

TEST REPORT

Applicant Name : TECNO MOBILE LIMITED
Address : FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35
SHAN MEI STREET FOTAN NT Hong Kong
Report Number : SZ1210927-50387E-RF-00C
FCC ID: 2ADYY-KG5K

Test Standard (s)

FCC PART 15.407

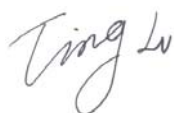
Sample Description

Product Type: Mobile Phone
Model No.: KG5k
Multiple Model(s) No.: N/A
Trade Mark: TECNO
Date Received: 2021/09/27
Date of Test: 2021/10/21~2021/11/16
Report Date: 2021/11/16

Test Result:	Pass*
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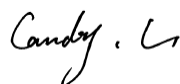
* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:



Ting Lü
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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TABLE OF CONTENTS

GENERAL INFORMATION	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	5
TEST FACILITY	5
SYSTEM TEST CONFIGURATION	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	7
DUTY CYCLE	8
EQUIPMENT MODIFICATIONS	8
SUPPORT EQUIPMENT LIST AND DETAILS	8
EXTERNAL I/O CABLE	9
BLOCK DIAGRAM OF TEST SETUP	9
SUMMARY OF TEST RESULTS	10
TEST EQUIPMENT LIST	11
FCC §1.1307 (B) (1) & §2.1093 – RF EXPOSURE	13
APPLICABLE STANDARD	13
FCC §15.203 – ANTENNA REQUIREMENT	14
APPLICABLE STANDARD	14
ANTENNA CONNECTOR CONSTRUCTION	14
FCC §15.407 (B) (6) §15.207 (A) – CONDUCTED EMISSIONS	15
APPLICABLE STANDARD	15
EUT SETUP	15
EMI TEST RECEIVER SETUP	15
TEST PROCEDURE	15
TEST DATA	16
§15.205 & §15.209 & §15.407(B)– UNDESIRABLE EMISSION	19
APPLICABLE STANDARD	19
EUT SETUP	19
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	20
TEST PROCEDURE	20
CORRECTED AMPLITUDE & MARGIN CALCULATION	21
TEST DATA	21
FCC §15.407(A),(E) – 26 DB & 6DB EMISSION BANDWIDTH	38
APPLICABLE STANDARD	38
TEST PROCEDURE	38
TEST DATA	39
FCC §15.407(A) – CONDUCTED TRANSMITTER OUTPUT POWER	40
APPLICABLE STANDARD	40
TEST PROCEDURE	40
TEST DATA	41
FCC §15.407(A) - POWER SPECTRAL DENSITY	42

TEST PROCEDURE	42
TEST DATA	43
APPENDIX	44
APPENDIX A1: EMISSION BANDWIDTH	44
APPENDIX A2: OCCUPIED CHANNEL BANDWIDTH	50
APPENDIX A3: MIN EMISSION BANDWIDTH.....	61
APPENDIX B: MAXIMUM CONDUCTED OUTPUT POWER	67
APPENDIX C: MAXIMUM POWER SPECTRAL DENSITY	68
APPENDIX D: DUTY CYCLE.....	79

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5G Wi-Fi: 5150-5250MHz; 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Output Power	5150-5250 MHz: 7.36dBm 5725-5850 MHz: 5.36dBm
Modulation Technique	OFDM
Antenna Specification*	-0.9dBi (It is provided by the manufacturer)
Voltage Range	DC 3.85V from battery or DC 5.0 from adapter
Sample serial number	SZ1210927-50387E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: U100TSA Input: AC 100-240V ~ 50/60Hz, 0.3A Output: DC 5.0V, 2.0A

Objective

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

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

Test Methodology

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

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Line Conducted emission		2.72dB
Emissions, Radiated	30MHz - 1GHz	4.28dB
	1GHz- 18GHz	4.98dB
	18GHz- 26.5GHz	5.06dB
	26.5GHz- 40GHz	4.72dB
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 Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The device support 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes, which was declared by manufacturer.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a/n20/ac20 mode: channel 36, 40, 48 were tested;

For 802.11n40/ac40 mode: channel 38, 46 were tested;

For 802.11ac80 mode, channel 42 was tested.

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a/n20/ac20 mode: channel 149, 157, 165 were tested;

For 802.11n40/ac40 mode: channel 151, 159 were tested;

For 802.11ac80 mode, channel 155 was tested.

EUT Exercise Software

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

The worst case was performed under:

U-NII	Mode	Frequency (MHz)	Data Rate	Power Level*
5150 – 5250MHz	802.11 a	5180	6Mbps	0
		5200	6Mbps	0
		5240	6Mbps	0
	802.11 n20	5180	MCS0	0
		5200	MCS0	0
		5240	MCS0	0
	802.11 n40	5190	MCS0	0
		5230	MCS0	0
	802.11 ac20	5180	MCS0	0
		5200	MCS0	0
		5240	MCS0	0
	802.11 ac40	5190	MCS0	0
		5230	MCS0	0
	802.11 ac80	5210	MCS0	0
	802.11 ax20	5180	MCS0	0
		5200	MCS0	0
		5240	MCS0	0
	802.11 ax40	5190	MCS0	0
		5230	MCS0	0
	802.11 ax80	5210	MCS0	0

U-NII	Mode	Frequency (MHz)	Data Rate	Power Level*
5725 – 5850MHz	802.11 a	5745	6Mbps	0
		5785	6Mbps	0
		5825	6Mbps	0
	802.11 n20	5745	MCS0	0
		5785	MCS0	0
		5825	MCS0	0
	802.11 n40	5755	MCS0	0
		5795	MCS0	0
	802.11 ac20	5745	MCS0	0
		5785	MCS0	0
		5825	MCS0	0
	802.11 ac40	5755	MCS0	0
		5795	MCS0	0
	802.11 ac80	5775	MCS0	0
	802.11 ax20	5745	MCS0	0
		5785	MCS0	0
		5825	MCS0	0
	802.11 ax40	5755	MCS0	0
		5795	MCS0	0
	802.11 ax80	5775	MCS0	0

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.

Duty cycle

Test Result: Pass. Please refer to the Appendix.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

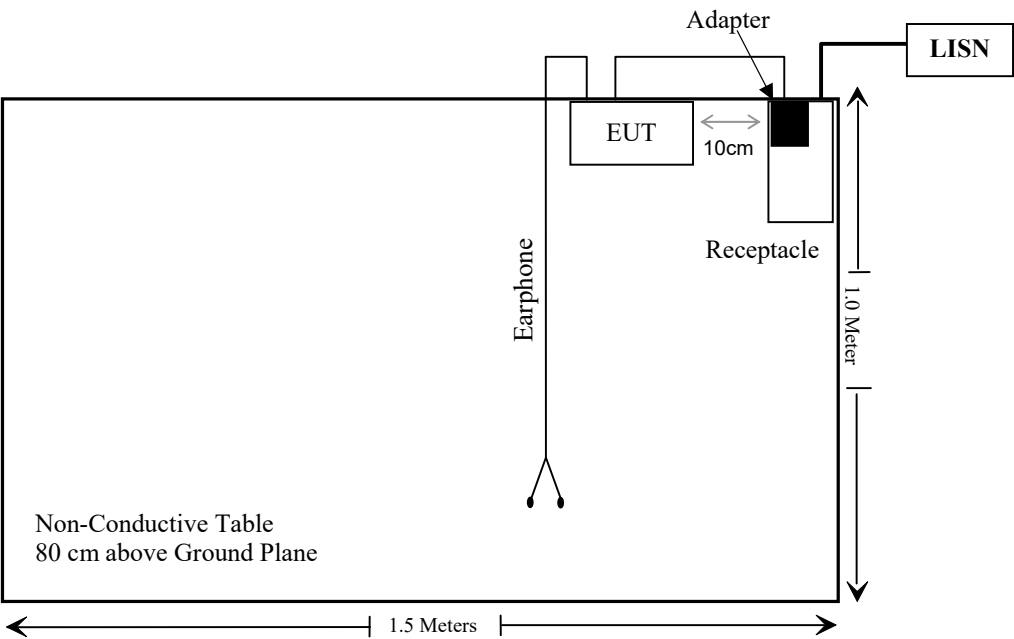
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

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

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

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

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission test					
Rohde& Schwarz	Test Receiver	ESPI3	100396	2020/12/24	2021/12/23
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50ΩCoaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Conducted Emission Test Software: e3 19821G (V9)					
Radiated emission test					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/28	2021/11/27
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
SCHWARZBECK	LOOP ANTENNA	FMZB1516	1516131	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
OREGON SCIENTIFIC	Temperature & Humidity Meter	JB913R	GZ-WS004	2020/01/02	2023/01/01
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.725/5.875G-45	065	2020/12/25	2021/12/24
Radiated Emission Test Software: e3 19821G (V9)					
Radiated Emission Test Software: EZ_EMV V 1.1.4.2					

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF conducted test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Rohde & Schwarz	Open Switch and Control Unit	OSP120 + OSP-B157	101244 + 100866	2020/12/24	2021/12/23
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307 (b) (1) & §2.1093 – RF EXPOSURE

Applicable Standard

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

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

For worst case:

Frequency (MHz)	Maximum Tune-up power		Calculated Distance (mm)	Calculated Value	Threshold (1-g SAR)	SAR Test Exclusion
	(dBm)	(mW)				
5150-5250	7.5	5.62	5	2.6	3.0	Yes
5725-5850	5.5	3.55	5	1.7	3.0	Yes

Result: No Standalone SAR test is required

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

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

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

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna arrangement for 5G Wi-Fi, which was permanently attached and the antenna gain is -0.9dBi, fulfill the requirement of this section. Please refer to the EUT photos.

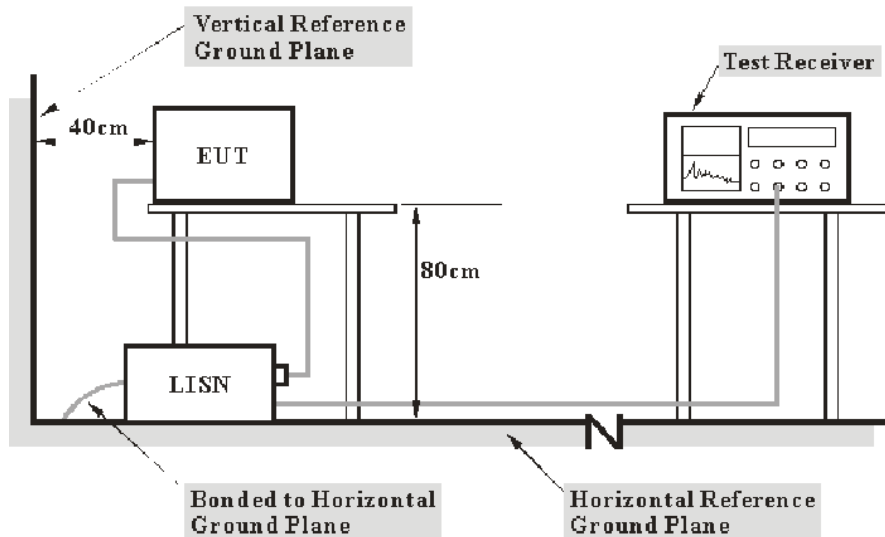
Result: Compliant.

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

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

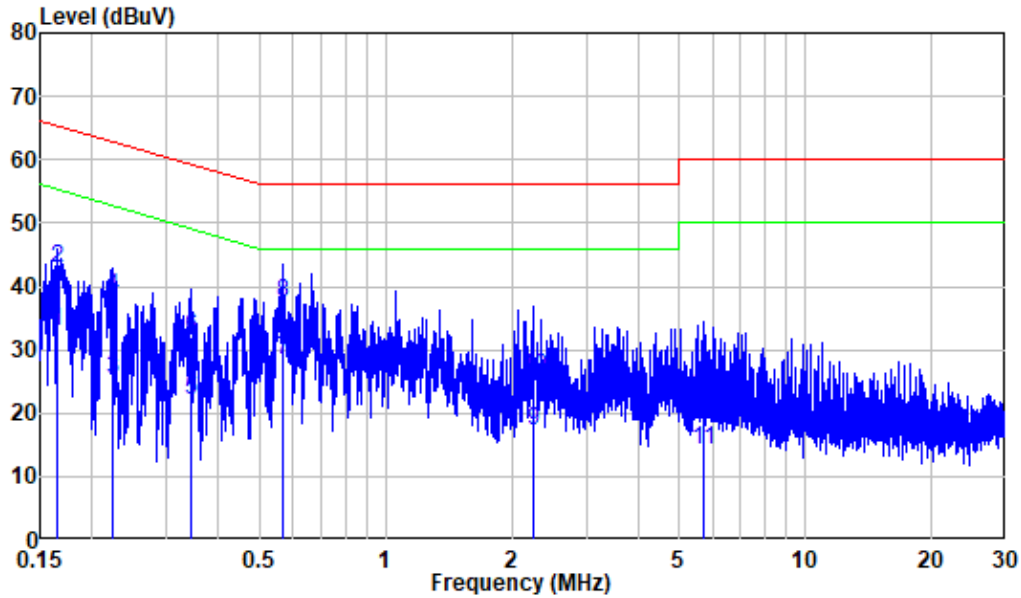
All data was recorded in the Quasi-peak and Average detection mode.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

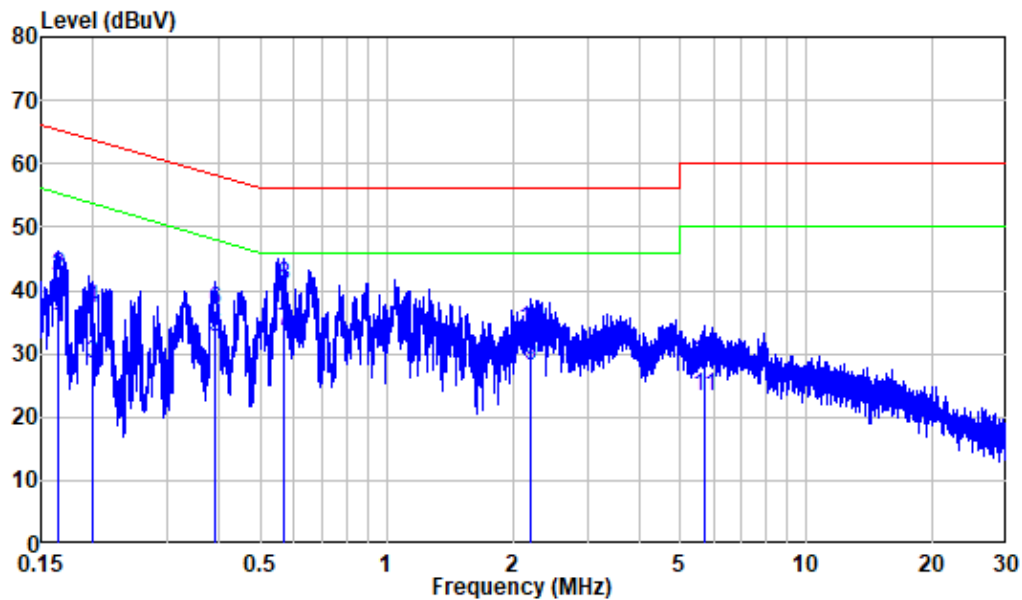
The testing was performed by Bin Duan on 2021-11-16.

EUT operation mode: Transmitting

AC 120V/60 Hz, Line:

Site : Shielding Room
 Condition: Line
 Mode : 5G WIFI
 Model : KG5kTECNO MOBILE LIMITED

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.165	9.87	23.03	32.90	55.20	-22.30	Average
2	0.165	9.87	33.04	42.91	65.20	-22.29	QP
3	0.222	9.80	15.56	25.36	52.73	-27.37	Average
4	0.222	9.80	28.61	38.41	62.73	-24.32	QP
5	0.345	9.80	12.28	22.08	49.09	-27.01	Average
6	0.345	9.80	22.28	32.08	59.09	-27.01	QP
7	0.569	9.81	18.67	28.48	46.00	-17.52	Average
8	0.569	9.81	27.52	37.33	56.00	-18.67	QP
9	2.241	9.92	7.18	17.10	46.00	-28.90	Average
10	2.241	9.92	15.61	25.53	56.00	-30.47	QP
11	5.691	10.02	4.29	14.31	50.00	-35.69	Average
12	5.691	10.02	12.57	22.59	60.00	-37.41	QP

AC 120V/60 Hz, Neutral:

Site : Shielding Room
 Condition: Neutral
 Mode : 5G WIFI
 Model : KG5kTECNO MOBILE LIMITED

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.164	9.1	24.29	34.22	55.24	-21.02	Average
2	0.164	9.93	32.44	42.37	65.24	-22.87	QP
3	0.200	10.00	18.40	28.40	53.62	-25.22	Average
4	0.200	10.00	27.09	37.09	63.62	-26.53	QP
5	0.388	9.93	22.76	32.69	48.10	-15.41	Average
6	0.388	9.93	26.78	36.71	58.10	-21.39	QP
7	0.567	9.91	23.66	33.57	46.00	-12.43	Average
8	0.567	9.91	30.79	40.70	56.00	-15.30	QP
9	2.207	9.93	18.18	28.11	46.00	-17.89	Average
10	2.207	9.93	24.03	33.96	56.00	-22.04	QP
11	5.721	10.06	13.16	23.22	50.00	-26.78	Average
12	5.721	10.06	18.69	28.75	60.00	-31.25	QP

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

Applicable Standard

FCC §15.407 (b); §15.209; §15.205;

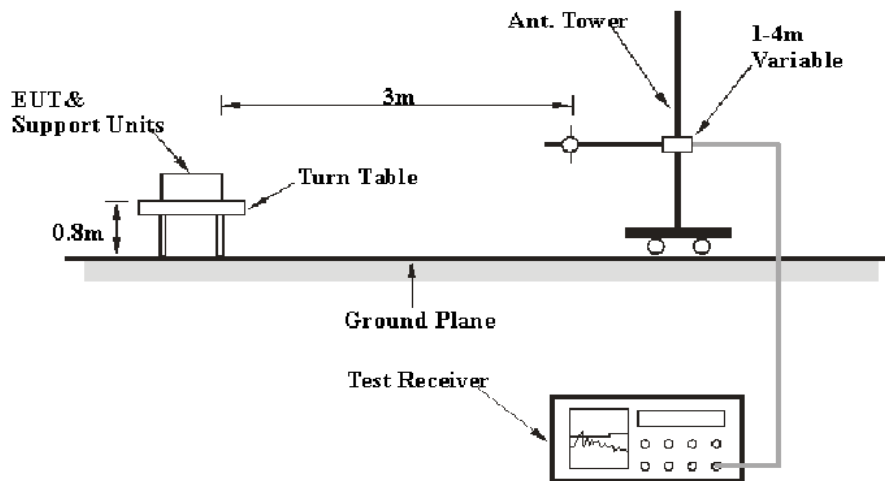
(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

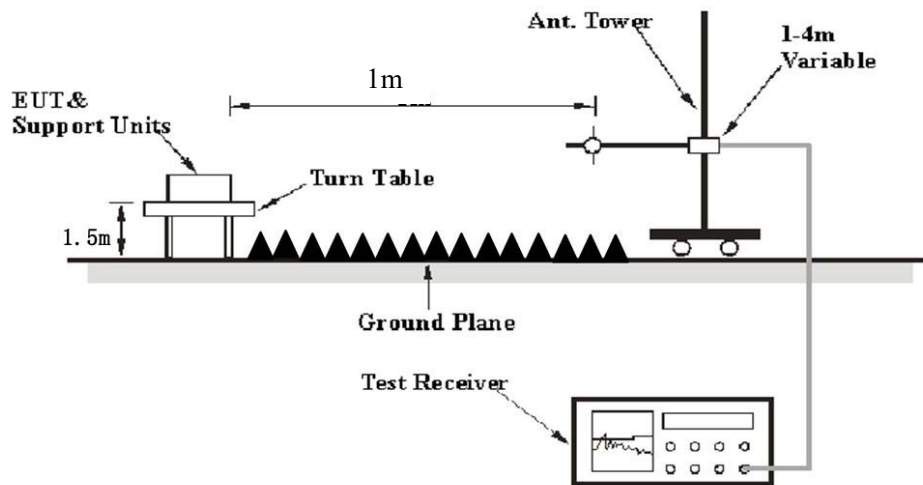
- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.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

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

EUT Setup

Below 1 GHz:



Above 1 GHz:

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

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

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

Note 2: when duty cycle is less than 98%

Test Procedure**Radiated Spurious Emission**

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

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

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

Corrected Amplitude & Margin Calculation

The 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:

$$\text{Margin/Over limit} = \text{Corrected Amplitude} - \text{Limit}$$

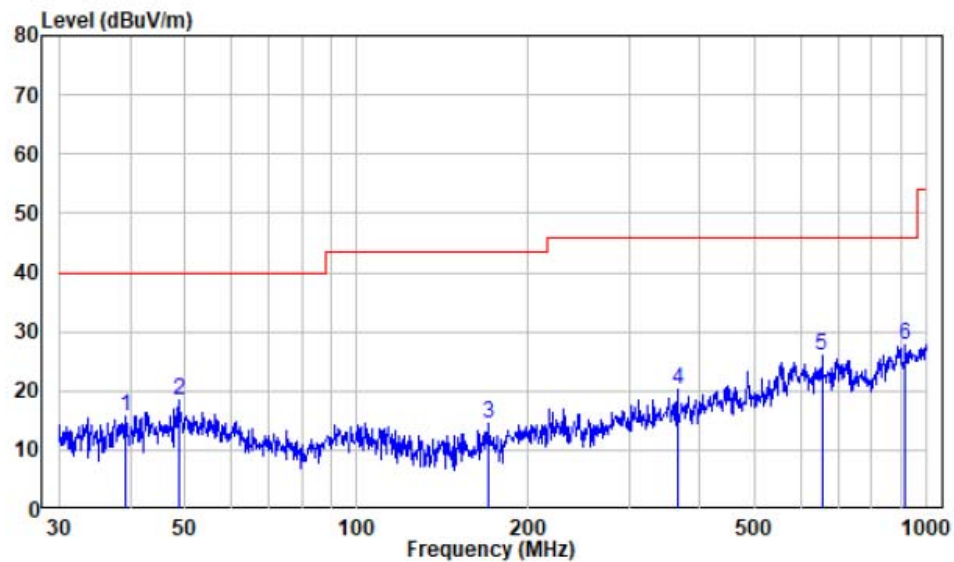
Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50~64 %
ATM Pressure:	103 kPa

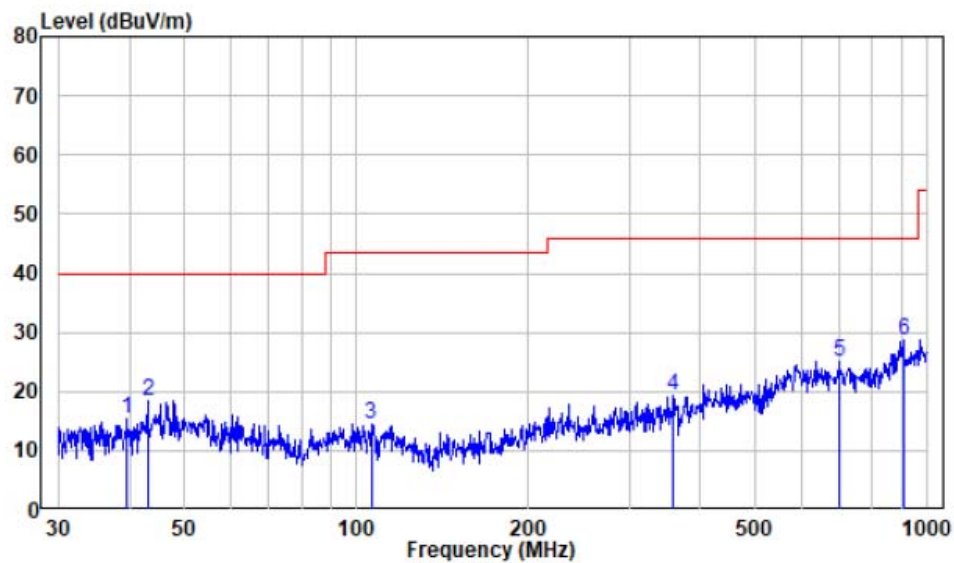
The testing was performed by Bin Deng on 2021-11-09 for below 1GHz and by Chao Mo from 2021-10-21 to 2021-11-09 for above 1GHz.

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

30 MHz – 1 GHz:

Site : chamber
Condition: 3m HORIZONTAL
Job NO. : SZ1210927-50387E-RF
Mode : 5G WIFI

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	39.30	-18.76	34.33	15.57	40.00	-24.43	Peak
2	48.67	-17.29	35.77	18.48	40.00	-21.52	Peak
3	169.60	-21.00	35.55	14.55	43.50	-28.95	Peak
4	365.54	-15.84	36.16	20.32	46.00	-25.68	Peak
5	654.23	-11.17	37.09	25.92	46.00	-20.08	Peak
6	916.07	-7.93	35.82	27.89	46.00	-18.11	Peak



Site : chamber
Condition: 3m VERTICAL
Job NO. : SZ1210927-50387E-RF
Mode : 5G WIFI

	Freq Factor		Read	Limit	Over	Remark
	MHz	dB/m	Level	Level	Line	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	39.58	-18.72	34.11	15.39	40.00	-24.61 Peak
2	43.05	-17.91	36.24	18.33	40.00	-21.67 Peak
3	106.01	-19.17	33.78	14.61	43.50	-28.89 Peak
4	359.19	-15.94	35.26	19.32	46.00	-26.68 Peak
5	699.30	-11.38	36.56	25.18	46.00	-20.82 Peak
6	906.48	-8.04	36.84	28.80	46.00	-17.20 Peak

1GHz –40 GHz:**5150-5250 MHz:**

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
4500	41.59	PK	282	2.1	H	1.89	43.48	74	-30.52
4500	42	PK	339	1.5	V	1.89	43.89	74	-30.11
5150	67.34	PK	282	2.1	H	3.37	70.71	74	-3.29
5150	42.49	AV	282	2.1	H	3.37	45.86	54	-8.14
5150	67.18	PK	315	1.3	V	3.37	70.55	74	-3.45
5150	41.9	AV	315	1.3	V	3.37	45.27	54	-8.73
10360	38.45	PK	63	1.1	H	14.41	52.86	68.2	-15.34
10360	39.58	PK	63	1.1	V	14.41	53.99	68.2	-14.21
5200 MHz									
10400	37.52	PK	144	14.5	H	14.46	51.98	68.2	-16.22
10400	38.31	PK	28	14.5	V	14.46	52.77	68.2	-15.43
5240 MHz									
5350	42.05	PK	220	1.3	H	3.33	45.38	74	-28.62
5350	41.35	PK	46	2.5	V	3.33	44.68	74	-29.32
5460	41.97	PK	220	1.3	H	3.31	45.28	74	-28.72
5460	39.11	PK	164	1.6	V	3.31	42.42	74	-31.58
10480	36.14	PK	82	1.2	H	14.53	50.67	68.2	-17.53
10480	36.25	PK	318	1.8	V	14.53	50.78	68.2	-17.42

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5180 MHz									
4500	40.59	PK	231	1.7	H	1.89	42.48	74	-31.52
4500	41.09	PK	280	1.3	V	1.89	42.98	74	-31.02
5150	64.42	PK	231	1.7	H	3.37	67.79	74	-6.21
5150	42.17	AV	231	1.7	H	3.37	45.54	54	-8.46
5150	64.54	PK	41	2.1	V	3.37	67.91	74	-6.09
5150	42.99	AV	41	2.1	V	3.37	46.36	54	-7.64
10360	38.11	PK	44	2.3	H	14.41	52.52	68.2	-15.68
10360	37.57	PK	41	2.1	V	14.41	51.98	68.2	-16.22
5200 MHz									
10400	37	PK	236	14.5	H	14.46	51.46	68.2	-16.74
10400	37.52	PK	1	14.5	V	14.46	51.98	68.2	-16.22
5240 MHz									
5350	39.41	PK	329	1.7	H	3.33	42.74	74	-31.26
5350	39.62	PK	46	2.5	V	3.33	42.95	74	-31.05
5460	39.58	PK	329	1.7	H	3.31	42.89	74	-31.11
5460	40.4	PK	256	1.1	V	3.31	43.71	74	-30.29
10480	37.5	PK	38	1.4	H	14.53	52.03	68.2	-16.17
10480	37.89	PK	212	1.3	V	14.53	52.42	68.2	-15.78

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
4500	40.86	PK	293	1.1	H	1.89	42.75	74	-31.25
4500	41.72	PK	199	1.2	V	1.89	43.61	74	-30.39
5150	65.17	PK	293	1.1	H	3.37	68.54	74	-5.46
5150	43.28	AV	293	1.1	H	3.37	46.65	54	-7.35
5150	64.59	PK	218	1.7	V	3.37	67.96	74	-6.04
5150	43.37	AV	218	1.7	V	3.37	46.74	54	-7.26
10380	37.24	PK	218	1.7	H	14.41	51.65	68.2	-16.55
10380	37.44	PK	218	1.7	V	14.41	51.85	68.2	-16.35
5230 MHz									
5350	40.44	PK	220	1.3	H	3.33	43.77	74	-30.23
5350	40.09	PK	46	2.5	V	3.33	43.42	74	-30.58
5460	39.04	PK	220	1.3	H	3.31	42.35	74	-31.65
5460	38.71	PK	314	2.2	V	3.31	42.02	74	-31.98
10460	36.32	PK	345	1.5	H	14.53	50.85	68.2	-17.35
10460	36.22	PK	316	1.4	V	14.53	50.75	68.2	-17.45

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/AV	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	38.57	PK	318	2.2	H	1.89	40.46	74	-33.54
4500	39.14	PK	119	2.0	V	1.89	41.03	74	-32.97
5150	65.78	PK	318	2.2	H	3.37	69.15	74	-4.85
5150	44.39	AV	119	2.0	H	3.37	47.76	54	-6.24
5150	64.89	PK	116	2.2	V	3.37	68.26	74	-5.74
5150	44.75	AV	116	2.2	V	3.37	48.12	54	-5.88
10360	38.85	PK	116	2.2	H	14.41	53.26	68.2	-14.94
10360	39.12	PK	116	2.2	V	14.41	53.53	68.2	-14.67
5200 MHz									
10400	38.07	PK	123	14.5	H	14.46	52.53	68.2	-15.67
10400	37.97	PK	262	14.5	V	14.46	52.43	68.2	-15.77
5240 MHz									
5350	40.46	PK	194	1.9	H	3.33	43.79	74	-30.21
5350	40.3	PK	46	2.5	V	3.33	43.63	74	-30.37
5460	40.14	PK	194	1.9	H	3.31	43.45	74	-30.55
5460	39.63	PK	281	1.8	V	3.31	42.94	74	-31.06
10480	37.14	PK	255	2.1	H	14.53	51.67	68.2	-16.53
10480	38.28	PK	353	1.1	V	14.53	52.81	68.2	-15.39

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5190 MHz									
4500	40	PK	323	1.3	H	1.89	41.89	74	-32.11
4500	40.59	PK	241	1.7	V	1.89	42.48	74	-31.52
5150	63.89	PK	323	1.3	H	3.37	67.26	74	-6.74
5150	42.18	AV	323	1.3	H	3.37	45.55	54	-8.45
5150	64.22	PK	160	1.9	V	3.37	67.59	74	-6.41
5150	43.3	AV	160	1.9	V	3.37	46.67	54	-7.33
10380	37.93	PK	277	2.2	H	14.43	52.36	68.2	-15.84
10380	38.10	PK	18	2.2	V	14.43	52.53	68.2	-15.67
5230 MHz									
5350	39.41	PK	180	2.2	H	3.33	42.74	74	-31.26
5350	39	PK	46	2.5	V	3.33	42.33	74	-31.67
5460	39.95	PK	180	2.2	H	3.31	43.26	74	-30.74
5460	40.25	PK	332	1.1	V	3.31	43.56	74	-30.44
10460	38.29	PK	123	1.6	H	14.53	52.82	68.2	-15.38
10460	37.56	PK	223	1.6	V	14.53	52.09	68.2	-16.11

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Correcte d Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Heigh t (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5210 MHz									
4500	41.99	PK	336	1.8	H	1.89	43.88	74	-30.12
4500	41.7	PK	93	1.6	V	1.89	43.59	74	-30.41
5150	64.96	PK	336	1.8	H	3.37	68.33	74	-5.67
5150	45.77	AV	336	1.8	H	3.37	49.14	54	-4.86
5150	64.96	PK	329	1.1	V	3.37	68.33	74	-5.67
5150	46.08	AV	329	1.1	V	3.37	49.45	54	-4.55
5350	40.42	PK	316	1.3	H	3.33	43.75	74	-30.25
5350	39.43	PK	46	2.5	V	3.33	42.76	74	-31.24
5460	39.6	PK	316	1.3	H	3.31	42.91	74	-31.09
5460	40.58	PK	118	1.2	V	3.31	43.89	74	-30.11
10420	37.15	PK	296	1.7	H	14.48	51.63	68.2	-16.57
10420	37.70	PK	74	1.7	V	14.48	52.18	68.2	-16.02

5725-5850 MHz:

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5650	35.60	PK	204	1.1	H	3.75	39.35	68.2	-28.85
5650	34.17	PK	172	1.5	V	3.75	37.92	68.2	-30.28
5700	71.85	PK	228	1.7	H	3.89	75.74	105.2	-29.46
5700	69.67	PK	80	2.5	V	3.89	73.56	105.2	-31.64
5720	-1926.15	PK	210	2	H	3.95	-1922.20	110.8	-2033
5720	90.01	PK	194	2.4	V	3.95	93.96	110.8	-16.84
5725	98.87	PK	110	1.7	H	3.97	102.84	122.2	-19.36
5725	102.65	PK	261	1.1	V	3.97	106.62	122.2	-15.58
11490	43.52	PK	15	1.2	H	14.74	58.26	74	-15.74
11490	35.37	AV	299	1.2	H	14.74	50.11	54	-3.89
11490	43.15	PK	29	1.7	v	14.74	57.89	74	-16.11
11490	34.61	AV	320	1.4	v	14.74	49.35	54	-4.65
5785 MHz									
11570	40.92	PK	19	14.5	H	14.64	55.56	74	-18.44
11570	30.93	AV	19	14.5	H	14.64	45.57	54	-8.43
11570	40.14	PK	38	14.1	V	14.64	54.78	74	-19.22
11570	30.13	AV	38	14.1	V	14.64	44.77	54	-9.23
5825 MHz									
5850	102.61	PK	258	2.1	H	4.33	106.94	122.2	-15.26
5850	100.47	PK	134	1.9	V	4.33	104.80	122.2	-17.4
5855	89.85	PK	98	2.2	H	4.35	94.20	110.8	-16.6
5855	87.98	PK	251	2.5	V	4.35	92.33	110.8	-18.47
5875	82.15	PK	126	1.8	H	4.41	86.56	105.2	-18.64
5875	81.53	PK	3	2.2	V	4.41	85.94	105.2	-19.26
5925	44.51	PK	279	2.2	H	4.55	49.06	68.2	-19.14
5925	36.51	PK	128	1.8	V	4.55	41.06	68.2	-27.14
11650	44.44	PK	1	1.5	H	14.79	59.23	74	-14.77
11650	35.23	AV	237	1.2	H	14.79	50.02	54	-3.98
11650	44.34	PK	168	1.9	V	14.79	59.13	74	-14.87
11650	34.40	AV	109	1.7	V	14.79	49.19	54	-4.81

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745 MHz									
5650	33.37	PK	48	1.8	H	3.75	37.12	68.2	-31.08
5650	31.90	PK	177	1.3	V	3.75	35.65	68.2	-32.55
5700	68.15	PK	304	1.4	H	3.89	72.04	105.2	-33.16
5700	67.47	PK	249	2.3	V	3.89	71.36	105.2	-33.84
5720	75.41	PK	225	1.2	H	3.95	79.36	110.8	-31.44
5720	73.68	PK	321	2.3	V	3.95	77.63	110.8	-33.17
5725	93.55	PK	7	2.2	H	3.97	97.52	122.2	-24.68
5725	93.62	PK	147	2	V	3.97	97.59	122.2	-24.61
11490	36.86	PK	216	1.1	H	14.78	51.64	74	-22.36
11490	36.76	PK	216	1.1	V	14.78	51.54	74	-22.46
5785 MHz									
11570	36.17	PK	19	14.5	H	14.64	50.81	74	-23.19
11570	35.83	PK	19	14.5	V	14.64	50.47	74	-23.53
5825 MHz									
5850	92.74	PK	132	1.5	H	4.33	97.07	122.2	-25.13
5850	92.90	PK	252	1.4	V	4.33	97.23	122.2	-24.97
5855	79.63	PK	103	1.6	H	4.35	83.98	110.8	-26.82
5855	79.26	PK	152	1.4	V	4.35	83.61	110.8	-27.19
5875	74.67	PK	36	2.2	H	4.41	79.08	105.2	-26.12
5875	72.87	PK	8	1.9	V	4.41	77.28	105.2	-27.92
5925	40.54	PK	296	1.8	H	4.55	45.09	68.2	-23.11
5925	40.64	PK	82	2.1	V	4.55	45.19	68.2	-23.01
11650	35.91	PK	302	1.4	H	14.51	50.42	74	-23.58
11650	36.88	PK	78	2.0	V	14.51	51.39	74	-22.61

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5755 MHz									
5650	32.01	PK	311	2.1	H	3.75	35.76	68.2	-32.44
5650	32.81	PK	347	1.2	V	3.75	36.56	68.2	-31.64
5700	66.70	PK	303	2.3	H	3.89	70.59	105.2	-34.61
5700	65.49	PK	74	1.7	V	3.89	69.38	105.2	-35.82
5720	72.03	PK	255	1.1	H	3.95	75.98	110.8	-34.82
5720	70.86	PK	312	1.4	V	3.95	74.81	110.8	-35.99
5725	94.74	PK	177	1.3	H	3.97	98.71	122.2	-23.49
5725	95.34	PK	216	1.7	V	3.97	99.31	122.2	-22.89
11510	35.55	PK	5	1.5	H	14.78	50.33	74	-23.67
11510	36.07	PK	5	1.5	V	14.78	50.85	74	-23.15
5795 MHz									
5850	93.48	PK	138	2.4	H	4.33	97.81	122.2	-24.39
5850	93.64	PK	162	1.5	V	4.33	97.97	122.2	-24.23
5855	80.53	PK	227	1.4	H	4.35	84.88	110.8	-25.92
5855	79.74	PK	137	2.1	V	4.35	84.09	110.8	-26.71
5875	73.95	PK	208	1.7	H	4.41	78.36	105.2	-26.84
5875	73.63	PK	333	2.3	V	4.41	78.04	105.2	-27.16
5925	41.29	PK	70	1.2	H	4.55	45.84	68.2	-22.36
5925	40.87	PK	65	2.3	V	4.55	45.42	68.2	-22.78
11590	35.13	PK	327	1.8	H	14.51	49.64	74	-24.36
11590	35.37	PK	195	1.7	V	14.51	49.88	74	-24.12

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745 MHz									
5650	33.71	PK	126	2.1	H	3.75	37.46	68.2	-30.74
5650	33.81	PK	29	2.3	V	3.75	37.56	68.2	-30.64
5700	69.69	PK	132	1.6	H	3.89	73.58	105.2	-31.62
5700	69.30	PK	120	1.9	V	3.89	73.19	105.2	-32.01
5720	82.18	PK	250	2.1	H	3.95	86.13	110.8	-24.67
5720	80.91	PK	274	1.9	V	3.95	84.86	110.8	-25.94
5725	95.89	PK	346	1.1	H	3.97	99.86	122.2	-22.34
5725	95.74	PK	86	1.5	V	3.97	99.71	122.2	-22.49
11490	38.67	PK	21	1.6	H	14.74	53.41	74	-20.59
11490	38.40	PK	91	1.2	V	14.74	53.14	74	-20.86
5785 MHz									
11570	37.95	PK	225	14.5	H	14.64	52.59	74	-21.41
11570	38.39	PK	225	14.5	V	14.64	53.03	74	-20.97
5825 MHz									
5850	96.14	PK	45	2.2	H	4.33	100.47	122.2	-21.73
5850	97.41	PK	218	2.1	V	4.33	101.74	122.2	-20.46
5855	82.99	PK	183	1.5	H	4.35	87.34	110.8	-23.46
5855	81.53	PK	248	2.5	V	4.35	85.88	110.8	-24.92
5875	78.15	PK	111	1.3	H	4.41	82.56	105.2	-22.64
5875	77.62	PK	164	2.5	V	4.41	82.03	105.2	-23.17
5925	43.27	PK	63	1.5	H	4.55	47.82	68.2	-20.38
5925	42.58	PK	240	2.3	V	4.55	47.13	68.2	-21.07
11650	37.63	PK	272	2.4	H	14.79	52.42	74	-21.58
11650	39.02	PK	176	1.9	V	14.79	53.81	74	-20.19

Frequency (MHz)	Receiver		Turn- Table Angle Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15.407	
	Reading (dBµV)	Detector (PK/QP/AV)		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11ac40									
5755 MHz									
5650	32.99	PK	77	1.1	H	3.75	36.74	68.2	-31.46
5650	33.58	PK	319	2.4	V	3.75	37.33	68.2	-30.87
5700	69.15	PK	6	2.1	H	3.89	73.04	105.2	-32.16
5700	70.04	PK	13	2.1	V	3.89	73.93	105.2	-31.27
5720	78.39	PK	119	2.1	H	3.95	82.34	110.8	-28.46
5720	77.38	PK	357	1.1	V	3.95	81.33	110.8	-29.47
5725	94.79	PK	153	1.2	H	3.97	98.76	122.2	-23.44
5725	95.55	PK	259	2	V	3.97	99.52	122.2	-22.68
11510	37.91	PK	252	2.1	H	14.74	52.65	74	-21.35
11510	37.91	PK	252	2.1	H	14.74	52.65	74	-21.35
5795 MHz									
5850	95.11	PK	276	1.7	H	4.33	99.44	122.2	-22.76
5850	94.41	PK	310	1.2	V	4.33	98.74	122.2	-23.46
5855	80.61	PK	130	2.5	H	4.35	84.96	110.8	-25.84
5855	81.41	PK	342	2.2	V	4.35	85.76	110.8	-25.04
5875	76.22	PK	39	1.1	H	4.41	80.63	105.2	-24.57
5875	75.97	PK	233	2.3	V	4.41	80.38	105.2	-24.82
5925	38.97	PK	25	2.5	H	4.55	43.52	68.2	-24.68
5925	39.53	PK	158	1.3	V	4.55	44.08	68.2	-24.12
11590	35.67	PK	309	1.1	H	14.79	50.46	74	-23.54
11590	36.82	PK	320	1	V	14.79	51.61	74	-22.39

Frequency (MHz)	Receiver		Turn- Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/AV)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5775 MHz									
5650	34.06	PK	69	2.3	H	3.75	37.81	68.2	-30.39
5650	33.91	PK	327	2	V	3.75	37.66	68.2	-30.54
5700	68.07	PK	28	1.3	H	3.89	71.96	105.2	-33.24
5700	68.85	PK	30	1.9	V	3.89	72.74	105.2	-32.46
5720	75.01	PK	180	2	H	3.95	78.96	110.8	-31.84
5720	74.91	PK	353	2.3	V	3.95	78.86	110.8	-31.94
5725	96.84	PK	148	1.7	H	3.97	100.81	122.2	-21.39
5725	96.37	PK	248	1.5	V	3.97	100.34	122.2	-21.86
5850	94.72	PK	308	1.5	H	4.33	99.05	122.2	-23.15
5850	94.32	PK	294	1.1	V	4.33	98.65	122.2	-23.55
5855	80.81	PK	358	1.5	H	4.35	85.16	110.8	-25.64
5855	81.60	PK	251	2.1	V	4.35	85.95	110.8	-24.85
5875	76.12	PK	196	2.4	H	4.41	80.53	105.2	-24.67
5875	75.63	PK	274	1.4	V	4.41	80.04	105.2	-25.16
5925	39.97	PK	149	1.6	H	4.55	44.52	68.2	-23.68
5925	41.47	PK	205	1.3	V	4.55	46.02	68.2	-22.18
11550	38.4	PK	49	1.8	H	14.51	52.91	74	-21.09
11550	38.68	PK	1	1.6	V	14.51	53.19	74	-20.81

Note:

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

Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

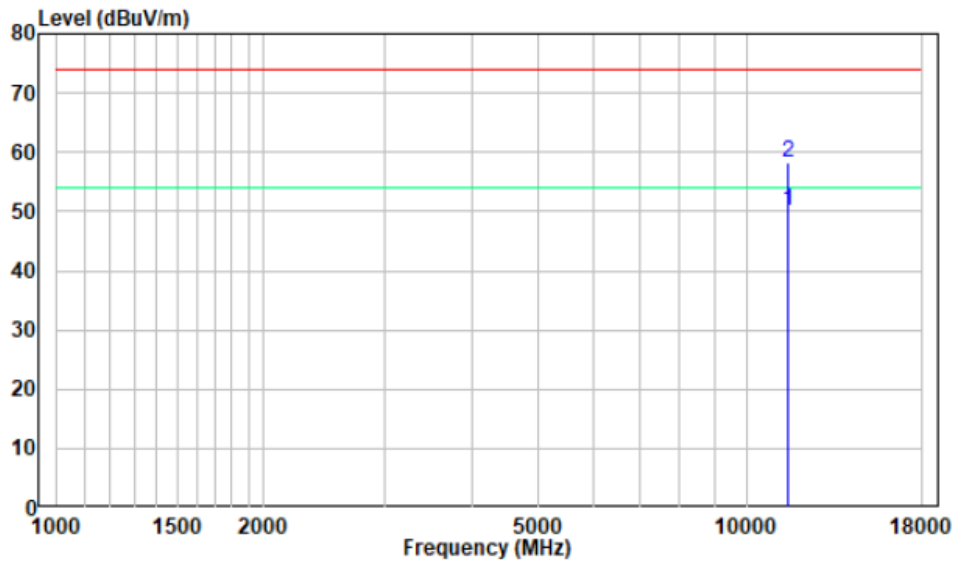
The other spurious emission which is in the noise floor level was not recorded.

The test result of peak was less than the limit of average, so just peak values were recorded.

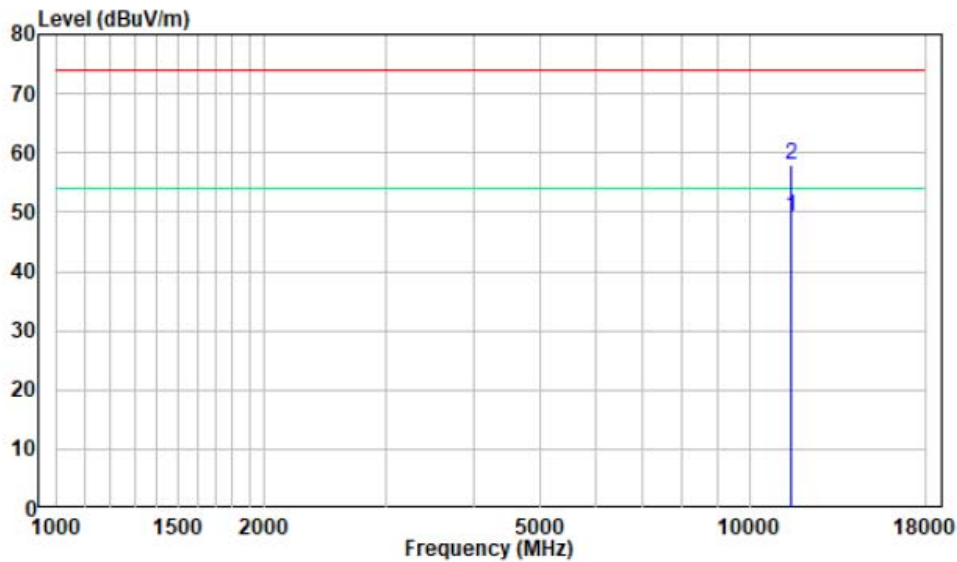
1-18 GHz:

Pre-scan for 802.11a 5745MHz

Horizontal:



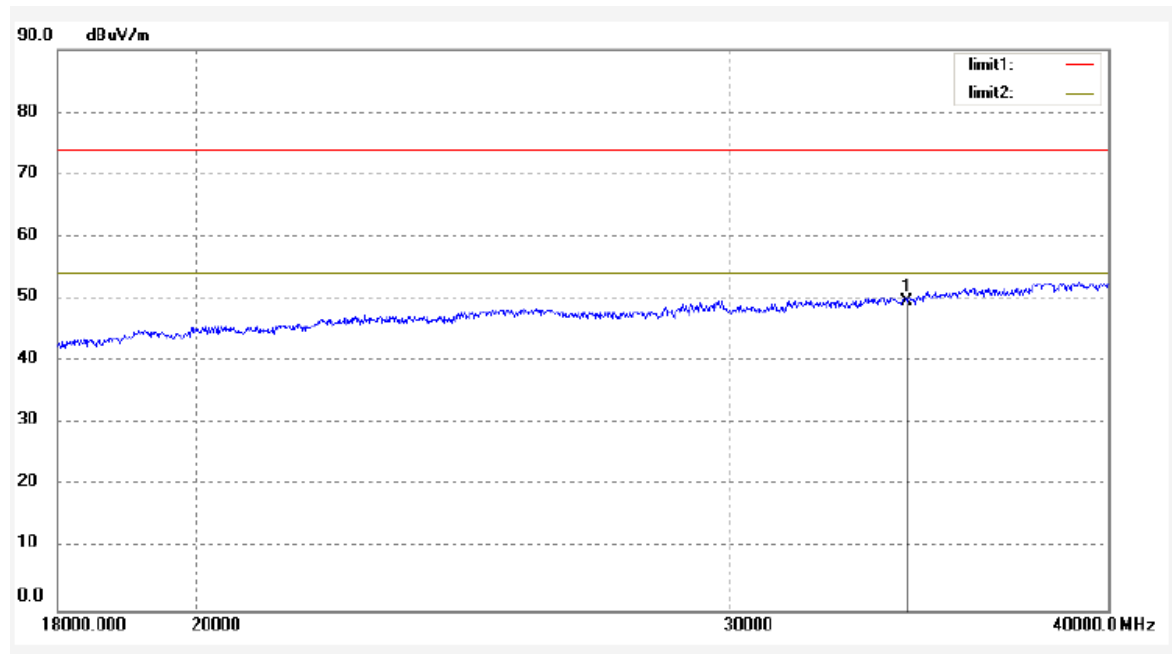
Vertical:



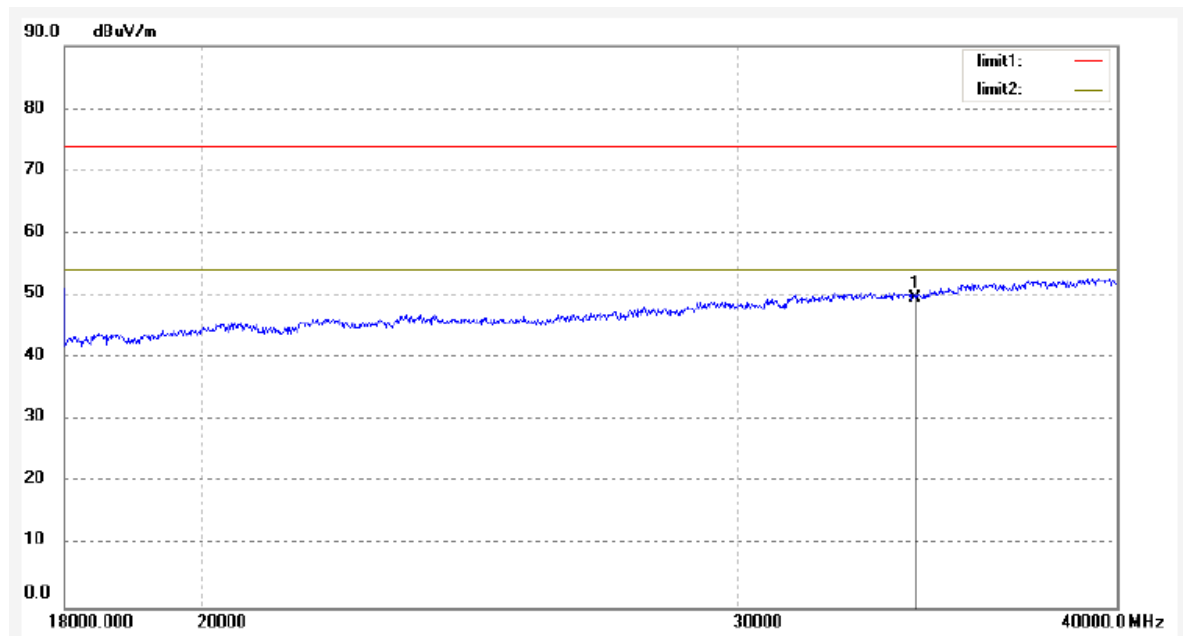
18-40 GHz:

Pre-scan for 802.11a 5745MHz

Horizontal:



Vertical:



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

Applicable Standard

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

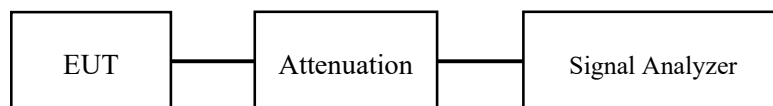
1. Emission Bandwidth (EBW)

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ 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:	24 °C
Relative Humidity:	63 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu on 2021-11-11 and 2021-11-12.

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.

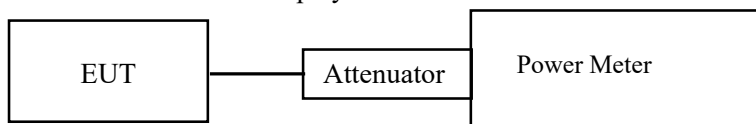
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting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

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



Test Data**Environmental Conditions**

Temperature:	24 °C
Relative Humidity:	63 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu on 2021-11-11.

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:	24 °C
Relative Humidity:	63 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul Liu on 2021-11-12.

EUT operation mode: Transmitting

Test Result: Pass

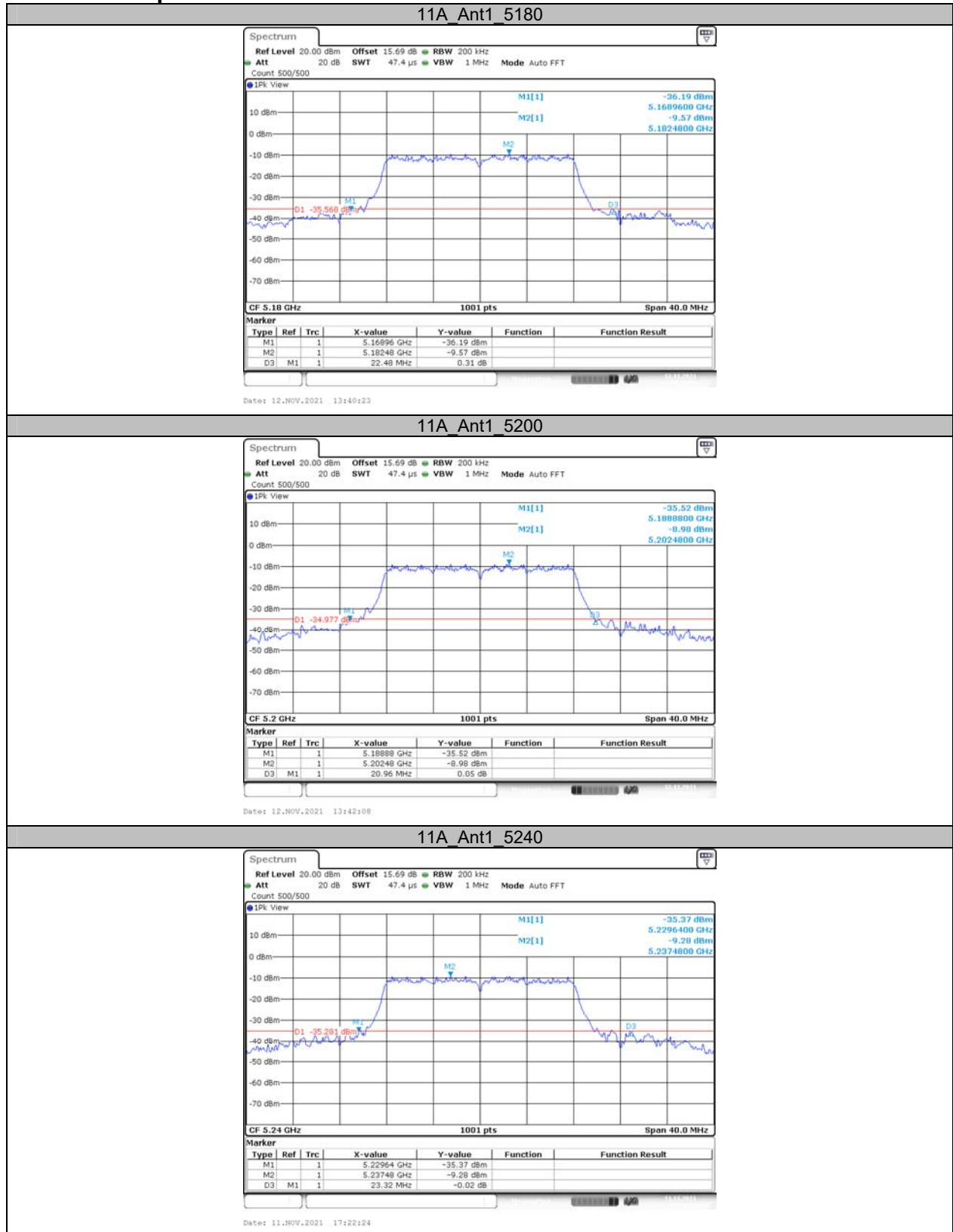
Please refer to the Appendix.

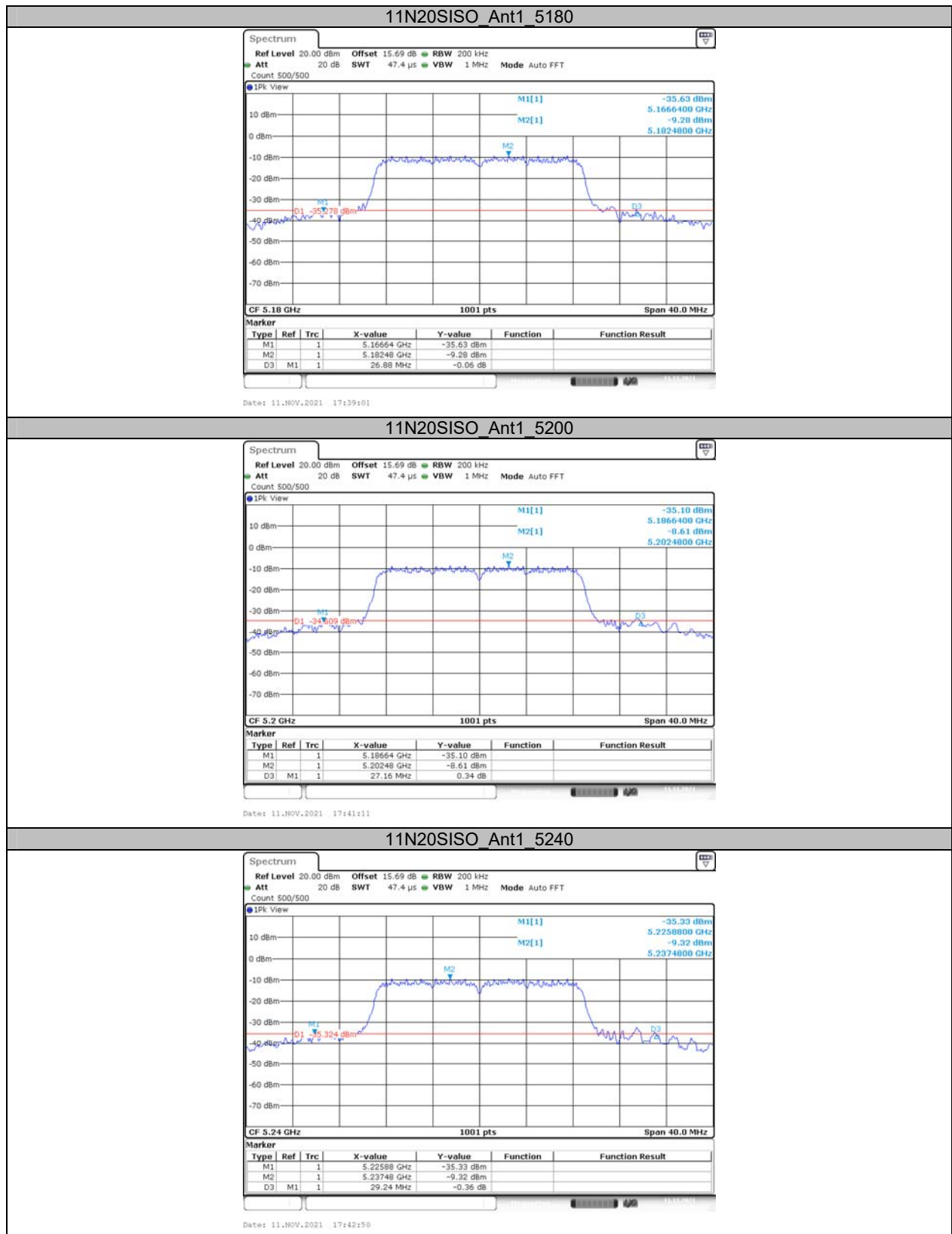
APPENDIX

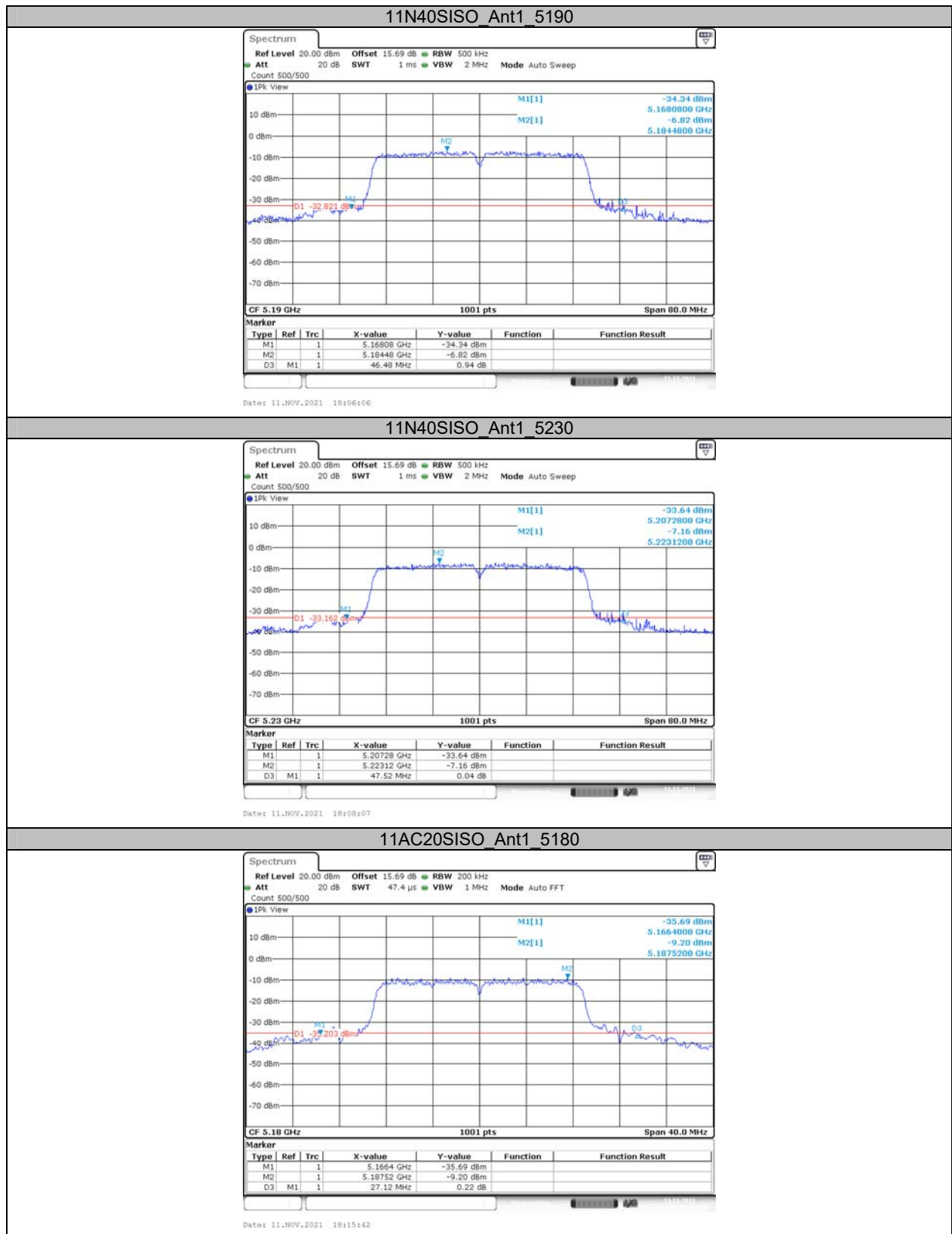
Appendix A1: Emission Bandwidth Test Result

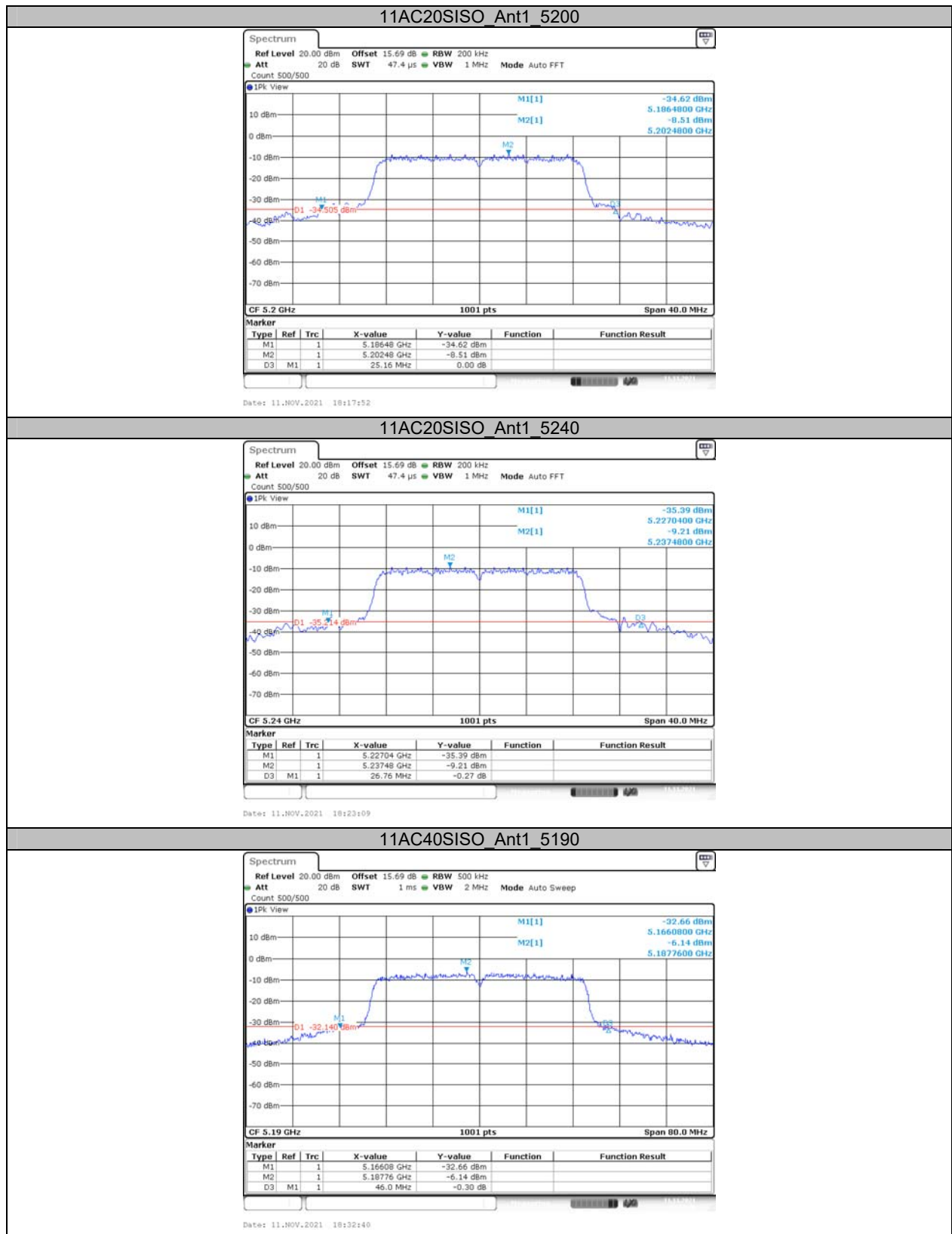
Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	22.480	---	PASS
		5200	20.960	---	PASS
		5240	23.320	---	PASS
11N20SISO	Ant1	5180	26.880	---	PASS
		5200	27.160	---	PASS
		5240	29.240	---	PASS
11N40SISO	Ant1	5190	46.480	---	PASS
		5230	47.520	---	PASS
11AC20SISO	Ant1	5180	27.120	---	PASS
		5200	25.160	---	PASS
		5240	26.760	---	PASS
11AC40SISO	Ant1	5190	46.000	---	PASS
		5230	49.120	---	PASS
11AC80SISO	Ant1	5210	78.960	---	PASS

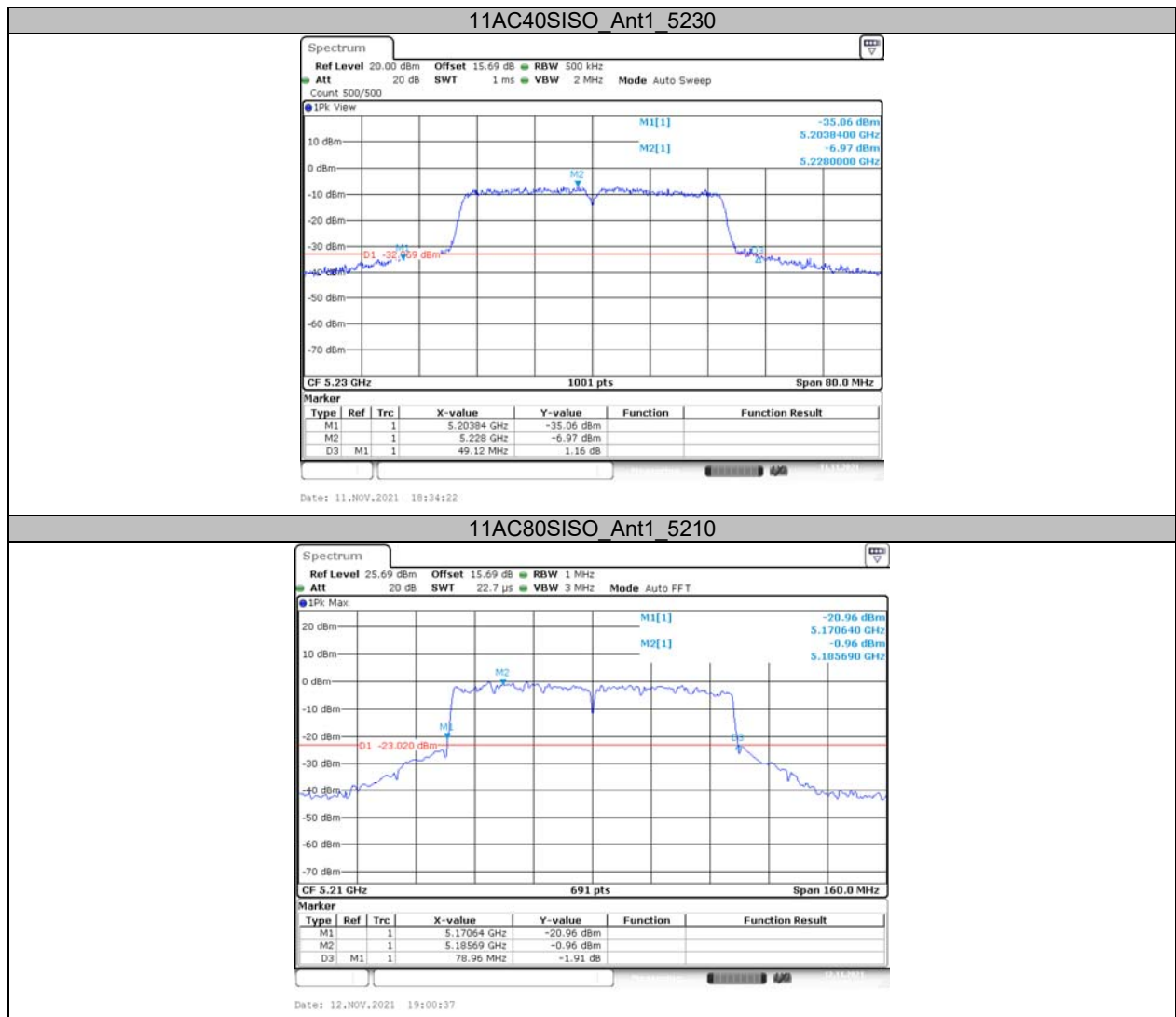
Test Graphs







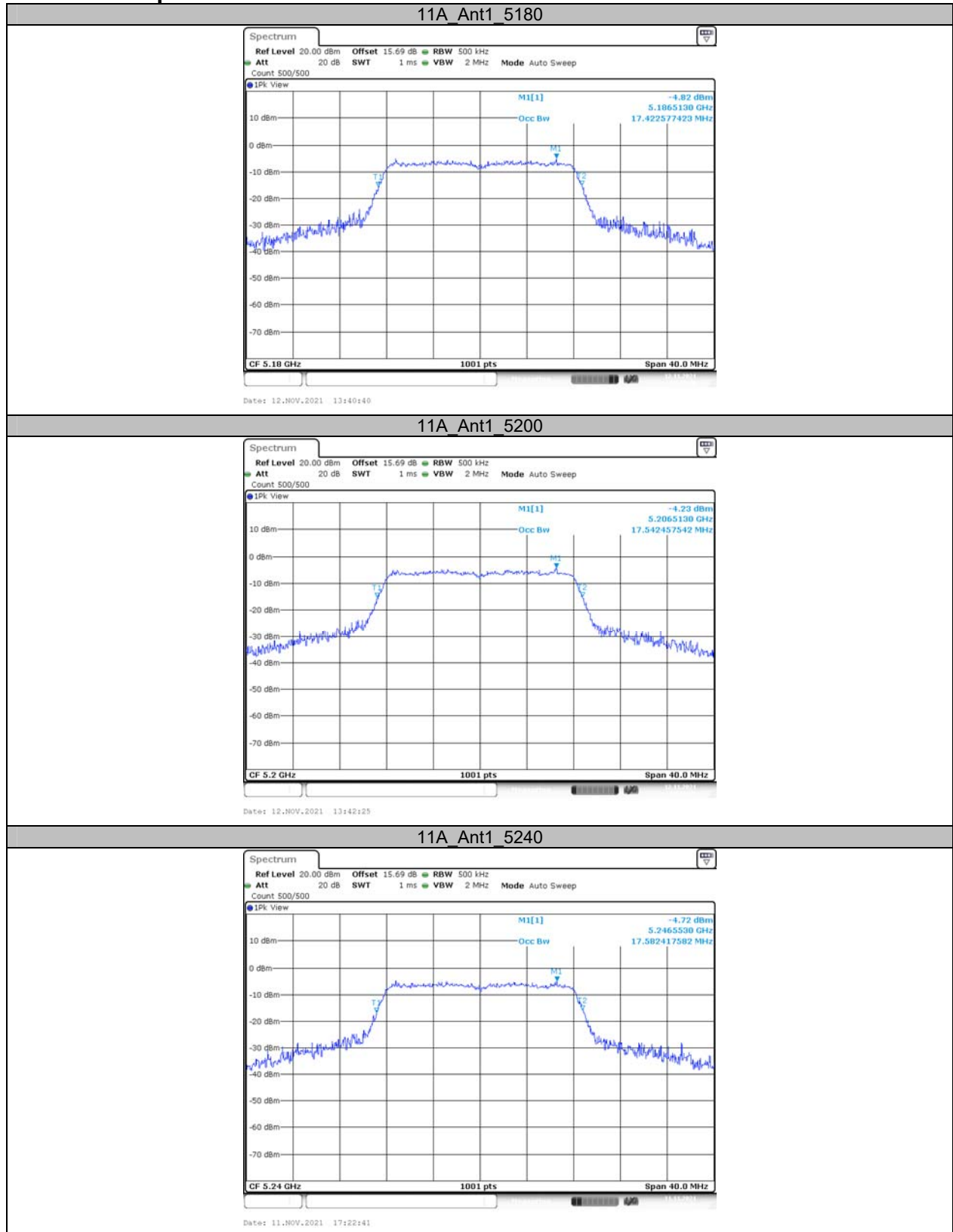


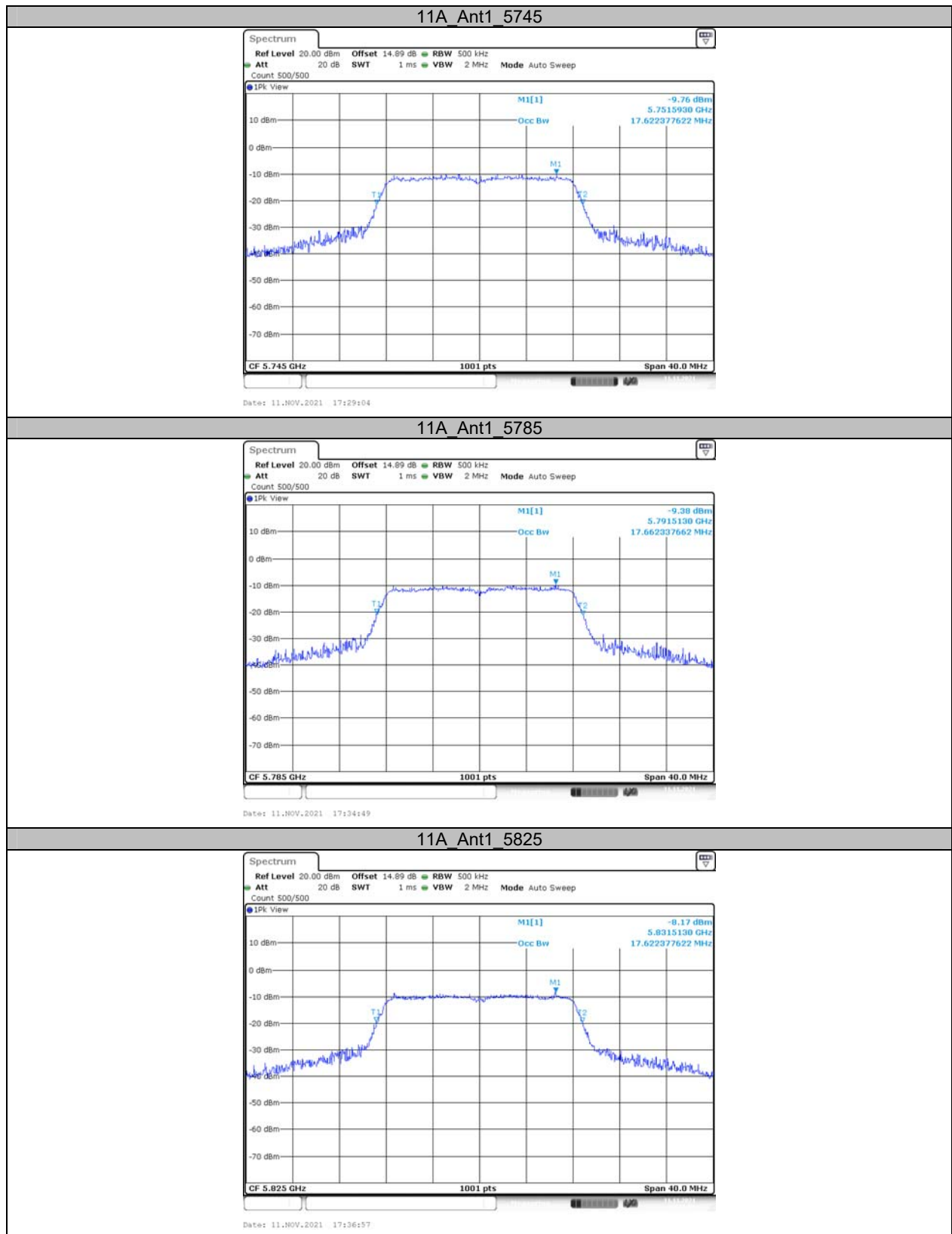


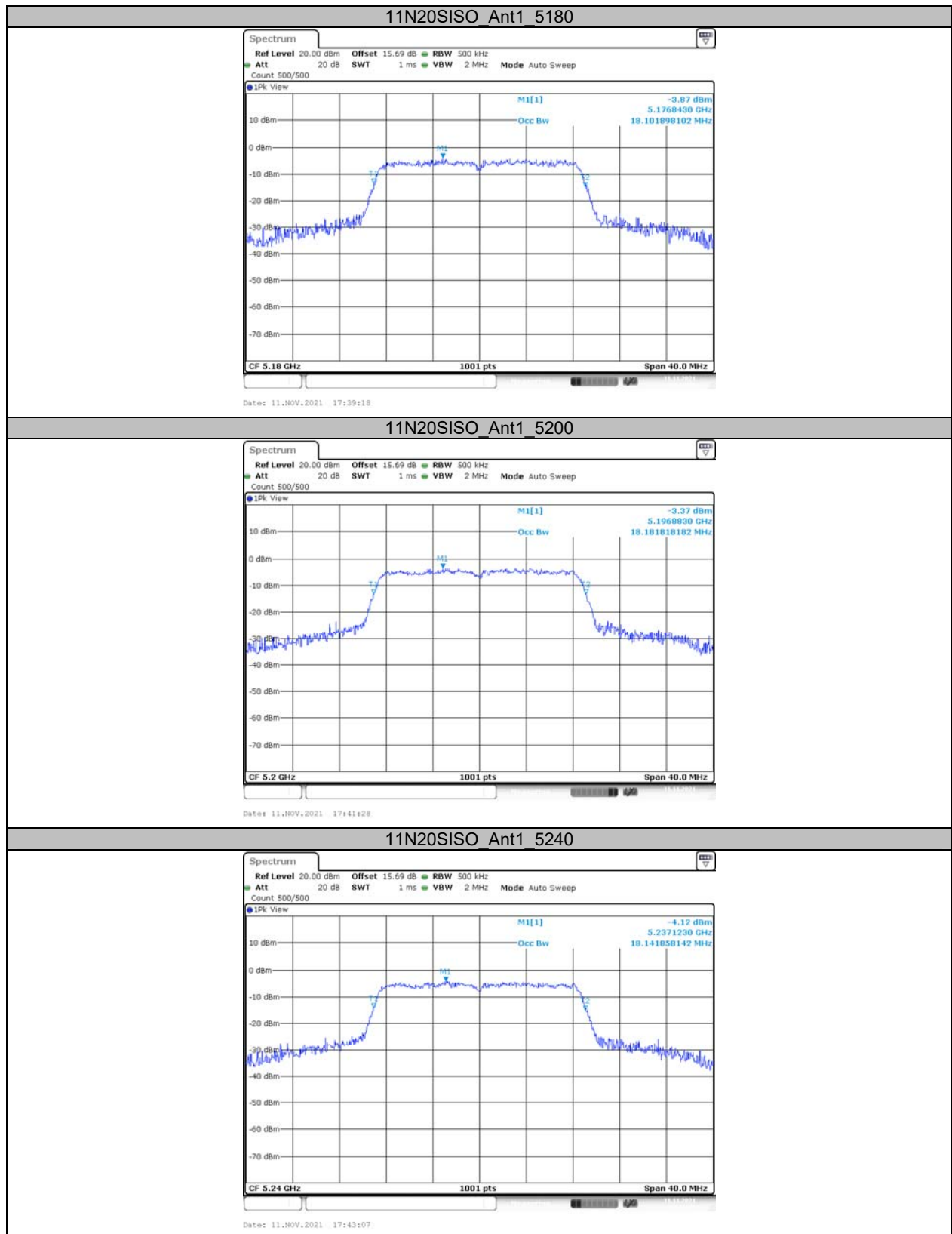
Appendix A2: Occupied channel bandwidth Test Result

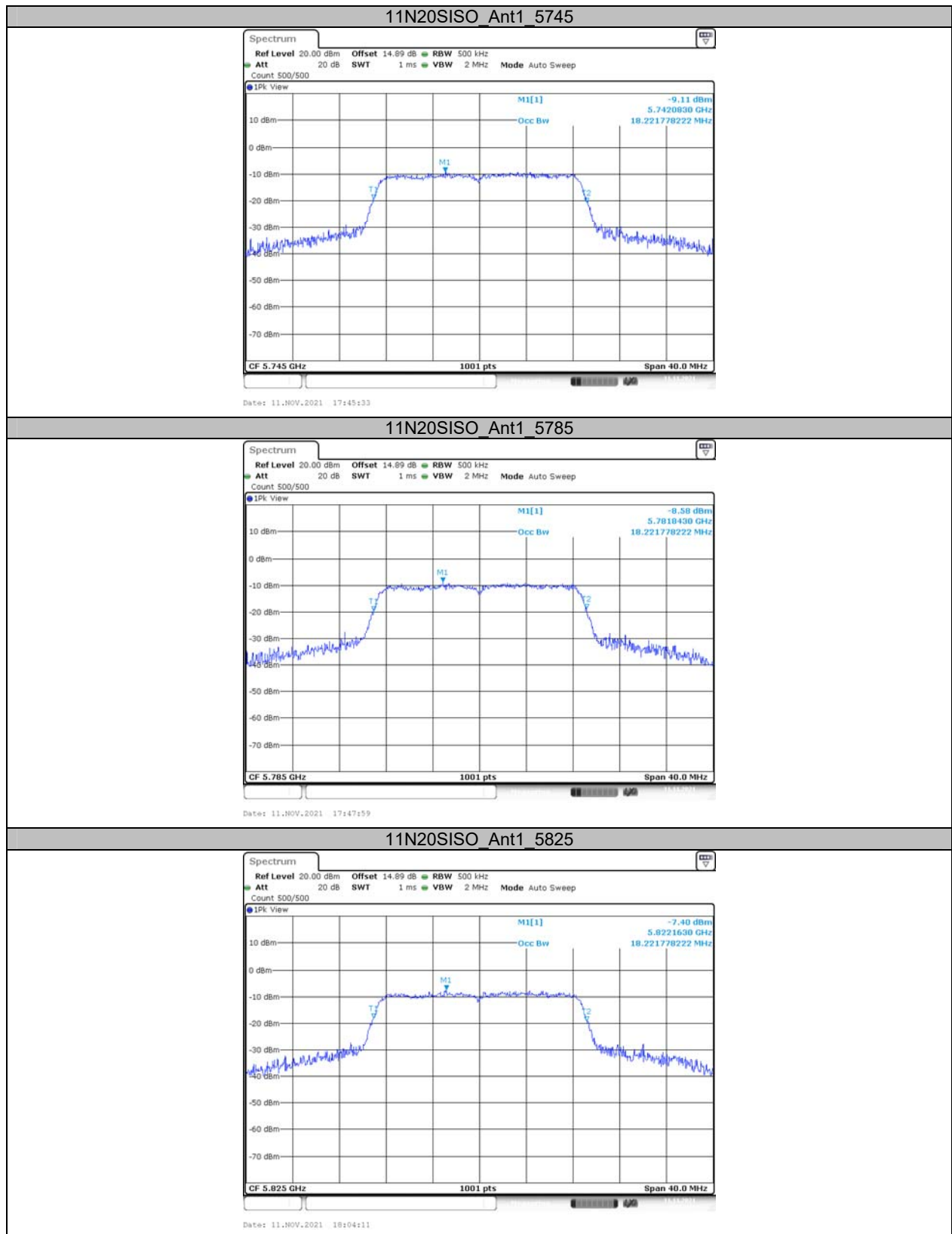
Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.423	---	PASS
		5200	17.542	---	PASS
		5240	17.582	---	PASS
		5745	17.622	---	PASS
		5785	17.662	---	PASS
		5825	17.622	---	PASS
11N20SISO	Ant1	5180	18.102	---	PASS
		5200	18.182	---	PASS
		5240	18.142	---	PASS
		5745	18.222	---	PASS
		5785	18.222	---	PASS
		5825	18.222	---	PASS
11N40SISO	Ant1	5190	36.523	---	PASS
		5230	36.444	---	PASS
		5755	36.683	---	PASS
		5795	36.763	---	PASS
11AC20SISO	Ant1	5180	18.142	---	PASS
		5200	18.222	---	PASS
		5240	18.222	---	PASS
		5745	18.302	---	PASS
		5785	18.302	---	PASS
		5825	18.262	---	PASS
11AC40SISO	Ant1	5190	36.444	---	PASS
		5230	36.603	---	PASS
		5755	36.843	---	PASS
		5795	36.763	---	PASS
11AC80SISO	Ant1	5210	77.043	---	PASS
		5775	75.950	---	PASS

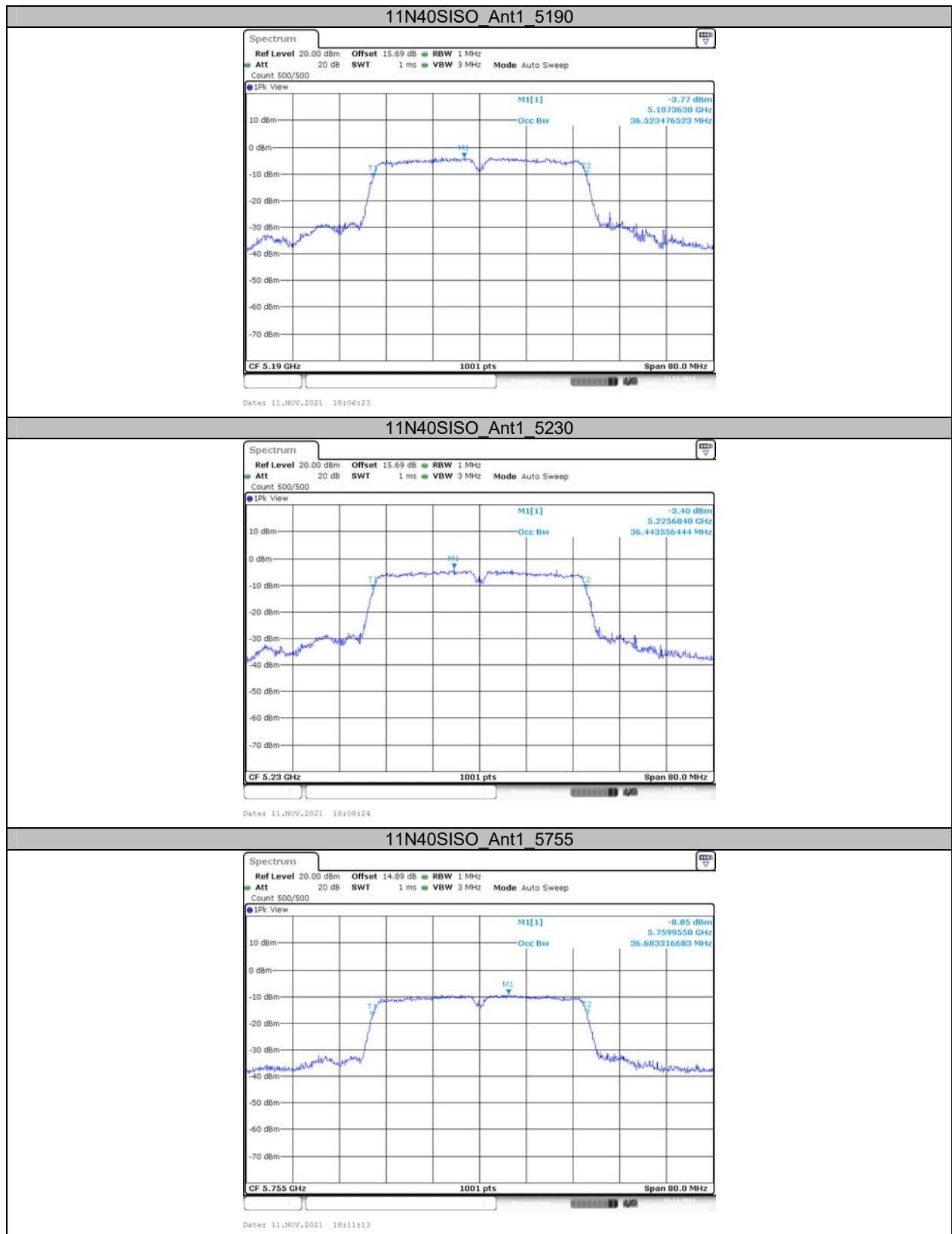
Test Graphs

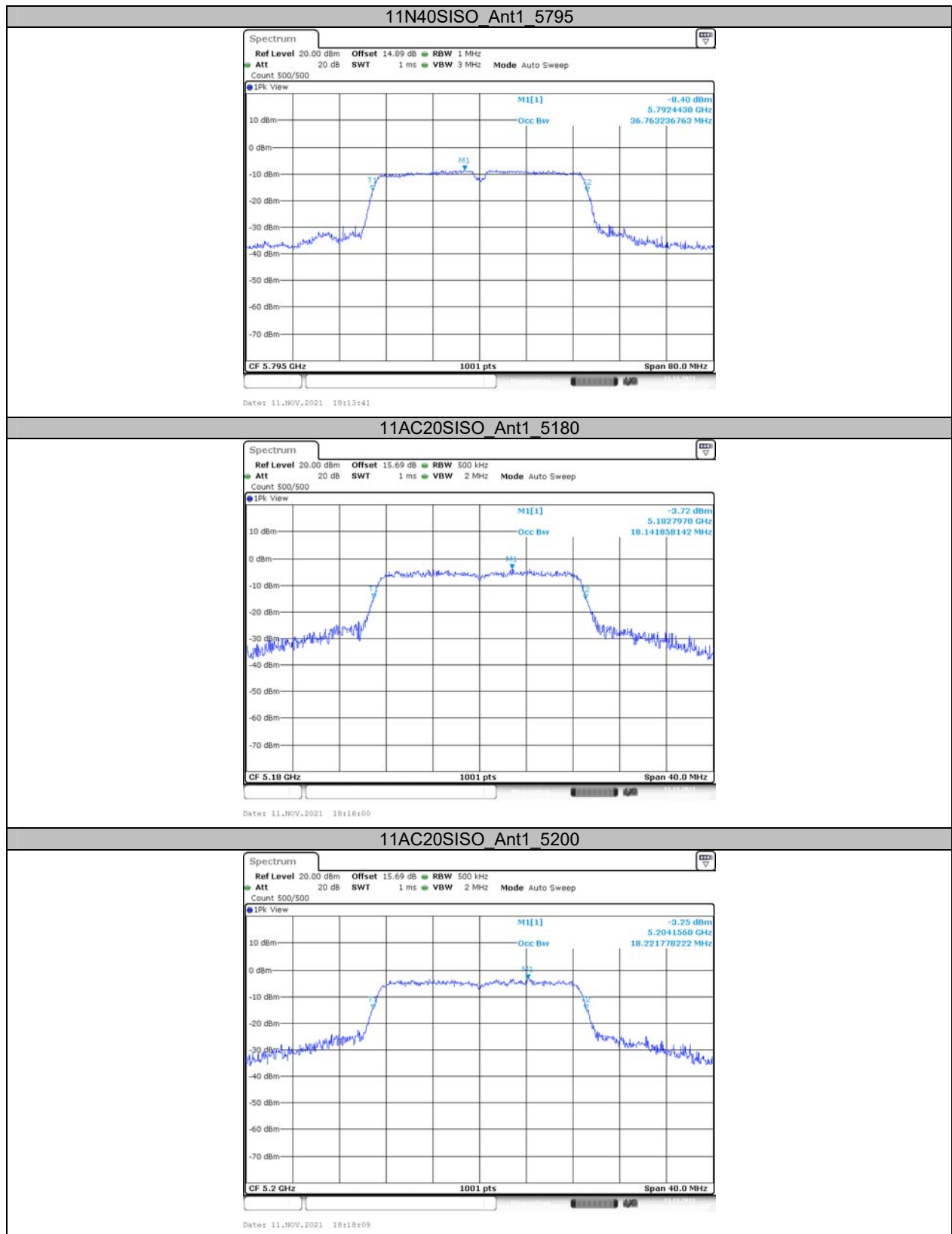


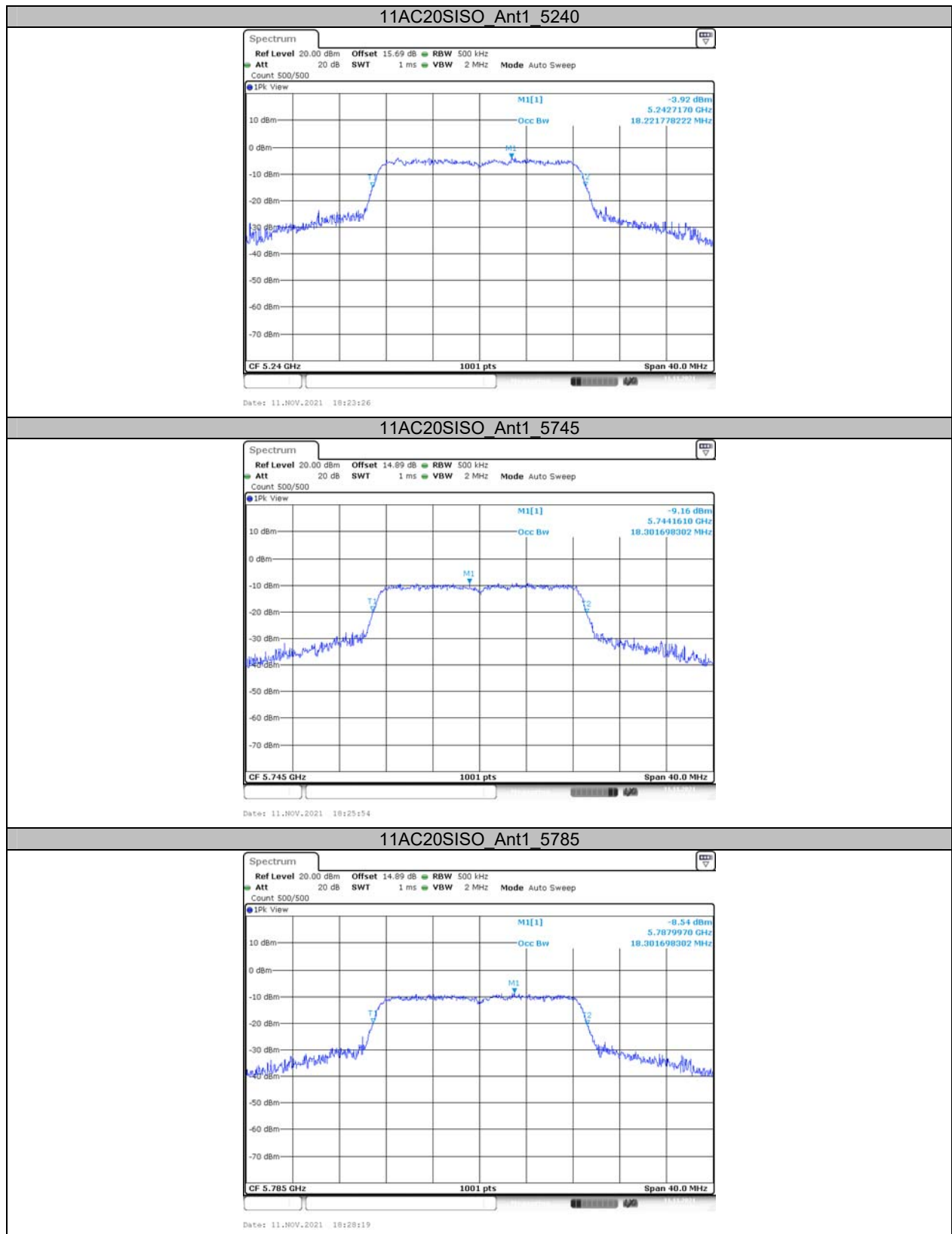


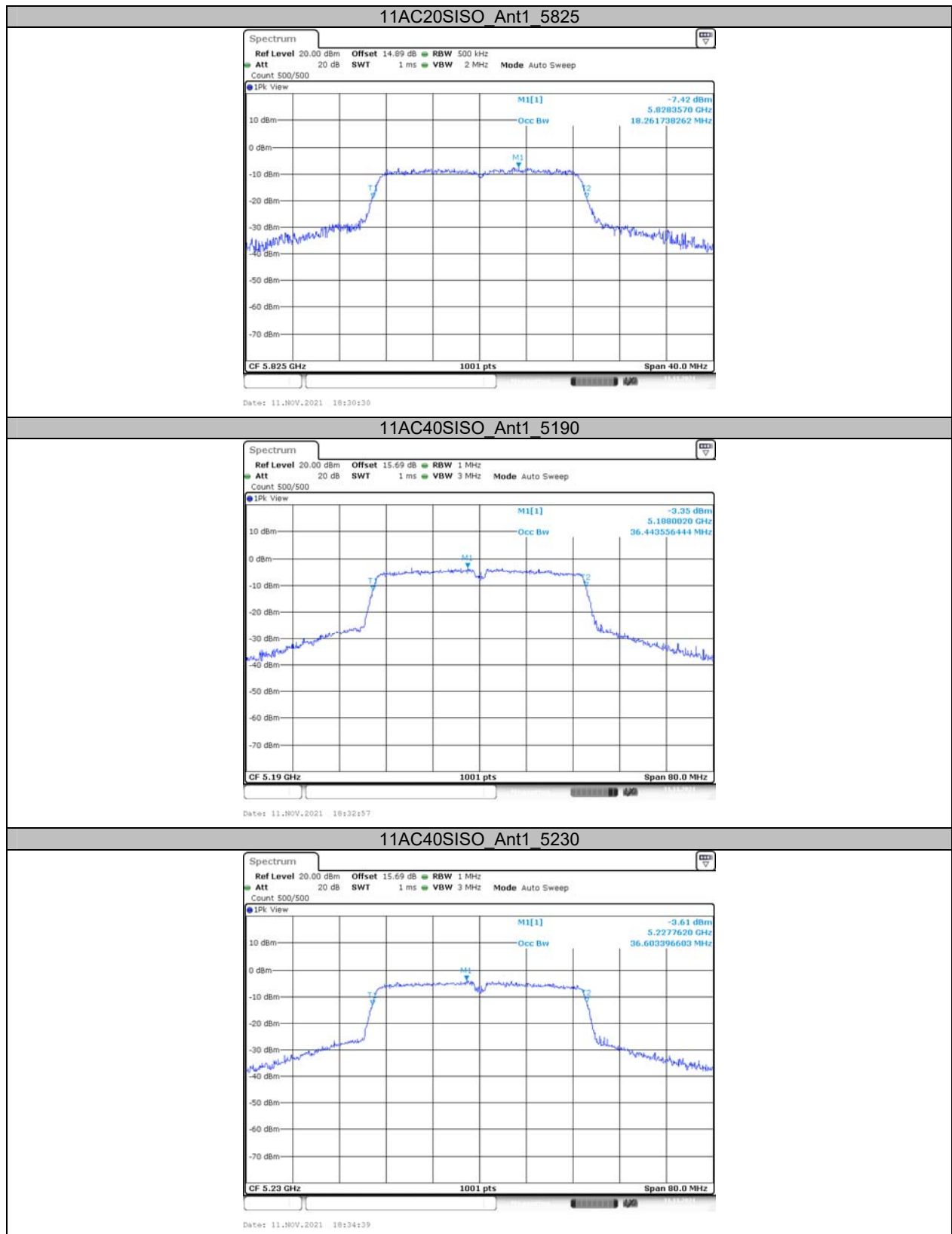


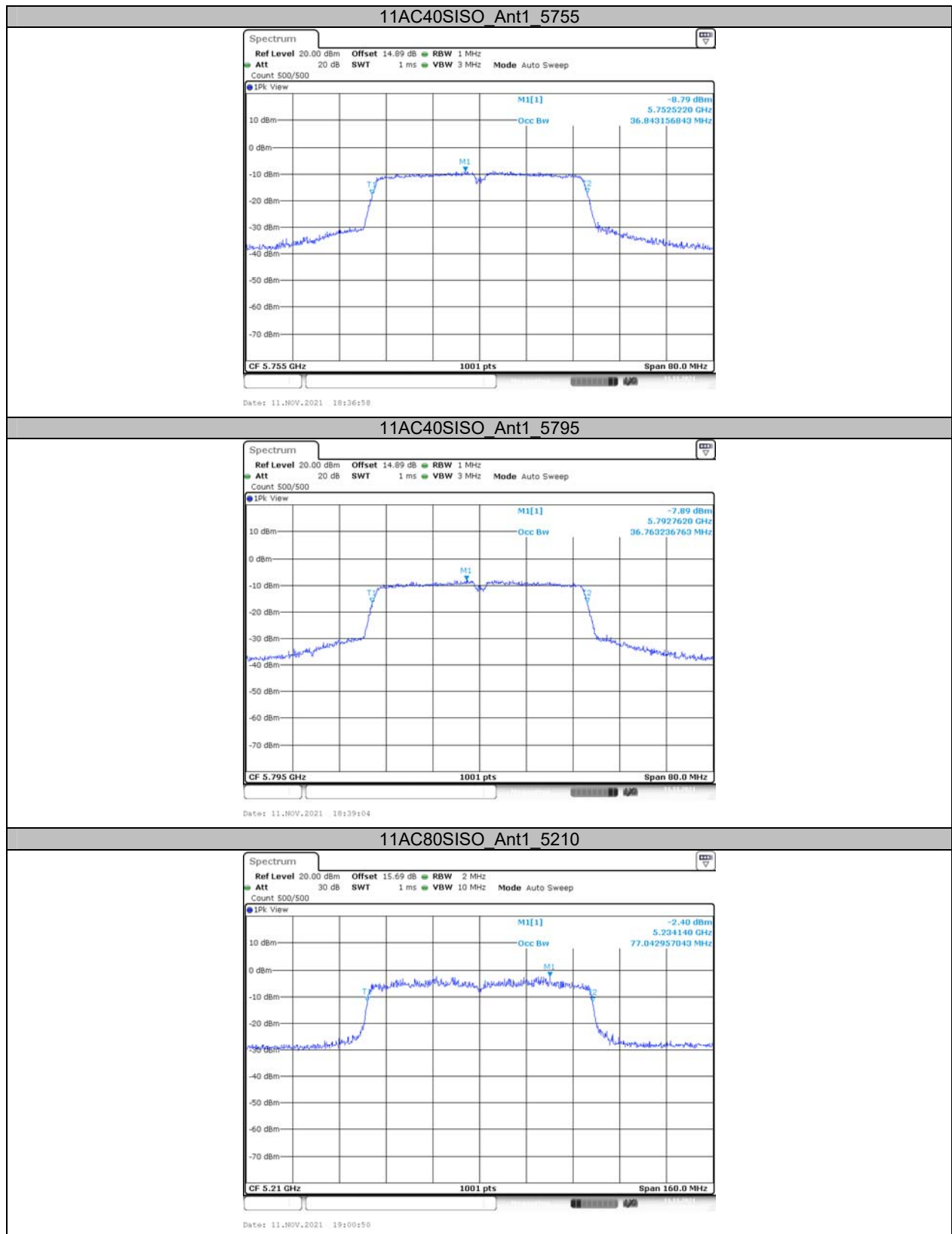


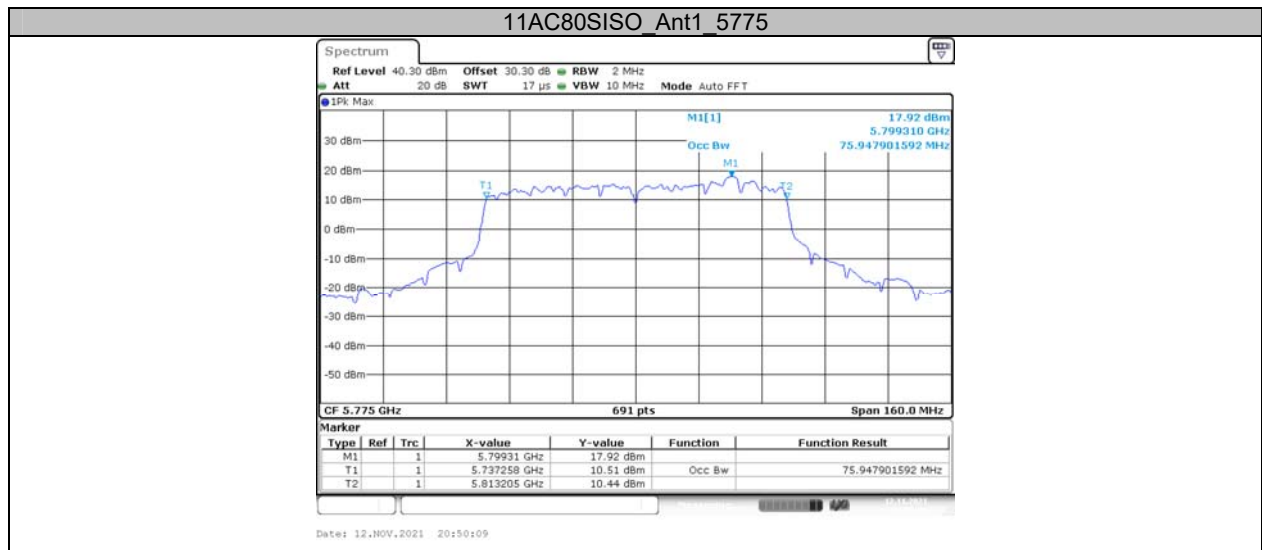








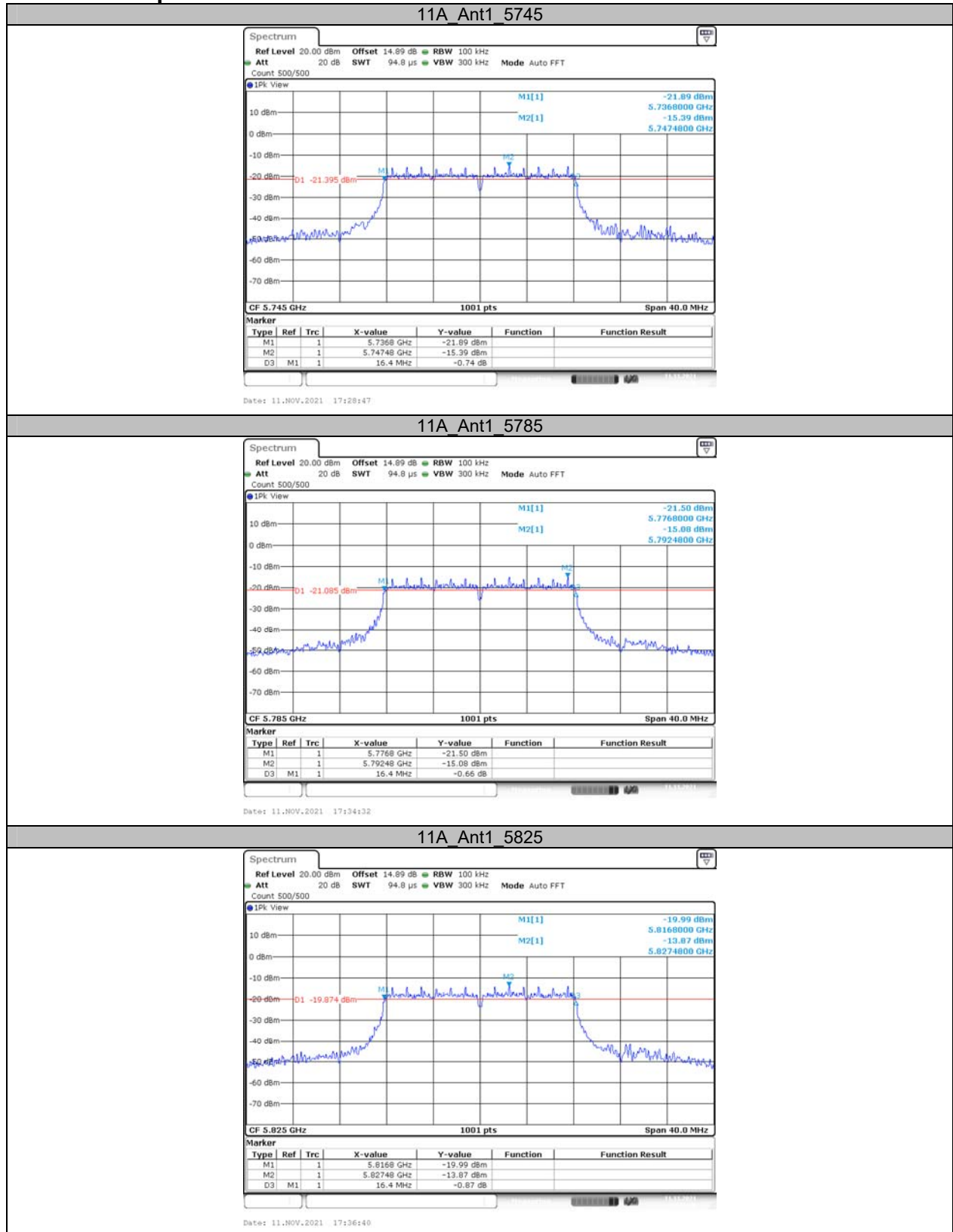


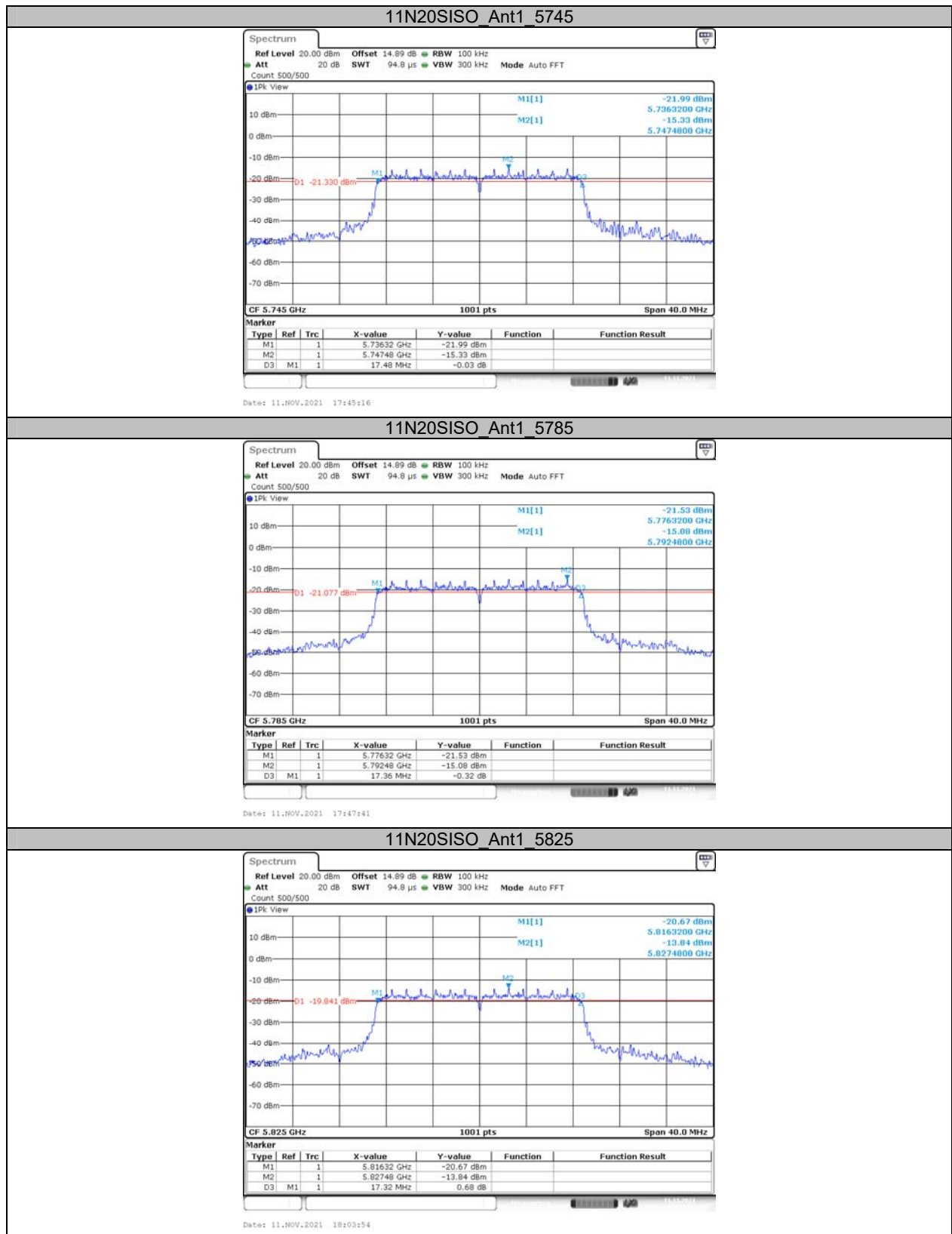


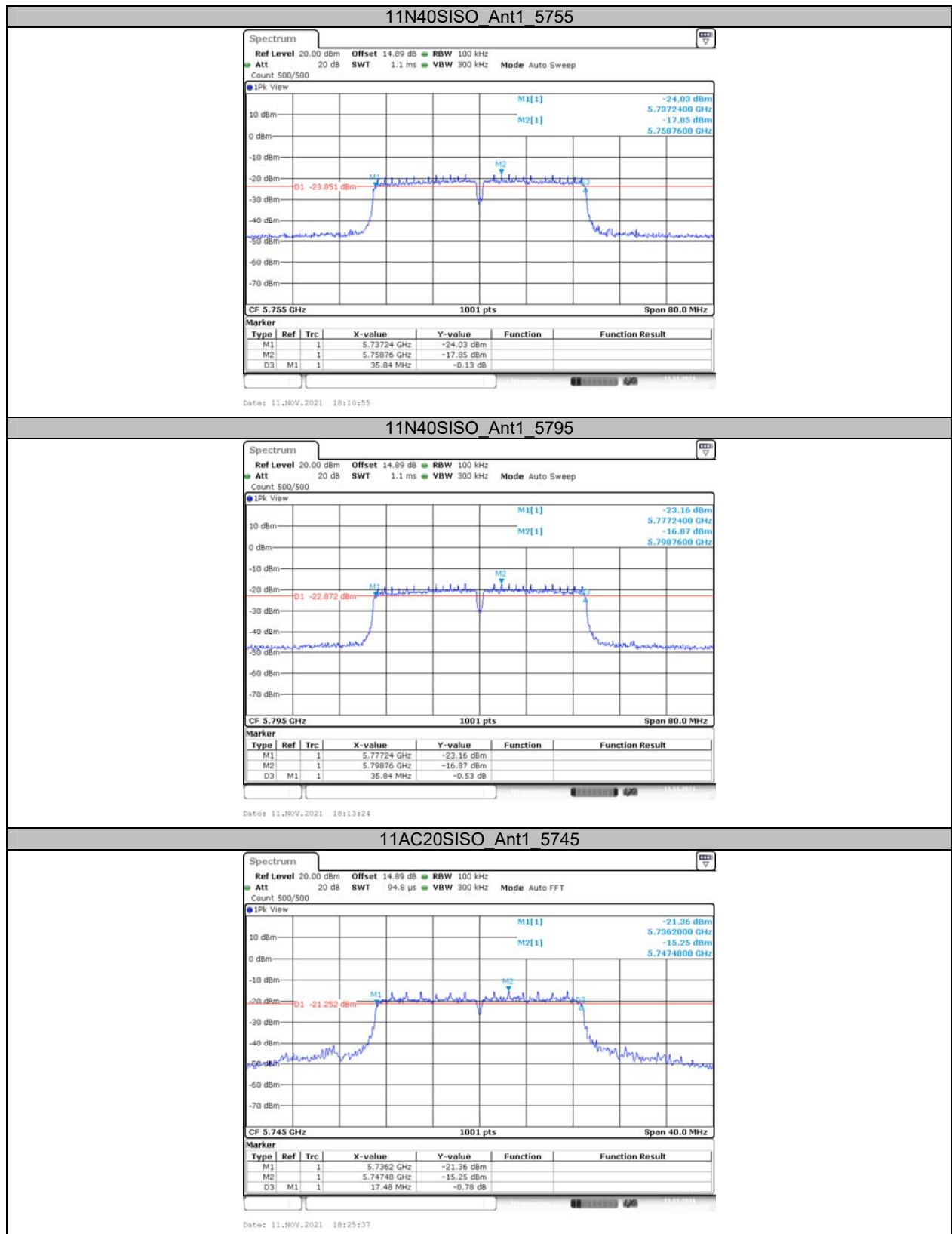
**Appendix A3: Min emission bandwidth
Test Result**

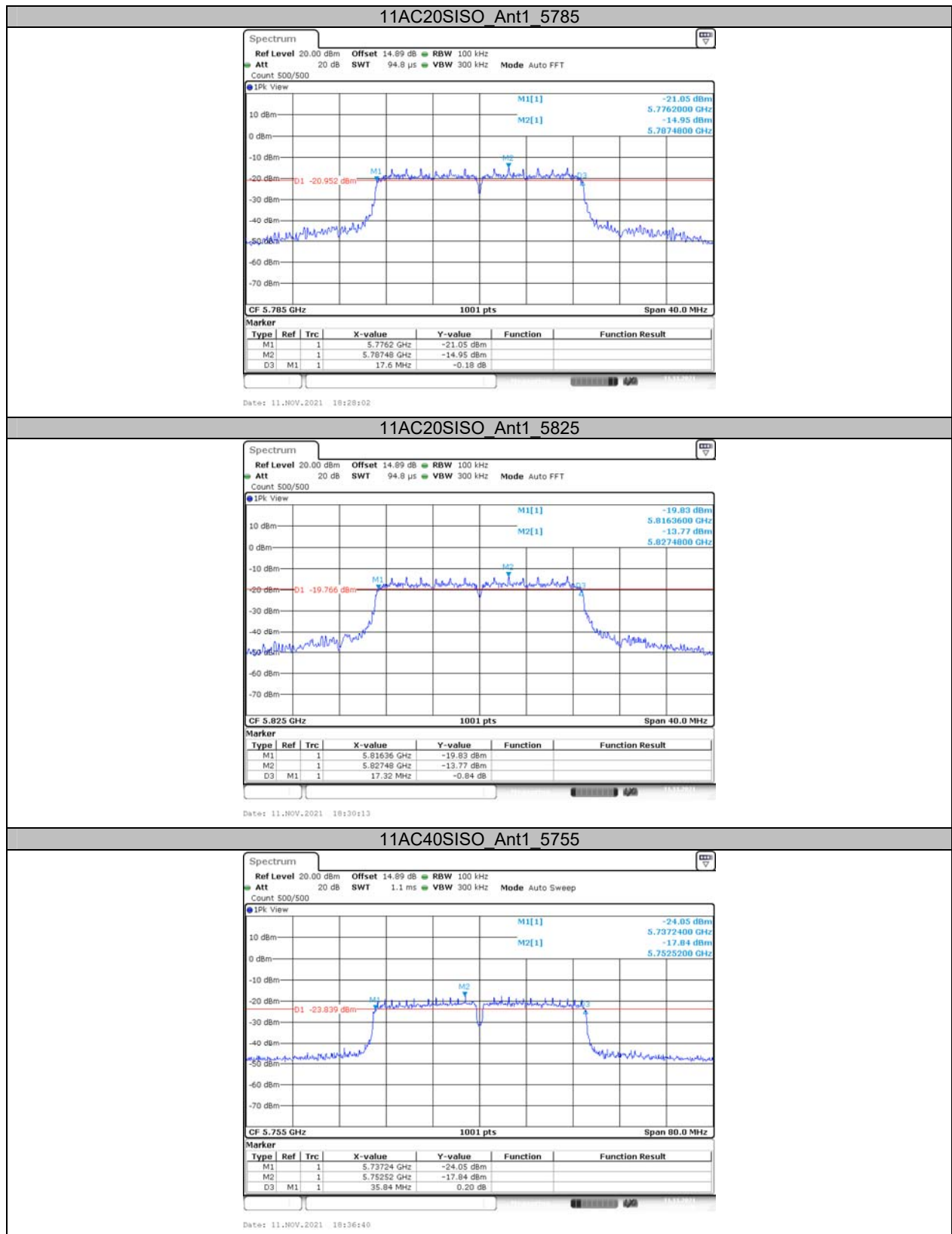
Test Mode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.400	0.5	PASS
		5785	16.400	0.5	PASS
		5825	16.400	0.5	PASS
11N20SISO	Ant1	5745	17.480	0.5	PASS
		5785	17.360	0.5	PASS
		5825	17.320	0.5	PASS
11N40SISO	Ant1	5755	35.840	0.5	PASS
		5795	35.840	0.5	PASS
11AC20SISO	Ant1	5745	17.480	0.5	PASS
		5785	17.600	0.5	PASS
		5825	17.320	0.5	PASS
11AC40SISO	Ant1	5755	35.840	0.5	PASS
		5795	36.160	0.5	PASS
11AC80SISO	Ant1	5775	77.570	0.5	PASS

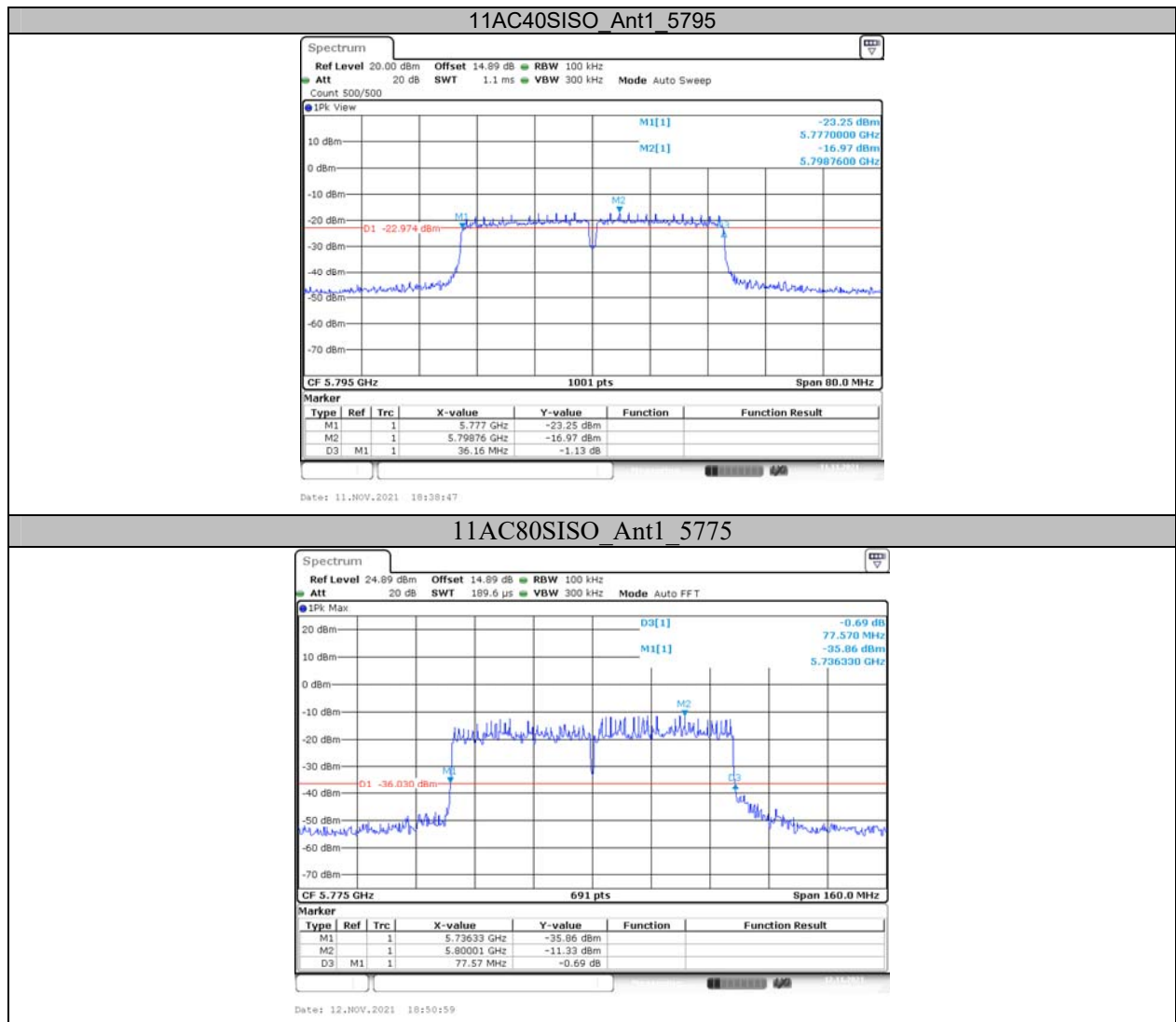
Test Graphs











Appendix B: Maximum conducted output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	7.16	<=23.98	PASS
		5200	6.18	<=23.98	PASS
		5240	7.26	<=23.98	PASS
		5745	4.15	<=30	PASS
		5785	5.13	<=30	PASS
		5825	5.27	<=30	PASS
11N20SISO	Ant1	5180	6.87	<=23.98	PASS
		5200	6.97	<=23.98	PASS
		5240	6.52	<=23.98	PASS
		5745	4.24	<=30	PASS
		5785	5.21	<=30	PASS
		5825	5.36	<=30	PASS
11N40SISO	Ant1	5190	7.14	<=23.98	PASS
		5230	6.85	<=23.98	PASS
		5755	3.92	<=30	PASS
		5795	4.06	<=30	PASS
11AC20SISO	Ant1	5180	6.75	<=23.98	PASS
		5200	6.97	<=23.98	PASS
		5240	7.36	<=23.98	PASS
		5745	4.35	<=30	PASS
		5785	5.13	<=30	PASS
		5825	5.33	<=30	PASS
11AC40SISO	Ant1	5190	6.87	<=23.98	PASS
		5230	6.95	<=23.98	PASS
		5755	3.97	<=30	PASS
		5795	3.86	<=30	PASS
11AC80SISO	Ant1	5210	6.75	<=23.98	PASS
		5775	3.68	<=30	PASS

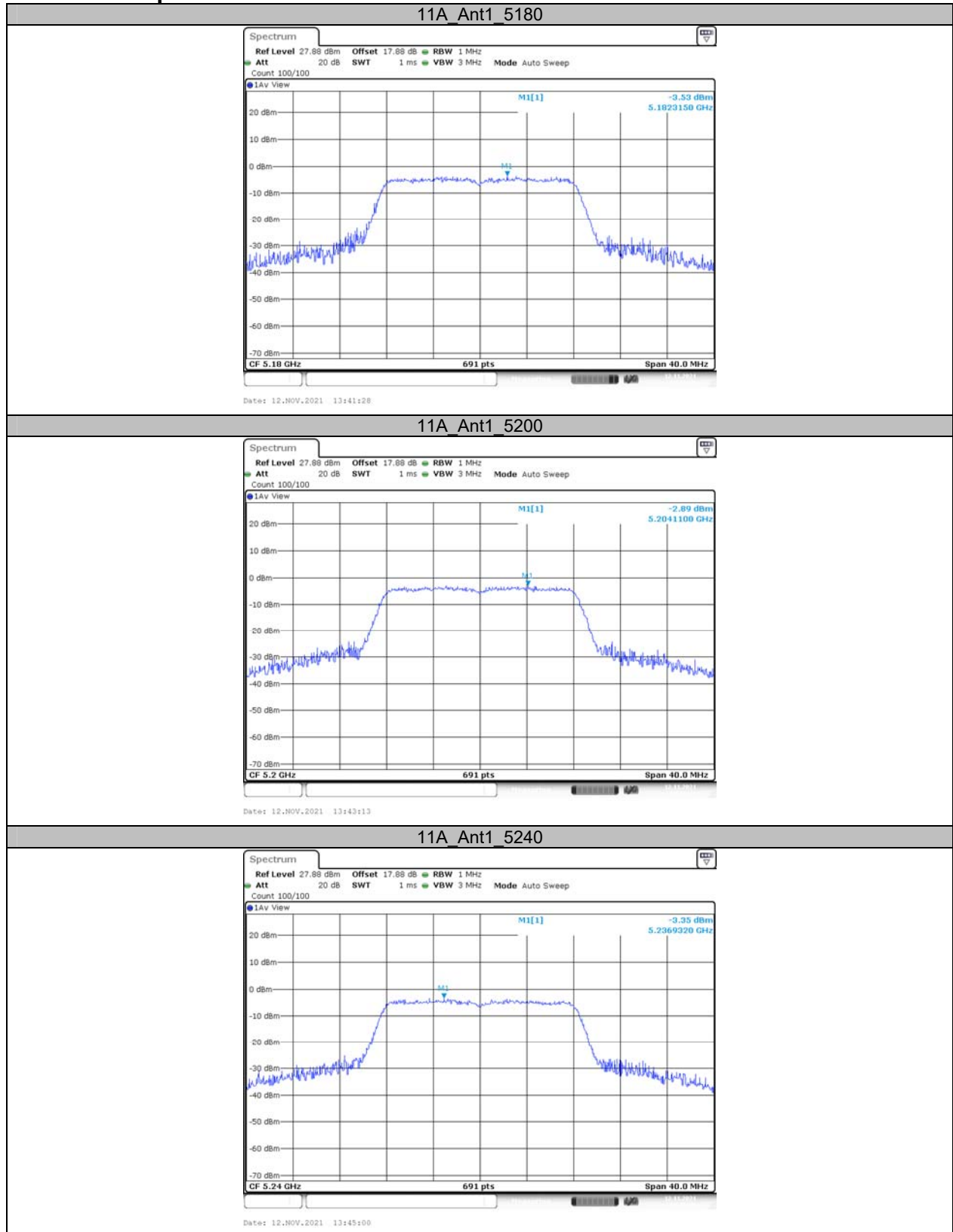
Appendix C: Maximum power spectral density Test Result

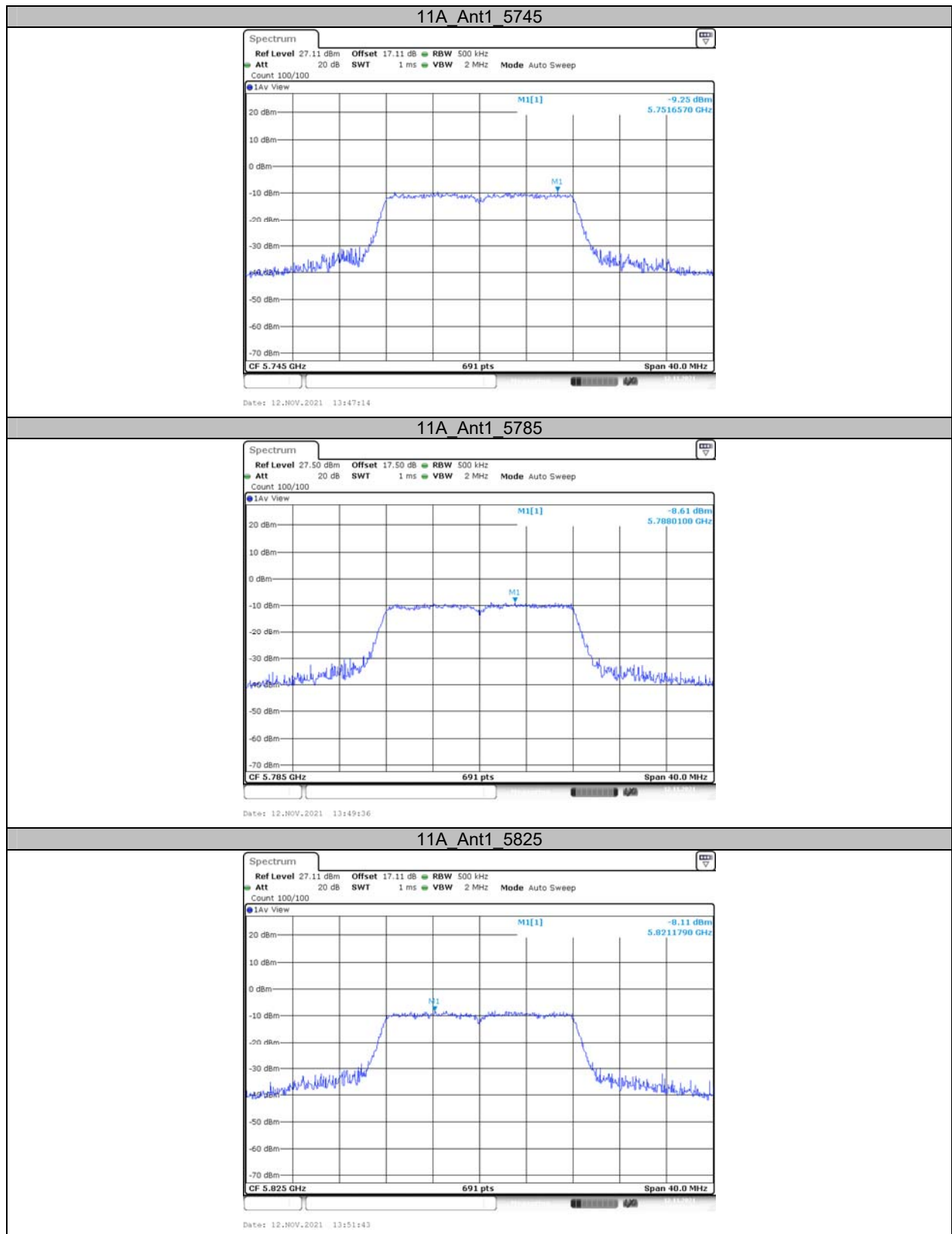
TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	-3.53	<=11	PASS
		5200	-2.89	<=11	PASS
		5240	-3.35	<=11	PASS
		5745	-9.25	<=30	PASS
		5785	-8.61	<=30	PASS
		5825	-8.11	<=30	PASS
11N20SISO	Ant1	5180	-2.72	<=11	PASS
		5200	-1.8	<=11	PASS
		5240	-2.27	<=11	PASS
		5745	-8.8	<=30	PASS
		5785	-8.26	<=30	PASS
		5825	-7.37	<=30	PASS
11N40SISO	Ant1	5190	-4.3	<=11	PASS
		5230	-5.2	<=11	PASS
		5755	-10.89	<=30	PASS
		5795	-10.05	<=30	PASS
11AC20SISO	Ant1	5180	-1.75	<=11	PASS
		5200	-1.45	<=11	PASS
		5240	-2.31	<=11	PASS
		5745	-8.93	<=30	PASS
		5785	-8.54	<=30	PASS
		5825	-7.4	<=30	PASS
11AC40SISO	Ant1	5190	-4.54	<=11	PASS
		5230	-4.53	<=11	PASS
		5755	-11.06	<=30	PASS
		5795	-10.53	<=30	PASS
11AC80SISO	Ant1	5210	-5.46	<=11	PASS
		5775	-12.69	<=30	PASS

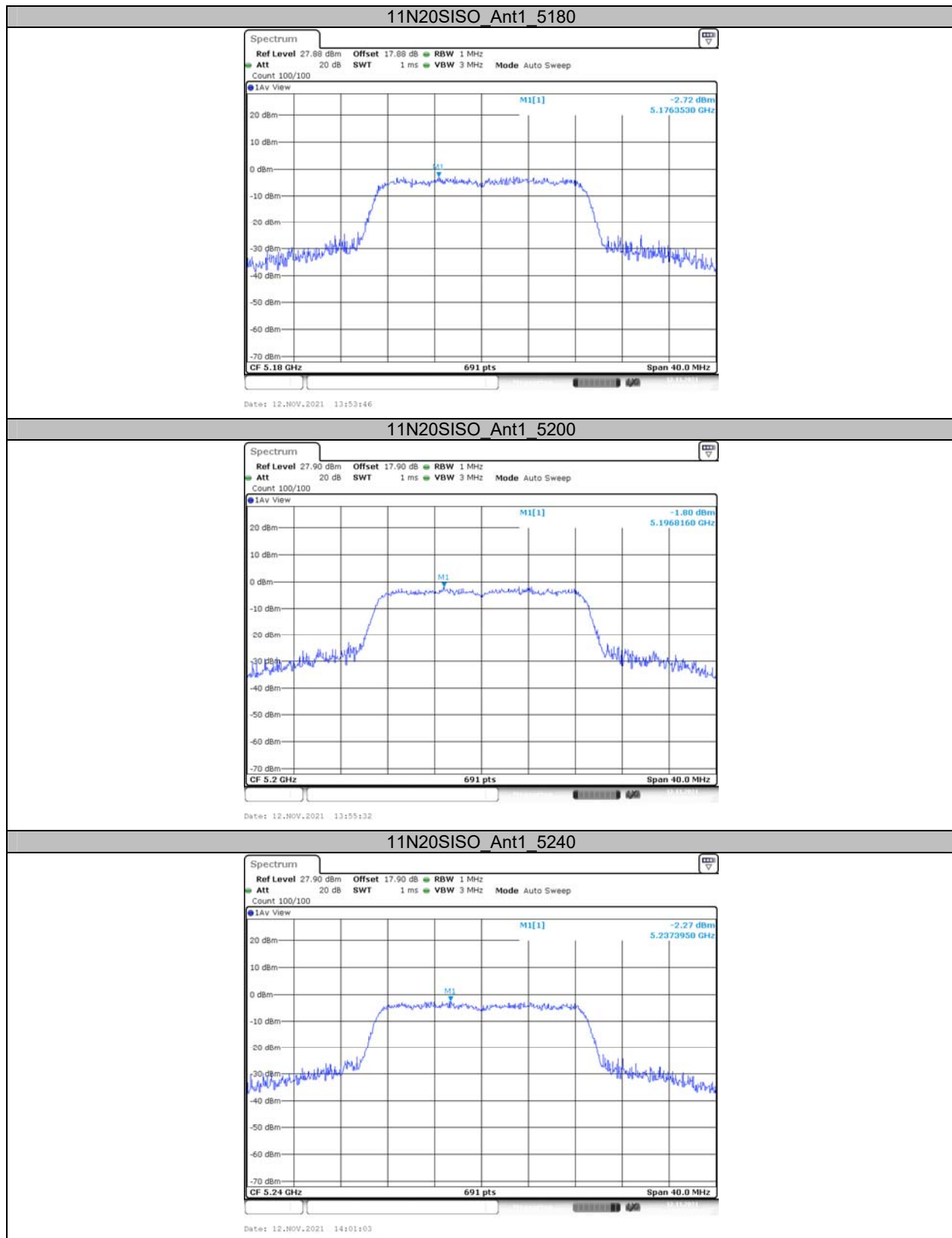
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

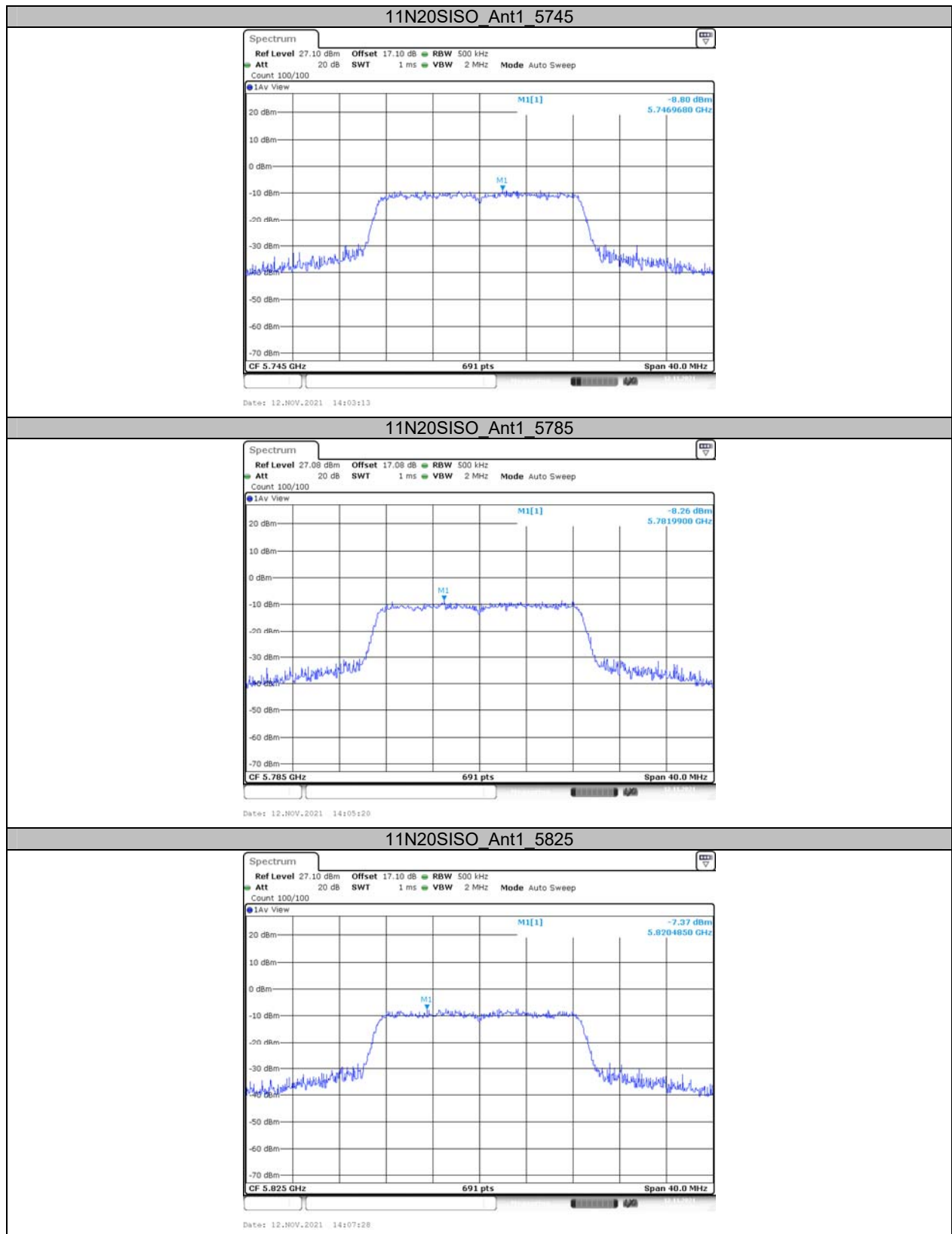
2.The Duty Cycle Factor is compensated in the graph.

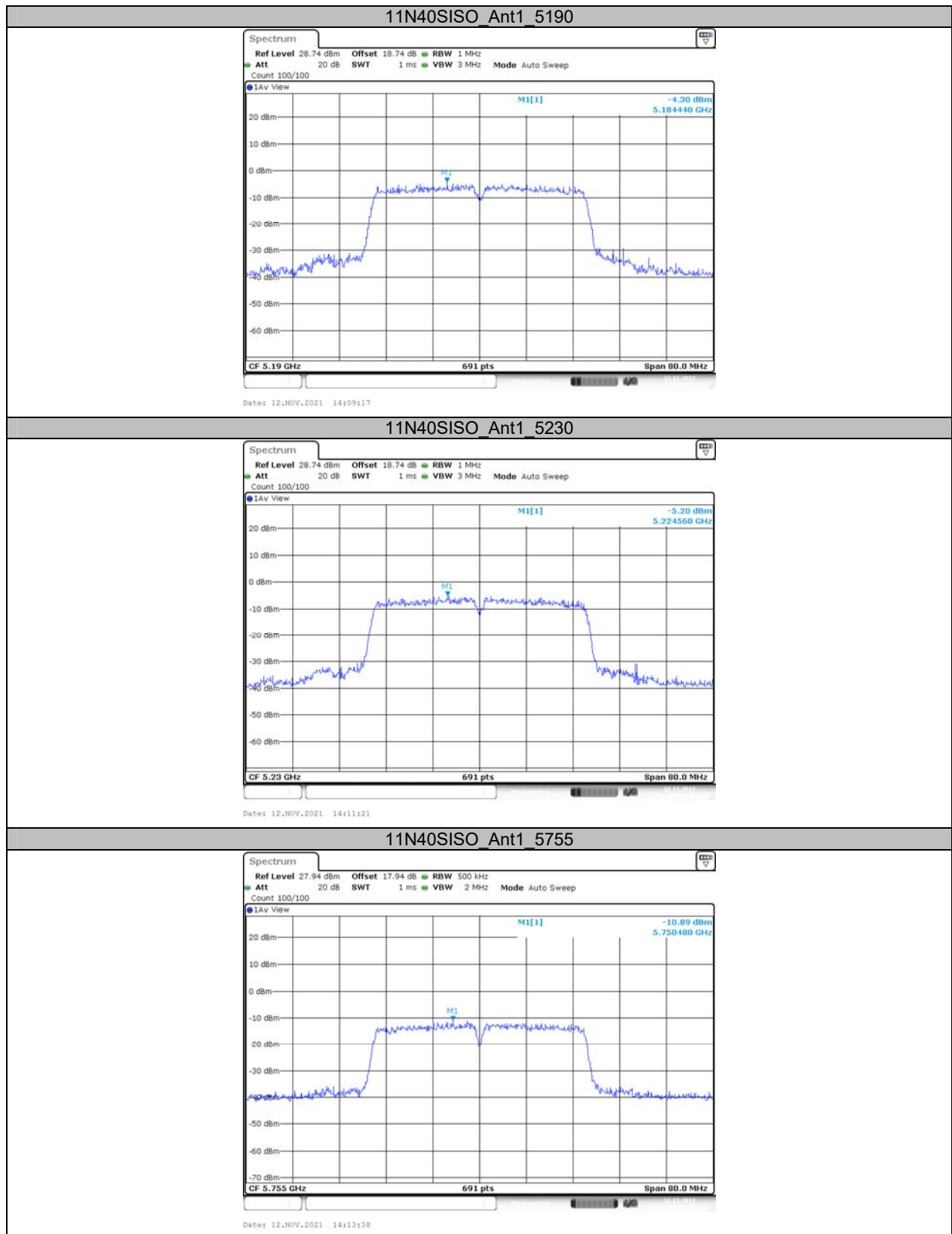
Test Graphs

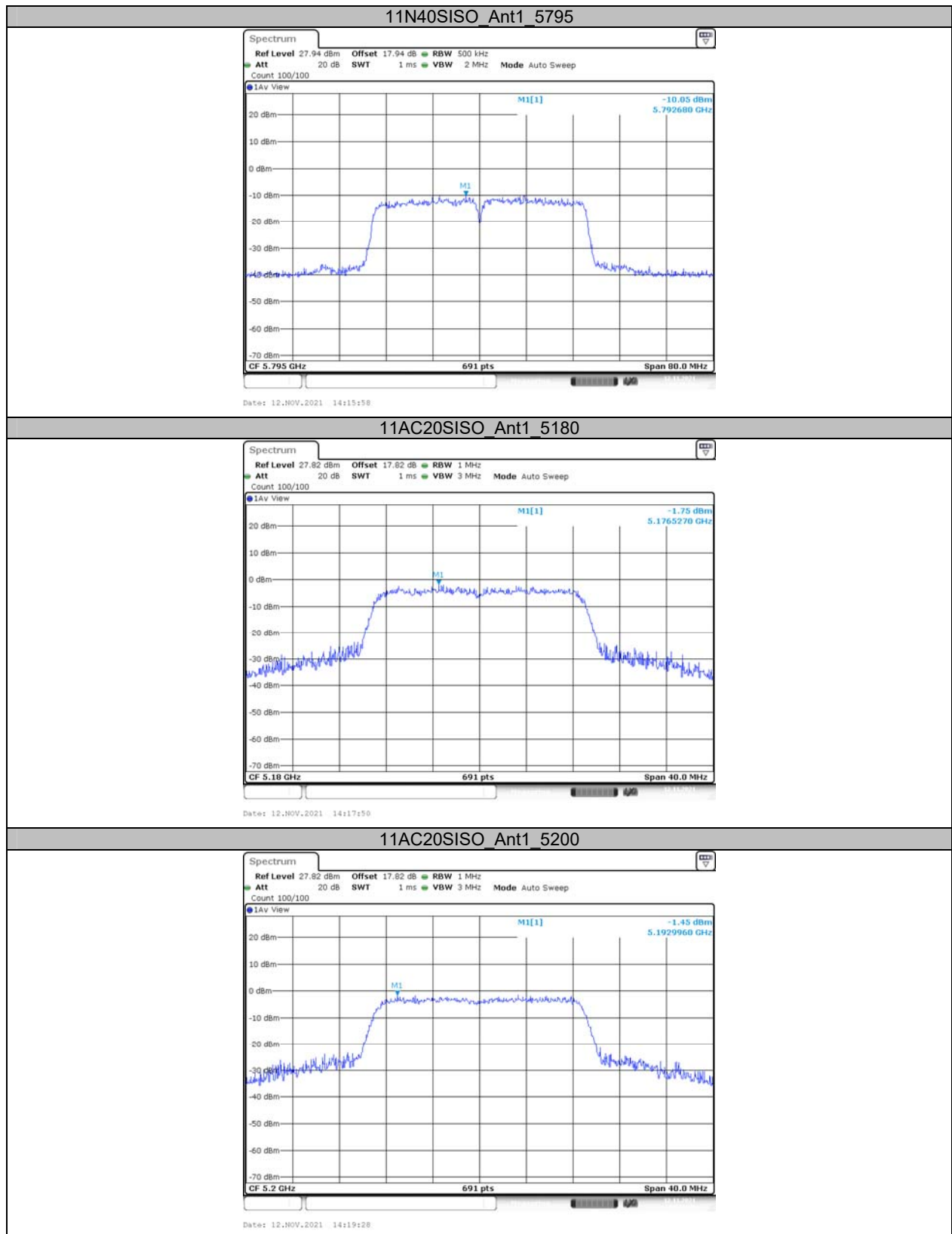


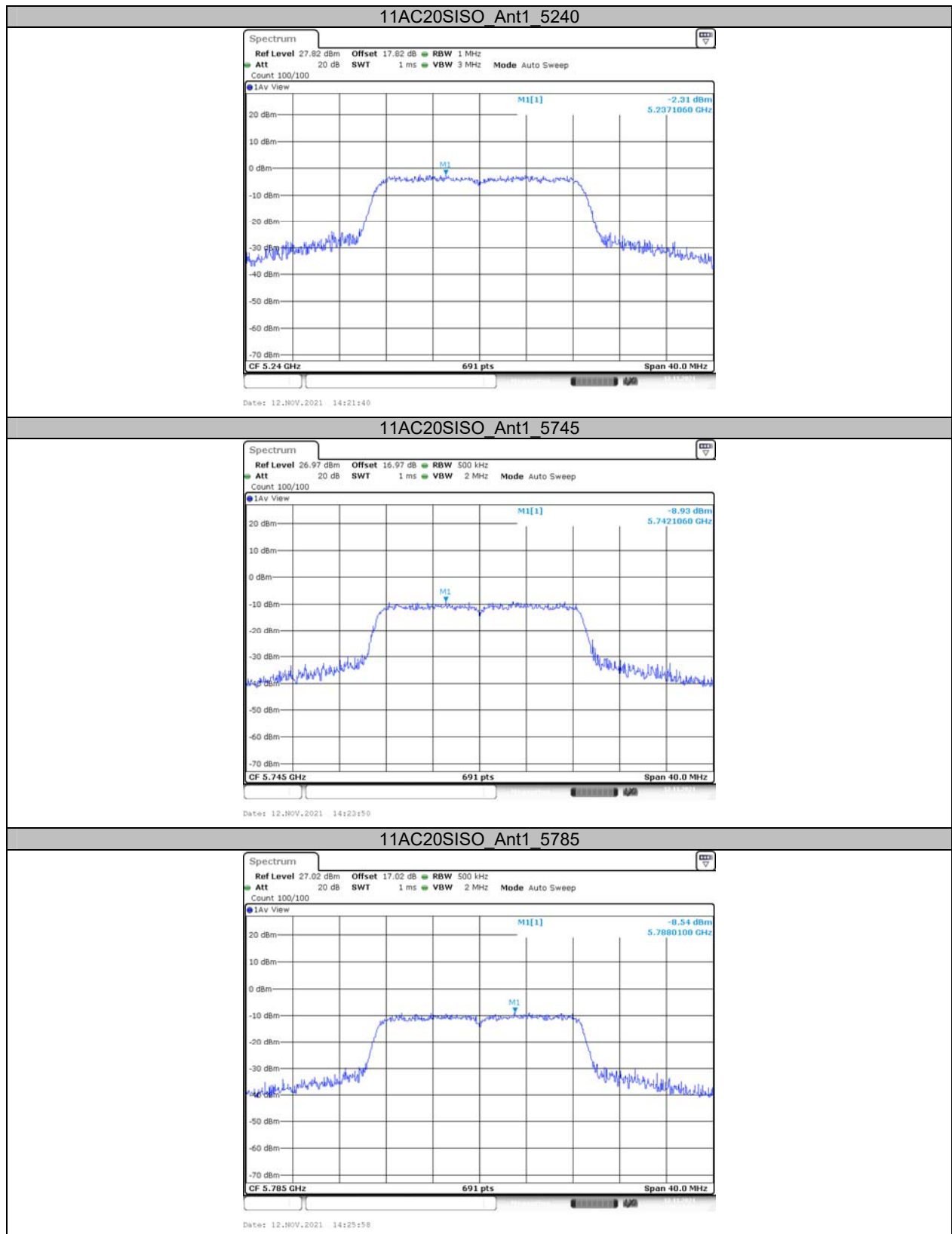


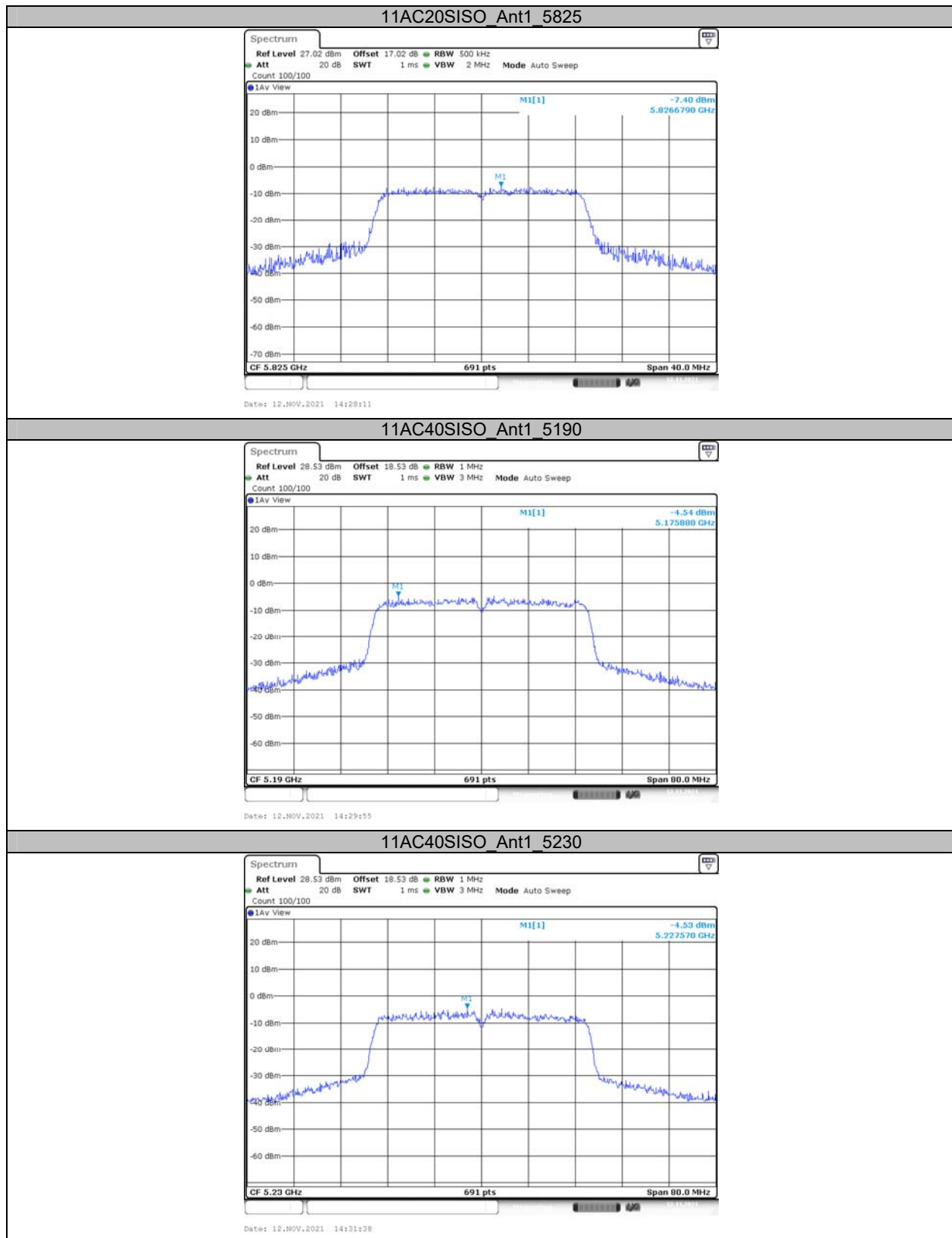


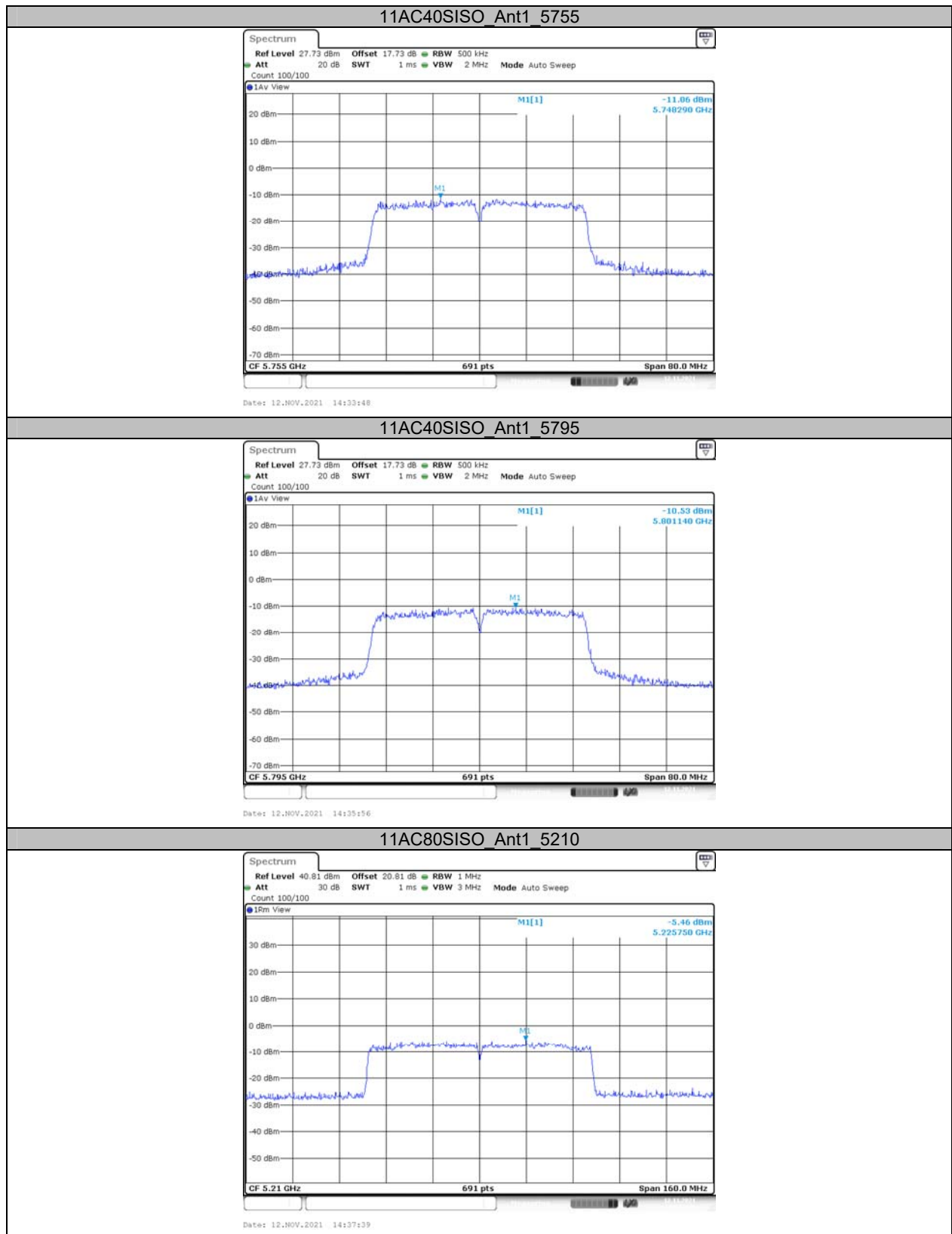


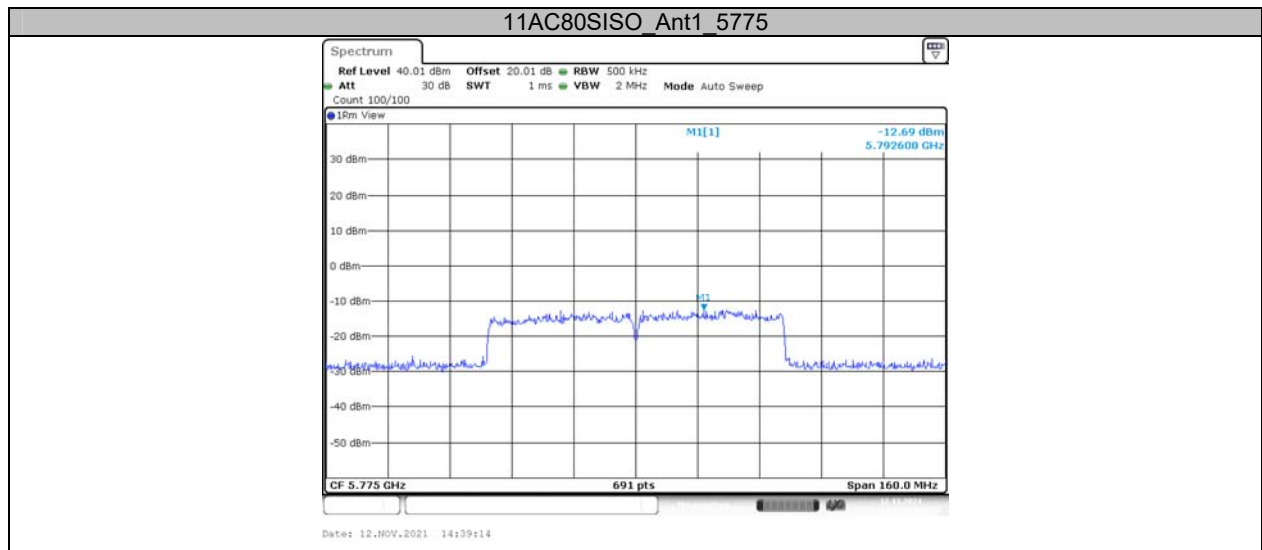










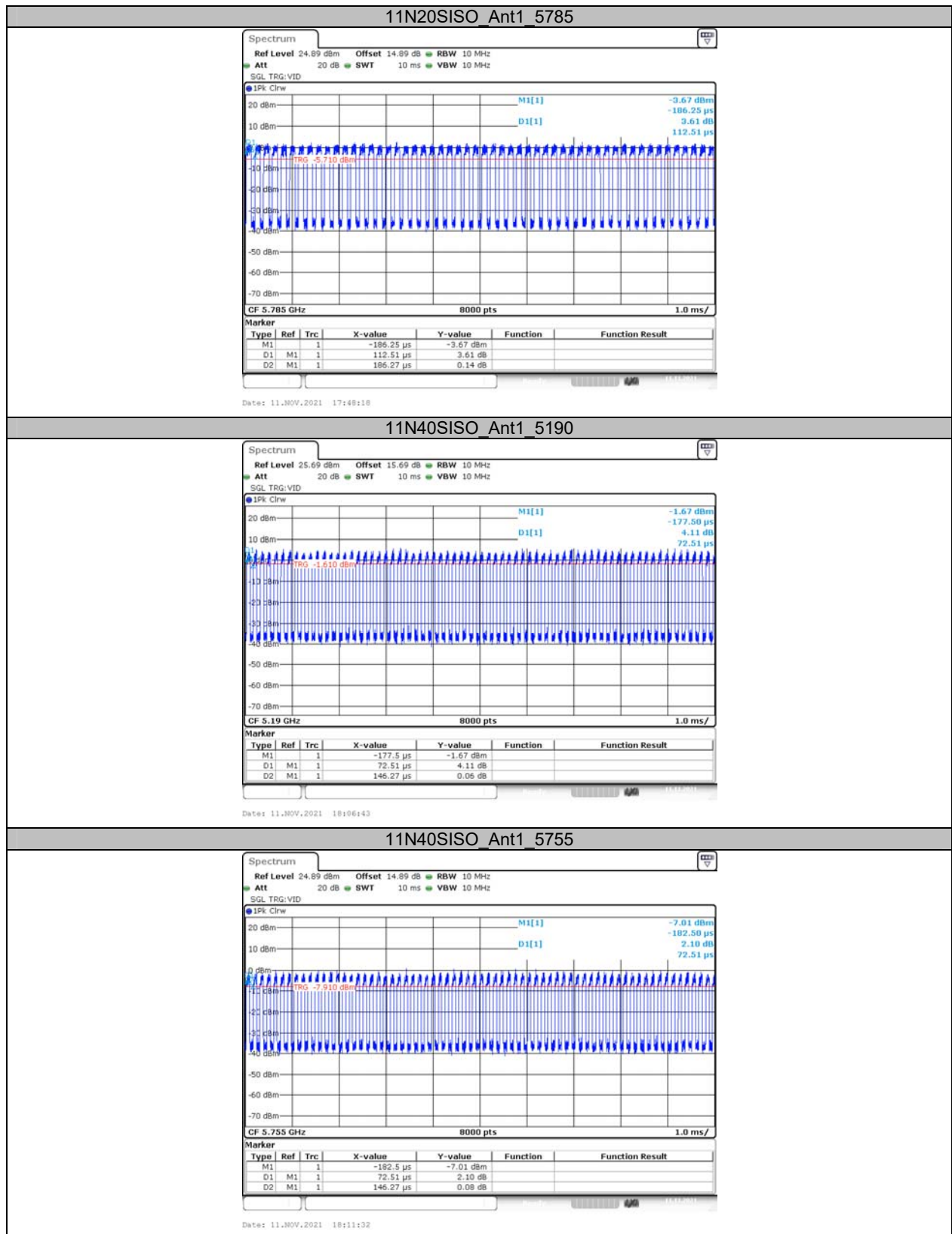


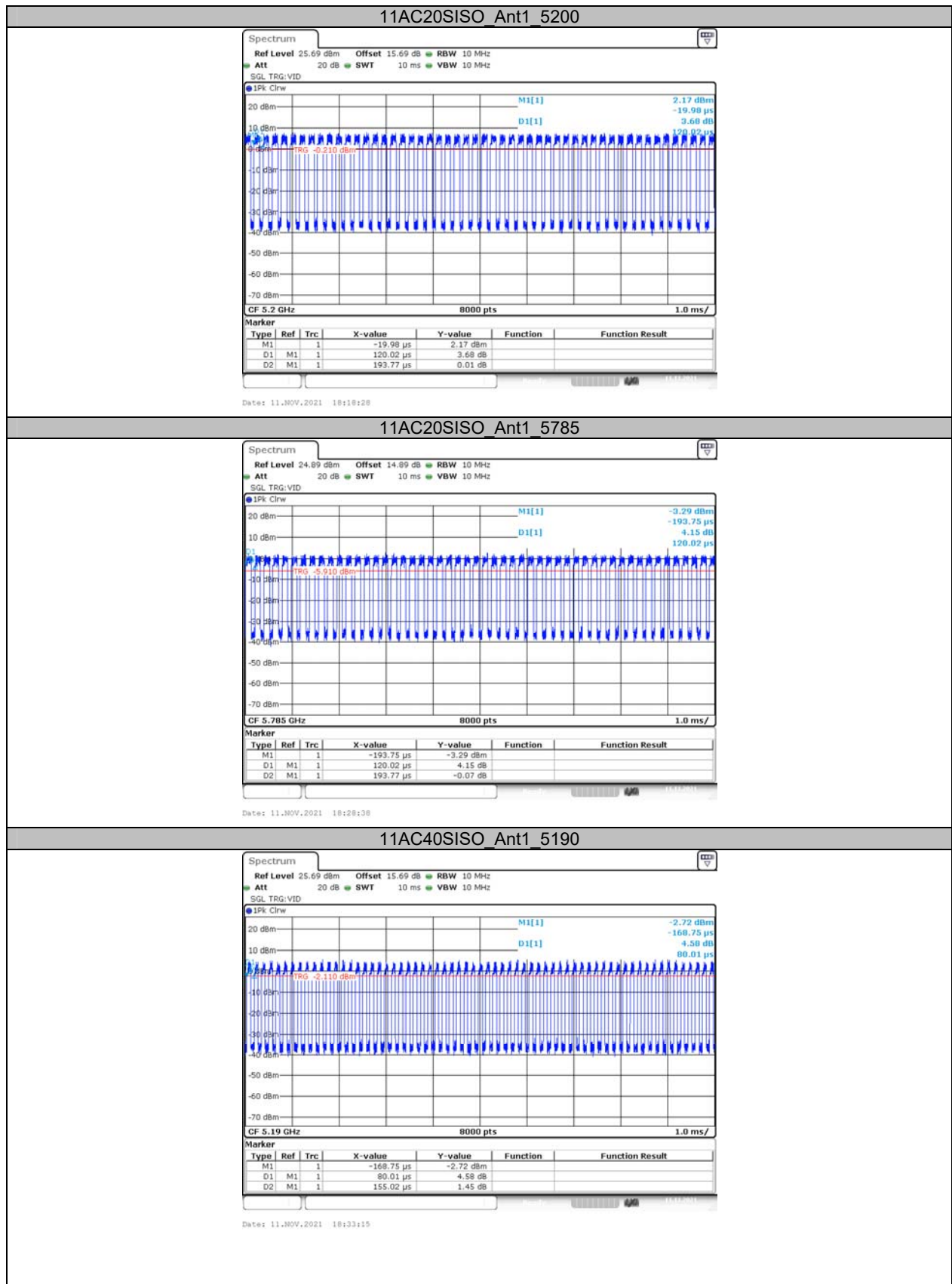
**Appendix D: Duty Cycle
Test Result**

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5200	0.11	0.19	60.40
		5785	0.11	0.19	60.67
11N20SISO	Ant1	5200	0.11	0.19	60.14
		5785	0.11	0.19	60.40
11N40SISO	Ant1	5190	0.07	0.15	49.57
		5755	0.07	0.15	49.57
11AC20SISO	Ant1	5200	0.12	0.19	61.94
		5785	0.12	0.19	61.94
11AC40SISO	Ant1	5190	0.08	0.16	51.61
		5755	0.08	0.15	52.03
11AC80SISO	Ant1	5210	0.04	0.13	30.77
		5775	0.04	0.13	30.77

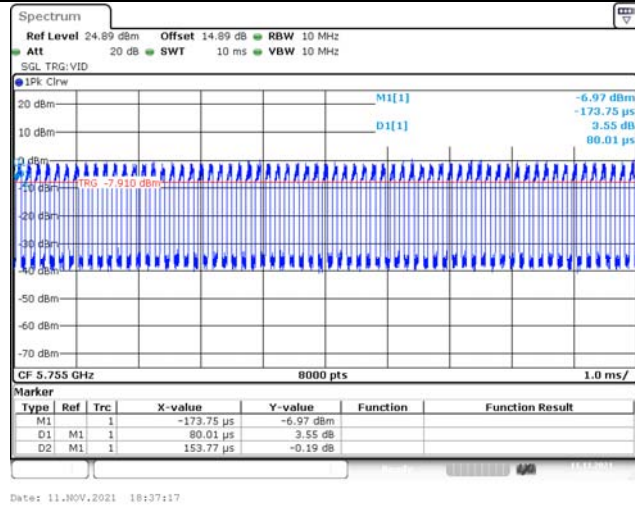
Test Graphs



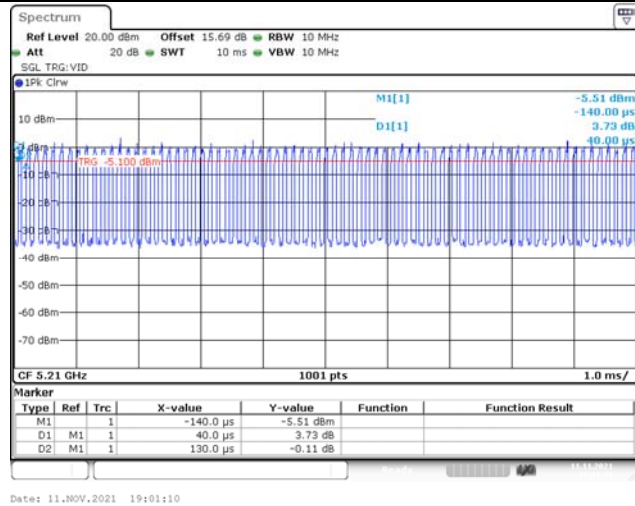




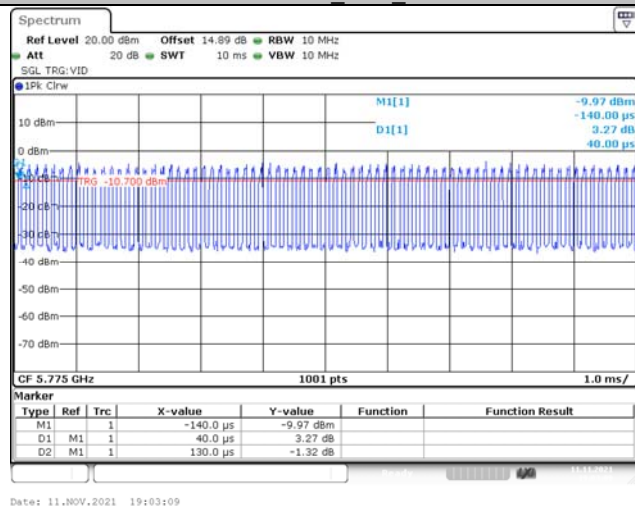
11AC40SISO_Ant1_5755



11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5775



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