TEST REPORT

Applicant Name :	INFINIX MOBILITY LIMITED
Address :	FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT Hong Kong
Report Number :	SZNS211123-60257E-RF-00C
FCC ID:	2AIZN-X689F

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	Mobile Phone
Model No.:	X689F
Multiple Model(s) No.:	N/A
Trade Mark:	Infinix
Date Received:	2021/11/23
Date of Test:	2021/12/09~2021/12/16
Report Date:	2021/12/17

Test Result:	Pass*

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

Prepared and Checked By:

Fan Yang
EMC Engineer

Approved By:

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5G Wi-Fi: 5150-5250MHz & 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Ouput Power	7.64dBm(5150-5250MHz) 7.68dBm(5725-5850MHz)
Modulation Technique	OFDM
Antenna Specification*	Antenna gain:-0.9dBi (It is provided by the manufacturer)
Voltage Range	DC3.85V from battery or DC5V from adapter
Sample serial number	SZNS211123-60257E-RF-S1 for RF conducted SZNS211123-60257E-RF-S5 for CE&RE (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: U100XSA Input: AC 100-240V~50/60Hz, 0.3A Output: DC 5.0V, 2.0A

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.

The device only supports 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes, which was declared 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 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

EUT testing in engineering mode and power level was provided by the applicant.

The worst case was performed under:

U-NII	Mode	Frequency (MHz)	Data Rate (Mbps)	Power Level*
5150 – 5250MHz	802.11 a	5180	6Mbps	12
		5200	6Mbps	12
		5240	6Mbps	12
	802.11 n20	5180	MCS0	12
		5200	MCS0	12
		5240	MCS0	12
	802.11 n40	5190	MCS0	13
		5230	MCS0	13
	802.11 ac20	5180	MCS0	13
		5200	MCS0	13
		5240	MCS0	13
	802.11 ac40	5190	MCS0	13
		5230	MCS0	13
	802.11 ac80	5210	MCS0	13
5725 – 5850MHz	802.11 a	5745	6Mbps	12
		5785	6Mbps	12
		5825	6Mbps	12
	802.11 n20	5745	MCS0	12
		5785	MCS0	12
		5825	MCS0	12
	802.11 n40	5755	MCS0	13
		5795	MCS0	13
	802.11 ac20	5745	MCS0	13
		5785	MCS0	13
		5825	MCS0	13
	802.11 ac40	5755	MCS0	13
		5795	MCS0	13
	802.11 ac80	5775	MCS0	13

Note 1: 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 rates, bandwidths, and modulations.
Note 2: The power level was provided by the applicant.

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

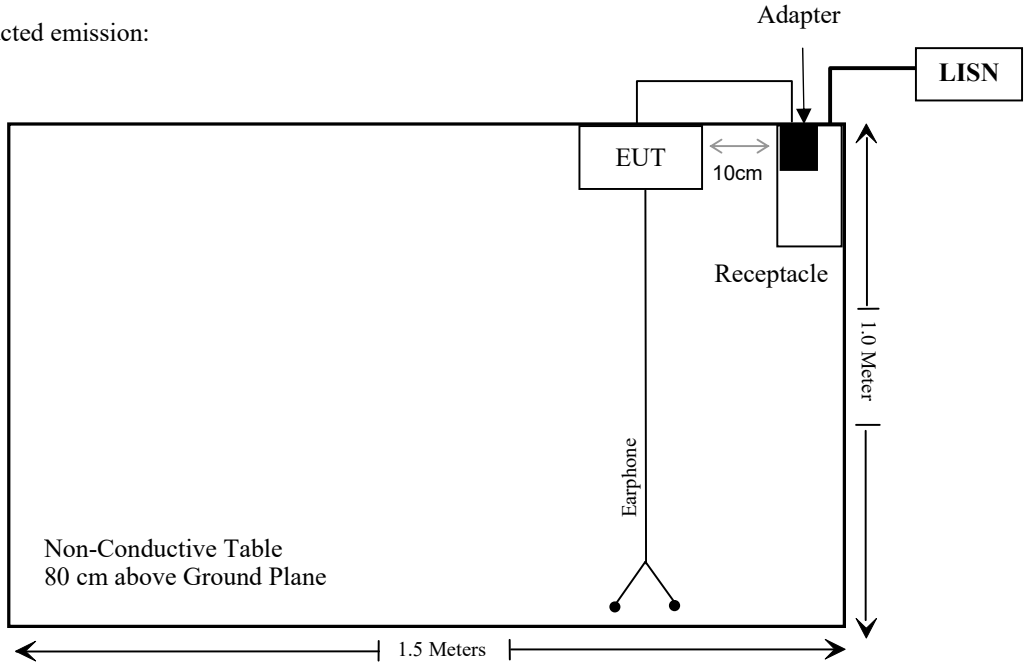
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

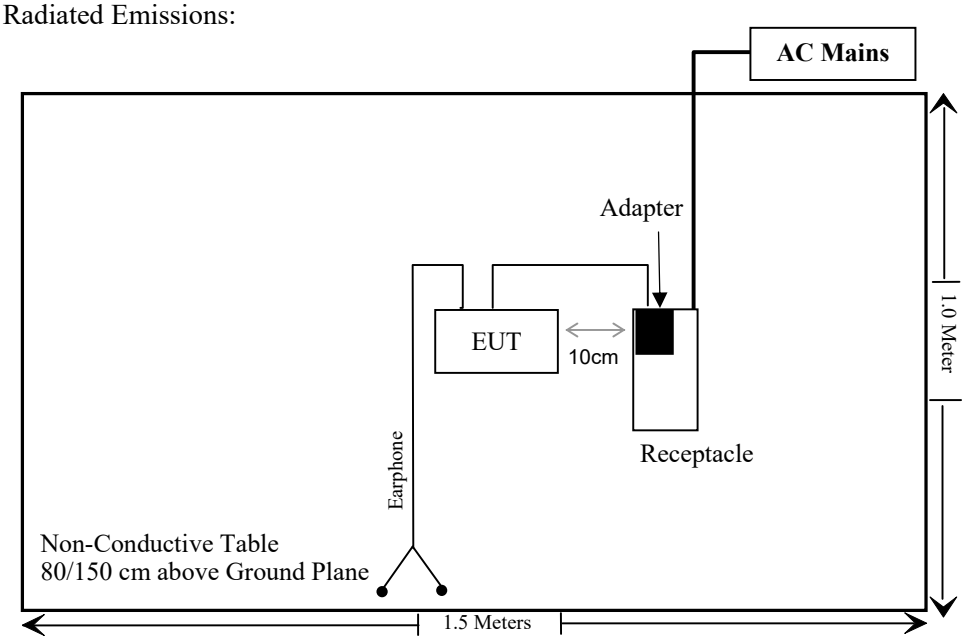
Cable Description	Length (m)	From Port	To
Un-shielding Detachable USB Cable	1.0	EUT	Adapter

Block Diagram of Test Setup

For conducted emission:



For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Compliant
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (e)	99% Occupied Bandwidth & 26 dB Emission Bandwidth & 6dB Emission Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/02/03	2022/02/02
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50ΩCoaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Conducted Emission Test Software: e3 19821b (V9)					
Radiated emission test					
Rohde& Schwarz	Test Receiver	ESR	102725	2020/12/25	2021/12/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/5/18	2022/5/17
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/11	2022/11/10
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-10m	No.7	2021/11/09	2022/11/08
Unknown	RF Coaxial Cable	N-2m	No.8	2021/11/09	2022/11/08
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.725/5.875G-45	065	2020/12/25	2021/12/24
Radiated Emission Test Software: e3 19821b (V9)					

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF conducted test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05

*** 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 §1.1307(b) & §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Measurement Result

For worst case:

Mode	Frequency (MHz)	Max Tune-up Conducted Power (dBm)	Max Tune-up Conducted Power (mW)	Calculated Distance (mm)	Calculated value	Threshold (1-g SAR)	SAR Test Exclusion
5G Wi-Fi	5180-5240	7.8	6.03	5	2.8	3.0	Yes
	5745-5825	7.8	6.03	5	2.9	3.0	Yes

Note: The tune up conducted power was declared by the applicant.

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.

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 -0.9dBi, fulfill the requirement of this section. Please refer to the EUT photos.

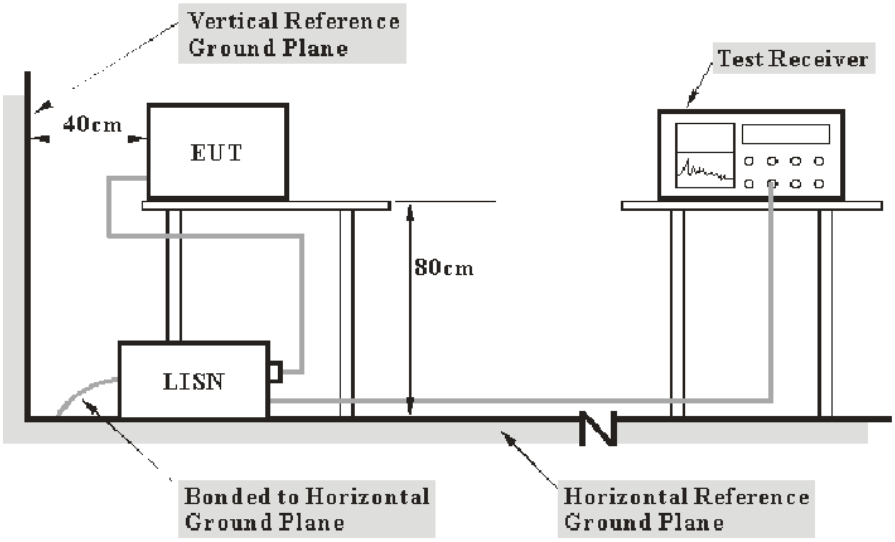
Result: Compliant.

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.

Transd Factor & Margin Calculation

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

Transd 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

Test Data

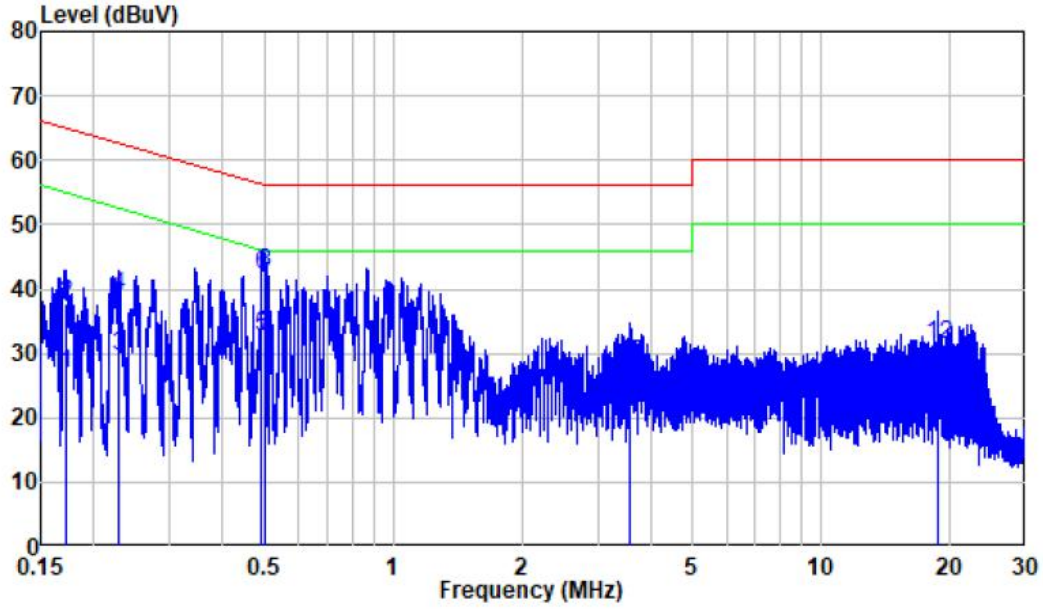
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	64 %
ATM Pressure:	101.0 kPa

The testing was performed by Bin Deng on 2021-12-09.

EUT operation mode: Transmitting

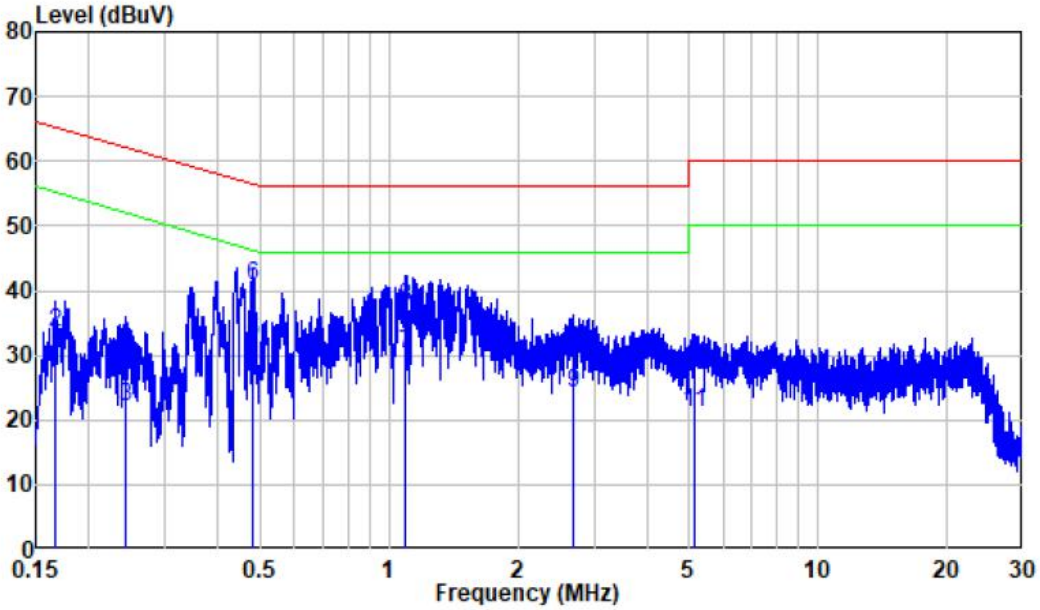
AC 120V/60 Hz, Line:



Site : Shielding Room
Condition: Line
Mode : 5G WIFI
Model : X689F
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.171	9.85	17.05	26.90	54.89	-27.99	Average
2	0.171	9.85	27.78	37.63	64.89	-27.26	QP
3	0.228	9.80	19.77	29.57	52.54	-22.97	Average
4	0.228	9.80	29.05	38.85	62.54	-23.69	QP
5	0.493	9.80	22.66	32.46	46.12	-13.66	Average
6	0.493	9.80	32.50	42.30	56.12	-13.82	QP
7	0.500	9.80	23.23	33.03	46.00	-12.97	Average
8	0.500	9.80	32.83	42.63	56.00	-13.37	QP
9	3.554	9.94	10.80	20.74	46.00	-25.26	Average
10	3.554	9.94	18.48	28.42	56.00	-27.58	QP
11	18.684	10.17	13.49	23.66	50.00	-26.34	Average
12	18.684	10.17	21.31	31.48	60.00	-28.52	QP

AC 120V/60 Hz, Neutral:



Site : Shielding Room
Condition: Neutral
Mode : 5G WIFI
Model : X689F
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.167	9.94	17.43	27.37	55.11	-27.74	Average
2	0.167	9.94	23.64	33.58	65.11	-31.53	QP
3	0.244	9.98	12.03	22.01	51.96	-29.95	Average
4	0.244	9.98	18.76	28.74	61.96	-33.22	QP
5	0.480	9.90	21.98	31.88	46.33	-14.45	Average
6	0.480	9.90	30.89	40.79	56.33	-15.54	QP
7	1.095	9.91	20.19	30.10	46.00	-15.90	Average
8	1.095	9.91	27.63	37.54	56.00	-18.46	QP
9	2.687	9.97	14.05	24.02	46.00	-21.98	Average
10	2.687	9.97	21.04	31.01	56.00	-24.99	QP
11	5.132	10.05	11.09	21.14	50.00	-28.86	Average
12	5.132	10.05	18.16	28.21	60.00	-31.79	QP

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

Applicable Standard

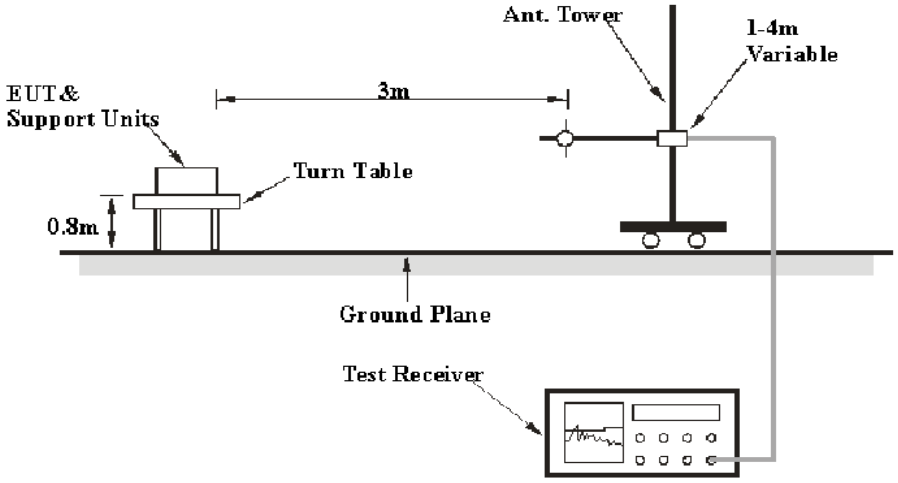
FCC §15.407 (b); §15.209; §15.205;

(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.

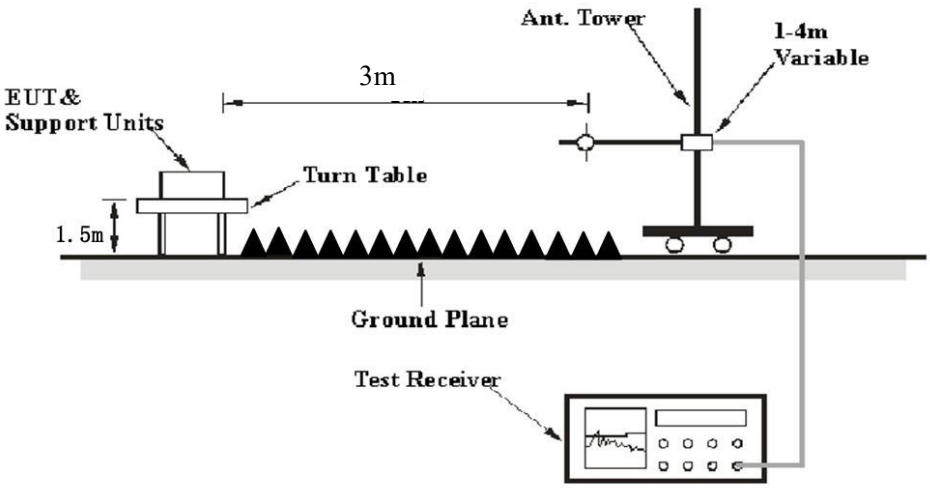
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

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.

Corrected Amplitude & 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

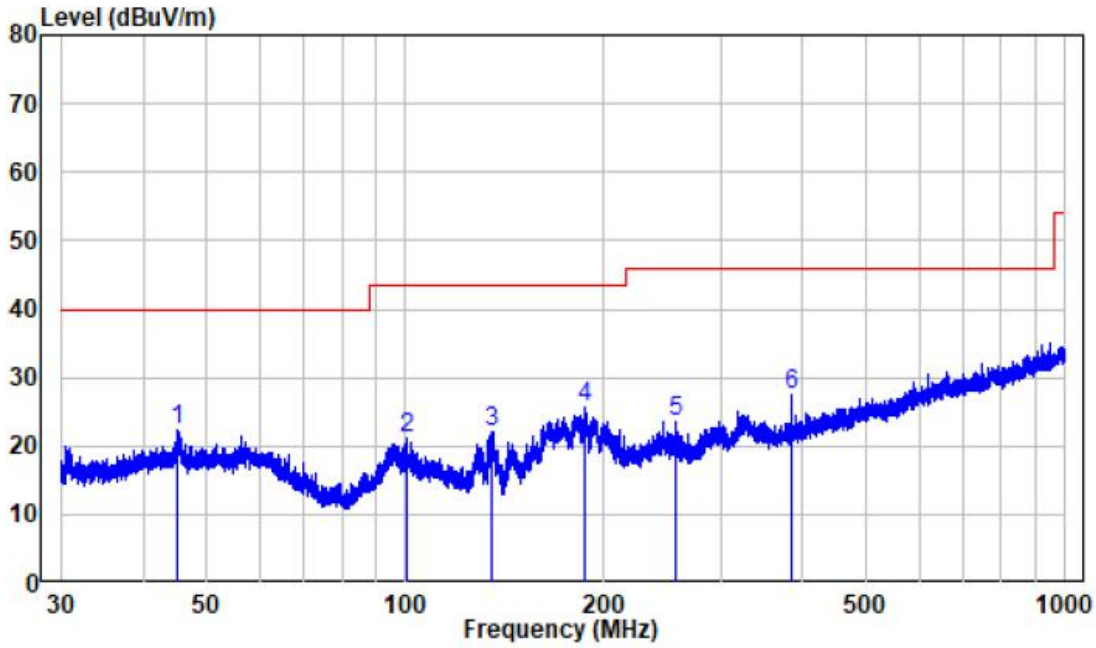
Temperature:	25~26 ℃
Relative Humidity:	50~64 %
ATM Pressure:	101.0 kPa

The testing was performed by Bin Deng on 2021-12-13 for below 1GHz and 2021-12-05 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:

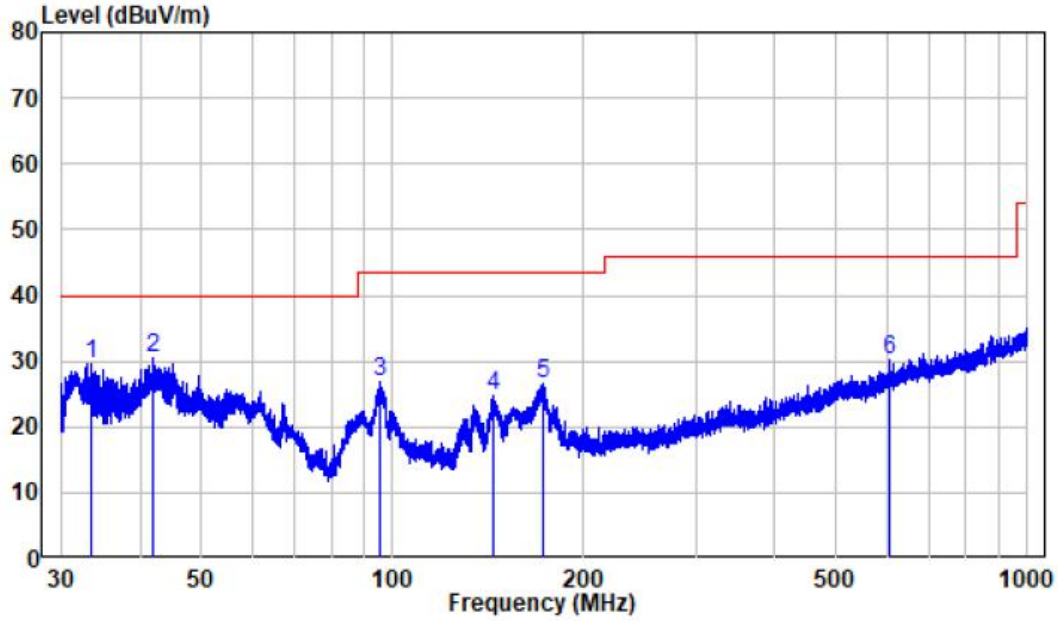
Horizontal:



Site : chamber
Condition: 3m HORIZONTAL
Job NO : : szns211123-60257e-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	45.14	-9.95	32.18	22.23	40.00	-17.77	Peak
2	100.18	-11.78	33.00	21.22	43.50	-22.28	Peak
3	134.85	-15.01	37.17	22.16	43.50	-21.34	Peak
4	187.34	-11.90	37.63	25.73	43.50	-17.77	Peak
5	256.30	-10.60	34.23	23.63	46.00	-22.37	Peak
6	384.10	-7.08	34.48	27.40	46.00	-18.60	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job NO : : szns211123-60257e-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	33.58	-11.92	41.50	29.58	40.00	-10.42	Peak
2	41.82	-10.06	40.61	30.55	40.00	-9.45	Peak
3	95.59	-12.37	39.20	26.83	43.50	-16.67	Peak
4	143.89	-15.52	40.28	24.76	43.50	-18.74	Peak
5	172.83	-13.29	39.82	26.53	43.50	-16.97	Peak
6	604.86	-2.31	32.42	30.11	46.00	-15.89	Peak

5150-5250 MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
4500	62.24	PK	183	1.8	H	-4.72	57.52	74	-16.48
4500	49.98	AV	183	1.8	H	-4.72	45.26	54	-8.74
4500	62.18	PK	231	1.9	V	-4.72	57.46	74	-16.54
4500	49.94	AV	231	1.9	V	-4.72	45.22	54	-8.78
5150	63.75	PK	220	1.1	H	-2.73	61.02	74	-12.98
5150	50.54	AV	220	1.1	H	-2.73	47.81	54	-6.19
5150	63.50	PK	44	1.3	V	-2.73	60.77	74	-13.23
5150	50.46	AV	44	1.3	V	-2.73	47.73	54	-6.27
10360	46.37	PK	44	1	H	8.12	54.49	68.2	-13.71
10360	48.43	PK	300	1.2	V	8.12	56.55	68.2	-11.65
5200 MHz									
10400	45.52	PK	129	2.3	H	8.24	53.76	68.2	-14.44
10400	46.73	PK	293	2.4	V	8.24	54.97	68.2	-13.23
5240 MHz									
5350	64.76	PK	144	2	H	-2.33	62.43	74	-11.57
5350	50.91	AV	144	2	H	-2.33	48.58	54	-5.42
5350	64.18	PK	303	2.4	V	-2.33	61.85	74	-12.15
5350	50.79	AV	303	2.4	V	-2.33	48.46	54	-5.54
5460	62.79	PK	97	1.6	H	-2.60	60.19	74	-13.81
5460	50.53	AV	97	1.6	H	-2.60	47.93	54	-6.07
5460	62.68	PK	185	1.3	V	-2.60	60.08	74	-13.92
5460	50.49	AV	185	1.3	V	-2.60	47.89	54	-6.11
10480	45.36	PK	84	2	H	8.56	53.92	68.2	-14.28
10480	47.30	PK	137	1.2	V	8.56	55.86	68.2	-12.34

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5180 MHz									
4500	62.31	PK	20	1.2	H	-4.72	57.59	74	-16.41
4500	50.45	AV	20	1.2	H	-4.72	45.73	54	-8.27
4500	62.22	PK	295	1.9	V	-4.72	57.50	74	-16.50
4500	50.31	AV	295	1.9	V	-4.72	45.59	54	-8.41
5150	64.01	PK	263	2.2	H	-2.73	61.28	74	-12.72
5150	50.79	AV	263	2.2	H	-2.73	48.06	54	-5.94
5150	63.65	PK	68	1.7	V	-2.73	60.92	74	-13.08
5150	50.60	AV	68	1.7	V	-2.73	47.87	54	-6.13
10360	46.53	PK	92	1.2	H	8.12	54.65	68.2	-13.55
10360	47.74	PK	154	2	V	8.12	55.86	68.2	-12.34
5200 MHz									
10400	46.13	PK	9	2.5	H	8.24	54.37	68.2	-13.83
10400	47.34	PK	66	1.9	V	8.24	55.58	68.2	-12.62
5240 MHz									
5350	64.49	PK	48	2.5	H	-2.33	62.16	74	-11.84
5350	51.10	AV	48	2.5	H	-2.33	48.77	54	-5.23
5350	64.11	PK	287	1.4	V	-2.33	61.78	74	-12.22
5350	50.93	AV	287	1.4	V	-2.33	48.60	54	-5.40
5460	63.11	PK	169	1.8	H	-2.60	60.51	74	-13.49
5460	50.89	AV	169	1.8	H	-2.60	48.29	54	-5.71
5460	62.92	PK	189	2	V	-2.60	60.32	74	-13.68
5460	50.79	AV	189	2	V	-2.60	48.19	54	-5.81
10480	44.97	PK	261	1	H	8.56	53.53	68.2	-14.67
10480	46.40	PK	103	1.5	V	8.56	54.96	68.2	-13.24

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
4500	63.81	PK	69	1.8	H	-4.72	59.09	74	-14.91
4500	50.62	AV	69	1.8	H	-4.72	45.90	54	-8.10
4500	63.52	PK	119	2	V	-4.72	58.80	74	-15.20
4500	50.54	AV	119	2	V	-4.72	45.82	54	-8.18
5150	70.27	PK	250	1.1	H	-2.73	67.54	74	-6.46
5150	52.16	AV	250	1.1	H	-2.73	49.43	54	-4.57
5150	65.36	PK	56	1.7	V	-2.73	62.63	74	-11.37
5150	51.57	AV	56	1.7	V	-2.73	48.84	54	-5.16
10380	44.87	PK	28	1.8	H	8.18	53.05	68.2	-15.15
10380	45.49	PK	171	2	V	8.18	53.67	68.2	-14.53
5230 MHz									
5350	64.89	PK	116	1.5	H	-2.33	62.56	74	-11.44
5350	51.57	AV	116	1.5	H	-2.33	49.24	54	-4.76
5350	64.47	PK	162	2.4	V	-2.33	62.14	74	-11.86
5350	51.50	AV	162	2.4	V	-2.33	49.17	54	-4.83
5460	63.25	PK	256	2.1	H	-2.60	60.65	74	-13.35
5460	51.30	AV	256	2.1	H	-2.60	48.70	54	-5.30
5460	63.11	PK	324	2.1	V	-2.60	60.51	74	-13.49
5460	51.19	AV	324	2.1	V	-2.60	48.59	54	-5.41
10460	44.00	PK	333	2.3	H	8.47	52.47	68.2	-15.73
10460	44.54	PK	179	2.4	V	8.47	53.01	68.2	-15.19

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	63.01	PK	178	2	H	-4.72	58.29	74	-15.71
4500	50.42	AV	178	2	H	-4.72	45.70	54	-8.30
4500	62.77	PK	324	2.3	V	-4.72	58.05	74	-15.95
4500	50.34	AV	324	2.3	V	-4.72	45.62	54	-8.38
5150	63.77	PK	12	1.2	H	-2.73	61.04	74	-12.96
5150	50.80	AV	12	1.2	H	-2.73	48.07	54	-5.93
5150	63.27	PK	133	1.3	V	-2.73	60.54	74	-13.46
5150	50.59	AV	133	1.3	V	-2.73	47.86	54	-6.14
10360	46.38	PK	234	1.8	H	8.12	54.50	68.2	-13.70
10360	47.99	PK	332	1.5	V	8.12	56.11	68.2	-12.09
5200 MHz									
10400	45.43	PK	68	2.1	H	8.24	53.67	68.2	-14.53
10400	47.30	PK	189	1.7	V	8.24	55.54	68.2	-12.66
5240 MHz									
5350	64.40	PK	225	2.1	H	-2.33	62.07	74	-11.93
5350	51.04	AV	225	2.1	H	-2.33	48.71	54	-5.29
5350	64.13	PK	8	2.3	V	-2.33	61.80	74	-12.20
5350	50.96	AV	8	2.3	V	-2.33	48.63	54	-5.37
5460	63.36	PK	270	1.4	H	-2.60	60.76	74	-13.24
5460	50.93	AV	270	1.4	H	-2.60	48.33	54	-5.67
5460	63.22	PK	334	1.9	V	-2.60	60.62	74	-13.38
5460	50.84	AV	334	1.9	V	-2.60	48.24	54	-5.76
10480	46.18	PK	167	1.4	H	8.56	54.74	68.2	-13.46
10480	47.51	PK	183	2.3	V	8.56	56.07	68.2	-12.13

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5190 MHz									
4500	63.69	PK	339	2.3	H	-4.72	58.97	74	-15.03
4500	50.78	AV	339	2.3	H	-4.72	46.06	54	-7.94
4500	63.54	PK	260	2.1	V	-4.72	58.82	74	-15.18
4500	50.72	AV	260	2.1	V	-4.72	46.00	54	-8.00
5150	68.59	PK	322	2.2	H	-2.73	65.86	74	-8.14
5150	52.01	AV	322	2.2	H	-2.73	49.28	54	-4.72
5150	64.50	PK	19	1.8	V	-2.73	61.77	74	-12.23
5150	51.08	AV	19	1.8	V	-2.73	48.35	54	-5.65
10380	44.61	PK	359	1.5	H	8.18	52.79	68.2	-15.41
10380	45.03	PK	289	1.2	V	8.18	53.21	68.2	-14.99
5230 MHz									
5350	65.38	PK	134	1.6	H	-2.33	63.05	74	-10.95
5350	51.56	AV	134	1.6	H	-2.33	49.23	54	-4.77
5350	64.27	PK	164	2.2	V	-2.33	61.94	74	-12.06
5350	51.35	AV	164	2.2	V	-2.33	49.02	54	-4.98
5460	64.26	PK	26	2.2	H	-2.60	61.66	74	-12.34
5460	51.15	AV	26	2.2	H	-2.60	48.55	54	-5.45
5460	63.83	PK	323	2.1	V	-2.60	61.23	74	-12.77
5460	50.96	AV	323	2.1	V	-2.60	48.36	54	-5.64
10460	43.67	PK	255	1.4	H	8.47	52.14	68.2	-16.06
10460	44.24	PK	7	1.1	V	8.47	52.71	68.2	-15.49

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5210MHz									
4500	63.51	PK	324	1.9	H	-4.72	58.79	74	-15.21
4500	50.70	AV	324	1.9	H	-4.72	45.98	54	-8.02
4500	63.10	PK	198	1.6	V	-4.72	58.38	74	-15.62
4500	50.59	AV	198	1.6	V	-4.72	45.87	54	-8.13
5150	69.27	PK	123	1.2	H	-2.73	66.54	74	-7.46
5150	53.41	AV	123	1.2	H	-2.73	50.68	54	-3.32
5150	64.54	PK	193	1.5	V	-2.73	61.81	74	-12.19
5150	51.19	AV	193	1.5	V	-2.73	48.46	54	-5.54
5350	65.81	PK	210	1.4	H	-2.33	63.48	74	-10.52
5350	51.79	AV	210	1.4	H	-2.33	49.46	54	-4.54
5350	65.04	PK	203	1.4	V	-2.33	62.71	74	-11.29
5350	51.57	AV	203	1.4	V	-2.33	49.24	54	-4.76
5460	63.07	PK	357	2.5	H	-2.60	60.47	74	-13.53
5460	50.88	AV	357	2.5	H	-2.60	48.28	54	-5.72
5460	62.77	PK	149	1.8	V	-2.60	60.17	74	-13.83
5460	50.69	AV	149	1.8	V	-2.60	48.09	54	-5.91
10420	43.36	PK	7	2.2	H	8.32	51.68	68.2	-16.52
10420	43.91	PK	64	2.1	V	8.32	52.23	68.2	-15.97

5725-5850 MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5650	65.47	PK	59	1.6	H	-1.95	63.52	68.2	-4.68
5650	65.15	PK	298	1.2	V	-1.95	63.20	68.2	-5.00
5700	65.76	PK	281	2.2	H	-2.02	63.74	105.2	-41.46
5700	65.63	PK	318	1.9	V	-2.02	63.61	105.2	-41.59
5720	68.87	PK	74	1.8	H	-1.97	66.90	110.8	-43.90
5720	68.34	PK	301	1.8	V	-1.97	66.37	110.8	-44.43
5725	73.82	PK	339	2.3	H	-1.96	71.86	122.2	-50.34
5725	71.84	PK	1	2.4	V	-1.96	69.88	122.2	-52.32
11490	44.69	PK	342	2	H	6.63	51.32	74	-22.68
11490	45.76	PK	222	2	V	6.63	52.39	74	-21.61
5785 MHz									
11570	45.54	PK	152	1.3	H	6.59	52.13	74	-21.87
11570	46.66	PK	27	1.7	V	6.59	53.25	74	-20.75
5825 MHz									
5850	72.42	PK	286	1.2	H	-1.81	70.61	122.2	-51.59
5850	70.86	PK	183	1	V	-1.81	69.05	122.2	-53.15
5855	66.81	PK	235	2.2	H	-1.82	64.99	110.8	-45.81
5855	67.98	PK	319	1.2	V	-1.82	66.16	110.8	-44.64
5875	67.46	PK	126	1.9	H	-1.84	65.62	105.2	-39.58
5875	67.86	PK	187	2	V	-1.84	66.02	105.2	-39.18
5925	66.45	PK	240	1.1	H	-1.82	64.63	68.2	-3.57
5925	66.84	PK	332	2.3	V	-1.82	65.02	68.2	-3.18
11650	44.50	PK	270	1.5	H	6.77	51.27	74	-22.73
11650	45.63	PK	194	1.2	V	6.77	52.40	74	-21.60

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745 MHz									
5650	65.56	PK	45	1.1	H	-1.95	63.61	68.2	-4.59
5650	65.42	PK	80	2.4	V	-1.95	63.47	68.2	-4.73
5700	66.74	PK	66	2.5	H	-2.02	64.72	105.2	-40.48
5700	66.55	PK	330	1.9	V	-2.02	64.53	105.2	-40.67
5720	69.82	PK	77	1.9	H	-1.97	67.85	110.8	-42.95
5720	68.75	PK	53	1.4	V	-1.97	66.78	110.8	-44.02
5725	74.73	PK	251	2.4	H	-1.96	72.77	122.2	-49.43
5725	73.27	PK	293	1.1	V	-1.96	71.31	122.2	-50.89
11490	45.43	PK	170	1.4	H	6.63	52.06	74	-21.94
11490	45.99	PK	315	1.5	V	6.63	52.62	74	-21.38
5785 MHz									
11570	45.78	PK	156	1.4	H	6.59	52.37	74	-21.63
11570	46.77	PK	179	2.4	V	6.59	53.36	74	-20.64
5825 MHz									
5850	70.53	PK	5	1.2	H	-1.81	68.72	122.2	-53.48
5850	70.02	PK	32	1.7	V	-1.81	68.21	122.2	-53.99
5855	69.21	PK	261	1.6	H	-1.82	67.39	110.8	-43.41
5855	68.61	PK	212	2.2	V	-1.82	66.79	110.8	-44.01
5875	67.29	PK	283	1	H	-1.84	65.45	105.2	-39.75
5875	67.07	PK	121	2.5	V	-1.84	65.23	105.2	-39.97
5925	66.83	PK	251	1.8	H	-1.82	65.01	68.2	-3.19
5925	66.64	PK	175	2.2	V	-1.82	64.82	68.2	-3.38
11650	44.45	PK	182	1.5	H	6.77	51.22	74	-22.78
11650	45.56	PK	303	1.5	V	6.77	52.33	74	-21.67

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5755 MHz									
5650	65.46	PK	236	2.4	H	-1.95	63.51	68.2	-4.69
5650	65.38	PK	163	2.2	V	-1.95	63.43	68.2	-4.77
5700	65.79	PK	78	1.6	H	-2.02	63.77	105.2	-41.43
5700	66.13	PK	6	2.1	V	-2.02	64.11	105.2	-41.09
5720	73.32	PK	58	2	H	-1.97	71.35	110.8	-39.45
5720	71.92	PK	24	1.6	V	-1.97	69.95	110.8	-40.85
5725	75.54	PK	298	2.2	H	-1.96	73.58	122.2	-48.62
5725	73.63	PK	196	1.9	V	-1.96	71.67	122.2	-50.53
11510	45.01	PK	223	2.4	H	6.59	51.60	74	-22.40
11510	45.91	PK	46	2.2	V	6.59	52.50	74	-21.50
5795 MHz									
5850	67.94	PK	247	2.3	H	-1.81	66.13	122.2	-56.07
5850	67.39	PK	257	2.1	V	-1.81	65.58	122.2	-56.62
5855	67.82	PK	34	1.3	H	-1.82	66.00	110.8	-44.80
5855	67.31	PK	180	2.4	V	-1.82	65.49	110.8	-45.31
5875	67.05	PK	312	1.3	H	-1.84	65.21	105.2	-39.99
5875	66.77	PK	116	2.4	V	-1.84	64.93	105.2	-40.27
5925	66.57	PK	347	1.8	H	-1.82	64.75	68.2	-3.45
5925	66.43	PK	345	2.4	V	-1.82	64.61	68.2	-3.59
11590	45.62	PK	278	2.2	H	6.57	52.19	74	-21.81
11590	46.30	PK	133	2.3	V	6.57	52.87	74	-21.13

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745 MHz									
5650	65.40	PK	105	1.8	H	-1.95	63.45	68.2	-4.75
5650	66.51	PK	200	2.3	V	-1.95	64.56	68.2	-3.64
5700	66.53	PK	92	2.5	H	-2.02	64.51	105.2	-40.69
5700	66.63	PK	88	2.1	V	-2.02	64.61	105.2	-40.59
5720	70.44	PK	197	2.1	H	-1.97	68.47	110.8	-42.33
5720	69.20	PK	125	1	V	-1.97	67.23	110.8	-43.57
5725	75.36	PK	347	1	H	-1.96	73.40	122.2	-48.80
5725	73.30	PK	24	1.2	V	-1.96	71.34	122.2	-50.86
11490	44.57	PK	304	1.8	H	6.63	51.20	74	-22.80
11490	45.82	PK	144	2.1	V	6.63	52.45	74	-21.55
5785 MHz									
11570	45.20	PK	268	1.1	H	6.59	51.79	74	-22.21
11570	46.37	PK	304	2.4	V	6.59	52.96	74	-21.04
5825 MHz									
5850	74.39	PK	145	1.2	H	-1.81	72.58	122.2	-49.62
5850	72.74	PK	49	1.5	V	-1.81	70.93	122.2	-51.27
5855	70.67	PK	192	2.1	H	-1.82	68.85	110.8	-41.95
5855	69.54	PK	250	2.4	V	-1.82	67.72	110.8	-43.08
5875	66.85	PK	293	1.2	H	-1.84	65.01	105.2	-40.19
5875	66.70	PK	227	2.5	V	-1.84	64.86	105.2	-40.34
5925	66.72	PK	21	1.6	H	-1.82	64.90	68.2	-3.30
5925	66.53	PK	169	2.3	V	-1.82	64.71	68.2	-3.49
11650	44.12	PK	8	2	H	6.77	50.89	74	-23.11
11650	45.17	PK	208	1.5	V	6.77	51.94	74	-22.06

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5755 MHz									
5650	65.52	PK	303	1.9	H	-1.95	63.57	68.2	-4.63
5650	65.36	PK	342	2.2	V	-1.95	63.41	68.2	-4.79
5700	66.62	PK	307	1.4	H	-2.02	64.60	105.2	-40.60
5700	66.55	PK	32	1.8	V	-2.02	64.53	105.2	-40.67
5720	73.32	PK	102	2.4	H	-1.97	71.35	110.8	-39.45
5720	71.82	PK	136	2.2	V	-1.97	69.85	110.8	-40.95
5725	75.84	PK	49	1.1	H	-1.96	73.88	122.2	-48.32
5725	73.24	PK	57	2.3	V	-1.96	71.28	122.2	-50.92
11510	45.17	PK	270	1.7	H	6.59	51.76	74	-22.24
11510	46.02	PK	294	1	V	6.59	52.61	74	-21.39
5795 MHz									
5850	68.72	PK	217	2.2	H	-1.81	66.91	122.2	-55.29
5850	68.17	PK	131	2.4	V	-1.81	66.36	122.2	-55.84
5855	68.14	PK	140	1.8	H	-1.82	66.32	110.8	-44.48
5855	67.87	PK	196	1.7	V	-1.82	66.05	110.8	-44.75
5875	67.08	PK	228	2	H	-1.84	65.24	105.2	-39.96
5875	66.73	PK	244	1.8	V	-1.84	64.89	105.2	-40.31
5925	66.68	PK	241	1.9	H	-1.82	64.86	68.2	-3.34
5925	66.55	PK	145	1.9	V	-1.82	64.73	68.2	-3.47
11590	45.59	PK	26	2.3	H	6.57	52.16	74	-21.84
11590	46.48	PK	155	2.1	V	6.57	53.05	74	-20.95

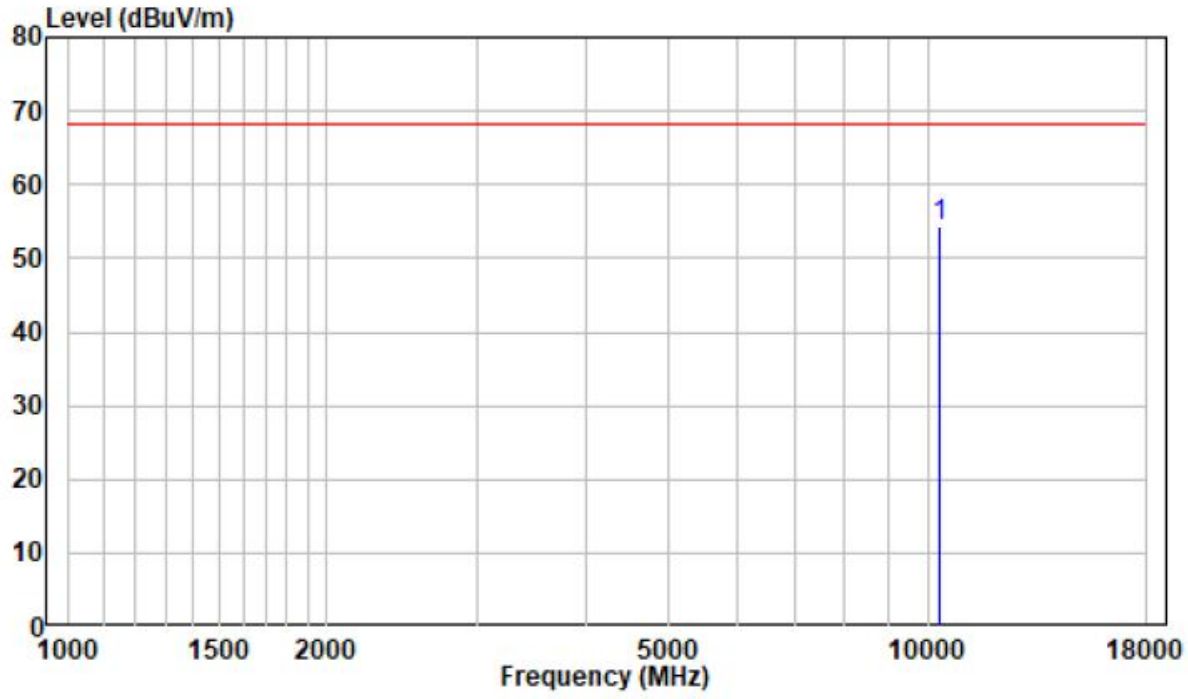
Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5775 MHz									
5650	65.50	PK	78	1.2	H	-1.95	63.55	68.2	-4.65
5650	65.63	PK	209	2	V	-1.95	63.68	68.2	-4.52
5700	70.46	PK	166	1.2	H	-2.02	68.44	105.2	-36.76
5700	69.89	PK	112	1.5	V	-2.02	67.87	105.2	-37.33
5720	71.34	PK	252	2	H	-1.97	69.37	110.8	-41.43
5720	70.60	PK	293	1.5	V	-1.97	68.63	110.8	-42.17
5725	74.52	PK	151	1.3	H	-1.96	72.56	122.2	-49.64
5725	72.07	PK	233	2.5	V	-1.96	70.11	122.2	-52.09
5850	70.96	PK	190	1.3	H	-1.81	69.15	122.2	-53.05
5850	70.41	PK	237	1.7	V	-1.81	68.60	122.2	-53.60
5855	68.88	PK	183	1.3	H	-1.82	67.06	110.8	-43.74
5855	69.34	PK	326	2.4	V	-1.82	67.52	110.8	-43.28
5875	67.16	PK	1	1.3	H	-1.84	65.32	105.2	-39.88
5875	66.85	PK	20	2.2	V	-1.84	65.01	105.2	-40.19
5925	66.76	PK	144	1	H	-1.82	64.94	68.2	-3.26
5925	66.58	PK	308	1.6	V	-1.82	64.76	68.2	-3.44
11550	44.44	PK	236	1.8	H	6.61	51.05	74	-22.95
11550	45.04	PK	204	1.7	V	6.61	51.65	74	-22.35

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.

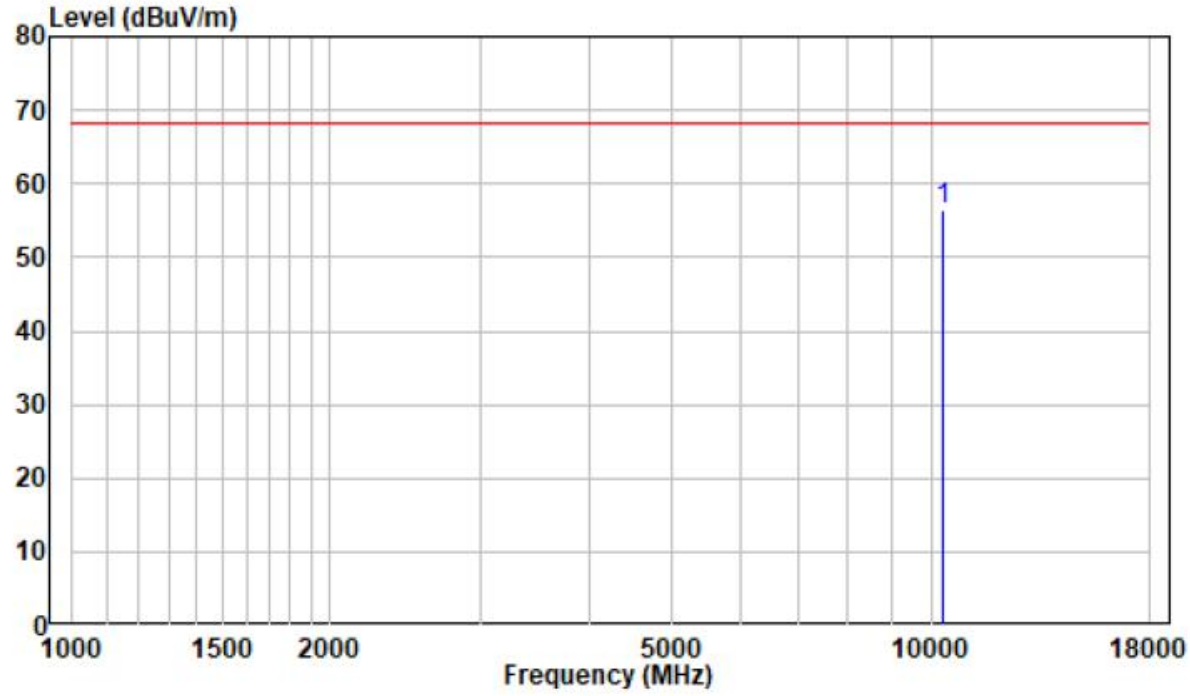
1 GHz - 18 GHz: (Pre-Scan plots)

802.11a mode, 5180MHz

Horizontal



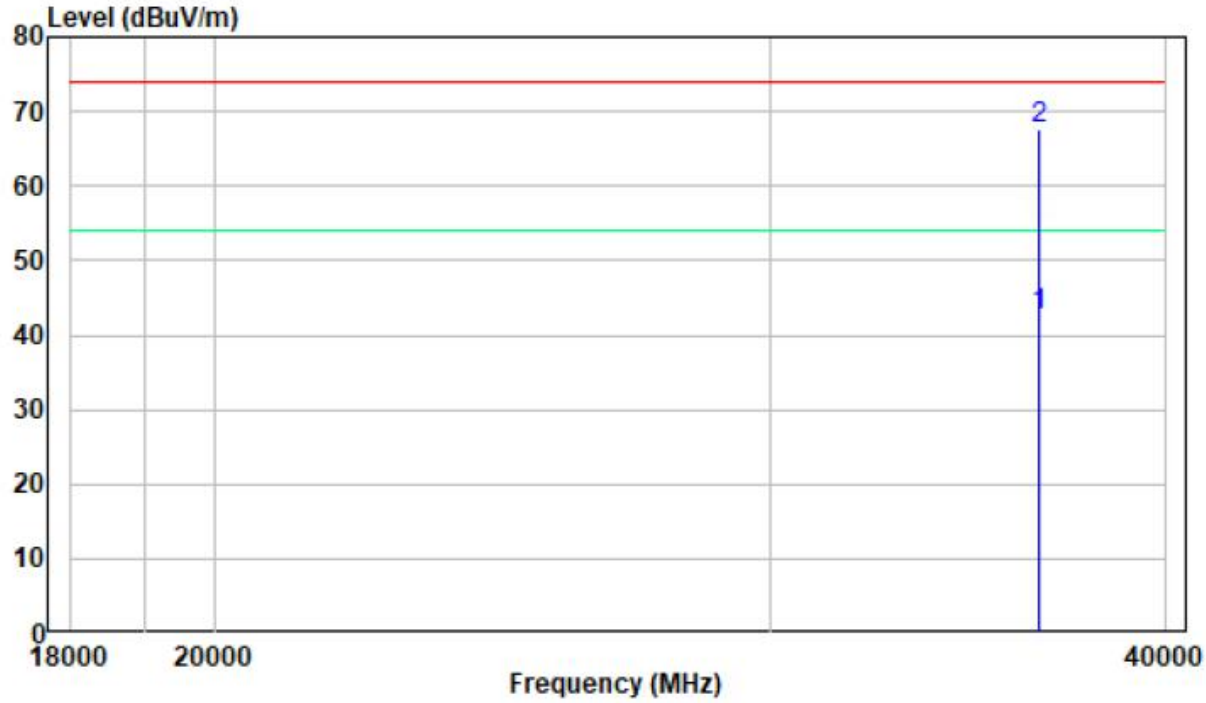
Vertical



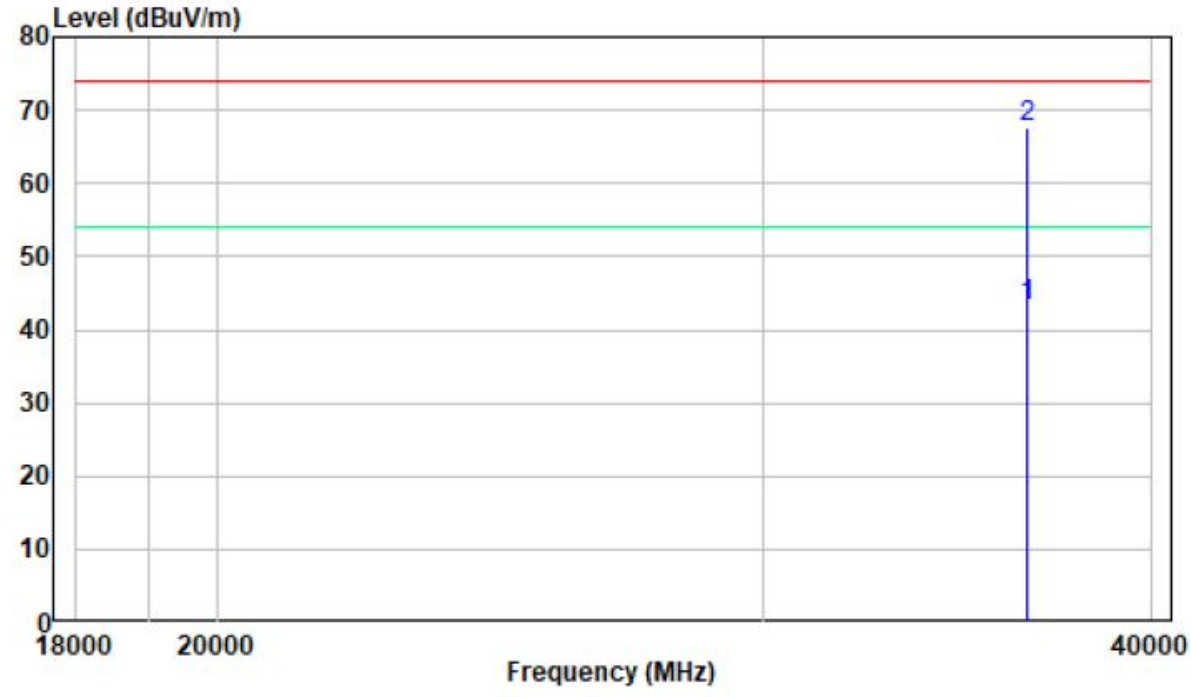
18-40GHz: (Pre-Scan plots)

802.11a mode, 5180MHz

Horizontal



Vertical



FCC §15.407(a),(e) –99% OCCUPIED BANDWIDTH & 26 dB Emission Bandwidth & 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.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

The following conditions shall be observed for measuring the occupied bandwidth and 6 dB bandwidth:
• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

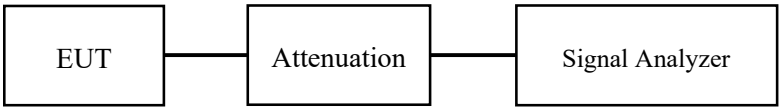
• The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / 6 dB bandwidth if the device is not transmitting continuously.

• The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / 6 dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level 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, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-12-15 to 2021-12-16.

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.

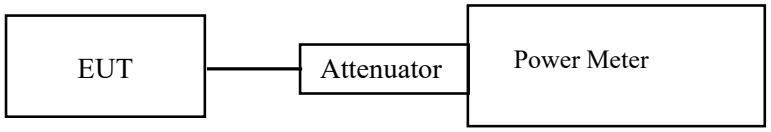
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-12-15 to 2021-12-16.

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 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-12-15.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

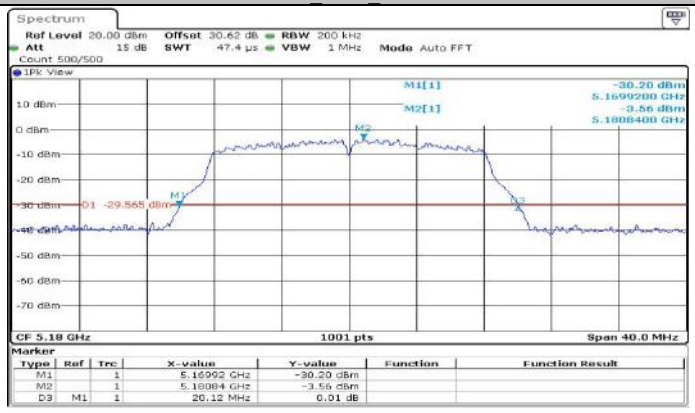
Appendix A1: Emission Bandwidth

Test Result

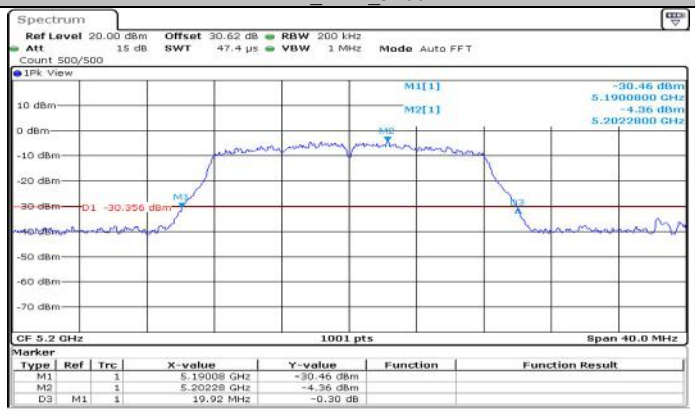
Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.120	---	PASS
		5200	19.920	---	PASS
		5240	20.080	---	PASS
11N20SISO	Ant1	5180	20.200	---	PASS
		5200	20.240	---	PASS
		5240	20.160	---	PASS
11N40SISO	Ant1	5190	41.360	---	PASS
		5230	41.280	---	PASS
11AC20SISO	Ant1	5180	20.160	---	PASS
		5200	20.360	---	PASS
		5240	20.320	---	PASS
11AC40SISO	Ant1	5190	41.120	---	PASS
		5230	41.600	---	PASS
11AC80SISO	Ant1	5210	82.240	---	PASS

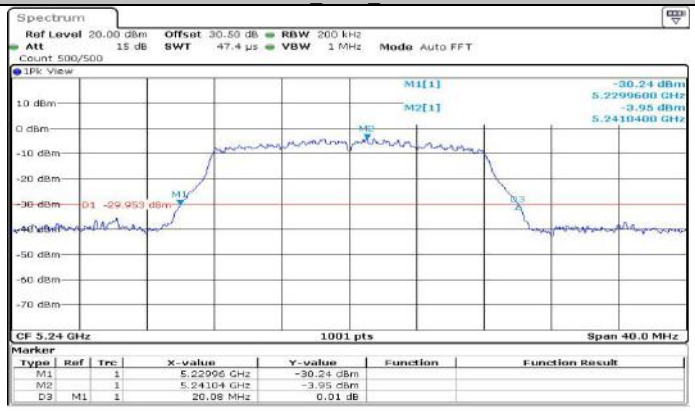
Test Graphs

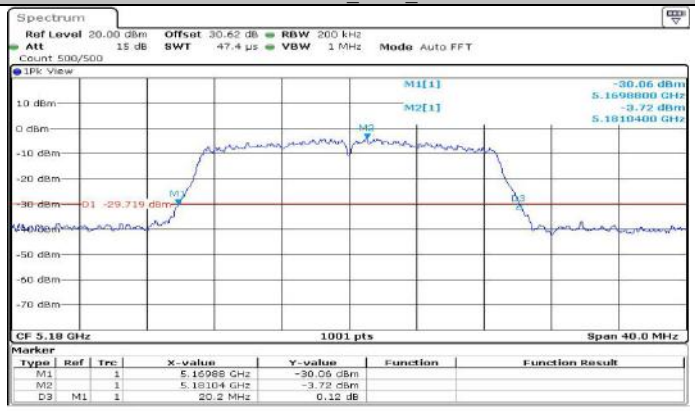
11A_Ant1_5180

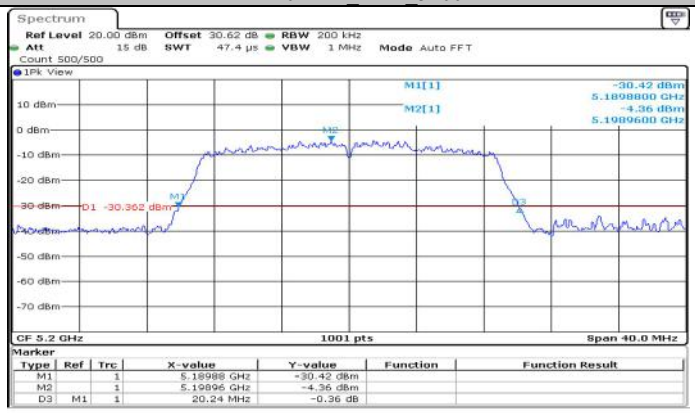


11A_Ant1_5200

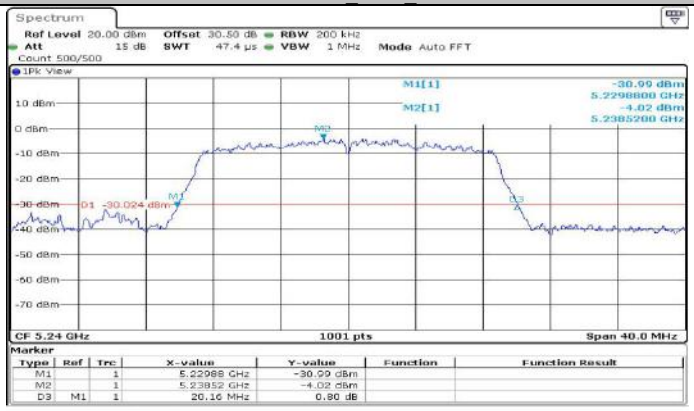


11A_Ant1_5240


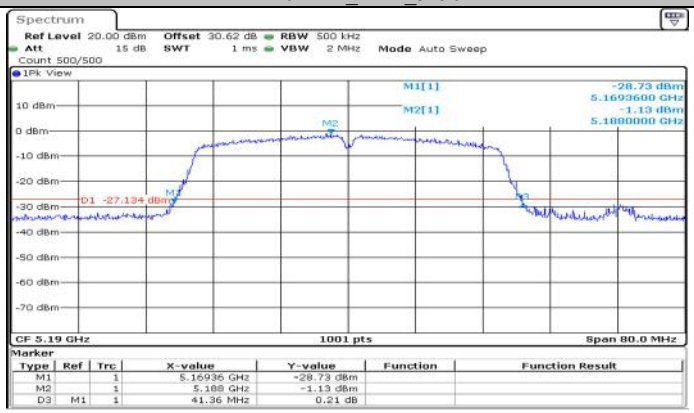
11N20SISO_Ant1_5180


11N20SISO_Ant1_5200


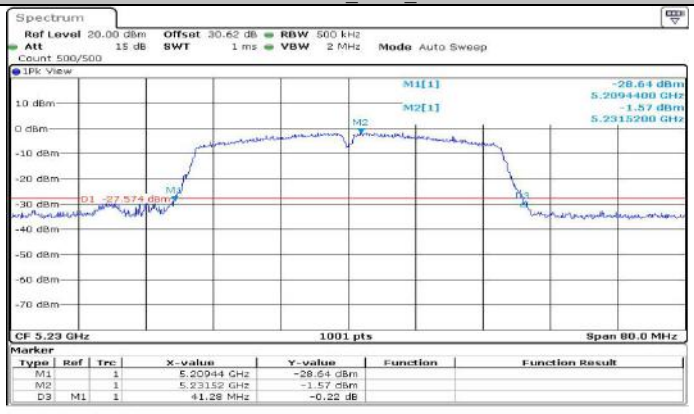
11N20SISO_Ant1_5240



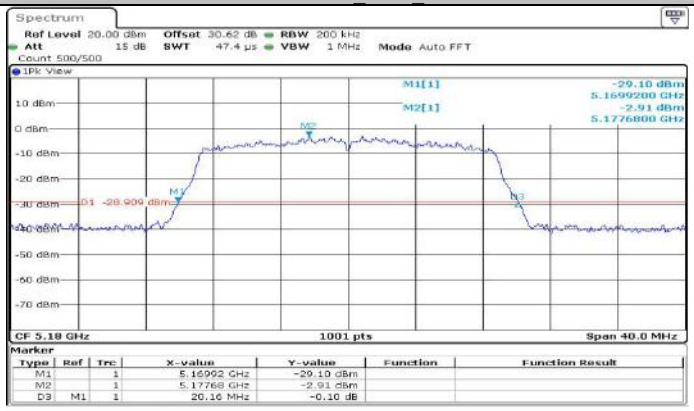
11N40SISO_Ant1_5190



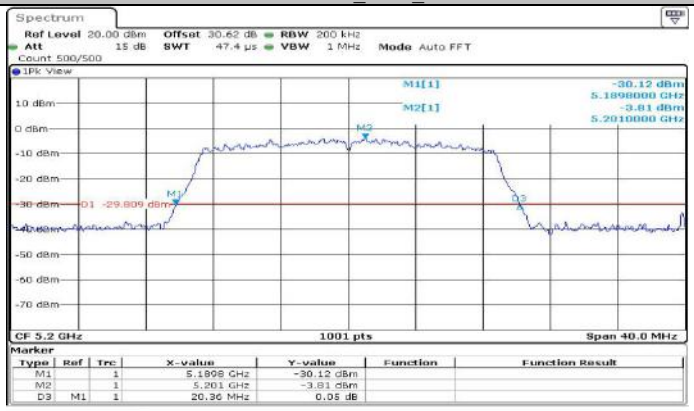
11N40SISO_Ant1_5230



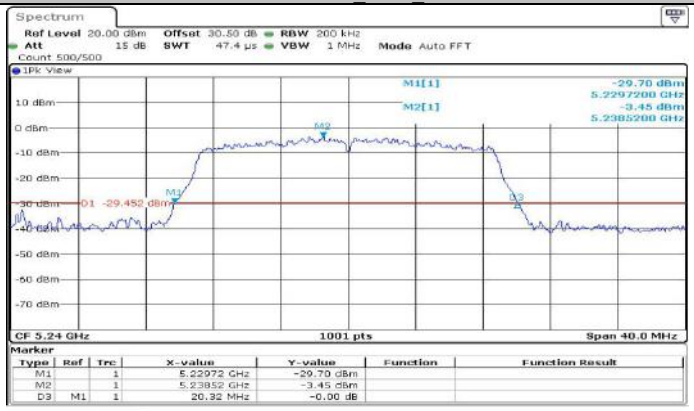
11AC20SISO_Ant1_5180



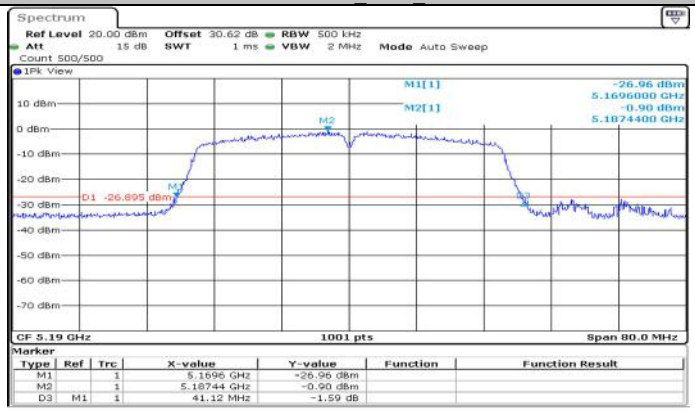
11AC20SISO_Ant1_5200



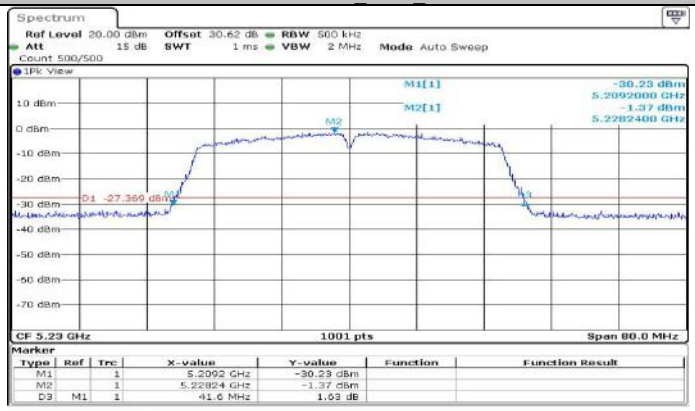
11AC20SISO_Ant1_5240



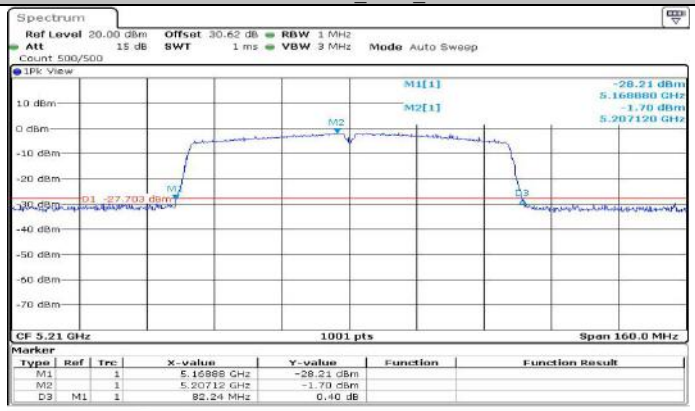
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Appendix A2: Occupied channel bandwidth

Test Result

Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.463	---	PASS
		5200	17.542	---	PASS
		5240	17.463	---	PASS
		5745	17.542	---	PASS
		5785	17.702	---	PASS
		5825	17.822	---	PASS
11N20SISO	Ant1	5180	18.182	---	PASS
		5200	18.302	---	PASS
		5240	18.222	---	PASS
		5745	18.342	---	PASS
		5785	18.342	---	PASS
		5825	18.462	---	PASS
11N40SISO	Ant1	5190	37.243	---	PASS
		5230	36.843	---	PASS
		5755	37.083	---	PASS
		5795	37.323	---	PASS
11AC20SISO	Ant1	5180	18.182	---	PASS
		5200	18.182	---	PASS
		5240	18.222	---	PASS
		5745	18.262	---	PASS
		5785	18.422	---	PASS
		5825	18.382	---	PASS
11AC40SISO	Ant1	5190	37.083	---	PASS
		5230	36.843	---	PASS
		5755	37.243	---	PASS
		5795	37.722	---	PASS
11AC80SISO	Ant1	5210	75.924	---	PASS
		5775	76.563	---	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

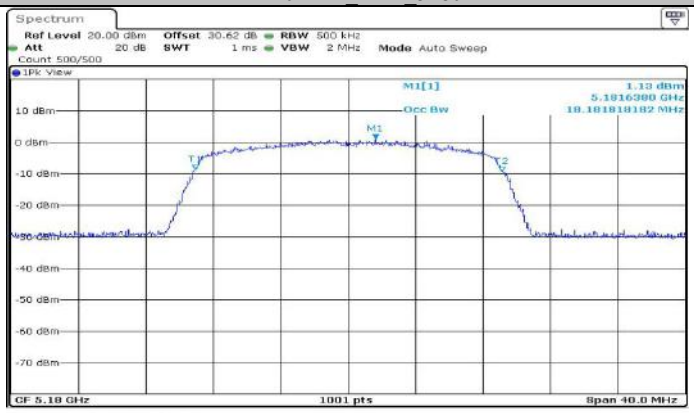
11A_Ant1_5200

11A_Ant1_5240

11A_Ant1_5745

11A_Ant1_5785


11A_Ant1_5825


11N20SISO_Ant1_5180


11N20SISO_Ant1_5200

11N20SISO_Ant1_5240

11N20SISO_Ant1_5745

11N20SISO_Ant1_5785


11N20SISO_Ant1_5825

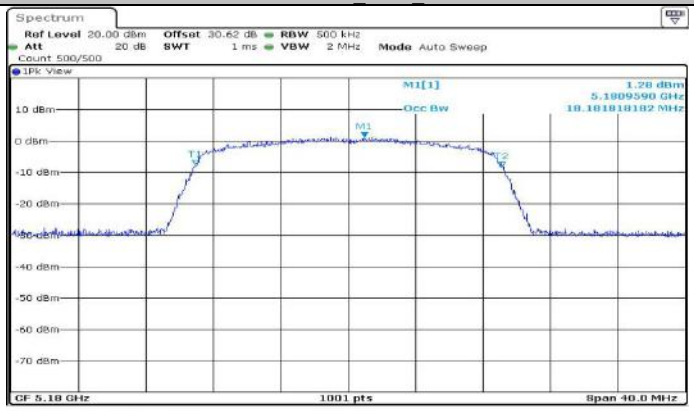

11N40SISO_Ant1_5190


11N40SISO_Ant1_5230

11N40SISO_Ant1_5755

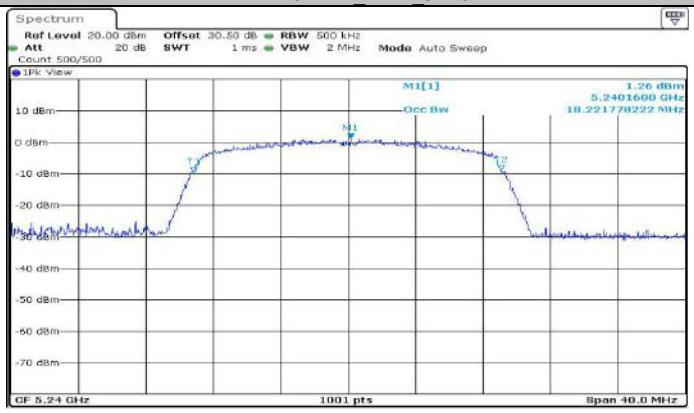
11N40SISO_Ant1_5795

11AC20SISO_Ant1_5180



11AC20SISO_Ant1_5200

11AC20SISO_Ant1_5240



11AC20SISO_Ant1_5745

11AC20SISO_Ant1_5785

11AC20SISO_Ant1_5825

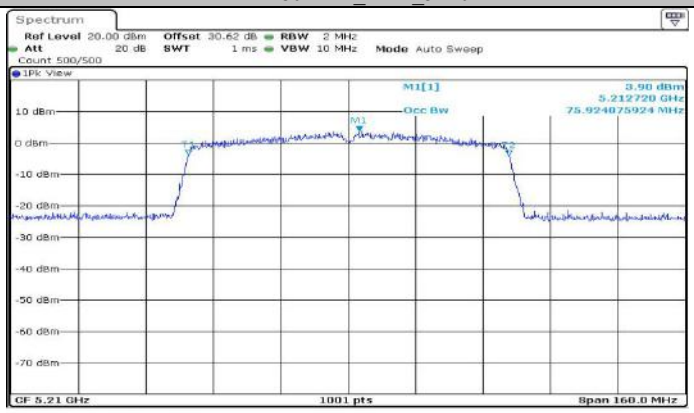
11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230

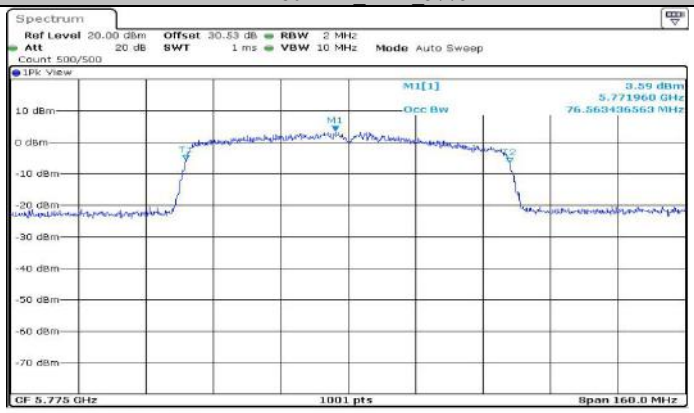
11AC40SISO_Ant1_5755

11AC40SISO_Ant1_5795

11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5775



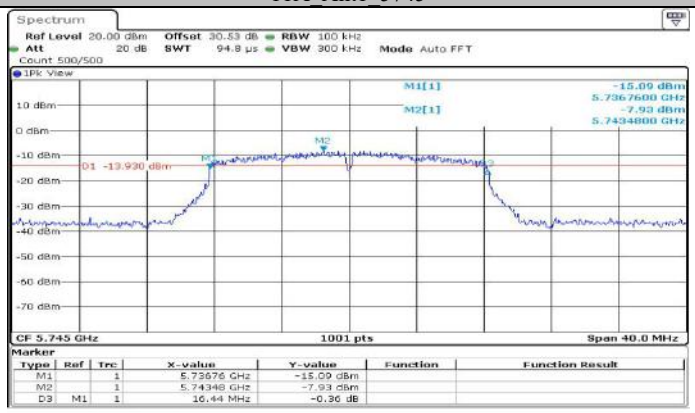
Appendix A3: Min emission bandwidth

Test Result

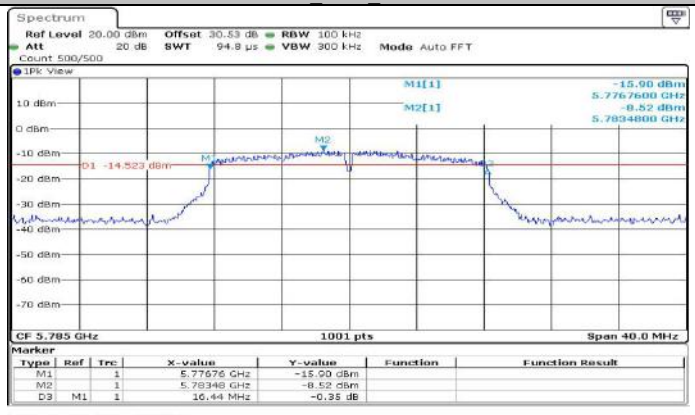
Test Mode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.440	0.5	PASS
		5785	16.440	0.5	PASS
		5825	16.440	0.5	PASS
11N20SISO	Ant1	5745	17.640	0.5	PASS
		5785	17.640	0.5	PASS
		5825	17.640	0.5	PASS
11N40SISO	Ant1	5755	36.240	0.5	PASS
		5795	36.240	0.5	PASS
11AC20SISO	Ant1	5745	17.640	0.5	PASS
		5785	17.640	0.5	PASS
		5825	17.640	0.5	PASS
11AC40SISO	Ant1	5755	36.240	0.5	PASS
		5795	36.240	0.5	PASS
11AC80SISO	Ant1	5775	74.720	0.5	PASS

Test Graphs

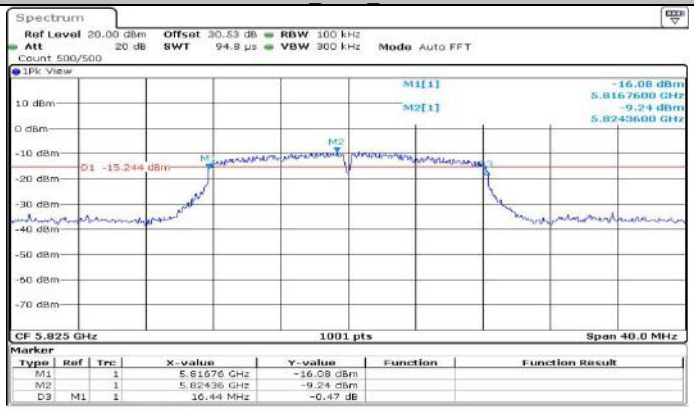
11A_Ant1_5745



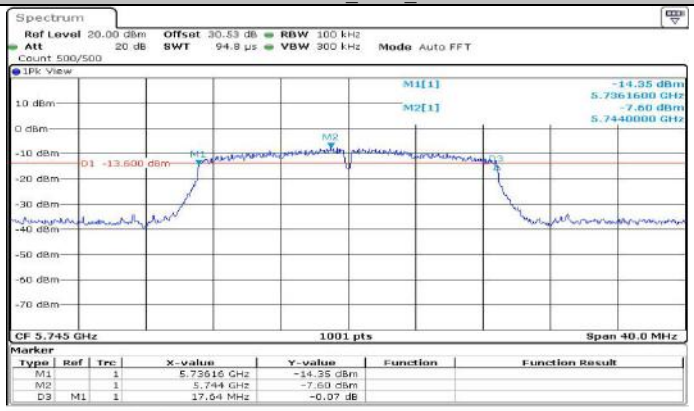
11A_Ant1_5785



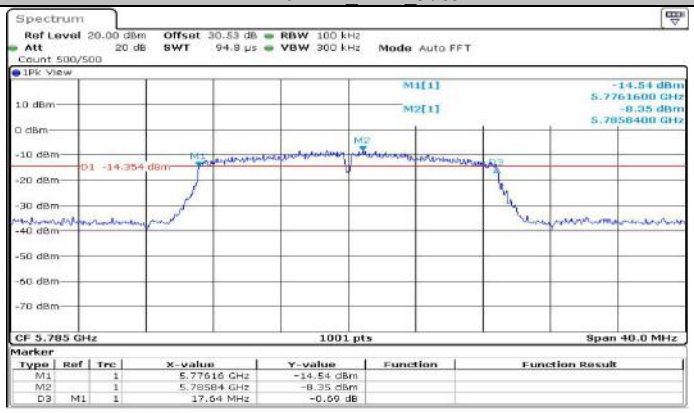
11A_Ant1_5825



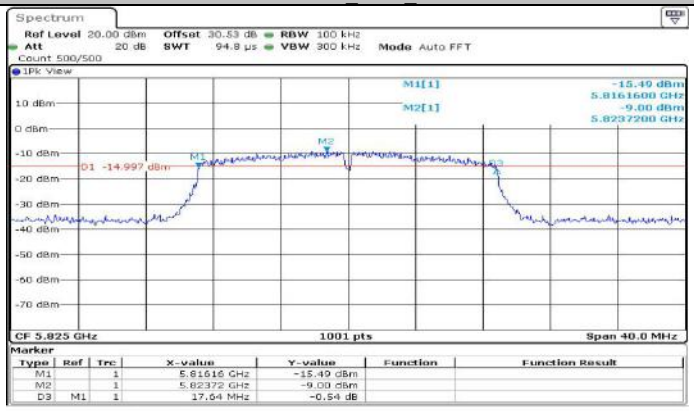
11N20SISO_Ant1_5745



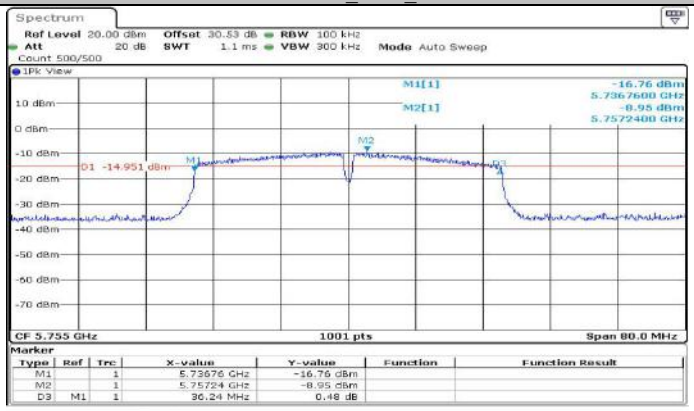
11N20SISO_Ant1_5785



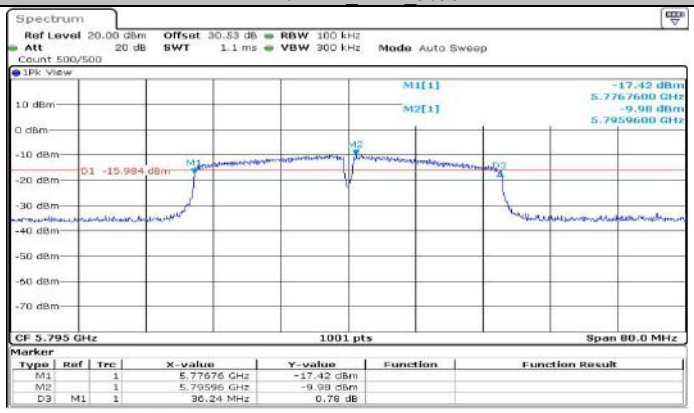
11N20SISO_Ant1_5825



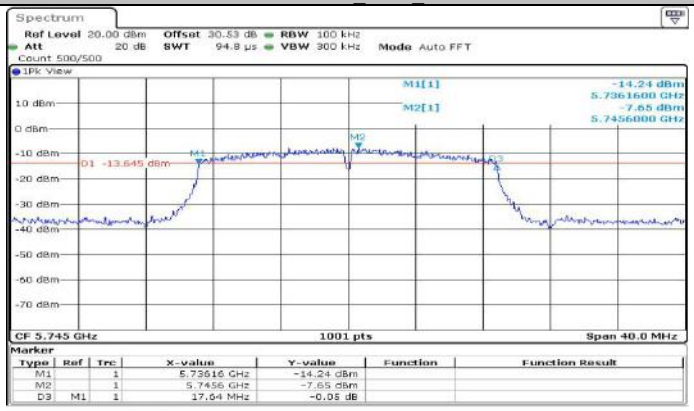
11N40SISO_Ant1_5755



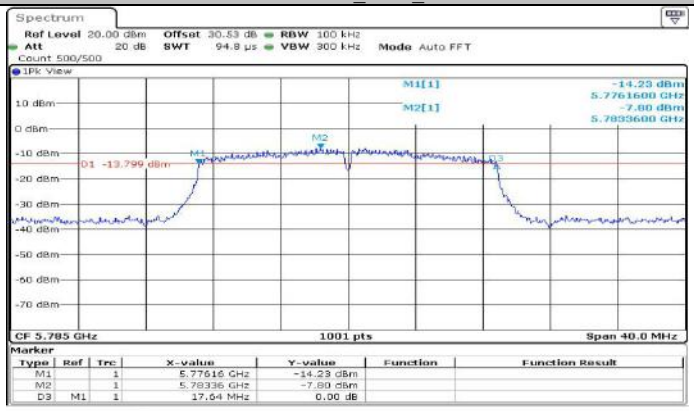
11N40SISO_Ant1_5795



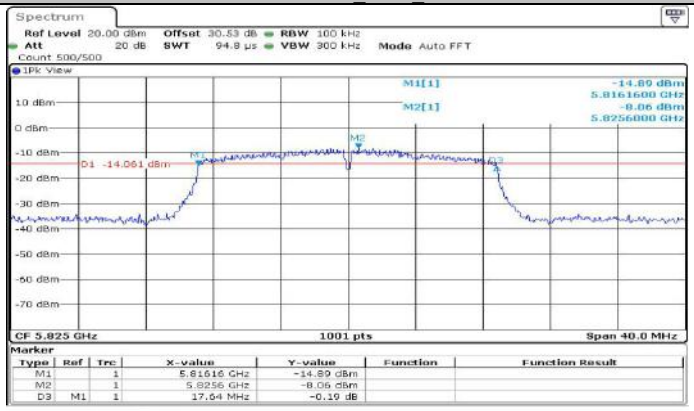
11AC20SISO_Ant1_5745



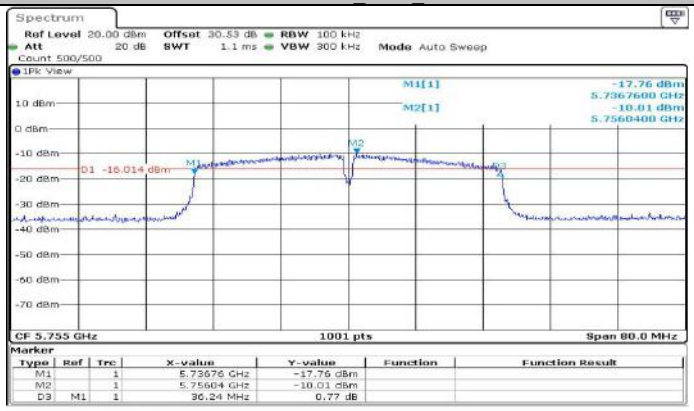
11AC20SISO_Ant1_5785



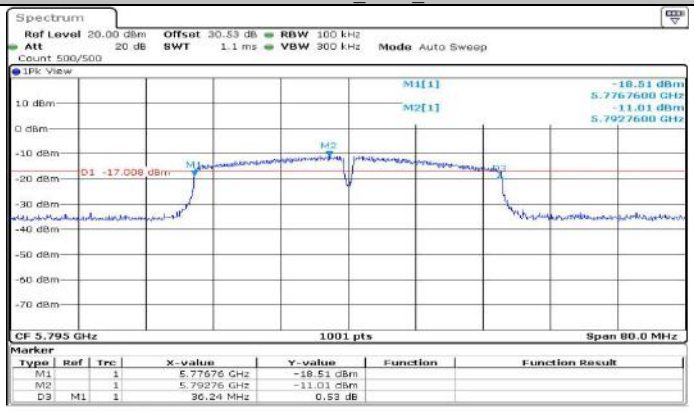
11AC20SISO_Ant1_5825



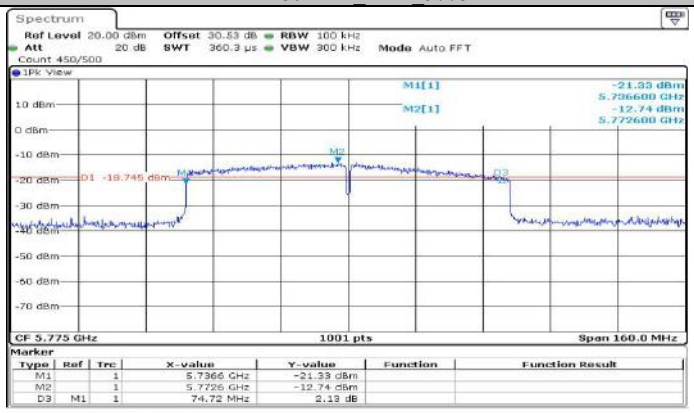
11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775



Appendix B: Maximum conducted output power(Average)

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	7.08	≤23.98	PASS
		5200	7.03	≤23.98	PASS
		5240	7.02	≤23.98	PASS
		5745	7.27	≤30	PASS
		5785	6.82	≤30	PASS
		5825	6.29	≤30	PASS
11N20SISO	Ant1	5180	7.26	≤23.98	PASS
		5200	6.69	≤23.98	PASS
		5240	6.63	≤23.98	PASS
		5745	7.62	≤30	PASS
		5785	6.91	≤30	PASS
		5825	6.77	≤30	PASS
11N40SISO	Ant1	5190	7.33	≤23.98	PASS
		5230	7.00	≤23.98	PASS
		5755	7.68	≤30	PASS
		5795	7.17	≤30	PASS
11AC20SISO	Ant1	5180	7.52	≤23.98	PASS
		5200	7.23	≤23.98	PASS
		5240	7.48	≤23.98	PASS
		5745	7.66	≤30	PASS
		5785	7.25	≤30	PASS
		5825	7.36	≤30	PASS
11AC40SISO	Ant1	5190	7.27	≤23.98	PASS
		5230	7.64	≤23.98	PASS
		5755	7.19	≤30	PASS
		5795	6.30	≤30	PASS
11AC80SISO	Ant1	5210	7.43	≤23.98	PASS
		5775	7.59	≤30	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	1.00	≤11	PASS
		5200	0.98	≤11	PASS
		5240	0.98	≤11	PASS
		5745	-1.76	≤30	PASS
		5785	-2.25	≤30	PASS
		5825	-2.85	≤30	PASS
11N20SISO	Ant1	5180	1.31	≤11	PASS
		5200	0.69	≤11	PASS
		5240	0.52	≤11	PASS
		5745	-1.38	≤30	PASS
		5785	-2.12	≤30	PASS
		5825	-2.26	≤30	PASS
11N40SISO	Ant1	5190	-1.33	≤11	PASS
		5230	-1.69	≤11	PASS
		5755	-3.00	≤30	PASS
		5795	-3.52	≤30	PASS
11AC20SISO	Ant1	5180	1.55	≤11	PASS
		5200	1.28	≤11	PASS
		5240	1.54	≤11	PASS
		5745	-1.24	≤30	PASS
		5785	-1.71	≤30	PASS
		5825	-1.54	≤30	PASS
11AC40SISO	Ant1	5190	-1.41	≤11	PASS
		5230	-0.97	≤11	PASS
		5755	-3.50	≤30	PASS
		5795	-4.56	≤30	PASS
11AC80SISO	Ant1	5210	-5.01	≤11	PASS
		5775	-6.49	≤30	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725-5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The eut is a client device.

Test Graphs

11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240

11A_Ant1_5745

11A_Ant1_5785

11A_Ant1_5825

11N20SISO_Ant1_5180

11N20SISO_Ant1_5200

11N20SISO_Ant1_5240

11N20SISO_Ant1_5745

11N20SISO_Ant1_5785

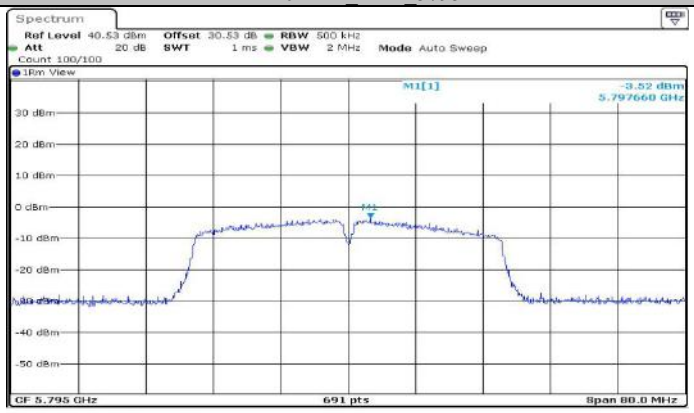
11N20SISO_Ant1_5825

11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

11N40SISO_Ant1_5755

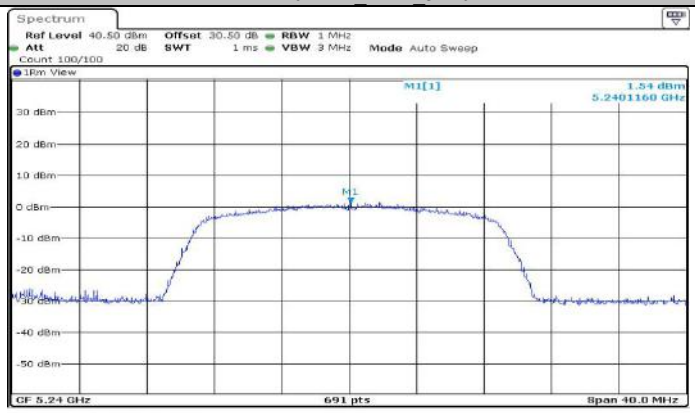
11N40SISO_Ant1_5795



11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200

11AC20SISO_Ant1_5240



11AC20SISO_Ant1_5745

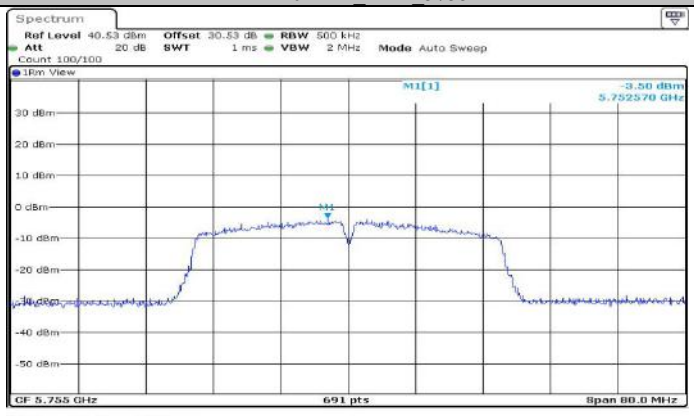
11AC20SISO_Ant1_5785

11AC20SISO_Ant1_5825

11AC40SISO_Ant1_5190

11AC40SISO_Ant1_5230

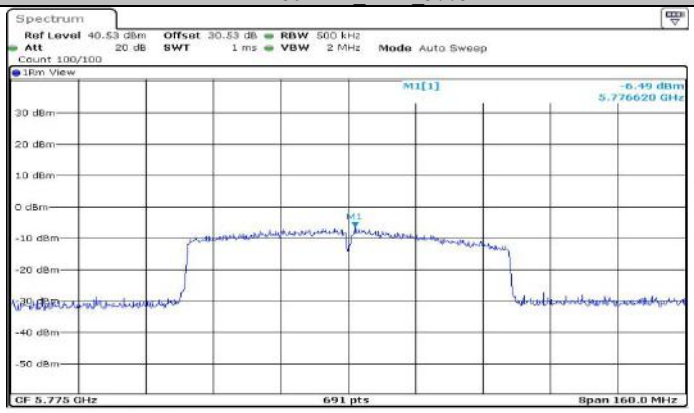
11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795

11AC80SISO_Ant1_5210

11AC80SISO_Ant1_5775



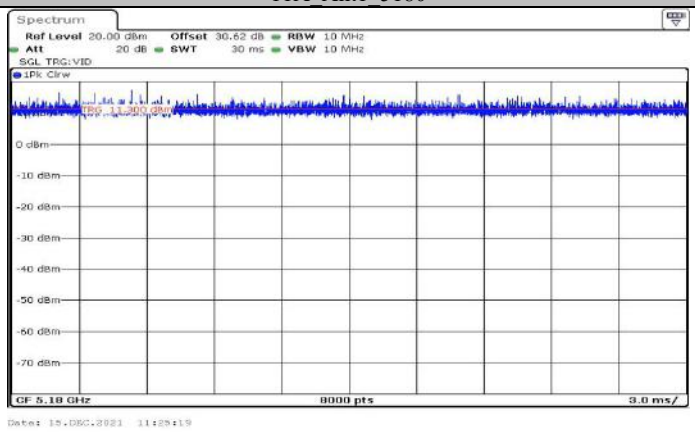
Appendix D: Duty Cycle

Test Result

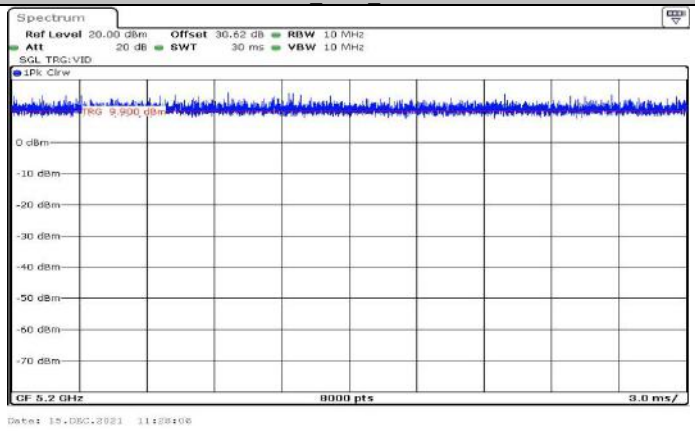
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	30.00	30.00	100.00
		5200	30.00	30.00	100.00
		5240	30.00	30.00	100.00
		5745	30.00	30.00	100.00
		5785	30.00	30.00	100.00
		5825	30.00	30.00	100.00
11N20SISO	Ant1	5180	30.00	30.00	100.00
		5200	30.00	30.00	100.00
		5240	30.00	30.00	100.00
		5745	30.00	30.00	100.00
		5785	30.00	30.00	100.00
		5825	30.00	30.00	100.00
11N40SISO	Ant1	5190	30.00	30.00	100.00
		5230	30.00	30.00	100.00
		5755	30.00	30.00	100.00
		5795	30.00	30.00	100.00
11AC20SISO	Ant1	5180	30.00	30.00	100.00
		5200	30.00	30.00	100.00
		5240	30.00	30.00	100.00
		5745	30.00	30.00	100.00
		5785	30.00	30.00	100.00
		5825	30.00	30.00	100.00
11AC40SISO	Ant1	5190	30.00	30.00	100.00
		5230	30.00	30.00	100.00
		5755	30.00	30.00	100.00
		5795	30.00	30.00	100.00
11AC80SISO	Ant1	5210	30.00	30.00	100.00
		5775	30.00	30.00	100.00

Test Graphs

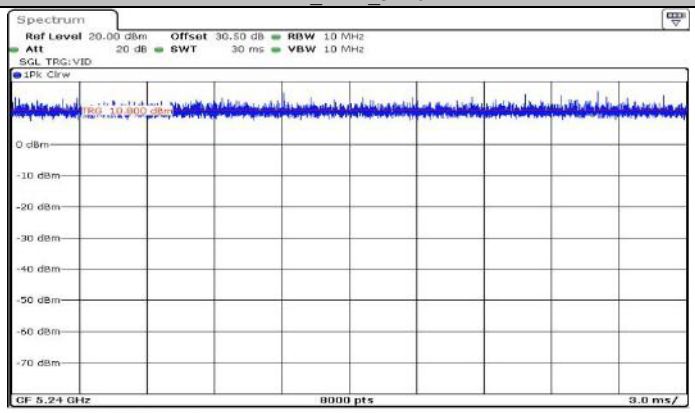
11A_Ant1_5180



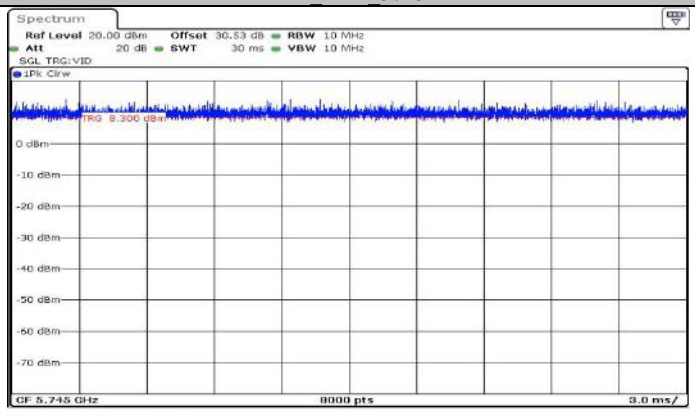
11A_Ant1_5200

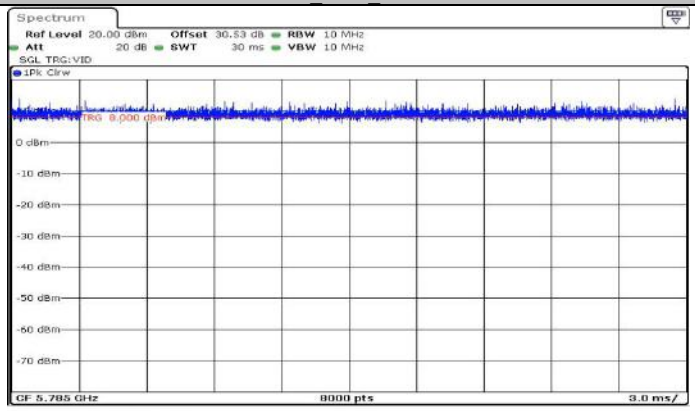


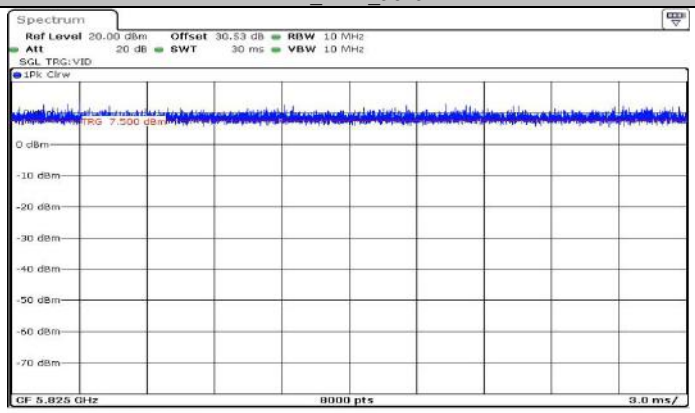
11A_Ant1_5240

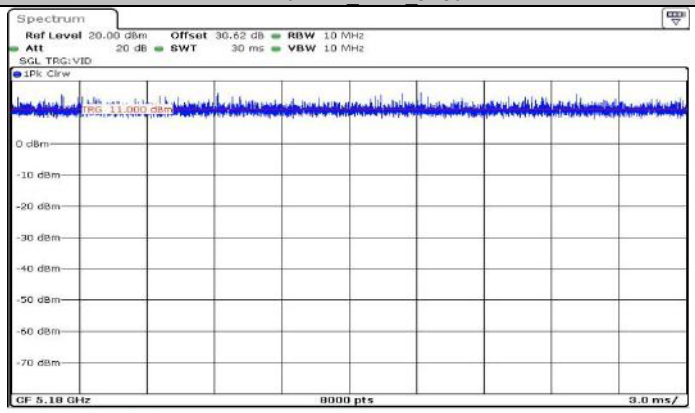


11A_Ant1_5745

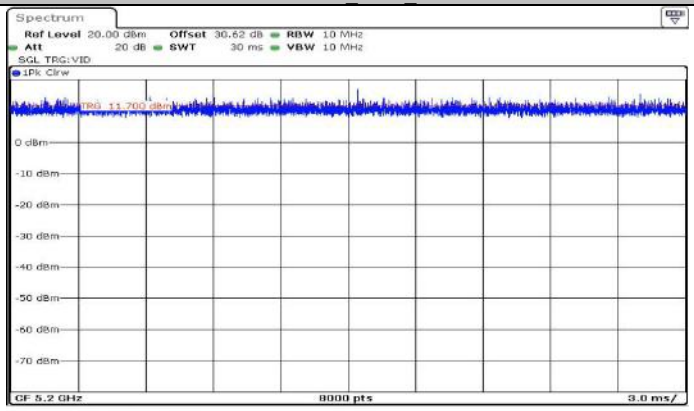


11A_Ant1_5785


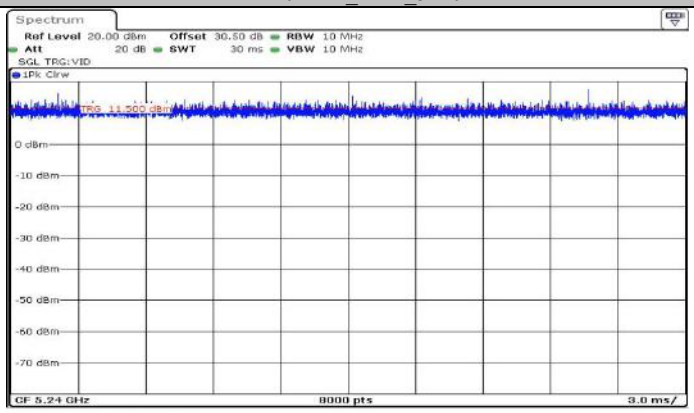
11A_Ant1_5825


11N20SISO_Ant1_5180


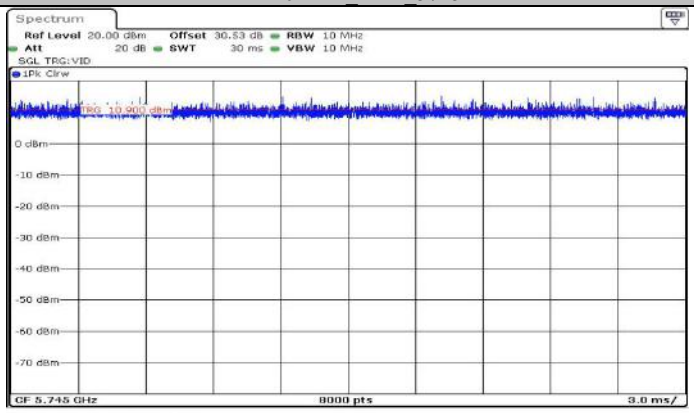
11N20SISO_Ant1_5200



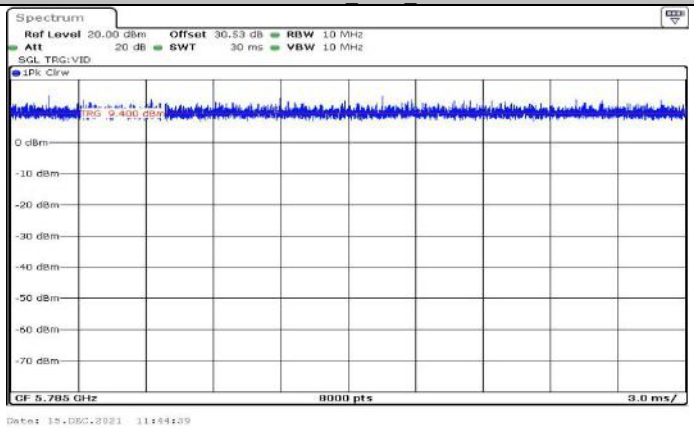
11N20SISO_Ant1_5240



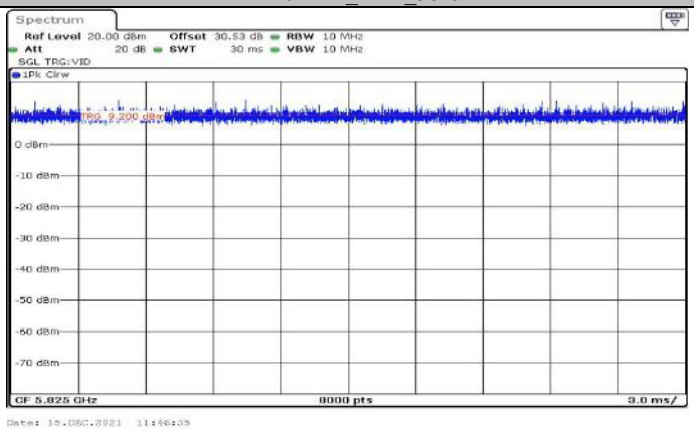
11N20SISO_Ant1_5745



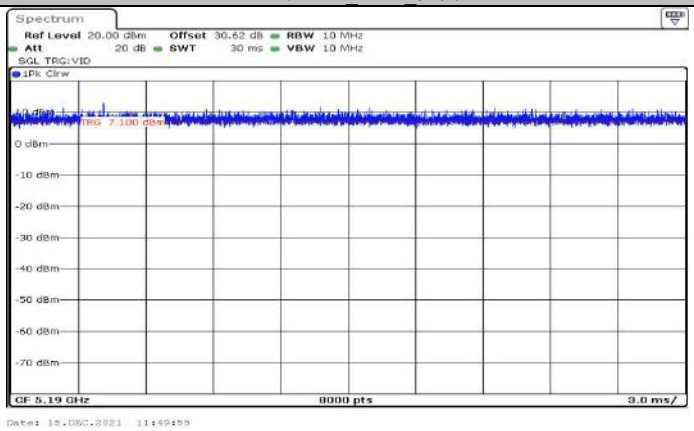
11N20SISO_Ant1_5785



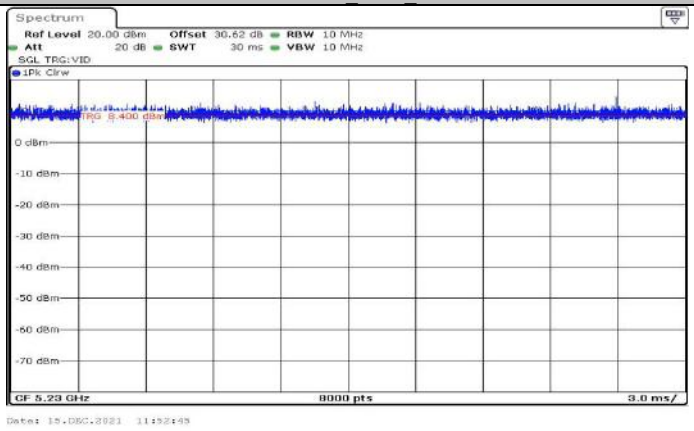
11N20SISO_Ant1_5825



11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



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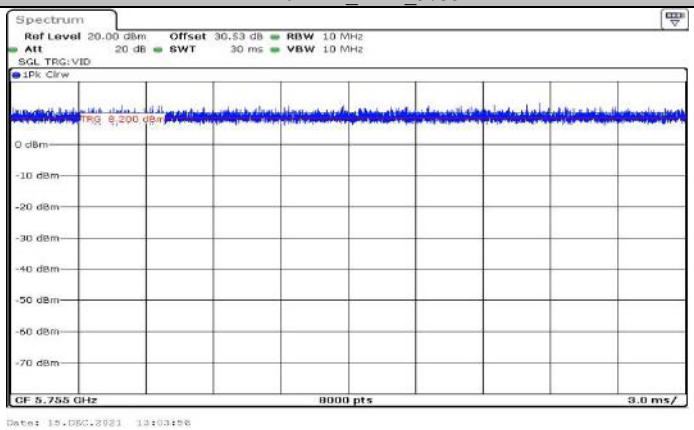

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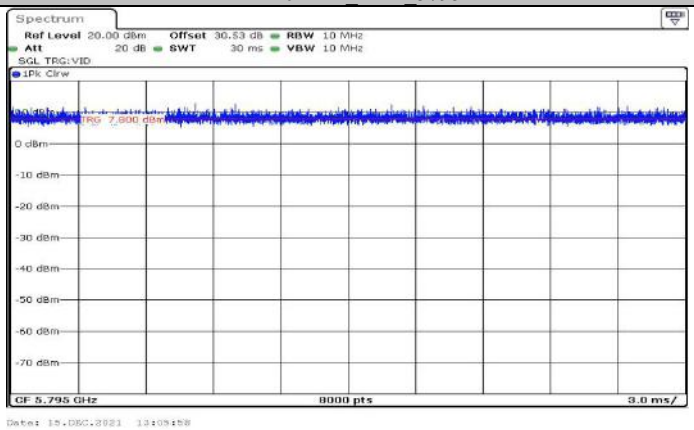

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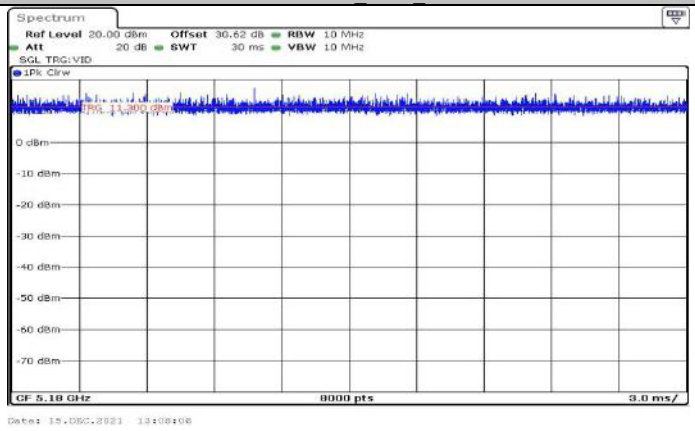

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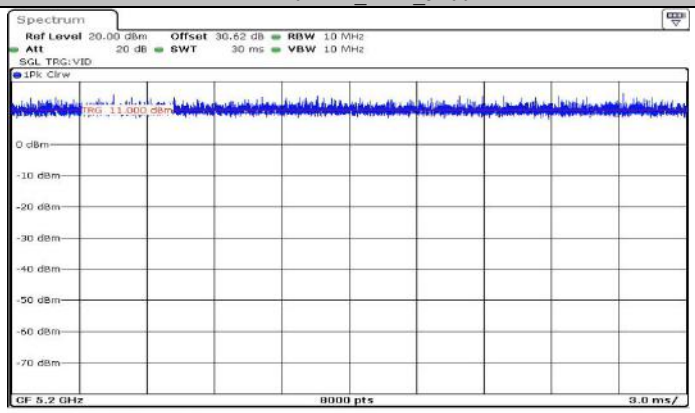

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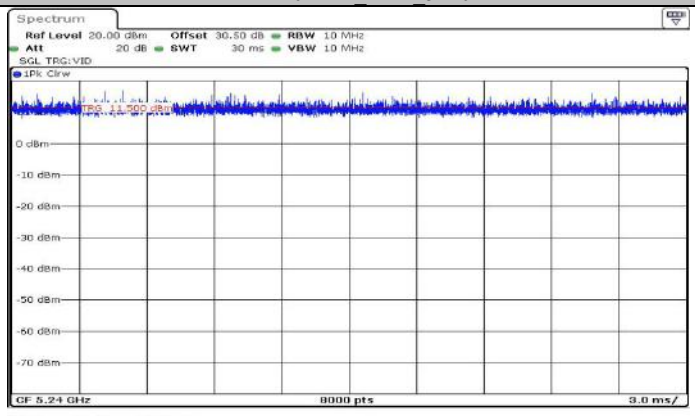

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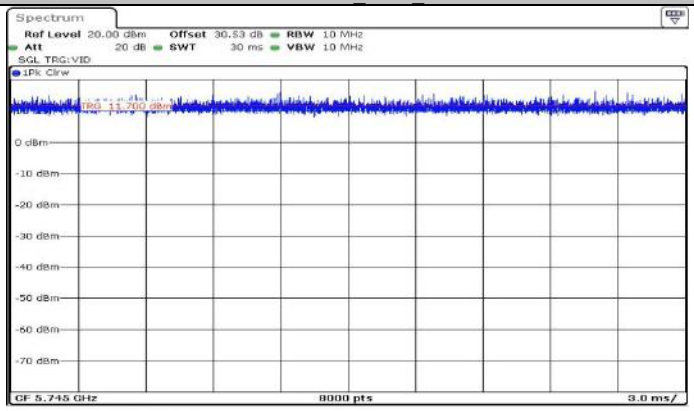

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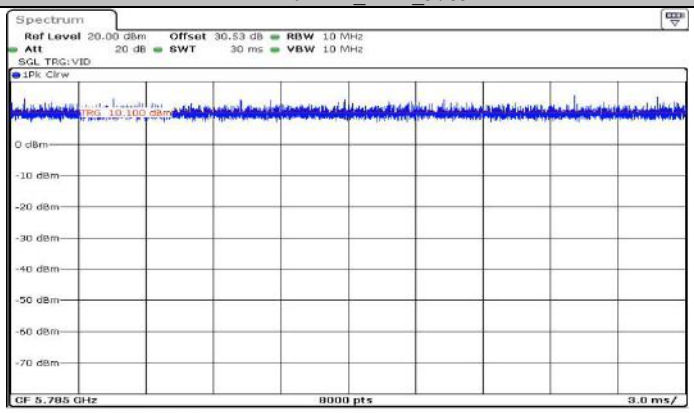

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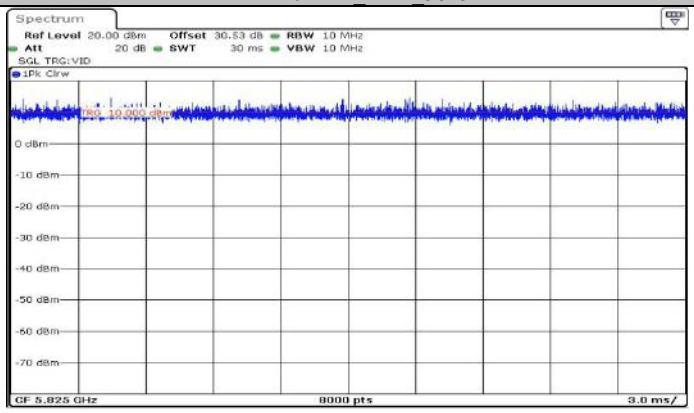

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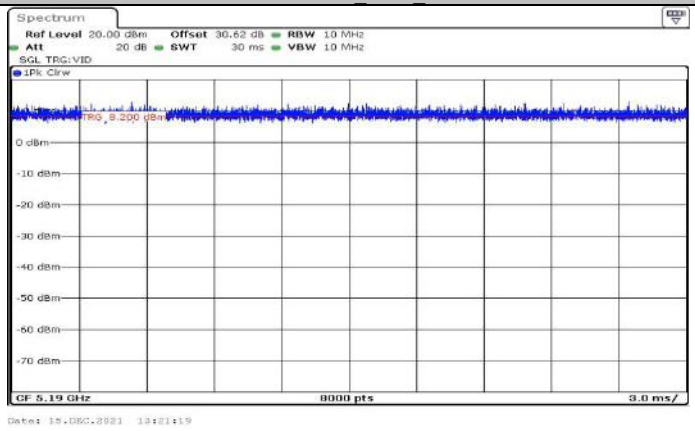

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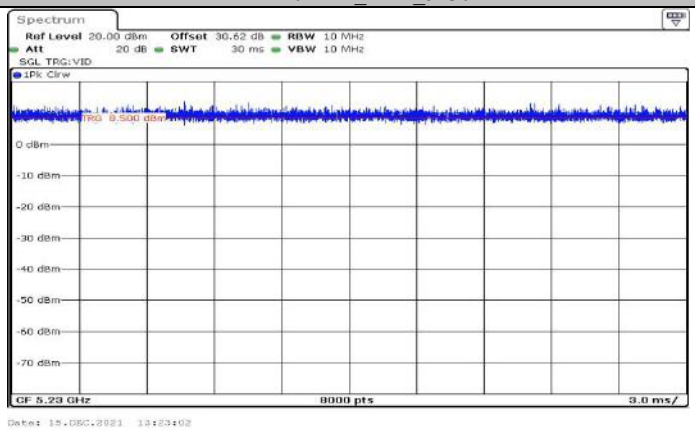

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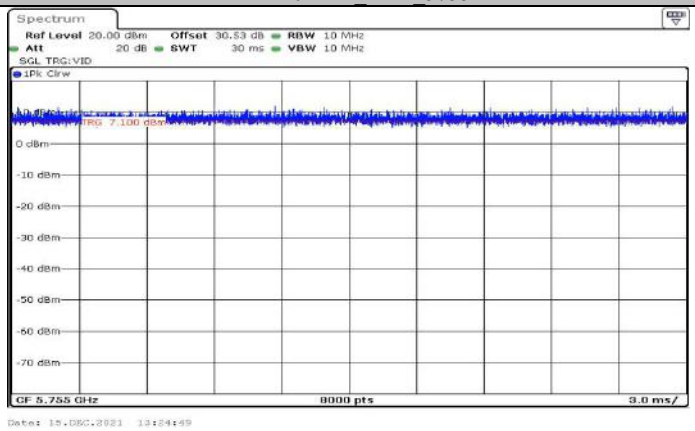

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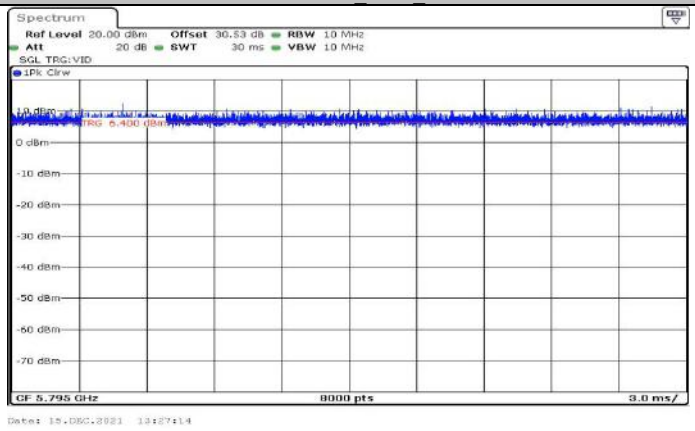

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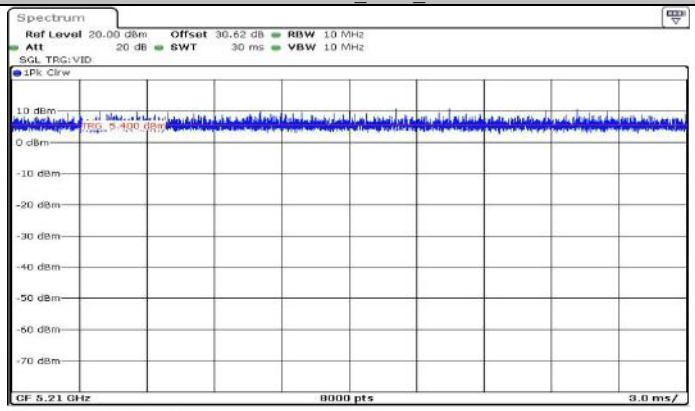

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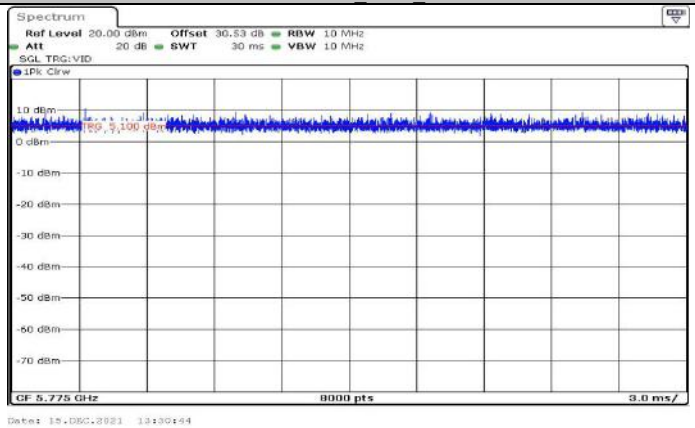

******* END OF REPORT *******