TEST REPORT

Applicant Name :	Shenzhen Hi-Link Electronic co., Ltd.
Address :	Room 301, Building 1, 1970 Science & Technology Park, Minzhi Community, Minzhi Street, Longhua District, Shenzhen, China
Report Number :	SZNS2220719-32781E-RF-00B
FCC ID:	2AD56HLK-B32

Test Standard (s)

FCC PART 15.407

Sample Description

Product:	WIFI module
Model No.:	HLK-B32; HLK-RM58D
Date Received:	2022-07-19
Date of Test:	2022-07-25 to 2022-08-08
Report Date:	2022-08-09

Test Result:	PASS*

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

Prepared and Checked By:

Roger.Ling

Roger.Ling
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 "★".

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	WIFI module
Tested Model	HLK-B32
Multiple Model	HLK-RM58D
Model difference*	Refer to the DoS letter
Frequency Range	5G Wi-Fi: 5150-5250 MHz; 5250-5350 MHz; 5470-5725 MHz; 5725-5850 MHz
Maximum Average Conducted Output Power	5150-5250 MHz: 11.78dBm (802.11a) 5250-5350 MHz: 14.28dBm (802.11a) 5470-5725 MHz: 15.35dBm (802.11a) 5725-5850 MHz: 11.74dBm (802.11a)
Modulation Technique	OFDM
Antenna Specification*	4.69dBi (provided by the applicant)
Voltage Range	DC 5V
Sample number	SZNS2220719-32781E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition

Objective

This type approval 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 KDB789033D02 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.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	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 only supports 5G Wi-Fi 802.11a modes, which was declared by manufacturer.

For 5150-5250MHz Band, 4 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

For 802.11a, channel 36, 40, 48 were tested;

For 5250-5350MHz Band, 4 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

For 802.11a, channel 52, 56, 64 were tested;

For 5470-5725MHz Band, 12 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600	144	5720

For 802.11a, channel 100, 116, 140, 144 were tested;

For 5725-5850MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785	/	/

For 802.11a, Channel 149, 157, 165 were tested;

EUT Exercise Software

"QA tool"* software was used to test and power level as below:

Frequency Range (MHz)	Mode	Date rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150-5250/ 5250-5350/ 5470-5725/ 5725-5850	802.11a	6Mbps	15	15	15

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

Duty cycle

Please refer to the Appendix.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

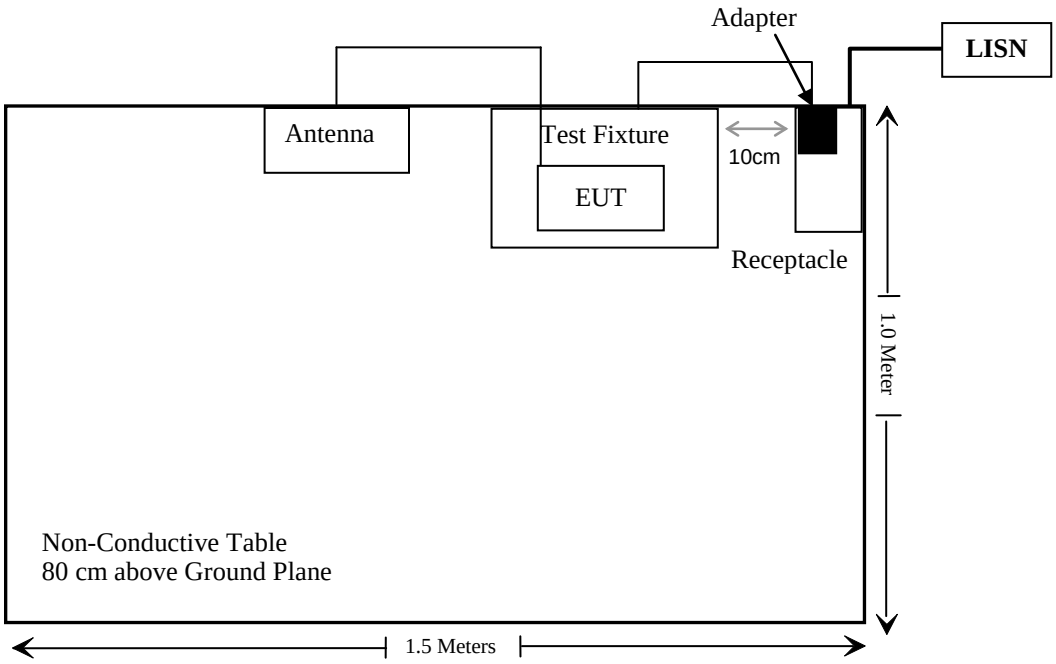
Manufacturer	Description	Model	Serial Number
Shenzhen EYA CO ,LTD.	Adapter	EYA-00500100	A1906038835
Unknown	Antenna	Unknown	Unknown
Unknown	Antenna RF Cable	Unknown	Unknown
Unknown	Test Fixture	Unknown	Unknown

External I/O Cable

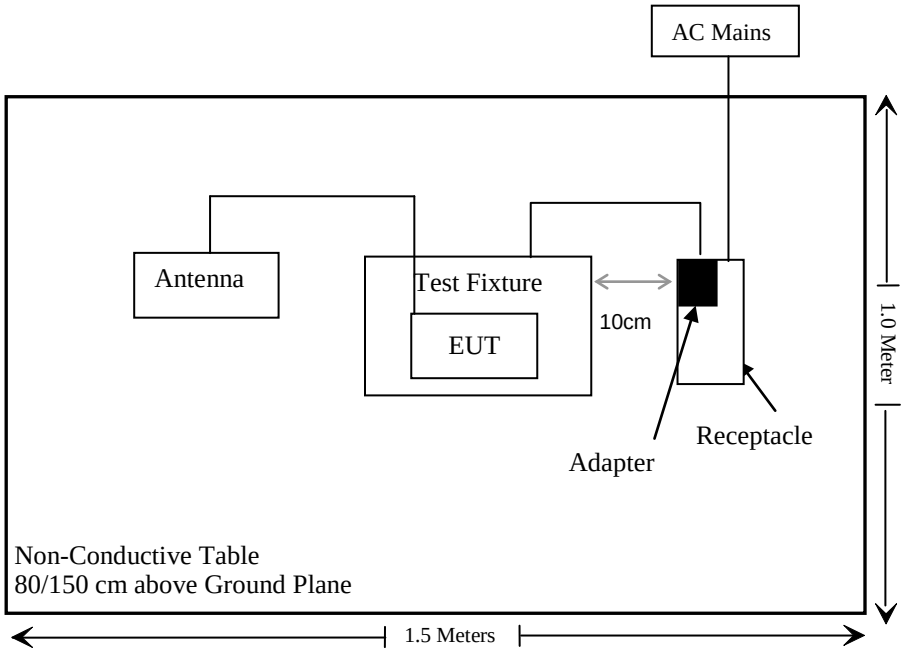
Cable Description	Length (m)	From Port	To
Un-shielding Detachable DC Cable	1.13	Test Fixture	Adapter
Un-shielding Detachable Antenna RF Cable	0.1	EUT	Antenna

Block Diagram of Test Setup

For Conducted Emission:



For Radiated Emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307(b)	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)	Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Compliant*

Not Applicable: The EUT has no TPC function which was declared by the applicant.
Compliant*: Please refer to the DFS report: SZNS2220719-32781E-RF-00C.

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
R & S	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50Ω Coaxial Switch	MP59B	6200506474	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
CD	High PASS Filter	HPM-8.0/18G-60	020	2021/12/14	2022/12/13
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
Radiated Emission Test Software: e3 19821b(V9)					
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
Rohde & Schwarz	Open Switch and Control Unit	OSP120 + OSP-B157	101244 + 100866	2021/12/13	2022/12/12
WEINSCHEL	10dB Attenuator	5324	AU 3842	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.33	RF-03	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) – RF EXPOSURE

Applicable Standard

According to KDB 447498 D04 Interim General RF Exposure Guidance v01, clause 2.1.4 –MPE-Based Exemption:

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

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

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

f = frequency in MHz;
R = minimum separation distance from the body of a nearby person (appropriate units, e.g., m);

Test result

For worst case:

Mode	Frequency Range (MHz)	Tune-up Output Power		Antenna Gain		ERP		Evaluation Distance (cm)	MPE-based exemption Limit (W)
		(dBm)	(mW)	(dBi)	(dBd)	(dBm)	(W)		
2.4G Wi-Fi	2412-2462	17	50.12	3.76	1.61	18.61	0.073	20	0.768
5G Wi-Fi	5150-5250	12	15.85	4.69	2.54	14.54	0.028	20	0.768
	5250-5350	14.5	28.18	4.69	2.54	17.04	0.051	20	0.768
	5470-5725	15.5	35.48	4.69	2.54	18.04	0.064	20	0.768
	5725-5850	12	15.85	4.69	2.54	14.54	0.028	20	0.768

Note 1: The tune-up power was declared by the applicant.
Note 2: 0dBd=2.15dBi.
Note 3: The 2.4G Wi-Fi function can not transmit at the same time with the 5G Wi-Fi function.

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

Result: Compliant.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

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 External Antenna arrangement, which was used a unique coupling to EUT and the antenna gain is 4.69dBi, fulfill the requirement of this section. Please refer to the EUT photos.

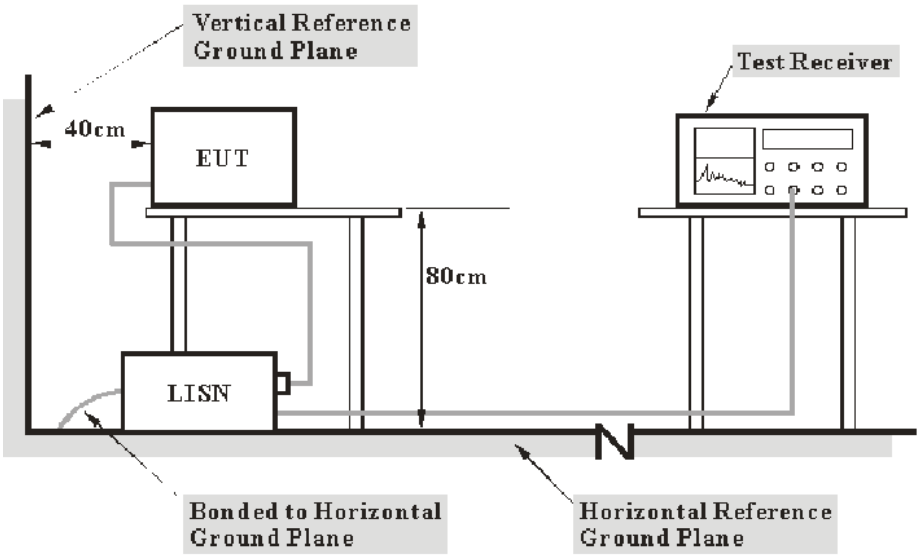
Result: Compliant.

FCC §15.407 (B) (9) §15.207 (A) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (9)

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

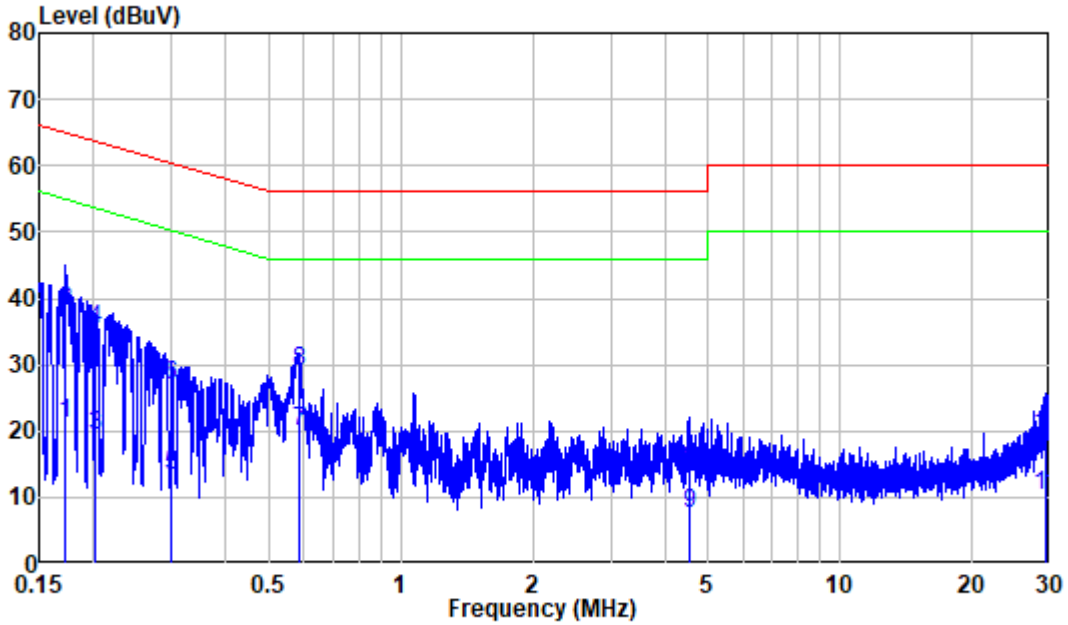
Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	24 %
ATM Pressure:	101.1 kPa

The testing was performed by Jason Liu on 2022-07-27.

EUT operation mode: 5G Wi-Fi Transmitting (Worst case for 802.11a, 5240MHz)

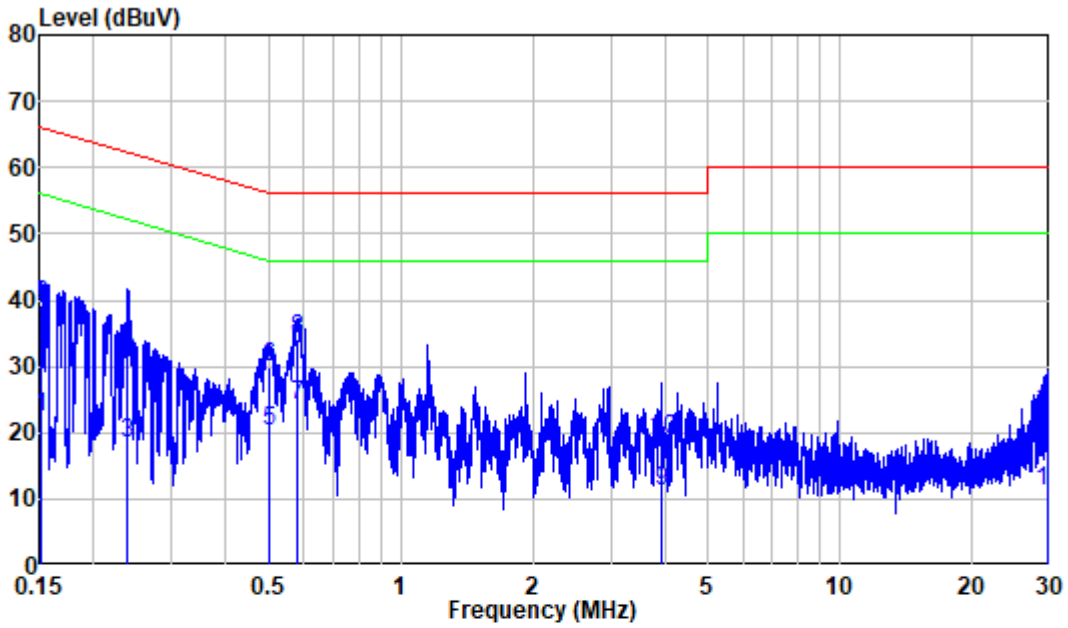
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Job No. : SZNS2220719-32781E-RF
Mode : 5G WIFI
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.172	9.80	11.38	21.18	54.88	-33.70	Average
2	0.172	9.80	28.23	38.03	64.88	-26.85	QP
3	0.201	9.80	9.42	19.22	53.59	-34.37	Average
4	0.201	9.80	25.46	35.26	63.59	-28.33	QP
5	0.300	9.80	3.58	13.38	50.23	-36.85	Average
6	0.300	9.80	17.15	26.95	60.23	-33.28	QP
7	0.587	9.81	10.21	20.02	46.00	-25.98	Average
8	0.587	9.81	19.14	28.95	56.00	-27.05	QP
9	4.543	9.85	-2.20	7.65	46.00	-38.35	Average
10	4.543	9.85	4.13	13.98	56.00	-42.02	QP
11	29.410	10.09	0.11	10.20	50.00	-39.80	Average
12	29.410	10.09	9.09	19.18	60.00	-40.82	QP

AC 120V/60 Hz, Neutral



Site : Shielding Room
Condition: Neutral
Job No. : SZNS2220719-32781E-RF
Mode : 5G WIFI Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.152	9.80	12.60	22.40	55.90	-33.50	Average
2	0.152	9.80	29.47	39.27	65.90	-26.63	QP
3	0.239	9.80	8.73	18.53	52.13	-33.60	Average
4	0.239	9.80	22.50	32.30	62.13	-29.83	QP
5	0.499	9.80	10.45	20.25	46.01	-25.76	Average
6	0.499	9.80	19.98	29.78	56.01	-26.23	QP
7	0.578	9.81	14.26	24.07	46.00	-21.93	Average
8	0.578	9.81	24.33	34.14	56.00	-21.86	QP
9	3.912	9.84	1.39	11.23	46.00	-34.77	Average
10	3.912	9.84	9.15	18.99	56.00	-37.01	QP
11	29.703	10.20	0.83	11.03	50.00	-38.97	Average
12	29.703	10.20	13.00	23.20	60.00	-36.80	QP

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

Applicable Standard

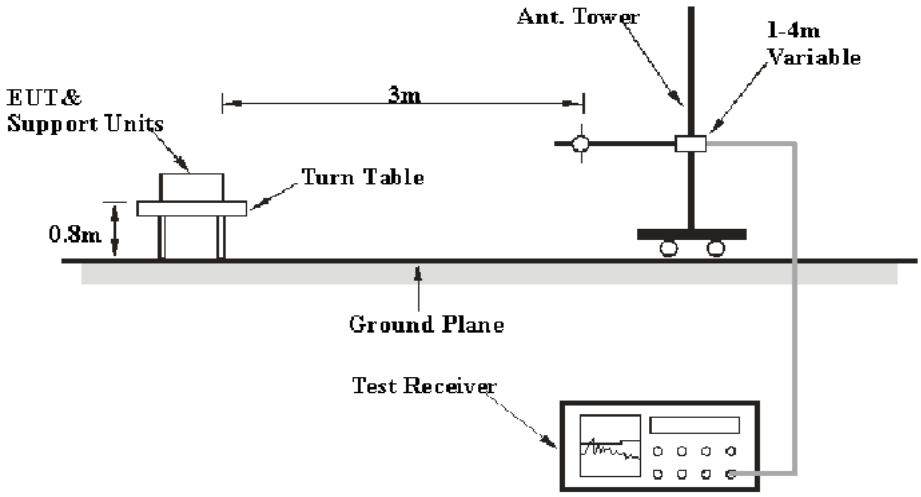
FCC §15.407 (b); §15.209; §15.205;

(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.

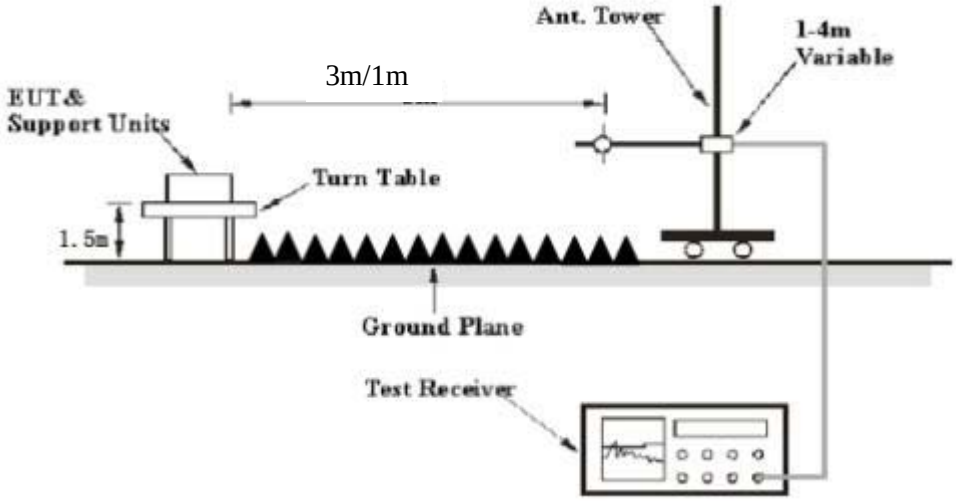
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



Above 1 GHz:



Note: 1-18GHz tested @3m, 18-40GHz tested @1m.

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*lg(1/3)= -9.5 dB

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.

EMI Test Receiver & Spectrum Analyzer Setup

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%

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

Test Procedure

Radiated Spurious Emission

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

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

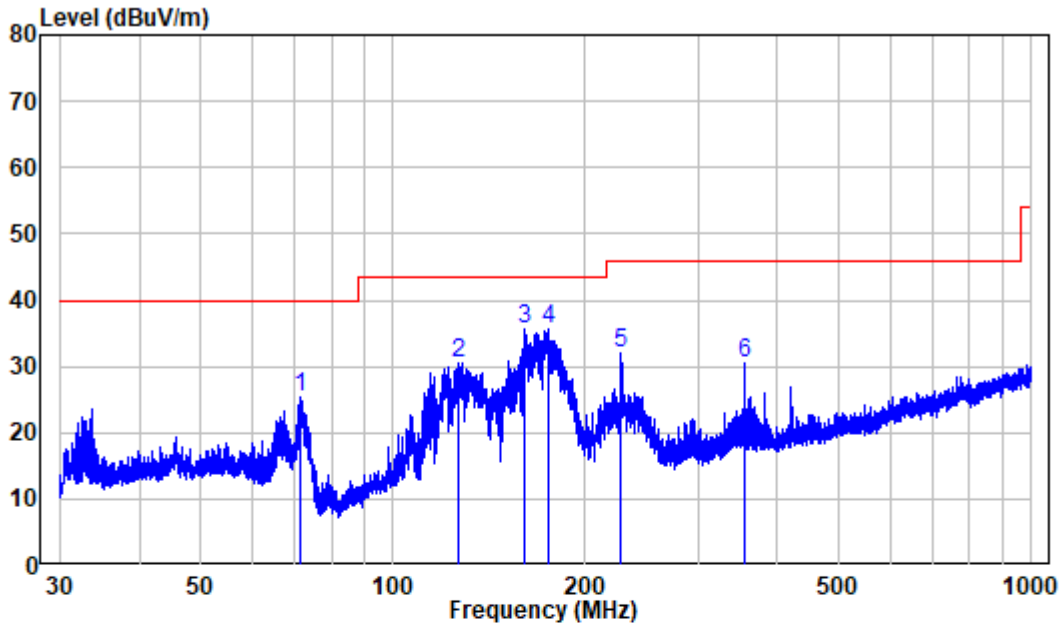
Temperature:	24~26 ℃
Relative Humidity:	56-61 %
ATM Pressure:	101.0-101.2 kPa

The testing was performed by Level Li from 2022-07-25 to 2022-08-08.

EUT operation mode: 5G WIFI Transmitting (Pre-scan in the X, Y and Z axes of orientation, the worst case as setup photos as below)

30 MHz~1 GHz: (Worst case for 802.11a, 5240MHz)

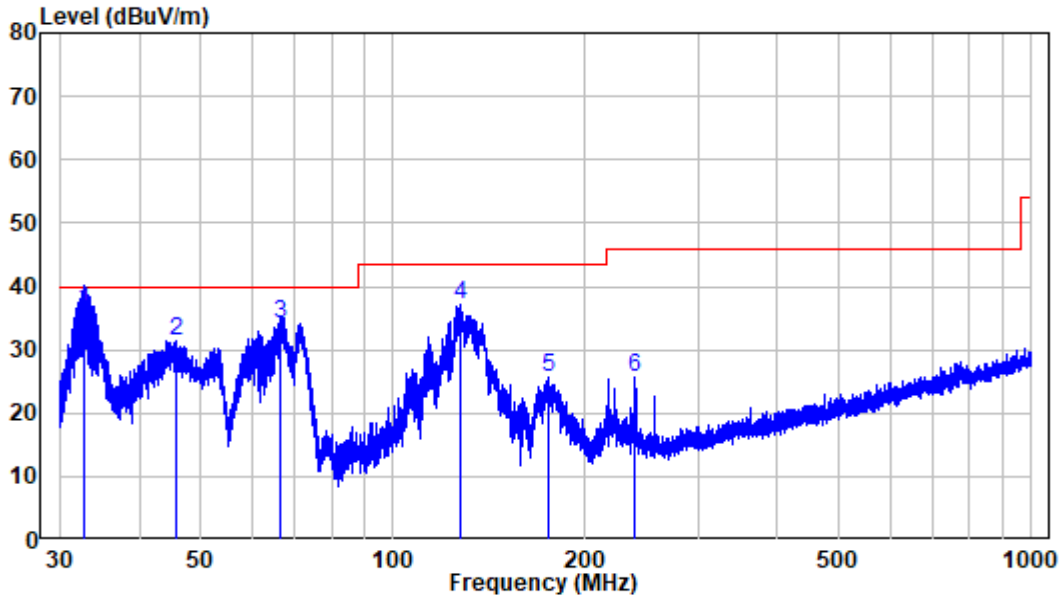
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : SZNS2220719-32781E-RF
Test Mode: 5G WIFI

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	71.581	-15.44	40.87	25.43	40.00	-14.57	Peak
2	126.828	-14.52	45.14	30.62	43.50	-12.88	Peak
3	161.121	-14.24	50.01	35.77	43.50	-7.73	Peak
4	174.730	-13.13	48.79	35.66	43.50	-7.84	Peak
5	226.596	-11.22	43.33	32.11	46.00	-13.89	Peak
6	354.649	-7.48	37.86	30.38	46.00	-15.62	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : SZNS2220719-32781E-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	32.892	-12.04	48.12	36.08	40.00	-3.92	QP
2	45.735	-9.98	41.48	31.50	40.00	-8.50	Peak
3	66.733	-13.23	47.33	34.10	40.00	-5.90	QP
4	127.051	-14.56	51.73	37.17	43.50	-6.33	Peak
5	175.344	-13.10	38.82	25.72	43.50	-17.78	Peak
6	239.672	-10.92	36.70	25.78	46.00	-20.22	Peak

1 ~ 40 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)				
802.11 A, 5180MHz									
4500	54.77	PK	23	1.6	H	-4.72	50.05	74	-23.95
4500	55.16	PK	28	2.0	V	-4.72	50.44	74	-23.56
5150	55.79	PK	65	1.9	H	-2.73	53.06	74	-20.94
5150	55.03	PK	248	1.9	V	-2.73	52.30	74	-21.7
10360	41.81	PK	248	1.8	H	8.12	49.93	68.2	-18.27
10360	40.73	PK	17	1.2	V	8.12	48.85	68.2	-19.35
802.11 A, 5200MHz									
10400	42.71	PK	238	1.6	H	8.24	50.95	68.2	-17.25
10400	41.30	PK	317	1.3	V	8.24	49.54	68.2	-18.66
802.11 A, 5240MHz									
5350	55.59	PK	123	2.1	H	-2.33	53.26	74	-20.74
5350	55.58	PK	166	1.5	V	-2.33	53.25	74	-20.75
5460	55.70	PK	37	1.1	H	-2.26	53.44	74	-20.56
5460	55.77	PK	295	1.7	V	-2.26	53.51	74	-20.49
10480	43.05	PK	112	1.2	H	8.57	51.62	68.2	-16.58
10480	42.00	PK	299	1.8	V	8.57	50.57	68.2	-17.63
802.11 A, 5260MHz									
4500	55.34	PK	161	1.9	H	-4.72	50.62	74	-23.38
4500	55.09	PK	348	1.2	V	-4.72	50.37	74	-23.63
5150	55.14	PK	354	1.3	H	-2.73	52.41	74	-21.59
5150	55.67	PK	65	1.2	V	-2.73	52.94	74	-21.06
10520	36.50	PK	99	2.4	H	8.65	45.15	68.2	-23.05
10520	35.00	PK	108	1.3	V	8.65	43.65	68.2	-24.55
802.11 A, 5280MHz									
10560	37.36	PK	95	2.1	H	8.65	46.01	68.2	-22.19
10560	36.79	PK	220	2.2	V	8.65	45.44	68.2	-22.76
802.11 A, 5320MHz									
5350	54.99	PK	316	1.8	H	-2.33	52.66	74	-21.34
5350	56.09	PK	163	2.2	V	-2.33	53.76	74	-20.24
5460	55.63	PK	192	1.7	H	-2.26	53.37	74	-20.63
5460	55.73	PK	227	1.6	V	-2.26	53.47	74	-20.53
10640	43.42	PK	307	2.2	H	8.9	52.32	74	-21.68
10640	43.39	PK	222	2.4	V	8.9	52.29	74	-21.71
802.11 A, 5500MHz									
5400	55.38	PK	222	2.4	H	-2.29	53.09	74	-20.91
5400	55.75	PK	44	2.1	V	-2.29	53.46	74	-20.54
5470	55.90	PK	300	2.4	H	-2.2	53.70	68.2	-14.5
5470	55.51	PK	356	1.9	V	-2.2	53.31	68.2	-14.89
11000	41.91	PK	109	2.2	H	9.67	51.58	74	-22.42
11000	42.99	PK	359	1.7	V	9.67	52.66	74	-21.34

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)				
802.11 A, 5580MHz									
11160	43.26	PK	322	1.7	H	8.6	51.86	74	-22.14
11160	43.85	PK	92	1.3	V	8.6	52.45	74	-21.55
802.11 A, 5700MHz									
5725	56.58	PK	38	2	H	-2.02	54.56	68.2	-13.64
5725	55.70	PK	47	1.4	V	-2.02	53.68	68.2	-14.52
5745	55.72	PK	272	1.6	H	-1.9	53.82	68.2	-14.38
5745	55.04	PK	223	1.5	V	-1.9	53.14	68.2	-15.06
11400	44.32	PK	340	2.2	H	7.26	51.58	74	-22.42
11400	44.94	PK	153	2.2	V	7.26	52.20	74	-21.8
802.11 A, 5720MHz									
5850	56.63	PK	45	2.2	H	-1.81	54.82	68.2	-13.38
5850	54.75	PK	325	1.3	V	-1.81	52.94	68.2	-15.26
11440	43.86	PK	321	2.1	H	6.89	50.75	74	-23.25
11440	45.44	PK	343	1.1	V	6.89	52.33	74	-21.67
802.11 A, 5745MHz									
5650	55.94	PK	327	1.6	H	-1.95	53.99	68.2	-14.21
5650	57.19	PK	99	1.4	V	-1.95	55.24	68.2	-12.96
5700	56.84	PK	173	1.8	H	-2.02	54.82	105.2	-50.38
5700	56.36	PK	238	1.8	V	-2.02	54.34	105.2	-50.86
5720	56.60	PK	168	1.5	H	-1.96	54.64	110.8	-56.16
5720	55.88	PK	138	1.8	V	-1.96	53.92	110.8	-56.88
5725	56.35	PK	261	1.0	H	-1.96	54.39	122.2	-67.81
5725	55.90	PK	112	1.5	V	-1.96	53.94	122.2	-68.26
11490	44.28	PK	350	2.0	H	6.63	50.91	74	-23.09
11490	43.79	PK	109	1.8	V	6.63	50.42	74	-23.58
802.11 A, 5785MHz									
11570	43.01	PK	143	2.0	H	6.59	49.60	74	-24.4
11570	43.60	PK	130	1.7	V	6.59	50.19	74	-23.81

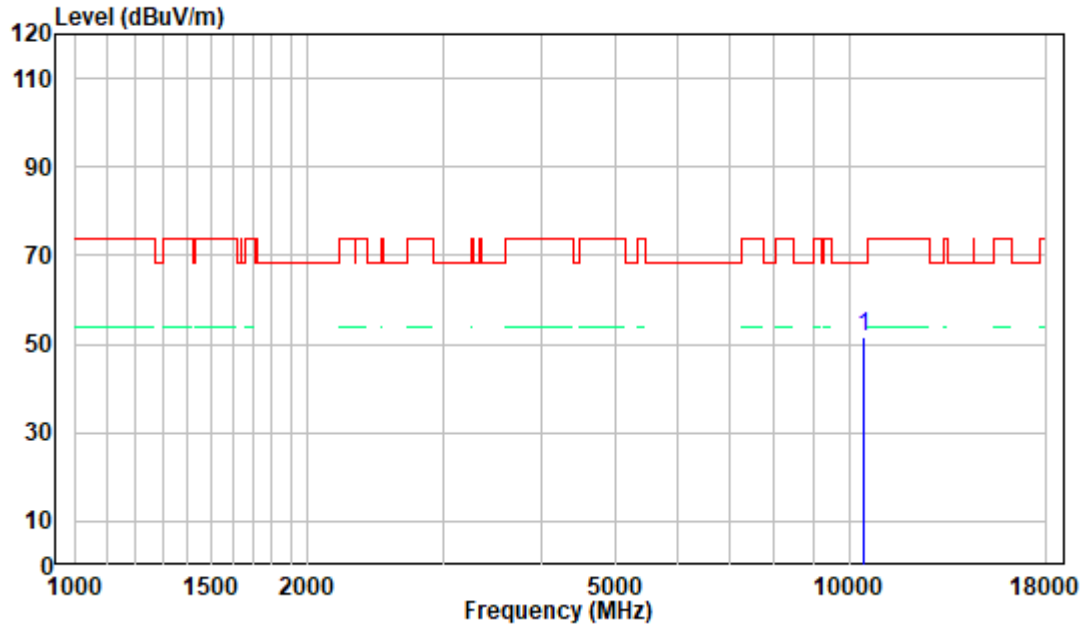
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit	Margin
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)			(dBμV/m)	(dB)
802.11 A, 5825MHz									
5850	56.18	PK	201	1.7	H	-1.81	54.37	122.2	-67.83
5850	56.55	PK	195	1.4	V	-1.81	54.74	122.2	-67.46
5855	56.03	PK	334	1.1	H	-1.82	54.21	110.8	-56.59
5855	56.55	PK	41	1.4	V	-1.82	54.73	110.8	-56.07
5875	56.59	PK	160	1.1	H	-1.84	54.75	105.2	-50.45
5875	56.22	PK	112	1.0	V	-1.84	54.38	105.2	-50.82
5925	56.26	PK	291	1.1	H	-1.83	54.43	68.2	-13.77
5925	55.28	PK	304	1.1	V	-1.83	53.45	68.2	-14.75
11650	44.21	PK	187	1.9	H	6.77	50.98	74	-23.02
11650	44.22	PK	340	1.3	V	6.77	50.99	74	-23.01

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 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

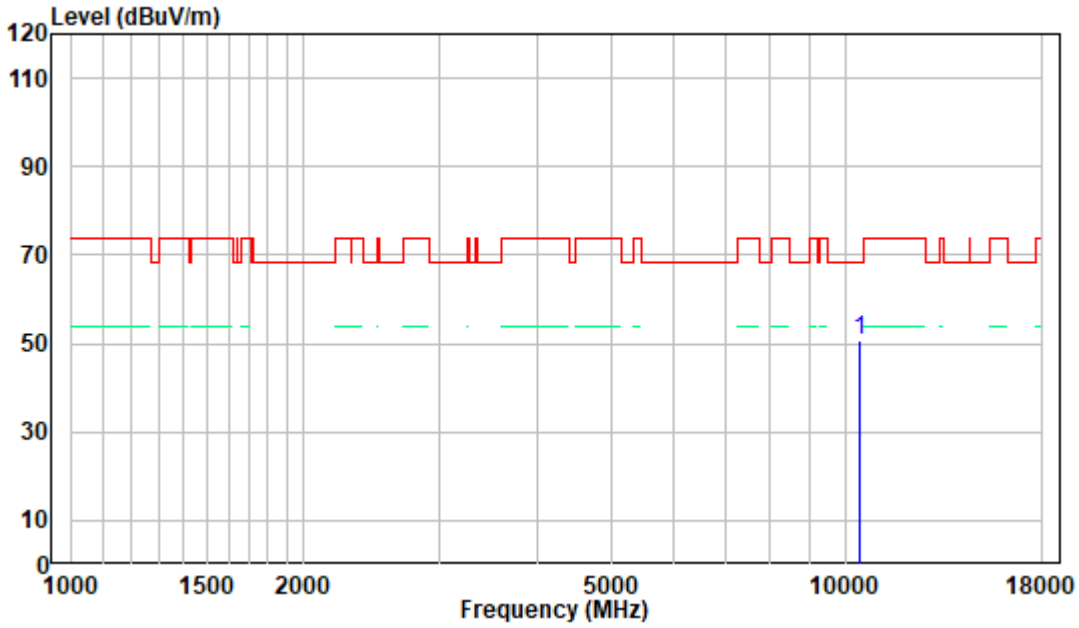
1-18 GHz:

Pre-scan plots:

802.11a, 5240MHz
Horizontal



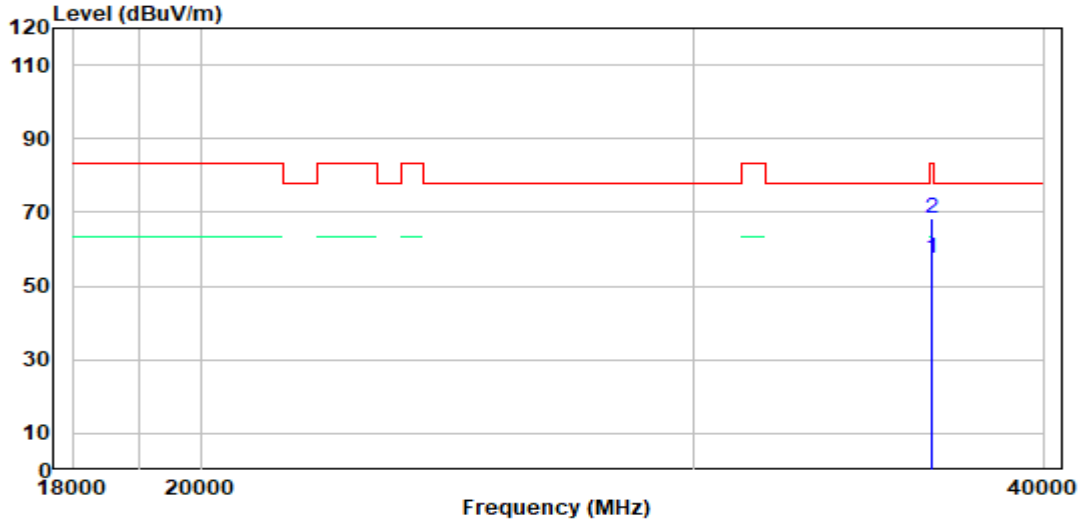
Vertical



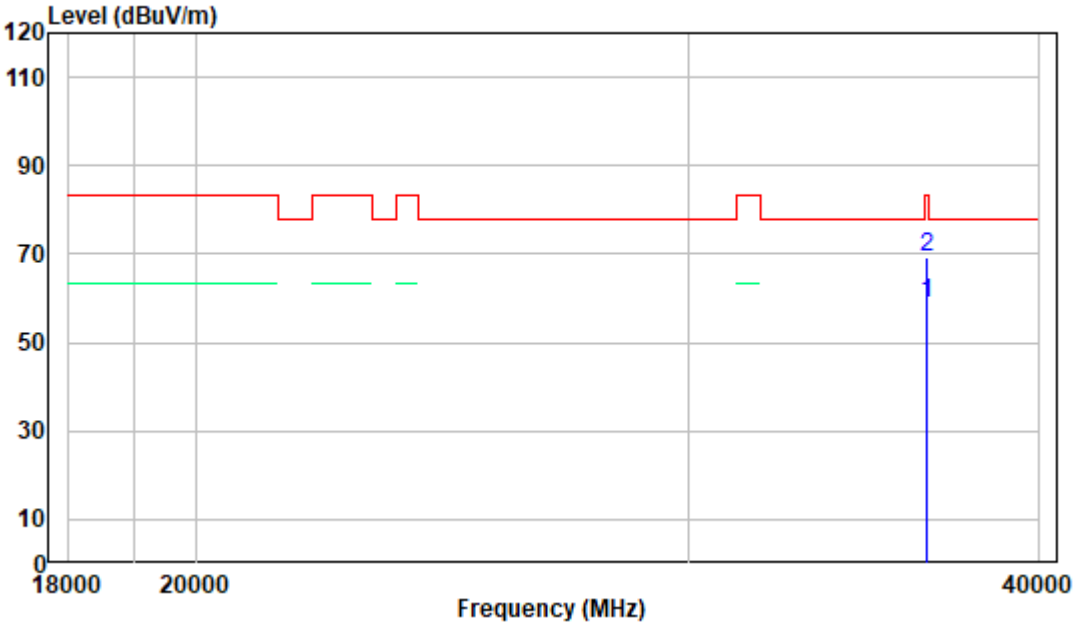
18-40 GHz:

Pre-scan plots:

802.11a, 5240MHz
Horizontal



Vertical



FCC §15.407(a)(e) – BANDWIDTH

Applicable Standard

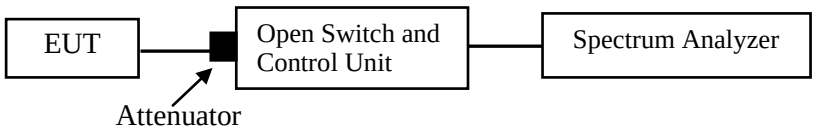
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band 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:	23 ℃
Relative Humidity:	54 %
ATM Pressure:	101.1 kPa

The testing was performed by Glenn Jiang on 2022-07-28.

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.

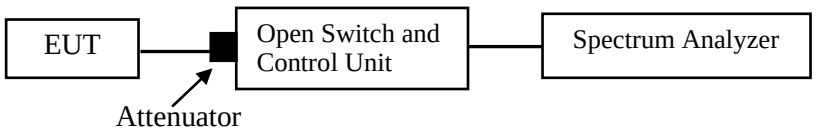
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting 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

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	23~26 ℃
Relative Humidity:	54~56 %
ATM Pressure:	101.0~101.2 kPa

The testing was performed by Glenn Jiang from 2022-07-28 to 2022-08-05.

EUT operation mode: Transmitting

Test Result: PASS

Please refer to the Appendix.

FCC §15.407(a) - 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.

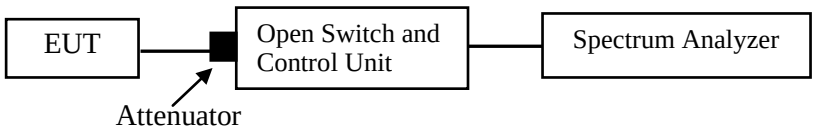
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 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 $\geq$ 1/T, where T is defined in section II.B.l.a).
b) Set VBW $\geq$ 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:	23-26 ℃
Relative Humidity:	54-56 %
ATM Pressure:	101.0-101.2 kPa

The testing was performed by Glenn Jiang from 2022-07-28 to 2022-08-05.

EUT operation mode: Transmitting

Test Result: PASS

Please refer to the Appendix.

APPENDIX

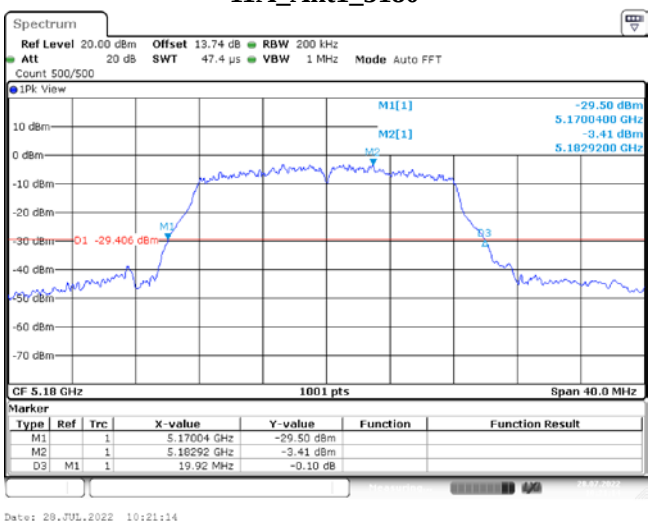
Appendix A1: Emission Bandwidth

Test Result

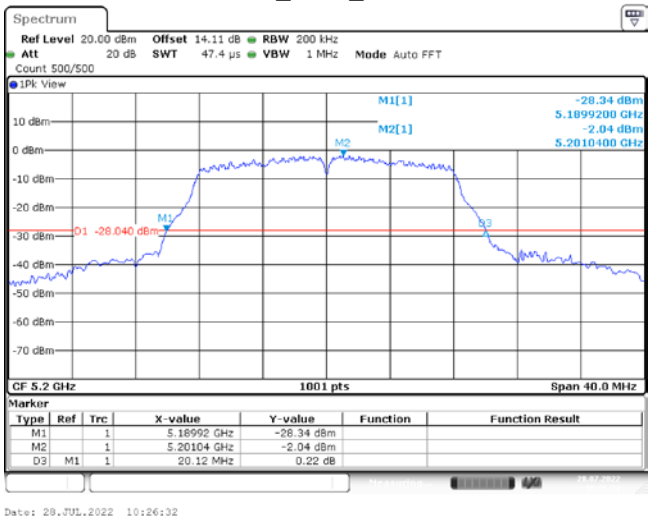
Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.920	5170.040	5189.960	---	PASS
		5200	20.120	5189.920	5210.040	---	PASS
		5240	20.120	5229.880	5250.000	---	PASS
		5260	19.920	5250.080	5270.000	---	PASS
		5280	19.880	5270.000	5289.880	---	PASS
		5320	20.000	5309.960	5329.960	---	PASS
		5500	19.920	5490.040	5509.960	---	PASS
		5580	19.840	5570.120	5589.960	---	PASS
		5700	20.440	5689.520	5709.960	---	PASS
		5720	21.480	5709.560	5731.040	---	PASS
		5720_UNII-2C	15.44	5709.560	5725	---	PASS
		5720_UNII-3	6.04	5725	5731.040	---	PASS
		5745	19.920	5735.040	5754.960	---	PASS
		5785	20.160	5774.960	5795.120	---	PASS
		5825	21.280	5813.680	5834.960	---	PASS

Test Graphs

11A_Ant1_5180

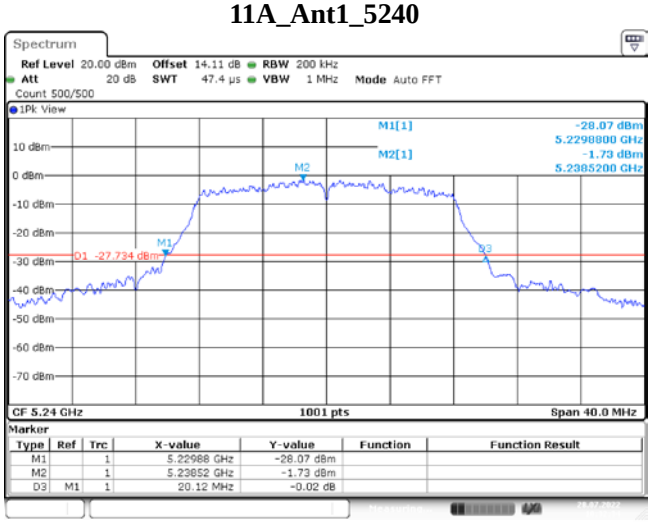


11A_Ant1_5200



Date: 28.JUL.2022 10:26:32

11A_Ant1_5240



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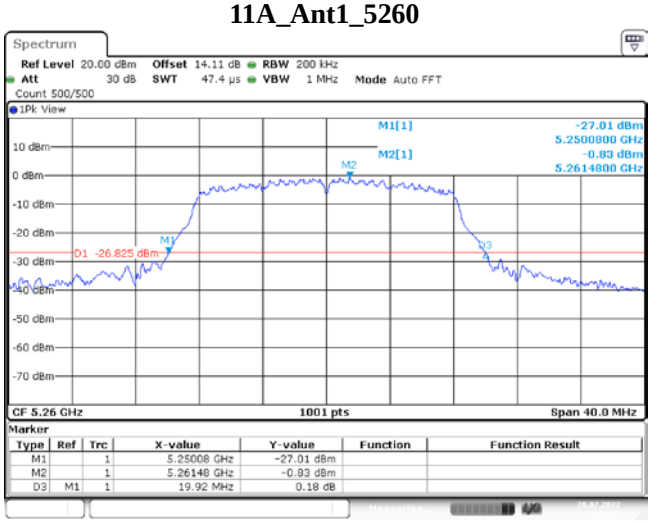
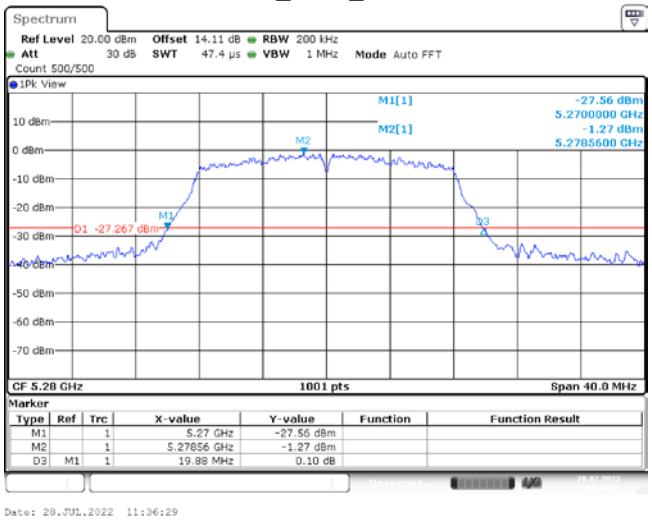
11A_Ant1_5260

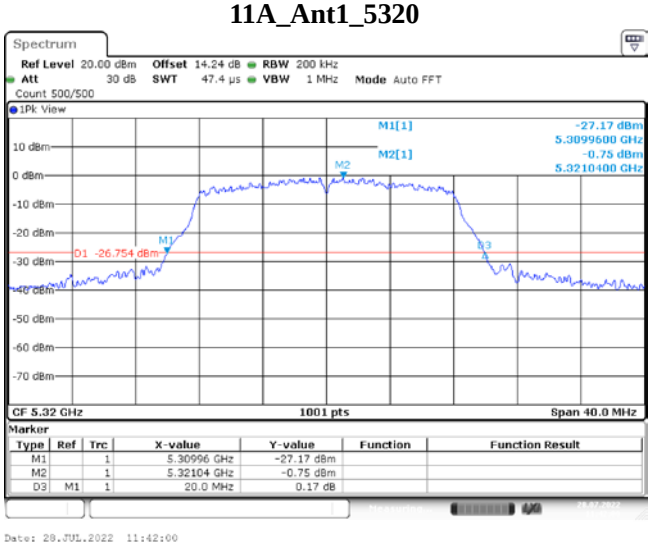


Date: 28.JUL.2022 11:24:59

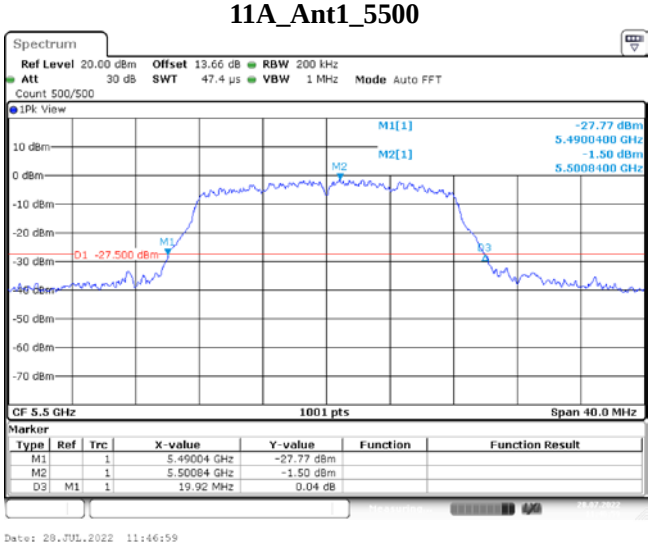
11A_Ant1_5280



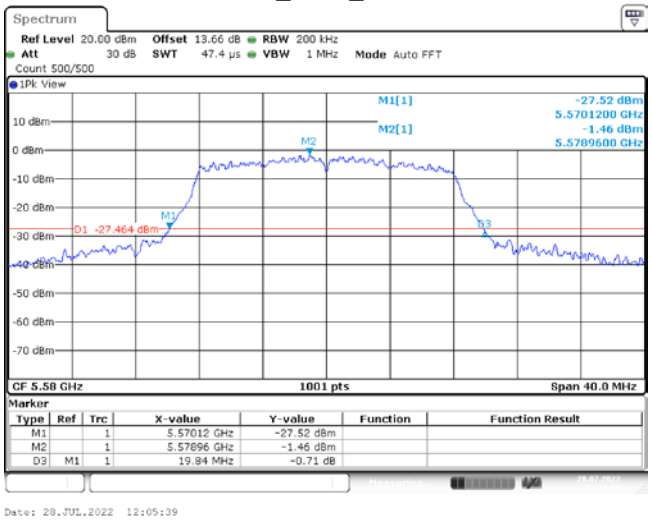
11A_Ant1_5320



11A_Ant1_5500

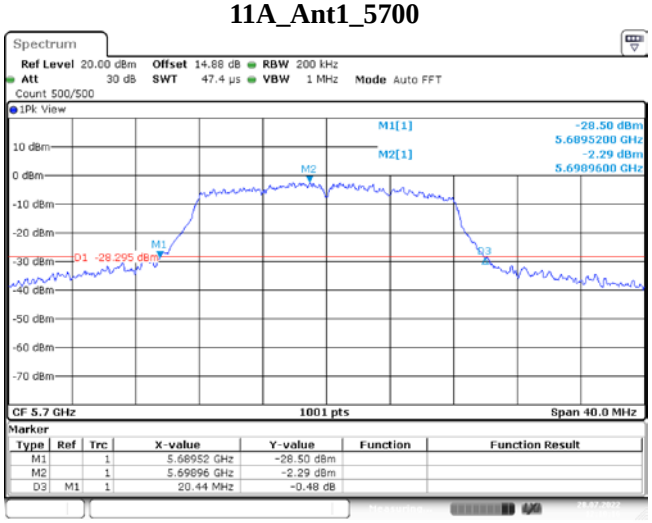


11A_Ant1_5580



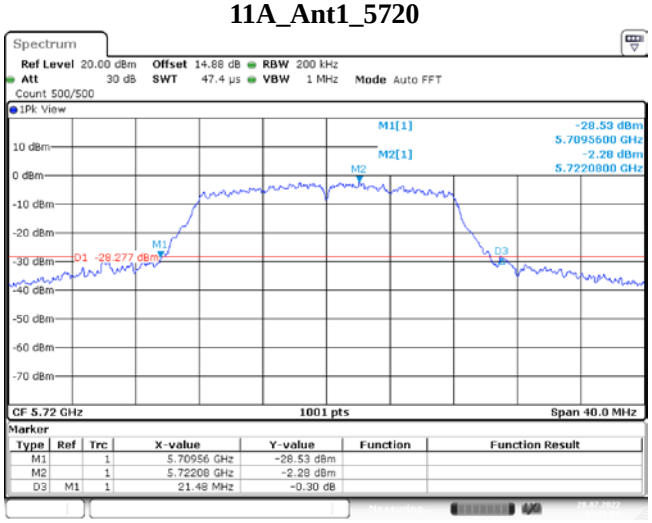
Date: 28.JUL.2022 12:05:39

11A_Ant1_5700



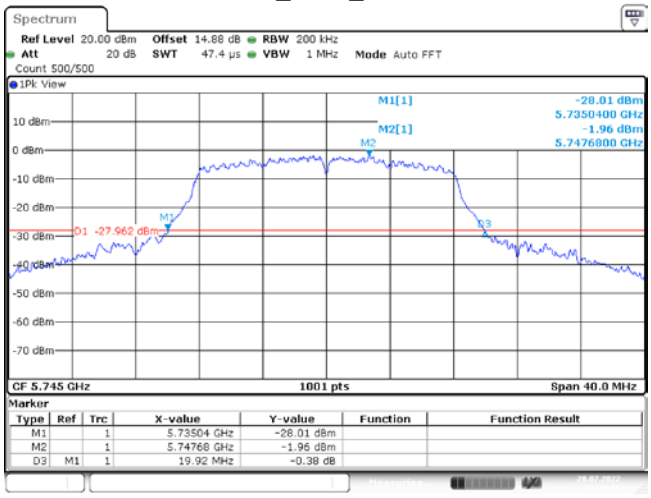
Date: 28.JUL.2022 12:10:16

11A_Ant1_5720



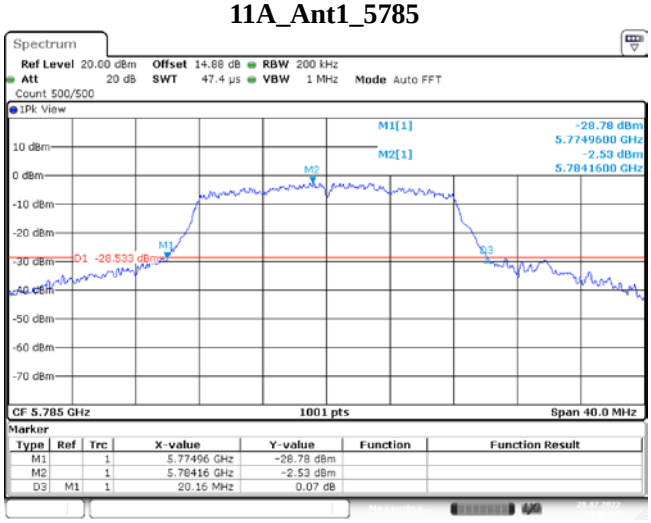
Date: 28.JUL.2022 12:16:06

11A_Ant1_5745



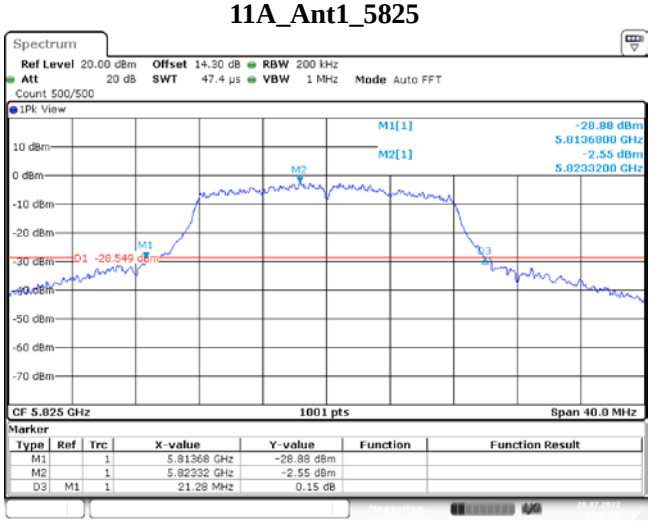
Date: 28.JUL.2022 10:48:26

11A_Ant1_5785



Date: 28.JUL.2022 11:02:27

11A_Ant1_5825



Date: 28.JUL.2022 11:09:50

Appendix A2: Occupied channel bandwidth

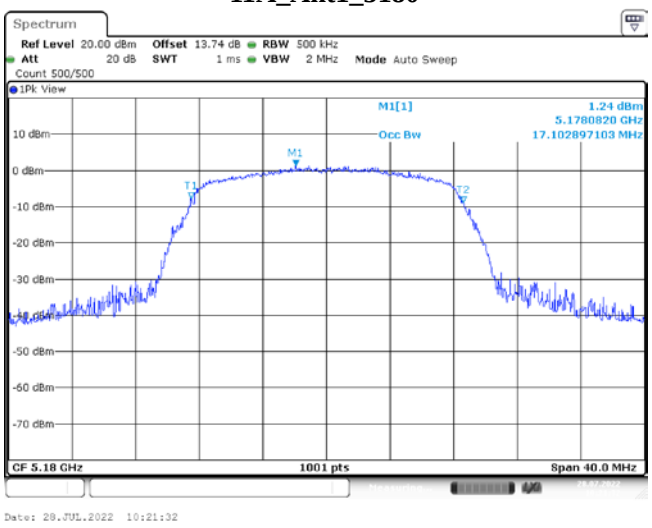
Test Result

:

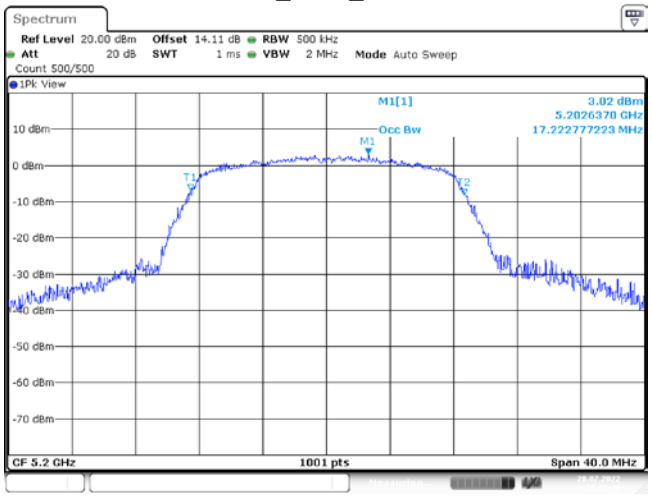
Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.103	5171.489	5188.591	---	PASS
		5200	17.223	5191.449	5208.671	---	PASS
		5240	17.223	5231.369	5248.591	---	PASS
		5260	17.343	5251.329	5268.671	---	PASS
		5280	17.303	5271.329	5288.631	---	PASS
		5320	17.263	5311.409	5328.671	---	PASS
		5500	17.303	5491.409	5508.711	---	PASS
		5580	17.343	5571.289	5588.631	---	PASS
		5700	17.542	5691.089	5708.631	---	PASS
		5720	17.542	5711.249	5728.791	---	PASS
		5720_UNII-2C	13.751	5711.249	5725	---	PASS
		5720_UNII-3	3.791	5725	5728.791	---	PASS
		5745	17.263	5736.369	5753.631	---	PASS
		5785	17.463	5776.329	5793.791	---	PASS
		5825	17.463	5816.129	5833.591	---	PASS

Test Graphs

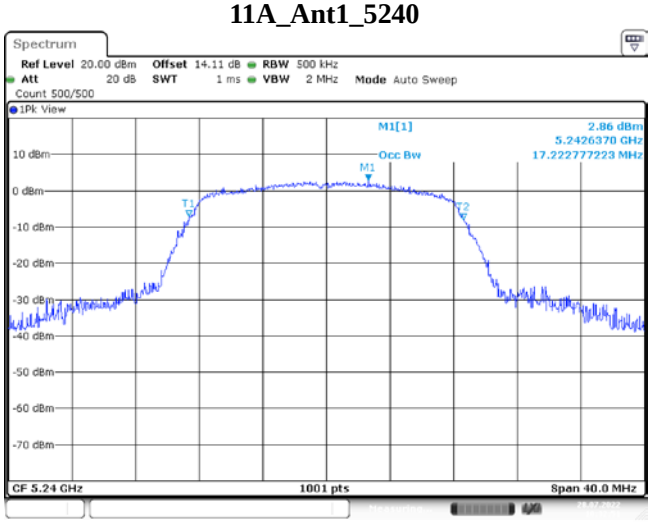
11A_Ant1_5180



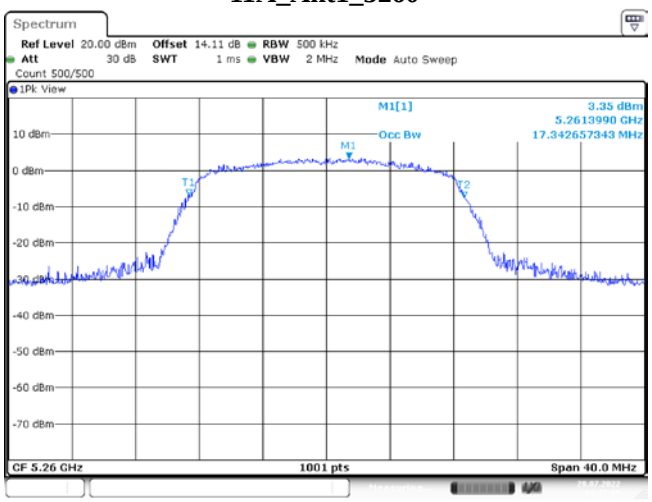
11A_Ant1_5200



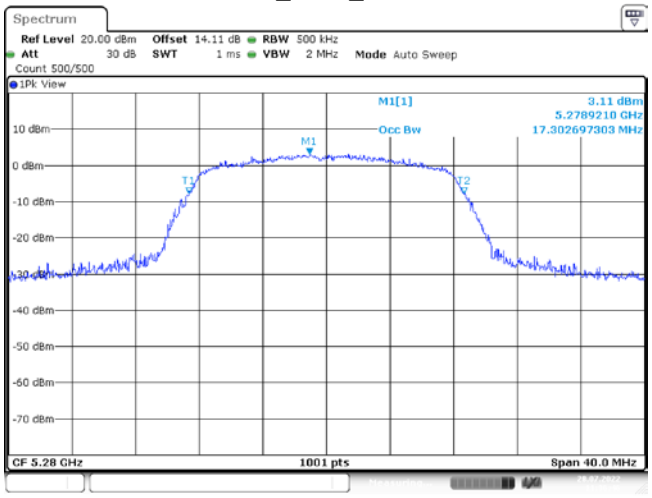
11A_Ant1_5240



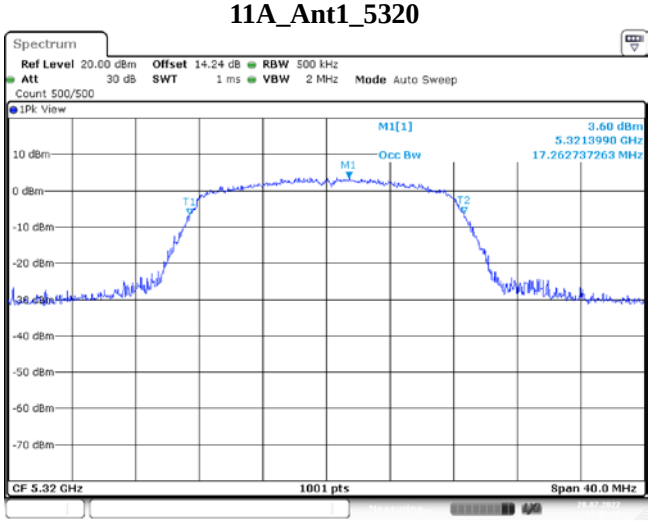
11A_Ant1_5260



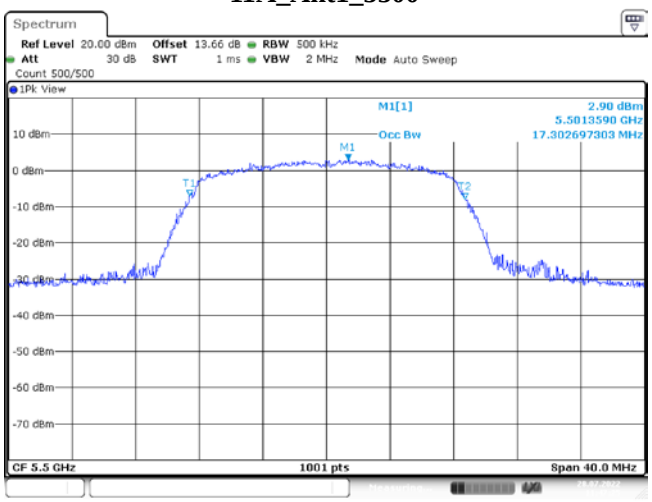
11A_Ant1_5280



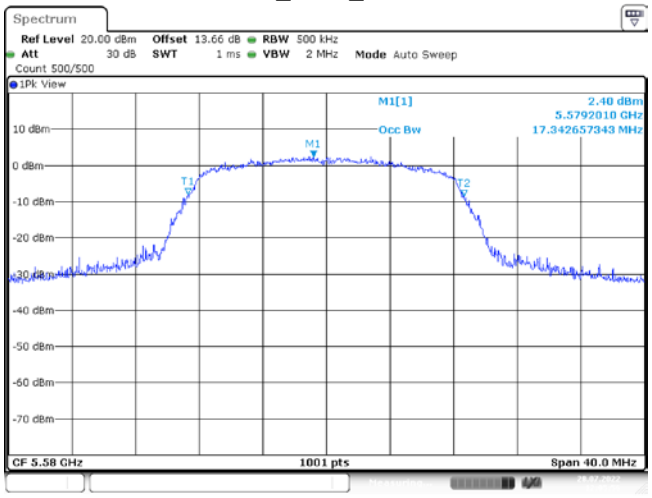
11A_Ant1_5320



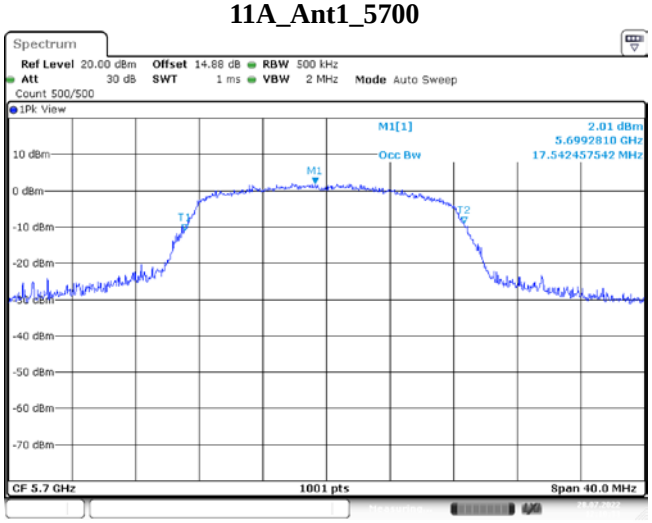
11A_Ant1_5500



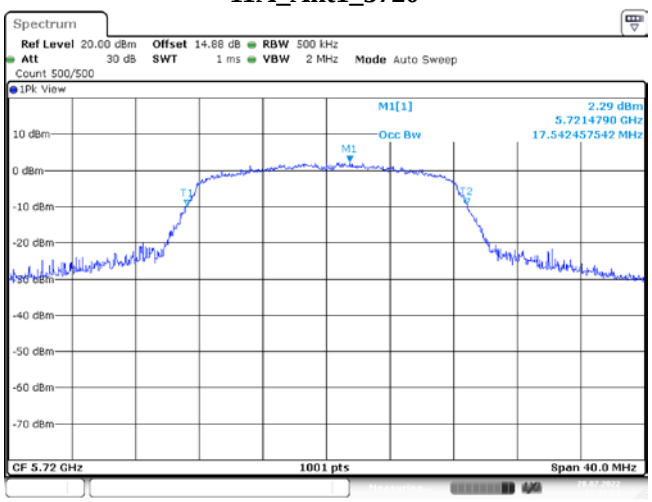
11A_Ant1_5580



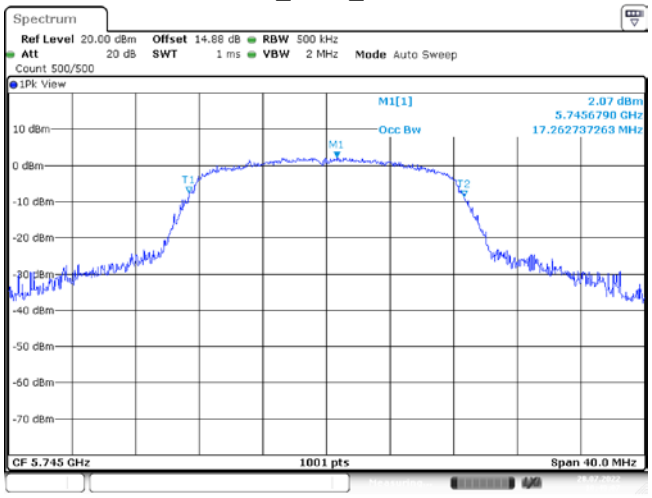
11A_Ant1_5700



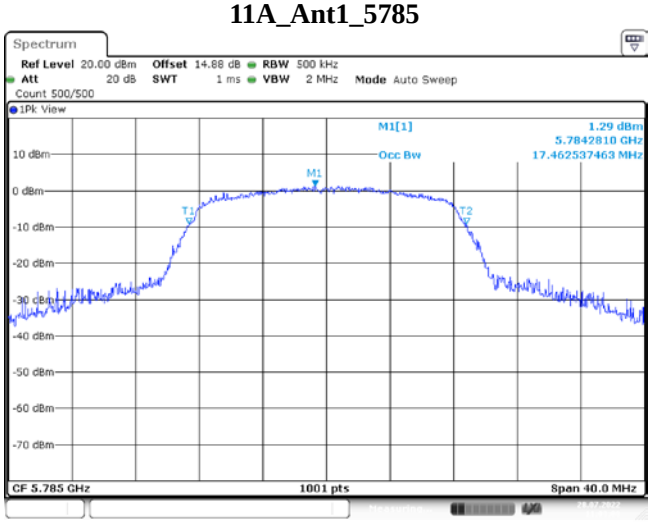
11A_Ant1_5720



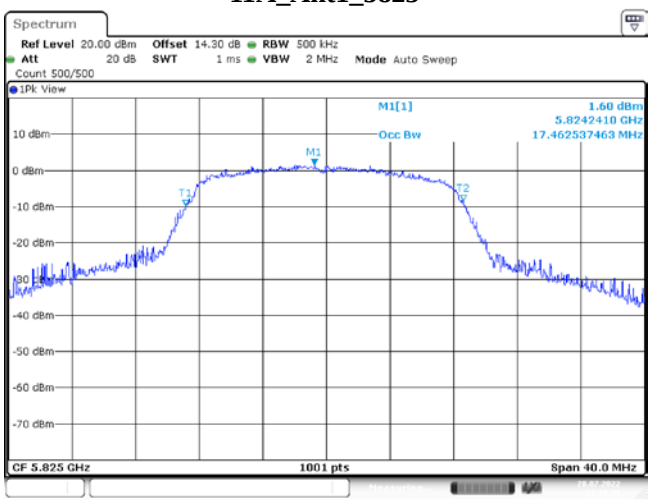
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



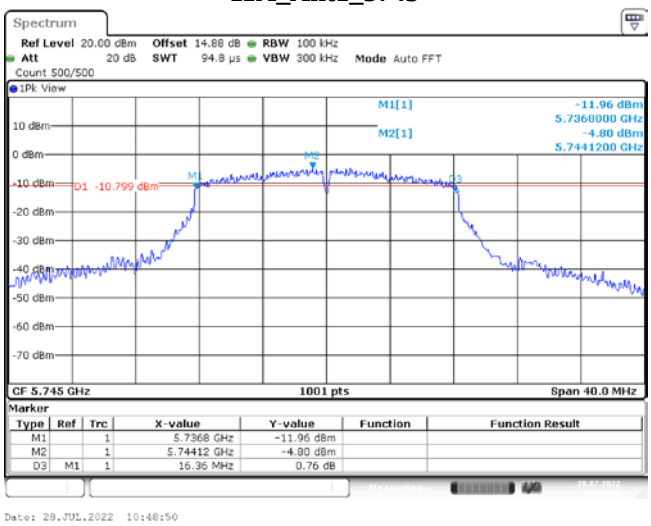
Appendix A3: Min emission bandwidth

Test Result

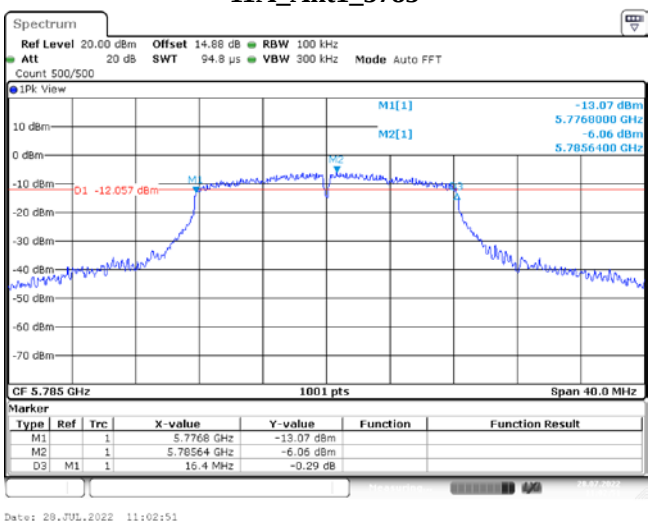
Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.360	5736.800	5753.160	0.5	PASS
		5785	16.400	5776.800	5793.200	0.5	PASS
		5825	16.120	5816.800	5832.920	0.5	PASS

Test Graphs

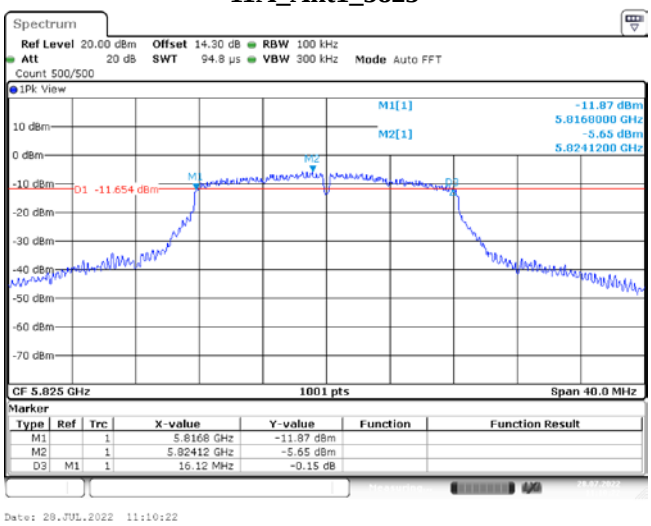
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



Appendix B: Maximum conducted Average output power

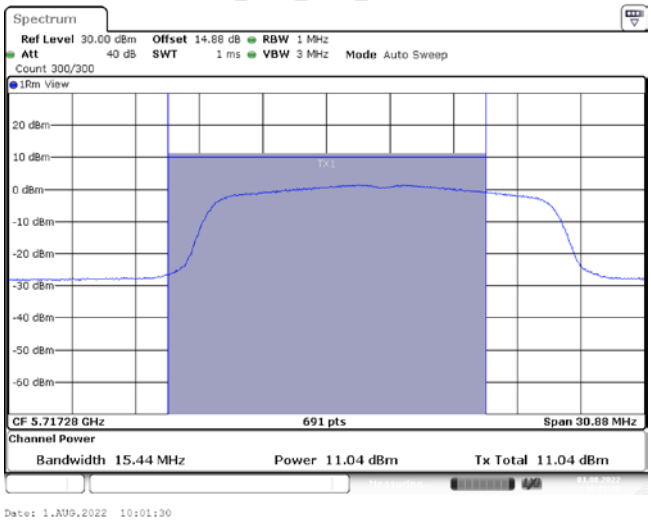
Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	11.08	<=23.98	PASS
		5200	11.55	<=23.98	PASS
		5240	**11.78**	<=23.98	PASS
		5260	12.98	<=23.98	PASS
		5280	14.03	<=23.98	PASS
		5320	**14.08**	<=23.98	PASS
		5500	**15.35**	<=23.98	PASS
		5580	15.21	<=23.98	PASS
		5700	13.84	<=23.98	PASS
		5720_UNII-2C	11.04	<=22.89	PASS
		5720_UNII-3	2.89	<=30	PASS
		5745	11.57	<=30	PASS
		5785	**11.74**	<=30	PASS
		5825	10.96	<=30	PASS

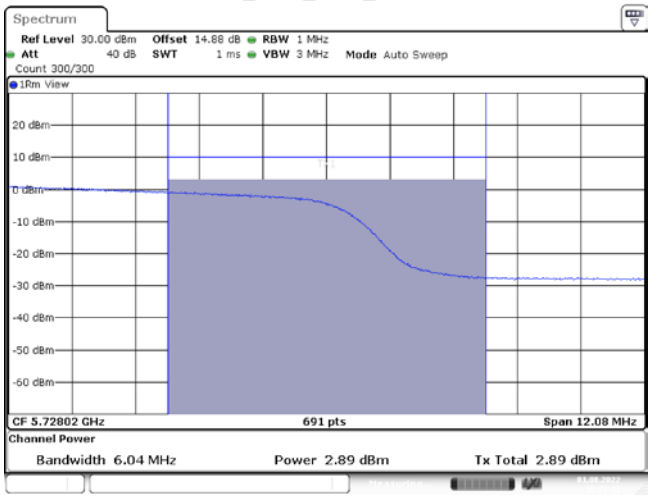
Note: The Duty Cycle Factor is compensated in the result.

Test Graphs

11A_Ant1_5720_UNII-2C



11A_Ant1_5720_UNII-3



Appendix C: Maximum power spectral density

Test Result

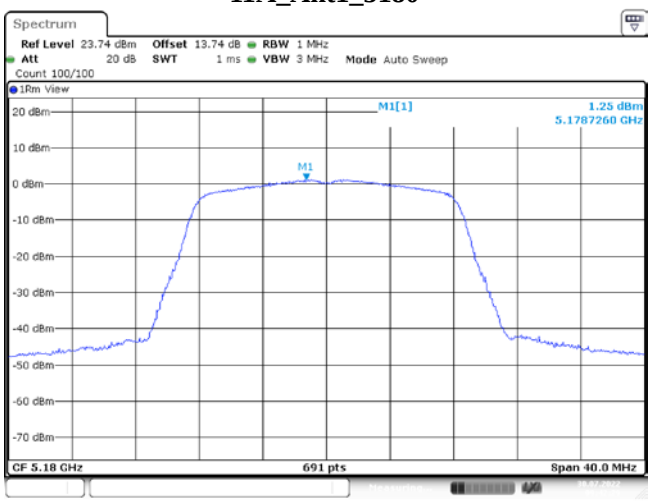
Test Mode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	1.25	<=11	PASS
		5200	2.39	<=11	PASS
		5240	2.78	<=11	PASS
		5260	2.36	<=11	PASS
		5280	2.59	<=11	PASS
		5320	2.91	<=11	PASS
		5500	3.12	<=11	PASS
		5580	3.07	<=11	PASS
		5700	3.16	<=11	PASS
		5720_UNII-2C	2.08	<=11	PASS
		5720_UNII-3	-3.15	<=11	PASS
		5745	-0.39	<=30	PASS
		5785	-0.03	<=30	PASS
		5825	-1.02	<=30	PASS

Note：The Duty Cycle Factor is compensated in the result.

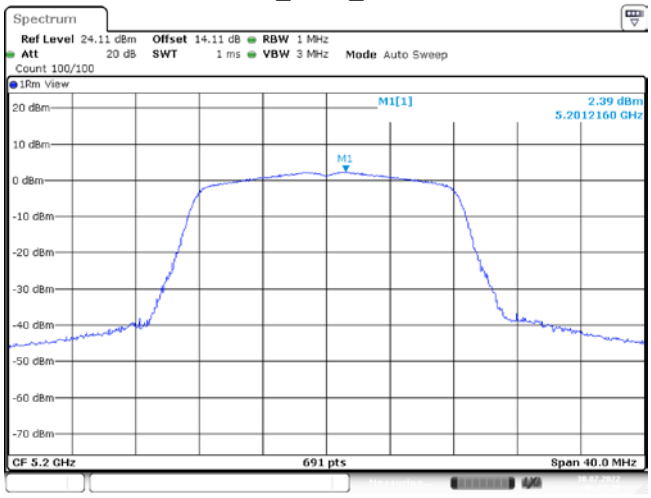
Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725-5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

Test Graphs

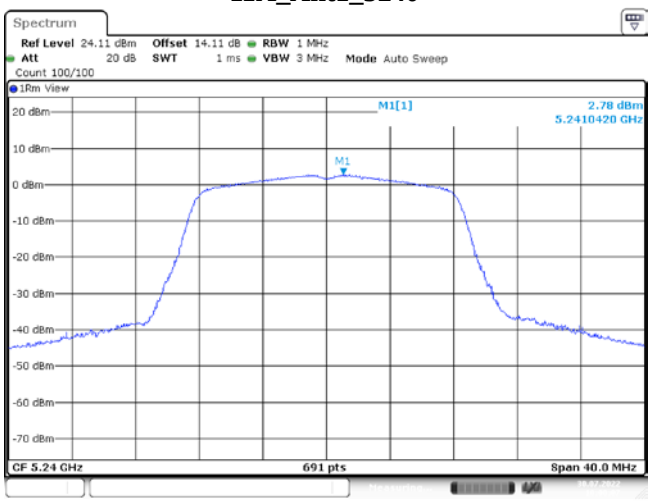
11A_Ant1_5180



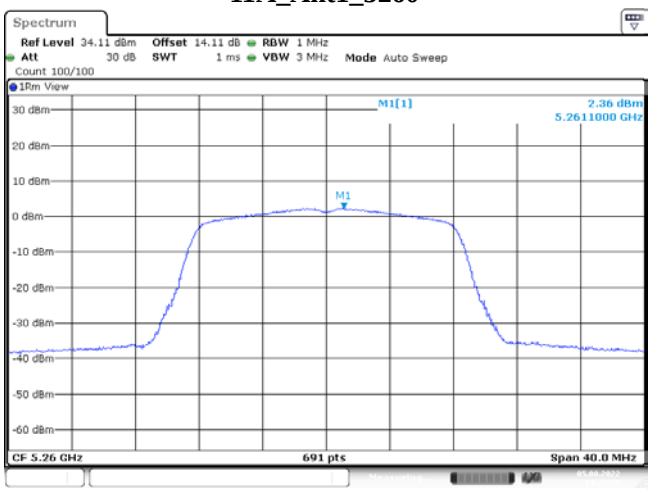
11A_Ant1_5200



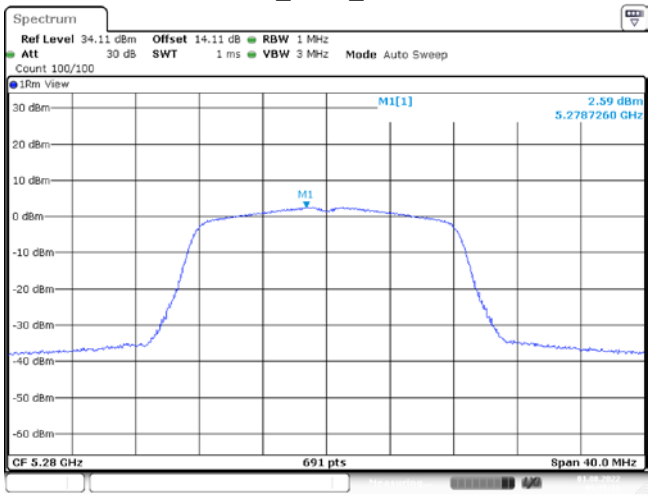
11A_Ant1_5240



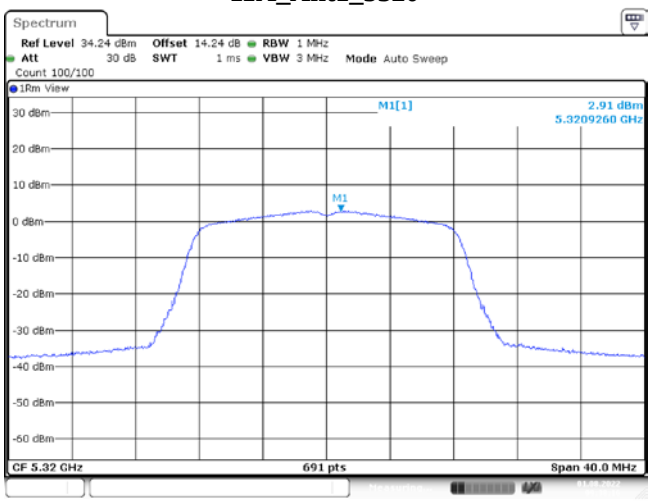
11A_Ant1_5260



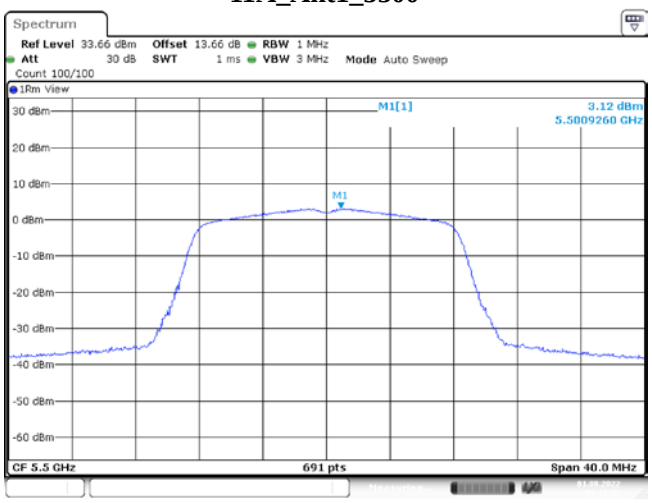
11A_Ant1_5280



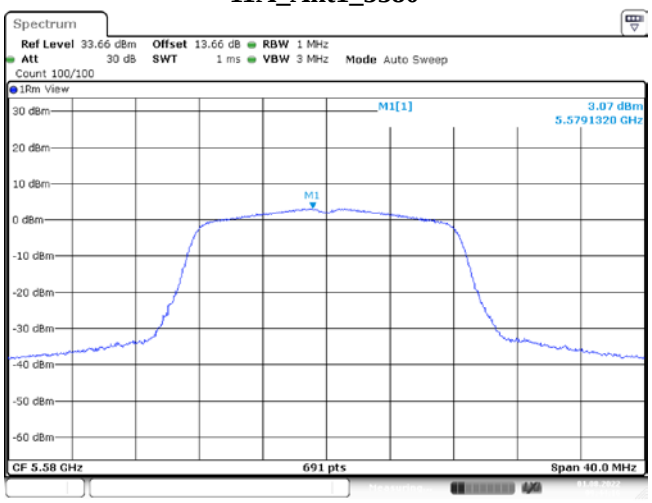
11A_Ant1_5320



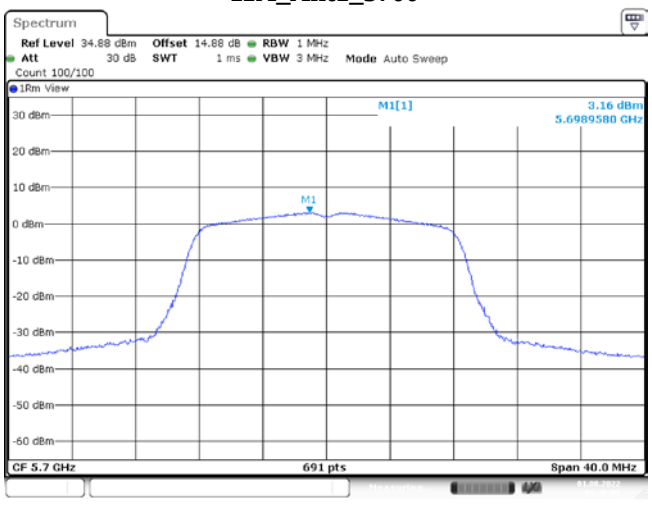
11A_Ant1_5500



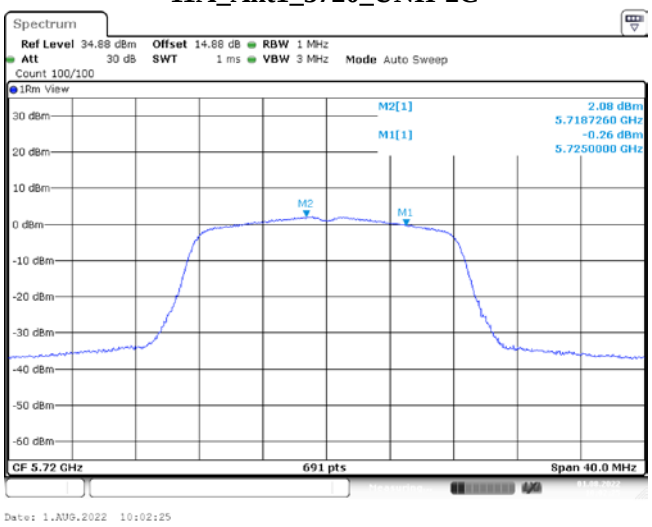
11A_Ant1_5580



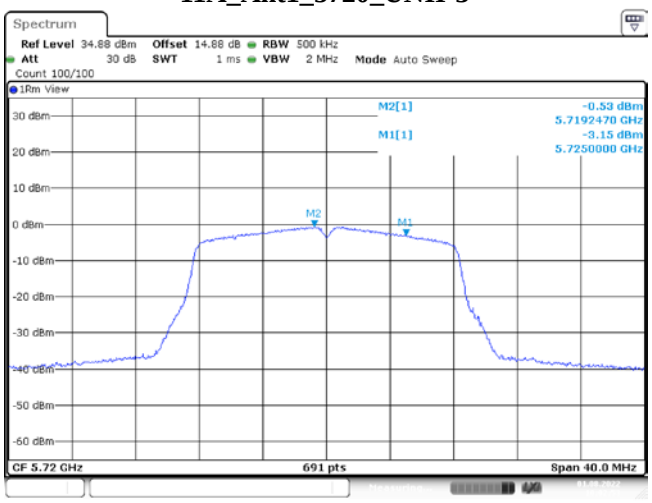
11A_Ant1_5700



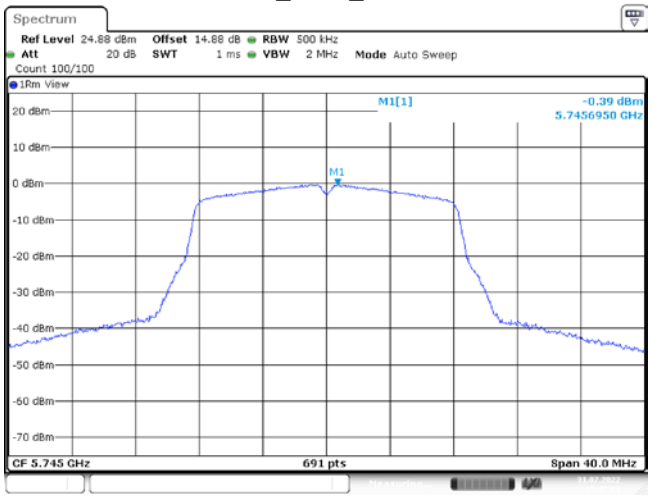
11A_Ant1_5720_UNII-2C



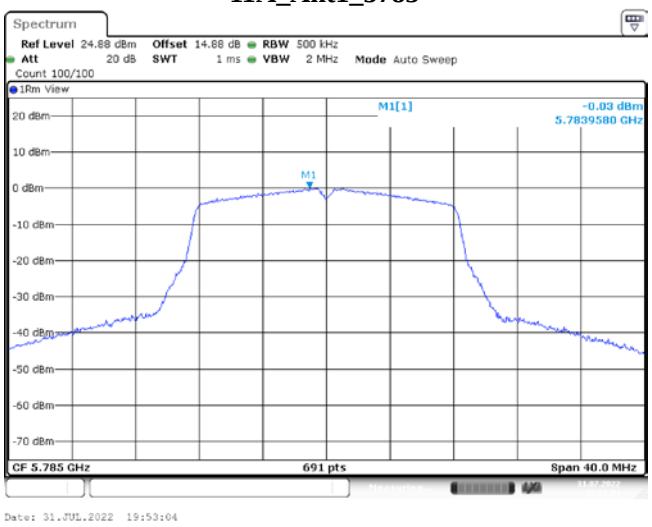
11A_Ant1_5720_UNII-3



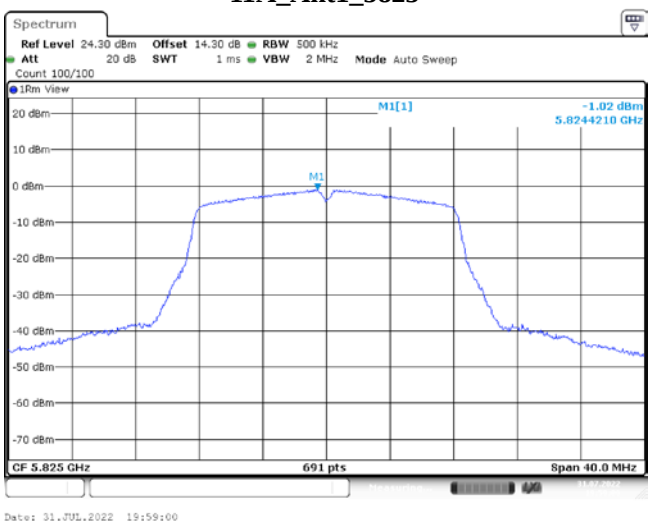
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



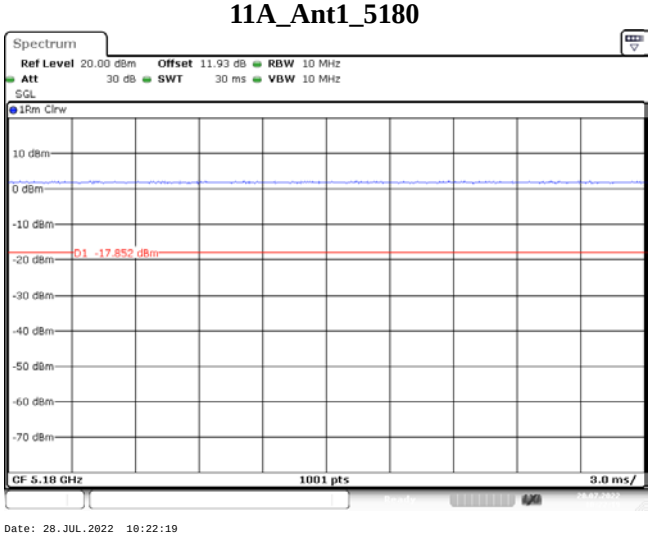
Appendix D: Duty Cycle

Test Result

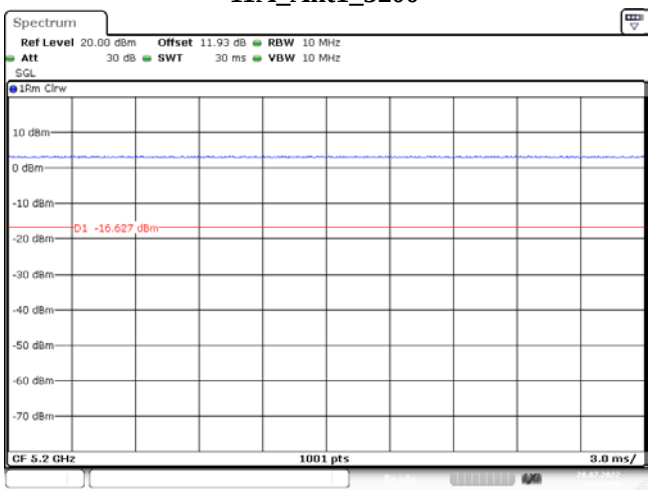
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	30.00	30.00	100.00
		5200	30.00	30.00	100.00
		5240	30.00	30.00	100.00
		5260	30.00	30.00	100.00
		5280	30.00	30.00	100.00
		5320	30.00	30.00	100.00
		5500	30.00	30.00	100.00
		5580	30.00	30.00	100.00
		5700	30.00	30.00	100.00
		5720	30.00	30.00	100.00
		5745	30.00	30.00	100.00
		5785	30.00	30.00	100.00
		5825	30.00	30.00	100.00

Test Graphs

11A_Ant1_5180

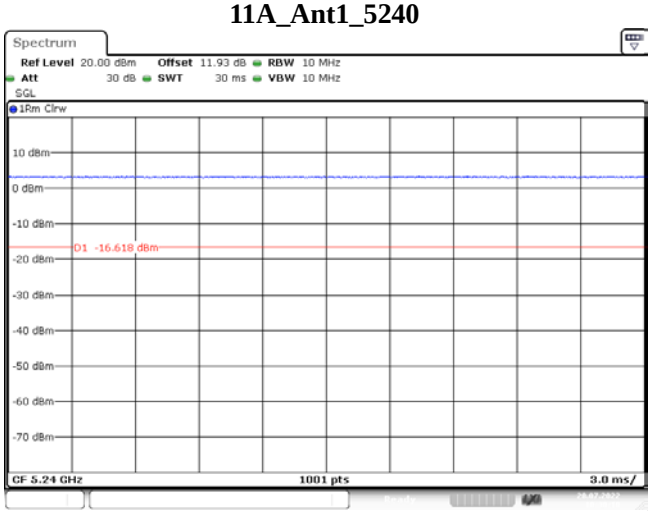


11A_Ant1_5200



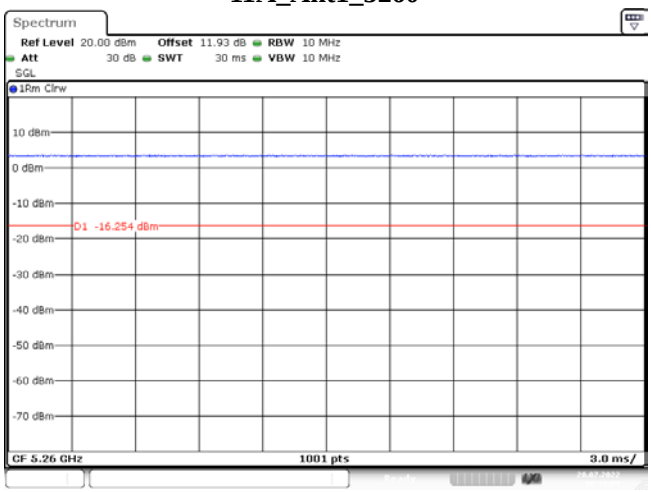
Date: 28.JUL.2022 10:26:10

11A_Ant1_5240



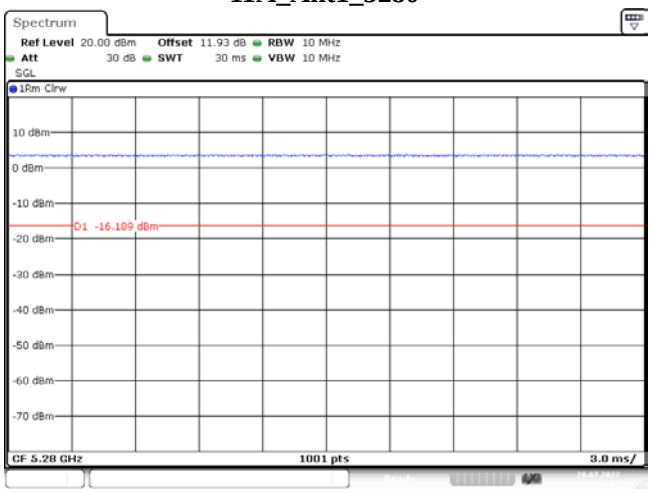
Date: 28.JUL.2022 10:30:10

11A_Ant1_5260



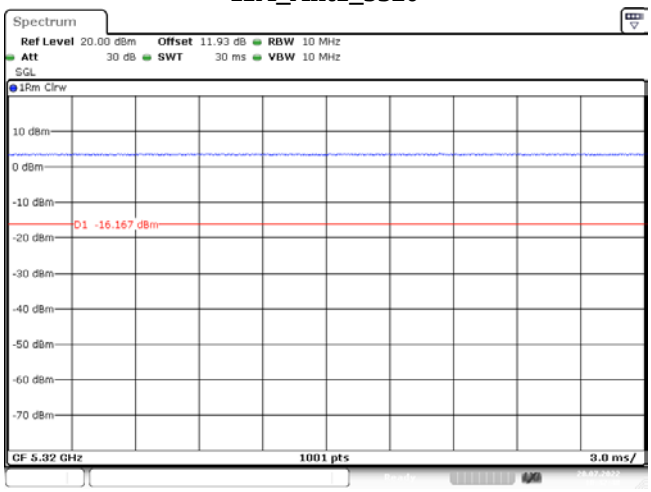
Date: 28.JUL.2022 10:33:09

11A_Ant1_5280



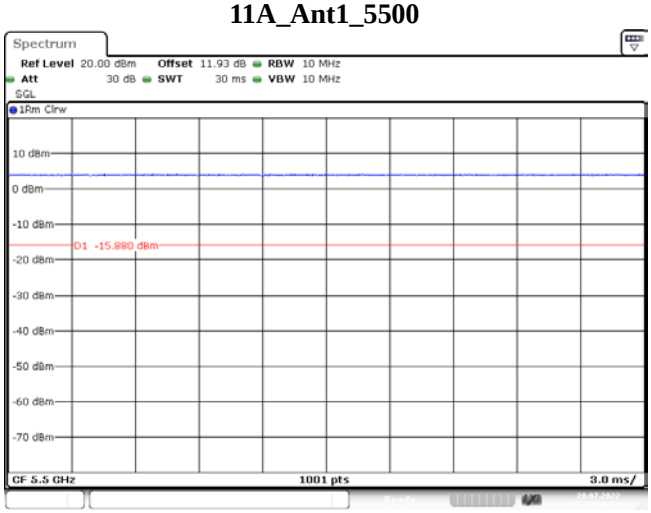
Date: 28.JUL.2022 10:37:09

11A_Ant1_5320



Date: 28.JUL.2022 10:42:48

11A_Ant1_5500



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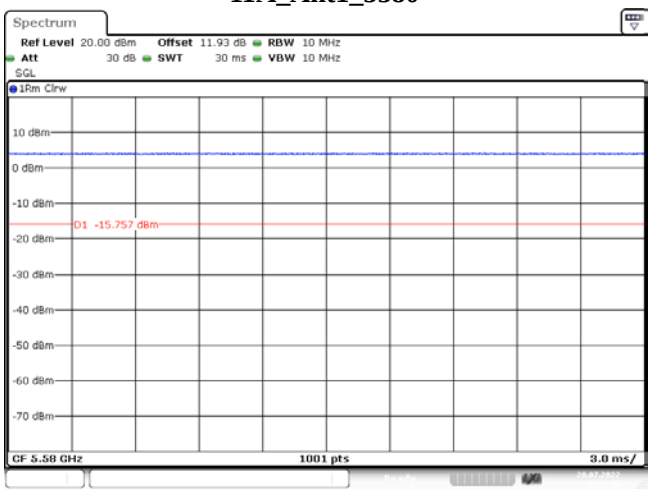

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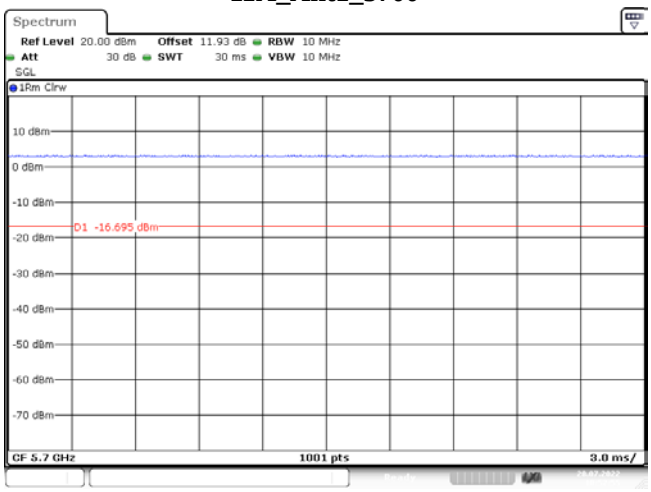

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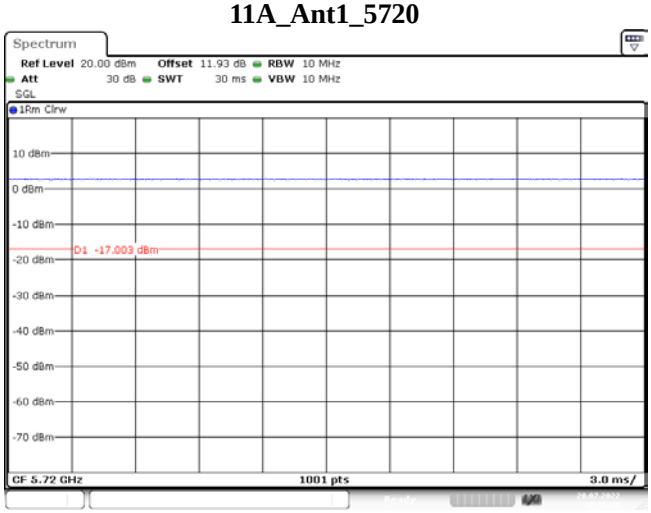

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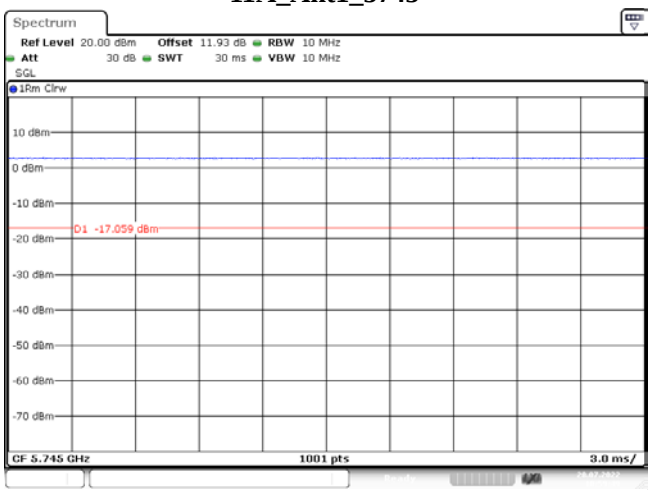

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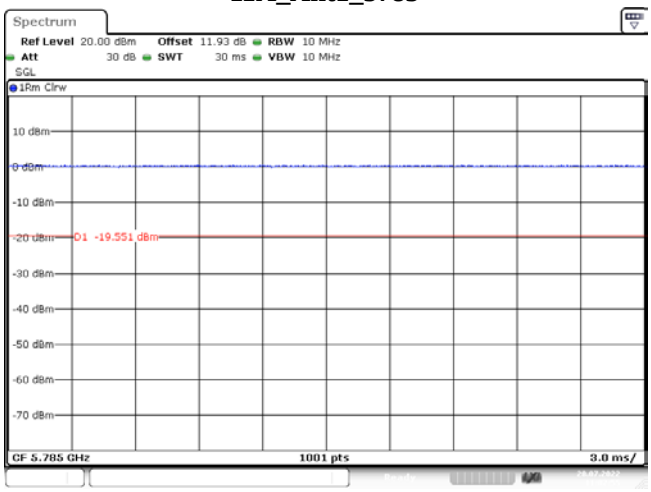

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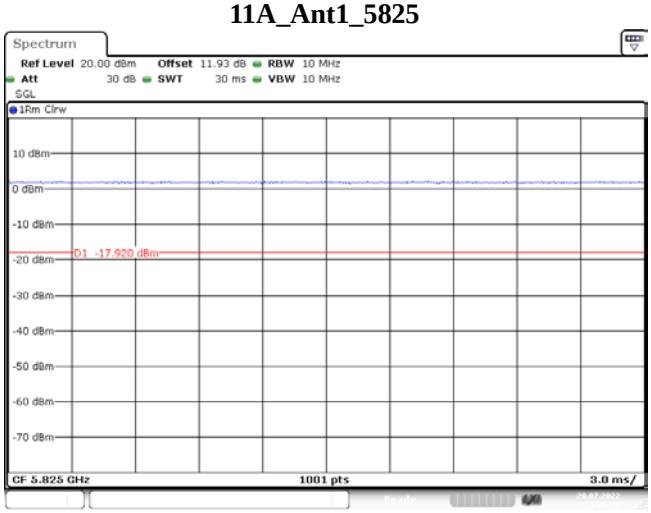

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