

TEST REPORT

Product Name : LUMA Smart Litter Box
Model Number : PLLB001, 6222001
FCC ID : 2A3DE-PLLB001

Prepared for : Shenzhen Libro Technology Co., Ltd.
Address : Room 501, West Tower, Twin Towers, Galaxy World, No. 8
Yaxing Road, Nankeng Community, Bantian
Street, Longgang District, Shenzhen, China

Prepared by : EMTEK (SHENZHEN) CO., LTD.
Address : Building 69, Majialong Industry Zone, Nanshan District,
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Report Number : ENS2505300401W00403R
Date(s) of Tests : June 1, 2025 to August 12, 2025
Date of issue : August 17, 2025

1 TEST RESULT CERTIFICATION

Applicant : Shenzhen Libro Technology Co., Ltd.
Address : Room 501, West Tower, Twin Towers, Galaxy World, No. 8 Yaxing Road, Nankeng Community, Bantian Street, Longgang District, Shenzhen, China
Manufacturer : Shenzhen Libro Technology Co., Ltd.
Address : Room 501, West Tower, Twin Towers, Galaxy World, No. 8 Yaxing Road, Nankeng Community, Bantian Street, Longgang District, Shenzhen, China
EUT : LUMA Smart Litter Box
Model Name : PLLB001, 6222001
Trademark : PETLIBRO

Measurement Procedure Used:

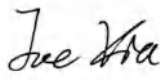
APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	PASS
IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021) IC RSS-247 Issue 3(08-2023)	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2, Part 15.407, IC RSS-247 Issue 3 and IC RSS-GEN, Issue 5.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : June 1, 2025 to August 12, 2025

Prepared by : 
Una Yu /Editor

Reviewer : 
Joe Xia/Supervisor

Approve & Authorized Signer : 
Lisa Wang/Manager



Modified History

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2505300401W00403R	/	Original Report



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2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product Name:	LUMA Smart Litter Box
Model Number:	PLLB001, 6222001 (NOTE: All models are identical in circuitry and electrical, mechanical and physical construction, the difference is model number for trading purpose. Mode PLLB001 was Chosen final test)
Test Sample S/N:	N/A
Variant Number:	N/A
Wifi Type:	Wifi 5G with 5150MHz-5250MHz Band Wifi 5G with 5250MHz-5350MHz Band Wifi 5G with 5470MHz-5725MHz Band Wifi 5G with 5725MHz-5850MHz Band
WLAN Supported:	802.11a/n
Data Rate :	802.11a: 54/48/36/24/12/9/6Mbps 802.11n: MCS0-MCS7
Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n
Frequency Range:	UNII-1: 5150MHz-5250MHz Band 5180-5240MHz for 802.11a/n(HT20); 5190-5230MHz for 802.11n(HT40);
	UNII-2A: 5250MHz-5350MHz Band 5260-5320MHz for 802.11a/n(HT20); 5270-5310MHz for 802.11n(HT40);
	UNII-2C: 5470MHz-5725MHz Band 5500-5700MHz for 802.11a/n(HT20); 5510-5670MHz for 802.11n(HT40);
	UNII-3 with 5725MHz-5850MHz Band 5745-5825MHz for 802.11a/n(HT20); 5755-5795MHz for 802.11n(HT40);
TPC Function:	Not Applicable
Antenna Port:	☒ Antenna port 1
Antenna Type:	FPC Antenna
Antenna Gain:	3.79 dBi (Note: The antenna information is provided by the customers, which will have a certain impact on the test results.)
Power Supply:	DC 12V from adapter

Adapter:	MODEL:HCX6501-1205000U INPUT:100-240V~50/60Hz 2.5A OUTPUT:12.0V/5A
Test Voltage:	AC 120V/60Hz
Temperature Range:	0° C ~ +40° C
Software Version:	V0.3.17
Hardware Version:	V0.8
Note: 1.For more details, please refer to the User's manual of the EUT.	



3 SUMMARY OF TEST RESULT

FCC Part Clause	IC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e) 2.1049	RSS-247, 6.2 RSS-Gen 6.7	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	RSS-247, 6.2	Maximum Conducted Output Power	PASS	
15.407 (a)	RSS-247, 6.2	PeakPower Spectral Density	PASS	
15.407 (b) 15.209 15.205	RSS-247, 6.2 RSS-Gen 8.9 RSS-Gen 8.10 RSS-Gen 6.13	RadiatedSpurious Emission	PASS	
15.207	RSS-Gen 8.8	Power Line Conducted Emission	PASS	
15.407(a) 15.203	RSS-Gen 6.8	Antenna Application	PASS	
NOTE1:N/A (Not Applicable) NOTE2:According to FCC OET KDB 789033, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.				

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for **FCC ID:2A3DE-PLLB001** filing to comply with Section 15.407 of the FCC Part 15, Subpart C Rules.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:

FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart E

IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021)

IC RSS-247 Issue 3(08-2023)

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2025/5/9	1Year
AMN	Rohde & Schwarz	ENV216	101161	2025/5/9	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	2025/5/9	1Year
Pre-Amplifier	Lunar EM	LNA30M3G-25	J10100000070	2025/5/9	1Year
Bilog Antenna	Schwarzbeck	VULB9163	661	2025/5/18	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1177	2025/5/17	2 Year
Pre-Amplifier	SKET	LNPA_0118G-45	SK2019051801	2025/5/9	1Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2025/5/13	2 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2025/5/9	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2025/5/13	2 Year
Coaxial Cable	TIMES	NmNm-7-C15702	N/A	2025/5/9	1Year
Coaxial Cable	TIMES	HF290-NMSM-6.5M	N/A	2025/5/9	1Year
Coaxial Cable	TIMES	LMR-240 N-N	N/A	2025/5/9	1Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2025/5/10	1Year
Vector Signal Generator	Agilent	N5182B	MY53050878	2025/5/10	1Year
Analog Signal Generator	Agilent	N5171B	MY53050553	2025/5/10	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	\	2025/5/10	1Year
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2025/5/10	1Year

4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11a: 54 Mbps; 802.11n(HT20): MCS0; 802.11ac(VHT20): MCS0; 802.11n(HT40): MCS0; 802.11ac(VHT40): MCS0; 802.11ac(VHT80): MCS0;)were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

☒ Wifi 5G with U-NII - 1

Frequency and Channel list for 802.11a, 802.11n (HT20):

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

Frequency and Channel list for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230		

Test Frequency and Channel for 802.11a, 802.11n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	48	5240

Test Frequency and channel for 802.11n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

☒ Wifi 5G with U-NII -2A

Frequency and Channel list 802.11a, 802.11n (HT20):

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

Frequency and Channel list for 802.11n (HT40), 802.11ac (VHT40))/ax(HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270				
62	5310				

Test Frequency and Channel for 802.11a, 802.11n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	56	5280	64	5320

Test Frequency and channel for 802.11n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	N/A	N/A	62	5310

☒ Wifi 5G with U-NII -2C

Frequency and Channel list for 802.11a, 802.11n (HT20):

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

Frequency and Channel list for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	118	5590	134	5670
110	5550	126	5630		

Test Frequency and Channel for 802.11a, 802.11n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580	140	5700

Test Frequency and channel for 802.11n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency	Channel	Frequency	Channel	Frequency

	(MHz)		(MHz)		(MHz)
102	5510	110	5550	134	5670

☒ Wifi 5G with U-NII -3

Frequency and Channel list for 802.11a, 802.11n (HT20):

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

Frequency and Channel list for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795		

Test Frequency and Channel for 802.11a, 802.11n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channel for 802.11n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	N/A	N/A	159	5795

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at:

EMTEK (Shenzhen) Co., Ltd.

Building 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L2291

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

Accredited by FCC

Designation Number: CN1204

Test Firm Registration Number: 882943

Accredited by A2LA

The Certificate Number is 4321.01

Accredited by Industry Canada

The Conformity Assessment Body Identifier is CN0008

Name of Firm : EMTEK (SHENZHEN) CO., LTD.

Site Location : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

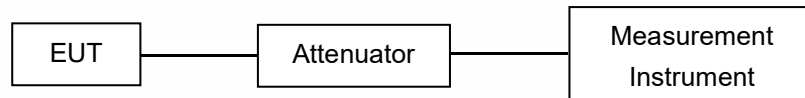
Test Parameter	Measurement Uncertainty
Frequency error	$\pm 20\text{Hz}$
Occupied Bandwidth	$\pm 0.5\text{KHz}$
Transmitter output power	$\pm 0.6\text{dB}$
Conducted spurious emissions	$\pm 3.2\text{dB}$
Radiated spurious emissions	$\pm 4.5\text{dB}$
Temperature	$\pm 1.2^{\circ}\text{C}$
Humidity	$\pm 3\%$
DC voltages	$\pm 0.25\text{V}$
Time	$\pm 1\%$

Measurement Uncertainty for a level of Confidence of 95%

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz:

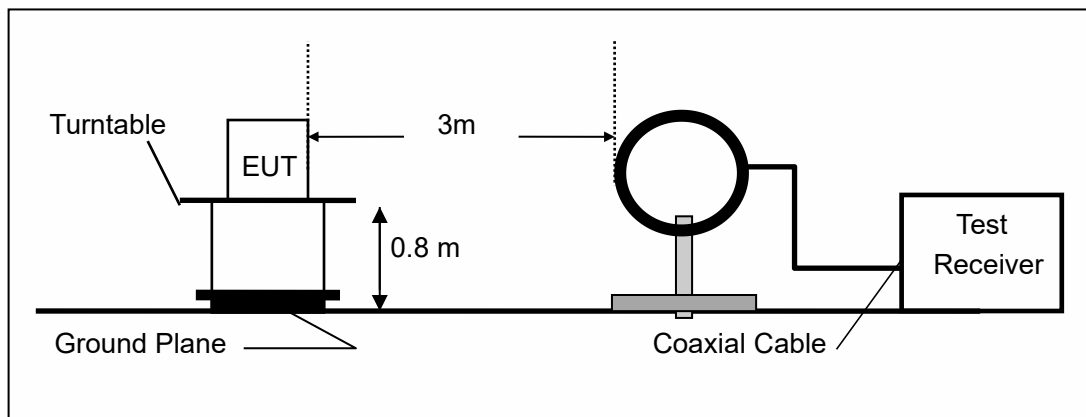
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz:

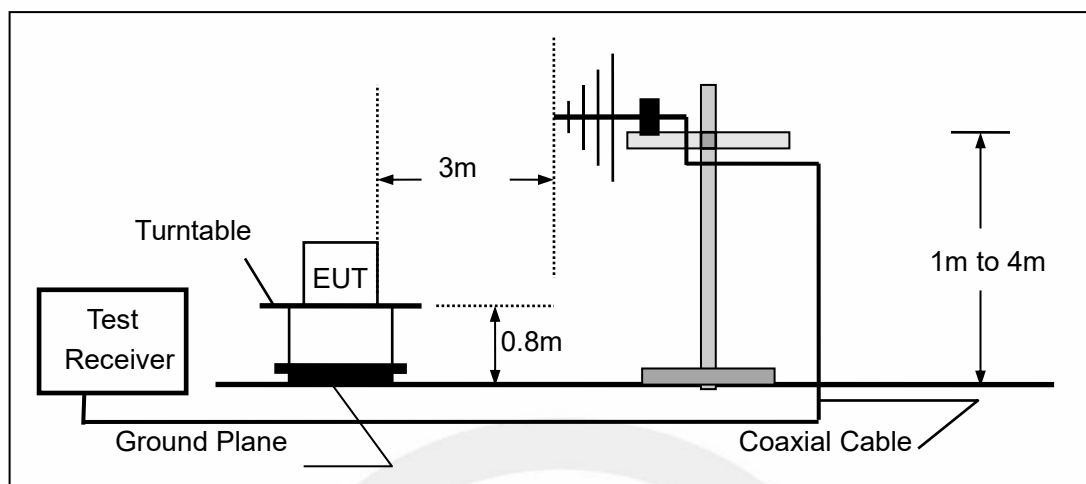
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

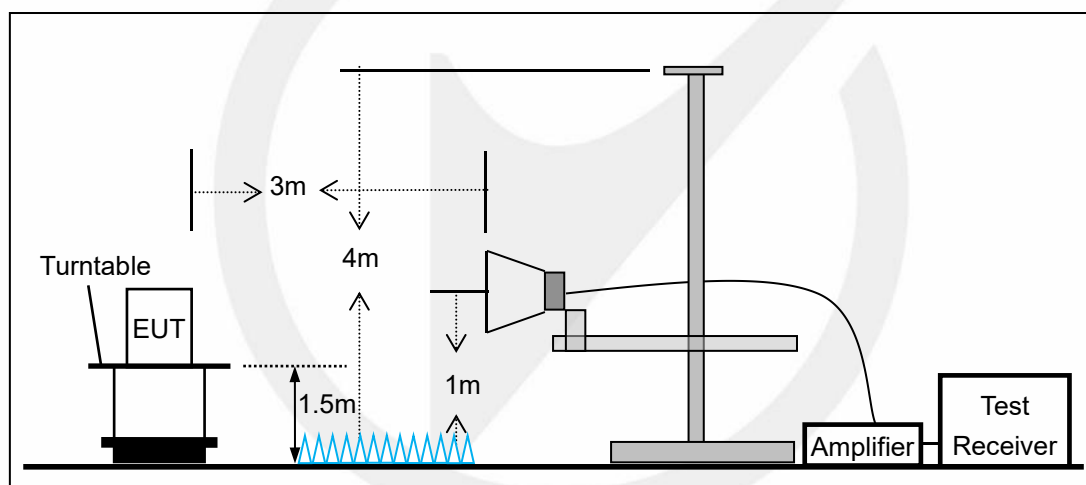
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

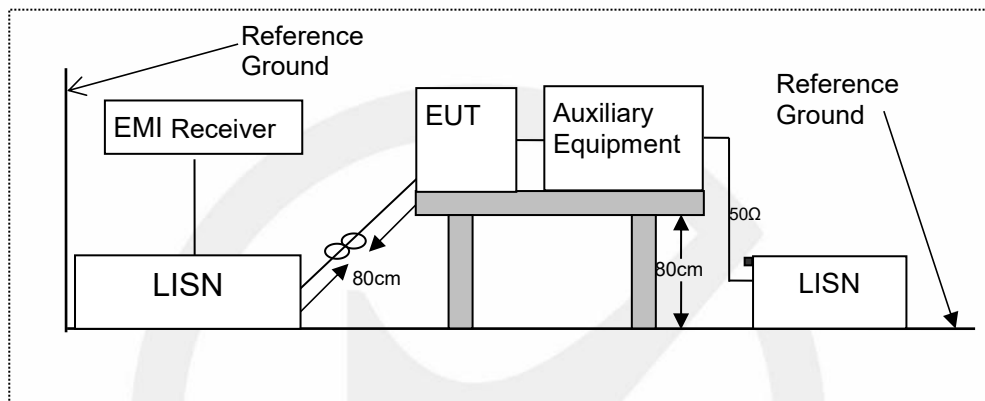


7.3 CONDUCTED EMISSION TEST SETUP

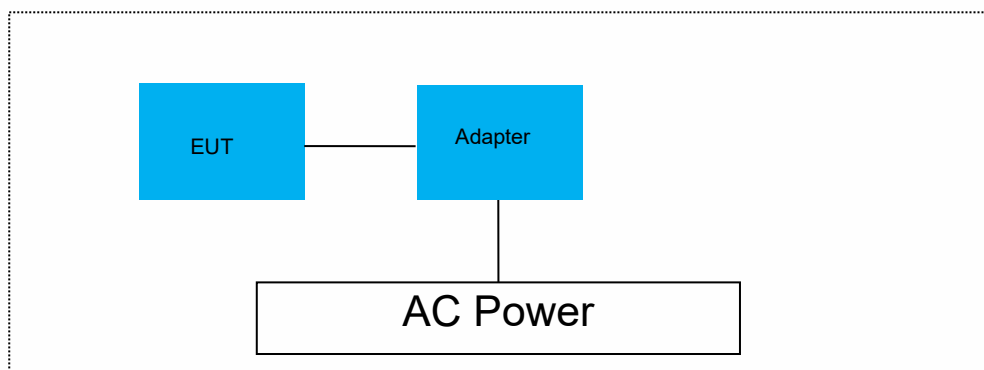
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH MEASUREMENT

8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to FCC Part 15.407(e) for UNII Band III
According to 789033 D02 Section II(C)
According to 789033 D02 Section II(D)
According to RSS-Gen6.6, RSS 247, 6.2

8.1.2 Conformance Limit

The 26dB bandwidth is used to determine the conducted power limits.
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup

8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement 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 5.715-5.85 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.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E.

However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



8.1.5 Test Results

Temperature:	25°C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

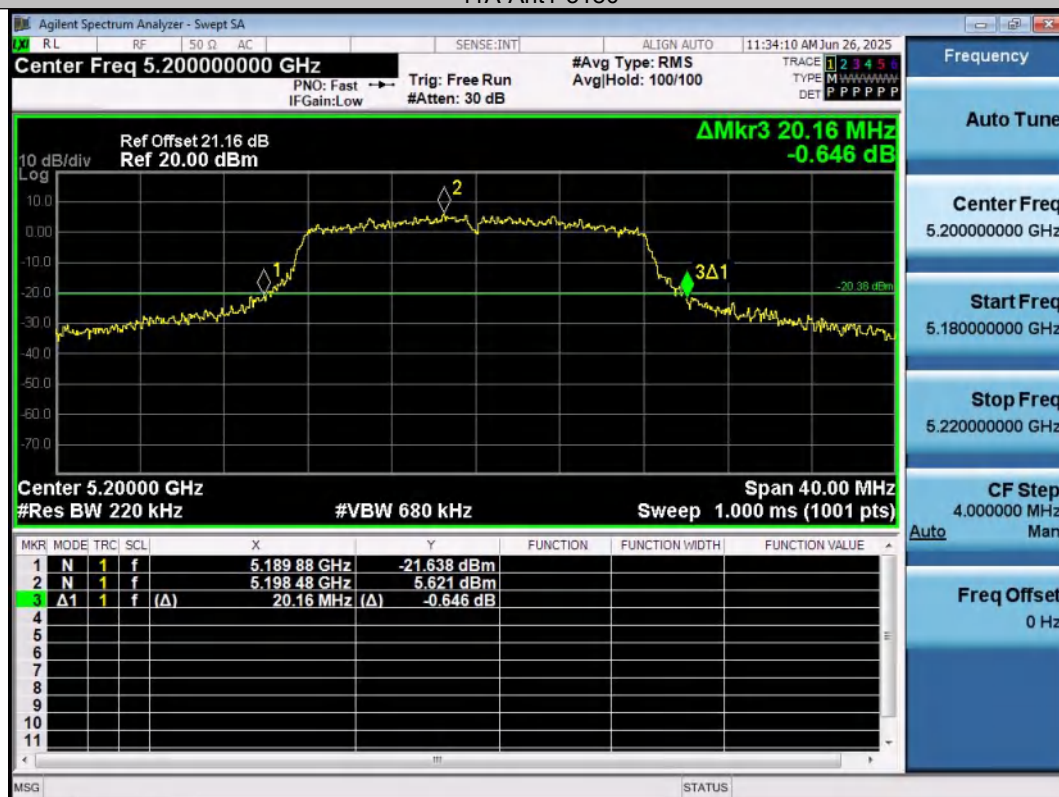
Note: N/A

Emission Bandwidth

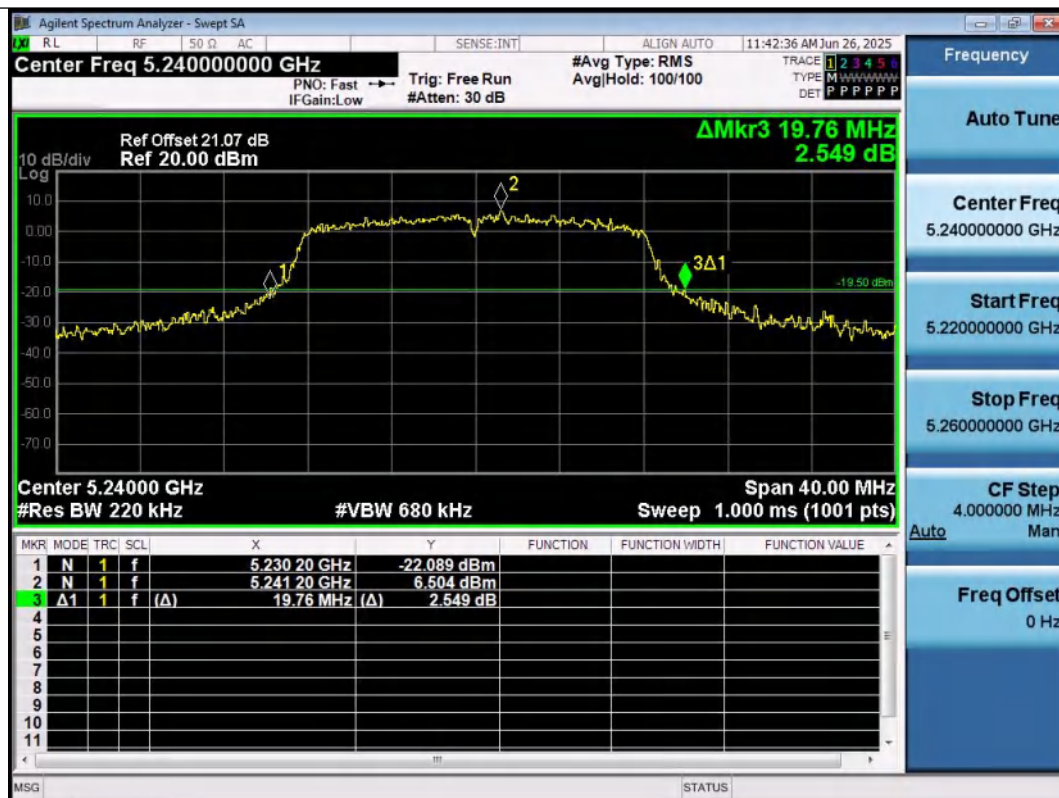
TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.000	5170.040	5190.040	---	---
11A	Ant1	5200	20.160	5189.880	5210.040	---	---
11A	Ant1	5240	19.760	5230.200	5249.960	---	---
11A	Ant1	5260	19.440	5250.280	5269.720	---	---
11A	Ant1	5280	20.080	5269.880	5289.960	---	---
11A	Ant1	5320	22.200	5310.040	5332.240	---	---
11A	Ant1	5500	19.680	5490.200	5509.880	---	---
11A	Ant1	5580	19.120	5570.520	5589.640	---	---
11A	Ant1	5700	20.000	5690.080	5710.080	---	---
11A	Ant1	5745	19.840	5734.960	5754.800	---	---
11A	Ant1	5785	20.160	5774.640	5794.800	---	---
11A	Ant1	5825	20.040	5815.040	5835.080	---	---
11N20SISO	Ant1	5180	20.560	5169.840	5190.400	---	---
11N20SISO	Ant1	5200	20.120	5189.960	5210.080	---	---
11N20SISO	Ant1	5240	20.000	5229.920	5249.920	---	---
11N20SISO	Ant1	5260	21.000	5249.480	5270.480	---	---
11N20SISO	Ant1	5280	21.800	5269.800	5291.600	---	---
11N20SISO	Ant1	5320	22.400	5309.880	5332.280	---	---
11N20SISO	Ant1	5500	20.520	5489.880	5510.400	---	---
11N20SISO	Ant1	5580	20.720	5569.600	5590.320	---	---
11N20SISO	Ant1	5700	20.320	5689.840	5710.160	---	---
11N20SISO	Ant1	5745	20.520	5734.840	5755.360	---	---
11N20SISO	Ant1	5785	21.800	5775.000	5796.800	---	---
11N20SISO	Ant1	5825	19.880	5814.920	5834.800	---	---
11N40SISO	Ant1	5190	38.320	5170.880	5209.200	---	---
11N40SISO	Ant1	5230	38.000	5210.880	5248.880	---	---
11N40SISO	Ant1	5270	45.280	5250.880	5296.160	---	---
11N40SISO	Ant1	5310	46.320	5290.800	5337.120	---	---
11N40SISO	Ant1	5510	38.080	5490.880	5528.960	---	---
11N40SISO	Ant1	5550	38.080	5530.960	5569.040	---	---
11N40SISO	Ant1	5670	38.080	5650.960	5689.040	---	---
11N40SISO	Ant1	5755	38.080	5735.880	5773.960	---	---
11N40SISO	Ant1	5795	40.400	5775.880	5816.280	---	---



11A-Ant1-5180



11A-Ant1-5200



11A-Ant1-5240



11A-Ant1-5260



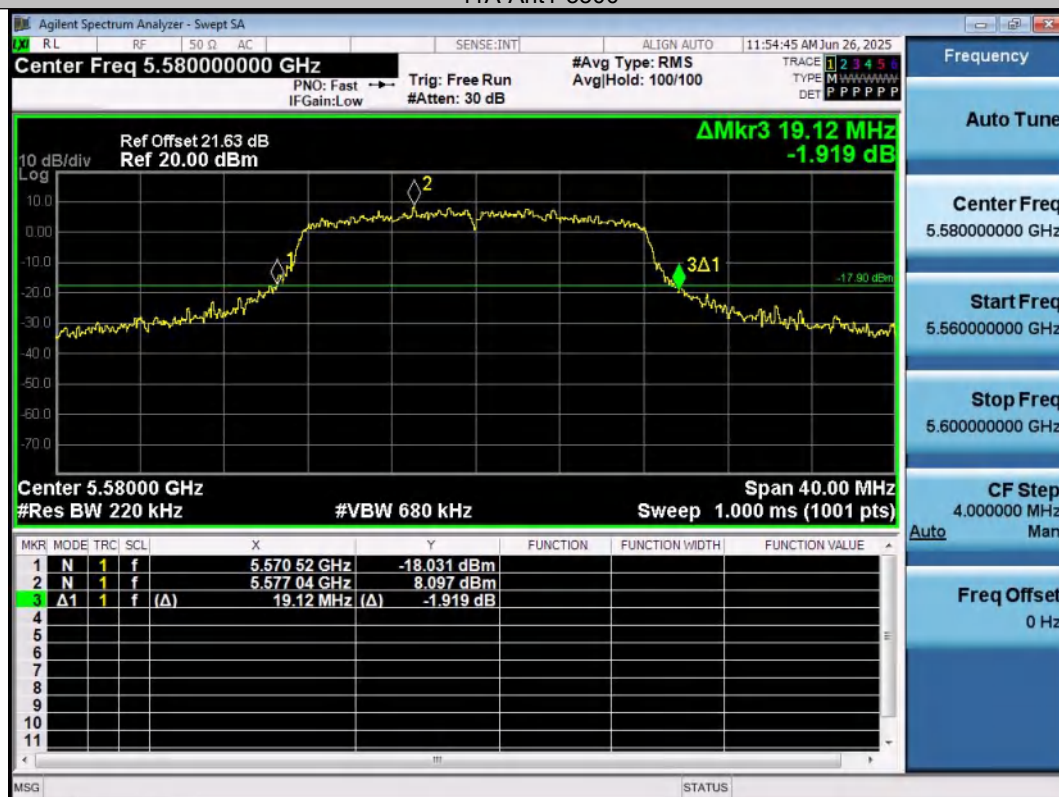
11A-Ant1-5280



11A-Ant1-5320



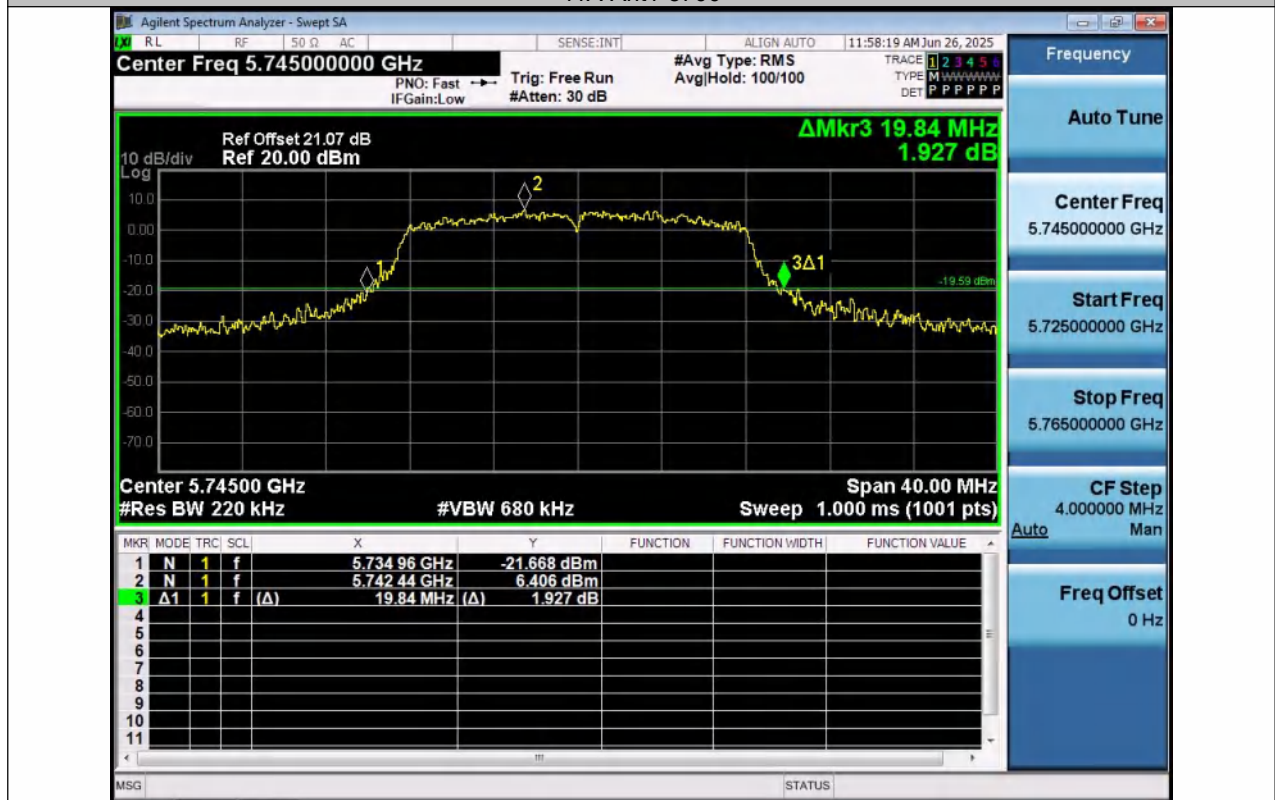
11A-Ant1-5500



11A-Ant1-5580



11A-Ant1-5700



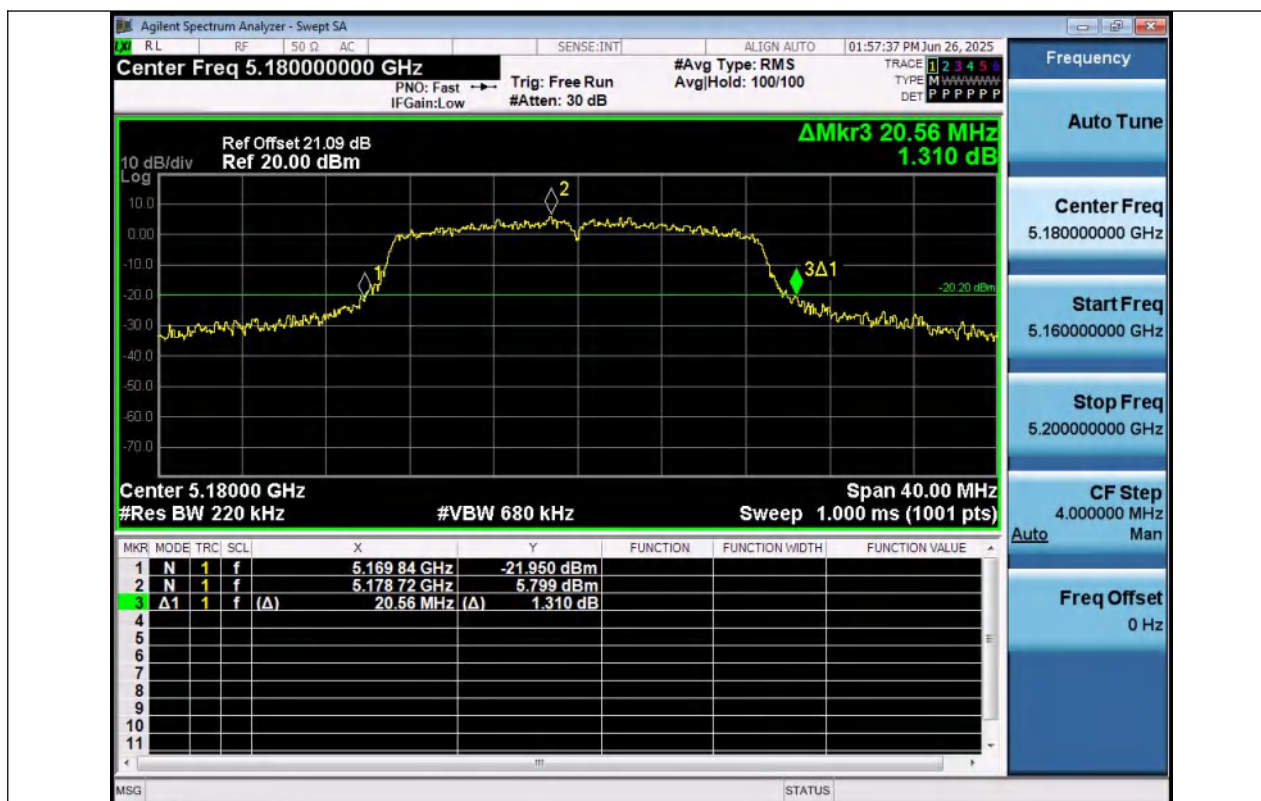
11A-Ant1-5745



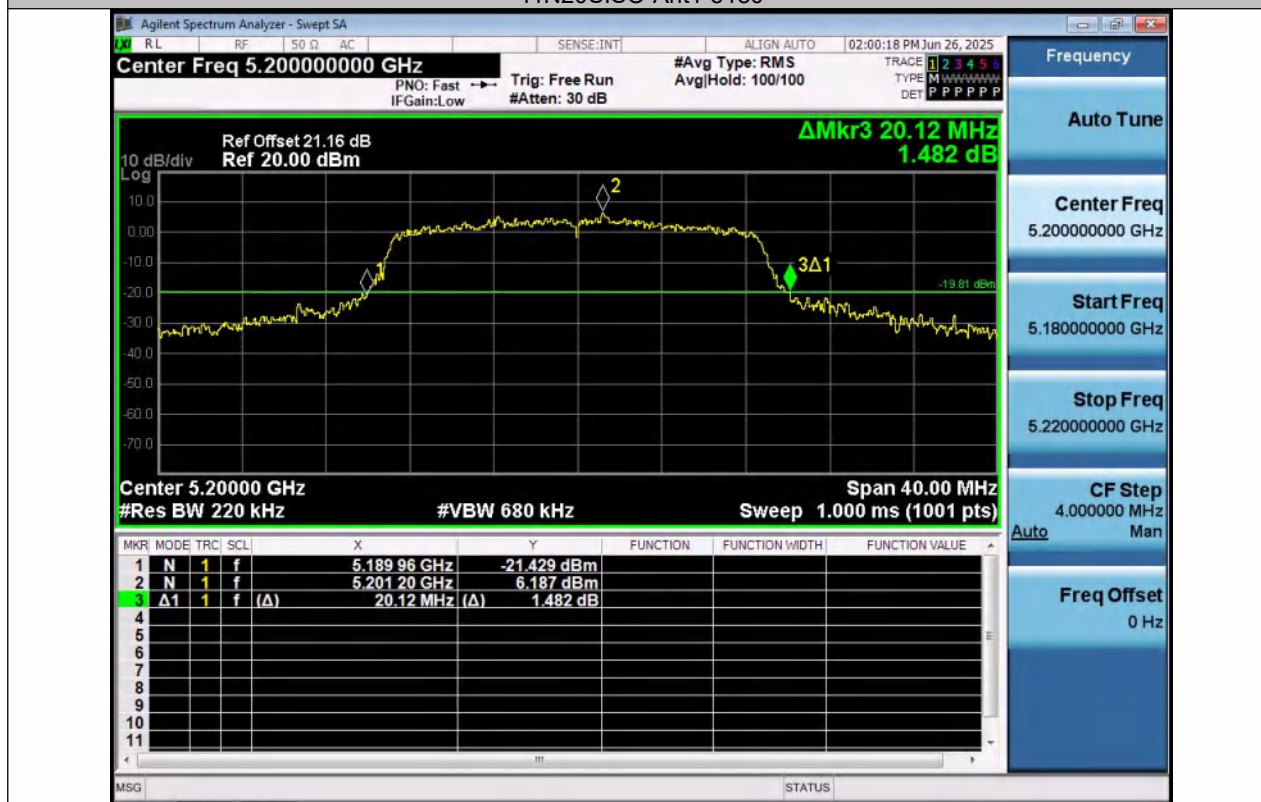
11A-Ant1-5785



11A-Ant1-5825



11N20SISO-Ant1-5180



11N20SISO-Ant1-5200



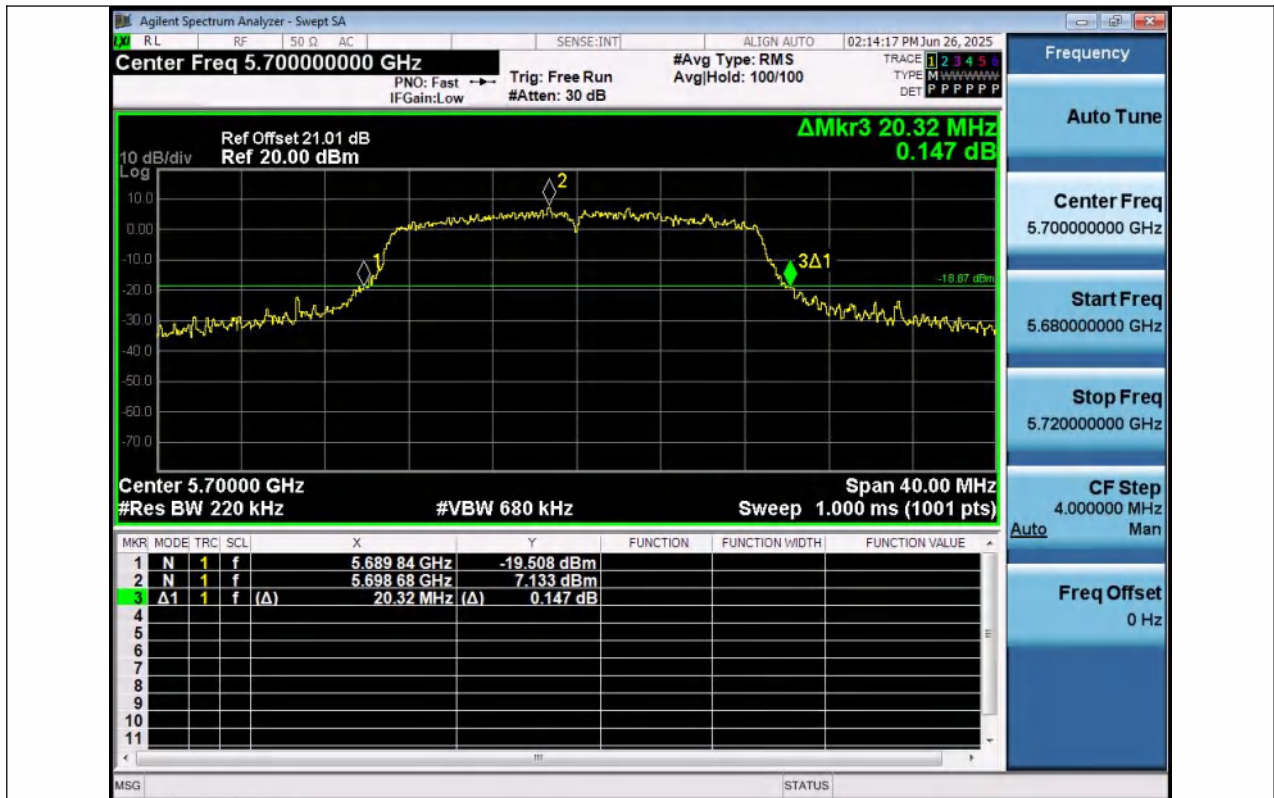


11N20SISO-Ant1-5280



11N20SISO-Ant1-5320



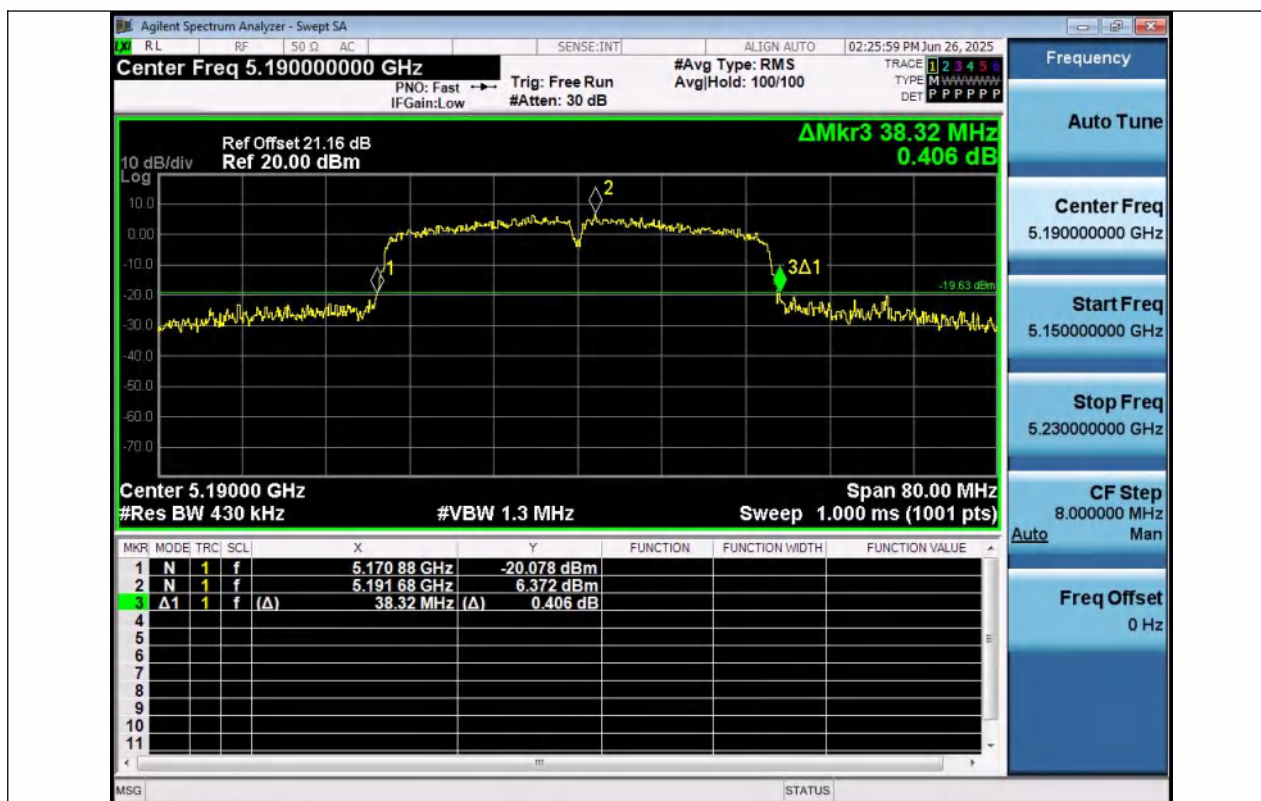


11N20SISO-Ant1-5700

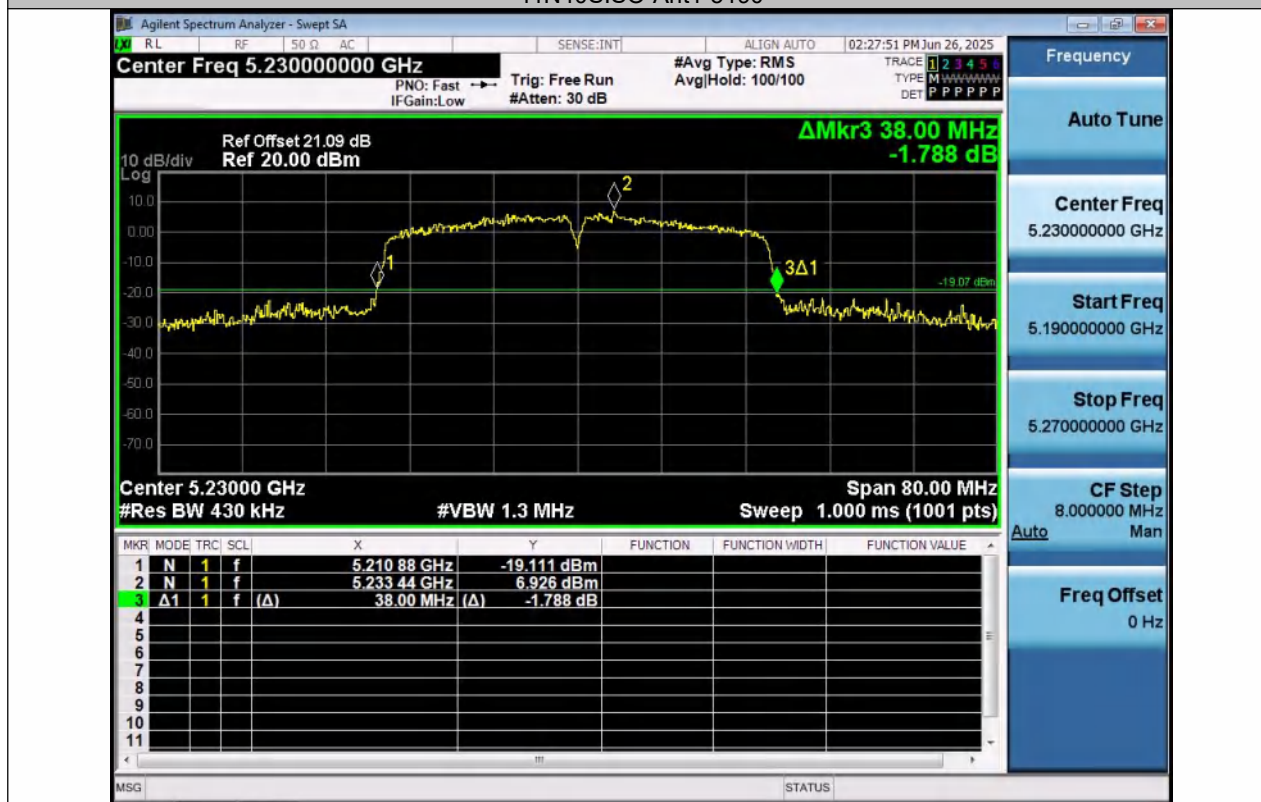


11N20SISO-Ant1-5745

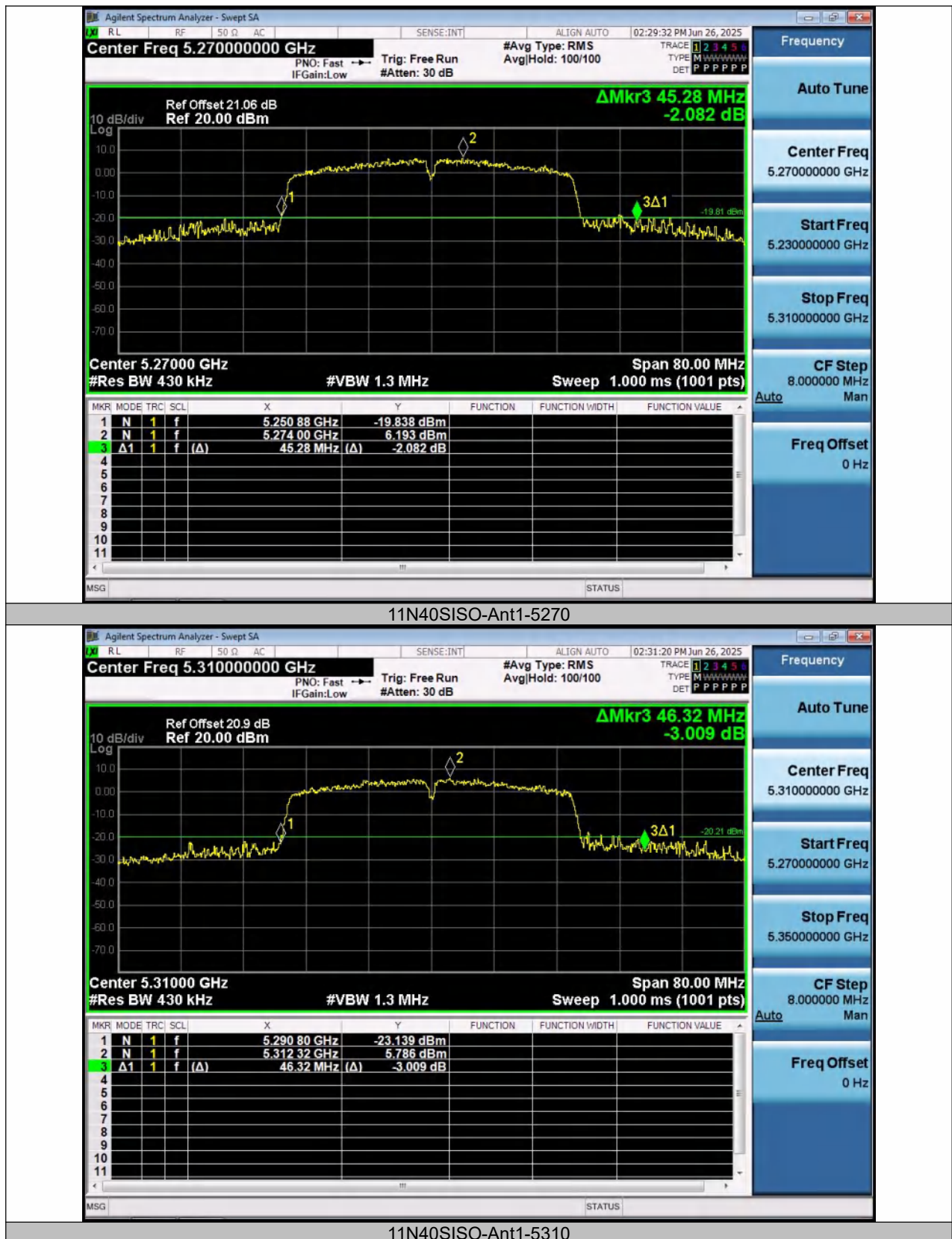


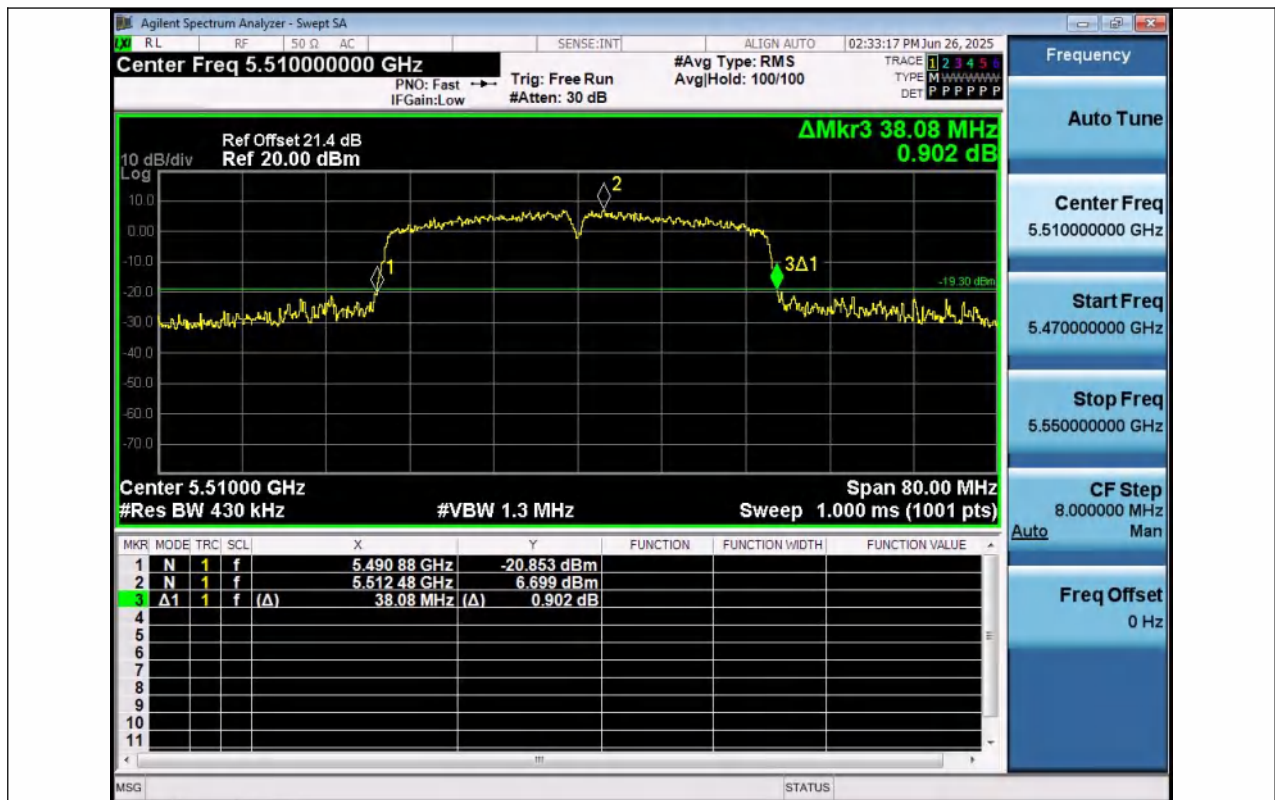


11N40SISO-Ant1-5190



11N40SISO-Ant1-5230





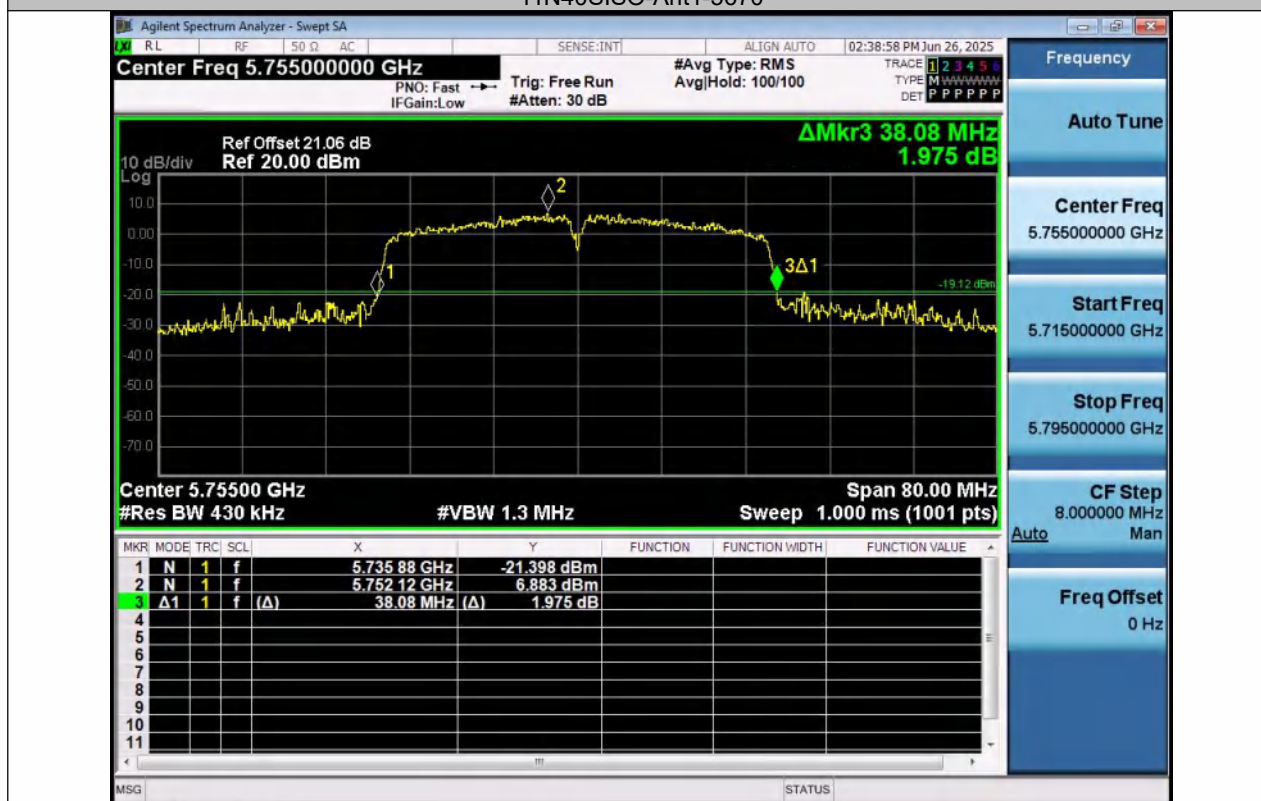
11N40SISO-Ant1-5510



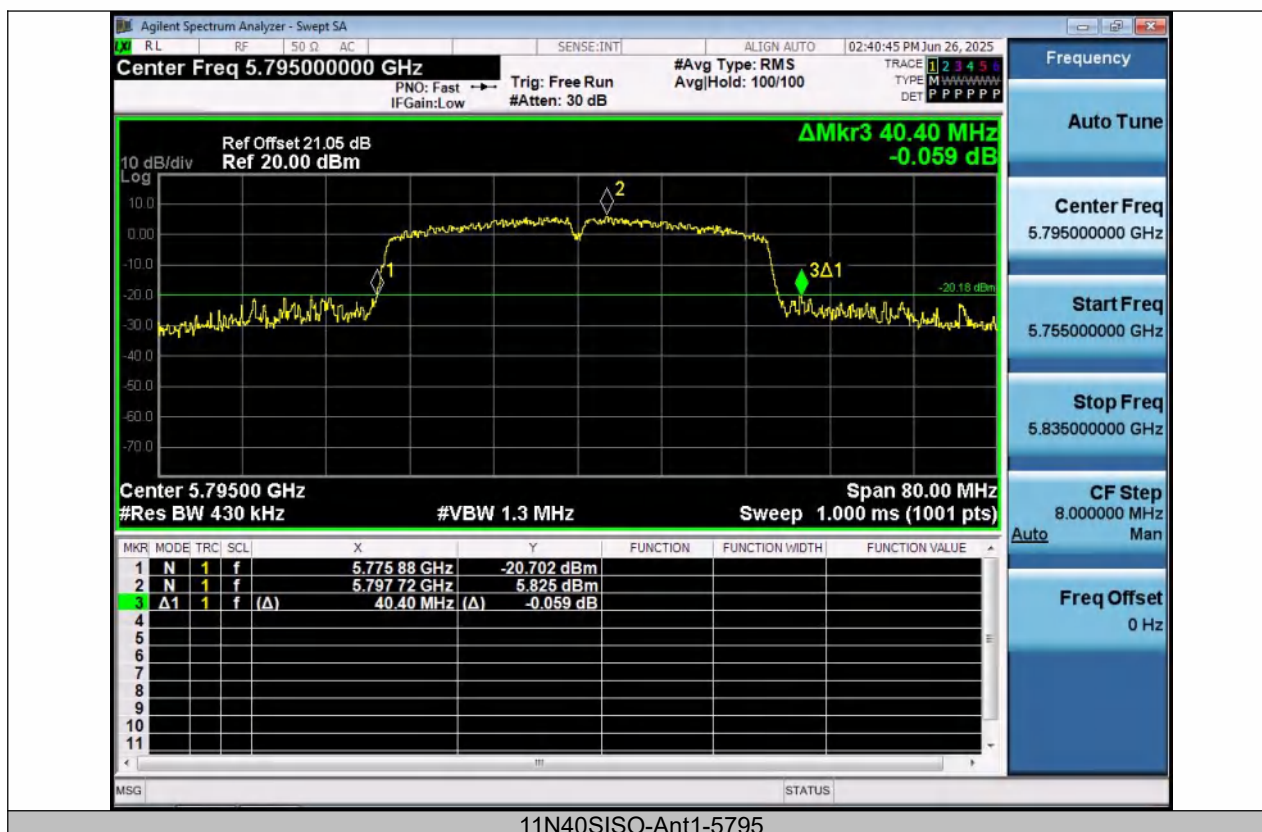
11N40SISO-Ant1-5550



11N40SISO-Ant1-5670

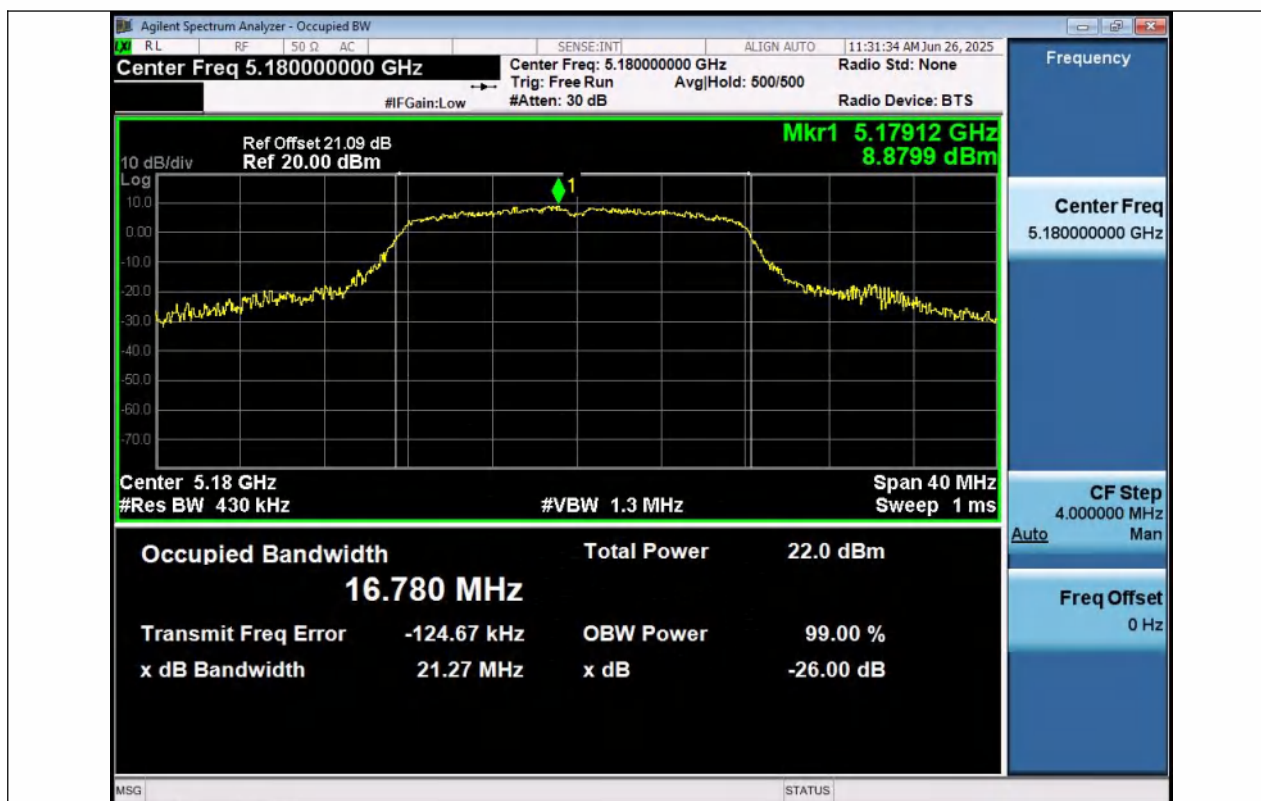


11N40SISO-Ant1-5755

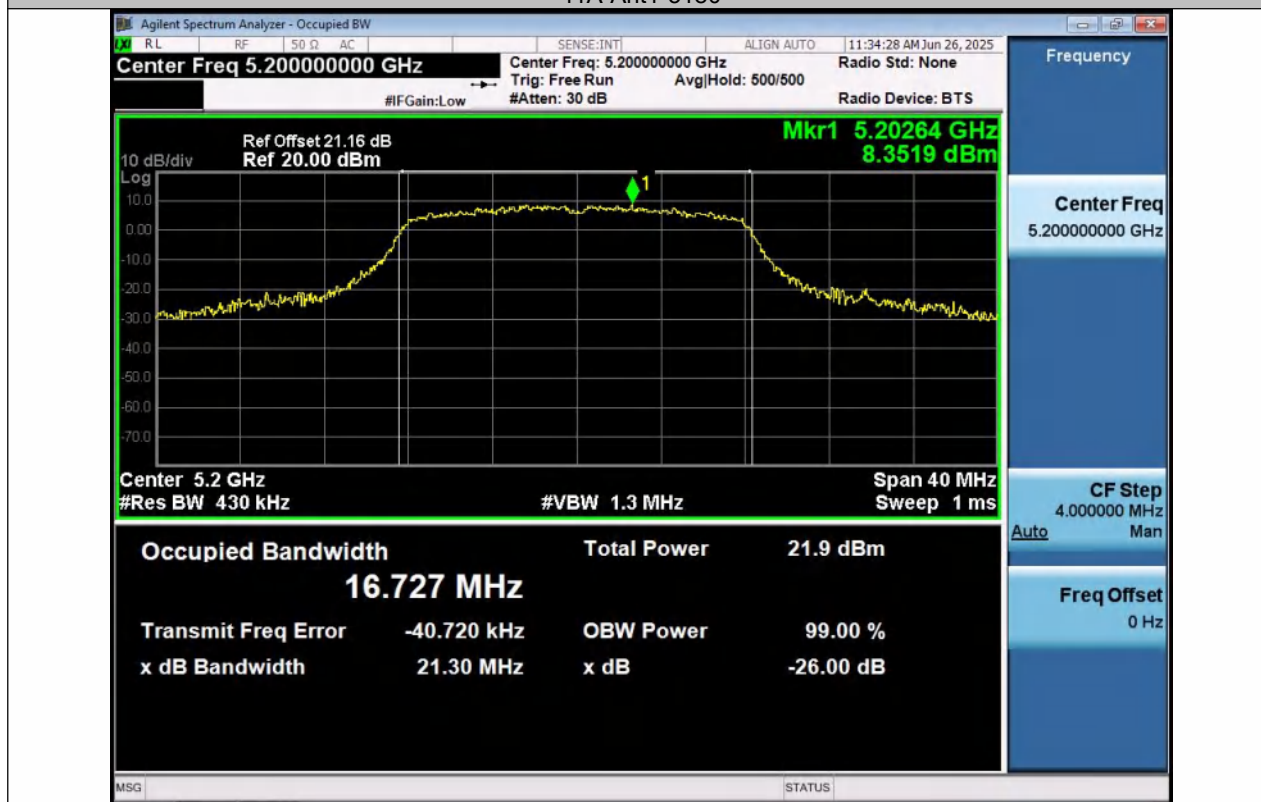


Occupied channel bandwidth

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.780	5171.4853	5188.2653	---	---
11A	Ant1	5200	16.727	5191.5958	5208.3228	---	---
11A	Ant1	5240	16.708	5231.6349	5248.3429	---	---
11A	Ant1	5260	16.725	5251.6747	5268.3997	---	---
11A	Ant1	5280	16.773	5271.5752	5288.3482	---	---
11A	Ant1	5320	16.759	5311.5991	5328.3581	---	---
11A	Ant1	5500	16.648	5491.6653	5508.3133	---	---
11A	Ant1	5580	16.677	5571.6479	5588.3249	---	---
11A	Ant1	5700	16.596	5691.6643	5708.2603	---	---
11A	Ant1	5745	16.662	5736.6135	5753.2755	---	---
11A	Ant1	5785	16.663	5776.6301	5793.2931	---	---
11A	Ant1	5825	16.628	5816.6469	5833.2749	---	---
11N20SISO	Ant1	5180	17.663	5171.1195	5188.7825	---	---
11N20SISO	Ant1	5200	17.757	5191.0720	5208.8290	---	---
11N20SISO	Ant1	5240	17.756	5231.0588	5248.8148	---	---
11N20SISO	Ant1	5260	17.716	5251.1492	5268.8652	---	---
11N20SISO	Ant1	5280	17.736	5271.1815	5288.9175	---	---
11N20SISO	Ant1	5320	17.748	5311.1331	5328.8811	---	---
11N20SISO	Ant1	5500	17.646	5491.1319	5508.7779	---	---
11N20SISO	Ant1	5580	17.713	5571.0747	5588.7877	---	---
11N20SISO	Ant1	5700	17.757	5691.1317	5708.8887	---	---
11N20SISO	Ant1	5745	17.816	5736.0744	5753.8904	---	---
11N20SISO	Ant1	5785	17.713	5776.1138	5793.8268	---	---
11N20SISO	Ant1	5825	17.692	5816.1333	5833.8253	---	---
11N40SISO	Ant1	5190	35.602	5172.1348	5207.7368	---	---
11N40SISO	Ant1	5230	35.557	5212.1956	5247.7526	---	---
11N40SISO	Ant1	5270	35.737	5252.1509	5287.8879	---	---
11N40SISO	Ant1	5310	35.713	5292.1991	5327.9121	---	---
11N40SISO	Ant1	5510	35.560	5492.2022	5527.7622	---	---
11N40SISO	Ant1	5550	35.531	5532.2102	5567.7412	---	---
11N40SISO	Ant1	5670	35.561	5652.2007	5687.7617	---	---
11N40SISO	Ant1	5755	35.566	5737.2188	5772.7848	---	---
11N40SISO	Ant1	5795	35.632	5777.1285	5812.7605	---	---



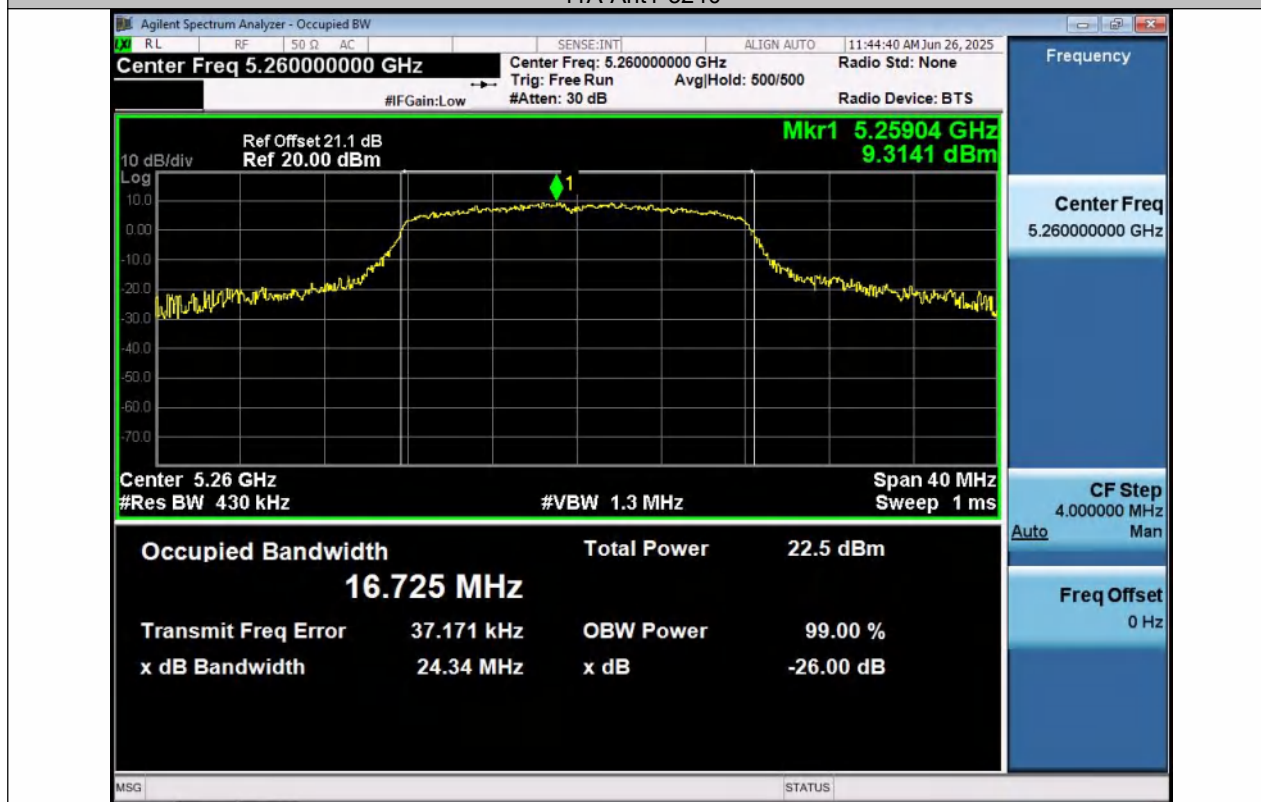
11A-Ant1-5180



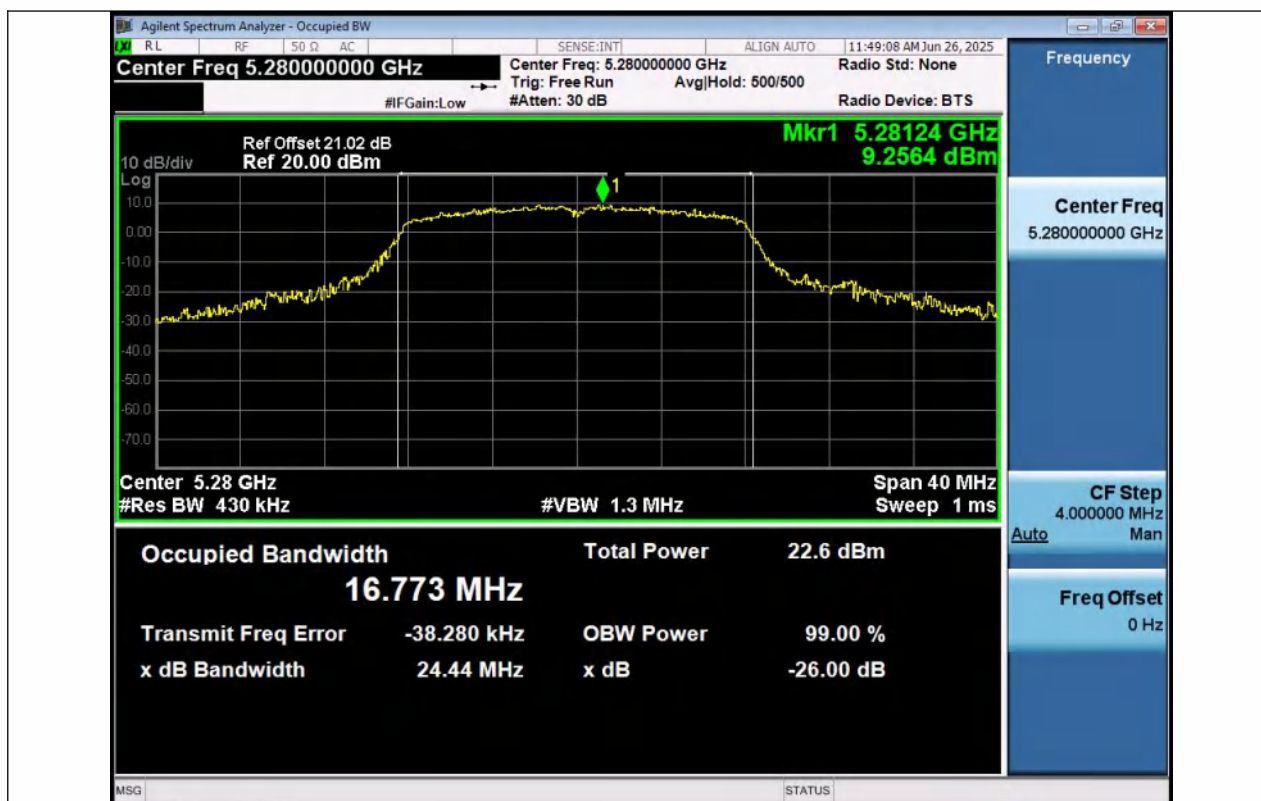
11A-Ant1-5200



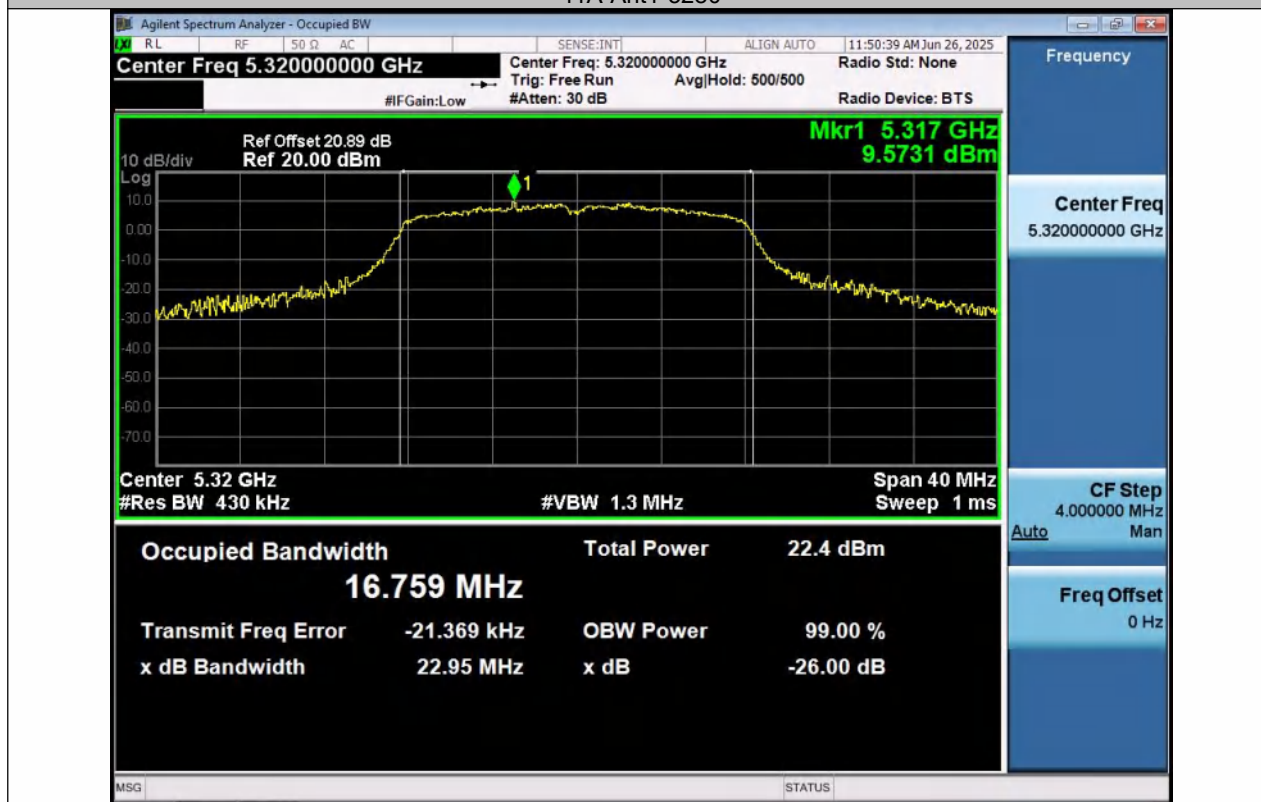
11A-Ant1-5240



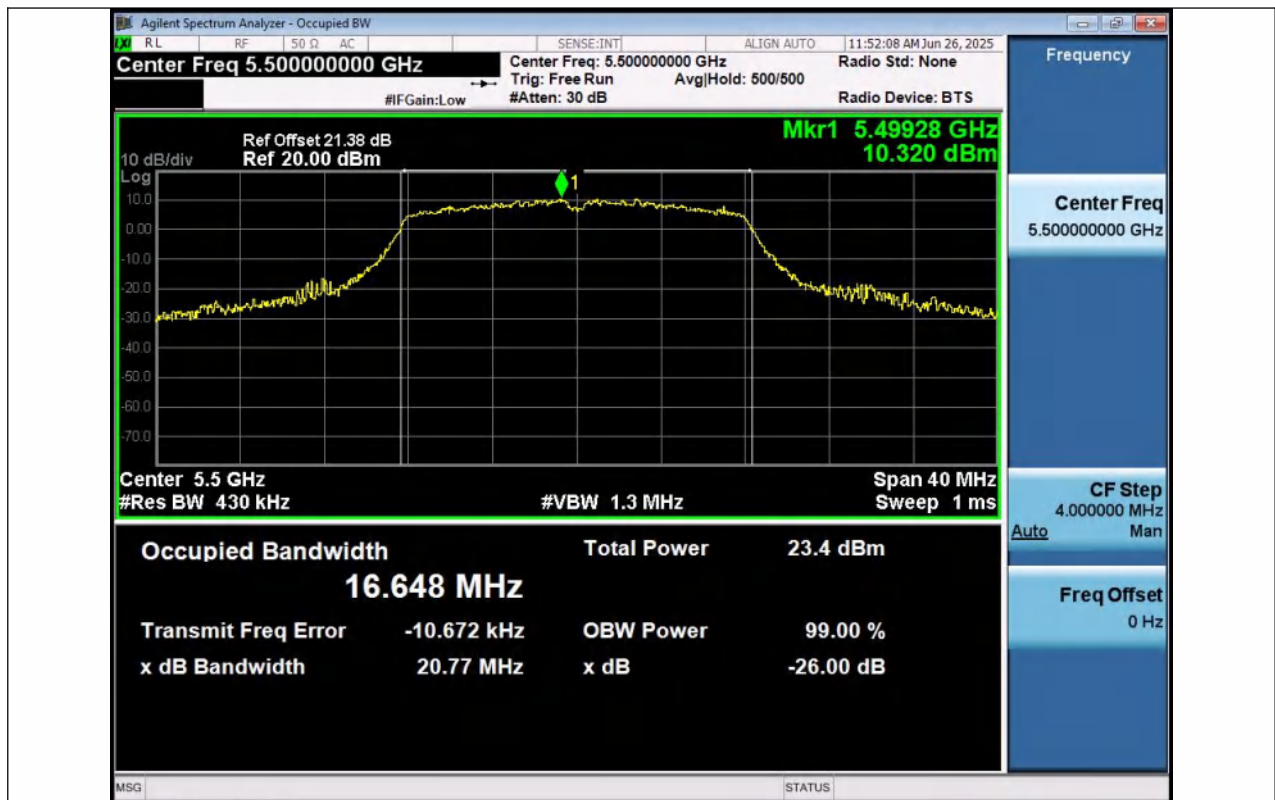
11A-Ant1-5260



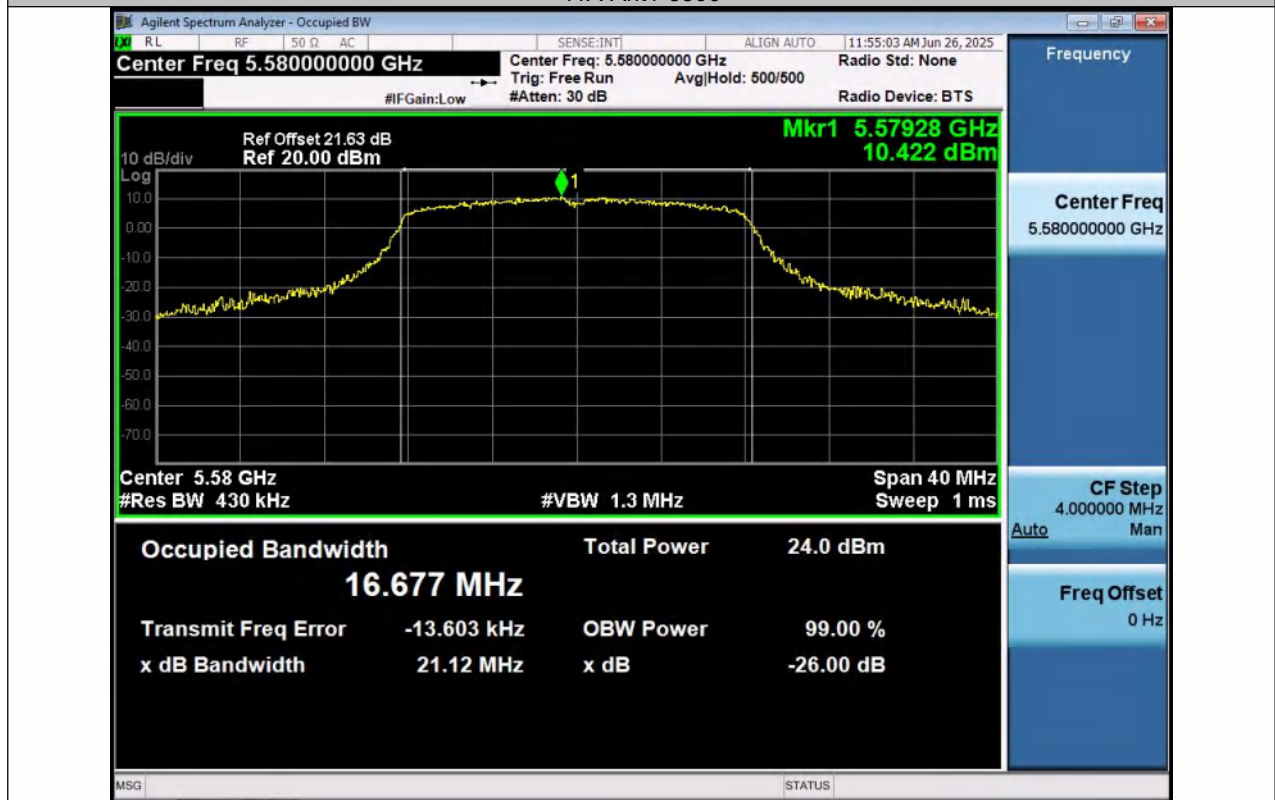
11A-Ant1-5280



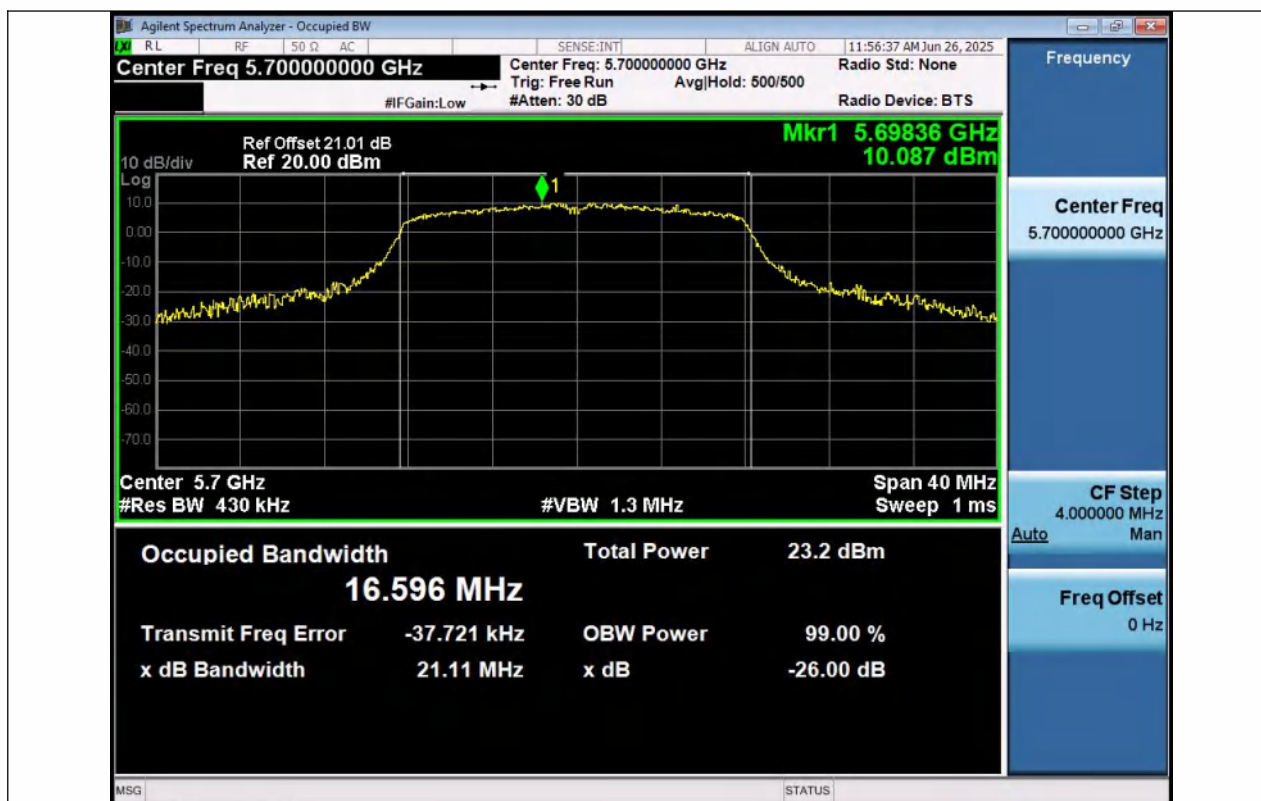
11A-Ant1-5320



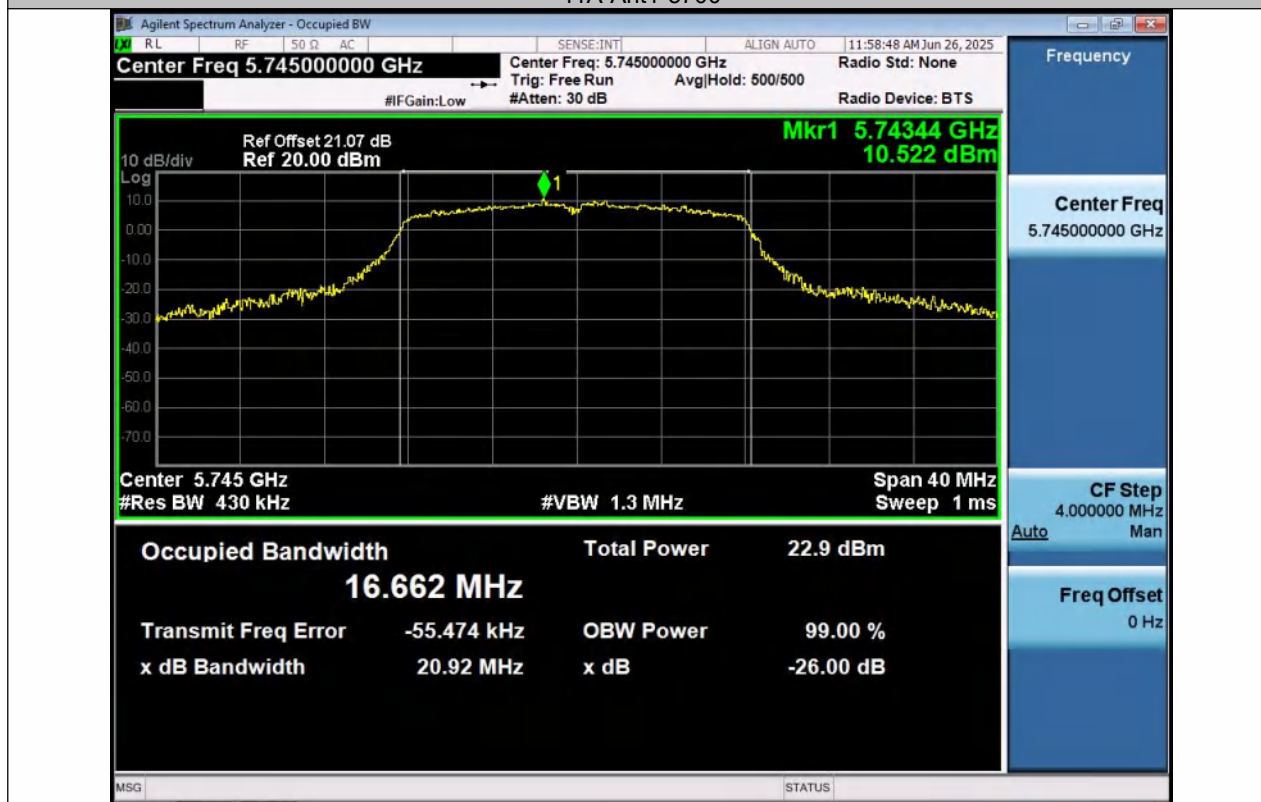
11A-Ant1-5500



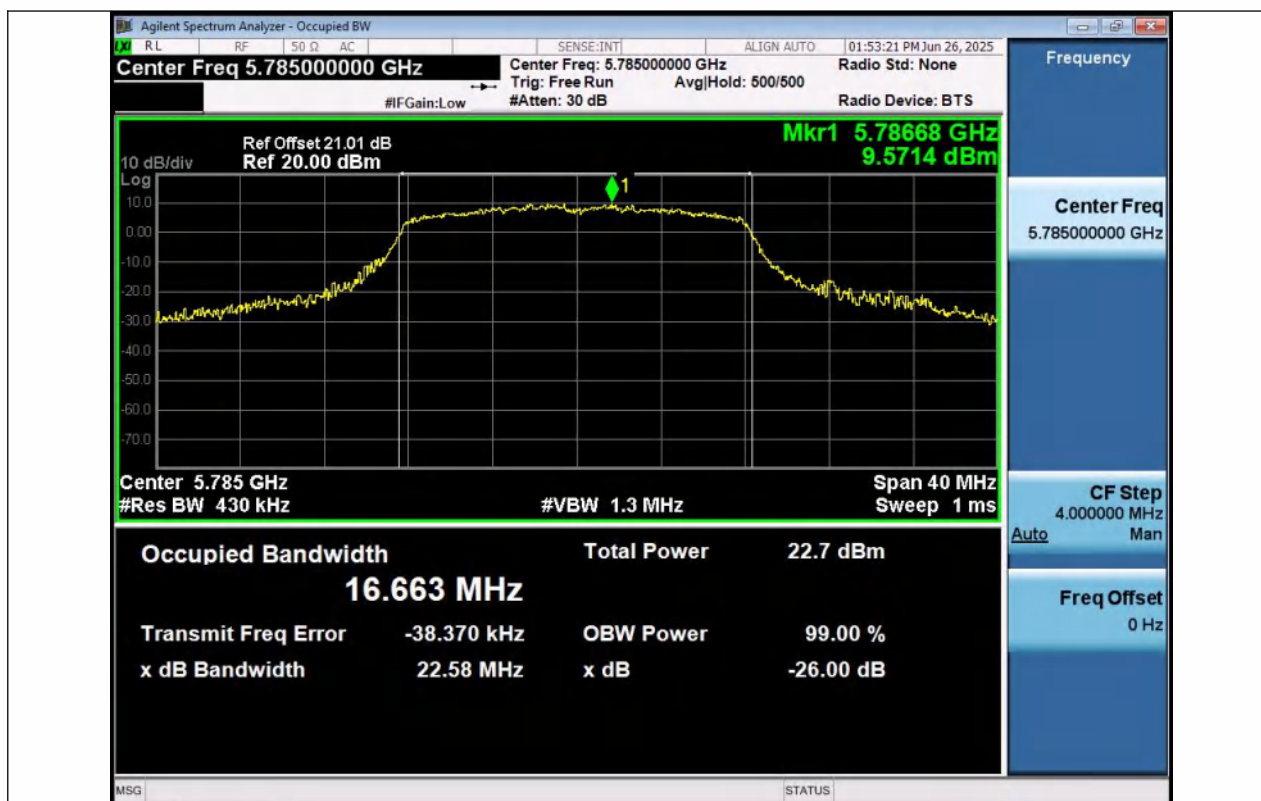
11A-Ant1-5580



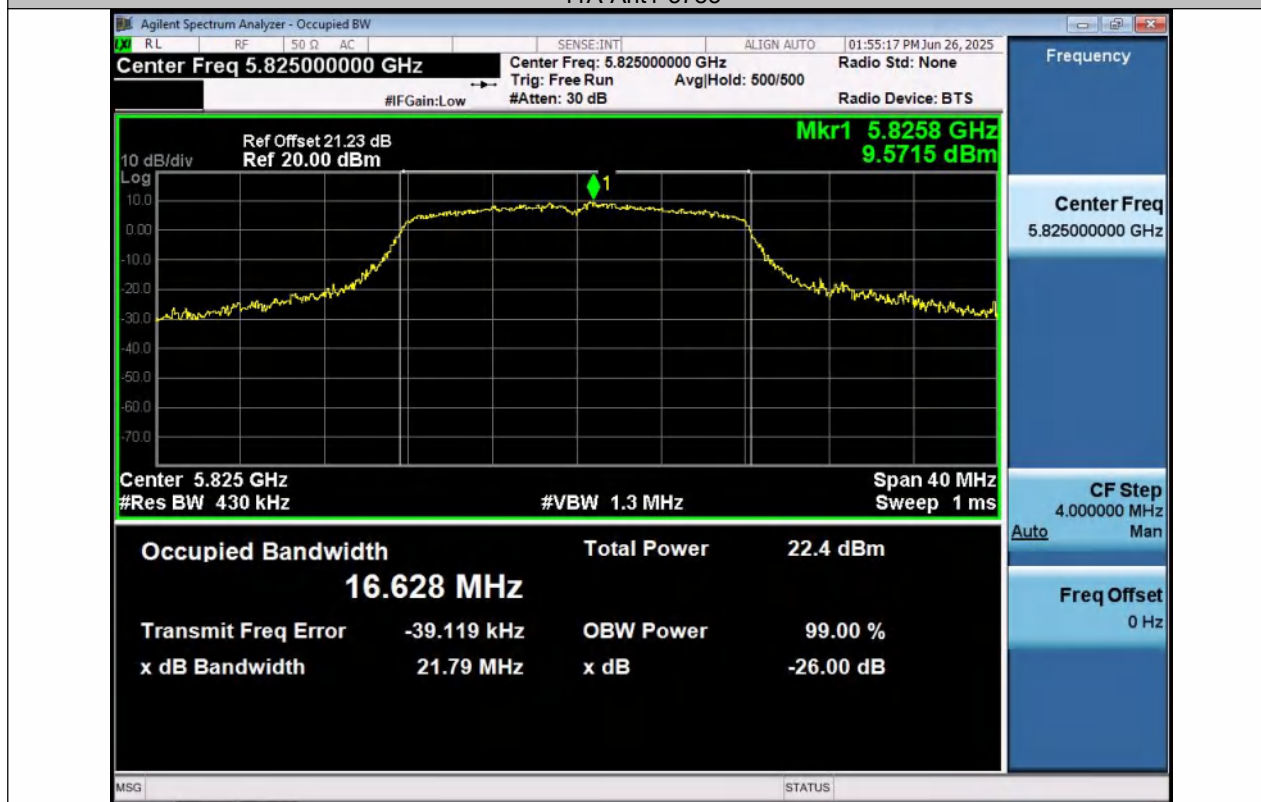
11A-Ant1-5700



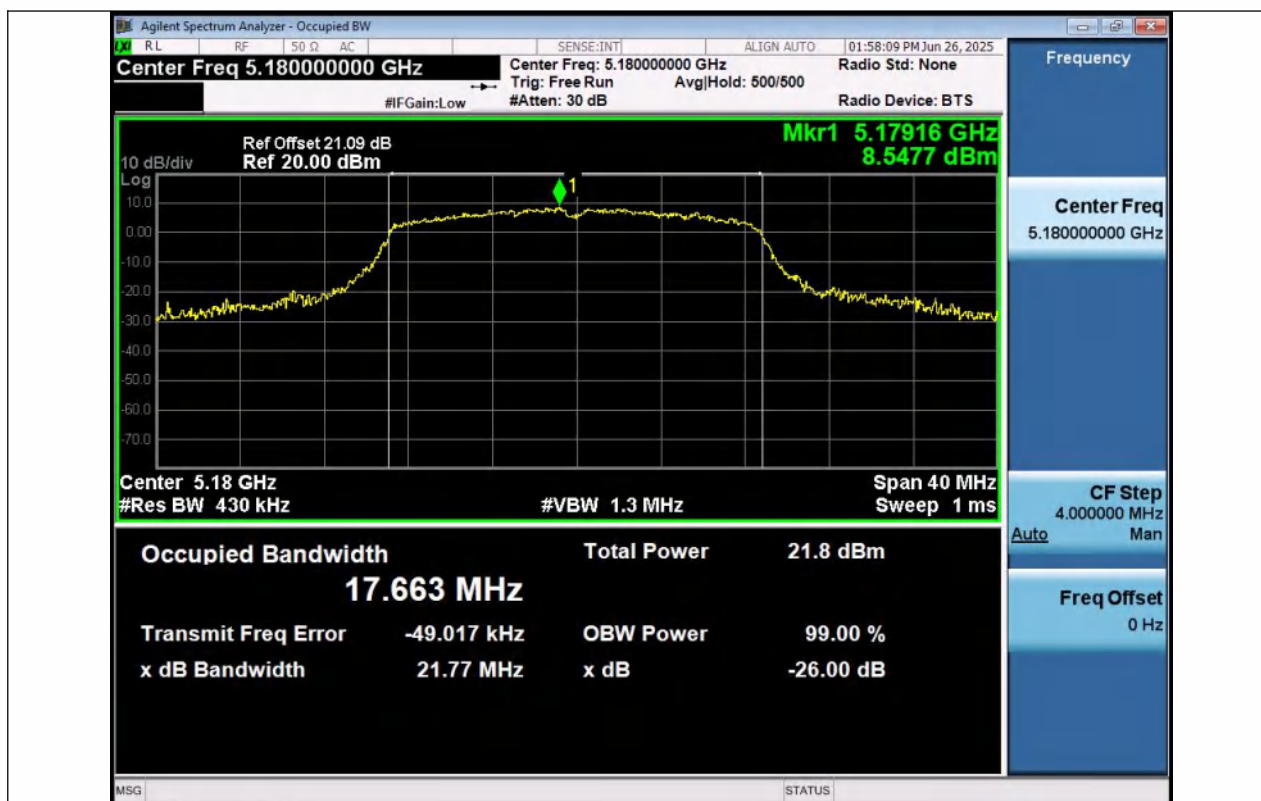
11A-Ant1-5745



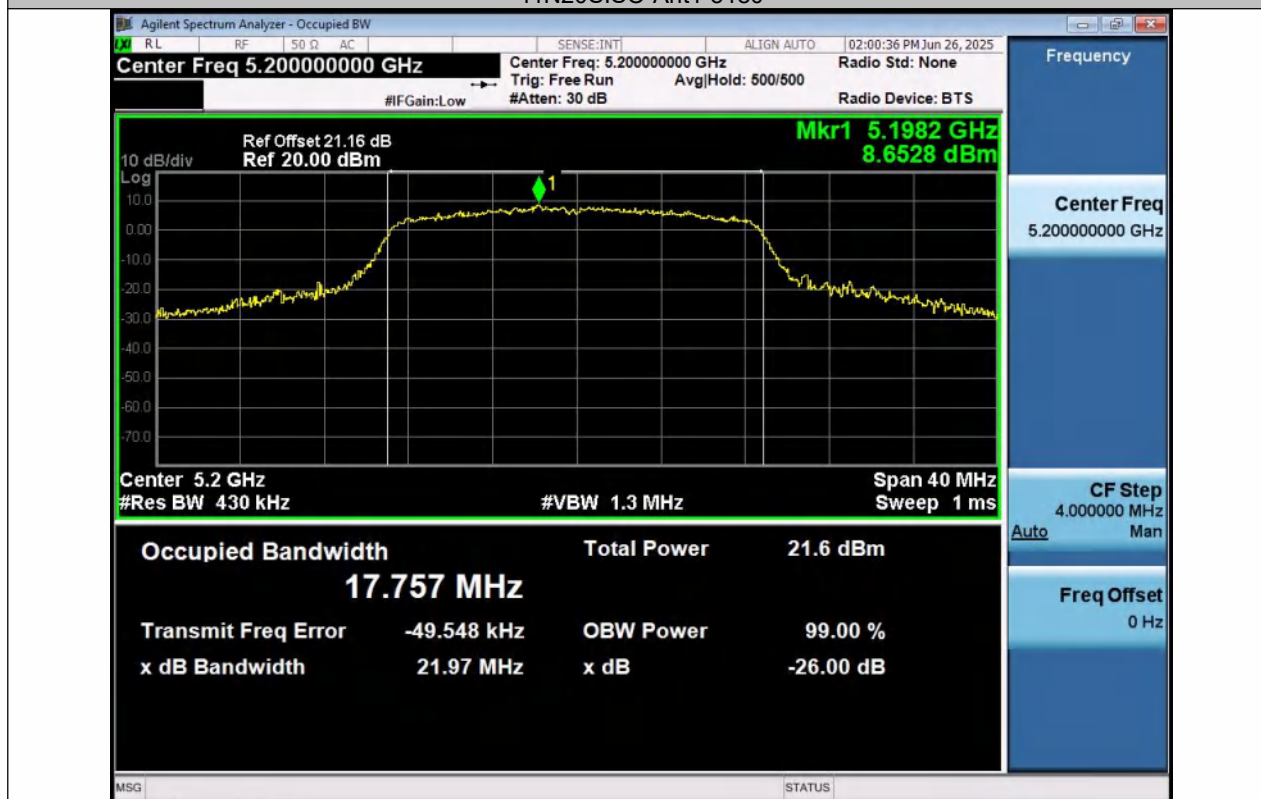
11A-Ant1-5785



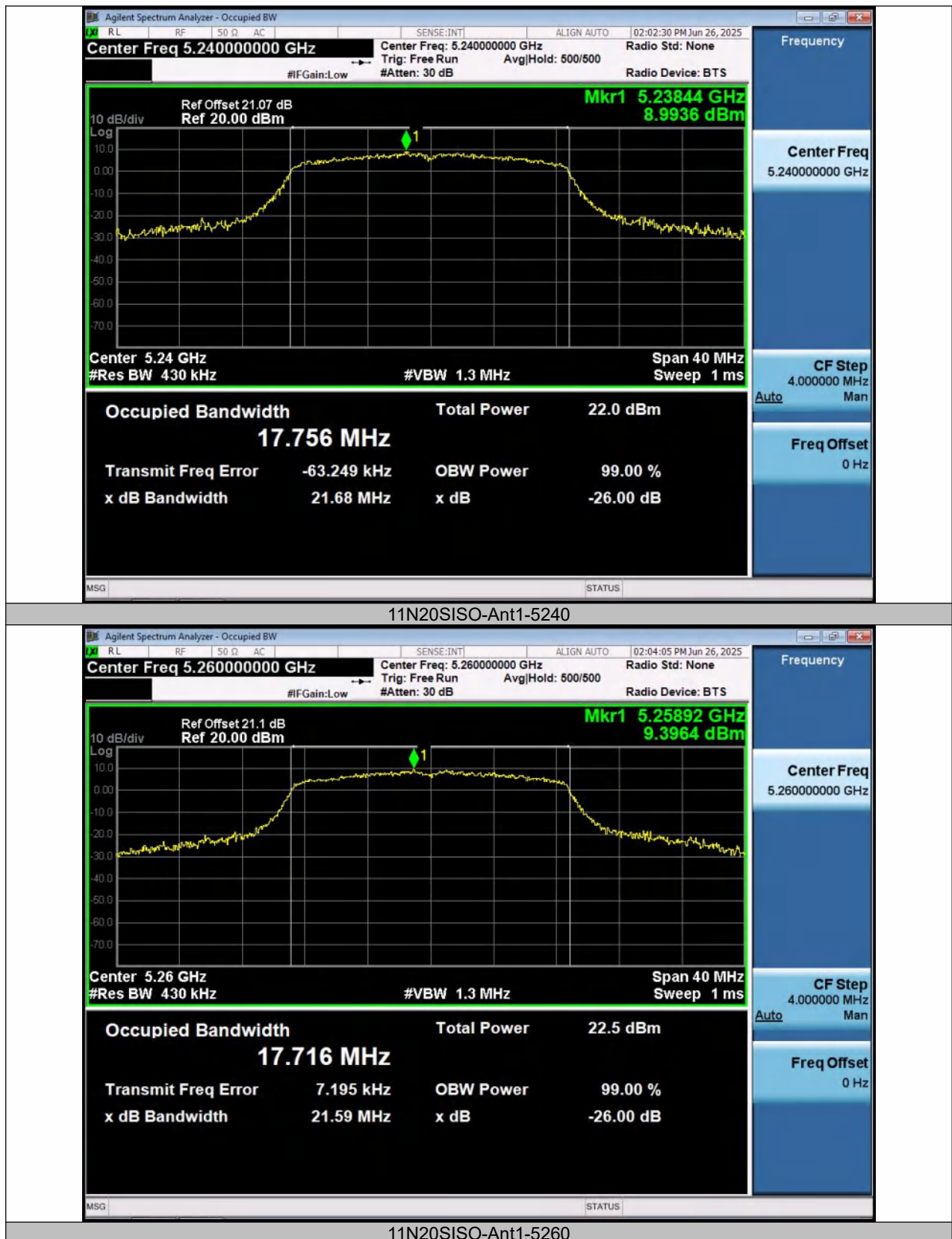
11A-Ant1-5825

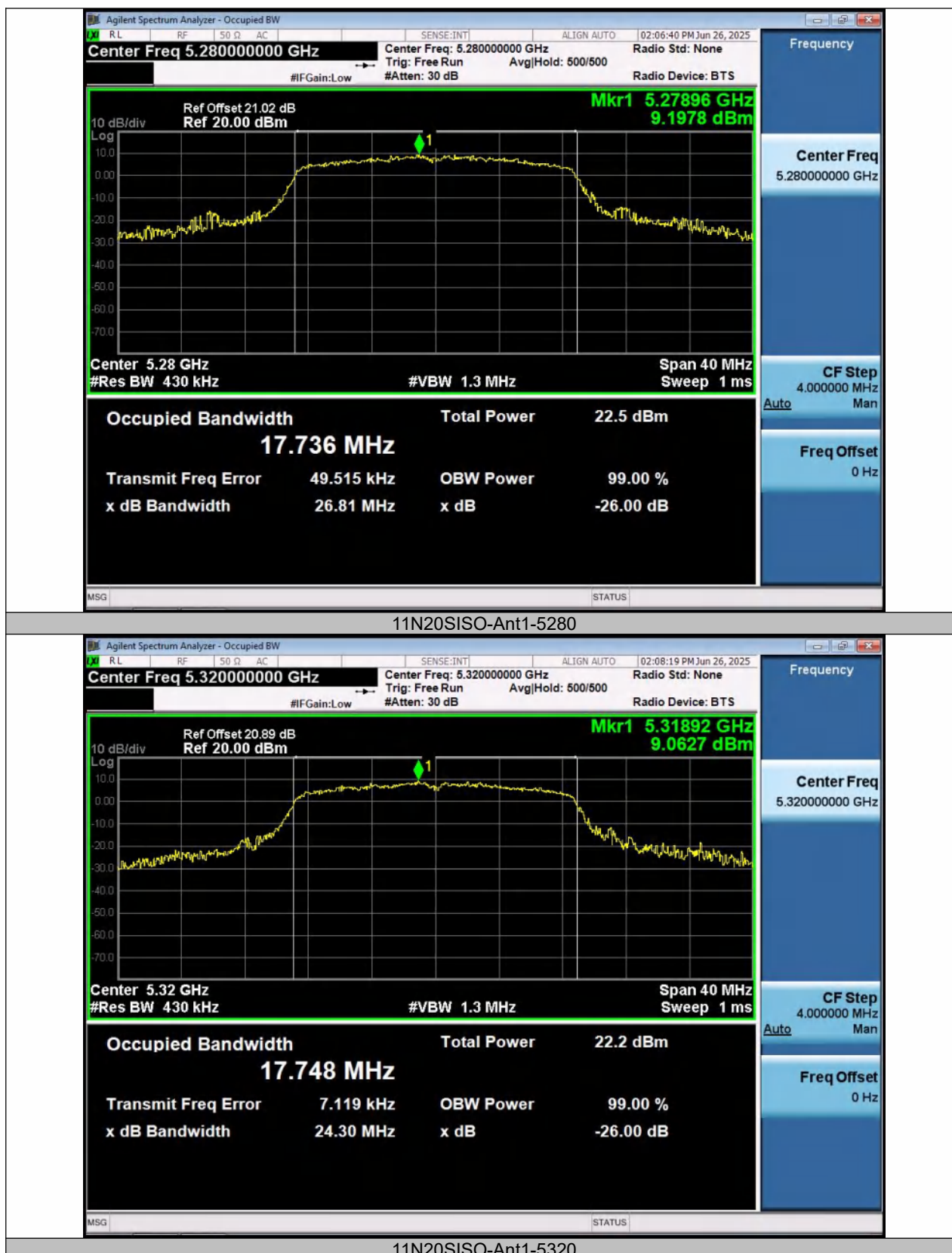


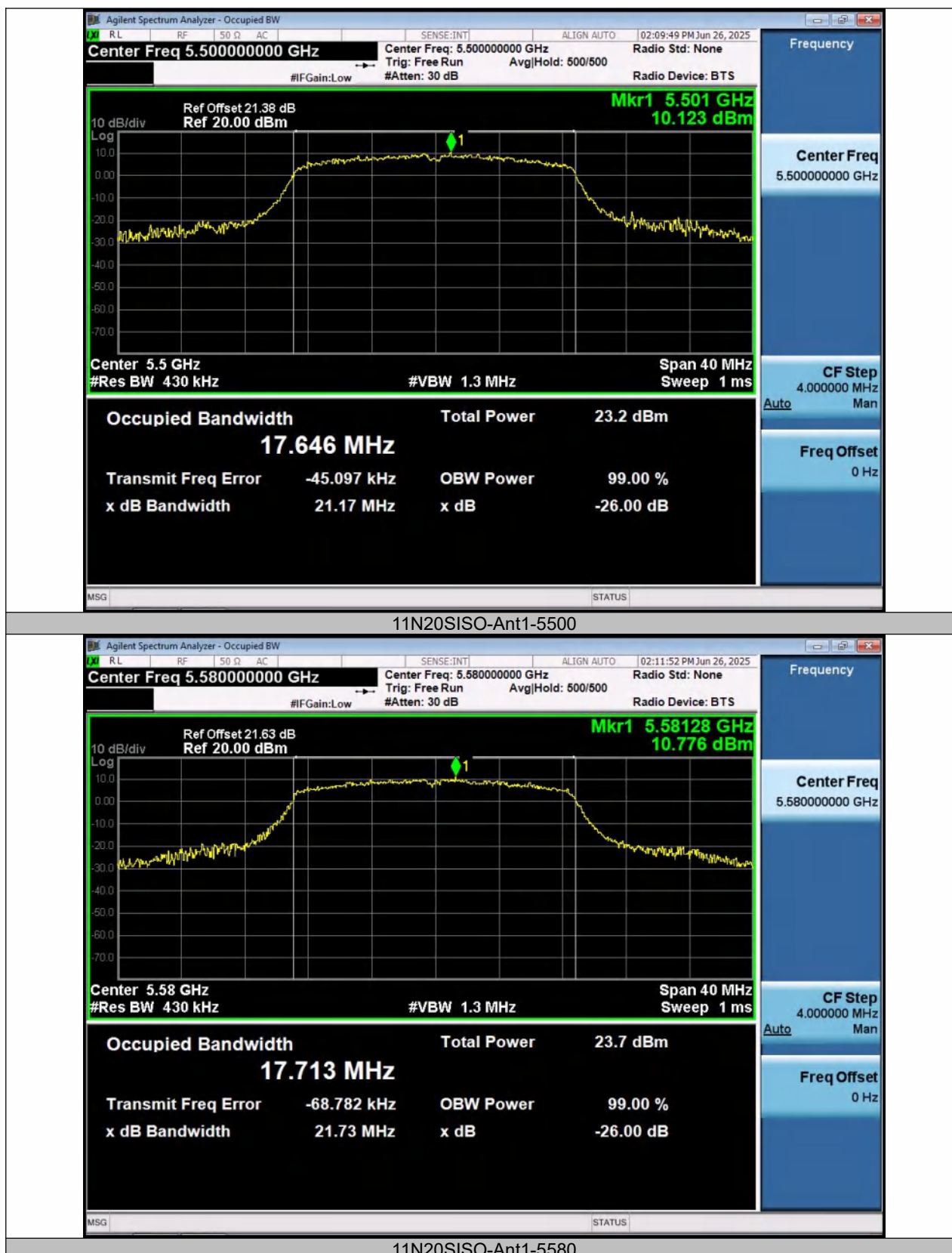
11N20SISO-Ant1-5180

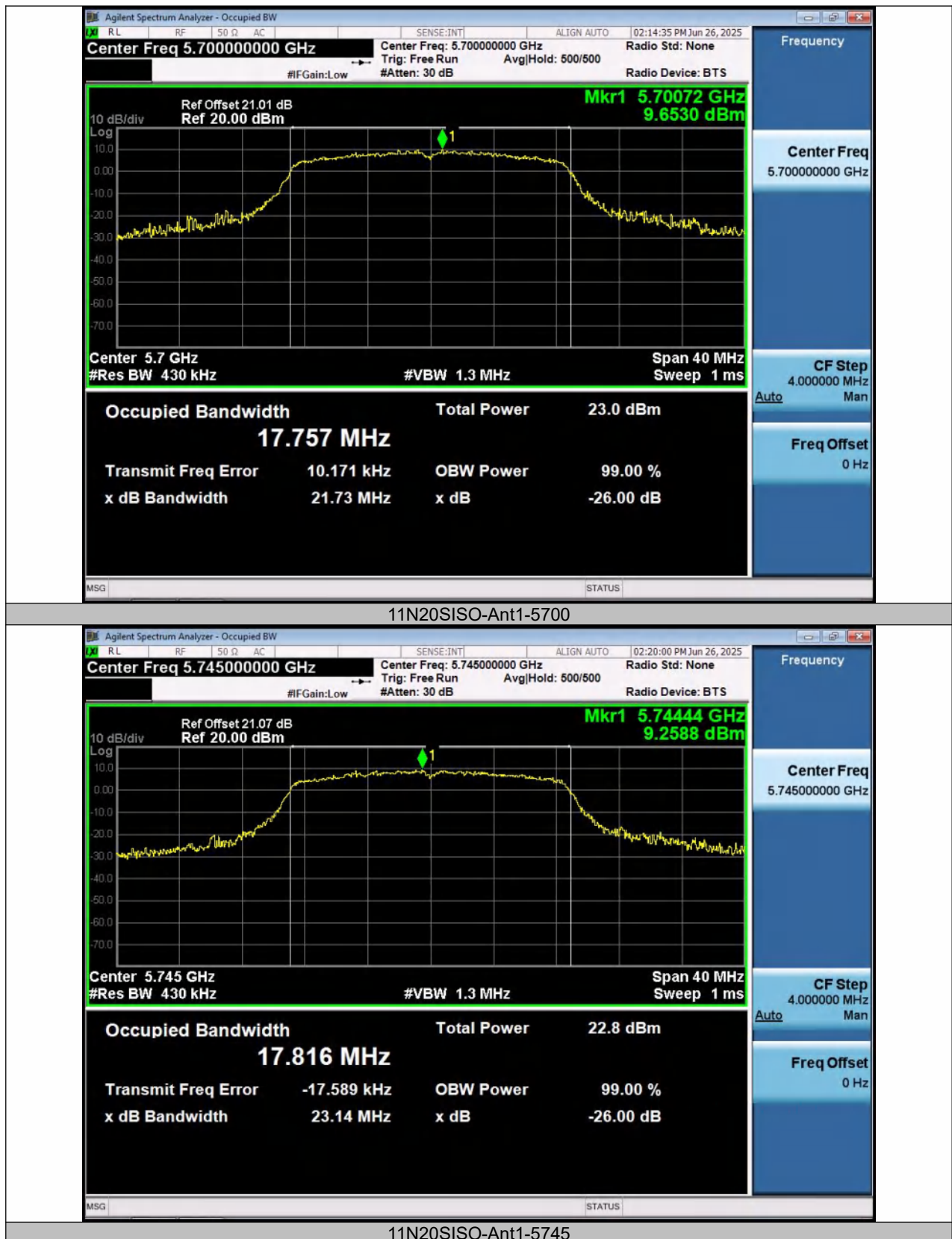


11N20SISO-Ant1-5200

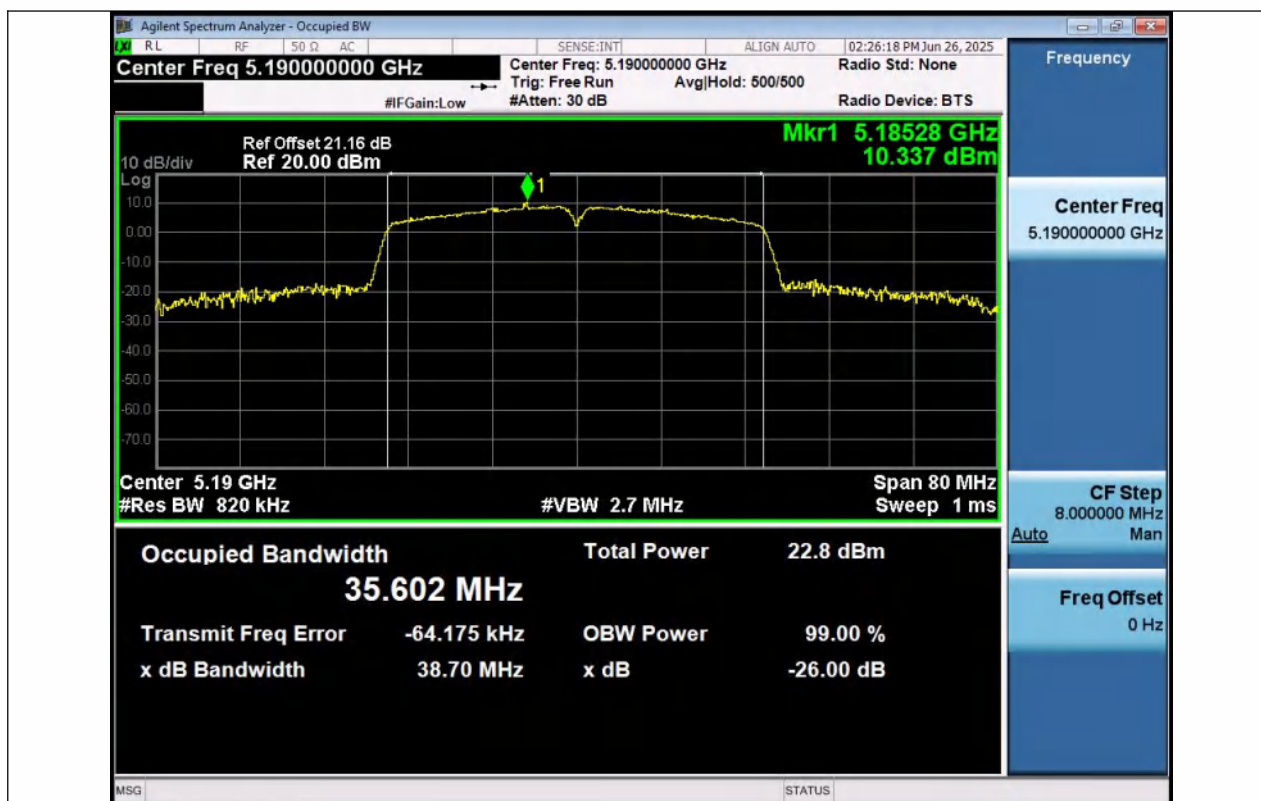




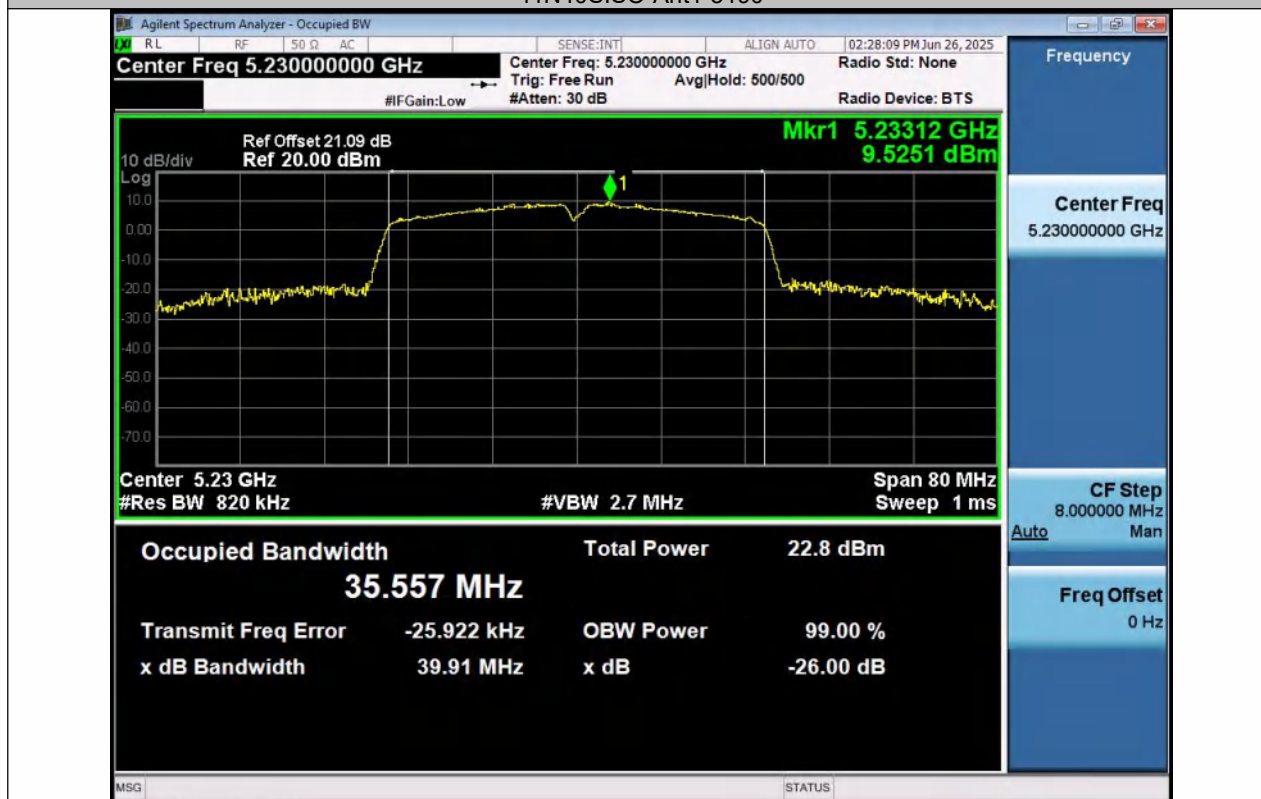






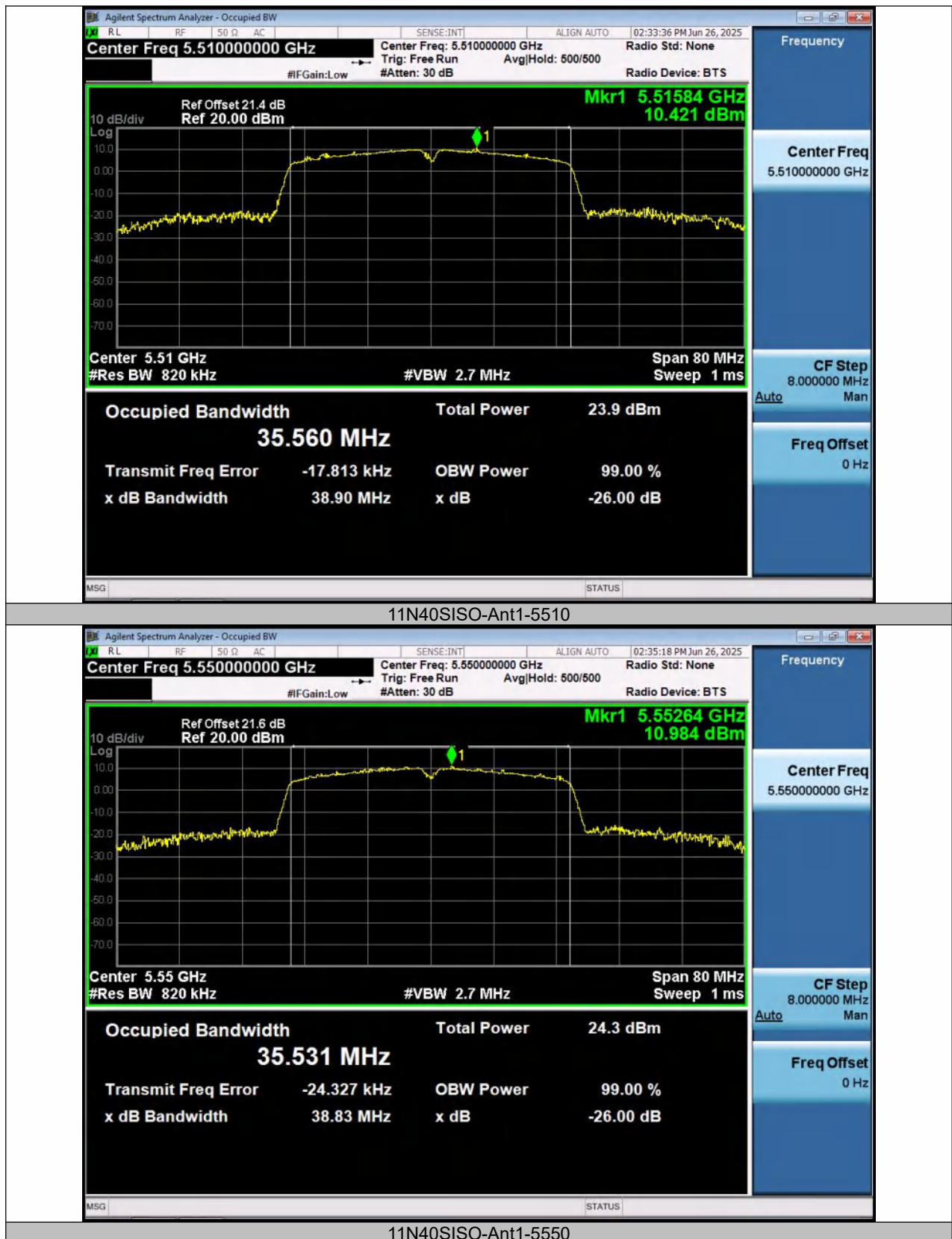


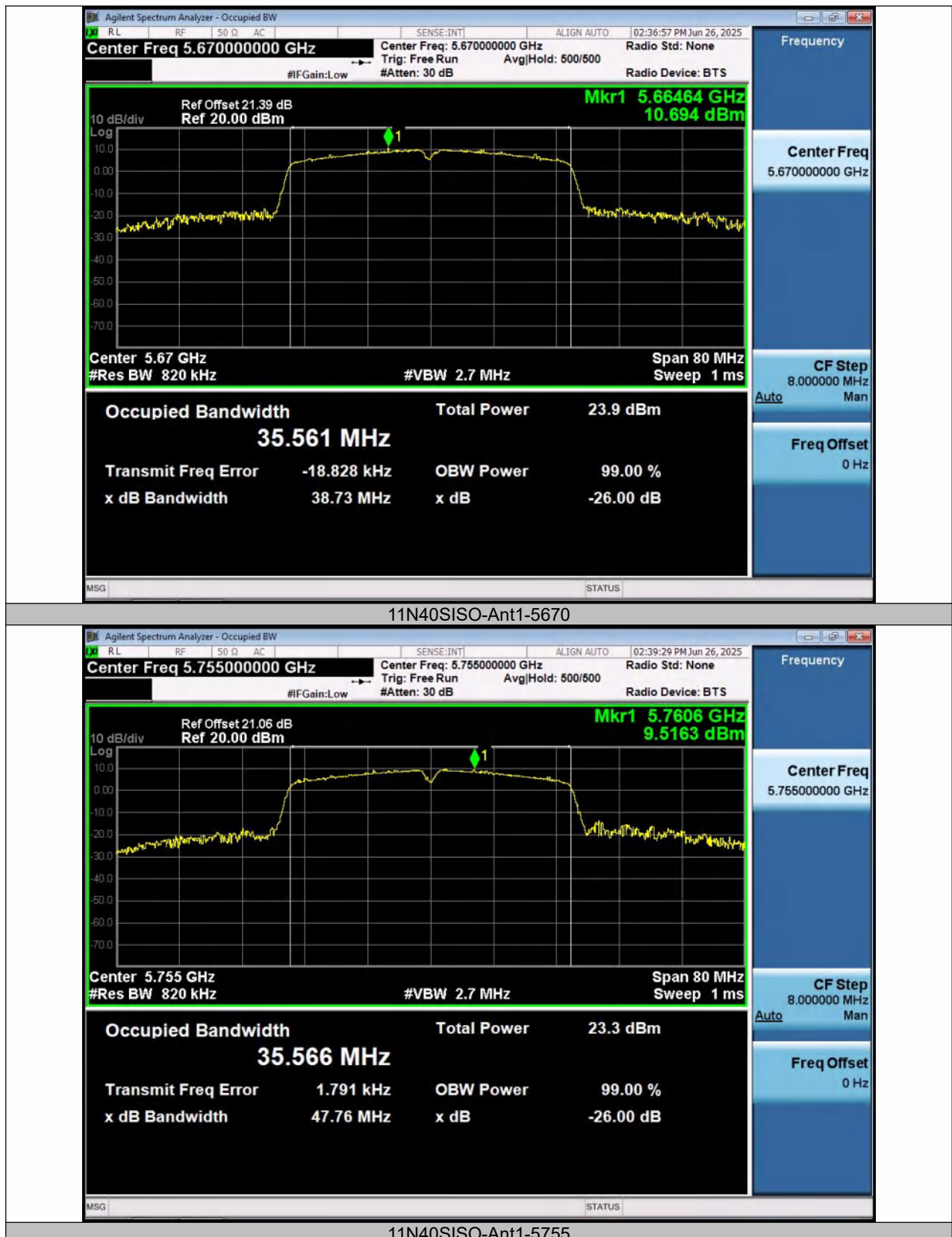
11N40SISO-Ant1-5190

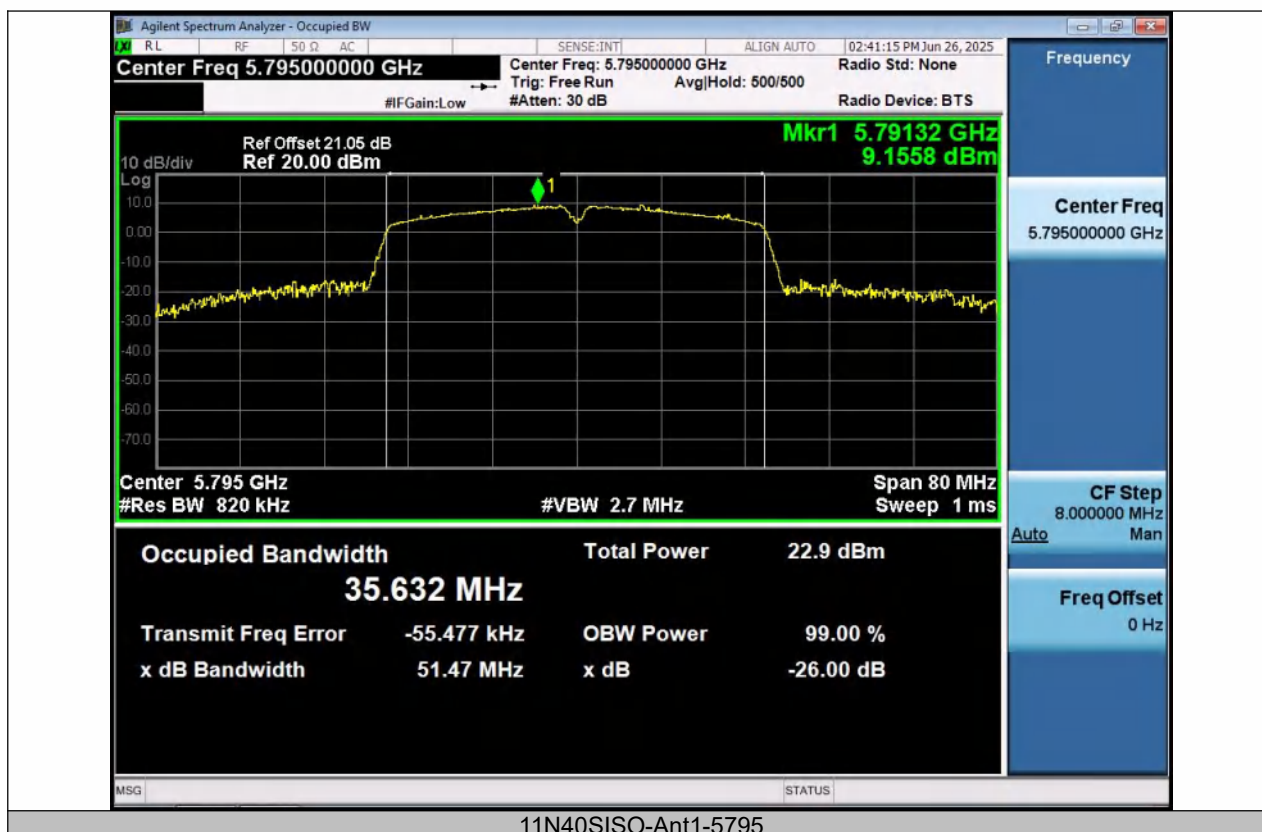


11N40SISO-Ant1-5230





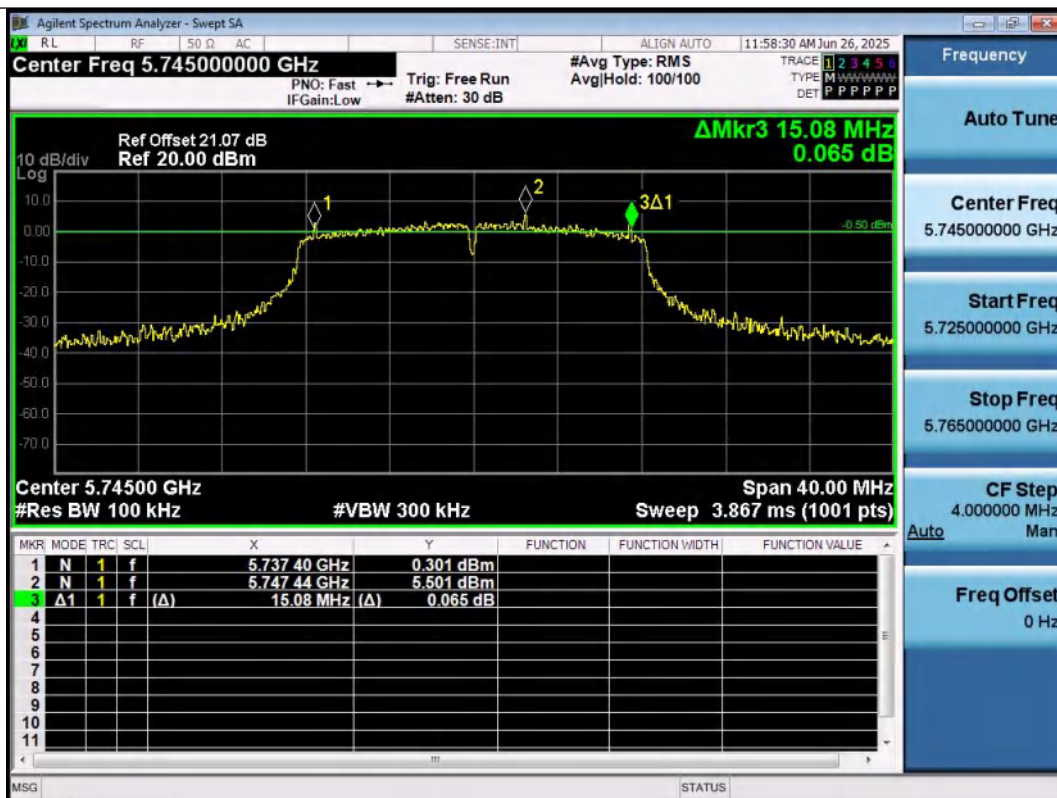




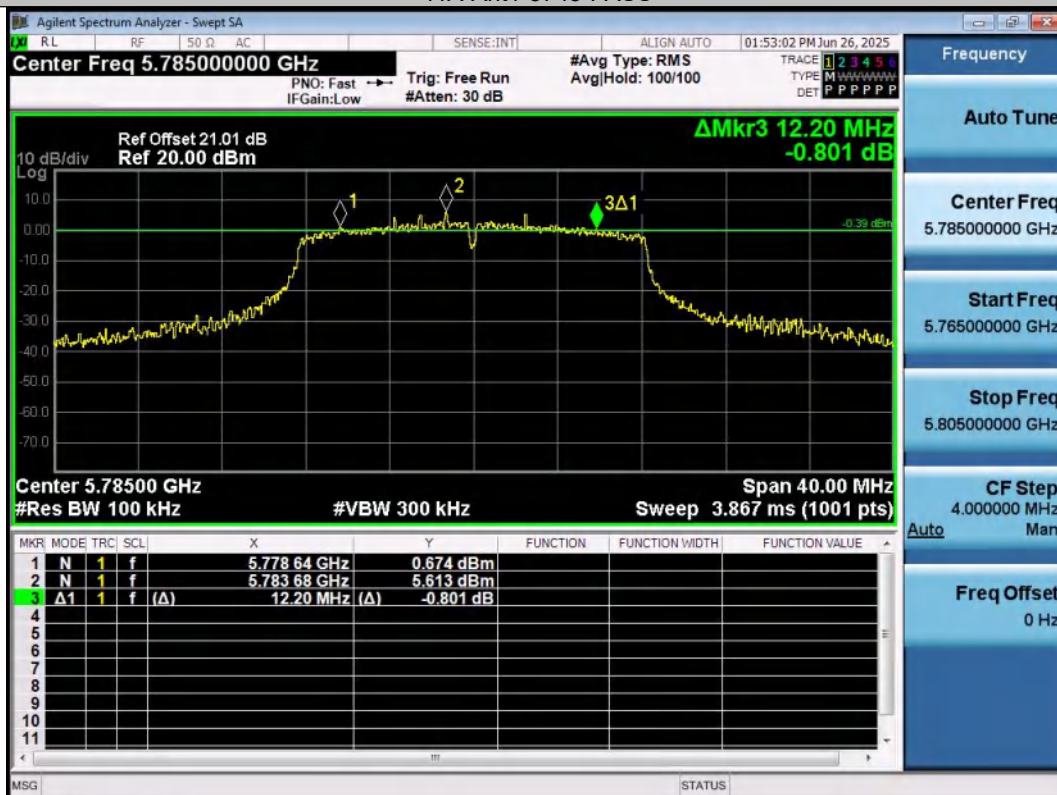
Min emission bandwidth

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.080	5737.400	5752.480	0.5	PASS
11A	Ant1	5785	12.200	5778.640	5790.840	0.5	PASS
11A	Ant1	5825	14.800	5817.680	5832.480	0.5	PASS
11N20SISO	Ant1	5745	14.680	5737.400	5752.080	0.5	PASS
11N20SISO	Ant1	5785	13.880	5777.400	5791.280	0.5	PASS
11N20SISO	Ant1	5825	13.800	5818.640	5832.440	0.5	PASS
11N40SISO	Ant1	5755	33.760	5738.680	5772.440	0.5	PASS
11N40SISO	Ant1	5795	32.560	5777.400	5809.960	0.5	PASS

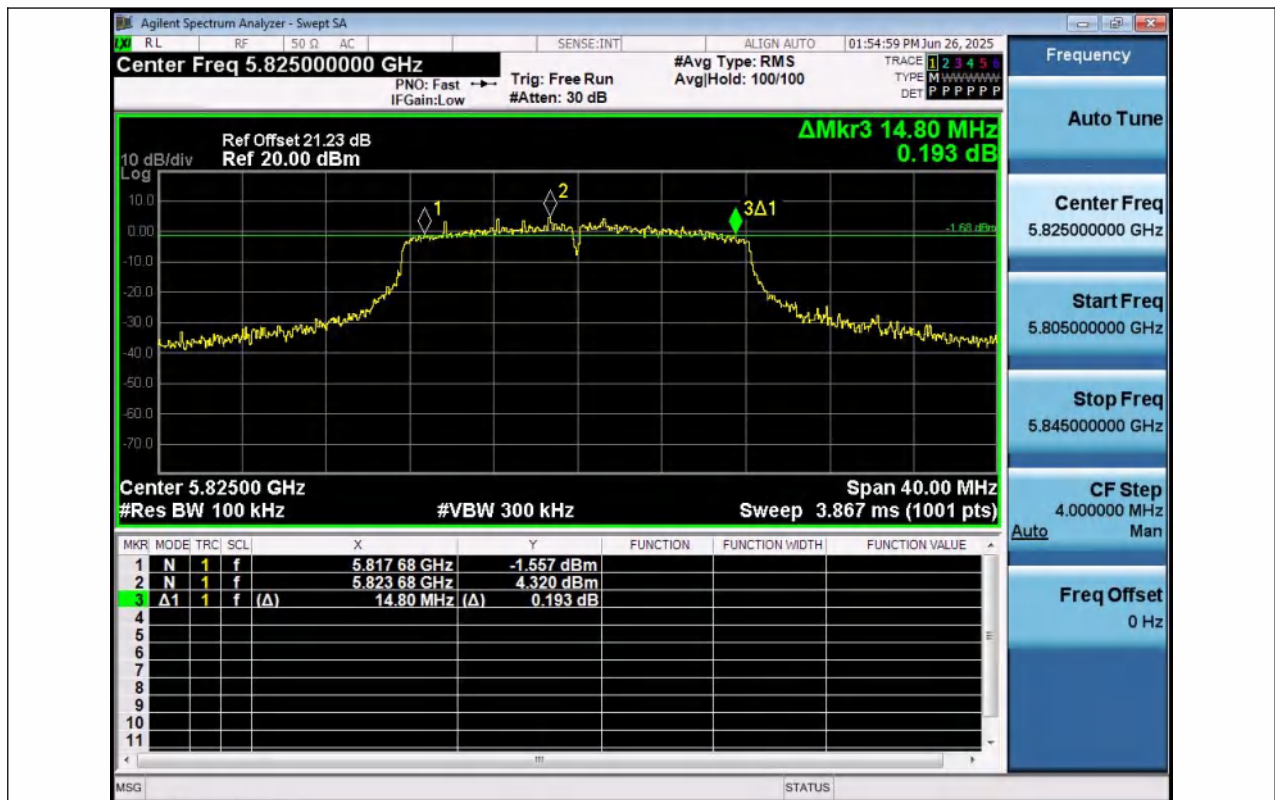




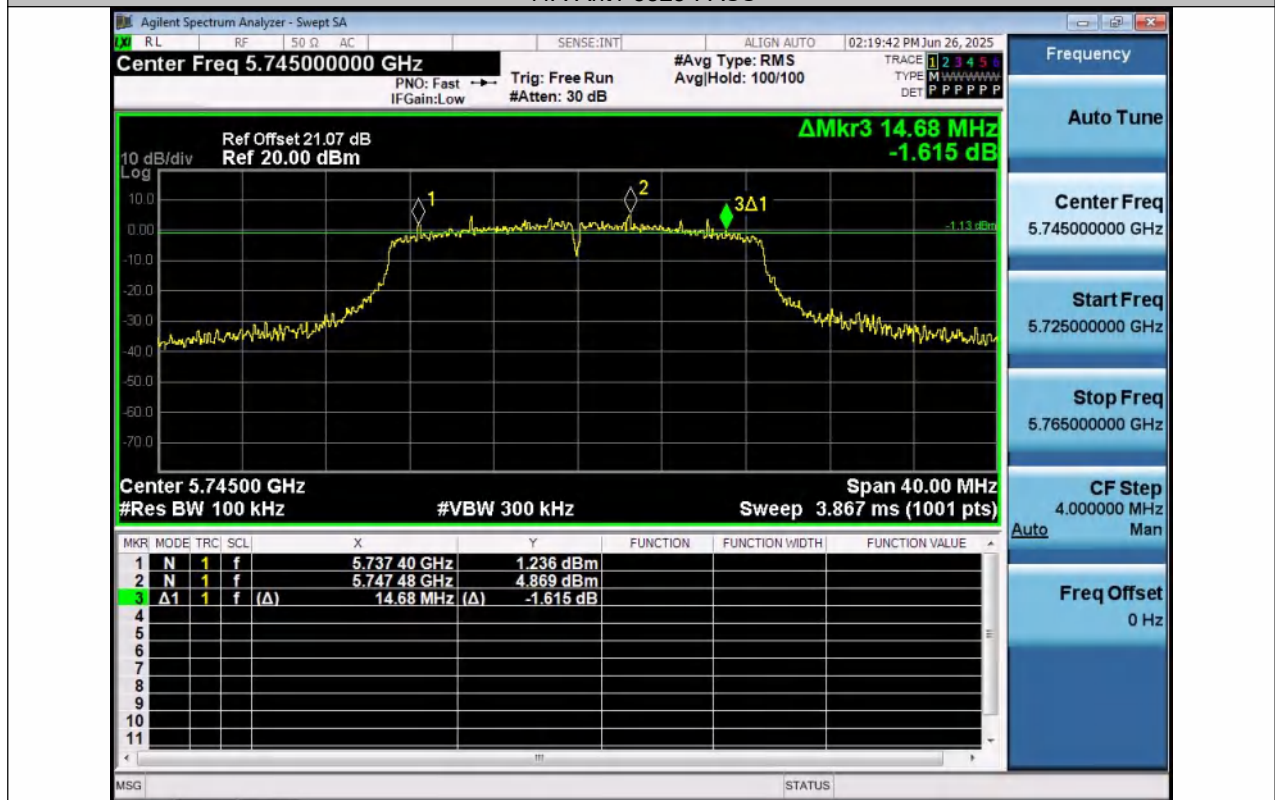
11A-Ant1-5745-PASS



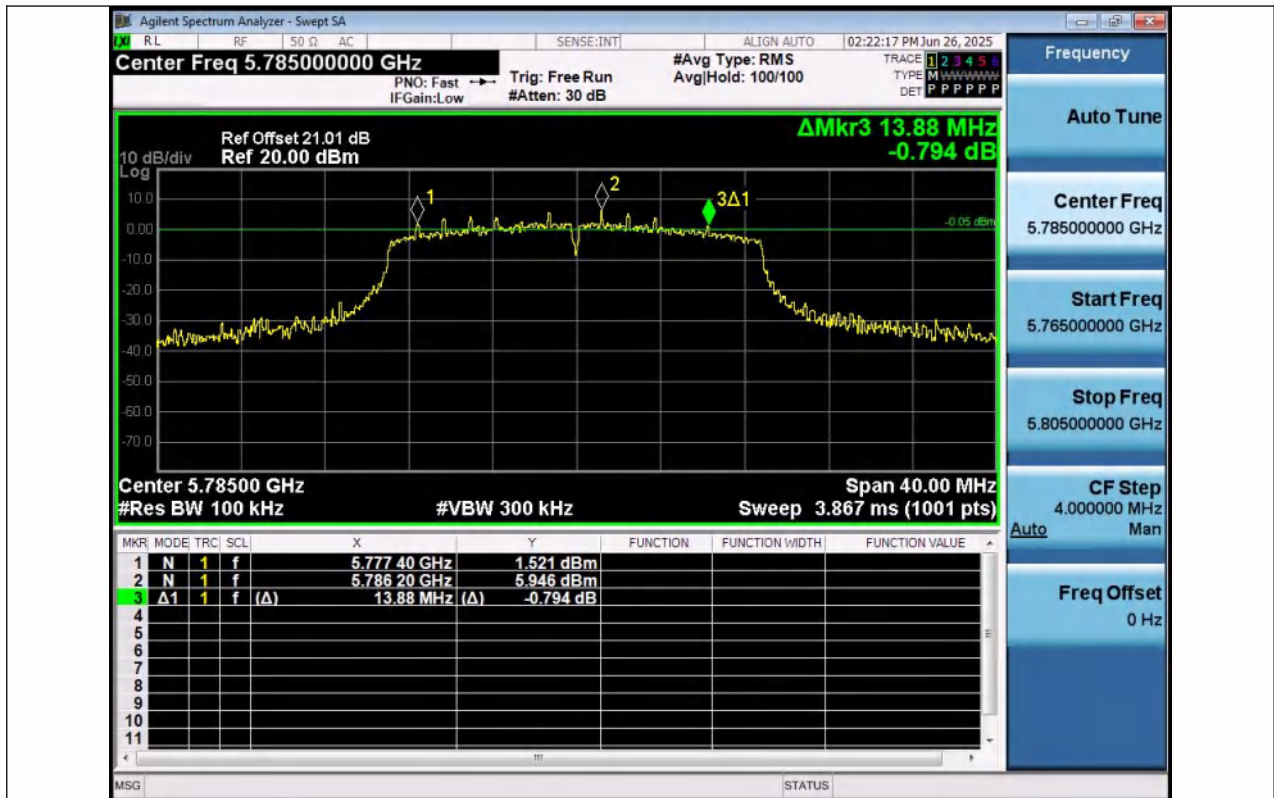
11A-Ant1-5785-PASS



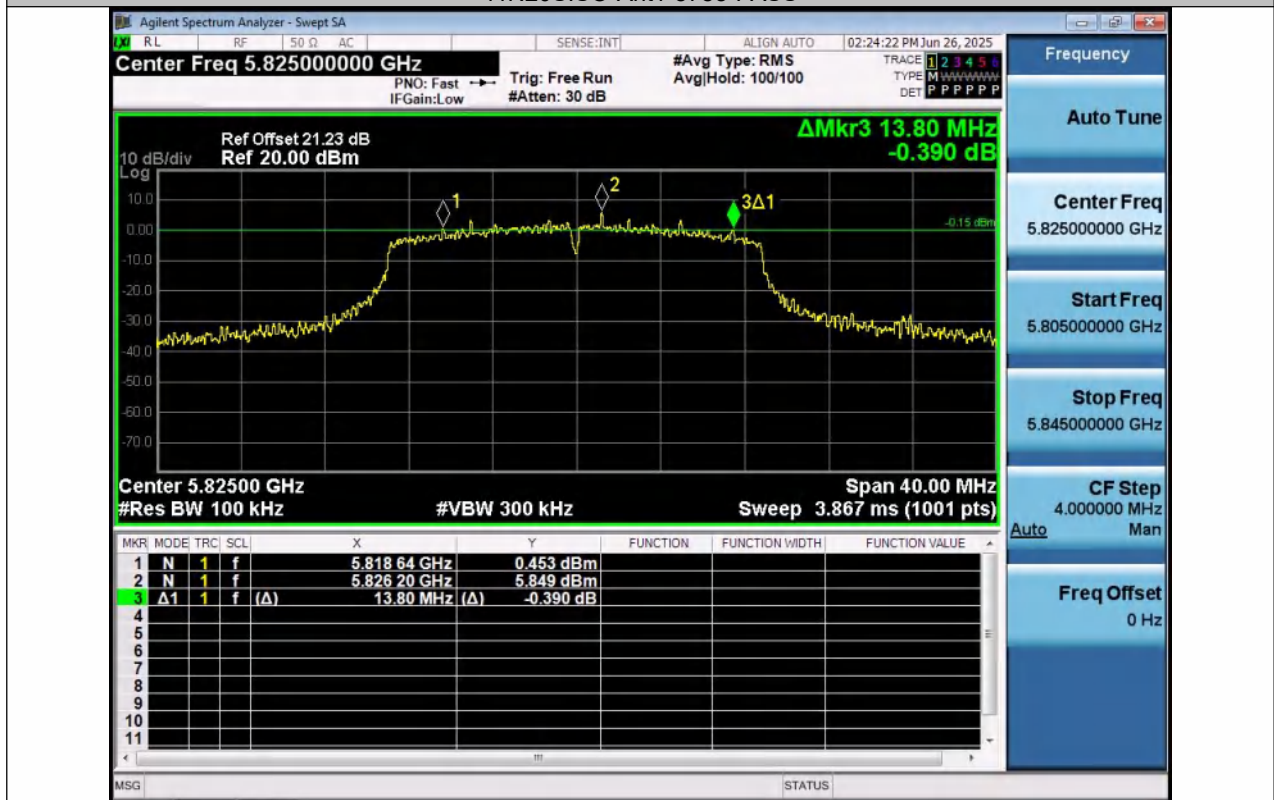
11A-Ant1-5825-PASS



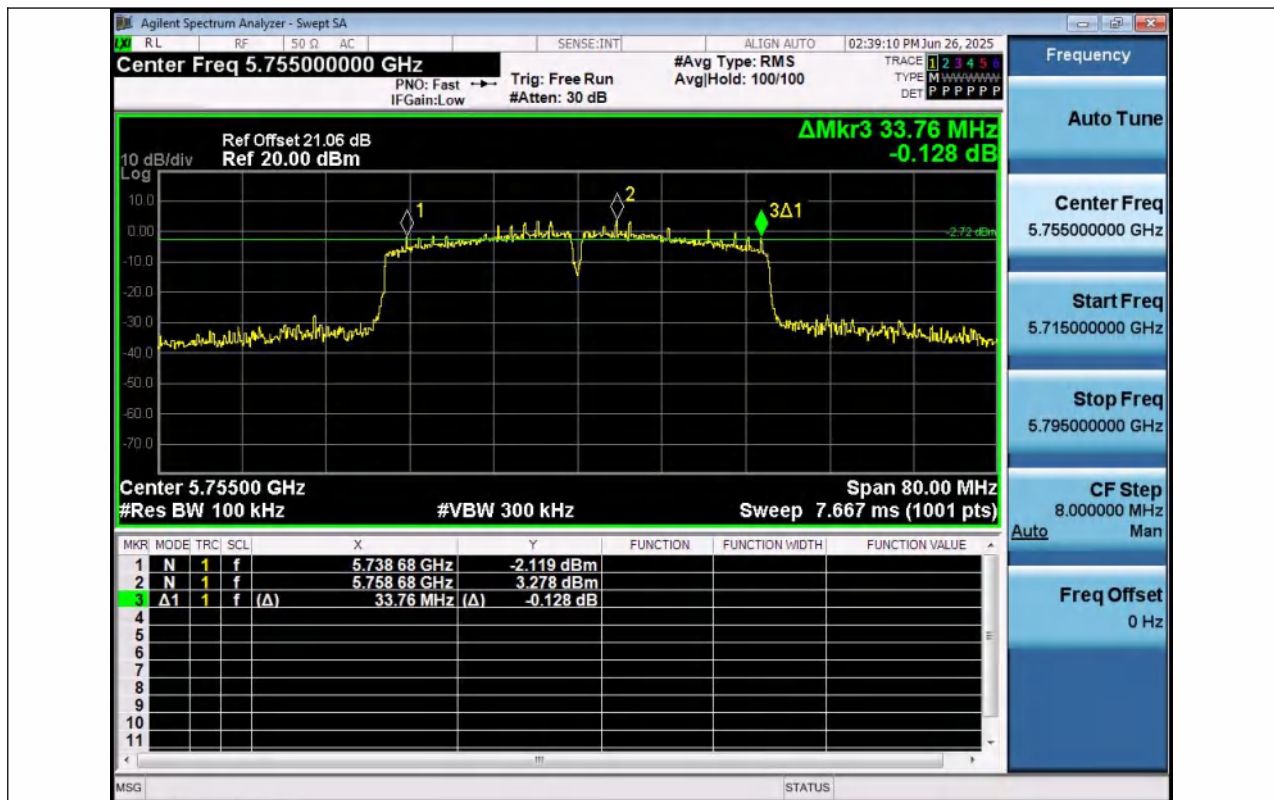
11N20SISO-Ant1-5745-PASS



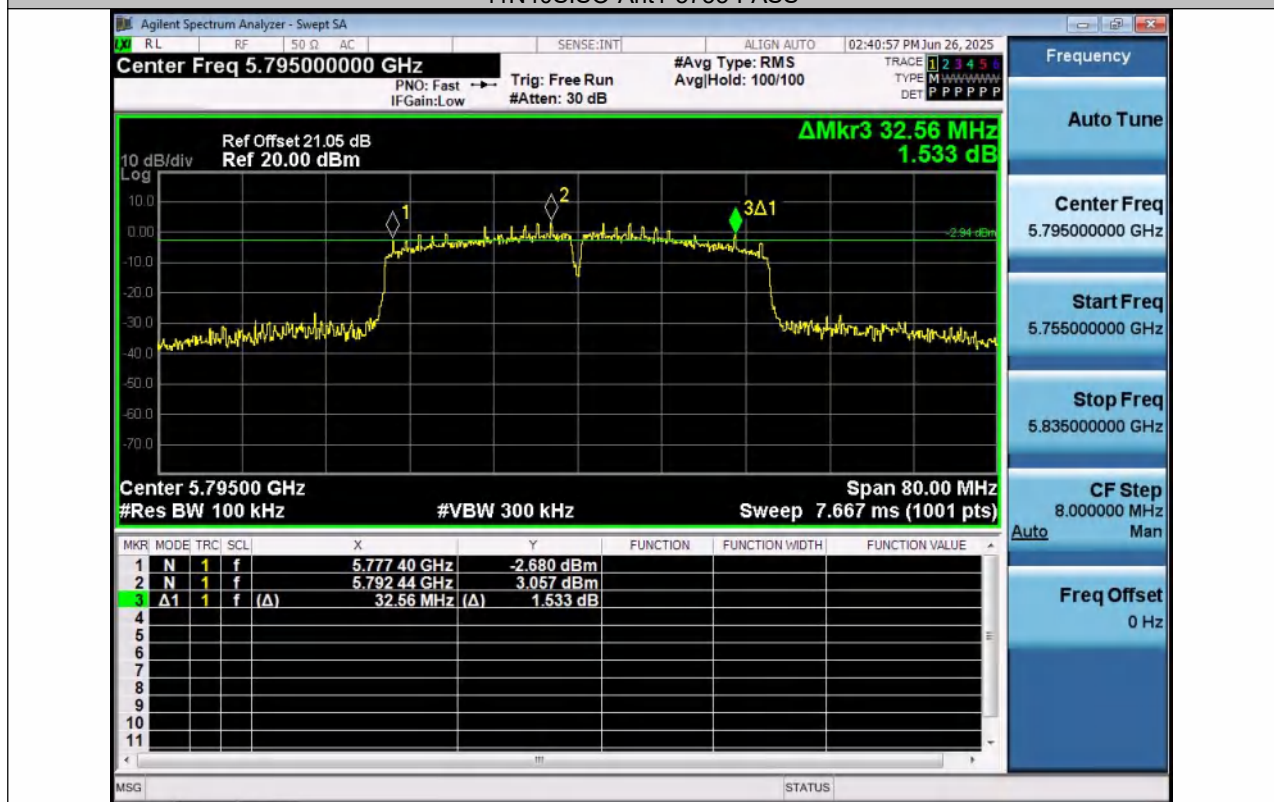
11N20SISO-Ant1-5785-PASS



11N20SISO-Ant1-5825-PASS



11N40SISO-Ant1-5755-PASS



11N40SISO-Ant1-5795-PASS

8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(E)
According to RSS 247, 6.2

8.2.2 Conformance Limit

FCC Limit:

■ For the band 5.15-5.25 GHz

(a)(1) (i) For an outdoor access point, 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. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point, 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. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (iii) For fixed point-to-point access points, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(a) (1) (iv) For client devices, 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. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power 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

(a) (2) 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. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power 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

(a) (3) The maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power 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

IC Limit:

■ Frequency band 5150-5250 MHz

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10}B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.

■ Frequency band 5250-5350 MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

■ Frequency bands 5470-5600 MHz and 5650-5725 MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

■ Frequency band 5725-5850 MHz

The maximum conducted output power shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point 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.

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

- The Transmitter output (antenna port) was connected to the power meter.
- Turn on the EUT and power meter and then record the power value.
- Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

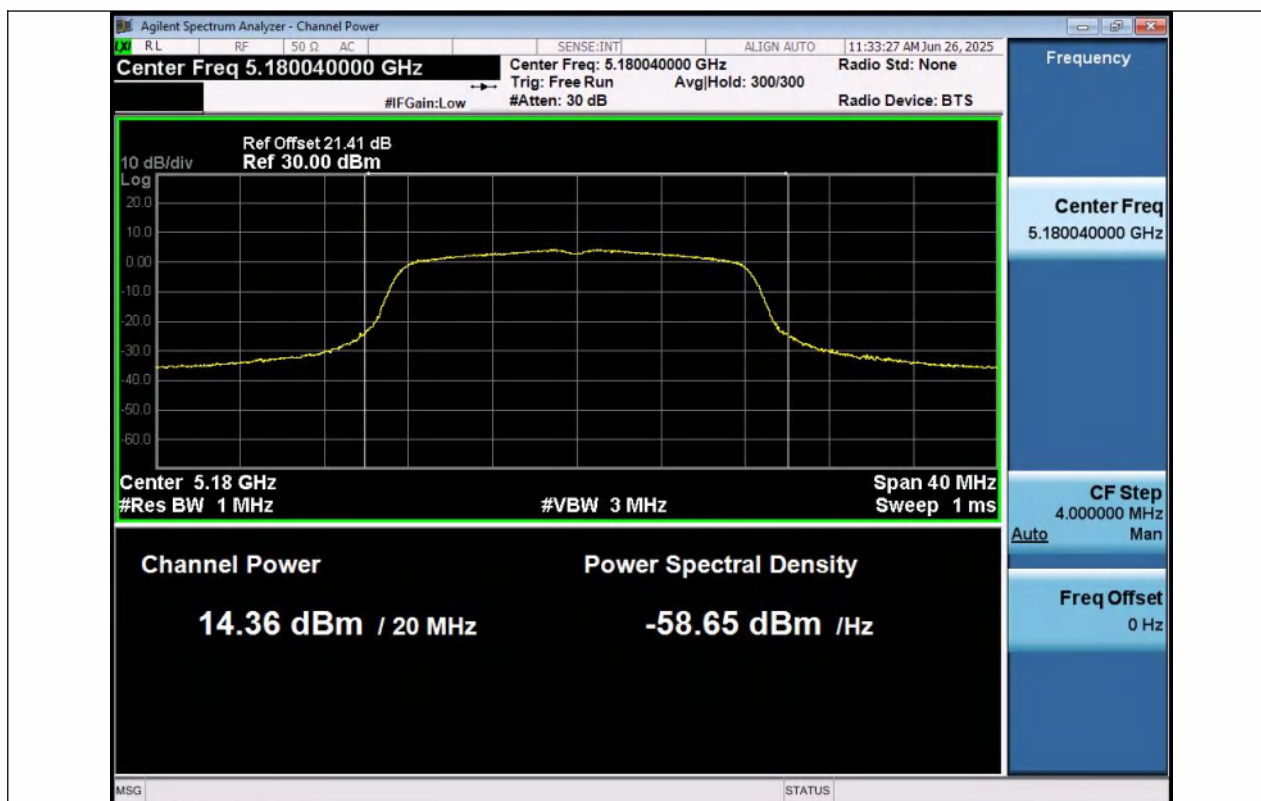
Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

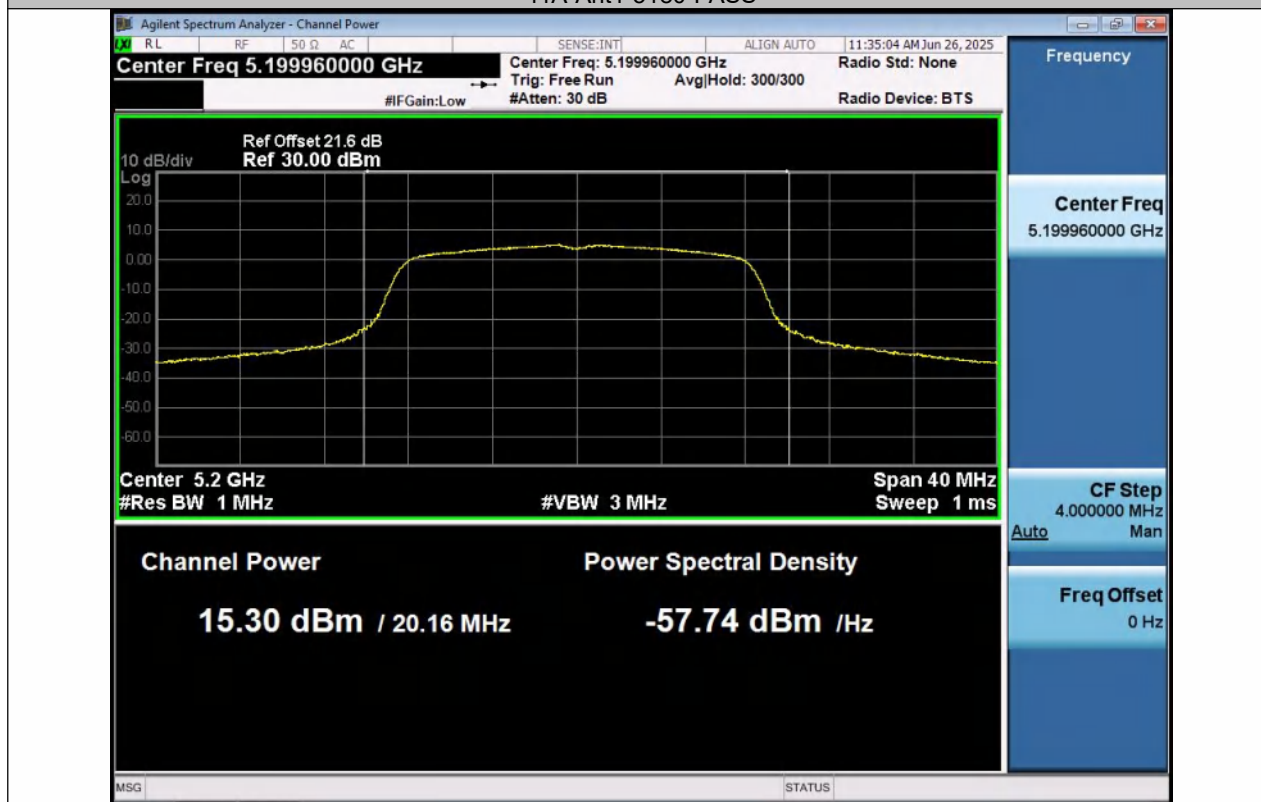
Test Mode	Antenna	Frequency[MHz]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11A	Ant1	5180	92.83	0.32	14.36	≤23.98	3.79	18.15	---	PASS
11A	Ant1	5200	90.35	0.44	15.30	≤23.98	3.79	19.09	---	PASS
11A	Ant1	5240	90.00	0.46	15.65	≤23.98	3.79	19.44	---	PASS
11A	Ant1	5260	89.96	0.46	16.04	≤23.89	3.79	19.83	---	PASS
11A	Ant1	5280	91.96	0.36	15.92	≤23.98	3.79	19.71	---	PASS
11A	Ant1	5320	89.96	0.46	15.88	≤23.98	3.79	19.67	---	PASS
11A	Ant1	5500	91.56	0.38	16.73	≤23.94	3.79	20.52	---	PASS
11A	Ant1	5580	91.56	0.38	17.30	≤23.81	3.79	21.09	---	PASS
11A	Ant1	5700	90.75	0.42	16.49	≤23.98	3.79	20.28	---	PASS
11A	Ant1	5745	90.39	0.44	16.25	≤30.00	3.79	20.04	---	PASS
11A	Ant1	5785	91.59	0.38	16.09	≤30.00	3.79	19.88	---	PASS
11A	Ant1	5825	90.00	0.46	15.81	≤30.00	3.79	19.60	---	PASS
11N20SIS O	Ant1	5180	89.30	0.49	15.27	≤23.98	3.79	19.06	---	PASS
11N20SIS O	Ant1	5200	89.30	0.49	14.78	≤23.98	3.79	18.57	---	PASS
11N20SIS O	Ant1	5240	94.12	0.26	15.18	≤23.98	3.79	18.97	---	PASS
11N20SIS O	Ant1	5260	89.72	0.47	15.88	≤23.98	3.79	19.67	---	PASS
11N20SIS O	Ant1	5280	91.87	0.37	15.78	≤23.98	3.79	19.57	---	PASS
11N20SIS O	Ant1	5320	90.14	0.45	15.68	≤23.98	3.79	19.47	---	PASS
11N20SIS O	Ant1	5500	89.30	0.49	16.57	≤23.98	3.79	20.36	---	PASS
11N20SIS O	Ant1	5580	90.14	0.45	17.20	≤23.98	3.79	20.99	---	PASS
11N20SIS O	Ant1	5700	89.30	0.49	16.44	≤23.98	3.79	20.23	---	PASS
11N20SIS O	Ant1	5745	89.30	0.49	16.12	≤30.00	3.79	19.91	---	PASS
11N20SIS O	Ant1	5785	90.14	0.45	15.76	≤30.00	3.79	19.55	---	PASS
11N20SIS O	Ant1	5825	90.14	0.45	15.49	≤30.00	3.79	19.28	---	PASS
11N40SIS O	Ant1	5190	80.51	0.94	15.73	≤23.98	3.79	19.52	---	PASS
11N40SIS O	Ant1	5230	80.34	0.95	15.79	≤23.98	3.79	19.58	---	PASS
11N40SIS O	Ant1	5270	80.34	0.95	16.27	≤23.98	3.79	20.06	---	PASS
11N40SIS O	Ant1	5310	80.34	0.95	15.94	≤23.98	3.79	19.73	---	PASS
11N40SIS O	Ant1	5510	81.03	0.91	16.90	≤23.98	3.79	20.69	---	PASS
11N40SIS O	Ant1	5550	80.51	0.94	17.20	≤23.98	3.79	20.99	---	PASS
11N40SIS O	Ant1	5670	80.51	0.94	16.81	≤23.98	3.79	20.60	---	PASS
11N40SIS O	Ant1	5755	81.03	0.91	16.31	≤30.00	3.79	20.10	---	PASS
11N40SIS O	Ant1	5795	81.03	0.91	15.94	≤30.00	3.79	19.73	---	PASS

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

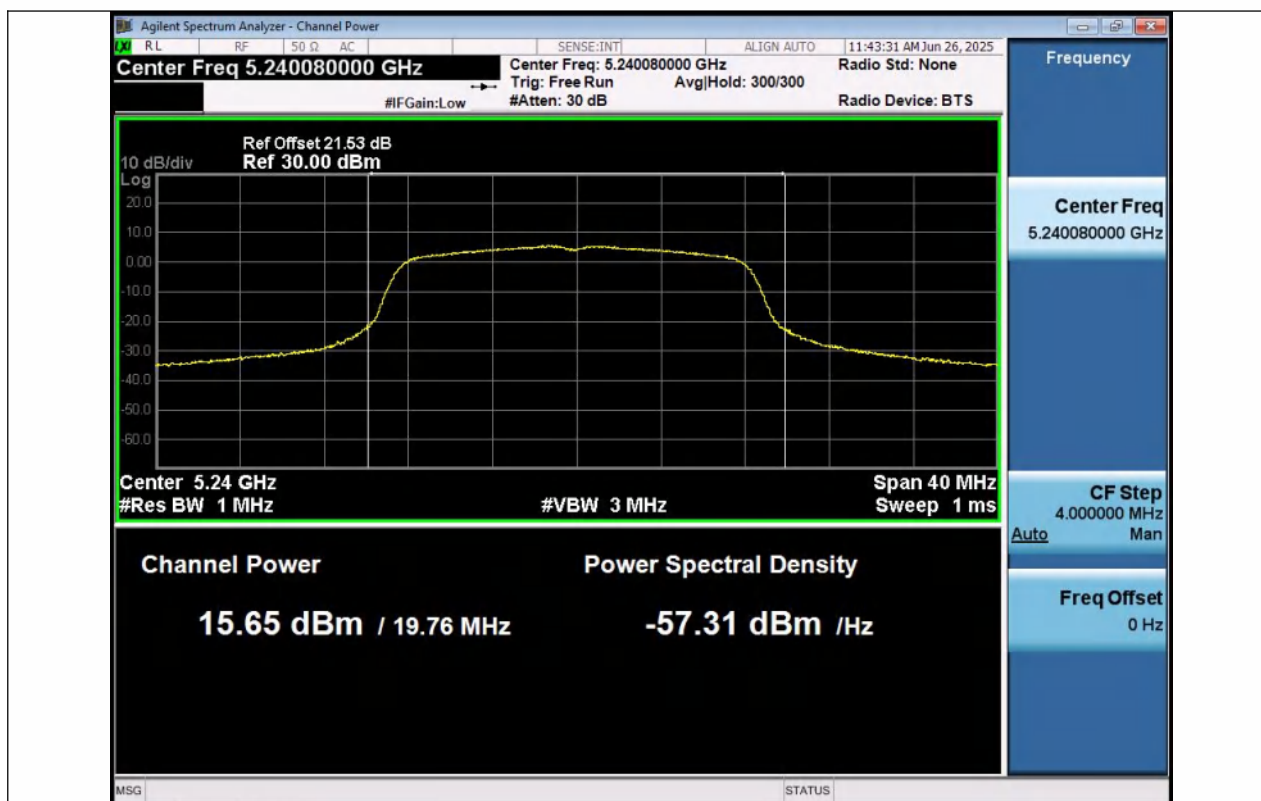
EIRP = conducted power + directional gain



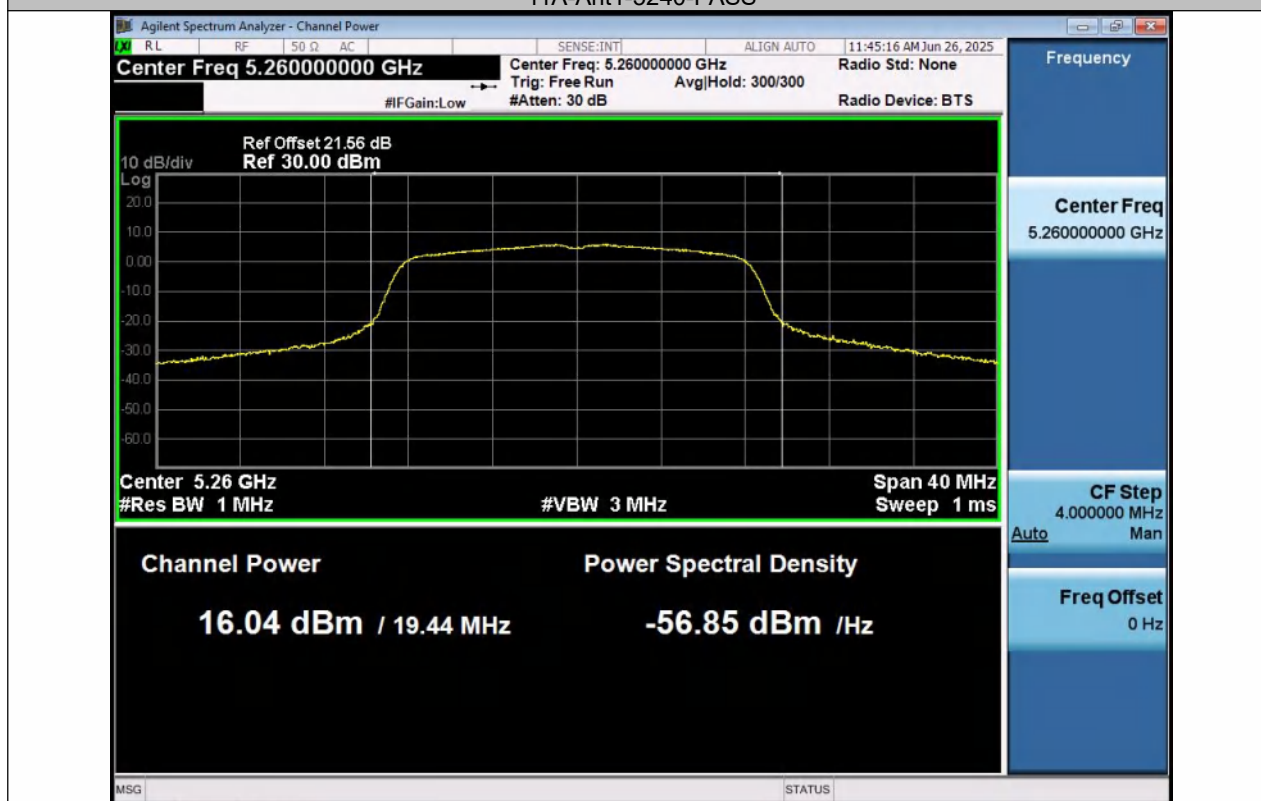
11A-Ant1-5180-PASS



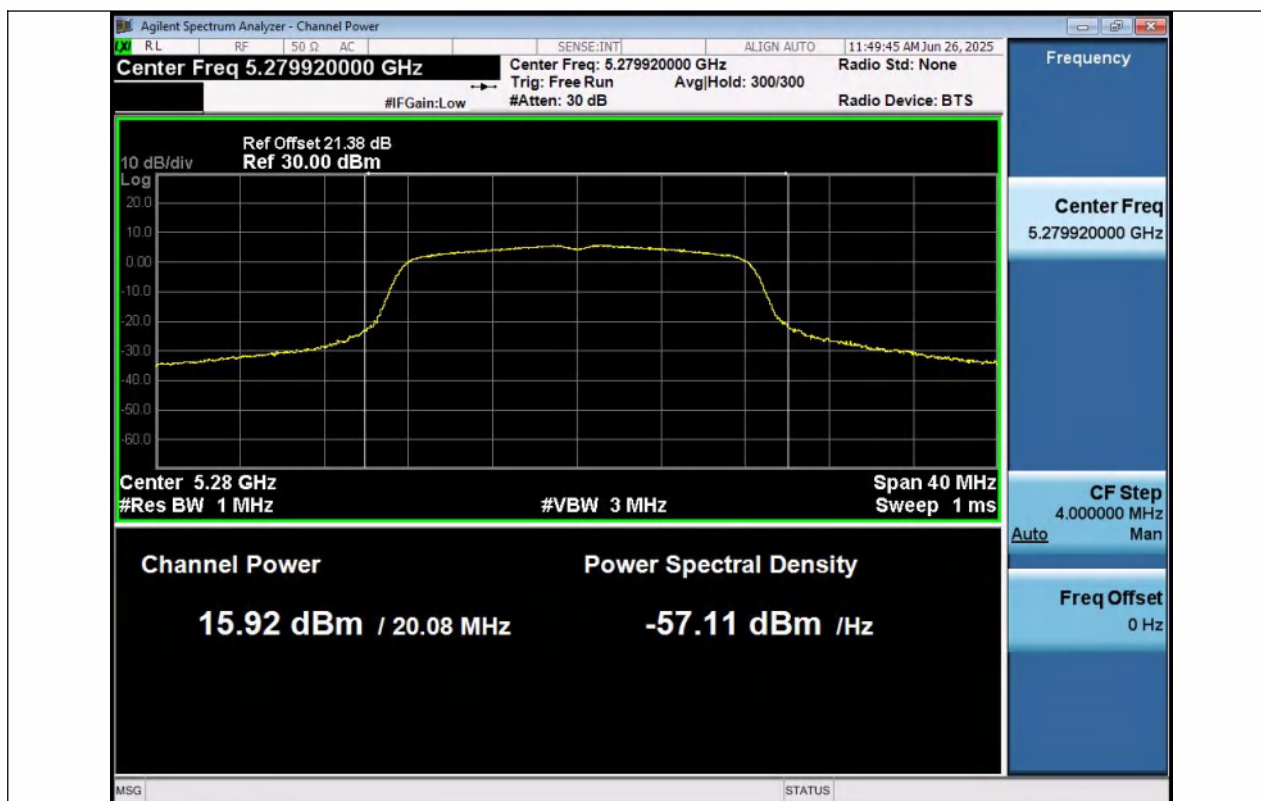
11A-Ant1-5200-PASS



11A-Ant1-5240-PASS



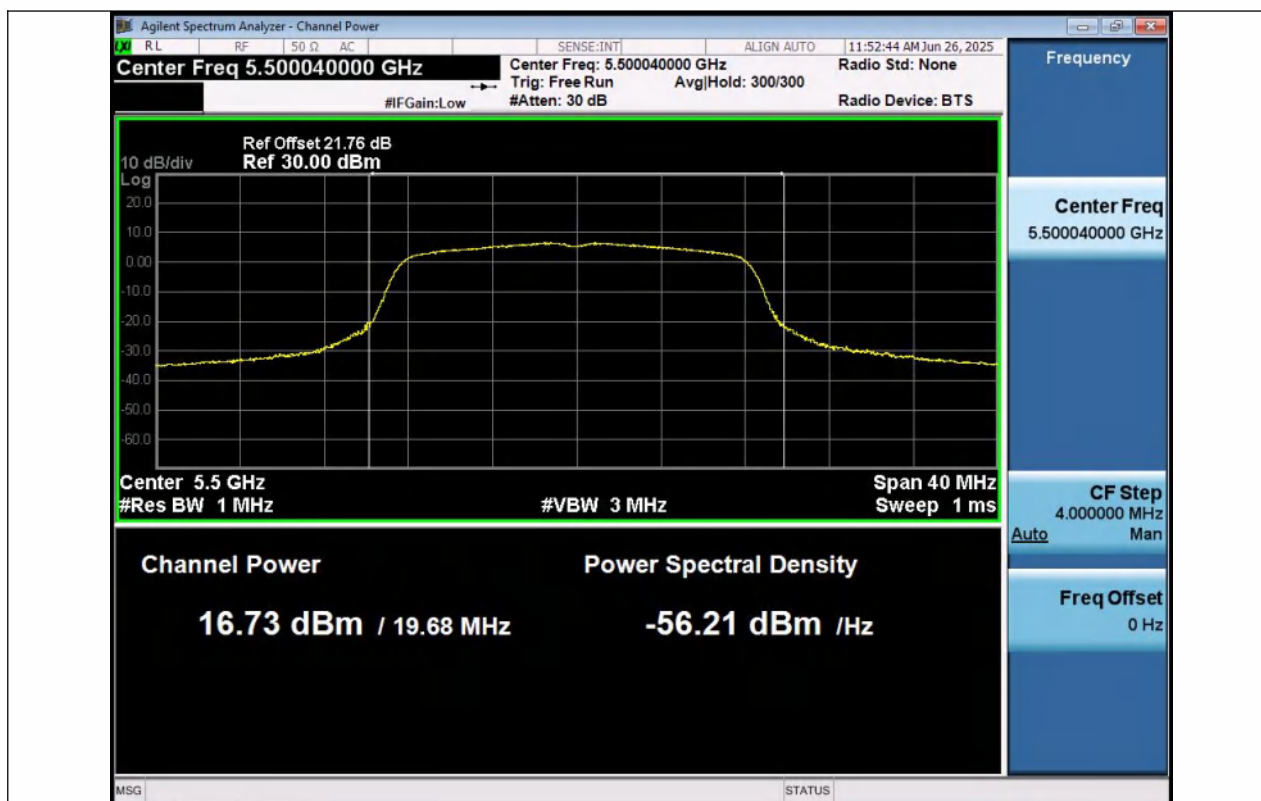
11A-Ant1-5260-PASS



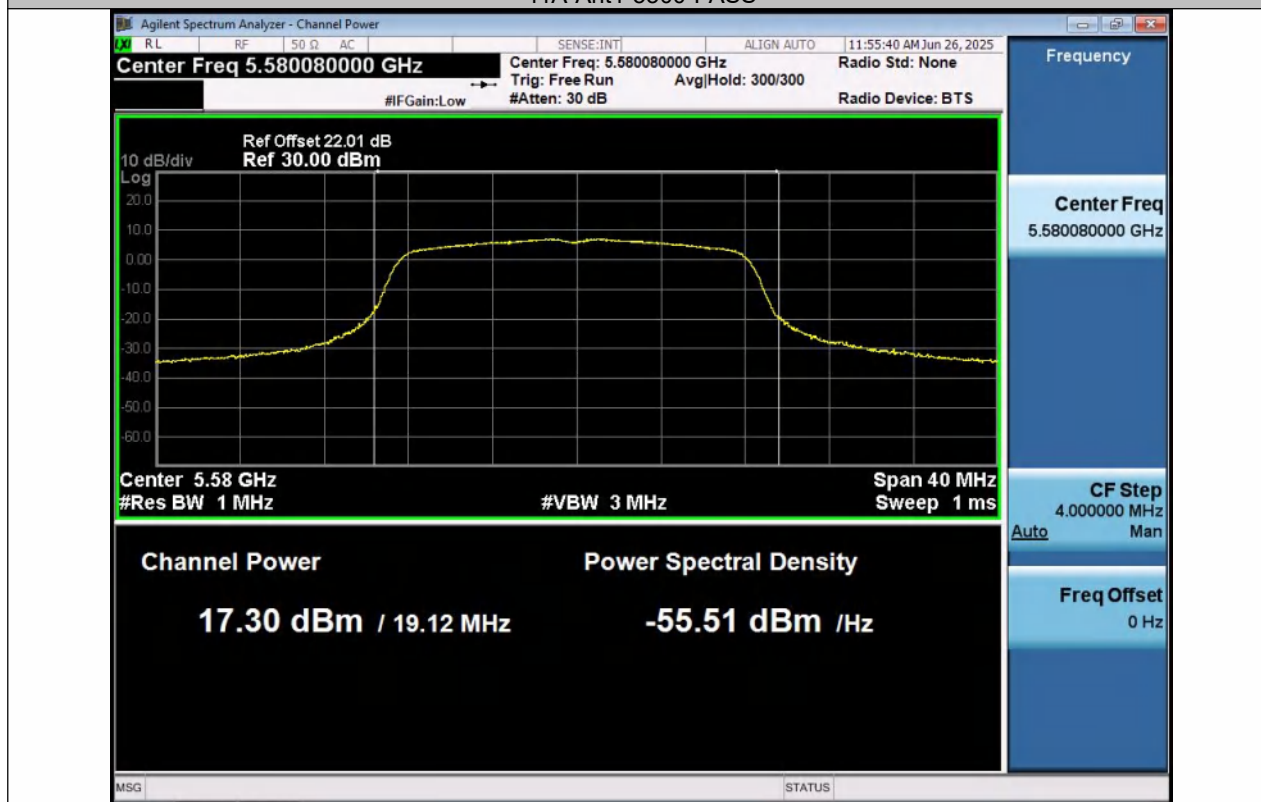
11A-Ant1-5280-PASS



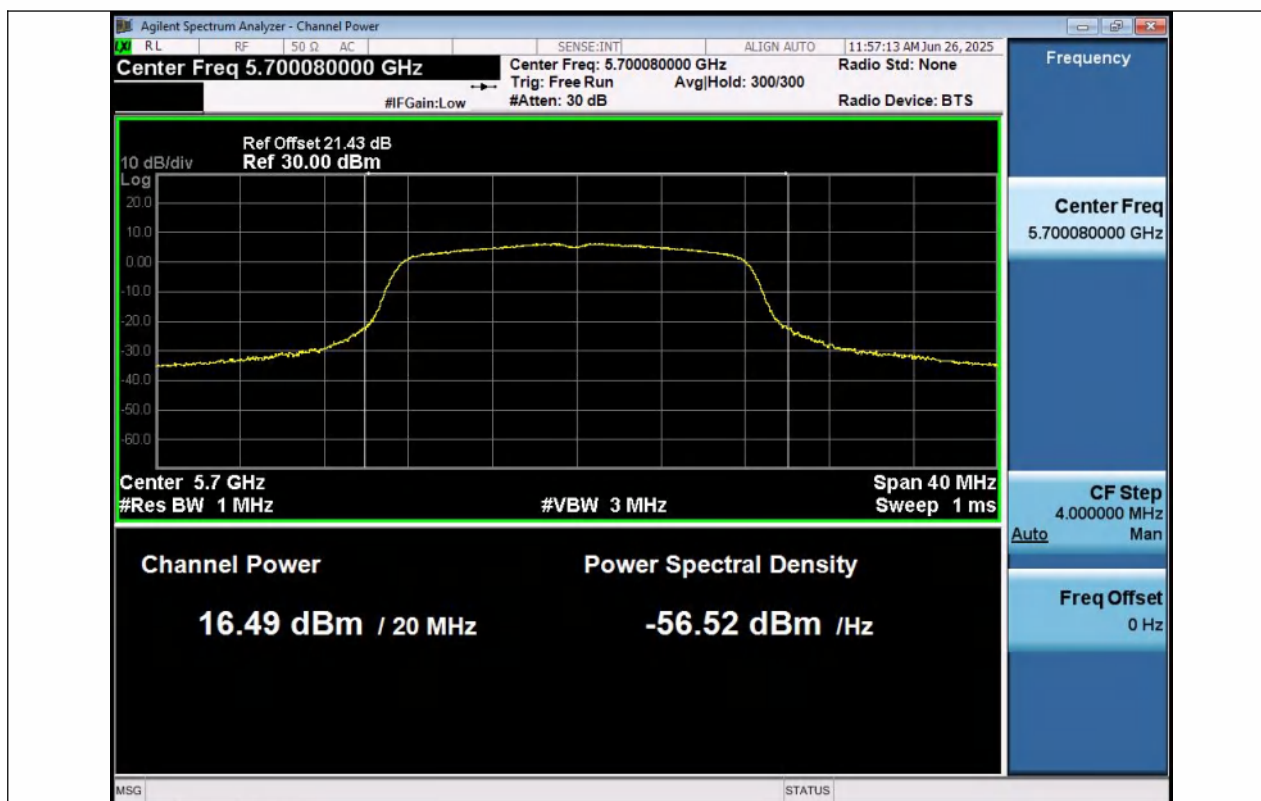
11A-Ant1-5320-PASS



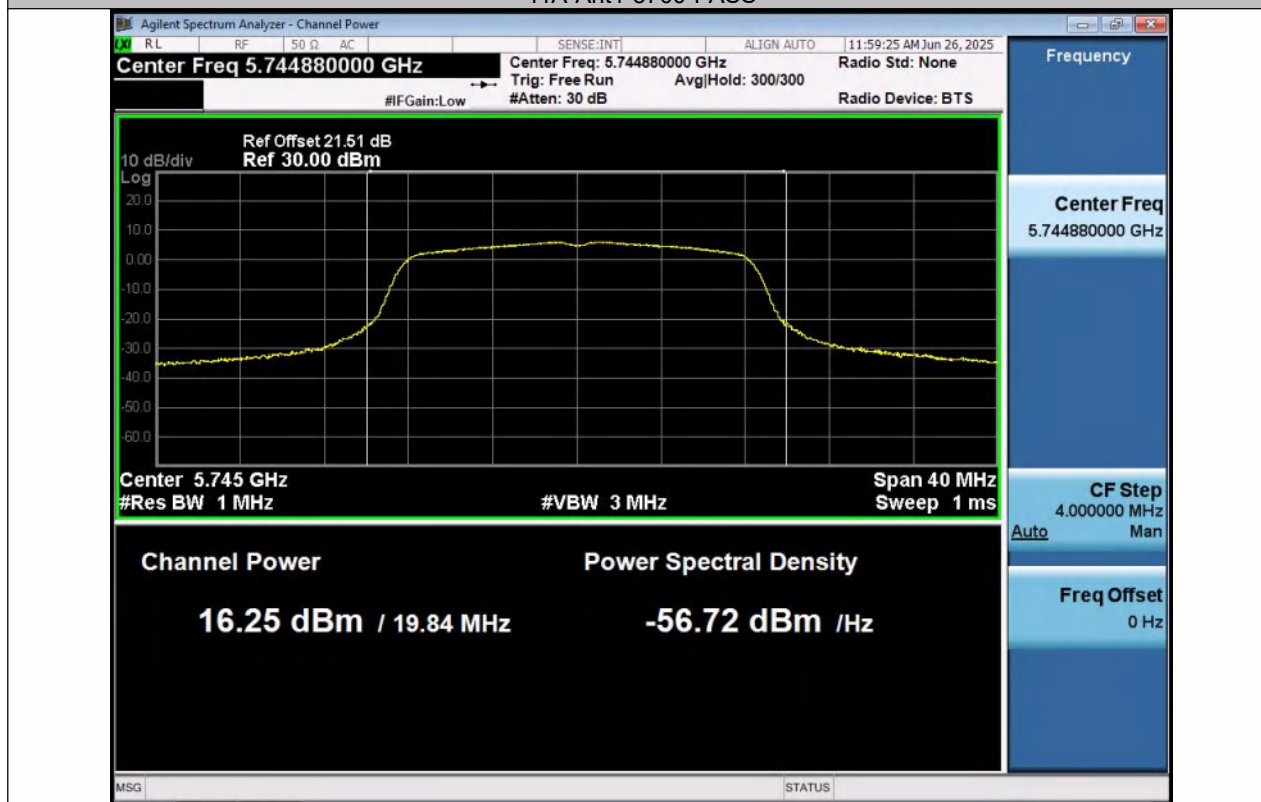
11A-Ant1-5500-PASS



11A-Ant1-5580-PASS



11A-Ant1-5700-PASS



11A-Ant1-5745-PASS