TEST REPORT

Applicant Name :	VTech Telecommunications Ltd
Address :	23/F Tai Ping Ind Center Block 1 57 Ting Kok Rd Tai Po NT, Hong Kong
Report Number :	SZNS220216-04648E-RF-00
FCC ID:	EW780-H0FE-13

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	SIP hotel phone
Model No.:	NG-S3211W
Multiple Model(s) No.:	N/A
Trade Mark:	vtech
Date Received:	2022/02/16
Report Date:	2022/04/26

Test Result:	Pass*

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

Prepared and Checked By:

Black Ding
EMC Engineer

Approved By:

Robert Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".
Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5G Wi-Fi: 5150-5250MHz; 5250-5350MHz; 5470-5725MHz; 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Ouput Power	5150-5250MHz: 14.79dBm 5250-5350MHz: 14.98dBm 5470-5725MHz: 12.73dBm 5725-5850MHz: 14.22dBm
Modulation Technique	OFDM
Antenna Specification*	2.0dBi (It is provided by the manufacturer)
Voltage Range	DC 5.0V from adapter and DC 48V from PoE
Sample number	SZNS220216-04648E-RF-S1 for Conducted and Radiation Emissions SZNS220216-04648E-RF-S2 for RF conducted (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: VT07EUS05200 Input: AC 100-240V~50/60Hz, 0.5A Output: DC 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 Shenzhen Accurate Technology Co., Ltd. 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		$0.082*10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
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 Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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, 802.11n20/ac20 mode: channel 36, 40, 48 were tested; For 802.11n40/ac40 mode: channel 38, 46 were tested. For 802.11ac80 mode, channel 42 was tested.

For 5250-5350MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
54	5270	62	5310
56	5280	64	5320
58	5290	/	/

For 802.11a, 802.11n20/ac20 mode: channel 52, 56, 64 were tested; For 802.11n40/ac40 mode: channel 54, 62 were tested. For 802.11ac80 mode, channel 58 was tested.

For 5470-5725MHz Band, 18 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	120	5600
102	5510	122	5610
104	5520	124	5620
106	5530	126	5630
108	5540	128	5640
110	5550	132	5660
112	5560	134	5670
116	5580	136	5680
118	5590	140	5700

For 802.11a, 802.11n20/ac20 mode: channel 100, 116, 140 were tested; For 802.11n40/ac40 mode: channel 102, 110, 134 were tested. For 802.11ac80 mode, channel 106, 122 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, 802.11n20/ac20 mode: channel 149, 157, 165 were tested; For 802.11n40/ac40 mode: channel 151, 159 were tested. For 802.11ac80 mode, channel 155 was tested.

EUT Exercise Software

"Tera Term"* exercise software was used. The software and power level was provided by the applicant.

The worst case was performed under:

U-NII Band	Mode	Data Rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150 – 5250MHz	802.11 a	6Mbps	46	46	46
	802.11 n20	MCS0	42	42	42
	802.11 n40	MCS0	40	/	40
	802.11 ac20	MCS0	45	45	45
	802.11 ac40	MCS0	44	/	44
	802.11 ac80	MCS0	/	40	/
5250 – 5350MHz	802.11 a	6Mbps	46	46	46
	802.11 n20	MCS0	40	40	40
	802.11 n40	MCS0	40	/	40
	802.11 ac20	MCS0	41	41	41
	802.11 ac40	MCS0	41	/	41
	802.11 ac80	MCS0	/	41	/
5470 – 5725MHz	802.11 a	6Mbps	37	37	37
	802.11 n20	MCS0	39	39	39
	802.11 n40	MCS0	36	36	36
	802.11 ac20	MCS0	38	38	38
	802.11 ac40	MCS0	36	36	36
	802.11 ac80	MCS0	38	/	38

U-NII Band	Mode	Data Rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5725 – 5850MHz	802.11 a	6Mbps	43	43	43
	802.11 n20	MCS0	36	36	36
	802.11 n40	MCS0	36	/	36
	802.11 ac20	MCS0	38	38	38
	802.11 ac40	MCS0	36	/	36
	802.11 ac80	MCS0	/	38	/

The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the output power and PSD across all data rated bandwidths, and modulations.

Duty cycle

Test Result: Pass. 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
HUAWEI	Router	WS5100	A4933FEF1D01
Unknown	IP PBX	MY PBX	M02YS09010133
YEALINK	PoE	YLPOE30	SU10551

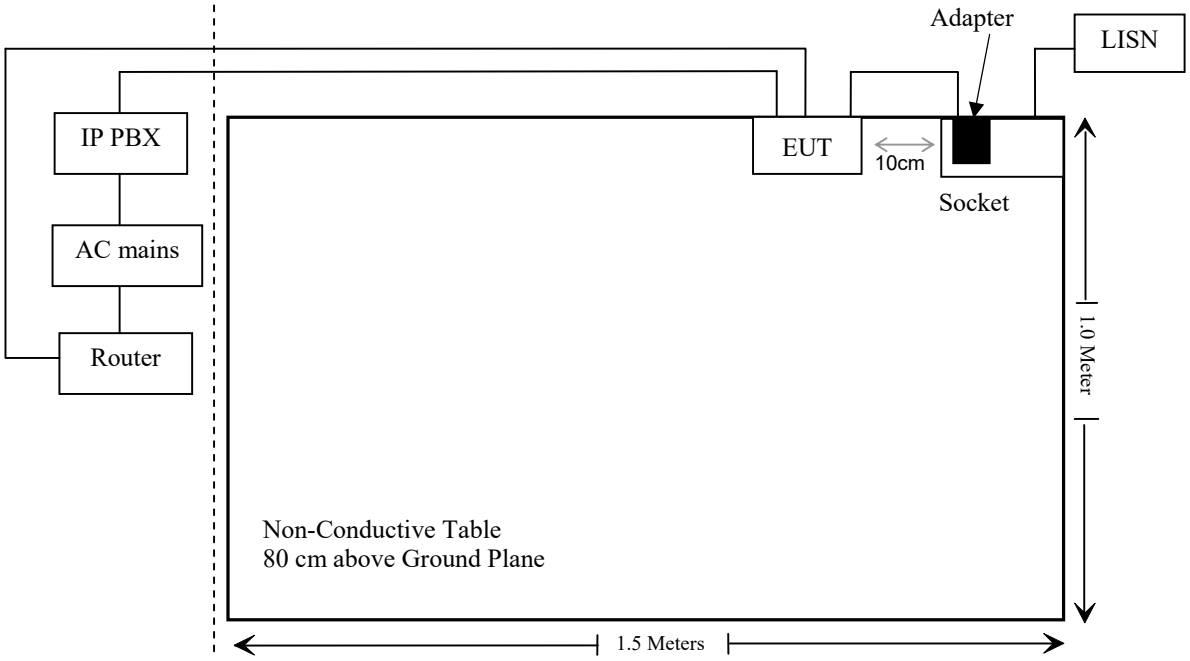
External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielded Un-detachable DC cable	2.0	Adapter	EUT
Un-shielded Detachable AC cable	2.0	PoE	AC mains
Un-shielded Detachable RJ45 Cable	2.0	PoE	EUT
Un-shielded Detachable RJ11 Cable	8.0	IP PBX	EUT
Un-shielded Detachable RJ45 Cable	8.0	EUT	Router
Un-shielded Un-detachable AC Cable	1.5	Router	AC mains
Un-shielded Un-detachable AC Cable	1.5	IP PBX	AC mains

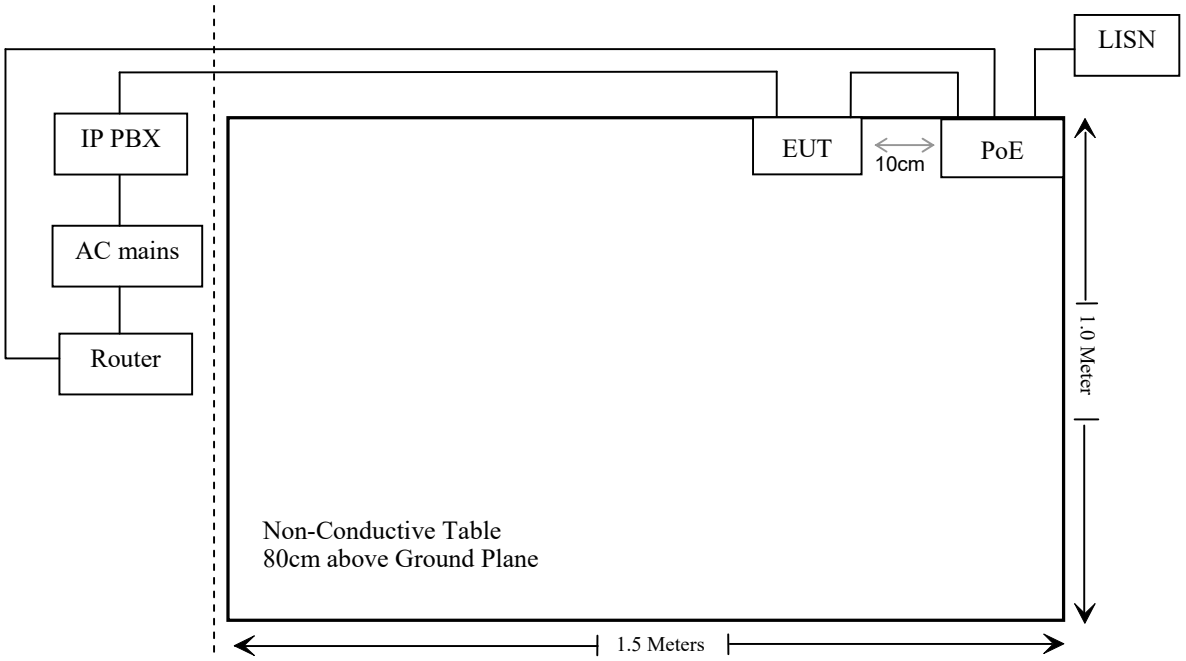
Block Diagram of Test Setup

For conducted emission

Powered by adapter

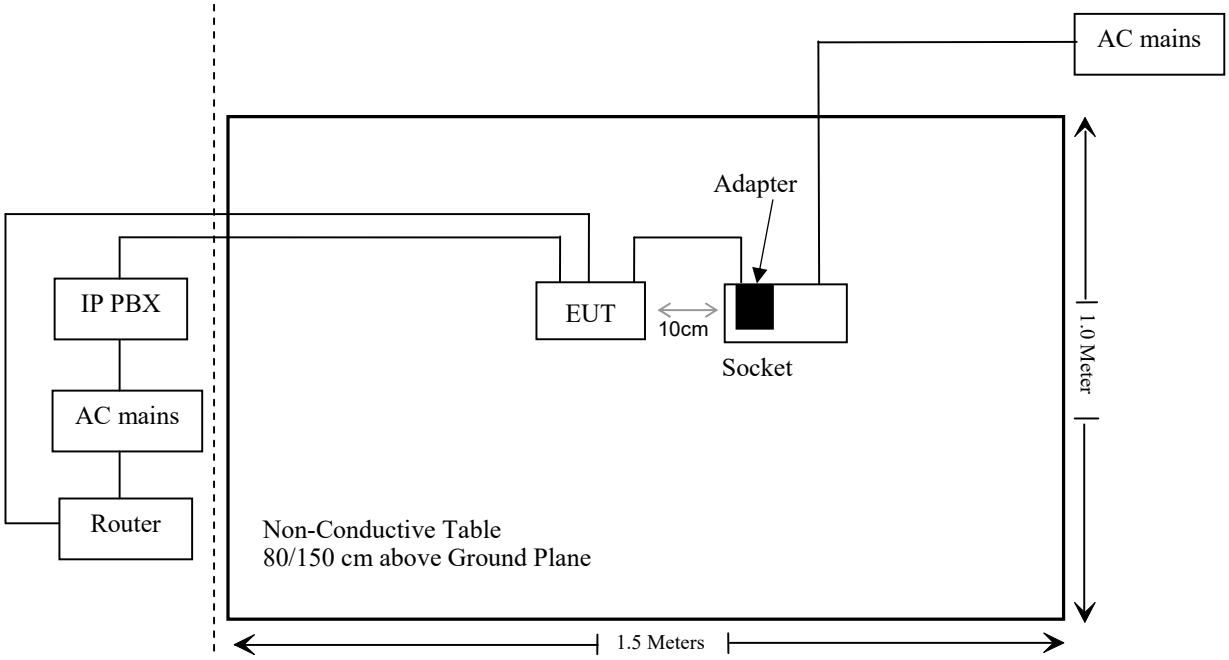


Powered by PoE

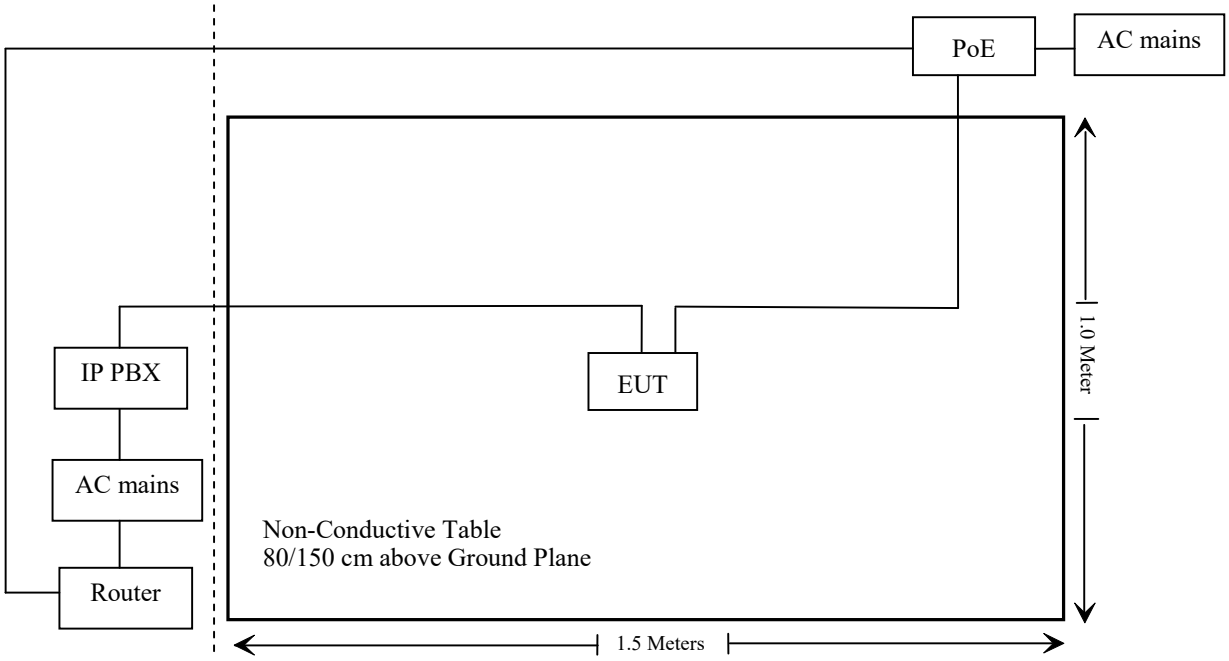


For radiated emission:

Powered by adapter



Powered by PoE



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1091	Maximum Permissible Exposure(MPE)	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)	Compliant*

Not Applicable: the EUT has no TPC function which was declarded by the applicant.
Compliant*: Please refer to the DFS report: SZNS220216-04648E-RFB.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.18	N0850	2021/12/14	2022/12/13
Conducted Emission Test Software: e3 19821b (V9)					
Radiated emission test					
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Radiated Emission Test Software: e3 19821b (V9)					
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.47/5.725G-45	055	2021/12/14	2022/12/13
CD	Band Reject Filter	BRM-5.725/5.875G-45	065	2021/12/14	2022/12/13

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF conducted test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05
WEINSCHEL	10dB Attenuator	5324	AU 3842	2021/12/14	2022/12/13
Unknown	RF Cable	Unknown	Unknown	Each time	

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and 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.

Limits for General Population/Uncontrolled Exposure

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

f = frequency in MHz
* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Mode	Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
5GHz Wi-Fi	5180-5240	2.0	1.58	15.0	31.62	20	0.010	1
	5260-5280	2.0	1.58	15.0	31.62	20	0.010	1
	5500-5700	2.0	1.58	13.0	19.95	20	0.006	1
	5745-5825	2.0	1.58	15.0	31.62	20	0.010	1

Note: the 2.4G Wi-Fi can't transmit with 5G Wi-Fi at the same time.

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

Result: Compliance

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.

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 anantenna arrangement for 5G Wi-Fi which were permanently attached. Please refer to the EUT photos.

Type	Antenna Gain	Impedance
PCB	2.0 dBi	50 Ω

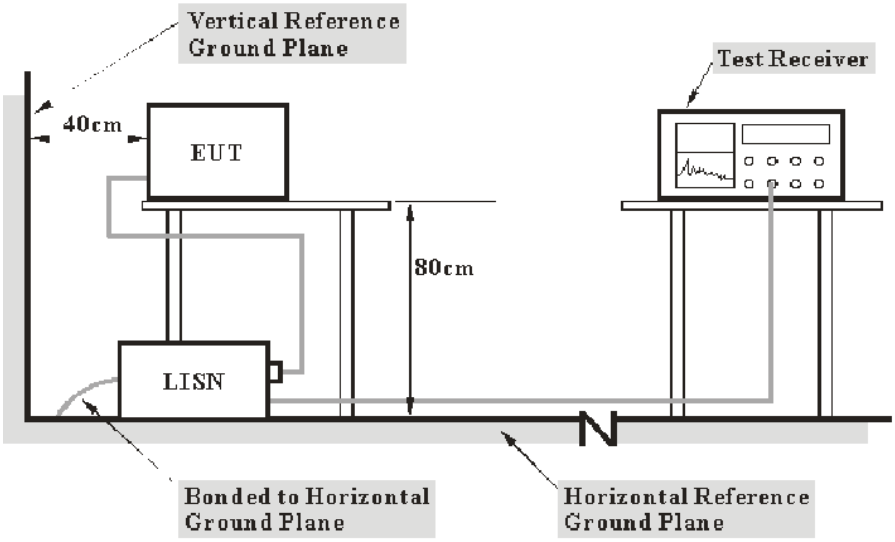
Result: Compliant.

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.

Corrected Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor), 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, a over limit of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Over Limit = level – Limit
Level= reading level+ Transd Factor

Test Data

Environmental Conditions

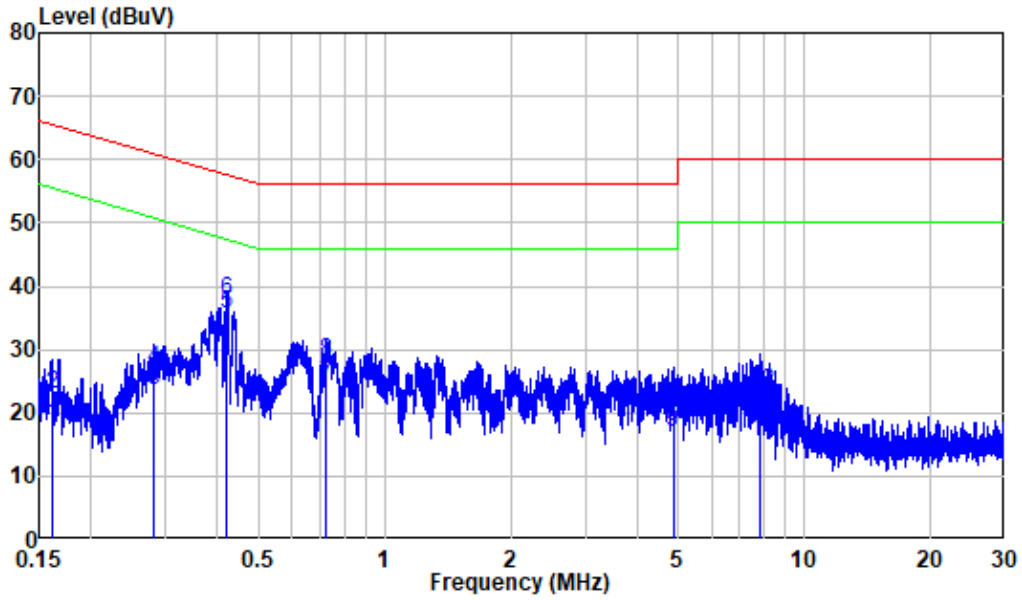
Temperature:	24 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Caro Hu on 2022-03-23.

EUT operation mode: Transmitting (worst case is 802.11a mode, 5280MHz)

Powered by adapter

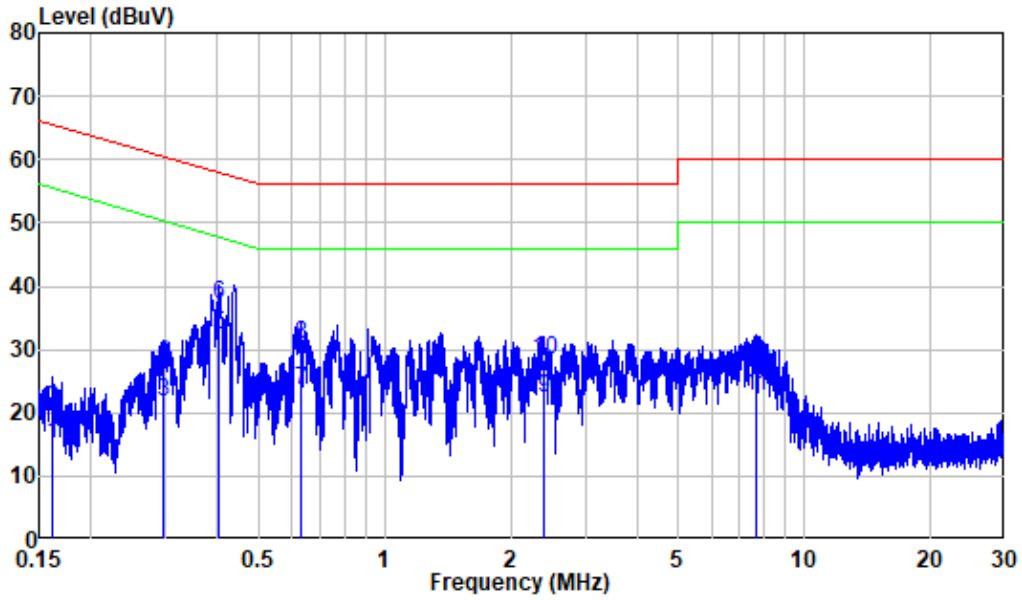
AC 120V/60 Hz, Line:



Site : Shielding Room
Condition: Line
Mode : 5G WIFI Transmitting
Model : NG-S3211W
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.161	9.80	8.23	18.03	55.39	-37.36	Average
2	0.161	9.80	13.22	23.02	65.39	-42.37	QP
3	0.281	9.80	13.80	23.60	50.79	-27.19	Average
4	0.281	9.80	17.10	26.90	60.79	-33.89	QP
5	0.421	9.80	25.76	35.56	47.42	-11.86	Average
6	0.421	9.80	27.83	37.63	57.42	-19.79	QP
7	0.727	9.81	14.78	24.59	46.00	-21.41	Average
8	0.727	9.81	18.22	28.03	56.00	-27.97	QP
9	4.861	9.85	7.05	16.90	46.00	-29.10	Average
10	4.861	9.85	10.00	19.85	56.00	-36.15	QP
11	7.872	9.88	5.95	15.83	50.00	-34.17	Average
12	7.872	9.88	13.34	23.22	60.00	-36.78	QP

AC 120V/60 Hz, Neutral:

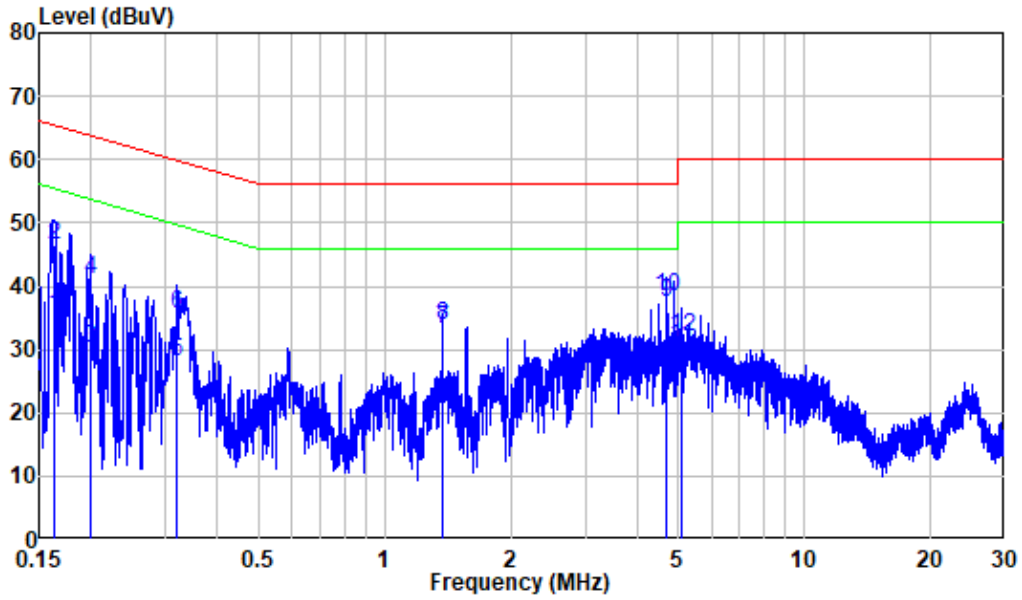


Site : Shielding Room
Condition: Neutral
Mode : 5G WIFI Transmitting
Model : NG-S3211W
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.162	9.80	5.35	15.15	55.37	-40.22	Average
2	0.162	9.80	10.70	20.50	65.37	-44.87	QP
3	0.296	9.80	12.06	21.86	50.35	-28.49	Average
4	0.296	9.80	18.08	27.88	60.35	-32.47	QP
5	0.402	9.80	22.45	32.25	47.81	-15.56	Average
6	0.402	9.80	27.46	37.26	57.81	-20.55	QP
7	0.630	9.81	13.70	23.51	46.00	-22.49	Average
8	0.630	9.81	20.95	30.76	56.00	-25.24	QP
9	2.396	9.82	12.48	22.30	46.00	-23.70	Average
10	2.396	9.82	18.66	28.48	56.00	-27.52	QP
11	7.662	9.98	12.60	22.58	50.00	-27.42	Average
12	7.662	9.98	16.71	26.69	60.00	-33.31	QP

Powered by PoE

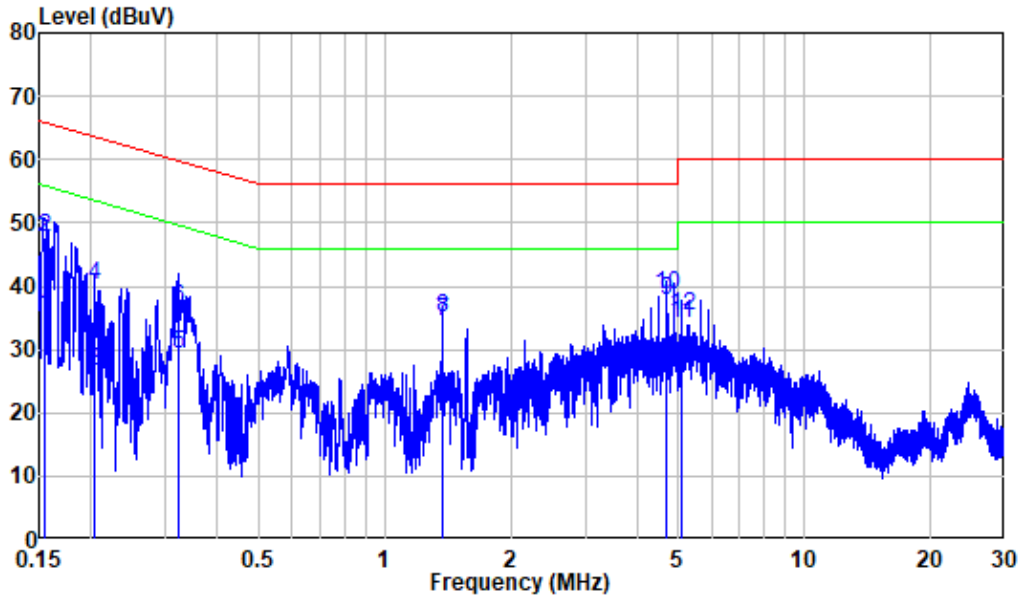
AC 120V/60 Hz, Line:



Site : Shielding Room
Condition: Line
Mode : 5G WIFI Transmitting
Model : NG-S3211W
Power : AC 120V 60Hz
Note : POE

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.163	9.80	25.47	35.27	55.33	-20.06	Average
2	0.163	9.80	36.56	46.36	65.33	-18.97	QP
3	0.200	9.80	20.51	30.31	53.61	-23.30	Average
4	0.200	9.80	31.31	41.11	63.61	-22.50	QP
5	0.320	9.80	18.19	27.99	49.70	-21.71	Average
6	0.320	9.80	25.90	35.70	59.70	-24.00	QP
7	1.373	9.81	23.44	33.25	46.00	-12.75	Average
8	1.373	9.81	24.10	33.91	56.00	-22.09	QP
9	4.699	9.85	27.54	37.39	46.00	-8.61	Average
10	4.699	9.85	28.49	38.34	56.00	-17.66	QP
11	5.098	9.85	20.59	30.44	50.00	-19.56	Average
12	5.098	9.85	22.04	31.89	60.00	-28.11	QP

AC 120V/60 Hz, Neutral:



Site : Shielding Room
Condition: Neutral
Mode : 5G WIFI Transmitting
Model : NG-S3211W
Power : AC 120V 60Hz
Note : POE

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.154	9.80	25.61	35.41	55.76	-20.35	Average
2	0.154	9.80	37.97	47.77	65.76	-17.99	QP
3	0.203	9.80	16.72	26.52	53.49	-26.97	Average
4	0.203	9.80	30.21	40.01	63.49	-23.48	QP
5	0.323	9.80	19.45	29.25	49.64	-20.39	Average
6	0.323	9.80	26.75	36.55	59.64	-23.09	QP
7	1.371	9.81	24.49	34.30	46.00	-11.70	Average
8	1.371	9.81	25.21	35.02	56.00	-20.98	QP
9	4.699	9.88	27.76	37.64	46.00	-8.36	Average
10	4.699	9.88	28.76	38.64	56.00	-17.36	QP
11	5.092	9.89	24.24	34.13	50.00	-15.87	Average
12	5.092	9.89	25.44	35.33	60.00	-24.67	QP

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

Applicable Standard

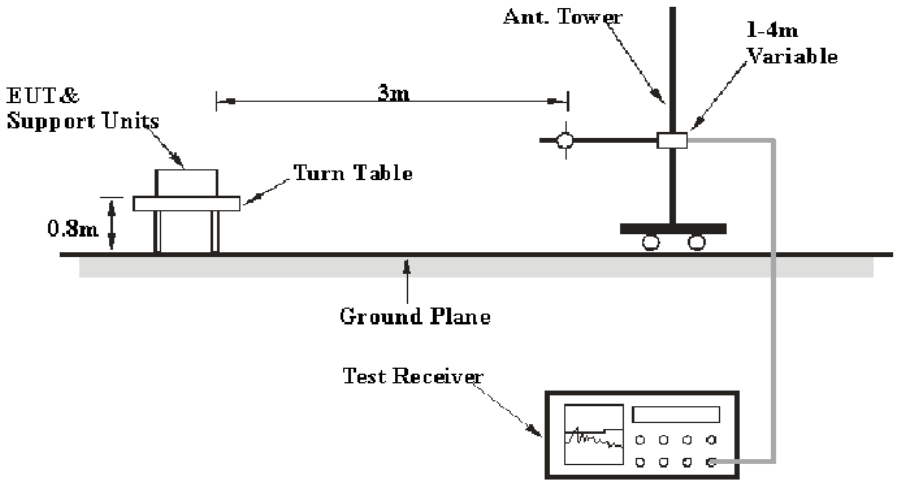
FCC §15.407 (b); §15.209; §15.205;

(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.

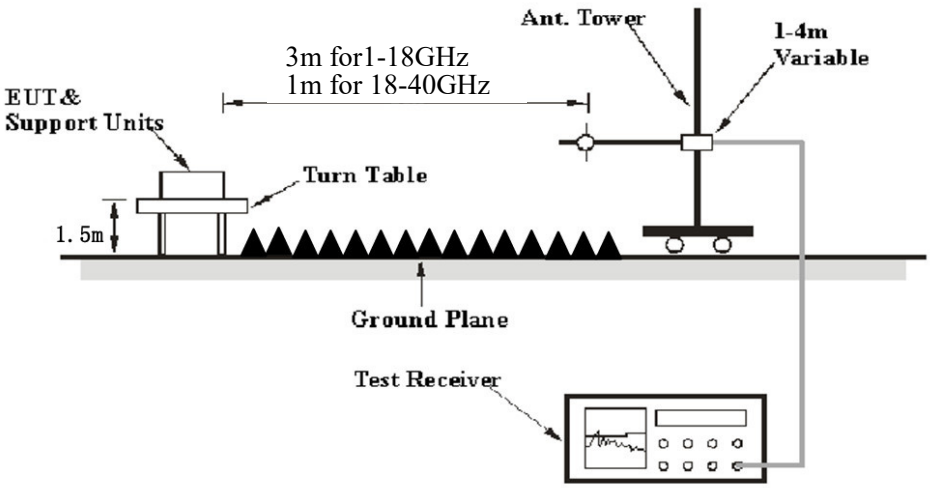
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



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 30 MHz to 40 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz Note 1	/	Average
	1MHz	＞1/T Note 2	/	Average

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

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.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

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.

Corrected Factor & 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/Margin = Level / Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	26~27 ℃
Relative Humidity:	58~65 %
ATM Pressure:	101.0 kPa

The testing was performed by Nick Fang on 2022-04-11 for below 1GHz, on 2022-04-14 and 2022-04-15 for above 1GHz.

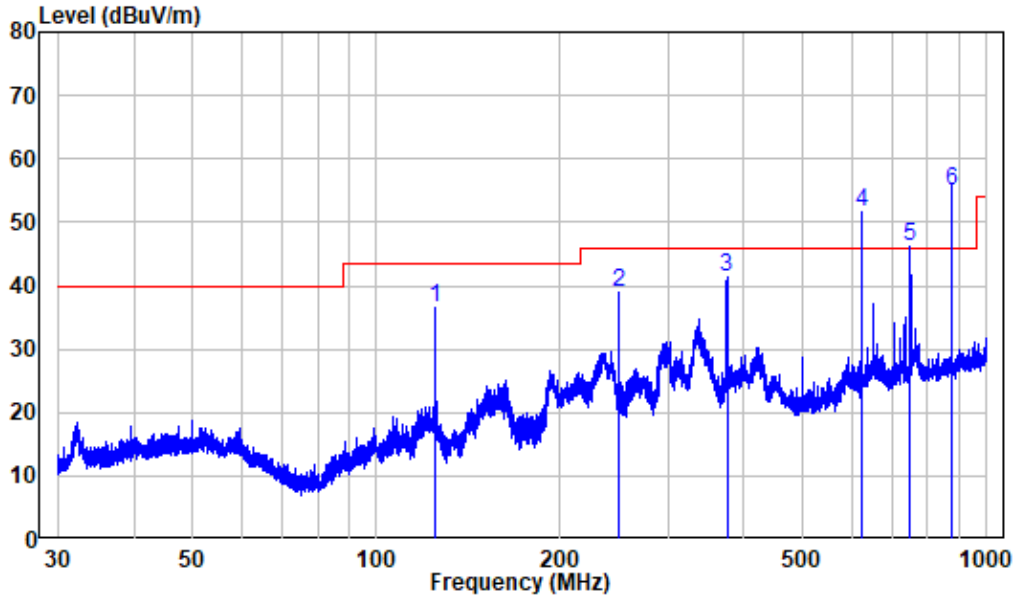
EUT operation mode: Transmitting(Pre-scan in the X,Y and Z axes of orientation, the worst case X-axis of orientation was recorded)

30 MHz – 1 GHz: *(the worst case is 802.11a mode, 5280MHz)*

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

Powered by adapter

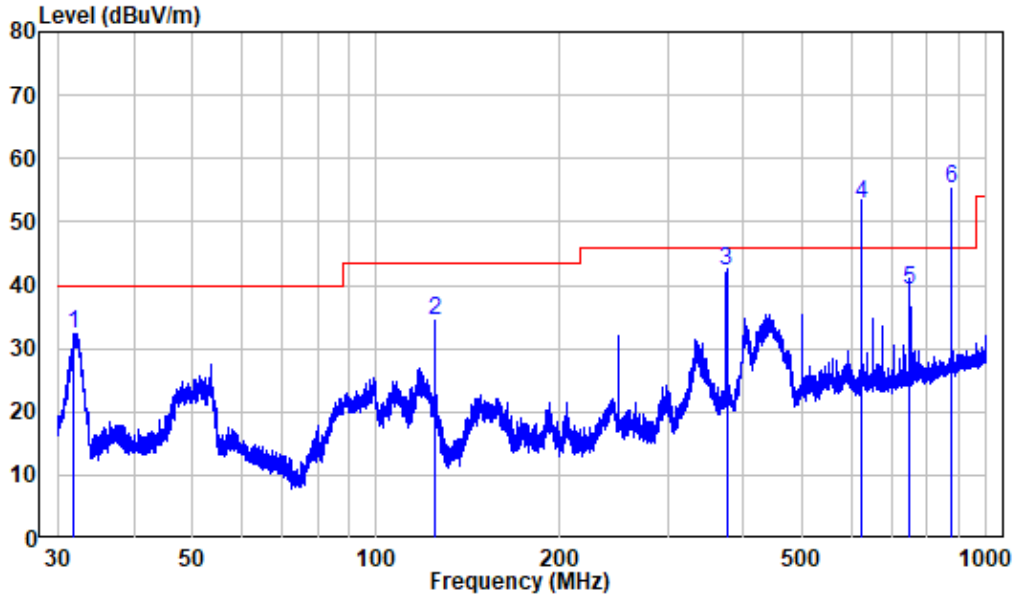
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : SZNS220216-04648E-RF
Test Mode: 5G WIFI

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	125.007	-14.31	50.79	36.48	43.50	-7.02	Peak
2	249.972	-10.74	49.73	38.99	46.00	-7.01	Peak
3	375.116	-7.28	48.76	41.48	46.00	-4.52	QP
4	625.078	-2.35	53.88	51.53	46.00	5.53	QP *
5	750.108	-0.87	46.94	46.07	46.00	0.07	QP *
6	875.247	1.18	53.88	55.06	46.00	9.06	QP *

Vertical

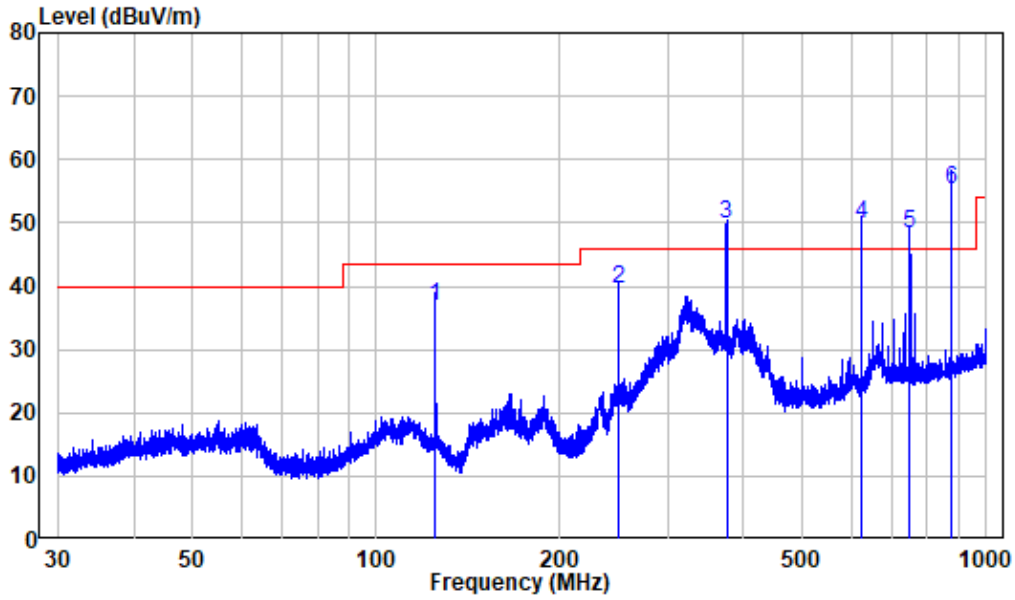


Site : chamber
Condition: 3m VERTICAL
Job No. : SZNS220216-04648E-RF
Test Mode: 5G WIFI

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	31.871	-12.19	44.51	32.32	40.00	-7.68	Peak
2	125.007	-14.31	48.61	34.30	43.50	-9.20	Peak
3	375.116	-7.28	49.51	42.23	46.00	-3.77	QP
4	625.078	-2.35	55.25	52.90	46.00	6.90	QP*
5	750.108	-0.87	40.25	39.38	46.00	-6.62	QP
6	875.050	1.18	53.99	55.17	46.00	9.17	QP*

Powered by PoE

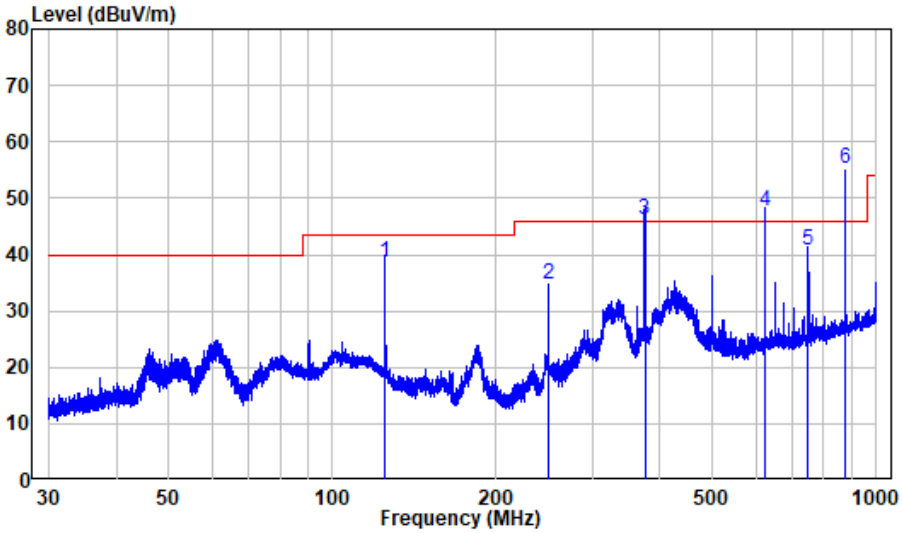
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : SZNS220216-04648E-RF
Test Mode: 5G WIFI (POE)

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	125.007	-14.31	51.25	36.94	43.50	-6.56	QP
2	249.972	-10.74	50.25	39.51	46.00	-6.49	QP
3	375.116	-7.28	56.99	49.71	46.00	3.71	QP *
4	625.078	-2.35	52.25	49.90	46.00	3.90	QP *
5	750.108	-0.87	49.26	48.39	46.00	2.39	QP *
6	875.247	1.18	54.20	55.38	46.00	9.38	QP *

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : SZNS220216-04648E-RF
Test Mode: 5G WIFI (POE)

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	125.007	-14.31	52.85	38.54	43.50	-4.96	QP
2	250.082	-10.75	45.45	34.70	46.00	-11.30	Peak
3	375.116	-7.28	53.59	46.31	46.00	0.31	QP *
4	625.078	-2.35	50.12	47.77	46.00	1.77	QP *
5	750.108	-0.87	41.57	40.70	46.00	-5.30	QP
6	875.247	1.18	54.00	55.18	46.00	9.18	QP *

Note*: The data recorded above represents the worst case for all supported operating modes, there were no spurious emission in the range 30MHz -1GHz over the limit in §15.209 caused by radio, the emission list at above table was investigated and was not caused by the radio, the emission was present when the radio was disabled. Those emissions comply with the FCC Part 15, Subpart B-Unintentional radiators §15.109(b) limit set for Class A digital device as the EUT is declared as a Class A equipment according the user manual.

1 GHz-40 GHz (Worst case: Powered by adaper)

5150-5250 MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
4500	63.71	PK	110	1.1	H	-4.72	58.99	74	-15.01
4500	50.19	AV	110	1.1	H	-4.72	45.47	54	-8.53
4500	64.13	PK	166	1.8	V	-4.72	59.41	74	-14.59
4500	50.33	AV	166	1.8	V	-4.72	45.61	54	-8.39
5150	63.22	PK	136	1.9	H	-2.73	60.49	74	-13.51
5150	50.96	AV	136	1.9	H	-2.73	48.23	54	-5.77
5150	62.78	PK	111	1.4	V	-2.73	60.05	74	-13.95
5150	50.31	AV	111	1.4	V	-2.73	47.58	54	-6.42
10360	51.01	PK	140	2.2	H	8.12	59.13	68.2	-9.07
10360	51.92	PK	3	2.3	V	8.12	60.04	68.2	-8.16
5200 MHz									
10400	48.9	PK	297	1.4	H	8.24	57.14	68.2	-11.06
10400	49.27	PK	47	1.9	V	8.24	57.51	68.2	-10.69
5240 MHz									
5350	63.75	PK	242	1.9	H	-2.33	61.42	74	-12.58
5350	51.07	AV	242	1.9	H	-2.33	48.74	54	-5.26
5350	63.5	PK	335	1.4	V	-2.33	61.17	74	-12.83
5350	51.18	AV	335	1.4	V	-2.33	48.85	54	-5.15
5460	63.63	PK	0	1.9	H	-2.26	61.37	74	-12.63
5460	51.6	AV	0	1.9	H	-2.26	49.34	54	-4.66
5460	63.84	PK	228	1.7	V	-2.26	61.58	74	-12.42
5460	51.53	AV	228	1.7	V	-2.26	49.27	54	-4.73
10480	46.28	PK	218	2.4	H	8.56	54.84	68.2	-13.36
10480	47.87	PK	43	1.9	V	8.56	56.43	68.2	-11.77

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5180 MHz									
4500	64.5	PK	219	1.5	H	-4.72	59.78	74	-14.22
4500	50.48	AV	219	1.5	H	-4.72	45.76	54	-8.24
4500	64.39	PK	195	1.6	V	-4.72	59.67	74	-14.33
4500	50.34	AV	195	1.6	V	-4.72	45.62	54	-8.38
5150	63.21	PK	313	2.2	H	-2.73	60.48	74	-13.52
5150	50.97	AV	313	2.2	H	-2.73	48.24	54	-5.76
5150	62.66	PK	127	1.5	V	-2.73	59.93	74	-14.07
5150	50.31	AV	127	1.5	V	-2.73	47.58	54	-6.42
10360	50.23	PK	42	1.1	H	8.12	58.35	68.2	-9.85
10360	50.1	PK	33	1.5	V	8.12	58.22	68.2	-9.98
5200 MHz									
10400	48.08	PK	39	2.5	H	8.24	56.32	68.2	-11.88
10400	48.25	PK	359	1.1	V	8.24	56.49	68.2	-11.71
5240 MHz									
5350	63.53	PK	168	1.3	H	-2.33	61.2	74	-12.8
5350	51.19	AV	168	1.3	H	-2.33	48.86	54	-5.14
5350	63.46	PK	308	2.3	V	-2.33	61.13	74	-12.87
5350	51.30	AV	308	2.3	V	-2.33	48.97	54	-5.03
5460	63.95	PK	131	1.9	H	-2.26	61.69	74	-12.31
5460	51.46	AV	131	1.9	H	-2.26	49.20	54	-4.80
5460	63.95	PK	11	1.9	V	-2.26	61.69	74	-12.31
5460	51.21	AV	11	1.9	V	-2.26	48.95	54	-5.05
10480	46.48	PK	315	2.4	H	8.56	55.04	68.2	-13.16
10480	46.30	PK	90	1.8	V	8.56	54.86	68.2	-13.34

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
4500	63.00	PK	34	1.3	H	-4.72	58.28	74	-15.72
4500	51.23	AV	34	1.3	H	-4.72	46.51	54	-7.49
4500	62.75	PK	14	1.5	V	-4.72	58.03	74	-15.97
4500	51.09	AV	14	1.5	V	-4.72	46.37	54	-7.63
5150	63.48	PK	17	2.3	H	-2.73	60.75	74	-13.25
5150	52.95	AV	17	2.3	H	-2.73	50.22	54	-3.78
5150	62.65	PK	233	1.6	V	-2.73	59.92	74	-14.08
5150	50.82	AV	233	1.6	V	-2.73	48.09	54	-5.91
10380	47.94	PK	355	2.5	H	8.18	56.12	68.2	-12.08
10380	47.81	PK	322	1.1	V	8.18	55.99	68.2	-12.21
5230 MHz									
5350	64.9	PK	133	2.3	H	-2.33	62.57	74	-11.43
5350	51.71	AV	133	2.3	H	-2.33	49.38	54	-4.62
5350	64.73	PK	248	2.1	V	-2.33	62.4	74	-11.6
5350	51.76	AV	248	2.1	V	-2.33	49.43	54	-4.57
5460	63.73	PK	275	2	H	-2.26	61.47	74	-12.53
5460	51.52	AV	275	2	H	-2.26	49.26	54	-4.74
5460	63.72	PK	14	2	V	-2.26	61.46	74	-12.54
5460	51.18	AV	14	2	V	-2.26	48.92	54	-5.08
10460	46.24	PK	2	2.3	H	8.47	54.71	68.2	-13.49
10460	46.33	PK	153	2	V	8.47	54.8	68.2	-13.4

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	63.09	PK	271	2.4	H	-4.72	58.37	74	-15.63
4500	50.42	AV	271	2.4	H	-4.72	45.7	54	-8.3
4500	63.23	PK	103	2.3	V	-4.72	58.51	74	-15.49
4500	50.13	AV	103	2.3	V	-4.72	45.41	54	-8.59
5150	63.57	PK	176	1	H	-2.73	60.84	74	-13.16
5150	51.6	AV	176	1	H	-2.73	48.87	54	-5.13
5150	62.68	PK	165	1.1	V	-2.73	59.95	74	-14.05
5150	50.2	AV	165	1.1	V	-2.73	47.47	54	-6.53
10360	49.94	PK	276	1.8	H	8.12	58.06	68.2	-10.14
10360	50.23	PK	298	2.4	V	8.12	58.35	68.2	-9.85
5200 MHz									
10400	48.19	PK	16	2	H	8.24	56.43	68.2	-11.77
10400	48.15	PK	264	2.3	V	8.24	56.39	68.2	-11.81
5240 MHz									
5350	63.69	PK	150	1.2	H	-2.33	61.36	74	-12.64
5350	51.57	AV	150	1.2	H	-2.33	49.24	54	-4.76
5350	63.72	PK	69	1.1	V	-2.33	61.39	74	-12.61
5350	51.47	AV	69	1.1	V	-2.33	49.14	54	-4.86
5460	63.78	PK	175	1.4	H	-2.26	61.52	74	-12.48
5460	51.24	AV	175	1.4	H	-2.26	48.98	54	-5.02
5460	63.85	PK	275	2.5	V	-2.26	61.59	74	-12.41
5460	51.3	AV	275	2.5	V	-2.26	49.04	54	-4.96
10480	46.28	PK	347	1.4	H	8.56	54.84	68.2	-13.36
10480	46.64	PK	54	1.9	V	8.56	55.20	68.2	-13.00

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5190 MHz									
4500	63.37	PK	301	2.3	H	-4.72	58.65	74	-15.35
4500	51.45	AV	301	2.3	H	-4.72	46.73	54	-7.27
4500	63.14	PK	22	1.3	V	-4.72	58.42	74	-15.58
4500	51.44	AV	22	1.3	V	-4.72	46.72	54	-7.28
5150	66.47	PK	242	1	H	-2.73	63.74	74	-10.26
5150	52.73	AV	242	1	H	-2.73	50.00	54	-4.00
5150	62.64	PK	96	1.8	V	-2.73	59.91	74	-14.09
5150	51.32	AV	96	1.8	V	-2.73	48.59	54	-5.41
10380	47.87	PK	320	2.5	H	8.18	56.05	68.2	-12.15
10380	47.93	PK	73	2.2	V	8.18	56.11	68.2	-12.09
5230 MHz									
5350	64.67	PK	333	1.1	H	-2.33	62.34	74	-11.66
5350	51.47	AV	333	1.1	H	-2.33	49.14	54	-4.86
5350	64.52	PK	264	1.3	V	-2.33	62.19	74	-11.81
5350	51.59	AV	264	1.3	V	-2.33	49.26	54	-4.74
5460	63.85	PK	88	1.9	H	-2.26	61.59	74	-12.41
5460	51.41	AV	88	1.9	H	-2.26	49.15	54	-4.85
5460	63.83	PK	207	2.3	V	-2.26	61.57	74	-12.43
5460	51.37	AV	207	2.3	V	-2.26	49.11	54	-4.89
10460	46.72	PK	191	2.5	H	8.47	55.19	68.2	-13.01
10460	46.83	PK	342	1.4	V	8.47	55.30	68.2	-12.90

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5210 MHz									
4500	63.2	PK	107	2.2	H	-4.72	58.48	74	-15.52
4500	51.1	AV	107	2.2	H	-4.72	46.38	54	-7.62
4500	63.02	PK	234	2.3	V	-4.72	58.3	74	-15.7
4500	51.36	AV	234	2.3	V	-4.72	46.64	54	-7.36
5150	63.64	PK	338	2	H	-2.73	60.91	74	-13.09
5150	52.36	AV	338	2	H	-2.73	49.63	54	-4.37
5150	62.98	PK	248	2.4	V	-2.73	60.25	74	-13.75
5150	51.36	AV	248	2.4	V	-2.73	48.63	54	-5.37
5350	64.47	PK	88	1.3	H	-2.33	62.14	74	-11.86
5350	51.63	AV	88	1.3	H	-2.33	49.30	54	-4.70
5350	64.75	PK	327	1.4	V	-2.33	62.42	74	-11.58
5350	51.69	AV	327	1.4	V	-2.33	49.36	54	-4.64
5460	64.03	PK	206	1.6	H	-2.26	61.77	74	-12.23
5460	51.57	AV	206	1.6	H	-2.26	49.31	54	-4.69
5460	63.74	PK	342	1.6	V	-2.26	61.48	74	-12.52
5460	51.55	AV	342	1.6	V	-2.26	49.29	54	-4.71
10420	46.03	PK	92	1.9	H	8.32	54.35	68.2	-13.85
10420	45.86	PK	95	1	V	8.32	54.18	68.2	-14.02

5250-5350 MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5260MHz									
4500	64.34	PK	245	2.5	H	-4.72	59.62	74	-14.38
4500	50.12	AV	245	2.5	H	-4.72	45.4	54	-8.6
4500	64.03	PK	159	2.1	V	-4.72	59.31	74	-14.69
4500	50.29	AV	159	2.1	V	-4.72	45.57	54	-8.43
5150	63.41	PK	205	2.1	H	-2.73	60.68	74	-13.32
5150	50.6	AV	205	2.1	H	-2.73	47.87	54	-6.13
5150	62.92	PK	114	1.6	V	-2.73	60.19	74	-13.81
5150	50.08	AV	114	1.6	V	-2.73	47.35	54	-6.65
10520	45.69	PK	38	1.8	H	8.65	54.34	68.2	-13.86
10520	49.37	PK	251	1.4	V	8.65	58.02	68.2	-10.18
5280 MHz									
10560	50.12	PK	271	2.5	H	8.69	58.81	68.2	-9.39
10560	53.87	PK	125	1	V	8.69	62.56	68.2	-5.64
5320 MHz									
5350	66.9	PK	219	1.3	H	-2.33	64.57	74	-9.43
5350	51.4	AV	219	1.3	H	-2.33	49.07	54	-4.93
5350	63.74	PK	98	2.5	V	-2.33	61.41	74	-12.59
5350	51.19	AV	98	2.5	V	-2.33	48.86	54	-5.14
5460	64.06	PK	344	2	H	-2.26	61.8	74	-12.2
5460	50.82	AV	344	2	H	-2.26	48.56	54	-5.44
5460	63.68	PK	60	1.5	V	-2.26	61.42	74	-12.58
5460	51.05	AV	60	1.5	V	-2.26	48.79	54	-5.21
10640	47.93	PK	30	1.3	H	8.92	56.85	74	-17.15
10640	34.33	AV	30	1.3	H	8.92	43.25	54	-10.75
10640	52.54	PK	324	2.5	V	8.92	61.46	74	-12.54
10640	35.47	AV	324	2.5	V	8.92	44.39	54	-9.61

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5260MHz									
4500	64.38	PK	274	2.2	H	-4.72	59.66	74	-14.34
4500	50.24	AV	274	2.2	H	-4.72	45.52	54	-8.48
4500	64.07	PK	21	1.3	V	-4.72	59.35	74	-14.65
4500	50.34	AV	21	1.3	V	-4.72	45.62	54	-8.38
5150	63.33	PK	73	2.4	H	-2.73	60.6	74	-13.4
5150	50.41	AV	73	2.4	H	-2.73	47.68	54	-6.32
5150	63.09	PK	293	1.9	V	-2.73	60.36	74	-13.64
5150	50.01	AV	293	1.9	V	-2.73	47.28	54	-6.72
10520	47.52	PK	321	1.5	H	8.65	56.17	68.2	-12.03
10520	50.61	PK	275	2	V	8.65	59.26	68.2	-8.94
5280 MHz									
10560	47.99	PK	125	1.8	H	8.69	56.68	68.2	-11.52
10560	51.22	PK	245	2.4	V	8.69	59.91	68.2	-8.29
5320 MHz									
5350	64.37	PK	182	1.1	H	-2.33	62.04	74	-11.96
5350	50.95	AV	182	1.1	H	-2.33	48.62	54	-5.38
5350	63.69	PK	151	1.5	V	-2.33	61.36	74	-12.64
5350	51.18	AV	151	1.5	V	-2.33	48.85	54	-5.15
5460	63.71	PK	160	1.7	H	-2.26	61.45	74	-12.55
5460	51.04	AV	160	1.7	H	-2.26	48.78	54	-5.22
5460	63.67	PK	263	1.7	V	-2.26	61.41	74	-12.59
5460	50.83	AV	263	1.7	V	-2.26	48.57	54	-5.43
10640	46.93	PK	151	1.9	H	8.92	55.85	74	-18.15
10640	34.44	AV	151	1.9	H	8.92	43.36	54	-10.64
10640	50.05	PK	164	1.7	V	8.92	58.97	74	-15.03
10640	36.39	AV	164	1.7	V	8.92	45.31	54	-8.69

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5270MHz									
4500	64.26	PK	115	2	H	-4.72	59.54	74	-14.46
4500	50.23	AV	115	2	H	-4.72	45.51	54	-8.49
4500	63.72	PK	51	2.4	V	-4.72	59.00	74	-15.00
4500	50.28	AV	51	2.4	V	-4.72	45.56	54	-8.44
5150	63.43	PK	47	2.5	H	-2.73	60.70	74	-13.30
5150	50.63	AV	47	2.5	H	-2.73	47.90	54	-6.10
5150	63.07	PK	23	1.3	V	-2.73	60.34	74	-13.66
5150	50.7	AV	23	1.3	V	-2.73	47.97	54	-6.03
10540	43.29	PK	191	1.9	H	8.65	51.94	68.2	-16.26
10540	43.34	PK	191	1.2	V	8.65	51.99	68.2	-16.21
5310 MHz									
5350	65.19	PK	212	1.6	H	-2.33	62.86	74	-11.14
5350	51.91	AV	212	1.6	H	-2.33	49.58	54	-4.42
5350	63.82	PK	206	1.3	V	-2.33	61.49	74	-12.51
5350	51.02	AV	206	1.3	V	-2.33	48.69	54	-5.31
5460	64.00	PK	297	1.4	H	-2.26	61.74	74	-12.26
5460	50.67	AV	297	1.4	H	-2.26	48.41	54	-5.59
5460	63.9	PK	210	1.3	V	-2.26	61.64	74	-12.36
5460	50.82	AV	210	1.3	V	-2.26	48.56	54	-5.44
10620	43.37	PK	30	1.4	H	8.89	52.26	74	-21.74
10620	43.51	PK	172	1.3	V	8.89	52.4	74	-21.6

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5260MHz									
4500	64.04	PK	44	2.3	H	-4.72	59.32	74	-14.68
4500	50.31	AV	44	2.3	H	-4.72	45.59	54	-8.41
4500	64.3	PK	68	2.1	V	-4.72	59.58	74	-14.42
4500	50.44	AV	68	2.1	V	-4.72	45.72	54	-8.28
5150	63.61	PK	248	1.1	H	-2.73	60.88	74	-13.12
5150	50.13	AV	248	1.1	H	-2.73	47.4	54	-6.6
5150	63.22	PK	257	2	V	-2.73	60.49	74	-13.51
5150	49.72	AV	257	2	V	-2.73	46.99	54	-7.01
10520	44.79	PK	314	2.4	H	8.65	53.44	68.2	-14.76
10520	45.65	PK	47	1.9	V	8.65	54.3	68.2	-13.9
5280 MHz									
10560	45.62	PK	280	1.3	H	8.69	54.31	68.2	-13.89
10560	45.31	PK	35	1.5	V	8.69	54.00	68.2	-14.20
5320 MHz									
5350	66.84	PK	144	1.7	H	-2.33	64.51	74	-9.49
5350	51.13	AV	144	1.7	H	-2.33	48.80	54	-5.20
5350	64.33	PK	168	1.8	V	-2.33	62.00	74	-12.00
5350	50.55	AV	168	1.8	V	-2.33	48.22	54	-5.78
5460	64.05	PK	189	1.2	H	-2.26	61.79	74	-12.21
5460	51.12	AV	189	1.2	H	-2.26	48.86	54	-5.14
5460	63.79	PK	50	1.1	V	-2.26	61.53	74	-12.47
5460	50.75	AV	50	1.1	V	-2.26	48.49	54	-5.51
10640	42.33	PK	231	1.4	H	8.92	51.25	74	-22.75
10640	49.51	PK	233	1.9	V	8.9	58.41	74	-15.59
10640	37.55	AV	233	1.9	V	8.9	46.45	54	-7.55

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5270MHz									
4500	63.77	PK	192	1.7	H	-4.72	59.05	74	-14.95
4500	50.45	AV	192	1.7	H	-4.72	45.73	54	-8.27
4500	63.7	PK	317	2.1	V	-4.72	58.98	74	-15.02
4500	50.47	AV	317	2.1	V	-4.72	45.75	54	-8.25
5150	63.43	PK	177	1.2	H	-2.73	60.7	74	-13.3
5150	50.75	AV	177	1.2	H	-2.73	48.02	54	-5.98
5150	63.06	PK	32	1	V	-2.73	60.33	74	-13.67
5150	50.69	AV	32	1	V	-2.73	47.96	54	-6.04
10540	43.11	PK	353	2.4	H	8.65	51.76	68.2	-16.44
10540	43.25	PK	181	1.8	V	8.65	51.9	68.2	-16.3
5310 MHz									
5350	65.21	PK	314	1.5	H	-2.33	62.88	74	-11.12
5350	51.7	AV	314	1.5	H	-2.33	49.37	54	-4.63
5350	63.59	PK	308	2.1	V	-2.33	61.26	74	-12.74
5350	51.29	AV	308	2.1	V	-2.33	48.96	54	-5.04
5460	64.09	PK	95	1.2	H	-2.26	61.83	74	-12.17
5460	51.01	AV	95	1.2	H	-2.26	48.75	54	-5.25
5460	63.76	PK	98	1.6	V	-2.26	61.5	74	-12.5
5460	50.95	AV	98	1.6	V	-2.26	48.69	54	-5.31
10620	43.6	PK	117	1.8	H	8.89	52.49	74	-21.51
10620	43.61	PK	47	1.6	V	8.89	52.5	74	-21.5

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5290MHz									
4500	64.07	PK	289	1.2	H	-4.72	59.35	74	-14.65
4500	50.78	AV	289	1.2	H	-4.72	46.06	54	-7.94
4500	64.07	PK	246	2.2	V	-4.72	59.35	74	-14.65
4500	50.7	AV	246	2.2	V	-4.72	45.98	54	-8.02
5150	64.14	PK	167	1.9	H	-2.73	61.41	74	-12.59
5150	50.71	AV	167	1.9	H	-2.73	47.98	54	-6.02
5150	63.63	PK	53	2	V	-2.73	60.9	74	-13.1
5150	50.82	AV	53	2	V	-2.73	48.09	54	-5.91
5350	66.62	PK	332	2.3	H	-2.33	64.29	74	-9.71
5350	53.25	AV	332	2.3	H	-2.33	50.92	54	-3.08
5350	63.95	PK	63	1.5	V	-2.33	61.62	74	-12.38
5350	51.5	AV	63	1.5	V	-2.33	49.17	54	-4.83
5460	63.98	PK	158	1.7	H	-2.26	61.72	74	-12.28
5460	51.11	AV	158	1.7	H	-2.26	48.85	54	-5.15
5460	63.86	PK	240	1.4	V	-2.26	61.6	74	-12.4
5460	50.73	AV	240	1.4	V	-2.26	48.47	54	-5.53
10580	42.79	PK	68	1.3	H	8.77	51.56	68.2	-16.64
10580	42.78	PK	123	1.6	V	8.77	51.55	68.2	-16.65

5470-5725MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5500MHz									
5460	62.77	PK	236	2.2	H	-2.26	60.51	74	-13.49
5460	50.88	AV	236	2.2	H	-2.26	48.62	54	-5.38
5460	62.65	PK	307	1.7	V	-2.26	60.39	74	-13.61
5460	50.79	AV	307	1.7	V	-2.26	48.53	54	-5.47
5470	64.96	PK	217	1.6	H	-2.22	62.74	68.2	-5.46
5470	64.57	PK	289	2.5	V	-2.22	62.35	68.2	-5.85
11000	40.01	PK	116	2.1	H	9.67	49.68	74	-24.32
11000	40.63	PK	236	1.4	V	9.67	50.3	74	-23.7
5580MHz									
11160	43.56	PK	202	2.3	H	8.68	52.24	74	-21.76
11160	47.38	PK	52	1.3	V	8.68	56.06	74	-17.94
11160	29.35	AV	52	1.3	V	8.68	38.03	54	-15.97
5700MHz									
5725	66.84	PK	297	1.2	H	-1.96	64.88	68.2	-3.32
5725	65.96	PK	52	1.2	V	-1.96	64.00	68.2	-4.20
5745	64.44	PK	263	2.2	H	-1.91	62.53	68.2	-5.67
5745	63.88	PK	211	2.4	V	-1.91	61.97	68.2	-6.23
11400	47.29	PK	177	1.5	H	7.26	54.55	74	-19.45
11400	33.65	AV	177	1.5	H	7.26	40.91	54	-13.09
11400	53.12	PK	181	1.8	V	7.26	60.38	74	-13.62
11400	37.51	AV	181	1.8	V	7.26	44.77	54	-9.23

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5500MHz									
5460	63	PK	46	2.1	H	-2.26	60.74	74	-13.26
5460	51.05	AV	46	2.1	H	-2.26	48.79	54	-5.21
5460	62.88	PK	119	2.3	V	-2.26	60.62	74	-13.38
5460	50.99	AV	119	2.3	V	-2.26	48.73	54	-5.27
5470	65.13	PK	163	2.4	H	-2.22	62.91	68.2	-5.29
5470	64.72	PK	219	1.1	V	-2.22	62.5	68.2	-5.7
11000	40.45	PK	29	1.8	H	9.67	50.12	74	-23.88
11000	40.83	PK	211	2.4	V	9.67	50.5	74	-23.5
5580MHz									
11160	41.37	PK	83	1.2	H	8.68	50.05	74	-23.95
11160	41.82	PK	18	1.4	V	8.68	50.5	74	-23.5
5700MHz									
5725	68.13	PK	319	1.9	H	-1.96	66.17	68.2	-2.03
5725	66.2	PK	40	2.1	V	-1.96	64.24	68.2	-3.96
5745	64.64	PK	219	1.2	H	-1.91	62.73	68.2	-5.47
5745	64.47	PK	147	2.1	V	-1.91	62.56	68.2	-5.64
11400	48.45	PK	261	1.6	H	7.26	55.71	74	-18.29
11400	33.86	AV	261	1.6	H	7.26	41.12	54	-12.88
11400	54.44	PK	307	1.8	V	7.26	61.7	74	-12.3
11400	37.91	AV	307	1.8	V	7.26	45.17	54	-8.83

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5510MHz									
5460	64.58	PK	248	1.2	H	-2.26	62.32	74	-11.68
5460	51.22	AV	248	1.2	H	-2.26	48.96	54	-5.04
5460	64.39	PK	283	1.1	V	-2.26	62.13	74	-11.87
5460	51.11	AV	283	1.1	V	-2.26	48.85	54	-5.15
5470	66.3	PK	81	2.3	H	-2.22	64.08	68.2	-4.12
5470	65.96	PK	123	1.2	V	-2.22	63.74	68.2	-4.46
11020	40.04	PK	304	1.6	H	9.57	49.61	74	-24.39
11020	40.43	PK	43	2	V	9.57	50.00	74	-24.00
5550MHz									
11100	39.66	PK	144	1.1	H	9.12	48.78	74	-25.22
11100	40.46	PK	3	1.7	V	9.12	49.58	74	-24.42
5670MHz									
5725	66.07	PK	251	1.1	H	-1.96	64.11	68.2	-4.09
5725	65.63	PK	145	2	V	-1.96	63.67	68.2	-4.53
5745	63.76	PK	359	2.2	H	-1.91	61.85	68.2	-6.35
5745	63.63	PK	114	1.8	V	-1.91	61.72	68.2	-6.48
11340	43.78	PK	152	1.7	H	7.67	51.45	74	-22.55
11340	46.62	PK	246	1.8	V	7.67	54.29	74	-19.71
11340	32.75	AV	246	1.8	V	7.67	40.42	54	-13.58

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5500MHz									
5460	64.57	PK	79	1.3	H	-2.26	62.31	74	-11.69
5460	50.92	AV	79	1.3	H	-2.26	48.66	54	-5.34
5460	64.25	PK	193	2.4	V	-2.26	61.99	74	-12.01
5460	50.76	AV	193	2.4	V	-2.26	48.5	54	-5.5
5470	65.34	PK	212	1.5	H	-2.22	63.12	68.2	-5.08
5470	64.87	PK	157	1.4	V	-2.22	62.65	68.2	-5.55
11000	40.21	PK	334	2.2	H	9.67	49.88	74	-24.12
11000	40.88	PK	85	2.5	V	9.67	50.55	74	-23.45
5580MHz									
11160	41.45	PK	211	2.3	H	8.68	50.13	74	-23.87
11160	42.08	PK	320	1.3	V	8.68	50.76	74	-23.24
5700 MHz									
5725	68.08	PK	212	1.5	H	-1.96	66.12	68.2	-2.08
5725	66.83	PK	100	2	V	-1.96	64.87	68.2	-3.33
5745	64.35	PK	292	1.8	H	-1.91	62.44	68.2	-5.76
5745	63.86	PK	128	1.8	V	-1.91	61.95	68.2	-6.25
11400	48.81	PK	297	1.3	H	7.26	56.07	74	-17.93
11400	34.09	AV	297	1.3	H	7.26	41.35	54	-12.65
11400	54.53	PK	282	1.8	V	7.26	61.79	74	-12.21
11400	39.00	AV	282	1.8	V	7.26	46.26	54	-7.74

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5510MHz									
5460	64.81	PK	315	2.4	H	-2.26	62.55	74	-11.45
5460	51.25	AV	315	2.4	H	-2.26	48.99	54	-5.01
5460	64.4	PK	62	1.6	V	-2.26	62.14	74	-11.86
5460	51.07	AV	62	1.6	V	-2.26	48.81	54	-5.19
5470	65.65	PK	91	1.2	H	-2.22	63.43	68.2	-4.77
5470	64.98	PK	102	1.8	V	-2.22	62.76	68.2	-5.44
11020	40.91	PK	67	1.3	H	9.57	50.48	74	-23.52
11020	41.37	PK	318	1.7	V	9.57	50.94	74	-23.06
5550 MHZz									
11100	40.64	PK	121	1.6	H	9.12	49.76	74	-24.24
11100	41.12	PK	8	2.4	V	9.12	50.24	74	-23.76
5670 MHz									
5725	67.7	PK	218	1.3	H	-1.96	65.74	68.2	-2.46
5725	66.88	PK	195	1.6	V	-1.96	64.92	68.2	-3.28
5745	64.59	PK	199	1.2	H	-1.91	62.68	68.2	-5.52
5745	64.37	PK	308	1.7	V	-1.91	62.46	68.2	-5.74
11340	44.9	PK	220	2.1	H	7.67	52.57	74	-21.43
11340	47.51	PK	21	1.8	V	7.67	55.18	74	-18.82
11340	33.12	AV	21	1.8	V	7.67	40.79	54	-13.21

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5530MHz									
5460	64.91	PK	307	1.8	H	-2.26	62.65	74	-11.35
5460	51.8	AV	307	1.8	H	-2.26	49.54	54	-4.46
5460	64.49	PK	327	1.9	V	-2.26	62.23	74	-11.77
5460	51.38	AV	327	1.9	V	-2.26	49.12	54	-4.88
5470	65.96	PK	240	1.7	H	-2.22	63.74	68.2	-4.46
5470	65.3	PK	356	1.6	V	-2.22	63.08	68.2	-5.12
11060	39.69	PK	56	2	H	9.37	49.06	74	-24.94
11060	40.22	PK	182	1.8	V	9.37	49.59	74	-24.41
5610 MHz									
5725	66.24	PK	112	1.7	H	-1.96	64.28	68.2	-3.92
5725	65.82	PK	211	2.1	V	-1.96	63.86	68.2	-4.34
5745	64.26	PK	34	1.3	H	-1.91	62.35	68.2	-5.85
5745	64.08	PK	47	1.3	V	-1.91	62.17	68.2	-6.03
11220	43.1	PK	181	1.2	H	8.33	51.43	74	-22.57
11220	44.94	PK	68	1.8	V	8.33	53.27	74	-20.73

5725-5850 MHz:

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745MHz									
5650	65.83	PK	237	2.4	H	-1.95	63.88	68.2	-4.32
5700	66.13	PK	27	1.2	H	-2.02	64.11	105.2	-41.09
5720	69.41	PK	326	2.3	H	-1.97	67.44	110.8	-43.36
5725	72.23	PK	185	1.7	H	-1.96	70.27	122.2	-51.93
5650	65.68	PK	29	1	V	-1.95	63.73	68.2	-4.47
5700	65.94	PK	280	1.4	V	-2.02	63.92	105.2	-41.28
5720	68.74	PK	124	2	V	-1.97	66.77	110.8	-44.03
5725	71.5	PK	339	1.5	V	-1.96	69.54	122.2	-52.66
11490	43.88	PK	30	1.5	H	6.63	50.51	74	-23.49
11490	44.46	PK	98	1.3	V	6.63	51.09	74	-22.91
5785 MHz									
11570	44.67	PK	317	1.4	H	6.59	51.26	74	-22.74
11570	45.29	PK	304	2.4	V	6.59	51.88	74	-22.12
5825MHz									
5850	69.04	PK	149	2.1	H	-1.81	67.23	122.2	-54.97
5855	67.12	PK	26	1.9	H	-1.82	65.3	110.8	-45.5
5875	66.82	PK	253	1.4	H	-1.84	64.98	105.2	-40.22
5925	66.77	PK	261	1.5	H	-1.82	64.95	68.2	-3.25
5850	68.4	PK	219	1.1	V	-1.81	66.59	122.2	-55.61
5855	66.97	PK	67	2.2	V	-1.82	65.15	110.8	-45.65
5875	66.75	PK	242	1.9	V	-1.84	64.91	105.2	-40.29
5925	66.62	PK	224	1.7	V	-1.82	64.8	68.2	-3.4
11650	44.56	PK	89	1.6	H	6.77	51.33	74	-22.67
11650	46.12	PK	312	1.4	V	6.77	52.89	74	-21.11

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745MHz									
5650	65.58	PK	346	2.4	H	-1.95	63.63	68.2	-4.57
5700	65.9	PK	77	1.8	H	-2.02	63.88	105.2	-41.32
5720	66.32	PK	150	1.7	H	-1.97	64.35	110.8	-46.45
5725	67.82	PK	52	1.2	H	-1.96	65.86	122.2	-56.34
5650	65.51	PK	321	1.3	V	-1.95	63.56	68.2	-4.64
5700	65.8	PK	256	1.3	V	-2.02	63.78	105.2	-41.42
5720	66.18	PK	344	1.6	V	-1.97	64.21	110.8	-46.59
5725	67.63	PK	352	2.5	V	-1.96	65.67	122.2	-56.53
11490	43.12	PK	343	1.5	H	6.63	49.75	74	-24.25
11490	44.2	PK	156	2.1	V	6.63	50.83	74	-23.17
5785 MHz									
11570	43.74	PK	44	2.3	H	6.59	50.33	74	-23.67
11570	44.95	PK	148	2.3	V	6.59	51.54	74	-22.46
5825MHz									
5850	68.03	PK	298	1.5	H	-1.81	66.22	122.2	-55.98
5855	66.82	PK	306	2	H	-1.82	65	110.8	-45.8
5875	67.08	PK	251	2.3	H	-1.84	65.24	105.2	-39.96
5925	66.61	PK	31	1.2	H	-1.82	64.79	68.2	-3.41
5850	67.42	PK	239	2	V	-1.81	65.61	122.2	-56.59
5855	66.91	PK	47	1.2	V	-1.82	65.09	110.8	-45.71
5875	66.9	PK	299	1.8	V	-1.84	65.06	105.2	-40.14
5925	66.52	PK	127	1.4	V	-1.82	64.7	68.2	-3.5
11650	44.59	PK	232	2.3	H	6.77	51.36	74	-22.64
11650	47.75	PK	354	1.1	V	6.77	54.52	74	-19.48
11650	31.16	AV	354	1.1	V	6.77	37.93	54	-16.07

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5755MHz									
5650	65.77	PK	219	2.1	H	-1.95	63.82	68.2	-4.38
5700	65.7	PK	307	2.4	H	-2.02	63.68	105.2	-41.52
5720	66.5	PK	88	2.5	H	-1.97	64.53	110.8	-46.27
5725	67.16	PK	286	1.2	H	-1.96	65.20	122.2	-57.00
5650	65.66	PK	233	1.2	V	-1.95	63.71	68.2	-4.49
5700	65.88	PK	94	2	V	-2.02	63.86	105.2	-41.34
5720	66.62	PK	34	1.6	V	-1.97	64.65	110.8	-46.15
5725	67.06	PK	100	2.4	V	-1.96	65.1	122.2	-57.1
11510	43.71	PK	217	2.3	H	6.59	50.3	74	-23.7
11510	44.55	PK	294	2.1	V	6.59	51.14	74	-22.86
5795 MHz									
5850	69.14	PK	10	2.1	H	-1.81	67.33	122.2	-54.87
5855	67.4	PK	125	2	H	-1.82	65.58	110.8	-45.22
5875	67.08	PK	81	1.9	H	-1.84	65.24	105.2	-39.96
5925	66.83	PK	98	1	H	-1.82	65.01	68.2	-3.19
5850	68.66	PK	342	1.9	V	-1.81	66.85	122.2	-55.35
5855	67.16	PK	83	1.8	V	-1.82	65.34	110.8	-45.46
5875	66.86	PK	183	1.3	V	-1.84	65.02	105.2	-40.18
5925	66.68	PK	323	2.3	V	-1.82	64.86	68.2	-3.34
11590	45.31	PK	44	1.5	H	6.57	51.88	74	-22.12
11590	46.35	PK	90	1.1	V	6.57	52.92	74	-21.08

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745MHz									
5650	65.88	PK	279	2.4	H	-1.95	63.93	68.2	-4.27
5700	66.56	PK	333	1.4	H	-2.02	64.54	105.2	-40.66
5720	67.64	PK	60	1.5	H	-1.97	65.67	110.8	-45.13
5725	69.79	PK	320	1.1	H	-1.96	67.83	122.2	-54.37
5650	65.72	PK	311	2.5	V	-1.95	63.77	68.2	-4.43
5700	66.22	PK	57	1.3	V	-2.02	64.2	105.2	-41.00
5720	66.82	PK	226	1.6	V	-1.97	64.85	110.8	-45.95
5725	67.87	PK	110	1	V	-1.96	65.91	122.2	-56.29
11490	44.21	PK	111	1.3	H	6.63	50.84	74	-23.16
11490	44.96	PK	202	2.3	V	6.63	51.59	74	-22.41
5785 MHz									
11570	45.06	PK	127	2.5	H	6.59	51.65	74	-22.35
11570	45.74	PK	102	2.2	V	6.59	52.33	74	-21.67
5825 MHz									
5850	67.5	PK	353	1.1	H	-1.81	65.69	122.2	-56.51
5855	67.07	PK	88	1.3	H	-1.82	65.25	110.8	-45.55
5875	66.93	PK	235	1.6	H	-1.84	65.09	105.2	-40.11
5925	66.8	PK	117	1.3	H	-1.82	64.98	68.2	-3.22
5850	67.16	PK	319	2.4	V	-1.81	65.35	122.2	-56.85
5855	66.94	PK	117	2.1	V	-1.82	65.12	110.8	-45.68
5875	66.84	PK	207	1.1	V	-1.84	65.00	105.2	-40.2
5925	66.73	PK	185	2.5	V	-1.82	64.91	68.2	-3.29
11650	44.6	PK	157	1.2	H	6.77	51.37	74	-22.63
11650	46.14	PK	303	1.5	V	6.77	52.91	74	-21.09

Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5755MHz									
5650	65.65	PK	49	1.7	H	-1.95	63.7	68.2	-4.5
5700	65.88	PK	182	1.9	H	-2.02	63.86	105.2	-41.34
5720	66.5	PK	168	1.4	H	-1.97	64.53	110.8	-46.27
5725	67.64	PK	222	2	H	-1.96	65.68	122.2	-56.52
5650	65.51	PK	87	2.1	V	-1.95	63.56	68.2	-4.64
5700	65.69	PK	172	1.2	V	-2.02	63.67	105.2	-41.53
5720	66.32	PK	29	1.6	V	-1.97	64.35	110.8	-46.45
5725	67.18	PK	229	1.1	V	-1.96	65.22	122.2	-56.98
11510	43.31	PK	115	2.1	H	6.59	49.9	74	-24.1
11510	44.25	PK	125	1.8	V	6.59	50.84	74	-23.16
5795 MHz									
5850	67.5	PK	342	1.6	H	-1.81	65.69	122.2	-56.51
5855	67.2	PK	270	1.5	H	-1.82	65.38	110.8	-45.42
5875	67.08	PK	40	1.9	H	-1.84	65.24	105.2	-39.96
5925	66.73	PK	63	2.3	H	-1.82	64.91	68.2	-3.29
5850	67.63	PK	175	2	V	-1.81	65.82	122.2	-56.38
5855	67.08	PK	357	1.9	V	-1.82	65.26	110.8	-45.54
5875	66.96	PK	328	1.6	V	-1.84	65.12	105.2	-40.08
5925	66.65	PK	255	2.2	V	-1.82	64.83	68.2	-3.37
11590	45.22	PK	245	1.5	H	6.57	51.79	74	-22.21
11590	47.28	PK	42	1.2	V	6.57	53.85	74	-20.15

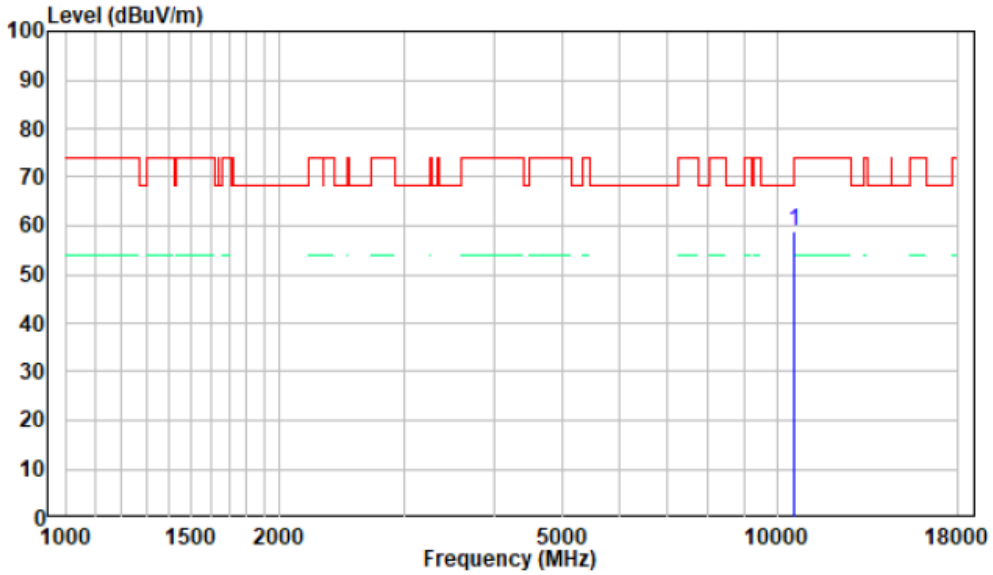
Frequency (MHz)	Receiver		Turn-Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5775MHz									
5650	65.51	PK	284	2.1	H	-1.95	63.56	68.2	-4.64
5700	84.67	PK	278	1.8	H	-2.02	82.65	105.2	-22.55
5720	67.01	PK	301	1.1	H	-1.97	65.04	110.8	-45.76
5725	75.41	PK	316	1.8	H	-1.96	73.45	122.2	-48.75
5650	64.69	PK	203	1.4	V	-1.95	62.74	68.2	-5.46
5700	65.74	PK	163	2.1	V	-2.02	63.72	105.2	-41.48
5720	66.42	PK	106	1.9	V	-1.97	64.45	110.8	-46.35
5725	73.37	PK	129	1.7	V	-1.96	71.41	122.2	-50.79
5850	70.41	PK	185	2.5	H	-1.81	68.6	122.2	-53.6
5855	70.42	PK	346	2.2	H	-1.82	68.6	110.8	-42.2
5875	73.61	PK	238	1.1	H	-1.84	71.77	105.2	-33.43
5925	66.37	PK	297	1.7	H	-1.82	64.55	68.2	-3.65
5850	68.45	PK	91	1.6	V	-1.81	66.64	122.2	-55.56
5855	69.57	PK	81	2.4	V	-1.82	67.75	110.8	-43.05
5875	73.43	PK	45	1.4	V	-1.84	71.59	105.2	-33.61
5925	66.73	PK	221	2.2	V	-1.82	64.91	68.2	-3.29
11550	43.67	PK	156	2.1	H	6.61	50.28	74	-23.72
11550	43.84	PK	100	1.3	V	6.61	50.45	74	-23.55

Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin = Corrected Amplitude – Limit
The other spurious emission which is in the noise floor level was not recorded.
The test result of peak was less than the limit of average, so just peak values were recorded.

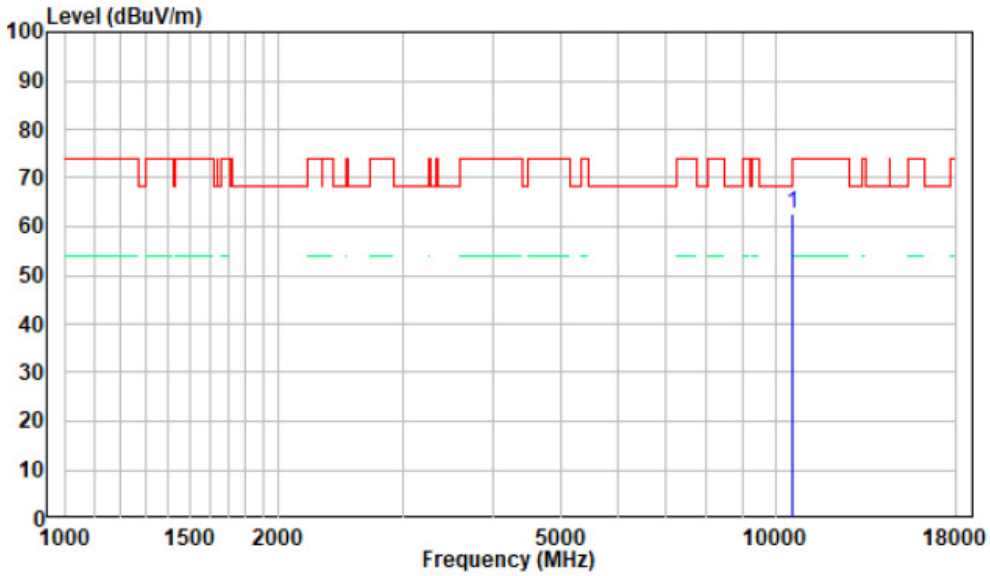
1 GHz - 18 GHz: (Pre-Scan plots)

802.11 a mode, 5280MHz

Horizontal



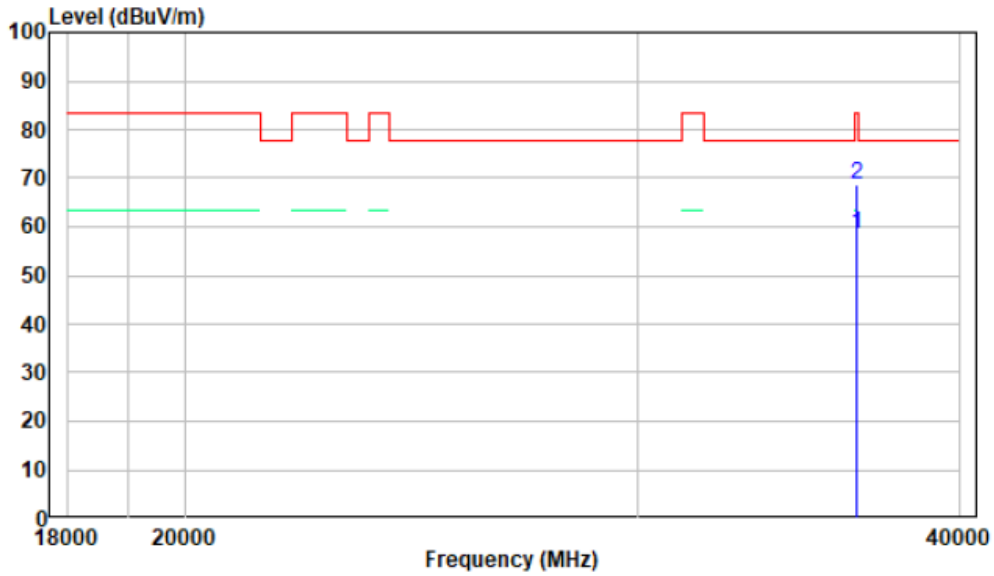
Vertical



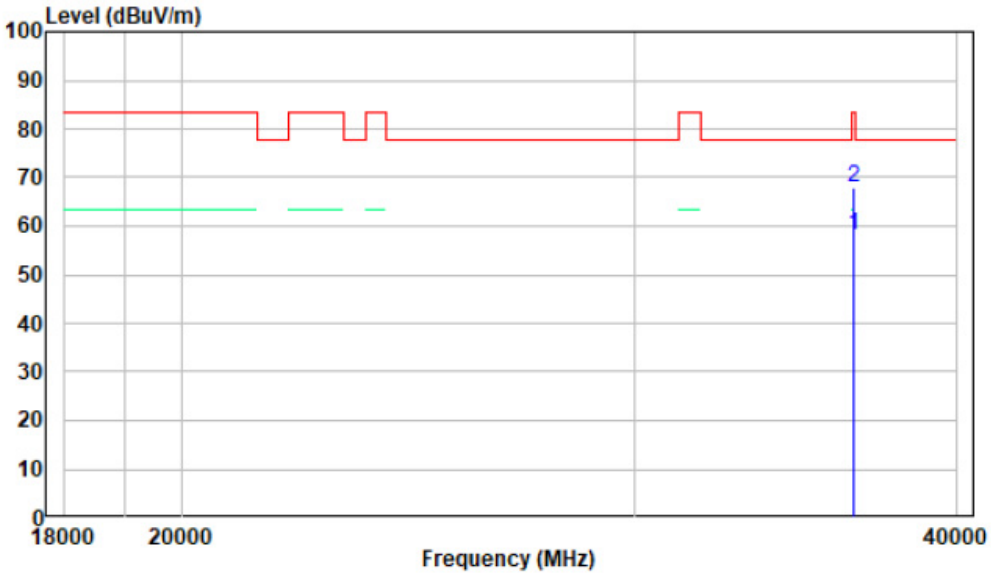
18-40GHz: (Pre-Scan plots)

802.11 a mode, 5280MHz

Horizontal



Vertical



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

Applicable Standard

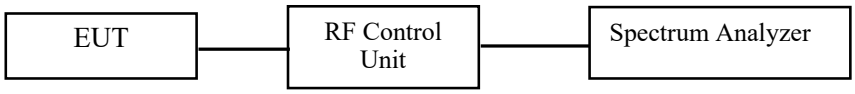
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band 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

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.



Test Data

Environmental Conditions

Temperature:	25.4~27.2 ℃
Relative Humidity:	56~62 %
ATM Pressure:	101.0 kPa

The testing was performed by Key Pei from 2022-03-01 to 2022-03-02.

EUT operation mode: Transmitting

Test Result: Pass

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.

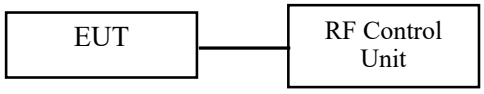
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum 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

c. Place the EUT on a bench and set it in transmitting mode.

d. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.

e. Add a correction factor to the display.



Note:The RF control Unit built-in a power sensor.

Test Data

Environmental Conditions

Temperature:	25.4~27.2 ℃
Relative Humidity:	56~62 %
ATM Pressure:	101.0 kPa

The testing was performed by Key Pei from 2022-03-01 to 2022-03-02.

EUT operation mode: Transmitting

Test Result: Pass

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.

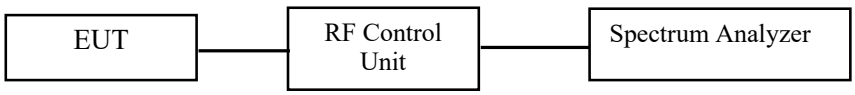
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11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

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

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



Test Data

Environmental Conditions

Temperature:	25.4~27.2 ℃
Relative Humidity:	56~62 %
ATM Pressure:	101.0 kPa

The testing was performed by Key Pei from 2022-03-02 to 2022-03-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

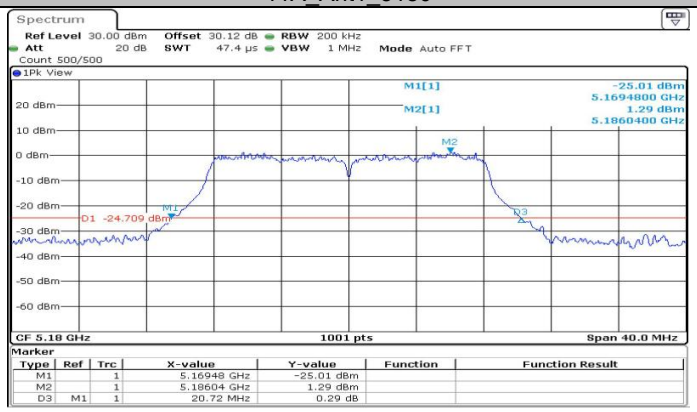
Appendix A1: Emission Bandwidth

Test Result

Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.720	---	PASS
		5200	21.040	---	PASS
		5240	20.800	---	PASS
		5260	20.920	---	PASS
		5280	20.680	---	PASS
		5320	20.400	---	PASS
		5500	20.920	---	PASS
		5580	21.320	---	PASS
		5700	21.040	---	PASS
11N20SISO	Ant1	5180	21.360	---	PASS
		5200	21.000	---	PASS
		5240	21.920	---	PASS
		5260	21.800	---	PASS
		5280	21.520	---	PASS
		5320	21.080	---	PASS
		5500	21.360	---	PASS
		5580	21.040	---	PASS
		5700	21.600	---	PASS
11N40SISO	Ant1	5190	42.560	---	PASS
		5230	43.200	---	PASS
		5270	43.920	---	PASS
		5310	43.280	---	PASS
		5510	43.520	---	PASS
		5550	44.080	---	PASS
		5670	42.800	---	PASS
11AC20SISO	Ant1	5180	21.760	---	PASS
		5200	21.920	---	PASS
		5240	20.840	---	PASS
		5260	21.480	---	PASS
		5280	21.400	---	PASS
		5320	21.240	---	PASS
		5500	21.800	---	PASS
		5580	22.520	---	PASS
		5700	21.600	---	PASS
11AC40SISO	Ant1	5190	42.240	---	PASS
		5230	41.280	---	PASS
		5270	43.200	---	PASS
		5310	42.240	---	PASS
		5510	42.640	---	PASS
		5550	42.720	---	PASS
		5670	43.040	---	PASS
11AC80SISO	Ant1	5210	83.360	---	PASS
		5290	83.840	---	PASS
		5530	83.360	---	PASS
		5610	83.200	---	PASS

Test Graphs

11A_Ant1_5180



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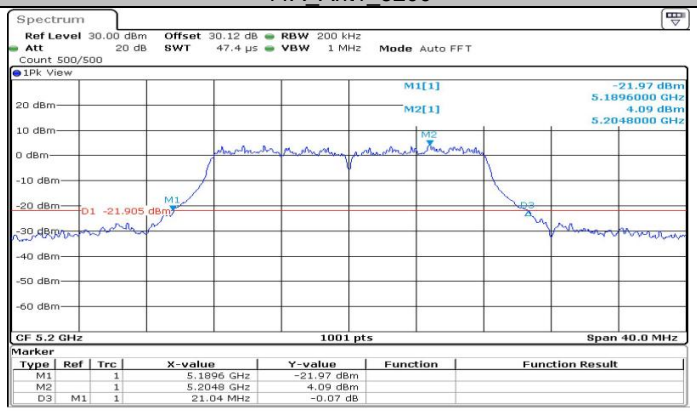

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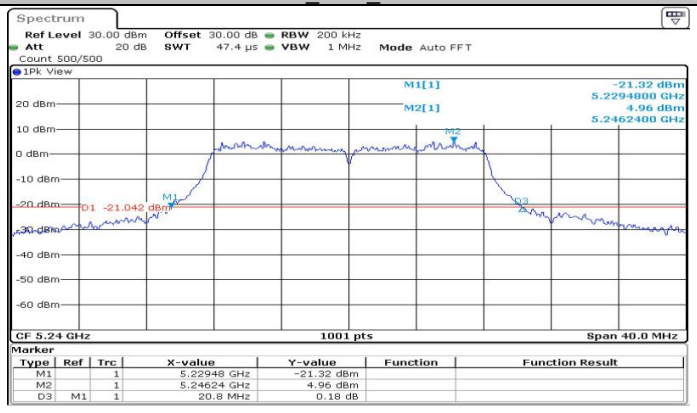

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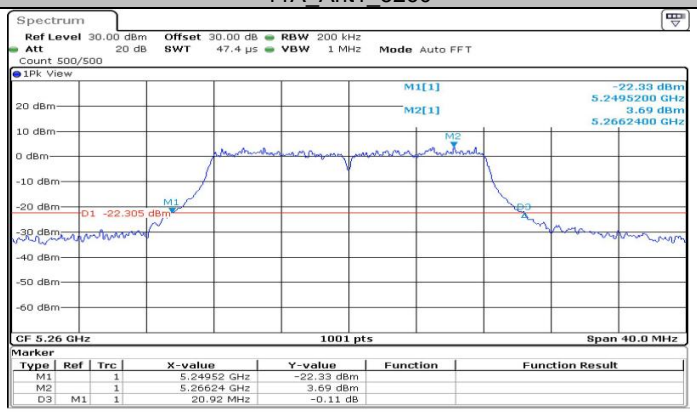

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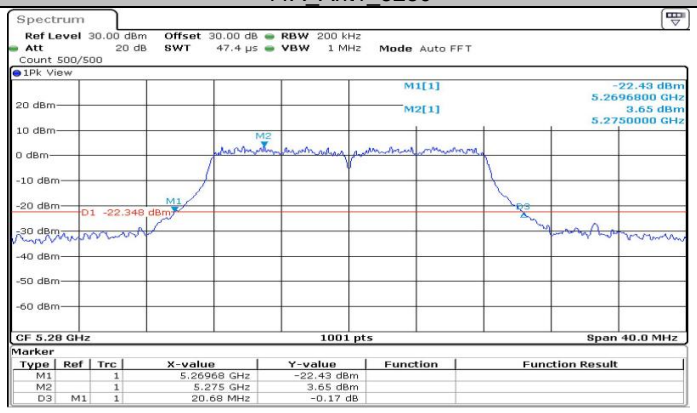

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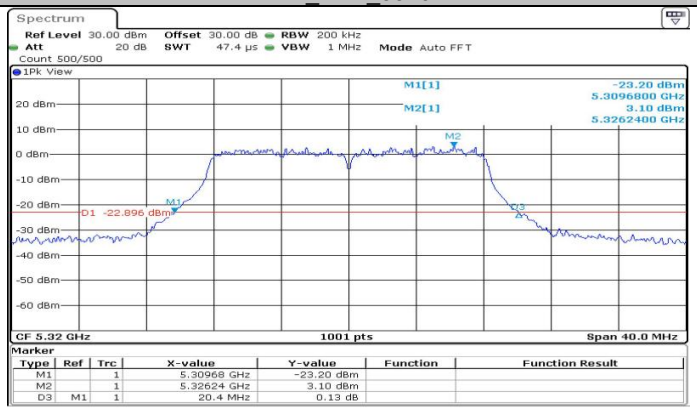

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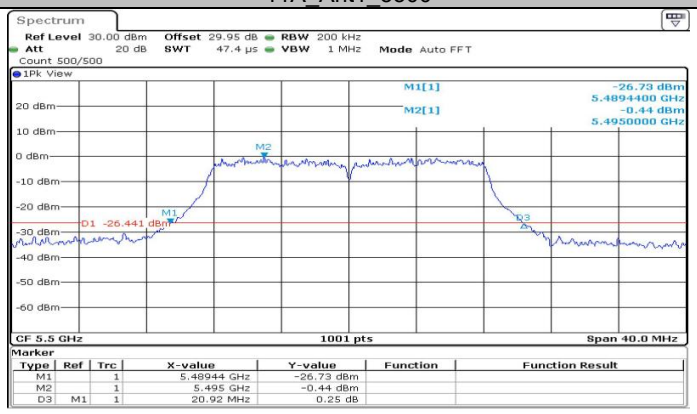

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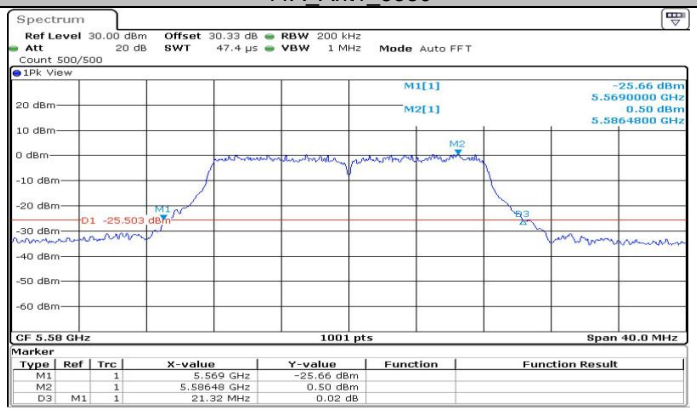

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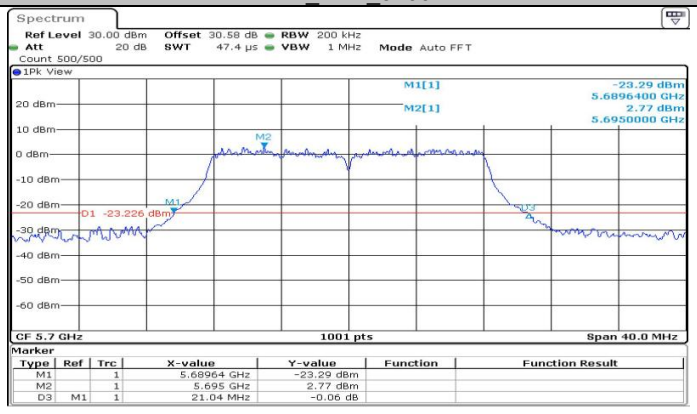

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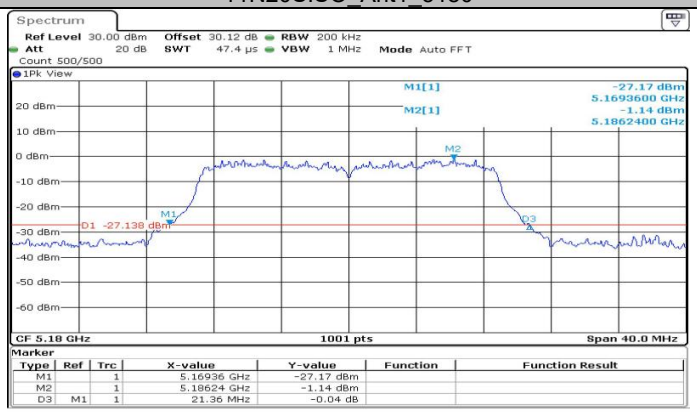

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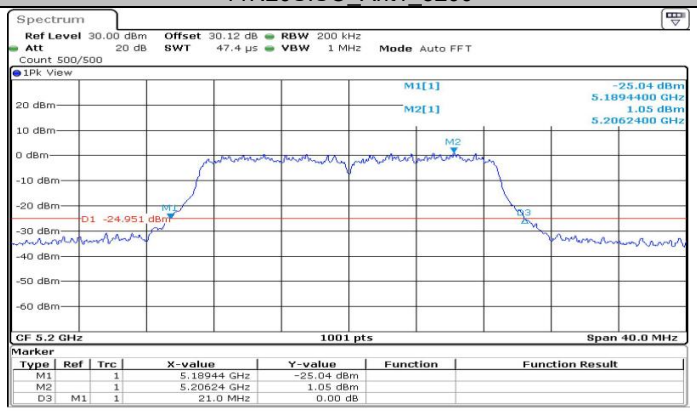

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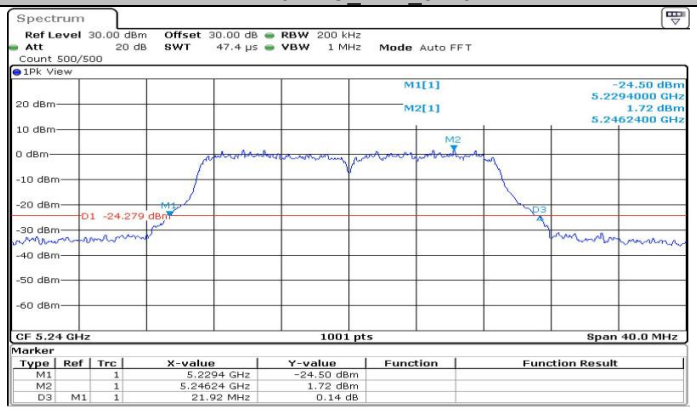

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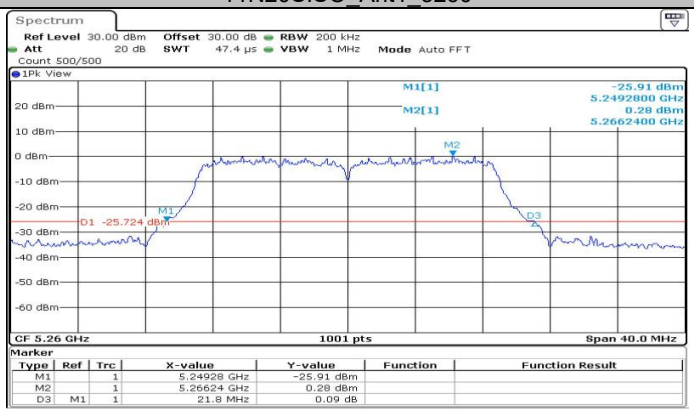

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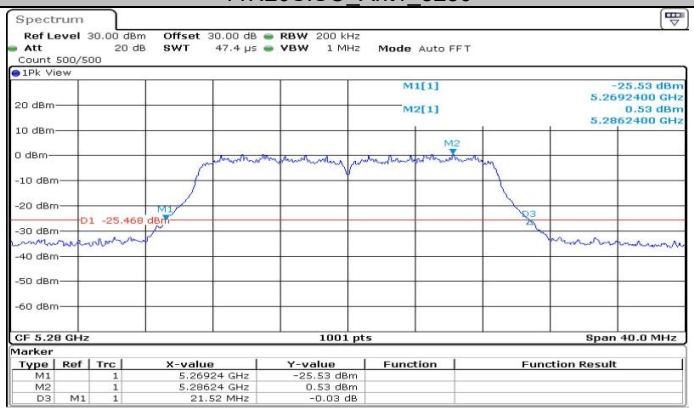

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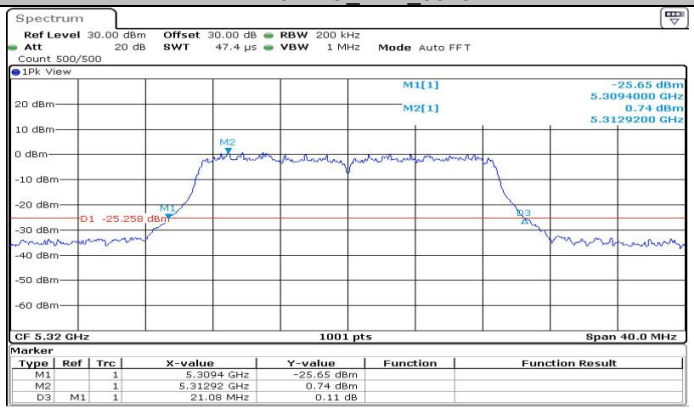

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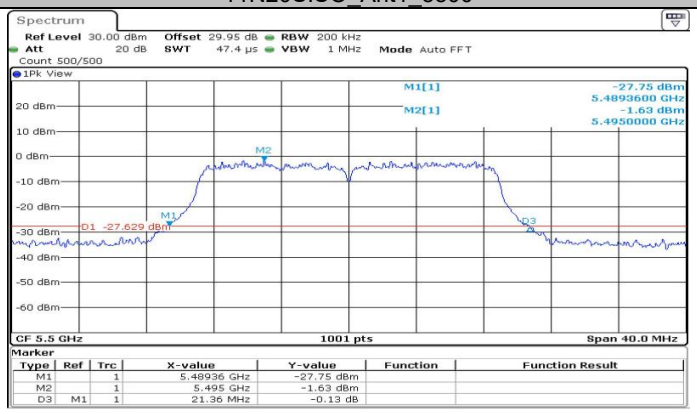

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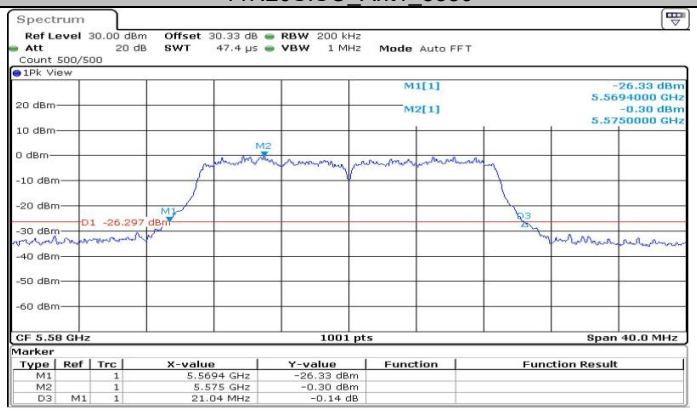

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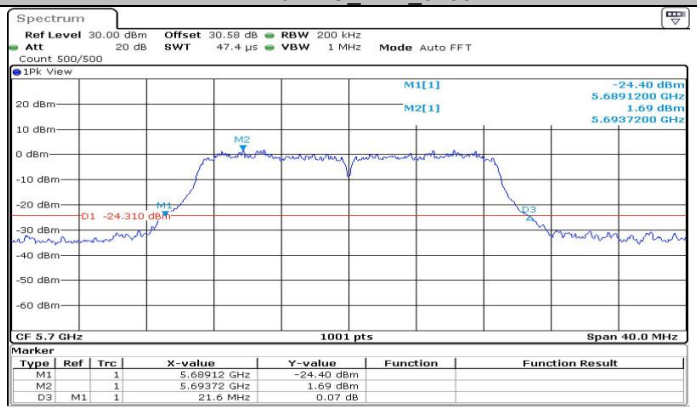

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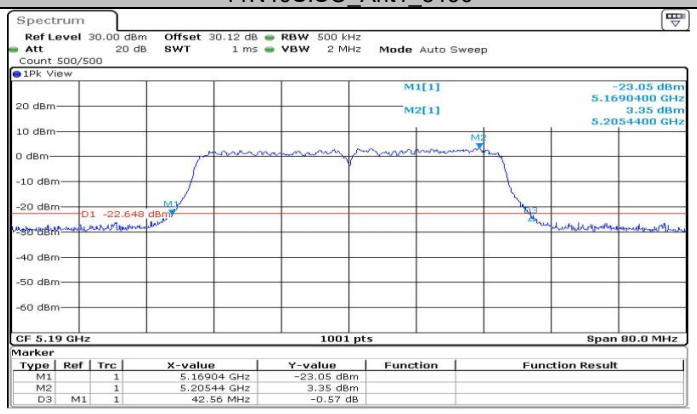

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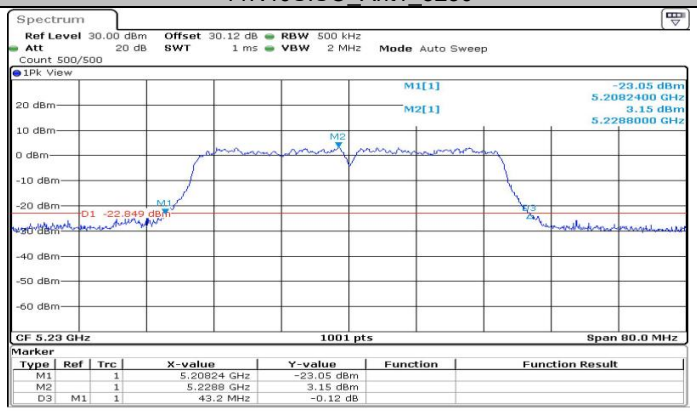

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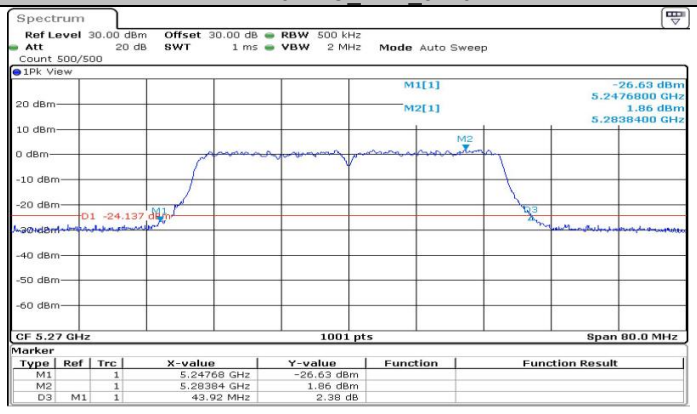

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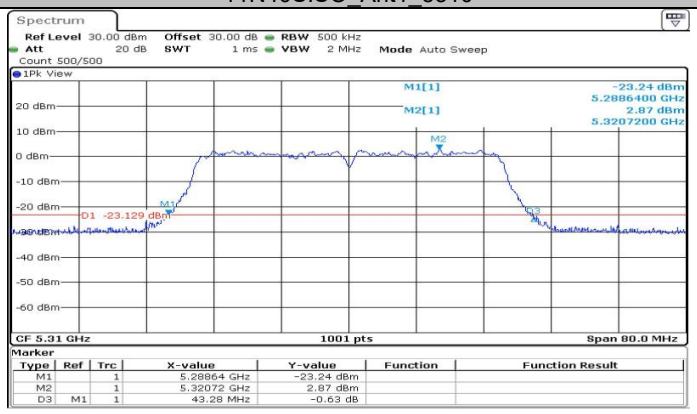

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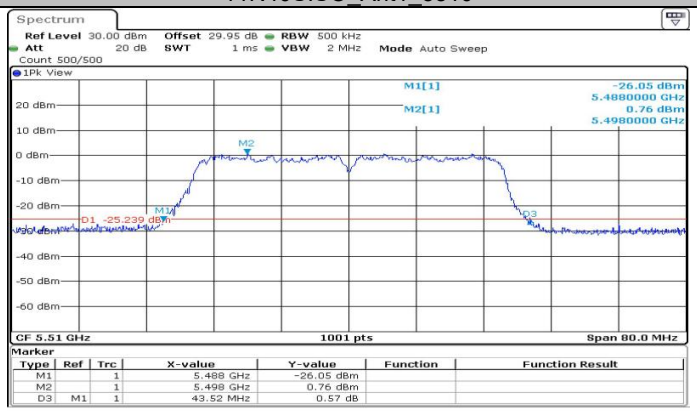

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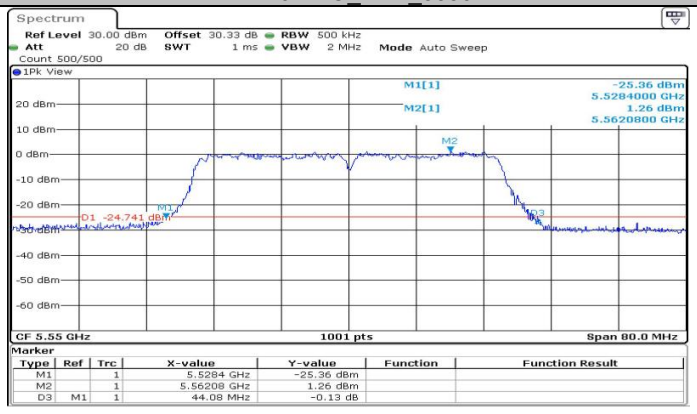

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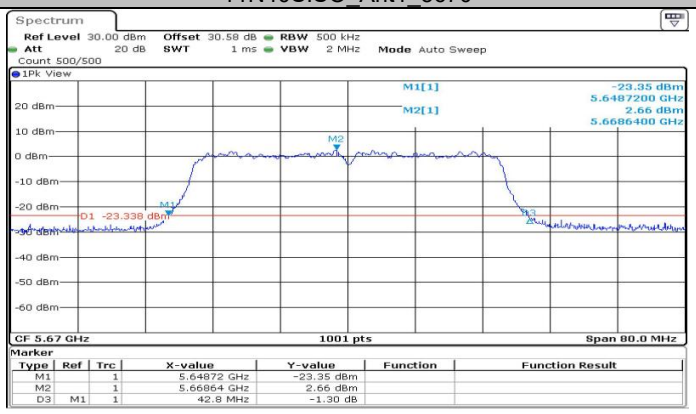

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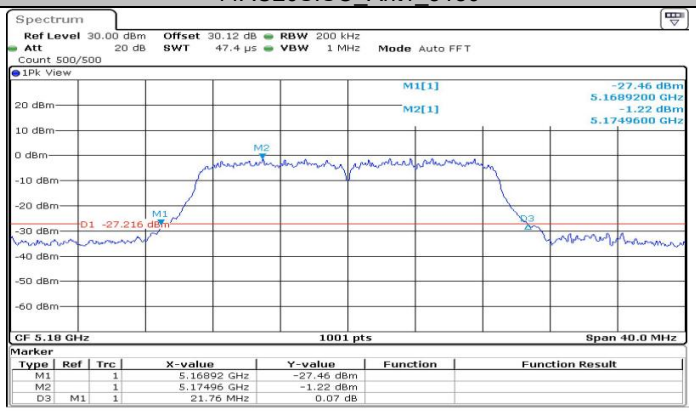

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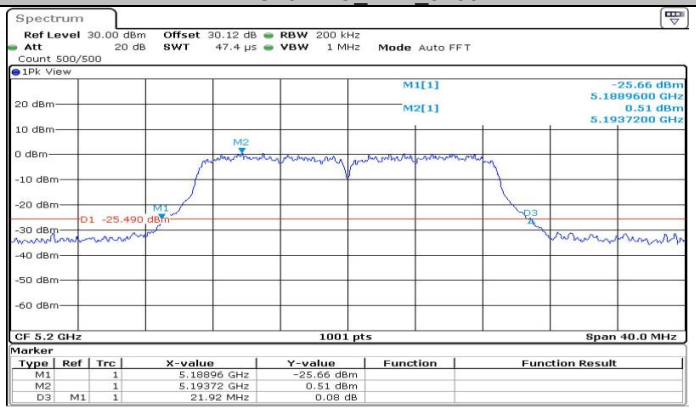

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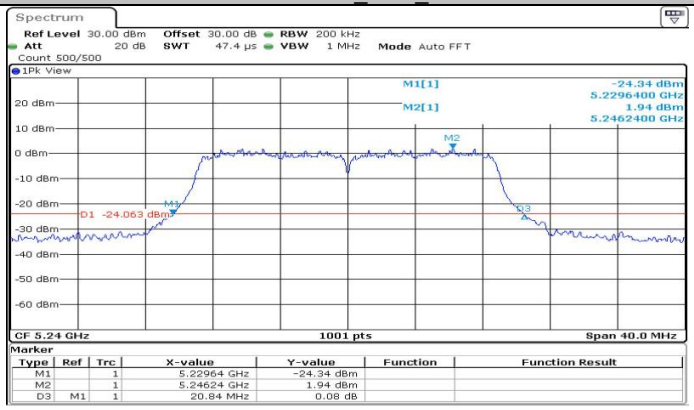

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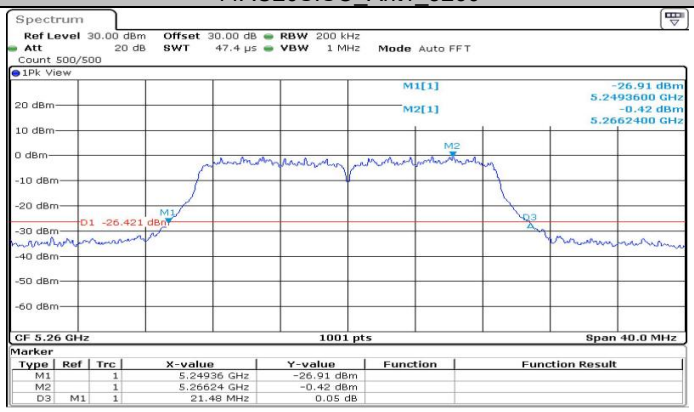

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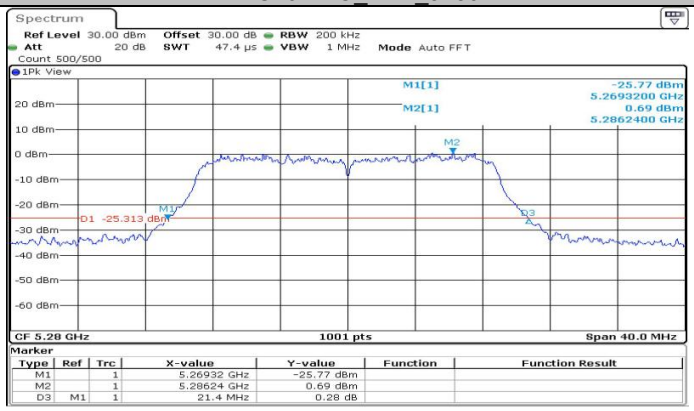

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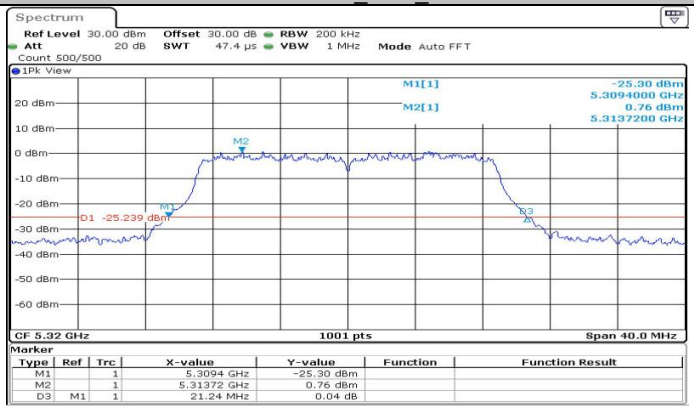

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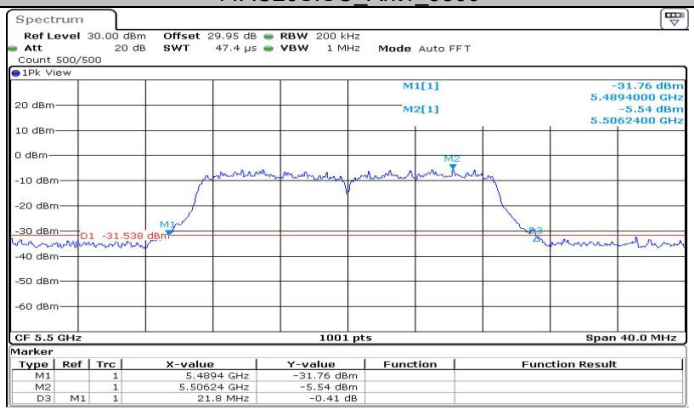

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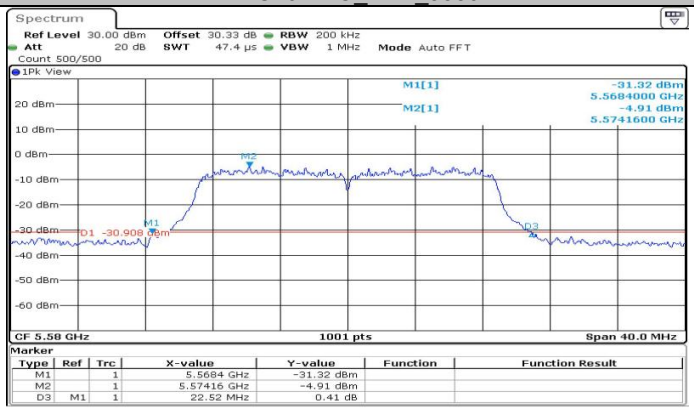

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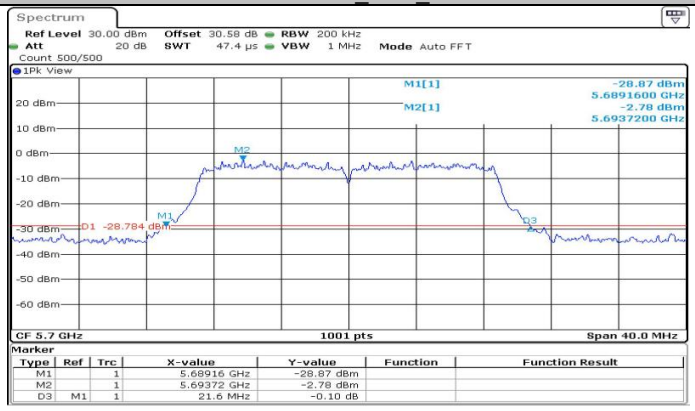
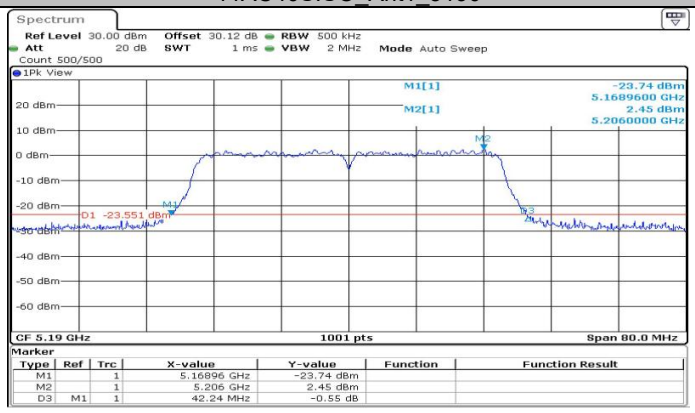
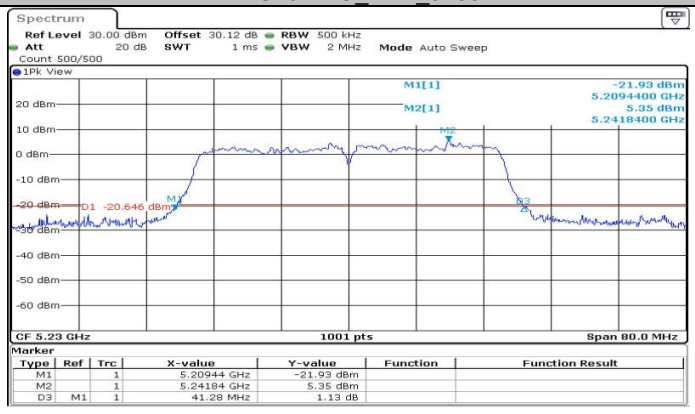


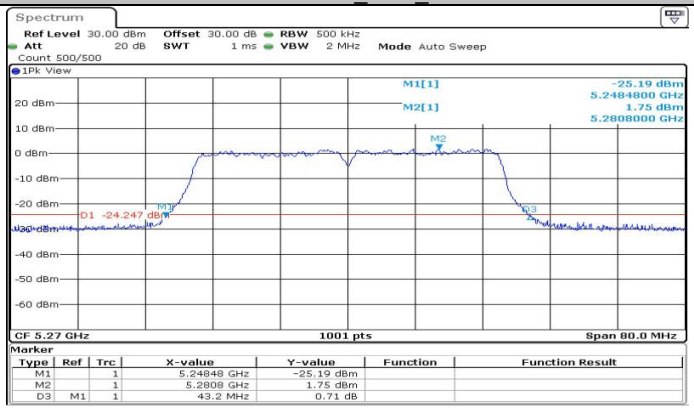
11AC40SISO_Ant1_5190



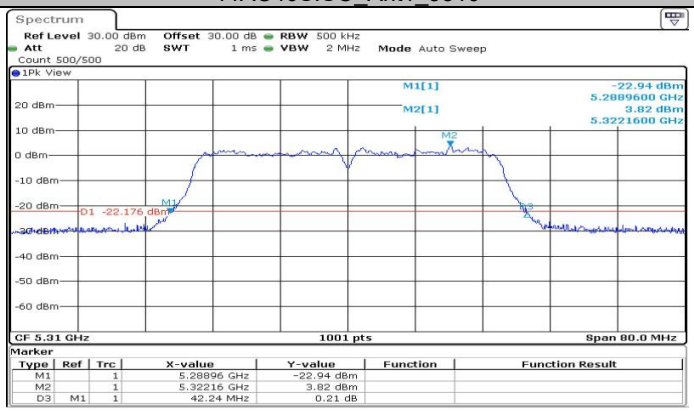
11AC40SISO_Ant1_5230



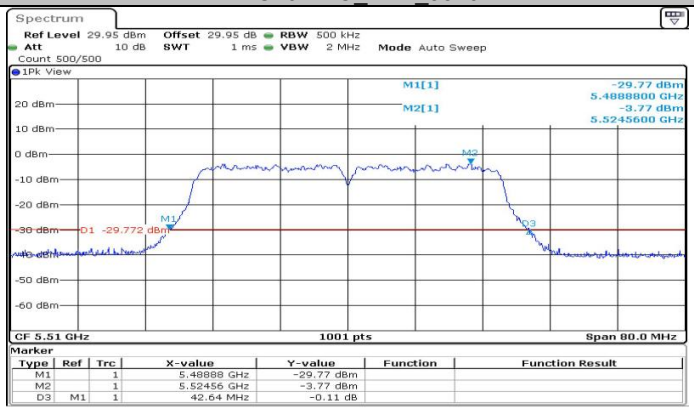
11AC40SISO_Ant1_5270



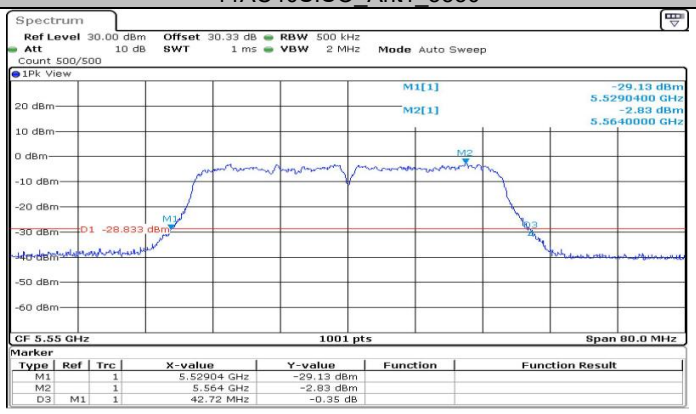
11AC40SISO_Ant1_5310



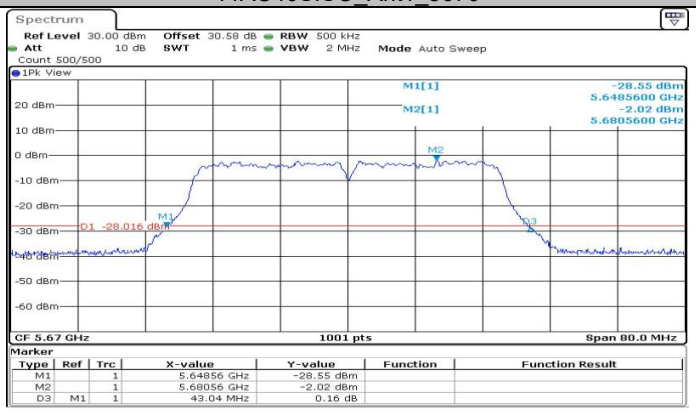
11AC40SISO_Ant1_5510



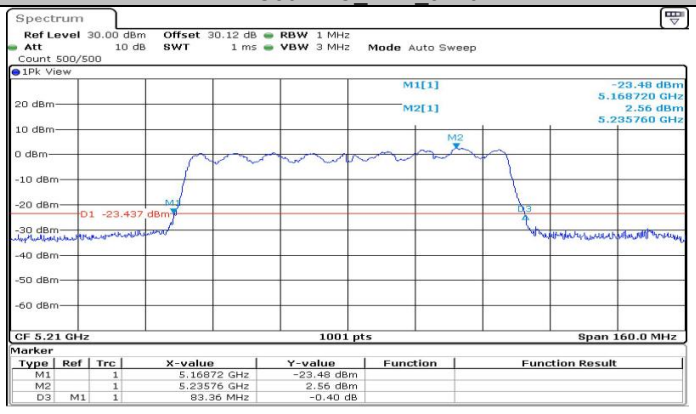
11AC40SISO_Ant1_5550



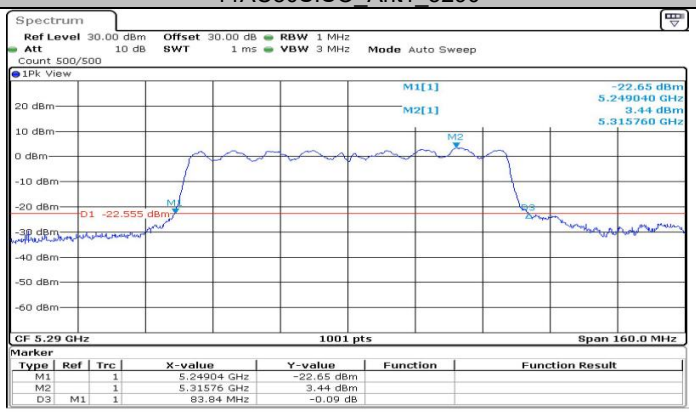
11AC40SISO_Ant1_5670



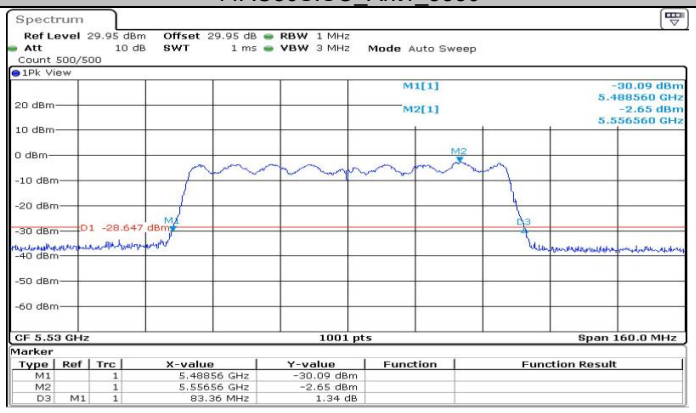
11AC80SISO_Ant1_5210



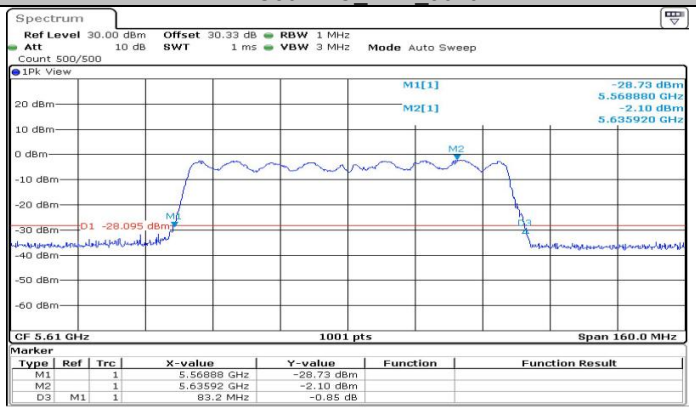
11AC80SISO_Ant1_5290



11AC80SISO_Ant1_5530



11AC80SISO_Ant1_5610



Appendix A2: Occupied channel bandwidth

Test Result

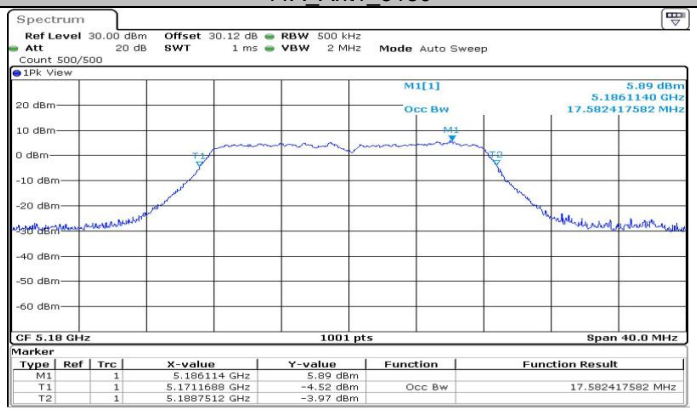
Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.582	---	PASS
		5200	17.582	---	PASS
		5240	17.622	---	PASS
		5260	17.463	---	PASS
		5280	17.383	---	PASS
		5320	17.343	---	PASS
		5500	17.582	---	PASS
		5580	17.463	---	PASS
		5700	17.582	---	PASS
		5745	17.463	---	PASS
		5785	17.822	---	PASS
		5825	17.542	---	PASS
11N20SISO	Ant1	5180	18.222	---	PASS
		5200	18.262	---	PASS
		5240	18.581	---	PASS
		5260	18.422	---	PASS
		5280	18.422	---	PASS
		5320	18.302	---	PASS
		5500	18.342	---	PASS
		5580	18.342	---	PASS
		5700	18.501	---	PASS
		5745	18.501	---	PASS
		5785	18.462	---	PASS
		5825	18.422	---	PASS
11N40SISO	Ant1	5190	36.923	---	PASS
		5230	37.083	---	PASS
		5270	36.683	---	PASS
		5310	37.403	---	PASS
		5510	37.323	---	PASS
		5550	36.923	---	PASS
		5670	37.163	---	PASS
		5755	36.843	---	PASS
		5795	37.163	---	PASS
11AC20SISO	Ant1	5180	18.541	---	PASS
		5200	18.342	---	PASS
		5240	18.302	---	PASS
		5260	18.342	---	PASS
		5280	18.382	---	PASS
		5320	18.342	---	PASS
		5500	18.541	---	PASS
		5580	18.581	---	PASS
		5700	18.501	---	PASS
		5745	18.462	---	PASS
		5785	18.501	---	PASS
		5825	18.501	---	PASS
11AC40SISO	Ant1	5190	36.843	---	PASS
		5230	36.683	---	PASS
		5270	36.843	---	PASS
		5310	36.763	---	PASS
		5510	37.403	---	PASS
		5550	37.483	---	PASS
		5670	37.243	---	PASS
		5755	37.483	---	PASS
		5795	37.003	---	PASS

Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11AC80SISO	Ant1	5210	76.563	---	PASS
		5290	76.563	---	PASS
		5530	77.842	---	PASS
		5610	77.363	---	PASS
		5775	76.723	---	PASS

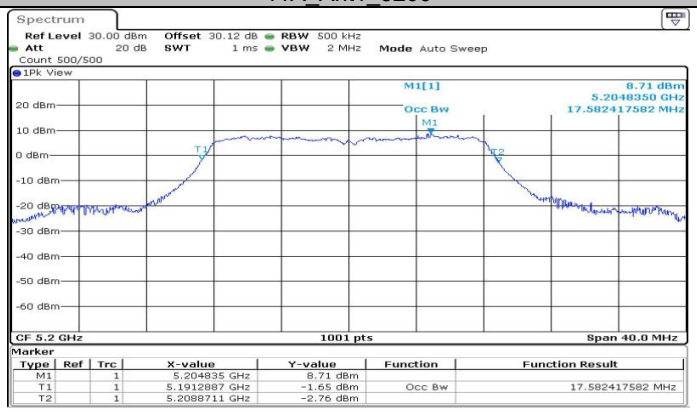
Note: OBWfor U-NII-1 and U-NII-3 bands will not within frequency range for U-NII-2A and U-NII-2C bands.

Test Graphs

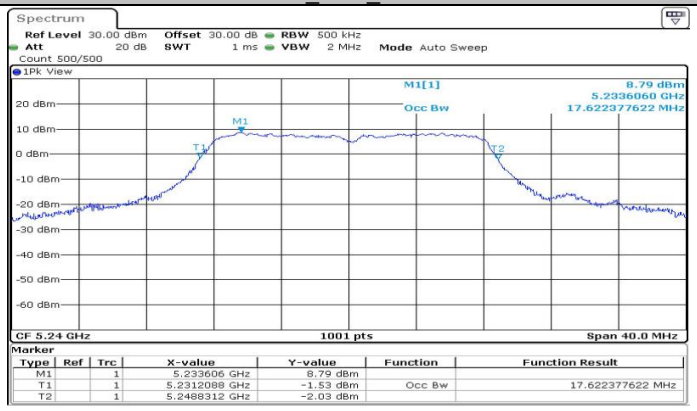
11A_Ant1_5180



11A_Ant1_5200



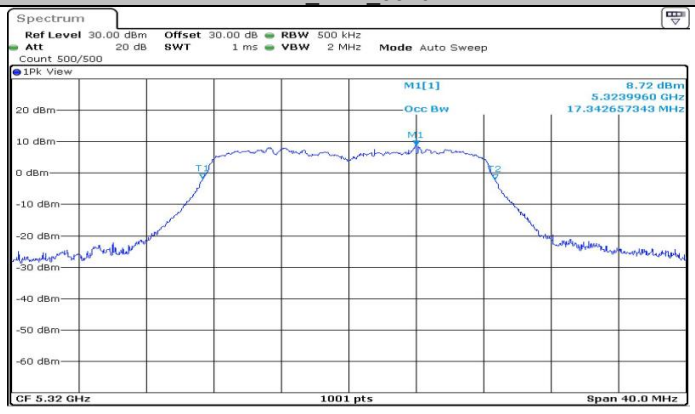
11A_Ant1_5240



11A_Ant1_5260

11A_Ant1_5280

11A_Ant1_5320



11A_Ant1_5500

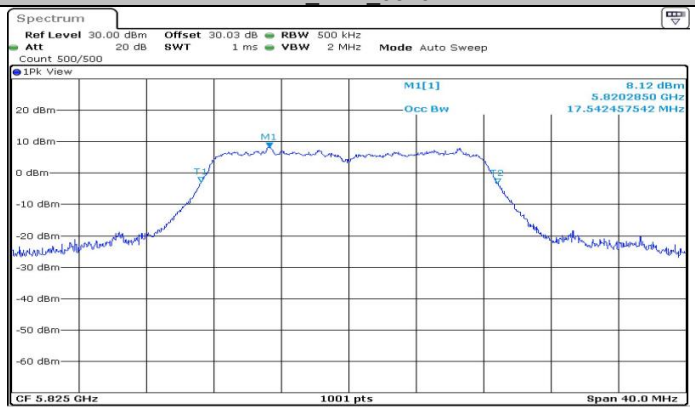
11A_Ant1_5580

11A_Ant1_5700

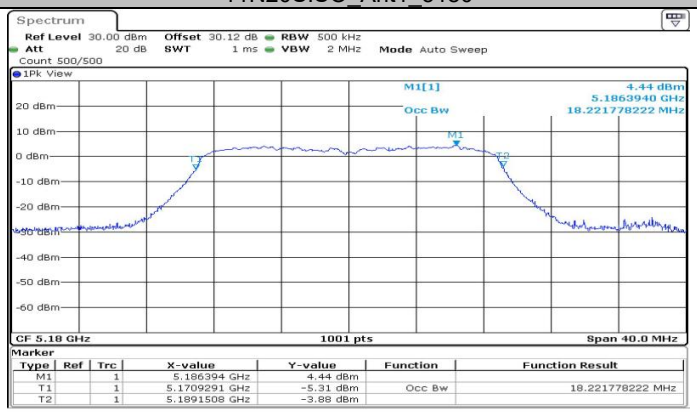
11A_Ant1_5745

11A_Ant1_5785

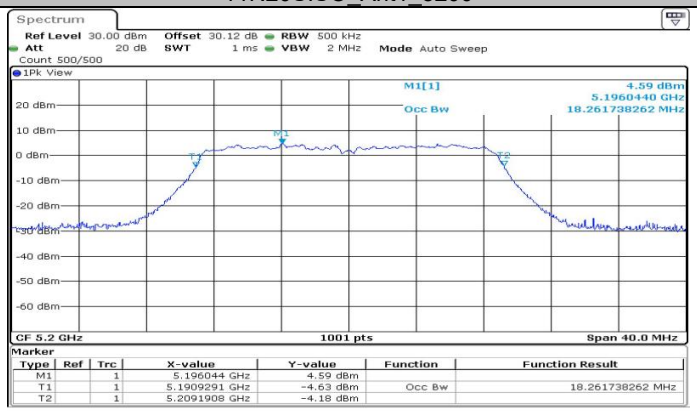
11A_Ant1_5825



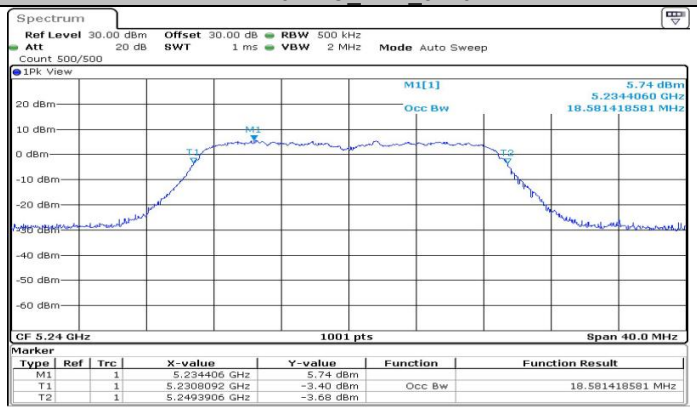
11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



11N20SISO_Ant1_5240



11N20SISO_Ant1_5260

11N20SISO_Ant1_5280

11N20SISO_Ant1_5320

11N20SISO_Ant1_5500

11N20SISO_Ant1_5580

11N20SISO_Ant1_5700