TEST REPORT

Applicant Name :	Shenzhen VanTop Technology & Innovation Co., Ltd.
Address :	502, 5th Flr. BLDG 4, MinQi Technology Park, No. 65 Lishan Road, Taoyuan Street, Nanshan District, Shenzhen, China
Report Number :	SZNS210428-54815E-RF-00
FCC ID:	2AQ3A-E10

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	Tablet PC
Model No.:	E10
Multiple Model(s) No.:	S31,S10,TB-JS101A,TB-VS100A,TB-JS100A(model difference see product declaration letter of similarity)
Trade Mark:	N/A
Date Received:	2021/04/28
Date of Test:	2021/05/13~2021/12/23
Report Date:	2022/01/05

Test Result:	Pass*

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

Prepared and Checked By:

Ting Lv

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	5150-5250 MHz: 10.59dBm 5725-5850 MHz: 10.05dBm
Modulation Technique	OFDM
Antenna Specification*	Antenna gain:1.8 dBi (It is provided by the manufacturer)
Voltage Range	DC 3.8V from battery or DC5.0V from adapter
Sample serial number	SZNS210428-54815E-RF-S2 for Conducted and Radiated Emissions SZNS210428-54815E-RF S_4C2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model:FX2U-050200U Input: AC 100-240V, 50/60Hz,0.4A Output: DC5.0V, 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 4297.01

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0016. 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 supports 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes.

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/n20/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/n20/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

The EUT was tested under Engineer mode, which provided by manufacturer and power level as below:

U-NII	Mode	Data rate	Power Level*
5150 – 5250MHz	802.11a	6Mbps	15
	802.11n-HT20	MCS0	15
	802.11n-HT40	MCS0	15
	802.11ac20	MCS0	15
	802.11ac40	MCS0	15
	802.11ac80	MCS0	15
5725 – 5850MHz	802.11a	6Mbps	15
	802.11n-HT20	MCS0	15
	802.11n-HT40	MCS0	15
	802.11ac20	MCS0	15
	802.11ac40	MCS0	15
	802.11ac80	MCS0	15

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.

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

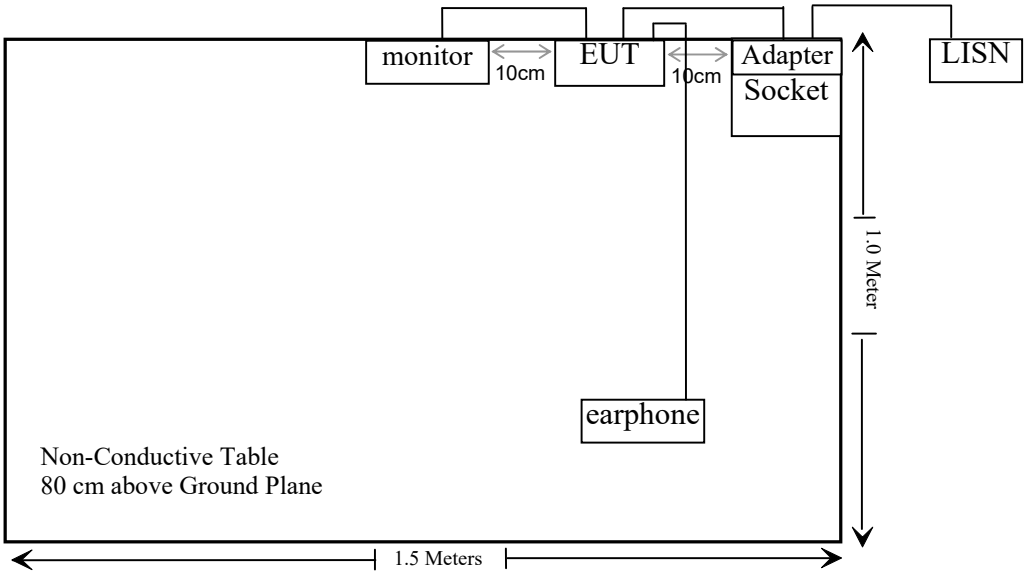
Manufacturer	Description	Model	Serial Number
SAMSUNG	Monitor	S24E390HL	ZZFRH4ZN303357K

External I/O Cable

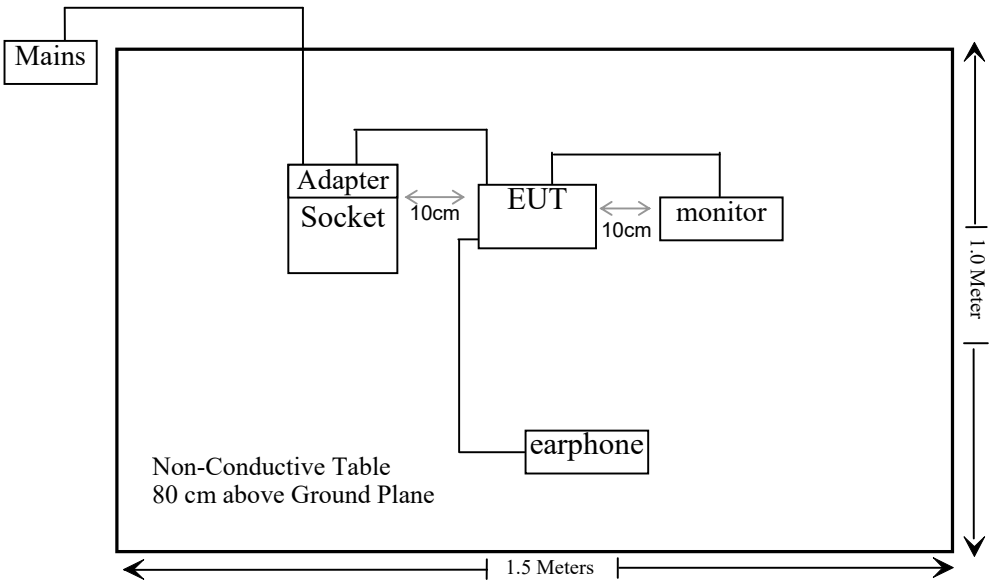
Cable Description	Length (m)	From/Port	To
Un-shielded un-detachable AC cable	1.2	Socket	Mains
Shielded detachable USB cable	1.0	EUT	Adapter
Un-shielded detachable HDMI cable	1.0	EUT	Monitor
Shielded Un-detachable earphone cable	1.2	EUT	Earphone

Block Diagram of Test Setup

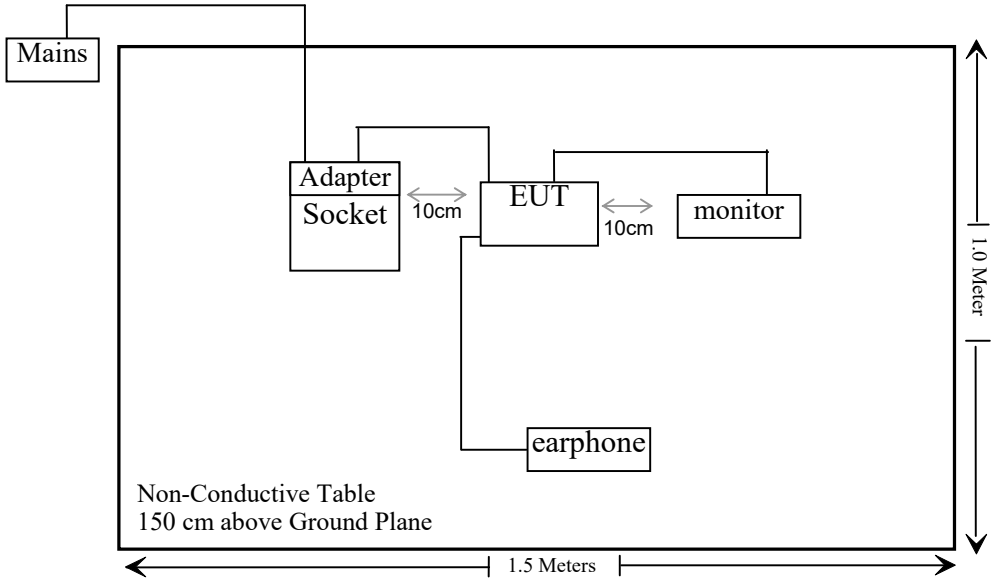
For conducted emission :



For RE below 1 GHz



For RE above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 1.1307 ,§2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(8) & §15.207(a)	Conducted Emissions	Compliant
§15.205 & §15.209 & §15.407(b) (1), (4), (7), (8), (9), (10)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (12), (e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliant
§15.407(a) (1), (3)	Conducted Transmitter Output Power	Compliant
§15.407 (a) (1), (3)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Not Applicable*

Not Applicable: the EUT has no TPC function which was declared by the applicant.
Not Applicable*: EUT does not operate within frequency range of 5250-5350MHz and 5470-5725MHz.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	EMI Test Receiver	ESCI	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 Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
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)					
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Tonscend	RF Control Unit	JS0806-2	19G8060182	2020/07/06	2021/07/05
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05
WEINSCHEL	10dB Attenuator	5324	AU 3842	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 §1.1307(b)&§2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: CR21110006-SA.

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 have one internal Antenna arrangement, which was permanently attached and the antenna gain is 1.8dBi fulfill the requirement of this section. Please refer to the EUT photos.

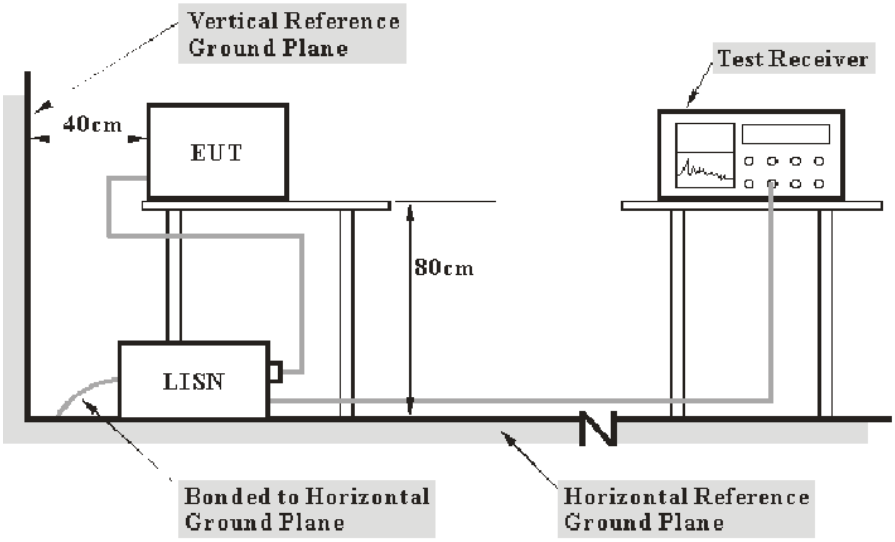
Result: Compliant.

FCC §15.407 (b) (8) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (8)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Factor & Margin Calculation

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

Factor = LISN VDF + Cable Loss

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

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

Test Data

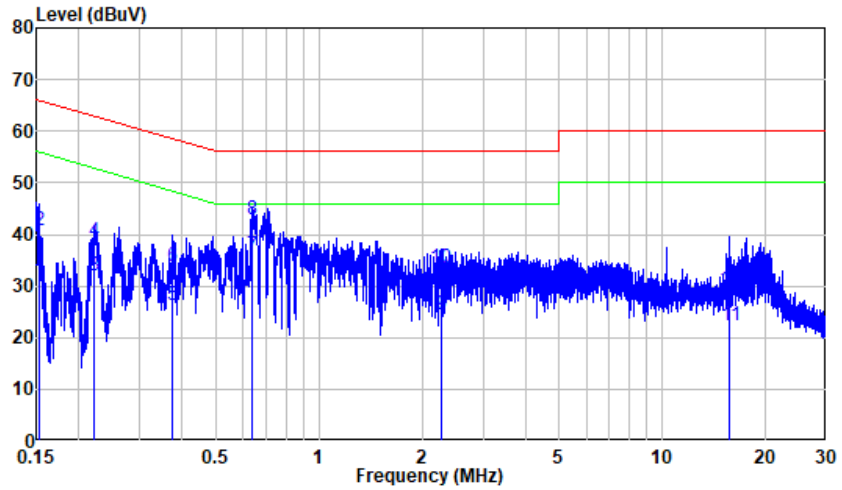
Environmental Conditions

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

The testing was performed by Bin Deng on 2021-11-17.

EUT operation mode: Transmitting (worst case is 802.11 a mode, 5240MHz)

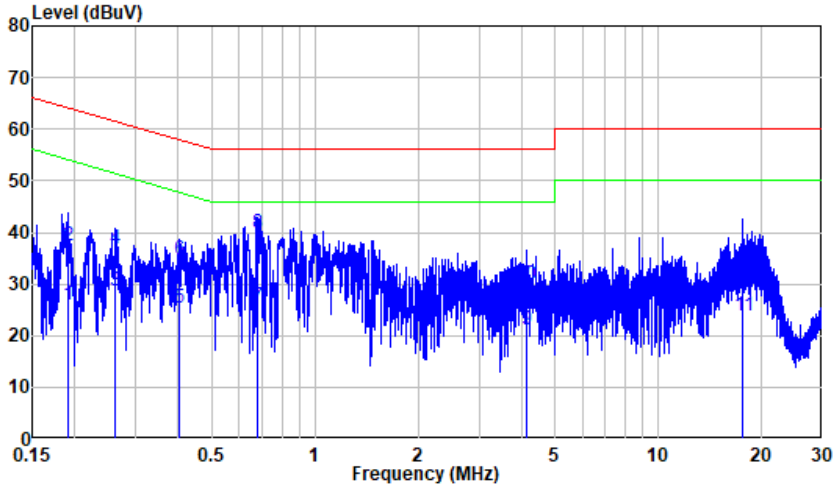
AC 120V/60 Hz, Line:



Site : Shielding Room
Condition: Line
Mode : 5G WIFI
Model : E10

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.153	9.89	21.15	31.04	55.86	-24.82	Average
2	0.153	9.89	30.81	40.70	65.86	-25.16	QP
3	0.222	9.80	22.33	32.13	52.75	-20.62	Average
4	0.222	9.80	28.95	38.75	62.75	-24.00	QP
5	0.375	9.80	16.57	26.37	48.39	-22.02	Average
6	0.375	9.80	23.92	33.72	58.39	-24.67	QP
7	0.639	9.81	26.15	35.96	46.00	-10.04	Average
8	0.639	9.81	32.97	42.78	56.00	-13.22	QP
9	2.261	9.92	14.56	24.48	46.00	-21.52	Average
10	2.261	9.92	23.67	33.59	56.00	-22.41	QP
11	15.708	10.08	12.31	22.39	50.00	-27.61	Average
12	15.708	10.08	19.22	29.30	60.00	-30.70	QP

AC 120V/60 Hz, Neutral:



Site : Shielding Room
Condition: Neutral
Mode : 5G WIFI
Model : E10

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.190	9.98	16.11	26.09	54.02	-27.93	Average
2	0.190	9.98	27.39	37.37	64.02	-26.65	QP
3	0.262	9.97	18.63	28.60	51.36	-22.76	Average
4	0.262	9.97	26.71	36.68	61.36	-24.68	QP
5	0.403	9.92	15.48	25.40	47.79	-22.39	Average
6	0.403	9.92	24.94	34.86	57.79	-22.93	QP
7	0.683	9.91	15.67	25.58	46.00	-20.42	Average
8	0.683	9.91	29.93	39.84	56.00	-16.16	QP
9	4.111	10.04	11.05	21.09	46.00	-24.91	Average
10	4.111	10.04	19.86	29.90	56.00	-26.10	QP
11	17.638	10.14	13.58	23.72	50.00	-26.28	Average
12	17.638	10.14	22.49	32.63	60.00	-27.37	QP

§15.205 & §15.209 & §15.407(B) (1), (4), (7), (8) , (9), (10) – UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b); §15.209; §15.205;

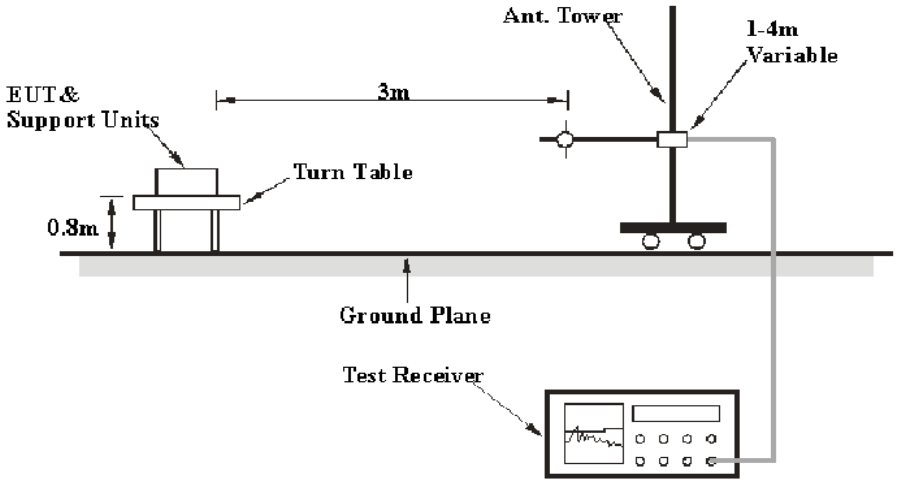
FCC §15.407 (b) (1), (4), (7), (8), (9), (10); §15.209; §15.205;

(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.
(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.

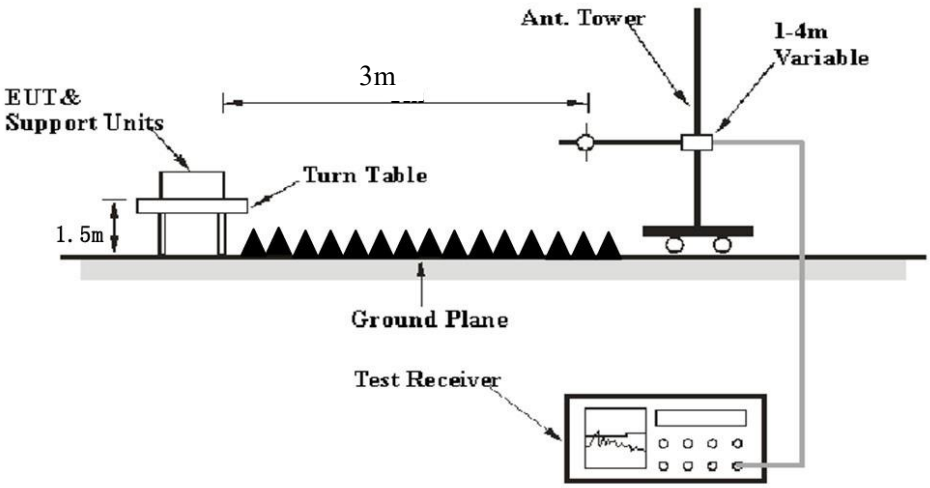
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

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.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform QP/Average measurement.

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

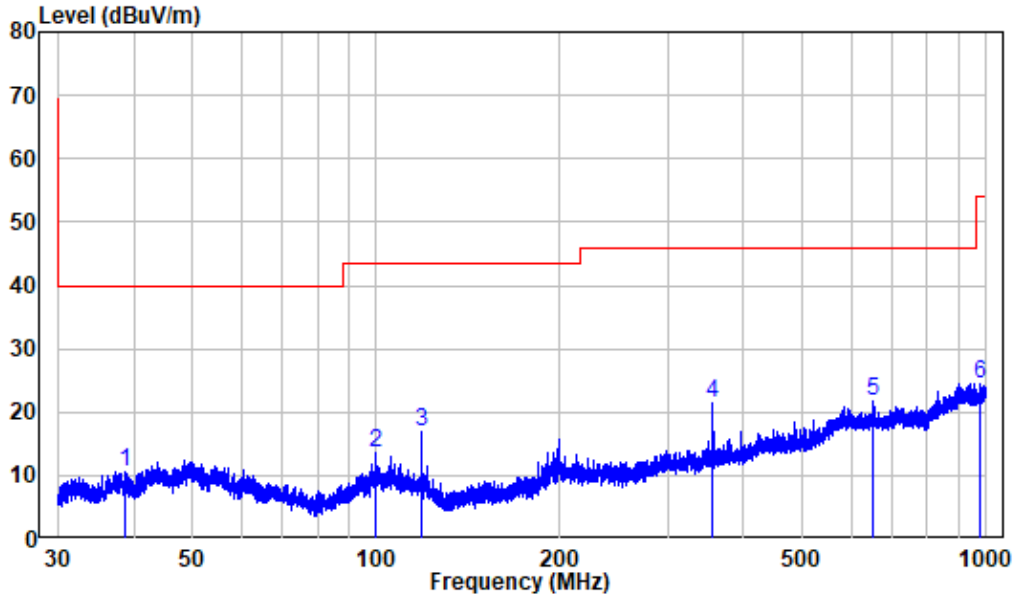
Temperature:	25~26.8℃
Relative Humidity:	51~64%
ATM Pressure:	101.0~101.2 kPa

The testing was performed by Bin Deng from 2021-11-17 to 2021-11-19.

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: *(worst case is 802.11 A mode, 5240MHz)*

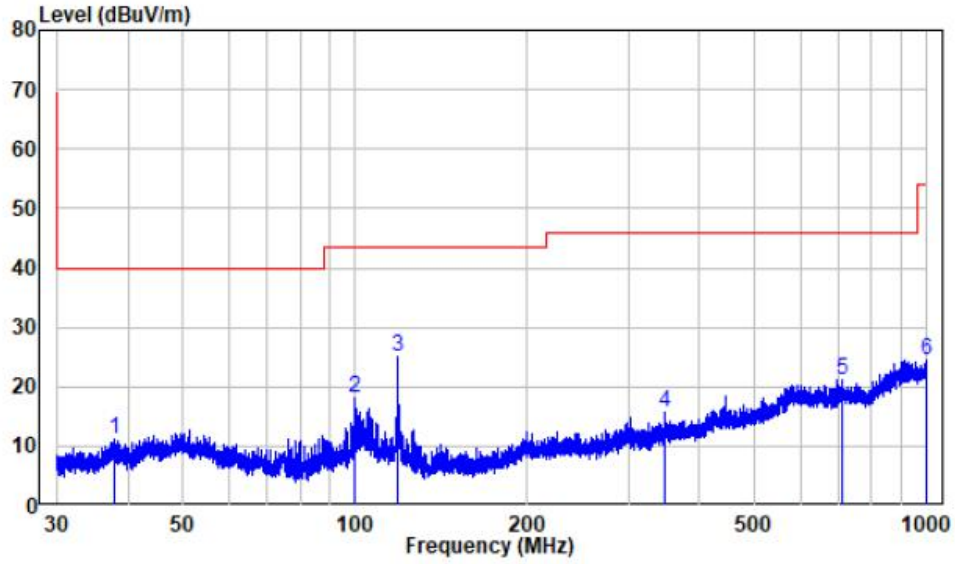
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job NO. : SZNS210428-54815E-RF
Mode : 5G wifi

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	38.599	-18.87	29.47	10.60	40.00	-29.40	Peak
2	99.485	-19.27	32.92	13.65	43.50	-29.85	Peak
3	118.705	-20.25	37.19	16.94	43.50	-26.56	Peak
4	356.363	-15.99	37.53	21.54	46.00	-24.46	Peak
5	652.514	-11.11	32.84	21.73	46.00	-24.27	Peak
6	979.610	-7.79	32.31	24.52	54.00	-29.48	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job NO. : SZNS210428-54815E-RF
Mode : 5G wifi

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	37.945	-18.98	30.23	11.25	40.00	-28.75	Peak
2	99.485	-19.27	37.27	18.00	43.50	-25.50	Peak
3	118.757	-20.26	45.42	25.16	43.50	-18.34	Peak
4	347.875	-16.14	31.90	15.76	46.00	-30.24	Peak
5	710.116	-11.37	32.55	21.18	46.00	-24.82	Peak
6	995.626	-7.43	31.91	24.48	54.00	-29.52	Peak

1GHz-40GHz:

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	75.46	PK	117	2.1	H	-5.53	69.93	74	-4.07
4500	52.79	Ave.	117	2.1	H	-5.53	47.26	54	-6.74
4500	74.09	PK	119	1.8	V	-5.53	68.56	74	-5.44
4500	51.42	Ave.	119	1.8	V	-5.53	45.89	54	-8.11
5150	65.70	PK	341	2.4	H	-3.54	62.16	74	-11.84
5150	51.02	Ave.	341	2.4	H	-3.54	47.48	54	-6.52
5150	64.46	PK	65	1.5	V	-3.54	60.92	74	-13.08
5150	49.78	Ave.	65	1.5	V	-3.54	46.24	54	-7.76
10360	47.54	PK	317	1.9	H	5.85	53.39	68.2	-14.81
10360	46.19	PK	294	1.9	V	5.85	52.04	68.2	-16.16
5200 MHz									
10400	46.84	PK	147	1.5	H	5.94	52.78	68.2	-15.42
10400	45.47	PK	11	1.5	V	5.94	51.41	68.2	-16.79
5240 MHz									
5350	63.37	PK	262	1.4	H	-2.68	60.69	74	-13.31
5350	49.30	Ave.	262	1.4	H	-2.68	46.62	54	-7.38
5350	62.00	PK	158	2.4	V	-2.68	59.32	74	-14.68
5350	47.93	Ave.	158	2.4	V	-2.68	45.25	54	-8.75
5460	63.87	PK	46	2.1	H	-2.15	61.72	74	-12.28
5460	49.61	Ave.	46	2.1	H	-2.15	47.46	54	-6.54
5460	62.63	PK	323	1.1	V	-2.15	60.48	74	-13.52
5460	48.37	Ave.	323	1.1	V	-2.15	46.22	54	-7.78
10480	45.93	PK	178	1.7	H	6.15	52.08	68.2	-16.12
10480	44.58	PK	331	1.7	V	6.15	50.73	68.2	-17.47

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	65.69	PK	186	1.6	H	-5.53	60.16	74	-13.84
4500	52.14	Ave.	186	1.6	H	-5.53	46.61	54	-7.39
4500	64.32	PK	79	2.3	V	-5.53	58.79	74	-15.21
4500	50.77	Ave.	79	2.3	V	-5.53	45.24	54	-8.76
5150	65.01	PK	91	2.4	H	-3.54	61.47	74	-12.53
5150	50.85	Ave.	91	2.4	H	-3.54	47.31	54	-6.69
5150	63.77	PK	144	1.8	V	-3.54	60.23	74	-13.77
5150	49.61	Ave.	144	1.8	V	-3.54	46.07	54	-7.93
10360	47.22	PK	68	1.8	H	5.85	53.07	68.2	-15.13
10360	45.87	PK	28	1.8	V	5.85	51.72	68.2	-16.48
5200 MHz									
10400	46.84	PK	241	2.5	H	5.94	52.78	68.2	-15.42
10400	45.47	PK	346	2.5	V	5.94	51.41	68.2	-16.79
5240 MHz									
5350	62.90	PK	347	2.1	H	-2.68	60.22	74	-13.78
5350	49.39	Ave.	347	2.1	H	-2.68	46.71	54	-7.29
5350	61.53	PK	63	2.4	V	-2.68	58.85	74	-15.15
5350	48.02	Ave.	63	2.4	V	-2.68	45.34	54	-8.66
5460	63.20	PK	202	1.7	H	-2.15	61.05	74	-12.95
5460	49.39	Ave.	202	1.7	H	-2.15	47.24	54	-6.76
5460	61.96	PK	75	1	V	-2.15	59.81	74	-14.19
5460	48.15	Ave.	75	1	V	-2.15	46.00	54	-8
10480	46.31	PK	223	1.7	H	6.15	52.46	68.2	-15.74
10480	44.96	PK	69	1.7	V	6.15	51.11	68.2	-17.09

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	65.91	PK	114	1.9	H	-5.53	60.38	74	-13.62
4500	52.08	Ave.	114	1.9	H	-5.53	46.55	54	-7.45
4500	64.54	PK	151	1	V	-5.53	59.01	74	-14.99
4500	50.71	Ave.	151	1	V	-5.53	45.18	54	-8.82
5150	64.61	PK	46	2	H	-3.54	61.07	74	-12.93
5150	50.64	Ave.	46	2	H	-3.54	47.10	54	-6.9
5150	63.37	PK	63	1.9	V	-3.54	59.83	74	-14.17
5150	49.40	Ave.	63	1.9	V	-3.54	45.86	54	-8.14
10380	45.76	PK	274	1.6	H	5.90	51.66	68.2	-16.54
10380	44.41	PK	47	1.6	V	5.90	50.31	68.2	-17.89
5230 MHz									
5350	62.55	PK	54	2.4	H	-2.68	59.87	74	-14.13
5350	49.13	Ave.	54	2.4	H	-2.68	46.45	54	-7.55
5350	61.18	PK	187	1.8	V	-2.68	58.50	74	-15.5
5350	47.76	Ave.	187	1.8	V	-2.68	45.08	54	-8.92
5460	63.20	PK	210	1.2	H	-2.15	61.05	74	-12.95
5460	49.66	Ave.	210	1.2	H	-2.15	47.51	54	-6.49
5460	61.96	PK	24	2.3	V	-2.15	59.81	74	-14.19
5460	48.42	Ave.	24	2.3	V	-2.15	46.27	54	-7.73
10460	45.49	PK	326	1.7	H	6.04	51.53	68.2	-16.67
10460	44.14	PK	200	1.7	V	6.04	50.18	68.2	-18.02

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	66.26	PK	36	1.8	H	-5.53	60.73	74	-13.27
4500	51.97	Ave.	36	1.8	H	-5.53	46.44	54	-7.56
4500	64.89	PK	46	2.2	V	-5.53	59.36	74	-14.64
4500	50.60	Ave.	46	2.2	V	-5.53	45.07	54	-8.93
5150	64.21	PK	109	2.2	H	-3.54	60.67	74	-13.33
5150	51.07	Ave.	109	2.2	H	-3.54	47.53	54	-6.47
5150	62.97	PK	124	2.1	V	-3.54	59.43	74	-14.57
5150	49.83	Ave.	124	2.1	V	-3.54	46.29	54	-7.71
10360	47.99	PK	182	2	H	5.85	53.84	68.2	-14.36
10360	46.53	PK	93	2	V	5.85	52.38	68.2	-15.82
5200 MHz									
10400	47.24	PK	319	1.1	H	5.94	53.18	68.2	-15.02
10400	45.87	PK	109	1.1	V	5.94	51.81	68.2	-16.39
5240 MHz									
5350	62.57	PK	27	1.9	H	-2.68	59.89	74	-14.11
5350	49.08	Ave.	27	1.9	H	-2.68	46.40	54	-7.6
5350	61.20	PK	200	1.4	V	-2.68	58.52	74	-15.48
5350	47.71	Ave.	200	1.4	V	-2.68	45.03	54	-8.97
5460	62.87	PK	183	1.2	H	-2.15	60.72	74	-13.28
5460	49.54	Ave.	183	1.2	H	-2.15	47.39	54	-6.61
5460	61.63	PK	33	2.2	V	-2.15	59.48	74	-14.52
5460	48.30	Ave.	33	2.2	V	-2.15	46.15	54	-7.85
10480	47.37	PK	167	1.7	H	6.15	53.52	68.2	-14.68
10480	46.02	PK	312	1.7	V	6.15	52.17	68.2	-16.03

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)
802.11ac40									
5190 MHz									
4500	65.97	PK	137	1.8	H	-5.53	60.44	74	-13.56
4500	52.41	Ave.	137	1.8	H	-5.53	46.88	54	-7.12
4500	64.60	PK	152	2.3	V	-5.53	59.07	74	-14.93
4500	51.04	Ave.	152	2.3	V	-5.53	45.51	54	-8.49
5150	65.02	PK	104	2.3	H	-3.54	61.48	74	-12.52
5150	50.96	Ave.	104	2.3	H	-3.54	47.42	54	-6.58
5150	63.78	PK	86	1.8	V	-3.54	60.24	74	-13.76
5150	49.72	Ave.	86	1.8	V	-3.54	46.18	54	-7.82
10380	45.89	PK	198	1.8	H	5.90	51.79	68.2	-16.41
10380	44.54	PK	117	1.8	V	5.90	50.44	68.2	-17.76
5230 MHz									
5350	63.37	PK	296	2.3	H	-2.68	60.69	74	-13.31
5350	49.66	Ave.	296	2.3	H	-2.68	46.98	54	-7.02
5350	62.00	PK	270	1.1	V	-2.68	59.32	74	-14.68
5350	48.29	Ave.	270	1.1	V	-2.68	45.61	54	-8.39
5460	63.53	PK	134	1.4	H	-2.15	61.38	74	-12.62
5460	49.68	Ave.	134	1.4	H	-2.15	47.53	54	-6.47
5460	62.29	PK	96	1.9	V	-2.15	60.14	74	-13.86
5460	48.44	Ave.	96	1.9	V	-2.15	46.29	54	-7.71
10460	45.27	PK	120	1.7	H	6.04	51.31	68.2	-16.89
10460	43.92	PK	132	1.7	V	6.04	49.96	68.2	-18.24

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)
802.11ac80									
5210 MHz									
4500	68.22	PK	359	2.1	H	-5.53	62.69	74	-11.31
4500	54.30	Ave.	359	2.1	H	-5.53	48.77	54	-5.23
4500	66.85	PK	185	2	V	-5.53	61.32	74	-12.68
4500	52.93	Ave.	185	2	V	-5.53	47.40	54	-6.6
5150	64.82	PK	328	2.4	H	-3.54	61.28	74	-12.72
5150	50.90	Ave.	328	2.4	H	-3.54	47.36	54	-6.64
5150	63.58	PK	352	1.4	V	-3.54	60.04	74	-13.96
5150	49.66	Ave.	352	1.4	V	-3.54	46.12	54	-7.88
5350	64.00	PK	61	1.1	H	-2.68	61.32	74	-12.68
5350	50.08	Ave.	61	1.1	H	-2.68	47.40	54	-6.6
5350	62.63	PK	196	2.5	V	-2.68	59.95	74	-14.05
5350	48.71	Ave.	196	2.5	V	-2.68	46.03	54	-7.97
5460	62.06	PK	42	1.8	H	-2.15	59.91	74	-14.09
5460	48.14	Ave.	42	1.8	H	-2.15	45.99	54	-8.01
5460	60.82	PK	324	1.4	V	-2.15	58.67	74	-15.33
5460	46.90	Ave.	324	1.4	V	-2.15	44.75	54	-9.25
10420	45.16	PK	3	2.4	H	5.96	51.12	68.2	-17.08
10420	43.81	PK	49	1.4	V	5.96	49.77	68.2	-18.43

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/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5650	62.38	PK	214	1.8	H	-0.65	61.73	68.2	-6.47
5650	60.71	PK	35	1.2	V	-0.65	60.06	68.2	-8.14
5700	62.09	PK	57	1.7	H	1.18	63.27	105.2	-41.93
5700	60.76	PK	138	1.1	V	1.18	61.94	105.2	-43.26
5720	62.80	PK	208	2.4	H	1.60	64.40	110.8	-46.4
5720	61.05	PK	187	2.4	V	1.60	62.65	110.8	-48.15
5725	65.23	PK	132	1.9	H	1.71	66.94	122.2	-55.26
5725	63.59	PK	195	1.4	V	1.71	65.30	122.2	-56.9
11490	42.98	PK	336	1.2	H	8.95	51.93	74	-22.07
11490	41.13	PK	173	1.8	V	8.95	50.08	74	-23.92
5785 MHz									
11570	41.86	PK	173	1.9	H	9.01	50.87	74	-23.13
11570	40.23	PK	166	2.3	V	9.01	49.24	74	-24.76
5825 MHz									
5850	75.59	PK	353	1.6	H	0.74	76.33	122.2	-45.87
5850	73.92	PK	94	1.8	V	0.74	74.66	122.2	-47.54
5855	66.05	PK	307	1	H	0.65	66.70	110.8	-44.1
5855	64.72	PK	28	1.7	V	0.65	65.37	110.8	-45.43
5875	69.64	PK	151	2	H	0.30	69.94	105.2	-35.26
5875	67.89	PK	147	1.3	V	0.30	68.19	105.2	-37.01
5925	64.90	PK	88	1.3	H	-0.48	64.42	68.2	-3.78
5925	63.26	PK	44	1.7	V	-0.48	62.78	68.2	-5.42
11650	40.39	PK	135	1.7	H	9.07	49.46	74	-24.54
11650	39.07	PK	174	1.2	V	9.07	48.14	74	-25.86

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745 MHz									
5650	62.28	PK	190	1.9	H	-0.65	61.63	68.2	-6.57
5650	60.61	PK	128	1.6	V	-0.65	59.96	68.2	-8.24
5700	62.77	PK	269	1.8	H	1.18	63.95	105.2	-41.25
5700	61.44	PK	14	2.2	V	1.18	62.62	105.2	-42.58
5720	67.25	PK	13	2	H	1.60	68.85	110.8	-41.95
5720	65.50	PK	329	1.6	V	1.60	67.10	110.8	-43.7
5725	71.80	PK	82	1.2	H	1.71	73.51	122.2	-48.69
5725	70.16	PK	249	1.6	V	1.71	71.87	122.2	-50.33
11490	42.53	PK	83	2	H	8.95	51.48	74	-22.52
11490	41.11	PK	54	1.9	V	8.95	50.06	74	-23.94
5785 MHz									
11570	42.63	PK	145	1.9	H	9.01	51.64	74	-22.36
11570	41.42	PK	337	1.4	V	9.01	50.43	74	-23.57
5825 MHz									
5850	71.72	PK	74	1	H	0.74	72.46	122.2	-49.74
5850	70.05	PK	294	2.1	V	0.74	70.79	122.2	-51.41
5855	63.20	PK	76	2.2	H	0.65	63.85	110.8	-46.95
5855	61.87	PK	202	2.2	V	0.65	62.52	110.8	-48.28
5875	68.89	PK	298	1.7	H	0.30	69.19	105.2	-36.01
5875	67.14	PK	279	1.5	V	0.30	67.44	105.2	-37.76
5925	64.16	PK	162	1.1	H	-0.48	63.68	68.2	-4.52
5925	62.52	PK	186	1.4	V	-0.48	62.04	68.2	-6.16
11650	41.60	PK	230	1.6	H	9.07	50.67	74	-23.33
11650	40.07	PK	148	1.7	V	9.07	49.14	74	-24.86

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									
5755 MHz									
5650	62.58	PK	84	1.5	H	-0.65	61.93	68.2	-6.27
5650	60.91	PK	340	1.8	V	-0.65	60.26	68.2	-7.94
5700	61.46	PK	65	1.2	H	1.18	62.64	105.2	-42.56
5700	60.13	PK	234	1.5	V	1.18	61.31	105.2	-43.89
5720	71.55	PK	6	1.6	H	1.60	73.15	110.8	-37.65
5720	69.80	PK	339	1.7	V	1.60	71.40	110.8	-39.4
5725	75.10	PK	2	2	H	1.71	76.81	122.2	-45.39
5725	73.46	PK	301	1.9	V	1.71	75.17	122.2	-47.03
11510	42.63	PK	170	1.7	H	8.98	51.61	74	-22.39
11510	41.26	PK	79	1.3	V	8.98	50.24	74	-23.76
5795 MHz									
5850	70.46	PK	168	1.2	H	0.74	71.20	122.2	-51
5850	68.79	PK	279	1.7	V	0.74	69.53	122.2	-52.67
5855	63.81	PK	169	2.3	H	0.65	64.46	110.8	-46.34
5855	62.48	PK	205	1.8	V	0.65	63.13	110.8	-47.67
5875	66.76	PK	62	1.1	H	0.30	67.06	105.2	-38.14
5875	65.01	PK	225	1.8	V	0.30	65.31	105.2	-39.89
5925	64.58	PK	201	2.4	H	-0.48	64.10	68.2	-4.1
5925	62.94	PK	235	2.4	V	-0.48	62.46	68.2	-5.74
11590	42.58	PK	160	1.9	H	9.01	51.59	74	-22.41
11590	41.31	PK	284	1	V	9.01	50.32	74	-23.68

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745 MHz									
5650	57.33	PK	281	1.7	H	3.75	61.08	68.2	-7.12
5650	55.66	PK	217	1.3	V	3.75	59.41	68.2	-8.79
5700	60.64	PK	234	2.5	H	3.89	64.53	105.2	-40.67
5700	59.31	PK	22	2.4	V	3.89	63.20	105.2	-42
5720	60.07	PK	140	1.6	H	3.95	64.02	110.8	-46.78
5720	58.32	PK	84	1.5	V	3.95	62.27	110.8	-48.53
5725	65.82	PK	243	2.2	H	3.97	69.79	122.2	-52.41
5725	64.18	PK	287	1.7	V	3.97	68.15	122.2	-54.05
11490	36.94	PK	262	1.2	H	14.74	51.68	74	-22.32
11490	35.32	PK	210	1.2	V	14.74	50.06	74	-23.94
5785 MHz									
11570	36.96	PK	249	1.1	H	14.74	51.70	74	-22.3
11570	34.64	PK	91	1.3	V	14.74	49.38	74	-24.62
5825 MHz									
5850	67.84	PK	123	1.1	H	4.33	72.17	122.2	-50.03
5850	66.17	PK	240	1.6	V	4.33	70.50	122.2	-51.7
5855	61.39	PK	59	1	H	4.35	65.74	110.8	-45.06
5855	60.06	PK	271	2.3	V	4.35	64.41	110.8	-46.39
5875	61.30	PK	40	1.7	H	4.41	65.71	105.2	-39.49
5875	59.55	PK	228	2	V	4.41	63.96	105.2	-41.24
5925	60.37	PK	36	1.7	H	4.55	64.92	68.2	-3.28
5925	58.73	PK	171	2.2	V	4.55	63.28	68.2	-4.92
11650	35.77	PK	342	1.5	H	14.79	50.56	74	-23.44
11650	34.53	PK	66	1.5	V	14.79	49.32	74	-24.68

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)
802.11ac40									
5755 MHz									
5650	63.47	PK	243	2.3	H	-0.65	62.82	68.2	-5.38
5650	61.80	PK	184	1.4	V	-0.65	61.15	68.2	-7.05
5700	62.82	PK	232	2.2	H	1.18	64.00	105.2	-41.2
5700	61.49	PK	273	1.1	V	1.18	62.67	105.2	-42.53
5720	67.31	PK	312	1.9	H	1.60	68.91	110.8	-41.89
5720	65.56	PK	225	1.3	V	1.60	67.16	110.8	-43.64
5725	68.46	PK	312	1.7	H	1.71	70.17	122.2	-52.03
5725	66.82	PK	11	2.4	V	1.71	68.53	122.2	-53.67
11510	42.57	PK	273	2.2	H	8.98	51.55	74	-22.45
11510	40.89	PK	197	1.1	V	8.98	49.87	74	-24.13
5795 MHz									
5850	73.44	PK	154	1.5	H	0.74	74.18	122.2	-48.02
5850	71.77	PK	245	2.5	V	0.74	72.51	122.2	-49.69
5855	64.84	PK	264	1.6	H	0.65	65.49	110.8	-45.31
5855	63.51	PK	360	1.1	V	0.65	64.16	110.8	-46.64
5875	62.94	PK	232	1.7	H	0.30	63.24	105.2	-41.96
5875	61.19	PK	267	1.7	V	0.30	61.49	105.2	-43.71
5925	64.04	PK	150	1.5	H	-0.48	63.56	68.2	-4.64
5925	62.40	PK	49	2	V	-0.48	61.92	68.2	-6.28
11590	42.61	PK	267	1.6	H	9.01	51.62	74	-22.38
11590	41.23	PK	50	1.5	V	9.01	50.24	74	-23.76

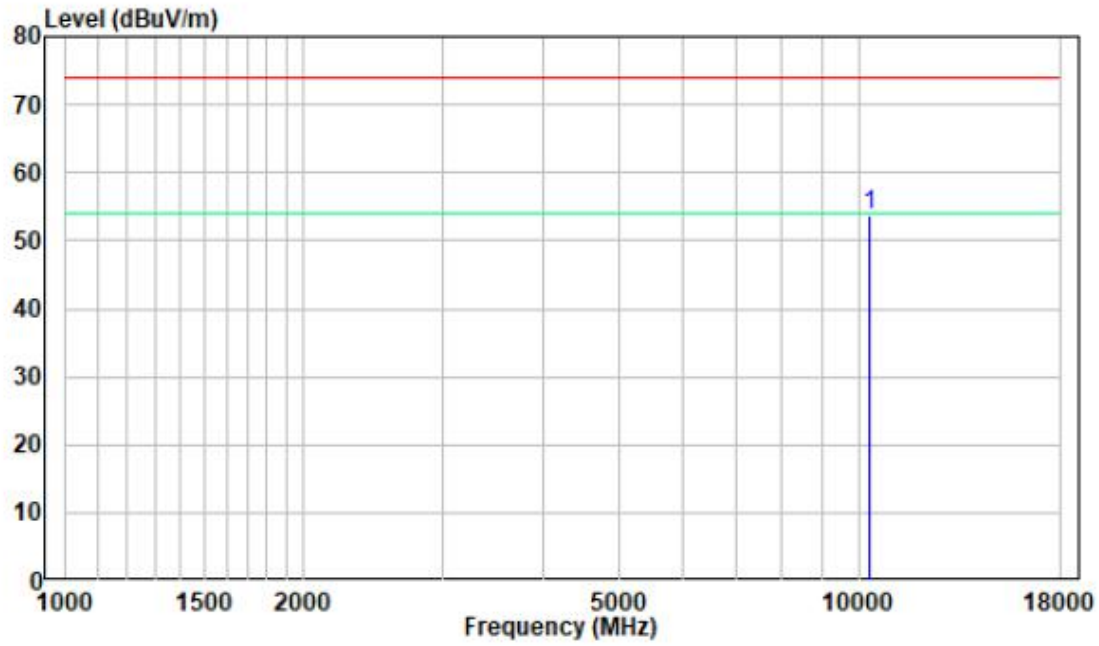
Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11AC80									
5775MHz									
5650	61.85	PK	322	1.3	H	-0.65	61.20	68.2	-7
5650	60.18	PK	156	1	V	-0.65	59.53	68.2	-8.67
5700	65.80	PK	120	2.3	H	1.18	66.98	105.2	-38.22
5700	64.47	PK	358	1.5	V	1.18	65.65	105.2	-39.55
5720	65.38	PK	95	1.8	H	1.60	66.98	110.8	-43.82
5720	63.63	PK	331	2.2	V	1.60	65.23	110.8	-45.57
5725	64.10	PK	355	2.2	H	1.71	65.81	122.2	-56.39
5725	62.46	PK	296	1.6	V	1.71	64.17	122.2	-58.03
5850	75.25	PK	241	1.5	H	0.74	75.99	122.2	-46.21
5850	73.58	PK	13	1.9	V	0.74	74.32	122.2	-47.88
5855	68.31	PK	242	1.4	H	0.65	68.96	110.8	-41.84
5855	66.98	PK	286	2.2	V	0.65	67.63	110.8	-43.17
5875	70.30	PK	237	1.2	H	0.30	70.60	105.2	-34.6
5875	68.55	PK	258	1.5	V	0.30	68.85	105.2	-36.35
5925	61.81	PK	311	1.8	H	-0.48	61.33	68.2	-6.87
5925	60.17	PK	144	1	V	-0.48	59.69	68.2	-8.51
11550	42.40	PK	106	1.8	H	9.03	51.43	74	-22.57
11550	41.39	PK	294	2.1	V	9.03	50.42	74	-23.58

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Absolute Level (Corrected Amplitude) = Factor + Reading
Margin = Absolute Level (Corrected Amplitude) – Limit
The other spurious emission which is in the noise floor level was not recorded.
The test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

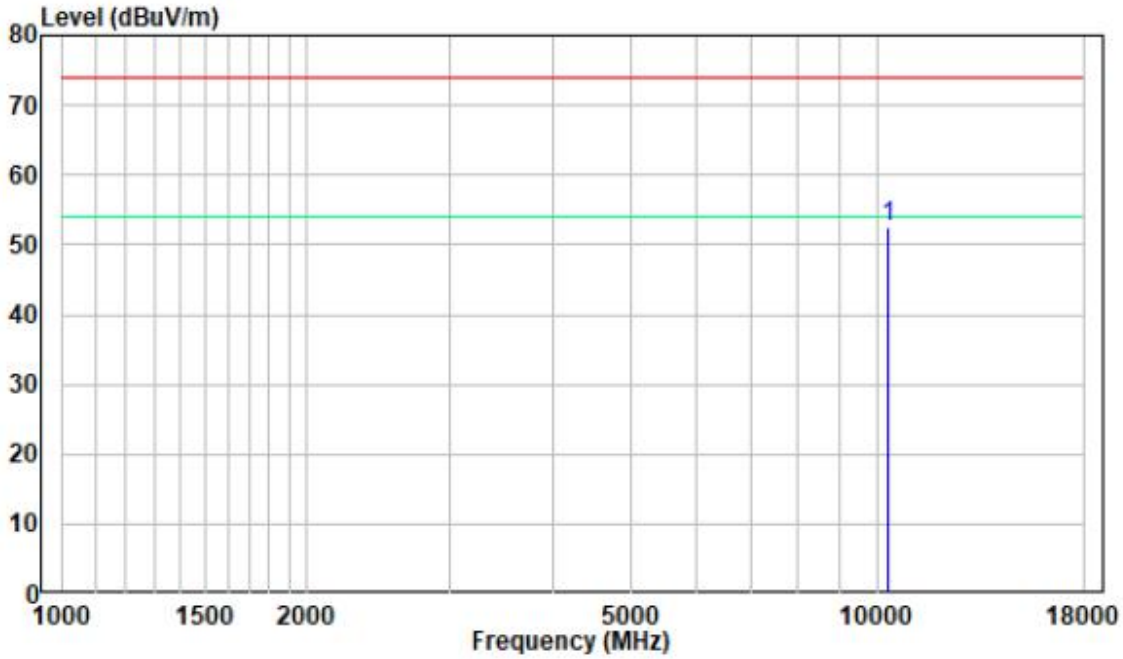
1-18GHz

Pre-scan plots: **802.11a, 5180MHz**

Horizontal:



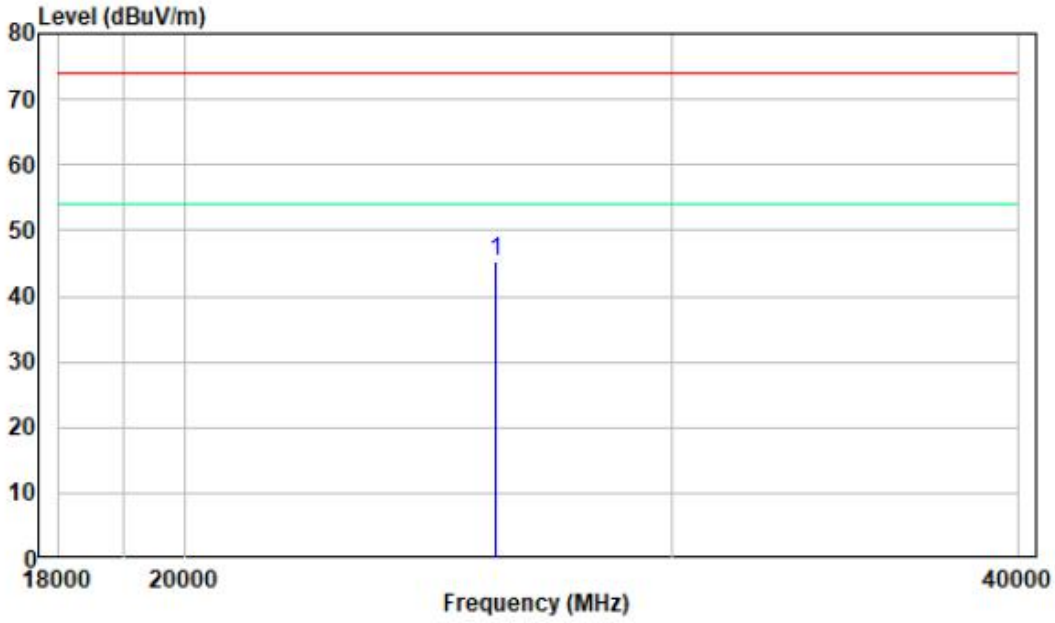
Vertical:



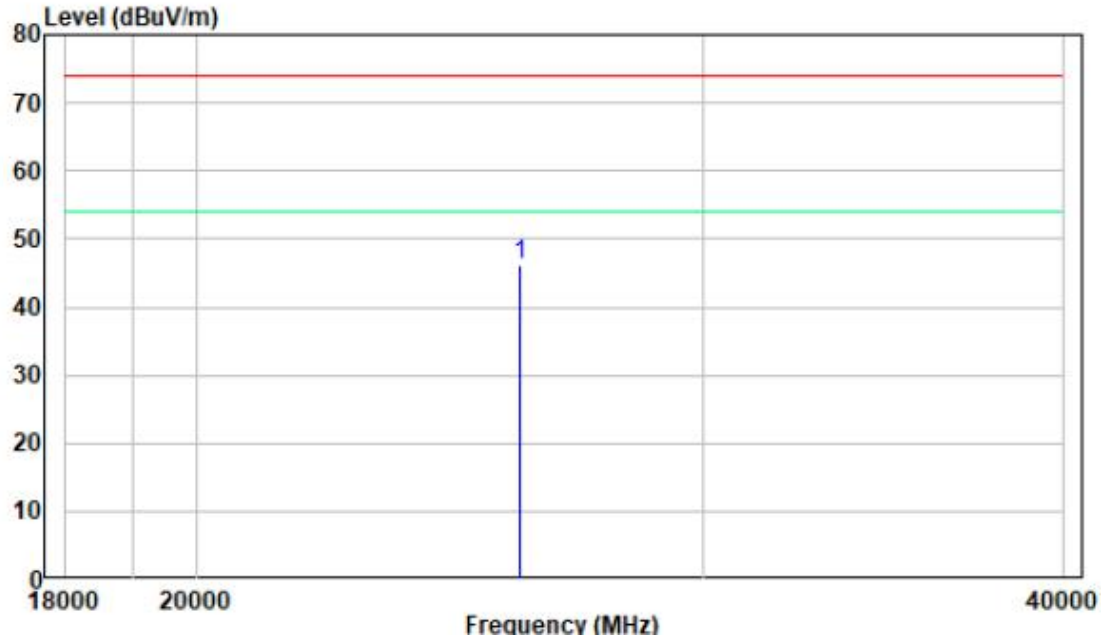
18-40GHz

Pre-scan plots: **802.11a, 5180MHz**

Horizontal:



Vertical:



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

Applicable Standard

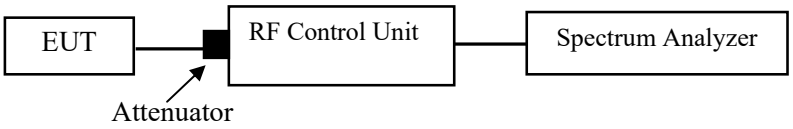
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band 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:	28.2℃
Relative Humidity:	52%
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu from 2021-05-13 to 2021-05-14.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) (1) (3) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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.

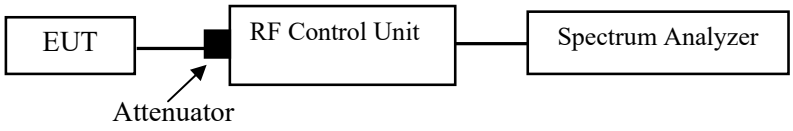
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum 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:	28.2℃
Relative Humidity:	52%
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu from 2021-12-22 to 2021-12-23.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) (1) (3) - POWER SPECTRAL DENSITY

Applicable Standard

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 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:	28.2℃
Relative Humidity:	52%
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu on 2021-12-23.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

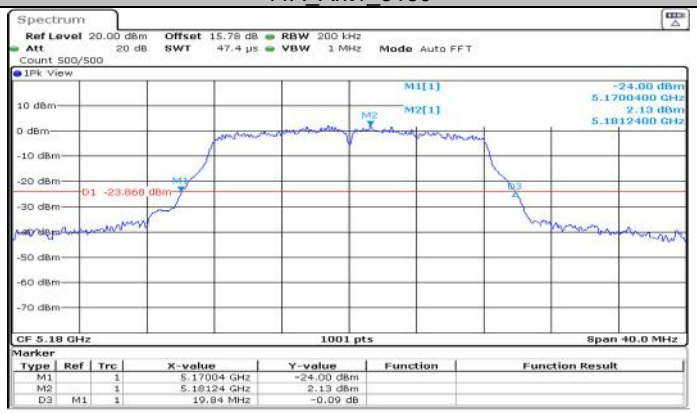
Appendix A1: Emission Bandwidth

Test Result

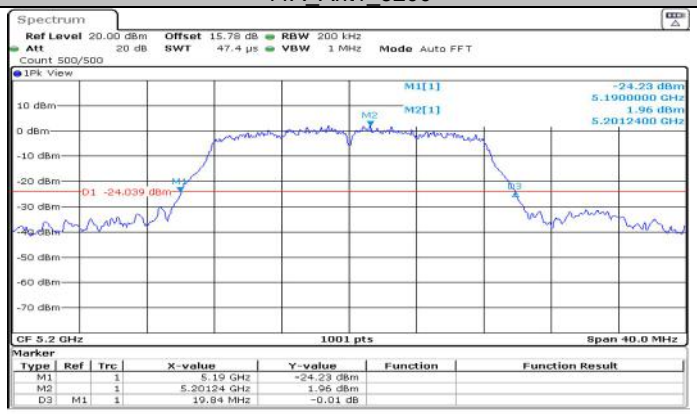
TestMode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.840	---	PASS
		5200	19.840	---	PASS
		5240	19.600	---	PASS
11N20SISO	Ant1	5180	20.120	---	PASS
		5200	20.240	---	PASS
		5240	20.120	---	PASS
11N40SISO	Ant1	5190	41.200	---	PASS
		5230	41.280	---	PASS
11AC20SISO	Ant1	5180	20.040	---	PASS
		5200	20.320	---	PASS
		5240	20.320	---	PASS
11AC40SISO	Ant1	5190	41.200	---	PASS
		5230	41.040	---	PASS
11AC80SISO	Ant1	5210	81.760	---	PASS

Test Graphs

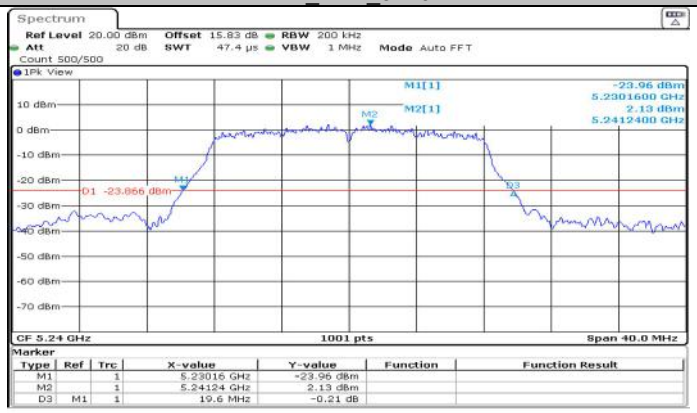
11A_Ant1_5180



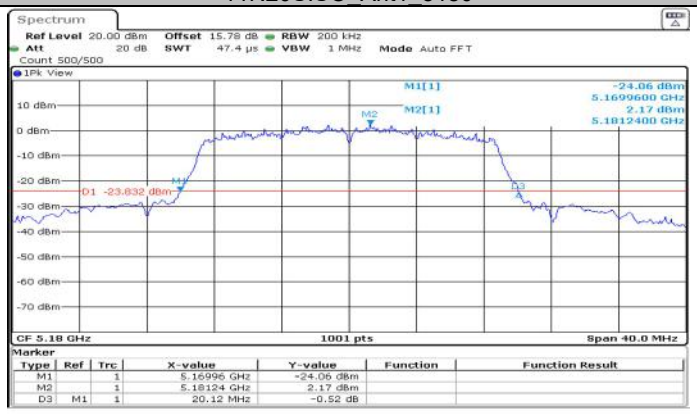
11A_Ant1_5200



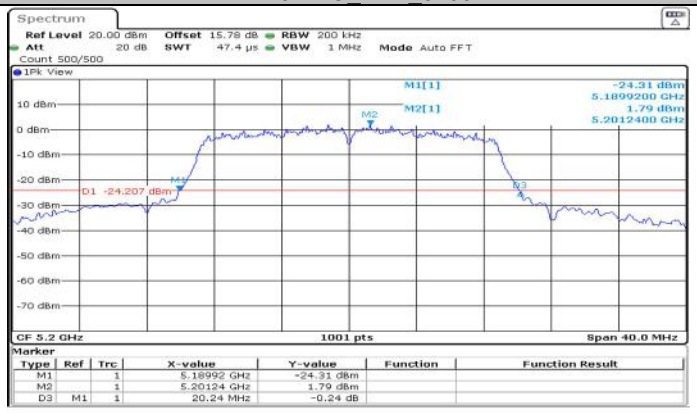
11A_Ant1_5240



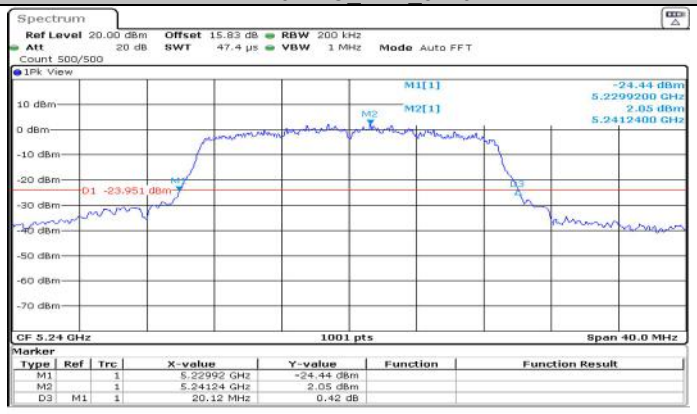
11N20SISO_Ant1_5180



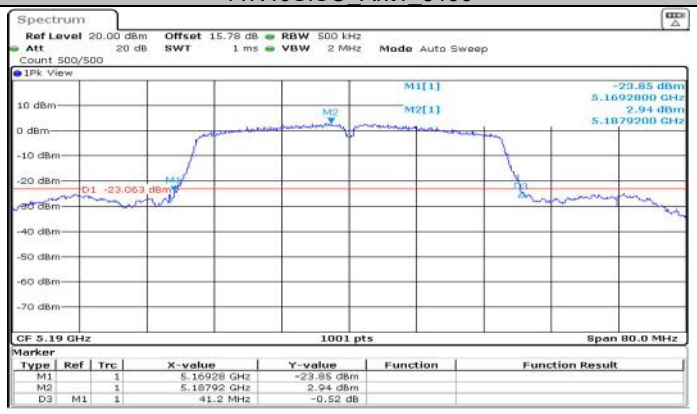
11N20SISO_Ant1_5200



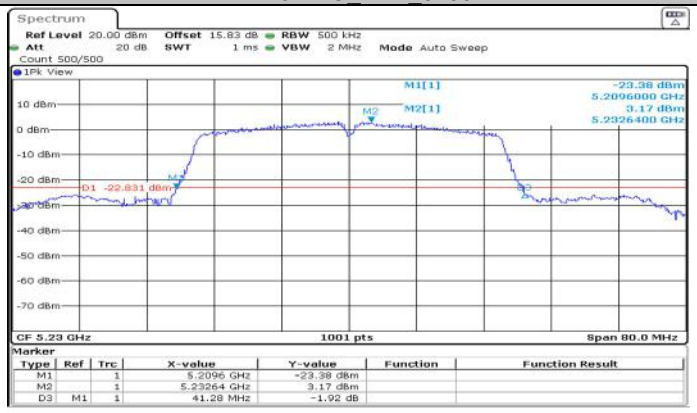
11N20SISO_Ant1_5240



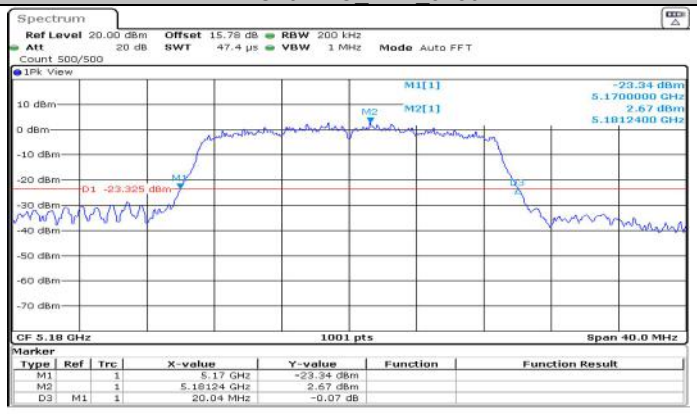
11N40SISO_Ant1_5190



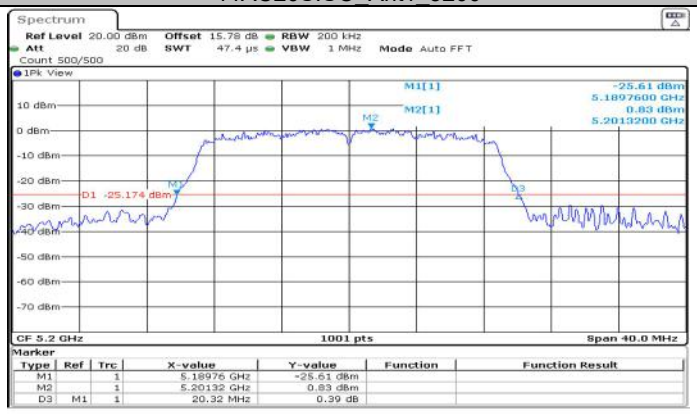
11N40SISO_Ant1_5230



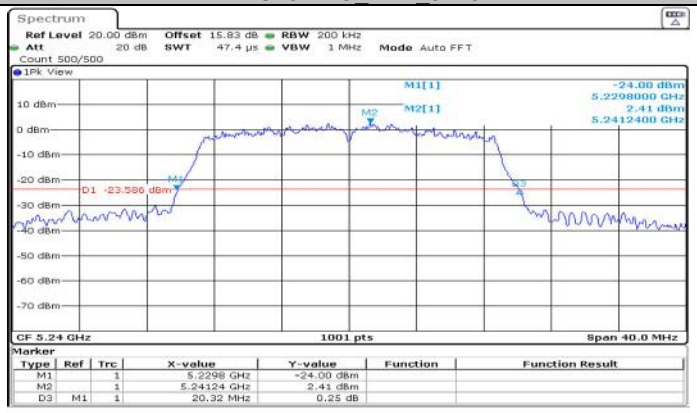
11AC20SISO_Ant1_5180



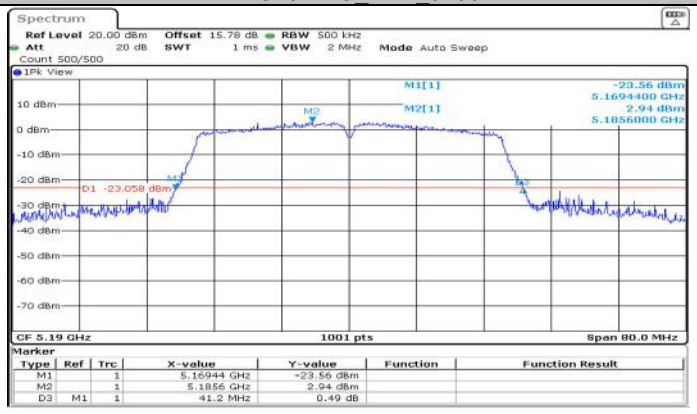
11AC20SISO_Ant1_5200



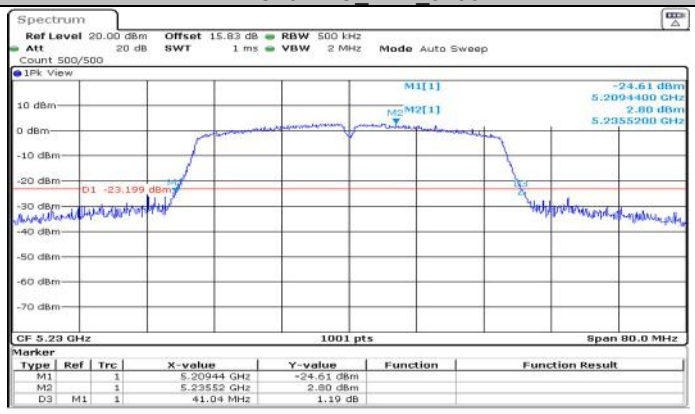
11AC20SISO_Ant1_5240



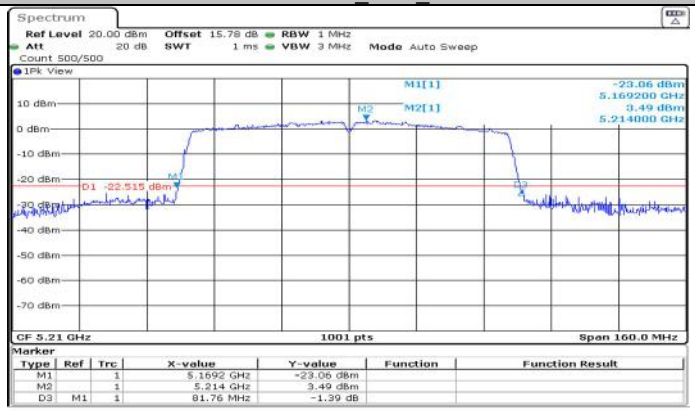
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Appendix A2: Occupied channel bandwidth

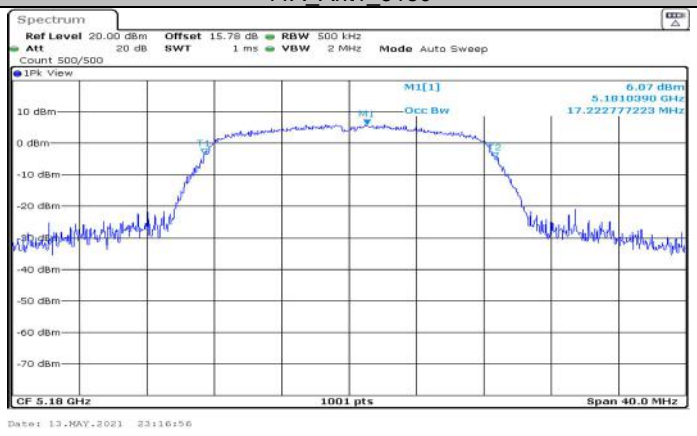
Test Result

Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.223	---	PASS
		5200	17.303	---	PASS
		5240	17.263	---	PASS
		5745	17.263	---	PASS
		5785	17.263	---	PASS
		5825	17.223	---	PASS
11N20SISO	Ant1	5180	18.182	---	PASS
		5200	18.302	---	PASS
		5240	18.262	---	PASS
		5745	18.222	---	PASS
		5785	18.262	---	PASS
		5825	18.222	---	PASS
11N40SISO	Ant1	5190	36.763	---	PASS
		5230	36.683	---	PASS
		5755	36.763	---	PASS
		5795	36.843	---	PASS
11AC20SISO	Ant1	5180	18.102	---	PASS
		5200	18.182	---	PASS
		5240	18.142	---	PASS
		5745	18.142	---	PASS
		5785	18.102	---	PASS
		5825	18.102	---	PASS
11AC40SISO	Ant1	5190	36.523	---	PASS
		5230	36.603	---	PASS
		5755	36.523	---	PASS
		5795	36.603	---	PASS
11AC80SISO	Ant1	5210	75.445	---	PASS
		5775	75.445	---	PASS

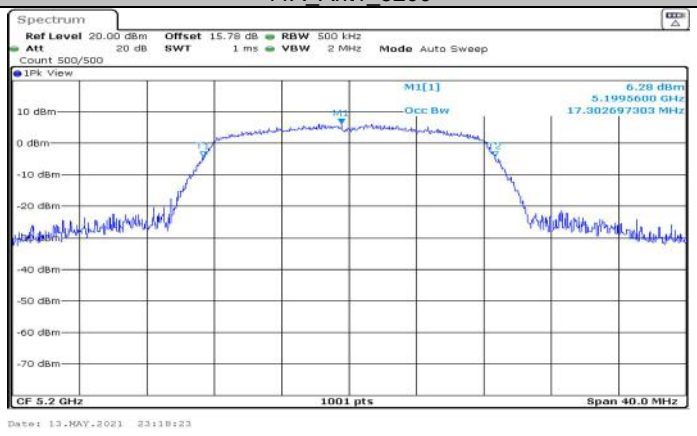
Note: OBW for U-NII-1 and U-NII-3 bands will not within frequency range for U-NII-2A and U-NII-2C bands.

Test Graphs

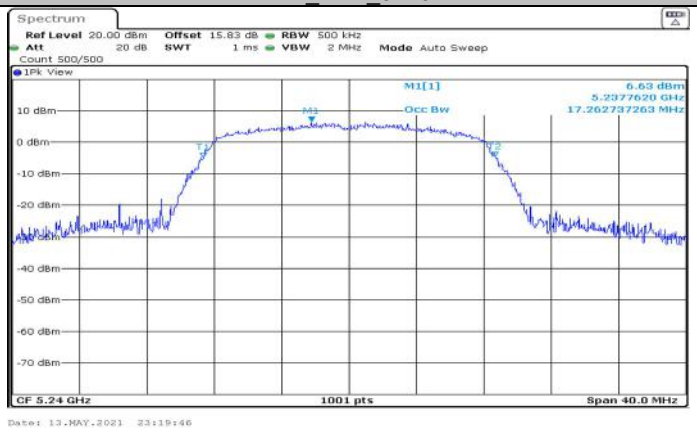
11A_Ant1_5180



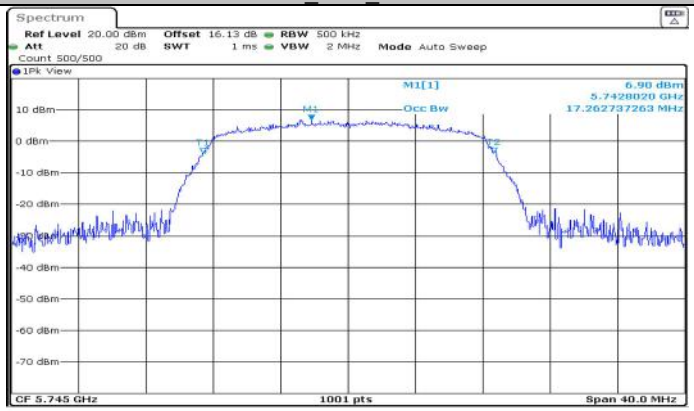
11A_Ant1_5200



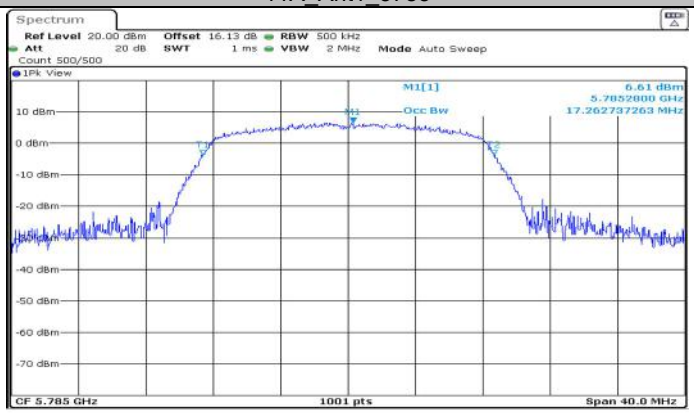
11A_Ant1_5240



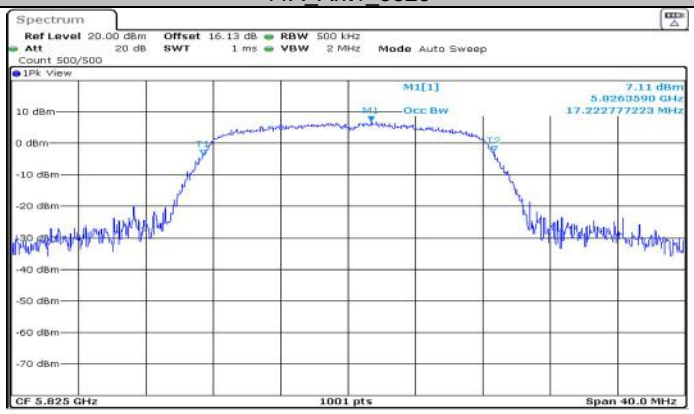
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



11N20SISO_Ant1_5180

11N20SISO_Ant1_5200

11N20SISO_Ant1_5240

11N20SISO_Ant1_5745

11N20SISO_Ant1_5785

11N20SISO_Ant1_5825

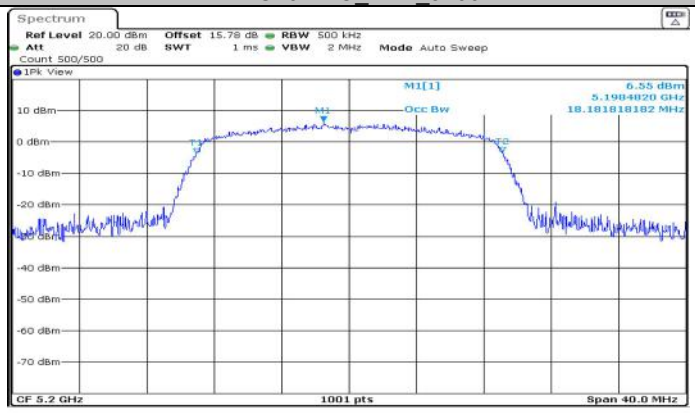
11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

11N40SISO_Ant1_5755

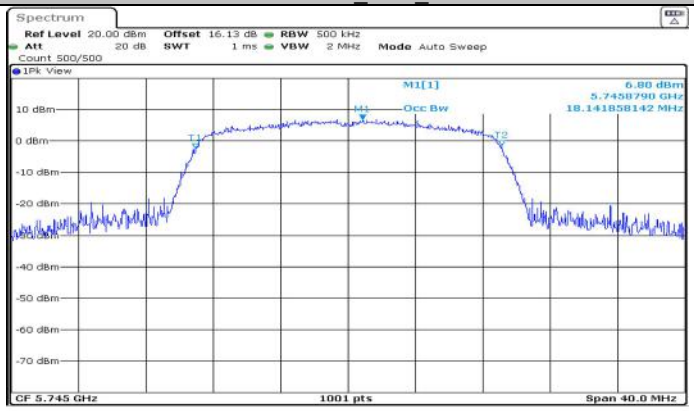
11N40SISO_Ant1_5795

11AC20SISO_Ant1_5180

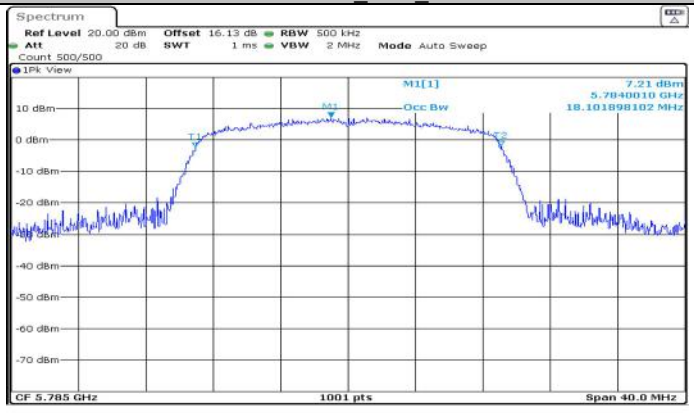
11AC20SISO_Ant1_5200


11AC20SISO_Ant1_5240

11AC20SISO_Ant1_5745

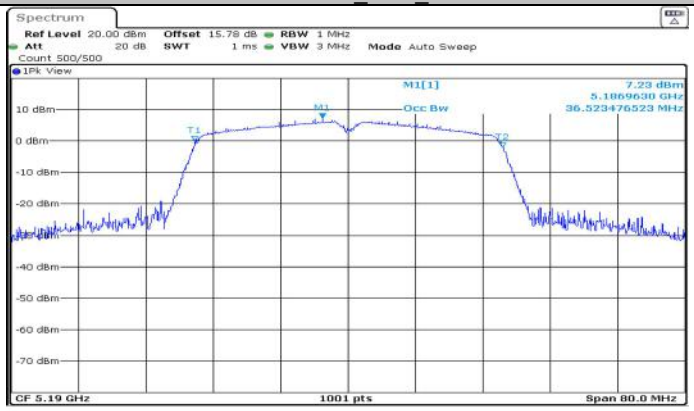


11AC20SISO_Ant1_5785

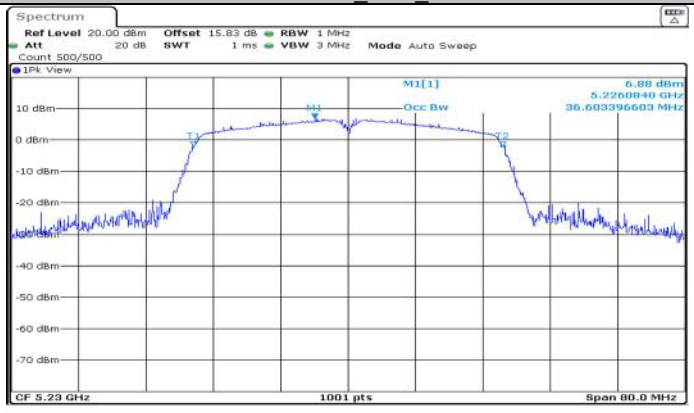


11AC20SISO_Ant1_5825

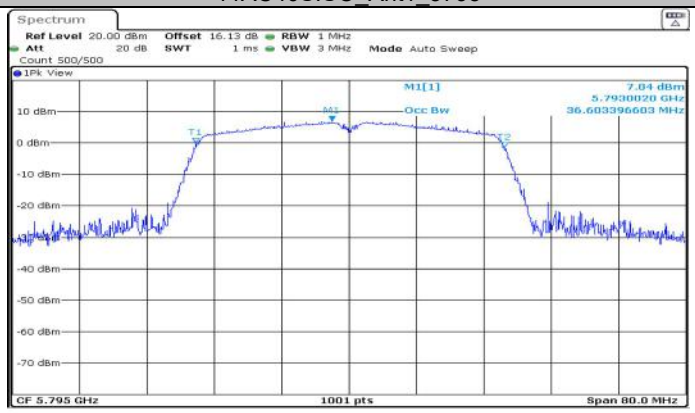
11AC40SISO_Ant1_5190

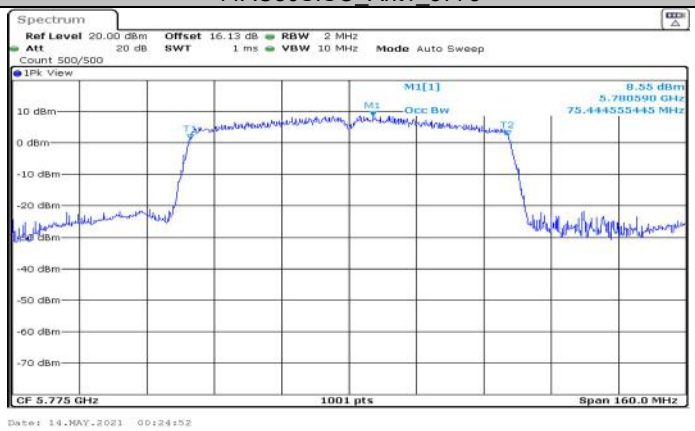


11AC40SISO_Ant1_5230



11AC40SISO_Ant1_5755

11AC40SISO_Ant1_5795

11AC80SISO_Ant1_5210


11AC80SISO_Ant1_5775


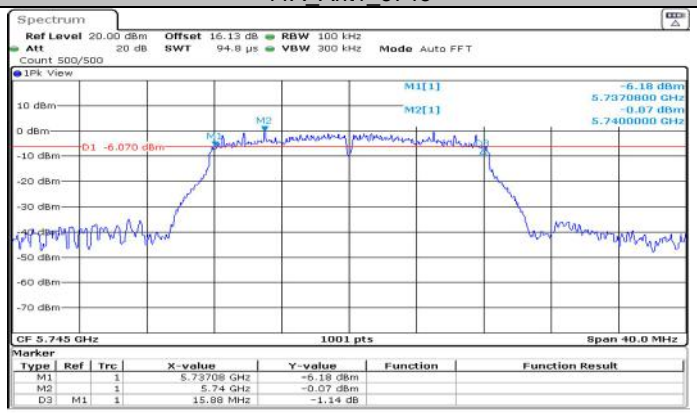
Appendix A3: Min emission bandwidth

Test Result

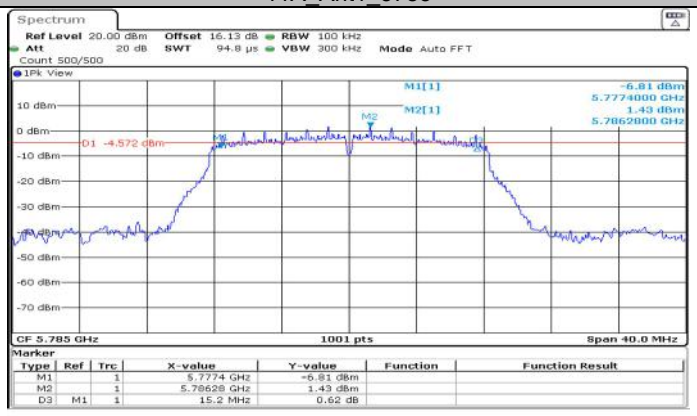
Test Mode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.880	0.5	PASS
		5785	15.200	0.5	PASS
		5825	15.200	0.5	PASS
11N20SISO	Ant1	5745	15.200	0.5	PASS
		5785	15.200	0.5	PASS
		5825	15.200	0.5	PASS
11N40SISO	Ant1	5755	35.280	0.5	PASS
		5795	35.280	0.5	PASS
11AC20SISO	Ant1	5745	15.200	0.5	PASS
		5785	15.200	0.5	PASS
		5825	15.200	0.5	PASS
11AC40SISO	Ant1	5755	35.280	0.5	PASS
		5795	35.280	0.5	PASS
11AC80SISO	Ant1	5775	75.520	0.5	PASS

Test Graphs

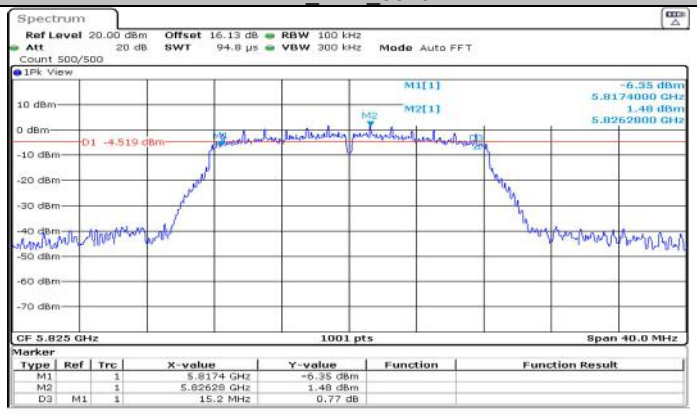
11A_Ant1_5745



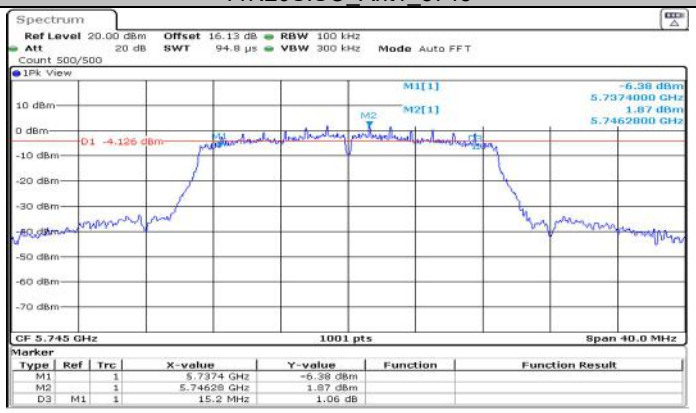
11A_Ant1_5785



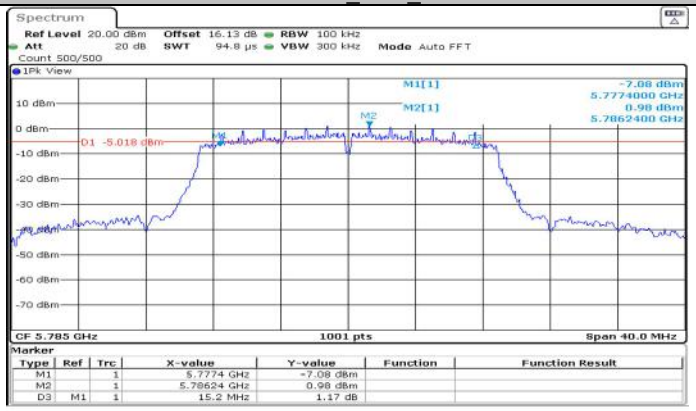
11A_Ant1_5825



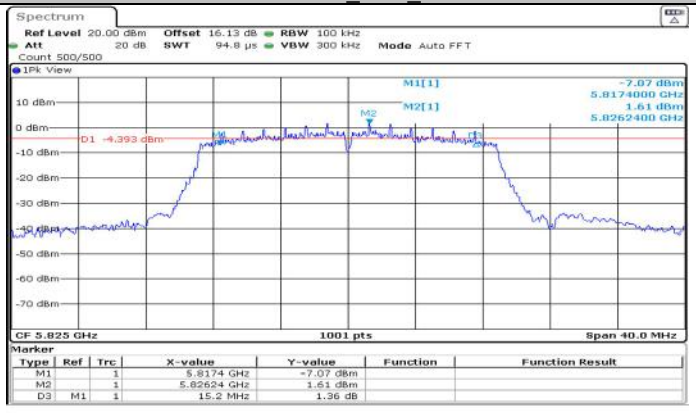
11N20SISO_Ant1_5745



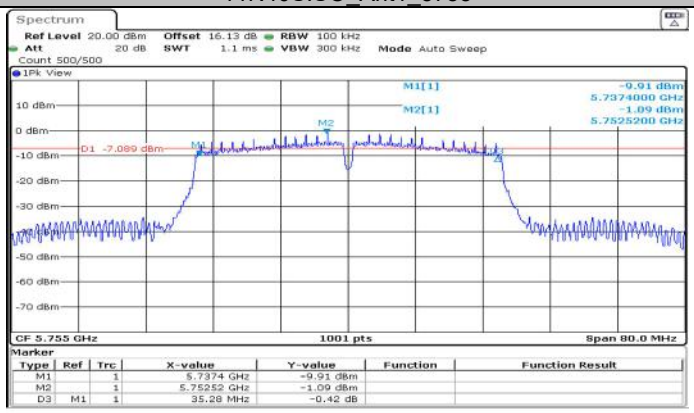
11N20SISO_Ant1_5785



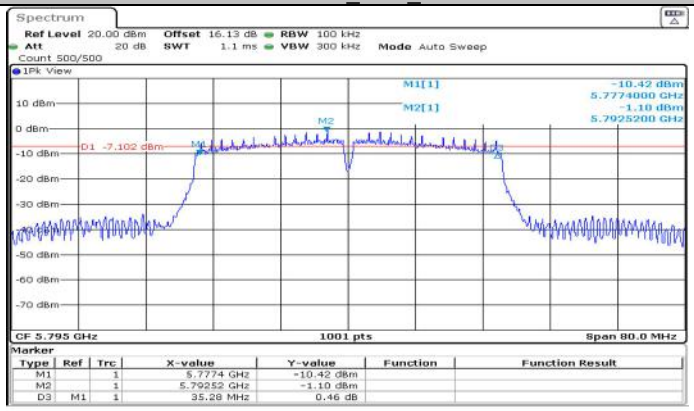
11N20SISO_Ant1_5825



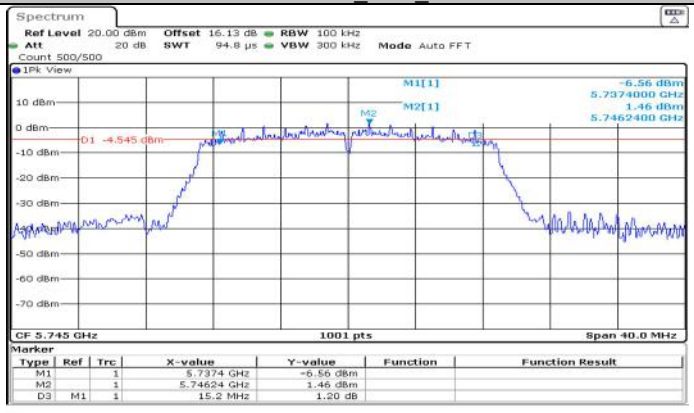
11N40SISO_Ant1_5755



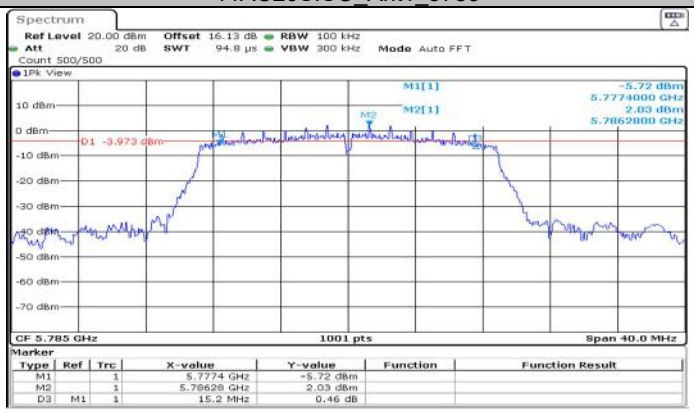
11N40SISO_Ant1_5795



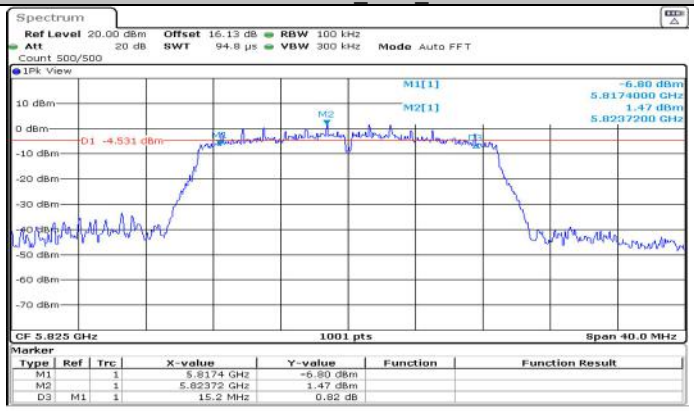
11AC20SISO_Ant1_5745



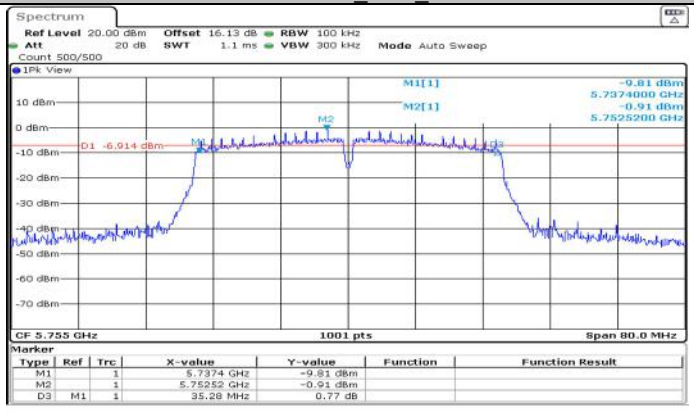
11AC20SISO_Ant1_5785



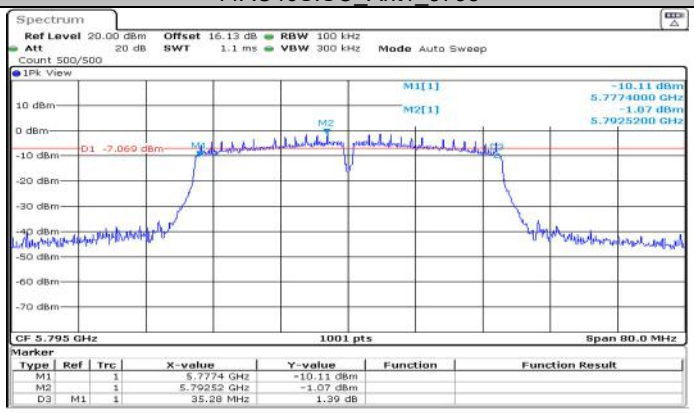
11AC20SISO_Ant1_5825



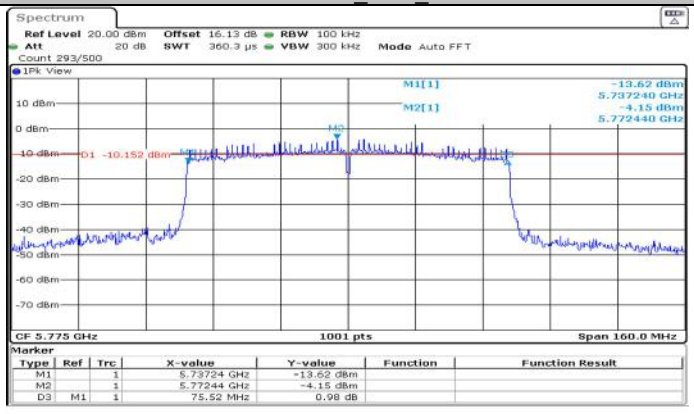
11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775



Appendix B: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	9.36	≤24	PASS
		5200	10.12	≤24	PASS
		5240	10.59	≤24	PASS
		5745	10.05	≤30	PASS
		5785	9.84	≤30	PASS
		5825	9.75	≤30	PASS
11N20SISO	Ant1	5180	9.34	≤24	PASS
		5200	9.43	≤24	PASS
		5240	9.98	≤24	PASS
		5745	9.20	≤30	PASS
		5785	9.43	≤30	PASS
		5825	9.83	≤30	PASS
11N40SISO	Ant1	5190	9.23	≤24	PASS
		5230	10.06	≤24	PASS
		5755	9.42	≤30	PASS
		5795	9.70	≤30	PASS
11AC20SISO	Ant1	5180	9.16	≤24	PASS
		5200	9.29	≤24	PASS
		5240	9.84	≤24	PASS
		5745	9.01	≤30	PASS
		5785	9.52	≤30	PASS
		5825	9.71	≤30	PASS
11AC40SISO	Ant1	5190	9.13	≤24	PASS
		5230	9.95	≤24	PASS
		5755	9.24	≤30	PASS
		5795	9.64	≤30	PASS
11AC80SISO	Ant1	5210	9.69	≤24	PASS
		5775	9.77	≤30	PASS

Note 1: This product is used for client device.

Appendix C: Maximum power spectral density

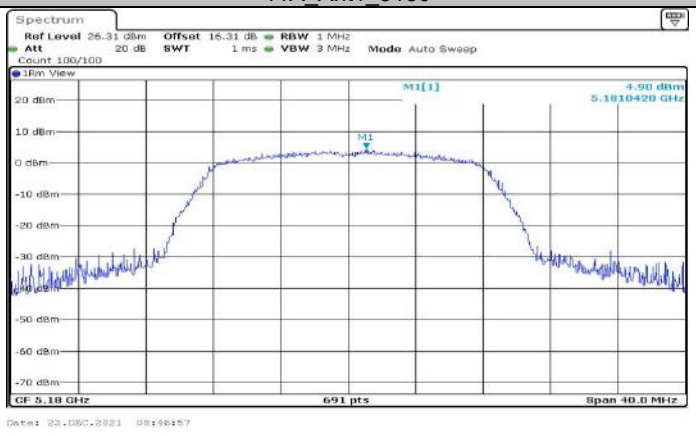
Test Result

Test Mode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	4.9	≤11	PASS
		5200	5.33	≤11	PASS
		5240	5.12	≤11	PASS
		5745	3.13	≤30	PASS
		5785	3.26	≤30	PASS
		5825	3.05	≤30	PASS
11N20SISO	Ant1	5180	3.73	≤11	PASS
		5200	3.92	≤11	PASS
		5240	4.39	≤11	PASS
		5745	2.38	≤30	PASS
		5785	2.9	≤30	PASS
		5825	2.92	≤30	PASS
11N40SISO	Ant1	5190	1.99	≤11	PASS
		5230	1.83	≤11	PASS
		5755	-0.07	≤30	PASS
		5795	-0.04	≤30	PASS
11AC20SISO	Ant1	5180	3.89	≤11	PASS
		5200	4.2	≤11	PASS
		5240	4.9	≤11	PASS
		5745	1.97	≤30	PASS
		5785	2.68	≤30	PASS
		5825	3.04	≤30	PASS
11AC40SISO	Ant1	5190	0.64	≤11	PASS
		5230	2.15	≤11	PASS
		5755	-0.27	≤30	PASS
		5795	0.07	≤30	PASS
11AC80SISO	Ant1	5210	-2.03	≤11	PASS
		5775	-3.35	≤30	PASS

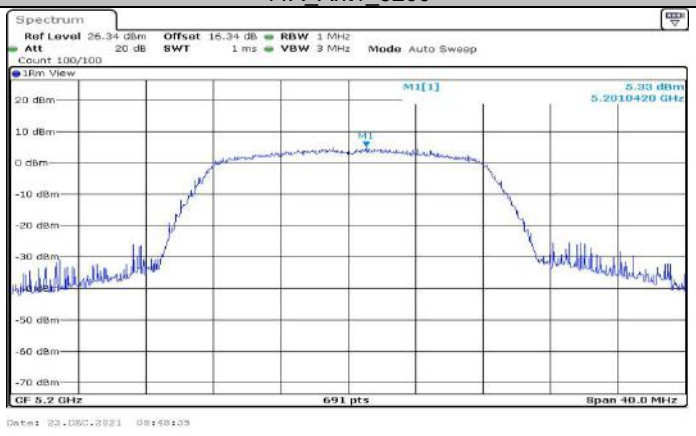
Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.

Test Graphs

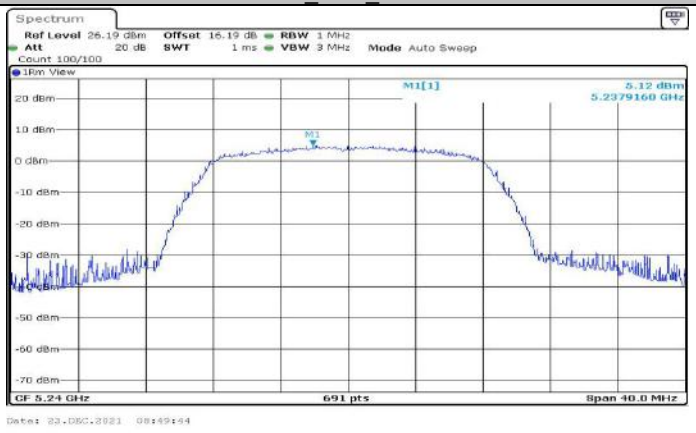
11A_Ant1_5180



11A_Ant1_5200

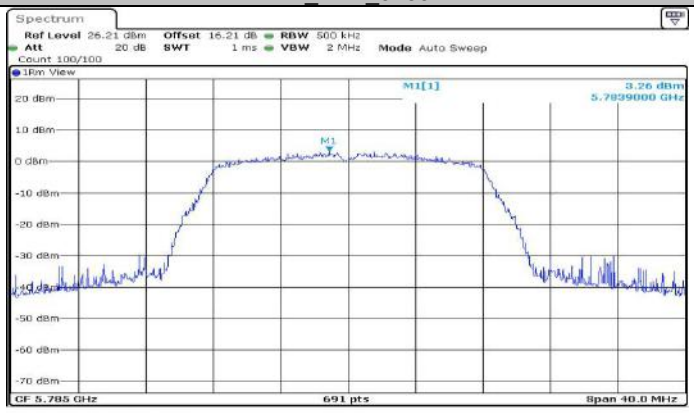


11A_Ant1_5240



11A_Ant1_5745

11A_Ant1_5785

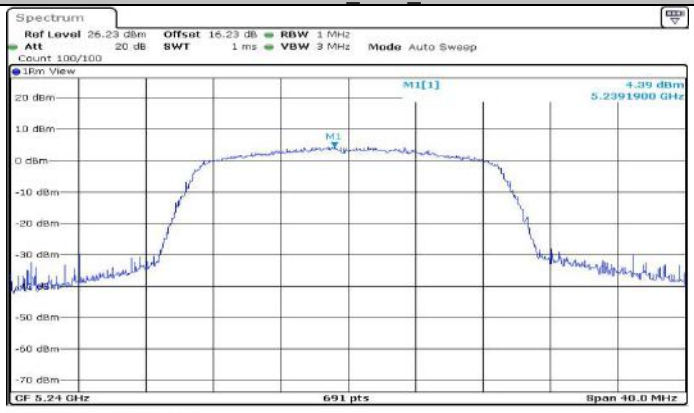


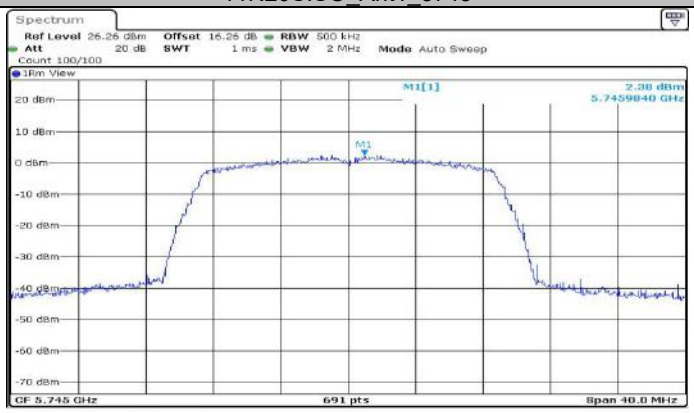
11A_Ant1_5825

11N20SISO_Ant1_5180

11N20SISO_Ant1_5200

11N20SISO_Ant1_5240



11N20SISO_Ant1_5745

11N20SISO_Ant1_5785

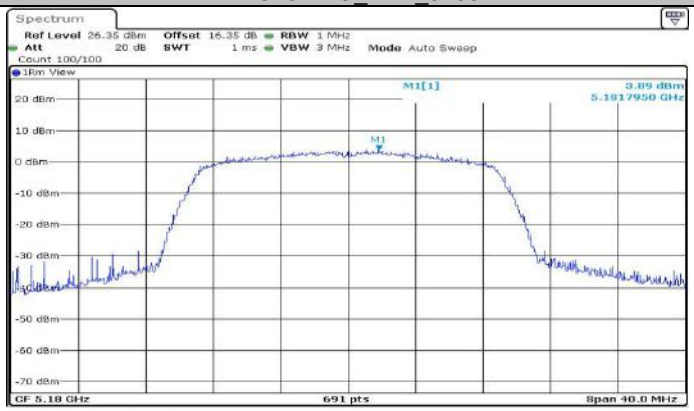
11N20SISO_Ant1_5825


11N40SISO_Ant1_5190

11N40SISO_Ant1_5230

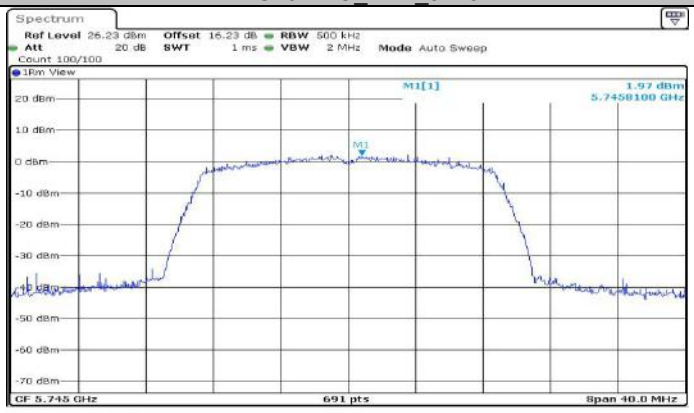
11N40SISO_Ant1_5755


11N40SISO_Ant1_5795

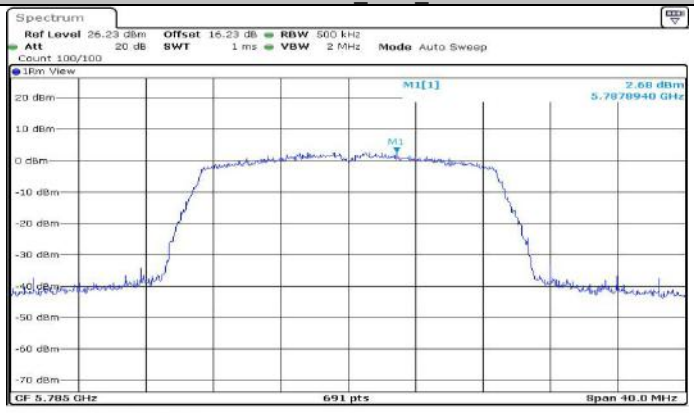
11AC20SISO_Ant1_5180

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

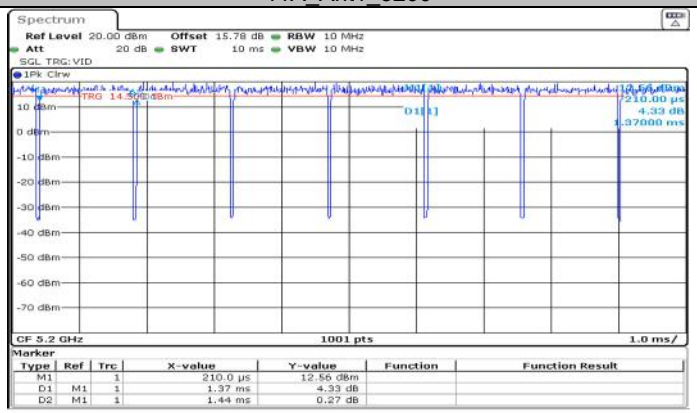

Appendix D: Duty Cycle

Test Result

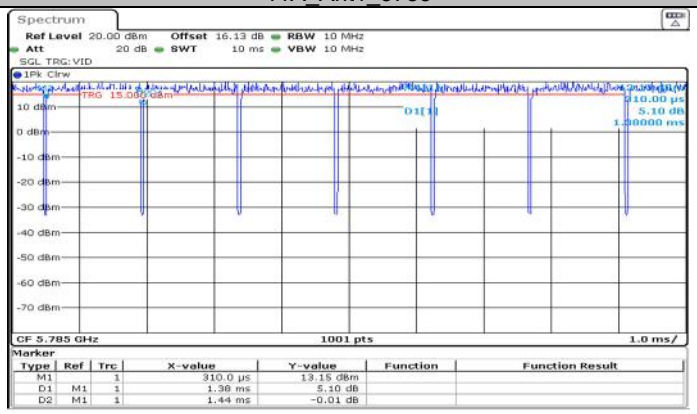
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5200	1.37	1.44	95.14
		5785	1.38	1.44	95.83
11N20SISO	Ant1	5200	1.29	1.35	95.56
		5785	1.29	1.35	95.56
11N40SISO	Ant1	5190	0.63	0.69	91.30
		5755	0.63	0.70	90.00
11AC20SISO	Ant1	5200	1.29	1.36	94.85
		5785	1.30	1.36	95.59
11AC40SISO	Ant1	5190	0.63	0.69	91.30
		5755	0.63	0.70	90.00
11AC80SISO	Ant1	5210	0.30	0.36	83.33
		5775	0.30	0.37	81.08

Test Graphs

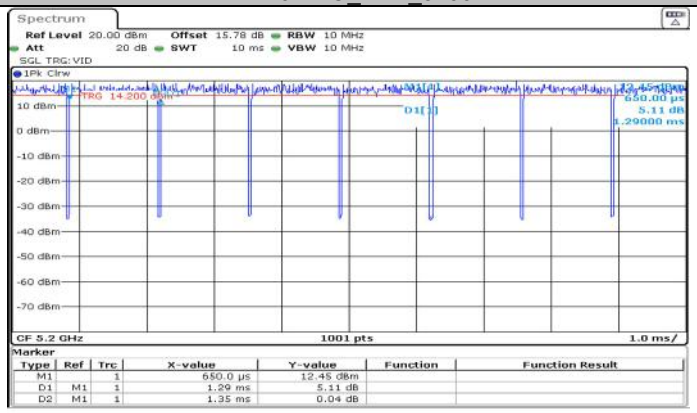
11A_Ant1_5200



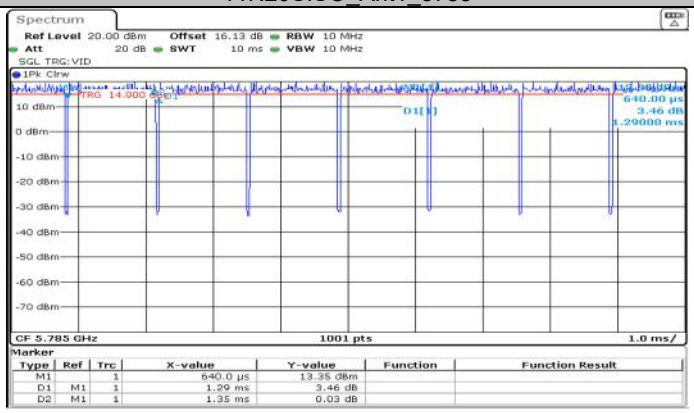
11A_Ant1_5785



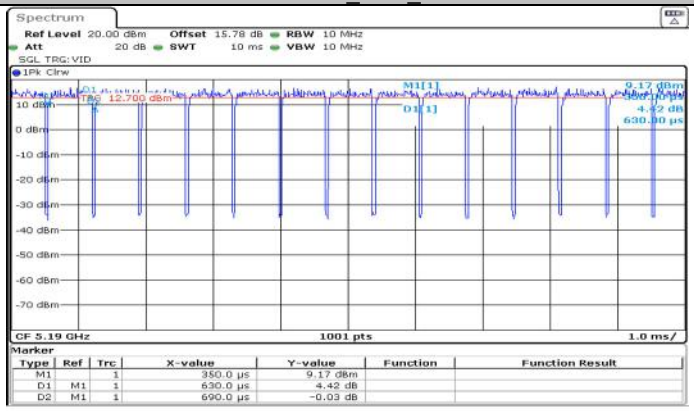
11N20SISO_Ant1_5200



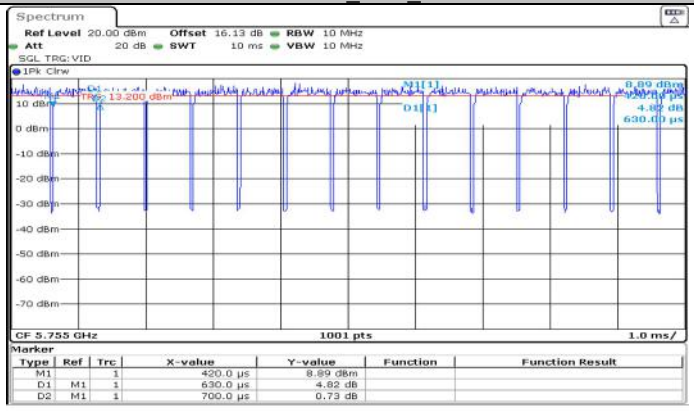
11N20SISO_Ant1_5785



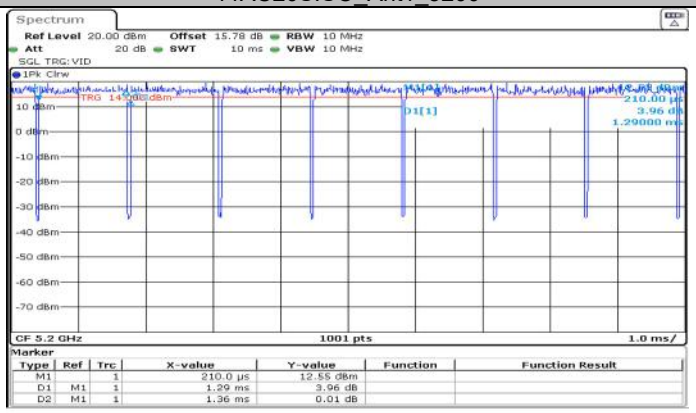
11N40SISO_Ant1_5190



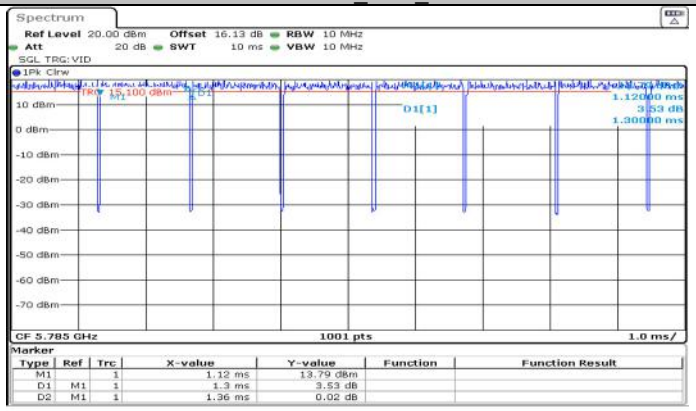
11N40SISO_Ant1_5755



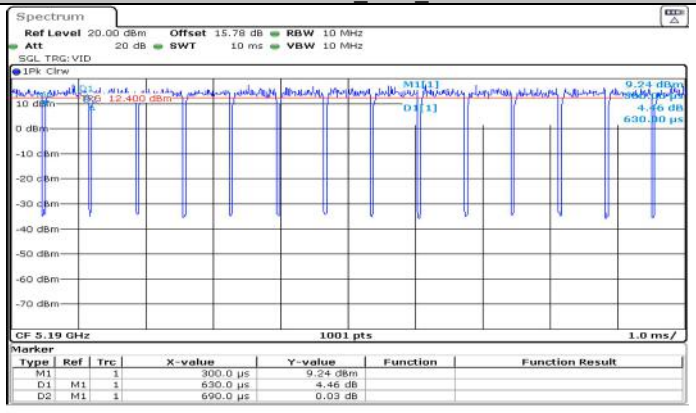
11AC20SISO_Ant1_5200



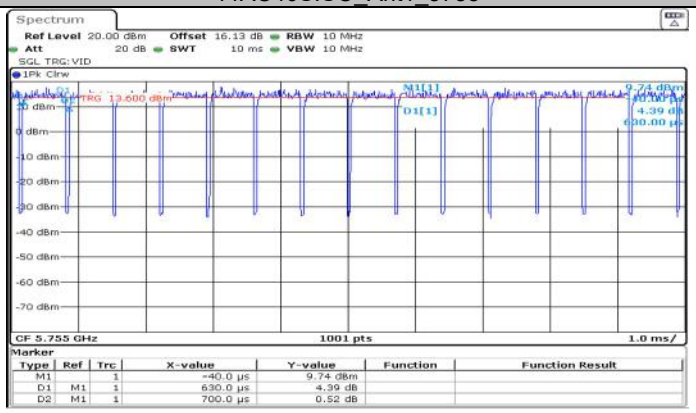
11AC20SISO_Ant1_5785



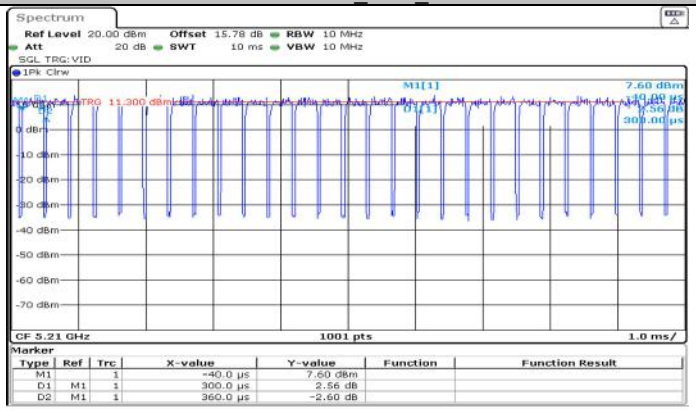
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5755



11AC80SISO_Ant1_5210



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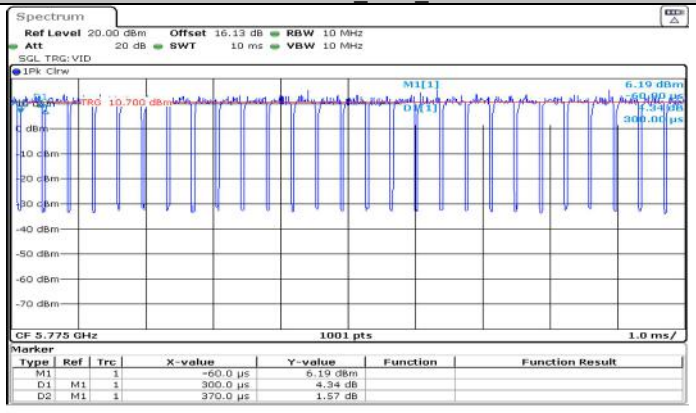

******* END OF REPORT *******