TEST REPORT

Applicant Name :	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address :	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen, China
Report Number :	SZNS211231-68438E-RF-00B
FCC ID:	2ATZ4-BIXSGN

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	RP05
Model No.:	BISON X10S NFC
Multiple Model(s) No.:	BISON X10G NFC (Please refer to DOS for Model difference)
Trade Mark:	UMIDIGI
Date Received:	2021/12/31
Date of Test:	2021/12/25~2022/02/22
Report Date:	2022/02/23

Test Result:	Pass*

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

Prepared and Checked By:

Ting Lü
EMC Engineer

Approved By:

Robert Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".
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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 Output Power	5150-5250 MHz: 15.94dBm 5725-5850 MHz: 16.32dBm
Modulation Technique	OFDM
Antenna Specification*	2.2 dBi (It is provided by the applicant)
Voltage Range	DC 3.87V from battery or DC 5V from adapter
Sample serial number	SZNS211231-68438E-RF-S1 for Conducted and Radiated Emissions SZNS211231-68438E-RF-S2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: HJ-0502000W2-US Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5 V, 2A

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 support 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

EUT was test in engineering mode. The software and power level was provided by the applicant.

The worst case was performed under:

U-NII	Mode	Date rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150 – 5250MHz	802.11a	6Mbps	14	14	14
	802.11n-HT20	MCS0	14	14	14
	802.11n-HT40	MCS0	14	/	14
	802.11ac20	MCS0	14	14	14
	802.11ac40	MCS0	14	/	14
	802.11ac80	MCS0	/	14	/
5725 – 5850MHz	802.11a	6Mbps	14	14	14
	802.11n-HT20	MCS0	14	14	14
	802.11n-HT40	MCS0	14	/	14
	802.11ac20	MCS0	14	14	14
	802.11ac40	MCS0	14	/	14
	802.11ac80	MCS0	/	14	/

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

The software and 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

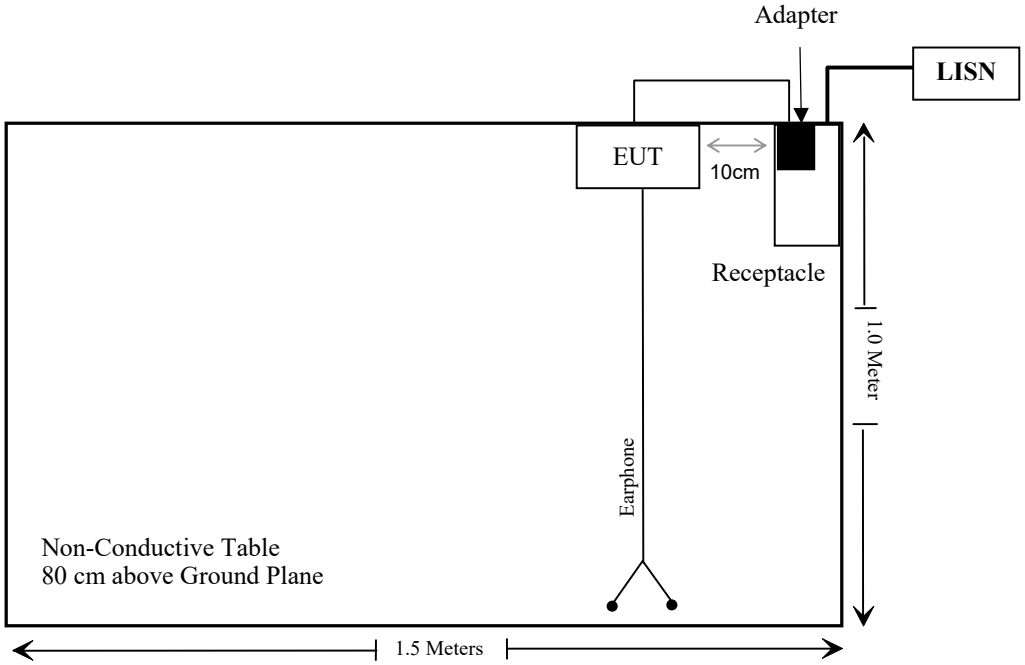
Manufacturer	Description	Model	Serial Number
Unknown	Earphone	Unknown	Earphone

External I/O Cable

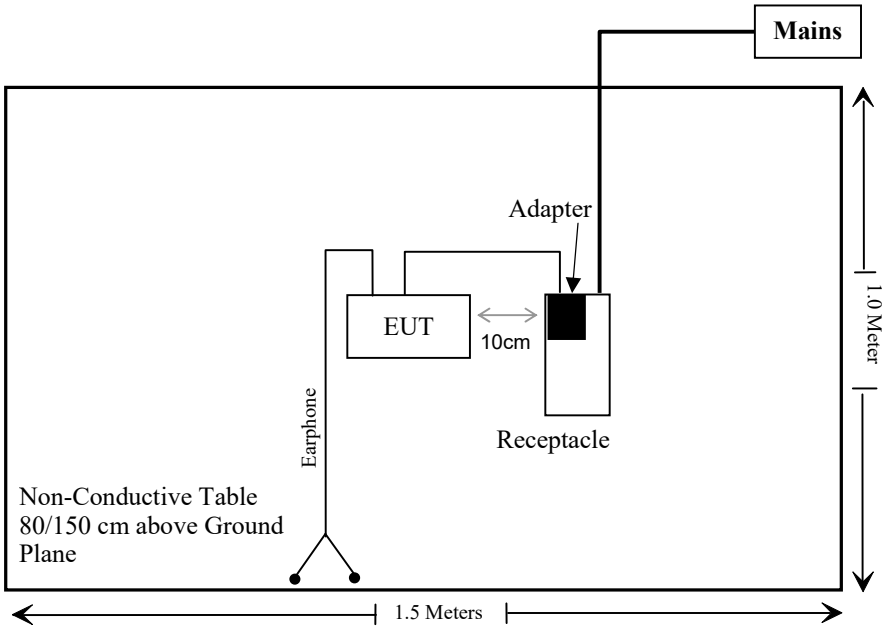
Cable Description	Length (m)	From Port	To
Un-shielding Detachable USB Cable	1.0	EUT	Adapter

Block Diagram of Test Setup

For conducted emission:



For radiated emission:



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)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Not Applicable*

Not Applicable: the EUT has no TPC function which was declarded by the applicant.
Not Applicable*: the EUT not operating within frequency range of 5250-5350MHz&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	2021/12/13	2022/12/12
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
Conducted Emission Test Software: e3 19821b (V9)					
Radiated Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Radiated Emission Test Software: e3 19821b (V9)					
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Wainwright	High Pass Filter	WHKX3.6/18G-10SS	5	2021/12/14	2022/12/13

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05

*** 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: SZNS211231-68438E-20A.

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

Type	Antenna Gain	Impedance	Frequency Range
FPC	2.2dBi	50 Ω	5150-5850MHz

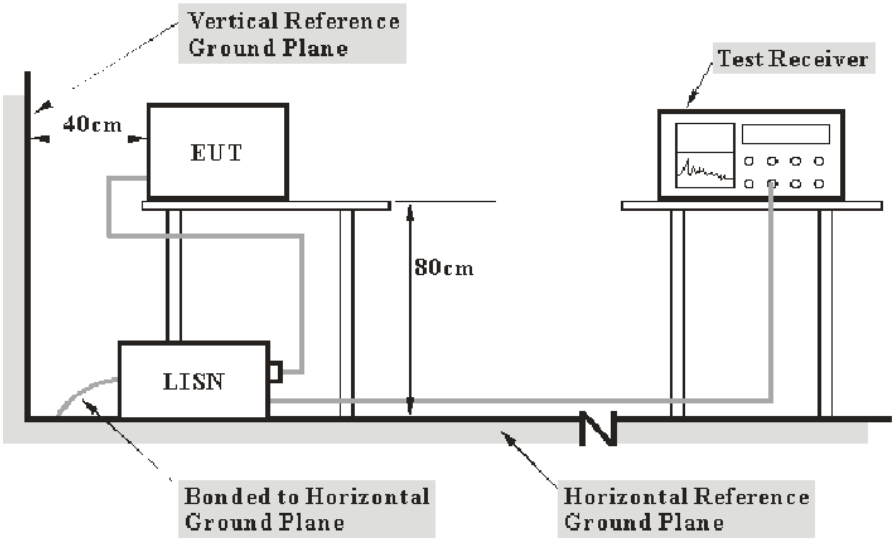
Result: Compliant.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Corrected Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor) 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

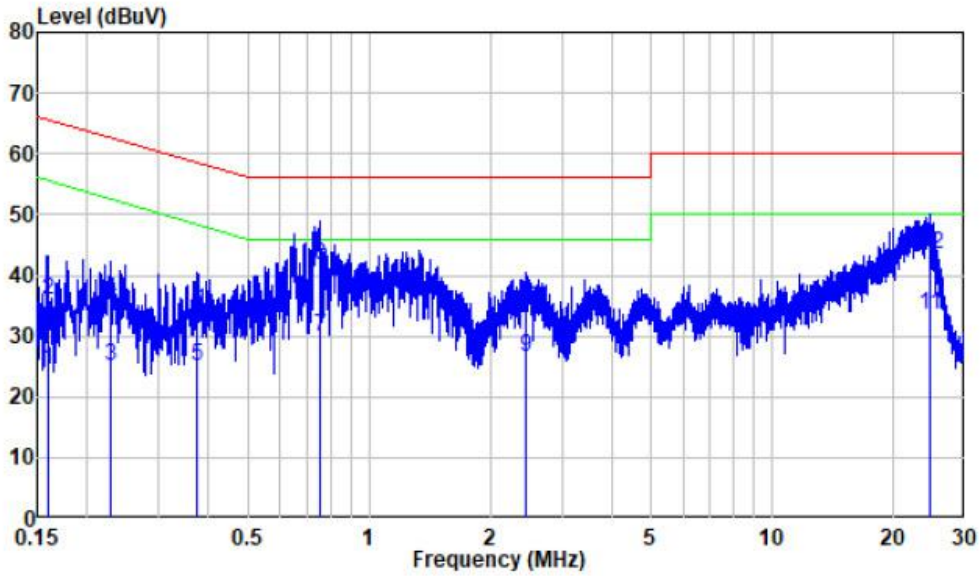
Environmental Conditions

Temperature:	23 °C
Relative Humidity:	53 %
ATM Pressure:	101.0 kPa

The testing was performed by Bin Duan on 2022-02-11.

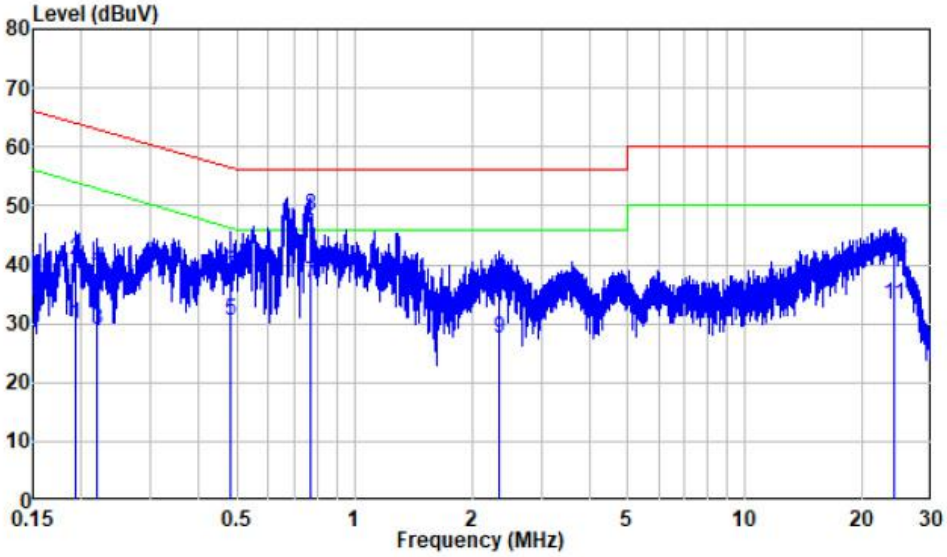
EUT operation mode: Transmitting (worst case is 802.11a, 5745MHz)

AC 120V/60 Hz, Line:



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.159	9.80	14.63	24.43	55.52	-31.09	Average
2	0.159	9.80	25.99	35.79	65.52	-29.73	QP
3	0.229	9.80	15.40	25.20	52.49	-27.29	Average
4	0.229	9.80	26.03	35.83	62.49	-26.66	QP
5	0.375	9.80	15.14	24.94	48.39	-23.45	Average
6	0.375	9.80	24.42	34.22	58.39	-24.17	QP
7	0.755	9.81	20.00	29.81	46.00	-16.19	Average
8	0.755	9.81	31.98	41.79	56.00	-14.21	QP
9	2.435	9.82	16.60	26.42	46.00	-19.58	Average
10	2.435	9.82	24.72	34.54	56.00	-21.46	QP
11	24.480	10.04	23.50	33.54	50.00	-16.46	Average
12	24.480	10.04	33.42	43.46	60.00	-16.54	QP

AC 120V/60 Hz, Neutral:



	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.194	9.80	20.19	29.99	53.87	-23.88	Average
2	0.194	9.80	31.03	40.83	63.87	-23.04	QP
3	0.219	9.80	19.20	29.00	52.86	-23.86	Average
4	0.219	9.80	29.34	39.14	62.86	-23.72	QP
5	0.481	9.80	20.79	30.59	46.33	-15.74	Average
6	0.481	9.80	28.77	38.57	56.33	-17.76	QP
7	0.768	9.81	26.99	36.80	46.00	-9.20	Average
8	0.768	9.81	38.35	48.16	56.00	-7.84	QP
9	2.335	9.82	17.71	27.53	46.00	-18.47	Average
10	2.335	9.82	25.98	35.80	56.00	-20.20	QP
11	24.031	10.14	23.18	33.32	50.00	-16.68	Average
12	24.031	10.14	30.77	40.91	60.00	-19.09	QP

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

Applicable Standard

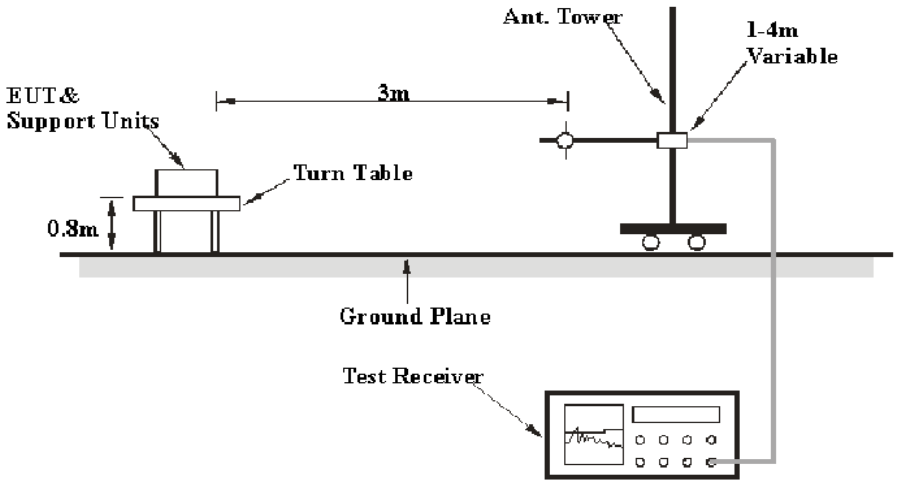
FCC §15.407 (b); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

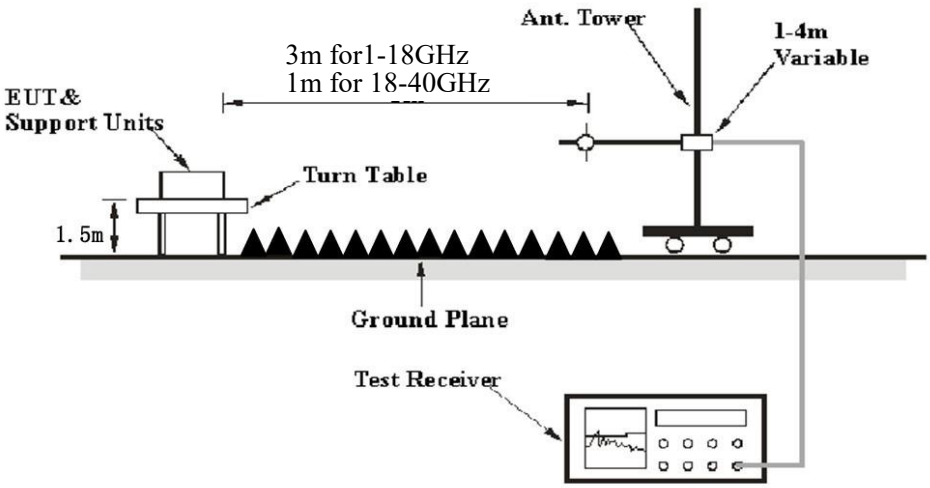
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

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

Test Procedure

Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

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

According to ANSI C63.10-2013,9.4: For field strength measurements made at other than the distance at which the applicable limit is specified,extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance). In some cases, a different distance correction factor may be required;

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

where

$E_{\mathrm{SpecLimit}}$	is the field strength of the emission at the distance specified by the limit, in dBμV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBμV/m
d_{Meas}	is the measurement distance, in m
$d_{\mathrm{SpecLimit}}$	is the distance specified by the limit, in m

So the extrapolation factor of 1m is 20*log(1/3)= -9.5 dB, for 18-40GHz range, the limit of 1m distance was added by 9.5dB from limit of 3m to compared with the result measurement at 1m distance.

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:	19~28.6 ℃
Relative Humidity:	54~62 %
ATM Pressure:	100.9~101.0 kPa

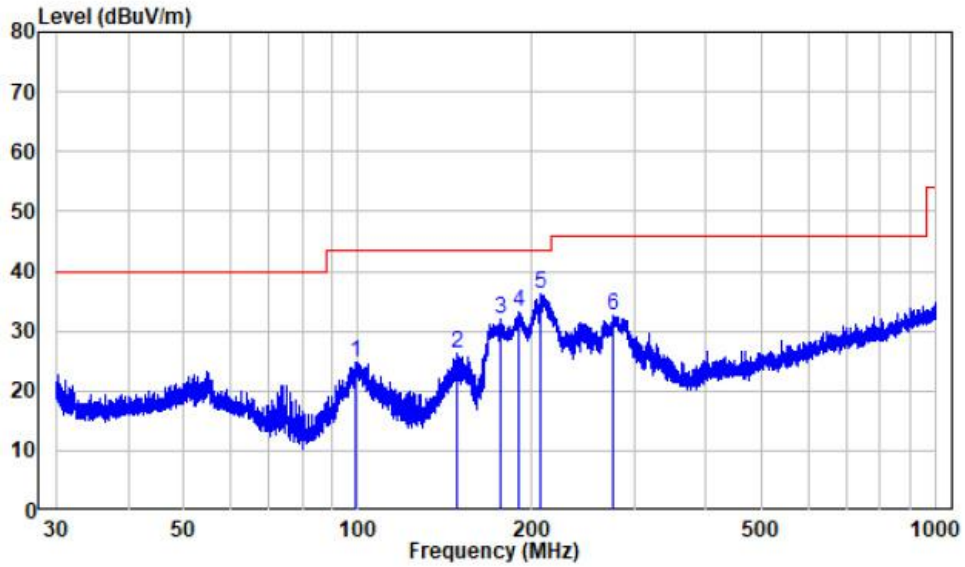
The testing was performed by Chao Mo on 2022-02-12 for below 1GHz, Caro Hu and Bin Deng from 2021-12-25 to 2022-02-15 for above 1GHz.

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

30 MHz – 1 GHz: *(worst case is 802.11a, 5745MHz)*

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

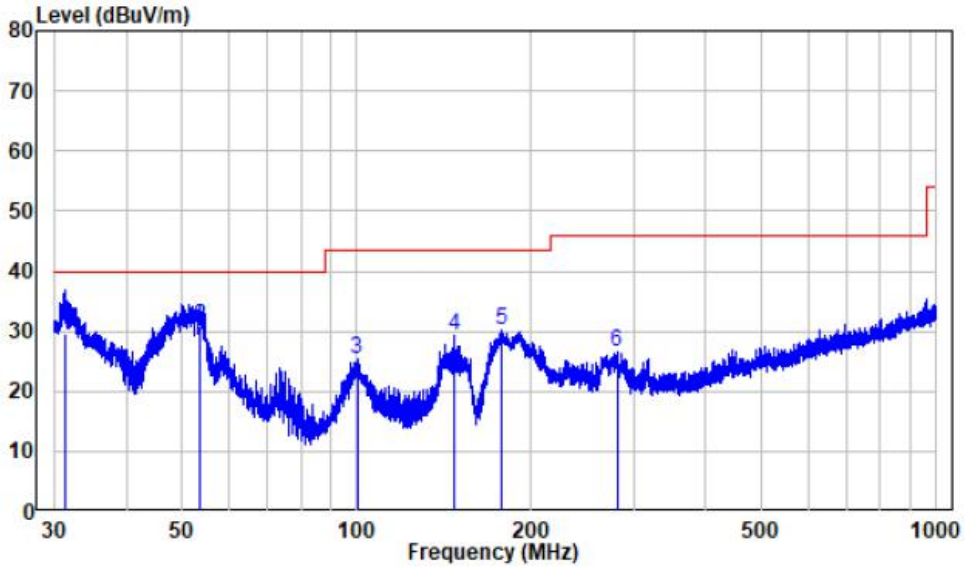
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : SZNS211231-68438E-RF
Test Mode: 5G Wifi Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	98.659	-12.10	36.99	24.89	43.50	-18.61	Peak
2	147.921	-15.38	41.53	26.15	43.50	-17.35	Peak
3	176.191	-13.07	45.18	32.11	43.50	-11.39	Peak
4	189.905	-11.60	44.94	33.34	43.50	-10.16	Peak
5	206.126	-11.83	48.11	36.28	43.50	-7.22	Peak
6	275.761	-9.85	42.34	32.49	46.00	-13.51	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : SZNS211231-68438E-RF
Test Mode: 5G Wifi Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	31.372	-12.25	41.70	29.45	40.00	-10.55	QP
2	53.482	-10.26	41.01	30.75	40.00	-9.25	QP
3	100.053	-11.79	37.18	25.39	43.50	-18.11	Peak
4	147.533	-15.40	44.66	29.26	43.50	-14.24	Peak
5	178.211	-12.95	42.99	30.04	43.50	-13.46	Peak
6	281.008	-9.56	36.22	26.66	46.00	-19.34	Peak

Above 1GHz:

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/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
4500	62.88	PK	93	1.9	H	-4.72	58.16	74	-15.84
4500	50.10	AV	93	1.9	H	-4.72	45.38	54	-8.62
4500	62.83	PK	26	2.1	V	-4.72	58.11	74	-15.89
4500	50.05	AV	26	2.1	V	-4.72	45.33	54	-8.67
5150	63.08	PK	311	1.9	H	-2.73	60.35	74	-13.65
5150	50.32	AV	311	1.9	H	-2.73	47.59	54	-6.41
5150	62.99	PK	234	2.1	V	-2.73	60.26	74	-13.74
5150	50.21	AV	234	2.1	V	-2.73	47.48	54	-6.52
10360	56.95	PK	246	2.0	H	8.12	65.07	68.2	-3.13
10360	54.04	PK	322	1.7	V	8.12	62.16	68.2	-6.04
5200 MHz									
10400	55.10	PK	249	2.0	H	8.24	63.34	68.2	-4.86
10400	53.51	PK	231	2.1	V	8.24	61.75	68.2	-6.45
5240 MHz									
5350	63.78	PK	310	1.9	H	-2.33	61.45	74	-12.55
5350	50.81	AV	310	1.9	H	-2.33	48.48	54	-5.52
5350	63.59	PK	260	1.8	V	-2.33	61.26	74	-12.74
5350	50.64	AV	260	1.8	V	-2.33	48.31	54	-5.69
5460	62.77	PK	218	1.9	H	-2.26	60.51	74	-13.49
5460	50.49	AV	218	1.9	H	-2.26	48.23	54	-5.77
5460	62.66	PK	269	1.6	V	-2.26	60.40	74	-13.60
5460	50.40	AV	269	1.6	V	-2.26	48.14	54	-5.86
10480	53.64	PK	194	1.9	H	8.56	62.20	68.2	-6.00
10480	51.88	PK	131	1.7	V	8.56	60.44	68.2	-7.76

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5180 MHz									
4500	63.24	PK	43	1.9	H	-4.72	58.52	74	-15.48
4500	50.32	AV	43	1.9	H	-4.72	45.60	54	-8.40
4500	63.10	PK	184	1.9	V	-4.72	58.38	74	-15.62
4500	50.17	AV	184	1.9	V	-4.72	45.45	54	-8.55
5150	63.48	PK	294	1.8	H	-2.73	60.75	74	-13.25
5150	50.35	AV	294	1.8	H	-2.73	47.62	54	-6.38
5150	63.27	PK	158	1.6	V	-2.73	60.54	74	-13.46
5150	50.22	AV	158	1.6	V	-2.73	47.49	54	-6.51
10360	56.75	PK	122	2.0	H	8.12	64.87	68.2	-3.33
10360	54.66	PK	290	1.6	V	8.12	62.78	68.2	-5.42
5200 MHz									
10400	55.50	PK	285	1.9	H	8.24	63.74	68.2	-4.46
10400	54.14	PK	268	2.0	V	8.24	62.38	68.2	-5.82
5240 MHz									
5350	64.04	PK	66	1.9	H	-2.33	61.71	74	-12.29
5350	50.88	AV	66	1.9	H	-2.33	48.55	54	-5.45
5350	63.86	PK	28	2.1	V	-2.33	61.53	74	-12.47
5350	50.77	AV	28	2.1	V	-2.33	48.44	54	-5.56
5460	62.99	PK	42	1.6	H	-2.26	60.73	74	-13.27
5460	50.82	AV	42	1.6	H	-2.26	48.56	54	-5.44
5460	62.86	PK	67	1.7	V	-2.26	60.60	74	-13.40
5460	50.68	AV	67	1.7	V	-2.26	48.42	54	-5.58
10480	53.88	PK	22	2.1	H	8.56	62.44	68.2	-5.76
10480	52.03	PK	125	1.6	V	8.56	60.59	68.2	-7.61

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
4500	63.92	PK	208	1.5	H	-4.72	59.20	74	-14.80
4500	51.04	AV	208	1.5	H	-4.72	46.32	54	-7.68
4500	63.79	PK	274	2.1	V	-4.72	59.07	74	-14.93
4500	50.93	AV	274	2.1	V	-4.72	46.21	54	-7.79
5150	63.87	PK	241	1.9	H	-2.73	61.14	74	-12.86
5150	50.79	AV	241	1.9	H	-2.73	48.06	54	-5.94
5150	63.61	PK	114	1.8	V	-2.73	60.88	74	-13.12
5150	50.68	AV	114	1.8	V	-2.73	47.95	54	-6.05
10380	55.19	PK	272	2.0	H	8.18	63.37	68.2	-4.83
10380	51.60	PK	24	2.0	V	8.18	59.78	68.2	-8.42
5230 MHz									
5350	64.61	PK	103	2.1	H	-2.33	62.28	74	-11.72
5350	51.33	AV	103	2.1	H	-2.33	49.00	54	-5.00
5350	64.15	PK	40	2.0	V	-2.33	61.82	74	-12.18
5350	51.26	AV	40	2.0	V	-2.33	48.93	54	-5.07
5460	63.78	PK	14	1.6	H	-2.26	61.52	74	-12.48
5460	51.00	AV	14	1.6	H	-2.26	48.74	54	-5.26
5460	63.61	PK	260	1.7	V	-2.26	61.35	74	-12.65
5460	50.82	AV	260	1.7	V	-2.26	48.56	54	-5.44
10460	52.66	PK	57	1.9	H	8.47	61.13	68.2	-7.07
10460	49.91	PK	314	1.6	V	8.47	58.38	68.2	-9.82

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	63.24	PK	147	1.7	H	-4.72	58.52	74	-15.48
4500	50.25	AV	147	1.7	H	-4.72	45.53	54	-8.47
4500	63.10	PK	257	1.7	V	-4.72	58.38	74	-15.62
4500	50.13	AV	257	1.7	V	-4.72	45.41	54	-8.59
5150	63.82	PK	339	2.0	H	-2.73	61.09	74	-12.91
5150	50.60	AV	339	2.0	H	-2.73	47.87	54	-6.13
5150	63.68	PK	22	1.8	V	-2.73	60.95	74	-13.05
5150	50.47	AV	22	1.8	V	-2.73	47.74	54	-6.26
10360	57.06	PK	60	1.6	H	8.12	65.18	68.2	-3.02
10360	54.49	PK	226	1.7	V	8.12	62.61	68.2	-5.59
5200 MHz									
10400	55.67	PK	203	1.8	H	8.24	63.91	68.2	-4.29
10400	53.71	PK	16	1.6	V	8.24	61.95	68.2	-6.25
5240 MHz									
5350	64.65	PK	344	1.9	H	-2.33	62.32	74	-11.68
5350	51.08	AV	344	1.9	H	-2.33	48.75	54	-5.25
5350	64.53	PK	137	1.6	V	-2.33	62.20	74	-11.80
5350	51.00	AV	137	1.6	V	-2.33	48.67	54	-5.33
5460	63.67	PK	304	1.7	H	-2.26	61.41	74	-12.59
5460	50.78	AV	304	1.7	H	-2.26	48.52	54	-5.48
5460	63.56	PK	120	1.8	V	-2.26	61.30	74	-12.70
5460	50.65	AV	120	1.8	V	-2.26	48.39	54	-5.61
10480	54.05	PK	187	1.9	H	8.56	62.61	68.2	-5.59
10480	52.13	PK	322	1.7	V	8.56	60.69	68.2	-7.51

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	64.22	PK	47	1.9	H	-4.72	59.50	74	-14.50
4500	51.08	AV	47	1.9	H	-4.72	46.36	54	-7.64
4500	64.10	PK	293	1.7	V	-4.72	59.38	74	-14.62
4500	50.99	AV	293	1.7	V	-4.72	46.27	54	-7.73
5150	63.98	PK	116	2.1	H	-2.73	61.25	74	-12.75
5150	50.92	AV	116	2.1	H	-2.73	48.19	54	-5.81
5150	63.74	PK	276	1.9	V	-2.73	61.01	74	-12.99
5150	50.86	AV	276	1.9	V	-2.73	48.13	54	-5.87
10380	55.42	PK	356	2.1	H	8.18	63.60	68.2	-4.60
10380	51.98	PK	350	2.0	V	8.18	60.16	68.2	-8.04
5230 MHz									
5350	64.79	PK	264	1.5	H	-2.33	62.46	74	-11.54
5350	51.76	AV	264	1.5	H	-2.33	49.43	54	-4.57
5350	64.37	PK	307	2.0	V	-2.33	62.04	74	-11.96
5350	51.61	AV	307	2.0	V	-2.33	49.28	54	-4.72
5460	63.91	PK	130	1.6	H	-2.26	61.65	74	-12.35
5460	51.09	AV	130	1.6	H	-2.26	48.83	54	-5.17
5460	63.77	PK	339	2.1	V	-2.26	61.51	74	-12.49
5460	51.00	AV	339	2.1	V	-2.26	48.74	54	-5.26
10460	53.50	PK	178	1.9	H	8.47	61.97	68.2	-6.23
10460	50.44	PK	210	1.8	V	8.47	58.91	68.2	-9.29

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	63.43	PK	51	1.8	H	-4.72	58.71	74	-15.29
4500	51.68	AV	51	1.8	H	-4.72	46.96	54	-7.04
4500	63.31	PK	214	1.8	V	-4.72	58.59	74	-15.41
4500	51.60	AV	214	1.8	V	-4.72	46.88	54	-7.12
5150	63.41	PK	256	1.6	H	-2.73	60.68	74	-13.32
5150	52.06	AV	256	1.6	H	-2.73	49.33	54	-4.67
5150	63.28	PK	276	1.7	V	-2.73	60.55	74	-13.45
5150	51.95	AV	276	1.7	V	-2.73	49.22	54	-4.78
5350	64.78	PK	68	1.8	H	-2.33	62.45	74	-11.55
5350	52.61	AV	68	1.8	H	-2.33	50.28	54	-3.72
5350	64.56	PK	196	1.9	V	-2.33	62.23	74	-11.77
5350	52.44	AV	196	1.9	V	-2.33	50.11	54	-3.89
5460	63.68	PK	167	2.1	H	-2.26	61.42	74	-12.58
5460	51.61	AV	167	2.1	H	-2.26	49.35	54	-4.65
5460	63.52	PK	167	2.1	V	-2.26	61.26	74	-12.74
5460	51.55	AV	167	2.1	V	-2.26	49.29	54	-4.71
10420	52.18	PK	229	2.1	H	8.32	60.50	68.2	-7.70
10420	49.97	PK	179	1.9	V	8.32	58.29	68.2	-9.91

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									
5725	67.92	PK	269	1.8	H	-1.96	65.96	122.2	-56.24
5725	67.44	PK	278	1.6	V	-1.96	65.48	122.2	-56.72
5720	66.59	PK	266	1.8	H	-1.97	64.62	110.8	-46.18
5720	67.23	PK	130	1.9	V	-1.97	65.26	110.8	-45.54
5700	64.79	PK	322	2.0	H	-2.02	62.77	105.2	-42.43
5700	66.52	PK	16	1.8	V	-2.02	64.5	105.2	-40.7
5650	65.48	PK	209	2.0	H	-1.95	63.53	68.2	-4.67
5650	65.39	PK	96	1.7	V	-1.95	63.44	68.2	-4.76
11490	50.01	PK	167	2.1	H	6.63	56.64	74	-17.36
11490	36.26	AV	167	2.1	H	6.63	42.89	54	-11.11
11490	48	PK	160	1.9	V	6.63	54.63	74	-19.37
11490	34.19	AV	160	1.9	V	6.63	40.82	54	-13.18
5785 MHz									
11570	48.69	PK	5	1.9	H	6.59	55.28	74	-18.72
11570	36.14	AV	5	1.9	H	6.59	42.73	54	-11.27
11570	47.93	PK	250	2.1	V	6.59	54.52	74	-19.48
11570	34.95	AV	250	2.1	V	6.59	41.54	54	-12.46
5825 MHz									
5850	68.8	PK	216	1.6	H	-1.81	66.99	122.2	-55.21
5850	68.81	PK	177	1.7	V	-1.81	67	122.2	-55.2
5855	66.57	PK	26	1.8	H	-1.82	64.75	110.8	-46.05
5855	66.98	PK	142	2.0	V	-1.82	65.16	110.8	-45.64
5875	67.83	PK	296	2.0	H	-1.84	65.99	105.2	-39.21
5875	67.86	PK	66	1.8	V	-1.84	66.02	105.2	-39.18
5925	66.65	PK	292	1.9	H	-1.82	64.83	68.2	-3.37
5925	66.56	PK	108	1.9	V	-1.82	64.74	68.2	-3.46
11650	48.34	PK	235	1.8	H	6.77	55.11	74	-18.89
11650	35.1	AV	235	1.8	H	6.77	41.87	54	-12.13
11650	47.73	PK	295	2.0	V	6.77	54.5	74	-19.5
11650	34.69	AV	295	2.0	V	6.77	41.46	54	-12.54

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									
5725	67.28	PK	120	1.8	H	-1.96	65.32	122.2	-56.88
5725	66.55	PK	332	1.6	V	-1.96	64.59	122.2	-57.61
5720	65.89	PK	34	1.5	H	-1.97	63.92	110.8	-46.88
5720	66.31	PK	344	1.6	V	-1.97	64.34	110.8	-46.46
5700	63.81	PK	329	1.9	H	-2.02	61.79	105.2	-43.41
5700	65.78	PK	140	1.8	V	-2.02	63.76	105.2	-41.44
5650	65.46	PK	275	2.0	H	-1.95	63.51	68.2	-4.69
5650	65.58	PK	105	1.8	V	-1.95	63.63	68.2	-4.57
11490	47.68	PK	169	1.9	H	6.63	54.31	74	-19.69
11490	33.69	AV	169	1.9	H	6.63	40.32	54	-13.68
11490	45.62	PK	83	2.0	V	6.63	52.25	74	-21.75
11490	32.07	AV	83	2.0	V	6.63	38.7	54	-15.3
5785 MHz									
11570	47.23	PK	313	1.7	H	6.59	53.82	74	-20.18
11570	33.66	AV	313	1.7	H	6.59	40.25	54	-13.75
11570	45.94	PK	120	1.9	V	6.59	52.53	74	-21.47
11570	32.91	AV	120	1.9	V	6.59	39.5	54	-14.5
5825 MHz									
5850	67.74	PK	160	2.0	H	-1.81	65.93	122.2	-56.27
5850	67.53	PK	321	2.1	V	-1.81	65.72	122.2	-56.48
5855	65.43	PK	226	2.0	H	-1.82	63.61	110.8	-47.19
5855	65.83	PK	279	1.7	V	-1.82	64.01	110.8	-46.79
5875	66.6	PK	243	2.0	H	-1.84	64.76	105.2	-40.44
5875	66.42	PK	52	1.7	V	-1.84	64.58	105.2	-40.62
5925	66.74	PK	119	1.8	H	-1.82	64.92	68.2	-3.28
5925	66.61	PK	98	1.7	V	-1.82	64.79	68.2	-3.41
11650	45.33	PK	13	1.9	H	6.77	52.1	74	-21.9
11650	31.79	AV	13	1.9	H	6.77	38.56	54	-15.44
11650	44.66	PK	215	1.9	V	6.77	51.43	74	-22.57
11650	31.54	AV	215	1.9	V	6.77	38.31	54	-15.69

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									
5725	66.88	PK	68	1.8	H	-1.96	64.92	122.2	-57.28
5725	65.97	PK	32	2.1	V	-1.96	64.01	122.2	-58.19
5720	68.14	PK	210	1.6	H	-1.97	66.17	110.8	-44.63
5720	69.53	PK	185	1.9	V	-1.97	67.56	110.8	-43.24
5700	65.05	PK	342	1.5	H	-2.02	63.03	105.2	-42.17
5700	67.39	PK	108	1.9	V	-2.02	65.37	105.2	-39.83
5650	65.8	PK	111	1.7	H	-1.95	63.85	68.2	-4.35
5650	65.69	PK	38	1.6	V	-1.95	63.74	68.2	-4.46
11510	47.97	PK	118	2.1	H	6.59	54.56	74	-19.44
11510	34.95	AV	118	2.1	H	6.59	41.54	54	-12.46
11510	46.76	PK	29	1.7	V	6.59	53.35	74	-20.65
11510	33.32	AV	29	1.7	V	6.59	39.91	54	-14.09
5795 MHz									
5850	66.64	PK	208	1.7	H	-1.81	64.83	122.2	-57.37
5850	66.88	PK	70	2.1	V	-1.81	65.07	122.2	-57.13
5855	67.24	PK	169	2.0	H	-1.82	65.42	110.8	-45.38
5855	68.05	PK	99	1.7	V	-1.82	66.23	110.8	-44.57
5875	66.88	PK	347	1.6	H	-1.84	65.04	105.2	-40.16
5875	66.47	PK	242	2.0	V	-1.84	64.63	105.2	-40.57
5925	66.68	PK	217	1.8	H	-1.82	64.86	68.2	-3.34
5925	66.64	PK	310	2.0	V	-1.82	64.82	68.2	-3.38
11590	47.23	PK	14	1.8	H	6.57	53.8	74	-20.2
11590	34.51	AV	14	1.8	H	6.57	41.08	54	-12.92
11590	46.36	PK	282	1.6	V	6.57	52.93	74	-21.07
11590	33.12	AV	282	1.6	V	6.57	39.69	54	-14.31

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									
5725	68.56	PK	81	2.0	H	-1.96	66.6	122.2	-55.6
5725	67.66	PK	300	1.7	V	-1.96	65.7	122.2	-56.5
5720	66.98	PK	114	1.7	H	-1.97	65.01	110.8	-45.79
5720	67.65	PK	231	2.0	V	-1.97	65.68	110.8	-45.12
5700	64.93	PK	356	1.8	H	-2.02	62.91	105.2	-42.29
5700	66.82	PK	113	1.7	V	-2.02	64.8	105.2	-40.4
5650	65.87	PK	287	2.0	H	-1.95	63.92	68.2	-4.28
5650	65.72	PK	358	1.5	V	-1.95	63.77	68.2	-4.43
11490	49.63	PK	10	1.9	H	6.63	56.26	74	-17.74
11490	36.12	AV	10	1.9	H	6.63	42.75	54	-11.25
11490	47.66	PK	14	1.8	V	6.63	54.29	74	-19.71
11490	33.58	AV	14	1.8	V	6.63	40.21	54	-13.79
5785 MHz									
11570	50.1	PK	283	1.8	H	6.59	56.69	74	-17.31
11570	36.63	AV	283	1.8	H	6.59	43.22	54	-10.78
11570	48.17	PK	285	1.6	V	6.59	54.76	74	-19.24
11570	35.25	AV	285	1.6	V	6.59	41.84	54	-12.16
5825 MHz									
5850	68.38	PK	28	1.5	H	-1.81	66.57	122.2	-55.63
5850	68.47	PK	264	1.9	V	-1.81	66.66	122.2	-55.54
5855	66.16	PK	342	1.7	H	-1.82	64.34	110.8	-46.46
5855	66.8	PK	332	2.0	V	-1.82	64.98	110.8	-45.82
5875	67.39	PK	13	1.6	H	-1.84	65.55	105.2	-39.65
5875	67.1	PK	83	1.7	V	-1.84	65.26	105.2	-39.94
5925	66.81	PK	313	2.0	H	-1.82	64.99	68.2	-3.21
5925	66.7	PK	273	2.0	V	-1.82	64.88	68.2	-3.32
11650	48.66	PK	269	1.6	H	6.77	55.43	74	-18.57
11650	35.14	AV	269	1.6	H	6.77	41.91	54	-12.09
11650	47.29	PK	17	1.5	V	6.77	54.06	74	-19.94
11650	34.83	AV	17	1.5	V	6.77	41.6	54	-12.4

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									
5725	67.02	PK	235	1.8	H	-1.96	65.06	122.2	-57.14
5725	66.53	PK	270	1.5	V	-1.96	64.57	122.2	-57.63
5720	68.59	PK	267	1.5	H	-1.97	66.62	110.8	-44.18
5720	70.14	PK	231	1.7	V	-1.97	68.17	110.8	-42.63
5700	66	PK	350	2.1	H	-2.02	63.98	105.2	-41.22
5700	67.55	PK	136	1.7	V	-2.02	65.53	105.2	-39.67
5650	65.63	PK	301	1.6	H	-1.95	63.68	68.2	-4.52
5650	65.5	PK	70	1.7	V	-1.95	63.55	68.2	-4.65
11510	48.95	PK	113	1.6	H	6.59	55.54	74	-18.46
11510	35.23	AV	113	1.6	H	6.59	41.82	54	-12.18
11510	46.87	PK	118	1.9	V	6.59	53.46	74	-20.54
11510	33.76	AV	118	1.9	V	6.59	40.35	54	-13.65
5795 MHz									
5850	67.9	PK	324	2.0	H	-1.81	66.09	122.2	-56.11
5850	67.64	PK	209	1.6	V	-1.81	65.83	122.2	-56.37
5855	67.98	PK	301	2.0	H	-1.82	66.16	110.8	-44.64
5855	69.37	PK	351	1.8	V	-1.82	67.55	110.8	-43.25
5875	67.96	PK	156	1.7	H	-1.84	66.12	105.2	-39.08
5875	66.88	PK	55	1.8	V	-1.84	65.04	105.2	-40.16
5925	66.67	PK	215	1.9	H	-1.82	64.85	68.2	-3.35
5925	66.62	PK	344	2.1	V	-1.82	64.8	68.2	-3.4
11590	47.89	PK	292	1.8	H	6.57	54.46	74	-19.54
11590	35.17	AV	292	1.8	H	6.57	41.74	54	-12.26
11590	47.60	PK	33	1.7	V	6.57	54.17	74	-19.83
11590	34.52	AV	33	1.7	V	6.57	41.09	54	-12.91

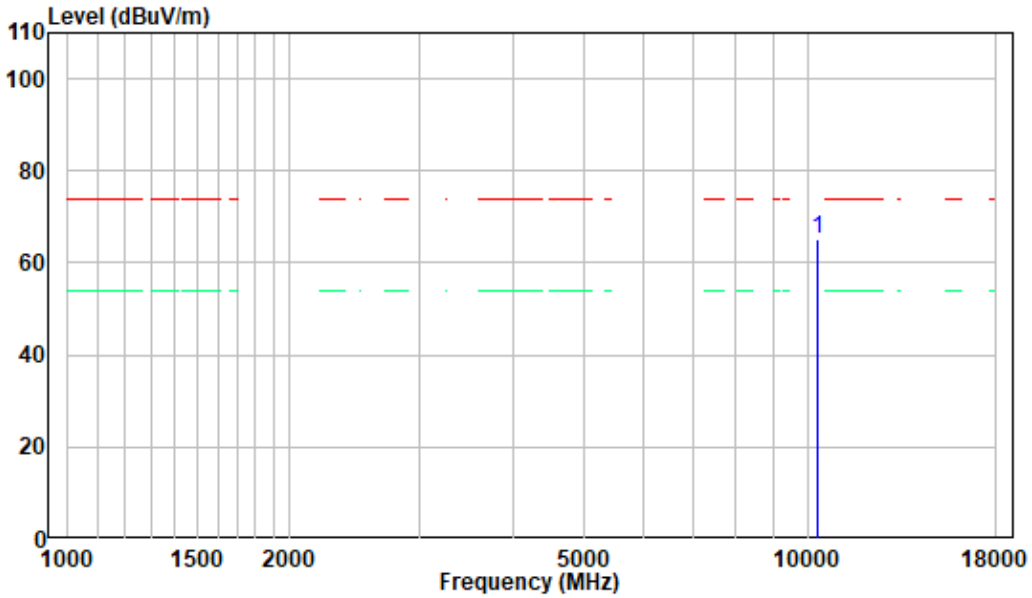
Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5775 MHz									
5725	69.22	PK	85	1.8	H	-1.96	67.26	122.2	-54.94
5725	67.72	PK	287	1.5	V	-1.96	65.76	122.2	-56.44
5720	69.28	PK	157	1.8	H	-1.97	67.31	110.8	-43.49
5720	69.15	PK	356	2.1	V	-1.97	67.18	110.8	-43.62
5700	66.54	PK	107	2.0	H	-2.02	64.52	105.2	-40.68
5700	69	PK	109	1.6	V	-2.02	66.98	105.2	-38.22
5650	65.99	PK	193	1.9	H	-1.95	64.04	68.2	-4.16
5650	66.93	PK	241	2.0	V	-1.95	64.98	68.2	-3.22
5850	67.53	PK	354	1.7	H	-1.81	65.72	122.2	-56.48
5850	68.92	PK	2	1.8	V	-1.81	67.11	122.2	-55.09
5855	68.61	PK	70	1.9	H	-1.82	66.79	110.8	-44.01
5855	68.54	PK	96	1.9	V	-1.82	66.72	110.8	-44.08
5875	68.21	PK	36	1.6	H	-1.84	66.37	105.2	-38.83
5875	68.67	PK	149	1.8	V	-1.84	66.83	105.2	-38.37
5925	65.68	PK	290	1.7	H	-1.82	63.86	68.2	-4.34
5925	66.73	PK	320	1.7	V	-1.82	64.91	68.2	-3.29
11550	46.66	PK	61	1.7	H	6.61	53.27	74	-20.73
11550	33.98	AV	61	1.7	H	6.61	40.59	54	-13.41
11550	45.52	PK	69	1.8	V	6.61	52.13	74	-21.87
11550	33.19	AV	69	1.8	V	6.61	39.8	54	-14.2

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

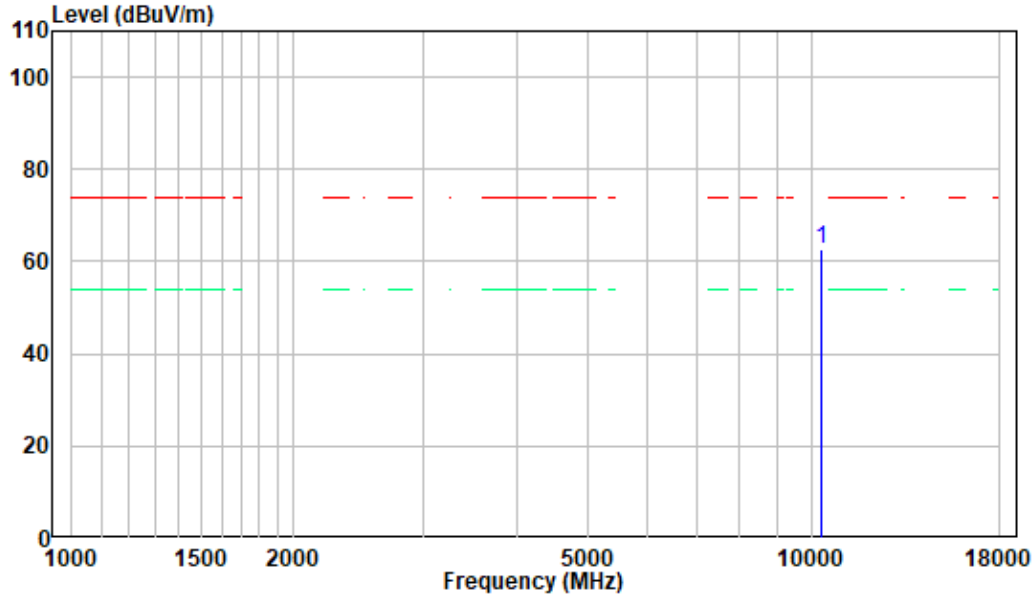
1 GHz - 18 GHz: (Pre-Scan plots)

802.11 ac20, 5180MHz

Horizontal



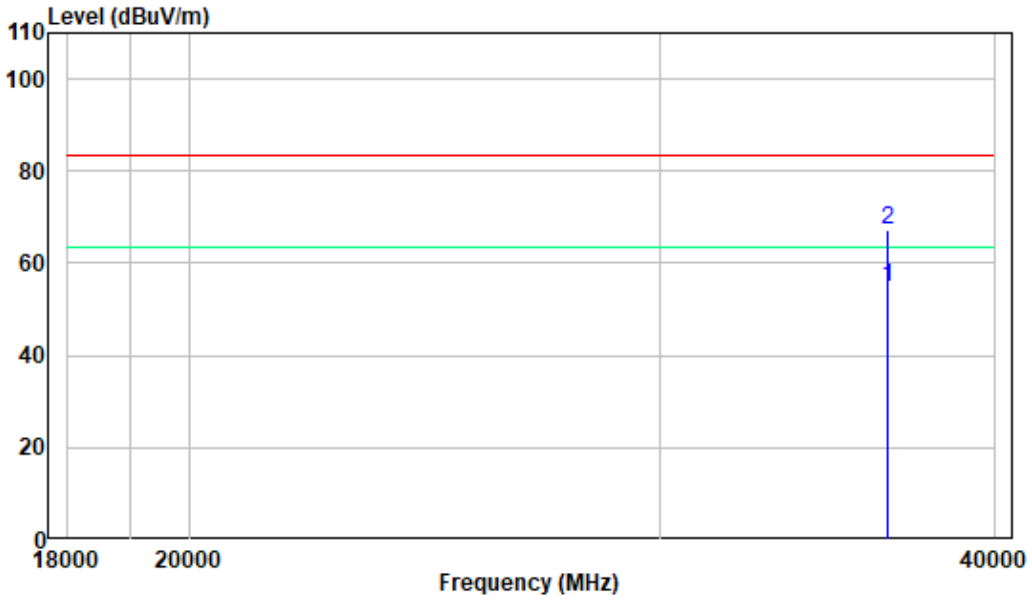
Vertical



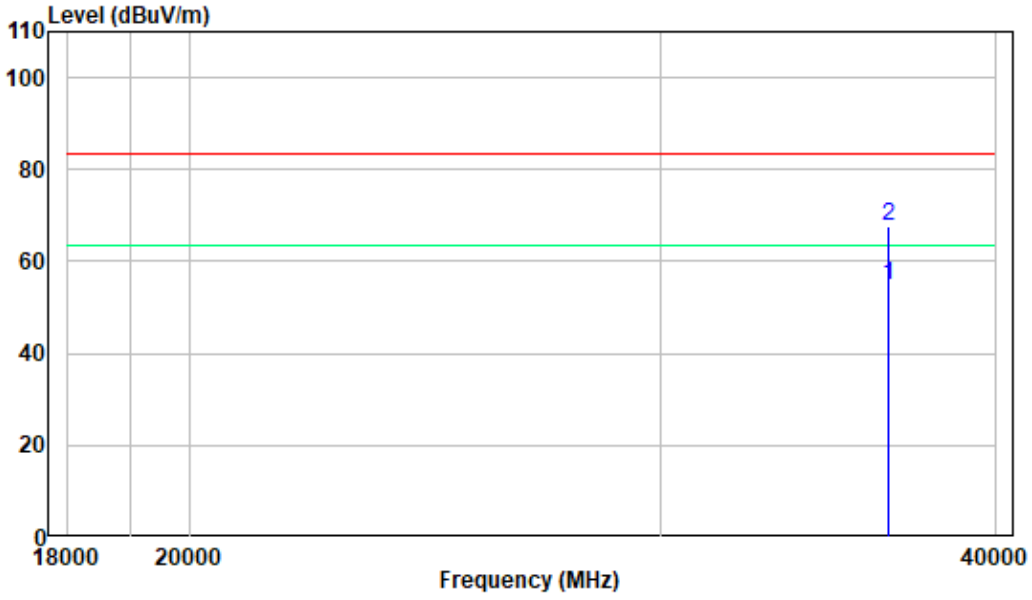
18-40GHz: (Pre-Scan plots)

802.11 ac20, 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:	20~25 ℃
Relative Humidity:	50~55 %
ATM Pressure:	100.1~101.0 kPa

The testing was performed by Ting Lü from 2022-01-25 to 2022-02-22.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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

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

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

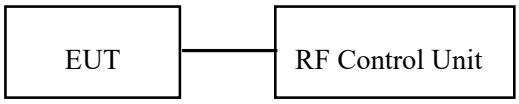
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

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

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

e. Add a correction factor to the display.



Note: the RF control unit has a built-in power sensor.

Test Data

Environmental Conditions

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

The testing was performed by Ting Lü on 2022-01-25.

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 Ting Lü on 2022-01-25 and 2022-02-09.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

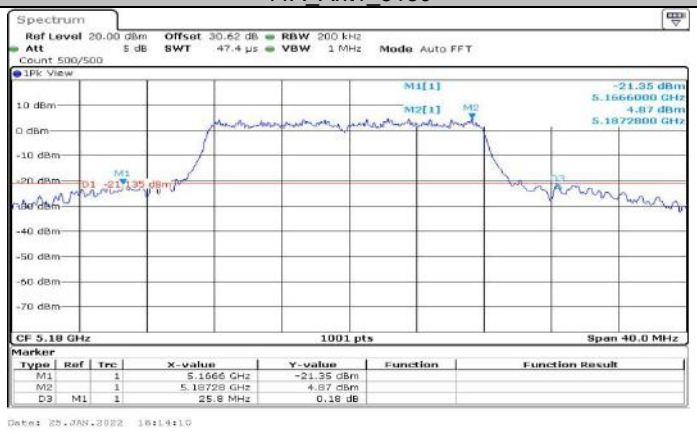
Appendix A1: Emission Bandwidth

Test Result

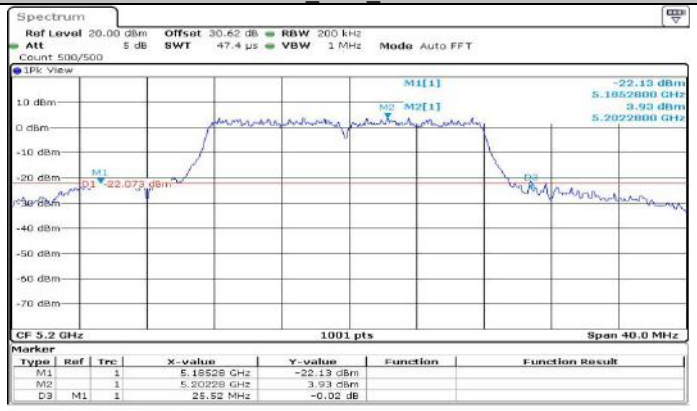
Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	25.800	---	PASS
		5200	25.520	---	PASS
		5240	26.760	---	PASS
11N20SISO	Ant1	5180	24.240	---	PASS
		5200	26.440	---	PASS
		5240	26.040	---	PASS
11N40SISO	Ant1	5190	52.720	---	PASS
		5230	54.640	---	PASS
11AC20SISO	Ant1	5180	22.960	---	PASS
		5200	26.320	---	PASS
		5240	22.520	---	PASS
11AC40SISO	Ant1	5190	51.920	---	PASS
		5230	48.000	---	PASS
11AC80SISO	Ant1	5210	90.880	---	PASS

Test Graphs

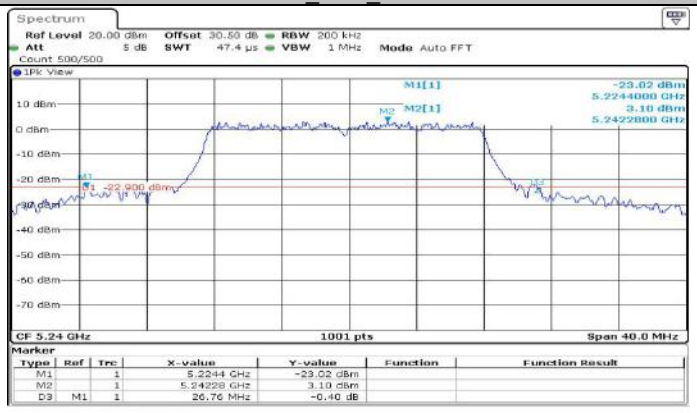
11A_Ant1_5180



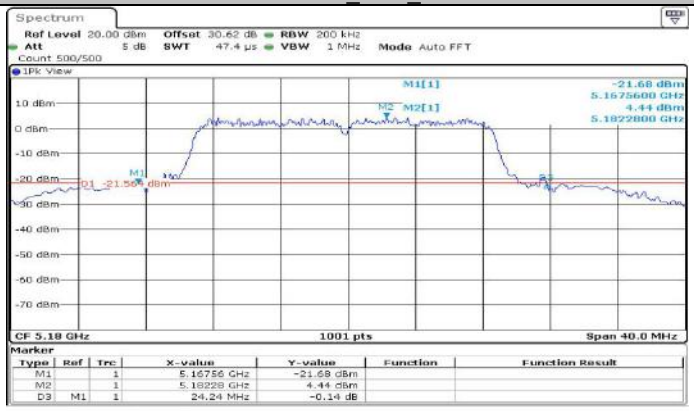
11A_Ant1_5200



11A_Ant1_5240



11N20SISO_Ant1_5180



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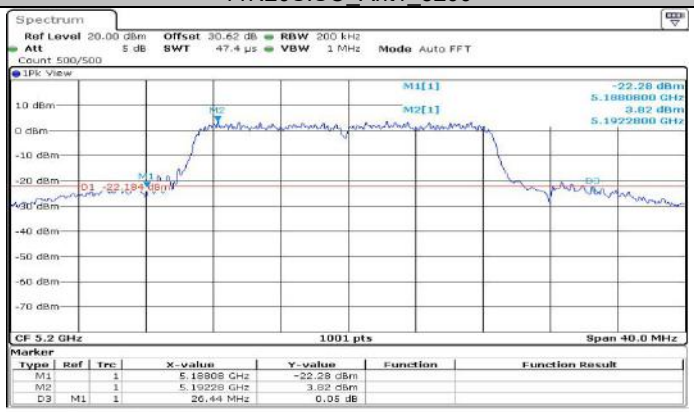
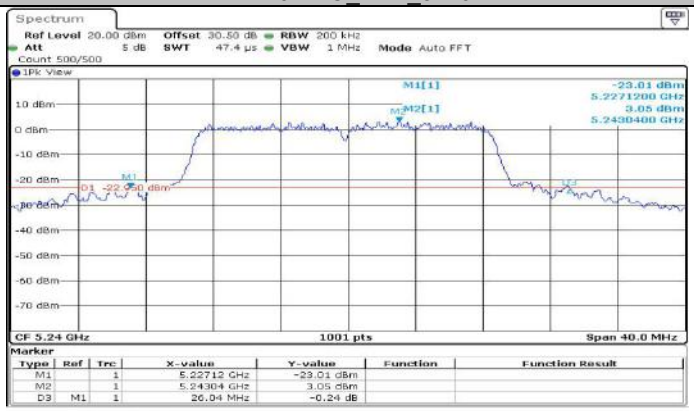
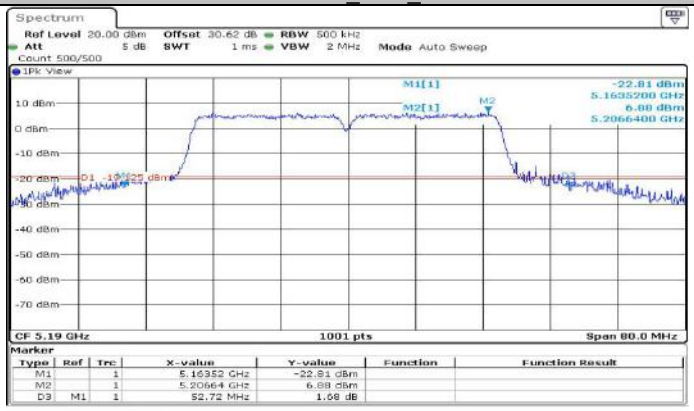


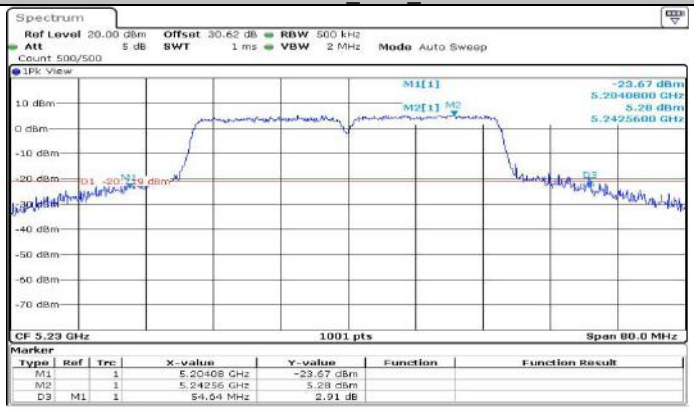
11N20SISO_Ant1_5240



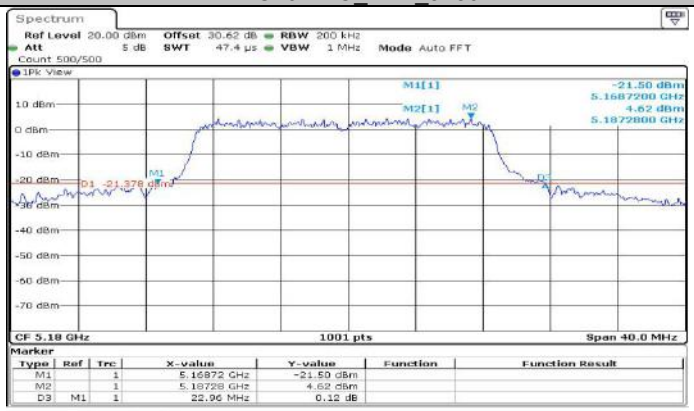
11N40SISO_Ant1_5190



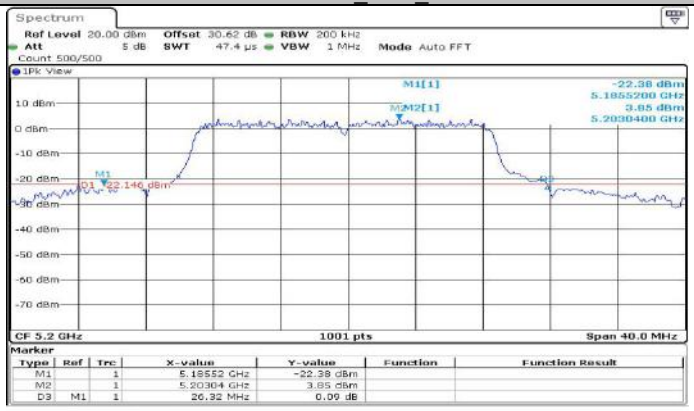
11N40SISO_Ant1_5230



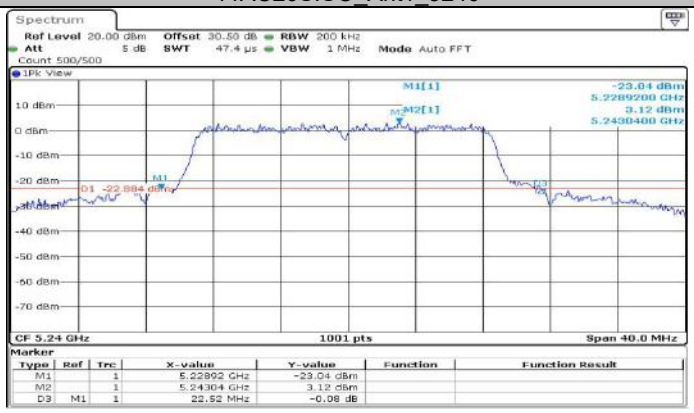
11AC20SISO_Ant1_5180



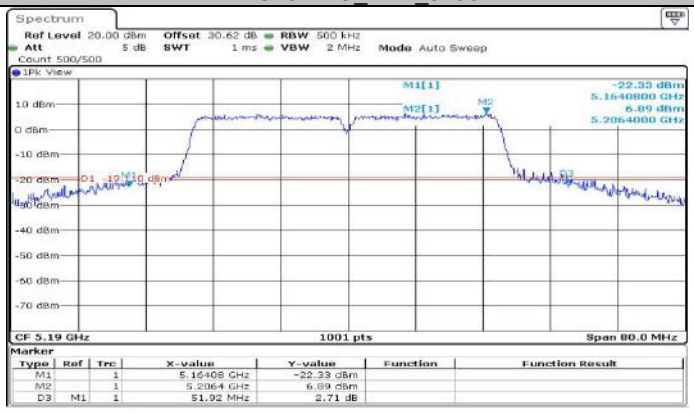
11AC20SISO_Ant1_5200

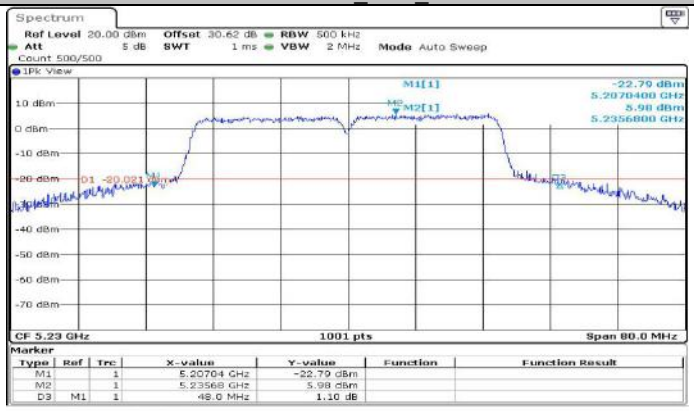
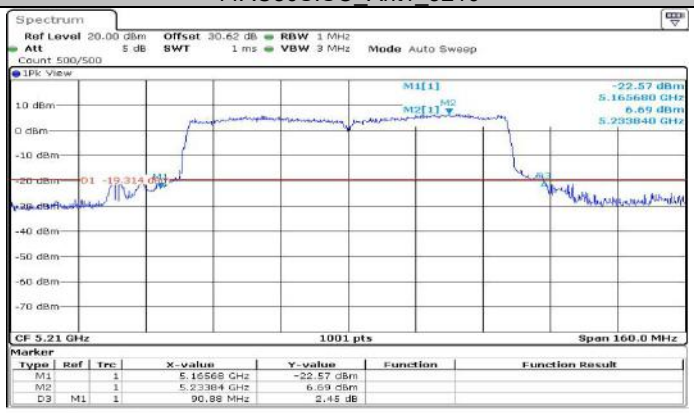


11AC20SISO_Ant1_5240



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	17.782	---	PASS
		5200	17.862	---	PASS
		5240	17.902	---	PASS
		5745	17.822	---	PASS
		5785	17.862	---	PASS
		5825	17.782	---	PASS
11N20SISO	Ant1	5180	18.342	---	PASS
		5200	18.382	---	PASS
		5240	18.382	---	PASS
		5745	18.342	---	PASS
		5785	18.382	---	PASS
		5825	18.342	---	PASS
11N40SISO	Ant1	5190	37.083	---	PASS
		5230	37.003	---	PASS
		5755	37.003	---	PASS
		5795	37.083	---	PASS
11AC20SISO	Ant1	5180	18.342	---	PASS
		5200	18.501	---	PASS
		5240	18.422	---	PASS
		5745	18.462	---	PASS
		5785	18.382	---	PASS
		5825	18.382	---	PASS
11AC40SISO	Ant1	5190	37.083	---	PASS
		5230	37.083	---	PASS
		5755	37.163	---	PASS
		5795	37.163	---	PASS
11AC80SISO	Ant1	5210	76.084	---	PASS
		5775	76.084	---	PASS

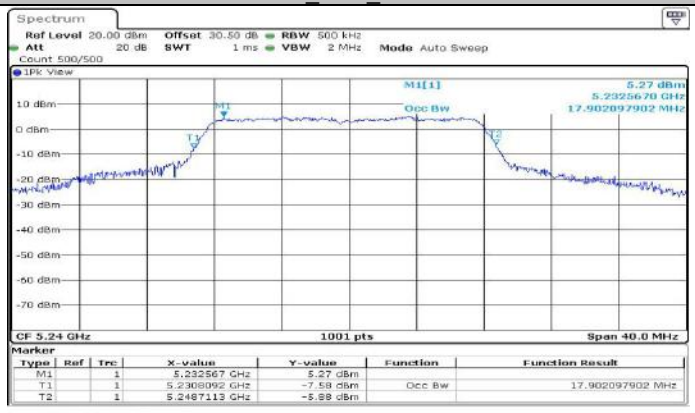
Note: EUT has no any part of occupied bandwidth fall within 5250-5350MHz and 5470-5725MHz range.

Test Graphs

11A_Ant1_5180

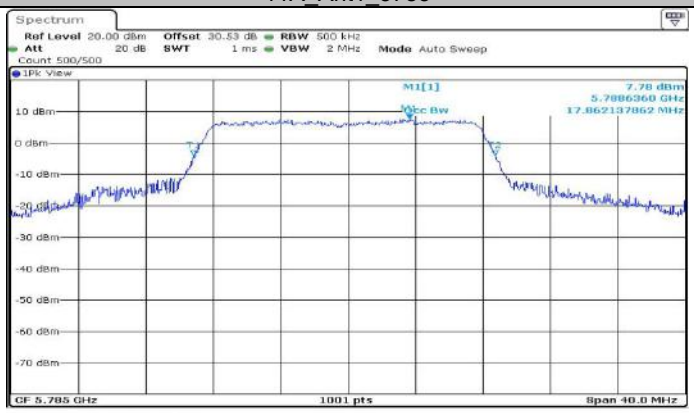
11A_Ant1_5200

11A_Ant1_5240

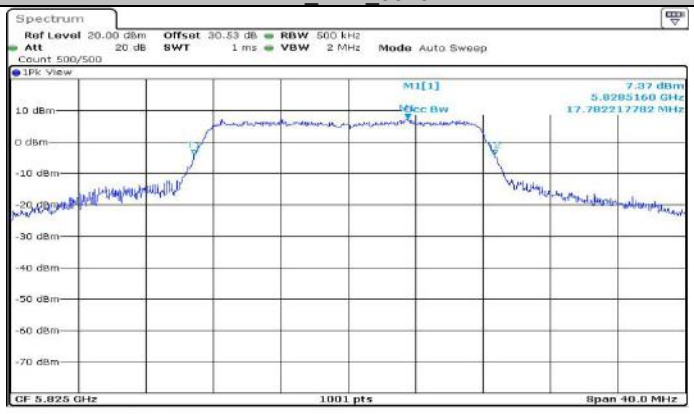


11A_Ant1_5745

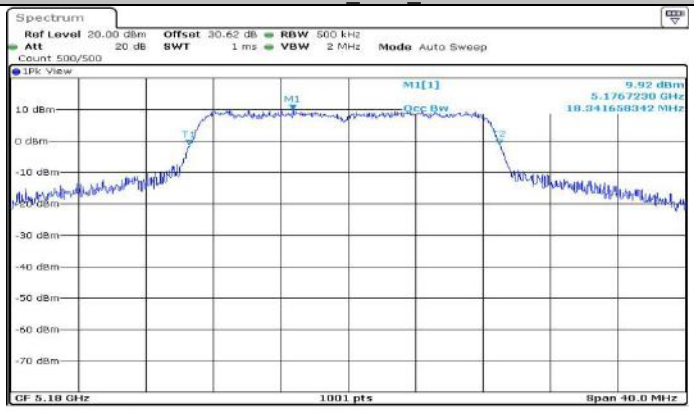
11A_Ant1_5785



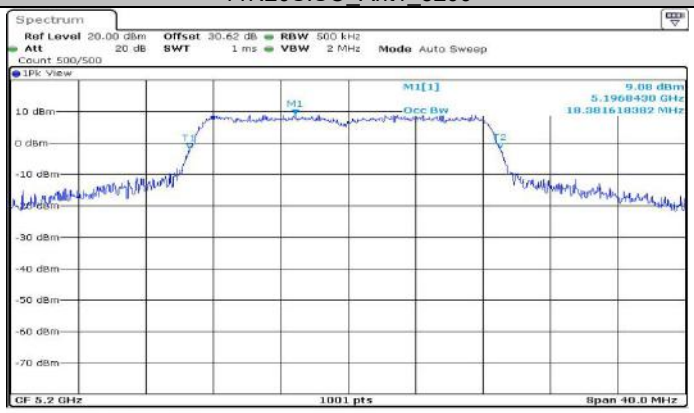
11A_Ant1_5825



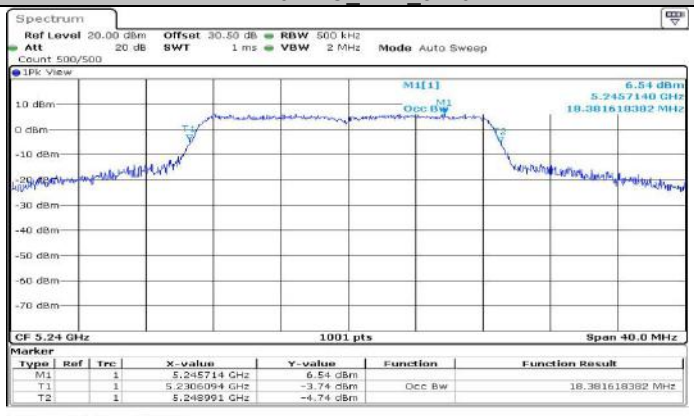
11N20SISO_Ant1_5180

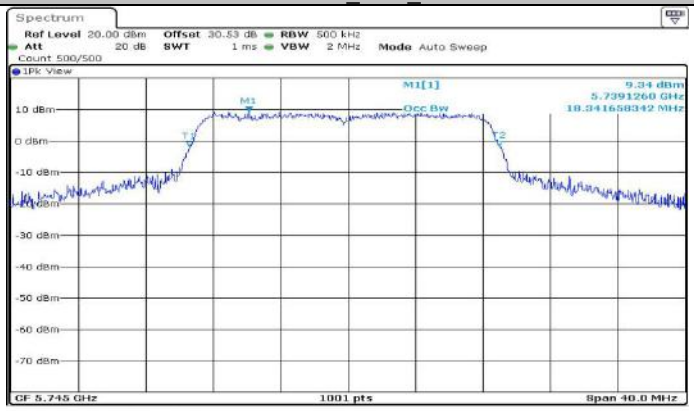
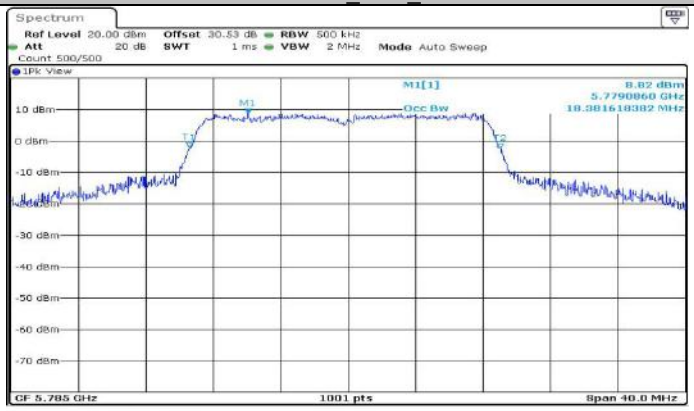
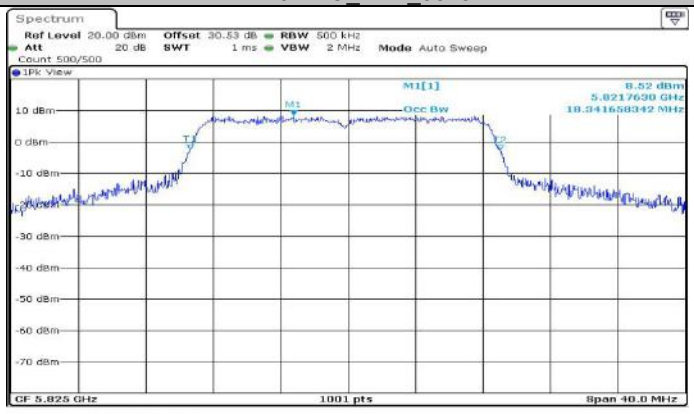


11N20SISO_Ant1_5200

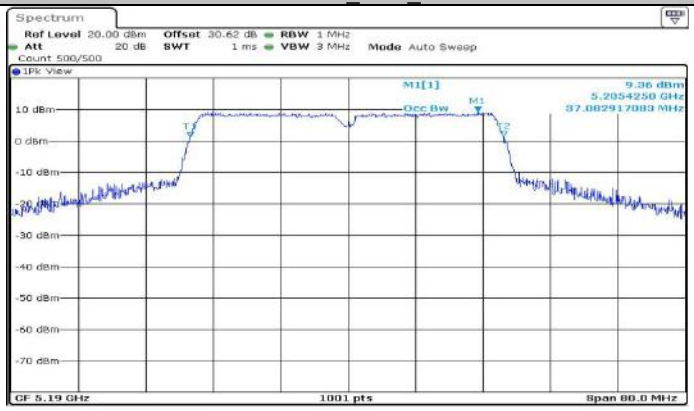


11N20SISO_Ant1_5240

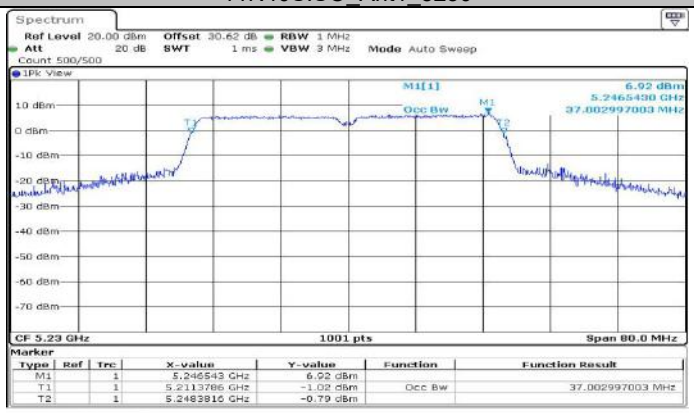


11N20SISO_Ant1_5745

11N20SISO_Ant1_5785

11N20SISO_Ant1_5825


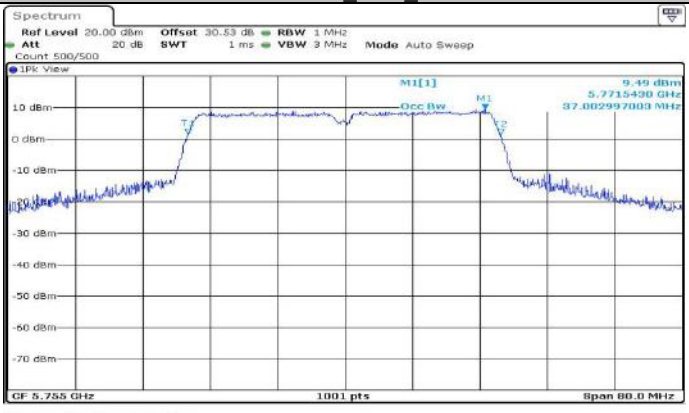
11N40SISO_Ant1_5190

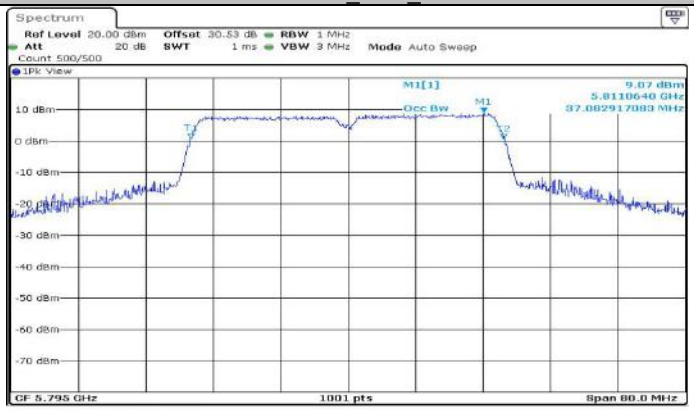


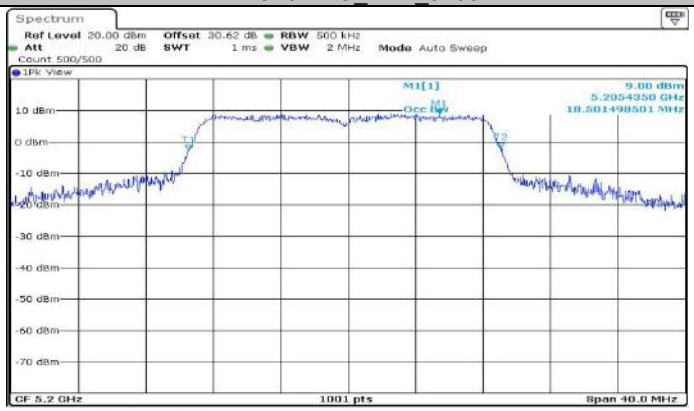
11N40SISO_Ant1_5230

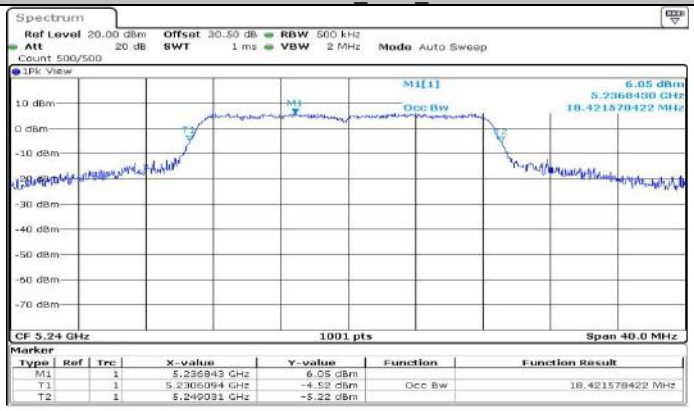
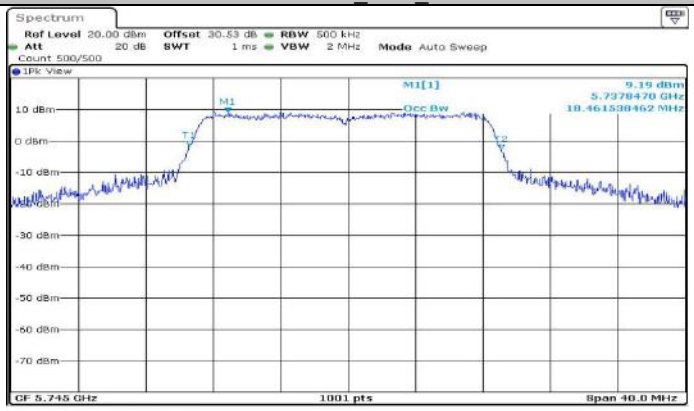
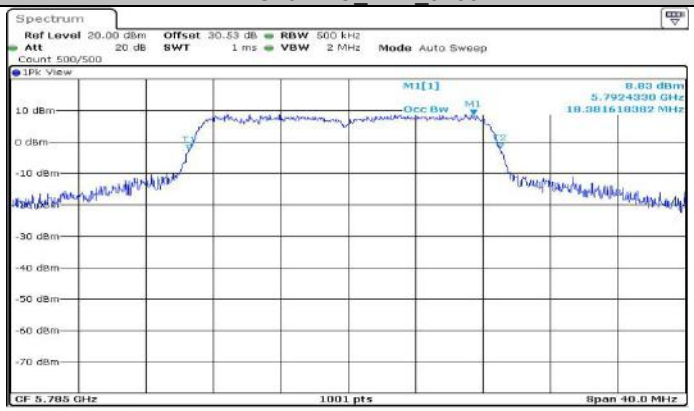


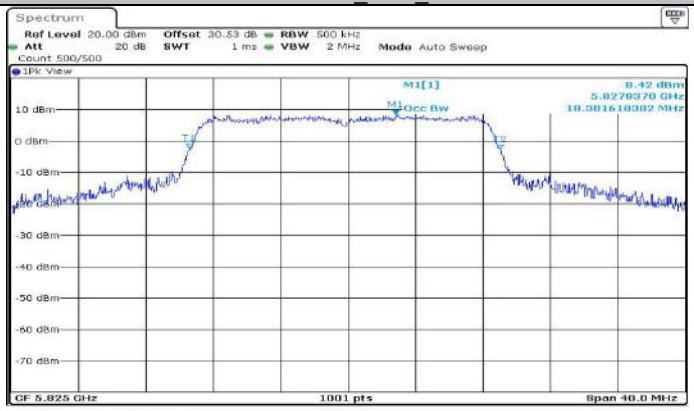
11N40SISO_Ant1_5755

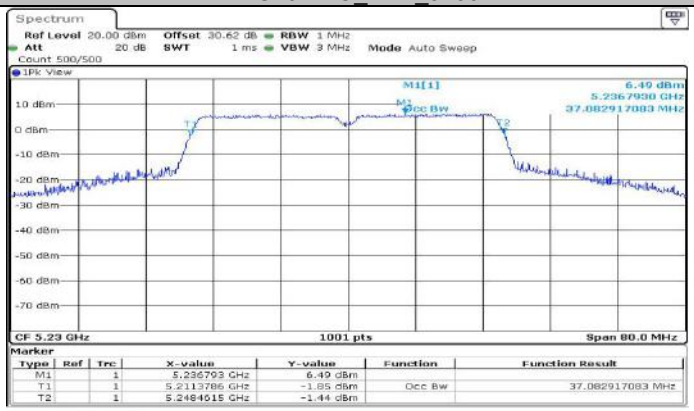


11N40SISO_Ant1_5795

11AC20SISO_Ant1_5180

11AC20SISO_Ant1_5200


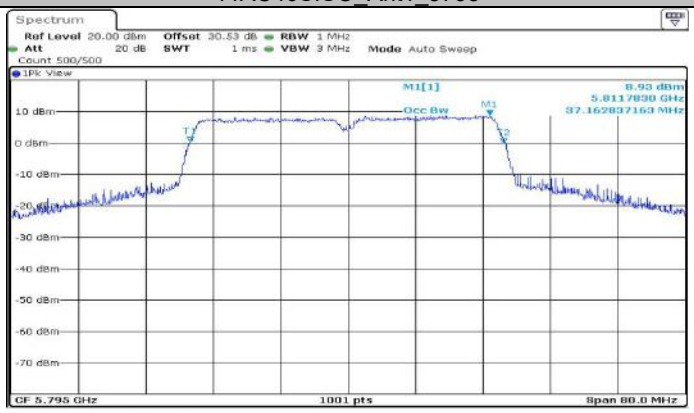
11AC20SISO_Ant1_5240

11AC20SISO_Ant1_5745

11AC20SISO_Ant1_5785


11AC20SISO_Ant1_5825

11AC40SISO_Ant1_5190

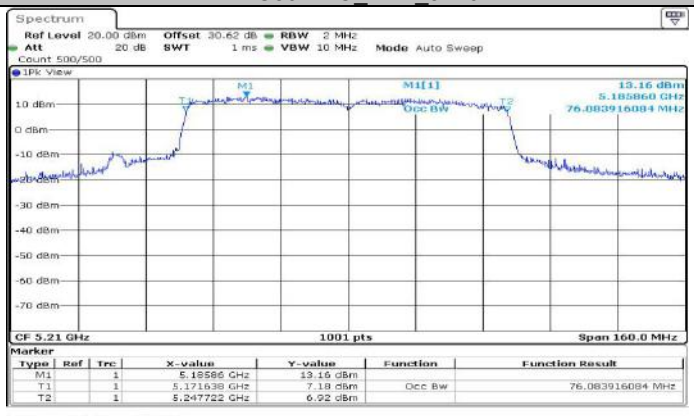
11AC40SISO_Ant1_5230


11AC40SISO_Ant1_5755

11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5775

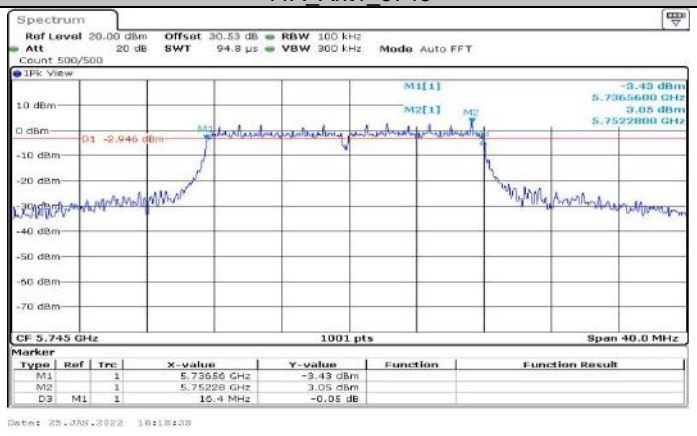

Appendix A3: Min emission bandwidth

Test Result

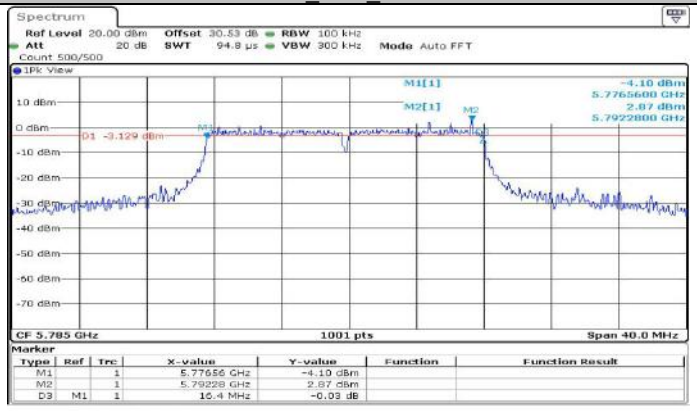
Test Mode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.400	0.5	PASS
		5785	16.400	0.5	PASS
		5825	16.400	0.5	PASS
11N20SISO	Ant1	5745	17.640	0.5	PASS
		5785	17.600	0.5	PASS
		5825	17.600	0.5	PASS
11N40SISO	Ant1	5755	36.480	0.5	PASS
		5795	36.320	0.5	PASS
11AC20SISO	Ant1	5745	17.480	0.5	PASS
		5785	17.600	0.5	PASS
		5825	17.640	0.5	PASS
11AC40SISO	Ant1	5755	36.400	0.5	PASS
		5795	36.320	0.5	PASS
11AC80SISO	Ant1	5775	75.680	0.5	PASS

Test Graphs

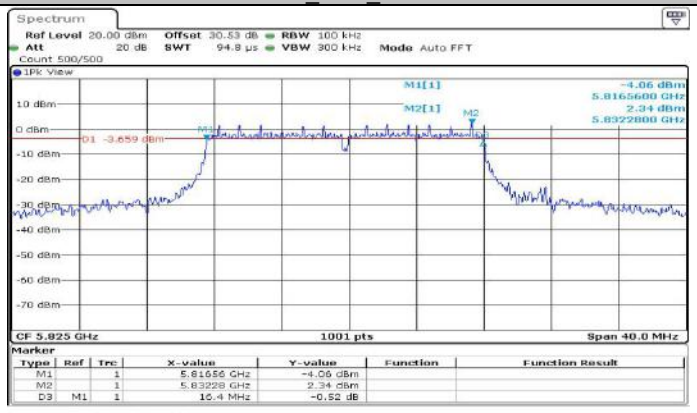
11A_Ant1_5745



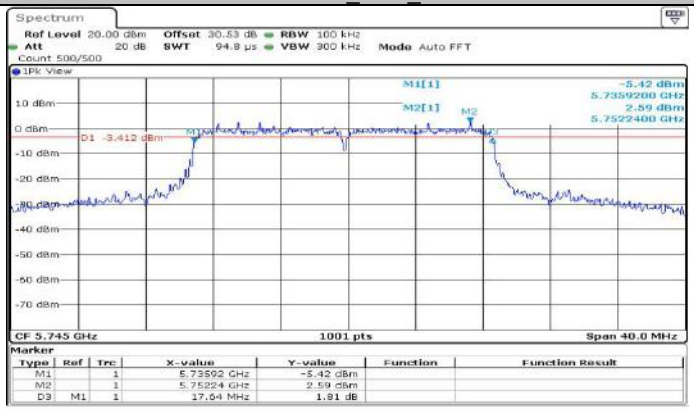
11A_Ant1_5785



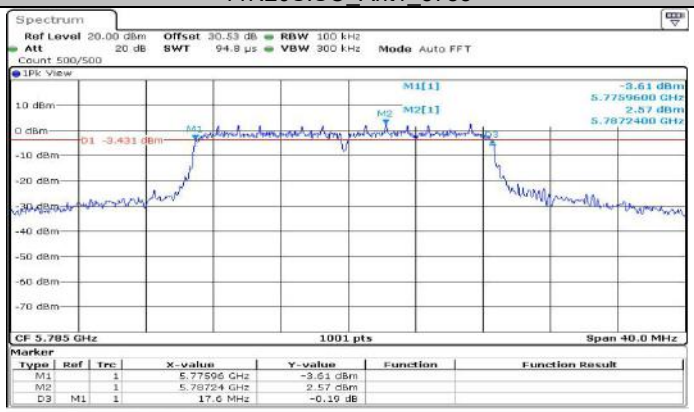
11A_Ant1_5825



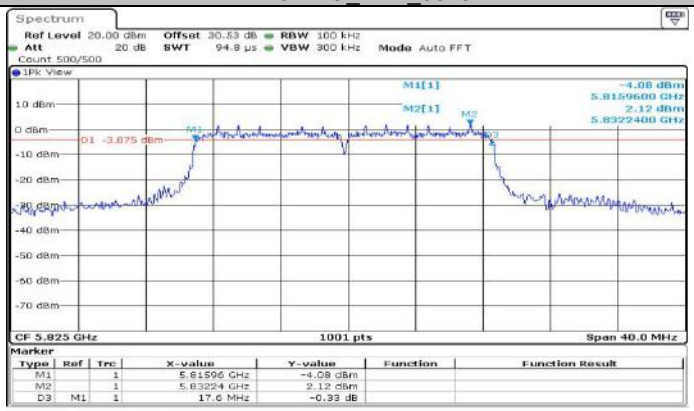
11N20SISO_Ant1_5745



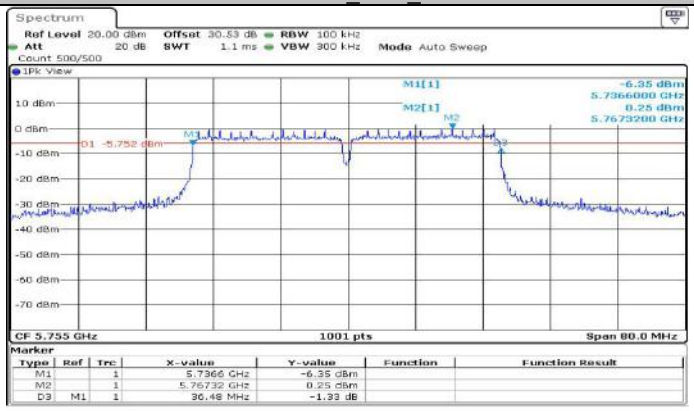
11N20SISO_Ant1_5785



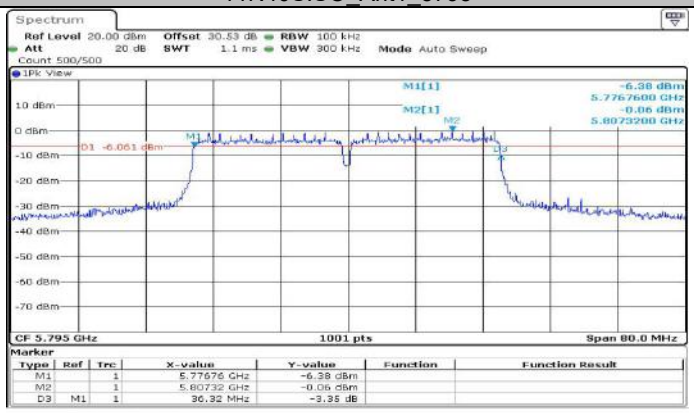
11N20SISO_Ant1_5825



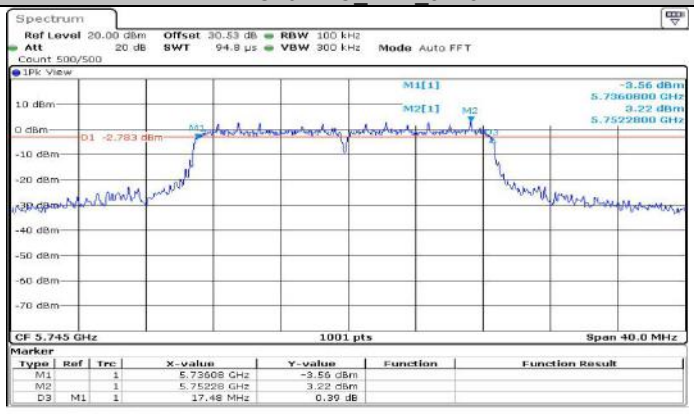
11N40SISO_Ant1_5755

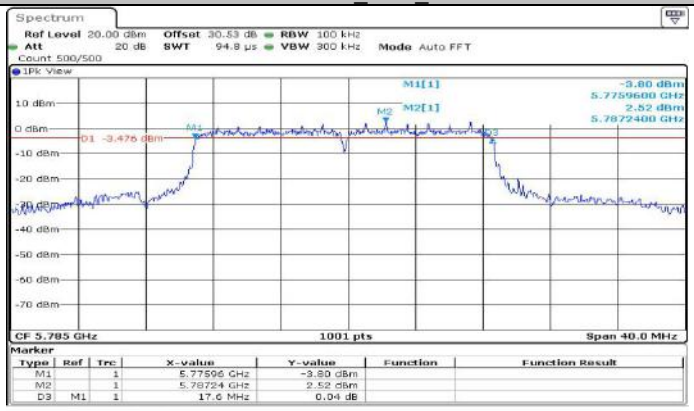
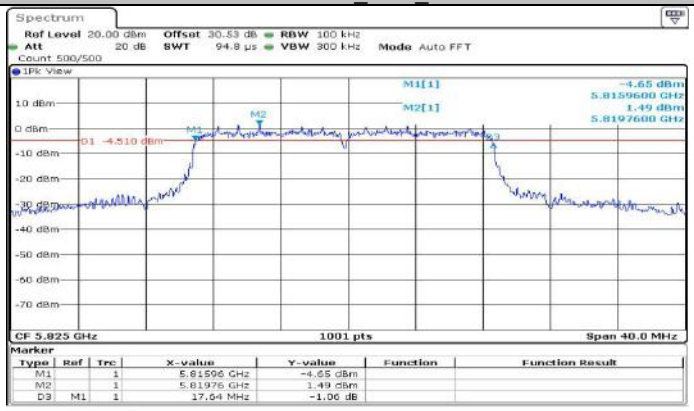
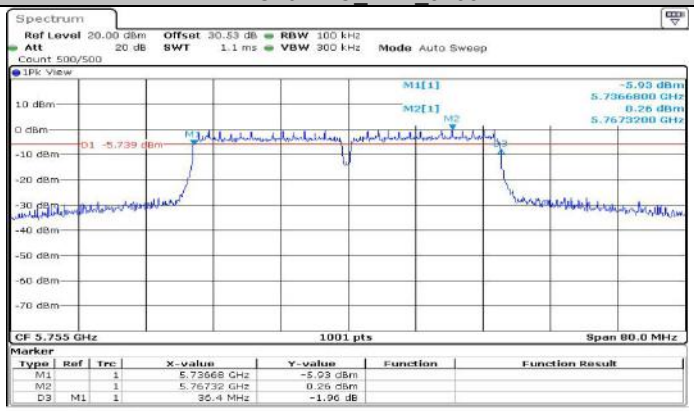


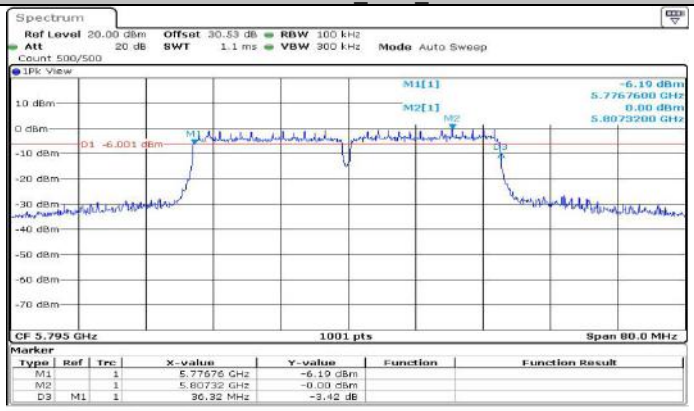
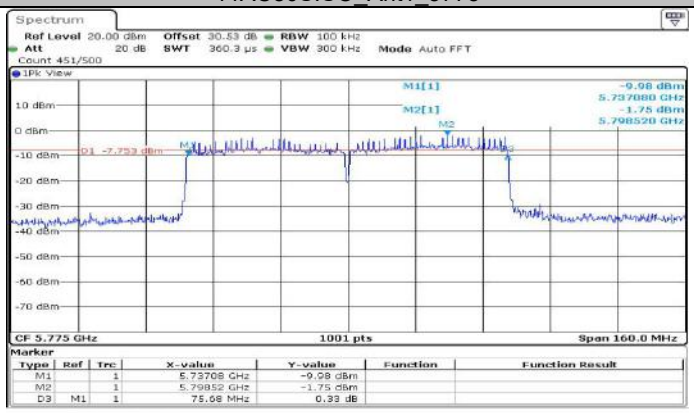
11N40SISO_Ant1_5795



11AC20SISO_Ant1_5745



11AC20SISO_Ant1_5785

11AC20SISO_Ant1_5825

11AC40SISO_Ant1_5755


11AC40SISO_Ant1_5795

11AC80SISO_Ant1_5775


Appendix B: Maximum conducted average output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	13.54	≤23.98	PASS
		5200	13.04	≤23.98	PASS
		5240	11.78	≤23.98	PASS
		5745	16.10	≤30	PASS
		5785	15.60	≤30	PASS
		5825	14.82	≤30	PASS
11N20SISO	Ant1	5180	13.05	≤23.98	PASS
		5200	12.50	≤23.98	PASS
		5240	11.43	≤23.98	PASS
		5745	16.26	≤30	PASS
		5785	15.83	≤30	PASS
		5825	15.12	≤30	PASS
11N40SISO	Ant1	5190	15.85	≤23.98	PASS
		5230	14.73	≤23.98	PASS
		5755	16.26	≤30	PASS
		5795	15.62	≤30	PASS
11AC20SISO	Ant1	5180	13.06	≤23.98	PASS
		5200	12.52	≤23.98	PASS
		5240	11.37	≤23.98	PASS
		5745	16.32	≤30	PASS
		5785	15.80	≤30	PASS
		5825	15.20	≤30	PASS
11AC40SISO	Ant1	5190	15.94	≤23.98	PASS
		5230	14.75	≤23.98	PASS
		5755	16.16	≤30	PASS
		5795	15.68	≤30	PASS
11AC80SISO	Ant1	5210	15.85	≤23.98	PASS
		5775	16.19	≤30	PASS

Note: the duty cycle factor has added into result.

Appendix C: Maximum power spectral density

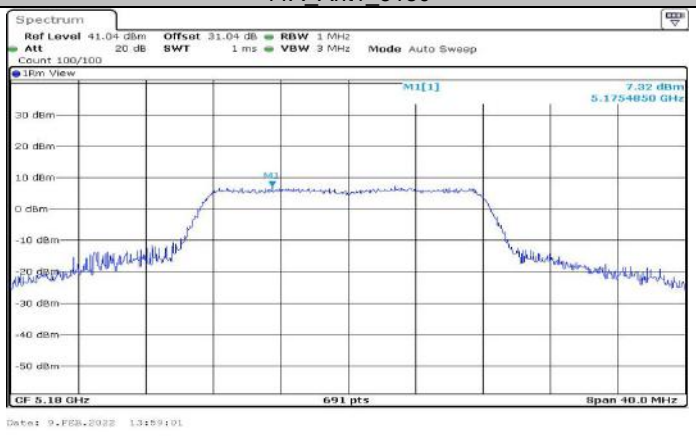
Test Result

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	7.32	≤11	PASS
		5200	6.66	≤11	PASS
		5240	5.79	≤11	PASS
		5745	7.24	≤30	PASS
		5785	6.84	≤30	PASS
		5825	6.09	≤30	PASS
11N20SISO	Ant1	5180	7.69	≤11	PASS
		5200	7.15	≤11	PASS
		5240	6.06	≤11	PASS
		5745	8.07	≤30	PASS
		5785	7.44	≤30	PASS
		5825	7.29	≤30	PASS
11N40SISO	Ant1	5190	7.27	≤11	PASS
		5230	6.39	≤11	PASS
		5755	5.26	≤30	PASS
		5795	4.98	≤30	PASS
11AC20SISO	Ant1	5180	7.78	≤11	PASS
		5200	7.3	≤11	PASS
		5240	6.38	≤11	PASS
		5745	8.24	≤30	PASS
		5785	8.12	≤30	PASS
		5825	7.05	≤30	PASS
11AC40SISO	Ant1	5190	7.41	≤11	PASS
		5230	6.82	≤11	PASS
		5755	5.98	≤30	PASS
		5795	4.85	≤30	PASS
11AC80SISO	Ant1	5210	5.42	≤11	PASS
		5775	2.99	≤30	PASS

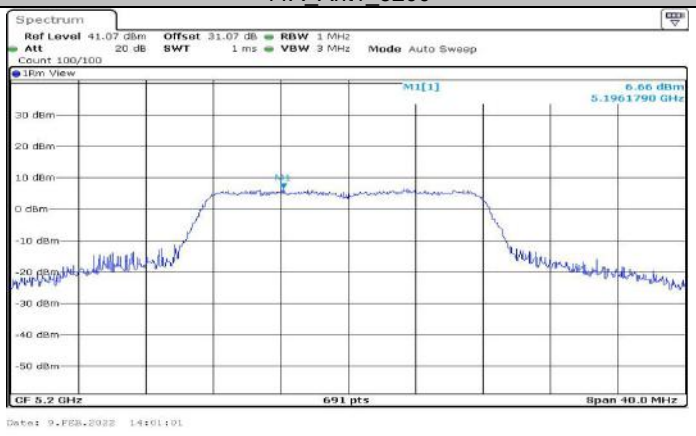
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725−5.85 GHz.
2.The Duty Cycle Factor is compensated in the graph.

Test Graphs

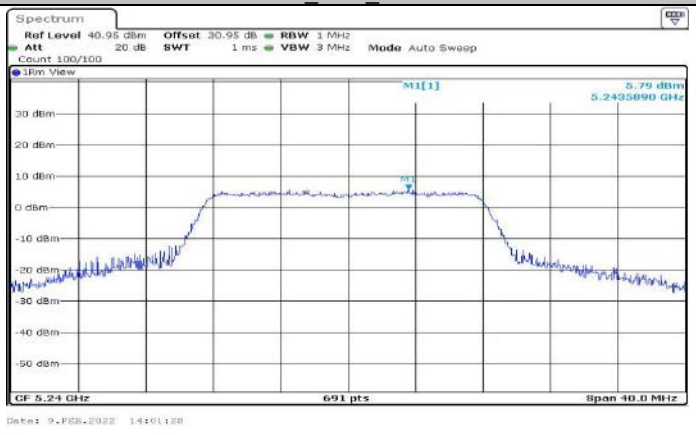
11A_Ant1_5180



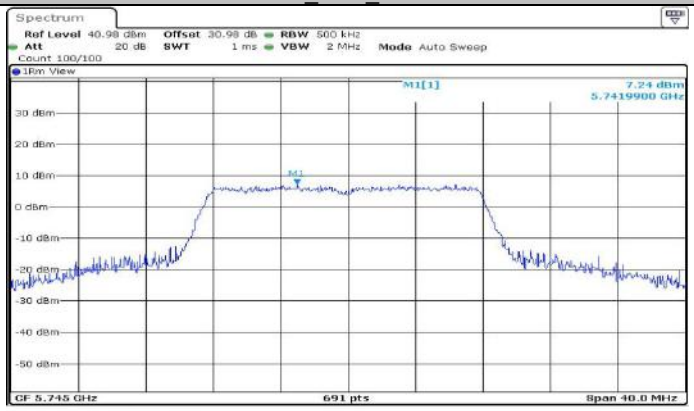
11A_Ant1_5200



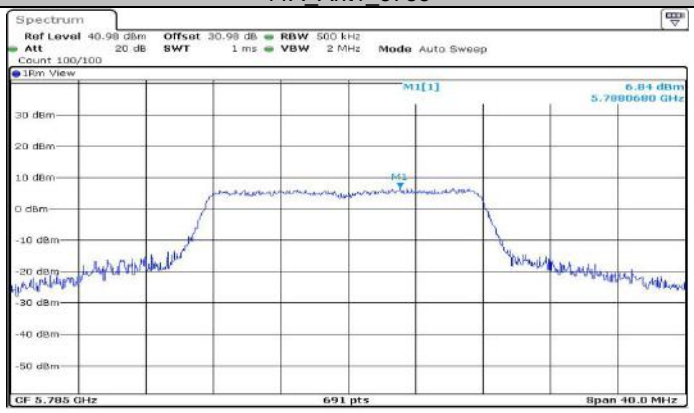
11A_Ant1_5240



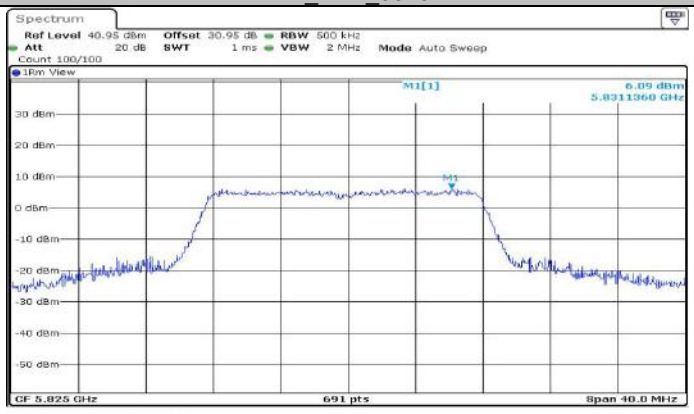
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



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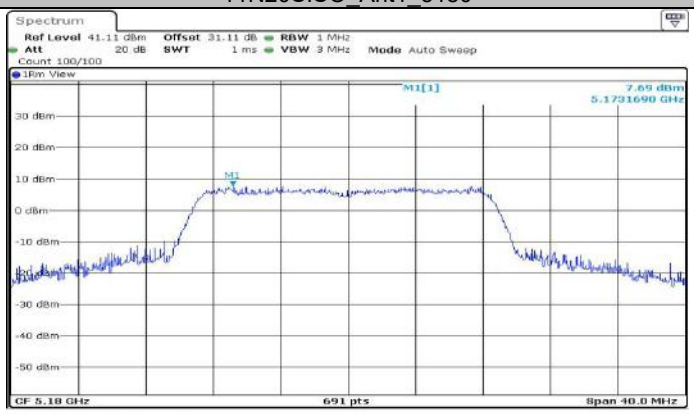

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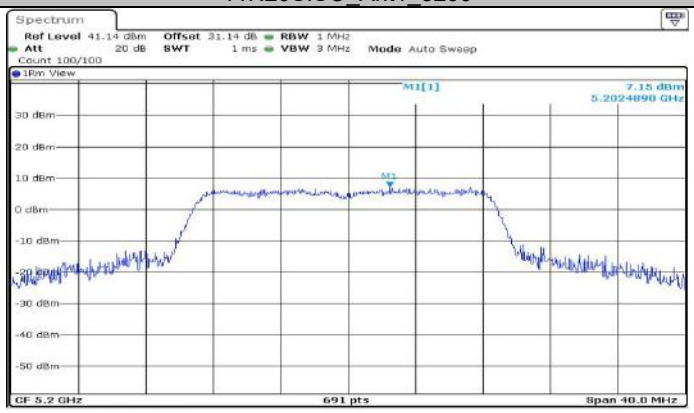

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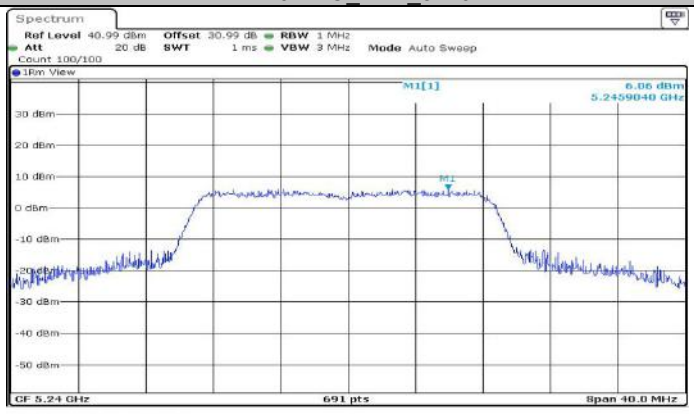

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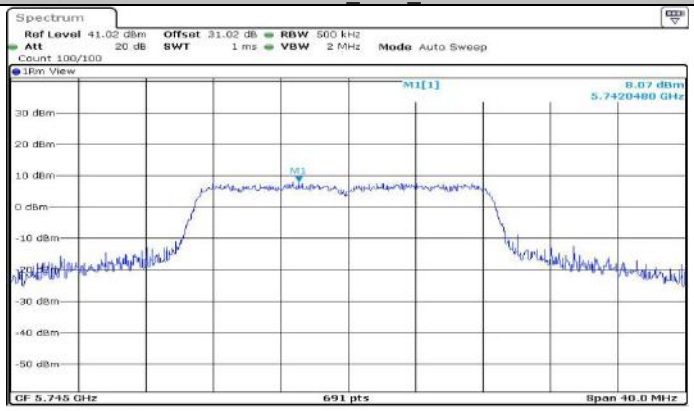

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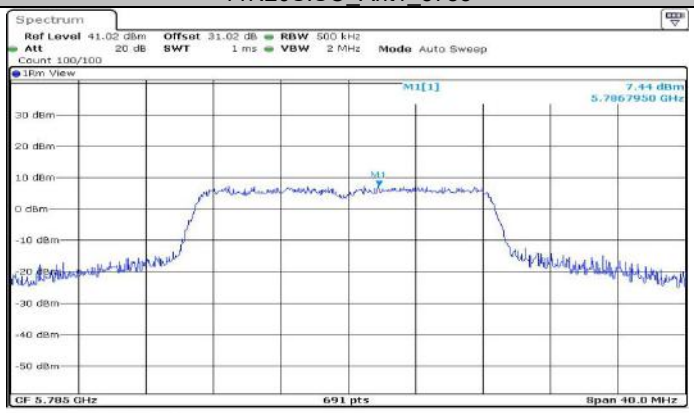

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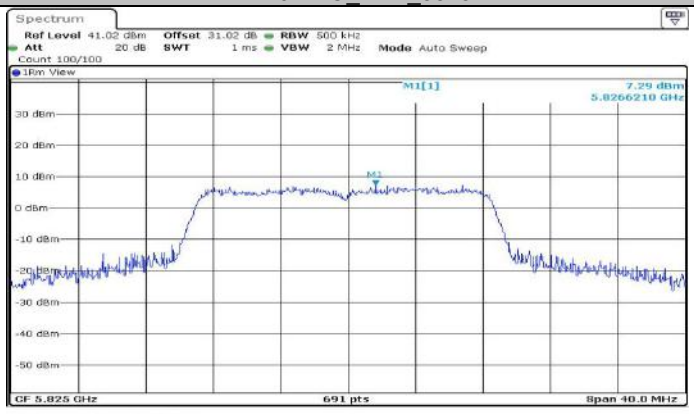

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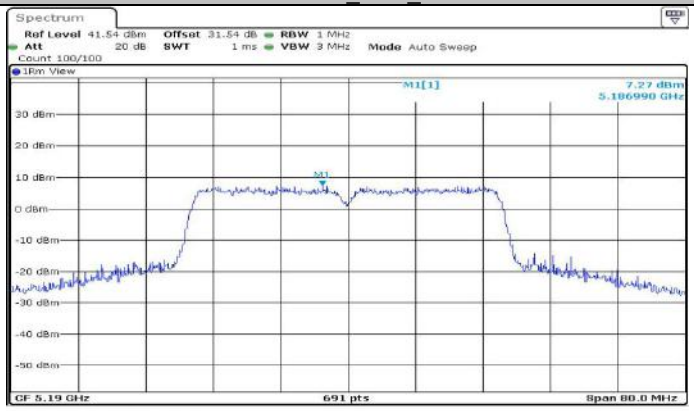

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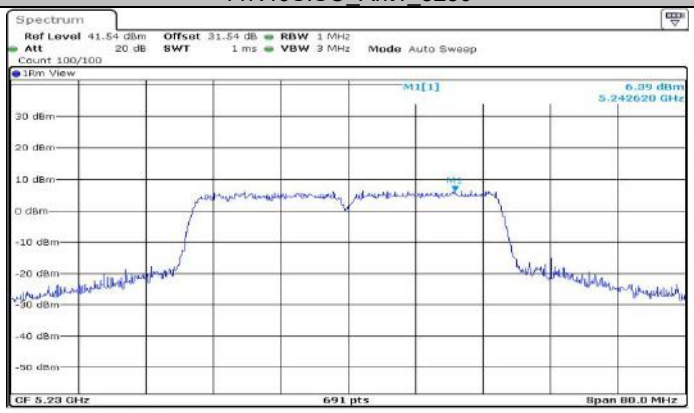

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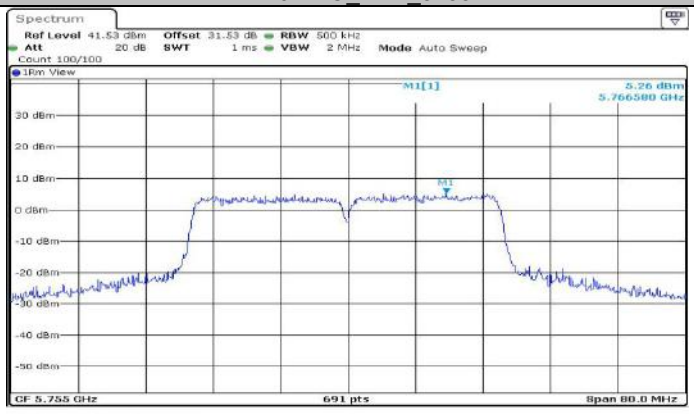

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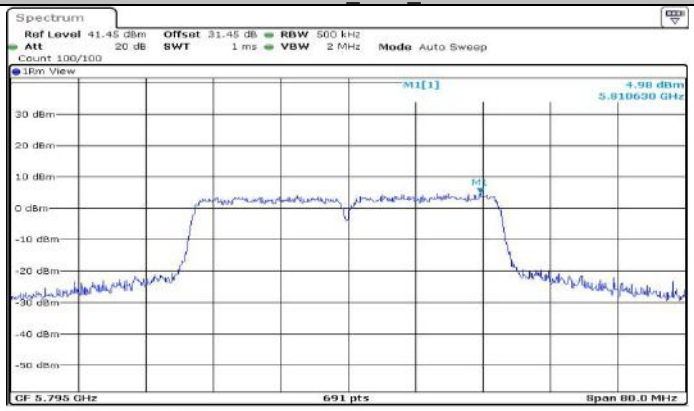
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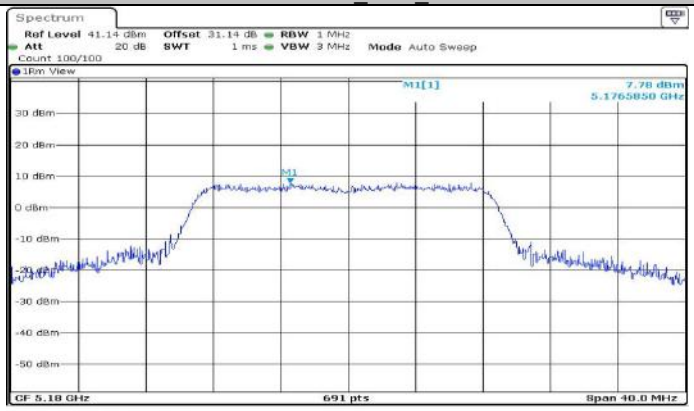
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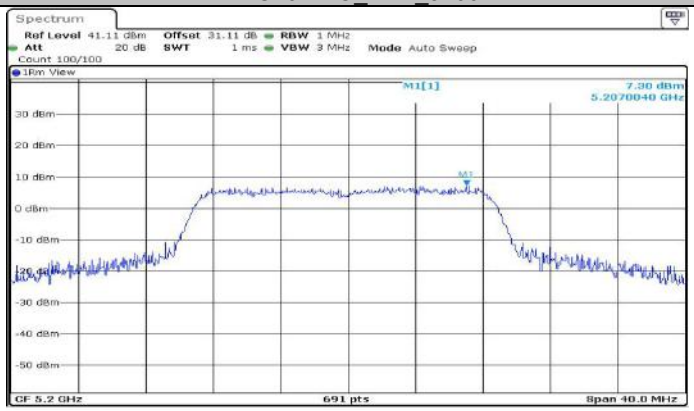

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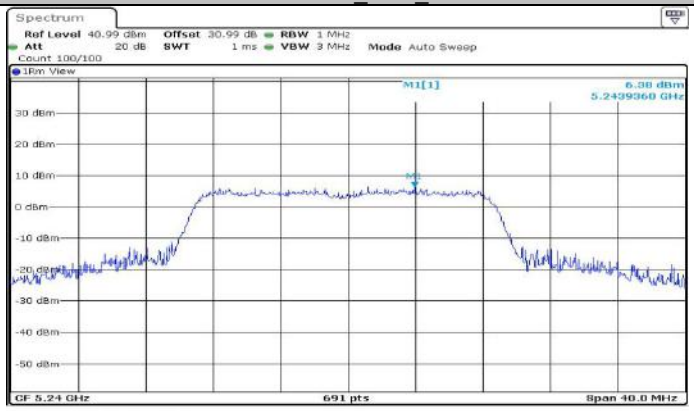
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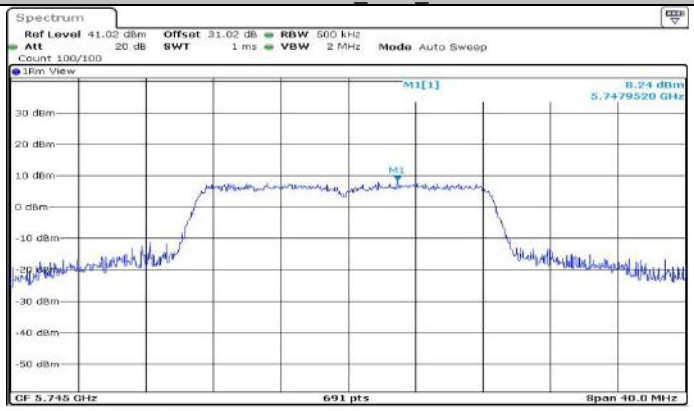
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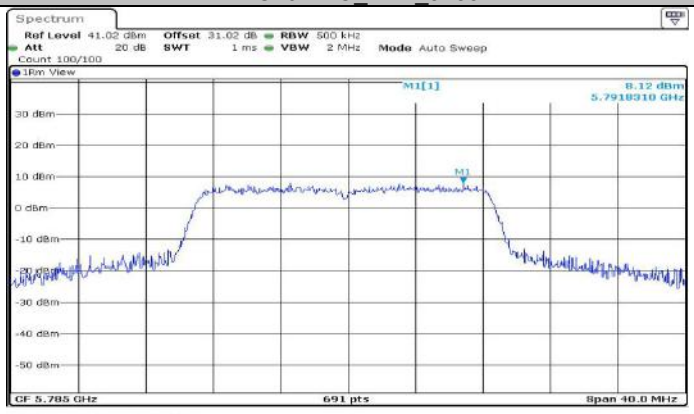

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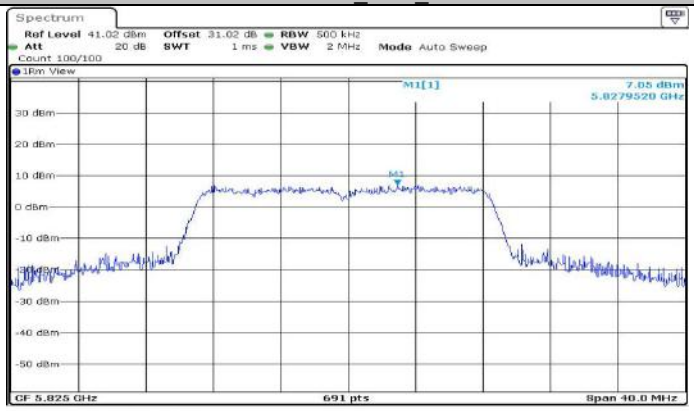
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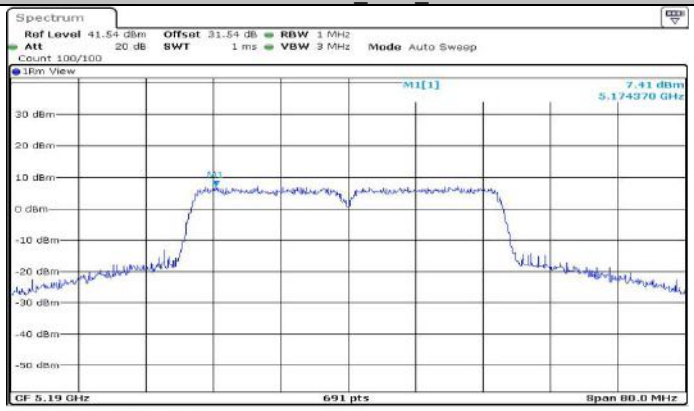
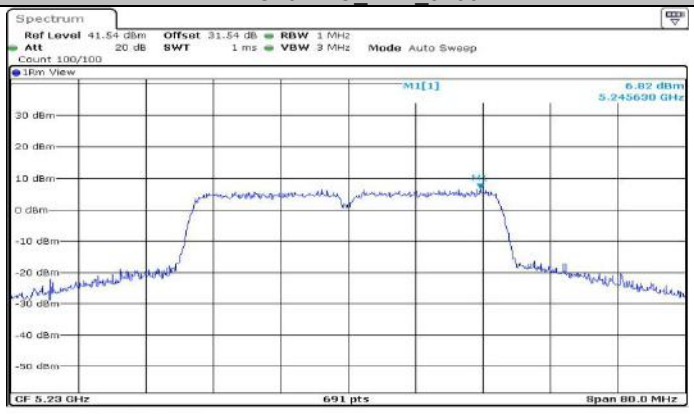

11AC40SISO_Ant1_5230


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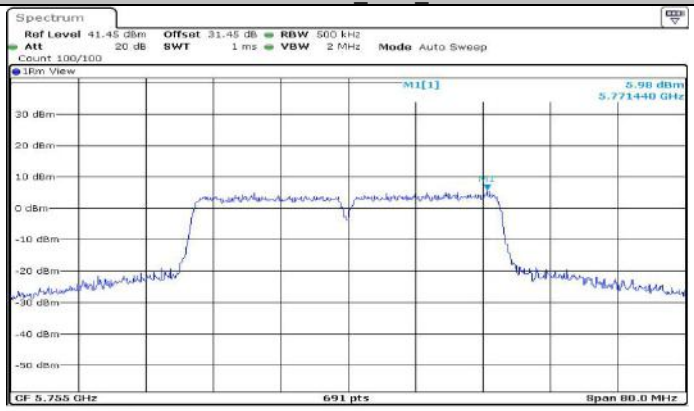

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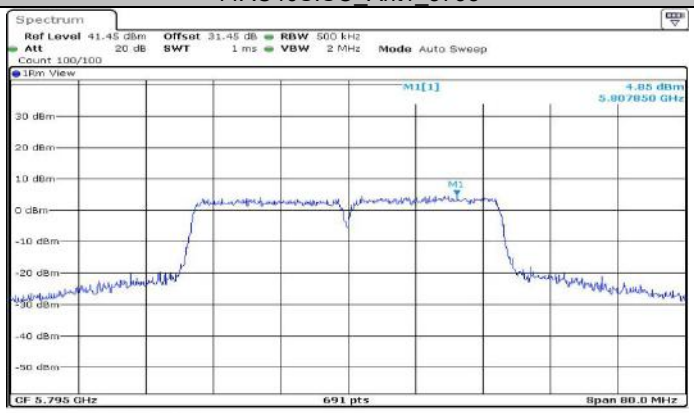
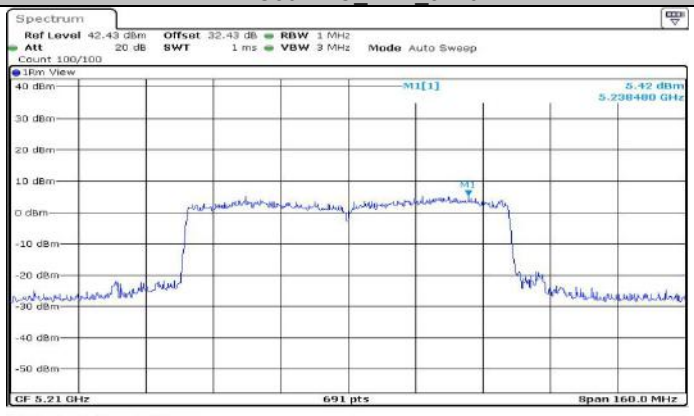
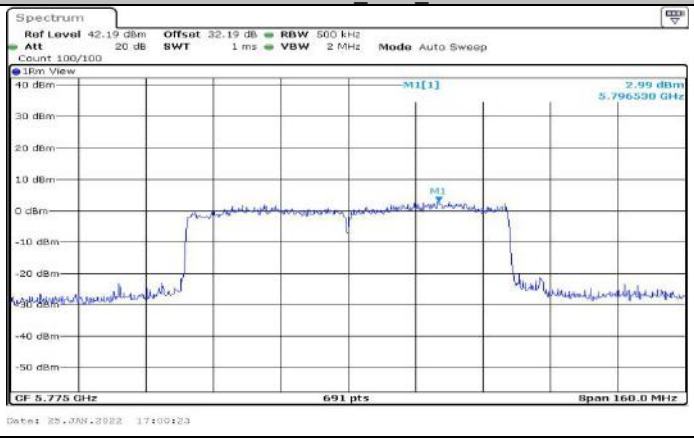


11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5775


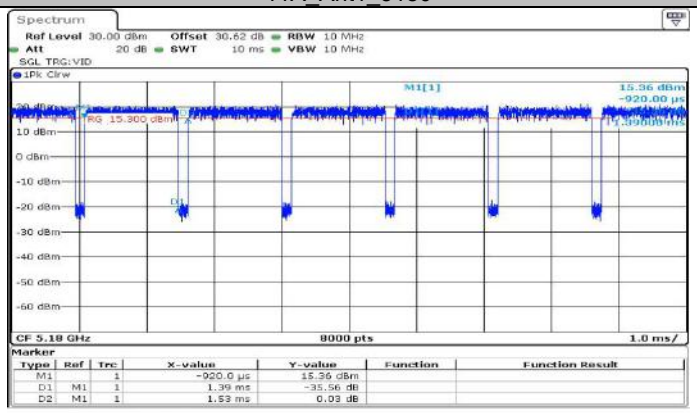
Appendix D: Duty Cycle

Test Result

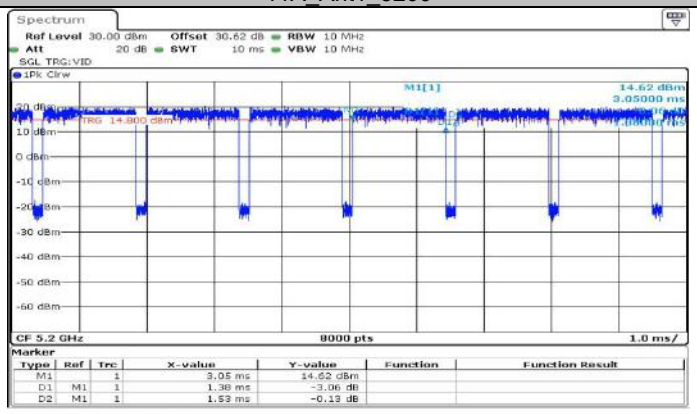
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	1.39	1.53	90.85
		5200	1.38	1.53	90.20
		5240	1.38	1.53	90.20
		5745	1.39	1.54	90.26
		5785	1.38	1.53	90.20
		5825	1.39	1.53	90.85
11N20SISO	Ant1	5180	1.17	1.31	89.31
		5200	1.17	1.32	88.64
		5240	1.18	1.32	89.39
		5745	1.17	1.31	89.31
		5785	1.17	1.31	89.31
		5825	1.17	1.31	89.31
11N40SISO	Ant1	5190	0.59	0.73	80.82
		5230	0.59	0.73	80.82
		5755	0.58	0.73	79.45
		5795	0.59	0.73	80.82
11AC20SISO	Ant1	5180	1.18	1.33	88.72
		5200	1.18	1.32	89.39
		5240	1.18	1.32	89.39
		5745	1.18	1.32	89.39
		5785	1.18	1.32	89.39
		5825	1.18	1.32	89.39
11AC40SISO	Ant1	5190	0.59	0.73	80.82
		5230	0.59	0.73	80.82
		5755	0.59	0.73	80.82
		5795	0.59	0.73	80.82
11AC80SISO	Ant1	5210	0.29	0.44	65.91
		5775	0.30	0.44	68.18

Test Graphs

11A_Ant1_5180



11A_Ant1_5200



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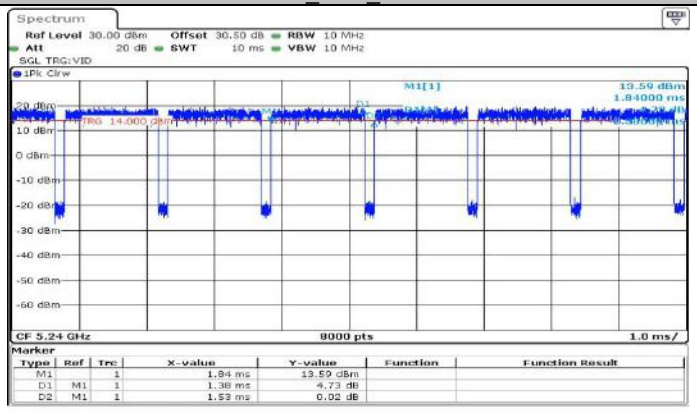

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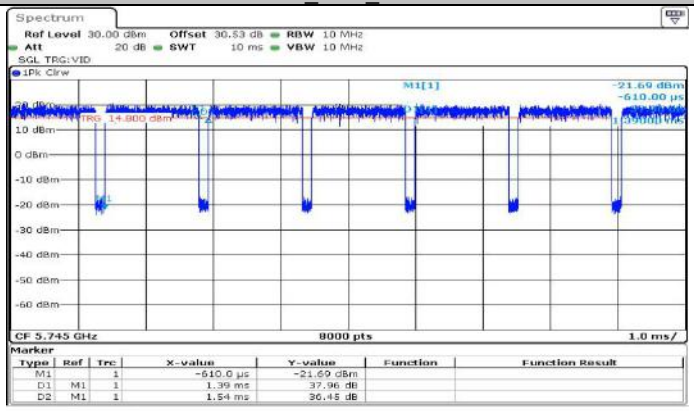

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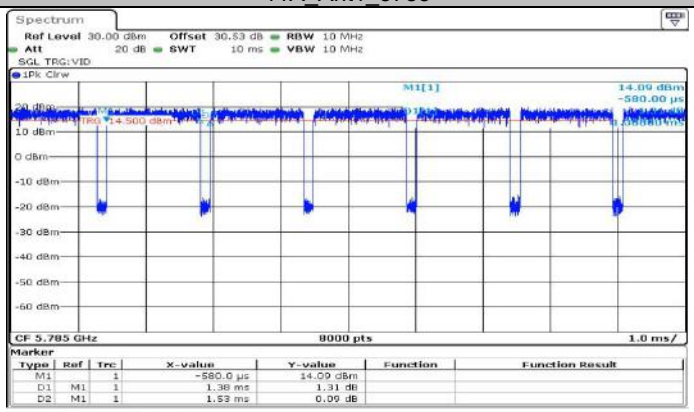

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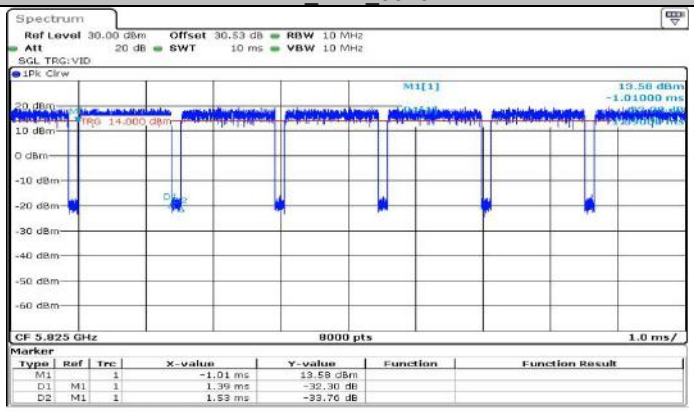

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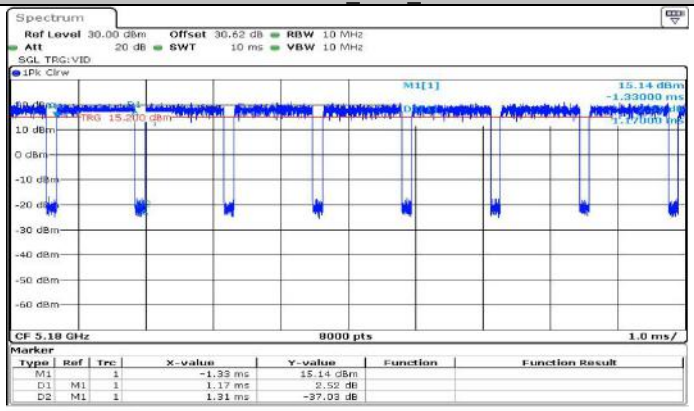

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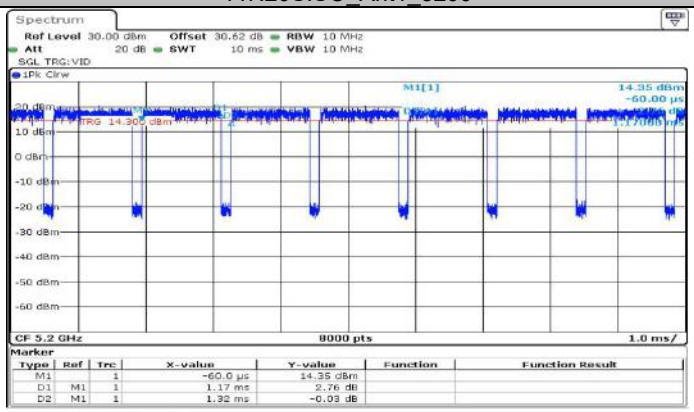

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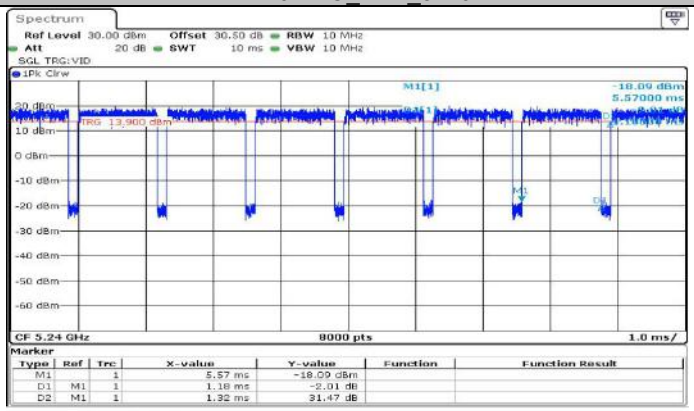

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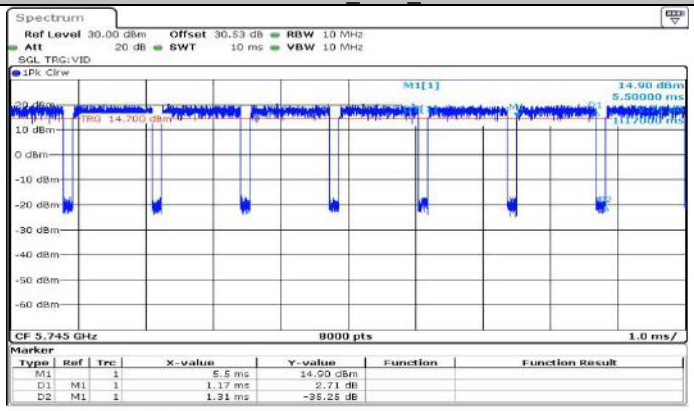

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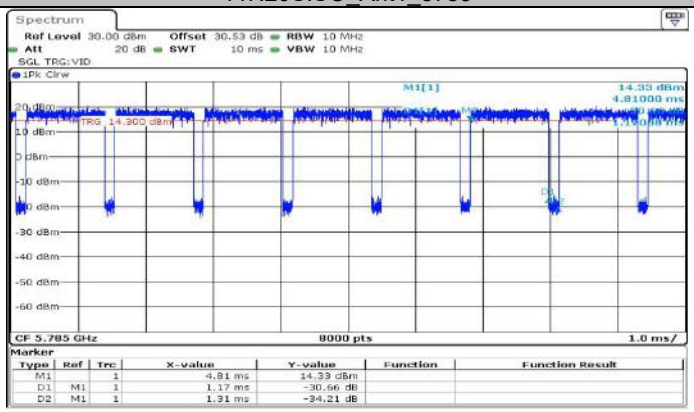

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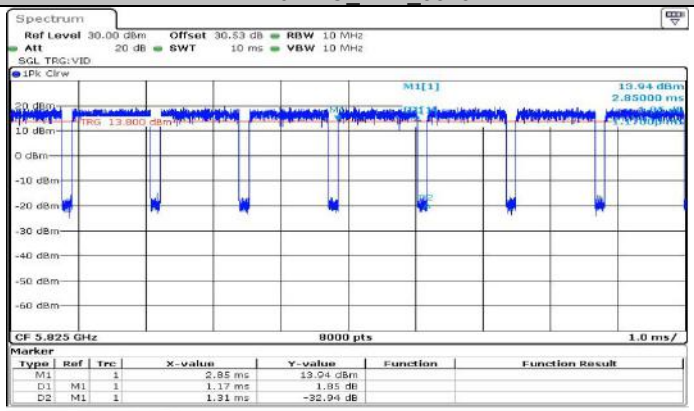

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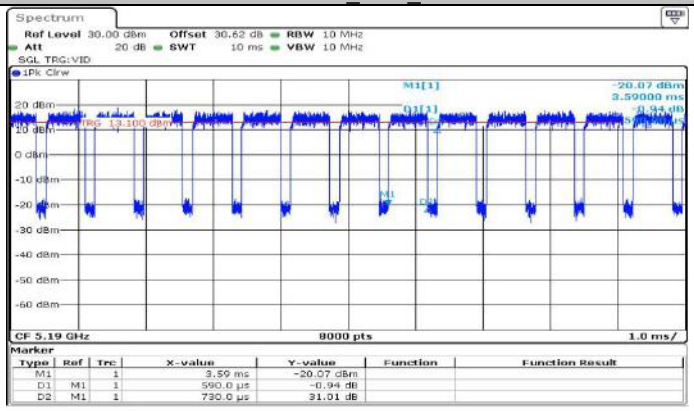

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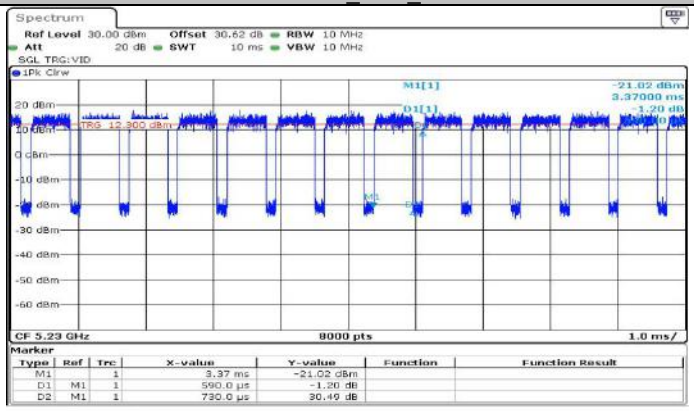

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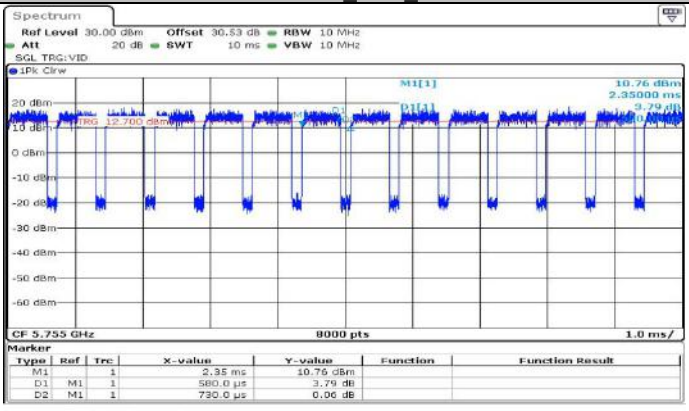

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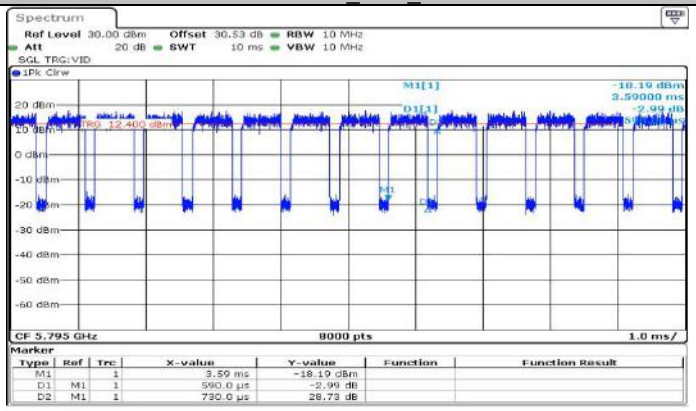
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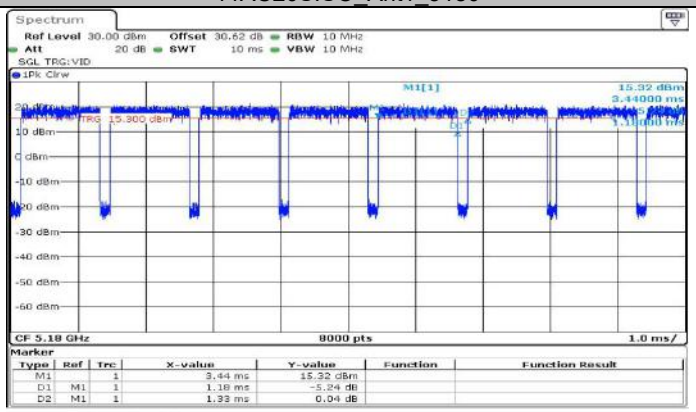
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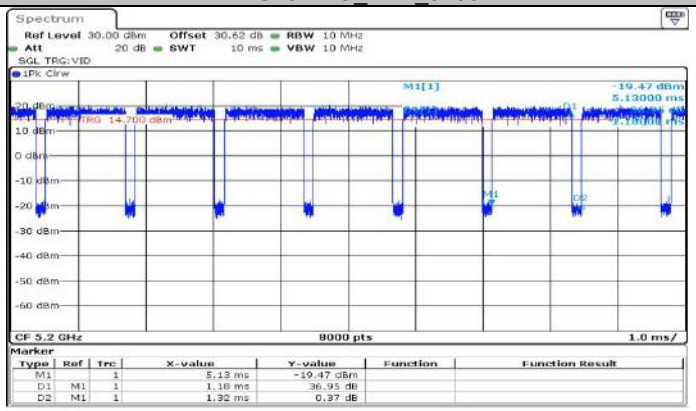

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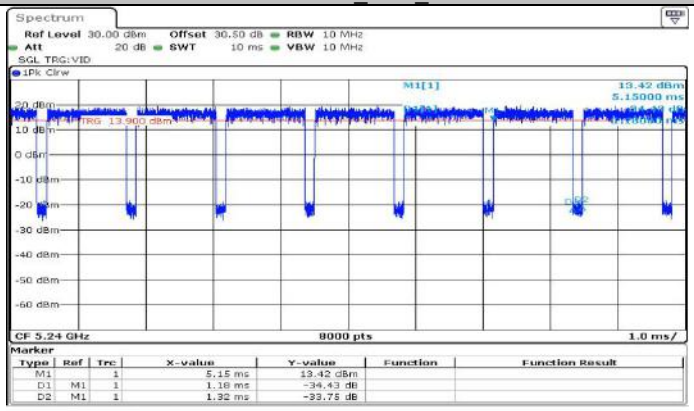

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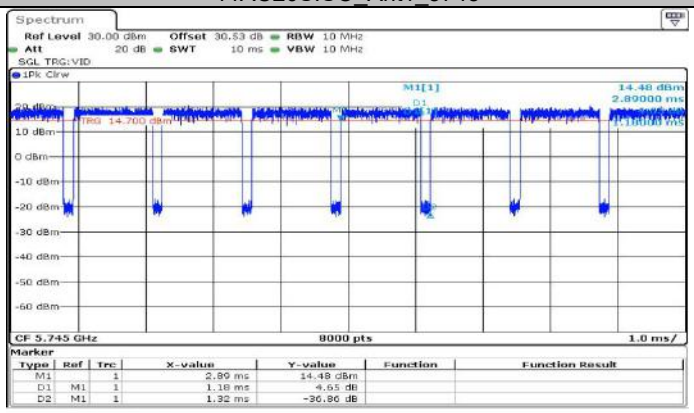

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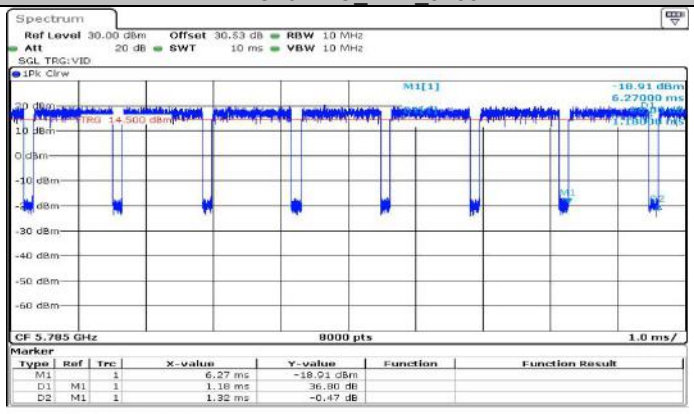

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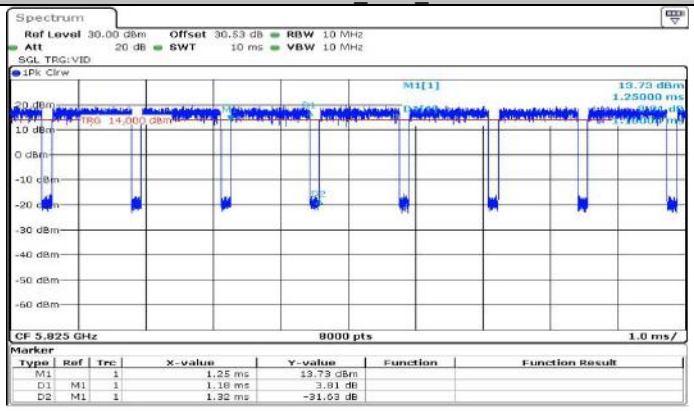

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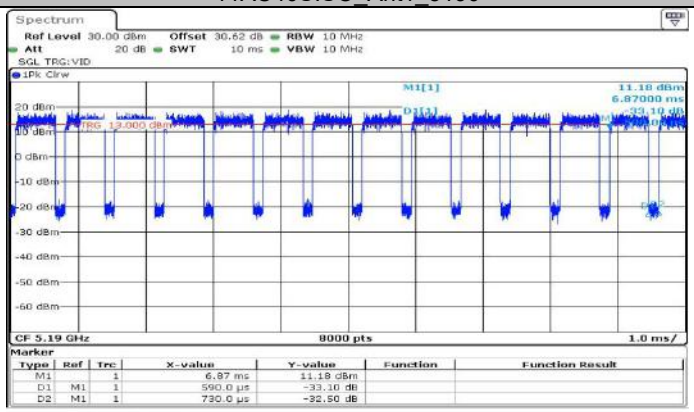

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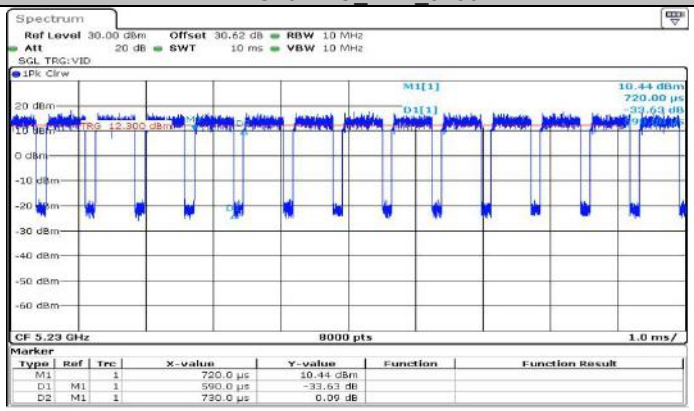

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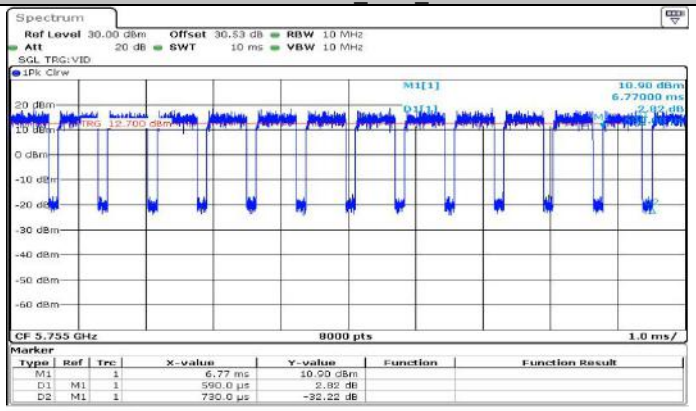

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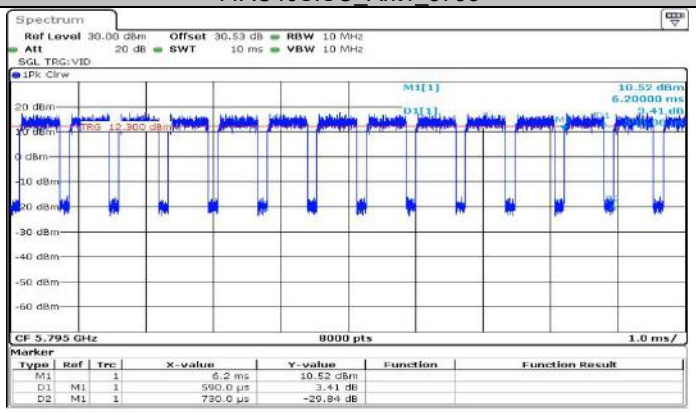

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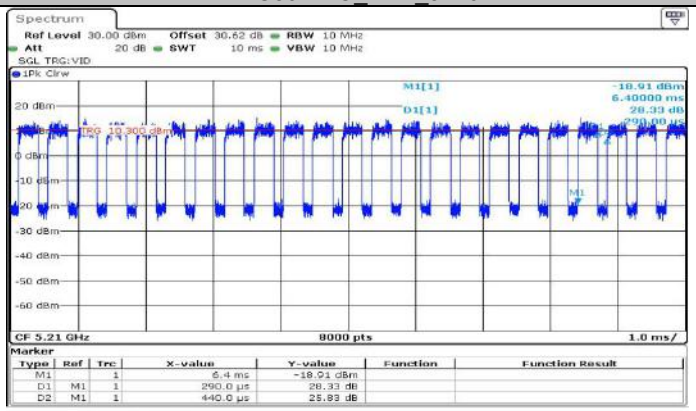

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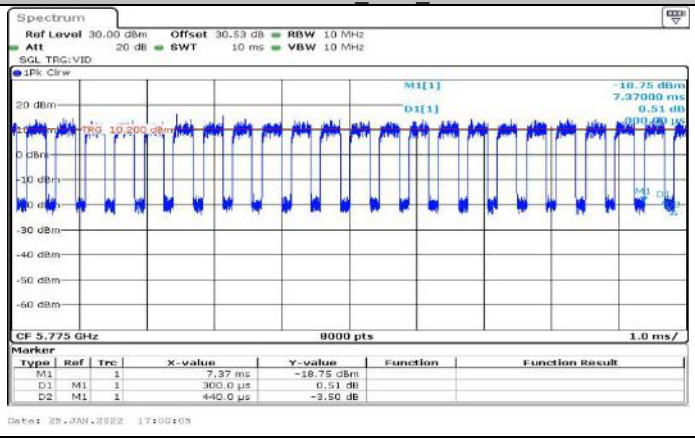

******* END OF REPORT *******