TEST REPORT

Applicant Name:	M&M Electronics, S.A.
Address:	Cocosolito, Colon Free Zone, Main Entrance Warehouse 10D and 11D, Colon Panama
Report Number:	2401Y68085E-RF-00C
FCC ID:	2BLU9-QT10

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	Tablet
Model No.:	QT10AVGW464
Multiple Model(s) No.:	N/A
Trade Mark:	COMPAQ
Date Received:	2024/10/23
Issue Date:	2024/12/11

Test Result:	Pass▲

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

Prepared and Checked By:

Jack Zeng

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.

This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "▼".

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401Y68085E-RF-00C	Original Report	2024/12/11

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Tablet
Tested Model	QT10AVGW464
Multiple Model(s)	N/A
Frequency Range	5G Wi-Fi: 5150-5250MHz; 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Output Power	5150-5250MHz: 8.37dBm 5725-5850MHz: 8.08dBm
Modulation Technique	OFDM
Antenna Specification#	2.06dBi (5150-5250MHz) 1.45dBi (5725-5850MHz) (provided by the applicant)
Voltage Range	DC 5V from adapter or DC 3.85V from battery
Sample serial number	2SLQ-1 for Conducted and Radiated Emissions Test 2SLQ-7 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Model:HJ-0502000W2-US Input: 100-240V~50/60Hz 0.3A Output: 5.0V, 2.0A 10.0W

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)
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	0.009MHz~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.

The system support 802.11a/n20/n40/ac20/ac40/ac80, the 802.11 n20/n40 were reduced since the identical parameters with 802.11ac20/ac40.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a/ac20 mode: channel 36, 40, 48 were tested;
For 802.11ac40 mode: channel 38, 46 were tested;
For 802.11ac80 mode, channel 42 was tested.

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a/ac20 mode: channel 149, 157, 165 were tested;
For 802.11ac40 mode: channel 151, 159 were tested;
For 802.11ac80 mode, channel 155 was tested.

EUT Exercise Software

Test in the engineering mode 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:

5150-5250 MHz Band:				
Test Modes	**Test Channels**	**Test Frequency (MHz)**	**Data rate**	**Power Level Setting#**
802.11a	Lowest	5180	6Mbps	8
	Middle	5200	6Mbps	8
	Highest	5240	6Mbps	8
802.11ac-VHT20	Lowest	5180	MCS0	8
	Middle	5200	MCS0	8
	Highest	5240	MCS0	8
802.11ac-VHT40	Lowest	5190	MCS0	8
	Highest	5230	MCS0	8
802.11ac-VHT80	Middle	5210	MCS0	8
5150-5250 MHz Band:				
Test Modes	**Test Channels**	**Test Frequency (MHz)**	**Data rate**	**Power Level Setting#**
802.11a	Lowest	5745	6Mbps	8
	Middle	5785	6Mbps	8
	Highest	5825	6Mbps	8
802.11ac-VHT20	Lowest	5745	MCS0	8
	Middle	5785	MCS0	8
	Highest	5825	MCS0	8
802.11ac-VHT40	Lowest	5755	MCS0	8
	Highest	5795	MCS0	8
802.11ac-VHT80	Middle	5775	MCS0	8

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

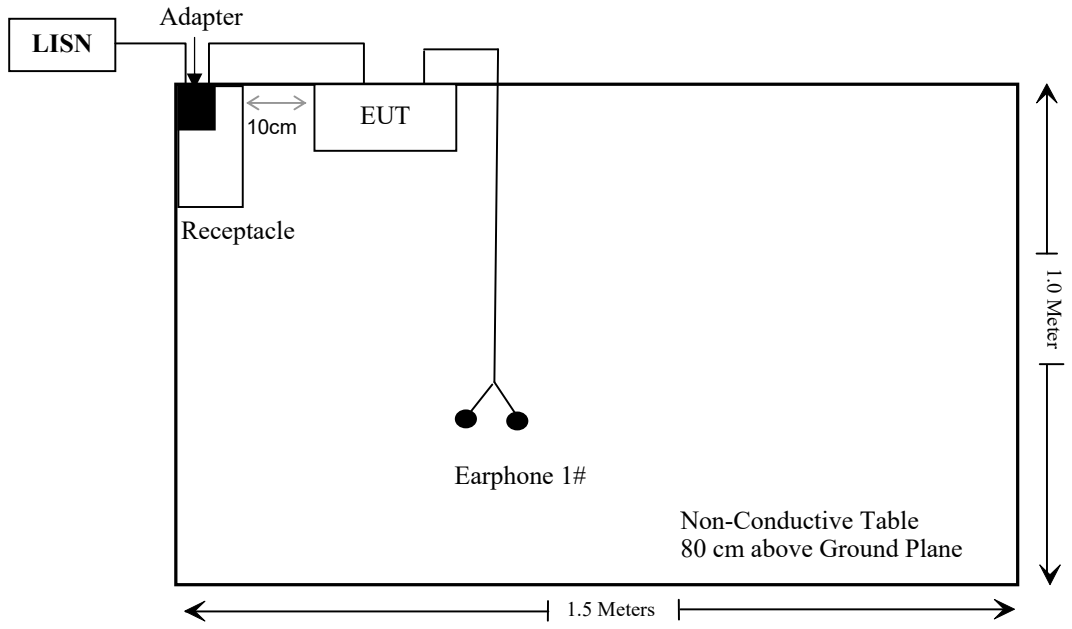
Manufacturer	Description	Model	Serial Number
Unknown	Receptacle	Unknown	Unknown
Unknown	Earphone 1#	Unknown	Unknown
Unknown	Earphone 2#	Unknown	Unknown

External I/O Cable

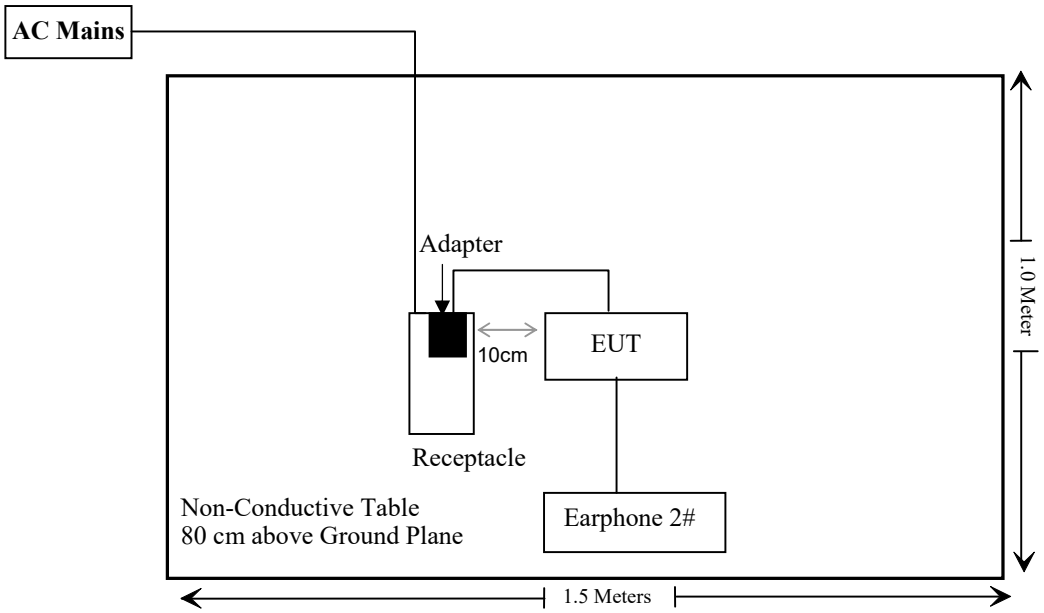
Cable Description	Length (m)	From Port	To
Un-shielding Detachable USB Cable	1.0	EUT	Adapter
Un-shielding Detachable Audio Cable	1.2	EUT	Earphone 1#
Un-shielding Detachable Audio Cable	1.5	EUT	Earphone 2#
Shielded Un-detachable AC Cable	1.5	Receptacle	LISN/AC Mains

Block Diagram of Test Setup

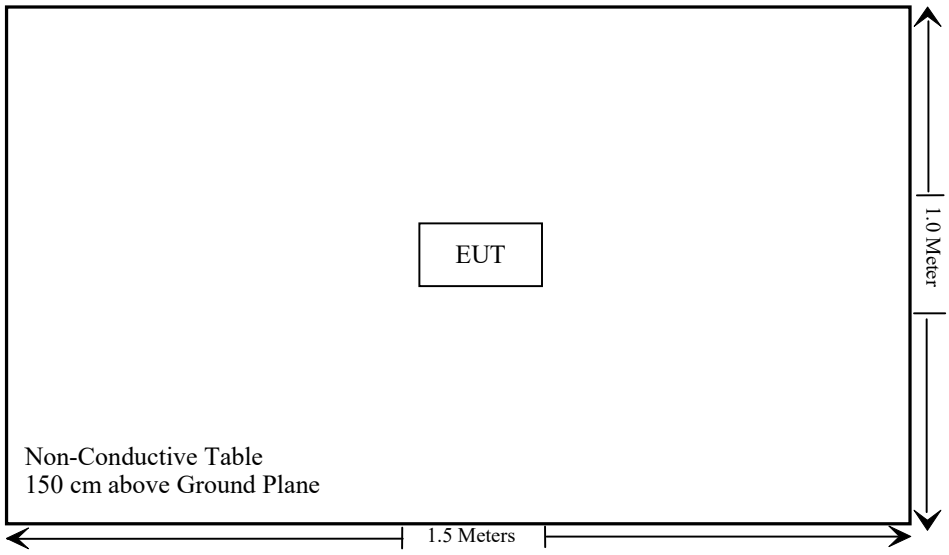
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) & §2.1093	RF Exposure	Compliant
§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
§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 can't support the 5250-5350MHz and 5470-5725MHz.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
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	2024/01/16	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
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101942	2023/12/18	2024/12/17
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
Unknown	10dB Attenuator	Unknown	F-03-EM190	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 §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: 2401Y68085E-SA.

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 two internal antennas which was permanently attached, and the maximum antenna gain# is 2.06dBi for 5150-5250MHz and 1.45dBi for 5725-5850MHz, fulfill the requirement of this section. Please refer to the EUT photos.

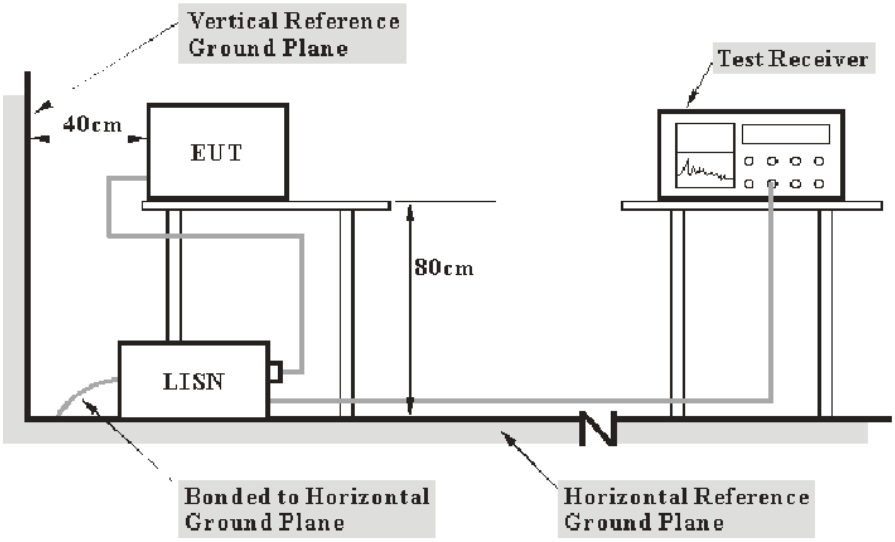
Result: Compliant

FCC §15.407 (b) (6) §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (6)

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).

Test Data

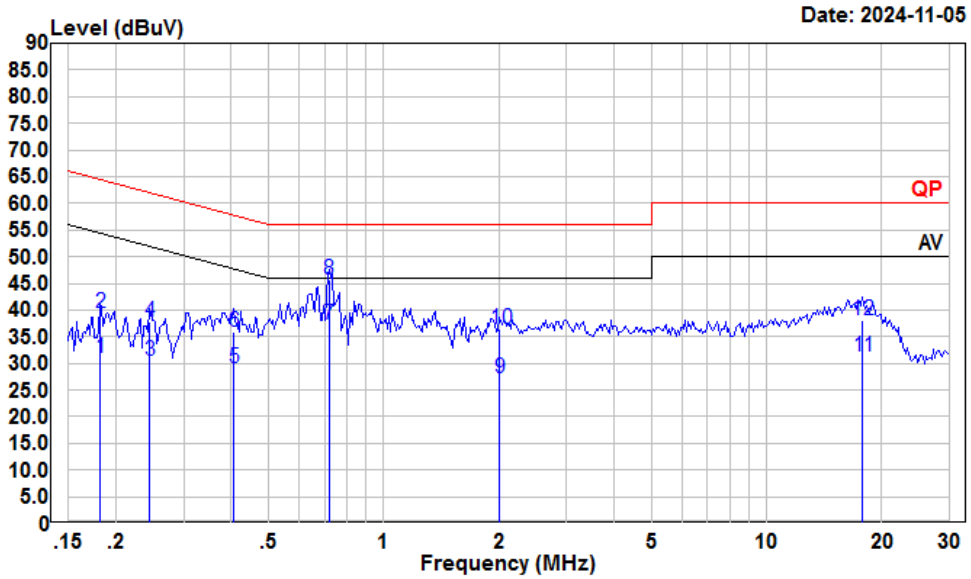
Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	55~57 %
ATM Pressure:	101 kPa

The testing was performed by Macy Shi on 2024-11-05.

EUT operation mode: Transmitting (Maximum output power mode, 802.11a 5180MHz)

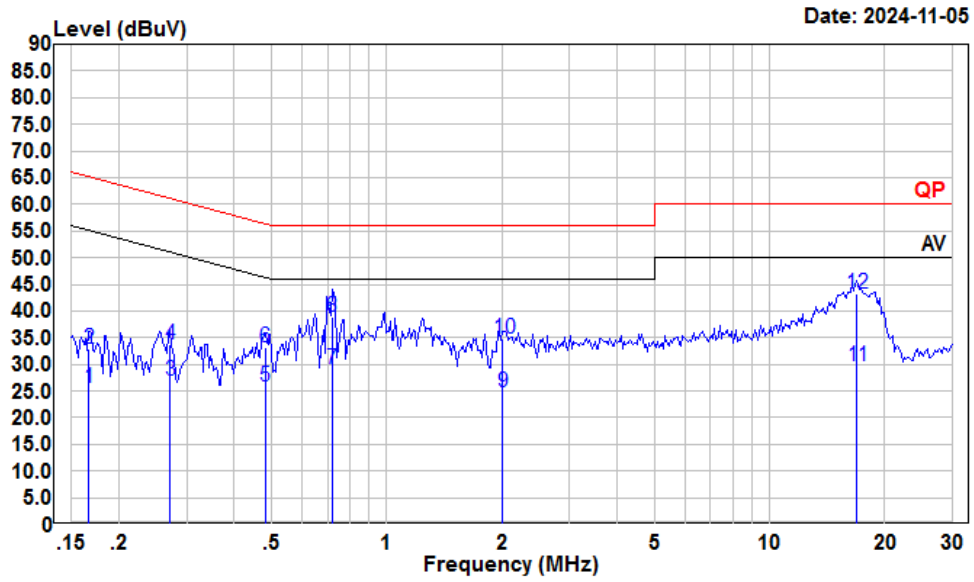
AC 120V/60 Hz, Line



Condition: Line
Project : 2401Y68085E-RF
tester : Macy.shi
Note : 5G WIFI Transmitting

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.182	10.05	30.98	10.83	10.10	54.42	-23.44	Average
2	0.182	18.53	39.46	10.83	10.10	64.42	-24.96	QP
3	0.244	9.61	30.42	10.73	10.08	51.95	-21.53	Average
4	0.244	17.07	37.88	10.73	10.08	61.95	-24.07	QP
5	0.406	8.57	29.24	10.57	10.10	47.73	-18.49	Average
6	0.406	15.23	35.90	10.57	10.10	57.73	-21.83	QP
7	0.720	16.56	37.19	10.49	10.14	46.00	-8.81	Average
8	0.720	24.95	45.58	10.49	10.14	56.00	-10.42	QP
9	2.012	6.28	27.07	10.60	10.19	46.00	-18.93	Average
10	2.012	15.77	36.56	10.60	10.19	56.00	-19.44	QP
11	17.849	10.44	31.41	10.78	10.19	50.00	-18.59	Average
12	17.849	17.04	38.01	10.78	10.19	60.00	-21.99	QP

AC 120V/60 Hz, Neutral



Condition: Neutral
Project : 2401Y68085E-RF
tester : Macy.shi
Note : 5G WIFI Transmitting

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.167	4.83	25.46	10.53	10.10	55.12	-29.66	Average
2	0.167	12.19	32.82	10.53	10.10	65.12	-32.30	QP
3	0.272	6.31	26.90	10.50	10.09	51.07	-24.17	Average
4	0.272	13.15	33.74	10.50	10.09	61.07	-27.33	QP
5	0.481	4.98	25.80	10.69	10.13	46.32	-20.52	Average
6	0.481	12.25	33.07	10.69	10.13	56.32	-23.25	QP
7	0.720	8.12	28.98	10.72	10.14	46.00	-17.02	Average
8	0.720	18.15	39.01	10.72	10.14	56.00	-16.99	QP
9	2.012	4.29	24.88	10.40	10.19	46.00	-21.12	Average
10	2.012	14.20	34.79	10.40	10.19	56.00	-21.21	QP
11	16.928	8.74	29.70	10.76	10.20	50.00	-20.30	Average
12	16.928	22.30	43.26	10.76	10.20	60.00	-16.74	QP

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

Applicable Standard

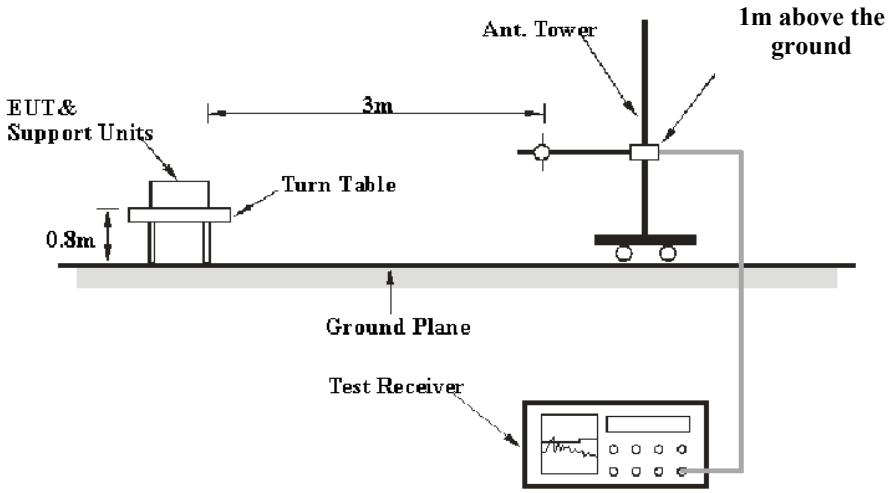
FCC §15.407 (b); §15.209; §15.205;

(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.

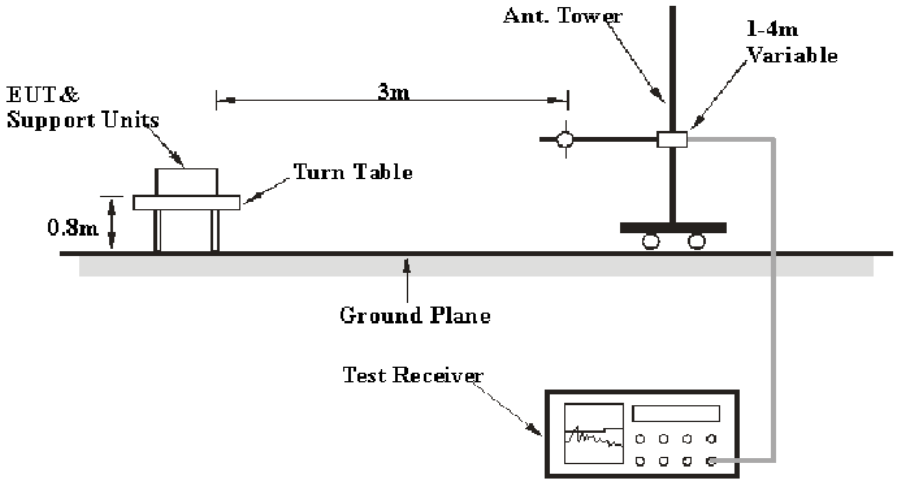
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

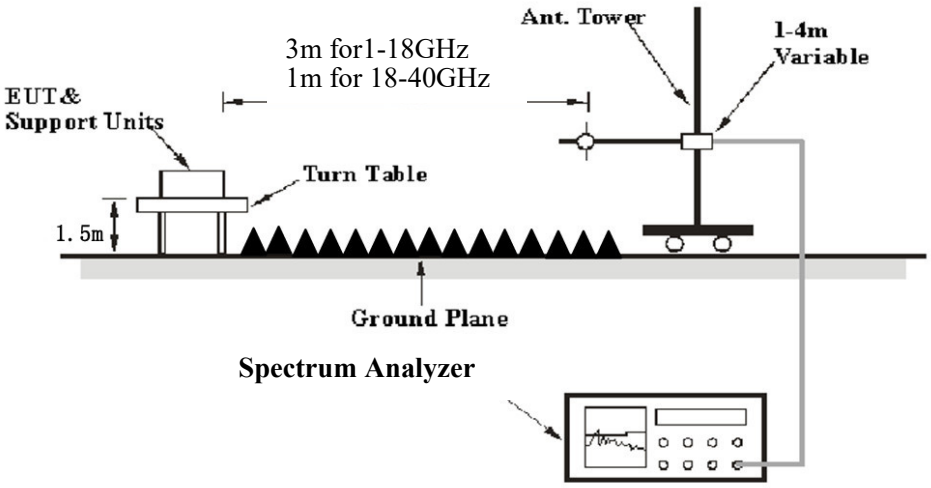
9 kHz-30MHz:



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:

Pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	5 kHz
	<98%	1MHz	≥1/Ton, not less than 5 kHz

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.

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;

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

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

Test Data

Environmental Conditions

Temperature:	22~25.5 ℃
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

The testing was performed by Anson Su on 2024-11-06 for below 1GHz and Karl Xu from 2024-11-16 to 2024-11-26 for above 1GHz.

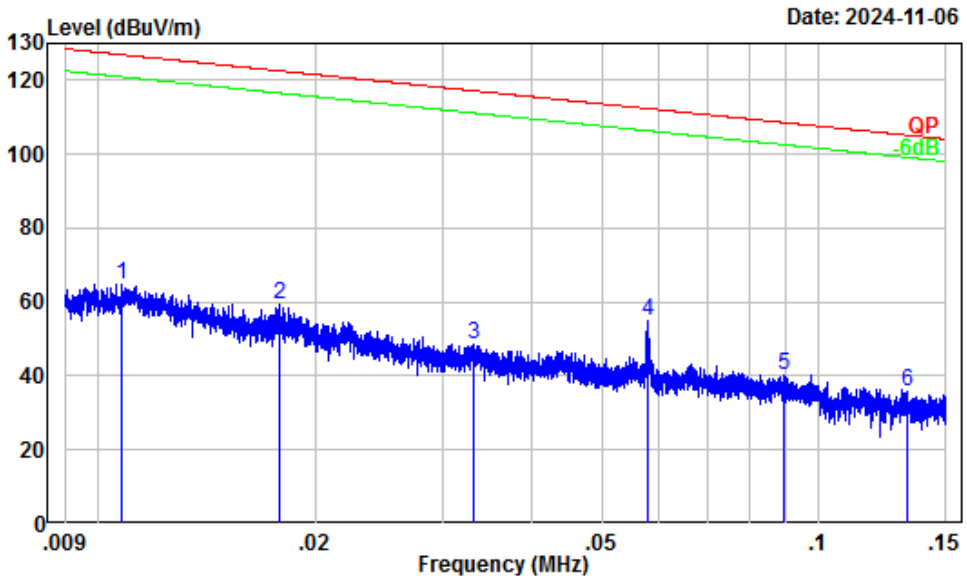
EUT operation mode: Transmitting

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

9 kHz-30MHz: *(Maximum output power mode, 802.11a 5180MHz)*

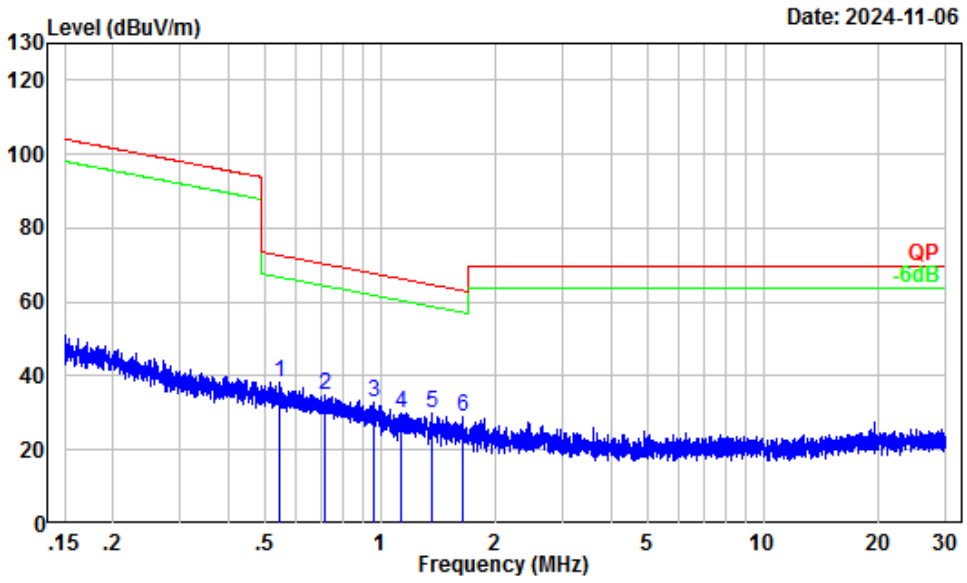
Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.

Parallel (worst case)



Site : Chamber A
Condition : 3m
Project Number: 2401Y68085E-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	37.29	27.49	64.78	126.96	-62.18	Peak
2	0.02	33.69	25.72	59.41	122.58	-63.17	Peak
3	0.03	26.78	21.64	48.42	117.18	-68.76	Peak
4	0.06	22.01	32.99	55.00	112.35	-57.35	Peak
5	0.09	18.08	22.32	40.40	108.55	-68.15	Peak
6	0.13	15.55	20.41	35.96	105.18	-69.22	Peak

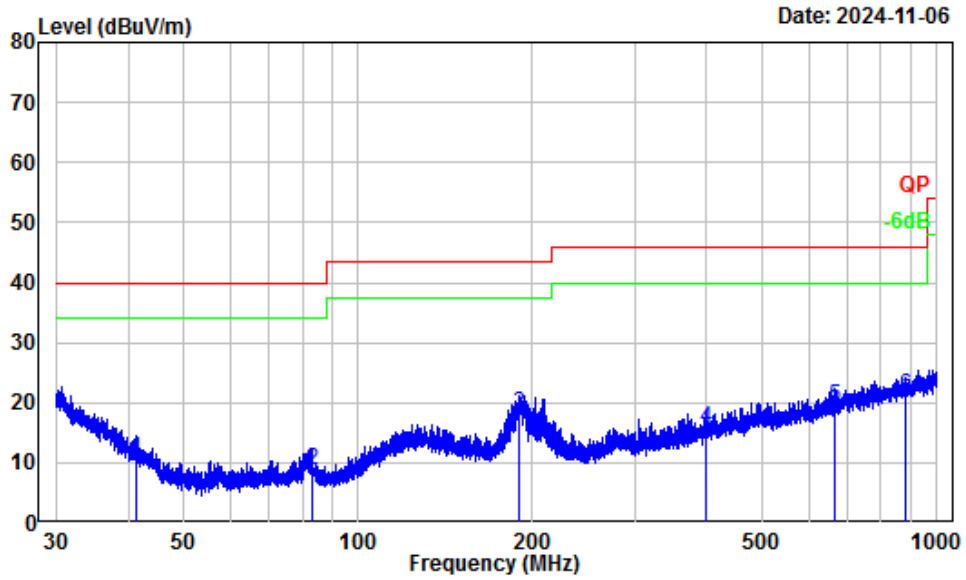


Site : Chamber A
Condition : 3m
Project Number: 2401Y68085E-RF
Test Mode : 5G WIFI Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.55	2.93	35.15	38.08	72.84	-34.76	Peak
2	0.72	0.85	33.91	34.76	70.39	-35.63	Peak
3	0.96	-1.32	33.95	32.63	67.80	-35.17	Peak
4	1.13	-2.06	32.15	30.09	66.35	-36.26	Peak
5	1.37	-2.86	32.59	29.73	64.71	-34.98	Peak
6	1.64	-3.82	32.56	28.74	63.09	-34.35	Peak

30 MHz–1 GHz: *(Maximum output power mode, 802.11a 5180MHz)*

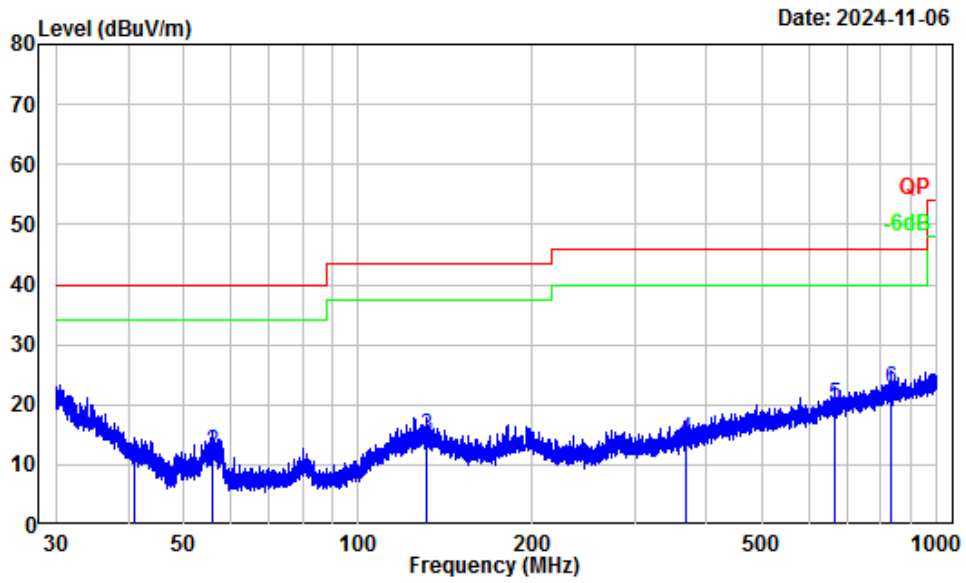
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401Y68085E-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	41.19	-14.06	24.65	10.59	40.00	-29.41	QP
2	83.38	-18.76	27.38	8.62	40.00	-31.38	QP
3	189.74	-13.08	31.20	18.12	43.50	-25.38	QP
4	400.08	-10.94	26.58	15.64	46.00	-30.36	QP
5	664.35	-6.88	26.29	19.41	46.00	-26.59	QP
6	885.28	-3.77	24.83	21.06	46.00	-24.94	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401Y68085E-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	40.95	-13.88	24.20	10.32	40.00	-29.68	QP
2	56.00	-19.09	31.23	12.14	40.00	-27.86	QP
3	130.84	-12.47	27.27	14.80	43.50	-28.70	QP
4	368.76	-11.74	25.87	14.13	46.00	-31.87	QP
5	665.22	-6.87	26.89	20.02	46.00	-25.98	QP
6	833.68	-4.44	27.12	22.68	46.00	-23.32	QP

Above 1GHz:

5150-5250 MHz:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11a							
5180MHz							
5150.00	44.14	PK	H	2.71	46.85	74	-27.15
5150.00	30.89	AV	H	2.71	33.6	54	-20.40
5150.00	43.54	PK	V	2.71	46.25	74	-27.75
5150.00	30.98	AV	V	2.71	33.69	54	-20.31
15540.00	39.85	PK	H	13.07	52.92	74	-21.08
15540.00	40.07	PK	H	13.07	53.14	74	-20.86
5200MHz							
15600.00	39.83	PK	H	13.12	52.95	74	-21.05
15600.00	20.27	PK	V	13.12	33.39	54	-20.61
5240MHz							
5350.00	42.99	PK	H	3.07	46.06	74	-27.94
5350.00	30.19	AV	H	3.07	33.26	54	-20.74
5350.00	42.54	PK	V	3.07	45.61	74	-28.39
5350.00	30.28	AV	V	3.07	33.35	54	-20.65
15720.00	37.81	PK	H	13.07	50.88	74	-23.12
15720.00	38.4	PK	H	13.07	51.47	74	-22.53
802.11ac20							
5180MHz							
5150.00	43.6	PK	H	2.71	46.31	74	-27.69
5150.00	31.26	AV	H	2.71	33.97	54	-20.03
5150.00	43.8	PK	V	2.71	46.51	74	-27.49
5150.00	31.12	AV	V	2.71	33.83	54	-20.17
10360.00	40.24	PK	H	13.07	53.31	74	-20.69
10360.00	39.54	PK	H	13.07	52.61	74	-21.39
5200MHz							
15600.00	38.84	PK	H	13.12	51.96	74	-22.04
15600.00	38.77	PK	V	13.12	51.89	74	-22.11
5240MHz							
5350.00	44.03	PK	H	3.07	47.1	74	-26.9
5350.00	30.33	AV	H	3.07	33.4	54	-20.6
5350.00	43.35	PK	V	3.07	46.42	74	-27.58
5350.00	29.87	AV	V	3.07	32.94	54	-21.06
15720.00	37.04	PK	H	13.07	50.11	74	-23.89
15720.00	36.32	PK	H	13.07	49.39	74	-24.61

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11ac40							
5190MHz							
5150.00	44.73	PK	H	2.71	47.44	74	-26.56
5150.00	31.08	AV	H	2.71	33.79	54	-20.21
5150.00	43.93	PK	V	2.71	46.64	74	-27.36
5150.00	30.73	AV	V	2.71	33.44	54	-20.56
15570.00	39.52	PK	H	12.88	52.4	74	-21.6
15570.00	48.37	PK	H	12.88	61.25	74	-12.75
5230MHz							
5350.00	43.17	PK	H	3.07	46.24	74	-27.76
5350.00	30.17	AV	H	3.07	33.24	54	-20.76
5350.00	42.87	PK	V	3.07	45.94	74	-28.06
5350.00	30.28	AV	V	3.07	33.35	54	-20.65
15690.00	37.17	PK	H	13.26	50.43	74	-23.57
15690.00	39.53	PK	H	13.26	52.79	74	-21.21
802.11ac80							
5210MHz							
5150.00	44.8	PK	H	2.71	47.51	74	-26.49
5150.00	31.07	AV	H	2.71	33.78	54	-20.22
5150.00	44.6	PK	V	2.71	47.31	74	-26.69
5150.00	31.28	AV	V	2.71	33.99	54	-20.01
5350.00	44.01	PK	H	3.07	47.08	74	-26.92
5350.00	29.6	AV	H	3.07	32.67	54	-21.33
5350.00	42.74	PK	V	3.07	45.81	74	-28.19
5350.00	30.49	AV	V	3.07	33.56	54	-20.44
15630.00	39.75	PK	H	12.98	52.73	74	-21.27
15630.00	39.51	PK	H	12.98	52.49	74	-21.51

5725-5850 MHz:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/AV					
802.11a							
5745MHz							
5650.00	45.28	PK	H	3.59	48.87	68.2	-19.33
5700.00	55.74	PK	H	4.09	59.83	105.2	-45.37
5720.00	51.00	PK	H	4.09	55.09	110.8	-55.71
5725.00	49.10	PK	H	4.09	53.19	122.2	-69.01
5650.00	45.23	PK	V	3.59	48.82	68.2	-19.38
5700.00	53.80	PK	V	4.09	57.89	105.2	-47.31
5720.00	46.99	PK	V	4.09	51.08	110.8	-59.72
5725.00	52.62	PK	V	4.09	56.71	122.2	-65.49
11490.00	36.01	PK	H	14.31	50.32	74	-23.68
11490.00	26.09	AV	H	14.31	40.4	54	-13.6
11490.00	36.89	PK	V	14.31	51.2	74	-22.8
11490.00	26.27	AV	V	14.31	40.58	54	-13.42
5785MHz							
11570.00	37.74	PK	H	14.05	51.79	74	-22.21
11570.00	26.33	AV	H	14.05	40.38	54	-13.62
11570.00	37.32	PK	V	14.05	51.37	74	-22.63
11570.00	26.42	AV	V	14.05	40.47	54	-13.53
5825MHz							
5850.00	49.79	PK	H	4.09	53.88	122.2	-68.32
5855.00	48.22	PK	H	4.09	52.31	110.8	-58.49
5875.00	56.48	PK	H	4.19	60.67	105.2	-44.53
5925.00	44.81	PK	H	4.69	49.5	68.2	-18.70
5850.00	49.08	PK	V	4.09	53.17	122.2	-69.03
5855.00	47.35	PK	V	4.09	51.44	110.8	-59.36
5875.00	67.39	PK	V	4.19	71.58	105.2	-33.62
5925.00	43.92	PK	V	4.69	48.61	68.2	-19.59
11650.00	37.40	PK	H	13.83	51.23	74	-22.77
11650.00	26.02	AV	H	13.83	39.85	54	-14.15
11650.00	38.00	PK	V	13.83	51.83	74	-22.17
11650.00	25.98	AV	V	13.83	39.81	54	-14.19

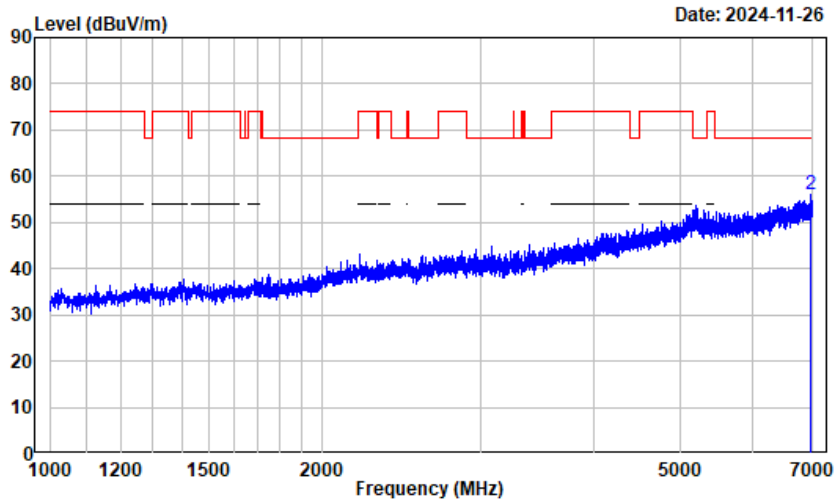
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/AV					
802.11ac20							
5745MHz							
5650.00	46.34	PK	H	3.59	49.93	68.2	-18.27
5700.00	58.40	PK	H	4.09	62.49	105.2	-42.71
5720.00	49.37	PK	H	4.09	53.46	110.8	-57.34
5725.00	55.00	PK	H	4.09	59.09	122.2	-63.11
5650.00	44.94	PK	V	3.59	48.53	68.2	-19.67
5700.00	62.74	PK	V	4.09	66.83	105.2	-38.37
5720.00	47.96	PK	V	4.09	52.05	110.8	-58.75
5725.00	48.35	PK	V	4.09	52.44	122.2	-69.76
11490.00	35.74	PK	H	14.31	50.05	74	-23.95
11490.00	26.07	AV	H	14.31	40.38	54	-13.62
11490.00	37.27	PK	V	14.31	51.58	74	-22.42
11490.00	26.23	AV	V	14.31	40.54	54	-13.46
5785MHz							
11570.00	36.56	PK	H	14.05	50.61	74	-23.39
11570.00	26.03	AV	H	14.05	40.08	54	-13.92
11570.00	37.7	PK	V	14.05	51.75	74	-22.25
11570.00	26.12	AV	V	14.05	40.17	54	-13.83
5825MHz							
5850.00	56.04	PK	H	4.09	60.13	122.2	-62.07
5855.00	54.88	PK	H	4.09	58.97	110.8	-51.83
5875.00	64.38	PK	H	4.19	68.57	105.2	-36.63
5925.00	44.95	PK	H	4.69	49.64	68.2	-18.56
5850.00	51.67	PK	V	4.09	55.76	122.2	-66.44
5855.00	54.41	PK	V	4.09	58.5	110.8	-52.3
5875.00	63.64	PK	V	4.19	67.83	105.2	-37.37
5925.00	45.16	PK	V	4.69	49.85	68.2	-18.35
11650.00	38.15	PK	H	13.83	51.98	74	-22.02
11650.00	26.23	AV	H	13.83	40.06	54	-13.94
11650.00	36.80	PK	V	13.83	50.63	74	-23.37
11650.00	25.96	AV	V	13.83	39.79	54	-14.21

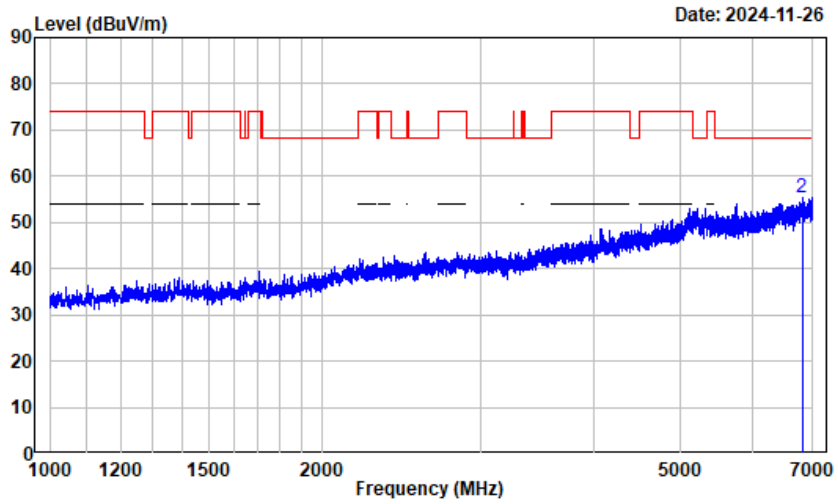
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/AV					
802.11ac40							
5755MHz							
5650.00	45.08	PK	H	3.59	48.67	68.2	-19.53
5700.00	66.66	PK	H	4.09	70.75	105.2	-34.45
5720.00	49.37	PK	H	4.09	53.46	110.8	-57.34
5725.00	50.43	PK	H	4.09	54.52	122.2	-67.68
5650.00	45.21	PK	V	3.59	48.8	68.2	-19.40
5700.00	68.32	PK	V	4.09	72.41	105.2	-32.79
5720.00	49.21	PK	V	4.09	53.3	110.8	-57.50
5725.00	49.91	PK	V	4.09	54	122.2	-68.20
11510.00	40.59	PK	H	14.29	54.88	74	-19.12
11510.00	30.17	AV	H	14.29	44.46	54	-9.54
11510.00	41.11	PK	V	14.29	55.40	74	-18.60
11510.00	30.85	AV	V	14.29	45.14	54	-8.86
5795MHz							
5850.00	42.21	PK	H	4.09	46.3	122.2	-75.9
5855.00	47.49	PK	H	4.09	51.58	110.8	-59.22
5875.00	74.32	PK	H	4.19	78.51	105.2	-26.69
5925.00	44.50	PK	H	4.69	49.19	68.2	-19.01
5850.00	45.02	PK	V	4.09	49.11	122.2	-73.09
5855.00	48.44	PK	V	4.09	52.53	110.8	-58.27
5875.00	78.02	PK	V	4.19	82.21	105.2	-22.99
5925.00	44.48	PK	V	4.69	49.17	68.2	-19.03
11590.00	37.08	PK	H	13.97	51.05	74	-22.95
11590.00	25.97	AV	H	13.97	39.94	54	-14.06
11590.00	38.30	PK	V	13.97	52.27	74	-21.73
11590.00	26.34	AV	V	13.97	40.31	54	-13.69

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/AV					
802.11ac80							
5775MHz							
5650.00	44.80	PK	H	3.59	48.39	68.2	-19.81
5700.00	61.69	PK	H	4.09	65.78	105.2	-39.42
5720.00	53.04	PK	H	4.09	57.13	110.8	-53.67
5725.00	54.91	PK	H	4.09	59	122.2	-63.2
5650.00	45.32	PK	V	3.59	48.91	68.2	-19.29
5700.00	42.28	PK	V	4.09	46.37	105.2	-58.83
5720.00	68.44	PK	V	4.09	72.53	110.8	-38.27
5725.00	65.43	PK	V	4.09	69.52	122.2	-52.68
5850.00	64.24	PK	H	4.09	68.33	122.2	-53.87
5855.00	64.54	PK	H	4.09	68.63	110.8	-42.17
5875.00	57.43	PK	H	4.19	61.62	105.2	-43.58
5925.00	54.82	PK	H	4.69	59.51	68.2	-8.69
5850.00	63.38	PK	V	4.09	67.47	122.2	-54.73
5855.00	48.55	PK	V	4.09	52.64	110.8	-58.16
5875.00	69.34	PK	V	4.19	73.53	105.2	-31.67
5925.00	43.95	PK	V	4.69	48.64	68.2	-19.56
11550.00	37.21	PK	H	14.13	51.34	74	-22.66
11550.00	26.22	AV	H	14.13	40.35	54	-13.65
11550.00	37.69	PK	V	14.13	51.82	74	-22.18
11550.00	26.25	AV	V	14.13	40.38	54	-13.62

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.

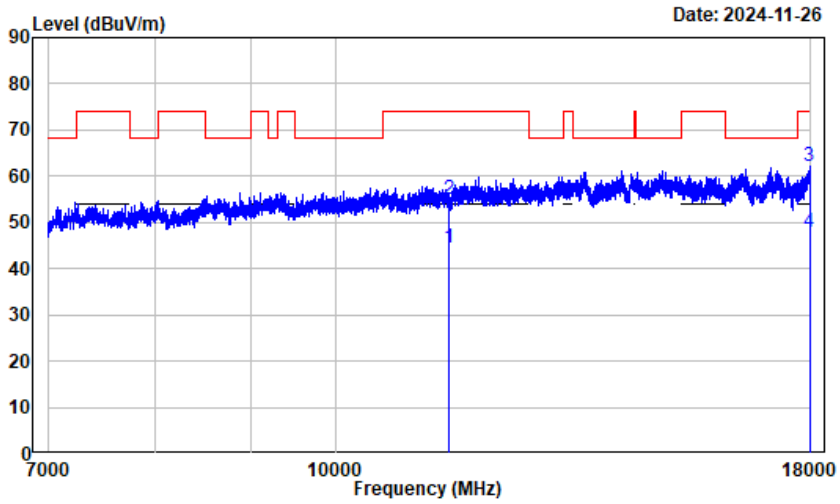
Listed with the worst harmonic margin test plot: (802.11ac40, 5755MHz)

Horizontal	
1-7GHz	 Condition : Horizontal Project Number : 2401Y68085E-RF Tester : Karl Xu Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak Note : Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 2 6959.495 8.68 47.21 55.89 68.20 -12.31 Peak

Vertical	
1-7GHz	 Condition : Vertical Project Number : 2401Y68085E-RF Tester : Karl Xu Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak Note : Freq / Factor / Read Level / Limit Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 2 6813.227 7.50 47.80 55.30 68.20 -12.90 Peak

Horizontal

7-18GHz

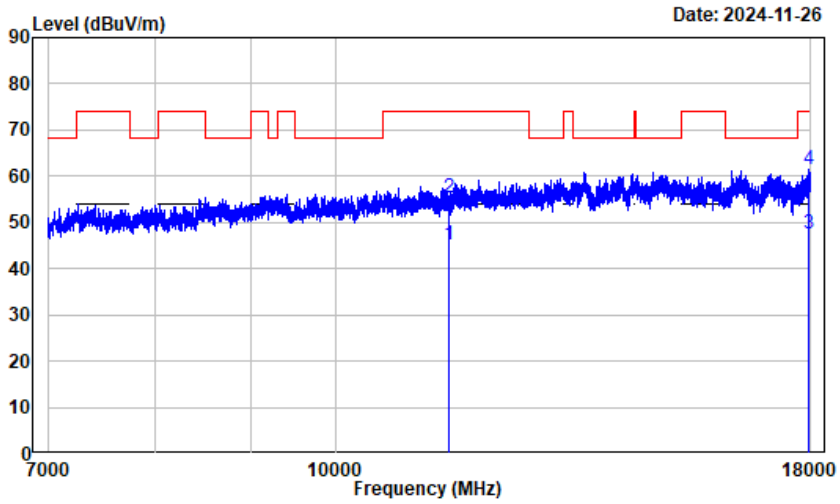


Condition : Horizontal
Project Number : 2401Y68085E-RF
Tester : Karl Xu
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note :

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11510.000	14.29	30.17	44.46	54.00	-9.54	Average
2	11510.000	14.29	40.59	54.88	74.00	-19.12	Peak
3	17972.500	24.43	37.85	62.28	74.00	-11.72	Peak
4	17972.500	24.43	23.50	47.93	54.00	-6.07	Average

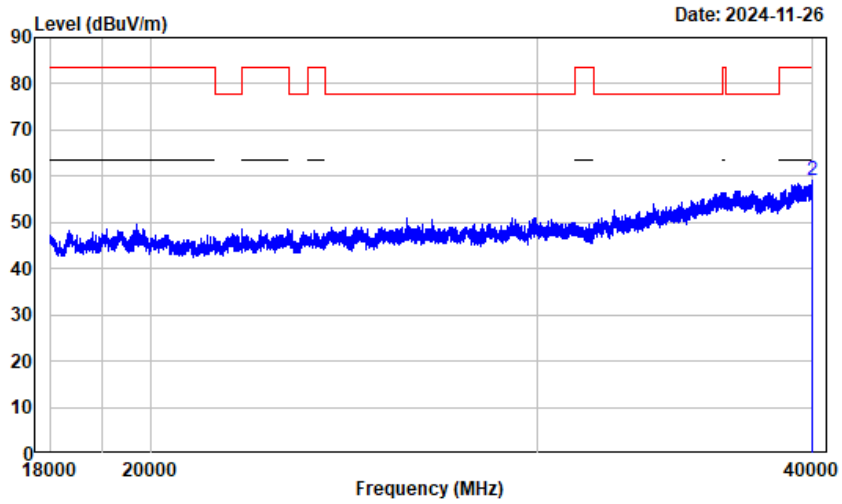
Vertical

7-18GHz



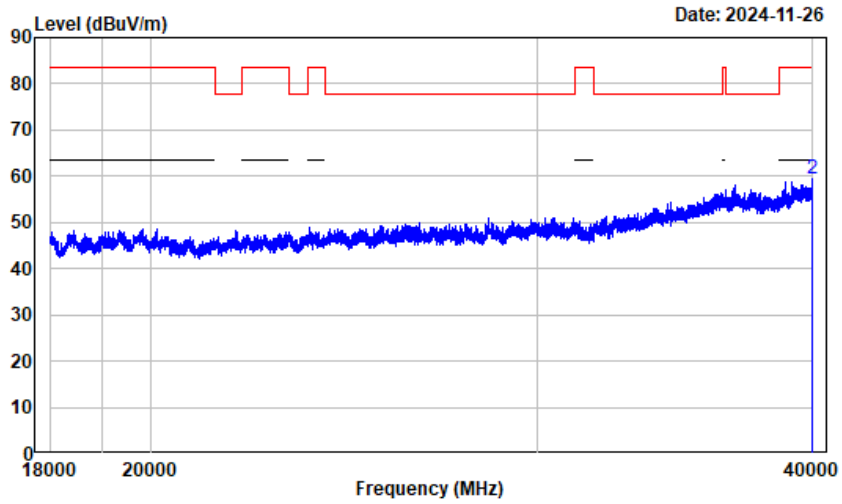
Condition : Vertical
Project Number : 2401Y68085E-RF
Tester : Karl Xu
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note :

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11510.000	14.29	30.85	45.14	54.00	-8.86	Average
2	11510.000	14.29	41.11	55.40	74.00	-18.60	Peak
3	17962.870	24.36	23.07	47.43	54.00	-6.57	Average
4	17962.870	24.36	37.10	61.46	74.00	-12.54	Peak

Horizontal	
18-40GHz	 Condition : Horizontal Project Number : 2401Y68085E-RF Tester : Karl Xu Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak Note : Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 2 39989.000 22.59 36.59 59.18 83.50 -24.32 Peak

Vertical

18-40GHz



Condition : Vertical
Project Number : 2401Y68085E-RF
Tester : Karl Xu
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note :

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
2	39991.750	22.59	36.89	59.48	83.50	-24.02	Peak

FCC §15.407(a), (e) - 26 dB & 6dB EMISSION BANDWIDTH

Applicable Standard

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 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. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

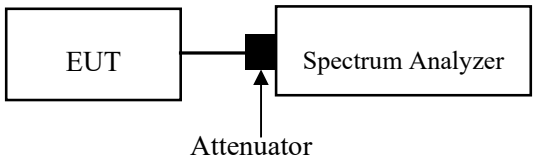
2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.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

3. 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:	26 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Allen Bai on 2024-11-18

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.407(a) - CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

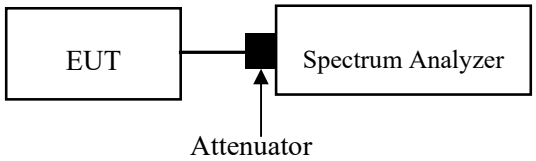
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11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

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.



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.

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Allen Bai on 2024-11-18

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.407(a) - POWER SPECTRAL DENSITY

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

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

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%

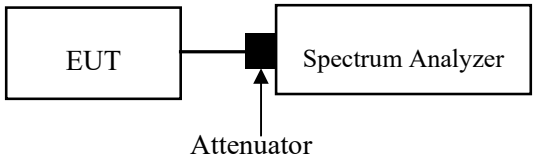
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

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.



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.

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Allen Bai on 2024-11-18

EUT operation mode: Transmitting

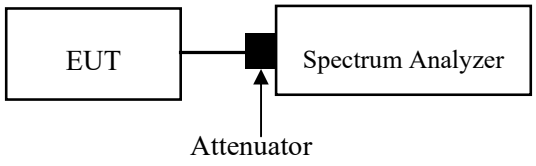
Test Result: Compliant. Please refer to the Appendix.

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:	26 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Allen Bai on 2024-11-18

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment 2401Y68085E-RF External photo and 2401Y68085E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401Y68085E-RFB Test Setup photo.

APPENDIX

Emission Bandwidth

26dB Emission Bandwidth
5150-5250MHz

Mode	Test Frequency (MHz)	Result (MHz)
802.11a	5180	19.920
	5200	20.190
	5240	20.089
802.11ac20	5180	20.490
	5200	20.696
	5240	20.645
802.11ac40	5190	41.241
	5230	40.741
802.11ac80	5210	**81.481**

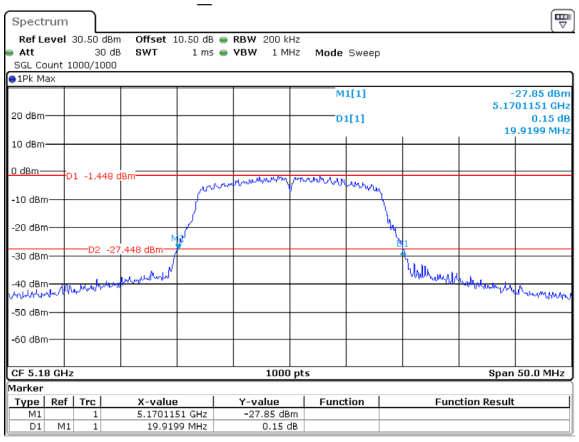
6dB Emission Bandwidth

5725-5850MHz

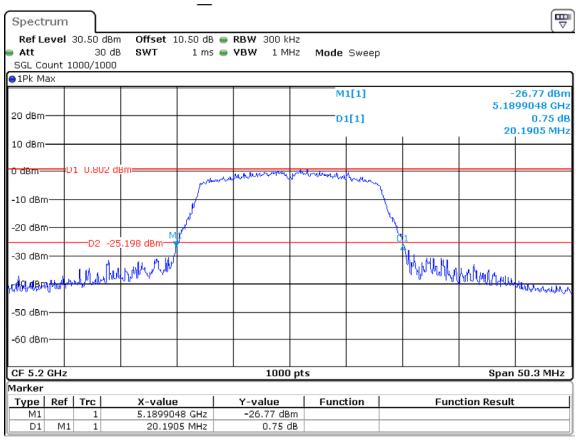
Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11a	5745	16.467	0.5	Pass
	5785	16.416	0.5	Pass
	5825	16.467	0.5	Pass
802.11ac20	5745	17.718	0.5	Pass
	5785	17.668	0.5	Pass
	5825	17.668	0.5	Pass
802.11ac40	5755	36.236	0.5	Pass
	5795	36.537	0.5	Pass
802.11ac80	5775	**76.476**	0.5	Pass

5150-5250MHz

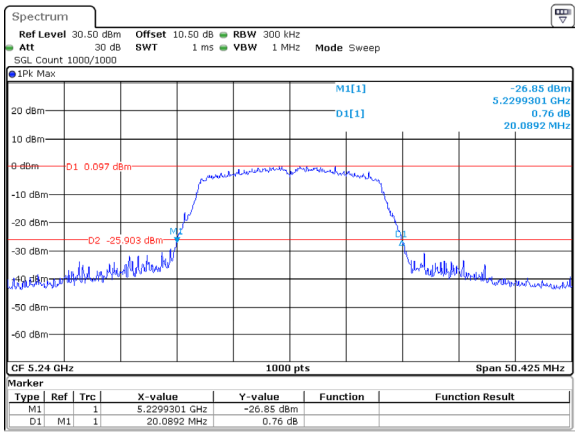
802.11a_5180MHz 19.920MHz



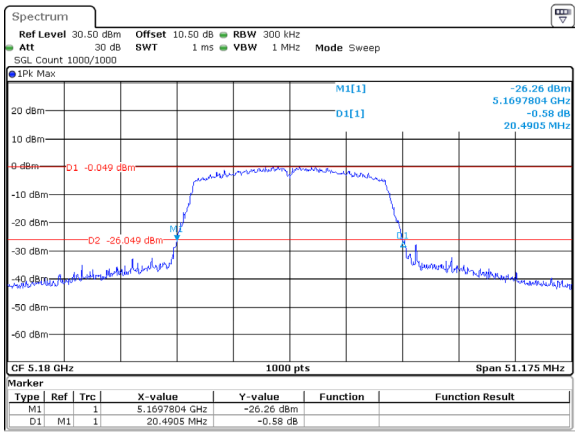
802.11a_5200MHz 20.190MHz



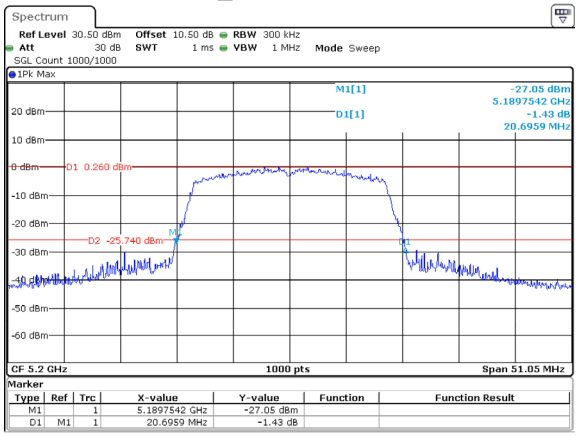
802.11a_5240MHz 20.089MHz



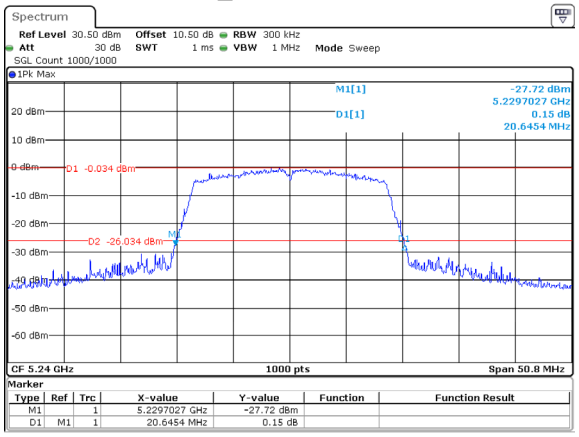
802.11ac20_5180MHz 20.490MHz



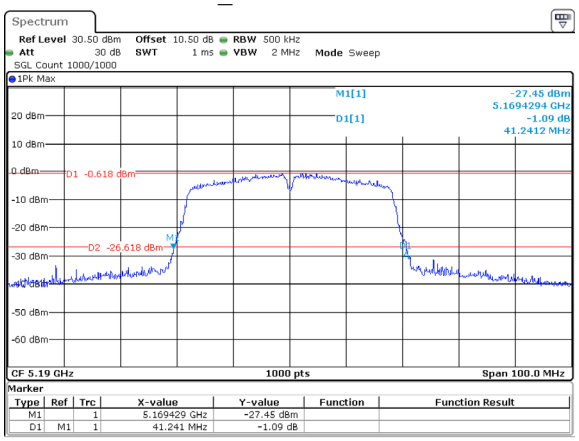
802.11ac20_5200MHz 20.696MHz



802.11ac20_5240MHz 20.645MHz

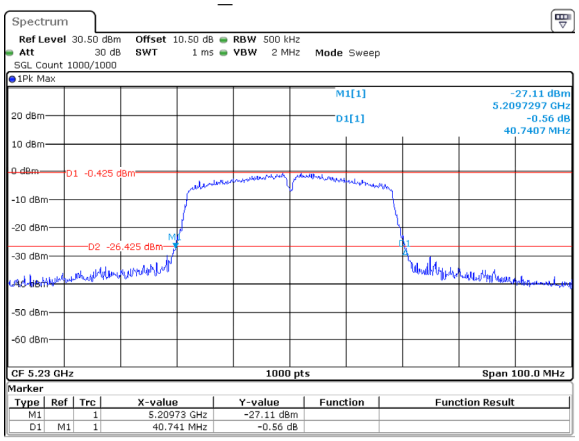


802.11ac40_5190MHz 41.241MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:37:44

802.11ac40_5230MHz 40.741MHz



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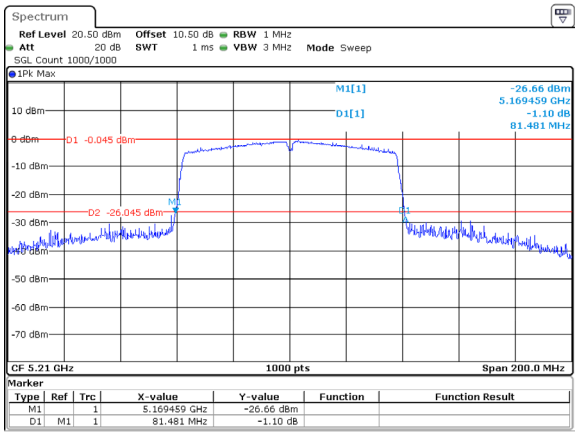
Date: 18.NOV.2024 14:41:32

5725-5850MHz

802.11ac80_5210MHz 81.481MHz



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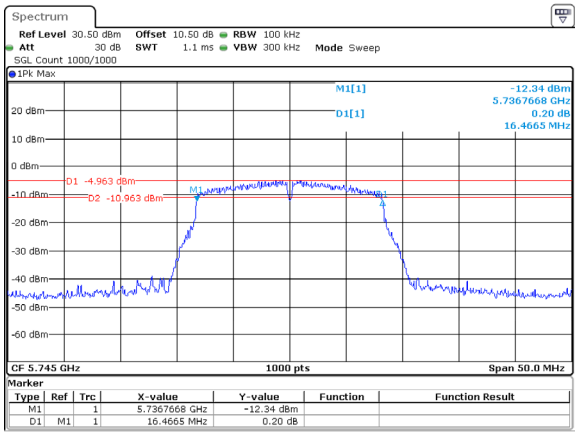
Date: 18.NOV.2024 16:38:50

802.11a_5745MHz 16.467MHz



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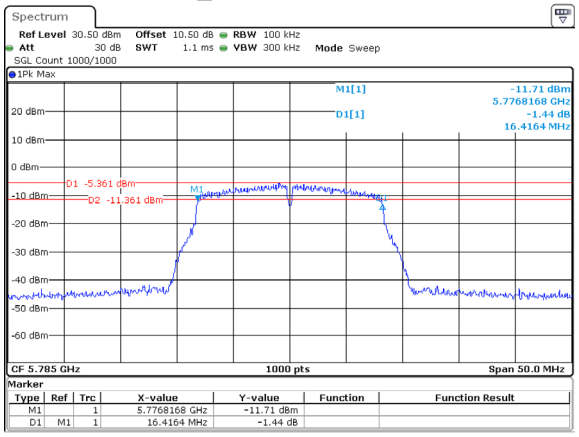
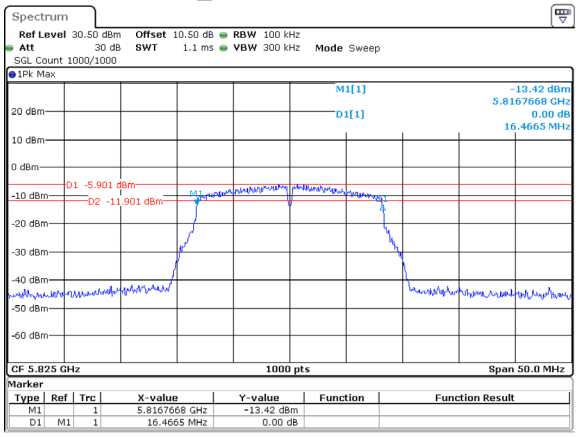
Date: 18.NOV.2024 15:18:59

802.11a_5785MHz 16.416MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:21:59

802.11a_5825MHz 16.467MHz



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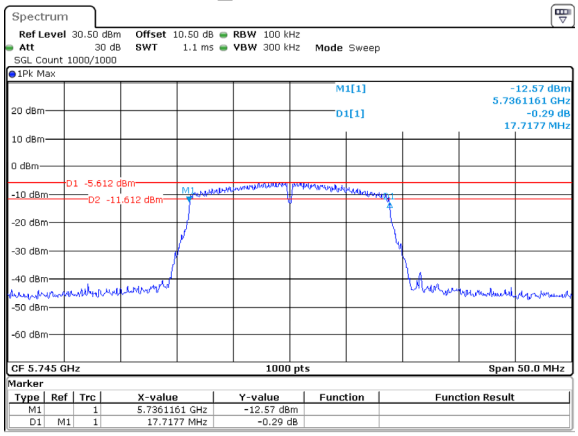
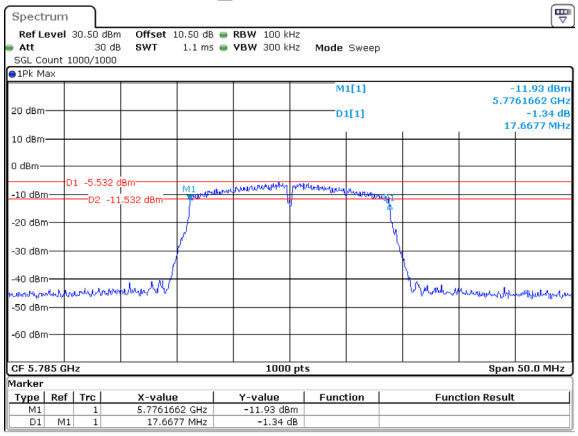
Date: 18.NOV.2024 15:24:37

802.11ac20_5745MHz 17.718MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:55:59

802.11ac20_5785MHz 17.668MHz



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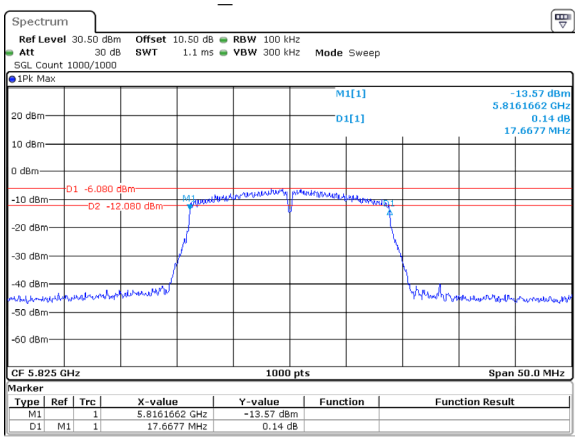
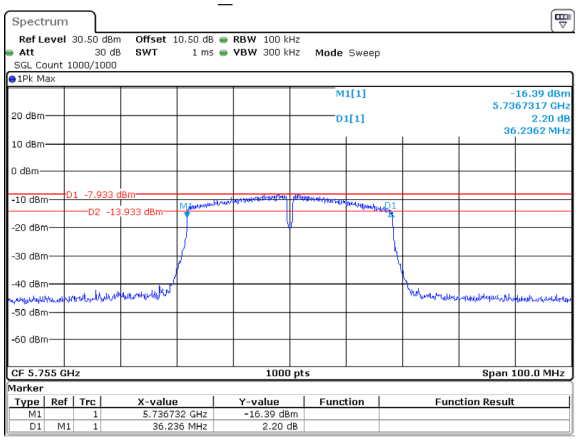
Date: 18.NOV.2024 15:58:59

802.11ac20_5825MHz 17.668MHz



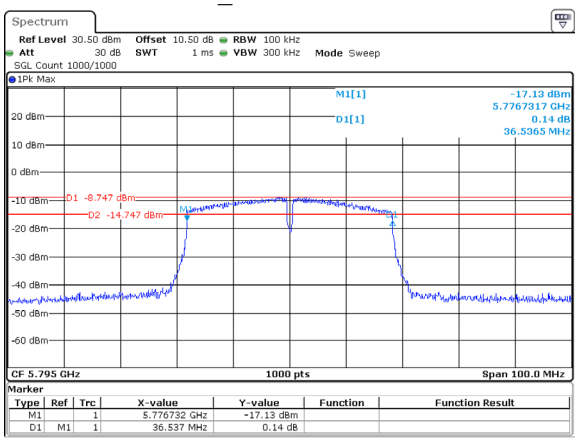
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:01:39

802.11ac40_5755MHz 36.236MHz



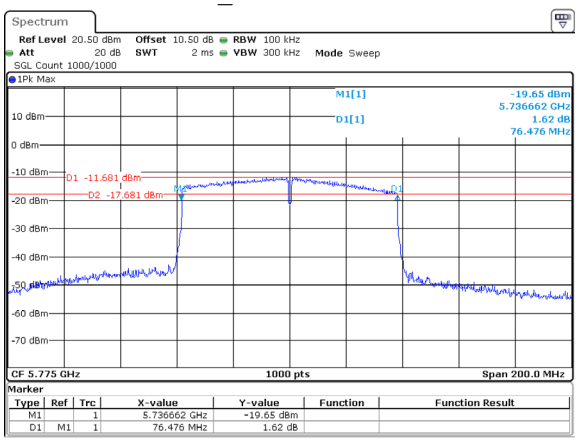
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:16:39

802.11ac40_5795MHz 36.537MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:18:20

802.11ac80_5775MHz 76.476MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:55:54

99% Occupied Bandwidth

5150-5250MHz

Mode	Test Frequency (MHz)	99% OBW (MHz)
802.11a	5180	16.500
	5200	16.550
	5240	16.550
802.11ac20	5180	17.600
	5200	17.600
	5240	17.600
802.11ac40	5190	36.200
	5230	36.200
802.11ac80	5210	**75.400**

Note:
The 99% Occupied Bandwidth have not fall into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.

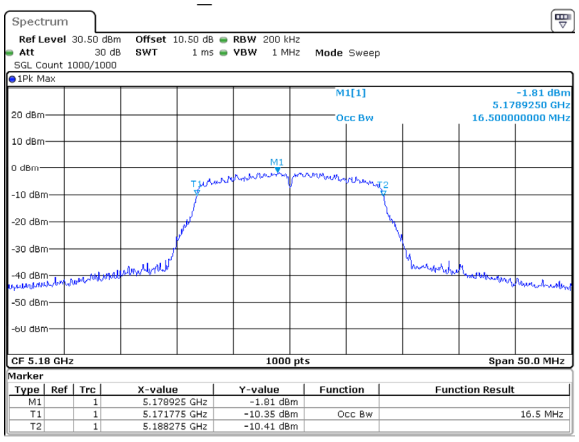
5725-5850MHz

Mode	Test Frequency (MHz)	99% OBW (MHz)
802.11a	5745	16.500
	5785	16.550
	5825	16.550
802.11ac20	5745	17.600
	5785	17.600
	5825	17.650
802.11ac40	5755	36.200
	5795	36.200
802.11ac80	5775	**75.400**

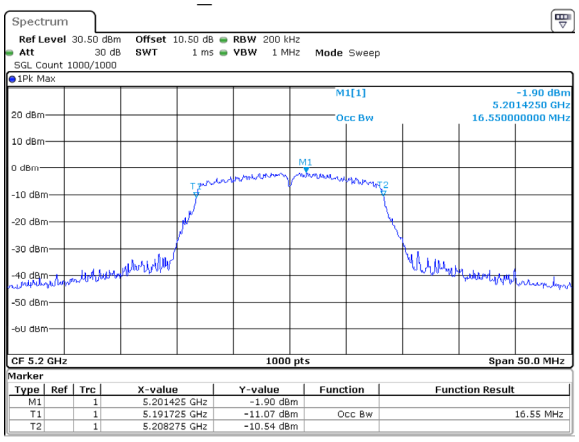
Note:
The 99% Occupied Bandwidth have not fall into the band 5470-5725MHz, please refer to the test plots of 99% Occupied Bandwidth.

5150-5250MHz

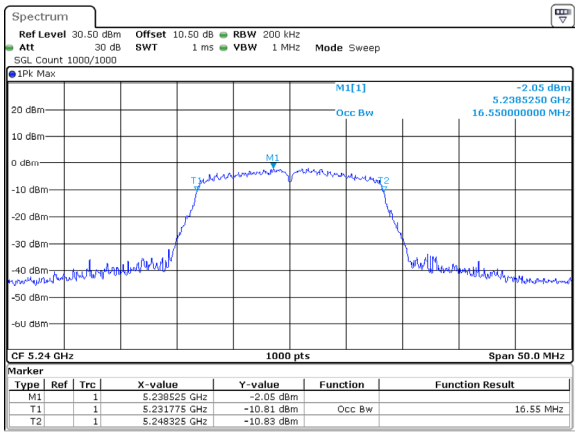
802.11a_5180MHz 16.500MHz



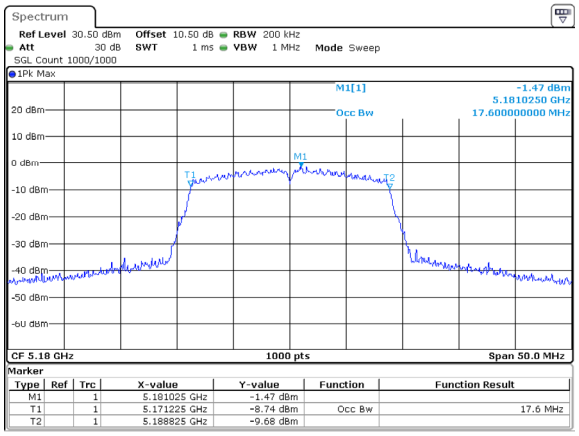
802.11a_5200MHz 16.550MHz



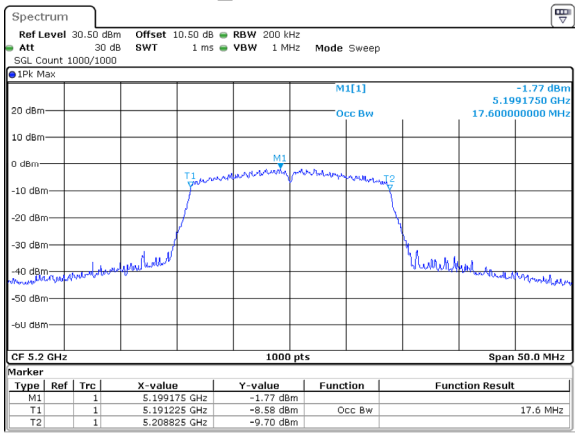
802.11a_5240MHz 16.550MHz



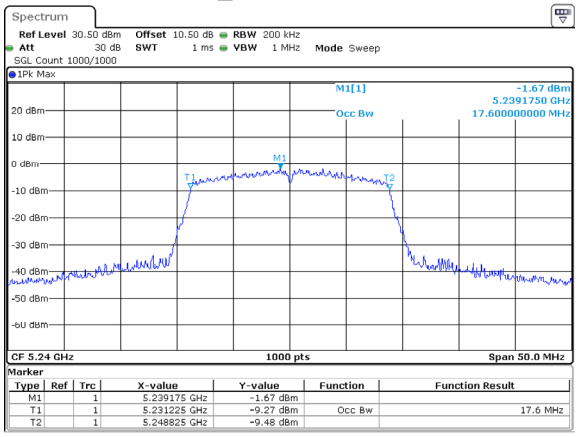
802.11ac20_5180MHz 17.600MHz



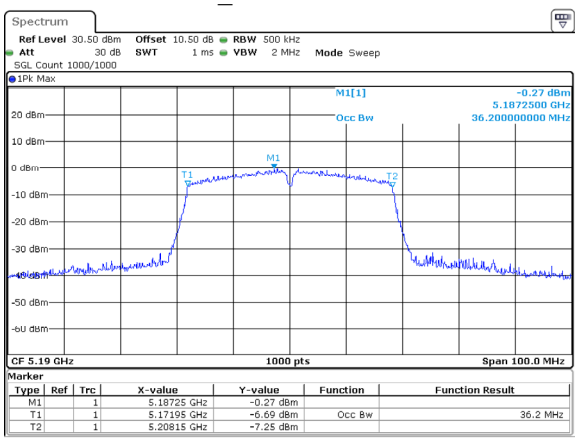
802.11ac20_5200MHz 17.600MHz



802.11ac20_5240MHz 17.600MHz

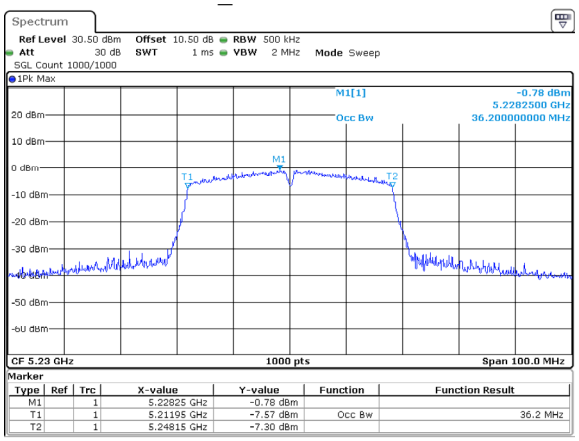


802.11ac40_5190MHz 36.200MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:38:16

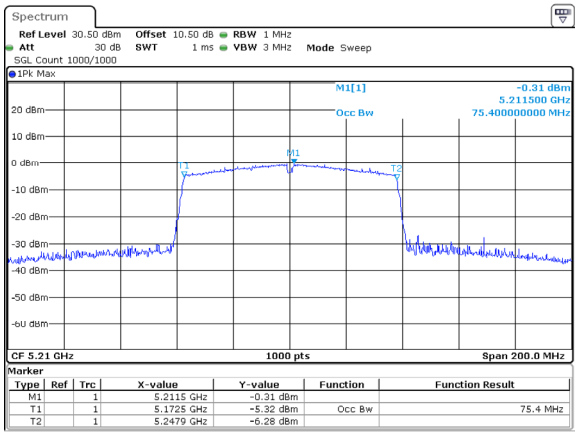
802.11ac40_5230MHz 36.200MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:42:04

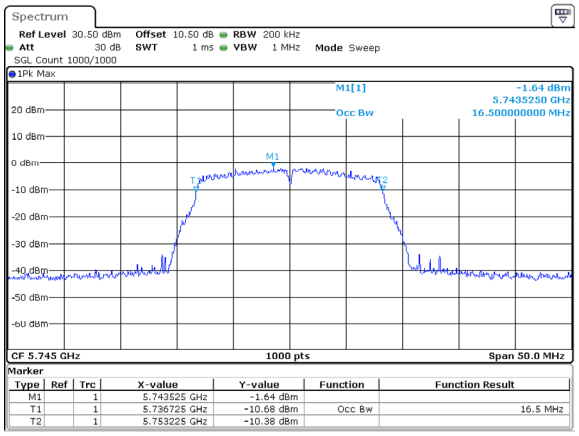
5725-5850MHz

802.11ac80_5210MHz 75.400MHz



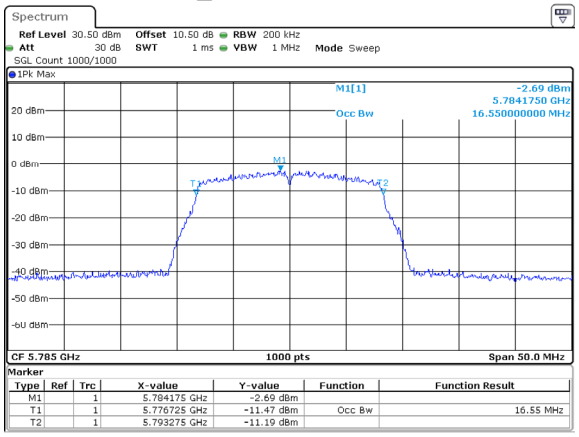
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:46:04

802.11a_5745MHz 16.500MHz



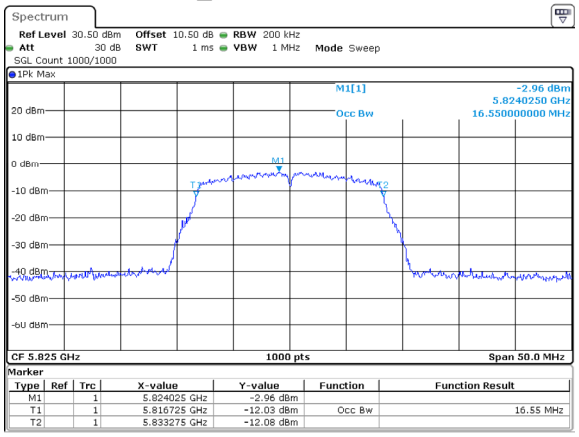
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:20:00

802.11a_5785MHz 16.550MHz



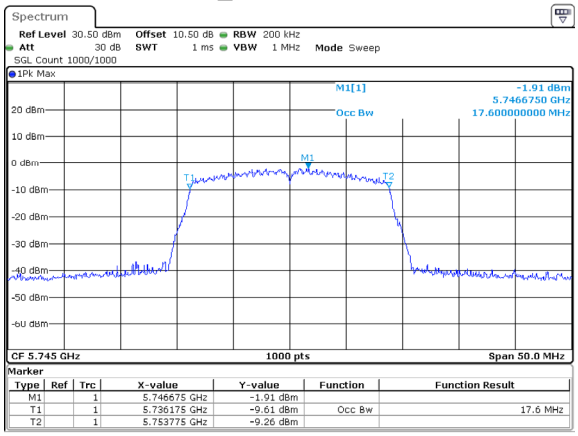
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:23:08

802.11a_5825MHz 16.550MHz



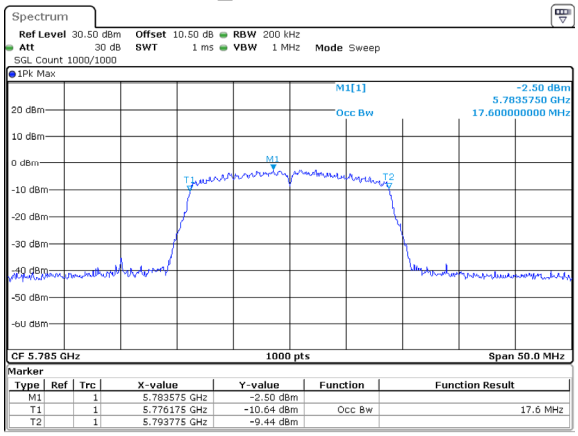
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:25:27

802.11ac20_5745MHz 17.600MHz



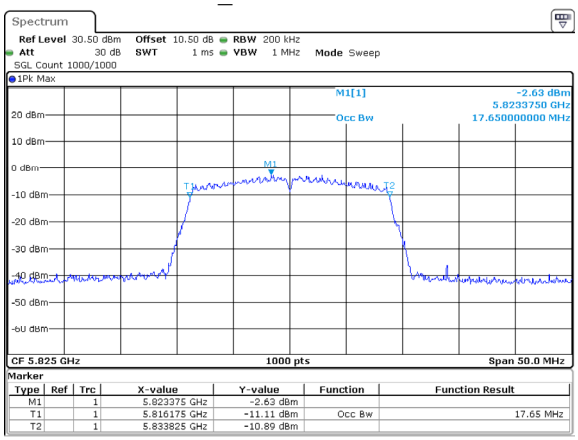
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:57:03

802.11ac20_5785MHz 17.600MHz



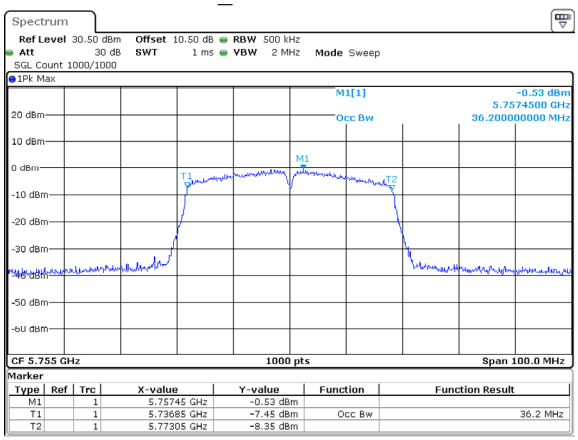
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:00:10

802.11ac20_5825MHz 17.650MHz



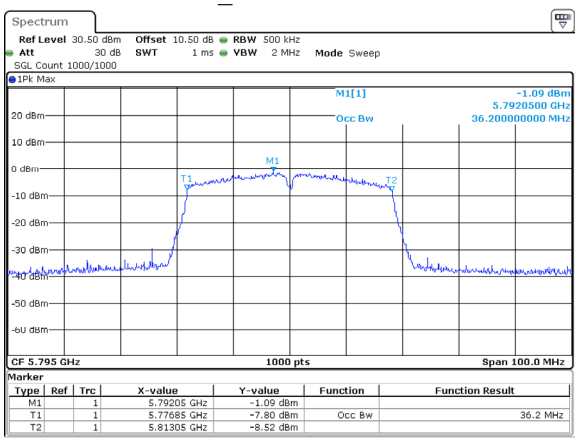
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:02:32

802.11ac40_5755MHz 36.200MHz



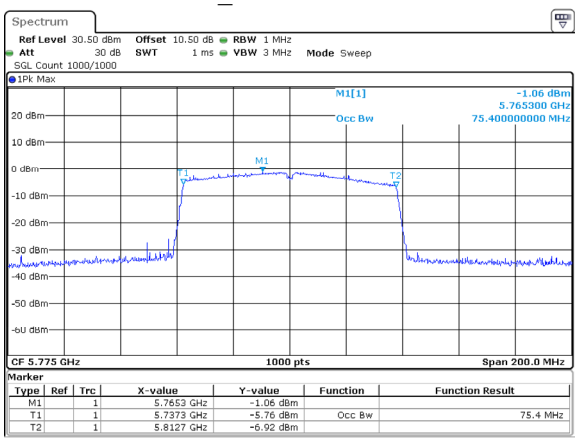
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:17:09

802.11ac40_5795MHz 36.200MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:18:51

802.11ac80_5775MHz 75.400MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:29:37

Maximum Conducted Output Power

5150-5250MHz

Mode	Test Frequency (MHz)	Average Output Power(dBm)	Limit (dBm)	Verdict
802.11a	5180	**8.37**	24	Pass
	5200	8.30	24	Pass
	5240	7.87	24	Pass
802.11ac20	5180	8.21	24	Pass
	5200	8.15	24	Pass
	5240	7.96	24	Pass
802.11ac40	5190	7.98	24	Pass
	5230	7.84	24	Pass
802.11ac80	5210	7.95	24	Pass

5725-5850MHz

Mode	Test Frequency (MHz)	Average Output Power(dBm)	Limit (dBm)	Verdict
802.11a	5745	**8.08**	30	Pass
	5785	7.30	30	Pass
	5825	7.12	30	Pass
802.11ac20	5745	7.87	30	Pass
	5785	7.42	30	Pass
	5825	6.92	30	Pass
802.11ac40	5755	7.72	30	Pass
	5795	7.29	30	Pass
802.11ac80	5775	7.23	30	Pass

Power Spectral Density

5150-5250MHz

Mode	Test Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor(dB)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11a	5180	-1.80	/	-1.80	11	Pass
	5200	-1.71	/	-1.71	11	Pass
	5240	-1.93	/	-1.93	11	Pass
802.11ac20	5180	-2.18	/	-2.18	11	Pass
	5200	-2.20	/	-2.20	11	Pass
	5240	-2.31	/	-2.31	11	Pass
802.11ac40	5190	-5.09	/	-5.09	11	Pass
	5230	-5.25	/	-5.25	11	Pass
802.11ac80	5210	-8.53	/	-8.53	11	Pass

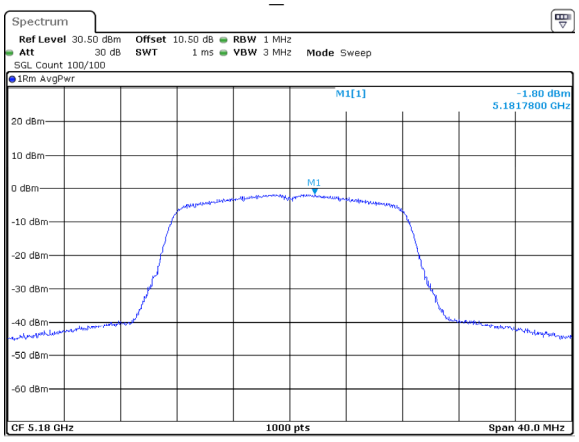
5725-5850MHz

Mode	Test Frequency (MHz)	Reading (dBm/500kHz)	Duty Cycle Factor(dB)	Result (dBm/500kHz)	Limit (dBm/500kHz)	Verdict
802.11a	5745	-4.80	0.15	-4.65	30	Pass
	5785	-5.50	0.15	-5.35	30	Pass
	5825	-5.45	0.15	-5.30	30	Pass
802.11ac20	5745	-5.16	0.18	-4.98	30	Pass
	5785	-5.66	0.18	-5.48	30	Pass
	5825	-6.13	0.18	-5.95	30	Pass
802.11ac40	5755	-8.24	0.32	-7.92	30	Pass
	5795	-8.95	0.32	-8.63	30	Pass
802.11ac80	5775	-11.89	0.60	-11.29	30	Pass

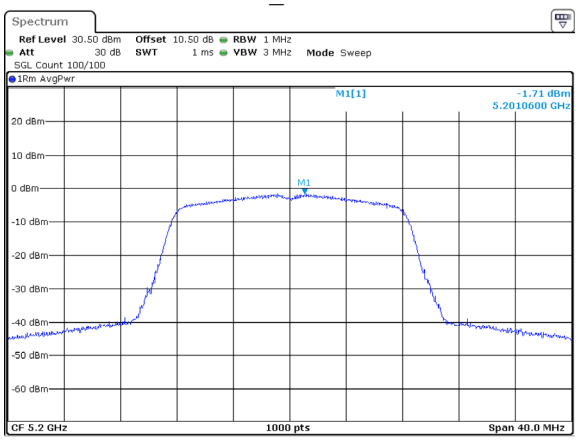
Result = Reading + Duty Cycle Factor

5150-5250MHz

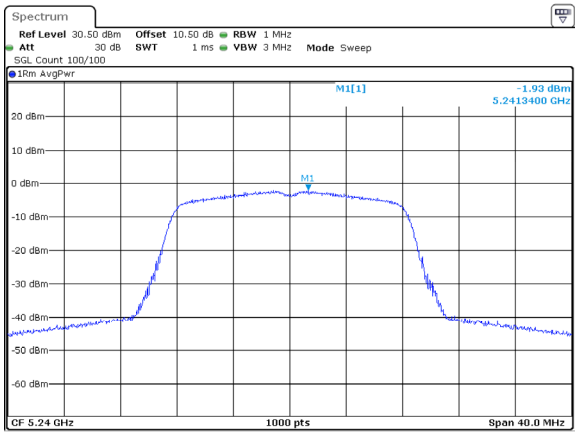
802.11a_5180MHz



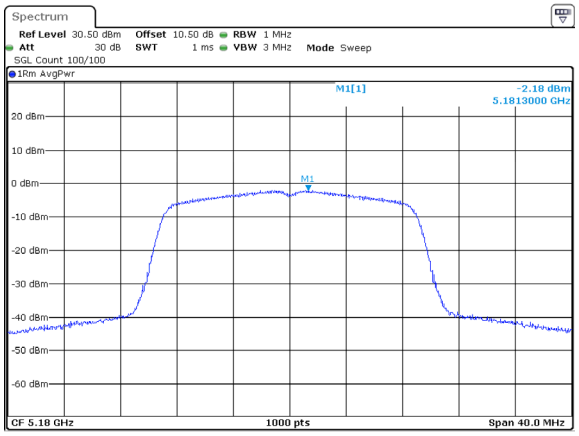
802.11a_5200MHz



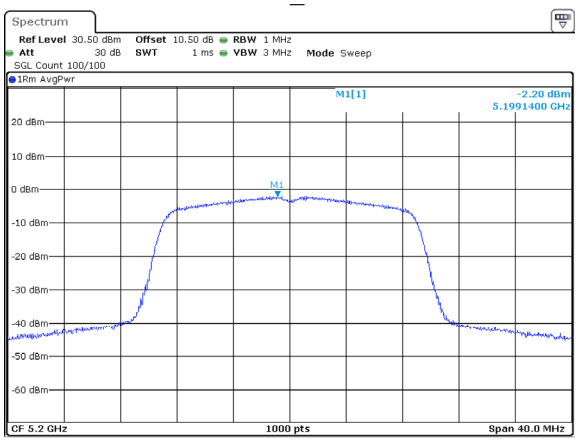
802.11a_5240MHz



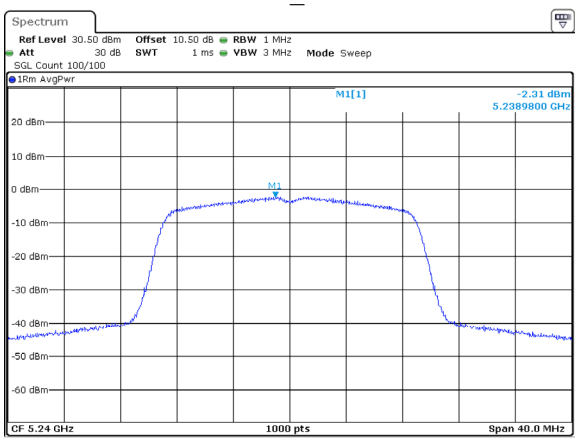
802.11ac20_5180MHz



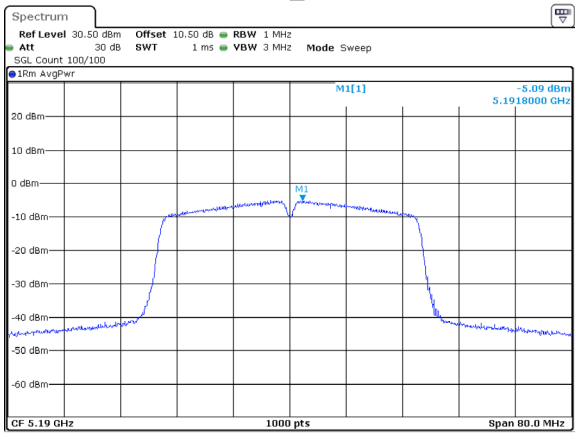
802.11ac20_5200MHz



802.11ac20_5240MHz

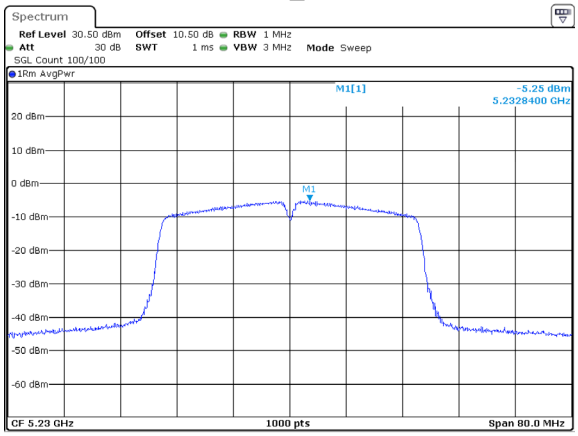


802.11ac40_5190MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:38:47

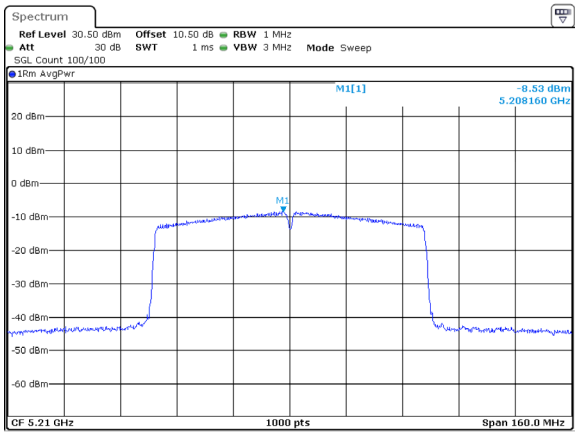
802.11ac40_5230MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 14:42:28

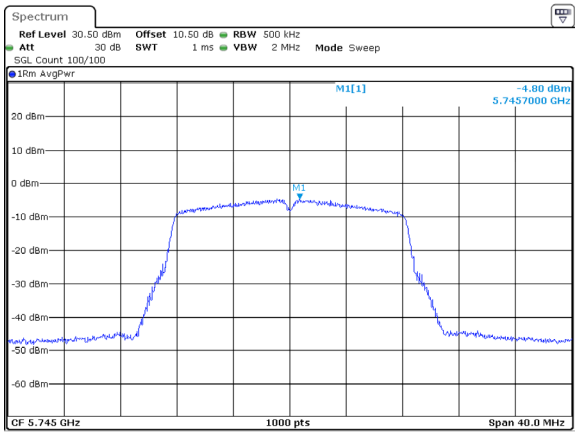
5725-5850MHz

802.11ac80_5210MHz



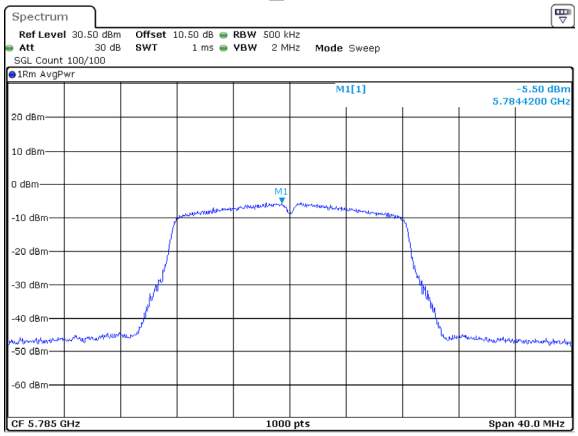
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:39:02

802.11a_5745MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:20:25

802.11a_5785MHz



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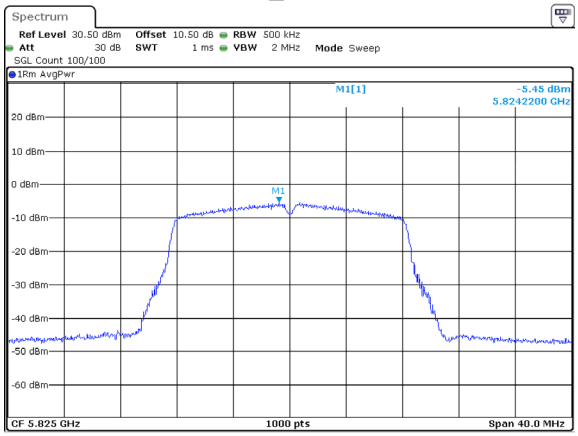
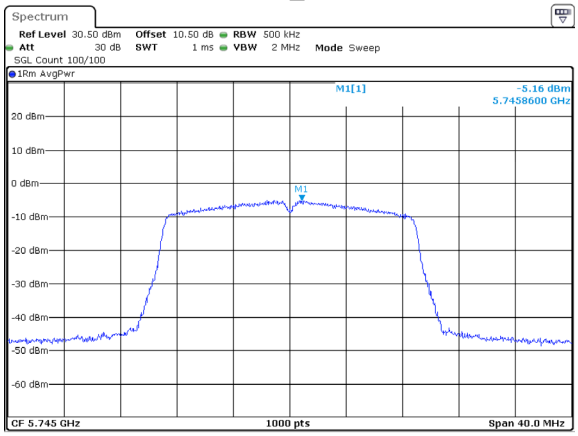
Date: 18.NOV.2024 15:23:33

802.11a_5825MHz



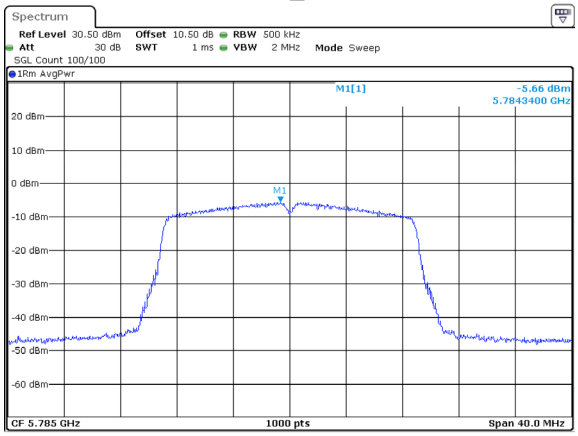
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:25:53

802.11ac20_5745MHz



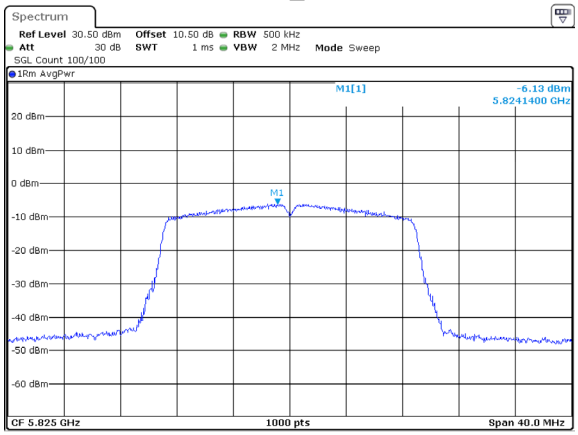
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 15:57:32

802.11ac20_5785MHz



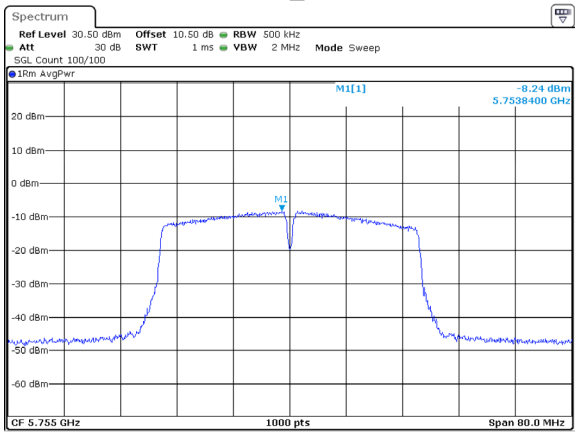
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:00:38

802.11ac20_5825MHz



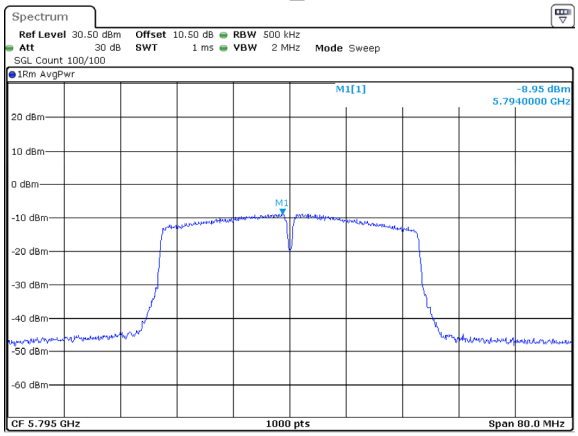
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:03:03

802.11ac40_5755MHz



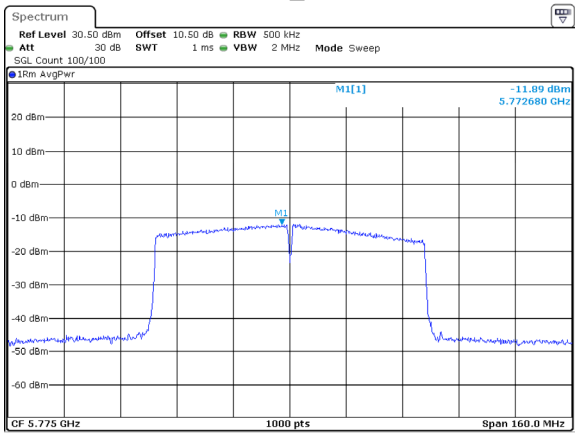
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:17:37

802.11ac40_5795MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:19:18

802.11ac80_5775MHz



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 18.NOV.2024 16:56:06

Duty Cycle

5150-5250MHz

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11a	5200	**100**	100	100	0	NA	0.010
802.11ac20	5200	**100**	100	100	0	NA	0.010
802.11ac40	5190	**100**	100	100	0	NA	0.010
802.11ac80	5210	**100**	100	100	0	NA	0.010

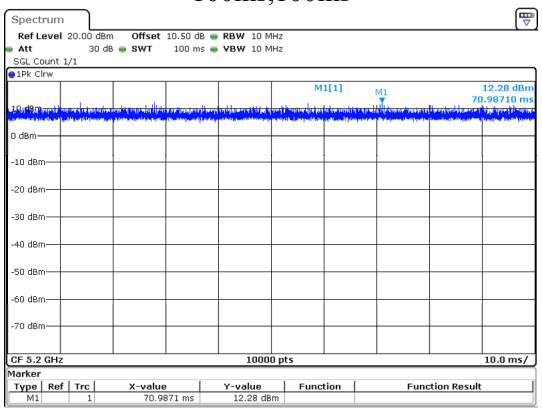
5725-5850MHz

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11a	5785	**1.388**	1.437	96.59	0.15	720	1.000
802.11ac20	5785	1.296	1.352	95.86	0.18	772	1.000
802.11ac40	5755	0.648	0.698	92.84	0.32	1543	2.000
802.11ac80	5775	0.323	0.371	87.06	0.60	3096	5.000

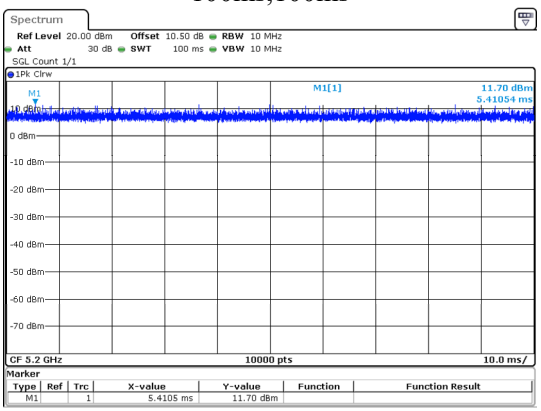
Duty Cycle = Ton/(Ton+Toff)*100%

5150-5250MHz

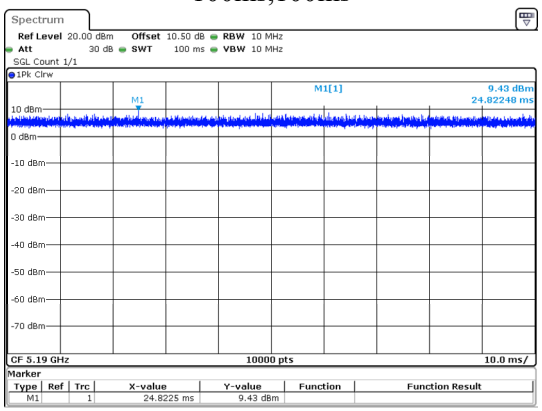
802.11a_5200MHz
100ms,100ms



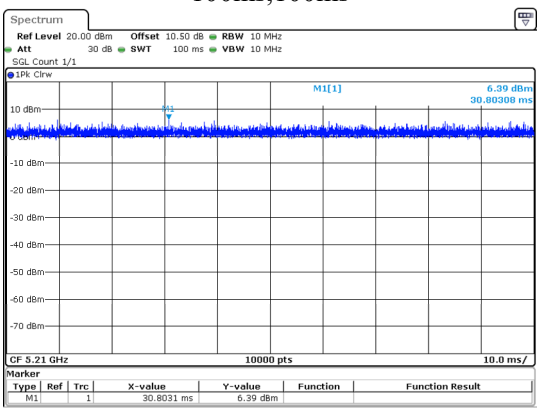
802.11ac20_5200MHz
100ms,100ms



802.11ac40_5190MHz
100ms,100ms

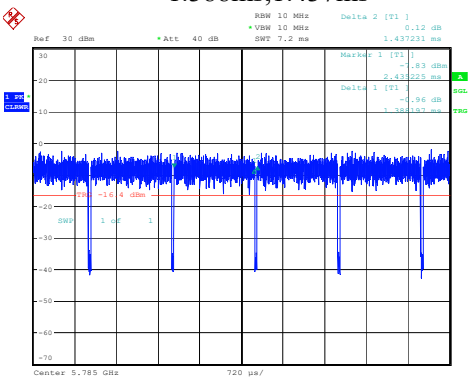


802.11ac80_5210MHz
100ms,100ms



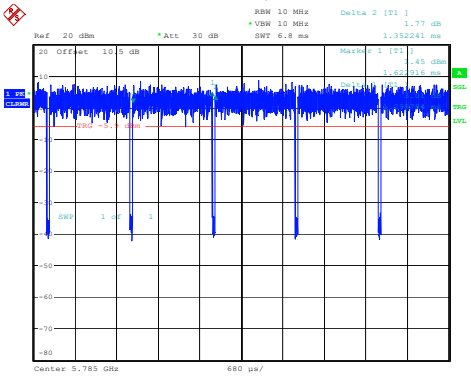
5725-5850MHz

802.11a_5785MHz
1.388ms,1.437ms



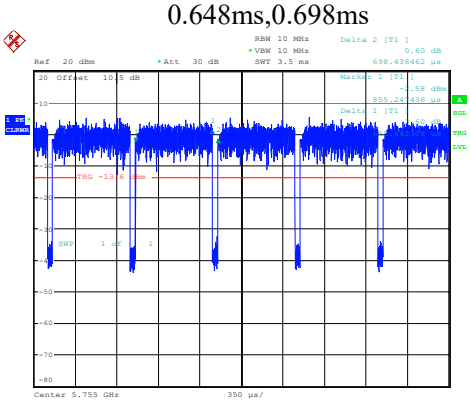
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 8.NOV.2024 23:34:59

802.11ac20_5785MHz
1.296ms,1.352ms



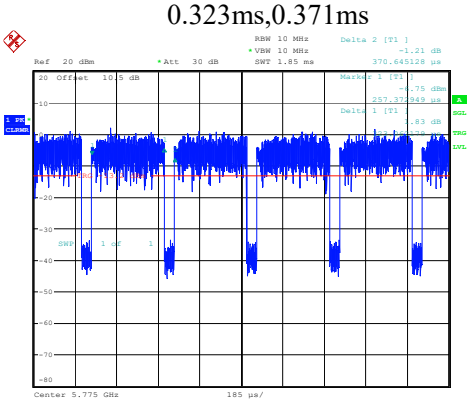
ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 11.NOV.2024 22:21:17

802.11ac40_5755MHz
0.648ms,0.698ms



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 11.NOV.2024 22:30:30

802.11ac80_5775MHz
0.323ms,0.371ms



ProjectNo.:2401Y68085E-RF Tester:Allen Bai
Date: 11.NOV.2024 22:31:35

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