

FCC PART 15.407

TEST REPORT

For

Vanstone Electronic (Beijing) Co., Ltd.

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China 100195

FCC ID: OWLA80

Report Type: Original Report	Product Type: Smart POS Terminal
Report Number: SZXX1210513-17093E-RF-00D	
Report Date: 2021-09-01	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Smart POS Terminal
Tested Model	A80
Frequency Range	5G Wi-Fi: 5150-5250MHz; 5250-5350MHz; 5470-5725MHz; 5725-5850MHz
Mode	802.11a/n20/n40
Maximum Conducted Average Output Power	10.04dBm(5150-5250MHz) 9.43dBm(5250-5350MHz) 7.49dBm(5470-5725MHz) 8.22dBm(5725-5850MHz)
Modulation Technique	OFDM
Antenna Specification*	1.0dBi (provided by the applicant)
Voltage Range	DC 3.85V from battery or DC 5.0V from adapter
Sample serial number	SZXX1210513-17093E-RF-S_511 (Assigned by BACL, Shenzhen)
Received date	2021-05-13
Sample/EUT Status	Good condition
Adapter information	Model: SW-0018C Input: AC 100-240V ~ 50/60Hz, 0.2A Output: DC 5.0V, 1.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). 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 Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1°C
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West), 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

For 5150-5250MHz Band, 6 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240

For 802.11a/n20 mode, channel 36, 40 and 48 were tested. For 802.11n40 mode, channel 38 and 46 were tested.

For 5250-5350MHz Band, 6 channels are provided to testing:

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

For 802.11a/n20 mode, channel 52, 56 and 64 were tested. For 802.11n40 mode, channel 54 and 62 were tested.

For 5470-5725MHz Band, 16 channels are provided to testing:

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

For 802.11a/n20 mode, channel 100, 116 and 140 were tested. For 802.11n40 mode, channel 102, 110 and 134 were tested.

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	165	5825
157	5785	/	/

For 802.11a/n20 mode, channel 149, 157 and 165 were tested. For 802.11n40 mode, channel 151 and 159 were tested.

EUT Exercise Software

“QRCT3.0”* exercise software was used.

Test frequencies and power level were configured as below:

U-NII	Mode	Frequency (MHz)	Rate (Mbps)	Power Level*
5150~5250MHz	802.11 a	5180	6	16
		5200	6	16
		5240	6	16
	802.11 n20	5180	MCS0	16
		5200	MCS0	16
		5240	MCS0	16
	802.11 n40	5190	MCS0	13
		5230	MCS0	16
5250~5350MHz	802.11 a	5260	6	16
		5280	6	16
		5320	6	16
	802.11 n20	5260	MCS0	16
		5280	MCS0	16
		5320	MCS0	16
	802.11 n40	5270	MCS0	16
		5310	MCS0	16
5470~5725MHz	802.11 a	5500	6	16
		5580	6	16
		5700	6	16
	802.11 n20	5500	MCS0	16
		5580	MCS0	16
		5700	MCS0	16
	802.11 n40	5510	MCS0	16
		5550	MCS0	16
		5670	MCS0	16

U-NII	Mode	Frequency (MHz)	Rate (Mbps)	Power Level*
5725~5850MHz	802.11 a	5745	6	16
		5785	6	16
		5825	6	16
	802.11 n20	5745	MCS0	16
		5785	MCS0	16
		5825	MCS0	16
	802.11 n40	5755	MCS0	16
		5795	MCS0	16

Note 1: The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the output power and PSD across all data rated bandwidths, and modulations.

Note 2: 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.

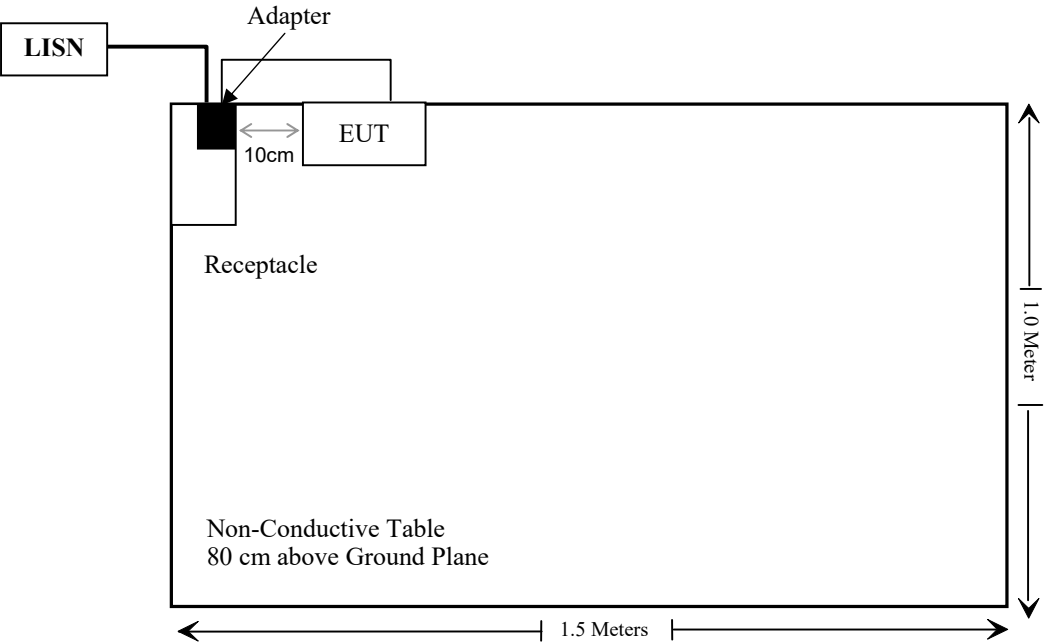
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable DC cable	1.0	Adapter	EUT

Block Diagram of Test Setup



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)	Compliant*

Not Applicable: the EUT has no TPC function which was declared by the applicant.

Compliant*: Please refer to the DFS report SZXX1210513-17093E-RF-00E.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2020/08/04	2021/08/03
Rohde & Schwarz	LISN	ENV216	101613	2020/08/04	2021/08/03
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2020/11/29	2021/11/28
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2020/11/29	2021/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
SNSD	Band Reject filter	BSF5150-5850MN-0899-004	5G filter	2021/04/20	2022/04/20
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05
Ducommun Technologies	Horn antenna	ARH-2823-02	1007726-02 1302	2020/12/06	2023/12/05
RF Conducted Test					
Tonscend Corporation	RF control Unit	JS0806-2	19D8060154	2020/08/04	2021/08/03
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2020/08/04	2021/08/03
Unknown	RF Cable	Unknown	2301 276	2020/11/29	2021/11/28

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) 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: SZXX1210513-17093E-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 which was permanently attached for 5G Wi-Fi, the antenna gain is 1.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

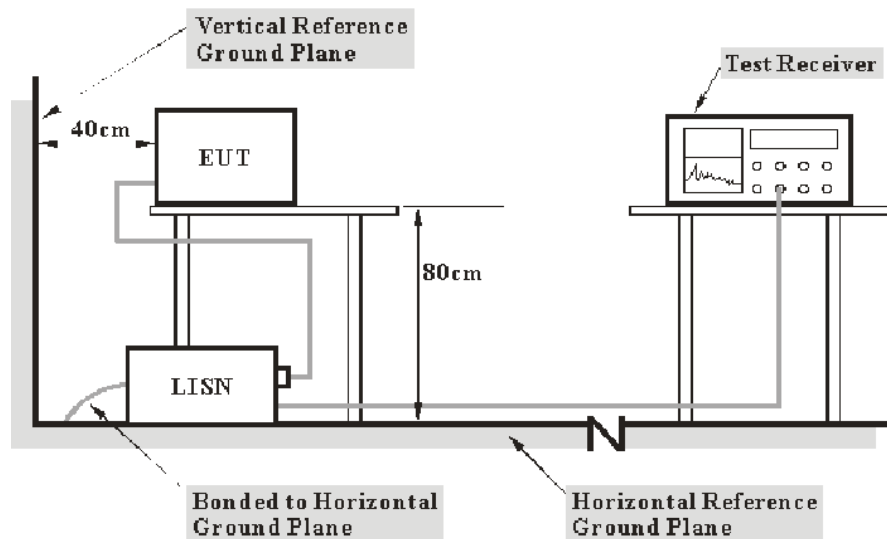
Result: Compliant.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

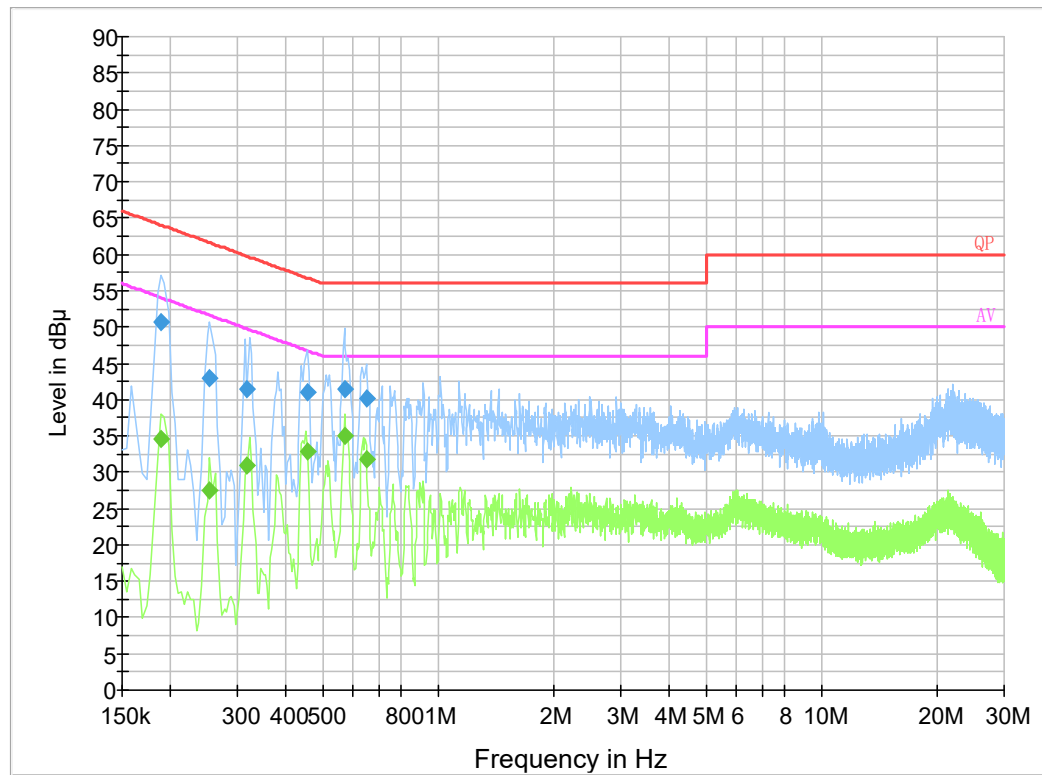
All data was recorded in the Quasi-peak and Average detection mode.

Test Data**Environmental Conditions**

Temperature:	27 °C
Relative Humidity:	71 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2021-05-29.

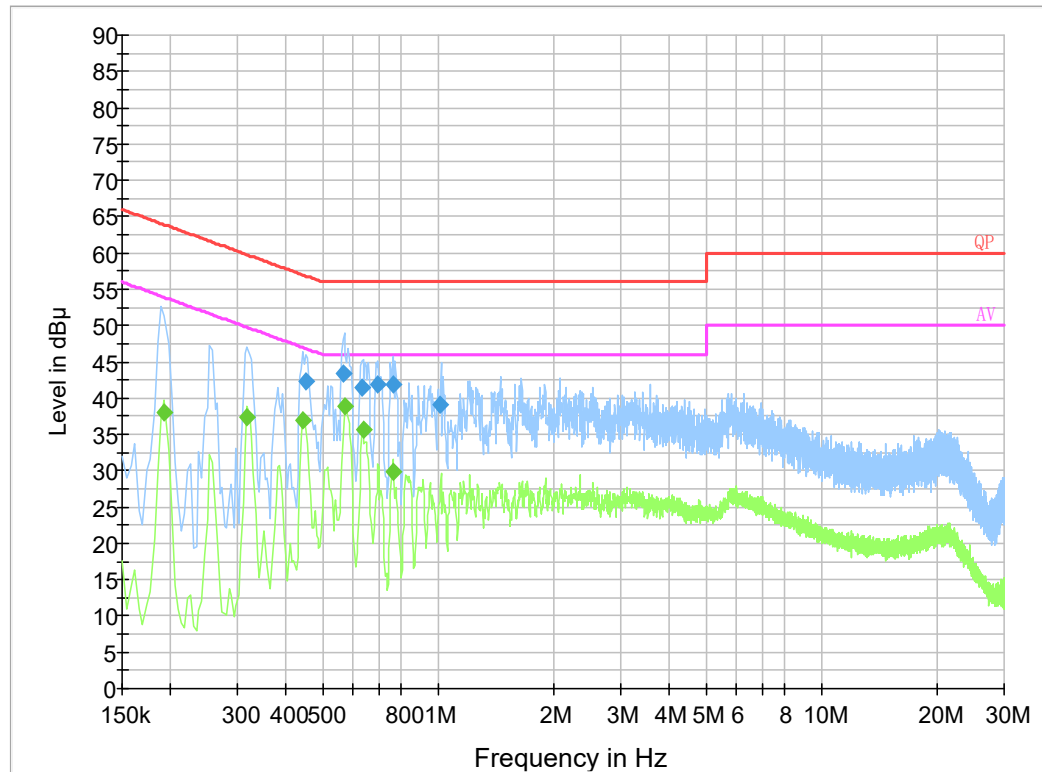
EUT operation mode: Transmitting

AC 120V/60 Hz, Line:**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.189500	50.7	9.000	L1	19.8	13.4	64.1
0.253500	42.9	9.000	L1	19.8	18.7	61.6
0.317170	41.4	9.000	L1	19.8	18.4	59.8
0.455130	40.9	9.000	L1	19.8	15.9	56.8
0.573450	41.4	9.000	L1	19.8	14.6	56.0
0.652250	40.2	9.000	L1	19.8	15.8	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.189500	34.5	9.000	L1	19.8	19.6	54.1
0.253500	27.6	9.000	L1	19.8	24.0	51.6
0.317170	31.0	9.000	L1	19.8	18.8	49.8
0.455130	32.9	9.000	L1	19.8	13.9	46.8
0.573450	35.0	9.000	L1	19.8	11.0	46.0
0.652250	31.7	9.000	L1	19.8	14.3	46.0

AC 120V/60 Hz, Neutral:**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.451310	42.4	9.000	N	19.8	14.5	56.9
0.565450	43.5	9.000	N	19.8	12.5	56.0
0.632430	41.4	9.000	N	19.8	14.6	56.0
0.699530	41.8	9.000	N	19.8	14.2	56.0
0.762570	41.8	9.000	N	19.8	14.2	56.0
1.014730	39.1	9.000	N	19.8	16.9	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.194000	37.9	9.000	N	19.8	16.0	53.9
0.318000	37.4	9.000	N	19.7	12.4	49.8
0.446000	37.0	9.000	N	19.8	9.9	46.9
0.574000	38.9	9.000	N	19.8	7.1	46.0
0.638000	35.6	9.000	N	19.8	10.4	46.0
0.762000	29.8	9.000	N	19.8	16.2	46.0

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

Applicable Standard

FCC §15.407 (b); §15.209; §15.205;

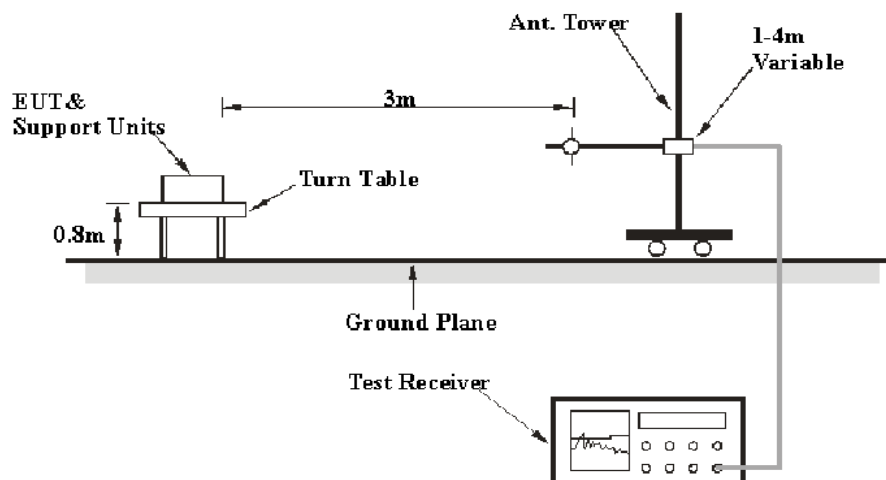
(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

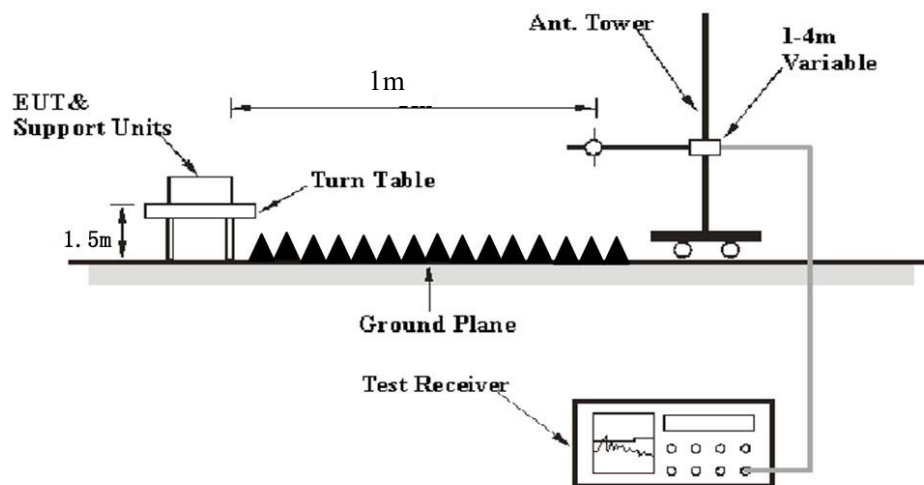
- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

EUT Setup

Below 1 GHz:



Above 1 GHz:

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

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

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

Note 2: when duty cycle is less than 98%

Test Procedure**Radiated Spurious Emission**

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

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

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

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

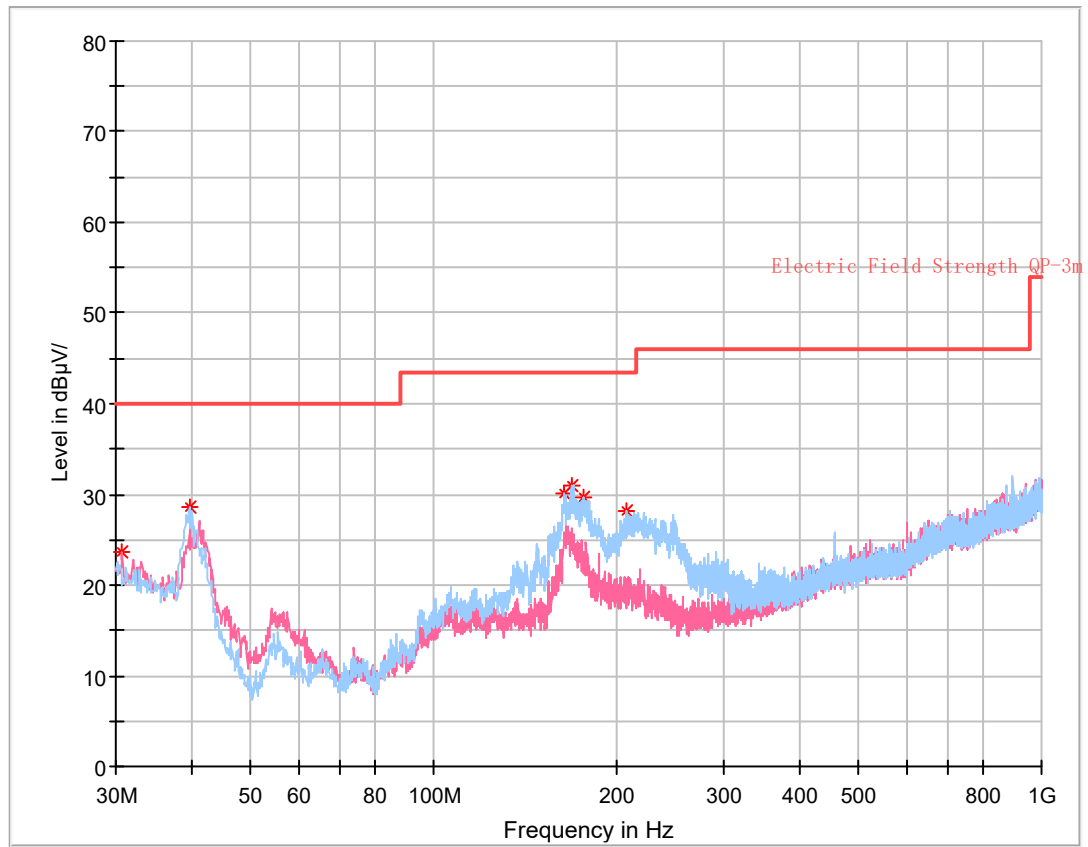
Test Data

Environmental Conditions

Temperature:	28.3~29.3 °C
Relative Humidity:	50~59 %
ATM Pressure:	101~101.1 kPa

The testing was performed by Zero Yan on 2021-05-29 for below 1GHz and Bruce Lin on 2021-06-07 and Alan He 2021-06-03 for above 1GHz.

EUT operation mode: Transmitting

30 MHz – 1 GHz: (worst case is 802.11a mode 5180 MHz)**Critical Freqs**

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.727500	23.72	40.00	16.28	100.0	V	120.0	-4.1
39.578750	28.65	40.00	11.35	100.0	H	102.0	-10.1
164.102500	30.09	43.50	13.41	200.0	H	113.0	-12.0
168.588750	31.07	43.50	12.43	200.0	H	92.0	-12.1
176.833750	29.65	43.50	13.85	200.0	H	80.0	-12.2
208.116250	28.16	43.50	15.34	100.0	H	84.0	-11.2

1 ~ 40 GHz:

Note: The test distance is 1m, so the correct factor from 3m to 1m is $20\log(3/1)=9.5\text{dB}$ which was added into the final limit.

5150-5250 MHz:

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part15.407	
	Reading (dBµV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11a									
5180 MHz									
5148.87	31.08	PK	99	2.1	H	38.36	69.44	83.5	14.06
5148.87	18.40	Ave.	99	2.1	H	38.36	56.76	63.5	6.74
5352.58	31.98	PK	196	2.2	H	39.09	71.07	83.5	12.43
5352.58	18.42	Ave.	196	2.2	H	39.09	57.51	63.5	5.99
10360.00	43.99	PK	264	1.0	H	17.42	61.41	77.7	16.29
5200 MHz									
10400.00	43.25	PK	89	2.1	H	17.52	60.77	77.7	16.93
5240 MHz									
5149.86	31.78	PK	97	2.1	H	38.36	70.14	83.5	13.36
5149.86	18.57	Ave.	97	2.1	H	38.36	56.93	63.5	6.57
5351.33	31.83	PK	53	1.6	H	39.09	70.92	83.5	12.58
5351.33	18.27	Ave.	53	1.6	H	39.09	57.36	63.5	6.14
10480.00	43.41	PK	60	2.5	H	17.25	60.66	77.7	17.04
802.11n20									
5180 MHz									
5148.47	31.84	PK	42	1.2	H	38.36	70.20	83.5	13.30
5148.47	18.27	Ave.	42	1.2	H	38.36	56.63	63.5	6.87
5351.81	31.52	PK	225	2.1	H	39.09	70.61	83.5	12.89
5351.81	18.64	Ave.	225	2.1	H	39.09	57.73	63.5	5.77
10360.00	42.93	PK	88	2.4	H	17.42	60.35	77.7	17.35
5200 MHz									
10400.00	43.09	PK	241	2.2	H	17.52	60.61	77.7	17.09
5240 MHz									
5148.40	31.59	PK	307	2.4	H	38.36	69.95	83.5	13.55
5148.40	18.26	Ave.	307	2.4	H	38.36	56.62	63.5	6.88
5350.10	31.17	PK	145	1.5	H	39.09	70.26	83.5	13.24
5350.10	18.35	Ave.	145	1.5	H	39.09	57.44	63.5	6.06
10480.00	43.11	PK	248	1.6	H	17.25	60.36	77.7	17.34

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
5149.36	31.83	PK	5	1.7	H	38.36	70.19	83.5	13.31
5149.36	18.26	Ave.	5	1.7	H	38.36	56.62	63.5	6.88
5352.93	31.53	PK	140	1.1	H	39.09	70.62	83.5	12.88
5352.93	18.21	Ave.	140	1.1	H	39.09	57.30	63.5	6.20
10380.00	42.88	PK	318	2.0	H	17.42	60.30	77.7	17.40
5230 MHz									
5149.99	31.43	PK	234	1.2	H	38.36	69.79	83.5	13.71
5149.99	18.62	Ave.	234	1.2	H	38.36	56.98	63.5	6.52
5352.73	31.80	PK	193	1.9	H	39.09	70.89	83.5	12.61
5352.73	18.52	Ave.	193	1.9	H	39.09	57.61	63.5	5.89
10460.00	43.35	PK	45	1.3	H	17.42	60.77	77.7	16.93

5250-5350 MHz:

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5260 MHz									
5149.19	32.38	PK	310	2.5	H	38.36	70.74	83.5	12.76
5149.19	18.46	Ave.	310	2.5	H	38.36	56.82	63.5	6.68
5351.35	32.08	PK	103	1.7	H	39.09	71.17	83.5	12.33
5351.35	18.51	Ave.	103	1.7	H	39.09	57.60	63.5	5.90
10520.00	43.24	PK	316	1.3	H	17.25	60.49	77.7	17.21
5280 MHz									
10560.00	43.11	PK	341	1.0	H	17.91	61.02	77.7	16.68
5320 MHz									
5148.13	32.02	PK	4	2.0	H	38.36	70.38	83.5	13.12
5148.13	18.49	Ave.	4	2.0	H	38.36	56.85	63.5	6.65
5351.69	41.35	PK	300	1.5	H	39.09	80.44	83.5	3.06
5351.69	21.55	Ave.	300	1.5	H	39.09	60.64	63.5	2.86
10640.00	43.38	PK	330	1.0	H	18.01	61.39	83.5	22.11
10640.00	28.67	Ave.	330	1.0	H	18.01	46.68	63.5	16.82
802.11n20									
5260 MHz									
5149.91	32.30	PK	357	1.1	H	38.36	70.66	83.5	12.84
5149.91	18.46	Ave.	357	1.1	H	38.36	56.82	63.5	6.68
5350.67	32.34	PK	338	1.8	H	39.09	71.43	83.5	12.07
5350.67	18.29	Ave.	338	1.8	H	39.09	57.38	63.5	6.12
10520.00	43.58	PK	316	1.2	H	17.25	60.83	77.7	16.87
5280 MHz									
10560.00	43.37	PK	95	1.8	H	17.91	61.28	77.7	16.42
5320 MHz 16									
5149.72	32.17	PK	247	1.6	H	38.36	70.53	83.5	12.97
5149.72	18.51	Ave.	247	1.6	H	38.36	56.87	63.5	6.63
5351.67	40.84	PK	126	2.3	H	39.09	79.93	83.5	3.57
5351.67	21.63	Ave.	126	2.3	H	39.09	60.72	63.5	2.78
10640.00	42.96	PK	142	1.6	H	18.01	60.97	83.5	22.53
10640.00	29.02	Ave.	142	1.6	H	18.01	47.03	63.5	16.47

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5270 MHz									
5149.08	32.12	PK	170	1.5	H	38.36	70.48	83.5	13.02
5149.08	18.37	Ave.	170	1.5	H	38.36	56.73	63.5	6.77
5351.14	32.56	PK	211	2.5	H	39.09	71.65	83.5	11.85
5351.14	18.55	Ave.	211	2.5	H	39.09	57.64	63.5	5.86
10540.00	43.48	PK	136	1.8	H	17.25	60.73	77.7	16.97
5310 MHz									
5148.68	32.08	PK	330	2.5	H	38.36	70.44	83.5	13.06
5148.68	18.40	Ave.	330	2.5	H	38.36	56.76	63.5	6.74
5351.49	38.54	PK	331	2.1	H	39.09	77.63	83.5	5.87
5351.49	21.67	Ave.	331	2.1	H	39.09	60.76	63.5	2.74
10620.00	43.67	PK	8	1.7	H	18.01	61.68	83.5	21.82
10620.00	28.62	Ave.	8	1.7	H	18.01	46.63	63.5	16.87

5470-5725MHz:

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5500 MHz									
5469.61	35.12	PK	336	1.2	H	39.37	74.49	77.7	3.21
5728.47	32.48	PK	230	1.2	H	39.49	71.97	77.7	5.73
11000.00	43.36	PK	189	1.8	H	17.66	61.02	83.5	22.48
11000.00	29.07	Ave.	189	1.8	H	17.66	46.73	63.5	16.77
5580 MHz									
11160.00	43.06	PK	226	1.8	H	17.39	60.45	83.5	23.05
11160.00	28.91	Ave.	226	1.8	H	17.39	46.30	63.5	17.20
5700 MHz									
5468.29	32.25	PK	275	1.4	H	39.37	71.62	77.7	6.08
5729.17	35.07	PK	221	1.1	H	39.49	74.56	77.7	3.14
11400.00	43.48	PK	323	1.9	H	17.73	61.21	83.5	22.29
11400.00	28.86	Ave.	323	1.9	H	17.73	46.59	63.5	16.91
802.11n20									
5500 MHz									
5467.86	34.84	PK	320	2.4	H	39.37	74.21	77.7	3.49
5729.43	32.56	PK	56	2.1	H	39.49	72.05	77.7	5.65
11000.00	43.09	PK	98	2.3	H	17.66	60.75	83.5	22.75
11000.00	29.08	Ave.	98	2.3	H	17.66	46.74	63.5	16.76
5580 MHz									
11160.00	42.99	PK	178	1.8	H	17.39	60.38	83.5	23.12
11160.00	28.92	AV	178	1.8	H	17.39	46.31	63.5	17.19
5700 MHz									
5468.13	32.82	PK	59	1.2	H	39.37	72.19	77.7	5.51
5725.80	34.96	PK	170	2.3	H	39.49	74.45	77.7	3.25
11400.00	43.64	PK	78	1.3	H	17.73	61.37	83.5	22.13
11400.00	29.02	Ave.	78	1.3	H	17.73	46.75	63.5	16.75

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5510 MHz									
5468.68	34.95	PK	0	1.9	H	39.37	74.32	77.7	3.38
5725.92	33.17	PK	282	1.1	H	39.49	72.66	77.7	5.04
11020.00	43.16	PK	227	1.3	H	17.66	60.82	83.5	22.68
11020.00	28.64	Ave.	227	1.3	H	17.66	46.30	63.5	17.20
5550 MHz									
11100.00	43.71	PK	149	2.1	H	16.72	60.43	77.7	17.27
11100.00	28.94	Ave.	149	2.1	H	16.72	45.66	63.5	17.84
5670 MHz									
5469.67	33.64	PK	63	2.3	H	39.37	73.01	77.7	4.69
5725.87	33.47	PK	150	2.3	H	39.49	72.96	77.7	4.74
11340.00	43.44	PK	52	1.5	H	17.43	60.87	83.5	22.63
11340.00	28.93	Ave.	52	1.5	H	17.43	46.36	63.5	17.14

5725-5850 MHz:

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5645.63	32.14	PK	330	2.3	H	39.46	71.60	77.7	6.10
5699.07	33.57	PK	352	1.9	H	39.49	73.06	114.01	40.95
5712.55	42.95	PK	139	1.3	H	39.49	82.44	118.21	35.77
5724.03	49.57	PK	101	1.2	H	39.49	89.06	129.49	40.43
11490.00	43.64	PK	21	1.6	H	17.47	61.11	83.5	22.39
11490.00	28.99	Ave.	21	1.6	H	17.47	46.46	63.5	17.04
5785 MHz									
11570.00	42.92	PK	80	1.1	H	17.51	60.43	83.5	23.07
11570.00	29.01	Ave.	80	1.1	H	17.51	46.52	63.5	16.98
5825 MHz									
5854.85	33.57	PK	64	2.3	H	39.87	73.44	120.65	47.21
5862.85	34.91	PK	351	1.0	H	39.87	74.78	118.1	43.32
5889.14	35.17	PK	300	1.4	H	39.87	75.04	104.24	29.20
5926.42	34.12	PK	193	1.2	H	39.97	74.09	77.7	3.61
11650.00	42.94	PK	185	1.3	H	16.18	59.12	83.5	24.38
11650.00	29.28	Ave.	185	1.3	H	16.18	45.46	63.5	18.04
802.11n20									
5745 MHz									
5649.02	31.67	PK	148	1.4	H	39.46	71.13	77.7	6.57
5695.83	33.58	PK	336	2.5	H	39.49	73.07	111.61	38.54
5713.86	43.24	PK	178	1.1	H	39.49	82.73	118.58	35.85
5724.11	50.51	PK	309	2.1	H	39.49	90.00	129.68	39.68
11490.00	43.72	PK	162	2.2	H	17.47	61.19	83.5	22.31
11490.00	29.46	Ave.	162	2.2	H	17.47	46.93	63.5	16.57
5785 MHz									
11570.00	43.27	PK	343	2.3	H	17.51	60.78	83.5	22.72
11570.00	29.36	Ave.	343	2.3	H	17.51	46.87	63.5	16.63
5825 MHz									
5853.55	35.02	PK	1	2.1	H	39.87	74.89	123.6	48.71
5864.35	34.16	PK	317	2.1	H	39.87	74.03	117.68	43.65
5883.94	33.78	PK	33	1.6	H	39.87	73.65	108.08	34.43
5928.86	33.83	PK	32	1.8	H	39.97	73.80	77.7	3.90
11650.00	43.41	PK	313	1.4	H	16.18	59.59	83.5	23.91
11650.00	29.46	Ave.	313	1.4	H	16.18	45.64	63.5	17.86

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5510 MHz									
5645.12	32.17	PK	345	1.4	H	39.46	71.63	77.7	6.07
5695.52	33.14	PK	293	2.1	H	39.49	72.63	111.38	38.75
5715.33	47.35	PK	21	1.5	H	39.49	86.84	118.99	32.15
5722.72	48.37	PK	44	2.3	H	39.49	87.86	126.5	38.64
11020.00	43.65	PK	44	1.6	H	17.47	61.12	83.5	22.38
11020.00	29.36	Ave.	44	1.6	H	17.47	46.83	63.5	16.67
5795 MHz									
5853.14	35.61	PK	220	1.8	H	39.87	75.48	124.55	49.07
5857.28	34.25	PK	305	2.3	H	39.87	74.12	119.66	45.54
5879.46	33.95	PK	122	1.6	H	39.87	73.82	111.4	37.58
5931.00	34.18	PK	134	2.1	H	39.97	74.15	77.7	3.55
11590.00	43.48	PK	107	2.4	H	17.51	60.99	83.5	22.51
11590.00	29.30	Ave.	107	2.4	H	17.51	46.81	63.5	16.69

Note:

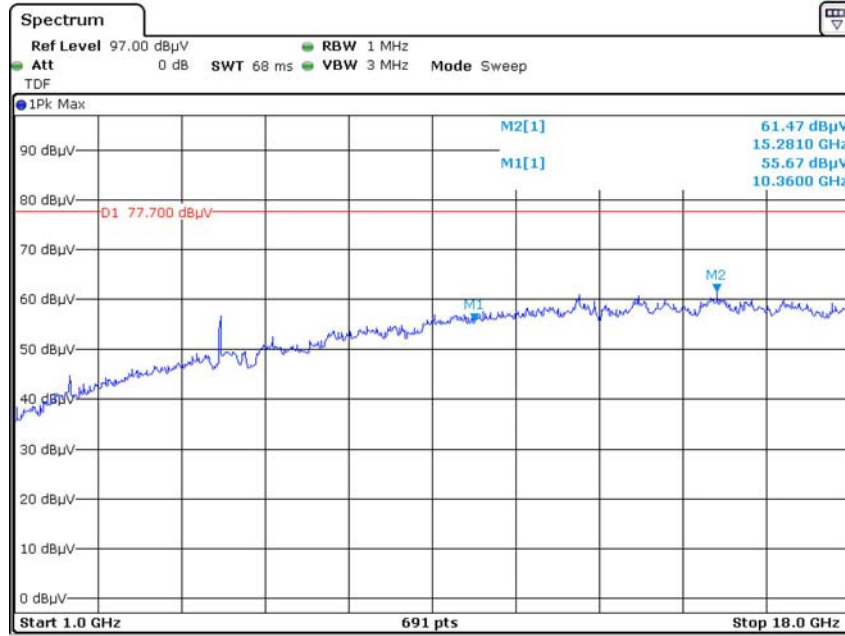
Corrected Amplitude = Corrected Factor + Reading

Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor

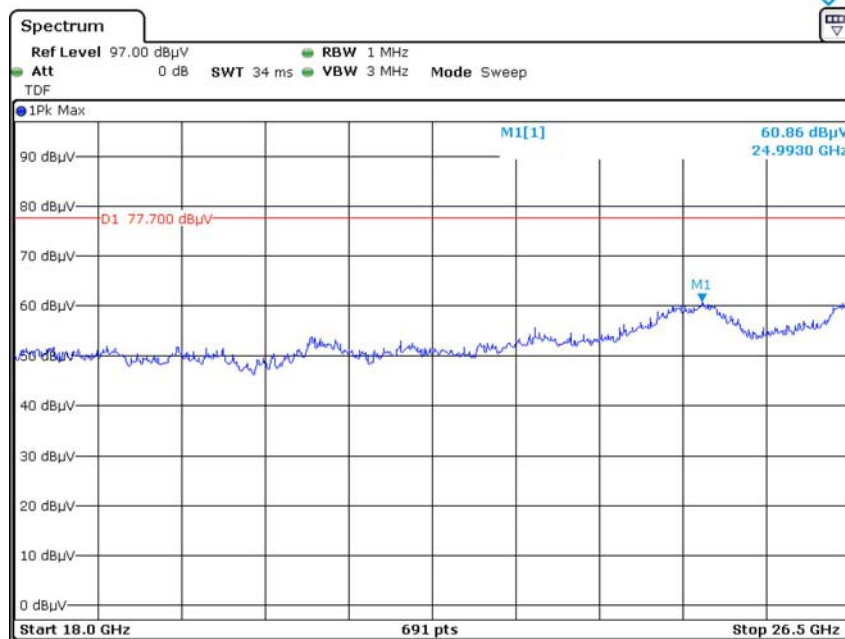
Margin = Limit- Corr. Amplitude

All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

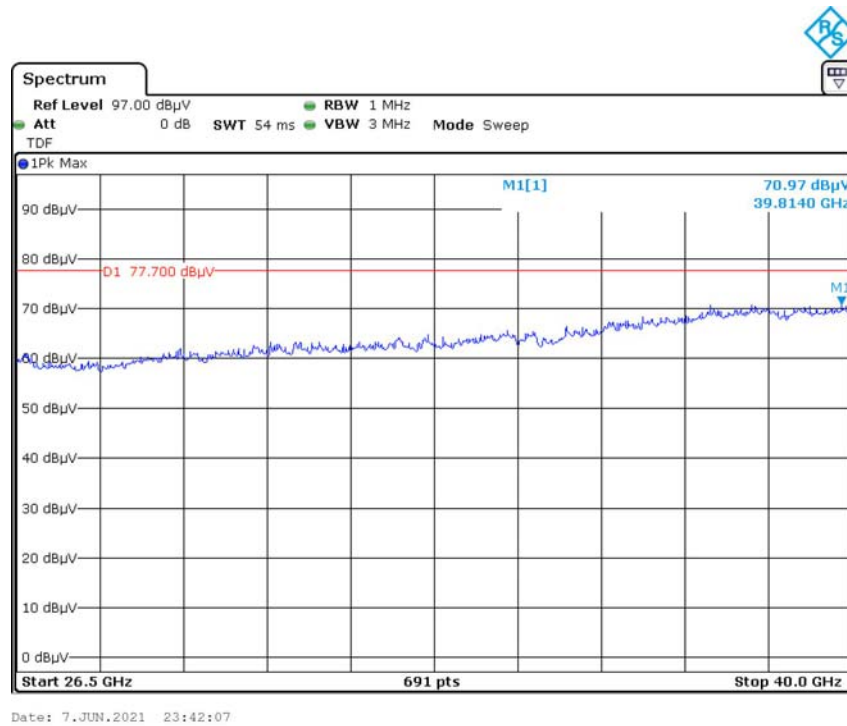
**Peak
Pre-scan with 802.11a 5180MHz
Horizontal**



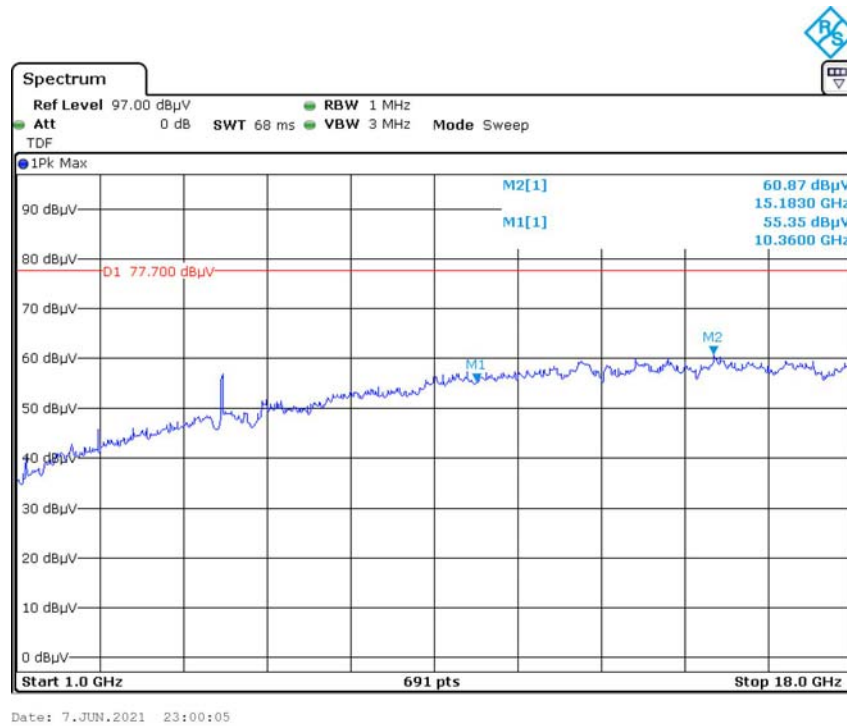
Date: 7.JUN.2021 22:54:44

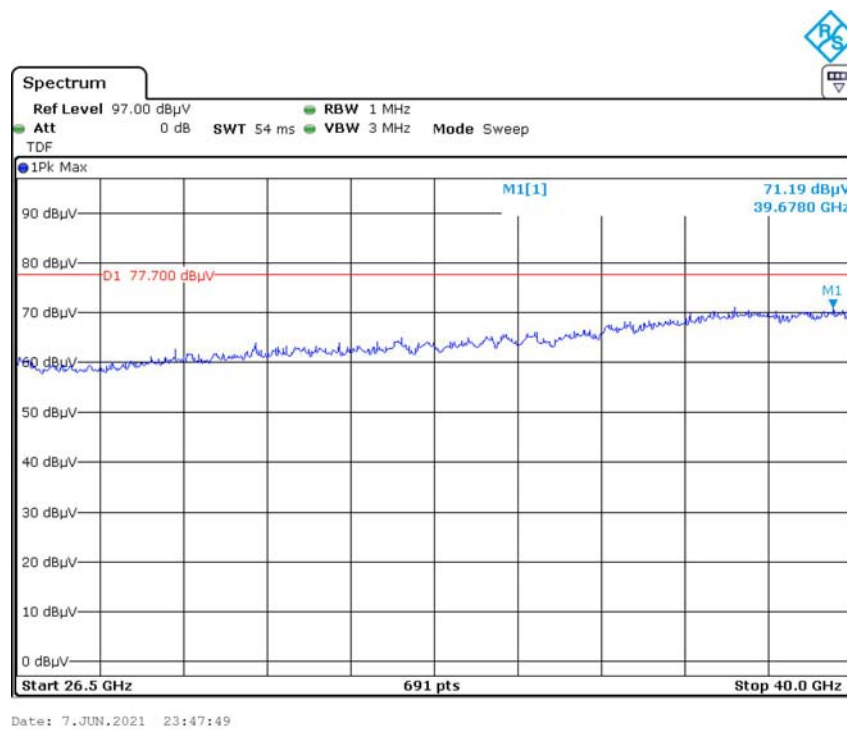
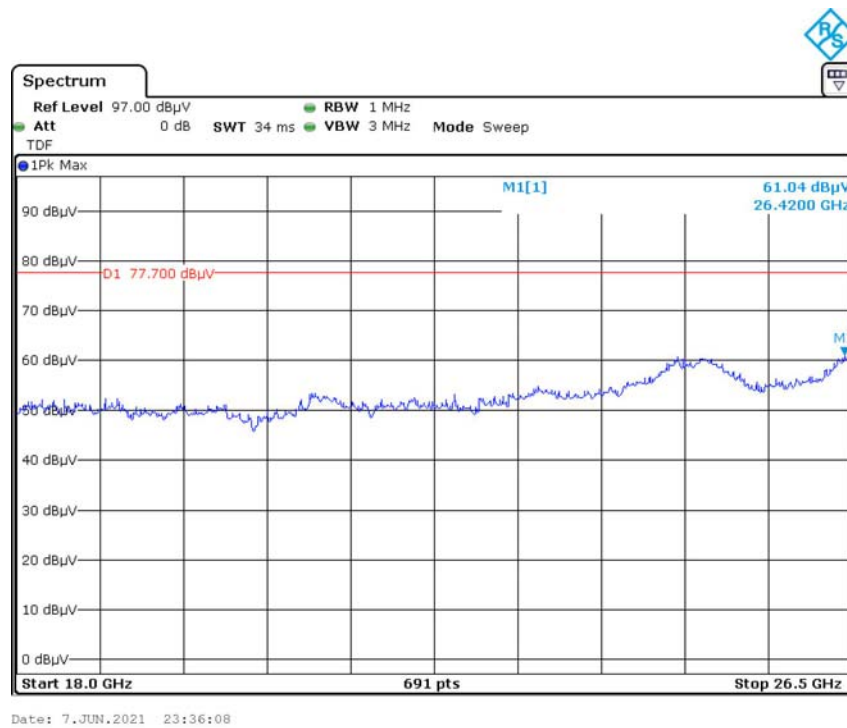


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Vertical





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

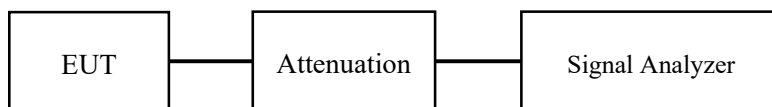
1. Emission Bandwidth (EBW)

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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:

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data**Environmental Conditions**

Temperature:	28.2 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Blaker Zhang from 2021-07-02 to 2021-07-03.

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.

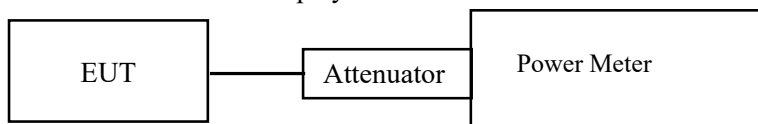
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting 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 $11 \text{ dBm} + 10 \log B$, 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:	28.2 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Blaker Zhang from 2021-07-02 to 2021-07-03.

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 $11 \text{ dBm} + 10 \log B$, 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 ($< 1 \text{ MHz}$, or $< 500 \text{ kHz}$) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

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

Test Data**Environmental Conditions**

Temperature:	28.2 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Blaker Zhang from 2021-07-02 to 2021-07-03.

EUT operation mode: Transmitting

Test Result: Pass

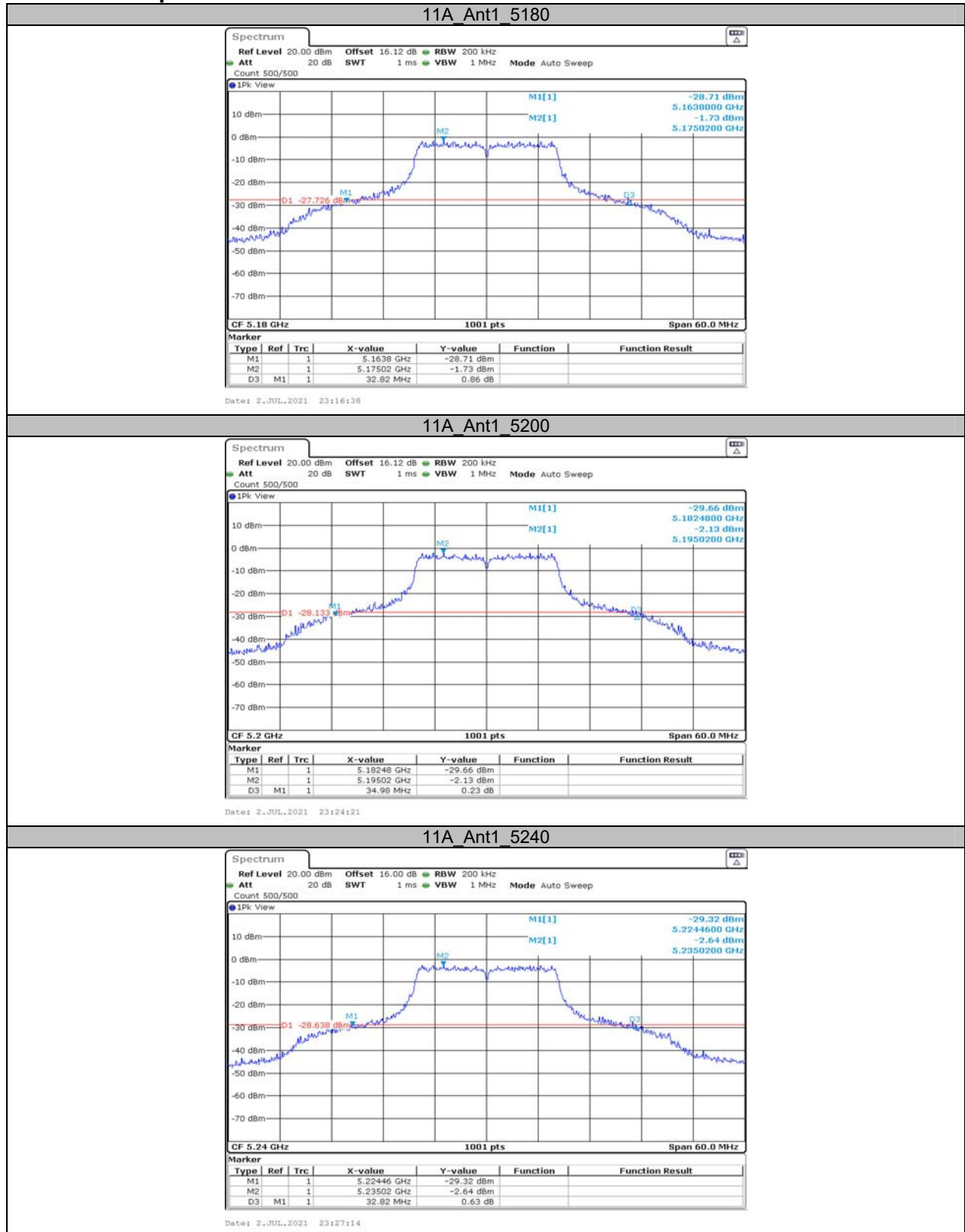
Please refer to the Appendix.

APPENDIX

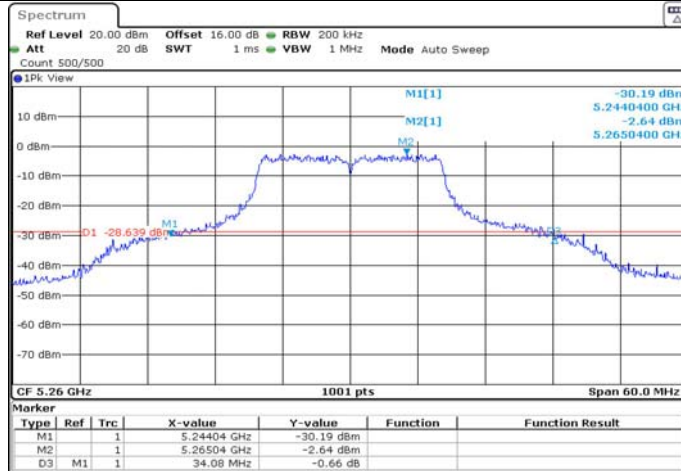
Appendix A1: Emission Bandwidth Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	32.820	---	PASS
		5200	34.980	---	PASS
		5240	32.820	---	PASS
		5260	34.080	---	PASS
		5280	38.400	---	PASS
		5320	37.980	---	PASS
		5500	38.400	---	PASS
		5580	39.480	---	PASS
11N20	Ant1	5700	32.040	---	PASS
		5180	37.860	---	PASS
		5200	38.580	---	PASS
		5240	34.500	---	PASS
		5260	36.240	---	PASS
		5280	36.420	---	PASS
		5320	40.740	---	PASS
		5500	39.660	---	PASS
11N40	Ant1	5580	39.600	---	PASS
		5700	34.680	---	PASS
		5190	70.900	---	PASS
		5230	76.000	---	PASS
		5270	76.000	---	PASS
		5310	85.900	---	PASS
		5510	85.700	---	PASS
	Ant1	5550	81.900	---	PASS
		5670	73.000	---	PASS

Test Graphs

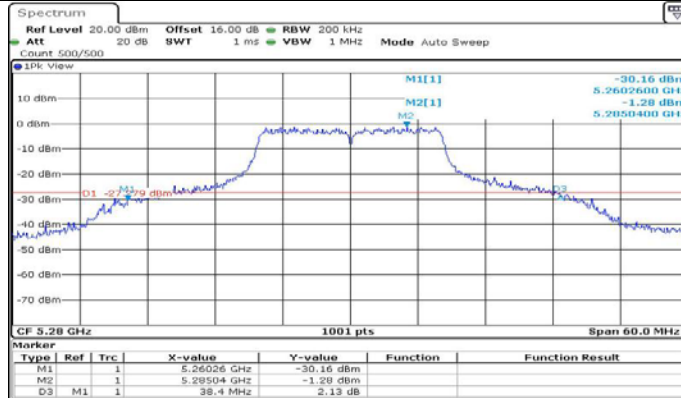


11A_Ant1_5260



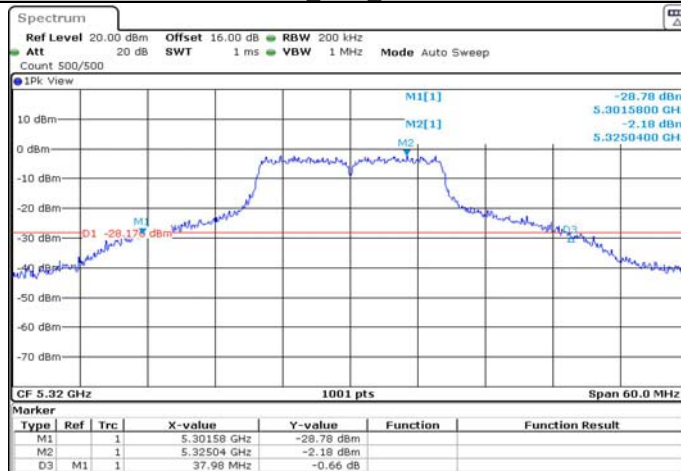
Date: 2.JUL.2021 23:33:24

11A_Ant1_5280



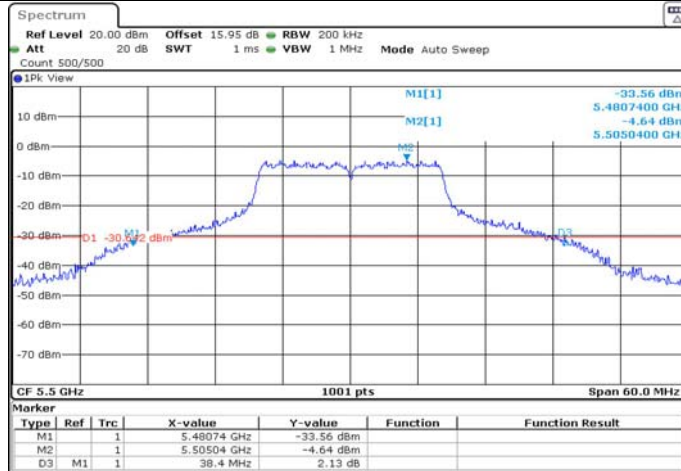
Date: 3.JUL.2021 03:45:40

11A_Ant1_5320



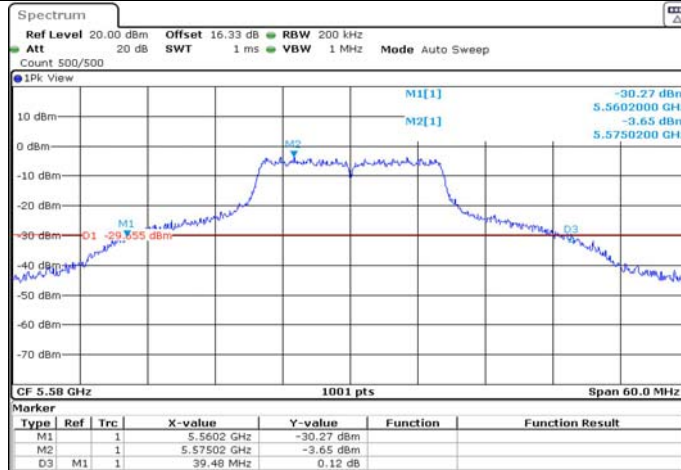
Date: 2.JUL.2021 23:37:47

11A Ant1_5500



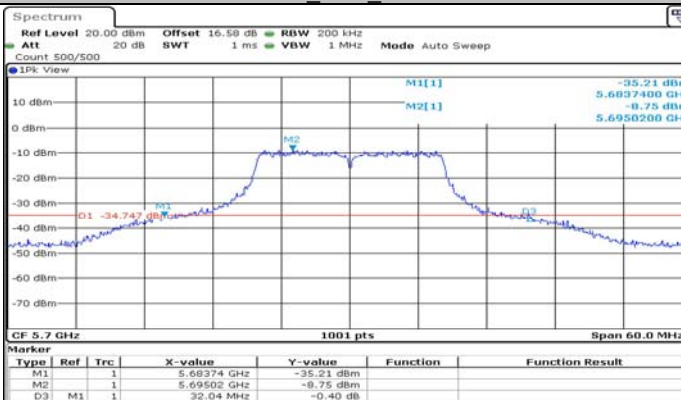
Date: 2.JUL.2021 23:39:06

11A Ant1_5580

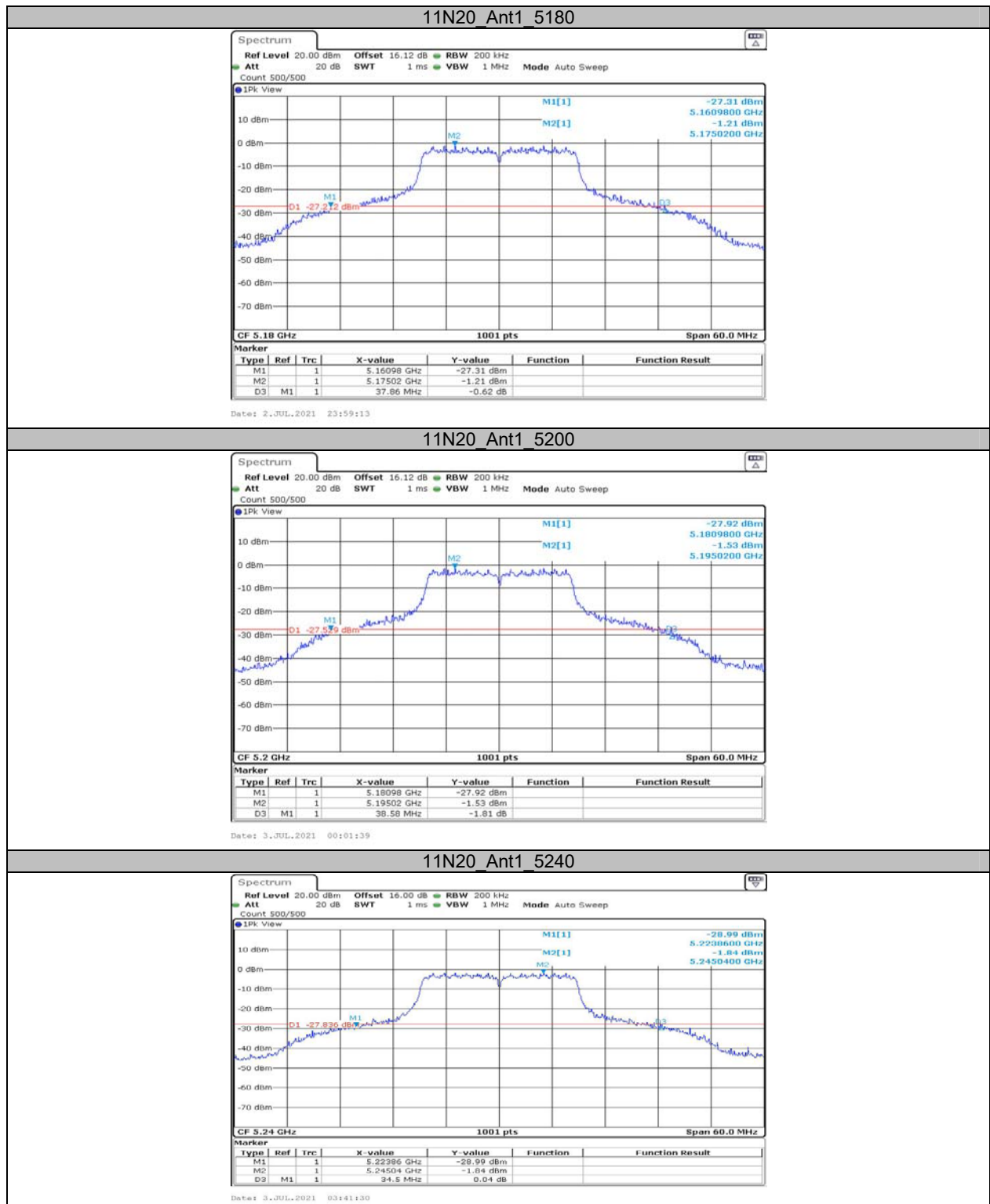


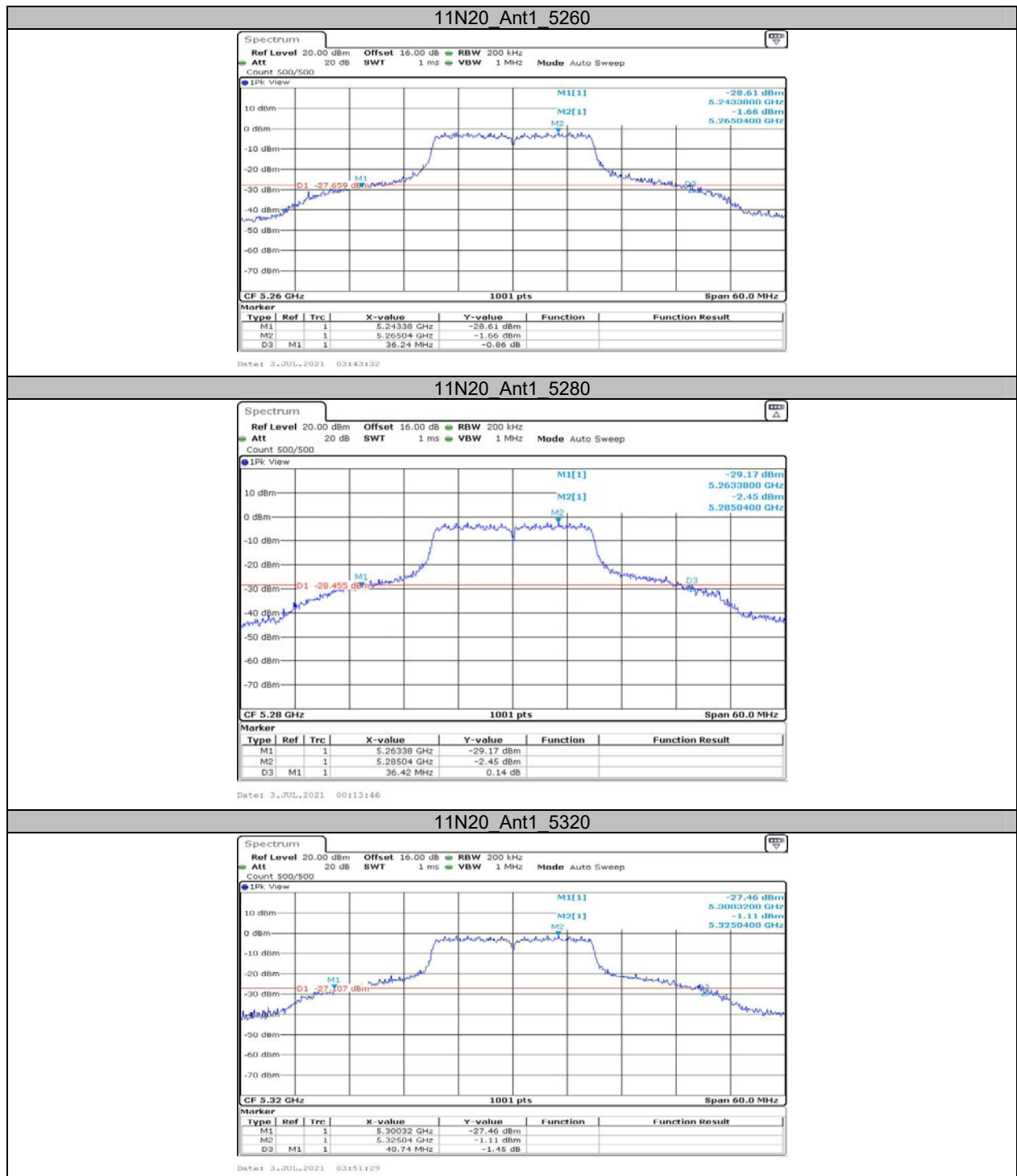
Date: 2.JUL.2021 23:42:23

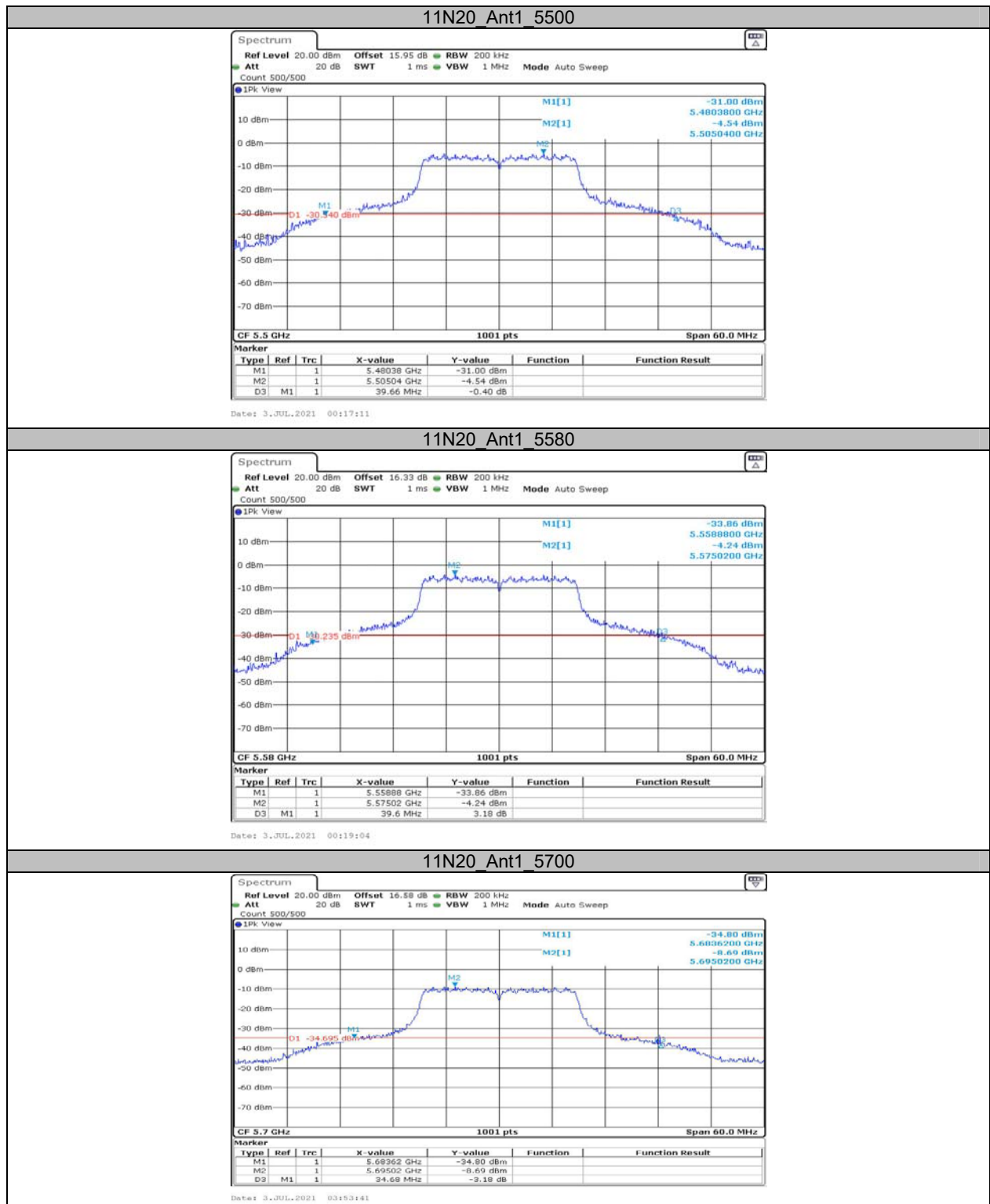
11A Ant1_5700



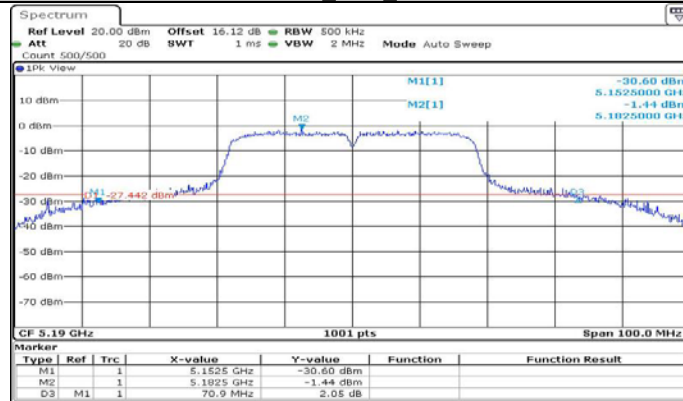
Date: 3.JUL.2021 03:15:43





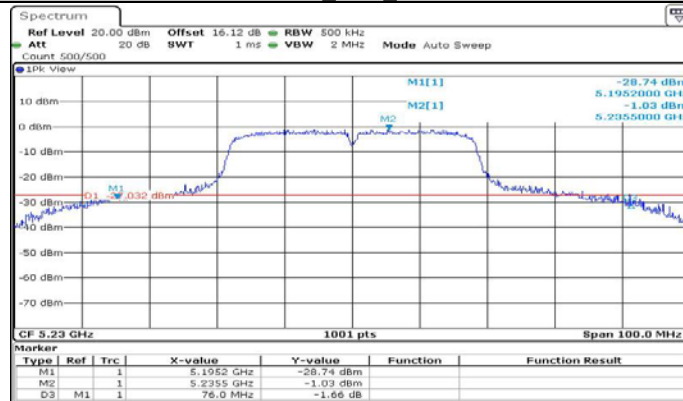


11N40_Ant1_5190



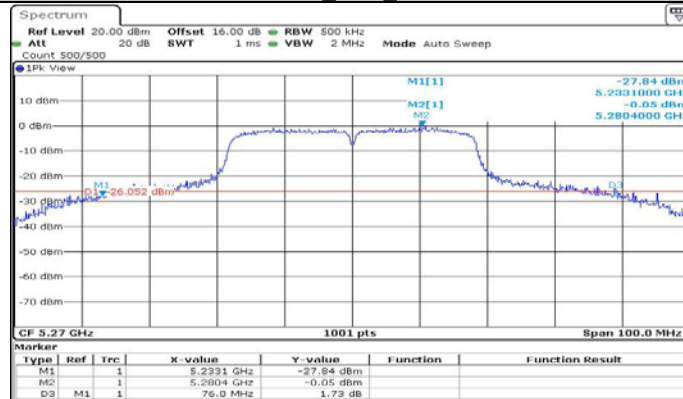
Date: 3.JUL.2021 03:58:44

11N40_Ant1_5230

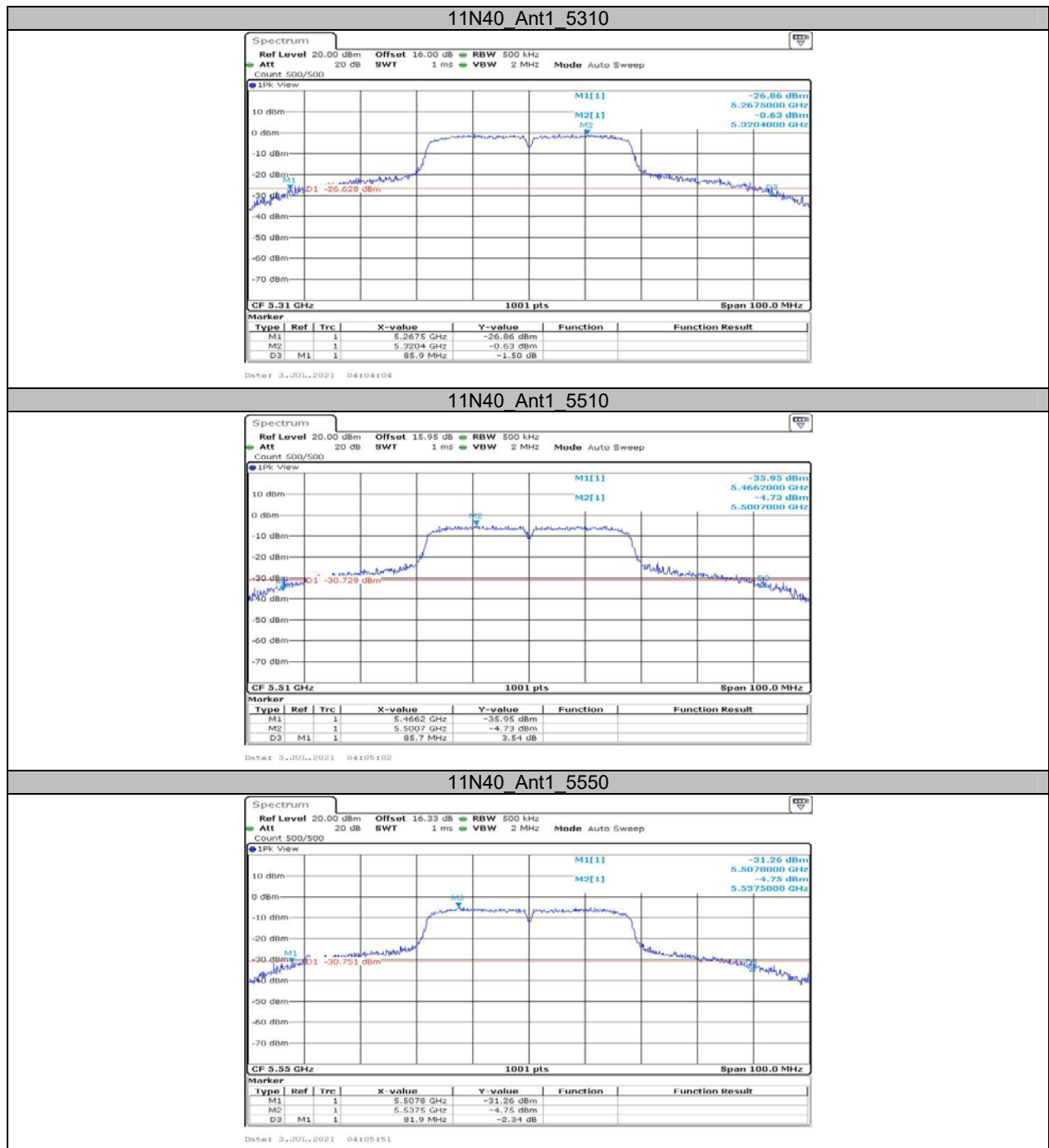


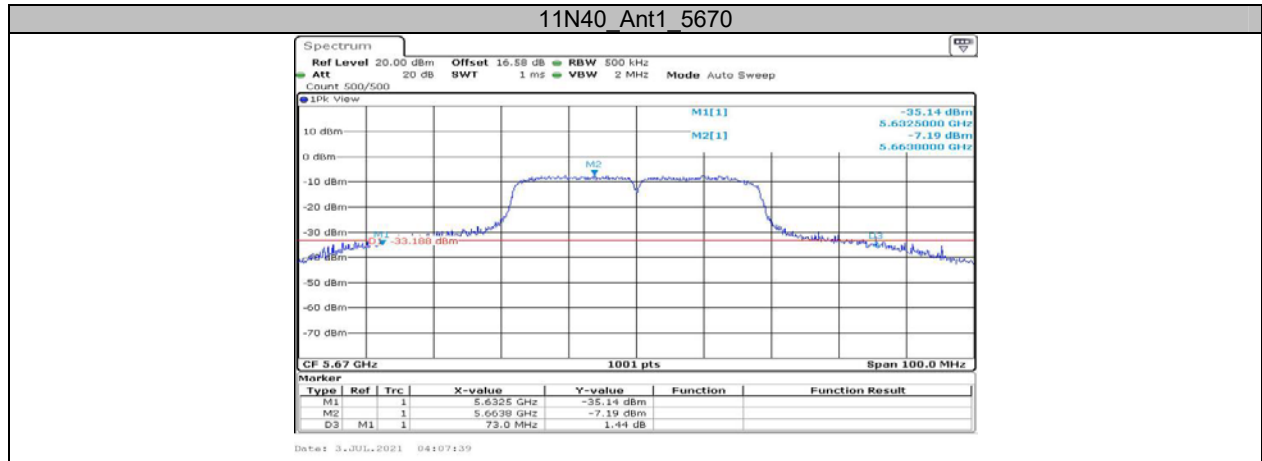
Date: 3.JUL.2021 04:00:52

11N40_Ant1_5270



Date: 3.JUL.2021 04:01:46

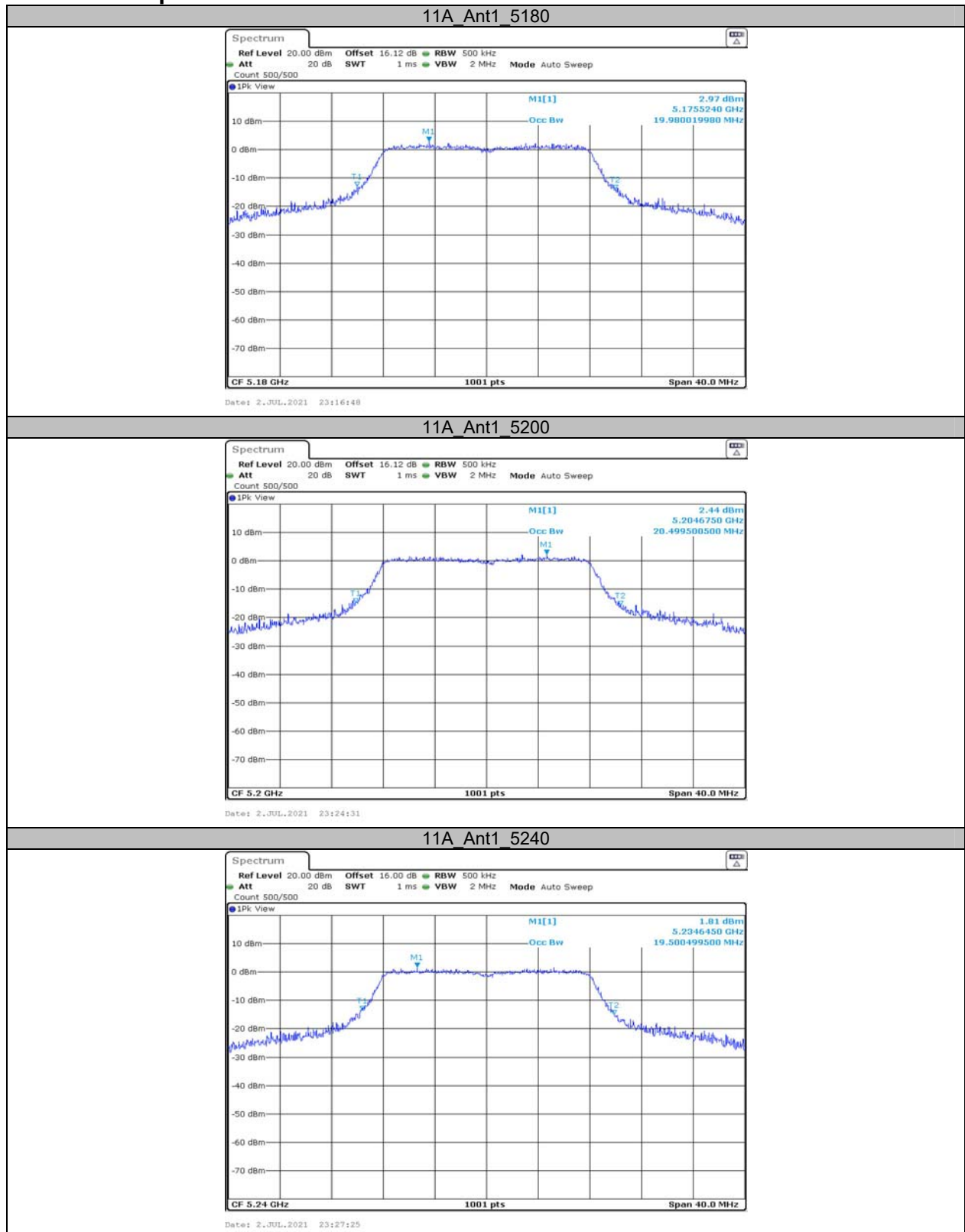




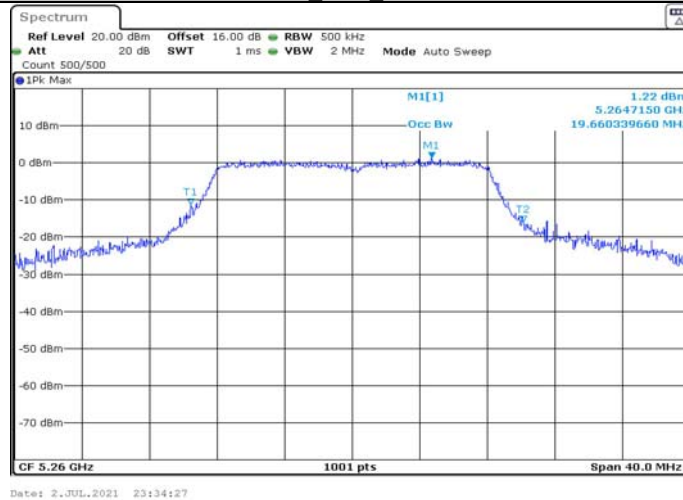
Appendix A2: Occupied channel bandwidth Test Result

TestMode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.980	---	PASS
		5200	20.500	---	PASS
		5240	19.500	---	PASS
		5260	20.140	---	PASS
		5280	19.740	---	PASS
		5320	23.856	---	PASS
		5500	22.338	---	PASS
		5580	23.776	---	PASS
		5700	21.499	---	PASS
		5745	21.099	---	PASS
		5785	20.140	---	PASS
		5825	18.302	---	PASS
11N20	Ant1	5180	22.617	---	PASS
		5200	22.577	---	PASS
		5240	19.301	---	PASS
		5260	19.980	---	PASS
		5280	21.299	---	PASS
		5320	24.456	---	PASS
		5500	22.697	---	PASS
		5580	22.298	---	PASS
		5700	22.378	---	PASS
		5745	21.858	---	PASS
		5785	20.899	---	PASS
		5825	19.141	---	PASS
11N40	Ant1	5190	39.001	---	PASS
		5230	38.841	---	PASS
		5270	39.800	---	PASS
		5310	42.438	---	PASS
		5510	39.880	---	PASS
		5550	39.640	---	PASS
		5670	38.042	---	PASS
		5755	38.442	---	PASS
		5795	37.962	---	PASS

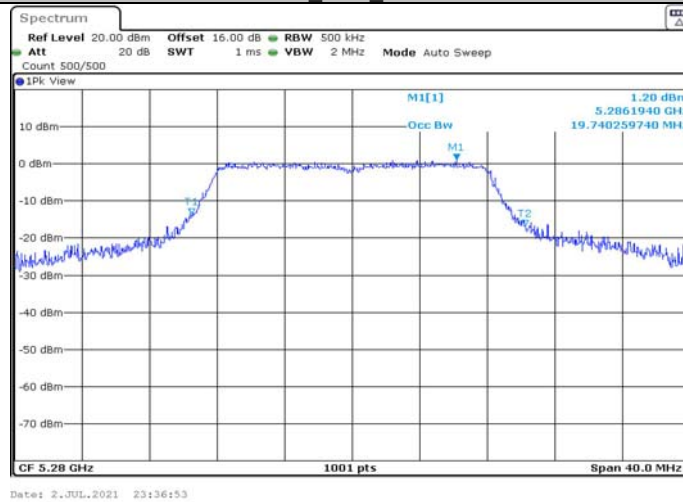
Test Graphs



11A_Ant1_5260

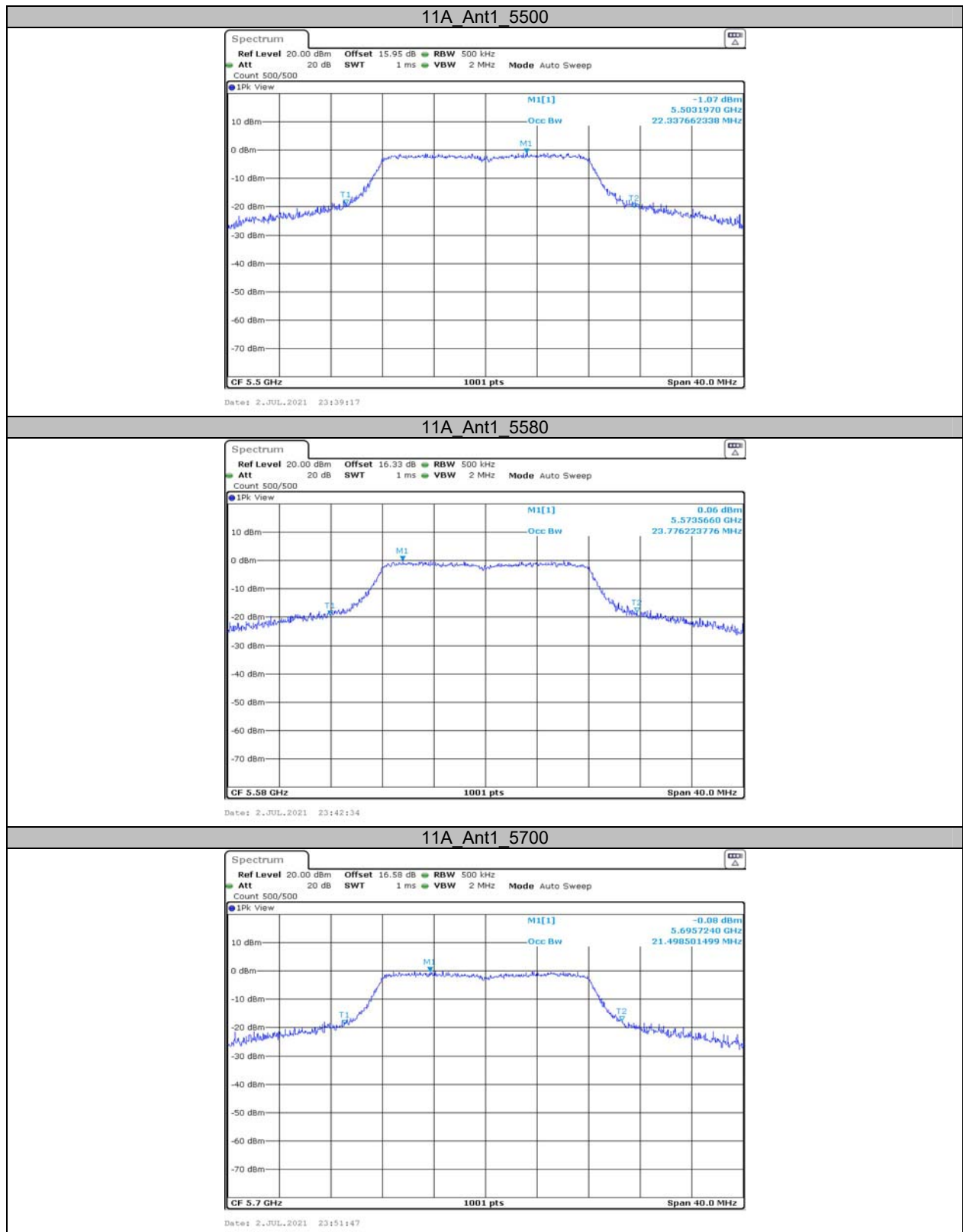


11A_Ant1_5280

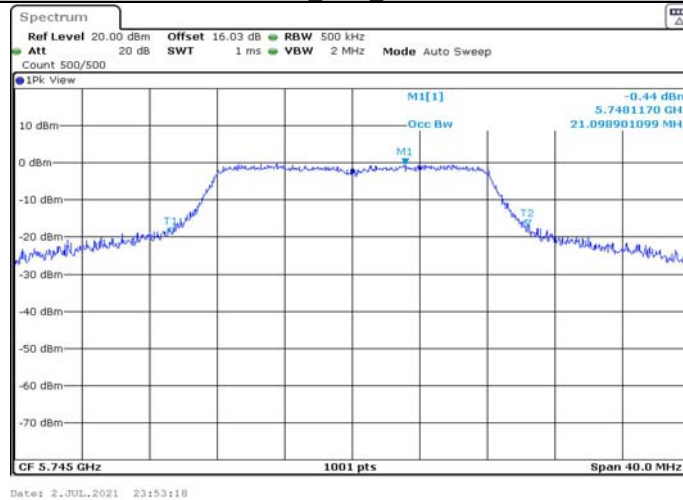


11A_Ant1_5320

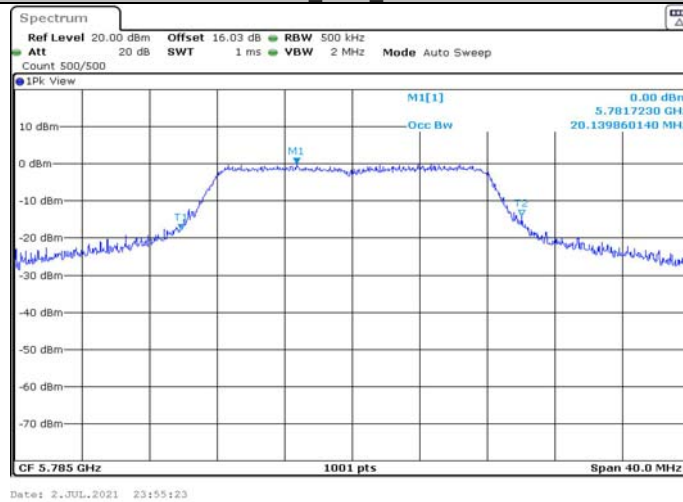




11A_Ant1_5745

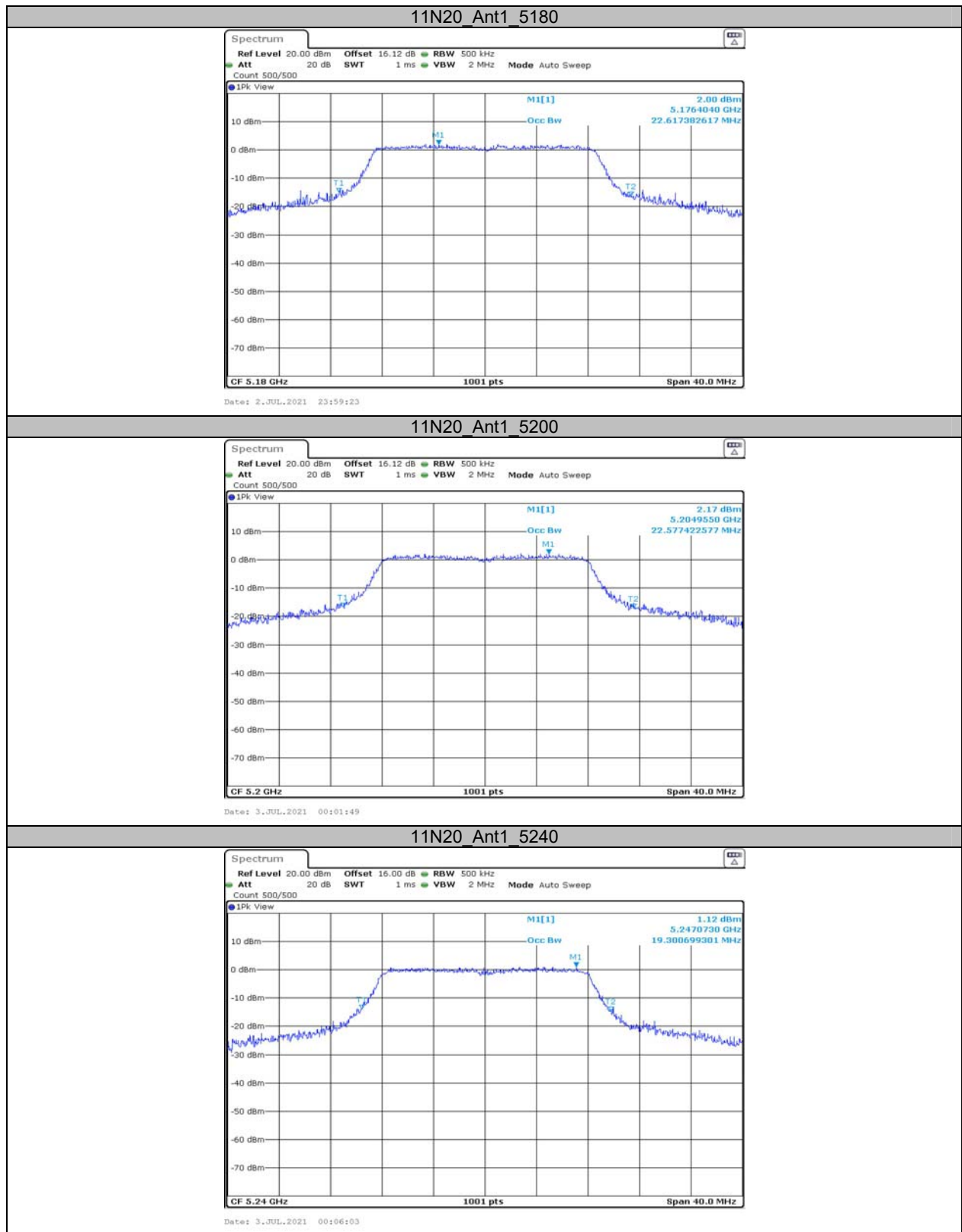


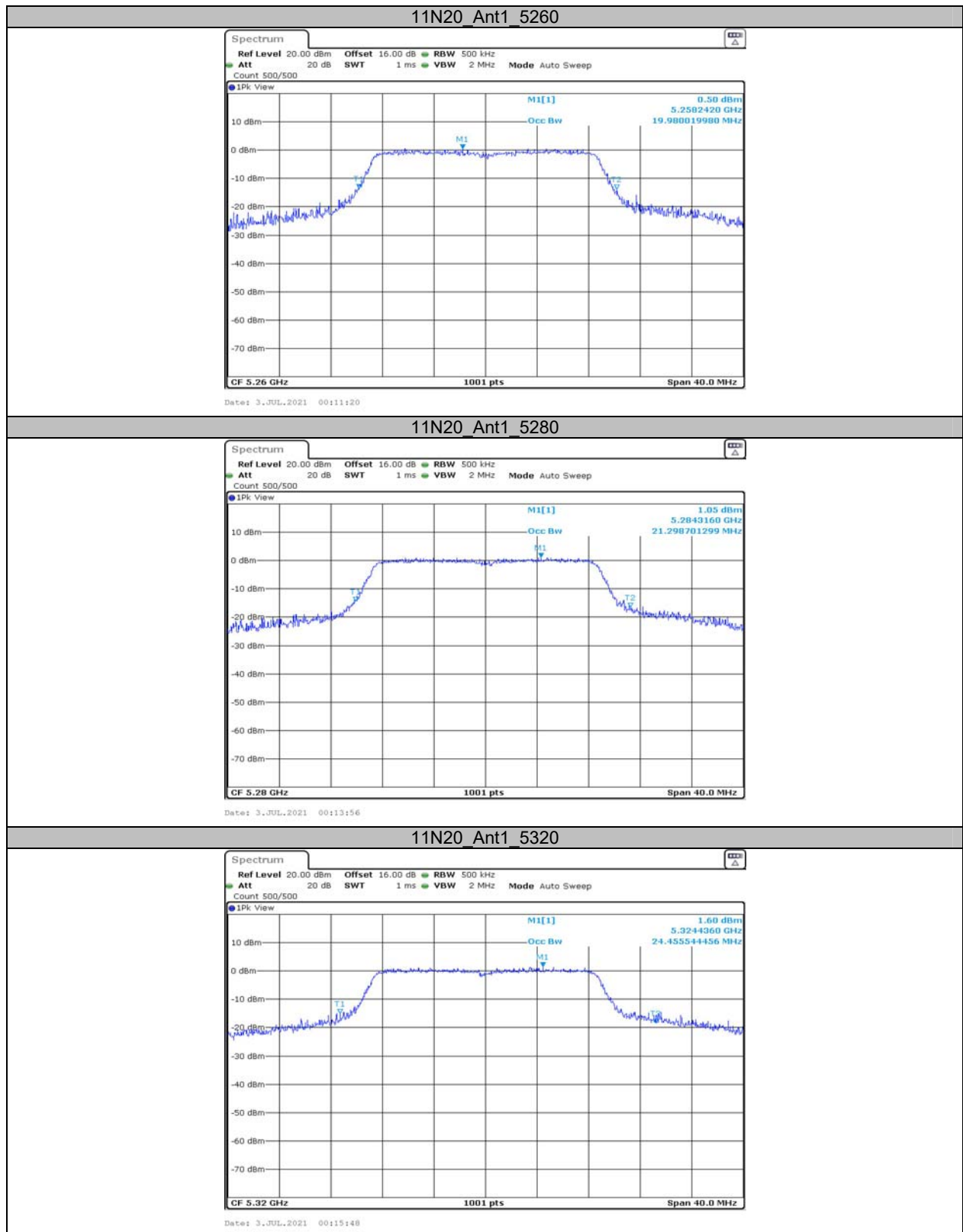
11A_Ant1_5785

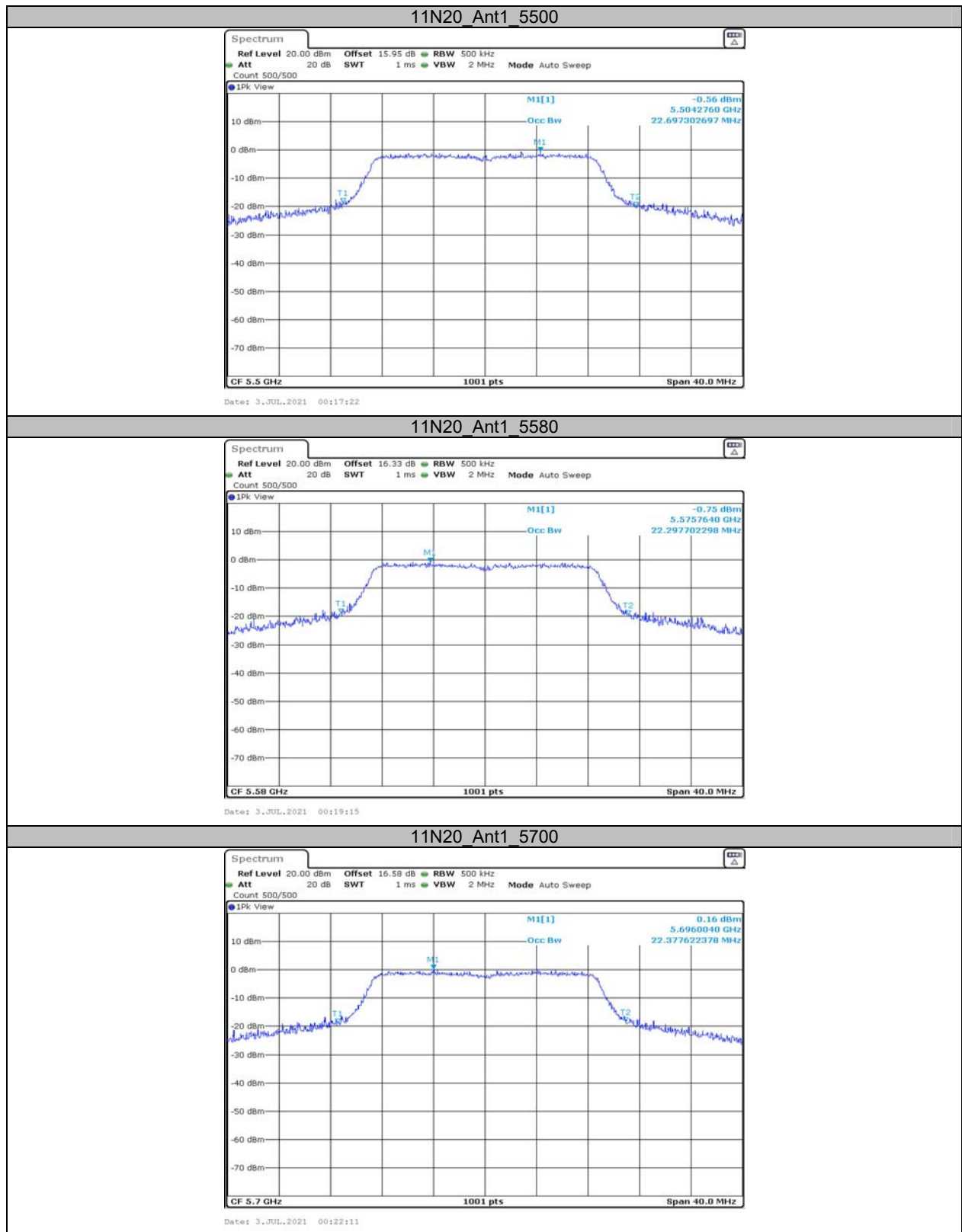


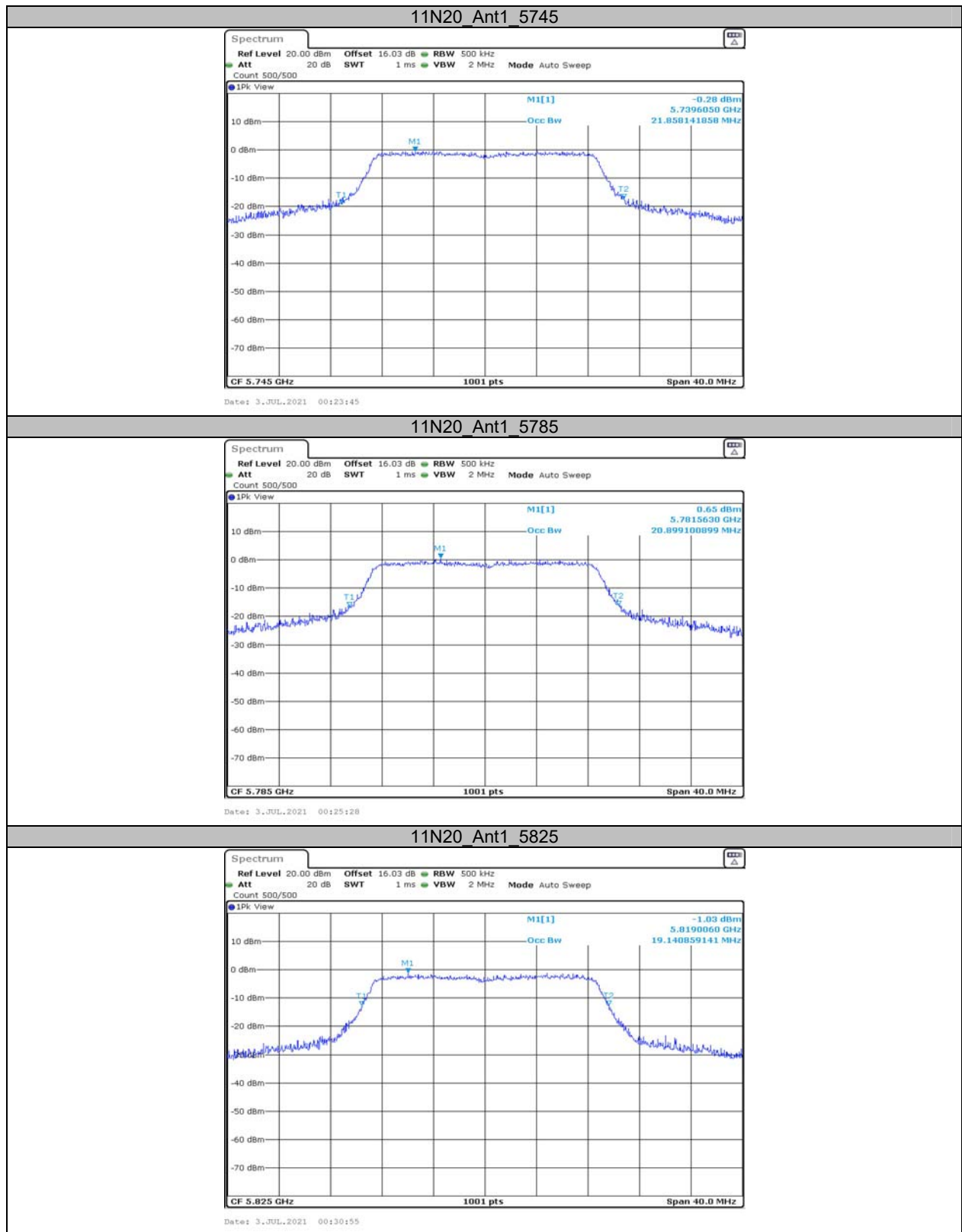
11A_Ant1_5825

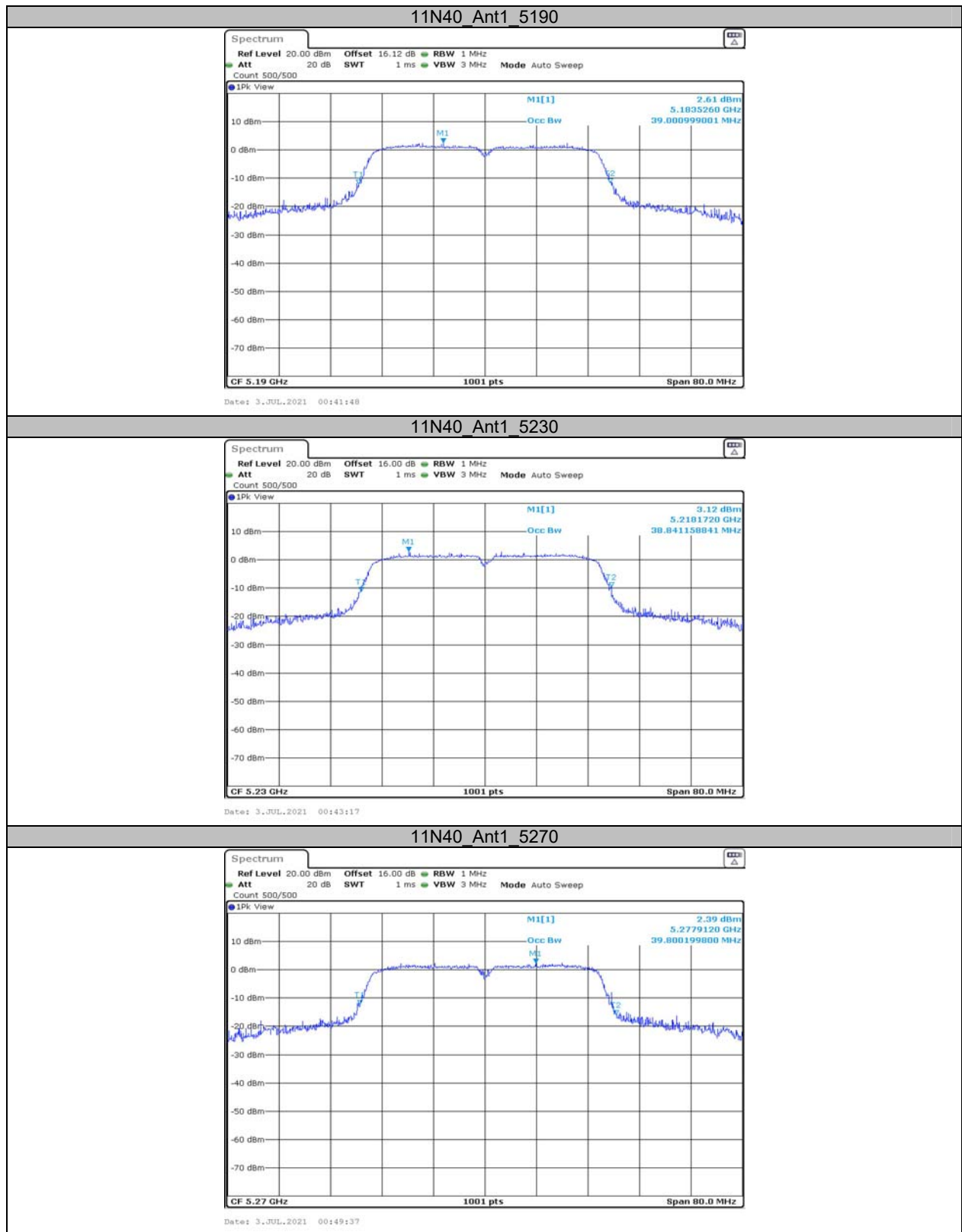


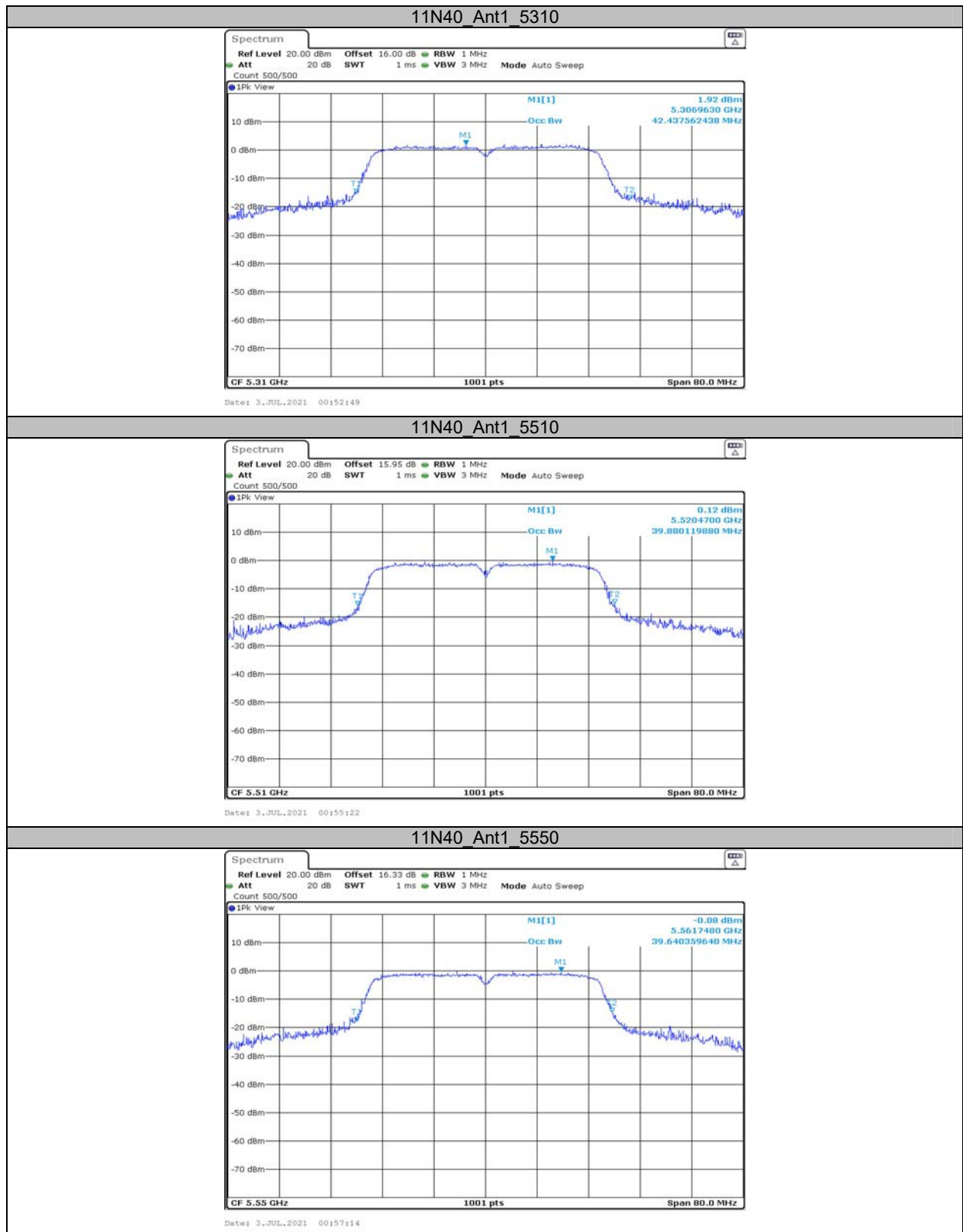


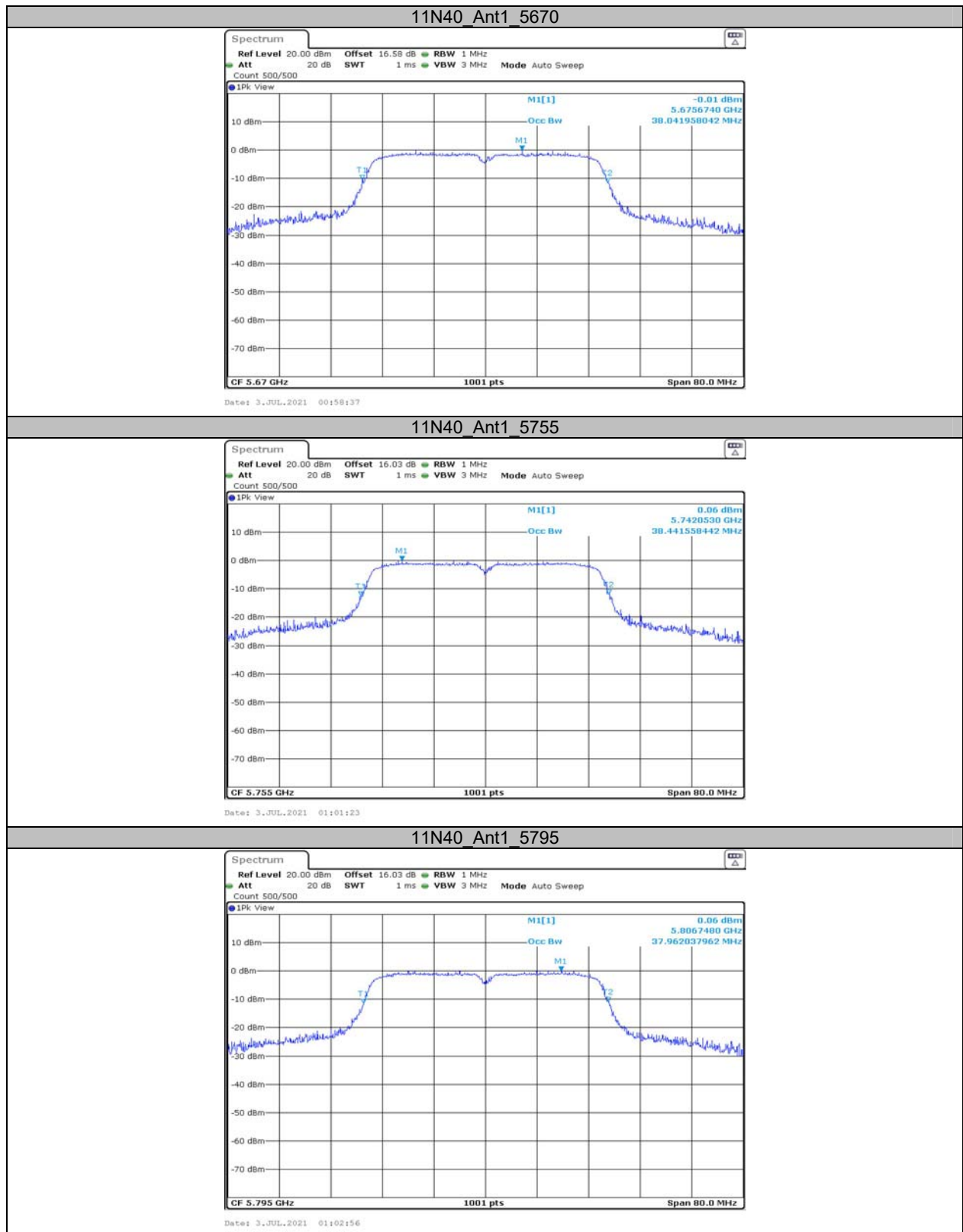










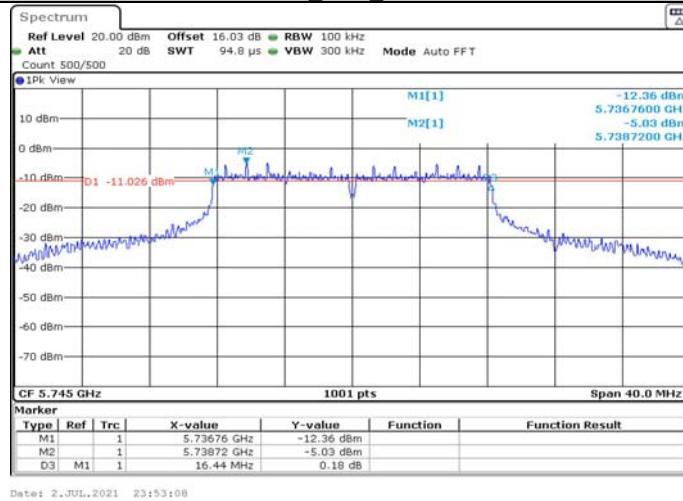


**Appendix A3: Min emission bandwidth
Test Result**

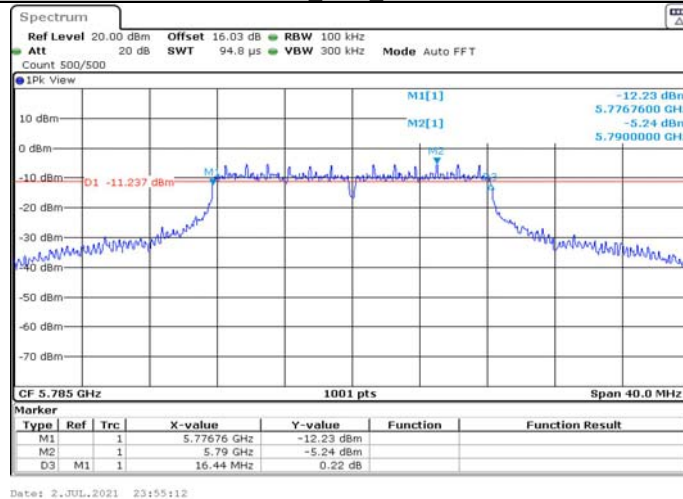
TestMode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.440	0.5	PASS
		5785	16.440	0.5	PASS
		5825	16.440	0.5	PASS
11N20	Ant1	5745	17.640	0.5	PASS
		5785	17.640	0.5	PASS
		5825	17.640	0.5	PASS
11N40	Ant1	5755	35.280	0.5	PASS
		5795	35.280	0.5	PASS

Test Graphs

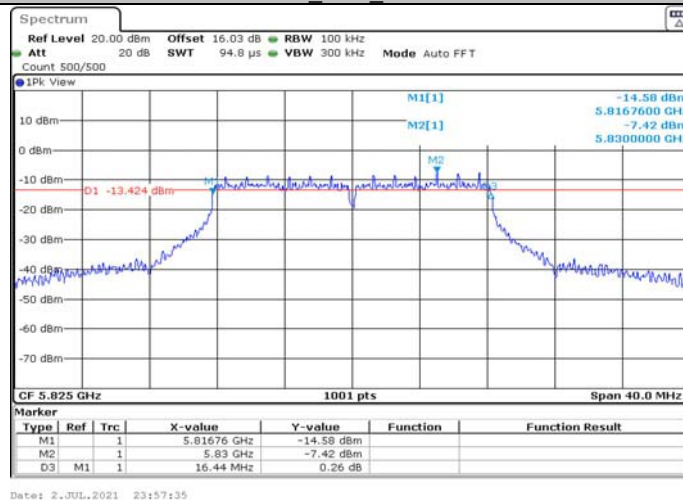
11A_Ant1_5745

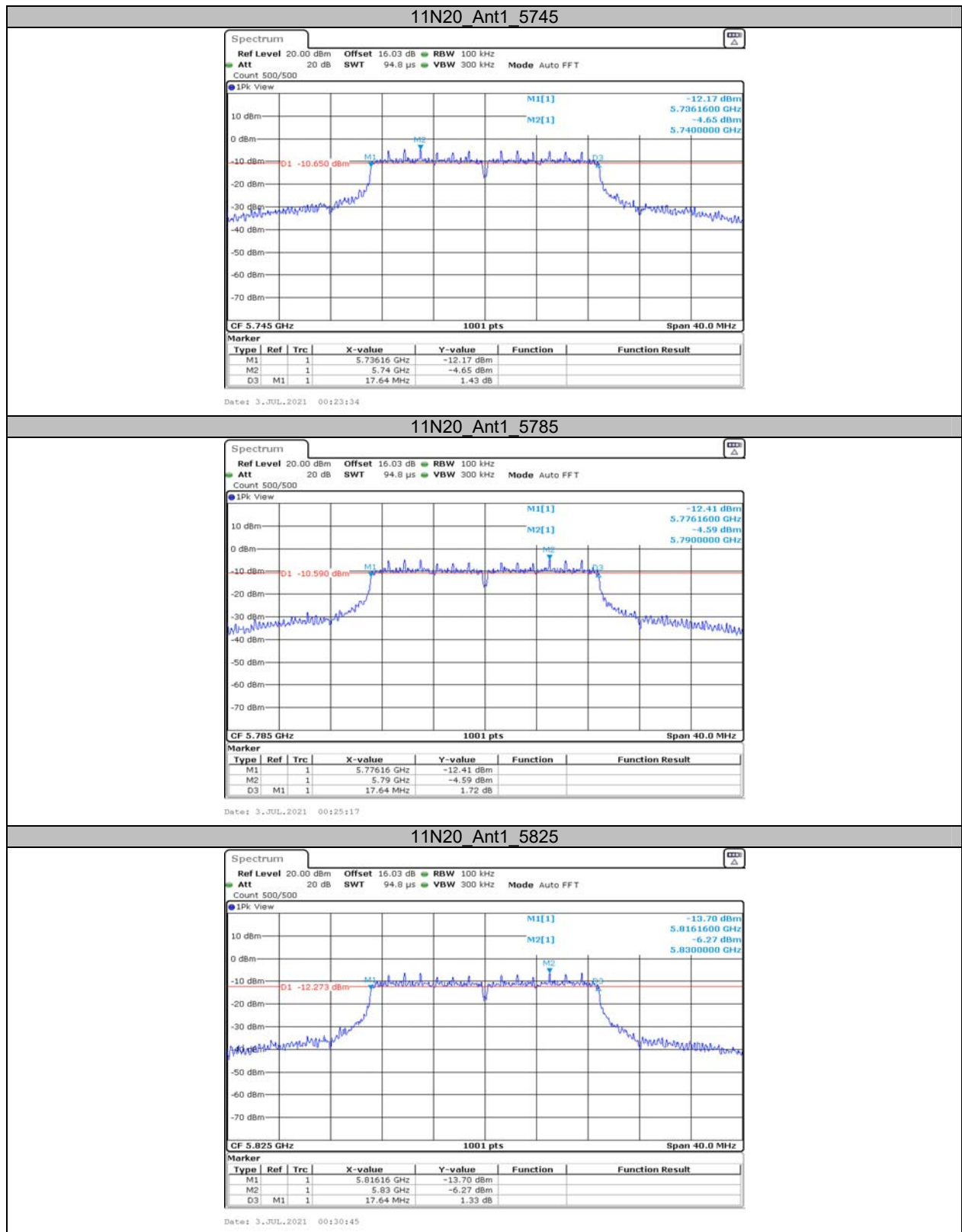


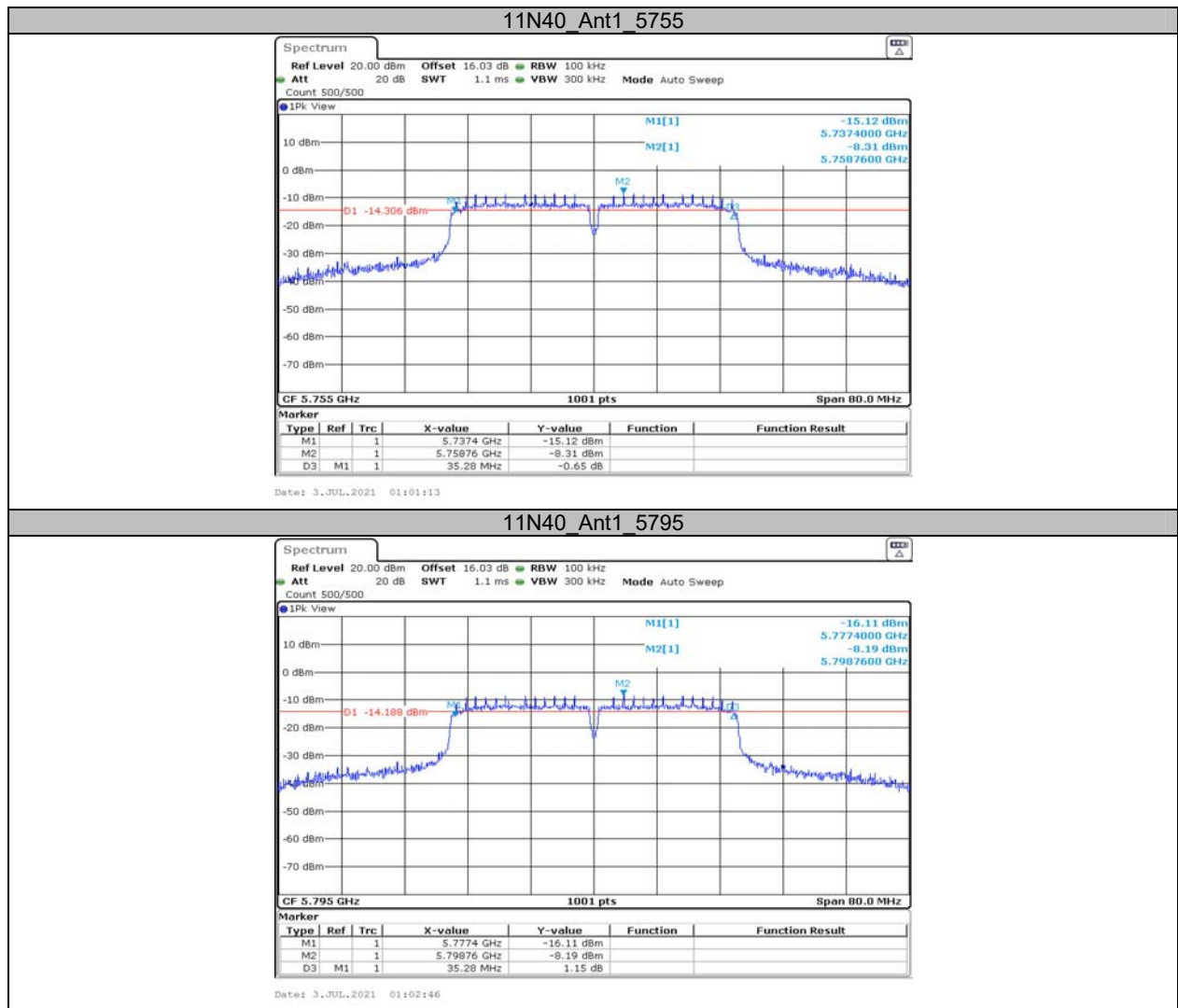
11A_Ant1_5785



11A_Ant1_5825







Appendix B: Maximum conducted output power Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	9.33	<=23.98	PASS
		5200	9.27	<=23.98	PASS
		5240	8.57	<=23.98	PASS
		5260	8.53	<=23.98	PASS
		5280	8.73	<=23.98	PASS
		5320	8.99	<=23.98	PASS
		5500	6.62	<=23.98	PASS
		5580	7.38	<=23.98	PASS
		5700	7.44	<=23.98	PASS
		5745	8.02	<=30	PASS
		5785	8.22	<=30	PASS
11N20	Ant1	5825	5.89	<=30	PASS
		5180	10.04	<=23.98	PASS
		5200	9.90	<=23.98	PASS
		5240	8.45	<=23.98	PASS
		5260	8.53	<=23.98	PASS
		5280	8.60	<=23.98	PASS
		5320	8.94	<=23.98	PASS
		5500	6.67	<=23.98	PASS
		5580	6.85	<=23.98	PASS
		5700	7.49	<=23.98	PASS
		5745	8.22	<=30	PASS
11N40	Ant1	5785	8.19	<=30	PASS
		5825	6.84	<=30	PASS
		5190	9.28	<=23.98	PASS
		5230	9.36	<=23.98	PASS
		5270	9.43	<=23.98	PASS
		5310	8.87	<=23.98	PASS
		5510	6.73	<=23.98	PASS
		5550	6.69	<=23.98	PASS
		5670	6.26	<=23.98	PASS
		5755	7.66	<=30	PASS
		5795	7.64	<=30	PASS

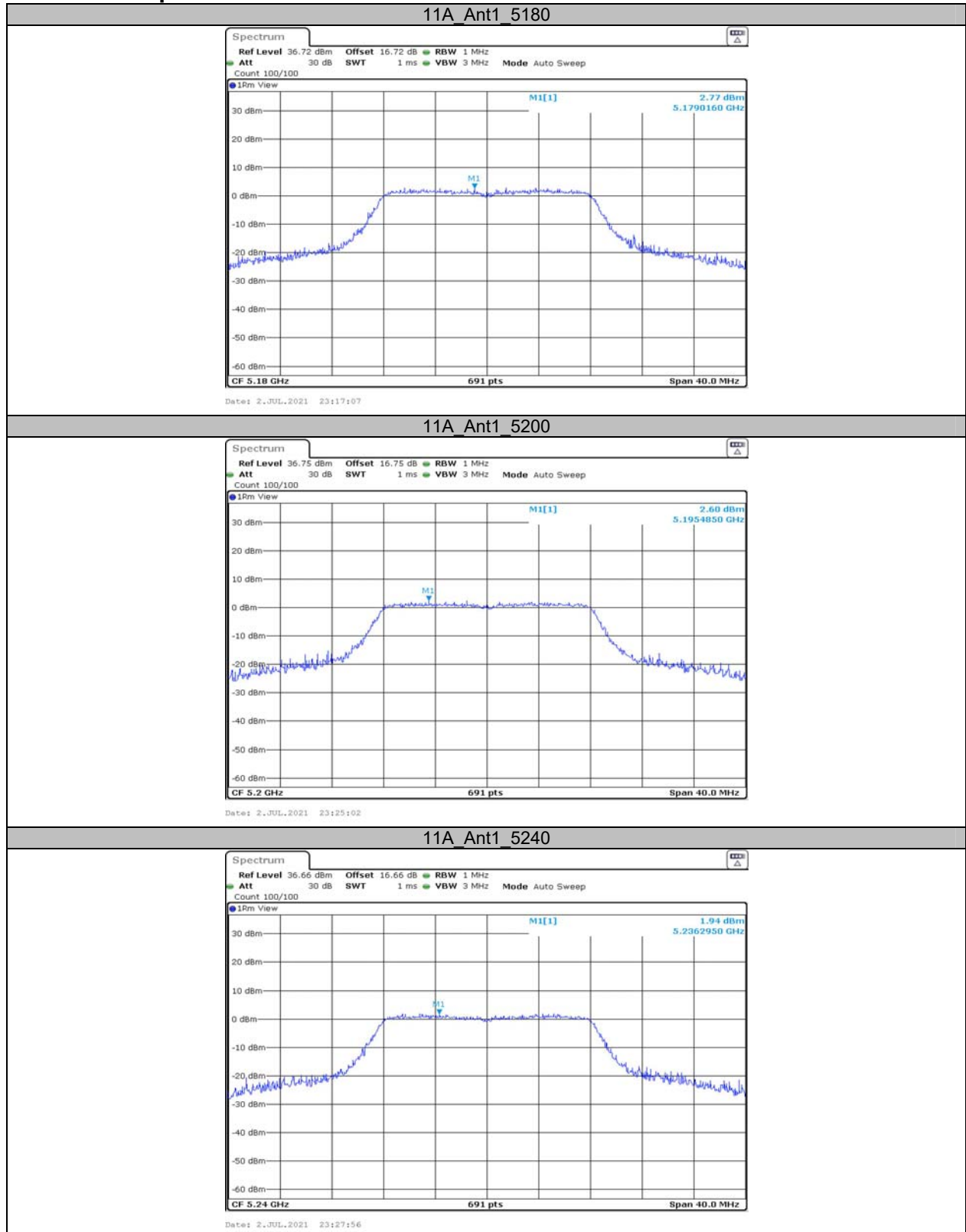
Appendix C: Maximum power spectral density Test Result

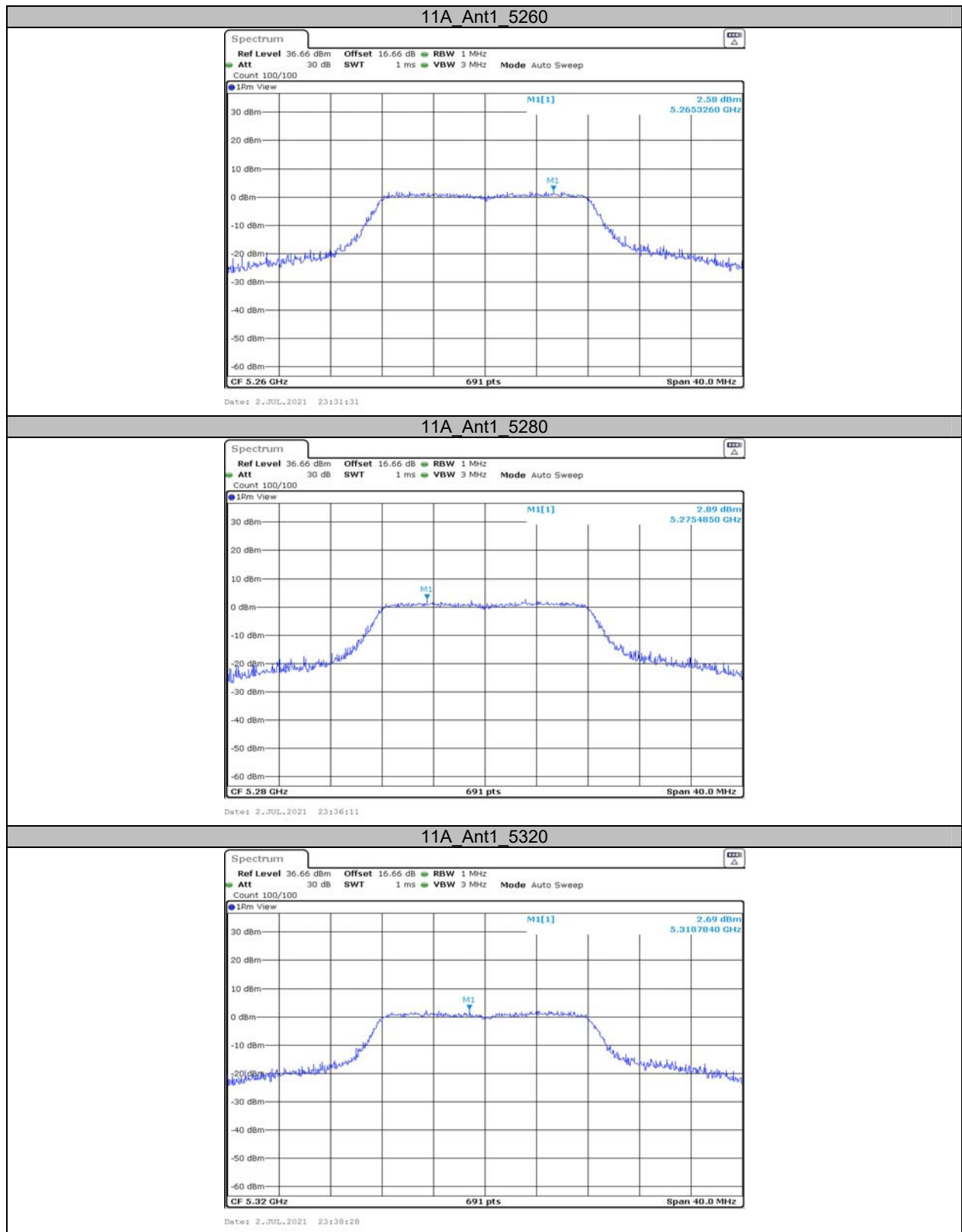
TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	2.77	<=11	PASS
		5200	2.60	<=11	PASS
		5240	1.94	<=11	PASS
		5260	2.58	<=11	PASS
		5280	2.89	<=11	PASS
		5320	2.69	<=11	PASS
		5500	-0.30	<=11	PASS
		5580	0.41	<=11	PASS
		5700	0.81	<=11	PASS
		5745	-0.45	<=30	PASS
		5785	-0.49	<=30	PASS
11N20	Ant1	5825	-3.38	<=30	PASS
		5180	3.00	<=11	PASS
		5200	2.64	<=11	PASS
		5240	2.41	<=11	PASS
		5260	1.60	<=11	PASS
		5280	2.18	<=11	PASS
		5320	1.85	<=11	PASS
		5500	-0.34	<=11	PASS
		5580	1.11	<=11	PASS
		5700	1.63	<=11	PASS
		5745	-0.79	<=30	PASS
11N40	Ant1	5785	-0.75	<=30	PASS
		5825	-1.88	<=30	PASS
		5190	0.23	<=11	PASS
		5230	0.74	<=11	PASS
		5270	0.96	<=11	PASS
		5310	-0.08	<=11	PASS
		5510	-2.31	<=11	PASS
		5550	-1.92	<=11	PASS
		5670	-2.90	<=11	PASS
		5755	-3.87	<=30	PASS
		5795	-3.62	<=30	PASS

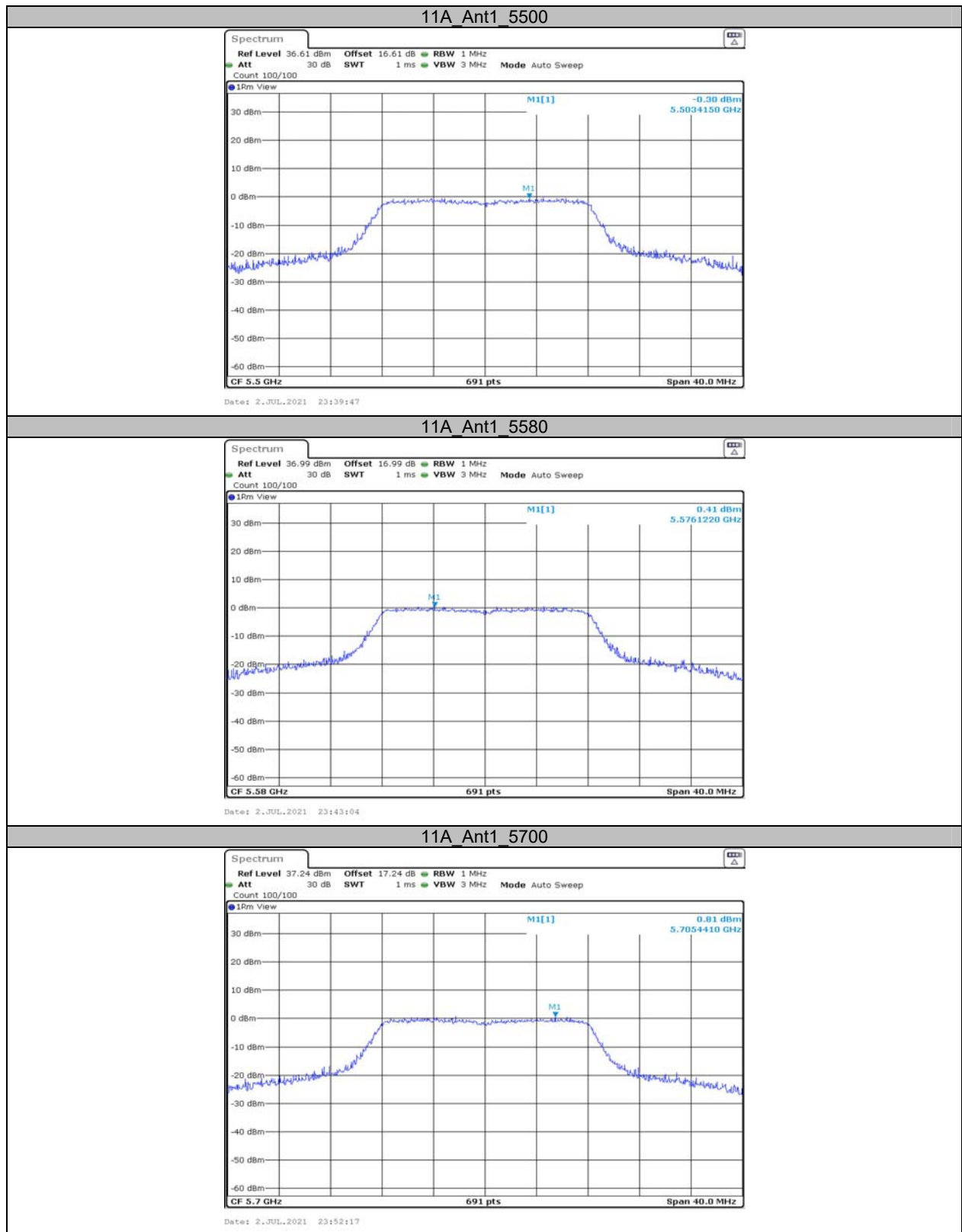
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2. The Duty Cycle Factor is compensated in the graph.

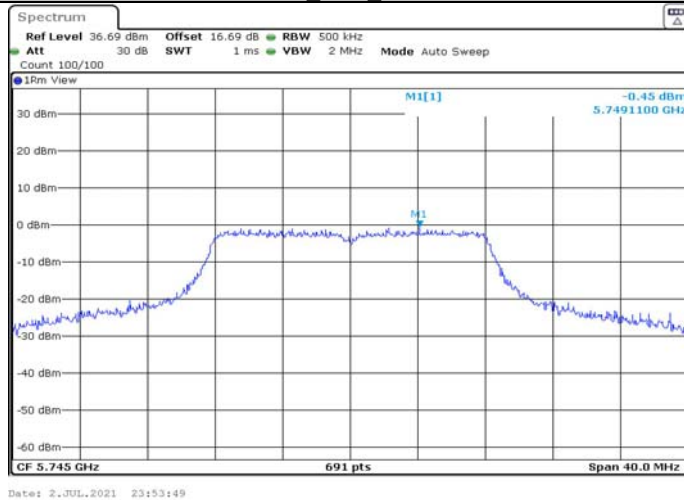
Test Graphs



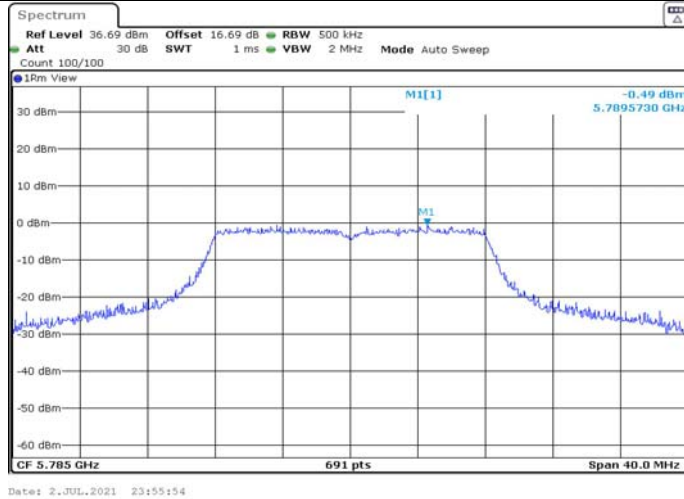




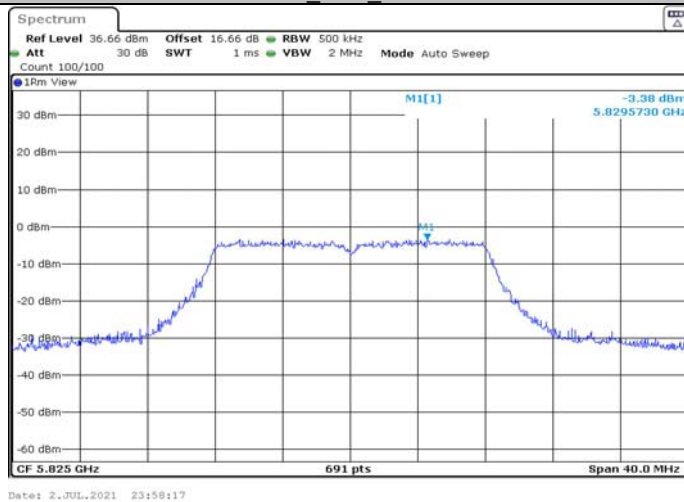
11A_Ant1_5745

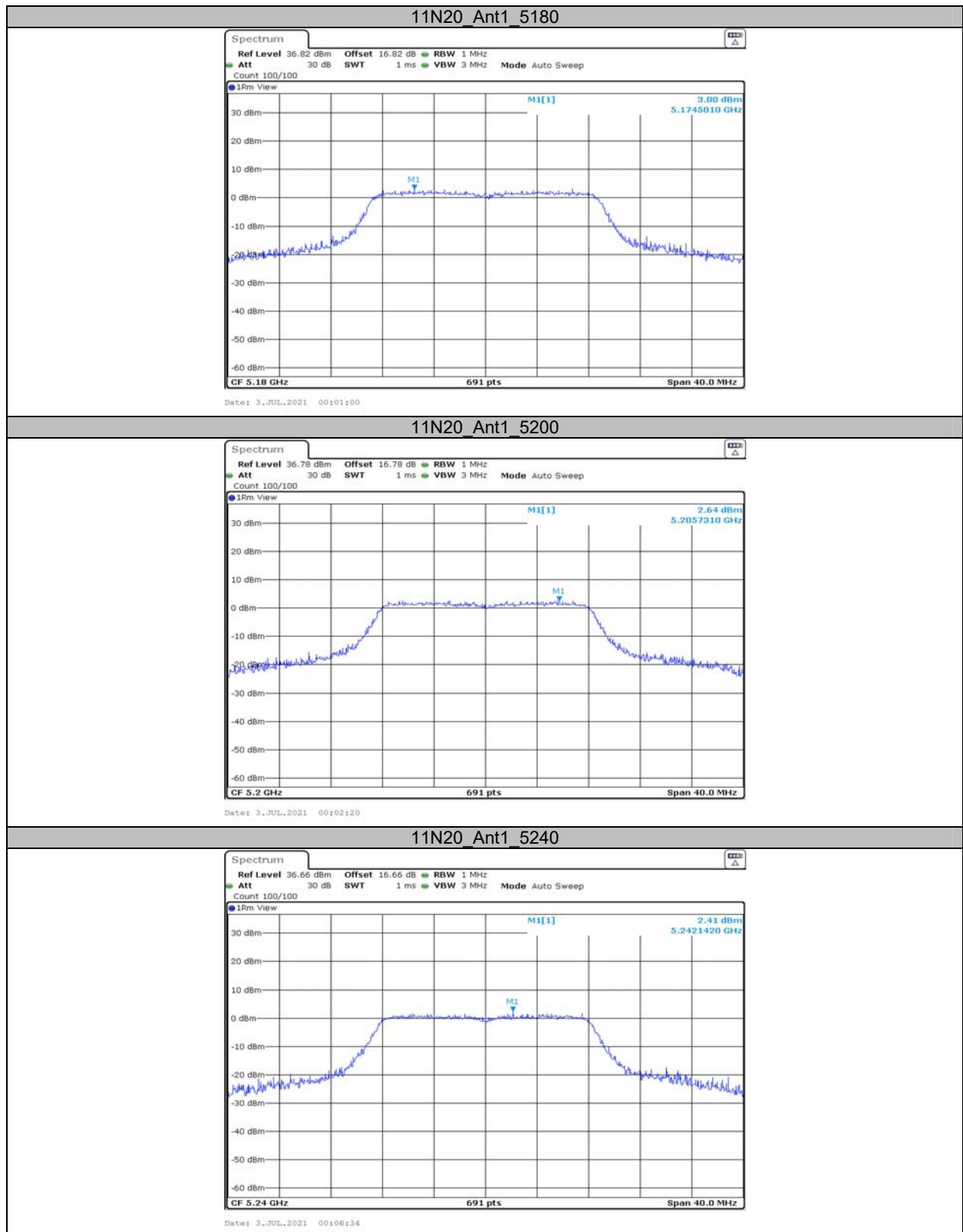


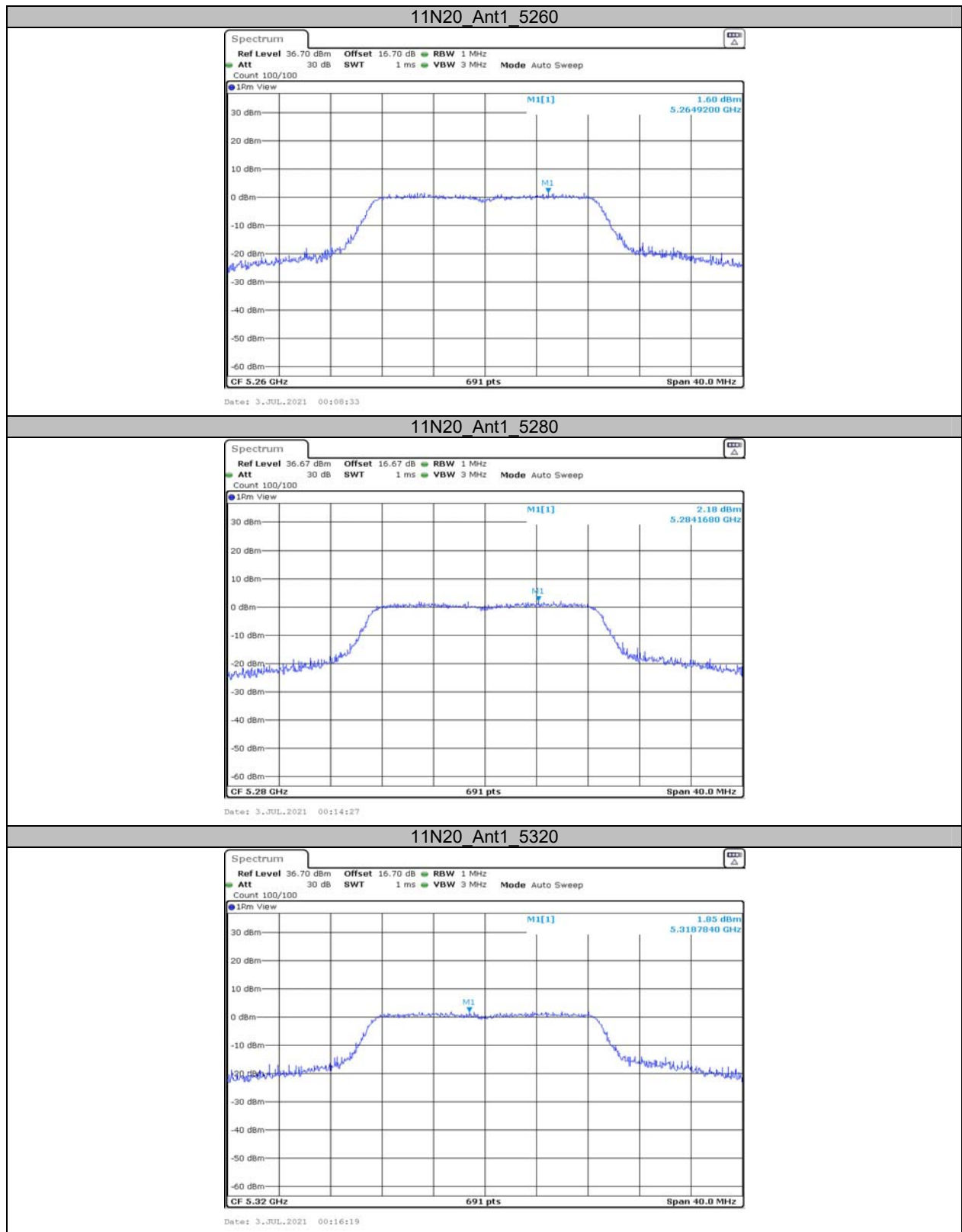
11A_Ant1_5785

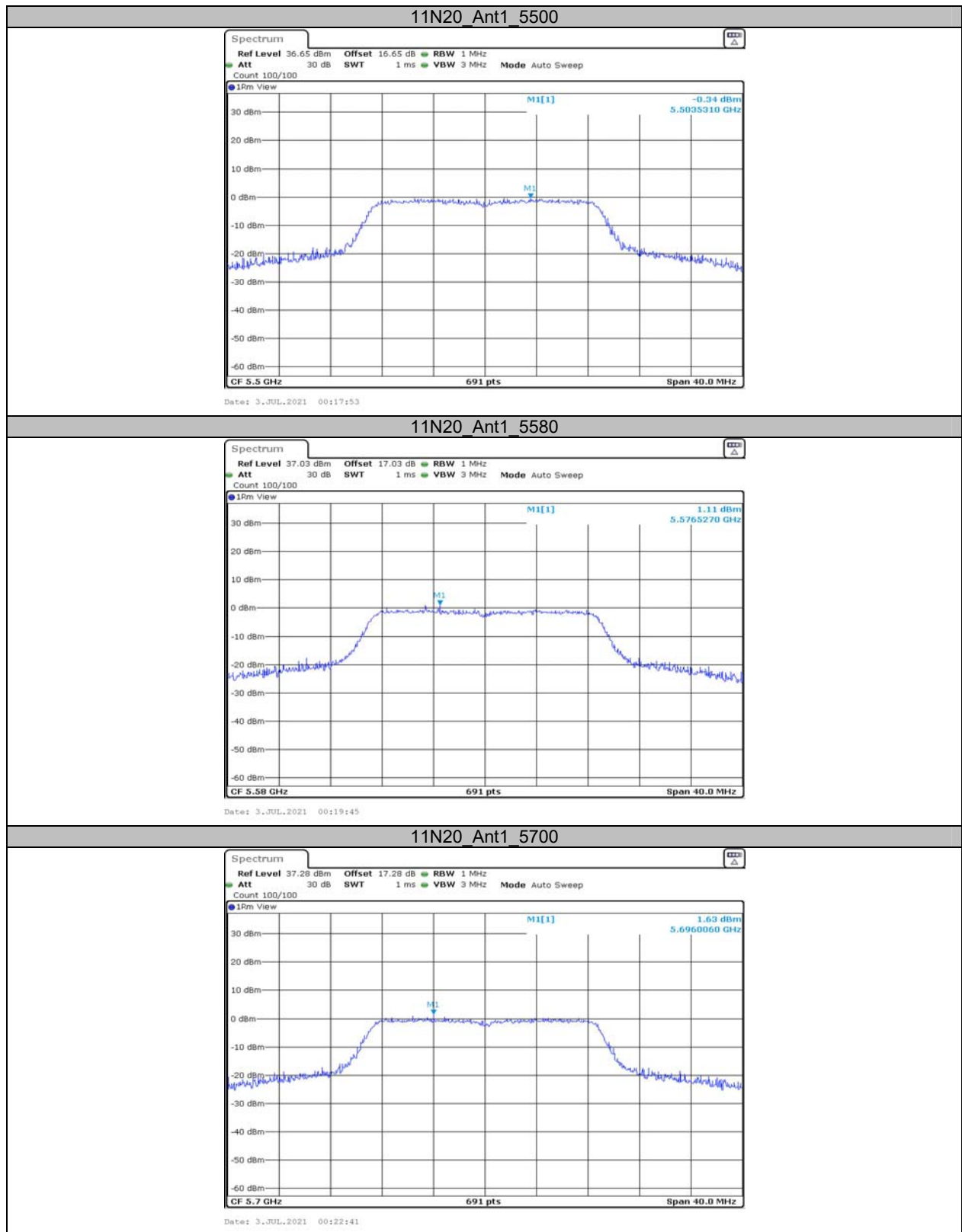


11A_Ant1_5825

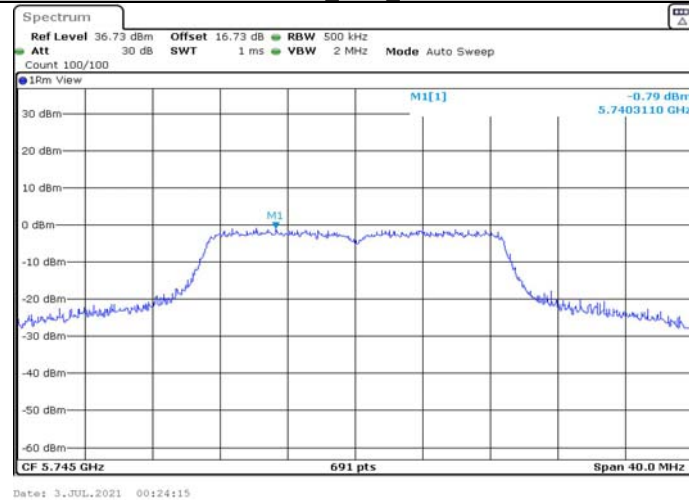




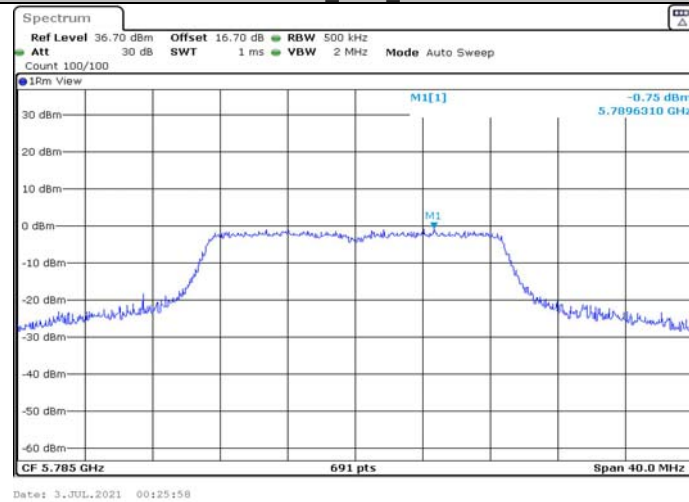




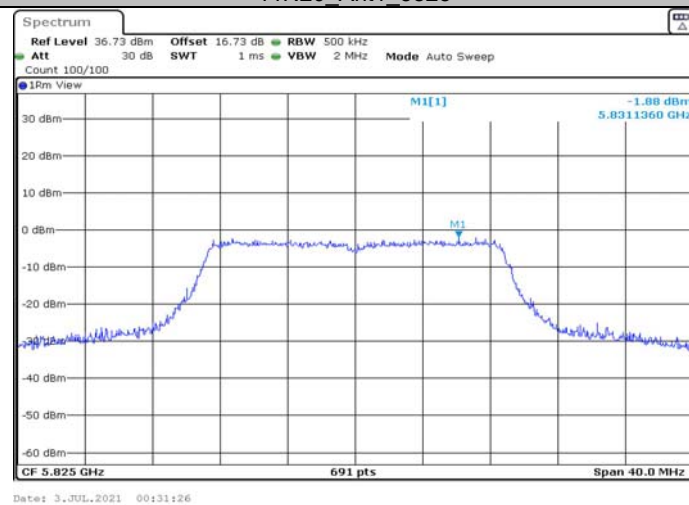
11N20_Ant1_5745



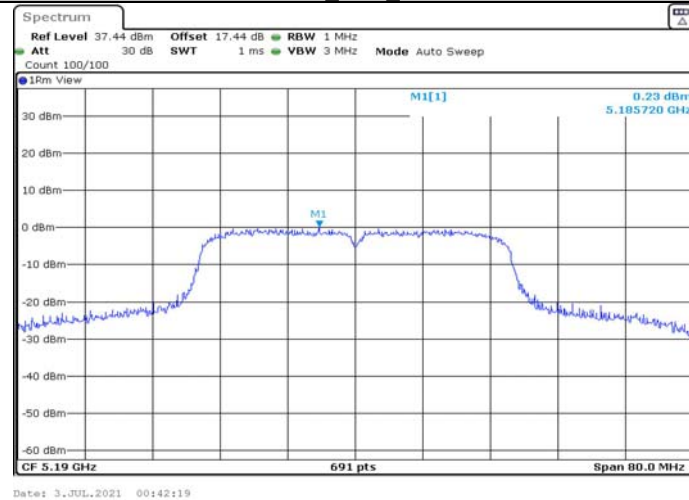
11N20_Ant1_5785



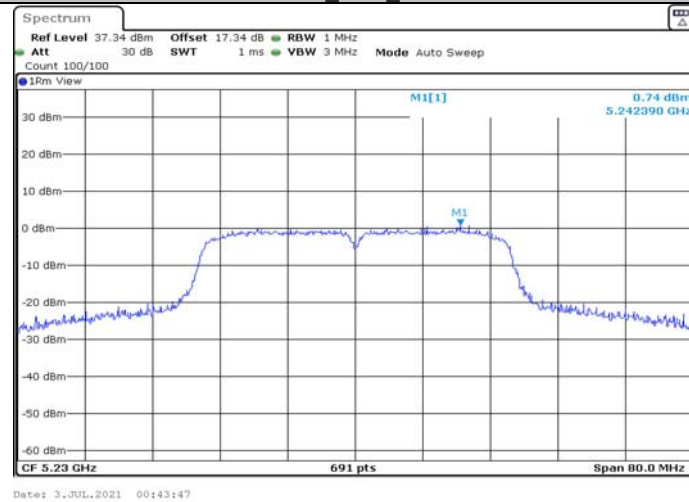
11N20_Ant1_5825



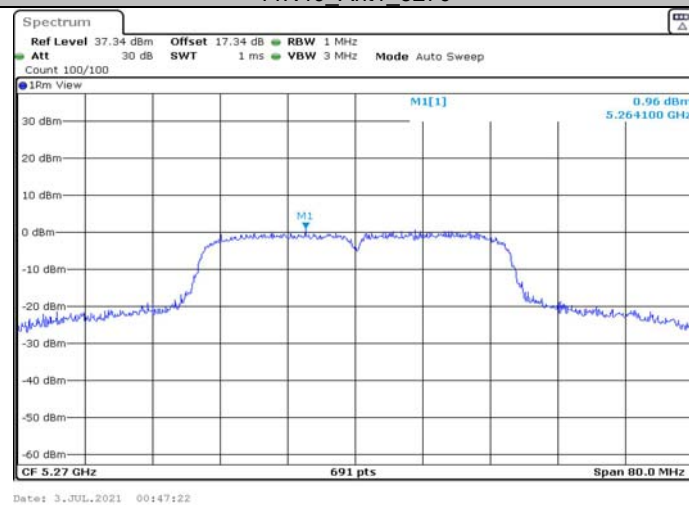
11N40_Ant1_5190

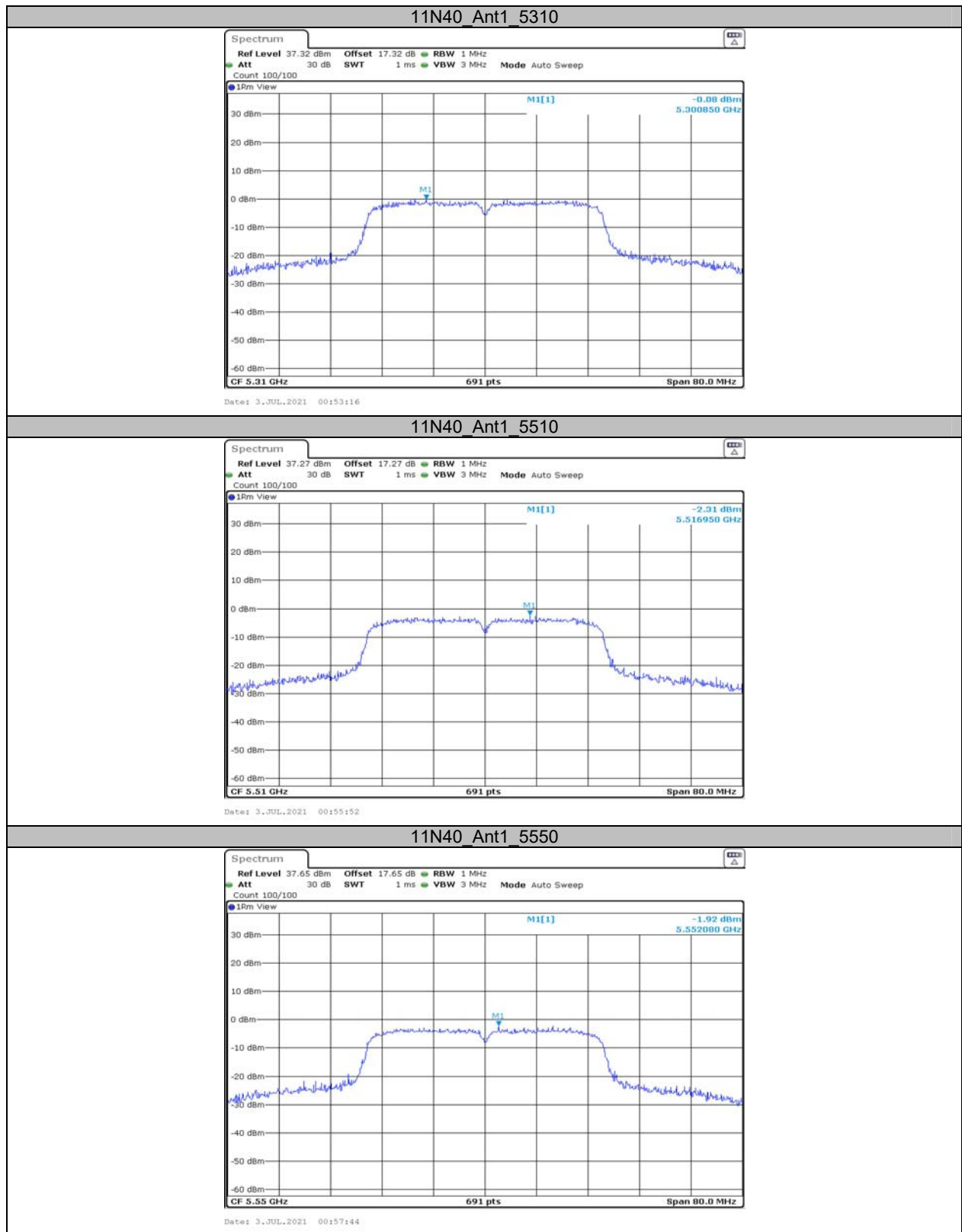


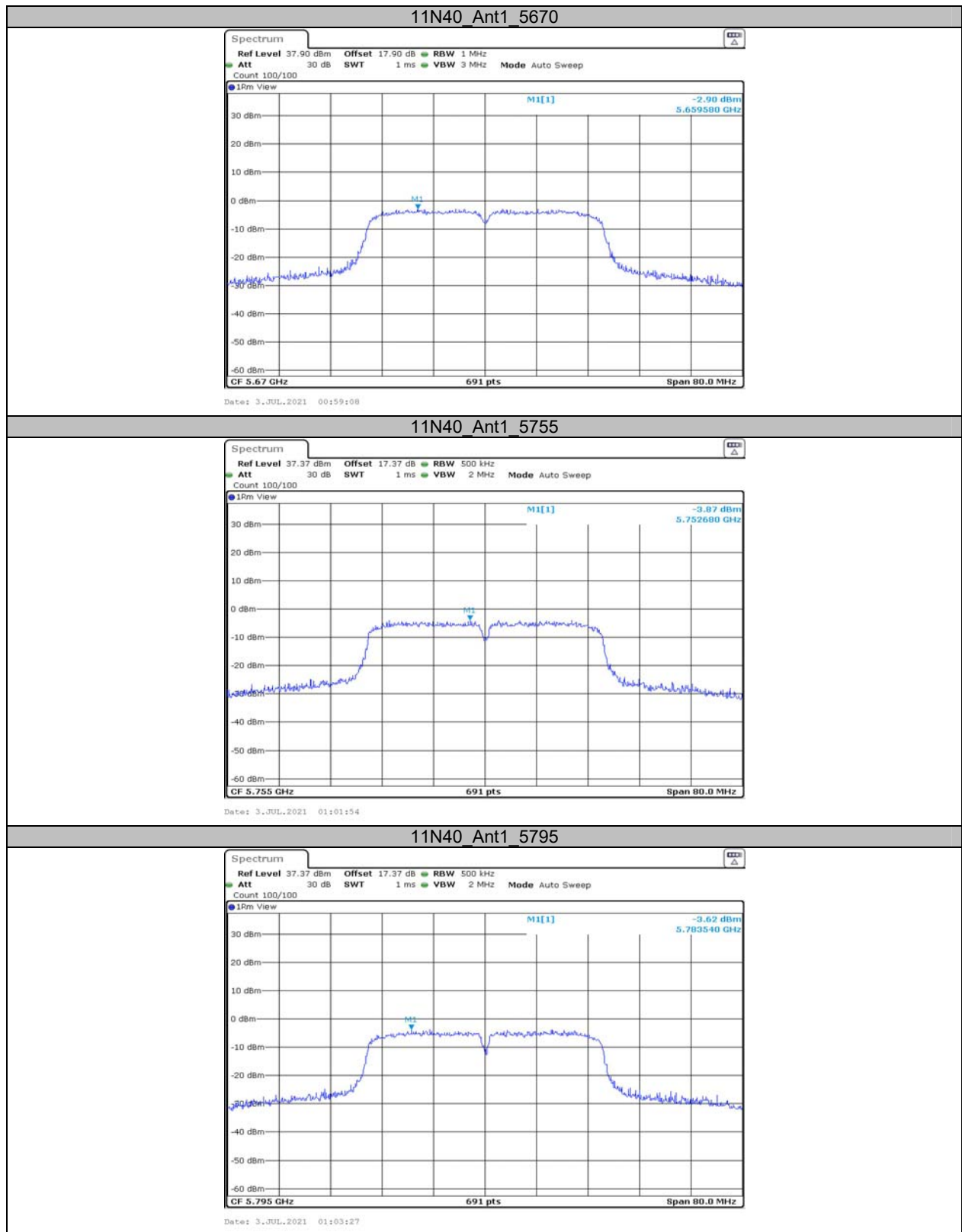
11N40_Ant1_5230



11N40_Ant1_5270







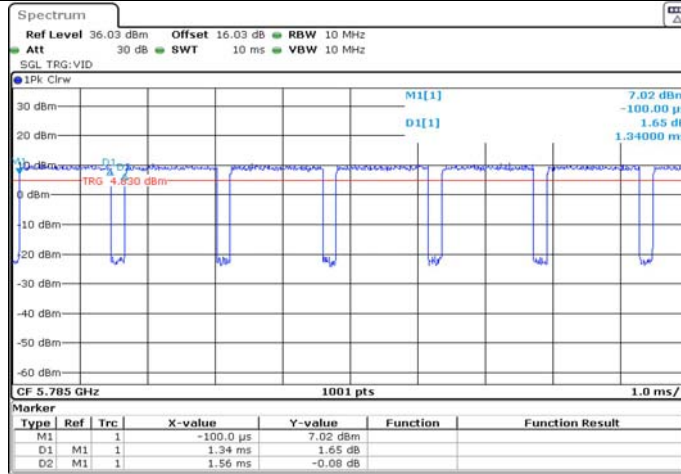
**Appendix D: Duty Cycle
Test Result**

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5200	1.35	1.56	86.54
		5280	1.34	1.56	85.90
		5580	1.34	1.56	85.90
		5785	1.34	1.56	85.90
11N20	Ant1	5200	1.35	1.57	85.99
		5280	1.26	1.47	85.71
		5580	1.26	1.48	85.14
		5785	1.26	1.47	85.71
11N40	Ant1	5190	0.62	0.84	73.81
		5270	0.61	0.83	73.49
		5510	0.62	0.84	73.81
		5755	0.61	0.83	73.49

Test Graphs

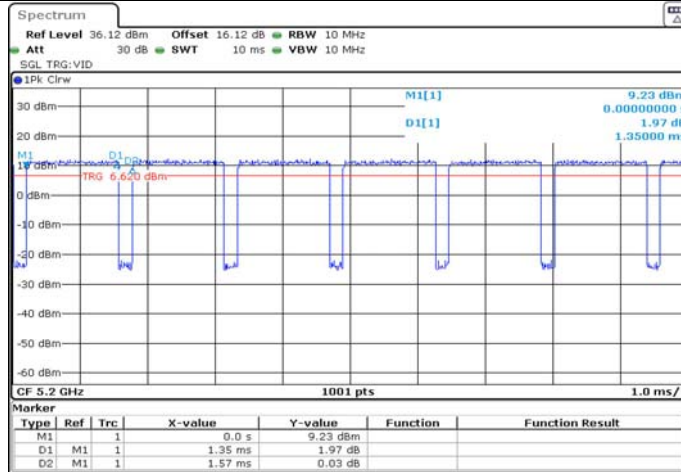


11A_Ant1_5785



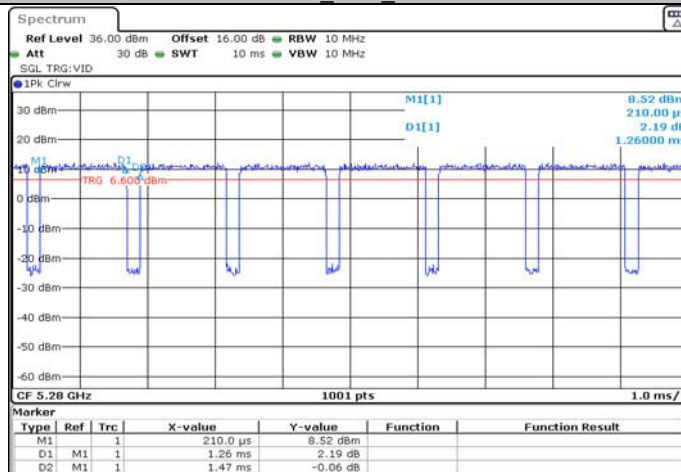
Date: 2.JUL.2021 23:55:35

11N20_Ant1_5200



Date: 3.JUL.2021 00:02:02

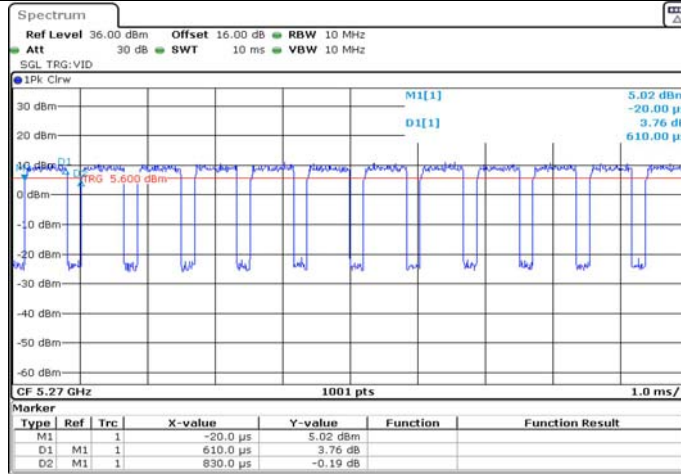
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Date: 3.JUL.2021 00:14:09

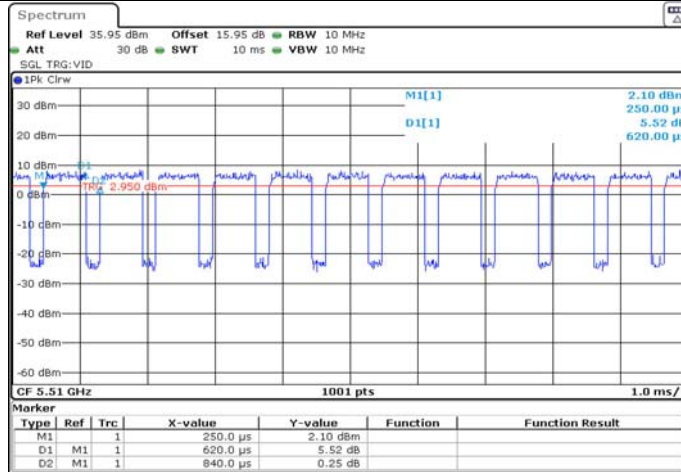


11N40_Ant1_5270



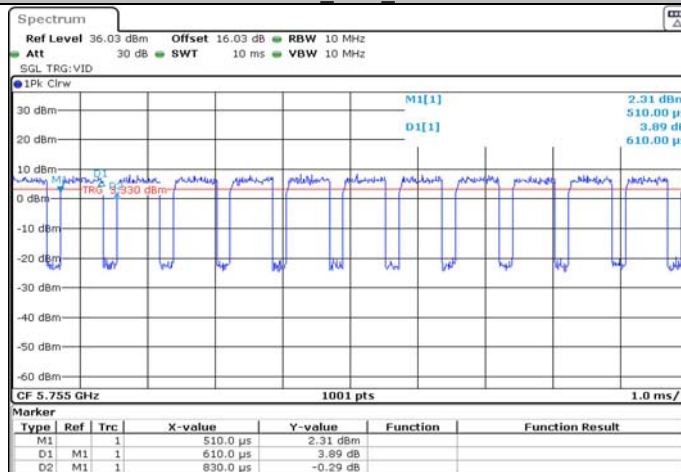
Date: 3..JUL.2021 00:47:04

11N40_Ant1_5510



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11N40_Ant1_5755



Date: 3..JUL.2021 01:01:36

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