TEST REPORT

Applicant Name:	Telepower Communication Co., Ltd.
Address:	5 Bld, Zone A, Hantian Technology Town No.17 ShenHai RD, Nanhai District Foshan China
Report Number:	SZ1240308-11533E-RF-00C
FCC ID:	2AJ2B-M10

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	Pos terminal
Model No.:	M10
Multiple Model(s) No.:	M10P
Trade Mark:	Telpo
Date Received:	2024/03/12
Issue Date:	2024/06/11

Test Result:	Pass▲

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

Prepared and Checked By:

Andy Yu

Andy Yu
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

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

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	SZ1240308-11533E-RF-00C	Original Report	2024/06/11

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Pos terminal
Tested Model	M10
Multiple Model(s)	M10P
Frequency Range	5G Wi-Fi: 5150-5250MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Output Power	5150-5250MHz: 16.31dBm
Modulation Technique	OFDM
Antenna Specification#	4.34dBi (provided by the applicant)
Voltage Range	DC 24V From Adapter
Sample serial number	2IGW-1 for Conducted and Radiated Emissions Test 2IGW-2 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Model: ADS-65HI-19A-3 24060E Input: AC 100-240V~50/60Hz, Max. 1.5A Output: DC 24.0V, 2.5A, 60.0W
Note: The Multiple models are electrically identical with the test model except for model name. Please refer to the declaration letter# for more detail, which was provided by manufacturer.	

Objective

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

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 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		±5%
RF Frequency		213.55 Hz(k=2, 95% level of confidence)
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.75 dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.94dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.30dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
Supply voltages		±0.4%

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

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the 802.11 n ht20/n ht40 were reduced since the identical parameters with 802.11ac vht20 and vht40.

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.

EUT Exercise Software

"QRCT3, Cmd.exe"[#] software was used and power level as below. The software and power level was provided by the applicant. The device was tested with the worst case was performed as below:

5150-5250 MHz Band:				
Test Modes	**Test Channels**	**Test Frequency (MHz)**	**Data rate**	**Power Level Setting[#]**
802.11a	Lowest	5180	6Mbps	15
	Middle	5200	6Mbps	15
	Highest	5240	6Mbps	15
802.11ac vht20	Lowest	5180	MCS0	15
	Middle	5200	MCS0	15
	Highest	5240	MCS0	15
802.11ac vht40	Lowest	5190	MCS0	15
	Highest	5230	MCS0	15
802.11ac vht80	Middle	5210	MCS0	15
Note: The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.				

Duty cycle

Please refer to the Appendix.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

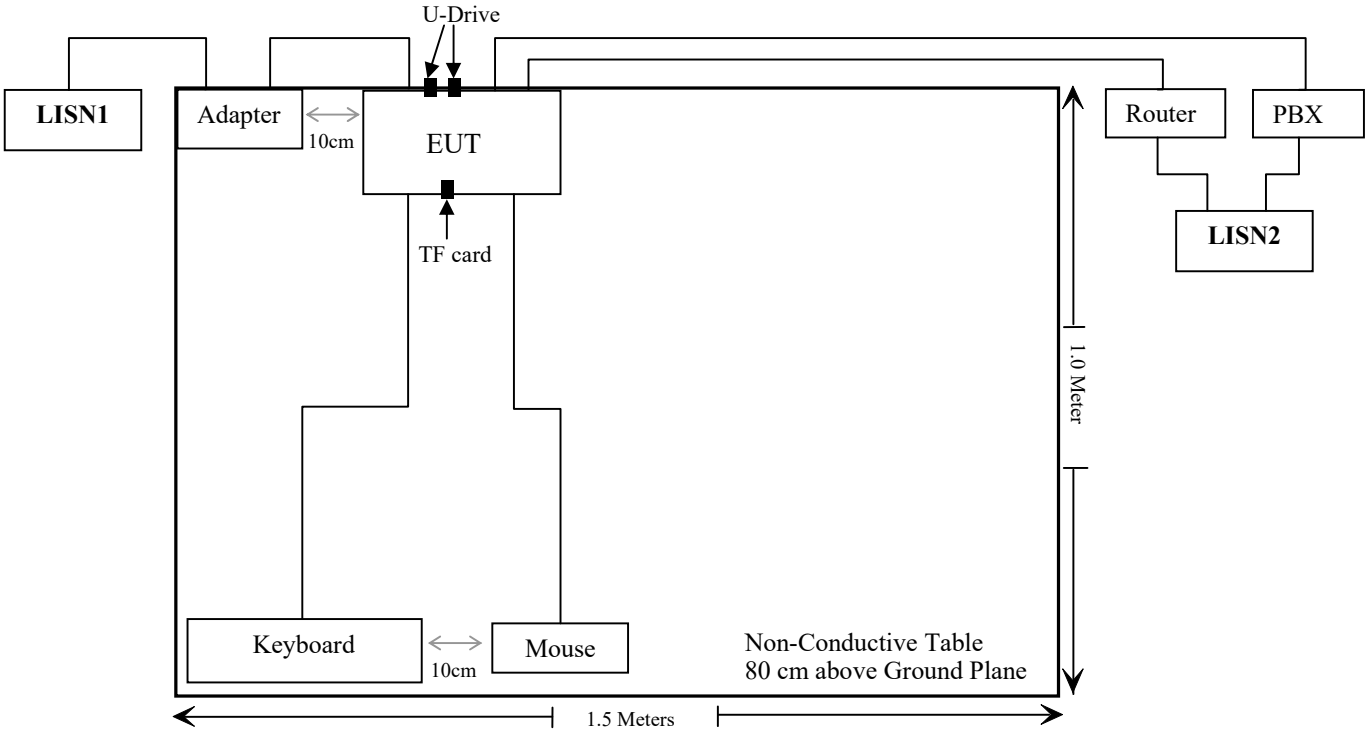
Manufacturer	Description	Model	Serial Number
Thinkplus	U drive*2	MU251	Unknown
Lenovo	Keyboard	EKB-536A	Unknown
DELL	Mouse	Ms116P	Unknown
TP-Link	Router	EAP225	22272F6001499
YIKE	PBX	TC-208	Unknown
Unknown	TF card	Unknown	Unknown

External I/O Cable

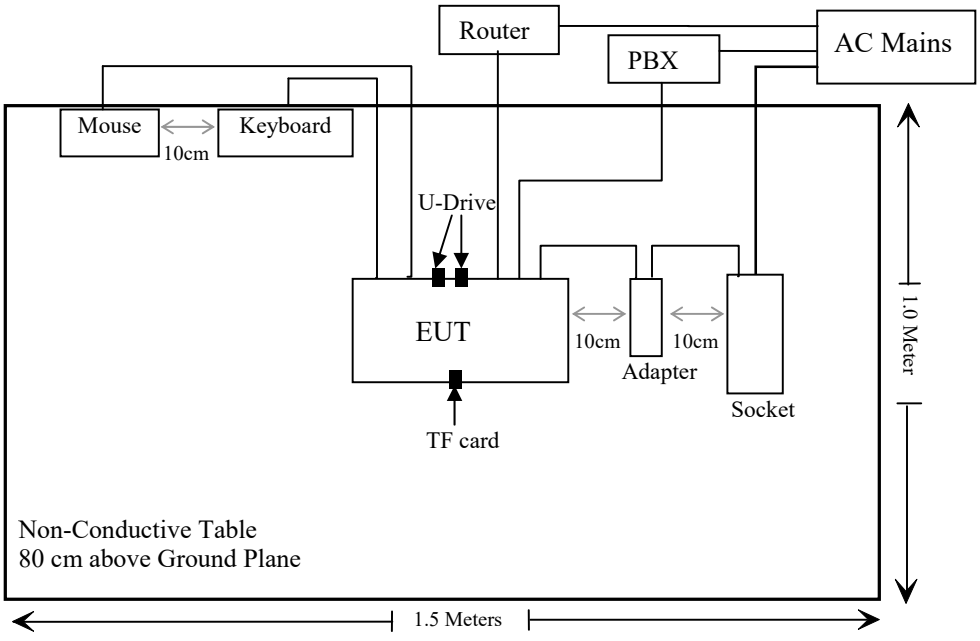
Cable Description	Length (m)	From Port	To
Un-shielded un-detachable AC cable	1.2	Socket	AC Mains
Un-shielded detachable AC cable	1.2	Adapter	LISN1/ Socket
Un-shielded un-detachable DC cable	1.8	EUT	Adapter
Un-shielded detachable RJ45 cable	8.0	EUT	Router
Un-shielded detachable RJ11 cable	10	EUT	PBX
Un-shielded un-detachable AC cable	1.5	PBX	LISN2/ AC Mains
Un-shielded detachable AC cable	1.2	Router	LISN2/ AC Mains
Un-shielded un-detachable USB cable	1.2	EUT	Keyboard
Un-shielded un-detachable USB cable	1.2	EUT	Mouse

Block Diagram of Test Setup

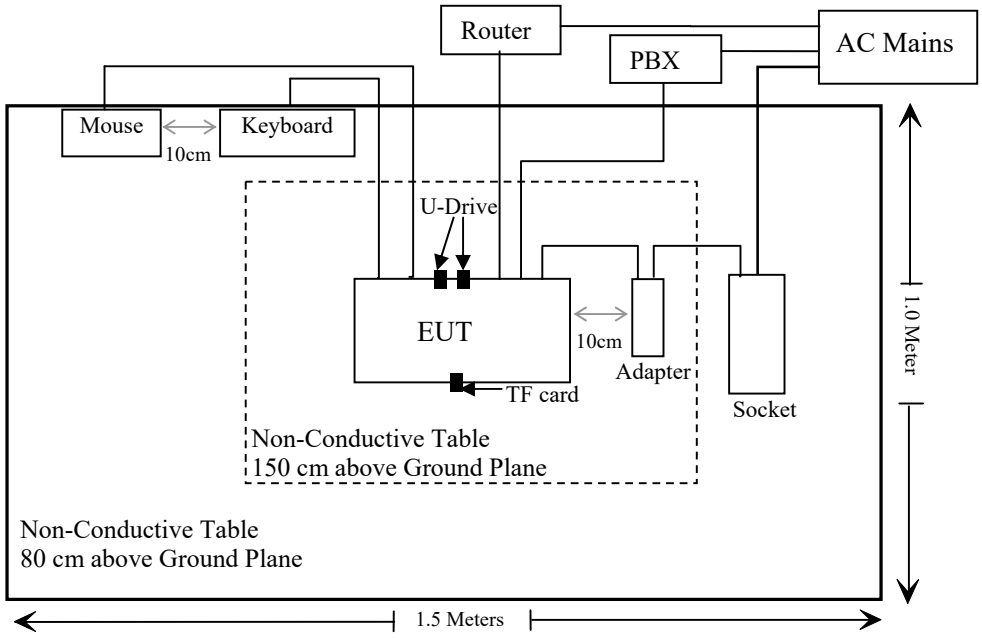
For Conducted Emissions:



For Radiated Emissions (below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) & §2.1091	MPE-Based Exemption	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

Not Applicable: The supplier declared that the equipment has no this function.

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	2023/08/03	2024/08/02
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2023/08/03	2024/08/02
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emissions Test					
R&S	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2023/06/08	2024/06/07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
BACL	Active Loop Antenna	1313-1A	4031911	2024/03/21	2025/03/20
Unknown	Cable	Chamber Cable 1	F-03-EM236	2023/08/03	2024/08/02
Unknown	Cable	Chamber Cable 4	EC-007	2023/08/03	2024/08/02
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	2023/06/29	2024/06/28
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	0735	2023/10/08	2024/10/07
Unknown	RF Cable	UFA147	219661	2023/10/08	2024/10/07
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	NCR	NCR
SNSD	5G Band Reject filter	BSF5150-5850MN-0899-004	5G filter	2023/08/03	2024/08/02
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
A.H.System	Pre-amplifier	PAM-1840VH	190	2023/08/02	2024/08/01
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2023/08/03	2024/08/02

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Tonscend	RF control Unit	JS0806-2	19D8060154	2023/09/06	2024/09/05
ANRITSU	Microwave peak power sensor	MA24418A	12622	2023/08/08	2024/08/07
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
Narda	20dB Attenuator	99899	0107	2023/07/04	2024/07/03
Unknown	RF Cable	65475	01670515	2023/07/04	2024/07/03

*** 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 (B) & §2.1091- MPE-BASED EXEMPTION

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power(ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] to support an exemptionfrom further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Result

Mode	Frequency (MHz)	Tune up conducted power#	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (mW)
		(dBm)	(dBi)	(dBd)	(dBm)	(mW)		
BT	2402-2480	11.5	2.97	0.82	12.32	17.06	0.2	768
BLE	2402-2480	2.5	2.97	0.82	3.32	2.15	0.2	768
2.4G Wi-Fi	2412-2462	20.0	2.97	0.82	20.82	120.78	0.2	768
5.2G Wi-Fi	5180-5240	16.5	4.34	2.19	18.69	73.96	0.2	768
GSM850*	824-849	26.24	-0.8	-2.95	23.29	213.30	0.2	422
PCS1900*	1850-1910	20.99	3.58	1.43	22.42	174.58	0.2	768
WCDMA B2	1850-1910	22.5	3.58	1.43	23.93	247.17	0.2	768
WCDMA B5	824-849	24.0	-0.8	-2.95	21.05	127.35	0.2	422
LTE B2	1850-1910	22.0	3.58	1.43	23.43	220.29	0.2	768
LTE B4	1710-1755	22.0	3.73	1.58	23.58	228.03	0.2	768
LTE B5	824-849	23.0	-0.8	-2.95	20.05	101.16	0.2	422
LTE B7	2500-2570	21.5	5.08	2.93	24.43	277.33	0.2	768
LTE B38	2570-2620	21.5	5.00	2.85	24.35	272.27	0.2	768
LTE B40 Lower	2305-2315	19.5	5.32	3.17	22.67	184.93	0.2	768
LTE B40 Upper	2350-2360	19.5	5.32	3.17	22.67	184.93	0.2	768
LTE B41	2496-2690	22.0	5.08	2.93	24.93	311.17	0.2	768

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. The BT, 2.4G Wi-Fi and 5G Wi-Fi can transmit at same time.
3. 0dBd=2.15dBi

Note*: It was the time average power according to the duty cycle.

Mode		Tune-up Peak Output Power (dBm)			Tune-up Average Output Power (dBm)		
		Low	Middle	High	Low	Middle	High
GPRS850	1 slot	32.5	32.5	32.5	23.47	23.47	23.47
	2 slots	31.5	31.5	31.5	25.48	25.48	25.48
	3 slots	30.5	30.5	30.5	**26.24**	**26.24**	**26.24**
	4 slots	28.5	28.5	28.5	25.49	25.49	25.49
GPRS1900	1 slot	28.0	28.0	28.0	18.97	18.97	18.97
	2 slots	26.5	26.5	26.5	20.48	20.48	20.48
	3 slots	25.0	25.0	25.0	20.74	20.74	20.74
	4 slots	24.0	24.0	24.0	**20.99**	**20.99**	**20.99**

Note: the duty cycle for 1 slot is 1/8, 2 slots is 1/4, 3 slots is 3/8, 4 slots is 1/2
The average power=Peak power+ duty cycle factor
Duty cycle factor=10*log (duty cycle)

NFC:

Mode	Frequency (MHz)	Maximum E-Field (dBuV/m@3m)	Maximum EIRP (dBm)	ERP		Evaluation Distance (m)	ERP Limit (mW)
				(dBm)	(mW)		
NFC	13.56	72.09	-23.11	-25.26	0.003	0.2	751

Note: EIRP = E-Field – 95.2 @3m, ERP = EIRP-2.15

Simultaneous transmitting consideration (worst case):

The ratio=ERP_{BT}/limit+$ERP_{2.4G\ Wi\text{-}Fi}$/limit+$ERP_{5G\ Wi\text{-}Fi}$/limit +ERP_{GSM850}/limit+ ERP_{NFC}/limit
= 17.06/768+ 120.78/768+ 73.96/768+ 213.3/422+ 0.003/751 =0.781＜1.0

So simultaneous exposure is compliant.

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

Result: Compliant.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna which was permanently attached, and the maximum antenna gain[#] is 4.34dBi, fulfill the requirement of this section. Please refer to the EUT photos.

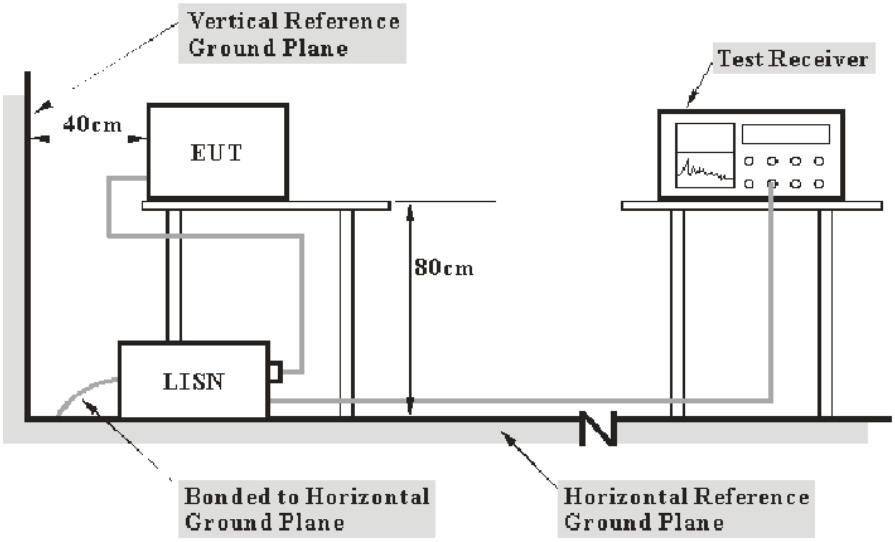
Result: Compliant

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

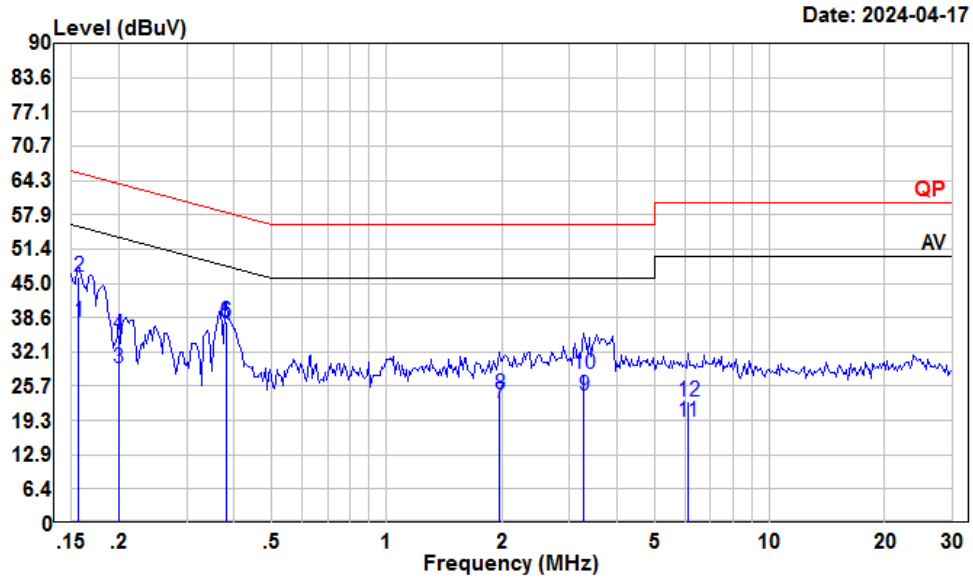
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	65 %
ATM Pressure:	101kPa

The testing was performed by Macy Shi on 2024-04-17.

EUT operation mode: Transmitting (Maximum output power mode, 802.11 ac 40, 5190MHz)

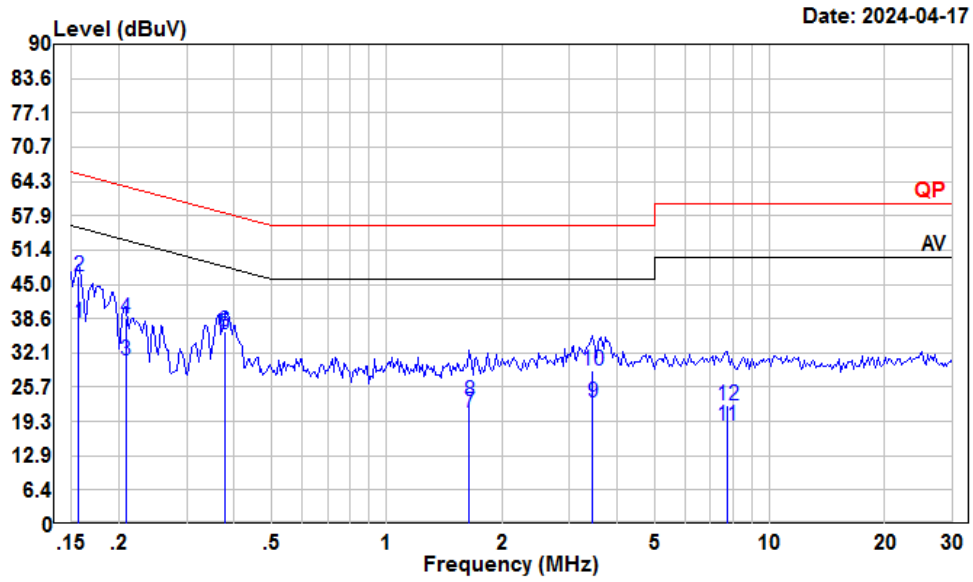
AC 120V/60 Hz, Line



Condition: Line
Project : SZ1240308-11533E-RF
Tester : Macy shi
Note : 5G WIFI

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.16	17.18	37.73	10.40	10.15	55.65	-17.92	Average
2	0.16	25.57	46.12	10.40	10.15	65.65	-19.53	QP
3	0.20	8.53	29.02	10.40	10.09	53.62	-24.60	Average
4	0.20	14.94	35.43	10.40	10.09	63.62	-28.19	QP
5	0.38	17.19	37.65	10.26	10.20	48.25	-10.60	Average
6	0.38	17.22	37.68	10.26	10.20	58.25	-20.57	QP
7	1.97	2.11	22.60	10.31	10.18	46.00	-23.40	Average
8	1.97	3.82	24.31	10.31	10.18	56.00	-31.69	QP
9	3.28	3.30	23.94	10.37	10.27	46.00	-22.06	Average
10	3.28	7.41	28.05	10.37	10.27	56.00	-27.95	QP
11	6.12	-1.65	19.12	10.55	10.22	50.00	-30.88	Average
12	6.12	2.18	22.95	10.55	10.22	60.00	-37.05	QP

AC 120V/60 Hz, Neutral



Condition: Neutral
Project : SZ1240308-11533E-RF
Tester : Macy shi
Note : 5G WIFI

	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.16	17.32	37.73	10.26	10.15	55.65	-17.92	Average
2	0.16	26.15	46.56	10.26	10.15	65.65	-19.09	QP
3	0.21	9.94	30.66	10.61	10.11	53.27	-22.61	Average
4	0.21	17.88	38.60	10.61	10.11	63.27	-24.67	QP
5	0.38	14.80	35.73	10.74	10.19	48.34	-12.61	Average
6	0.38	15.16	36.09	10.74	10.19	58.34	-22.25	QP
7	1.65	0.75	21.01	10.16	10.10	46.00	-24.99	Average
8	1.65	2.91	23.17	10.16	10.10	56.00	-32.83	QP
9	3.45	2.22	22.83	10.34	10.27	46.00	-23.17	Average
10	3.45	8.16	28.77	10.34	10.27	56.00	-27.23	QP
11	7.73	-2.31	18.38	10.46	10.23	50.00	-31.62	Average
12	7.73	1.52	22.21	10.46	10.23	60.00	-37.79	QP

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

Applicable Standard

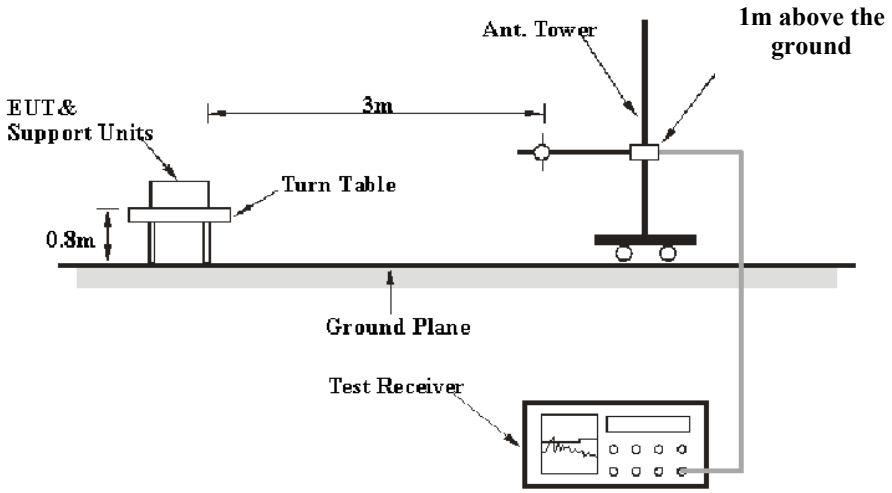
FCC §15.407 (b); §15.209; §15.205;

(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.

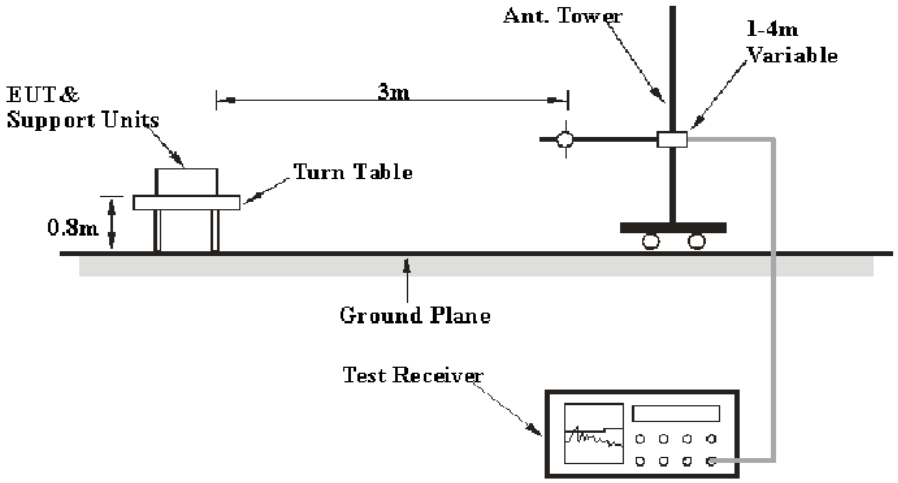
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

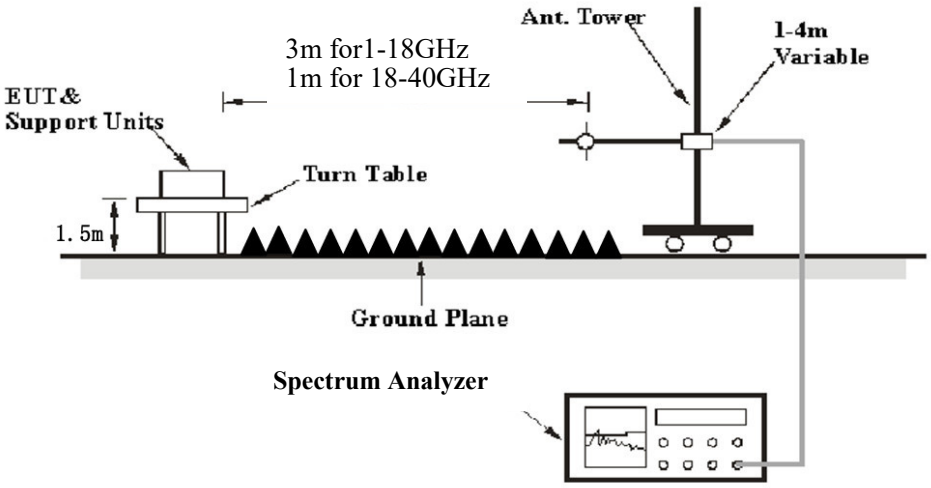
9 kHz-30MHz:



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:

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:	22~25.3 ℃
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

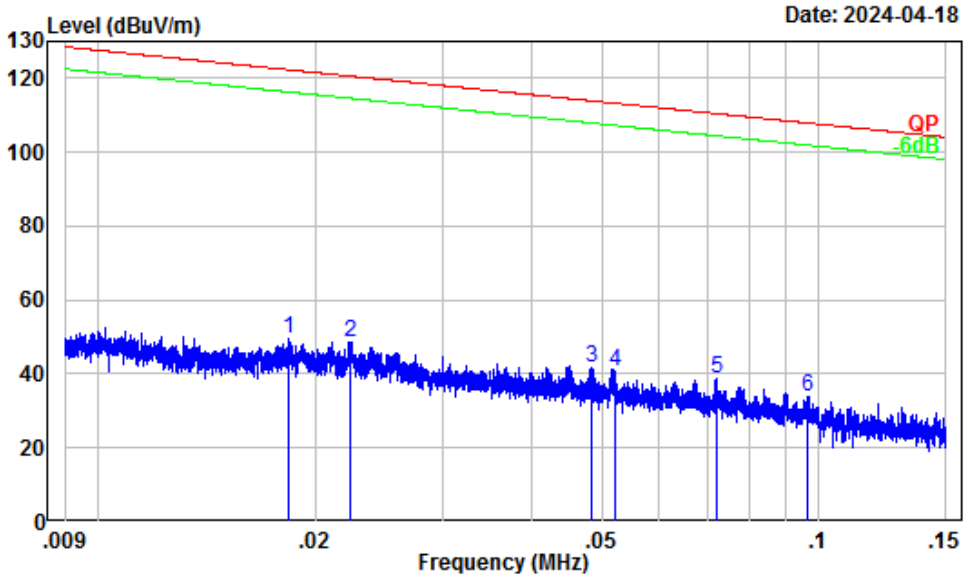
The testing was performed by Anson Su on 2024-04-18 for below 1GHz and Tyler Wu on 2024-04-11 for above 1GHz.

EUT operation mode: Transmitting

9 kHz-30MHz: *(Maximum output power mode, 802.11 ac 40, 5190MHz)*

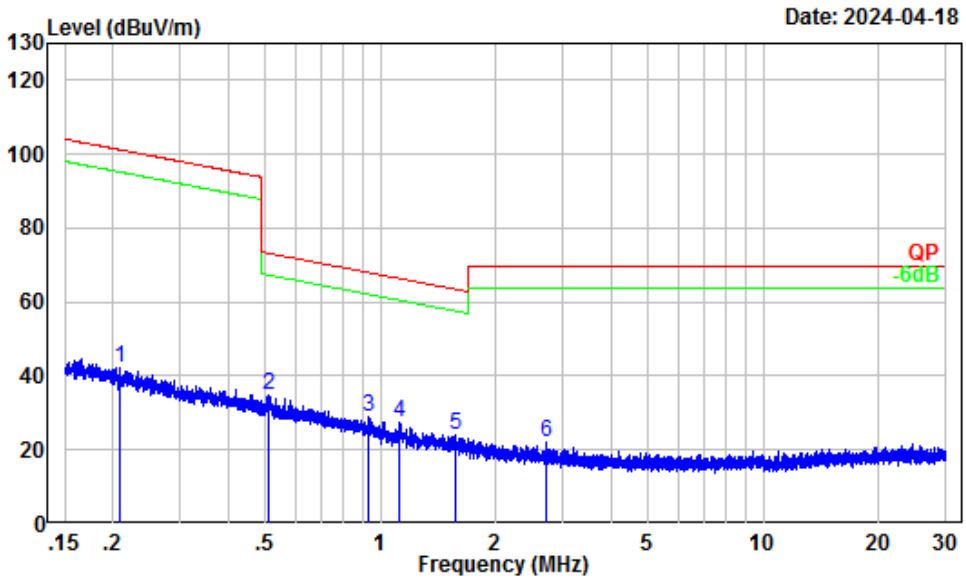
Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.

Parallel (worst case):



Site : Chamber A
Condition : 3m
Project Number: SZ1240308-11533E-RF
Note : 5G WIFI
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.02	33.38	16.03	49.41	122.29	-72.88	Peak
2	0.02	31.40	17.39	48.79	120.63	-71.84	Peak
3	0.05	23.43	18.18	41.61	113.91	-72.30	Peak
4	0.05	22.77	17.72	40.49	113.25	-72.76	Peak
5	0.07	20.07	18.79	38.86	110.42	-71.56	Peak
6	0.10	17.39	16.47	33.86	107.90	-74.04	Peak

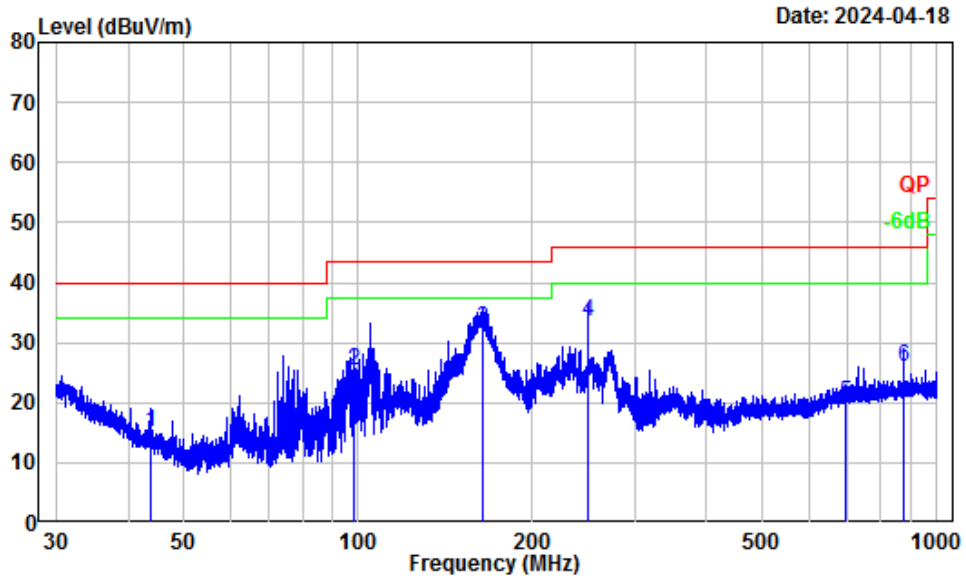


Site : Chamber A
Condition : 3m
Project Number: SZ1240308-11533E-RF
Note : 5G WIFI
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.21	11.96	30.44	42.40	101.20	-58.80	Peak
2	0.51	3.38	31.24	34.62	73.47	-38.85	Peak
3	0.93	-1.10	29.81	28.71	68.09	-39.38	Peak
4	1.13	-2.03	29.34	27.31	66.42	-39.11	Peak
5	1.57	-3.58	27.80	24.22	63.47	-39.25	Peak
6	2.72	-5.67	27.51	21.84	69.54	-47.70	Peak

30 MHz–1 GHz: *(Maximum output power mode, 802.11 ac 40, 5190MHz)*

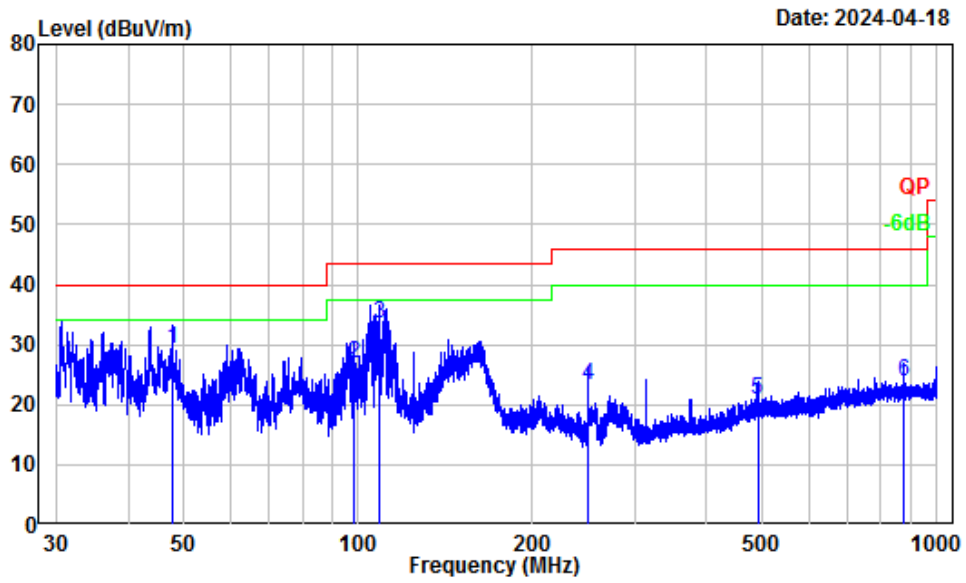
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: SZ1240308-11533E-RF
Note : 5G WIFI
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.75	-13.91	28.96	15.05	40.00	-24.95	QP
2	98.40	-15.88	41.17	25.29	43.50	-18.21	QP
3	164.19	-14.10	46.45	32.35	43.50	-11.15	QP
4	249.97	-14.53	47.98	33.45	46.00	-12.55	QP
5	696.86	-6.22	26.29	20.07	46.00	-25.93	QP
6	875.25	-4.63	30.59	25.96	46.00	-20.04	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: SZ1240308-11533E-RF
Note : 5G WIFI
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	47.78	-17.42	46.75	29.33	40.00	-10.67	QP
2	98.44	-17.26	44.22	26.96	43.50	-16.54	QP
3	108.79	-14.60	48.07	33.47	43.50	-10.03	QP
4	249.97	-14.93	38.24	23.31	46.00	-22.69	QP
5	490.10	-8.79	29.64	20.85	46.00	-25.15	QP
6	875.25	-4.98	28.79	23.81	46.00	-22.19	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/Ave					
802.11a							
5180MHz							
5140.26	55.35	PK	H	2.71	58.06	74	-15.94
5140.26	41.53	AV	H	2.71	44.24	54	-9.76
5148.53	56.39	PK	V	2.71	59.10	74	-14.90
5148.53	43.41	AV	V	2.71	46.12	54	-7.88
10360.00	45.15	PK	H	13.07	58.22	68.2	-9.98
10360.00	45.78	AV	H	13.07	58.85	68.2	-9.35
5200MHz							
10400.00	45.28	PK	H	13.12	58.40	68.2	-9.80
10400.00	45.71	AV	H	13.12	58.83	68.2	-9.37
5240MHz							
5459.76	55.18	PK	H	3.59	58.77	74	-15.23
5459.76	42.02	AV	H	3.59	45.61	54	-8.39
5451.16	55.47	PK	V	3.59	59.06	74	-14.94
5451.16	42.35	AV	V	3.59	45.94	54	-8.06
10480.00	45.34	PK	H	13.07	58.41	68.2	-9.79
10480.00	45.67	AV	H	13.07	58.74	68.2	-9.46

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11ac20							
5180MHz							
4846.64	55.32	PK	H	1.69	57.01	74	-16.99
4846.64	42.15	AV	H	1.69	43.84	54	-10.16
4789.25	55.73	PK	V	1.49	57.22	74	-16.78
4789.25	42.56	AV	V	1.49	44.05	54	-9.95
10360.00	45.38	PK	H	13.07	58.45	68.2	-9.75
10360.00	45.17	AV	H	13.07	58.24	68.2	-9.96
5200MHz							
10400.00	45.85	PK	H	13.12	58.97	68.2	-9.23
10400.00	45.42	AV	H	13.12	58.54	68.2	-9.66
5240MHz							
5444.03	55.47	PK	H	3.27	58.74	74	-15.26
5444.03	41.86	AV	H	3.27	45.13	54	-8.87
5354.38	56.42	PK	V	3.07	59.49	74	-14.51
5354.38	42.05	AV	V	3.07	45.12	54	-8.88
10480.00	46.13	PK	H	13.07	59.20	68.2	-9.00
10480.00	45.62	AV	H	13.07	58.69	68.2	-9.51

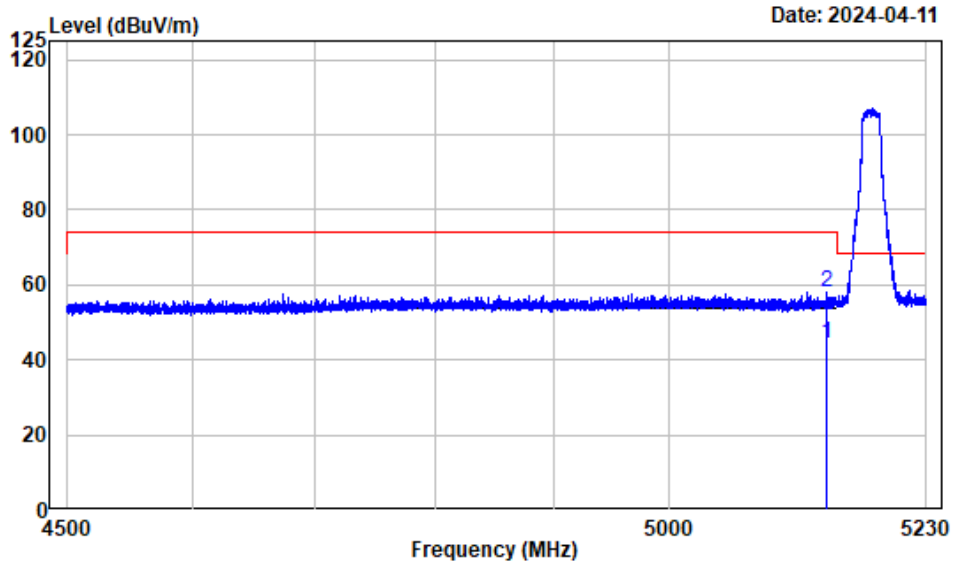
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11ac40							
5190MHz							
5149.46	56.32	PK	H	2.77	59.09	74	-14.91
5149.46	46.74	AV	H	2.77	49.51	54	-4.49
5149.53	57.65	PK	V	2.77	60.42	74	-13.58
5149.53	47.89	AV	V	2.77	50.66	54	-3.34
10380.00	45.07	PK	H	13.09	58.16	68.2	-10.04
10380.00	44.38	AV	H	13.09	57.47	68.2	-10.73
5230MHz							
5417.74	55.13	PK	H	3.17	58.30	74	-15.70
5417.74	42.57	AV	H	3.17	45.74	54	-8.26
5442.25	55.64	PK	V	3.27	58.91	74	-15.09
5442.25	43.16	AV	V	3.27	46.43	54	-7.57
10460.00	45.23	PK	H	13.09	58.32	68.2	-9.88
10460.00	44.62	AV	H	13.09	57.71	68.2	-10.49
802.11ac80							
5210MHz							
5149.53	64.05	PK	H	2.77	66.82	74	-7.18
5149.53	45.31	AV	H	2.77	48.08	54	-5.92
5148.59	65.72	PK	V	2.77	68.49	74	-5.51
5148.59	46.94	AV	V	2.77	49.71	54	-4.29
5361.38	55.38	PK	H	3.07	58.45	74	-15.55
5361.38	42.53	AV	H	3.07	45.60	54	-8.40
5357.24	55.72	PK	V	3.07	58.79	74	-15.21
5357.24	43.18	AV	V	3.07	46.25	54	-7.75
10420.00	44.34	PK	H	13.12	57.46	68.2	-10.74
10420.00	44.65	AV	H	13.12	57.77	68.2	-10.43

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

Test plots for Band Edge Measurements (Radiated)

5150-5250MHz:

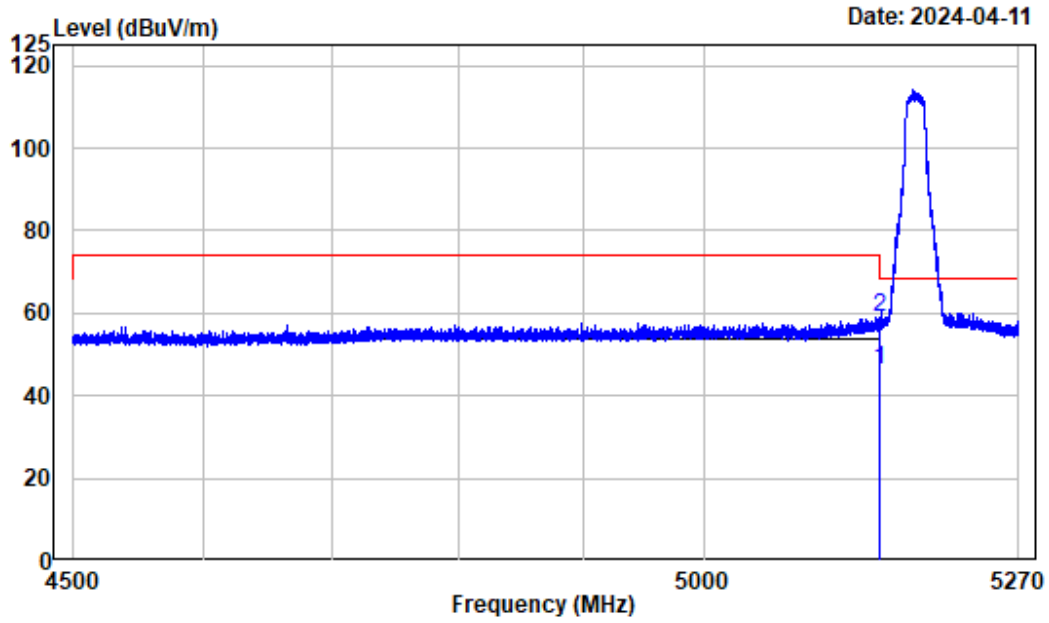
802.11a			
Test Channel:	**5180MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ1240308-11533E
Tester : Tyler
Note : 5G WiFi_B1_A_5180

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5140.255	2.71	41.53	44.24	54.00	-9.76	Average
2	5140.255	2.71	55.35	58.06	74.00	-15.94	peak

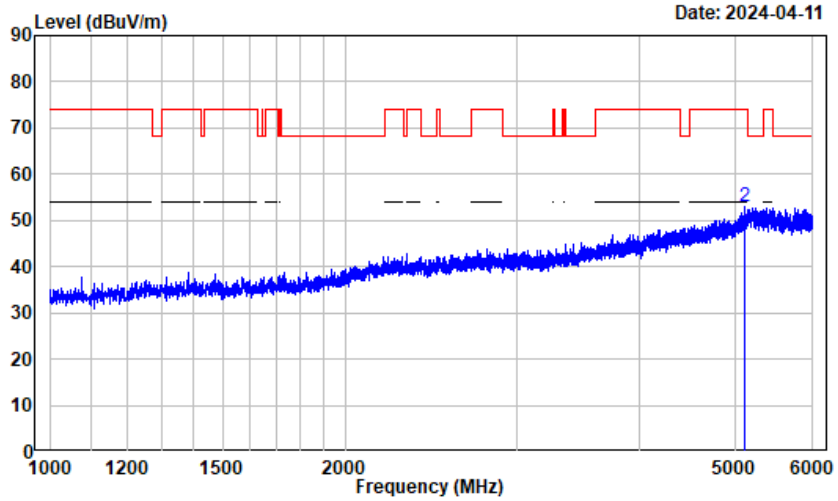
802.11a			
Test Channel:	**5180MHz**	**Ant. Polar. :**	**Vertical**



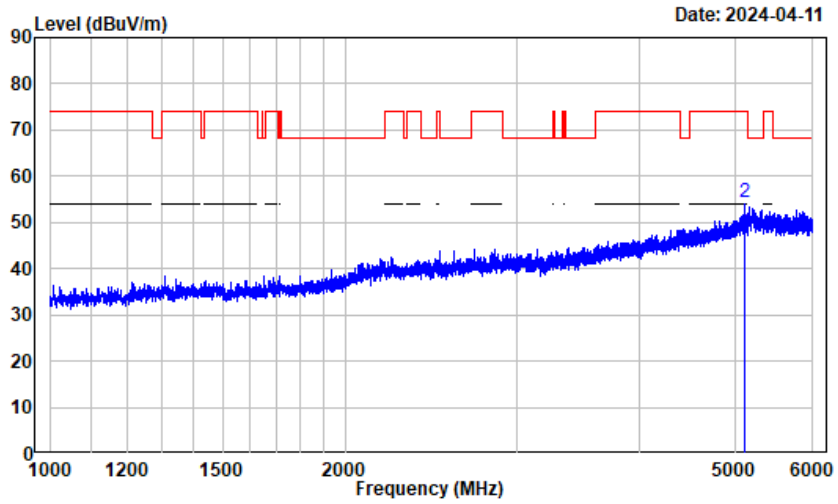
Condition : Vertical
Project No.: SZ1240308-11533E
Tester : Tyler
Note : 5G WiFi_B1_A_5180

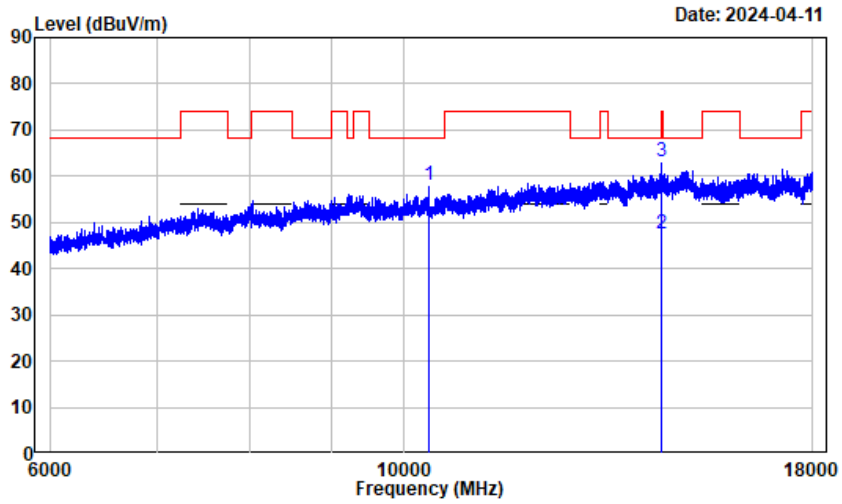
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5148.533	2.71	43.41	46.12	54.00	-7.88	Average
2	5148.533	2.71	56.39	59.10	74.00	-14.90	peak

Test plots for Harmonic Measurements: 802.11a, 5180 MHz

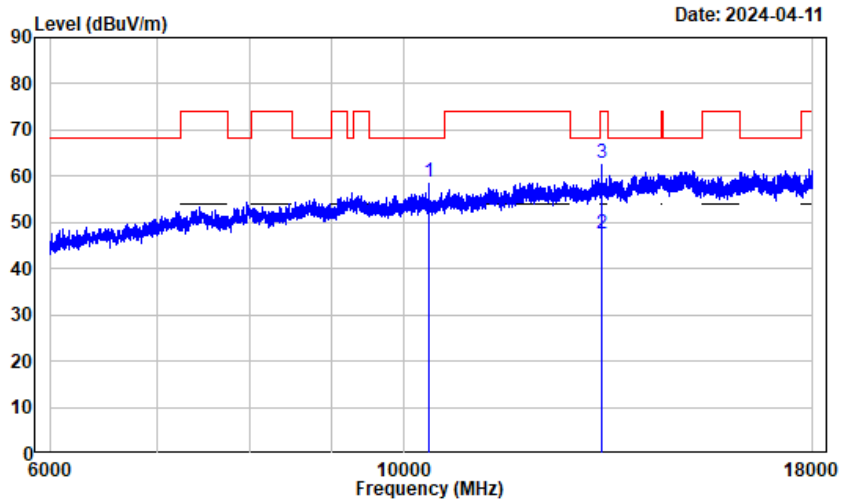
Horizontal	
1-6GHz	 Condition : Horizontal Project No.: SZ1240308-11533E Tester : Tyler Note : 5G WiFi_B1_A_5180

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	5115.000	2.71	44.61	47.32	54.00	-6.68	Average
2	5115.000	2.71	50.39	53.10	74.00	-20.90	Peak

Vertical	
1-6GHz	 Condition : Vertical Project No.: SZ1240308-11533E Tester : Tyler Note : 5G WiFi_B1_A_5180 Freq / Factor / Read Level / Limit Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 5112.500 2.72 44.93 47.65 54.00 -6.35 Average 2 5112.500 2.72 51.62 54.34 74.00 -19.66 Peak

Horizontal	
6-18GHz	 Condition : Horizontal Project No.: SZ1240308-11533E Tester : Tyler Note : 5G WiFi_B1_A_5180

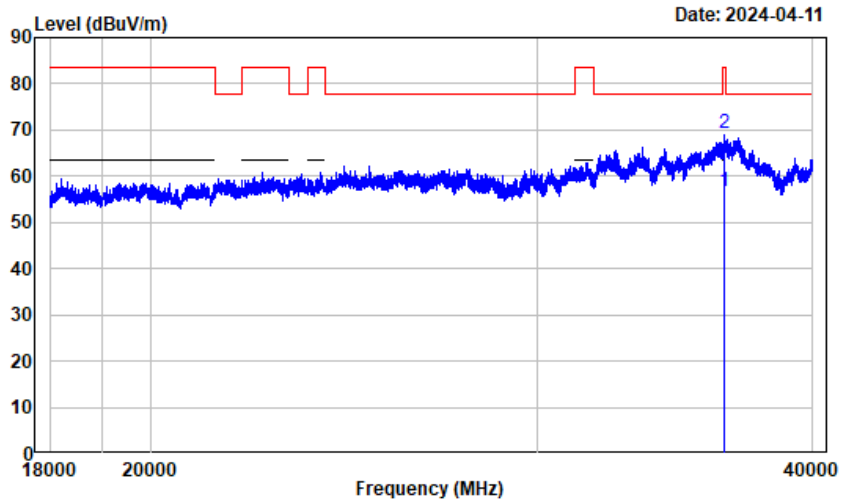
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	10360.000	13.07	45.15	58.22	68.20	-9.98	Peak
2	14482.500	17.44	30.03	47.47	54.00	-6.53	Average
3	14482.500	17.44	45.73	63.17	74.00	-10.83	Peak

Vertical	
6-18GHz	 Condition : Vertical Project No.: SZ1240308-11533E Tester : Tyler Note : 5G WiFi_B1_A_5180

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	10360.000	13.07	45.78	58.85	68.20	-9.35	Peak
2	13288.500	14.42	33.00	47.42	54.00	-6.58	Average
3	13288.500	14.42	48.35	62.77	74.00	-11.23	Peak

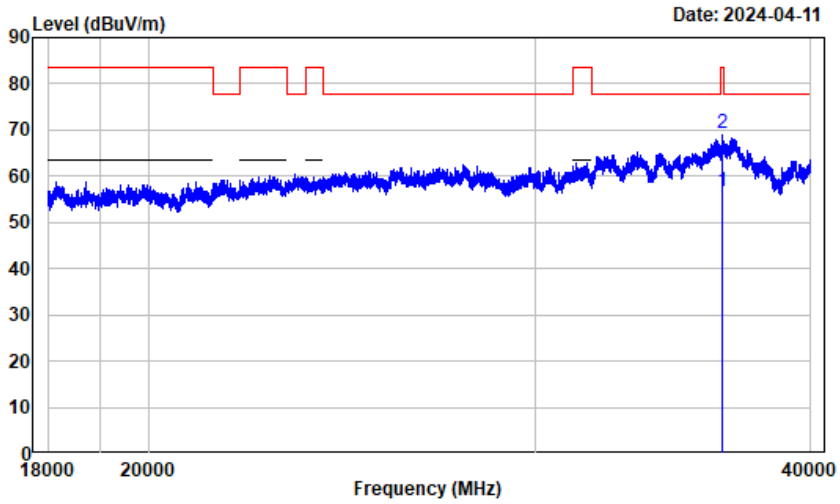
Horizontal

18-40GHz



Condition : Horizontal
Project No.: SZ1240308-11533E
Tester : Tyler
Note : 5G WiFi_B1_A_5180

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	36447.000	25.21	31.62	56.83	63.50	-6.67	Average
2	36447.000	25.21	44.18	69.39	83.50	-14.11	Peak

Vertical	
18-40GHz	 Condition : Vertical Project No.: SZ1240308-11533E Tester : Tyler Note : 5G WiFi_B1_A_5180 Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 36463.500 25.27 31.59 56.86 63.50 -6.64 Average 2 36463.500 25.27 43.94 69.21 83.50 -14.29 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%.

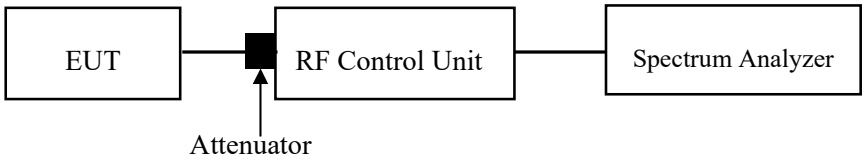
2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
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:	25 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-04-03.

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.

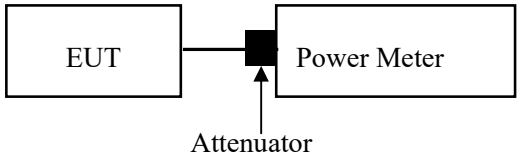
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 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.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-04-03.

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%

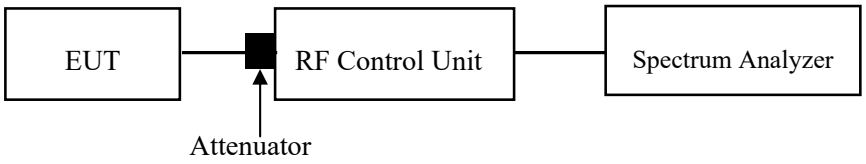
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

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.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-04-03.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment SZ1240308-11533E-RF External photo and SZ1240308-11533E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment SZ1240308-11533E-RFA Test Setup photo.

APPENDIX

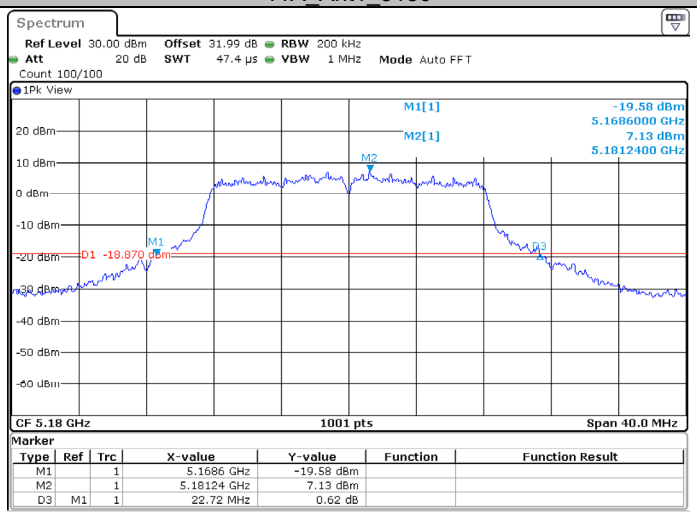
Appendix A1: Emission Bandwidth

Test Result

Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	22.72	---	---
		5200	22.76	---	---
		5240	23.00	---	---
11AC20SISO	Ant1	5180	23.32	---	---
		5200	23.24	---	---
		5240	23.08	---	---
11AC40SISO	Ant1	5190	42.24	---	---
		5230	42.56	---	---
11AC80SISO	Ant1	5210	96.48	---	---

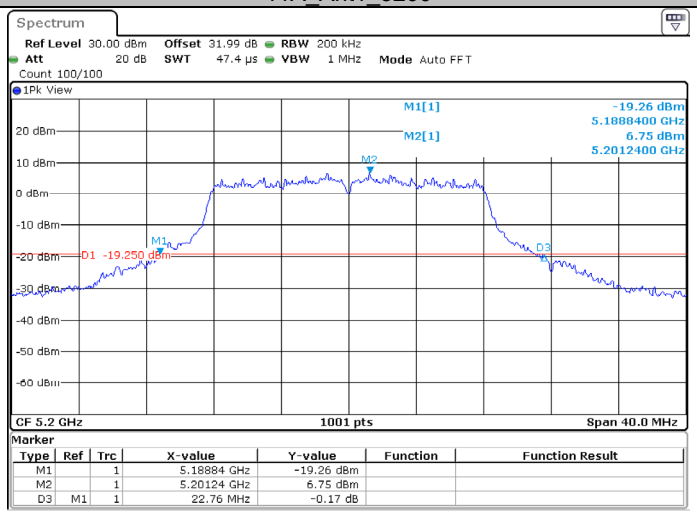
Test Graphs

11A_Ant1_5180



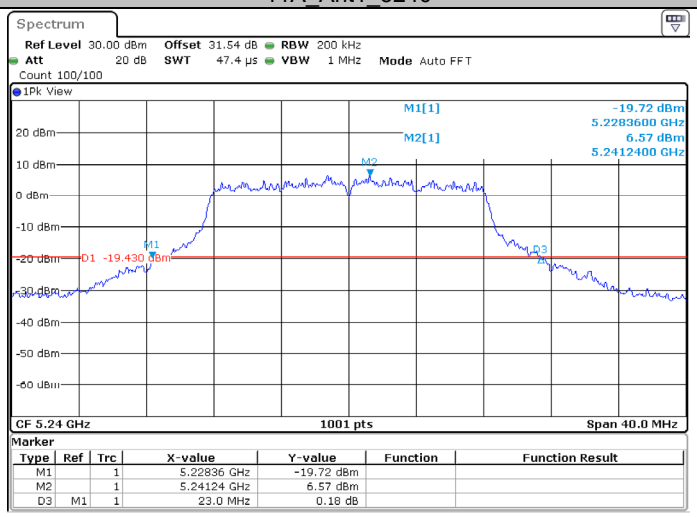
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:22:23

11A_Ant1_5200



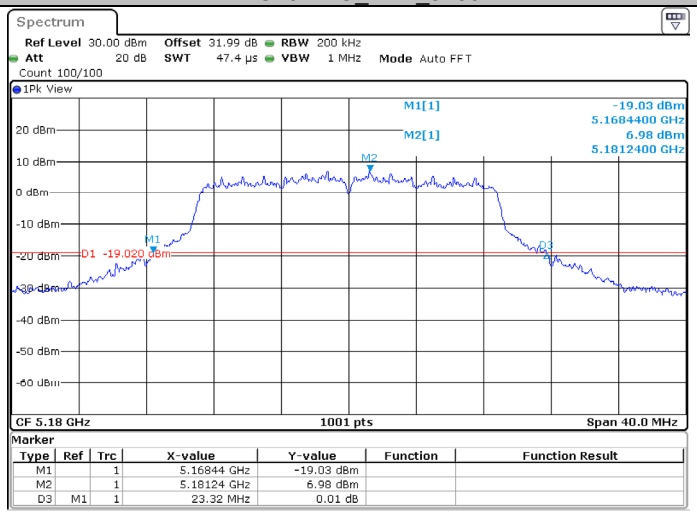
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:26:20

11A_Ant1_5240



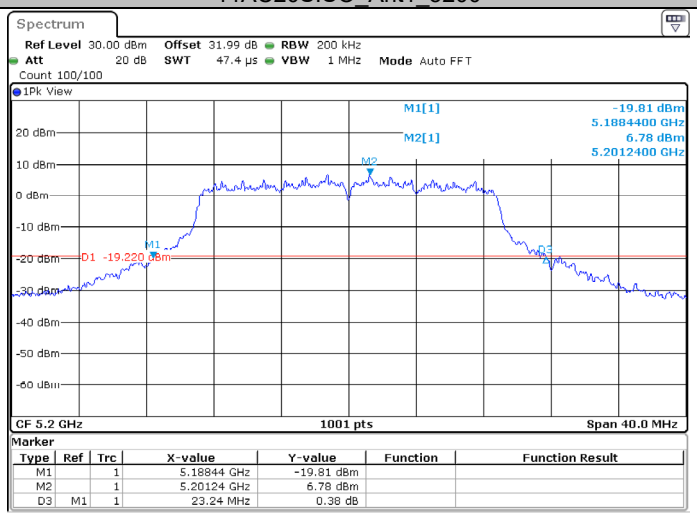
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:28:32

11AC20SISO_Ant1_5180



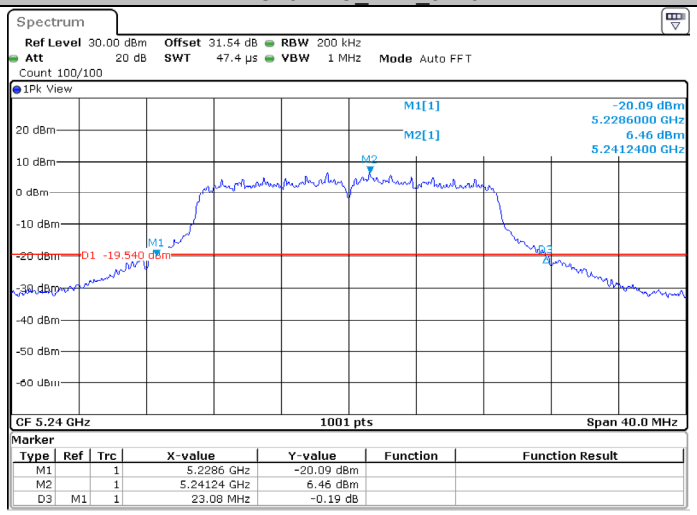
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:30:08

11AC20SISO_Ant1_5200



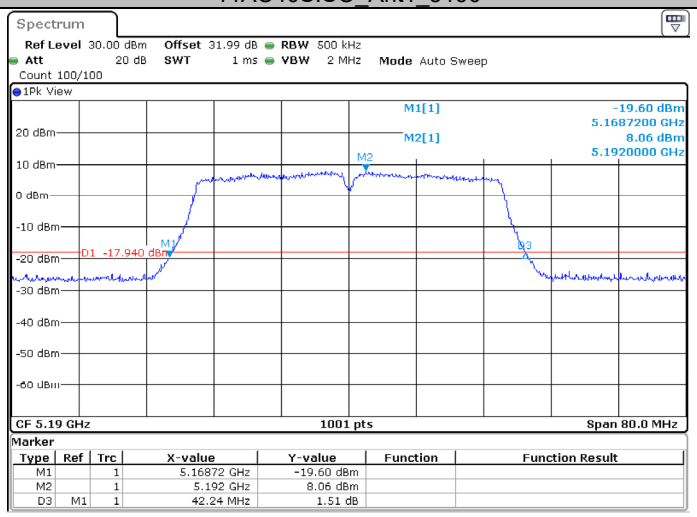
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:31:26

11AC20SISO_Ant1_5240



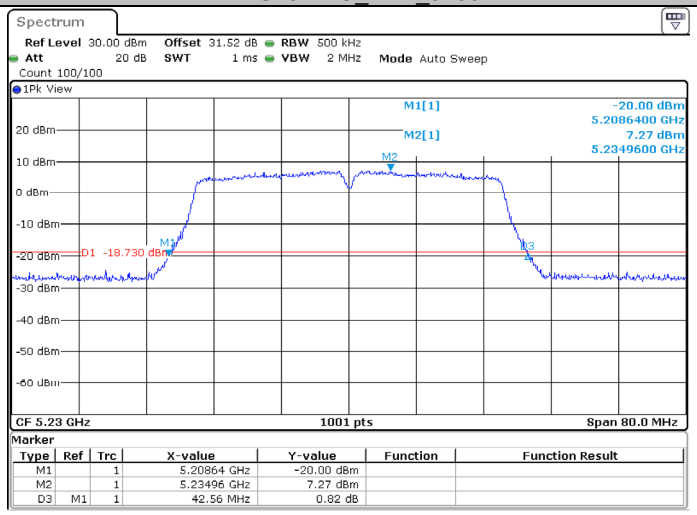
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:38:44

11AC40SISO_Ant1_5190



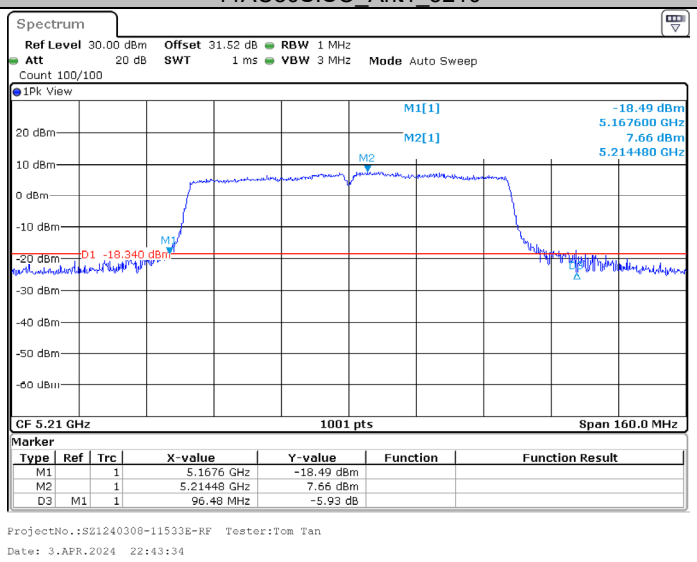
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:40:05

11AC40SISO_Ant1_5230



ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:41:31

11AC80SISO_Ant1_5210



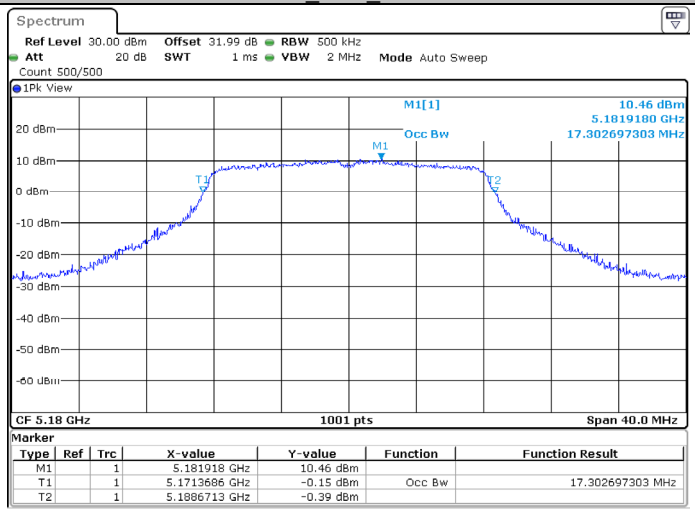
Appendix A2: Occupied Channel Bandwidth

Test Result

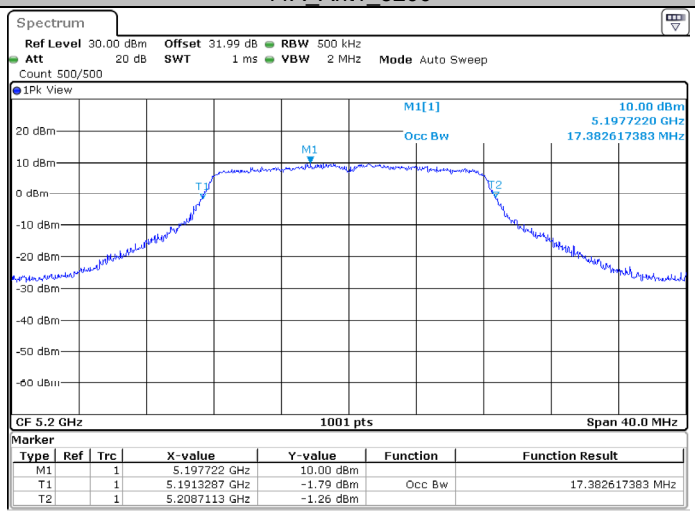
Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.303	---	---
		5200	17.383	---	---
		5240	17.343	---	---
11AC20SISO	Ant1	5180	18.422	---	---
		5200	18.422	---	---
		5240	18.382	---	---
11AC40SISO	Ant1	5190	36.763	---	---
		5230	36.603	---	---
11AC80SISO	Ant1	5210	76.563	---	---
Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2A band and U-NII-2C band.					

Test Graphs

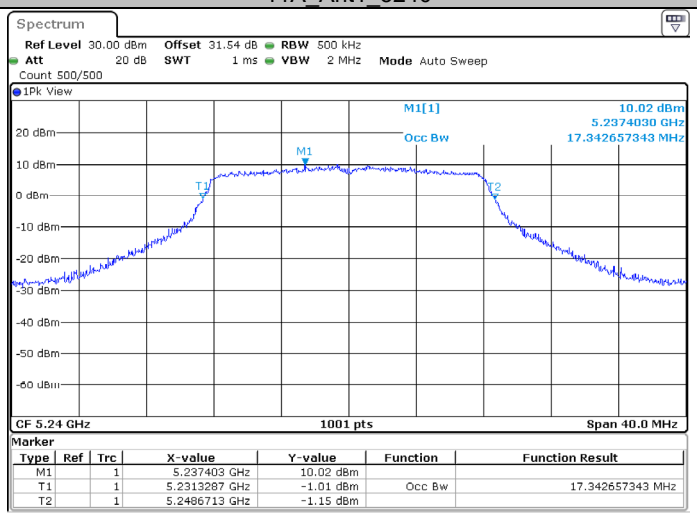
11A_Ant1_5180



11A_Ant1_5200

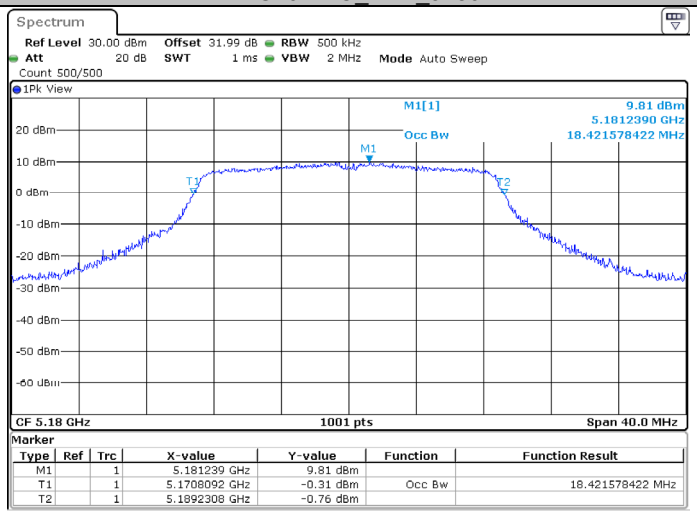


11A_Ant1_5240



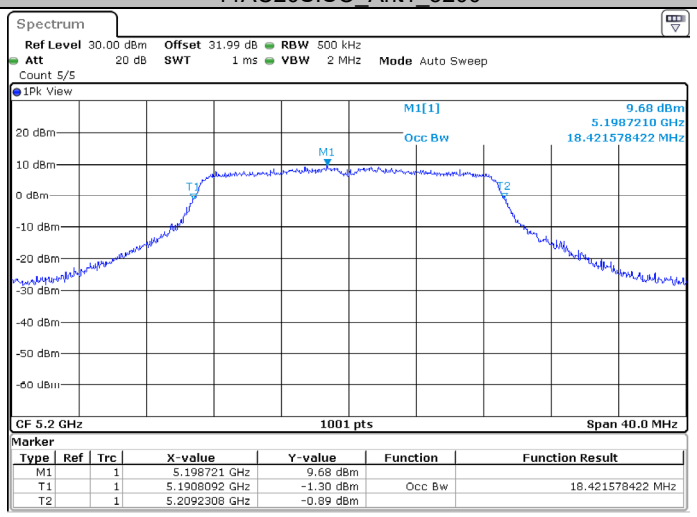
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:28:38

11AC20SISO_Ant1_5180



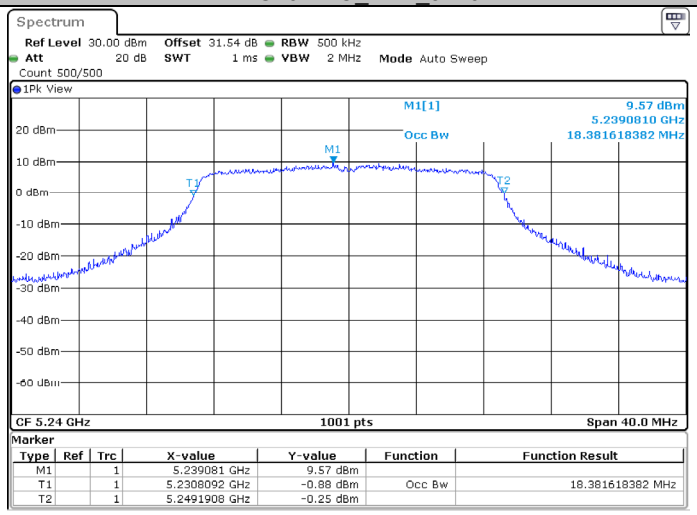
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:30:14

11AC20SISO_Ant1_5200



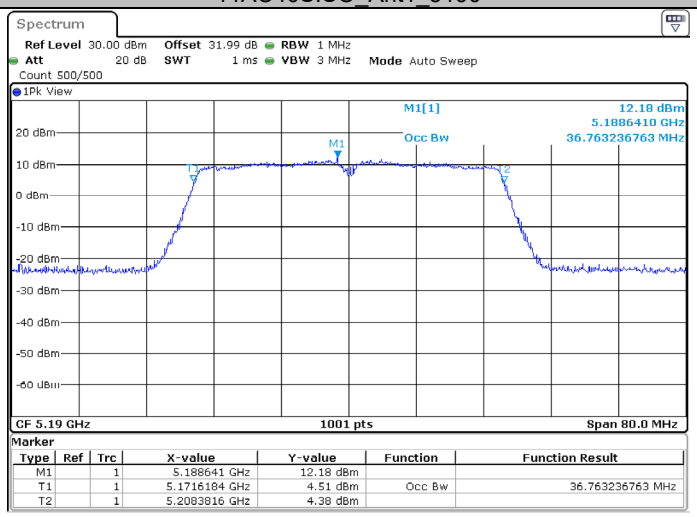
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:38:08

11AC20SISO_Ant1_5240



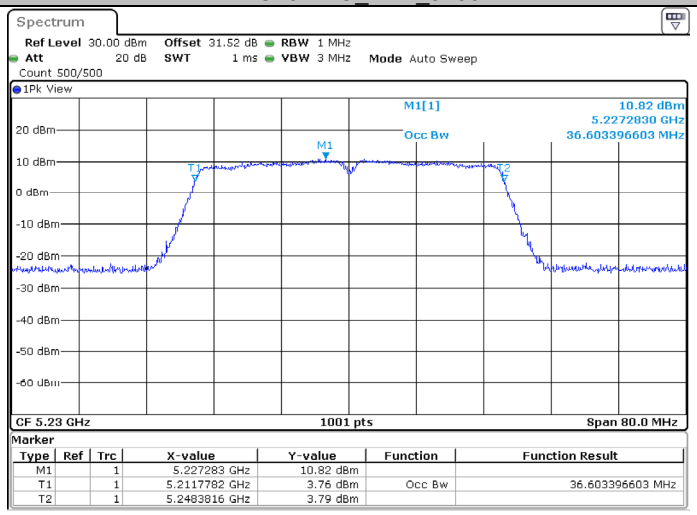
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:38:50

11AC40SISO_Ant1_5190



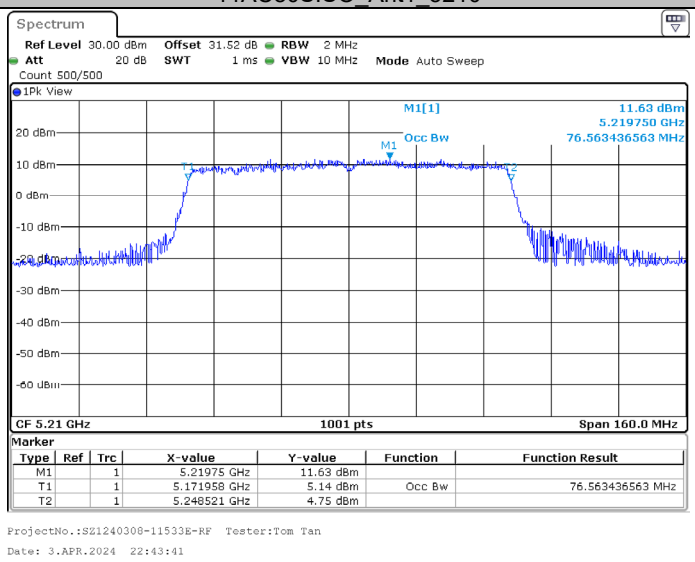
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:40:11

11AC40SISO_Ant1_5230



ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:41:37

11AC80SISO_Ant1_5210



Appendix B: Maximum Conducted Output AV Power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	15.95	≤23.98	PASS
		5200	15.46	≤23.98	PASS
		5240	15.21	≤23.98	PASS
11AC20SISO	Ant1	5180	15.59	≤23.98	PASS
		5200	15.33	≤23.98	PASS
		5240	15.01	≤23.98	PASS
11AC40SISO	Ant1	5190	16.31	≤23.98	PASS
		5230	15.78	≤23.98	PASS
11AC80SISO	Ant1	5210	15.46	≤23.98	PASS
Note: The EUT is a client device.					

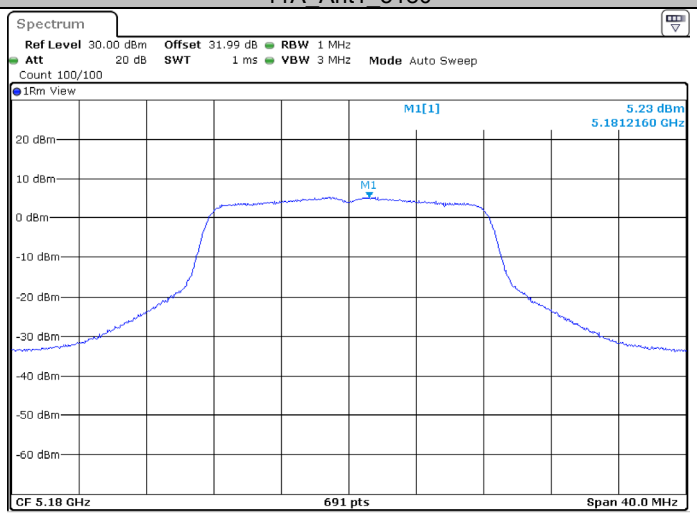
Appendix C: Maximum Power Spectral Density

Test Result

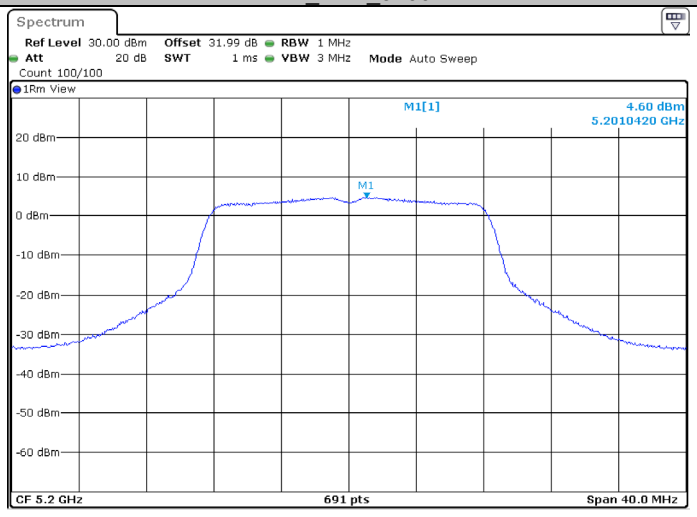
Test Mode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	5.23	≤11.00	PASS
		5200	4.60	≤11.00	PASS
		5240	4.66	≤11.00	PASS
11AC20SISO	Ant1	5180	4.63	≤11.00	PASS
		5200	4.43	≤11.00	PASS
		5240	4.06	≤11.00	PASS
11AC40SISO	Ant1	5190	2.44	≤11.00	PASS
		5230	1.84	≤11.00	PASS
11AC80SISO	Ant1	5210	-1.67	≤11.00	PASS
Note: 1. The EUT is a client device. 2. KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.					

Test Graphs

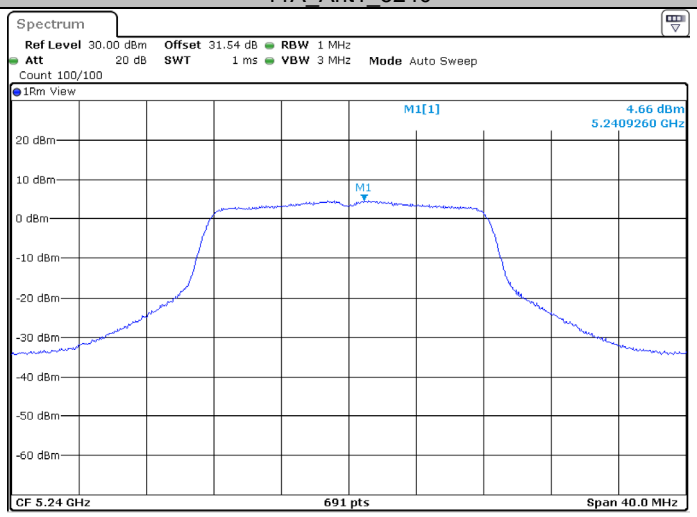
11A_Ant1_5180



11A_Ant1_5200

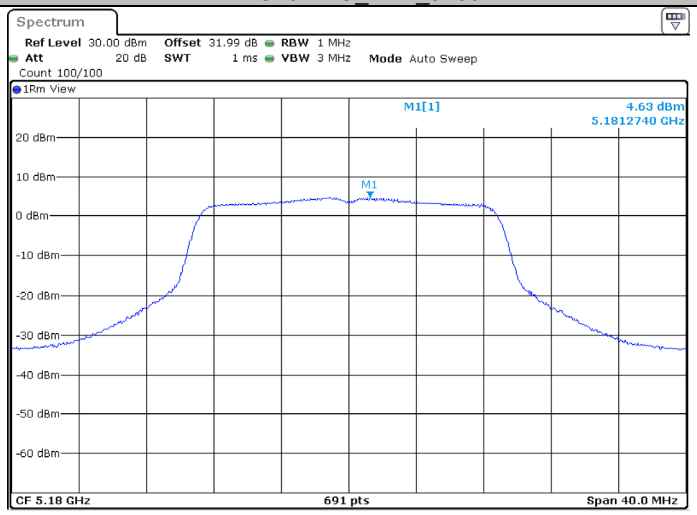


11A_Ant1_5240



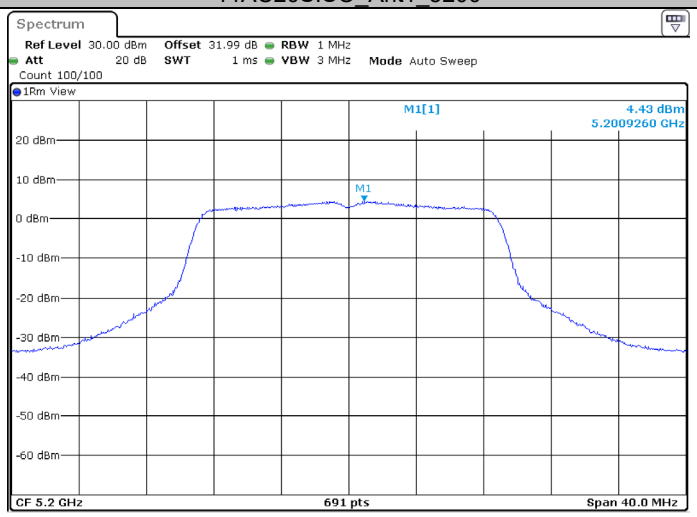
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:29:04

11AC20SISO_Ant1_5180



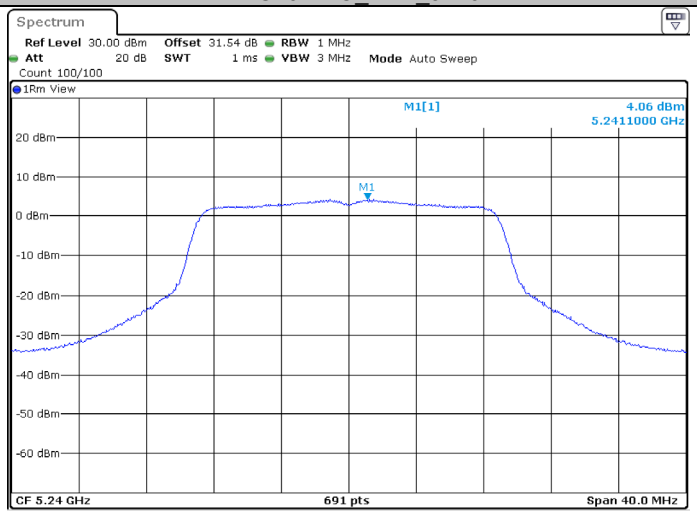
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:30:40

11AC20SISO_Ant1_5200



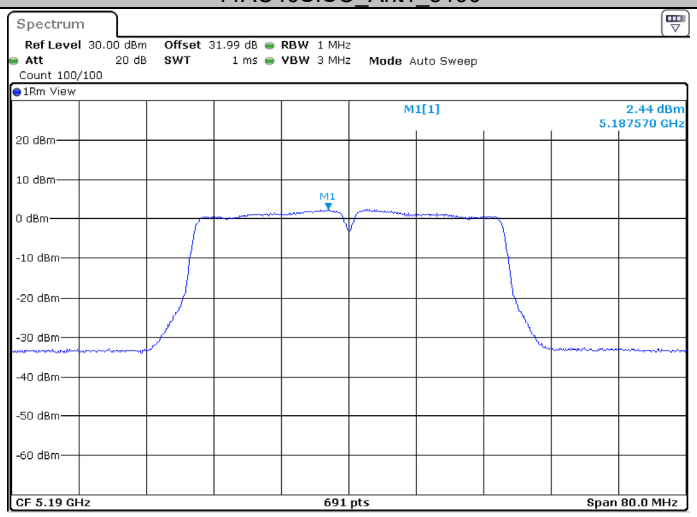
ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:31:59

11AC20SISO_Ant1_5240

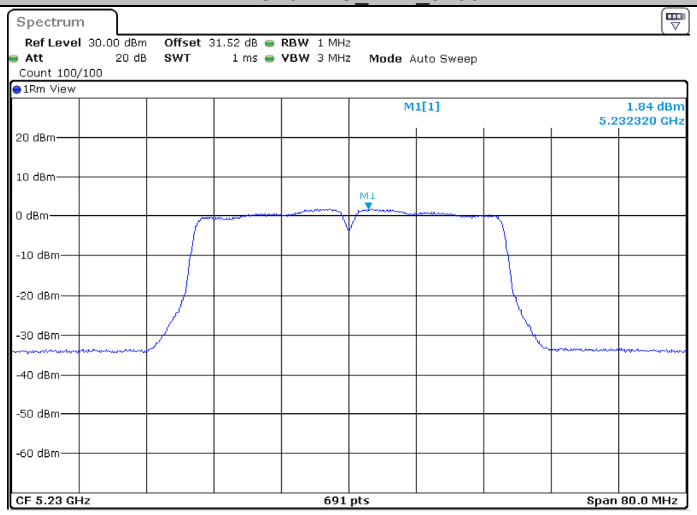


ProjectNo.:SZ1240308-11533E-RF Tester:Tom Tan
Date: 3.APR.2024 22:39:16

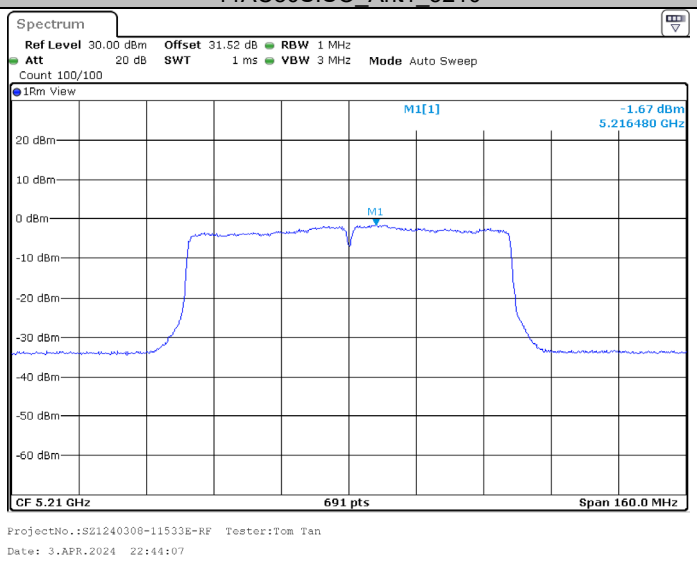
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



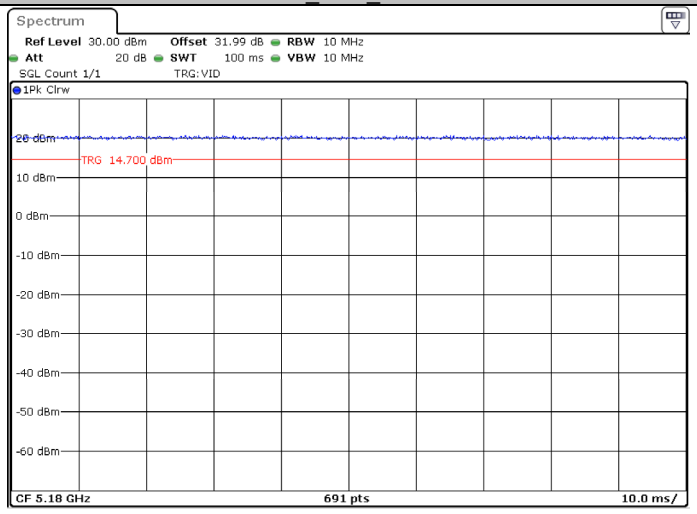
Appendix D: Duty Cycle

Test Result

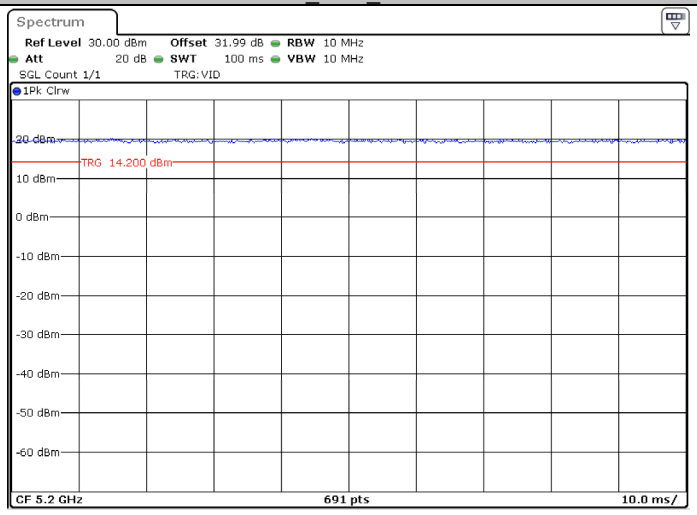
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Hz	VBW Setting Hz
11A	Ant1	5180	100.00	100.00	100.00	/	10
		5200	100.00	100.00	100.00	/	10
		5240	100.00	100.00	100.00	/	10
11AC20SISO	Ant1	5180	100.00	100.00	100.00	/	10
		5200	100.00	100.00	100.00	/	10
		5240	100.00	100.00	100.00	/	10
11AC40SISO	Ant1	5190	100.00	100.00	100.00	/	10
		5230	100.00	100.00	100.00	/	10
11AC80SISO	Ant1	5210	100.00	100.00	100.00	/	10

Test Graphs

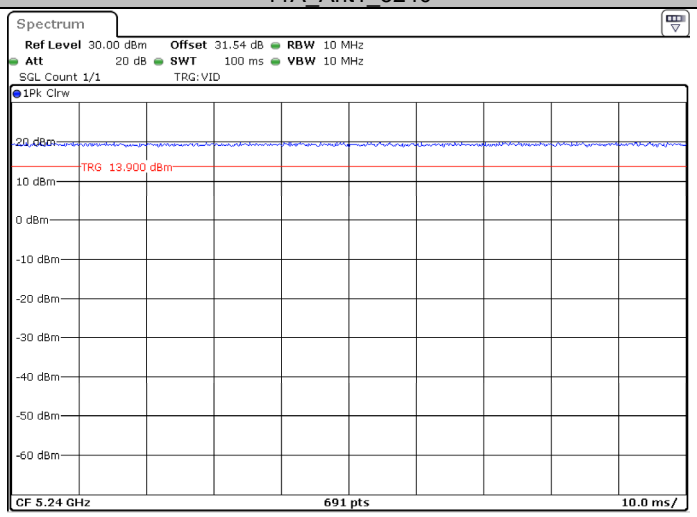
11A_Ant1_5180



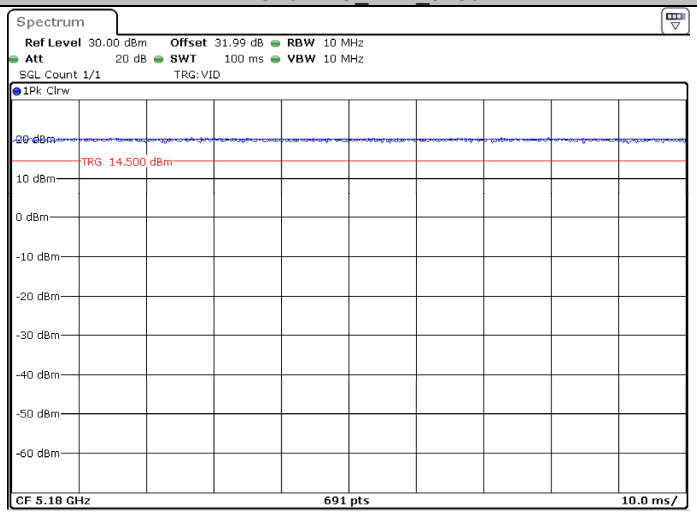
11A_Ant1_5200



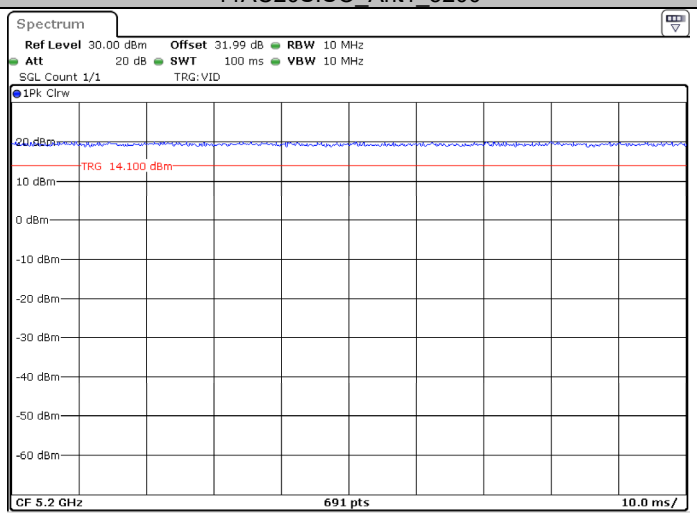
11A_Ant1_5240



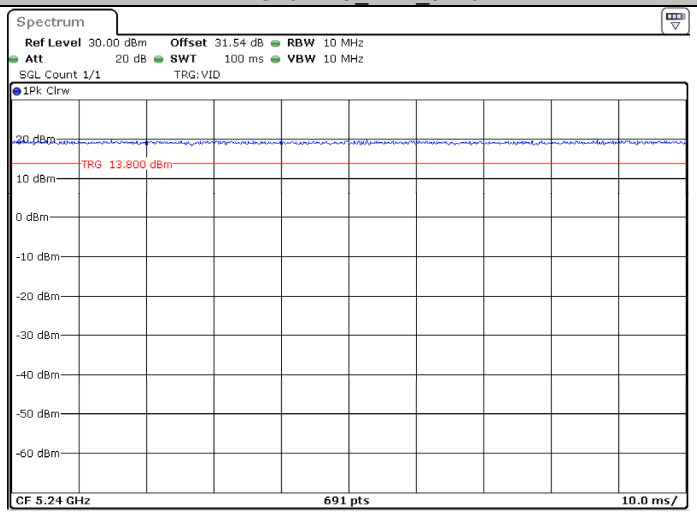
11AC20SISO_Ant1_5180



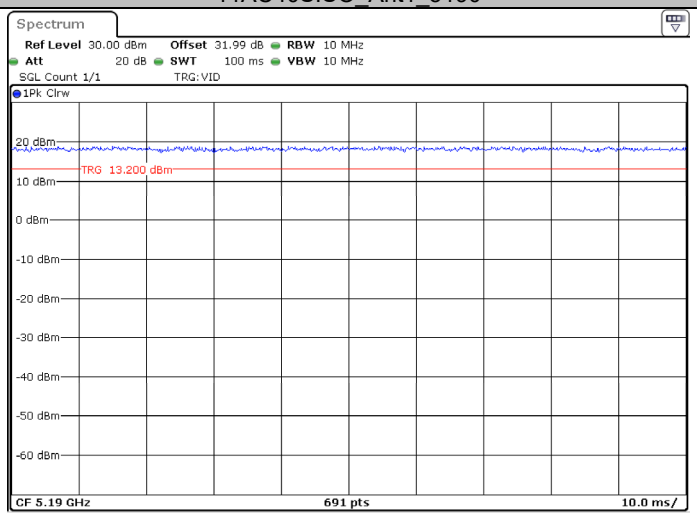
11AC20SISO_Ant1_5200



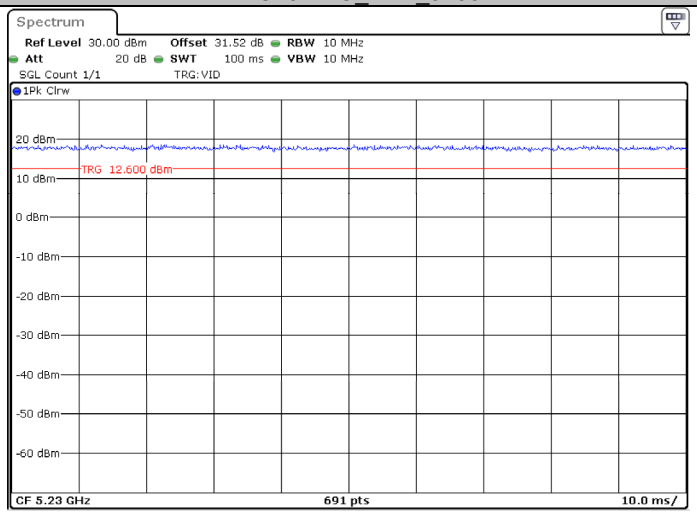
11AC20SISO_Ant1_5240



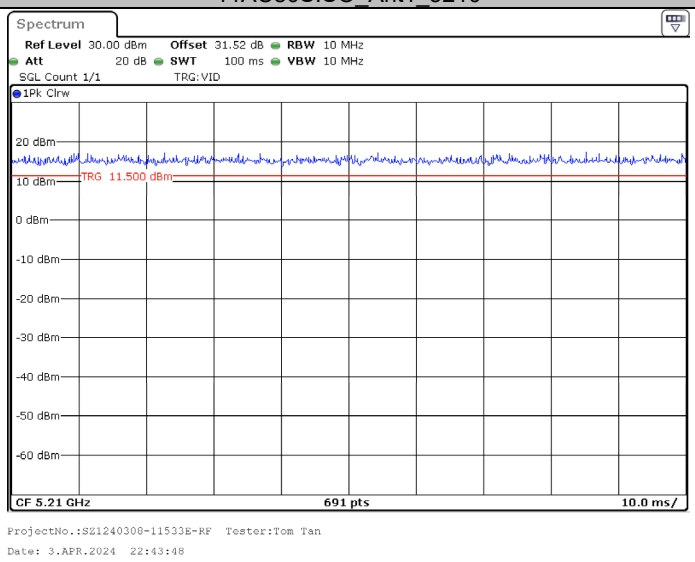
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



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