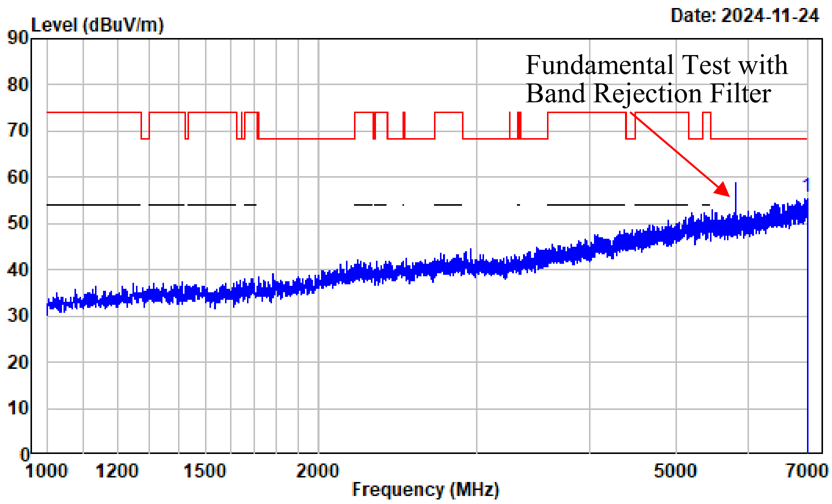


Condition : Horizontal
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	6794.474	7.35	48.13	55.48	68.20	-12.72	Peak

Vertical

1-7GHz

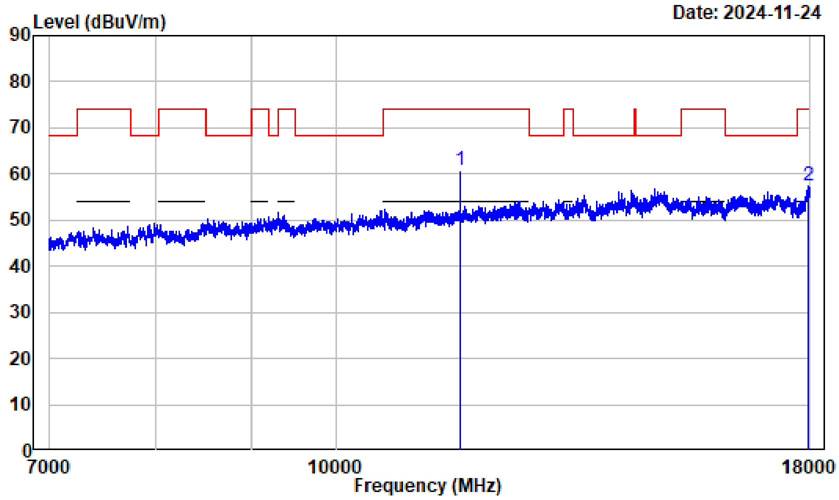


Condition : Vertical
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	6978.998	8.64	47.05	55.69	68.20	-12.51	Peak

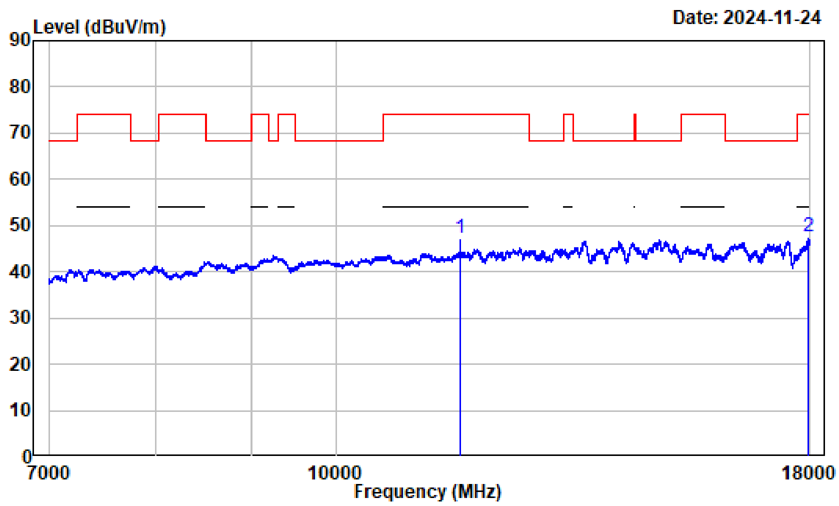
Horizontal-Peak

7-18GHz



Condition : Horizontal
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11650.000	13.83	46.86	60.69	74.00	-13.31	Peak
2	17940.490	24.19	33.28	57.47	74.00	-16.53	Peak

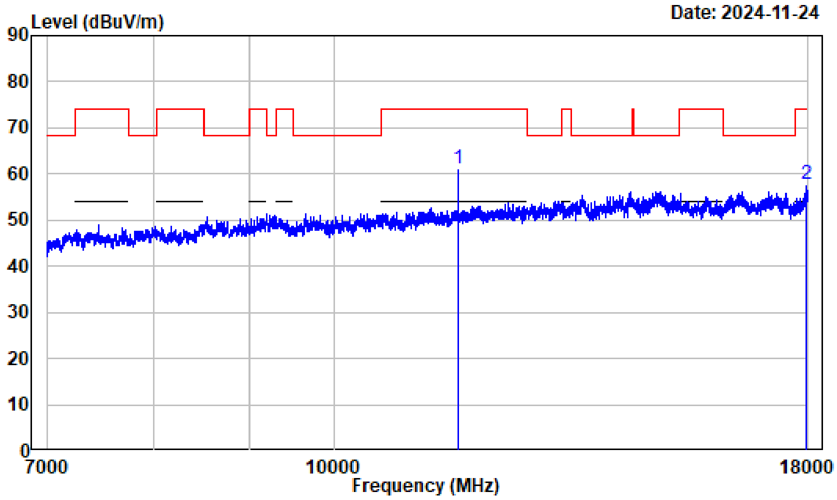
<table>
<tr><th colspan="2">Horizontal-Average</th></tr>
<tr><td>7-18GHz</td><td>


Condition : Horizontal
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11650.000	13.83	33.25	47.08	54.00	-6.92	Average
2	17960.690	24.33	23.17	47.50	54.00	-6.50	Average
</td></tr>
<tr><td colspan="2">Note: Spectrum Analyzer Setting: RBW=1MHz, VBW=5kHz</td></tr>
</table>

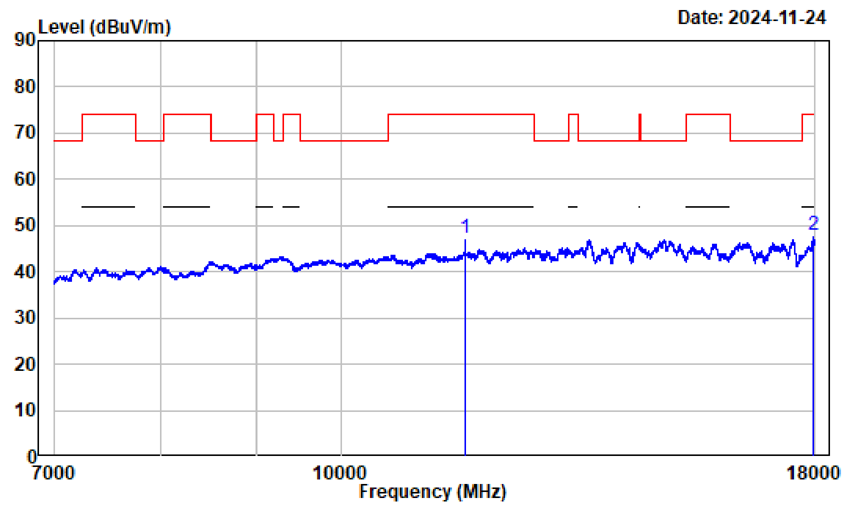
Vertical-Peak

7-18GHz



Condition : Vertical
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11650.000	13.83	47.38	61.21	74.00	-12.79	Peak
2	17956.240	24.31	33.43	57.74	74.00	-16.26	Peak

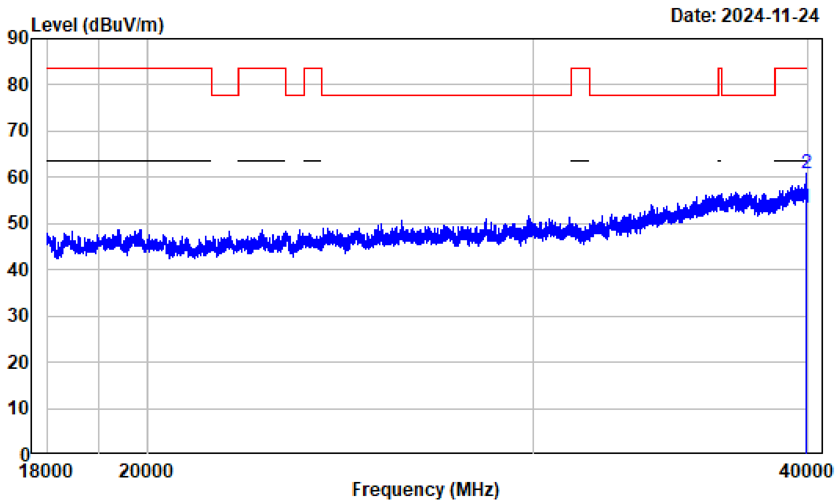
Vertical-Average	
7-18GHz	 Condition : Vertical Project No.: 2401X30305E-RF Tester : Zenos Qiao Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11650.000	13.83	33.51	47.34	54.00	-6.66	Average
2	17957.890	24.31	23.46	47.77	54.00	-6.23	Average

Note: Spectrum Analyzer Setting: RBW=1MHz, VBW=5kHz

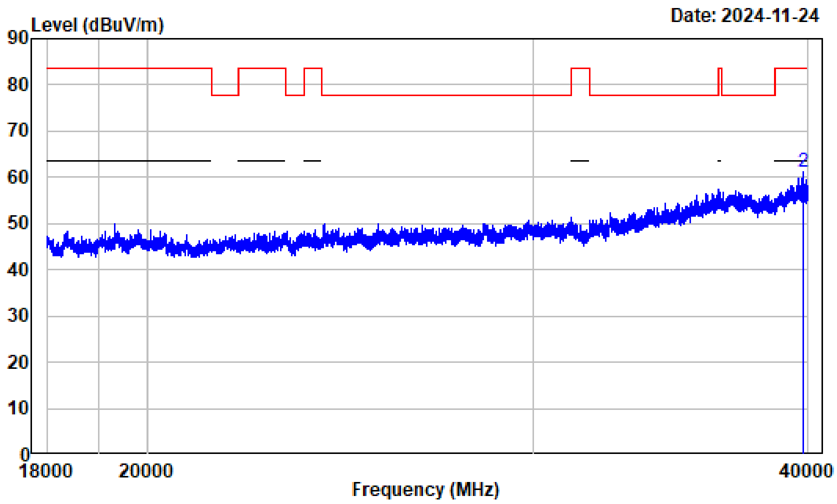
Horizontal

18-40GHz



Condition : Horizontal
Project No.: 2401X30305E-RF
Tester : Zenos Qiao
Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39939.490	22.56	30.69	53.25	63.50	-10.25	Average
2	39939.490	22.56	38.25	60.81	83.50	-22.69	Peak

Vertical	
18-40GHz	 Condition : Vertical Project No.: 2401X30305E-RF Tester : Zenos Qiao Note : 5GWiFi-Band4-A-5825

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39774.470	22.53	30.94	53.47	63.50	-10.03	Average
2	39774.470	22.53	38.52	61.05	83.50	-22.45	Peak

FCC §15.407 (e) - 6dB EMISSION BANDWIDTH

Applicable Standard

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

Test Procedure

According to KDB789033 D02 section II.C and section II.D

1. Minimum Emission Bandwidth for the band 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × 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.

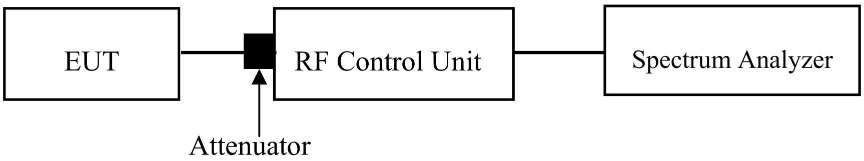
2. 99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The 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. The following procedure shall be used for measuring 99% power bandwidth:
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).



Test Data

Environmental Conditions

Temperature:	23.5 ℃
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Navilite Cai on 2025-01-09.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.407(a) - CONDUCTED TRANSMITTER OUTPUT POWER

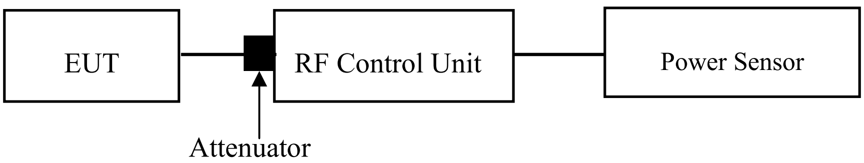
Applicable Standard

For the band 5.725-5.85 GHz, 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 30 dBm in any 500-kHz 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 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi 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.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method PM-G should be applied

a. Place the EUT on a bench and set it in transmitting mode.
b. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.



Test Data

Environmental Conditions

Temperature:	23.5 ℃
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Navilite Cai on 2025-01-08.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.407(a) - POWER SPECTRAL DENSITY

For the band 5.725-5.85 GHz, 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 30 dBm in any 500-kHz 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 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi 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.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Duty cycle ≥98%

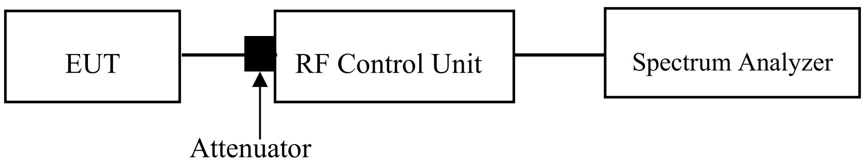
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

Duty cycle <98%, duty cycle variations are less than ±2%

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 should be applied.

Duty cycle <98%, duty cycle variations exceed ±2%

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-3 should be applied.



Test Data

Environmental Conditions

Temperature:	23.5 ℃
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Navilite Cai on 2025-01-08.

EUT operation mode: Transmitting

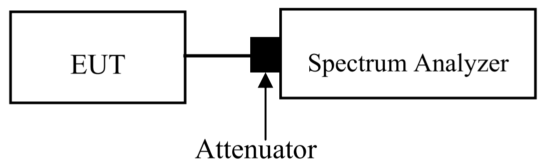
Test Result: Compliant. Please refer to the Appendix.

C63.10 §11.6- DUTY CYCLE

Test Procedure

According to ANSI C63.10-2013 Section 11.6

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
1) Set the center frequency of the instrument to the center frequency of the transmission.
2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ RBW. Set detector = peak or average.
4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 µs.)



Test Data

Environmental Conditions

Temperature:	23.5 °C
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Navilite Cai on 2025-01-09.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment 2401X30305E-RF External photo and 2401X30305E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401X30305E-RFB Test Setup photo.

APPENDIX

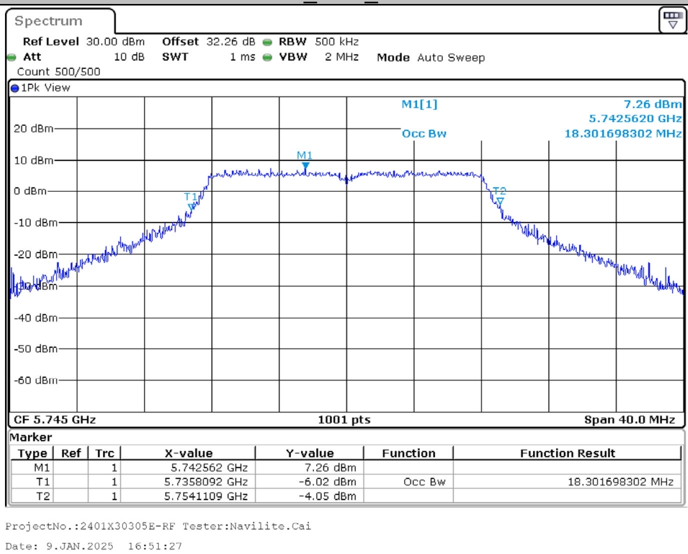
Appendix A1: Occupied channel bandwidth

Test Result

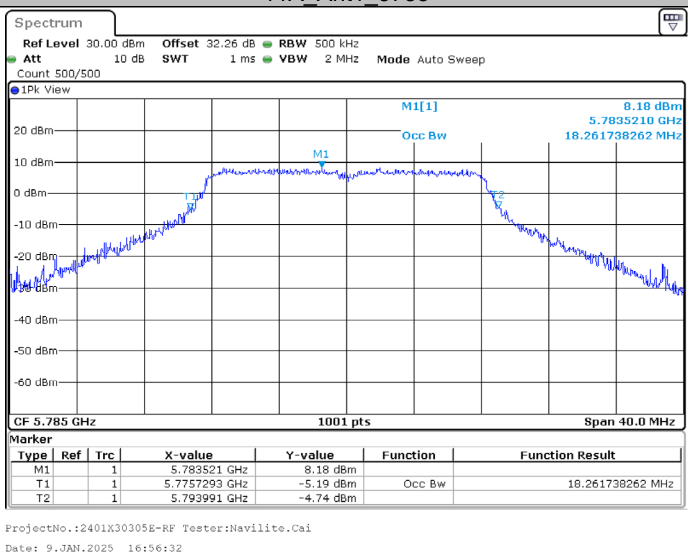
Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	18.302	---	---
		5785	18.262	---	---
		5825	18.062	---	---
Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2C band.					

Test Graphs

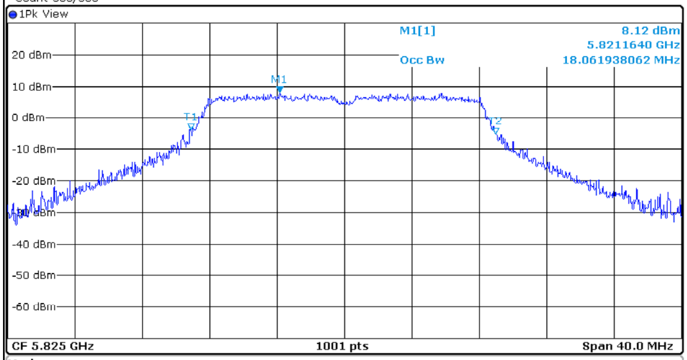
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.821164 GHz	8.12 dBm		
T1		1	5.8158891 GHz	-3.91 dBm	Occ Bw	18.061938062 MHz
T2		1	5.833951 GHz	-5.16 dBm		

ProjectNo.:2401X30305E-RF Tester:Navilite.Cai
Date: 9.JAN.2025 16:58:04

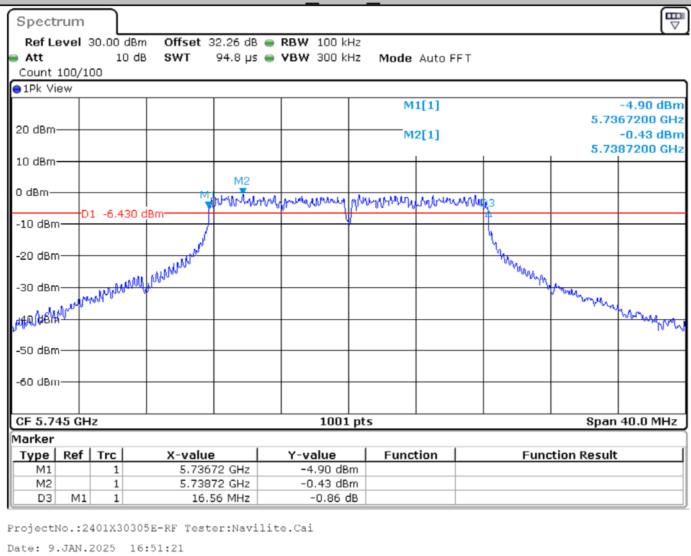
Appendix A2: Min emission bandwidth

Test Result

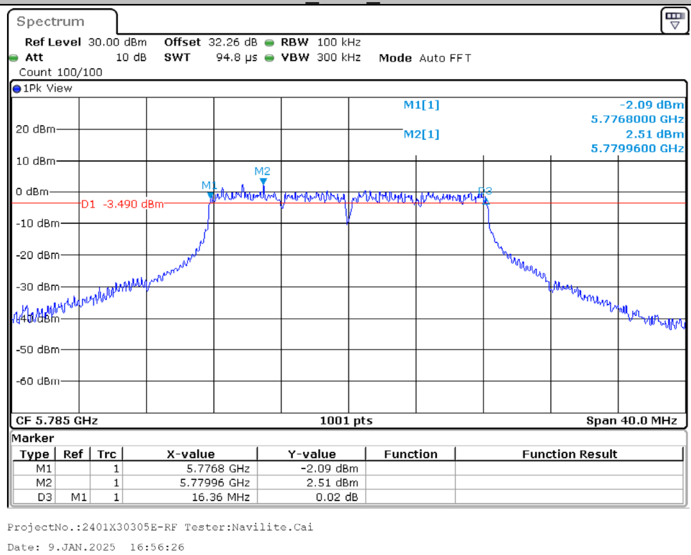
Test Mode	Antenna	Channel	6dB EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.56	0.5	PASS
		5785	16.36	0.5	PASS
		5825	16.52	0.5	PASS

Test Graphs

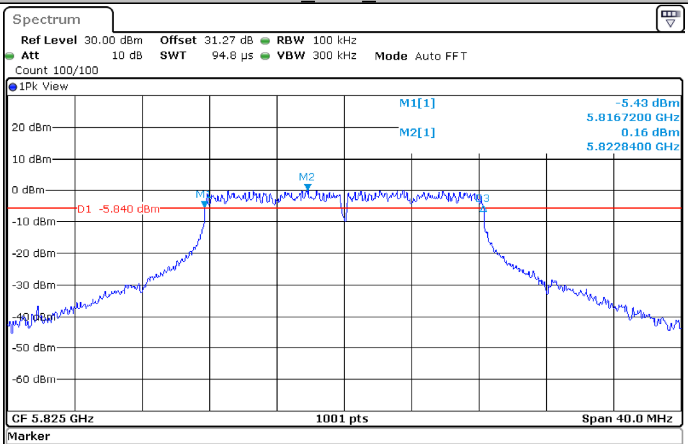
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.81672 GHz	-5.43 dBm		
M2		1	5.82284 GHz	0.16 dBm		
D3	M1	1	16.52 MHz	0.38 dB		

ProjectNo.:2401X30305E-RF Tester:Navilite.Cai
Date: 9.JAN.2025 16:57:58

Appendix B: Maximum conducted output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5745	15.23	≤30	PASS
		5785	15.37	≤30	PASS
		5825	14.69	≤30	PASS

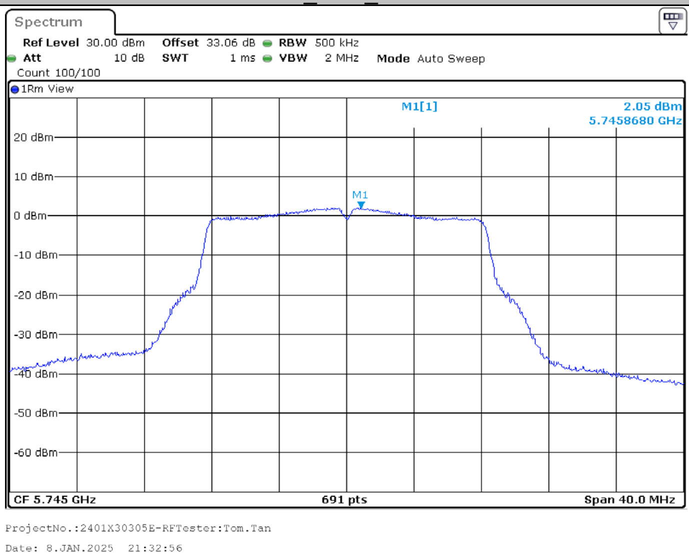
Appendix C: Maximum power spectral density

Test Result

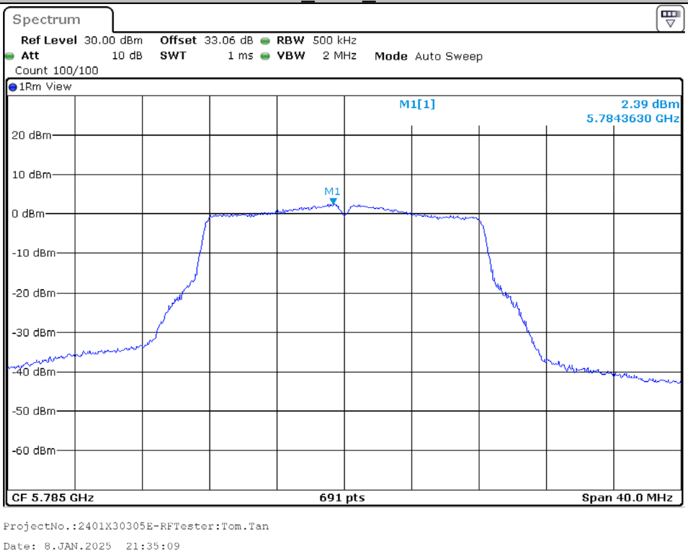
Test Mode	Antenna	Channel	Result [dBm/500kHz]	Limit[dBm/500kHz]	Verdict
11A	Ant1	5745	2.05	≤30	PASS
		5785	2.39	≤30	PASS
		5825	1.73	≤30	PASS
Note: The Duty Cycle Factor is compensated in the graph.					

Test Graphs

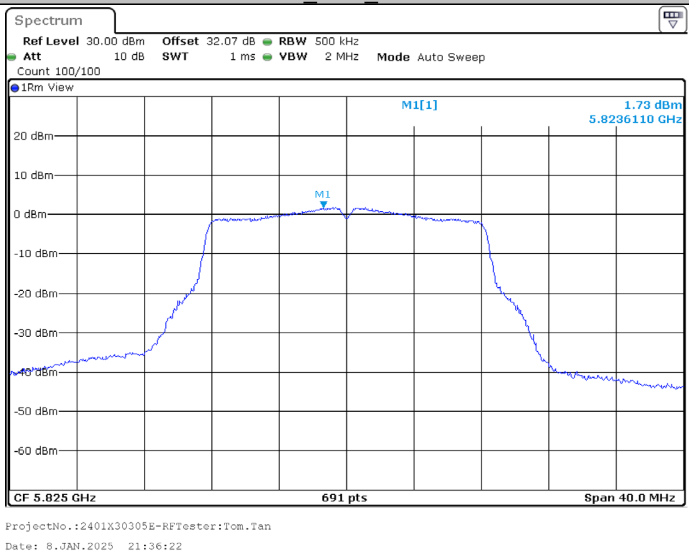
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



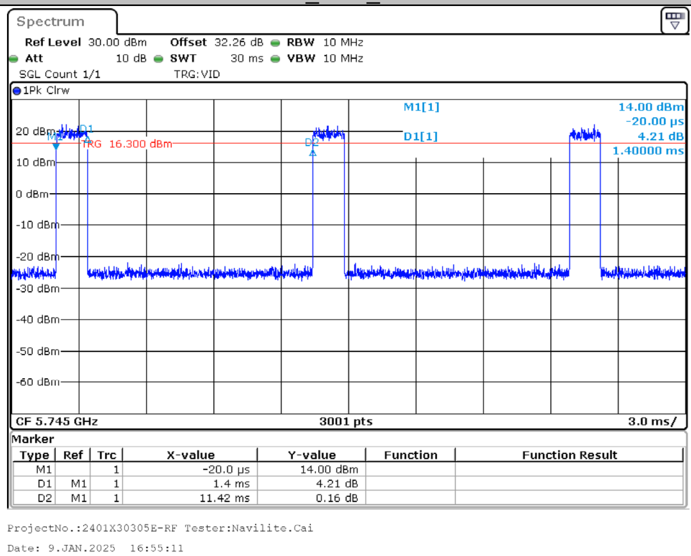
Appendix D: Duty Cycle

Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]	1/T [Hz]	VBW Setting [Hz]
11A	Ant1	5745	1.40	11.42	12.26	9.12	714	1000

Test Graphs

11A_Ant1_5745



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