TEST REPORT

Applicant Name:	Grandstream Networks, Inc.
Address:	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Report Number:	2401Z25490E-RF-00B
FCC ID:	YZZGWN7062ET

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	Wi-Fi 6 Router with FXS Ports
Model No.:	GWN7062ET
Multiple Model(s) No.:	N/A
Trade Mark:	GRANDSTREAM
Date Received:	2024-11-29
Issue Date:	2025-02-25

Test Result:	Pass▲

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

Prepared and Checked By:

Ekko Wu
RF Engineer

Approved By:

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	2401Z25490E-RF-00B	Original Report	2025-02-25

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5850-5895 MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80/ac160/ax20/ax40/ax80/ax160
Maximum Conducted Average Output Power	5850-5895 MHz: 23.61dBm
Maximum EIRP	5850-5895MHz: 32.77dBm
Modulation Technique	OFDM, OFDMA
Antenna Specification#	ANT0 (Chain 0): 3.98dBi; ANT1 (Chain 1): 4.26dBi ANT2 (Chain 2): 3.41dBi (provided by the applicant)
Voltage Range	DC 12V from adapter
Sample serial number	2V3K-2 for Conducted and Radiated Emissions Test 2V3K-1 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Adapter 1 Model: DCT18W120150US-A0 Input: AC 100-240V, 50/60Hz, 0.7A, max. Output: DC 12.0V, 1.5A Adapter 2 Model: GLH1201500 Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12.0V, 1.5A, 18.0W Adapter 3 Model: TS-A018-120150AJ Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12.0V, 1.5A, 18.0W
Note: The EUT charged by three adapters, the worst case Adapter 1 was selected to test for AC line conducted and Adapter 2 was selected to test for radiated emission below 1GHz according to 2.4G Wi-Fi report test result.	

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, 15.207, 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		109.2kHz(k=2, 95% level of confidence)
RF Frequency		56.6Hz(k=2, 95% level of confidence)
RF output power, conducted		0.86dB(k=2, 95% level of confidence)
Power Spectral Density		0.90dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.60dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.63dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.64dB(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 5850-5895MHz band, 5725-5850MHz & 5850-5895MHz bands span channels: 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
163	5815	173	5865
167	5835	175	5875
169	5845	177	5885
171	5855	/	/

For 802.11a/ac20/ax20 mode: channel 169, 173, 177 were tested;
For 802.11ac40/ax40 mode: channel 167, 175 were tested;
For 802.11ac80/ax80 mode, channel 171 was tested
For 802.11ac160/ax160 mode, channel 163 was tested.

EUT Exercise Software

Exercise Software#	SecureCRT.exe				
For 5850-5895MHz band, 5725-5850MHz & 5850-5895MHz bands span channels:					
Mode	Data rate	ANT	**Power Level#**		
			Low Channel	Middle Channel	High Channel
802.11a	6Mbps	ANT0	20	20	20
		ANT1	20	20	20
		ANT2	20	20	20
802.11ac20	MCS0	ANT0/1/2	20	20	20
802.11ac40	MCS0	ANT0/1/2	20.5	/	20.5
802.11ac80	MCS0	ANT0/1/2	/	20.5	/
802.11ac160	MCS0	ANT0/1/2	/	20.5	/
802.11ax20	MCS0	ANT0/1/2	20	20	20
802.11ax40	MCS0	ANT0/1/2	20.5	/	20.5
802.11ax80	MCS0	ANT0/1/2	/	20.5	/
802.11ax160	MCS0	ANT0/1/2	/	20.5	/

Note:
1. The worst-case data rates are determined to be as follows for each mode based upon inverstigation by measuring the average power, power and PSD across all data rates bandwidths, and modulations.
2. For 802.11a mode, the device supports SISO only.
3. For 802.11n/ac/ax mode, the device support SISO and MIMO, the MIMO mode support beamforming, the SISO/MIMO and beamforming/nonbeamforming modes have same parameter, which was declared by applicant. The MIMO/beamforming was the worst mode which was selected to test.
4. The n20/n40 mode was reduced test as identical parameter with ac20/ac40 mode.
5. For 802.11ax modes, the device not support partial RU mode.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

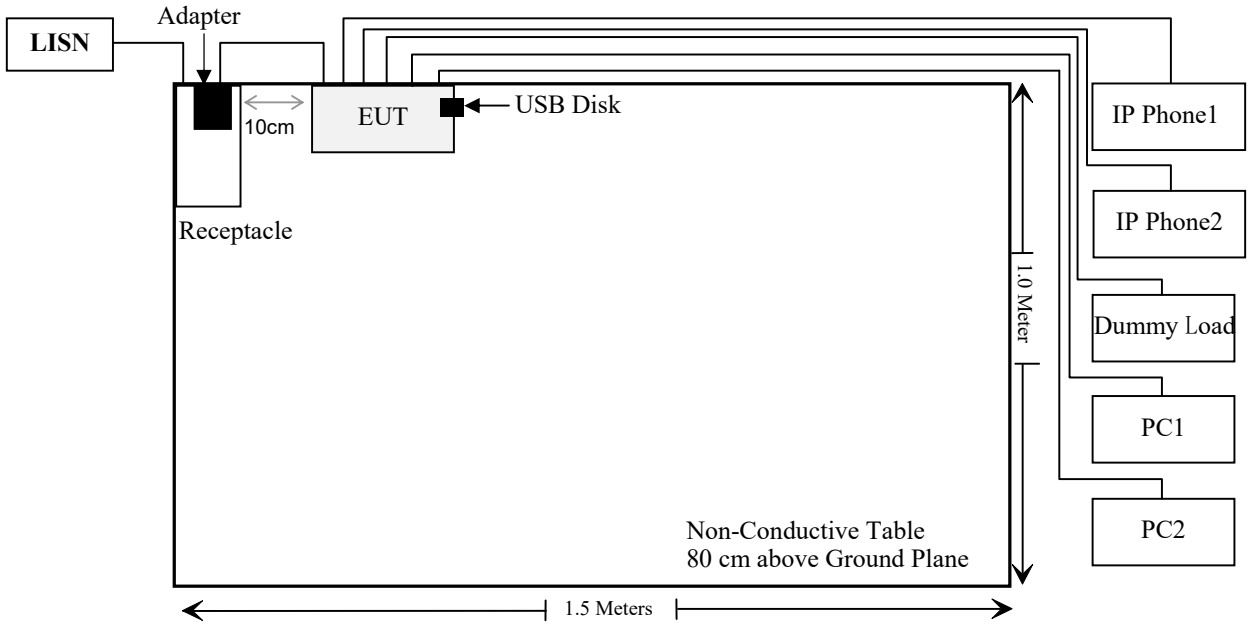
Manufacturer	Description	Model	Serial Number
DELL	PC1	Latitude E6520	DL0ZCS1
GREATWALL	PC2	NF50AL	Unknown
TP-link	Dummy load	Unknown	TP4362M2GH
Fanvil	IP Phone 1	V66	Unknown
Fanvil	IP Phone 2	V66	Unknown
Sandisk	USB disk	Unknown	DS23657J

External I/O Cable

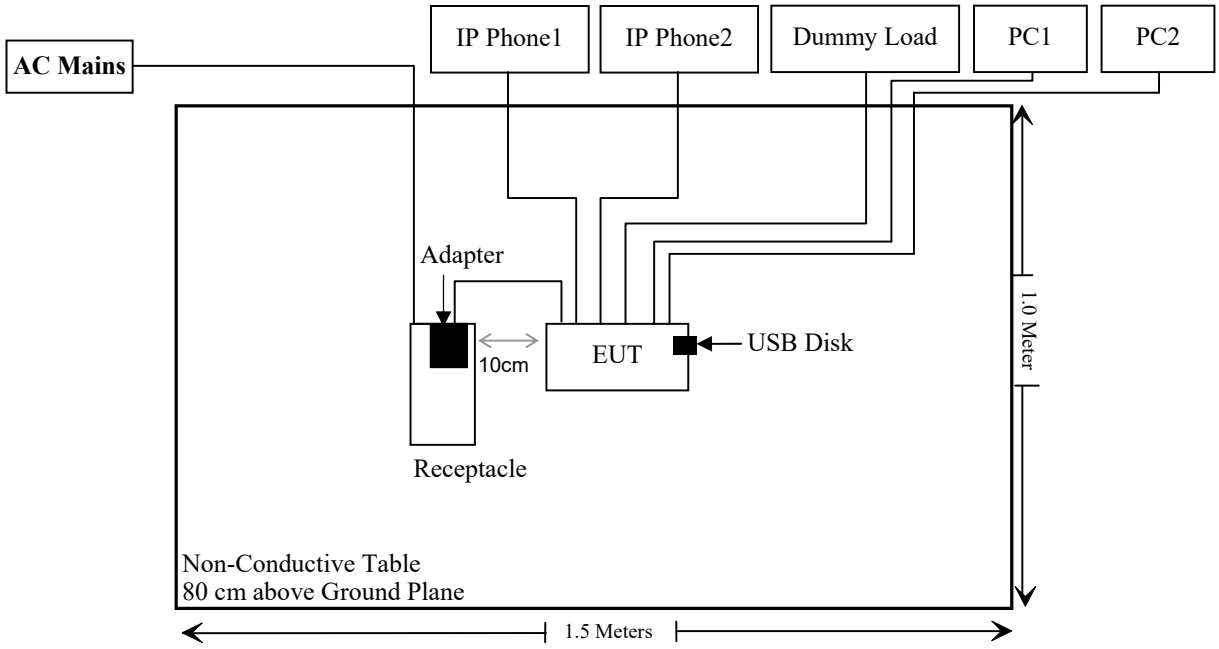
Cable Description	Length (m)	From Port	To
Unshielded Un-detachable AC cable	1.5	Receptacle	LISN/AC Mains
Unshielded Un-detachable DC cable	1.2	EUT	Adapter
Unshielded Detachable RJ45 cable	3.0	EUT	PC1
Unshielded Detachable RJ45 cable	3.0	EUT	PC2
Unshielded Detachable RJ45 cable	3.0	EUT	Dummy load
Unshielded Detachable RJ11 cable	3.0	EUT	IP Phone 1
Unshielded Detachable RJ11 cable	3.0	EUT	IP Phone 2

Block Diagram of Test Setup

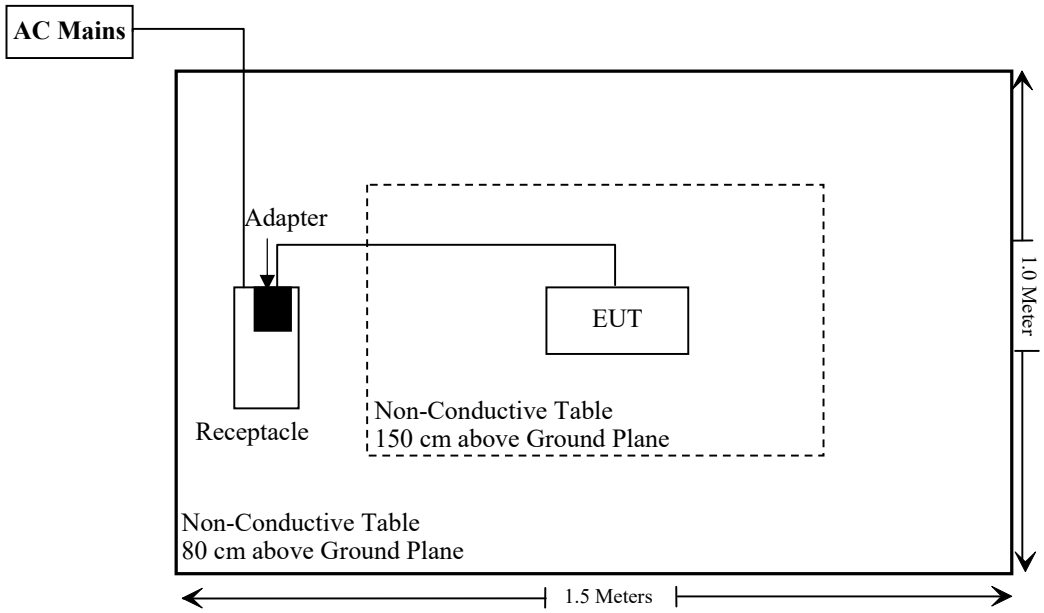
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Compliant
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
FCC §1.1310&§2.1091	Maximum Permissible Exposure (MPE)	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/12/04	2025/12/03
Rohde & Schwarz	LISN	ENV216	101613	2024/12/04	2025/12/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/12/04	2025/12/03
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	2024/12/04	2025/12/03
Unknown	Cable	PNG214	1354	2024/12/04	2025/12/03
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
A.H.System	Preamplifier	PAM-0118P	489	2024/11/15	2025/11/14
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/12/06	2025/12/05
Unknown	RF Cable	UFA147	219661	2024/12/06	2025/12/05
Unknown	RF Cable	XH750A-N	J-10M	2024/12/06	2025/12/05
JD	Filter Switch Unit	DT7220FSU	DS79906	2024/09/09	2025/09/08
JD	Multiplex Switch Test Control Set	DT7220SCU	DS79903	2024/09/09	2025/09/08
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	2024/12/18	2025/12/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV40-N	102259	2024/12/04	2025/12/03
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
MARCONI	10dB Attenuator	6534/3	2942	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).

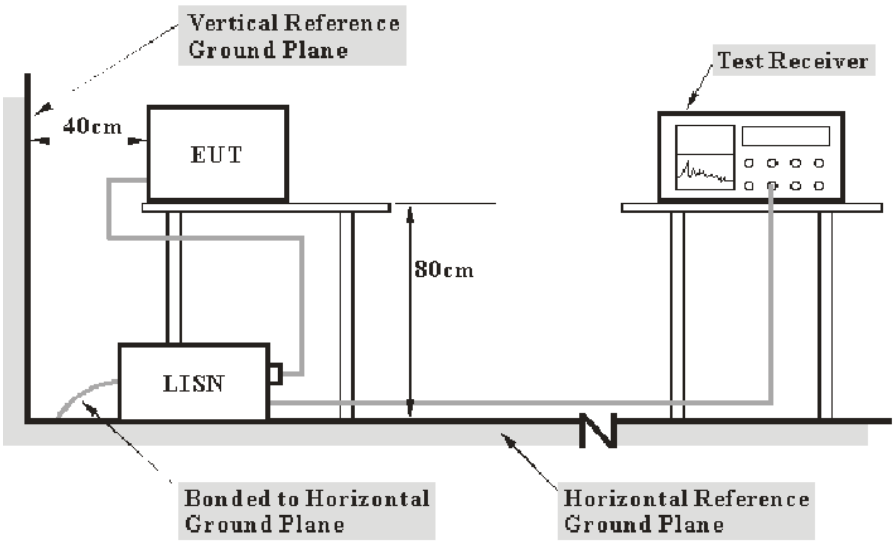
REQUIREMENTS AND TEST PROCEDURES

Conducted Emissions

Applicable Standard

FCC §15.207

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and Average detection mode.

Factor & Over Limit Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Factor = LISN VDF + Cable Loss

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

Over Limit = Level – Limit
Level = Read Level + Factor

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Undesirable Emission

Applicable Standard

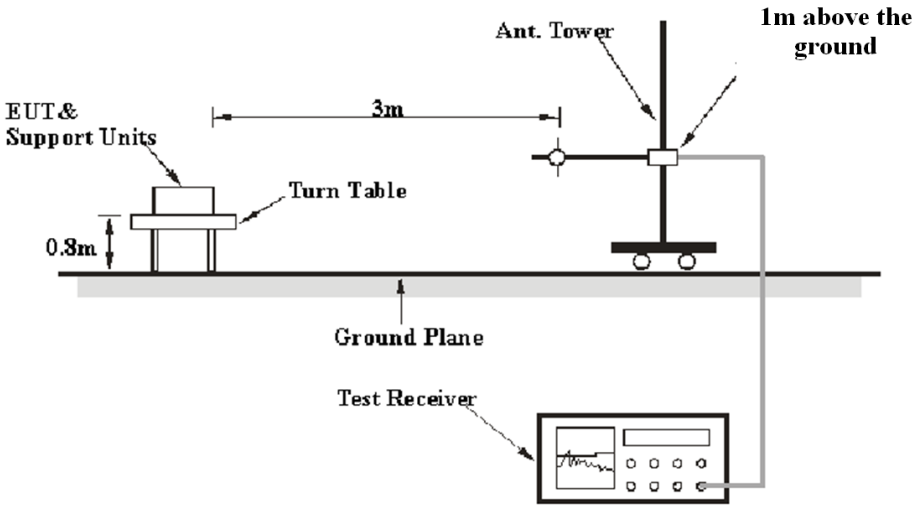
FCC §15.407 (b); §15.209; §15.205;

(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:
(5) For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:
(i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of −7 dBm/MHz at or above 5.925 GHz.
(ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of −5 dBm/MHz and shall decrease linearly to an e.i.r.p. of −27 dBm/MHz at or above 5.925 GHz.
(iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of −27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

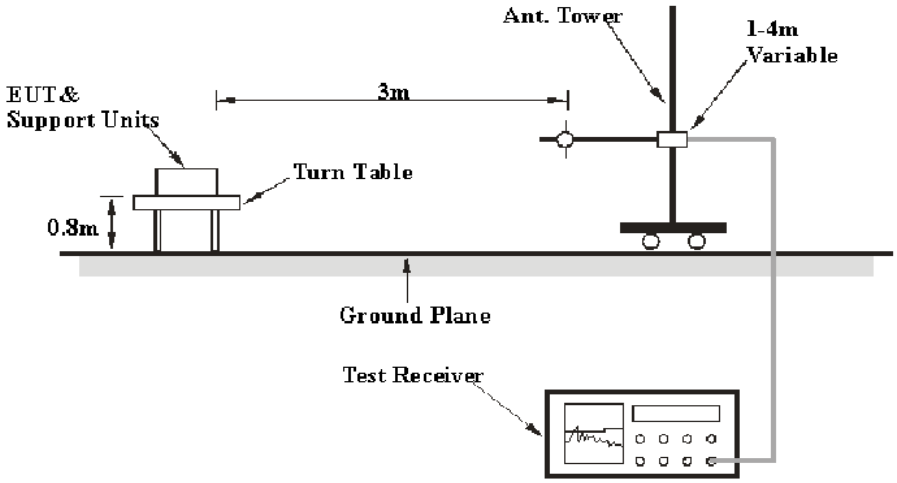
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

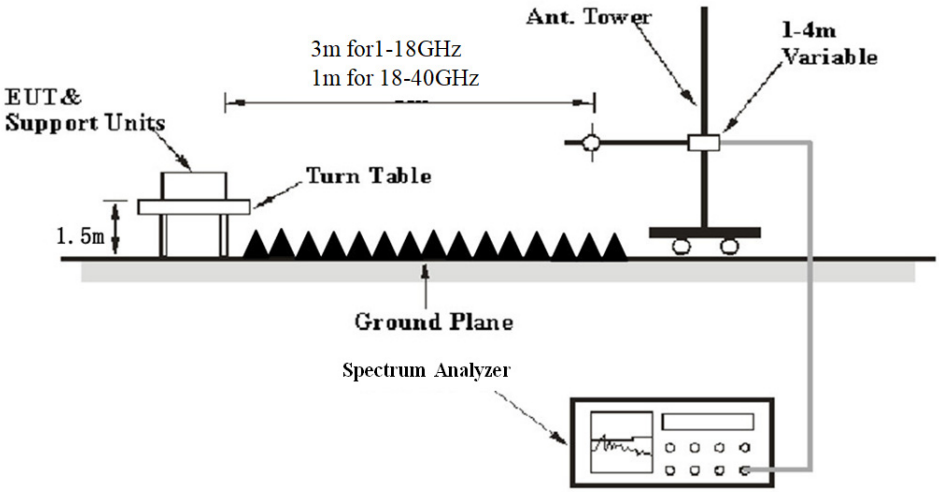
9 kHz-30MHz:



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:

Pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	5 kHz
	<98%	1MHz	≥1/Ton

Final measurement for emission identified during pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	10 Hz
	<98%	1MHz	≥1/Ton

Note: Ton is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

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.

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;

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

where

$E_{\mathrm{SpecLimit}}$	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
$d_{\mathrm{SpecLimit}}$	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

6dB Emission Bandwidth & 99% Occupied Bandwidth

Applicable Standard

Within the 5.850-5.895 GHz bands, 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 5.850-5.895 GHz

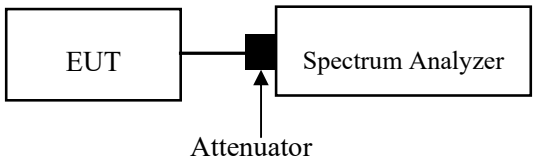
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = 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).



Conducted Transmitter Output Power

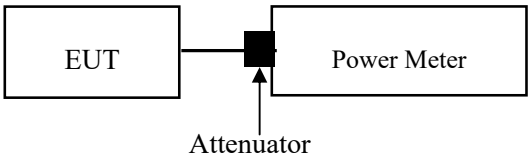
Applicable Standard

For an indoor access point operating in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 20 dBm e.i.r.p. in any 1-megahertz band. In addition, the maximum e.i.r.p. over the frequency band of operation must not exceed 36 dBm. Indoor access points operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 36 dBm.

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.



Note: A short RF cable with low cable loss connected to the EUT antenna port,which was provided by client or lab, the cable loss was add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

Power Spectral Density

For an indoor access point operating in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 20 dBm e.i.r.p. in any 1-megahertz band. In addition, the maximum e.i.r.p. over the frequency band of operation must not exceed 36 dBm. Indoor access points operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 36 dBm.

Test Procedure

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

Duty cycle ≥98%

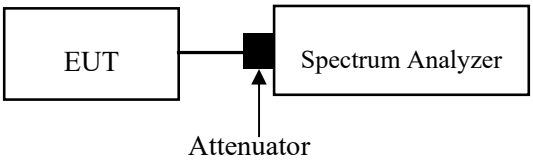
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

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.



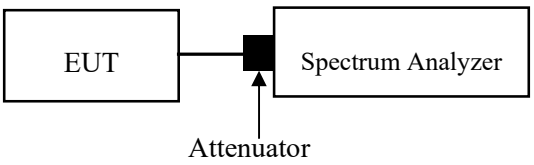
Note: A short RF cable with low cable loss connected to the EUT antenna port,which was provided by client or lab, the cable loss was add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

Duty Cycle

Test Procedure

According to ANSI C63.10-2013 Section 12.2

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.)



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 three internal antennas arrangement, which were permanently attached, the antenna gain# is 3.98dBi for ANT0, 4.26dBi for ANT1 and 3.41dBi for ANT2, fulfill the requirement of this section. Please refer to the EUT photos.

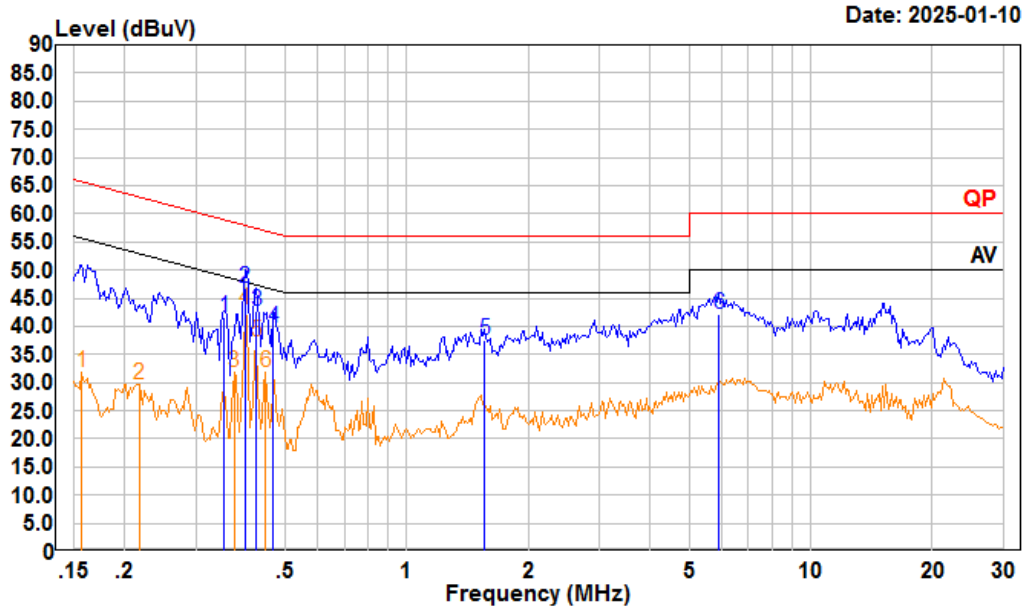
Result: Compliant

TEST DATA AND RESULTS

Conducted Emissions

Temperature (°C)	24.5	**Relative Humidity (%)**	37
ATM Pressure (kPa)	101.9	**Test engineer**	Macy Shi
Test date	2025/01/10		
EUT operation mode	Transmitting (Maximum output power mode, 802.11ac40 5835MHz)		

AC 120V 60 Hz, Line Adapter1



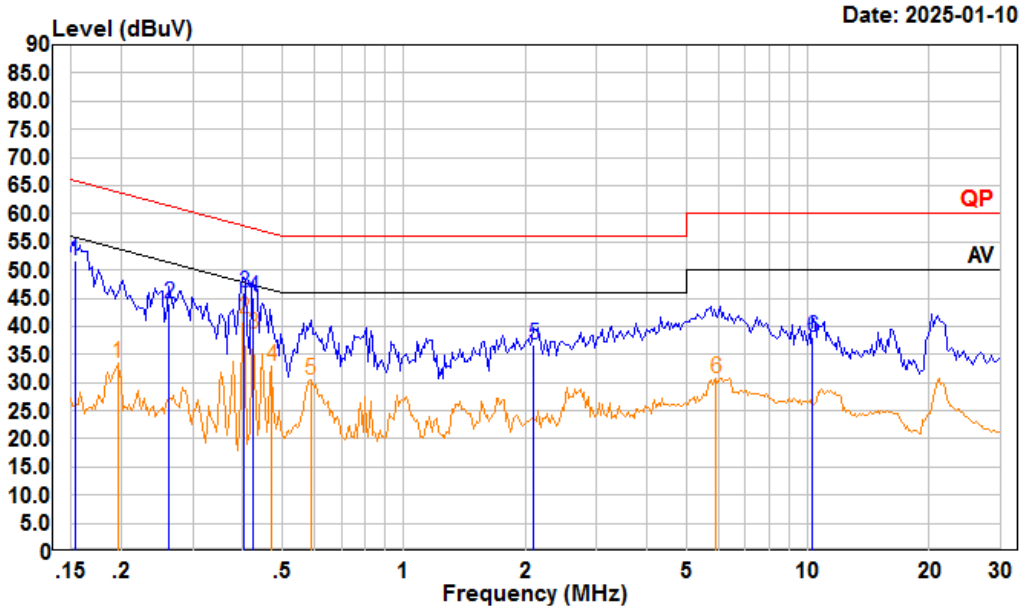
Trace: 1

Condition: Line
Project : 2401Z25490E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:Auto SWT:Auto

	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.354	20.88	41.61	10.61	10.12	58.87	-17.26	QP
2	0.398	26.10	46.78	10.58	10.10	57.90	-11.12	QP
3	0.424	22.10	42.76	10.55	10.11	57.37	-14.61	QP
4	0.466	18.94	39.59	10.52	10.13	56.58	-16.99	QP
5	1.560	16.73	37.42	10.53	10.16	56.00	-18.58	Peak
6	5.929	21.51	42.13	10.44	10.18	60.00	-17.87	QP

	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.156	10.73	31.74	10.89	10.12	55.65	-23.91	Average
2	0.217	8.92	29.78	10.77	10.09	52.92	-23.14	Average
3	0.373	11.19	31.90	10.60	10.11	48.43	-16.53	Average
4	0.398	22.23	42.91	10.58	10.10	47.90	-4.99	Average
5	0.424	16.66	37.32	10.55	10.11	47.37	-10.05	Average
6	0.447	11.24	31.90	10.54	10.12	46.93	-15.03	Average

AC 120V 60 Hz, Neutral Adapter1



Trace: 1

Condition: Neutral
Project : 2401Z25490E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.153	31.06	51.78	10.59	10.13	65.82	-14.04	QP
2	0.263	23.54	44.12	10.49	10.09	61.34	-17.22	QP
3	0.402	25.20	45.93	10.63	10.10	57.81	-11.88	QP
4	0.424	24.40	45.16	10.65	10.11	57.37	-12.21	QP
5	2.099	16.22	36.81	10.40	10.19	56.00	-19.19	QP
6	10.288	17.00	38.01	10.80	10.21	60.00	-21.99	QP

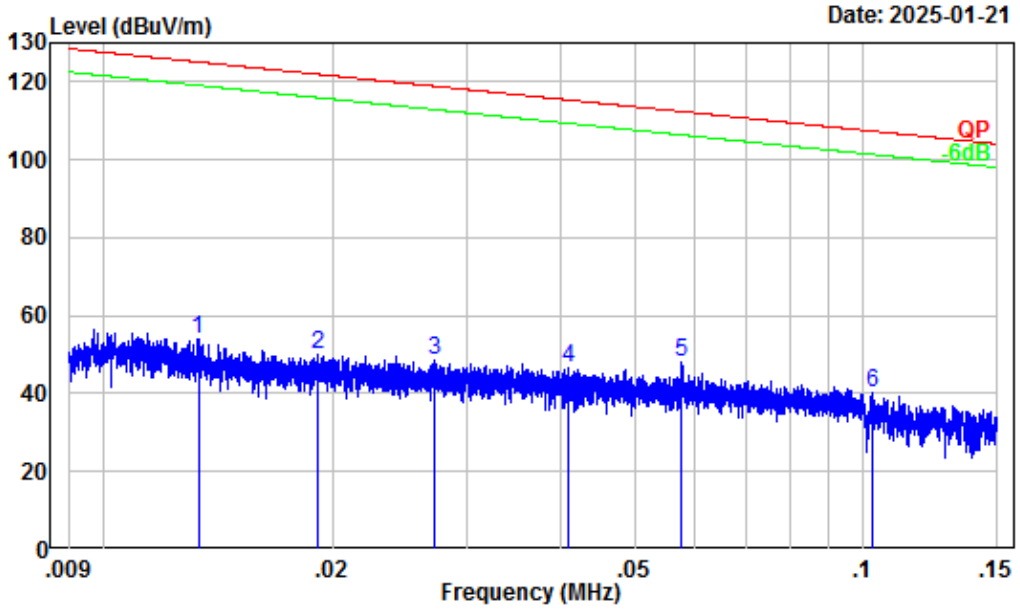
	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.195	13.06	33.57	10.42	10.09	53.80	-20.23	Average
2	0.402	20.67	41.40	10.63	10.10	47.81	-6.41	Average
3	0.424	17.82	38.58	10.65	10.11	47.37	-8.79	Average
4	0.471	11.98	32.79	10.68	10.13	46.49	-13.70	Average
5	0.589	9.76	30.58	10.70	10.12	46.00	-15.42	Average
6	5.929	10.01	30.80	10.61	10.18	50.00	-19.20	Average

Undesirable Emission

Temperature (°C)	24&24.5	**Relative Humidity (%)**	54&42
ATM Pressure (kPa):	101&101.2	**Test engineer:**	Jack Liu&Dylan Yang
Test date:	2024/12-26~2025/1/21		
EUT operation mode:	Below 1GHz: Transmitting (Maximum output power mode, 802.11ac40 5835MHz) Above 1GHz: Transmitting		
Note:	1. For the radiated spurious emission below 30MHz, only the worst case (parallel) was recorded. 2. When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded. 3. After pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation were recorded.		

Below 1GHz:

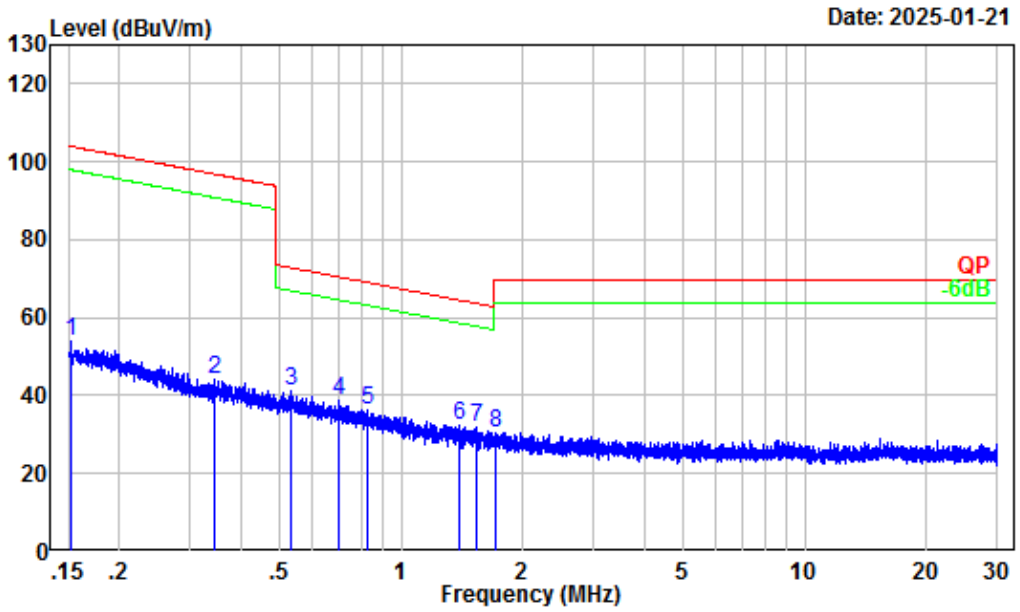
9kHz-150kHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z25490E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 0.3/1kHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	31.67	22.36	54.03	125.11	-71.08	Peak
2	0.02	30.56	19.25	49.81	121.95	-72.14	Peak
3	0.03	29.03	19.76	48.79	118.90	-70.11	Peak
4	0.04	27.34	19.11	46.45	115.35	-68.90	Peak
5	0.06	25.63	22.68	48.31	112.39	-64.08	Peak
6	0.10	21.85	18.45	40.30	107.38	-67.08	Peak

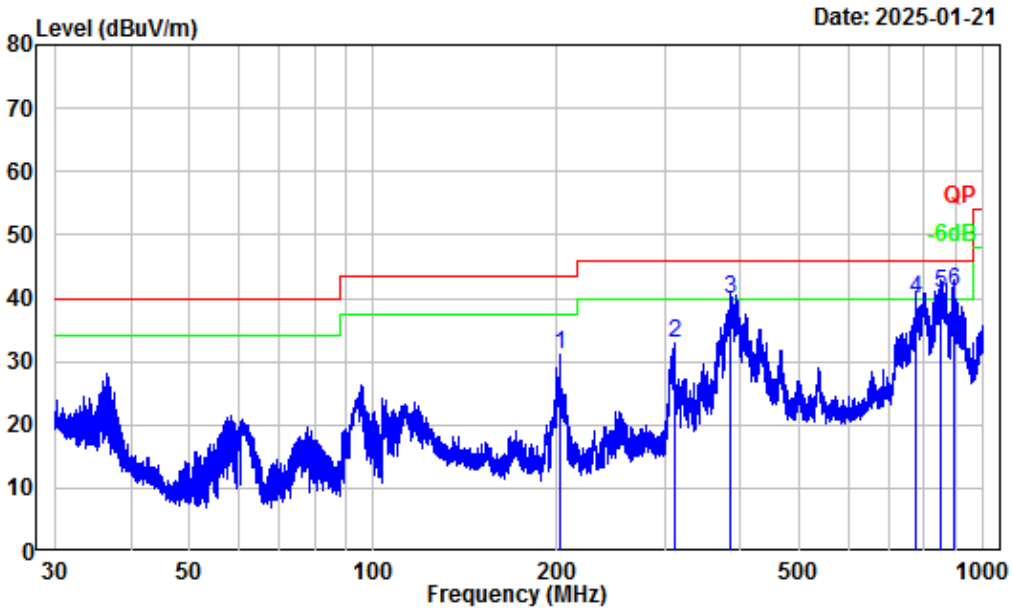
150kHz-30MHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z25490E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 10/30kHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.15	18.91	35.21	54.12	103.94	-49.82	Peak
2	0.35	9.34	34.78	44.12	96.84	-52.72	Peak
3	0.53	6.00	35.00	41.00	73.06	-32.06	Peak
4	0.70	3.96	34.59	38.55	70.67	-32.12	Peak
5	0.83	2.50	33.94	36.44	69.17	-32.73	Peak
6	1.39	0.11	32.26	32.37	64.57	-32.20	Peak
7	1.54	-0.32	32.18	31.86	63.62	-31.76	Peak
8	1.72	-0.81	31.32	30.51	69.54	-39.03	Peak

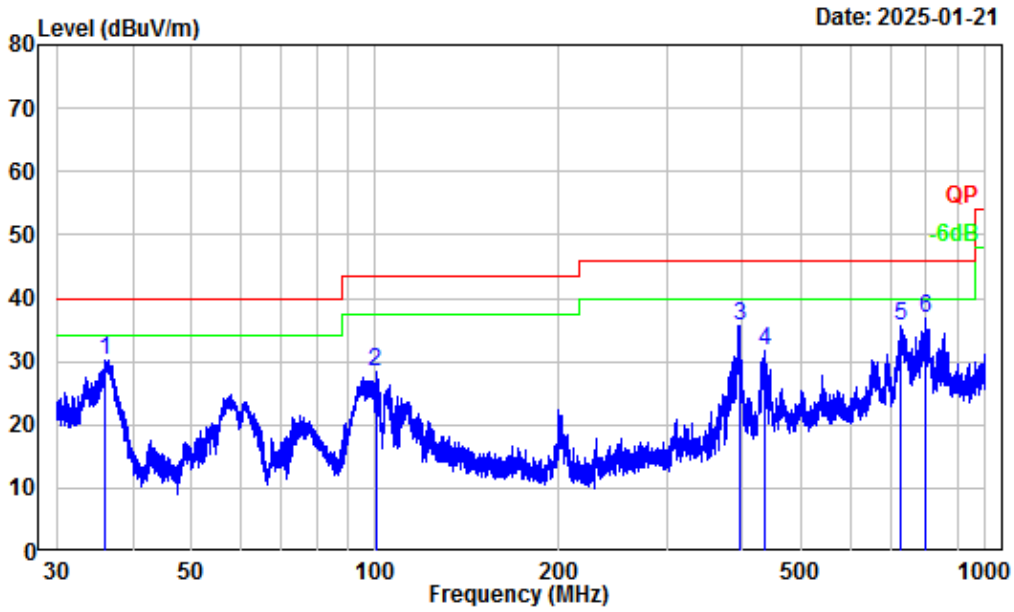
30MHz-1GHz_Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Z25490E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Detector: QP RBW : 120kHz
:
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	202.10	-13.22	44.20	30.98	43.50	-12.52	Peak
2	312.45	-10.99	43.75	32.76	46.00	-13.24	Peak
3	385.79	-8.99	48.94	39.95	46.00	-6.05	QP
4	776.54	-2.43	42.37	39.94	46.00	-6.06	QP
5	849.92	-1.73	42.46	40.73	46.00	-5.27	QP
6	895.03	-1.31	42.25	40.94	46.00	-5.06	QP

30MHz-1GHz_Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Z25490E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	36.06	-9.53	39.70	30.17	40.00	-9.83	Peak
2	100.05	-15.88	44.13	28.25	43.50	-15.25	Peak
3	394.68	-8.66	44.43	35.77	46.00	-10.23	Peak
4	434.64	-7.76	39.57	31.81	46.00	-14.19	Peak
5	724.58	-3.20	38.72	35.52	46.00	-10.48	Peak
6	800.38	-2.14	38.83	36.69	46.00	-9.31	Peak

Above 1GHz:

5850-5895 MHz:

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11a ANT0							
5845MHz							
5725	68.21	PK	H	-5.49	62.72	122.2	-59.48
5725	69.26	PK	V	-5.49	63.77	122.2	-58.43
5720	68.24	PK	H	-5.53	62.71	110.8	-48.09
5720	68.67	PK	V	-5.53	63.14	110.8	-47.66
5700	68.28	PK	H	-5.72	62.56	105.2	-42.64
5700	69.27	PK	V	-5.72	63.55	105.2	-41.65
5650	67.56	PK	H	-5.86	61.70	68.2	-6.50
5650	67.82	PK	V	-5.86	61.96	68.2	-6.24
11690	51.96	PK	H	3.63	55.59	74	-18.41
11690	40.80	AV	H	3.63	44.43	54	-9.57
11690	52.44	PK	V	3.63	56.07	74	-17.93
11690	40.96	AV	V	3.63	44.59	54	-9.41
5865MHz							
11730	51.83	PK	H	3.85	55.68	74	-18.32
11730	40.42	AV	H	3.85	44.27	54	-9.73
11730	52.40	PK	V	3.85	56.25	74	-17.75
11730	41.36	AV	V	3.85	45.21	54	-8.79
5885MHz							
5895	83.2	PK	H	-4.48	78.72	110.2	-31.48
5895	101.38	PK	V	-4.48	96.9	110.2	-13.3
5925	66.76	PK	H	-4.45	62.31	88.2	-25.89
5925	72.76	PK	V	-4.45	68.31	88.2	-19.89
11770	52.61	PK	H	4.07	56.68	74	-17.32
11770	40.80	AV	H	4.07	44.87	54	-9.13
11770	53.50	PK	V	4.07	57.57	74	-16.43
11770	41.61	AV	V	4.07	45.68	54	-8.32

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11a ANT1							
5845MHz							
5725	69.1	PK	H	-5.49	63.61	122.2	-58.59
5725	69.43	PK	V	-5.49	63.94	122.2	-58.26
5720	68.35	PK	H	-5.53	62.82	110.8	-47.98
5720	69.41	PK	V	-5.53	63.88	110.8	-46.92
5700	68.46	PK	H	-5.72	62.74	105.2	-42.46
5700	68.77	PK	V	-5.72	63.05	105.2	-42.15
5650	67.22	PK	H	-5.86	61.36	68.2	-6.84
5650	67.07	PK	V	-5.86	61.21	68.2	-6.99
11690	53.61	PK	H	3.63	57.24	74	-16.76
11690	41.95	AV	H	3.63	45.58	54	-8.42
11690	55.05	PK	V	3.63	58.68	74	-15.32
11690	42.49	AV	V	3.63	46.12	54	-7.88
5865MHz							
11730	52.72	PK	H	3.85	56.57	74	-17.43
11730	40.83	AV	H	3.85	44.68	54	-9.32
11730	53.84	PK	V	3.85	57.69	74	-16.31
11730	41.90	AV	V	3.85	45.75	54	-8.25
5885MHz							
5895	86.76	PK	H	-4.48	82.28	110.2	-27.92
5895	95.82	PK	V	-4.48	91.34	110.2	-18.86
5925	69.62	PK	H	-4.45	65.17	88.2	-23.03
5925	70.71	PK	V	-4.45	66.26	88.2	-21.94
11770	52.61	PK	H	4.07	56.68	74	-17.32
11770	40.32	AV	H	4.07	44.39	54	-9.61
11770	54.88	PK	V	4.07	58.95	74	-15.05
11770	41.80	AV	V	4.07	45.87	54	-8.13

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11a ANT2							
5845MHz							
5725	68.46	PK	H	-5.49	62.97	122.2	-59.23
5725	68.6	PK	V	-5.49	63.11	122.2	-59.09
5720	68.3	PK	H	-5.53	62.77	110.8	-48.03
5720	68.3	PK	V	-5.53	62.77	110.8	-48.03
5700	68.46	PK	H	-5.72	62.74	105.2	-42.46
5700	68.35	PK	V	-5.72	62.63	105.2	-42.57
5650	67.65	PK	H	-5.86	61.79	68.2	-6.41
5650	67.33	PK	V	-5.86	61.47	68.2	-6.73
11690	58.24	PK	H	3.63	61.87	74	-12.13
11690	46.07	AV	H	3.63	49.70	54	-4.30
11690	56.38	PK	V	3.63	60.01	74	-13.99
11690	44.07	AV	V	3.63	47.70	54	-6.30
5865MHz							
11730	58.83	PK	H	3.85	62.68	74	-11.32
11730	46.60	AV	H	3.85	50.45	54	-3.55
11730	56.88	PK	V	3.85	60.73	74	-13.27
11730	44.73	AV	V	3.85	48.58	54	-5.42
5885MHz							
5895	98.98	PK	H	-4.48	94.5	110.2	-15.7
5895	87.8	PK	V	-4.48	83.32	110.2	-26.88
5925	75.23	PK	H	-4.45	70.78	88.2	-17.42
5925	66.22	PK	V	-4.45	61.77	88.2	-26.43
11770	58.75	PK	H	4.07	62.82	74	-11.18
11770	46.63	AV	H	4.07	50.70	54	-3.30
11770	57.29	PK	V	4.07	61.36	74	-12.64
11770	45.49	AV	V	4.07	49.56	54	-4.44

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ac20							
5845MHz							
5725	68.74	PK	H	-5.49	63.25	122.2	-58.95
5725	67.64	PK	V	-5.49	62.15	122.2	-60.05
5720	69.24	PK	H	-5.53	63.71	110.8	-47.09
5720	68.15	PK	V	-5.53	62.62	110.8	-48.18
5700	68.83	PK	H	-5.72	63.11	105.2	-42.09
5700	69.23	PK	V	-5.72	63.51	105.2	-41.69
5650	67.58	PK	H	-5.86	61.72	68.2	-6.48
5650	68.01	PK	V	-5.86	62.15	68.2	-6.05
11690	53.51	PK	H	3.63	57.14	74	-16.86
11690	42.47	AV	H	3.63	46.10	54	-7.90
11690	52.64	PK	V	3.63	56.27	74	-17.73
11690	40.11	AV	V	3.63	43.74	54	-10.26
5865MHz							
11730	54.83	PK	H	3.85	58.68	74	-15.32
11730	43.60	AV	H	3.85	47.45	54	-6.55
11730	53.62	PK	V	3.85	57.47	74	-16.53
11730	40.50	AV	V	3.85	44.35	54	-9.65
5885MHz							
5895	97.24	PK	H	-4.48	92.76	110.2	-17.44
5895	98.5	PK	V	-4.48	94.02	110.2	-16.18
5925	69.49	PK	H	-4.45	65.04	88.2	-23.16
5925	67.4	PK	V	-4.45	62.95	88.2	-25.25
11770	56.75	PK	H	4.07	60.82	74	-13.18
11770	44.63	AV	H	4.07	48.70	54	-5.30
11770	55.14	PK	V	4.07	59.21	74	-14.79
11770	43.28	AV	V	4.07	47.35	54	-6.65

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ac40							
5835MHz							
5725	69.22	PK	H	-5.49	63.73	122.2	-58.47
5725	69.43	PK	V	-5.49	63.94	122.2	-58.26
5720	68.14	PK	H	-5.53	62.61	110.8	-48.19
5720	69.37	PK	V	-5.53	63.84	110.8	-46.96
5700	67.94	PK	H	-5.72	62.22	105.2	-42.98
5700	66.85	PK	V	-5.72	61.13	105.2	-44.07
5650	67.57	PK	H	-5.86	61.71	68.2	-6.49
5650	67.35	PK	V	-5.86	61.49	68.2	-6.71
11670	52.03	PK	H	3.54	55.57	74	-18.43
11670	40.14	AV	H	3.54	43.68	54	-10.32
11670	51.78	PK	V	3.54	55.32	74	-18.68
11670	42.14	AV	V	3.54	45.68	54	-8.32
5875MHz							
5895	92.59	PK	H	-4.48	88.11	110.2	-22.09
5895	94.41	PK	V	-4.48	89.93	110.2	-20.27
5925	74.3	PK	H	-4.45	69.85	88.2	-18.35
5925	77.51	PK	V	-4.45	73.06	88.2	-15.14
11750	53.02	PK	H	3.96	56.98	74	-17.02
11750	40.29	AV	H	3.96	44.25	54	-9.75
11750	51.68	PK	V	3.96	55.64	74	-18.36
11750	41.25	AV	V	3.96	45.21	54	-8.79

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ac80							
5855MHz							
5725	70.1	PK	H	-5.49	64.61	122.2	-57.59
5725	66.61	PK	V	-5.49	61.12	122.2	-61.08
5720	68.56	PK	H	-5.53	63.03	110.8	-47.77
5720	70.86	PK	V	-5.53	65.33	110.8	-45.47
5700	69.46	PK	H	-5.72	63.74	105.2	-41.46
5700	70	PK	V	-5.72	64.28	105.2	-40.92
5650	67.84	PK	H	-5.86	61.98	68.2	-6.22
5650	66.31	PK	V	-5.86	60.45	68.2	-7.75
5895	80.13	PK	H	-4.48	75.65	110.2	-34.55
5895	82.45	PK	V	-4.48	77.97	110.2	-32.23
5925	75.93	PK	H	-4.45	71.48	88.2	-16.72
5925	77.8	PK	V	-4.45	73.35	88.2	-14.85
11710	53.40	PK	H	3.74	57.14	74	-16.86
11710	41.53	AV	H	3.74	45.27	54	-8.73
11710	52.58	PK	V	3.74	56.32	74	-17.68
11710	40.54	AV	V	3.74	44.28	54	-9.72

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ac160							
5815MHz							
5725	69.06	PK	H	-5.49	63.57	122.2	-58.63
5725	67.17	PK	V	-5.49	61.68	122.2	-60.52
5720	69.28	PK	H	-5.53	63.75	110.8	-47.05
5720	70.38	PK	V	-5.53	64.85	110.8	-45.95
5700	69.44	PK	H	-5.72	63.72	105.2	-41.48
5700	69.04	PK	V	-5.72	63.32	105.2	-41.88
5650	67.18	PK	H	-5.86	61.32	68.2	-6.88
5650	67.39	PK	V	-5.86	61.53	68.2	-6.67
5895	78.75	PK	H	-4.48	74.27	110.2	-35.93
5895	82.73	PK	V	-4.48	78.25	110.2	-31.95
5925	76.70	PK	H	-4.45	72.25	88.2	-15.95
5925	77.92	PK	V	-4.45	73.47	88.2	-14.73
11630	52.99	PK	H	3.33	56.32	74	-17.68
11630	40.88	AV	H	3.33	44.21	54	-9.79
11630	51.93	PK	V	3.33	55.26	74	-18.74
11630	40.65	AV	V	3.33	43.98	54	-10.02

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax20							
5845MHz							
5725	68.15	PK	H	-5.49	62.66	122.2	-59.54
5725	69.63	PK	V	-5.49	64.14	122.2	-58.06
5720	68.07	PK	H	-5.53	62.54	110.8	-48.26
5720	68.92	PK	V	-5.53	63.39	110.8	-47.41
5700	67.24	PK	H	-5.72	61.52	105.2	-43.68
5700	68.46	PK	V	-5.72	62.74	105.2	-42.46
5650	67.64	PK	H	-5.86	61.78	68.2	-6.42
5650	67.42	PK	V	-5.86	61.56	68.2	-6.64
11690	54.17	PK	H	3.63	57.80	74	-16.20
11690	41.90	AV	H	3.63	45.53	54	-8.47
11690	50.82	PK	V	3.63	54.45	74	-19.55
11690	40.01	AV	V	3.63	43.64	54	-10.36
5865MHz							
11730	54.84	PK	H	3.85	58.69	74	-15.31
11730	42.39	AV	H	3.85	46.24	54	-7.76
11730	52.77	PK	V	3.85	56.62	74	-17.38
11730	39.88	AV	V	3.85	43.73	54	-10.27
5885MHz							
5895	103.57	PK	H	-4.48	99.09	110.2	-11.11
5895	107.13	PK	V	-4.48	102.65	110.2	-7.55
5925	64.52	PK	H	-4.45	60.07	88.2	-28.13
5925	67.59	PK	V	-4.45	63.14	88.2	-25.06
11770	56.38	PK	H	4.07	60.45	74	-13.55
11770	44.60	AV	H	4.07	48.67	54	-5.33
11770	54.00	PK	V	4.07	58.07	74	-15.93
11770	42.66	AV	V	4.07	46.73	54	-7.27

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax40							
5835MHz							
5725	70.18	PK	H	-5.49	64.69	122.2	-57.51
5725	69.25	PK	V	-5.49	63.76	122.2	-58.44
5720	67.98	PK	H	-5.53	62.45	110.8	-48.35
5720	68.57	PK	V	-5.53	63.04	110.8	-47.76
5700	68.47	PK	H	-5.72	62.75	105.2	-42.45
5700	69.35	PK	V	-5.72	63.63	105.2	-41.57
5650	67.39	PK	H	-5.86	61.53	68.2	-6.67
5650	67.65	PK	V	-5.86	61.79	68.2	-6.41
11670	53.31	PK	H	3.54	56.85	74	-17.15
11670	40.32	AV	H	3.54	43.86	54	-10.14
11670	50.81	PK	V	3.54	54.35	74	-19.65
11670	39.47	AV	V	3.54	43.01	54	-10.99
5875MHz							
5895	96.51	PK	H	-4.48	92.03	110.2	-18.17
5895	88.4	PK	V	-4.48	83.92	110.2	-26.28
5925	84.91	PK	H	-4.45	80.46	88.2	-7.74
5925	77.5	PK	V	-4.45	73.05	88.2	-15.15
11750	52.87	PK	H	3.96	56.83	74	-17.17
11750	40.76	AV	H	3.96	44.72	54	-9.28
11750	50.68	PK	V	3.96	54.64	74	-19.36
11750	39.65	AV	V	3.96	43.61	54	-10.39

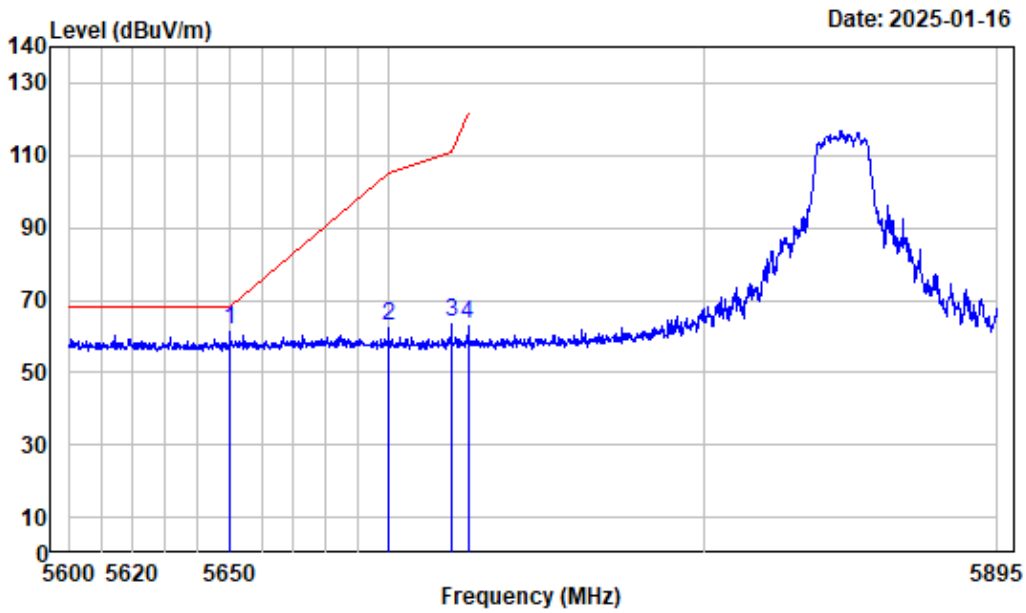
Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax80							
5855MHz							
5725	70.75	PK	H	-5.49	65.26	122.2	-56.94
5725	72.12	PK	V	-5.49	66.63	122.2	-55.57
5720	70.52	PK	H	-5.53	64.99	110.8	-45.81
5720	69.28	PK	V	-5.53	63.75	110.8	-47.05
5700	68.37	PK	H	-5.72	62.65	105.2	-42.55
5700	69.7	PK	V	-5.72	63.98	105.2	-41.22
5650	67.17	PK	H	-5.86	61.31	68.2	-6.89
5650	66.22	PK	V	-5.86	60.36	68.2	-7.84
5895	84.71	PK	H	-4.48	80.23	110.2	-29.97
5895	89.43	PK	V	-4.48	84.95	110.2	-25.25
5925	77.24	PK	H	-4.45	72.79	88.2	-15.41
5925	80.81	PK	V	-4.45	76.36	88.2	-11.84
11710	53.73	PK	H	3.74	57.47	74	-16.53
11710	41.95	AV	H	3.74	45.69	54	-8.31
11710	54.61	PK	V	3.74	58.35	74	-15.65
11710	41.94	AV	V	3.74	45.68	54	-8.32

Frequency (MHz)	Reading (dBµV)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax160							
5815MHz							
5725	69.75	PK	H	-5.49	64.26	122.2	-57.94
5725	69.12	PK	V	-5.49	63.63	122.2	-58.57
5720	68.52	PK	H	-5.53	62.99	110.8	-47.81
5720	68.28	PK	V	-5.53	62.75	110.8	-48.05
5700	69.37	PK	H	-5.72	63.65	105.2	-41.55
5700	70.7	PK	V	-5.72	64.98	105.2	-40.22
5650	67.11	PK	H	-5.86	61.25	68.2	-6.95
5650	67.41	PK	V	-5.86	61.55	68.2	-6.65
5895	85.71	PK	H	-4.48	81.23	110.2	-28.97
5895	88.04	PK	V	-4.48	83.56	110.2	-26.64
5925	78.1	PK	H	-4.45	73.65	88.2	-14.55
5925	79.76	PK	V	-4.45	75.31	88.2	-12.89
11630	53.93	PK	H	3.33	57.26	74	-16.74
11630	41.42	AV	H	3.33	44.75	54	-9.25
11630	53.56	PK	V	3.33	56.89	74	-17.11
11630	40.21	AV	V	3.33	43.54	54	-10.46

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.
The test result of peak was less than the limit of average, so just peak values were recorded.

Test plots:

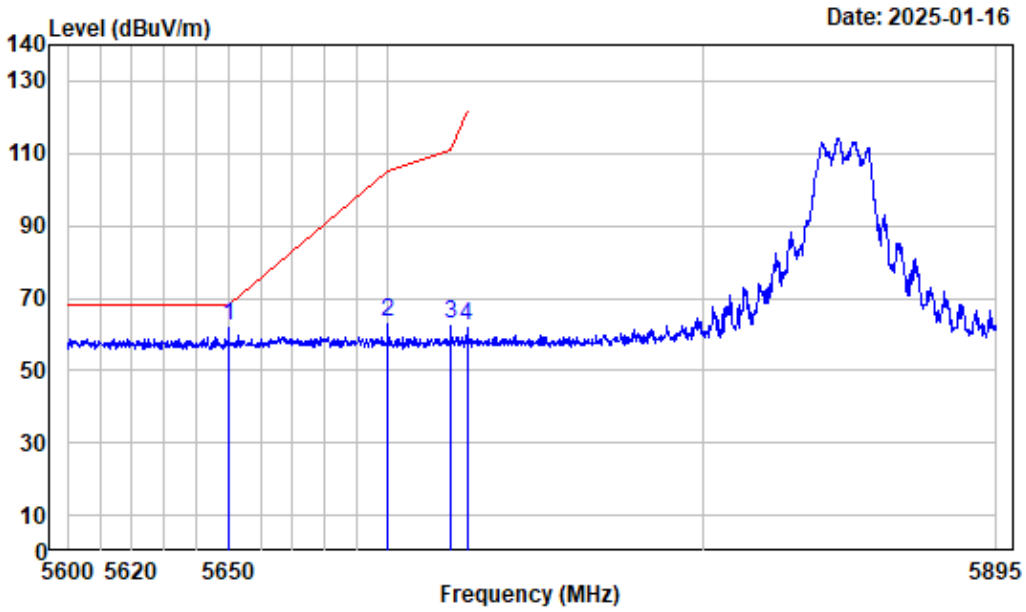
Horizontal



Condition : Horizontal
Project No.: 2401Z25490E-RF
Tester : Dylan Yang
Note : 5G_B5_ac20_5845

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5650.000	-5.86	67.58	61.72	68.20	-6.48	peak
2	5700.000	-5.72	68.83	63.11	105.20	-42.09	peak
3	5720.000	-5.53	69.24	63.71	110.80	-47.09	peak
4	5725.000	-5.49	68.74	63.25	122.20	-58.95	Peak

Vertical

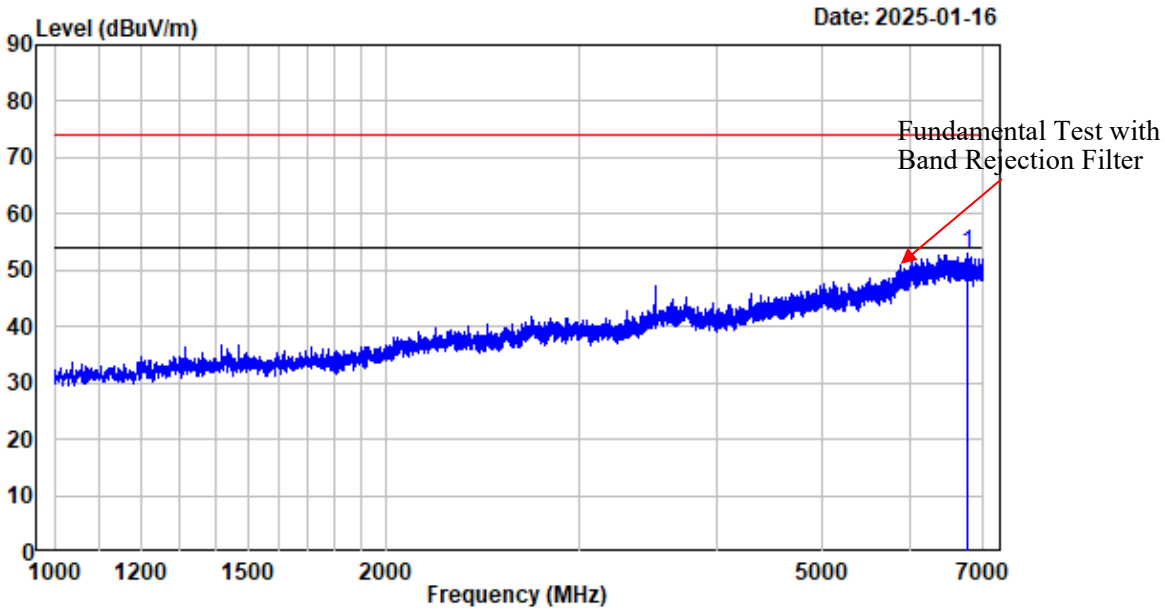


Condition : Vertical
Project No.: 2401Z25490E-RF
Tester : Dylan Yang
Note : 5G_B5_ac20_5845

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5650.000	-5.86	68.01	62.15	68.20	-6.05	Peak
2	5700.000	-5.72	69.23	63.51	105.20	-41.69	Peak
3	5720.000	-5.53	68.15	62.62	110.80	-48.18	Peak
4	5725.000	-5.49	67.64	62.15	122.20	-60.05	Peak

Listed with the worst harmonic margin test plot

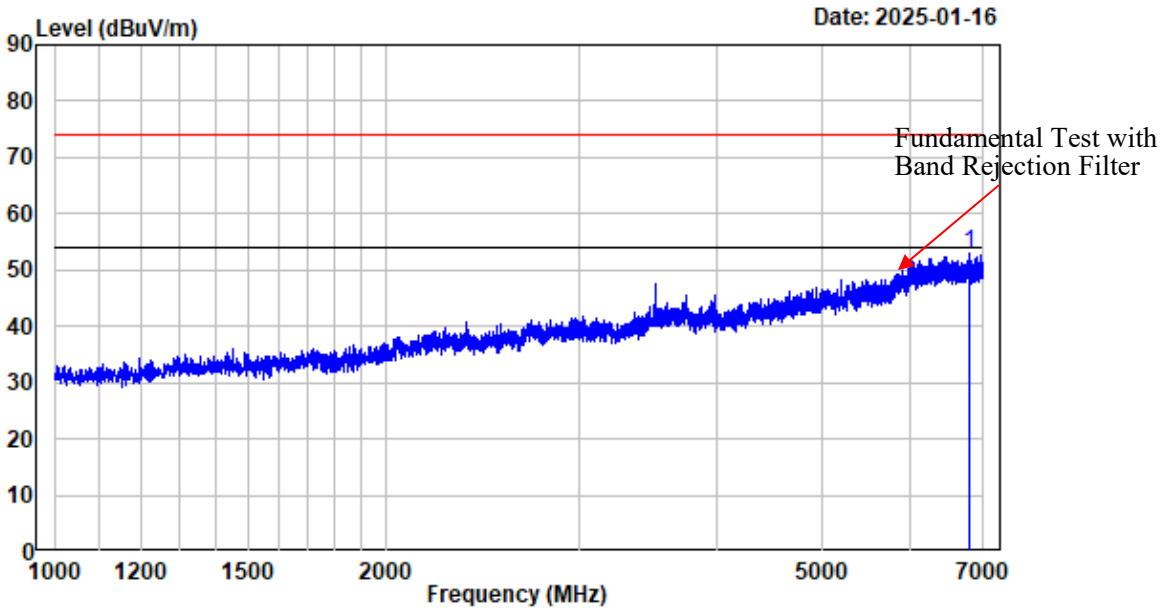
1-7GHz_Horizontal



Condition : Horizontal
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	6777.222	-3.29	56.20	52.91	74.00	-21.09	Peak

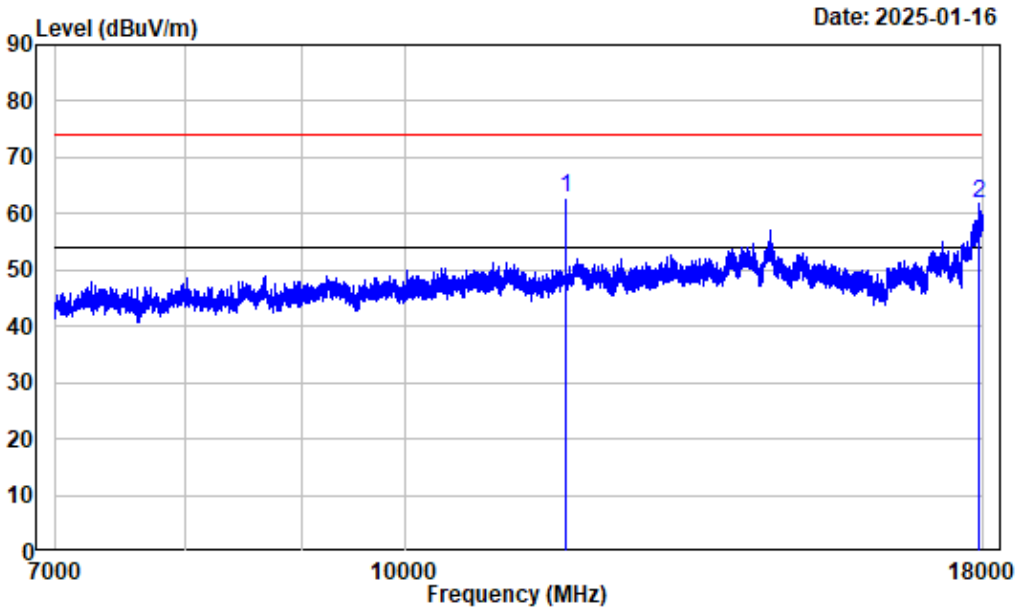
1-7GHz_Vertical



Condition : Vertical
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	6810.977	-3.30	56.13	52.83	74.00	-21.17	Peak

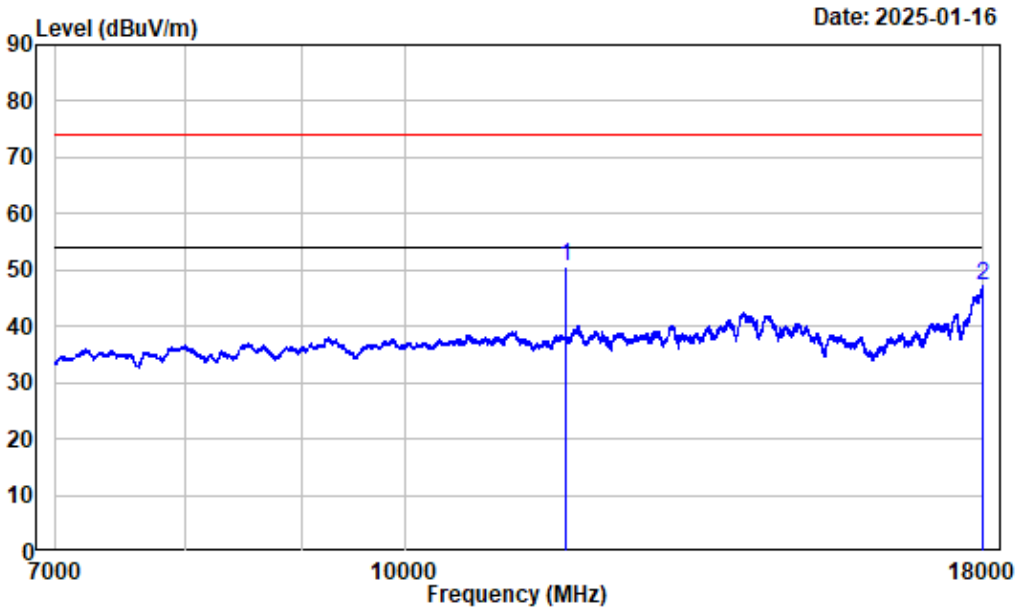
7-18GHz_Horizontal_Peak



Condition : Horizontal
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11770.000	4.07	58.75	62.82	74.00	-11.18	Peak
2	17921.620	12.81	48.91	61.72	74.00	-12.28	Peak

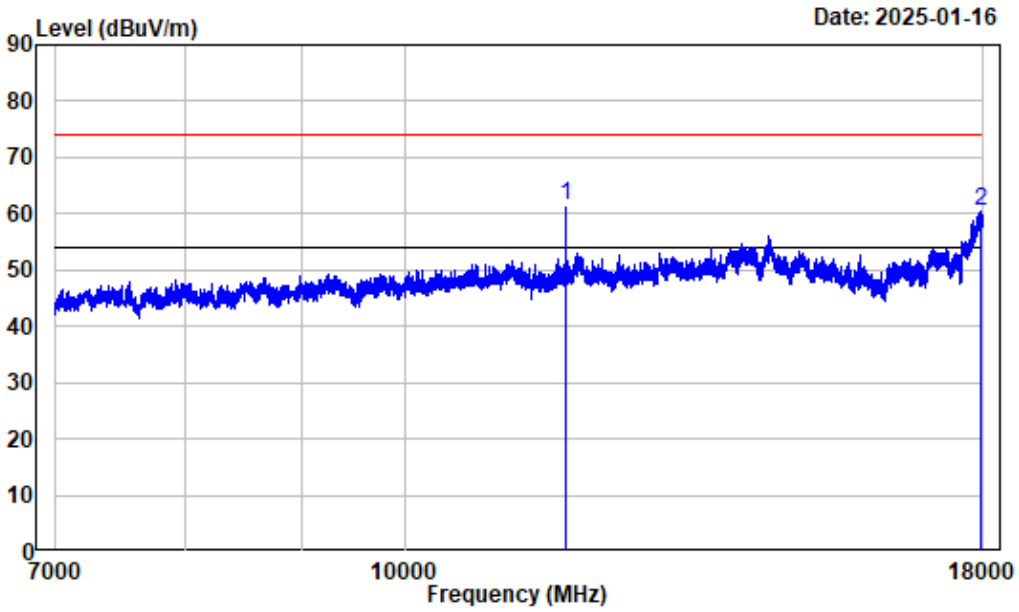
7-18GHz_Horizontal_Average



Condition : Horizontal
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11770.000	4.07	46.63	50.70	54.00	-3.30	Average
2	17995.880	13.18	33.90	47.08	54.00	-6.92	Average

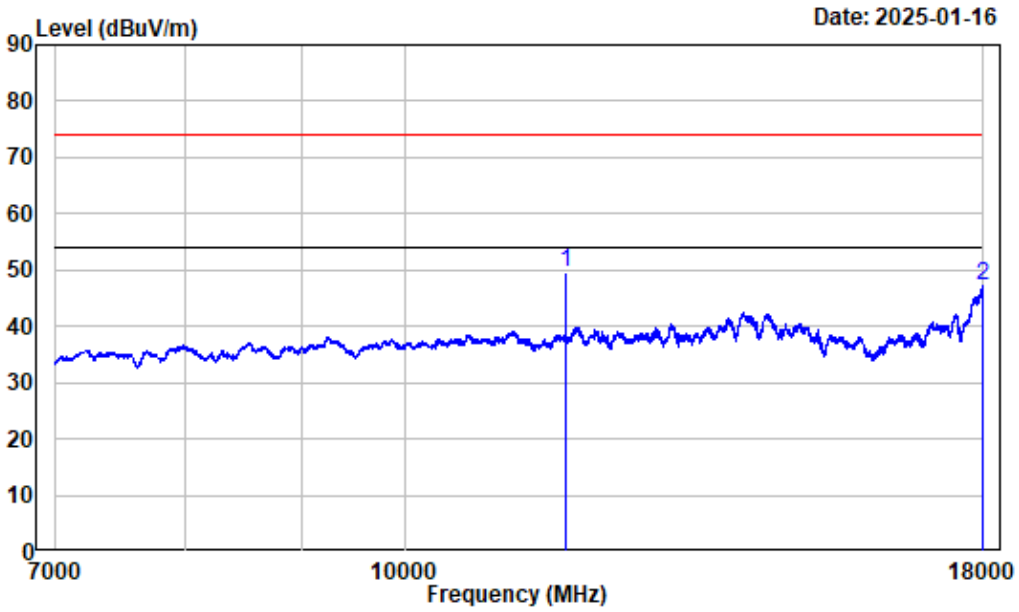
7-18GHz_Vertical_Peak



Condition : Vertical
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11770.000	4.07	57.29	61.36	74.00	-12.64	Peak
2	17943.620	12.92	47.66	60.58	74.00	-13.42	Peak

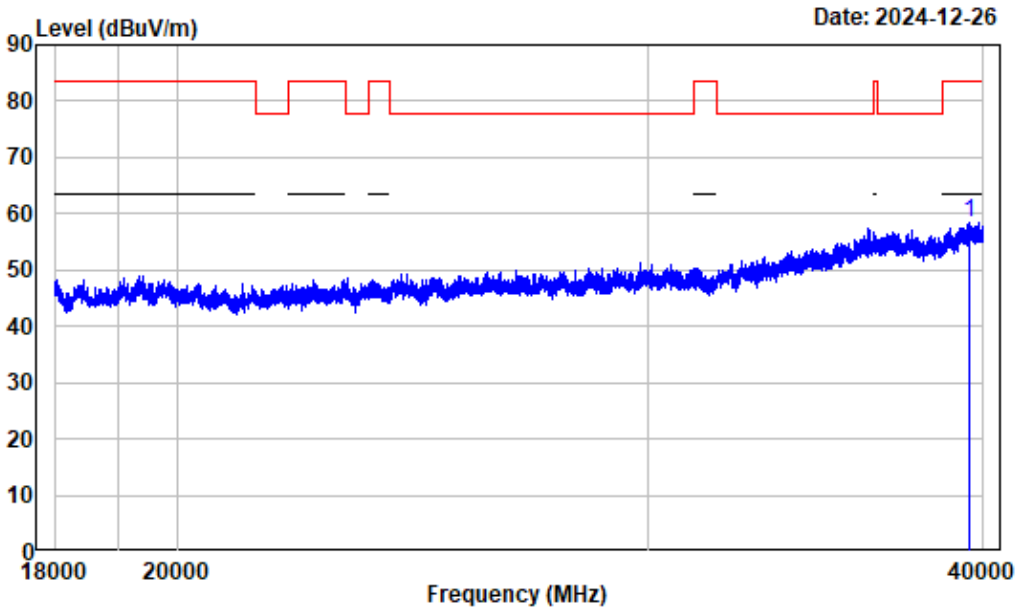
7-18GHz_Vertical_Average



Condition : Vertical
Project No. : 2401Z25490E-RF
Tester : Dylan Yang
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11770.000	4.07	45.49	49.56	54.00	-4.44	Average
2	17998.630	13.19	34.00	47.19	54.00	-6.81	Average

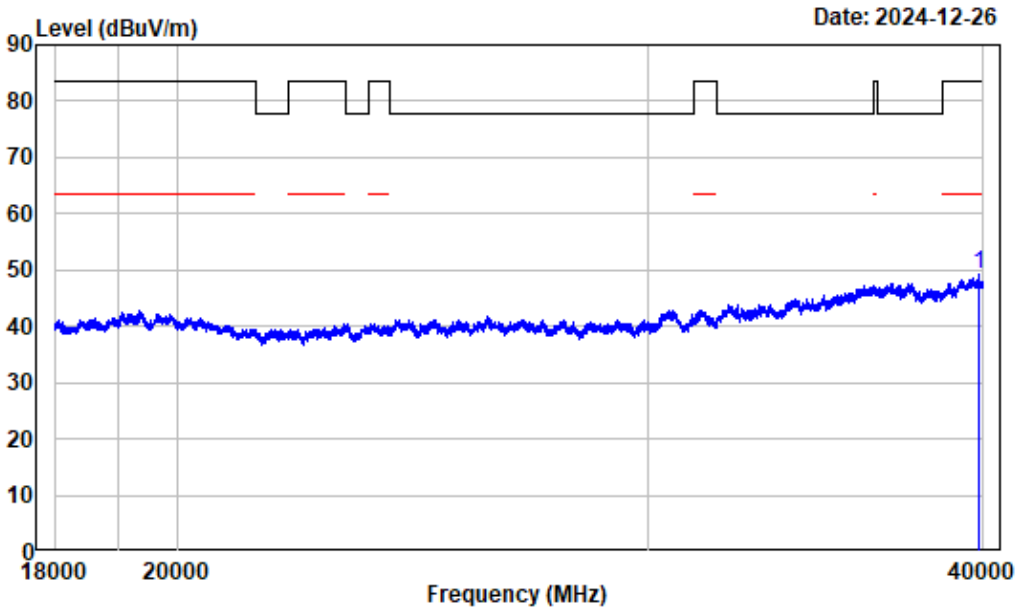
18-40GHz_Horizontal_Peak



Condition : Horizontal
Project No.: 2401Z25490E-RF
Tester : Dylan Yang
Note : Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
: 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39535.190	22.68	35.78	58.46	83.50	-25.04	Peak

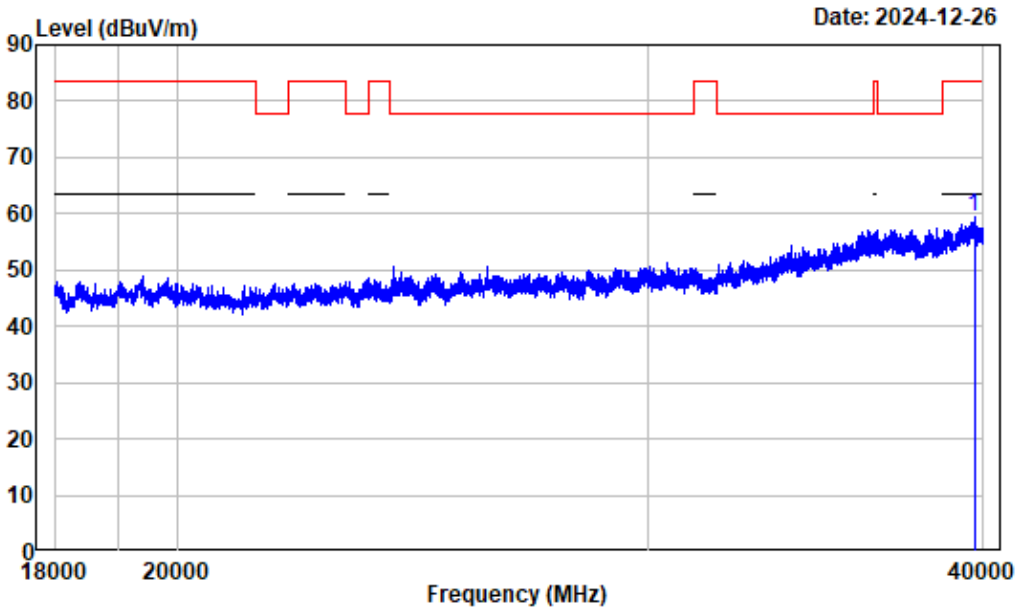
18-40GHz_Horizontal_Average



Condition: Horizontal
EUT : 2401Z25490E-RF
Mode : Dylan Yang
Note : Average reading: RBW:1MHz VBW:1kHz Detector:Peak
: 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39840.480	22.52	26.71	49.23	63.50	-14.27	Average

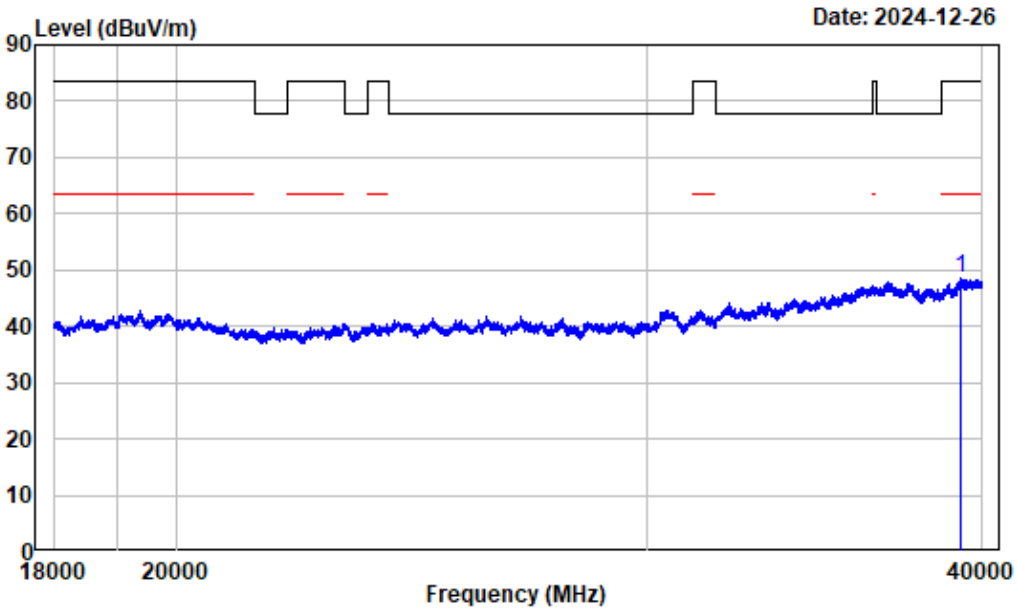
18-40GHz_Vertical_Peak



Condition : Vertical
Project No.: 2401Z25490E-RF
Tester : Dylan Yang
Note : Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
: 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39686.460	22.66	36.63	59.29	83.50	-24.21	Peak

18-40GHz_Vertical_Average



Condition: Vertical
EUT : 2401Z25490E-RF
Mode : Dylan Yang
Note : Average reading: RBW:1MHz VBW:1kHz Detector:Peak
: 5G_B5_ant2_a_5885

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39262.910	22.78	25.70	48.48	63.50	-15.02	Average

RF Conducted data

6dB Emission Bandwidth

Test Information:

Sample No.:	2V3K-1	**Test Date:**	2024/12/31~2025/01/02
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Cheeb Huang	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	23.1-24.2	**Relative Humidity: (%)**	37-42	**ATM Pressure: (kPa)**	101.5-101.8

6dB Emission Bandwidth

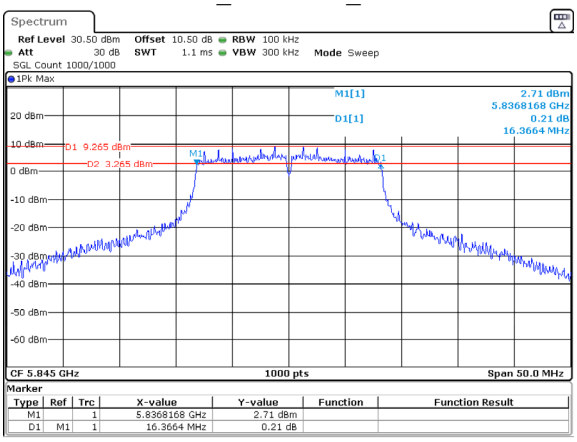
5.9G

Mode	Antenna	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11a	Chain 0	5845	16.366	0.5	Pass
		5865	16.366	0.5	Pass
		5885	16.416	0.5	Pass
	Chain 1	5845	16.466	0.5	Pass
		5865	16.366	0.5	Pass
		5885	16.416	0.5	Pass
	Chain 2	5845	16.416	0.5	Pass
		5865	16.416	0.5	Pass
		5885	16.416	0.5	Pass
802.11ac20	Chain 0	5845	17.668	0.5	Pass
		5865	17.668	0.5	Pass
		5885	17.668	0.5	Pass
	Chain 1	5845	17.668	0.5	Pass
		5865	17.668	0.5	Pass
		5885	17.668	0.5	Pass
	Chain 2	5845	17.618	0.5	Pass
		5865	17.668	0.5	Pass
		5885	17.668	0.5	Pass
802.11ac40	Chain 0	5835	35.335	0.5	Pass
		5875	35.335	0.5	Pass
	Chain 1	5835	35.335	0.5	Pass
		5875	35.335	0.5	Pass
	Chain 2	5835	35.335	0.5	Pass
		5875	35.235	0.5	Pass
802.11ac80	Chain 0	5855	75.475	0.5	Pass
	Chain 1	5855	75.475	0.5	Pass
	Chain 2	5855	75.475	0.5	Pass
802.11ac160	Chain 0	5815	**155.756**	0.5	Pass
	Chain 1	5815	153.353	0.5	Pass
	Chain 2	5815	**155.756**	0.5	Pass

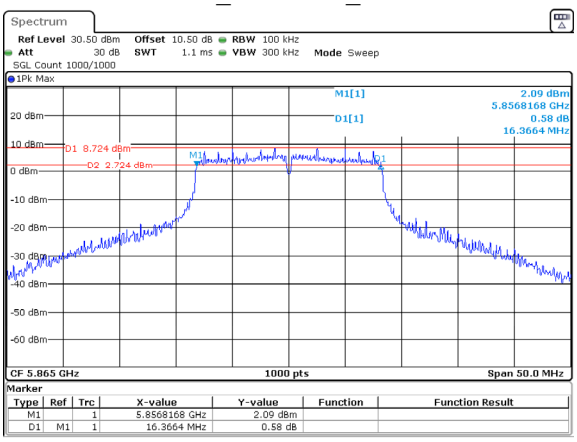
Mode	Antenna	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11ax20	Chain 0	5845	18.769	0.5	Pass
		5865	18.719	0.5	Pass
		5885	18.919	0.5	Pass
	Chain 1	5845	19.019	0.5	Pass
		5865	18.819	0.5	Pass
		5885	18.719	0.5	Pass
	Chain 2	5845	18.919	0.5	Pass
		5865	18.869	0.5	Pass
		5885	19.019	0.5	Pass
802.11ax40	Chain 0	5835	35.335	0.5	Pass
		5875	35.335	0.5	Pass
	Chain 1	5835	35.335	0.5	Pass
		5875	35.536	0.5	Pass
	Chain 2	5835	37.538	0.5	Pass
		5875	36.737	0.5	Pass
802.11ax80	Chain 0	5855	76.476	0.5	Pass
	Chain 1	5855	75.475	0.5	Pass
	Chain 2	5855	75.475	0.5	Pass
802.11ax160	Chain 0	5815	**155.756**	0.5	Pass
	Chain 1	5815	**155.756**	0.5	Pass
	Chain 2	5815	**155.756**	0.5	Pass

5.9G

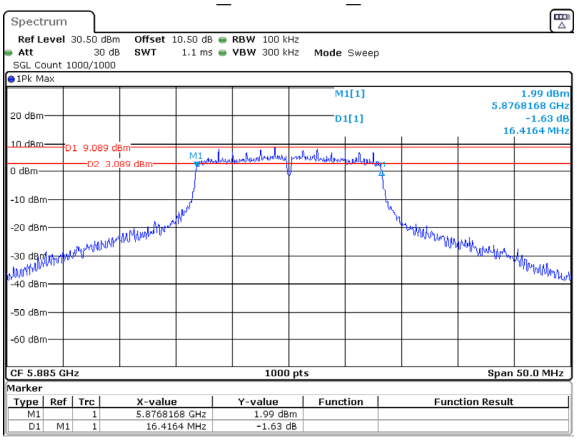
802.11a_5845MHz_Chain 0



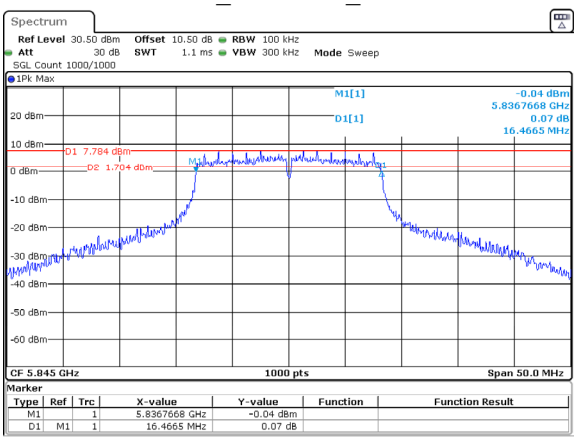
802.11a_5865MHz_Chain 0



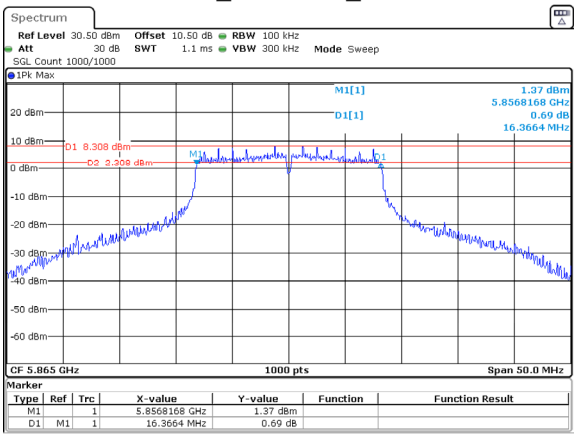
802.11a_5885MHz_Chain 0



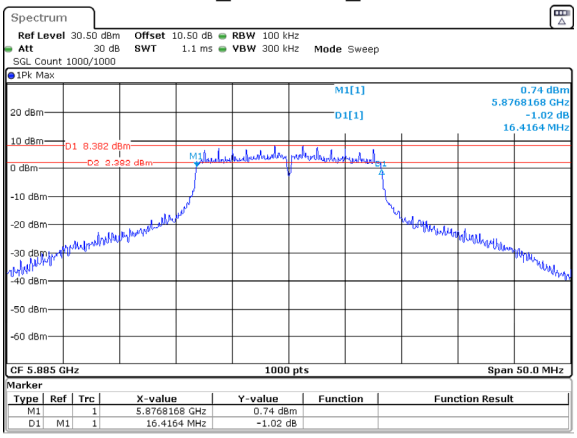
802.11a_5845MHz_Chain 1



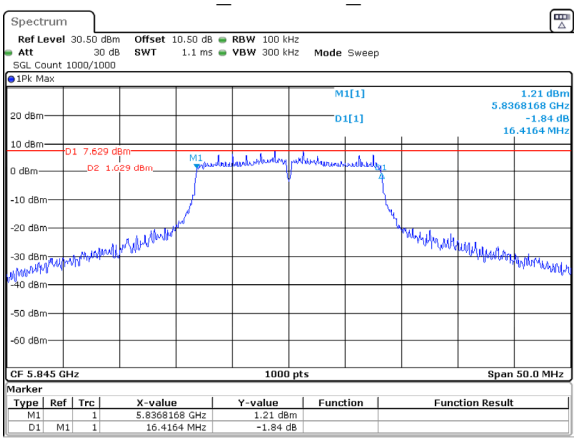
802.11a_5865MHz_Chain 1



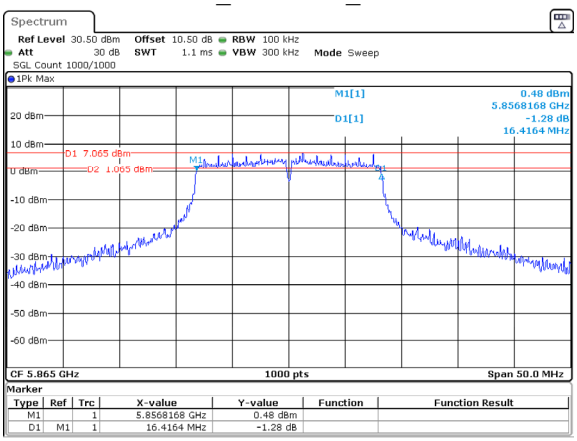
802.11a_5885MHz_Chain 1



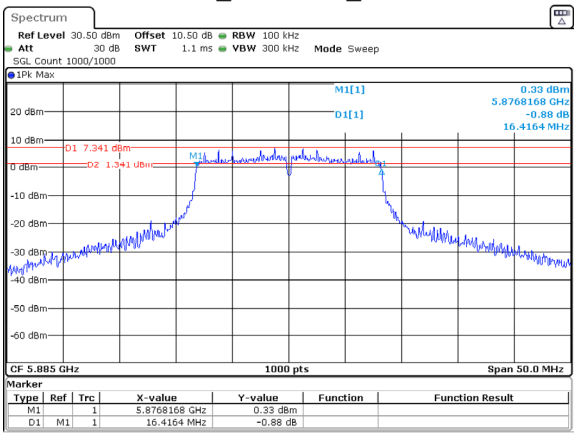
802.11a_5845MHz_Chain 2



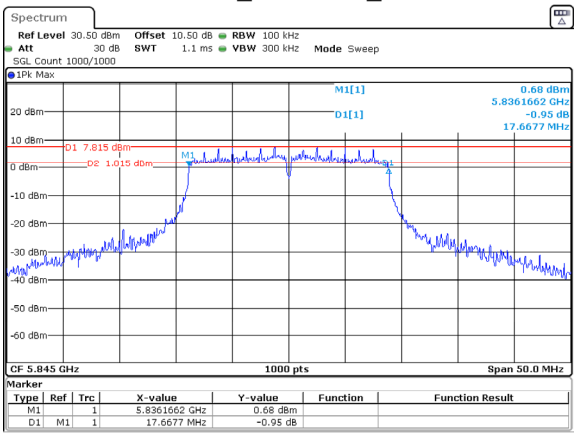
802.11a_5865MHz_Chain 2



802.11a_5885MHz_Chain 2



802.11ac20_5845MHz_Chain 0



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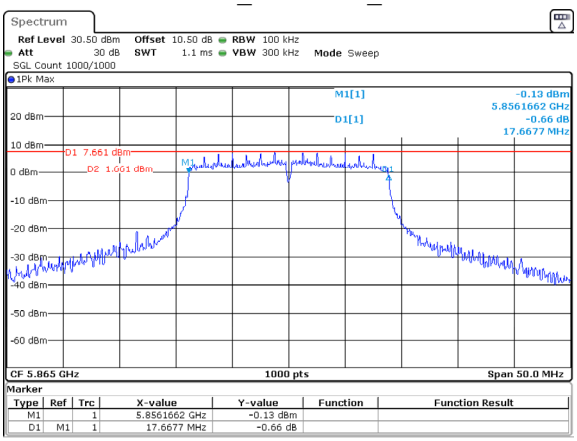
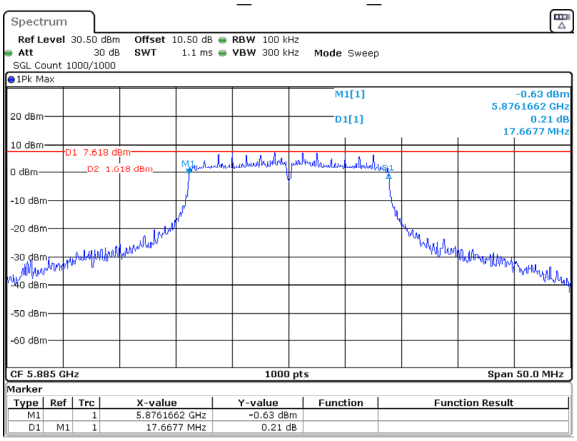
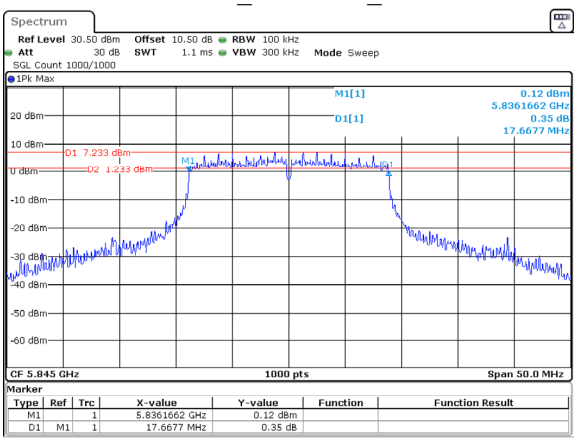


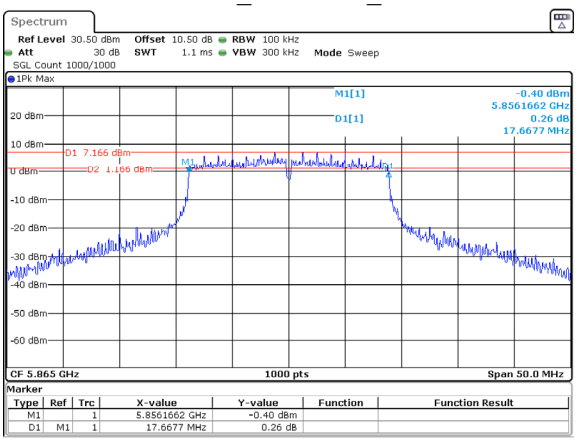
802.11ac20_5885MHz_Chain 0



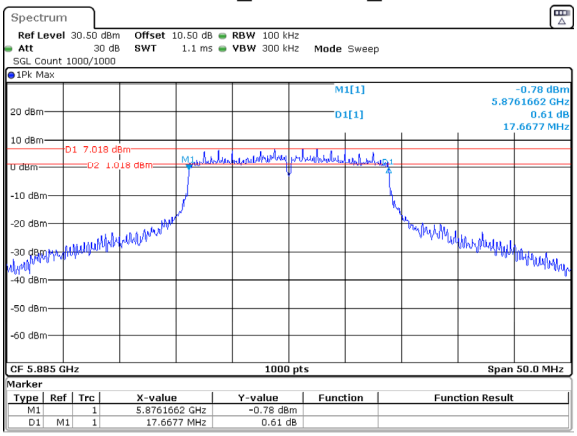
802.11ac20_5845MHz_Chain 1



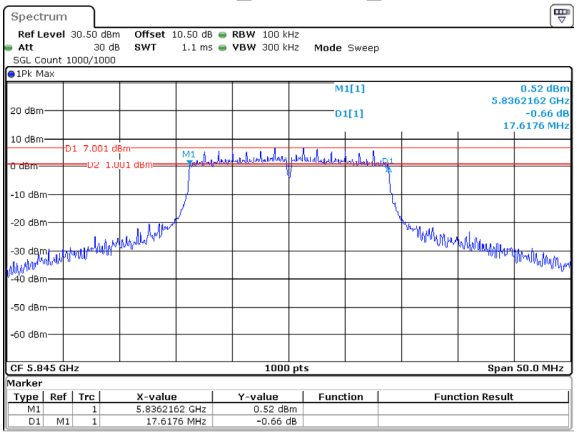
802.11ac20_5865MHz_Chain 1



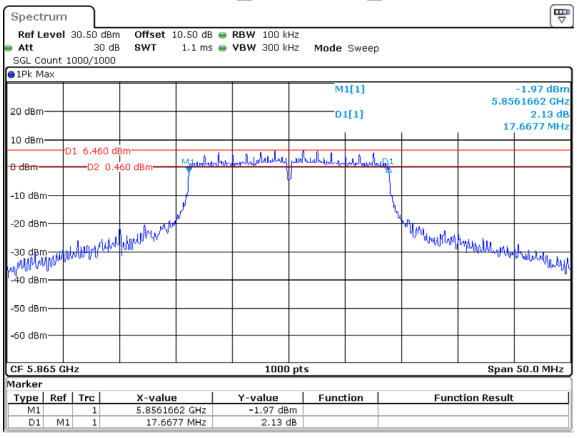
802.11ac20_5885MHz_Chain 1



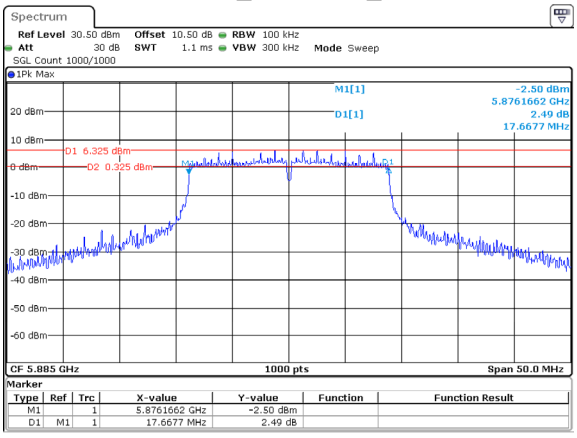
802.11ac20_5845MHz_Chain 2



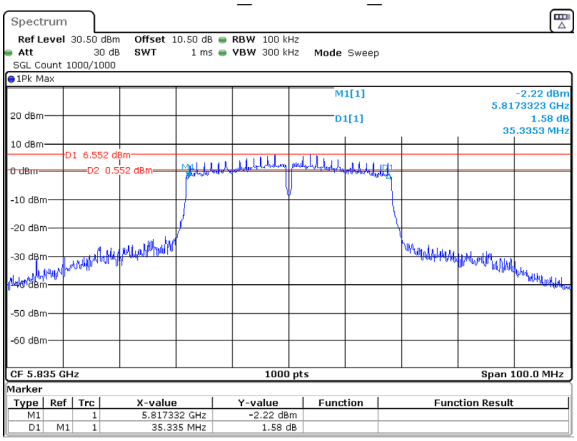
802.11ac20_5865MHz_Chain 2



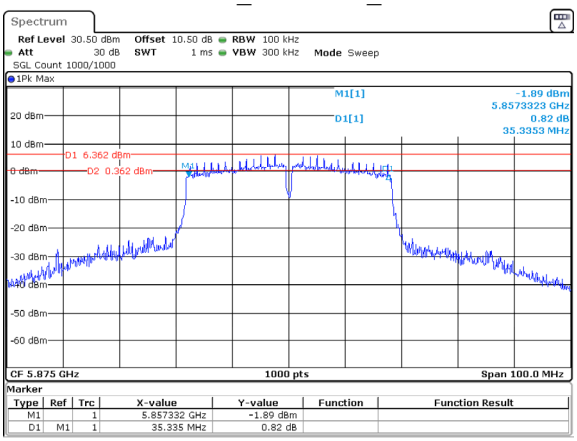
802.11ac20_5885MHz_Chain 2



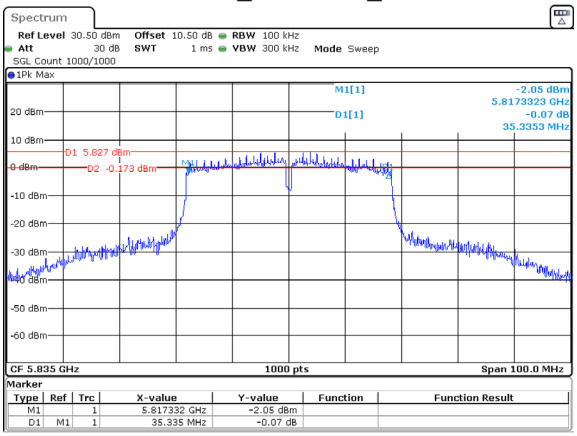
802.11ac40_5835MHz_Chain 0



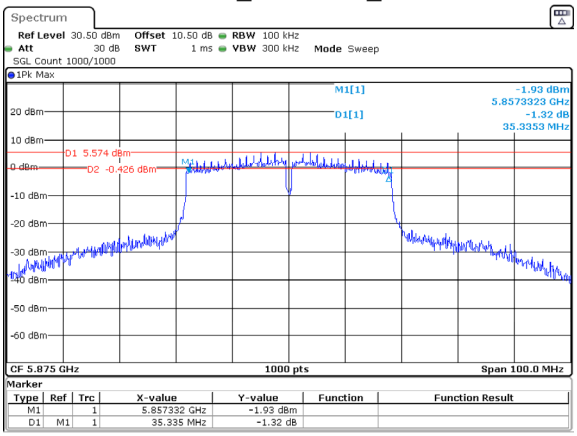
802.11ac40_5875MHz_Chain 0



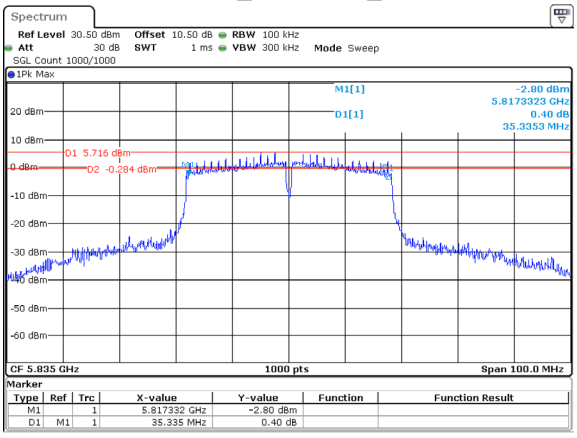
802.11ac40_5835MHz_Chain 1



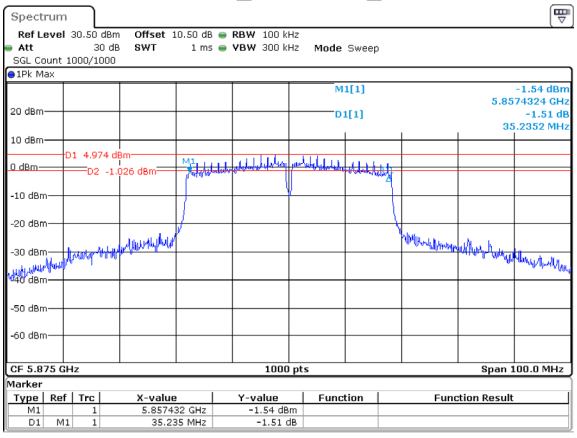
802.11ac40_5875MHz_Chain 1



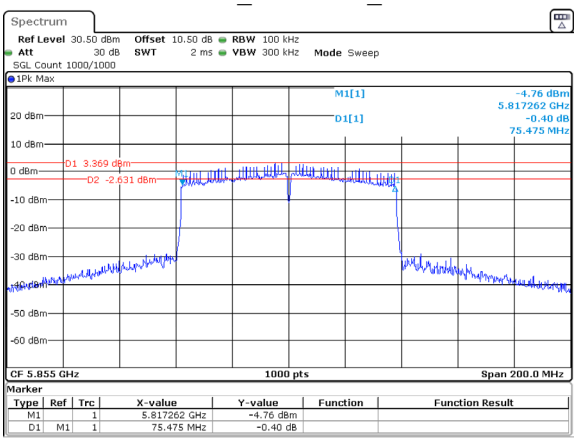
802.11ac40_5835MHz_Chain 2



802.11ac40_5875MHz_Chain 2

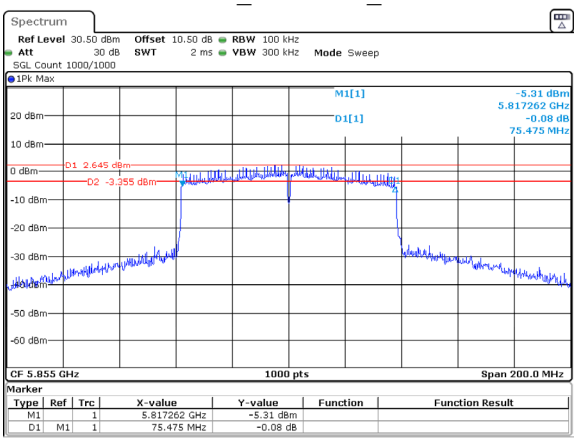


802.11ac80_5855MHz_Chain 0



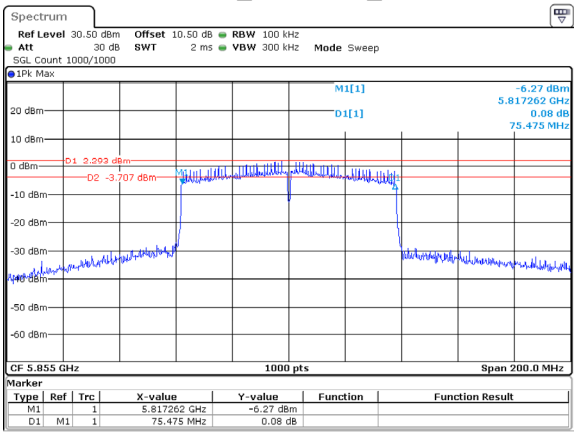
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 31.DEC.2024 15:47:38

802.11ac80_5855MHz_Chain 1



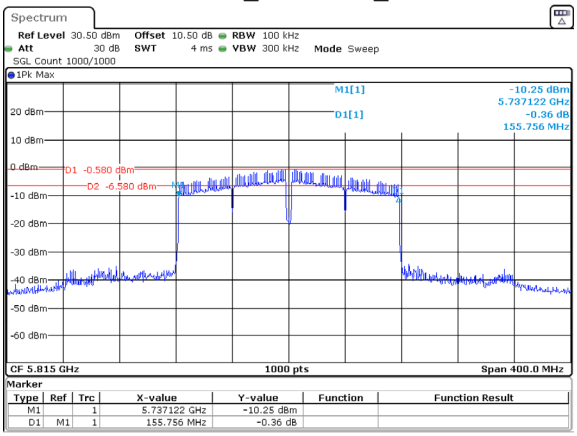
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 31.DEC.2024 17:06:53

802.11ac80_5855MHz_Chain 2



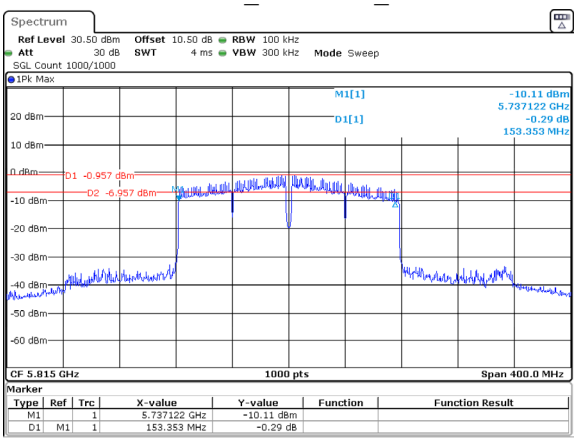
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 10:58:15

802.11ac160_5815MHz_Chain 0



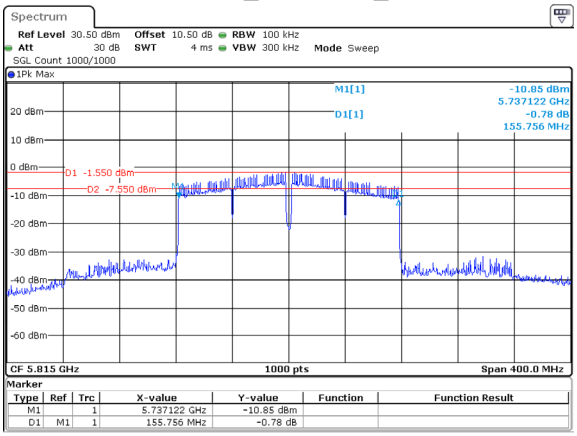
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 31.DEC.2024 15:49:07

802.11ac160_5815MHz_Chain 1



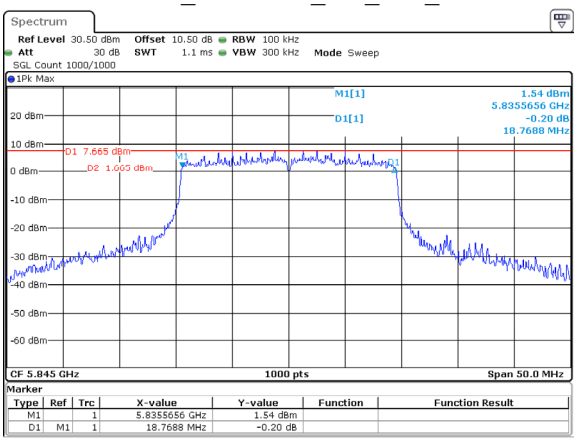
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 31.DEC.2024 17:08:22

802.11ac160_5815MHz_Chain 2

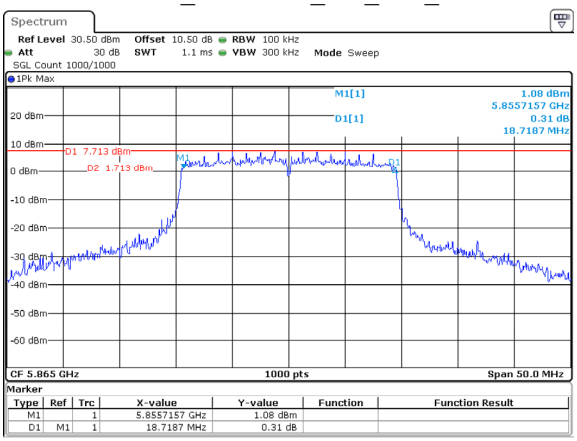


ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 11:00:12

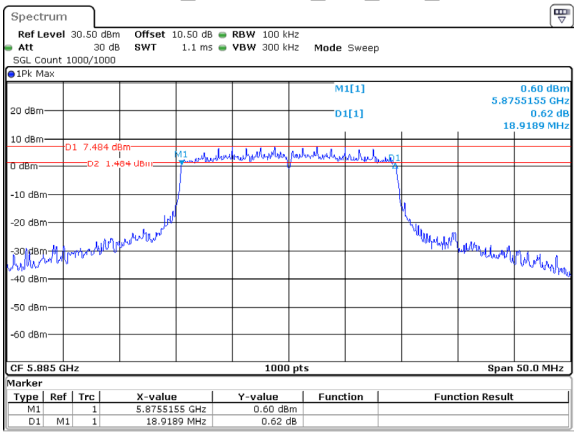
802.11ax20_5845MHz_RU_Full_Chain 0



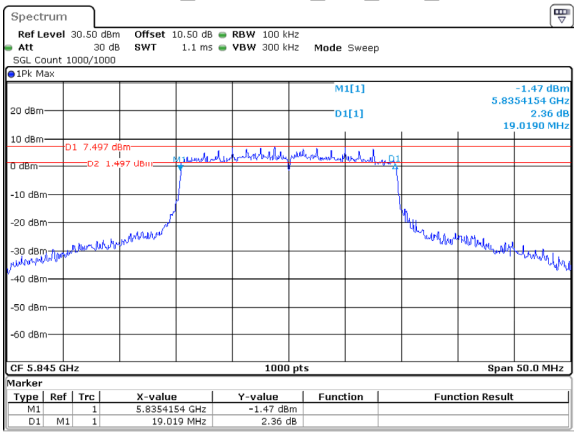
802.11ax20_5865MHz_RU_Full_Chain 0



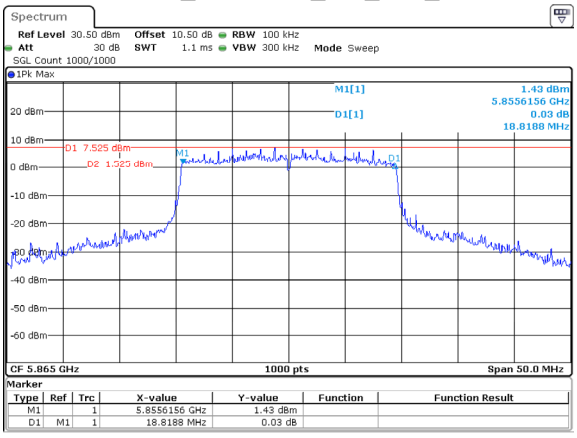
802.11ax20_5885MHz_RU_Full_Chain 0



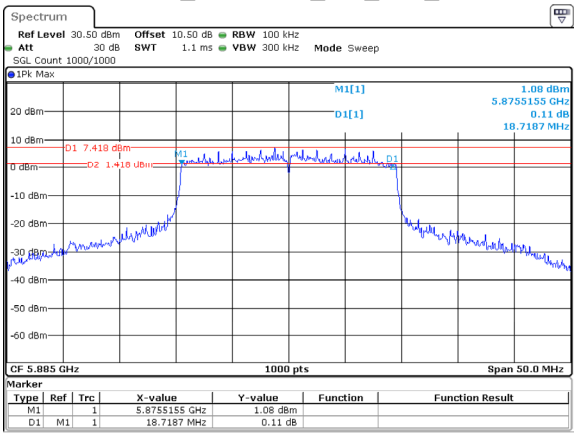
802.11ax20_5845MHz_RU_Full_Chain 1



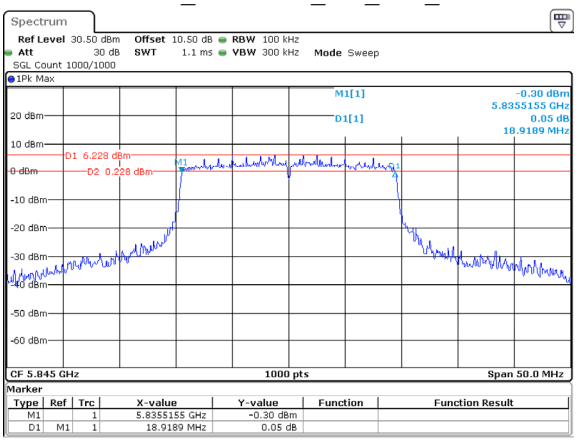
802.11ax20_5865MHz_RU_Full_Chain 1



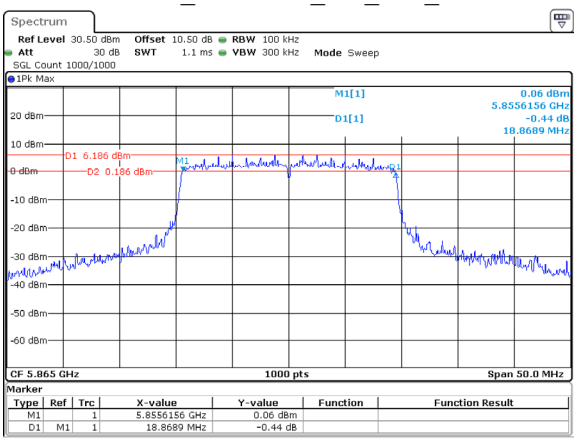
802.11ax20_5885MHz_RU_Full_Chain 1



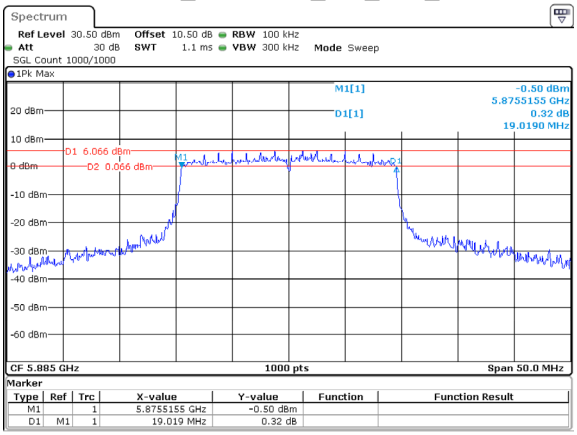
802.11ax20_5845MHz_RU_Full_Chain 2



802.11ax20_5865MHz_RU_Full_Chain 2



802.11ax20_5885MHz_RU_Full_Chain 2



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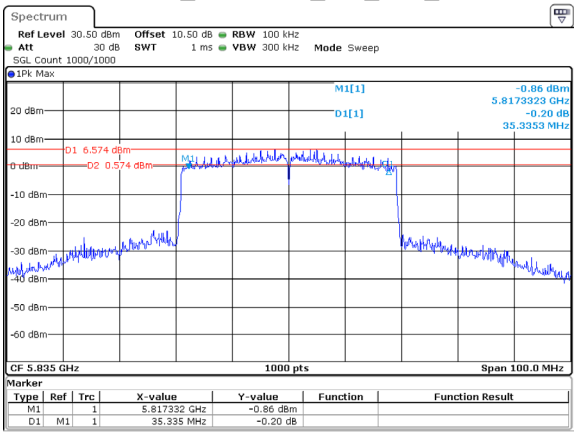
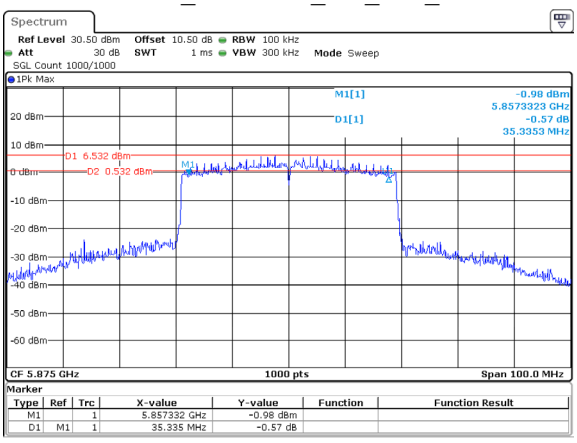
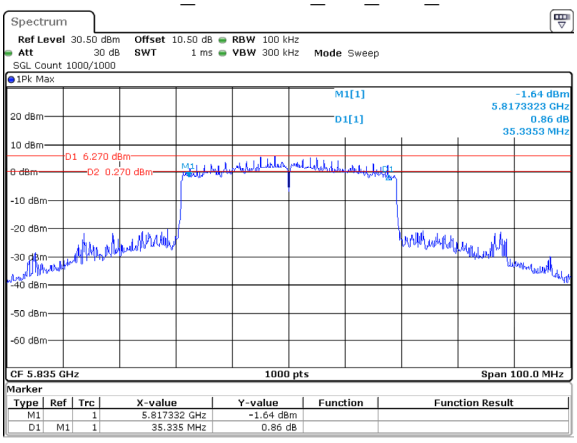


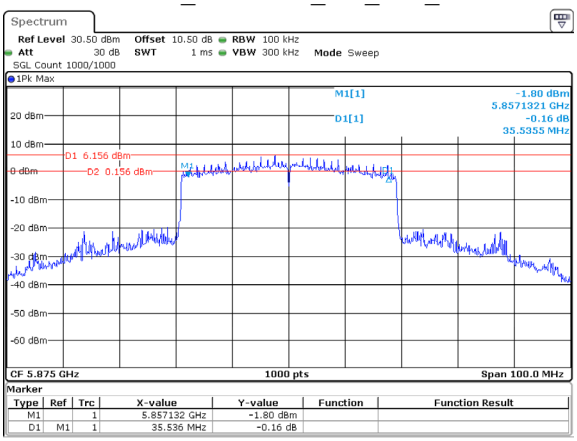
802.11ax40_5875MHz_RU_Full_Chain 0



802.11ax40_5835MHz_RU_Full_Chain 1

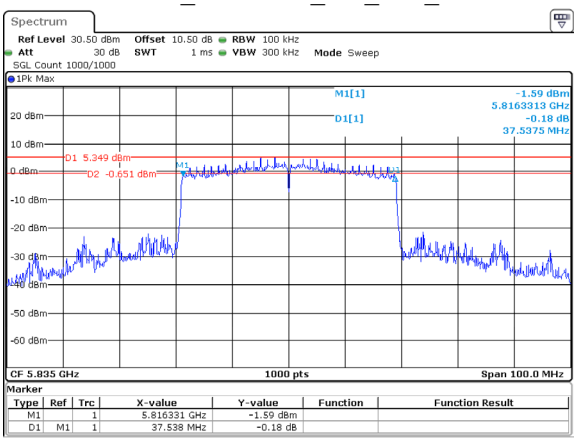


802.11ax40_5875MHz_RU_Full_Chain 1



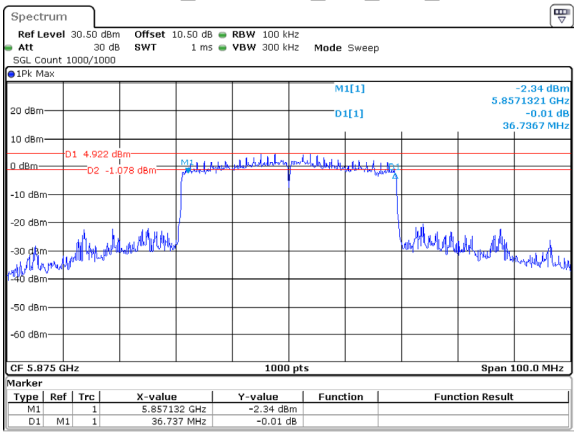
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 15:22:29

802.11ax40_5835MHz_RU_Full_Chain 2



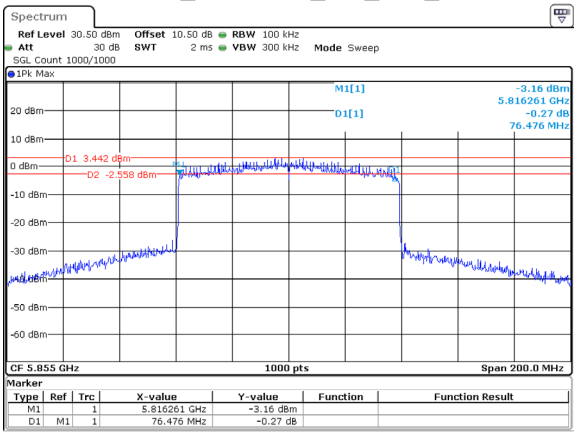
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 16:31:05

802.11ax40_5875MHz_RU_Full_Chain 2



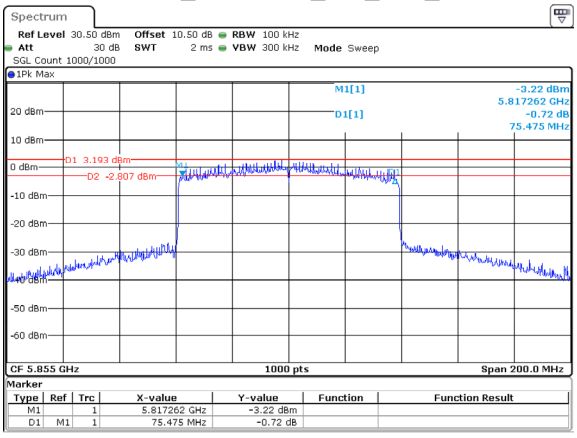
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 16:32:06

802.11ax80_5855MHz_RU_Full_Chain 0



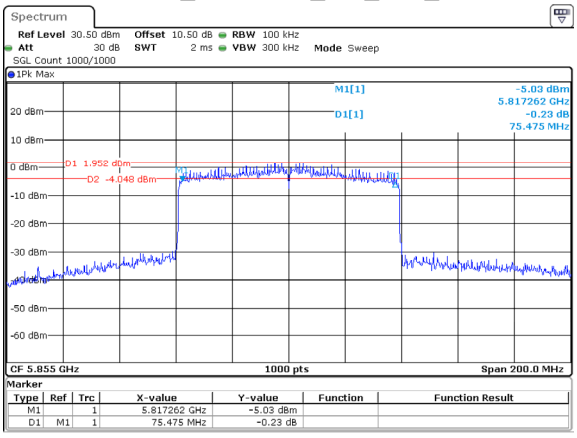
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 13:55:23

802.11ax80_5855MHz_RU_Full_Chain 1



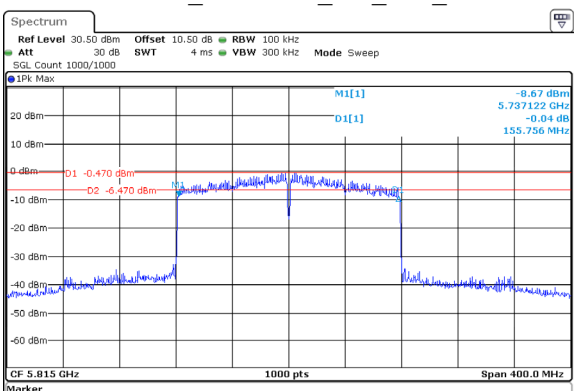
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 15:23:49

802.11ax80_5855MHz_RU_Full_Chain 2



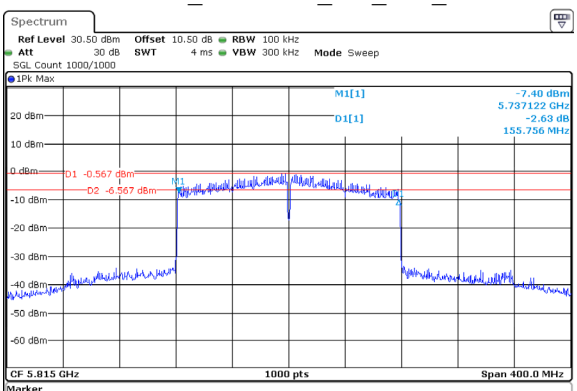
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 16:33:18

802.11ax160_5815MHz_RU_Full_Chain 0



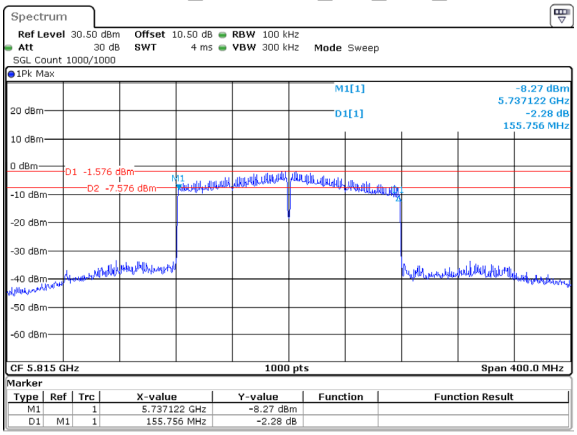
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 13:56:53

802.11ax160_5815MHz_RU_Full_Chain 1



ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 15:28:14

802.11ax160_5815MHz_RU_Full_Chain 2



ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 2.JAN.2025 16:34:53

99% Occupied Bandwidth

Test Information:

Sample No.:	2V3K-1	**Test Date:**	2025/01/08~2025/01/14
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Cheeb Huang	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	23.1-24.2	**Relative Humidity: (%)**	37-42	**ATM Pressure: (kPa)**	101.5-101.8

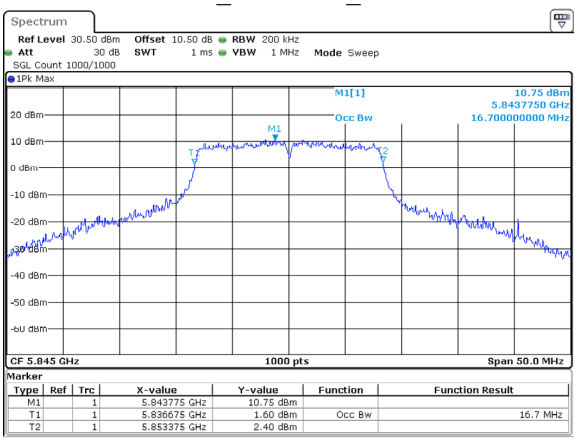
5.9G

Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
802.11a	Chain 0	5845	16.700
		5865	16.750
		5885	16.700
	Chain 1	5845	16.700
		5865	16.700
		5885	16.750
	Chain 2	5845	16.600
		5865	16.600
		5885	16.700
802.11ac20	Chain 0	5845	17.750
		5865	17.750
		5885	17.750
	Chain 1	5845	17.800
		5865	17.850
		5885	17.850
	Chain 2	5845	17.800
		5865	17.750
		5885	17.800
802.11ac40	Chain 0	5835	36.400
		5875	36.500
	Chain 1	5835	36.400
		5875	36.400
	Chain 2	5835	36.400
		5875	36.300
802.11ac80	Chain 0	5855	75.400
	Chain 1	5855	75.600
	Chain 2	5855	75.600
802.11ac160	Chain 0	5815	154
	Chain 1	5815	154
	Chain 2	5815	154

Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
802.11ax20	Chain 0	5845	19
		5865	19.050
		5885	19
	Chain 1	5845	19.100
		5865	19.100
		5885	19.100
	Chain 2	5845	19
		5865	19
		5885	19.100
802.11ax40	Chain 0	5835	37.800
		5875	37.800
	Chain 1	5835	37.800
		5875	37.900
	Chain 2	5835	37.800
		5875	37.900
802.11ax80	Chain 0	5855	77.200
	Chain 1	5855	77.200
	Chain 2	5855	77.200
802.11ax160	Chain 0	5815	155.600
	Chain 1	5815	155.600
	Chain 2	5815	**156**

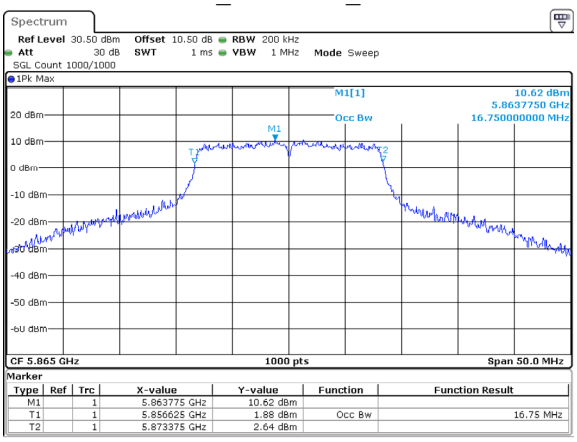
5.9G

802.11a_5845MHz_Chain 0



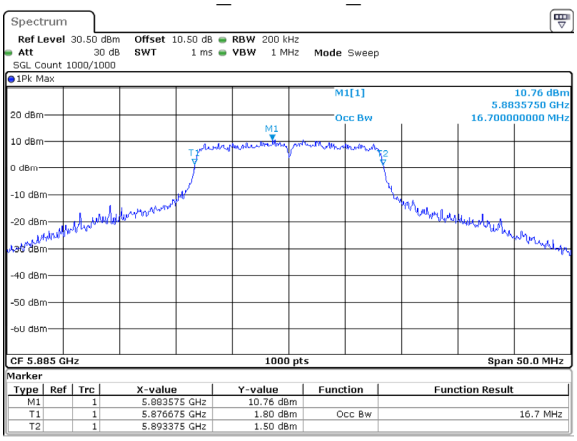
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 16:47:20

802.11a_5865MHz_Chain 0



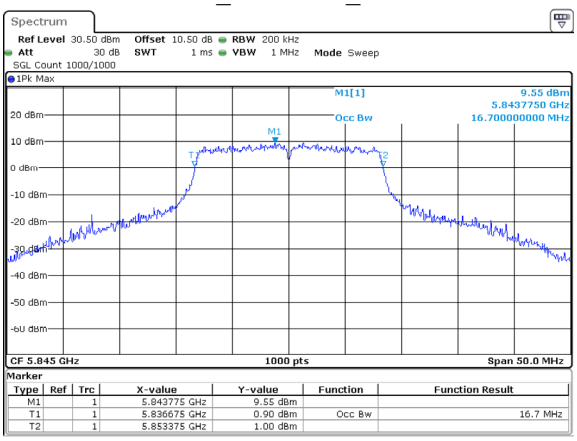
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 16:48:38

802.11a_5885MHz_Chain 0



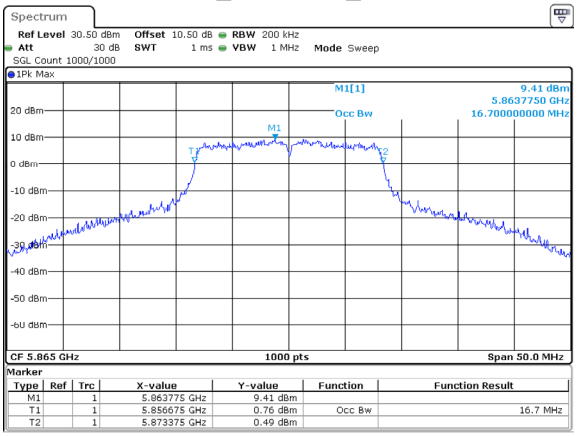
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 16:49:45

802.11a_5845MHz_Chain 1



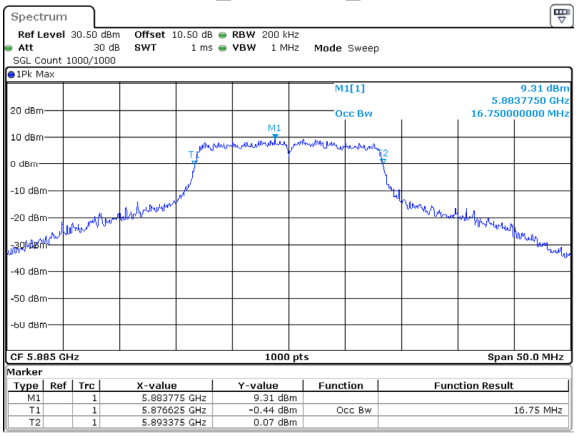
ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 17:06:20

802.11a_5865MHz_Chain 1



ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 17:07:30

802.11a_5885MHz_Chain 1



ProjectNo.:2401Z25490E-RF Tester:Cheeb Huang
Date: 8.JAN.2025 17:08:50