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ETSI EN 301 893 V2.1.1 (2017-05)

TEST REPORT

For

SHENZHEN TENDA TECHNOLOGY CO.,LTD.

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Tested Model: U11 Pro

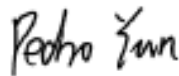
Report Type: Original Report	Product Type: AX900 Wi-Fi 6 Dual-band Wireless USB Adapter
Report Number:	2402X95327E-22B
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TABLE OF CONTENTS

DOCUMENT REVISION HISTORY	4
GENERAL INFORMATION	5
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
TECHNICAL SPECIFICATION	5
OBJECTIVE	5
TEST METHODOLOGY	5
MEASUREMENT UNCERTAINTY	6
DECLARATIONS	6
SYSTEM TEST CONFIGURATION	7
DESCRIPTION OF TEST CONFIGURATION	7
EUT EXERCISE SOFTWARE	7
SUPPORT EQUIPMENT LIST AND DETAILS	8
BLOCK DIAGRAM OF TEST SETUP	8
TEST EQUIPMENT LIST	9
ENVIRONMENTAL CONDITIONS	10
SUMMARY OF TEST RESULTS	11
1 – CARRIER FREQUENCIES	12
DEFINITION	12
LIMIT	12
TEST PROCEDURE	12
TEST DATA	12
2 – NOMINAL CHANNEL BANDWIDTH AND OCCUPIED CHANNEL BANDWIDTH.....	13
DEFINITION	13
LIMIT	13
TEST PROCEDURE	13
TEST DATA	13
3 – RF OUTPUT POWER, TRANSMIT POWER CONTROL (TPC), POWER DENSITY	14
DEFINITION	14
LIMIT	14
TEST PROCEDURE	15
TEST DATA	15
4 – TRANSMITTER UNWANTED EMISSIONS OUTSIDE THE 5 GHZ RLAN BANDS	16
DEFINITION	16
LIMIT	16
TEST PROCEDURE	16
TEST DATA	17
5 – TRANSMITTER UNWANTED EMISSIONS WITHIN THE 5 GHZ RLAN BANDS.....	21
DEFINITION	21
LIMIT	21
TEST PROCEDURE	21
TEST DATA	21
6 – RECEIVER SPURIOUS EMISSIONS	22
DEFINITION	22
LIMIT	22
TEST PROCEDURE	22
TEST DATA	23
8 – ADAPTIVITY	27
APPLICABLE STANDARD	27

LIMIT.....	27
TEST PROCEDURE.....	27
BLOCK DIAGRAM OF TEST SETUP	27
TEST DATA.....	28
9 – RECEIVER BLOCKING.....	35
APPLICABLE STANDARD.....	35
LIMIT.....	35
TEST PROCEDURE.....	35
BLOCK DIAGRAM OF TEST SETUP	35
TEST DATA.....	36
EXHIBIT A – EUT PHOTOGRAPHS	37
EXHIBIT B – TEST SET UP PHOTOGRAPHS	38
APPENDIX – RF CONDUCTED TEST.....	39
APPENDIX A: CARRIER FREQUENCIES	39
APPENDIX B: RF OUTPUT POWER	56
APPENDIX C: POWER SPECTRAL DENSITY	57
APPENDIX D: OCCUPIED CHANNEL BANDWIDTH	74
APPENDIX E: TRANSMITTER UNWANTED EMISSIONS WITHIN THE 5 GHZ RLAN BANDS	81
APPENDIX F: DUTY CYCLE.....	98

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402X95327E-22B	Original Report	2024/10/18

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:	AX900 Wi-Fi 6 Dual-band Wireless USB Adapter
EUT Model:	U11 Pro
Rated Input Voltage:	5Vdc from USB
Serial Number:	2RSS-1, 2RSS-5 (RE) 2RSS-3 (RF Conducted)
EUT Received Date:	2024/9/19
EUT Received Status:	Good

Technical Specification

Operation Frequency Range (MHz):		802.11 a/n20/ac20/ax20: 5180-5240 802.11 n40/ac40/ax40: 5190-5230 802.11 ac80/ax80: 5210
RF Output Power (EIRP) (dBm):		22.88
Number of Chains	Transmit:	1
	Receive:	1
Antenna Gain (dBi)▲:		4.03
Modulation Type:		OFDM, OFDMA

Objective

This report is prepared on behalf of *SHENZHEN TENDA TECHNOLOGY CO.,LTD.* in accordance with ETSI EN 301 893 V2.1.1 (2017-05) 5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

The objective is to determine the compliance of EUT with: ETSI EN 301 893 V2.1.1 (2017-05).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 893 V2.1.1 (2017-05) 5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

Measurement Uncertainty

Parameter	F _{lab}	Maximum allow uncertainty
RF Frequency	$\pm 0.82 \times 10^{-7}$	$\pm 1 \times 10^{-5}$
RF power conducted	$\pm 0.61 \text{ dB}$	$\pm 1,5 \text{ dB}$
RF power radiated	$\pm 3.62 \text{ dB}$	$\pm 6 \text{ dB}$
Spurious emissions, conducted	$\pm 2.47 \text{ dB}$	$\pm 3 \text{ dB}$
Spurious emissions, radiated	$\pm 3.62 \text{ dB}$	$\pm 6 \text{ dB}$
Temperature	$\pm 1 ^\circ \text{C}$	$\pm 2 ^\circ \text{C}$
Humidity	$\pm 5\%$	$\pm 5\%$
Time	1%	$\pm 10\%$

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Declarations

The information marked ▲ is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in engineering mode, which was provided by manufacture. The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80/ax20/ax40/ax80.

For 5150~5250 MHz band(W52), 7 channels were provided:

Frequency (MHz)	Frequency (MHz)
5180	5220
5190	5230
5200	5240
5210	/

Test condition as below:

NT: Normal Temperature 25℃, LT: Low Temperature 0℃, HT: High Temperature +40℃

EUT Exercise Software

Software “cmd” was used and the power level was configured as below. The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power and PSD across all data rates, bandwidths, and modulations[▲].

Band	Mode	Frequency (MHz)	Data rate (Mbps)	Power level
5150-5250	802.11 a	5180	6 Mbps	15
		5240	6 Mbps	17
	802.11 n20	5180	HT MCS8	17
		5240	HT MCS8	17
	802.11 n40	5190	HT MCS8	18
		5230	HT MCS8	18
	802.11 ac20	5180	VHT MCS8	17
		5240	VHT MCS8	17
	802.11 ac40	5190	VHT MCS8	18
		5230	VHT MCS8	18
	802.11 ac80	5210	VHT MCS8	18
	802.11 ax20	5180	HE MCS8	17
		5240	HE MCS8	17
	802.11 ax40	5190	HE MCS8	18
		5230	HE MCS8	18
	802.11 ax80	5210	HE MCS8	18

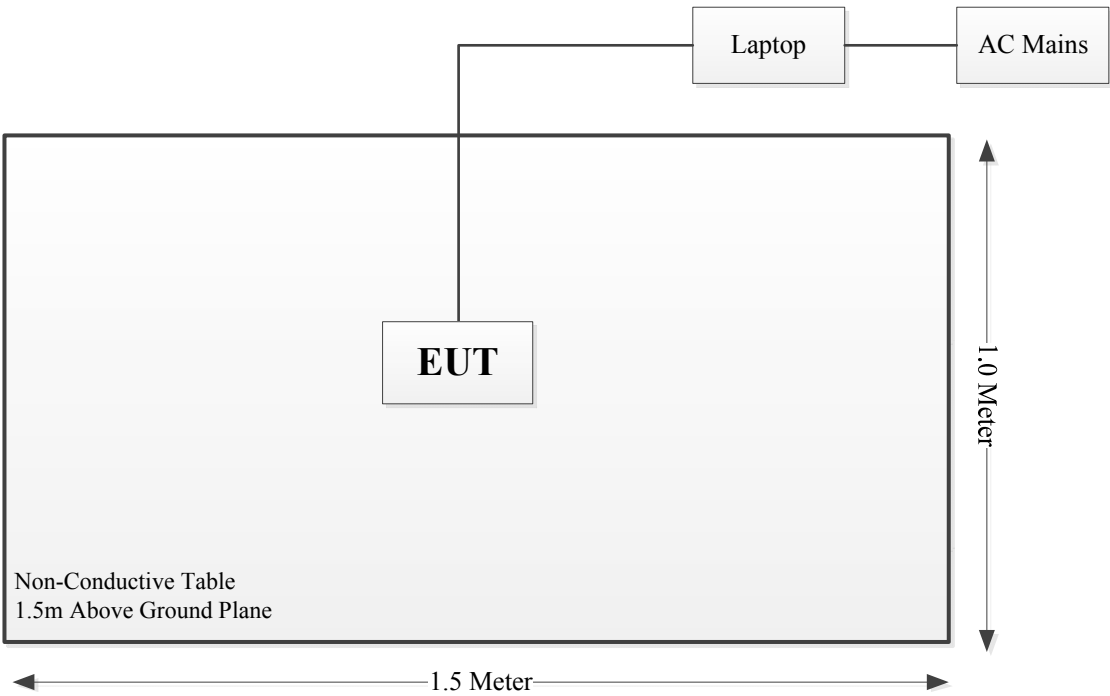
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	E450	PF-OMR8KV

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
USB Cable	NO	NO	6	EUT	Laptop

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated emissions below 1GHz					
Sunol Sciences	Hybrid Antenna	JB3	A060611-3	2024/1/12	2027/1/11
Wilson	Coaxial Attenuator	859936	F-08-EM014	2024/1/12	2027/1/11
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2024/7/1	2025/6/30
Sonoma	Amplifier	310N	372193	2024/8/16	2025/8/15
R&S	EMI Test Receiver	ESR3	102453	2024/8/26	2025/8/25
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Micro-Coax	Coaxial Cable	UFA210B	99G1448	2024/9/5	2025/9/4
Agilent	Signal Generator	E8247C	MY43321350	2023/10/18	2024/10/17
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
AH	Horn Antenna	SAS-571	1177	2023/2/22	2026/2/21
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-03 1304	2023/2/22	2026/2/21
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10 M	20231117004 #0001	2023/11/17	2024/11/16
Micro-Coax	Coaxial Cable	UFA210B	99G1448	2024/9/5	2025/9/4
Agilent	Signal Generator	E8247C	MY43321350	2023/10/18	2024/10/17
AH	Preamplifier	PAM-0118P	469	2024/4/15	2025/4/14
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17
Sinoscite	Band Rejection Filter	BSF5150-5850MN	0899003	2024/2/21	2025/2/20
Mini-Circuits	High Pass Filter	VHF-6010+	31118	2023/12/1	2024/11/30
RF conducted					
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G-10dB	F-08-EM509	2024/6/7	2025/6/6
R&S	Wideband Radio Communication Tester	CMW500	147473	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
Keysight	MXA Signal Analyzer	N9020A	MY48490106	2023/10/18	2024/10/17
Agilent	MXG Vector Signal Generator	N5182A	MY49060274	2023/10/18	2024/10/17
Agilent	MXG Analog Signal Generator	N5181A	MY48180151	2023/10/18	2024/10/17
Tonscend	RF Control Unit	JS0806-2	19G8060171	2023/10/18	2024/10/17

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF conducted(Adaptivity)					
Keysight	MXA Signal Analyzer	N9020A	MY48490106	2024/9/5	2025/9/4
Agilent	MXG Vector Signal Generator	N5182A	MY49060274	2024/9/5	2025/9/4
Tonscend	RF Control Unit	JS0806-2	19G8060171	2024/9/5	2025/9/4
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G-10dB	F-08-EM509	2024/6/7	2025/6/6

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Test Item:	Radiated emissions (below 1GHz)	Radiated emissions (above 1GHz)	RF conducted	RF conducted (Adaptivity)
Temperature:	27.8 °C	27.8 °C	25.9°C	25.4°C
Relative Humidity:	36.0 %	41.0 %	42%	54%
ATM Pressure:	100.6 kPa	99.7 kPa	100.4kPa	101.3kPa
Tester:	Jayce Wang	Leo Xiao	Harper Shen	Harper Shen
Test Date:	2024/9/22	2024/9/21	2024/9/29	2024/10/15

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	EN 301 893 Clause 4.2.1	Carrier frequencies	Compliant
2	EN 301 893 Clause 4.2.2	Nominal channel bandwidth and occupied channel bandwidth	Compliant
3	EN 301 893 Clause 4.2.3	RF output power	Compliant
		Transmit power control (TPC)	Not applicable*
		Power Density	Compliant
4	EN 301 893 Clause 4.2.4.1	Transmitter unwanted emissions outside the 5 GHz RLAN bands	Compliant
5	EN 301 893 Clause 4.2.4.2	Transmitter unwanted emissions within the 5 GHz RLAN bands	Compliant
6	EN 301 893 Clause 4.2.5	Receiver spurious emissions	Compliant
7	EN 301 893 Clause 4.2.6	Dynamic frequency selection (DFS)	Not applicable**
8	EN 301 893 Clause 4.2.7	Adaptivity	Compliant
9	EN 301 893 Clause 4.2.8	Receiver blocking	Compliant
10	EN 301 893 Clause 4.2.9	User access restrictions	Compliant*
11	EN 301 893 Clause 4.2.10	Geo-location capability	Not applicable*

Note:

Not applicable*: The device without this function.

Not applicable:** The device does not work on DFS band.

Compliant*: Please refer to the product information declared by the manufacturer.

1 – CARRIER FREQUENCIES

Definition

The Nominal Centre Frequency is the centre of the Operating Channel.

Limit

The actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range $f_c \pm 20$ ppm.

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.2

Test Data

Test Result: *Compliant. Please refer to the Appendix.*

2 – NOMINAL CHANNEL BANDWIDTH AND OCCUPIED CHANNEL BANDWIDTH

Definition

The Nominal Channel Bandwidth is the widest band of frequencies, inclusive of guard bands, assigned to a single channel.

The Occupied Channel Bandwidth is the bandwidth containing 99 % of the power of the signal.

When equipment has simultaneous transmissions in adjacent channels, these transmissions may be considered as one signal with an actual Nominal Channel Bandwidth of 'n' times the individual Nominal Channel Bandwidth where 'n' is the number of adjacent channels. When equipment has simultaneous transmissions in non-adjacent channels, each power envelope shall be considered separately.

Limit

The Nominal Channel Bandwidth for a single Operating Channel shall be 20 MHz.

Alternatively, equipment may implement a lower Nominal Channel Bandwidth with a minimum of 5 MHz, providing they still comply with the Nominal Centre Frequencies defined in clause 4.2.1 (20 MHz raster). The Occupied Channel Bandwidth shall be between 80 % and 100 % of the Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.

The Occupied Channel Bandwidth might change with time/payload.

During a Channel Occupancy Time (COT), equipment may operate temporarily with an Occupied Channel Bandwidth of less than 80 % of its Nominal Channel Bandwidth with a minimum of 2 MHz.

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.3

Test Data

Test Result: *Compliant. Please refer to the Appendix.*

3 – RF OUTPUT POWER, TRANSMIT POWER CONTROL (TPC), POWER DENSITY

Definition

RF Output Power:

The RF Output Power is the mean equivalent isotropically radiated power (e.i.r.p.) during a transmission burst.

Transmit Power Control (TPC):

Transmit Power Control (TPC) is a mechanism to be used by the RLAN device to ensure a mitigation factor of at least 3 dB on the aggregate power from a large number of devices. This requires the RLAN device to have a TPC range from which the lowest value is at least 6 dB below the values for mean e.i.r.p. given in table 2 for devices with TPC.

Power Density:

The Power Density is the mean Equivalent Isotropically Radiated Power (e.i.r.p.) density during a transmission burst.

Limit

TPC is not required for channels whose nominal bandwidth falls completely within the band 5150 MHz to 5250 MHz.

For devices with TPC, the RF output power and the power density when configured to operate at the highest stated power level of the TPC range shall not exceed the levels given in table 2.

Devices are allowed to operate without TPC. See table 2 for the applicable limits in this case.

Table 2: Mean e.i.r.p. limits for RF output power and Power Density at the highest power level (P_H)

Frequency range (MHz)	Mean e.i.r.p. limit for P_H (dBm)		Mean e.i.r.p. density limit (dBm/MHz)	
	with TPC	without TPC	with TPC	without TPC
5 150 to 5 350	23	20/23 (see note 1)	10	7/10 (see note 2)
5 470 to 5 725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)
NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.				
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.				
NOTE 3: Slave devices without a <i>Radar Interference Detection</i> function shall comply with the limits for the frequency range 5 250 MHz to 5 350 MHz.				

**Table 3: Mean e.i.r.p. limits for RF Output Power
at the lowest power level of the TPC range**

Frequency range	Mean e.i.r.p. (dBm) limit for P_L
5 250 MHz to 5 350 MHz	17
5 470 MHz to 5 725 MHz	24 (see note)
NOTE: Slave devices without a <i>Radar Interference Detection</i> function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.	

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.4

Test Data

Test Result: *Compliant. Please refer to the Appendix.*

4 – TRANSMITTER UNWANTED EMISSIONS OUTSIDE THE 5 GHZ RLAN BANDS

Definition

Transmitter unwanted emissions outside the 5 GHz RLAN bands are radio frequency emissions outside the 5 GHz RLAN bands defined in clause 3.1.

Limit

The level of transmitter unwanted emissions outside the 5 GHz RLAN bands shall not exceed the limits given in table 4.

Table 4: Transmitter unwanted emission limits outside the 5 GHz RLAN bands

Frequency range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 5,15 GHz	-30 dBm	1 MHz
5,35 GHz to 5,47 GHz	-30 dBm	1 MHz
5,725 GHz to 26 GHz	-30 dBm	1 MHz

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.5

Test Data

Test Result: Compliant. Pre-scan all modes, worst case please refer to following tables.

802.11 a Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.66	H	43.82	-72.89	0.00	0.10	-72.99	-54.00	18.99
256.97	V	49.35	-69.62	0.00	0.19	-69.81	-36.00	33.81
10360.00	H	48.64	-57.34	13.48	0.40	-44.26	-30.00	14.26
10360.00	V	48.20	-57.22	13.48	0.40	-44.14	-30.00	14.14

802.11 a High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.72	H	43.81	-72.87	0.00	0.10	-72.97	-54.00	18.97
257.03	V	49.32	-69.65	0.00	0.19	-69.84	-36.00	33.84
10480.00	H	48.92	-56.89	13.32	0.30	-43.87	-30.00	13.87
10480.00	V	52.95	-52.12	13.32	0.30	-39.10	-30.00	9.10

802.11 n20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.64	H	43.88	-72.84	0.00	0.10	-72.94	-54.00	18.94
256.92	V	49.32	-69.65	0.00	0.19	-69.84	-36.00	33.84
10360.00	H	48.20	-57.78	13.48	0.40	-44.70	-30.00	14.70
10360.00	V	48.00	-57.42	13.48	0.40	-44.34	-30.00	14.34

802.11 n20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.76	H	43.91	-72.75	0.00	0.10	-72.85	-54.00	18.85
257.01	V	49.28	-69.69	0.00	0.19	-69.88	-36.00	33.88
10480.00	H	47.05	-58.76	13.32	0.30	-45.74	-30.00	15.74
10480.00	V	48.69	-56.38	13.32	0.30	-43.36	-30.00	13.36

802.11 n40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.63	H	43.86	-72.87	0.00	0.10	-72.97	-54.00	18.97
256.94	V	49.34	-69.63	0.00	0.19	-69.82	-36.00	33.82
10380.00	H	48.72	-57.23	13.44	0.38	-44.17	-30.00	14.17
10380.00	V	46.70	-58.66	13.44	0.38	-45.60	-30.00	15.60

802.11 n40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.75	H	43.83	-72.84	0.00	0.10	-72.94	-54.00	18.94
256.95	V	49.39	-69.58	0.00	0.19	-69.77	-36.00	33.77
10460.00	H	46.65	-59.19	13.34	0.31	-46.16	-30.00	16.16
10460.00	V	47.88	-57.25	13.34	0.31	-44.22	-30.00	14.22

802.11 ac20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.67	H	43.86	-72.85	0.00	0.10	-72.95	-54.00	18.95
256.92	V	49.31	-69.66	0.00	0.19	-69.85	-36.00	33.85
10360.00	H	47.24	-58.74	13.48	0.40	-45.66	-30.00	15.66
10360.00	V	47.36	-58.06	13.48	0.40	-44.98	-30.00	14.98

802.11 ac20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.75	H	43.87	-72.80	0.00	0.10	-72.90	-54.00	18.90
257.07	V	49.34	-69.63	0.00	0.19	-69.82	-36.00	33.82
10480.00	H	48.03	-57.78	13.32	0.30	-44.76	-30.00	14.76
10480.00	V	47.92	-57.15	13.32	0.30	-44.13	-30.00	14.13

802.11 ac40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.72	H	43.83	-72.85	0.00	0.10	-72.95	-54.00	18.95
256.95	V	49.37	-69.60	0.00	0.19	-69.79	-36.00	33.79
10380.00	H	47.71	-58.24	13.44	0.38	-45.18	-30.00	15.18
10380.00	V	48.63	-56.73	13.44	0.38	-43.67	-30.00	13.67

802.11 ac40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.77	H	43.88	-72.78	0.00	0.10	-72.88	-54.00	18.88
257.04	V	49.35	-69.62	0.00	0.19	-69.81	-36.00	33.81
10460.00	H	47.16	-58.68	13.34	0.31	-45.65	-30.00	15.65
10460.00	V	47.75	-57.38	13.34	0.31	-44.35	-30.00	14.35

802.11 ac80**5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.76	H	43.86	-72.80	0.00	0.10	-72.90	-54.00	18.90
257.12	V	49.34	-69.62	0.00	0.19	-69.81	-36.00	33.81
10420.00	H	46.81	-59.09	13.38	0.35	-46.06	-30.00	16.06
10420.00	V	47.27	-57.98	13.38	0.35	-44.95	-30.00	14.95

802.11 ax20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.64	H	43.78	-72.94	0.00	0.10	-73.04	-54.00	19.04
256.99	V	49.38	-69.59	0.00	0.19	-69.78	-36.00	33.78
10360.00	H	47.51	-58.47	13.48	0.40	-45.39	-30.00	15.39
10360.00	V	47.67	-57.75	13.48	0.40	-44.67	-30.00	14.67

802.11 ax20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.75	H	43.84	-72.83	0.00	0.10	-72.93	-54.00	18.93
257.06	V	49.35	-69.62	0.00	0.19	-69.81	-36.00	33.81
10480.00	H	47.36	-58.45	13.32	0.30	-45.43	-30.00	15.43
10480.00	V	47.73	-57.34	13.32	0.30	-44.32	-30.00	14.32

802.11ax40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.68	H	43.79	-72.91	0.00	0.10	-73.01	-54.00	19.01
256.99	V	49.37	-69.60	0.00	0.19	-69.79	-36.00	33.79
10380.00	H	47.43	-58.52	13.44	0.38	-45.46	-30.00	15.46
10380.00	V	47.26	-58.10	13.44	0.38	-45.04	-30.00	15.04

802.11ax40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.78	H	43.78	-72.87	0.00	0.10	-72.97	-54.00	18.97
257.06	V	49.35	-69.62	0.00	0.19	-69.81	-36.00	33.81
10460.00	H	47.40	-58.44	13.34	0.31	-45.41	-30.00	15.41
10460.00	V	47.81	-57.32	13.34	0.31	-44.29	-30.00	14.29

802.11 ax80**5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
89.76	H	43.84	-72.82	0.00	0.10	-72.92	-54.00	18.92
257.07	V	49.38	-69.59	0.00	0.19	-69.78	-36.00	33.78
10420.00	H	47.42	-58.48	13.38	0.35	-45.45	-30.00	15.45
10420.00	V	47.19	-58.06	13.38	0.35	-45.03	-30.00	15.03

Note 1: The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

Note 2:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

5 – TRANSMITTER UNWANTED EMISSIONS WITHIN THE 5 GHZ RLAN BANDS

Definition

Transmitter unwanted emissions within the 5 GHz RLAN bands are radio frequency emissions within the 5 GHz RLAN bands defined in clause 3.1.

Limit

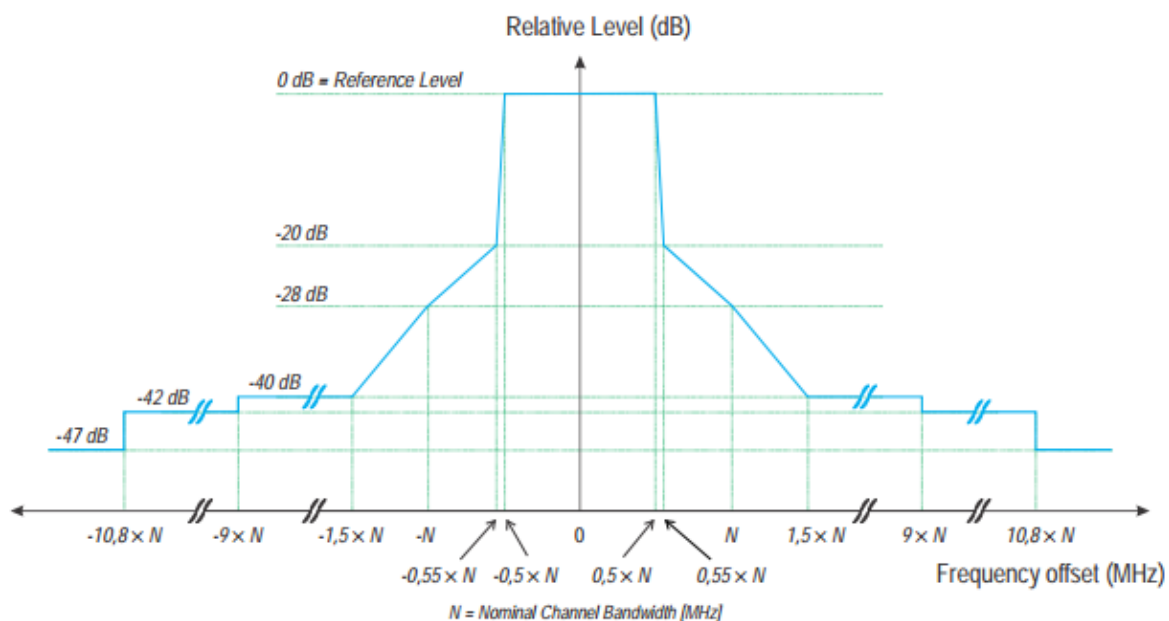


Figure 1: Transmit spectral power mask

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.6

Test Data

Test Result: Compliant. Please refer to the Appendix.

6 – RECEIVER SPURIOUS EMISSIONS

Definition

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

Limit

The spurious emissions of the receiver shall not exceed the limits given in table 5.

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

Table 5: Spurious radiated emission limits

Frequency range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 26 GHz	-47 dBm	1 MHz

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.7

Test Data

Test Result: Compliant. Pre-scan all modes, worst case please refer to following tables.

802.11 a Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.54	H	43.93	-72.38	0.00	0.10	-72.48	-57.00	15.48
265.59	V	49.29	-69.24	0.00	0.19	-69.43	-57.00	12.43
1542.60	H	47.52	-78.50	9.76	1.06	-69.80	-47.00	22.80
1872.00	V	47.31	-76.75	11.60	0.92	-66.07	-47.00	19.07

802.11 a High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.52	H	43.98	-72.34	0.00	0.10	-72.44	-57.00	15.44
256.56	V	49.26	-69.73	0.00	0.19	-69.92	-57.00	12.92
1352.60	H	47.80	-76.61	8.67	1.20	-69.14	-47.00	22.14
1473.90	V	47.74	-78.12	9.37	1.31	-70.06	-47.00	23.06

802.11 n20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.57	H	44.05	-72.25	0.00	0.10	-72.35	-57.00	15.35
265.55	V	49.34	-69.19	0.00	0.19	-69.38	-57.00	12.38
1246.90	H	47.10	-77.10	7.77	1.14	-70.47	-47.00	23.47
1664.30	V	47.57	-77.91	10.55	0.73	-68.09	-47.00	21.09

802.11 n20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.56	H	43.92	-72.38	0.00	0.10	-72.48	-57.00	15.48
256.52	V	49.24	-69.75	0.00	0.19	-69.94	-57.00	12.94
1578.40	H	47.79	-78.14	9.97	0.82	-68.99	-47.00	21.99
1623.60	V	47.83	-78.29	10.27	0.70	-68.72	-47.00	21.72

802.11 n40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.48	H	43.96	-72.38	0.00	0.10	-72.48	-57.00	15.48
265.52	V	49.32	-69.21	0.00	0.19	-69.40	-57.00	12.40
1528.90	H	47.92	-78.14	9.67	1.16	-69.63	-47.00	22.63
1478.20	V	47.76	-78.16	9.39	1.32	-70.09	-47.00	23.09

802.11 n40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.57	H	44.02	-72.28	0.00	0.10	-72.38	-57.00	15.38
256.54	V	49.28	-69.71	0.00	0.19	-69.90	-57.00	12.90
1053.60	H	47.60	-77.74	7.63	0.89	-71.00	-47.00	24.00
1575.30	V	47.90	-78.52	9.95	0.85	-69.42	-47.00	22.42

802.11 ac20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.61	H	43.95	-72.33	0.00	0.10	-72.43	-57.00	15.43
265.57	V	49.18	-69.35	0.00	0.19	-69.54	-57.00	12.54
1362.30	H	47.42	-76.94	8.74	1.20	-69.40	-47.00	22.40
1752.40	V	47.20	-77.95	10.96	0.71	-67.70	-47.00	20.70

802.11 ac20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.48	H	43.96	-72.38	0.00	0.10	-72.48	-57.00	15.48
256.49	V	49.21	-69.79	0.00	0.19	-69.98	-57.00	12.98
1667.80	H	47.57	-77.26	10.57	0.73	-67.42	-47.00	20.42
1299.20	V	47.28	-78.25	8.29	1.19	-71.15	-47.00	24.15

802.11 ac40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.53	H	43.97	-72.35	0.00	0.10	-72.45	-57.00	15.45
265.57	V	49.24	-69.29	0.00	0.19	-69.48	-57.00	12.48
1344.20	H	47.41	-77.03	8.61	1.19	-69.61	-47.00	22.61
1524.70	V	47.51	-78.78	9.65	1.18	-70.31	-47.00	23.31

802.11 ac40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.55	H	43.88	-72.43	0.00	0.10	-72.53	-57.00	15.53
256.59	V	49.26	-69.73	0.00	0.19	-69.92	-57.00	12.92
1824.50	H	47.63	-76.75	11.27	0.76	-66.24	-47.00	19.24
1639.70	V	47.32	-78.55	10.38	0.71	-68.88	-47.00	21.88

802.11 ac80**5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.53	H	44.03	-72.29	0.00	0.10	-72.39	-57.00	15.39
256.62	V	49.32	-69.67	0.00	0.19	-69.86	-57.00	12.86
1573.00	H	47.29	-78.66	9.94	0.86	-69.58	-47.00	22.58
1524.90	V	47.15	-79.14	9.65	1.18	-70.67	-47.00	23.67

802.11 ax20 Low channel**5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.57	H	43.97	-72.33	0.00	0.10	-72.43	-57.00	15.43
265.51	V	49.26	-69.27	0.00	0.19	-69.46	-57.00	12.46
1427.30	H	47.56	-77.16	9.14	1.24	-69.26	-47.00	22.26
1362.80	V	47.76	-77.31	8.74	1.20	-69.77	-47.00	22.77

802.11 ax20 High channel**5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.55	H	43.95	-72.36	0.00	0.10	-72.46	-57.00	15.46
256.52	V	49.22	-69.77	0.00	0.19	-69.96	-57.00	12.96
1974.50	H	47.37	-77.57	11.95	1.10	-66.72	-47.00	19.72
1824.60	V	47.78	-77.13	11.27	0.76	-66.62	-47.00	19.62

802.11ax40 Low channel**5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.53	H	43.94	-72.38	0.00	0.10	-72.48	-57.00	15.48
265.63	V	49.32	-69.21	0.00	0.19	-69.40	-57.00	12.40
1358.20	H	47.76	-76.62	8.71	1.20	-69.11	-47.00	22.11
1462.80	V	47.21	-78.49	9.31	1.29	-70.47	-47.00	23.47

802.11ax40 High channel**5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.62	H	43.96	-72.32	0.00	0.10	-72.42	-57.00	15.42
256.63	V	49.24	-69.75	0.00	0.19	-69.94	-57.00	12.94
1023.50	H	47.14	-78.61	7.78	0.81	-71.64	-47.00	24.64
1703.70	V	47.56	-77.39	10.81	0.75	-67.33	-47.00	20.33

802.11 ax80**5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
90.56	H	43.94	-72.36	0.00	0.10	-72.46	-57.00	15.46
256.58	V	49.28	-69.71	0.00	0.19	-69.90	-57.00	12.90
1562.70	H	47.63	-78.34	9.88	0.93	-69.39	-47.00	22.39
1309.40	V	47.33	-78.14	8.37	1.19	-70.96	-47.00	23.96

Note 1: The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

Note 2:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

8 – ADAPTIVITY

Applicable Standard

Adaptivity (Channel Access Mechanism) is an automatic mechanism by which a device limits its transmissions and gains access to an Operating Channel.

§4.2.7.3.1 Frame Based Equipment:

Frame Based Equipment shall implement a Listen Before Talk (LBT) based Channel Access Mechanism to detect the presence of other RLAN transmissions on an Operating Channel.

§4.2.7.3.2 Load Based Equipment:

Load based Equipment shall implement a Listen Before Talk (LBT) based Channel Access Mechanism to detect the presence of other RLAN transmissions on an Operating Channel.

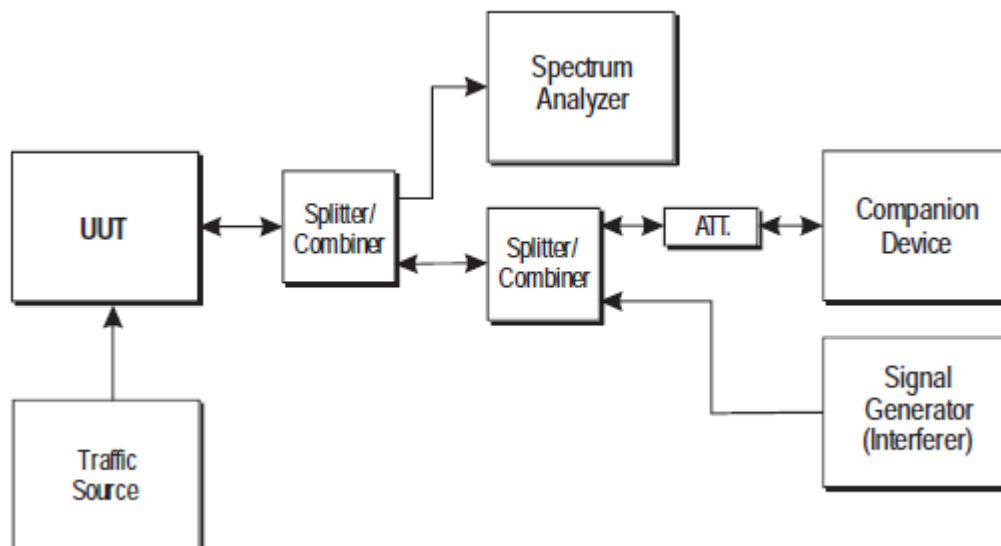
Limit

According to ETSI EN 301 893 V2.1.1 (2017-05) §4.2.7.3.1&§4.2.7.3.2

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.9

Block Diagram of Test Setup



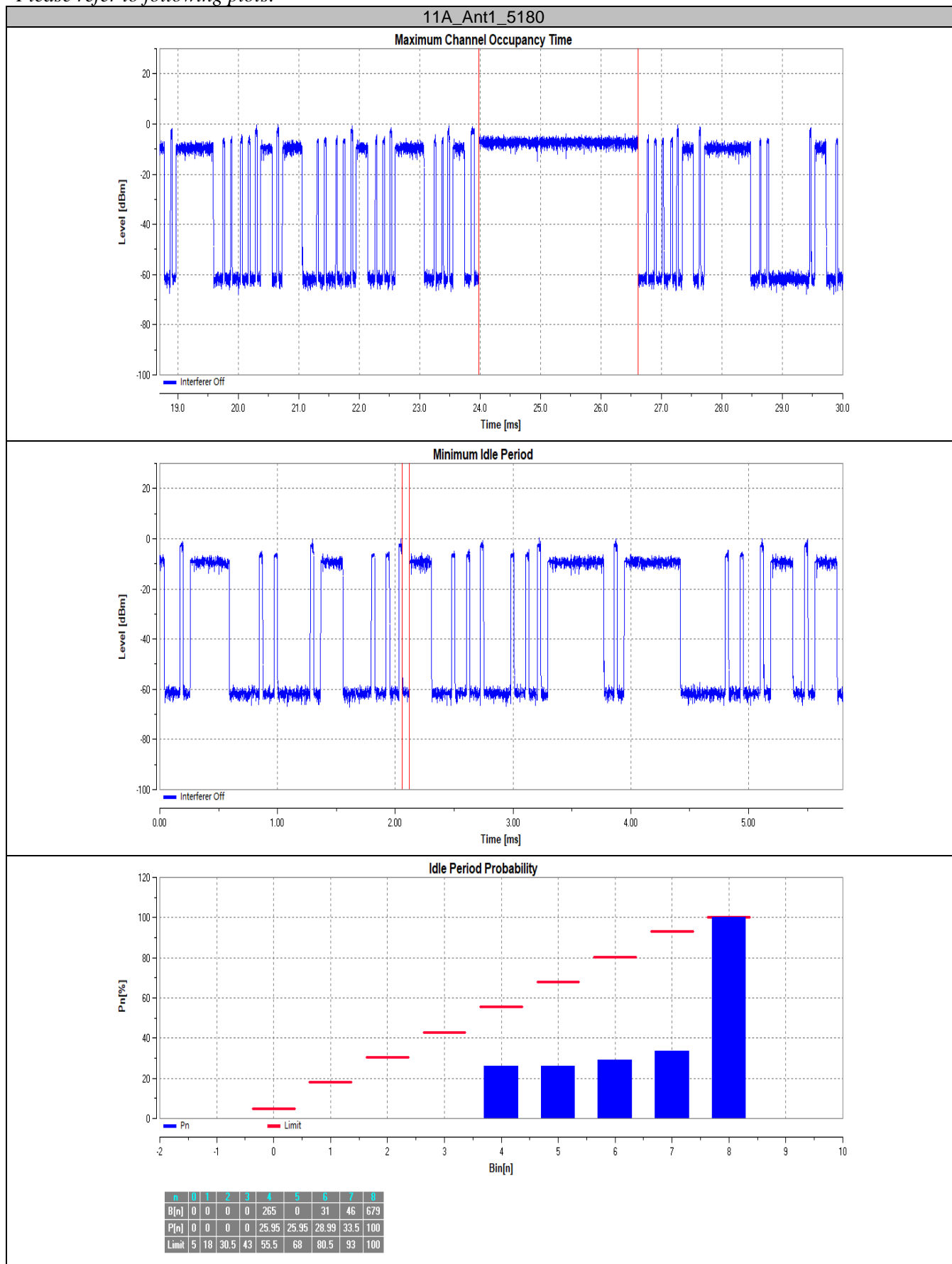
Test Data

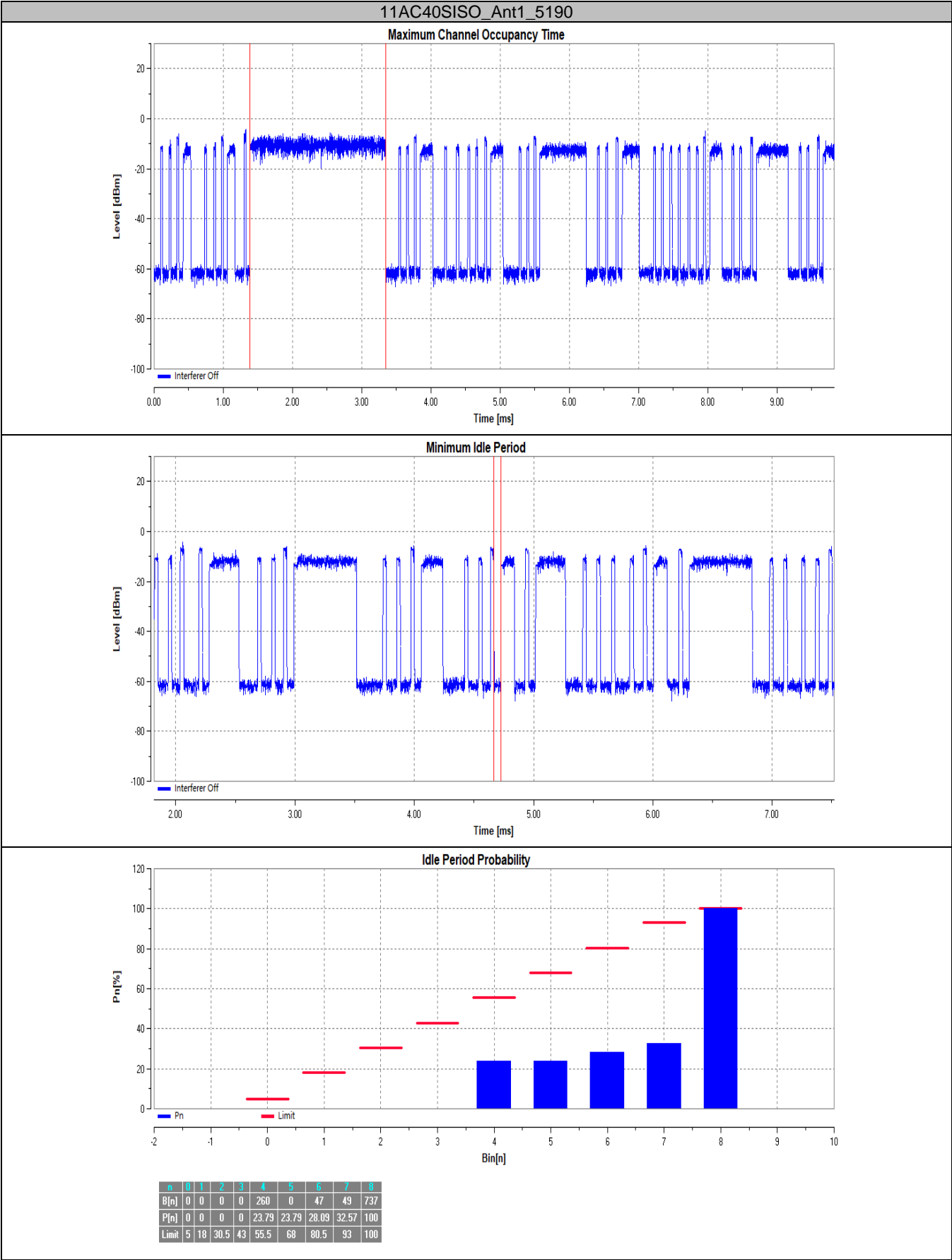
Test Result: Compliant. Please refer to following tables.

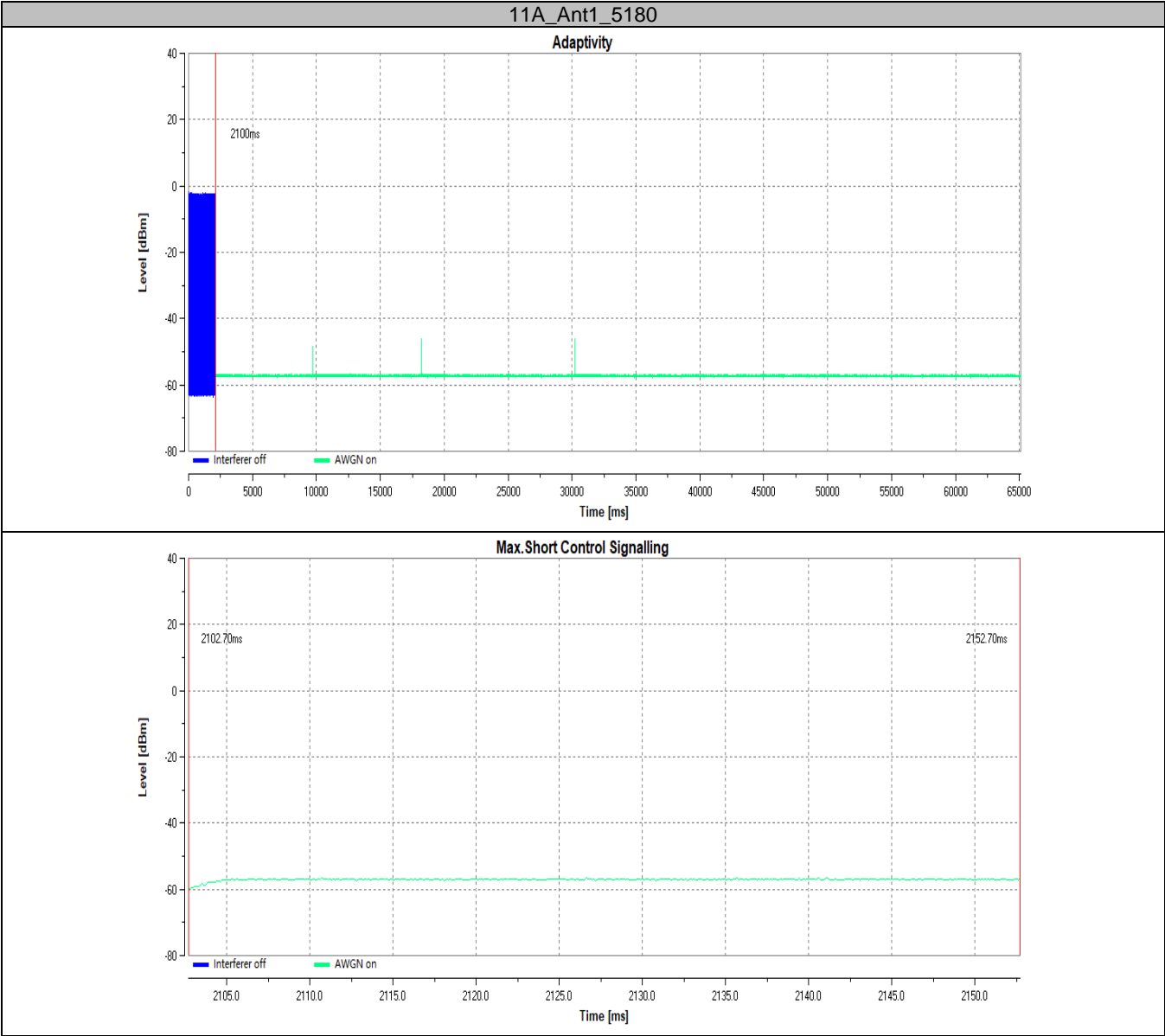
Test Mode	Channel	Priority Class	Max. COT [ms]	Limit [ms]	Min.Idle Time[ms]	Limit [ms]	Idle Period probability	Verdict
11A	5180	3	2.637	4.000	0.058	0.027	See the graph	PASS
11AC40SISO	5190	3	1.965	4.000	0.057	0.027	See the graph	PASS

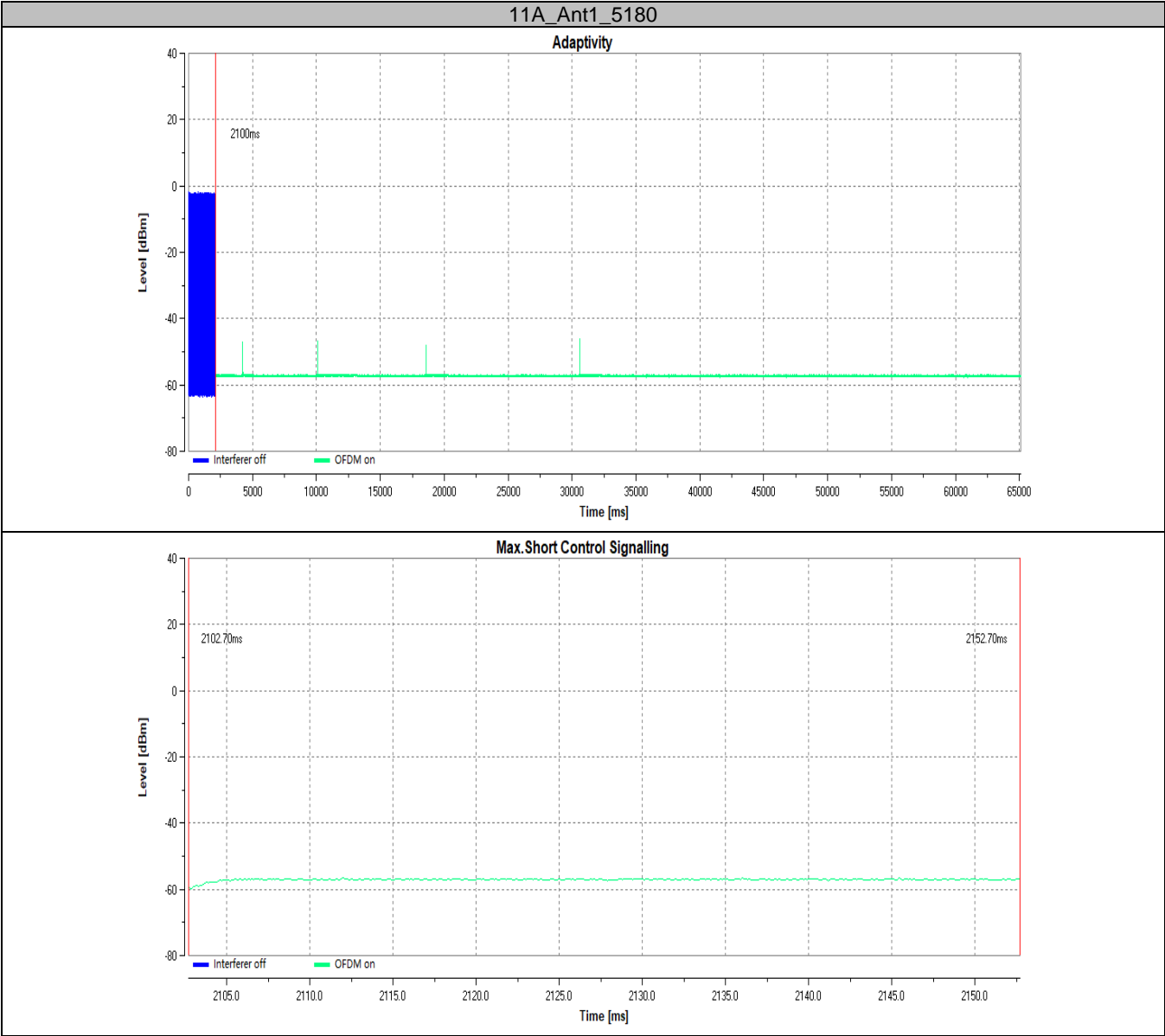
Test Mode	Channel	Interference Type	Add interference Time[ms]	Interference Level [dBm/MHz]	Max.Short Control number[n]	Limit [n]	Max.Short Control Time[ms]	Limit [ms]	Verdict
11A	5180	AWGN	2100	-70.97	0	50	0.00	2.5	PASS
		OFDM	2100	-70.97	0	50	0.00	2.5	PASS
		LTE	2100	-70.97	0	50	0.00	2.5	PASS
11AC40SISO	5190	AWGN	2100	-70.97	0	50	0.00	2.5	PASS

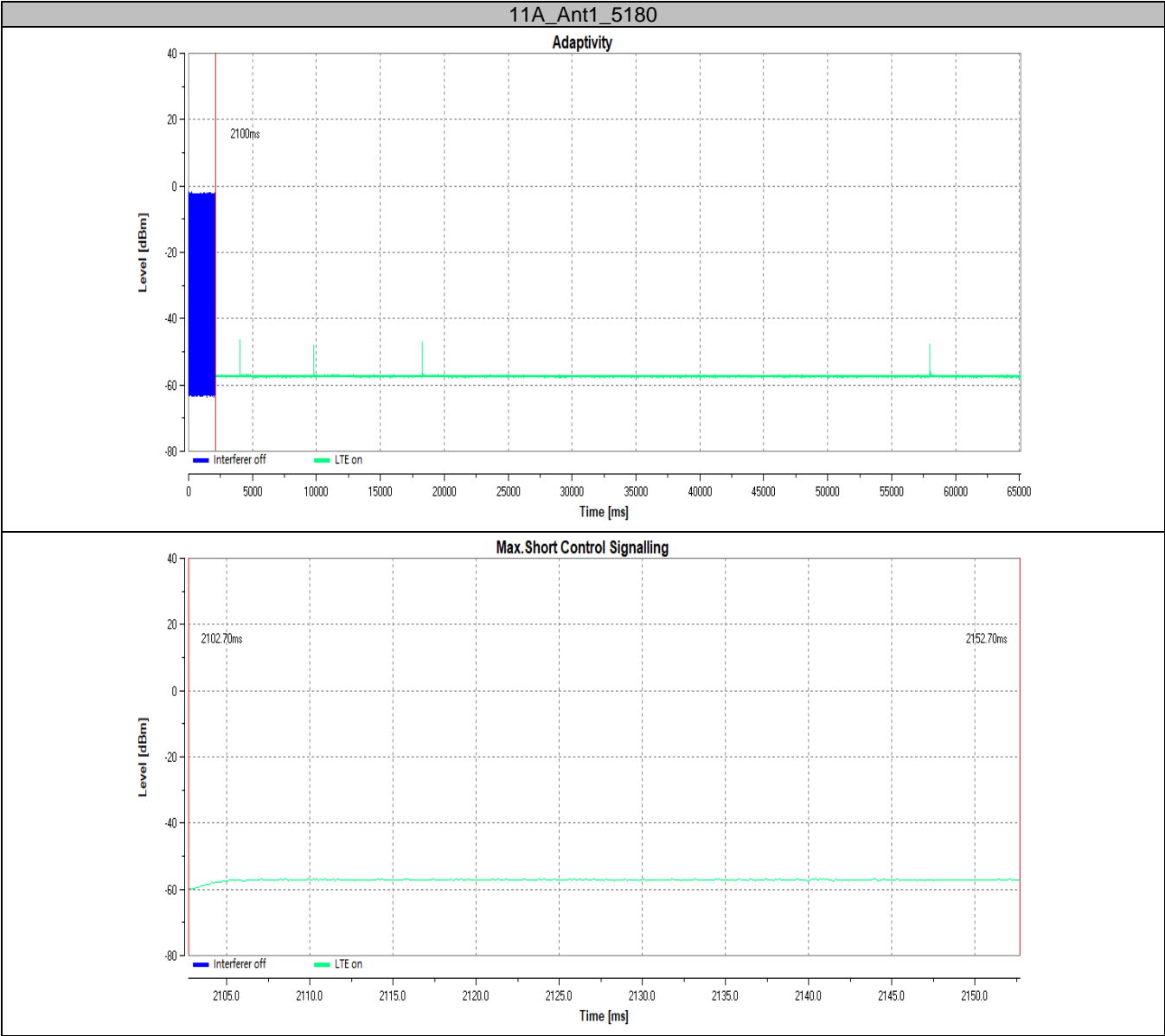
Please refer to following plots:

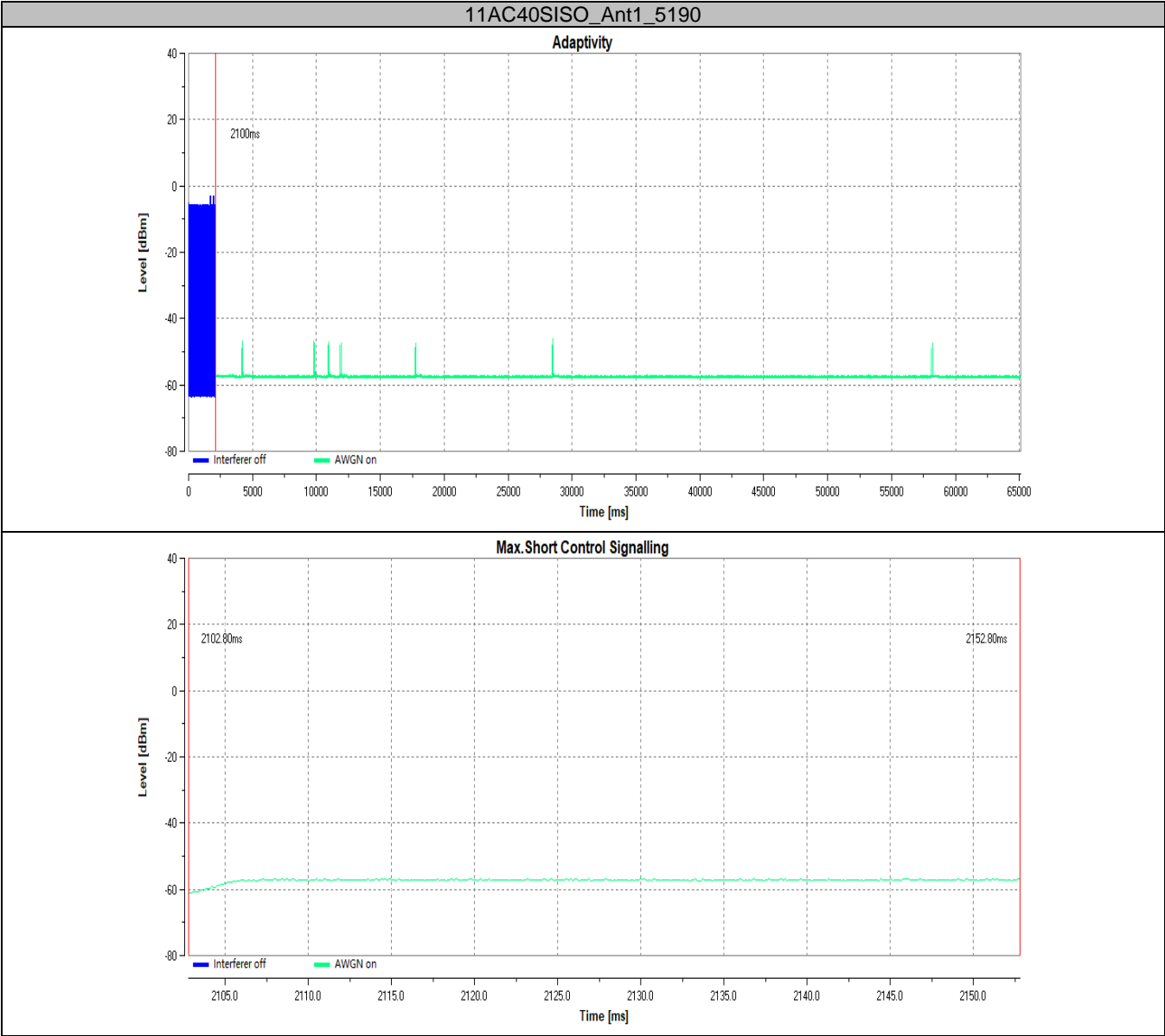












9 – RECEIVER BLOCKING

Applicable Standard

Receiver blocking is a measure of the capability of the equipment to receive a wanted signal on its operating channel without exceeding a given degradation due to the presence of an unwanted input signal (blocking signal) on frequencies other than those of the operating bands provided in table 1.

Limit

The minimum performance criterion shall be a PER of less than or equal to 10 %. The manufacturer may declare alternative performance criteria as long as that is appropriate for the intended use of the equipment

While maintaining the minimum performance criteria as defined in clause 4.2.8.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined in table 9.

Table 9: Receiver Blocking parameters

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)		Type of blocking signal
		Master or Slave with radar detection (see table D.2, note 2)	Slave without radar detection (see table D.2, note 2)	
$P_{min} + 6$ dB	5 100	-53	-59	Continuous Wave
$P_{min} + 6$ dB	4 900 5 000 5 975	-47	-53	Continuous Wave

NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined clause 4.2.8.3 in the absence of any blocking signal.

NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the same levels should be used at the antenna connector irrespective of antenna gain.

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.10

Block Diagram of Test Setup

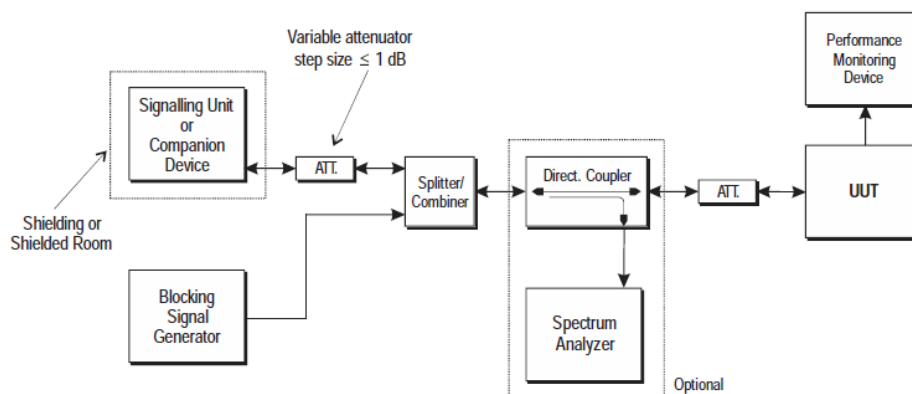


Figure 14: Test Set-up for receiver blocking

Test Data

Test Result: Compliant. Please refer to following tables.

Note: CMW500 was used to monitor the PER, and the worst case as below.

Test Mode	Pmin (dBm)	Wanted signal Power from companion device (dBm)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Max Blocking Signal Power (dBm)	PER (%)	Limit (%)
802.11 a (5180 MHz)	-88	-82	5100	-53	-48	4.9	≤ 10
			4900	-47	-43	5.1	
			5000	-47	-44	4.6	
			5975	-47	-43	6.3	

EXHIBIT A – EUT PHOTOGRAPHS

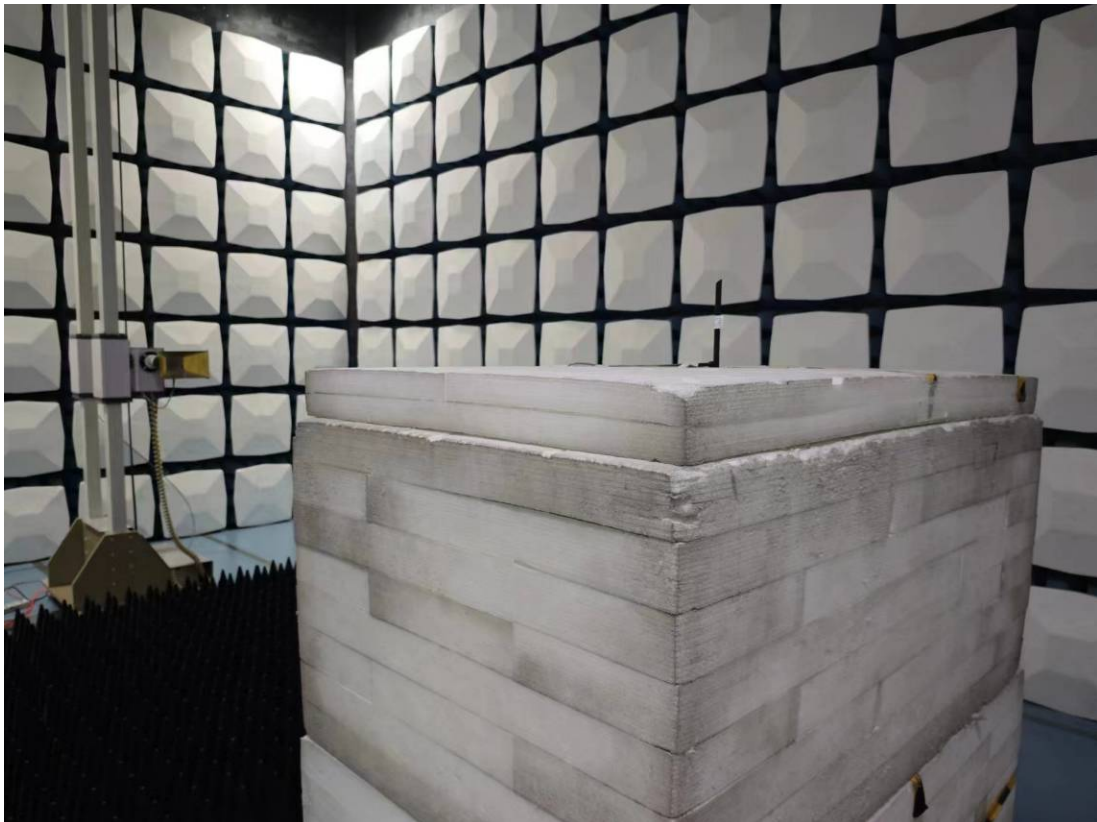
For photos in this section, please refer to report No.: 2402X95327E-02 EXHIBIT A.

EXHIBIT B – TEST SET UP PHOTOGRAPHS

Radiated Emission Below 1GHz View



Radiated Emission Above 1GHz View



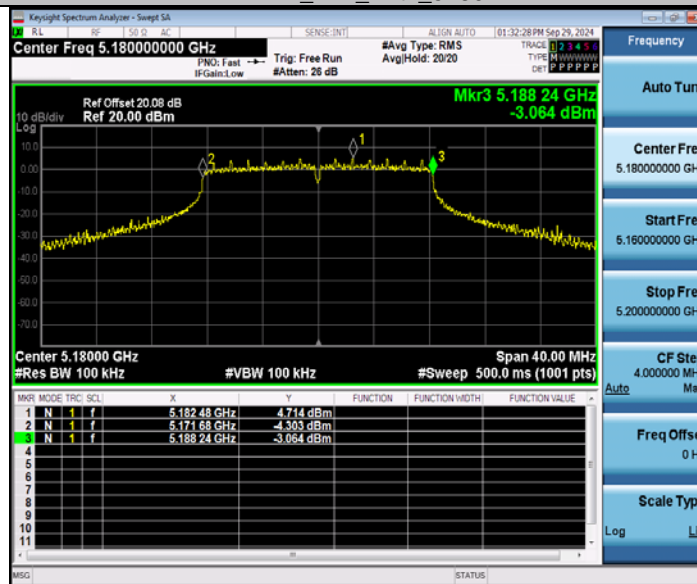
APPENDIX – RF CONDUCTED TEST

Appendix A: Carrier frequencies Test Result

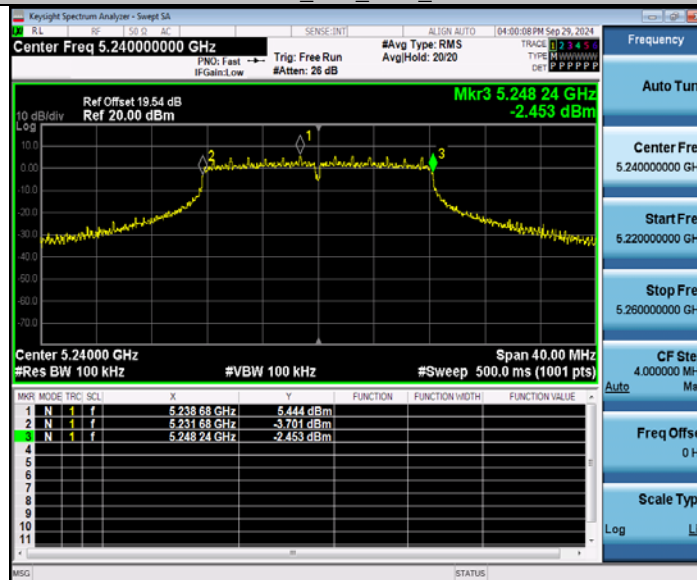
Test Condition	Test Mode	Antenna	Freq(MHz)	F1 (MHz)	F2 (MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	11A	Ant1	5180	5171.68	5188.24	-7.72201	±20	PASS
			5240	5231.68	5248.24	-7.63359	±20	PASS
	11N20SISO	Ant1	5180	5171.04	5188.88	-7.72201	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11N40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20SISO	Ant1	5180	5171.04	5188.88	-7.72201	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11AC40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC80SISO	Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
			5180	5170.36	5189.56	-7.72201	±20	PASS
	11AX20SISO	Ant1	5240	5230.36	5249.56	-7.63359	±20	PASS
			5190	5170.88	5209.04	-7.70713	±20	PASS
LTVN	11A	Ant1	5180	5171.68	5188.24	-7.72201	±20	PASS
			5240	5231.68	5248.24	-7.63359	±20	PASS
	11N20SISO	Ant1	5180	5171.04	5188.84	-11.58301	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11N40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20SISO	Ant1	5180	5171.04	5188.84	-11.58301	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11AC40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC80SISO	Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
			5180	5170.36	5189.56	-7.72201	±20	PASS
	11AX20SISO	Ant1	5240	5230.36	5249.56	-7.63359	±20	PASS
			5190	5170.88	5209.04	-7.70713	±20	PASS
HTNV	11A	Ant1	5180	5171.68	5188.24	-7.72201	±20	PASS
			5240	5231.68	5248.24	-7.63359	±20	PASS
	11N20SISO	Ant1	5180	5171.04	5188.88	-7.72201	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11N40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20SISO	Ant1	5180	5171.04	5188.84	-11.58301	±20	PASS
			5240	5231.04	5248.84	-11.45038	±20	PASS
	11AC40SISO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
			5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC80SISO	Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
			5180	5170.36	5189.52	-11.58301	±20	PASS
	11AX20SISO	Ant1	5240	5230.36	5249.56	-7.63359	±20	PASS
			5190	5170.88	5209.04	-7.70713	±20	PASS
	11AX40SISO	Ant1	5230	5210.80	5249.04	-15.29637	±20	PASS
			5210	5170.80	5249.04	-15.35509	±20	PASS

Test Graphs

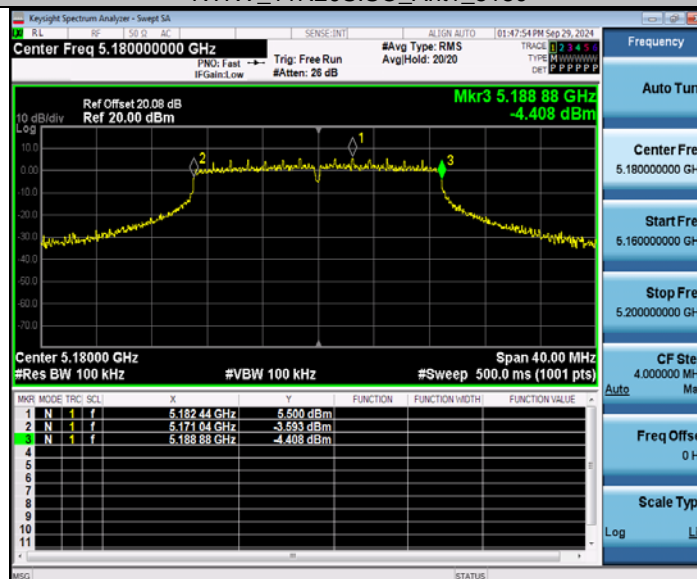
NTNV_11A_Ant1_5180



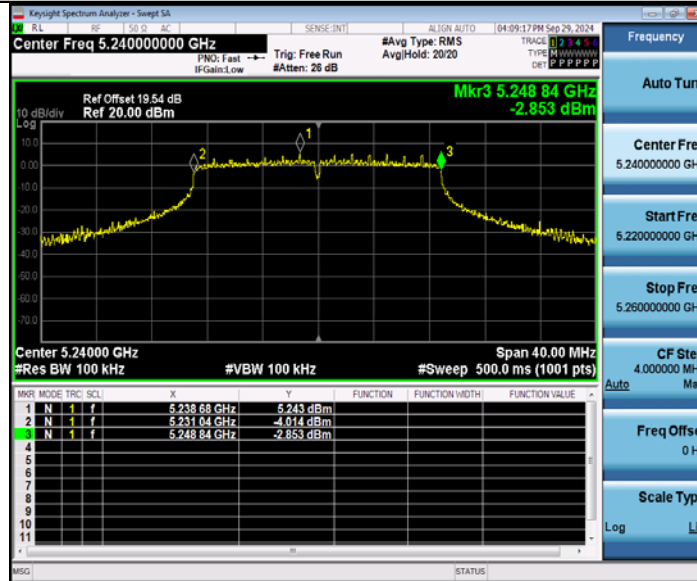
NTNV_11A_Ant1_5240



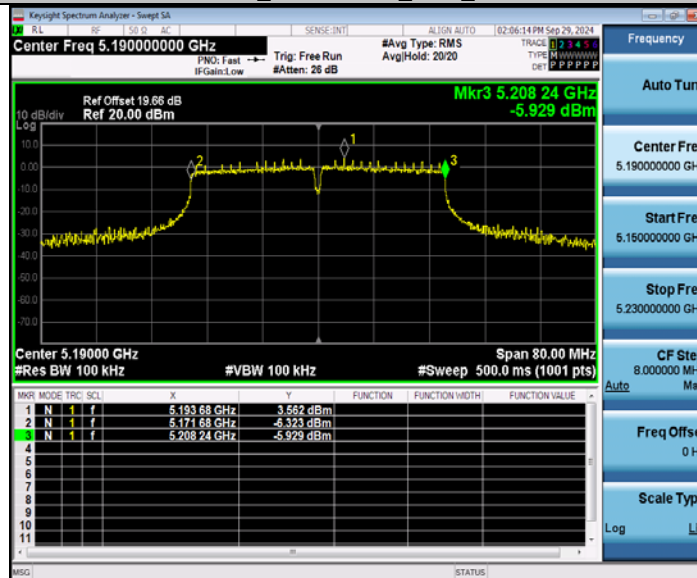
NTNV_11N20SISO_Ant1_5180



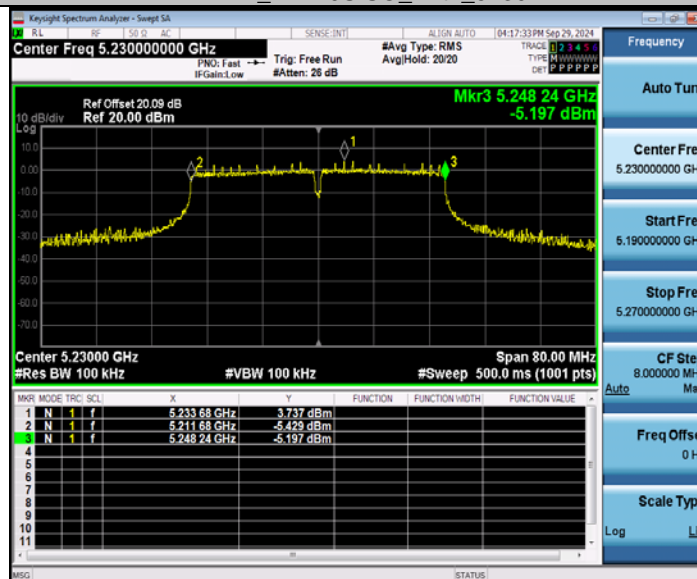
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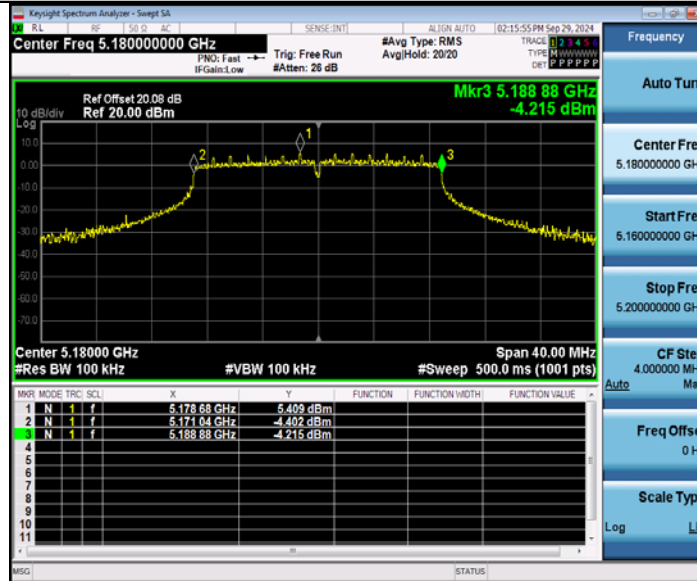
NTNV_11N40SISO_Ant1_5190



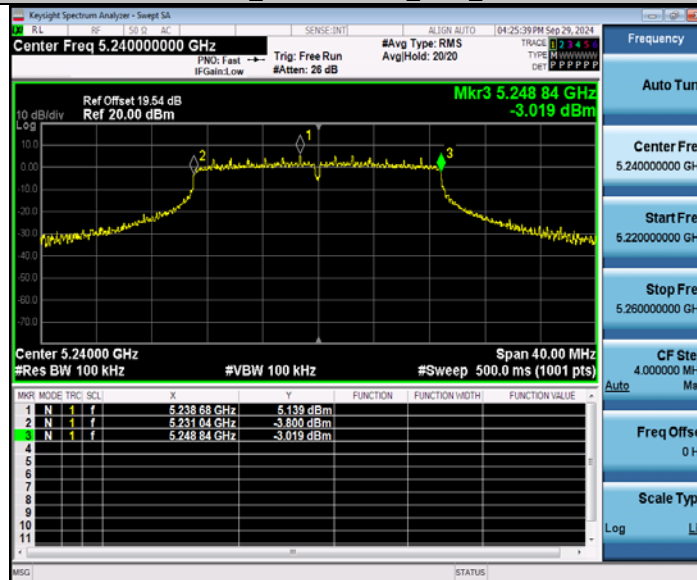
NTNV_11N40SISO_Ant1_5230



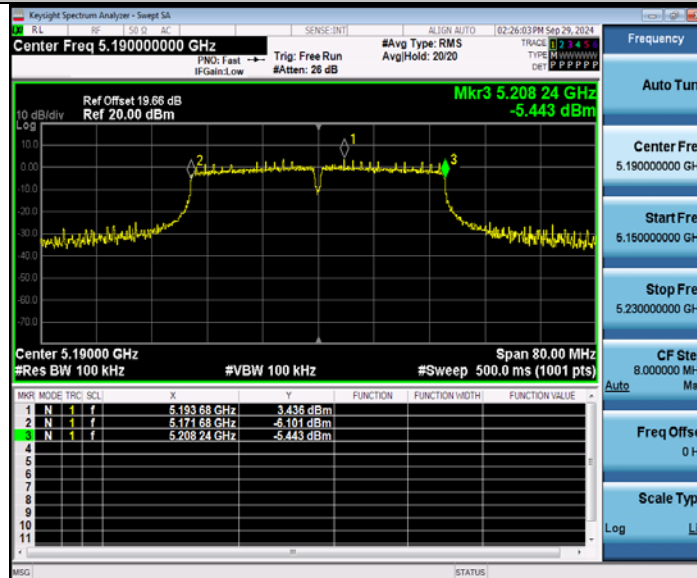
NTNV_11AC20SISO_Ant1_5180



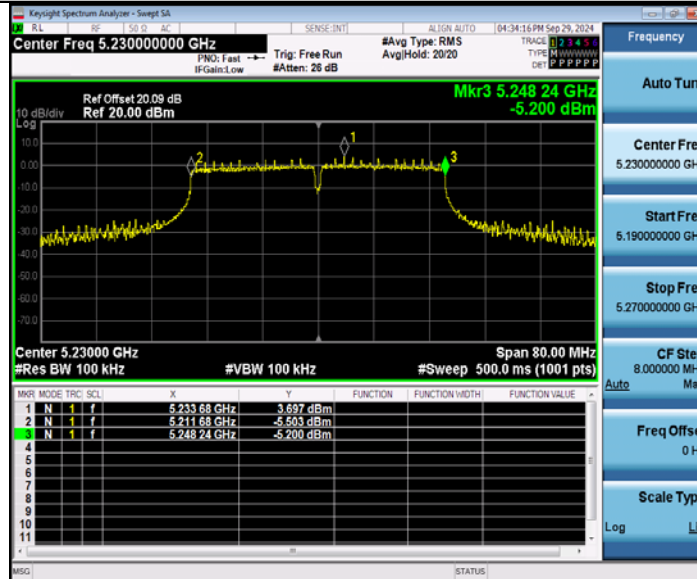
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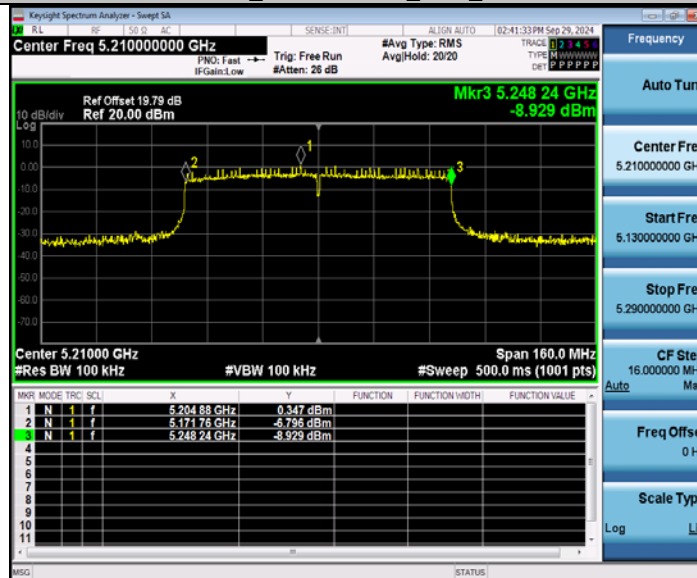
NTNV_11AC40SISO_Ant1_5190



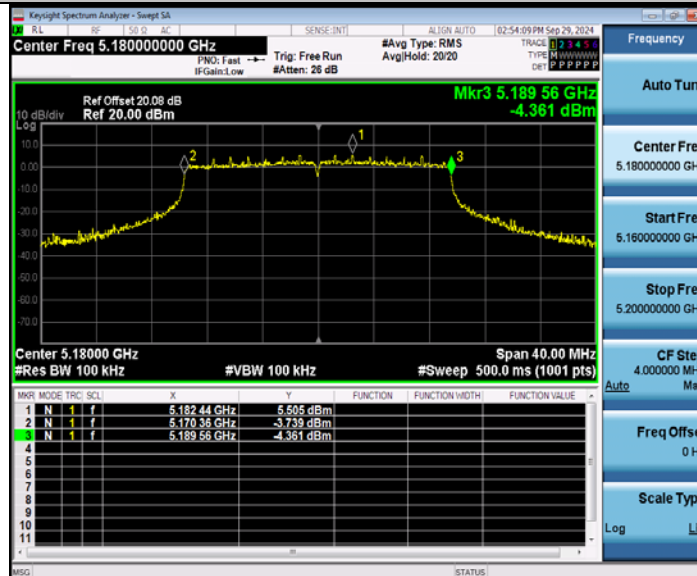
NTNV_11AC40SISO_Ant1_5230



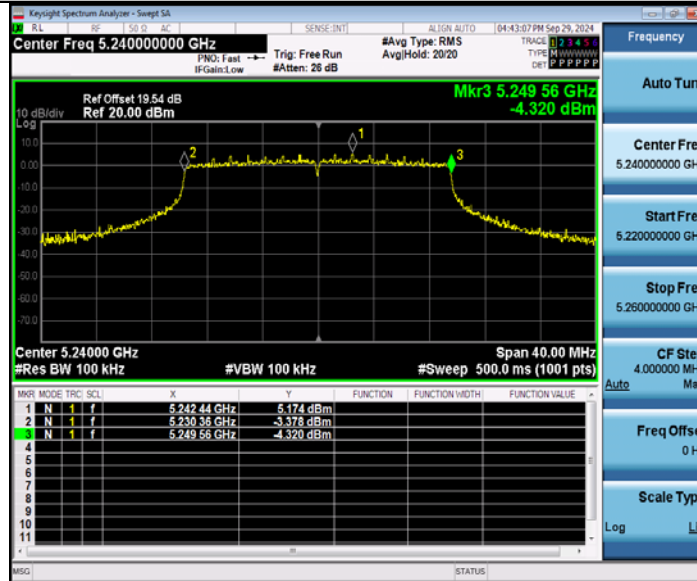
NTNV_11AC80SISO_Ant1_5210



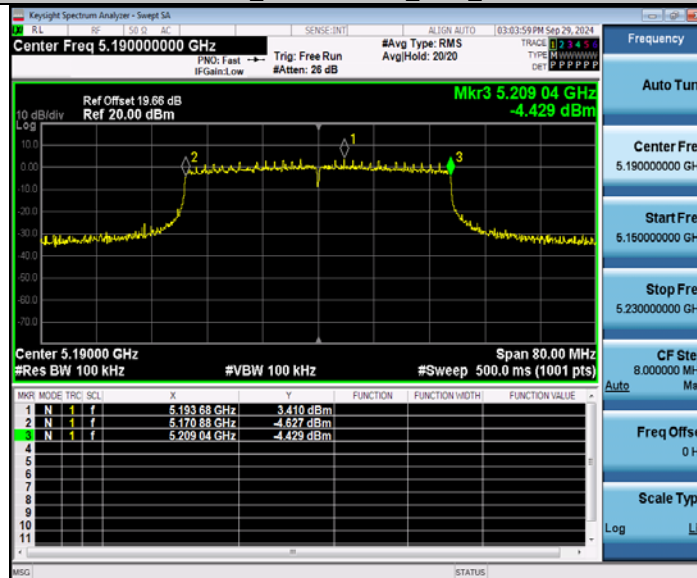
NTNV_11AX20SISO_Ant1_5180



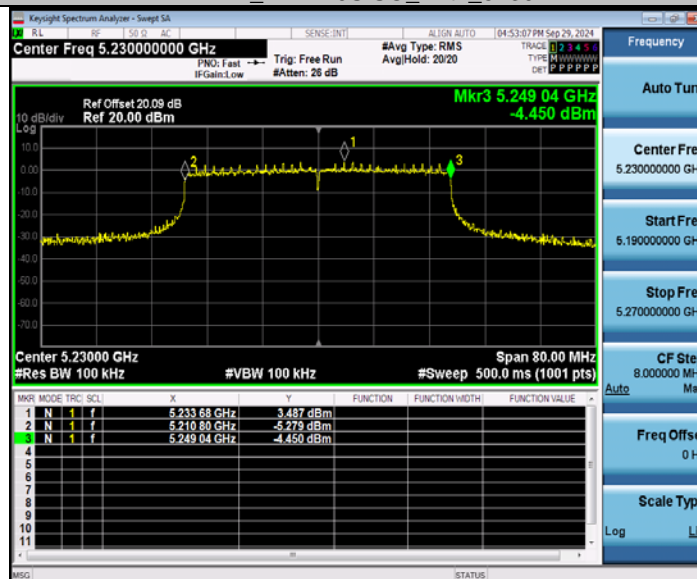
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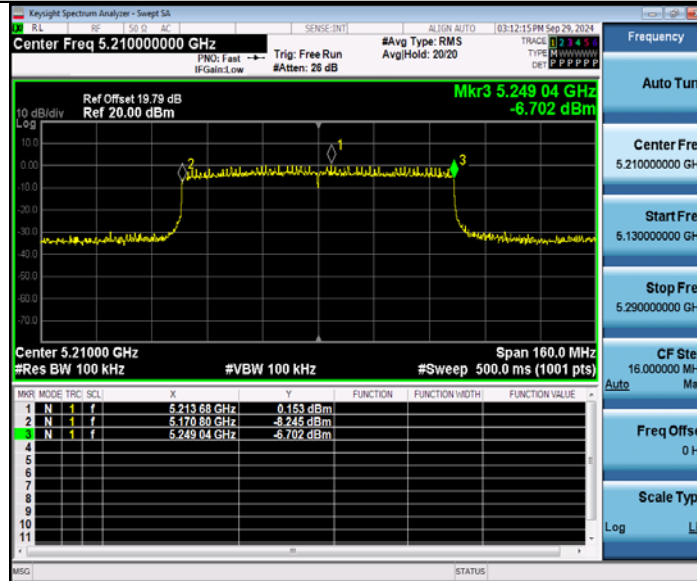
NTNV_11AX40SISO_Ant1_5190



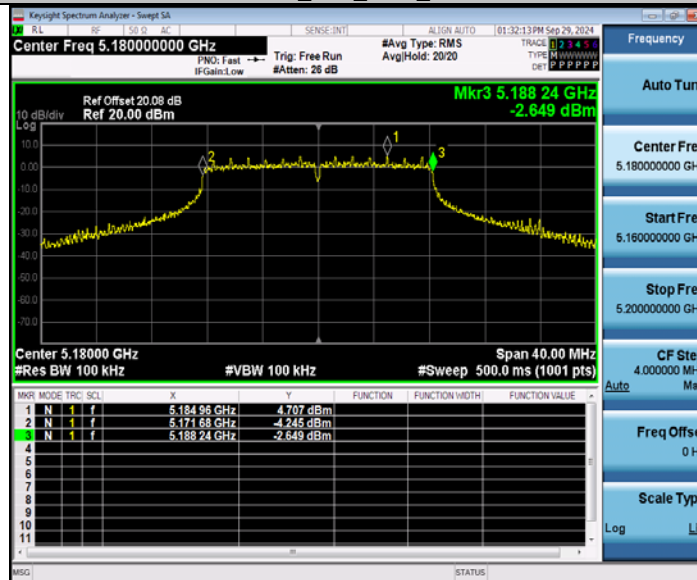
NTNV_11AX40SISO_Ant1_5230



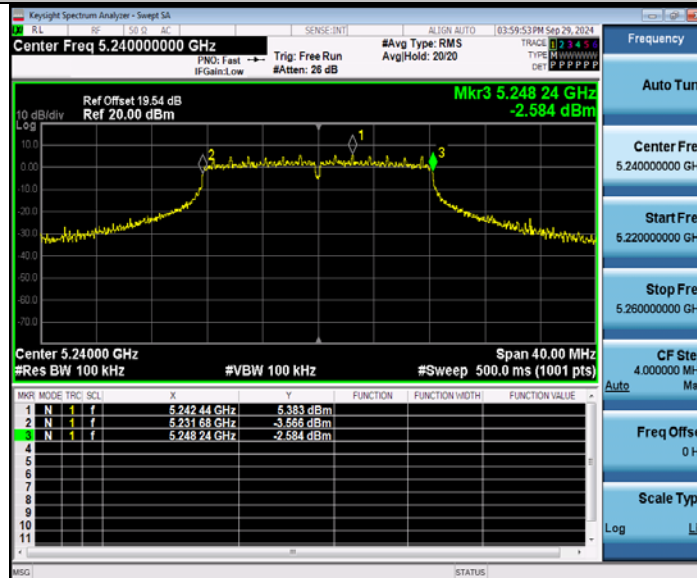
NTNV_11AX80SISO_Ant1_5210



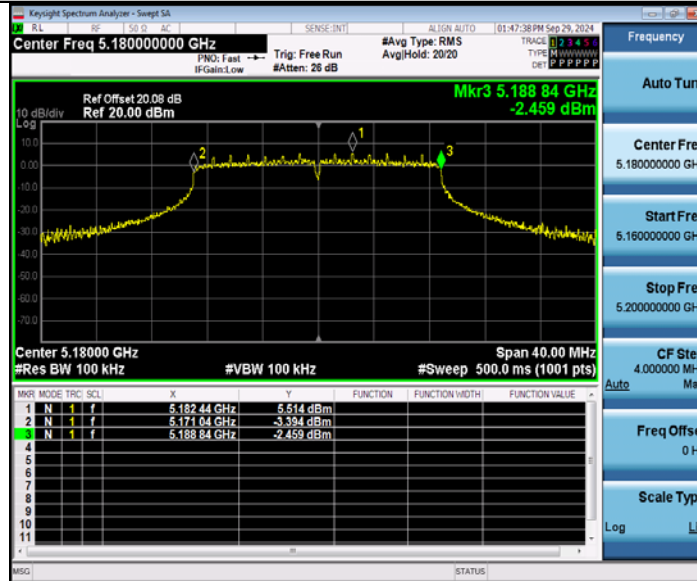
LTNV_11A_Ant1_5180



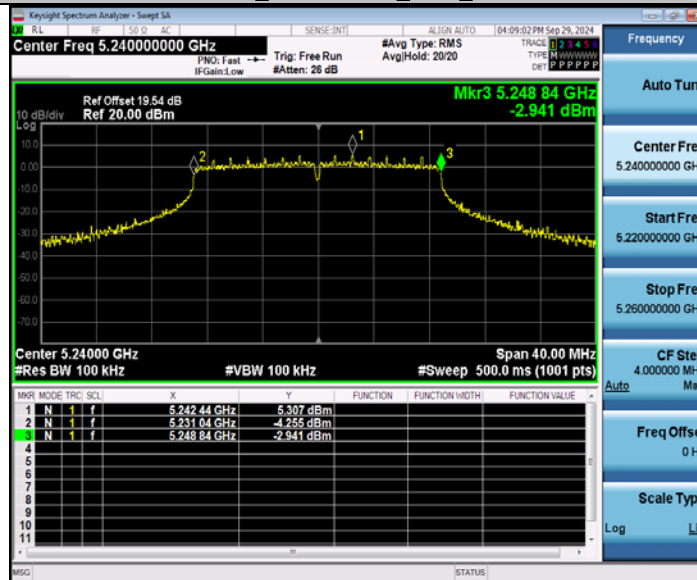
LTNV_11A_Ant1_5240



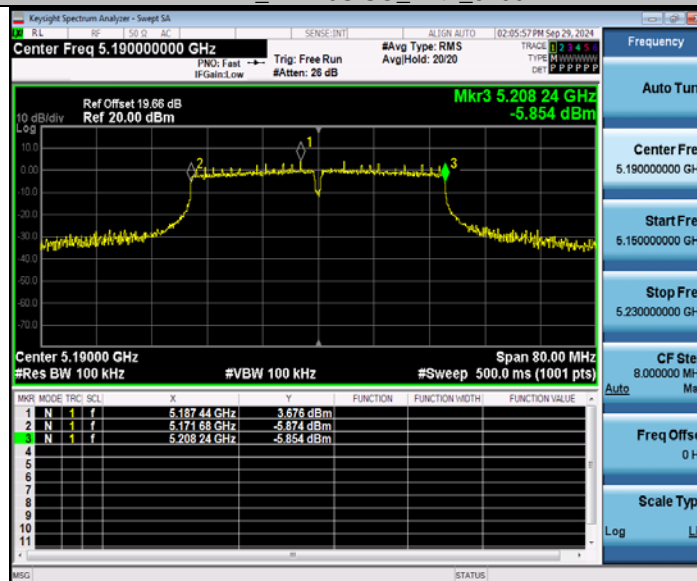
LTVN_11N20SISO_Ant1_5180



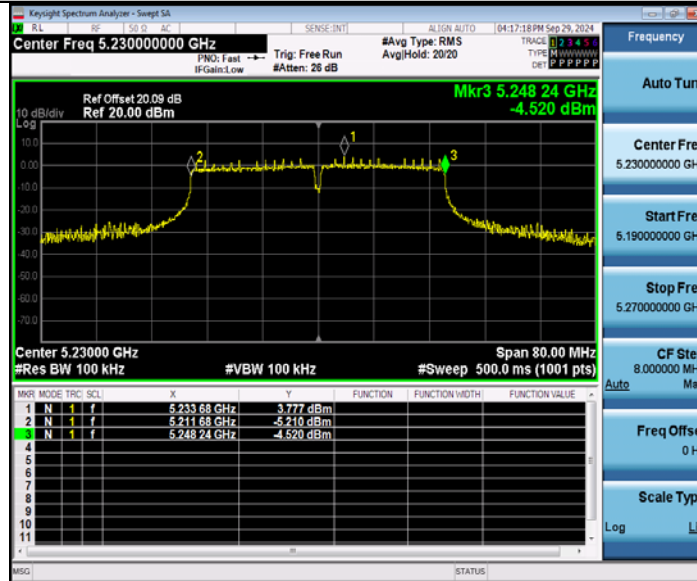
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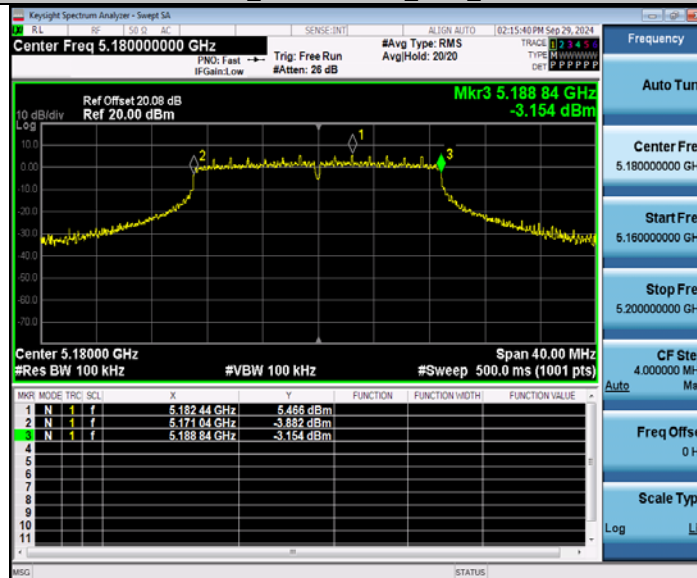
LTVN_11N40SISO_Ant1_5190



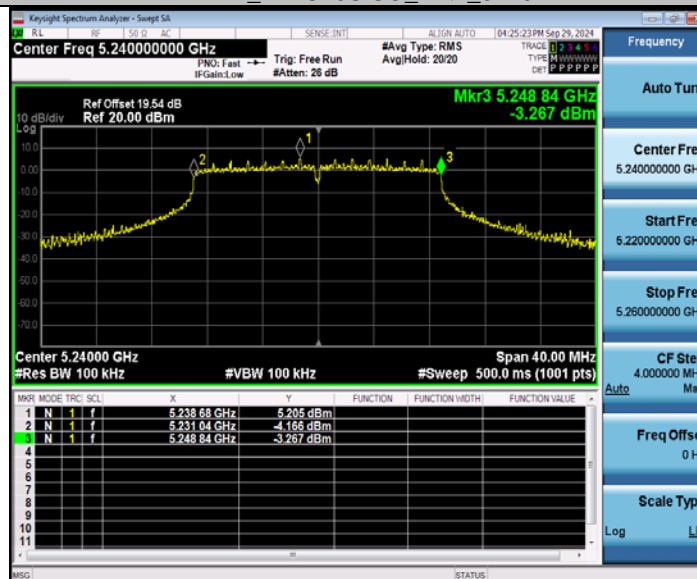
LTNV_11N40SISO_Ant1_5230



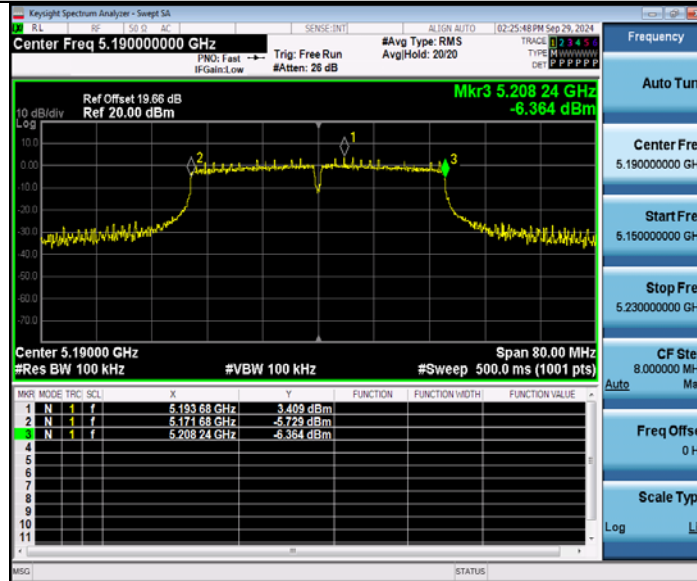
LTNV_11AC20SISO_Ant1_5180



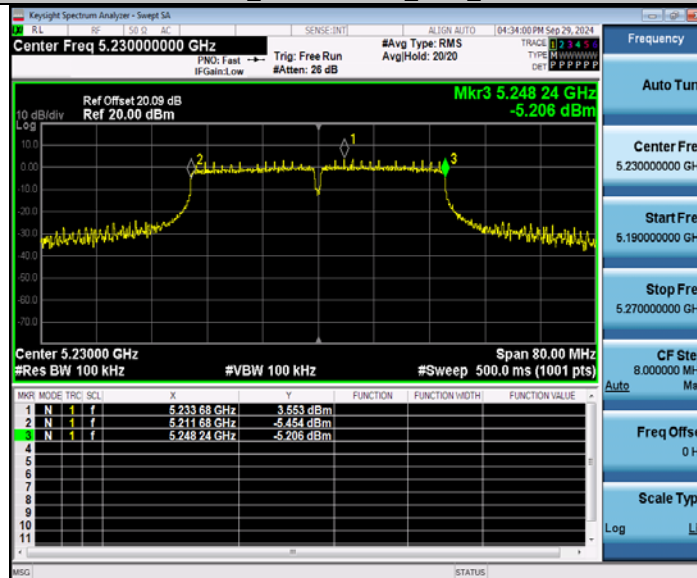
LTNV_11AC20SISO_Ant1_5240



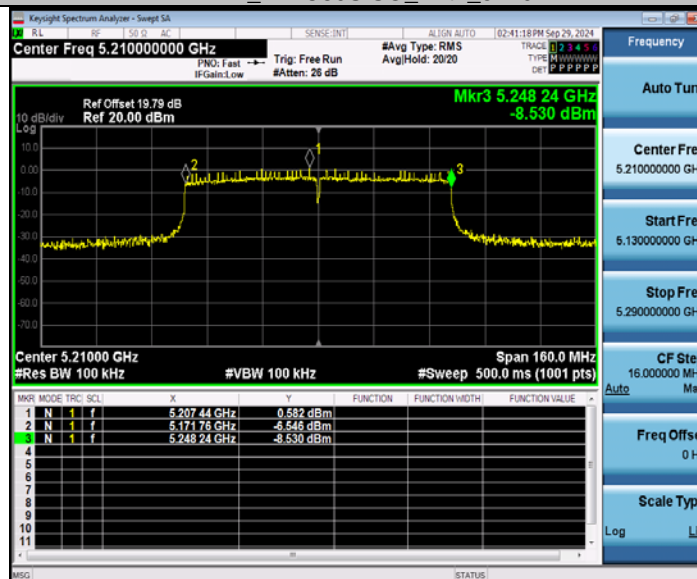
LTNV_11AC40SISO_Ant1_5190



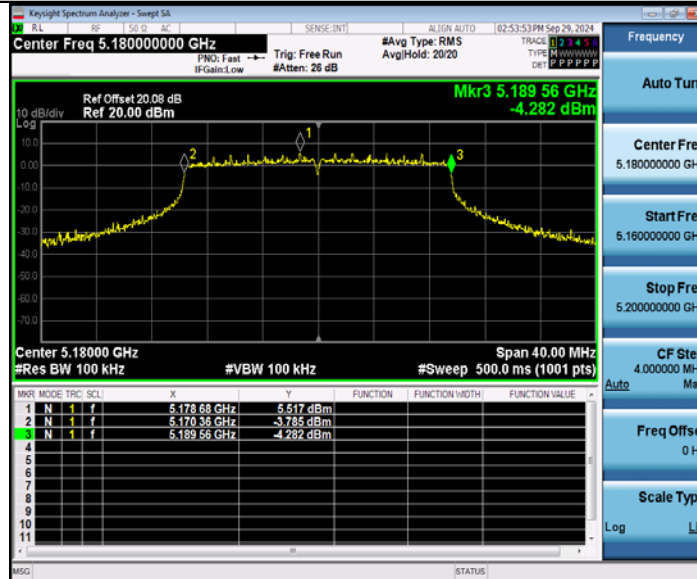
LTNV_11AC40SISO_Ant1_5230



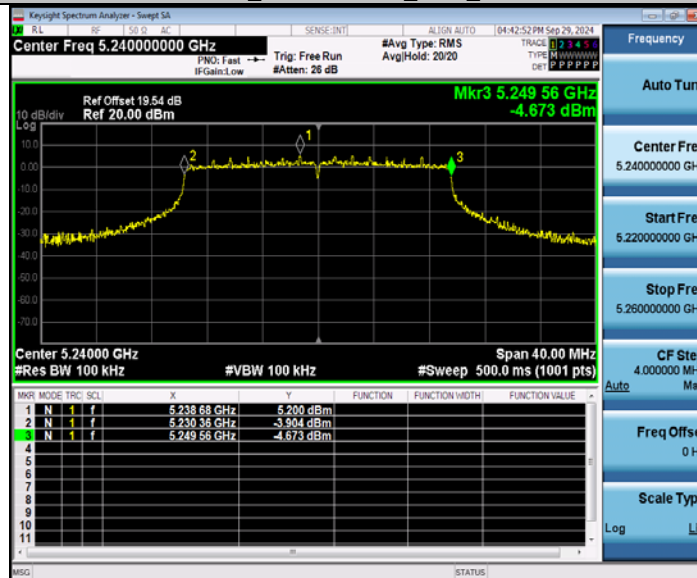
LTNV_11AC80SISO_Ant1_5210



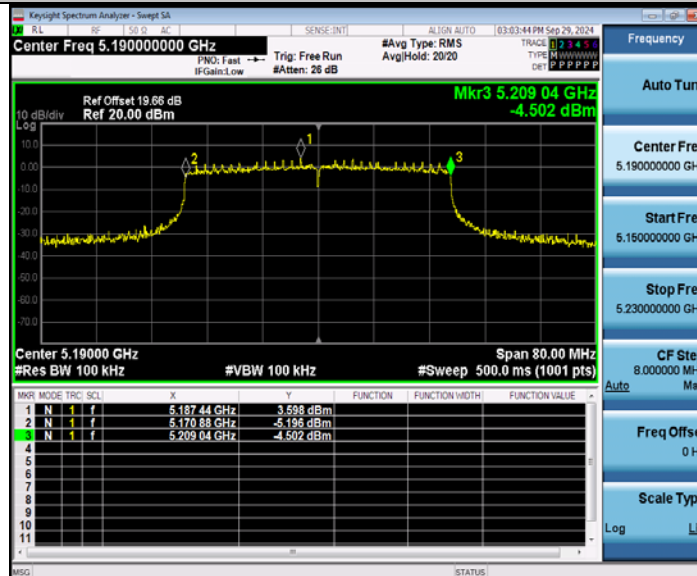
LTNV_11AX20SISO_Ant1_5180



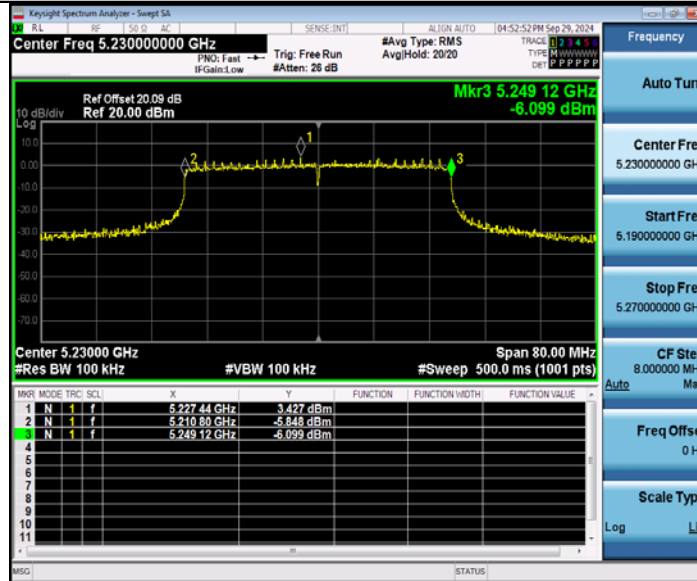
LTNV_11AX20SISO_Ant1_5240



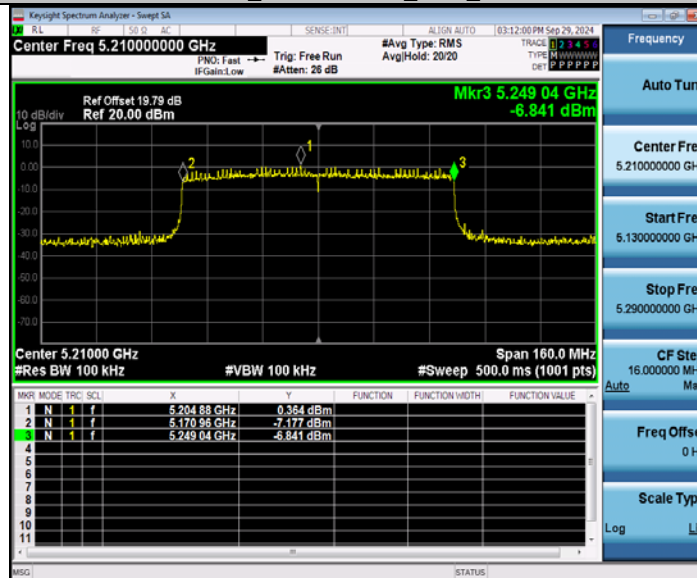
LTNV_11AX40SISO_Ant1_5190



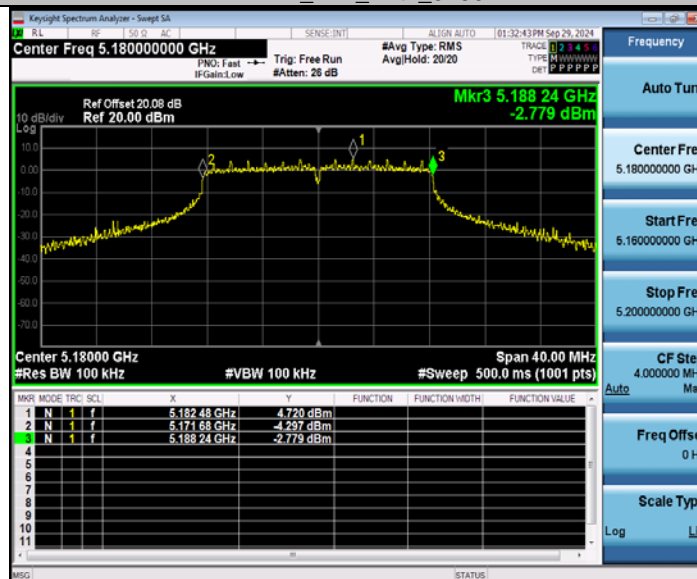
LTNV_11AX40SISO_Ant1_5230



LTNV_11AX80SISO_Ant1_5210

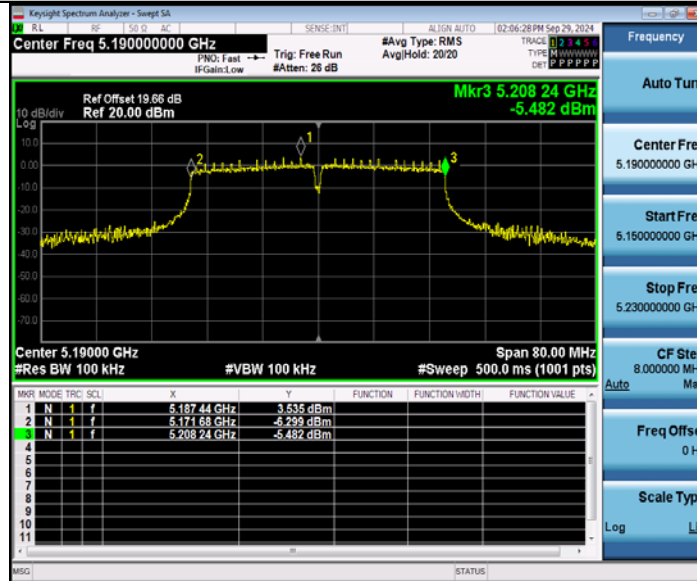


HTNV_11A_Ant1_5180

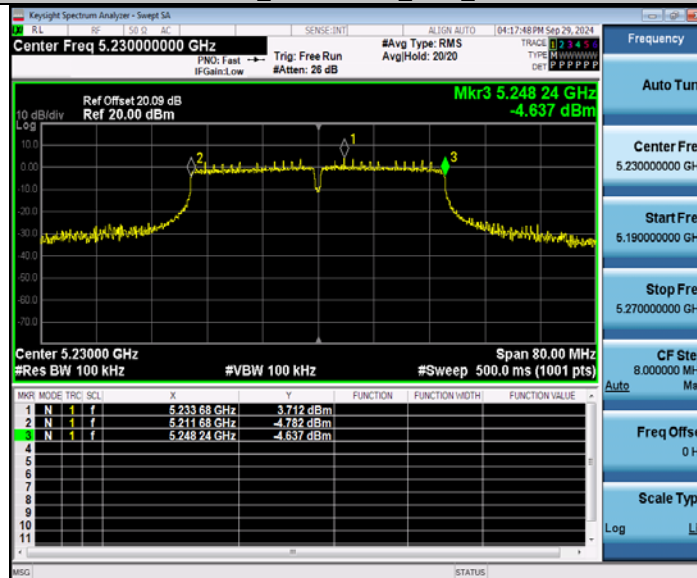




HTNV_11N40SISO_Ant1_5190



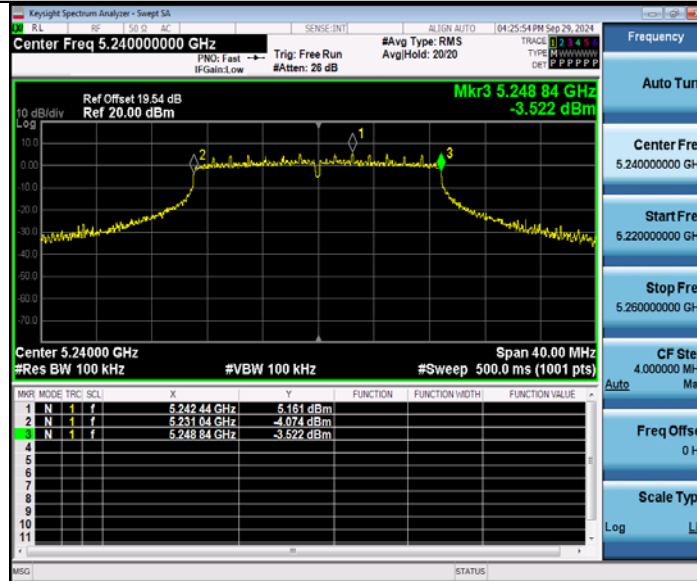
HTNV_11N40SISO_Ant1_5230



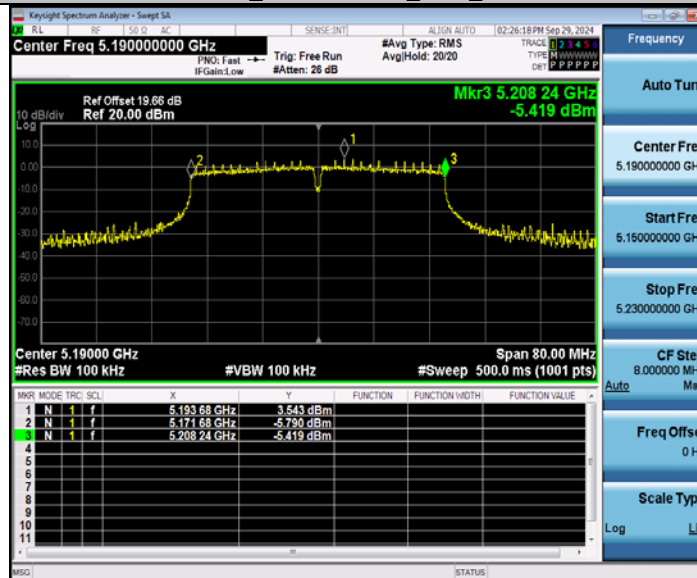
HTNV_11AC20SISO_Ant1_5180



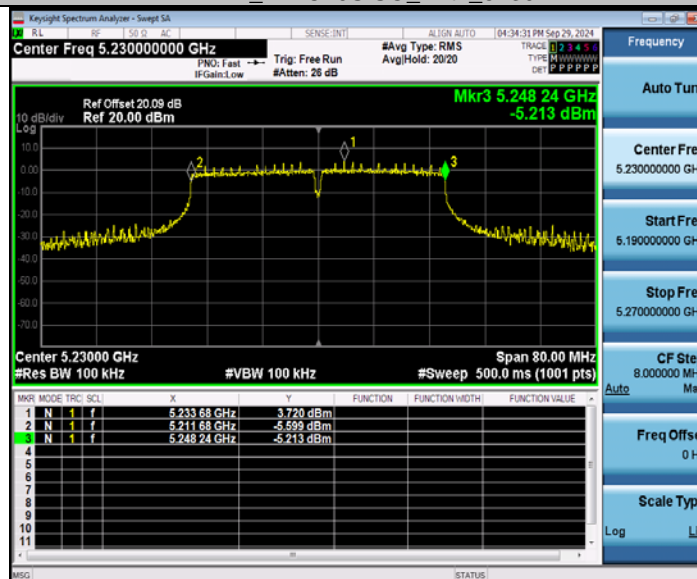
HTNV_11AC20SISO_Ant1_5240



HTNV_11AC40SISO_Ant1_5190



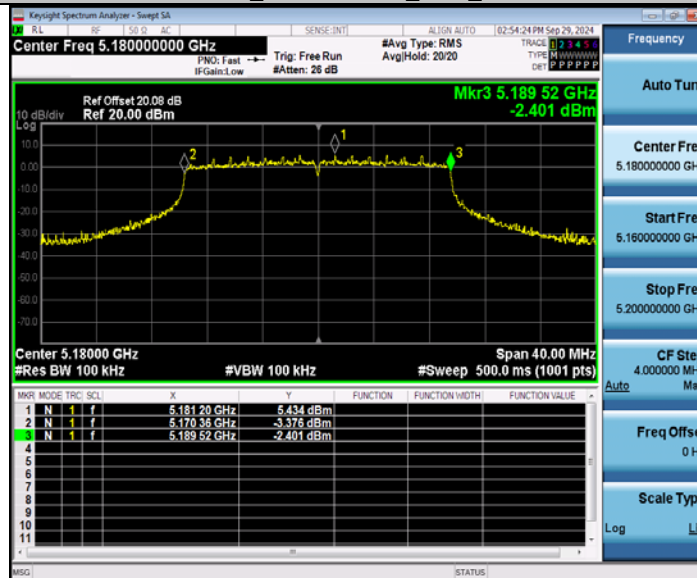
HTNV_11AC40SISO_Ant1_5230



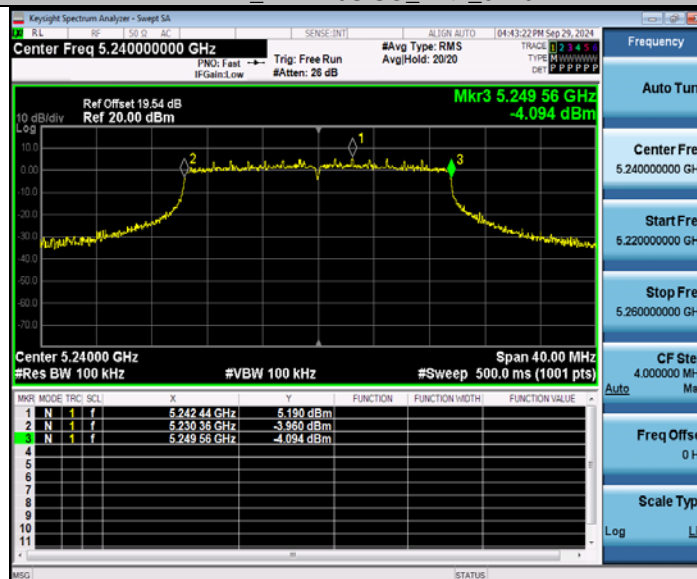
HTNV_11AC80SISO_Ant1_5210



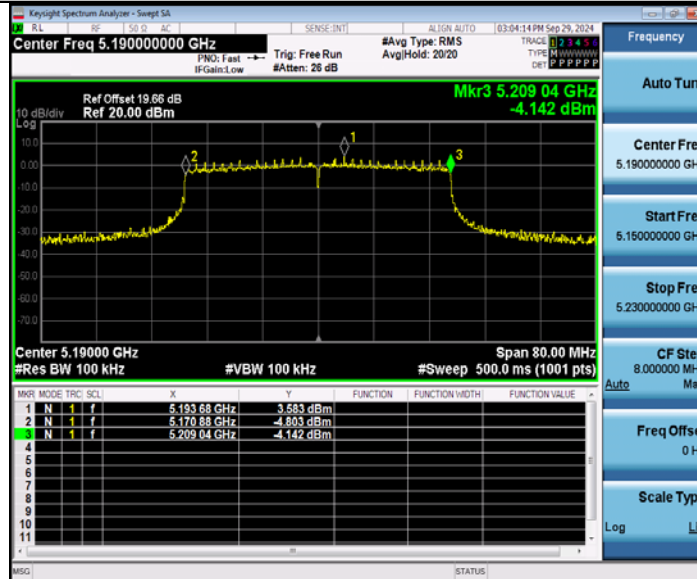
HTNV_11AX20SISO_Ant1_5180



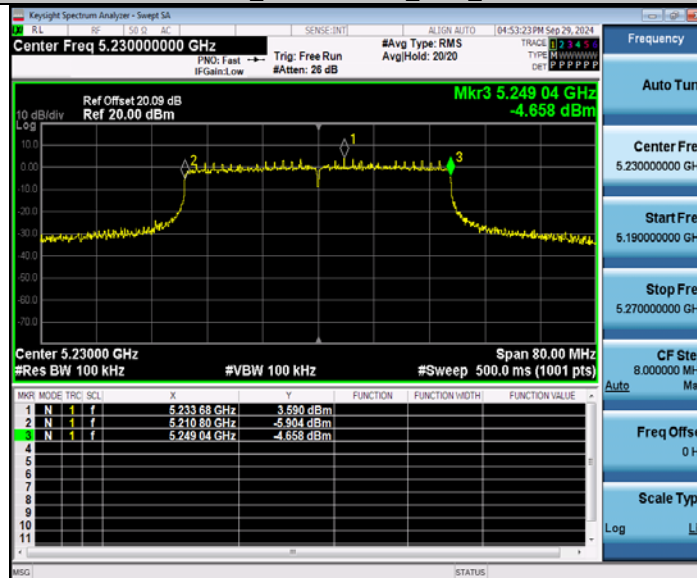
HTNV_11AX20SISO_Ant1_5240



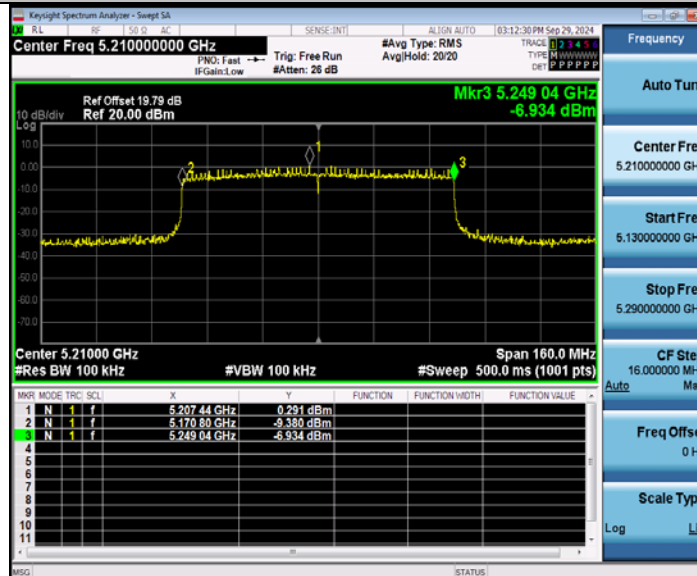
HTNV_11AX40SISO_Ant1_5190



HTNV_11AX40SISO_Ant1_5230



HTNV_11AX80SISO_Ant1_5210



Appendix B: RF Output Power Test Result

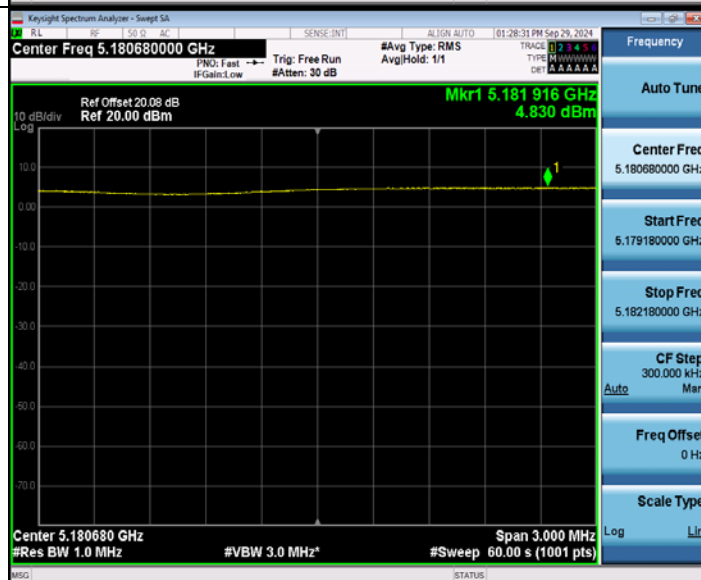
Test Condition	Test Mode	Antenna	Freq(MHz)	Conducted power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
NTNV	11A	Ant1	5180	16.50	91.14	0.40	16.90	4.03	20.93	23	PASS
			5240	17.59	90.26	0.45	18.04	4.03	22.07	23	PASS
	11N20SISO	Ant1	5180	17.56	95.26	0.21	17.77	4.03	21.80	23	PASS
			5240	17.61	96.95	0.13	17.74	4.03	21.77	23	PASS
	11N40SISO	Ant1	5190	18.47	96.61	0.15	18.62	4.03	22.65	23	PASS
			5230	18.62	98.19	0.08	18.70	4.03	22.73	23	PASS
	11AC20SISO	Ant1	5180	17.53	96.36	0.16	17.69	4.03	21.72	23	PASS
			5240	17.59	97.70	0.10	17.69	4.03	21.72	23	PASS
	11AC40SISO	Ant1	5190	18.52	97.96	0.09	18.61	4.03	22.64	23	PASS
			5230	18.65	96.65	0.15	18.80	4.03	22.83	23	PASS
	11AC80SISO	Ant1	5210	18.59	98.17	0.08	18.67	4.03	22.70	23	PASS
			5210	18.59	98.17	0.08	18.67	4.03	22.70	23	PASS
LTNV	11A	Ant1	5180	16.46	89.56	0.48	16.94	4.03	20.97	23	PASS
			5240	17.66	90.26	0.45	18.11	4.03	22.14	23	PASS
	11N20SISO	Ant1	5180	17.64	95.76	0.19	17.83	4.03	21.86	23	PASS
			5240	17.65	96.95	0.13	17.78	4.03	21.81	23	PASS
	11N40SISO	Ant1	5190	18.55	97.60	0.11	18.66	4.03	22.69	23	PASS
			5230	18.66	98.19	0.08	18.74	4.03	22.77	23	PASS
	11AC20SISO	Ant1	5180	17.62	97.41	0.11	17.73	4.03	21.76	23	PASS
			5240	17.66	97.70	0.10	17.76	4.03	21.79	23	PASS
	11AC40SISO	Ant1	5190	18.53	97.66	0.10	18.63	4.03	22.66	23	PASS
			5230	18.70	96.65	0.15	18.85	4.03	22.88	23	PASS
	11AC80SISO	Ant1	5210	18.57	96.91	0.14	18.71	4.03	22.74	23	PASS
			5210	18.57	96.91	0.14	18.71	4.03	22.74	23	PASS
HTNV	11A	Ant1	5180	16.49	92.05	0.36	16.85	4.03	20.88	23	PASS
			5240	17.56	90.26	0.45	18.01	4.03	22.04	23	PASS
	11N20SISO	Ant1	5180	17.50	95.59	0.20	17.70	4.03	21.73	23	PASS
			5240	17.59	96.95	0.13	17.72	4.03	21.75	23	PASS
	11N40SISO	Ant1	5190	18.43	96.79	0.14	18.57	4.03	22.6	23	PASS
			5230	18.57	98.19	0.08	18.65	4.03	22.68	23	PASS
	11AC20SISO	Ant1	5180	17.48	96.25	0.17	17.65	4.03	21.68	23	PASS
			5240	17.54	97.70	0.10	17.64	4.03	21.67	23	PASS
	11AC40SISO	Ant1	5190	18.44	96.80	0.14	18.58	4.03	22.61	23	PASS
			5230	18.61	96.65	0.15	18.76	4.03	22.79	23	PASS
	11AC80SISO	Ant1	5210	18.53	98.04	0.09	18.62	4.03	22.65	23	PASS
			5210	18.53	98.04	0.09	18.62	4.03	22.65	23	PASS
	11AX20SISO	Ant1	5180	17.61	94.91	0.23	17.84	4.03	21.87	23	PASS
			5240	17.43	96.51	0.15	17.58	4.03	21.61	23	PASS
	11AX40SISO	Ant1	5190	18.52	96.11	0.17	18.69	4.03	22.72	23	PASS
			5230	18.60	97.72	0.10	18.70	4.03	22.73	23	PASS
	11AX80SISO	Ant1	5210	18.43	96.54	0.15	18.58	4.03	22.61	23	PASS

Appendix C: Power Spectral Density Test Result

Test Mode	Antenna	Freq(MHz)	Result [dBm/MHz]	DC Factor [dB]	PD [dBm/MHz]	Gain [dBi]	EIRP PSD [dBm/MHz]	Limit [dBm]	Verdict
11A	Ant1	5180	4.83	0.50	5.33	4.03	9.36	10	PASS
		5240	5.41	0.45	5.86	4.03	9.89	10	PASS
11N20SISO	Ant1	5180	5.35	0.19	5.54	4.03	9.57	10	PASS
		5240	5.12	0.13	5.25	4.03	9.28	10	PASS
11N40SISO	Ant1	5190	2.85	0.12	2.97	4.03	7.00	10	PASS
		5230	3.17	0.08	3.25	4.03	7.28	10	PASS
11AC20SISO	Ant1	5180	4.86	0.20	5.06	4.03	9.09	10	PASS
		5240	5.18	0.10	5.28	4.03	9.31	10	PASS
11AC40SISO	Ant1	5190	2.93	0.13	3.06	4.03	7.09	10	PASS
		5230	2.96	0.15	3.11	4.03	7.14	10	PASS
11AC80SISO	Ant1	5210	-0.30	0.37	0.07	4.03	4.10	10	PASS
11AX20SISO	Ant1	5180	4.90	0.18	5.08	4.03	9.11	10	PASS
		5240	4.64	0.15	4.79	4.03	8.82	10	PASS
11AX40SISO	Ant1	5190	2.79	0.10	2.89	4.03	6.92	10	PASS
		5230	2.66	0.10	2.76	4.03	6.79	10	PASS
11AX80SISO	Ant1	5210	-0.39	0.23	-0.16	4.03	3.87	10	PASS

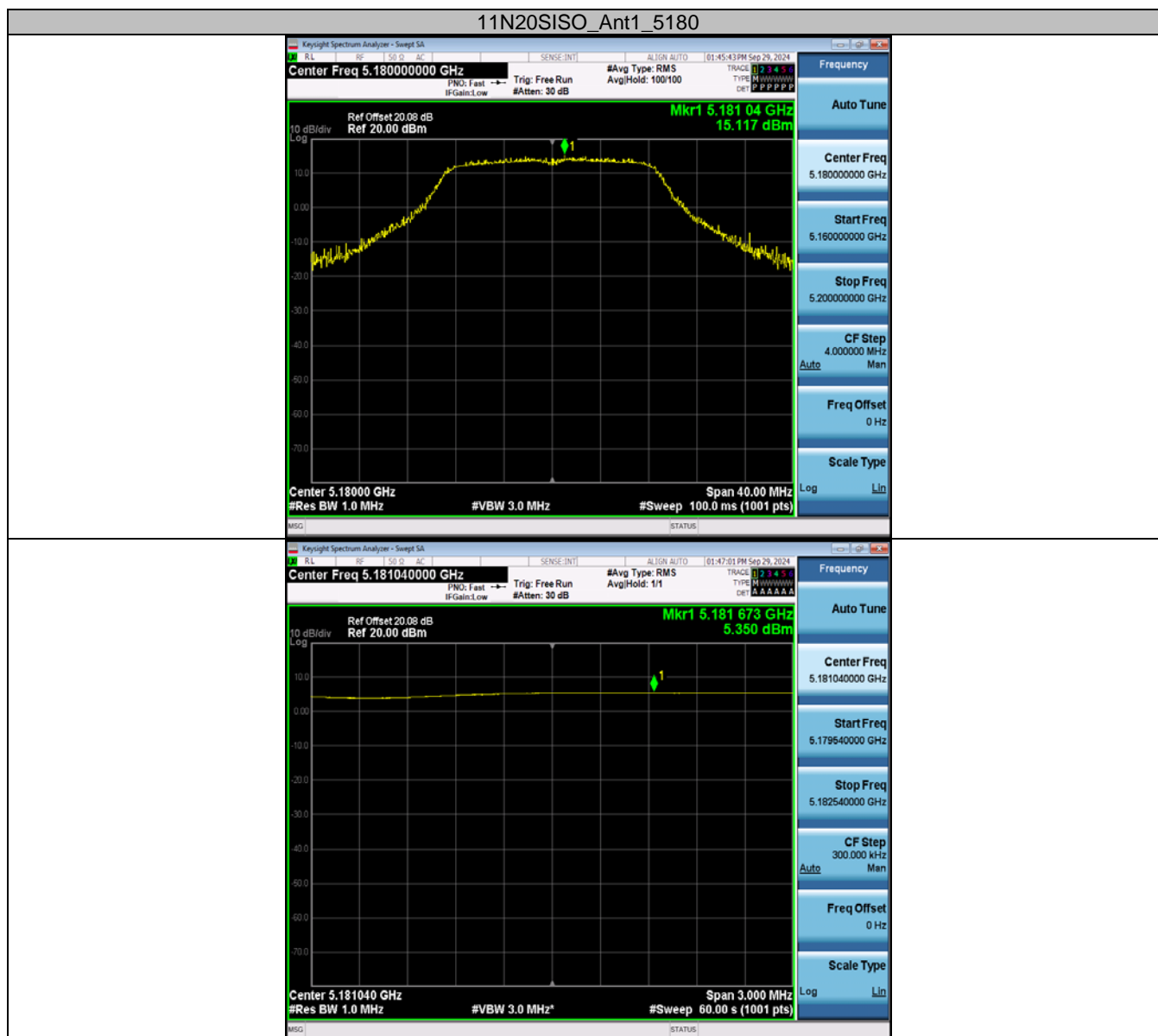
Test Graphs

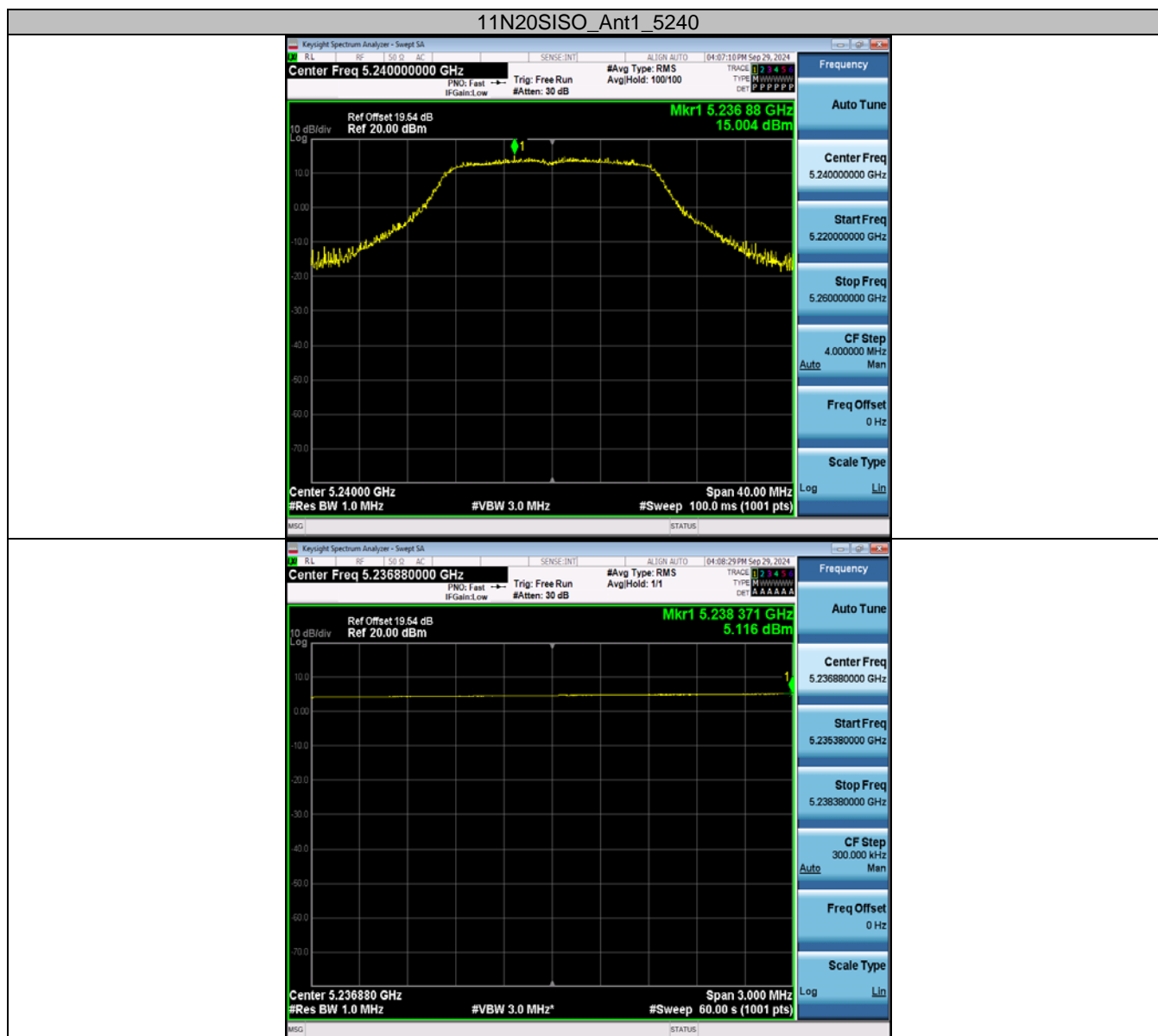
11A_Ant1_5180



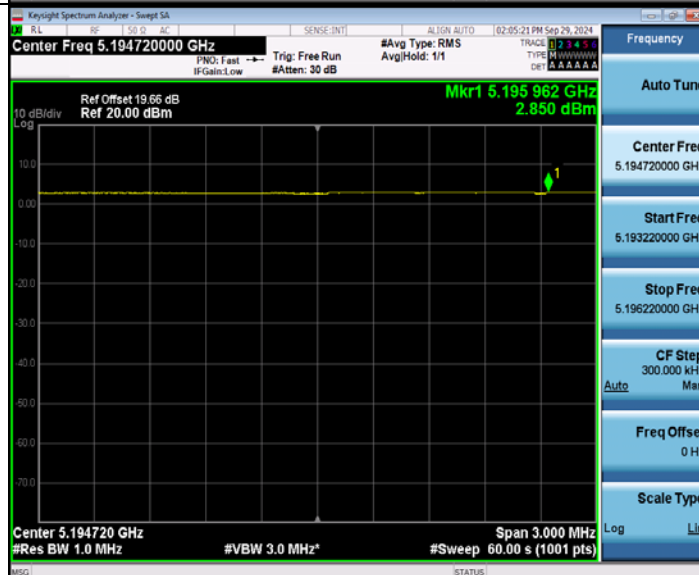
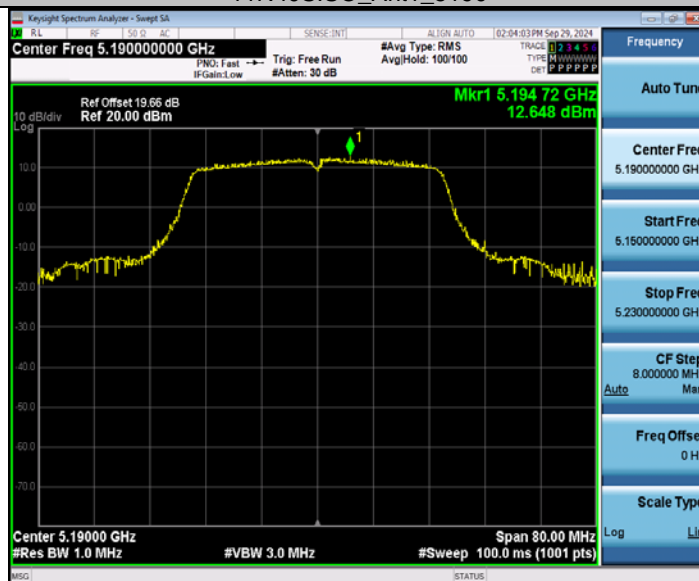
11A_Ant1_5240

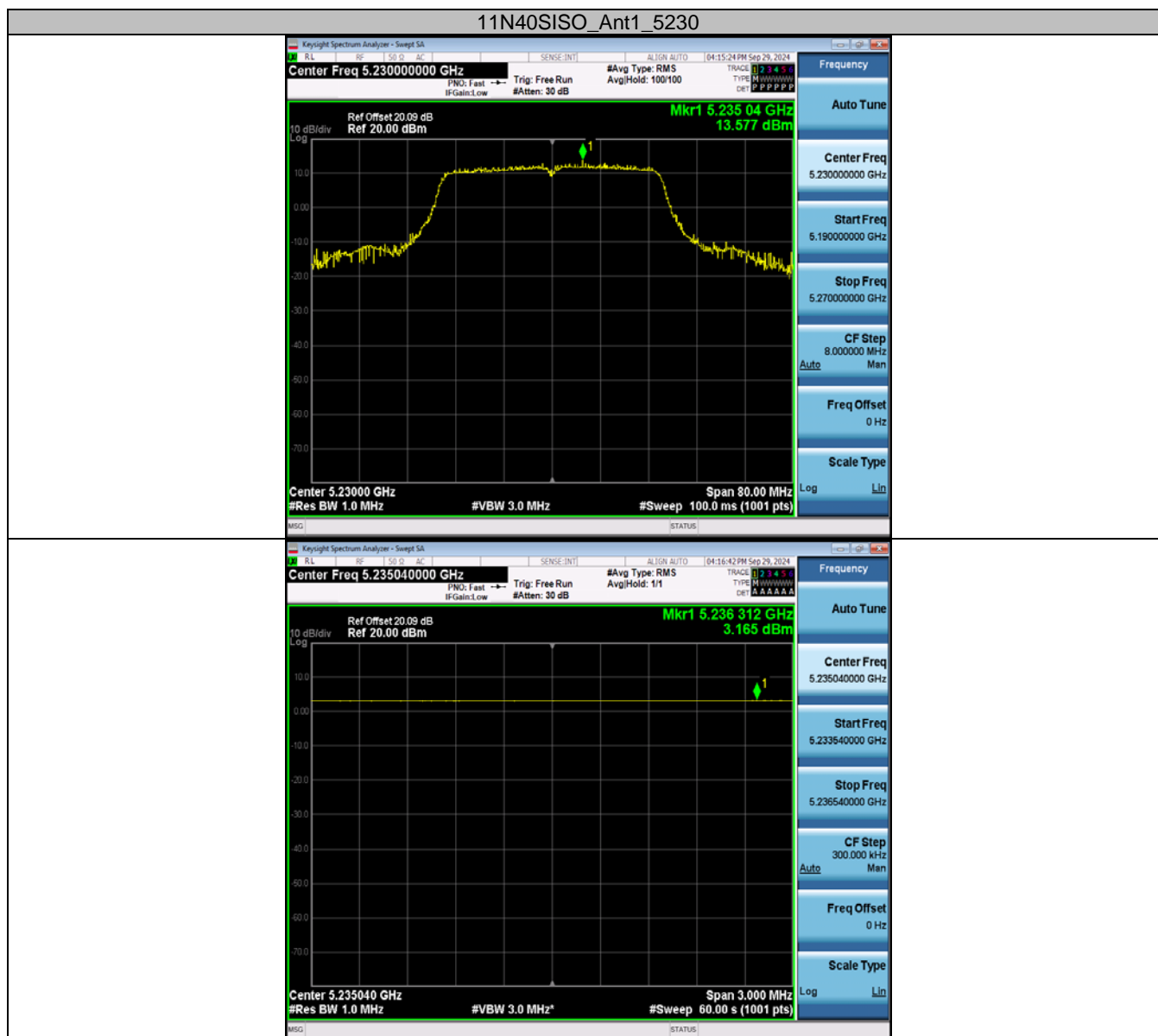


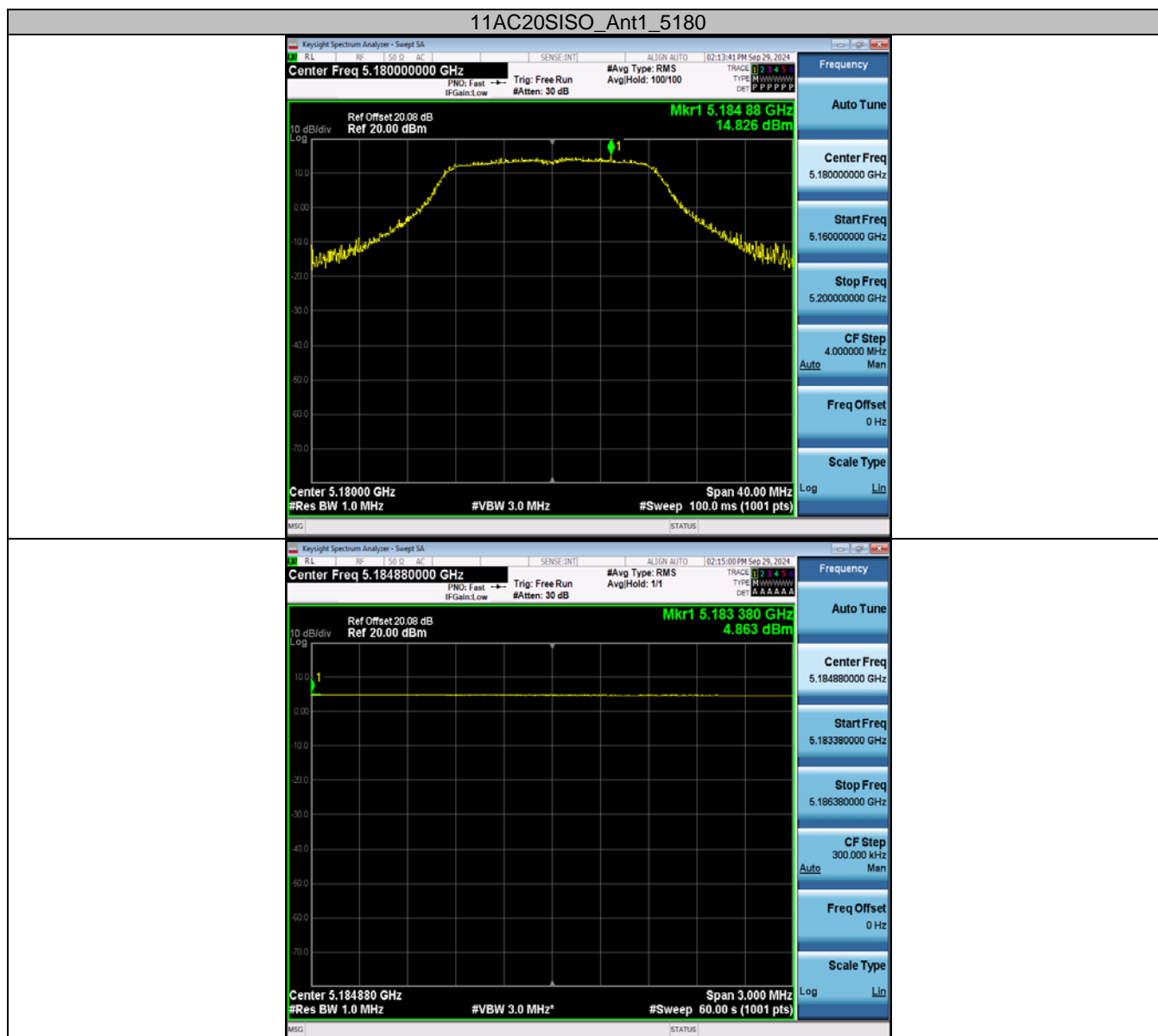




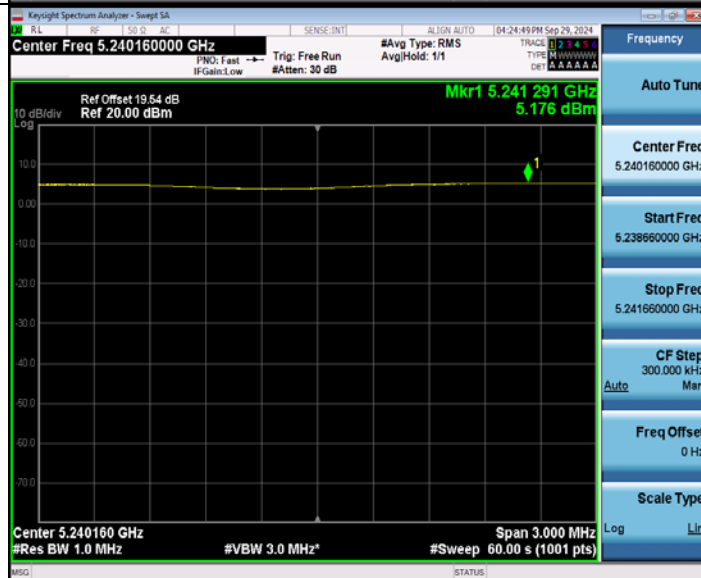
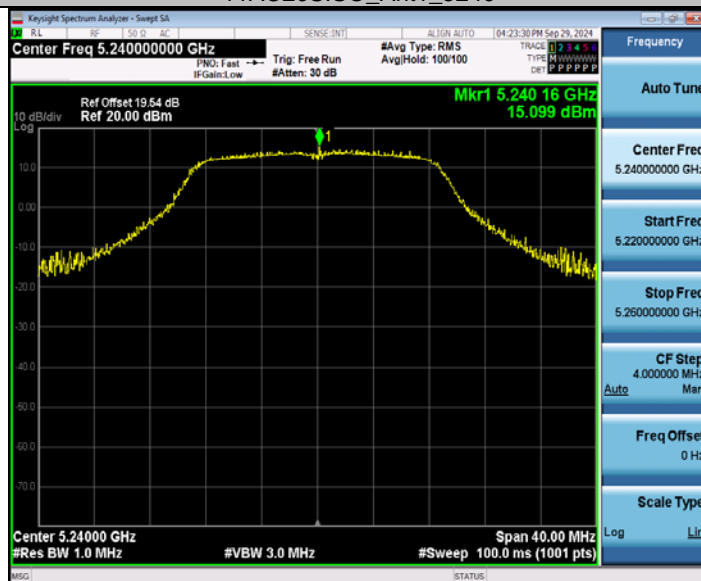
11N40SISO_Ant1_5190

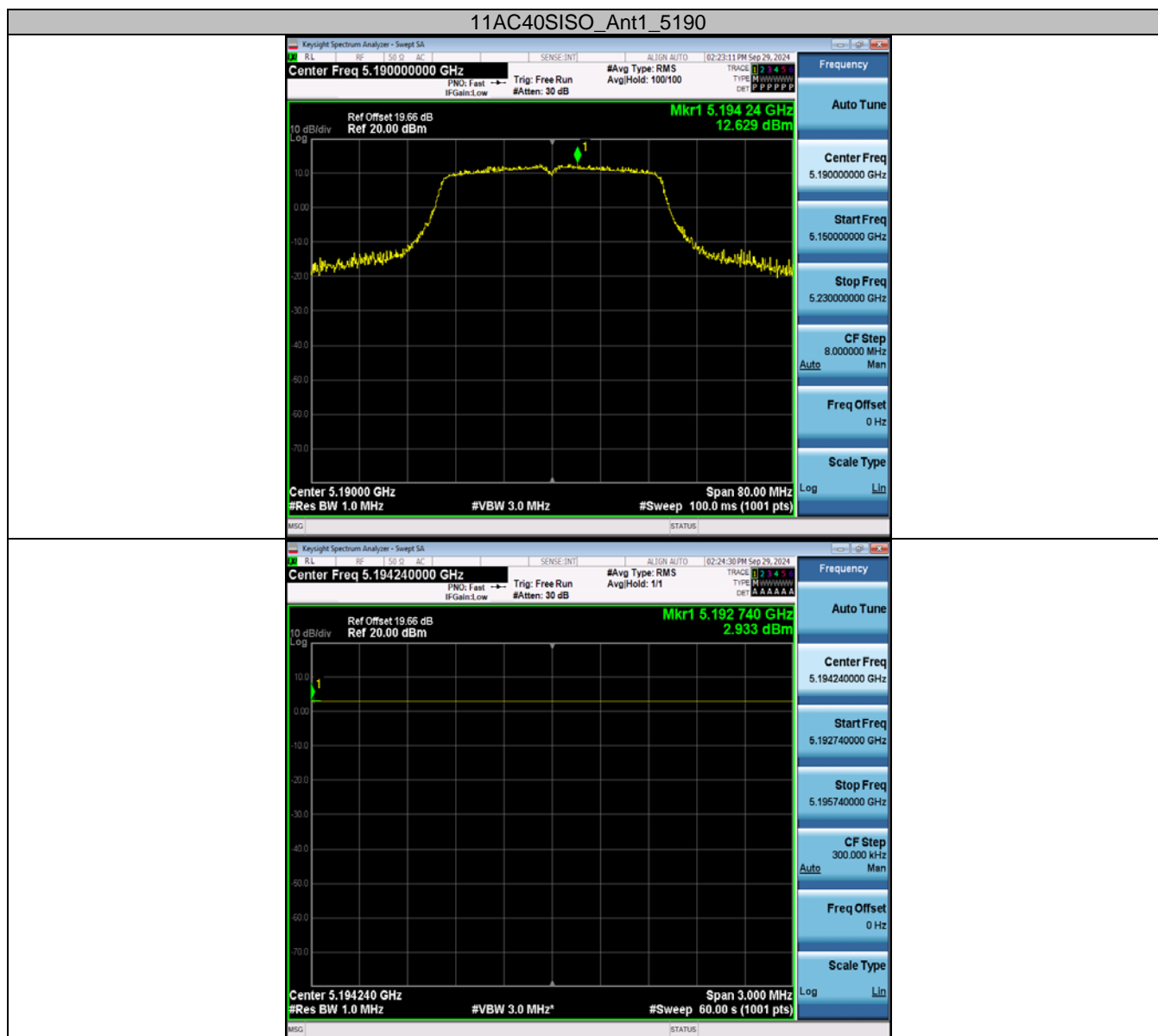


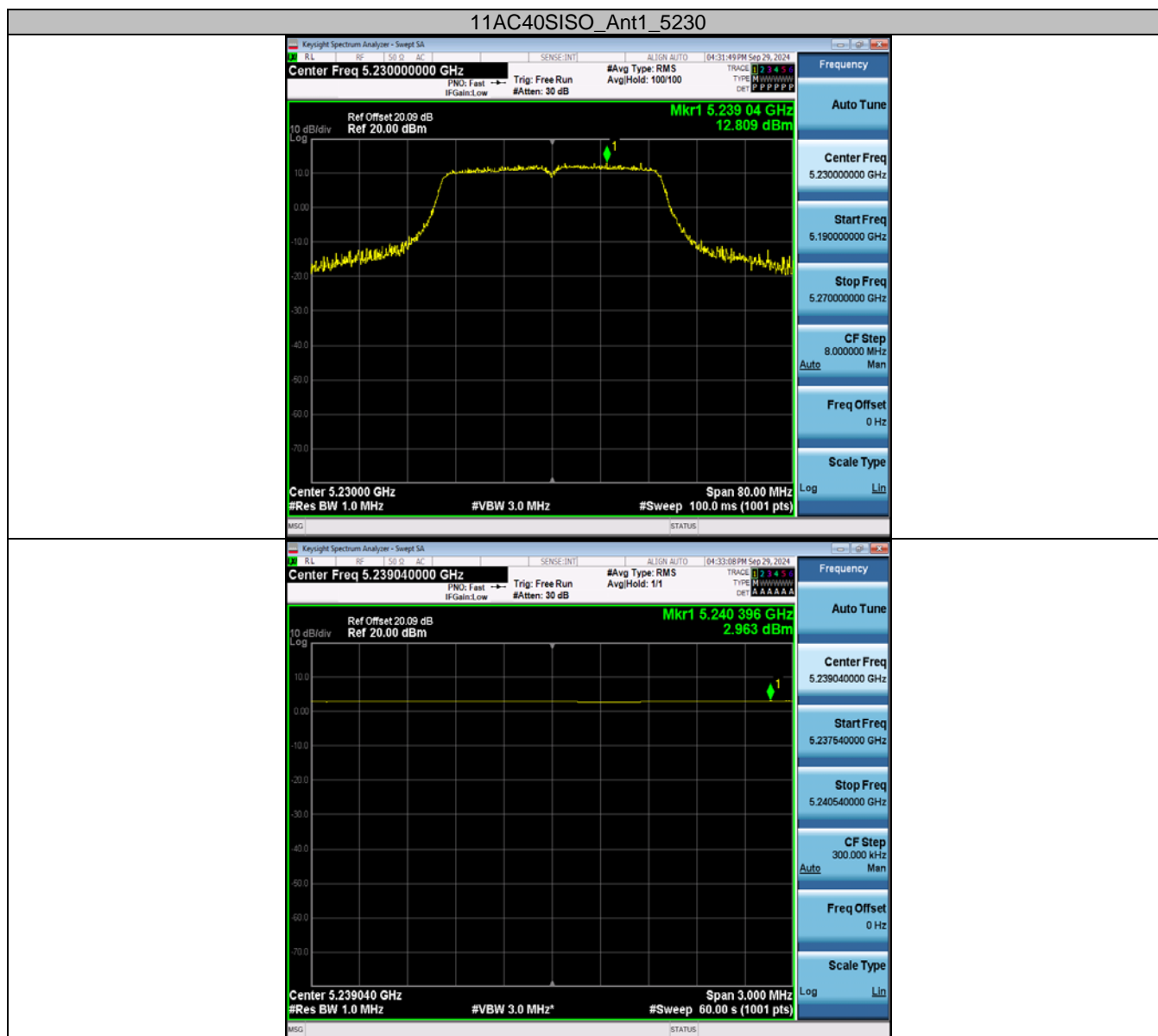




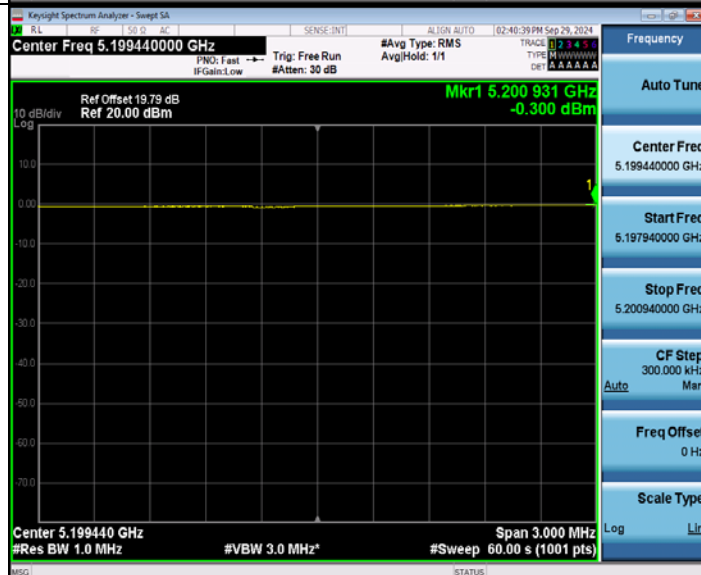
11AC20SISO_Ant1_5240

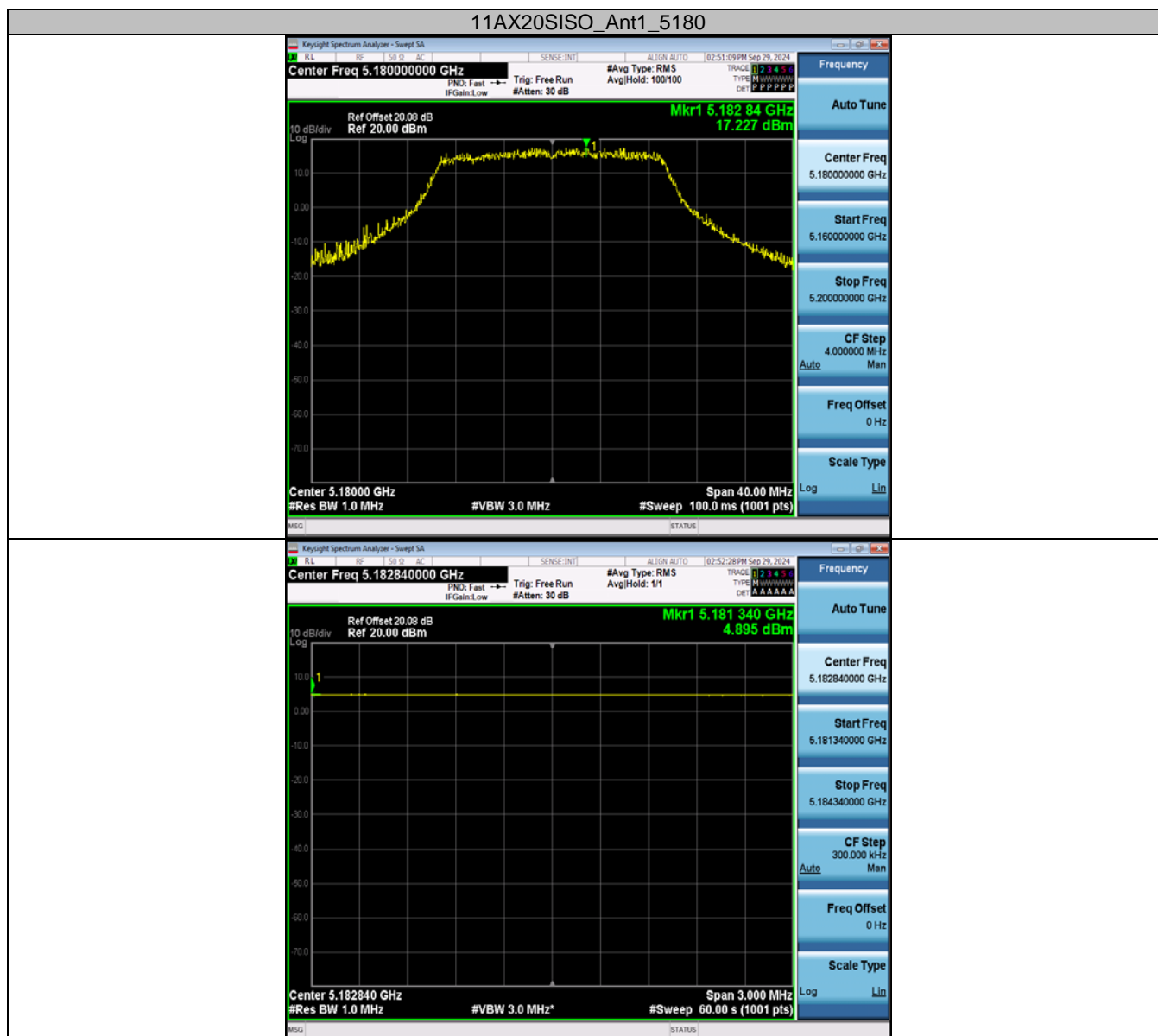


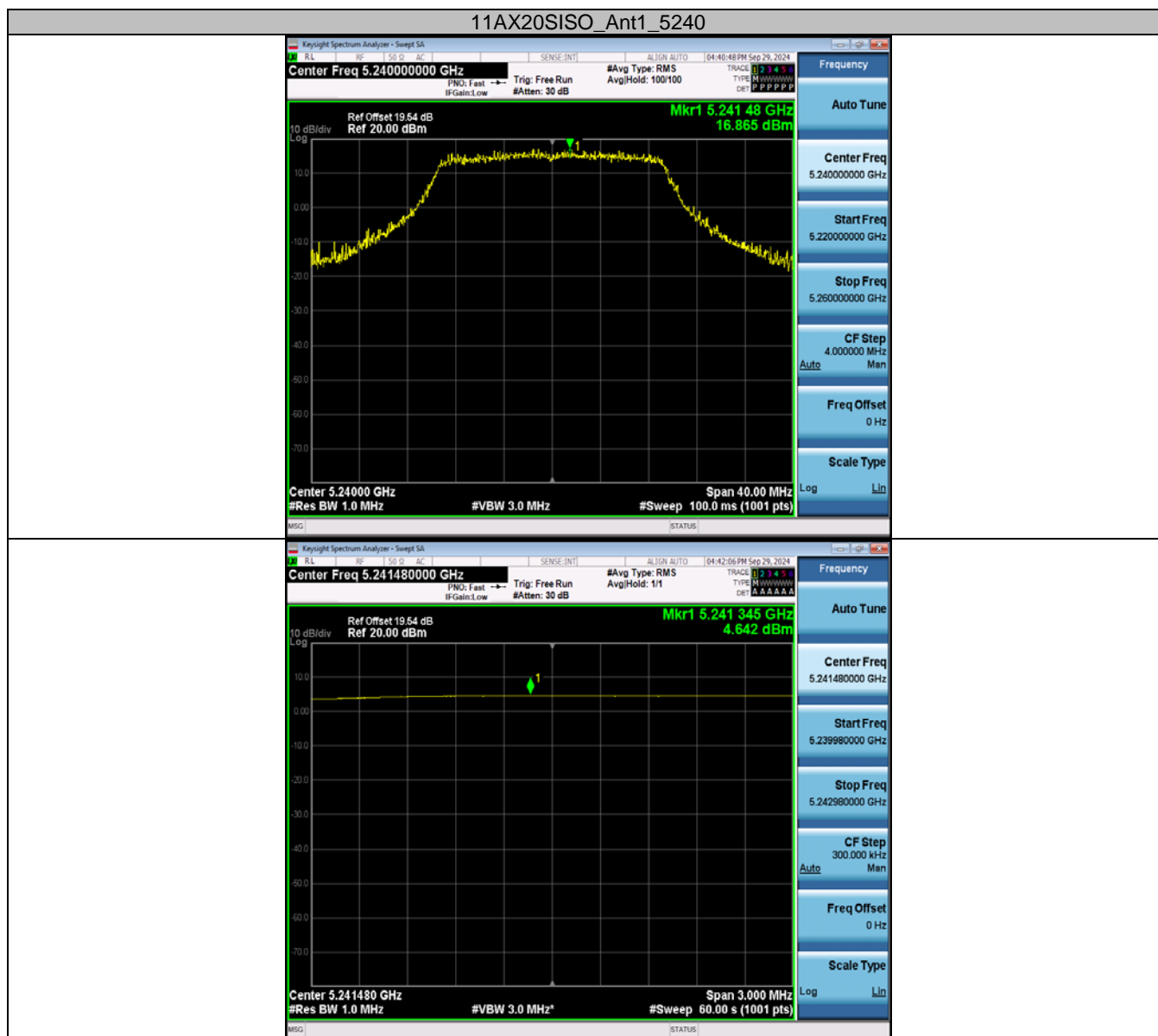




11AC80SISO_Ant1_5210

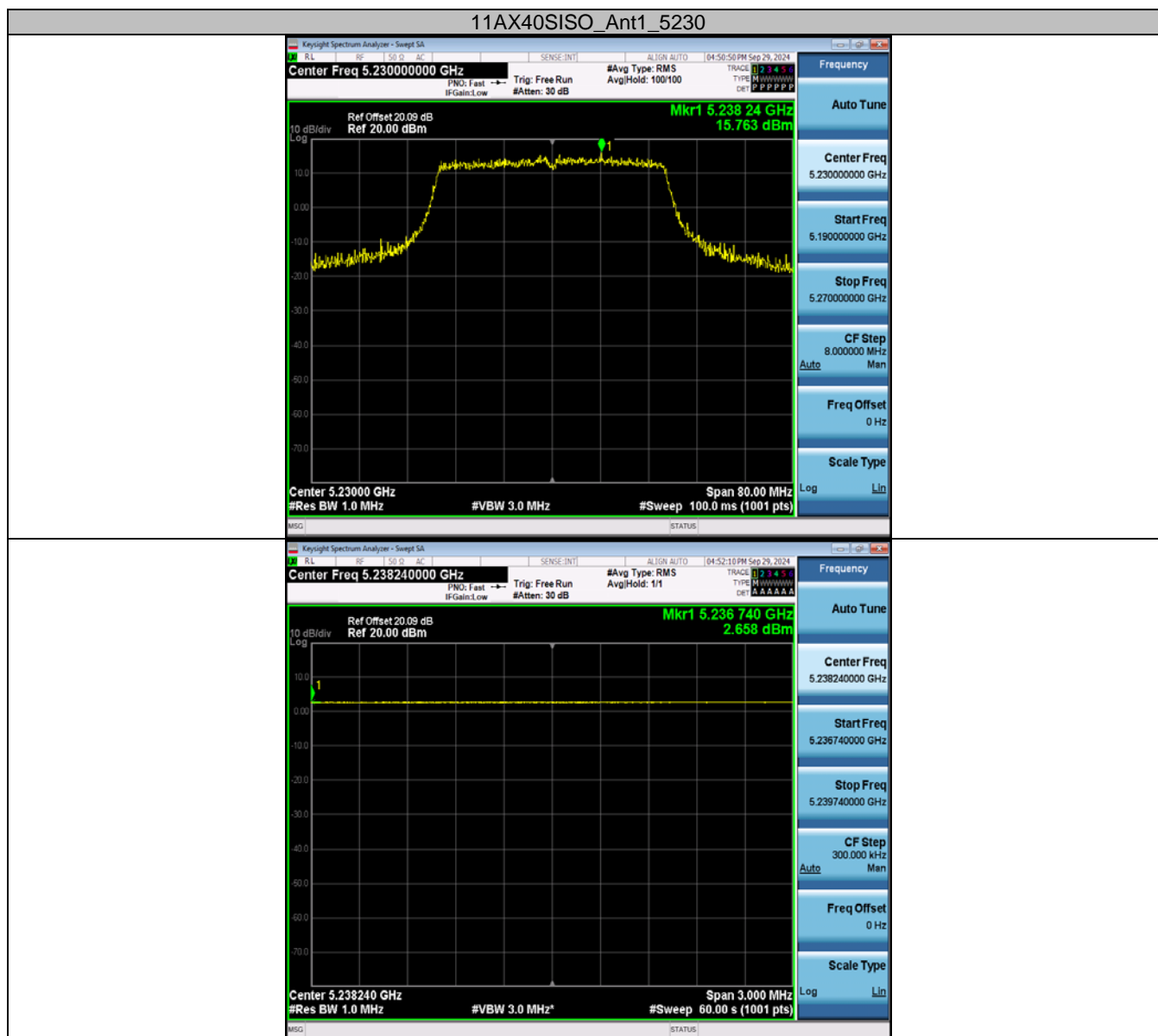




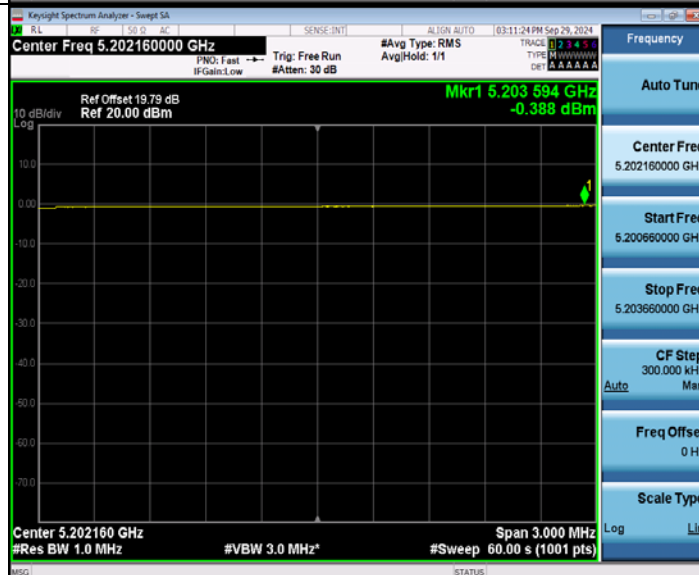


11AX40SISO_Ant1_5190





11AX80SISO_Ant1_5210

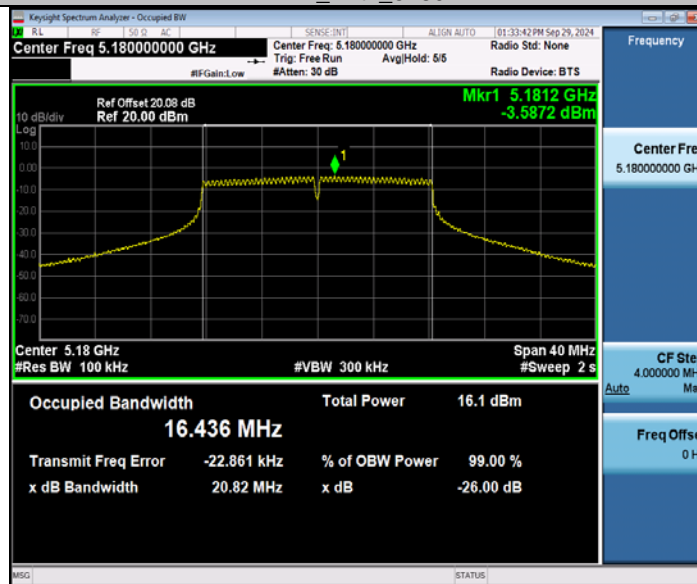


**Appendix D: Occupied Channel Bandwidth
Test Result**

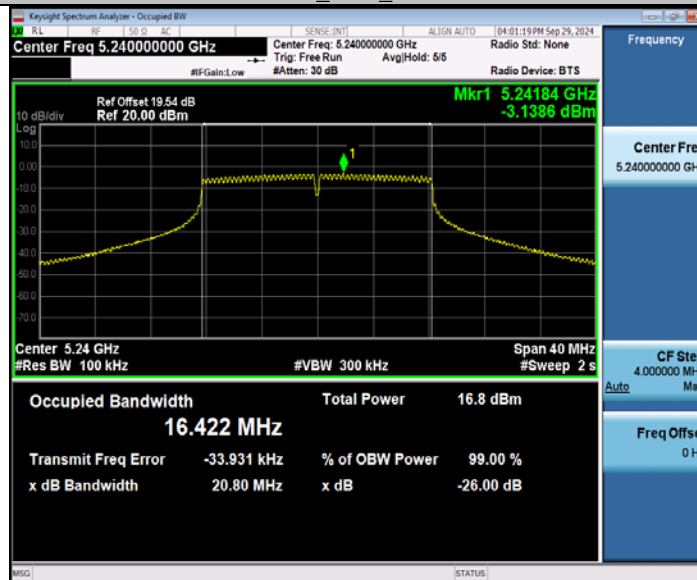
Test Mode	Antenna	Freq(MHz)	OCB[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.436	16 to 20	PASS
		5240	16.422	16 to 20	PASS
11N20SISO	Ant1	5180	17.657	16 to 20	PASS
		5240	17.650	16 to 20	PASS
11N40SISO	Ant1	5190	36.173	32 to 40	PASS
		5230	36.225	32 to 40	PASS
11AC20SISO	Ant1	5180	17.660	16 to 20	PASS
		5240	17.648	16 to 20	PASS
11AC40SISO	Ant1	5190	36.180	32 to 40	PASS
		5230	36.219	32 to 40	PASS
11AC80SISO	Ant1	5210	75.657	64 to 80	PASS
11AX20SISO	Ant1	5180	18.924	16 to 20	PASS
		5240	18.922	16 to 20	PASS
11AX40SISO	Ant1	5190	37.712	32 to 40	PASS
		5230	37.785	32 to 40	PASS
11AX80SISO	Ant1	5210	77.218	64 to 80	PASS

Test Graphs

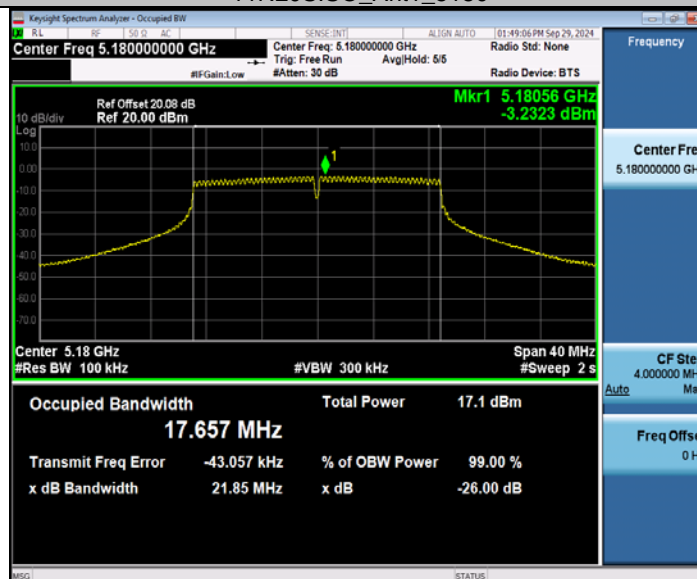
11A_Ant1_5180



11A_Ant1_5240



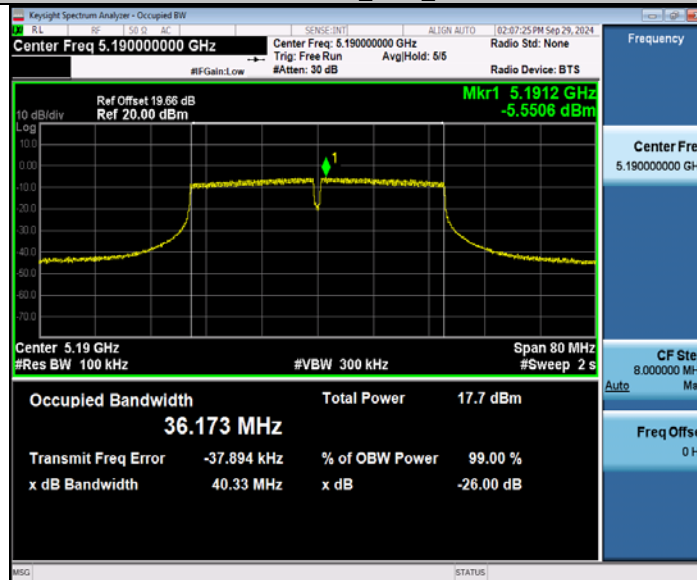
11N20SISO_Ant1_5180



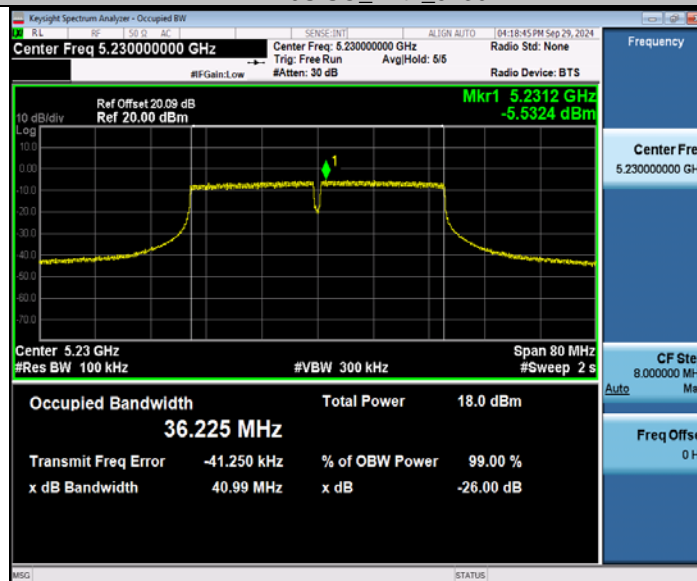
11N20SISO_Ant1_5240



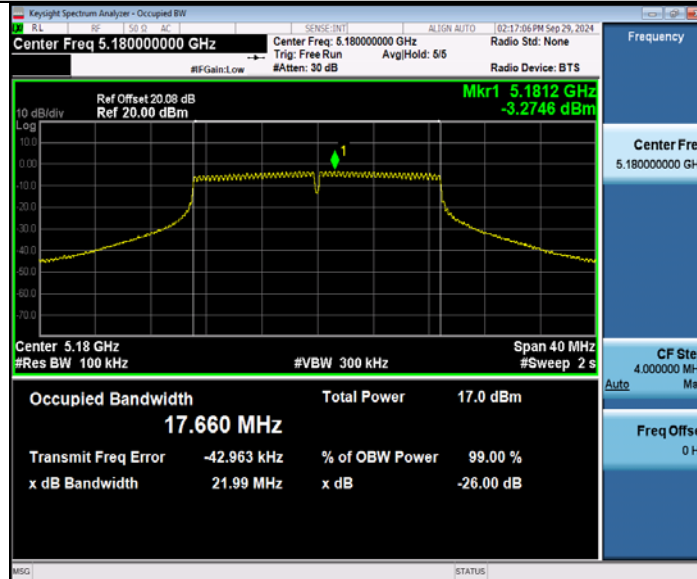
11N40SISO_Ant1_5190



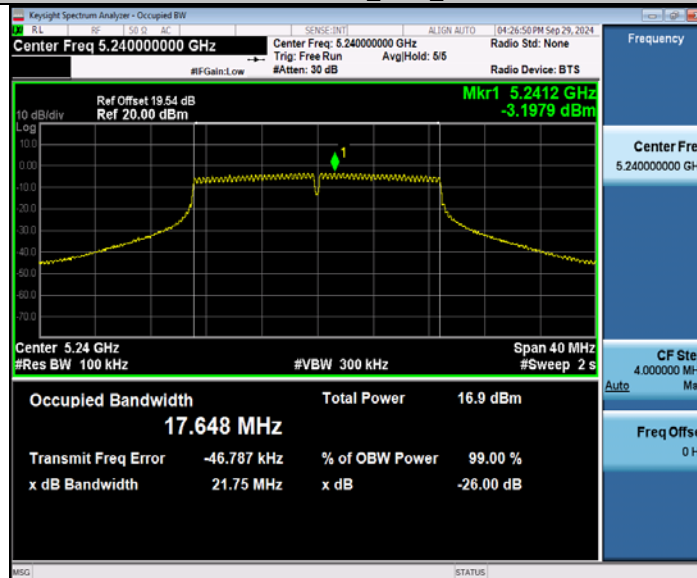
11N40SISO_Ant1_5230



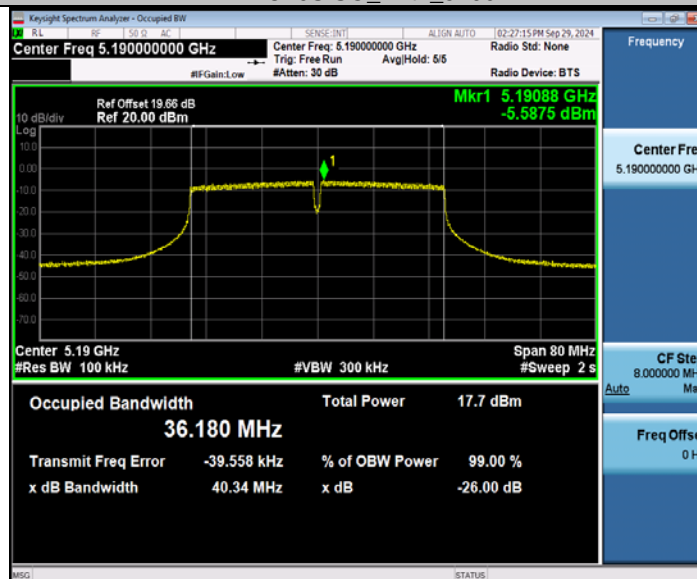
11AC20SISO_Ant1_5180



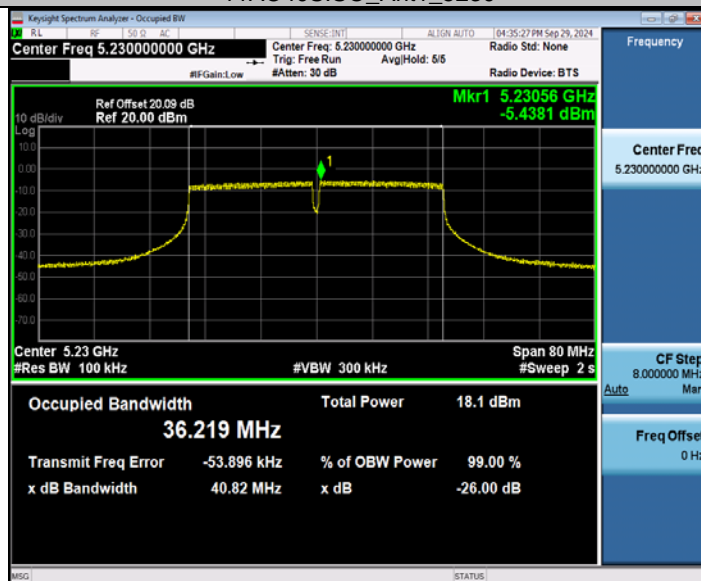
11AC20SISO_Ant1_5240



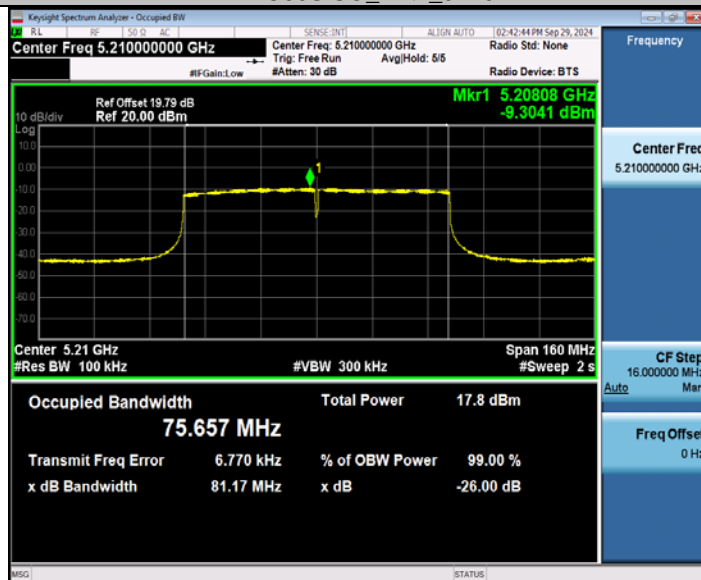
11AC40SISO_Ant1_5190



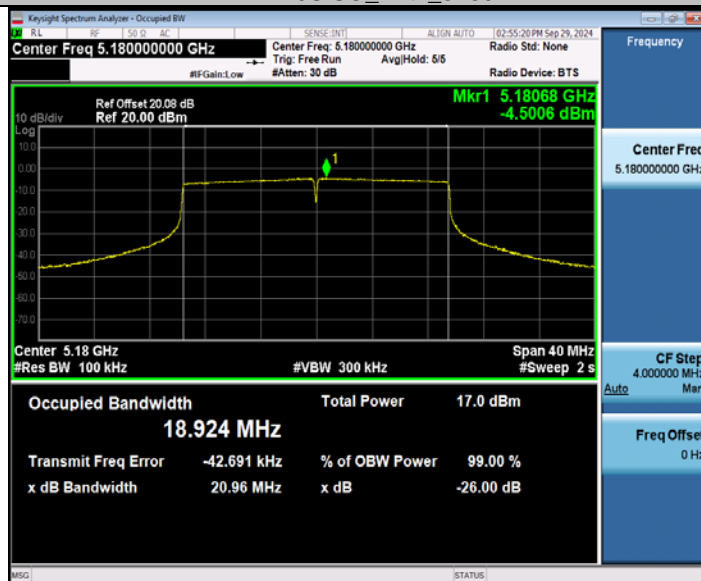
11AC40SISO_Ant1_5230

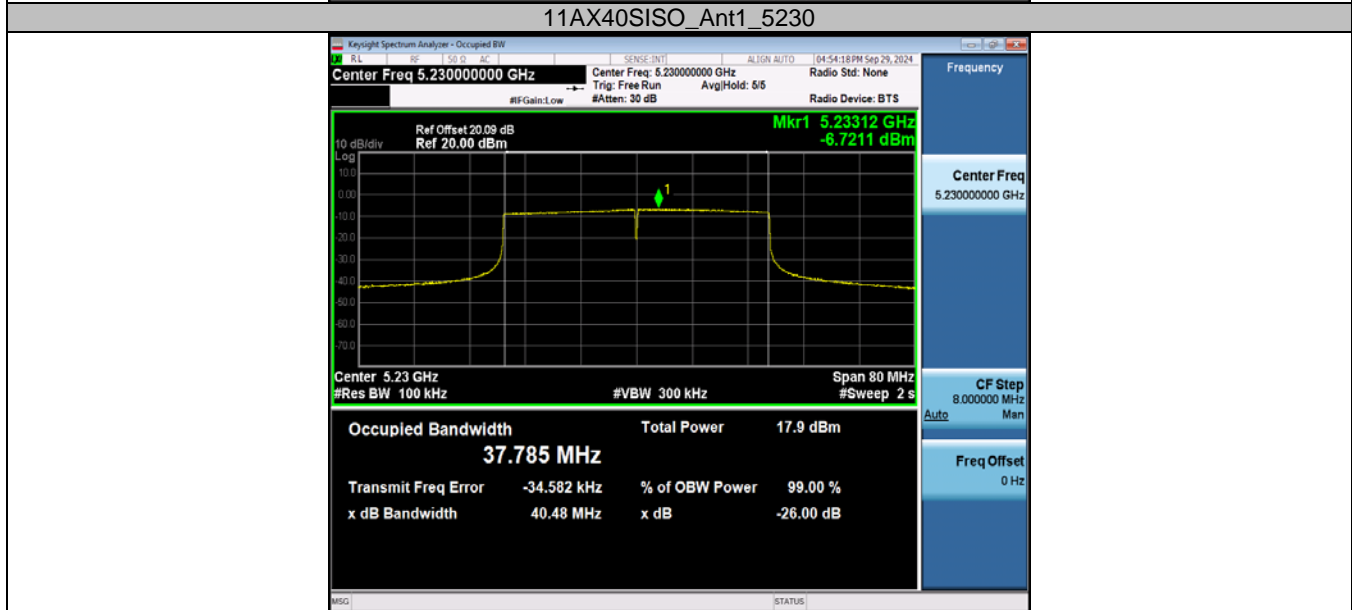
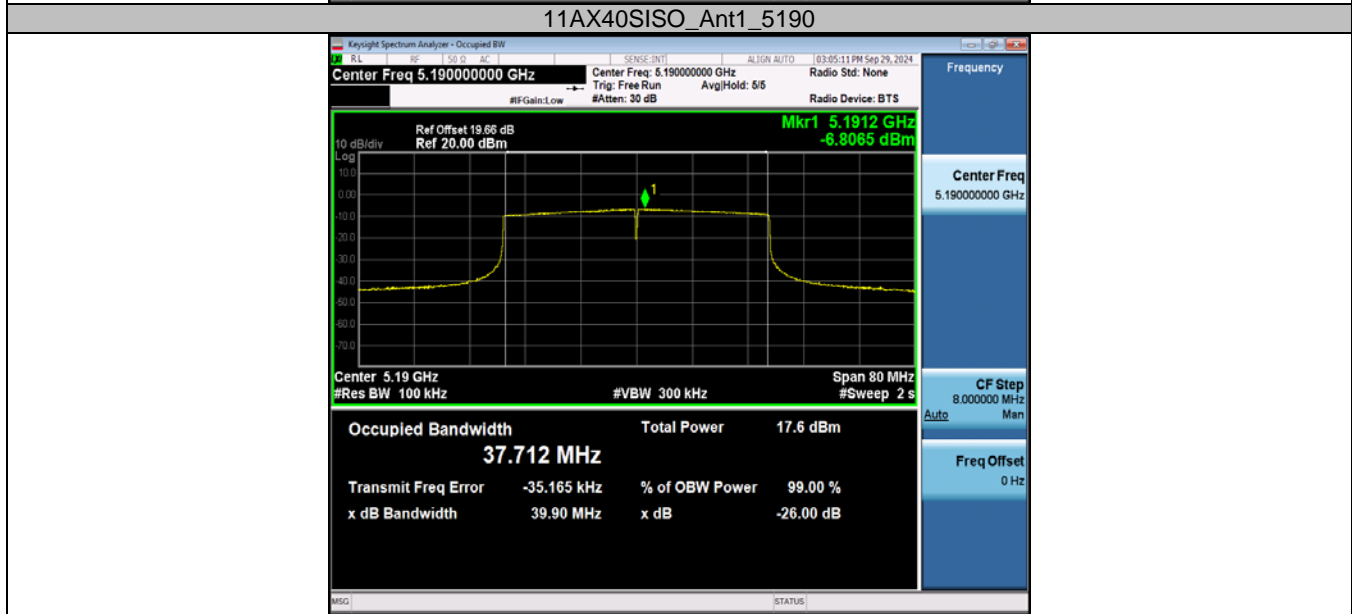
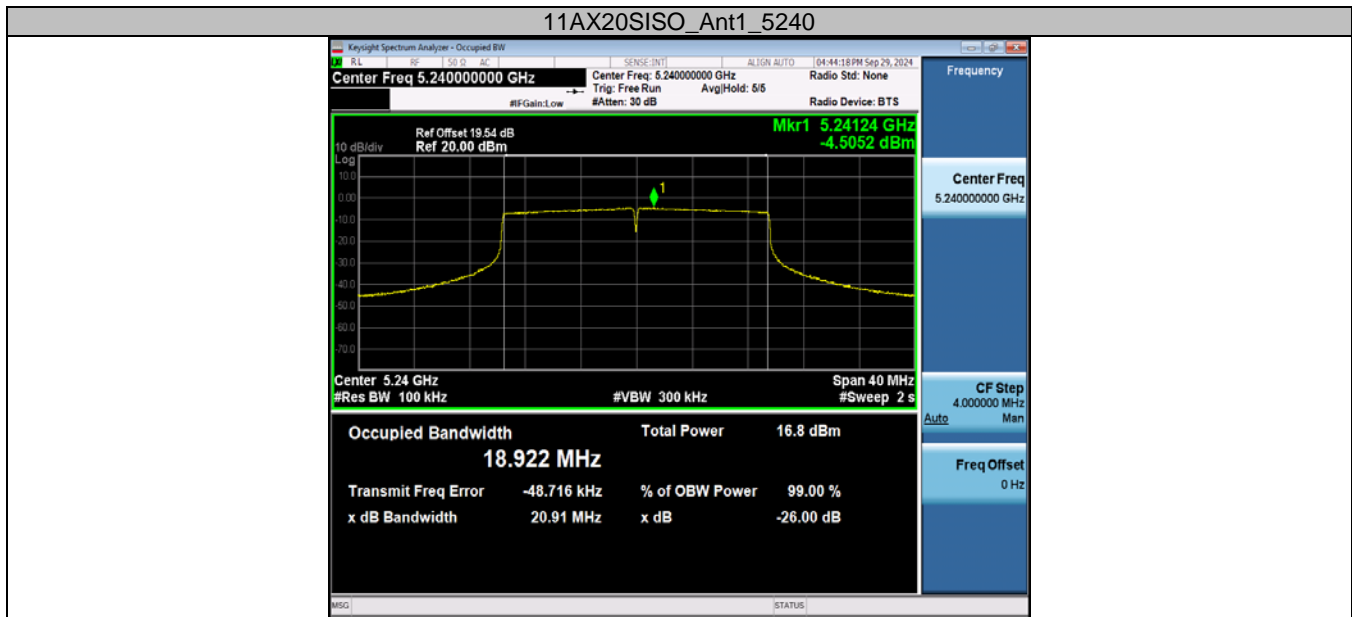


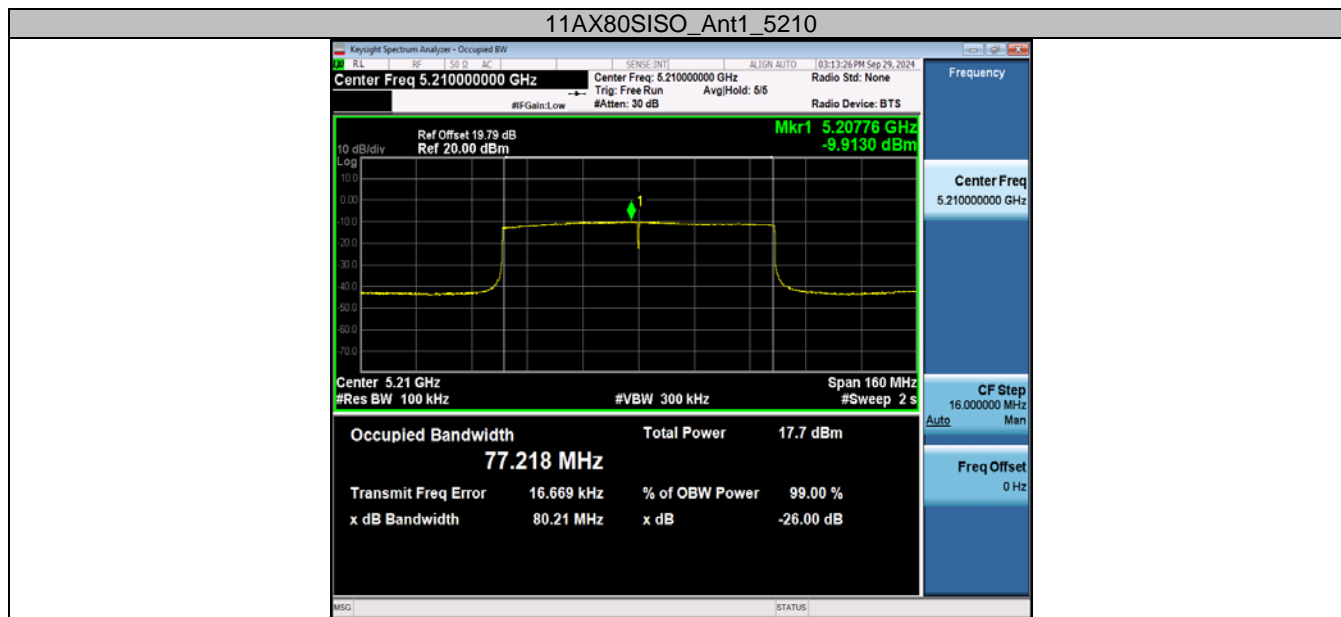
11AC80SISO_Ant1_5210



11AX20SISO_Ant1_5180





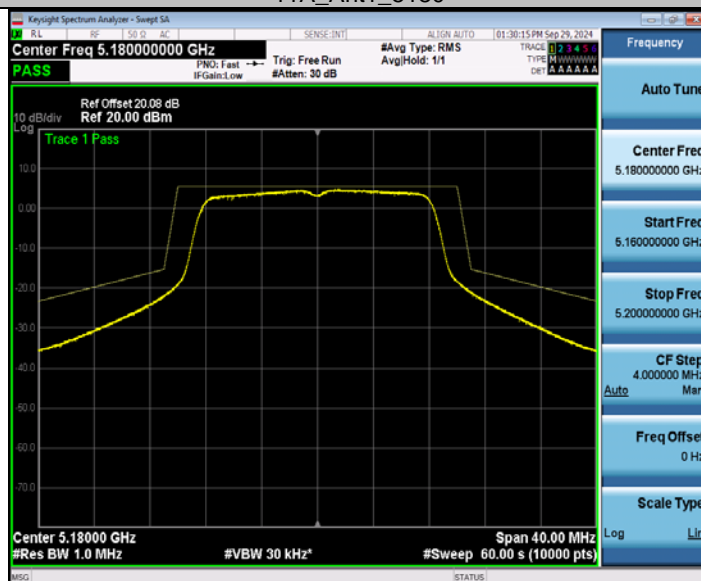


Appendix E: Transmitter unwanted emissions within the 5 GHz RLAN bands**Test Result**

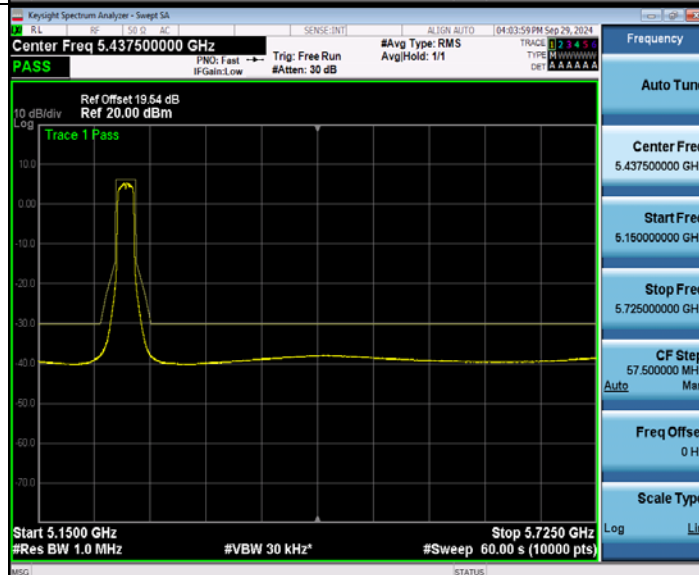
Test Mode	Antenna	Freq(MHz)	Result [dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	See test graph	See test graph	PASS
		5240	See test graph	See test graph	PASS
11N20SISO	Ant1	5180	See test graph	See test graph	PASS
		5240	See test graph	See test graph	PASS
11N40SISO	Ant1	5190	See test graph	See test graph	PASS
		5230	See test graph	See test graph	PASS
11AC20SISO	Ant1	5180	See test graph	See test graph	PASS
		5240	See test graph	See test graph	PASS
11AC40SISO	Ant1	5190	See test graph	See test graph	PASS
		5230	See test graph	See test graph	PASS
11AC80SISO	Ant1	5210	See test graph	See test graph	PASS
11AX20SISO	Ant1	5180	See test graph	See test graph	PASS
		5240	See test graph	See test graph	PASS
11AX40SISO	Ant1	5190	See test graph	See test graph	PASS
		5230	See test graph	See test graph	PASS
11AX80SISO	Ant1	5210	See test graph	See test graph	PASS

Test Graphs

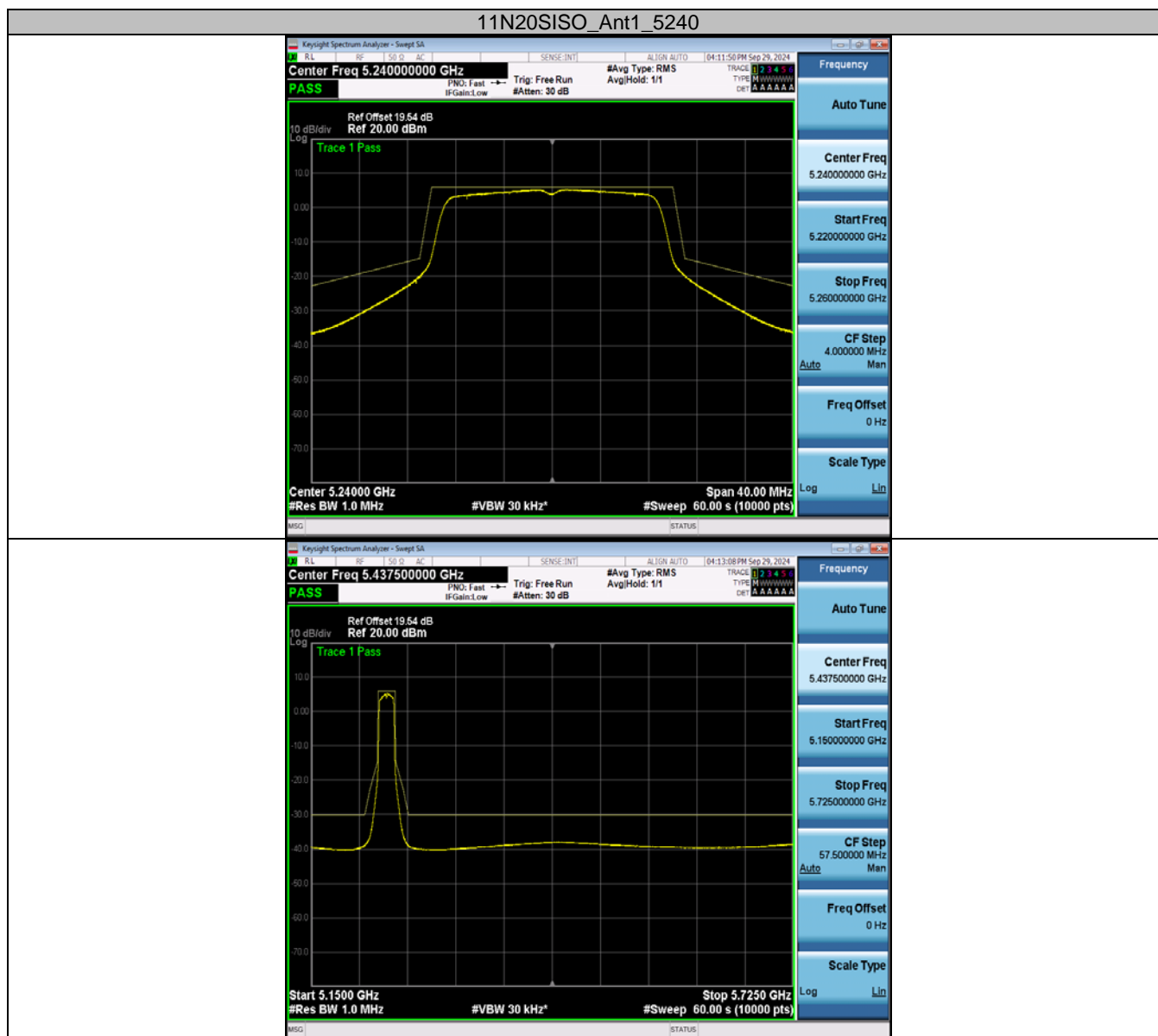
11A_Ant1_5180

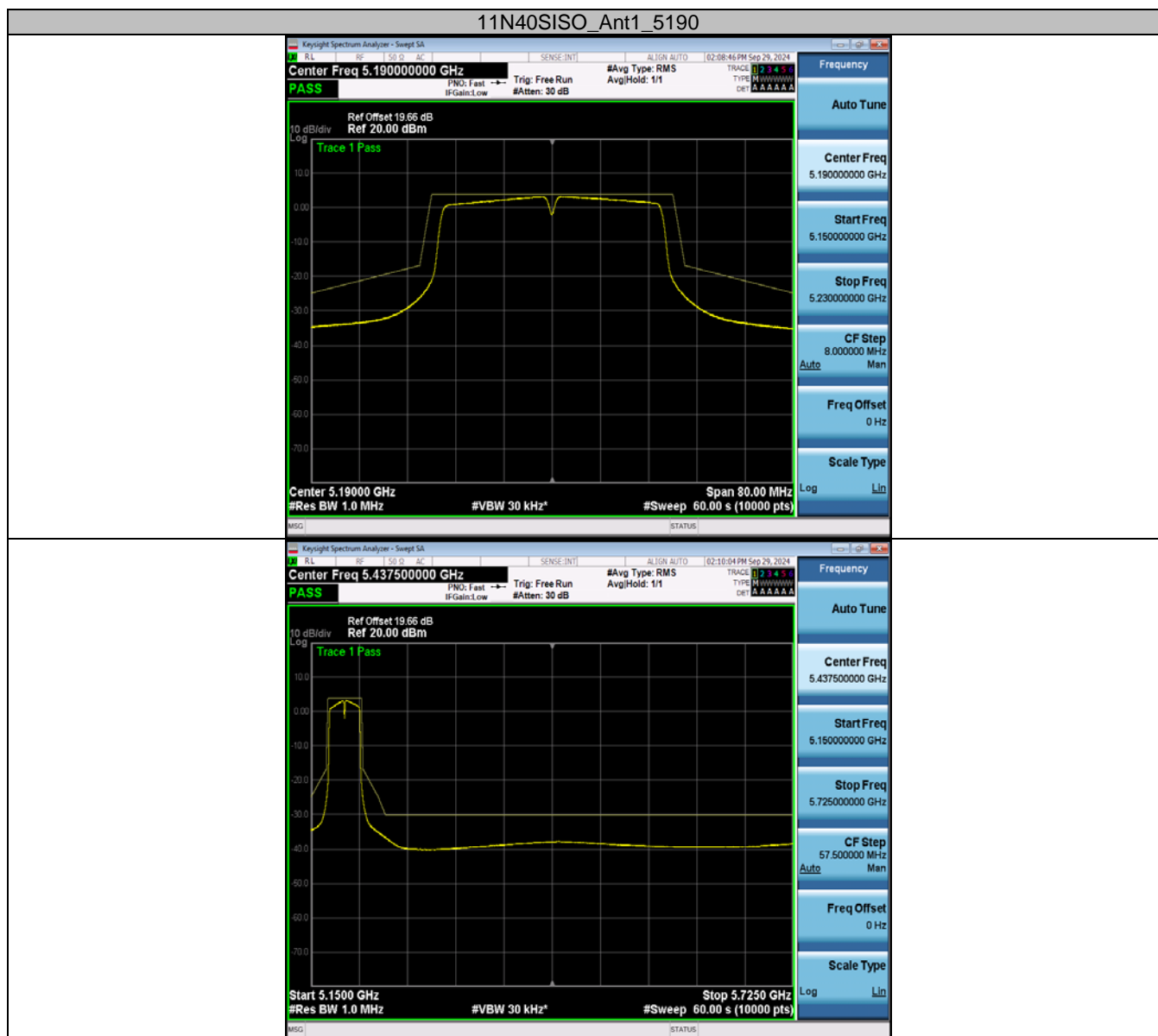


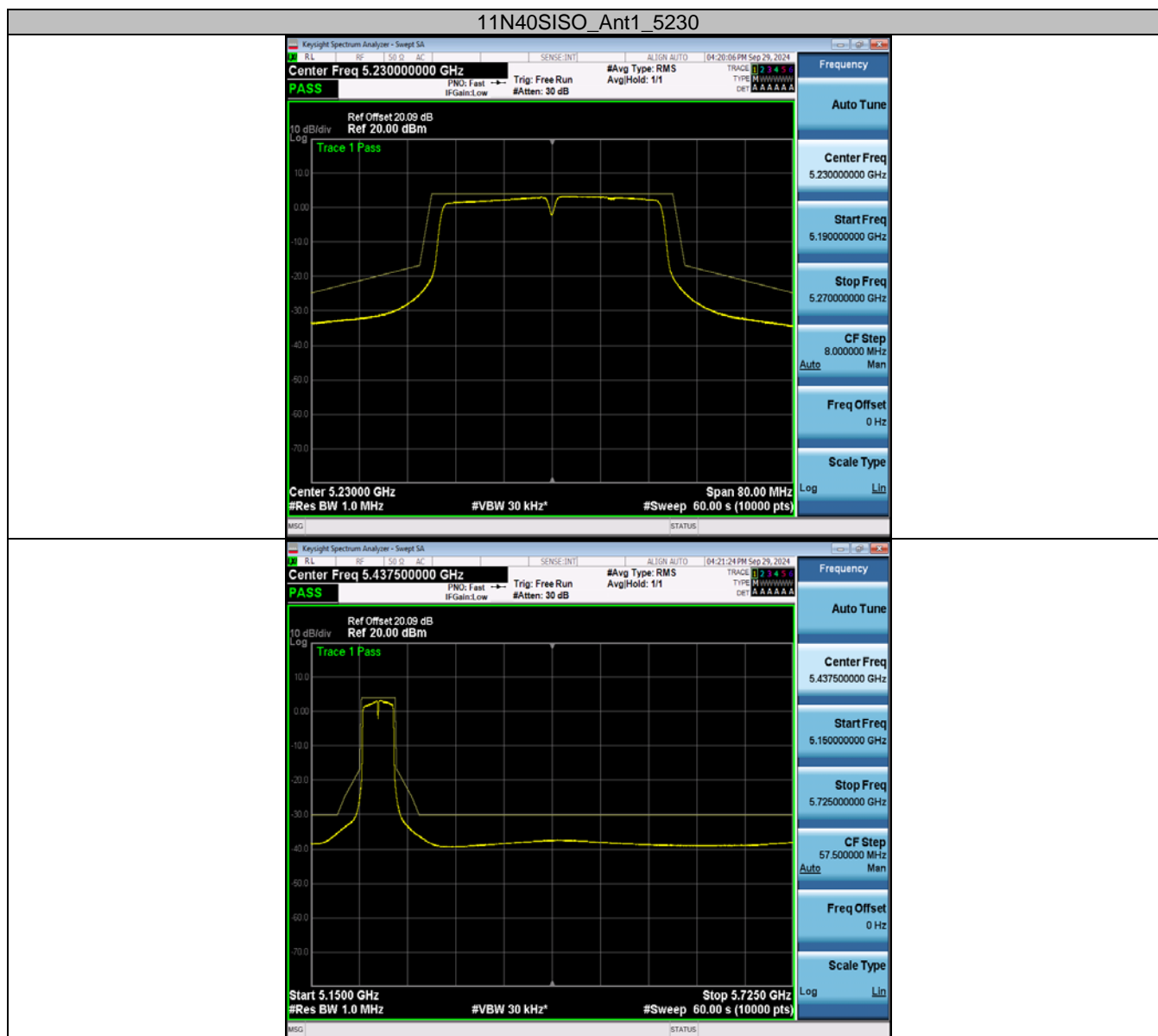
11A_Ant1_5240



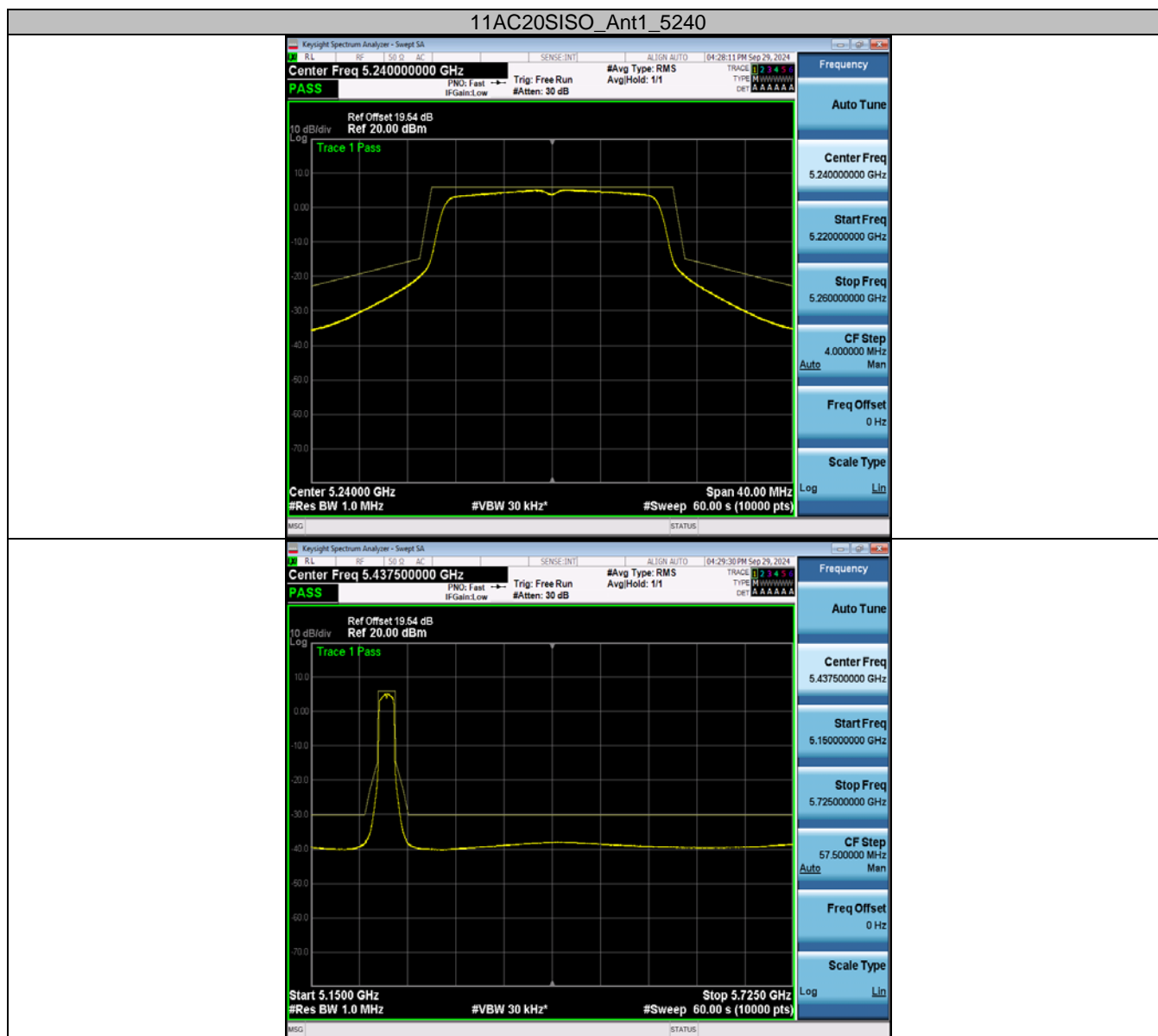


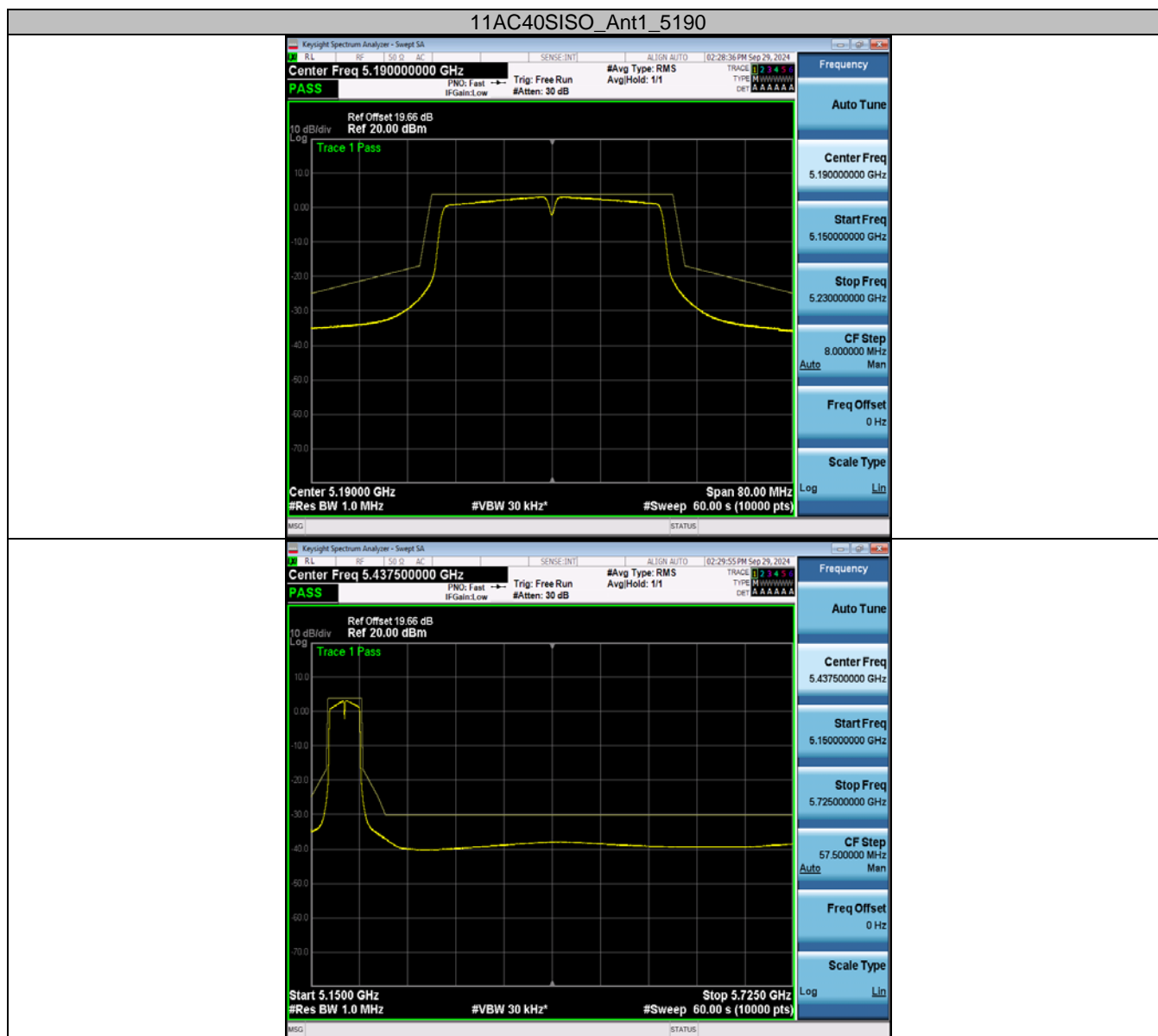


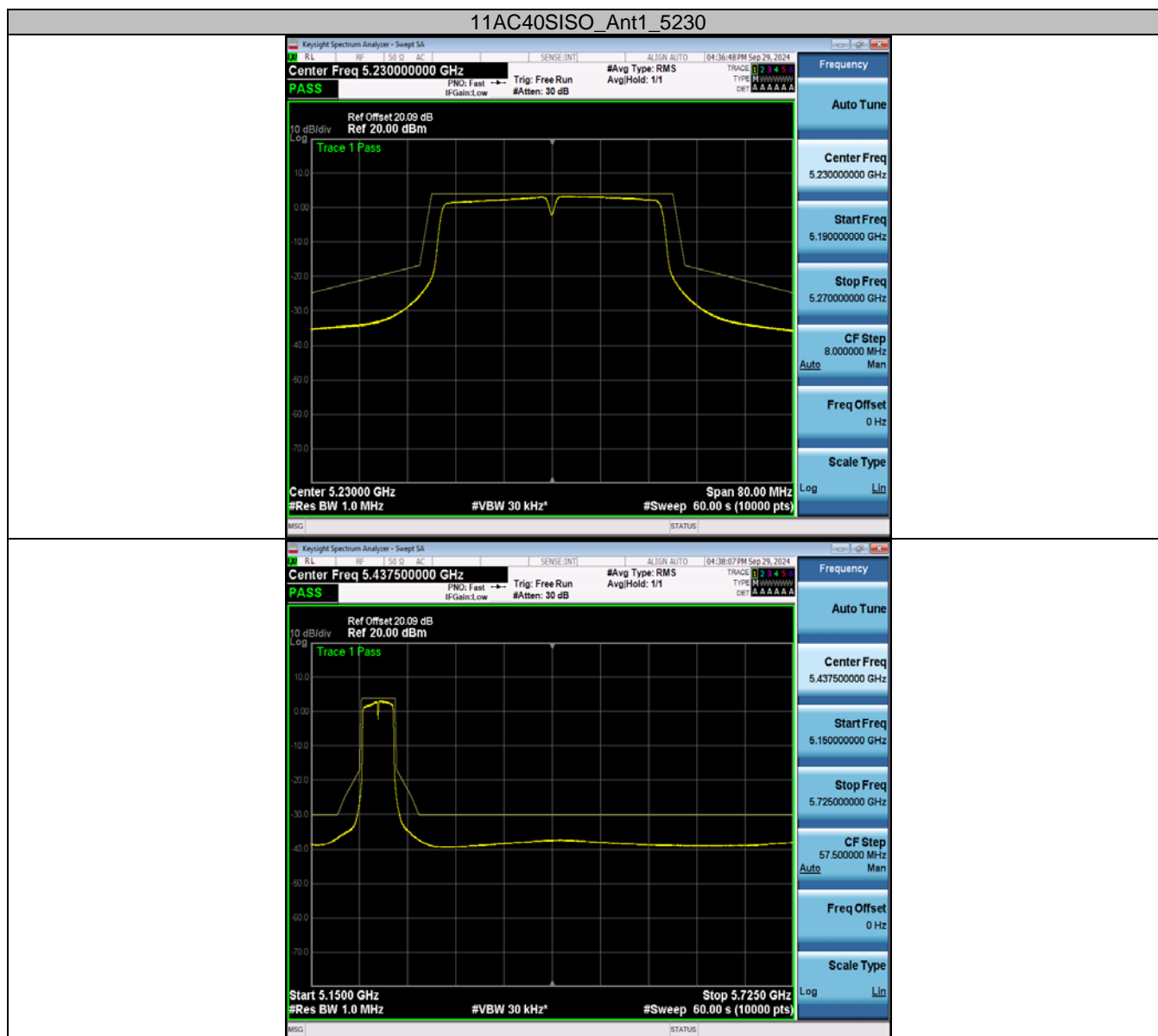




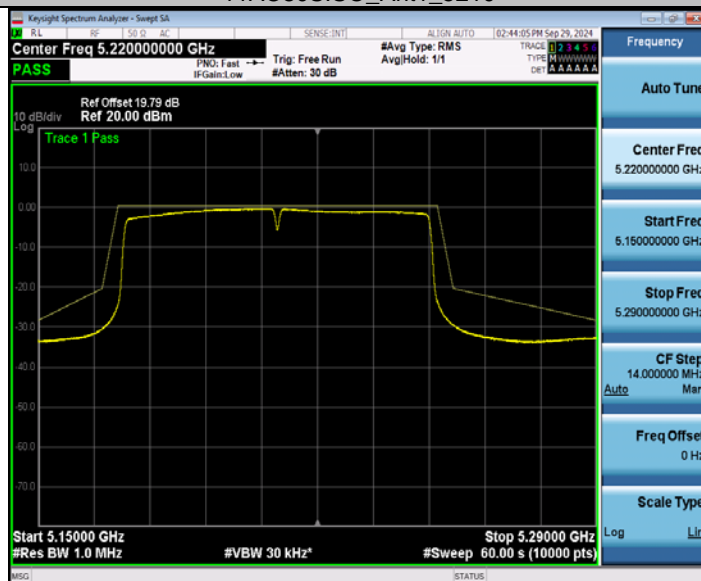


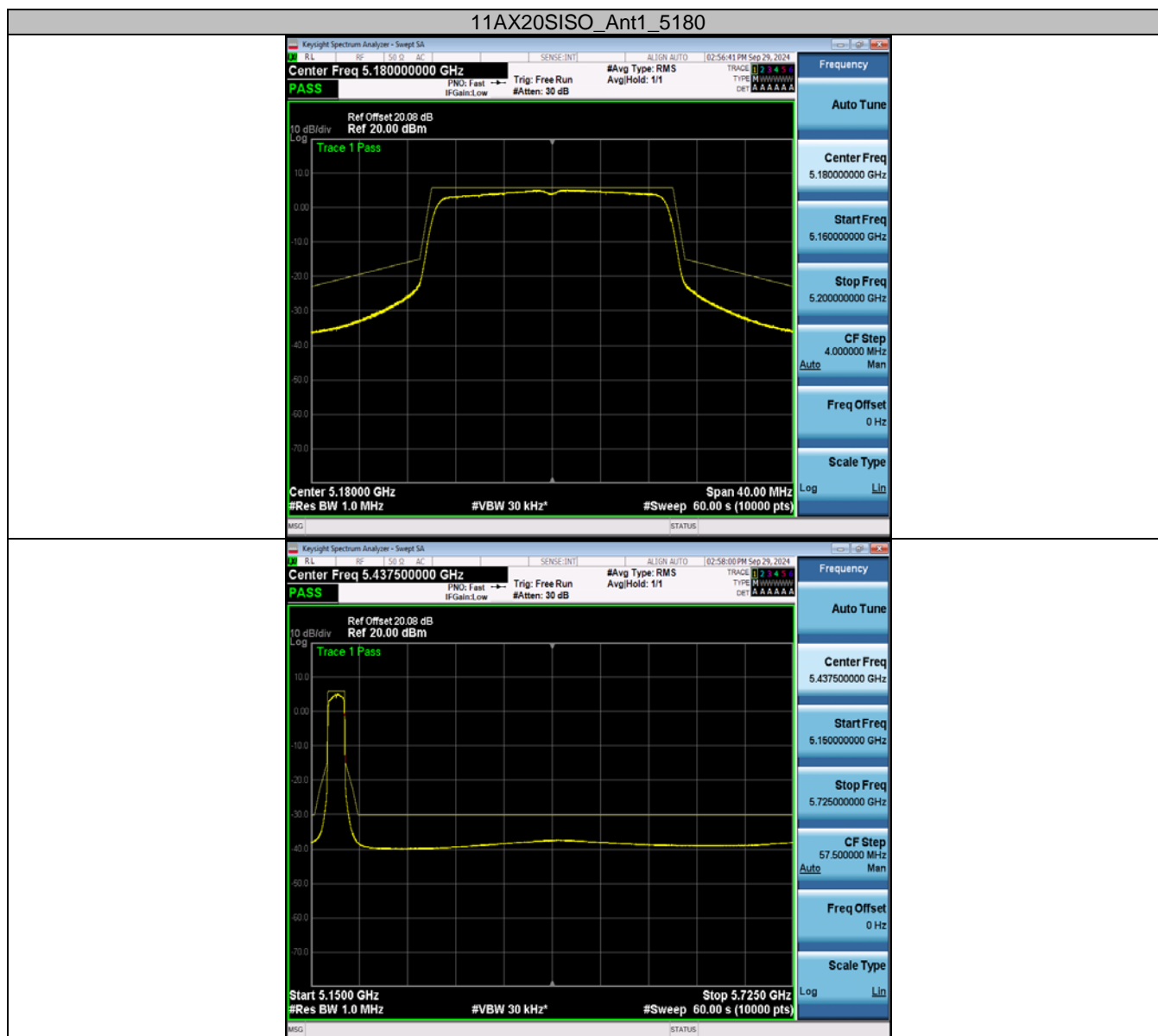


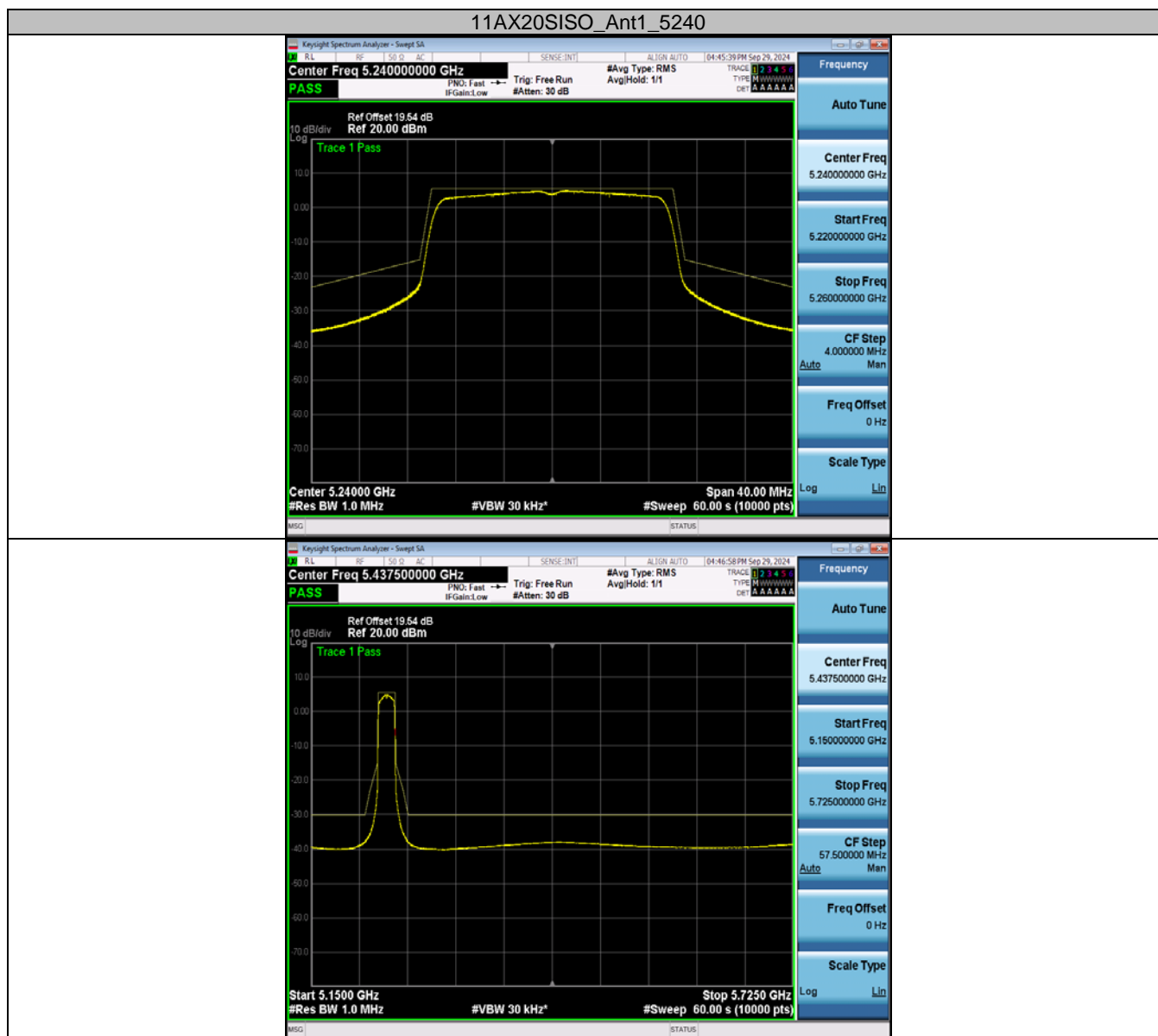


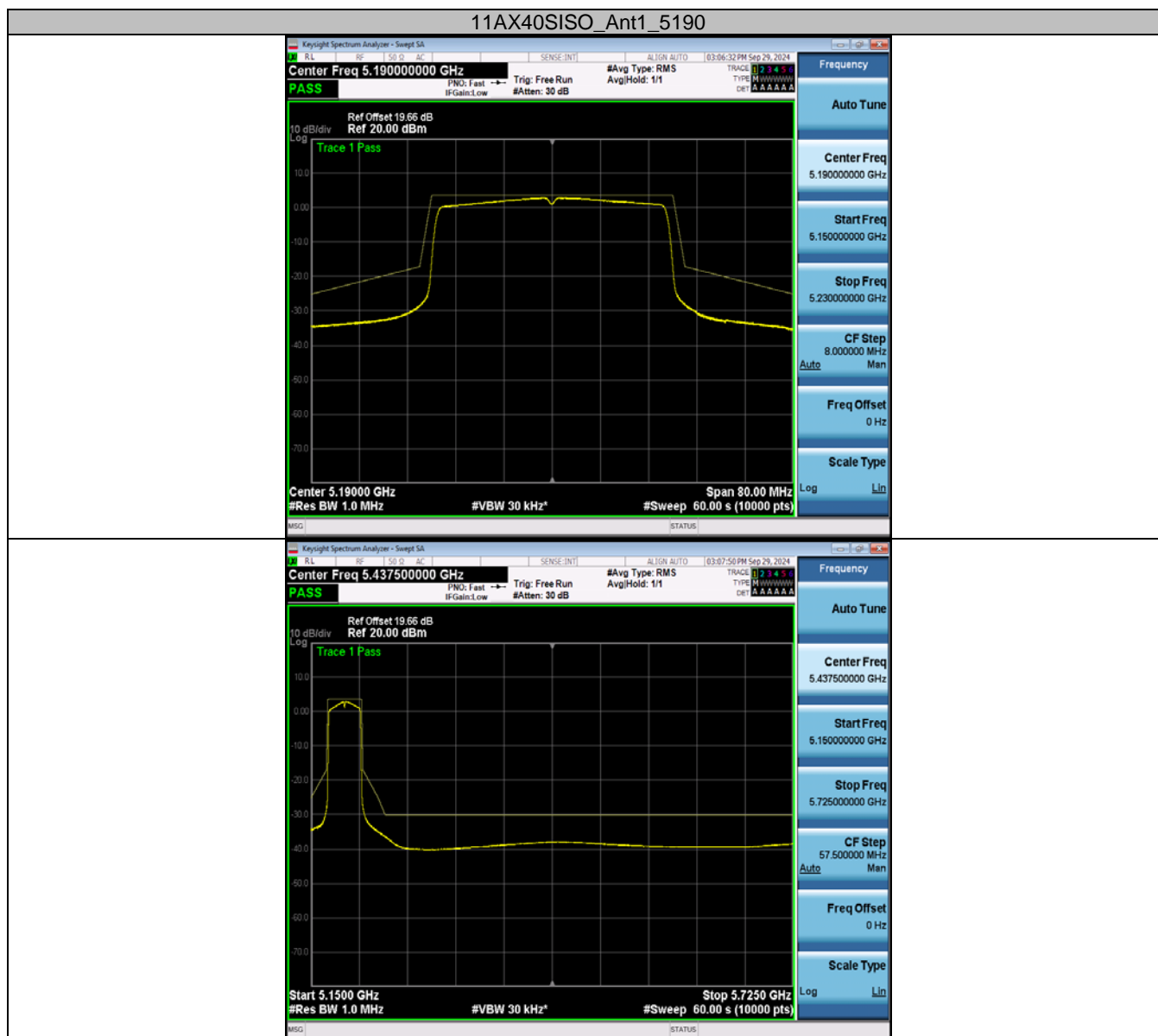


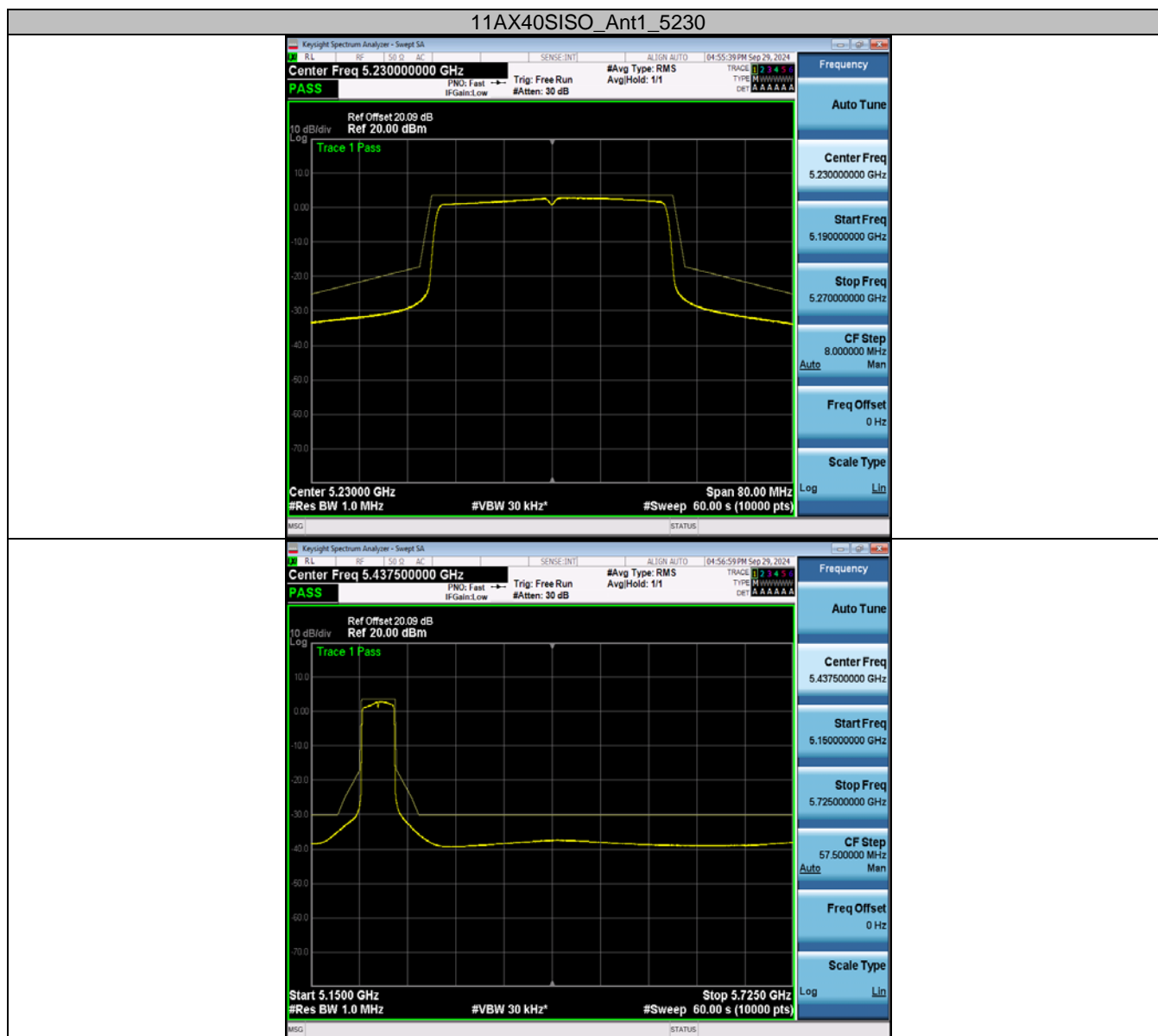
11AC80SISO_Ant1_5210

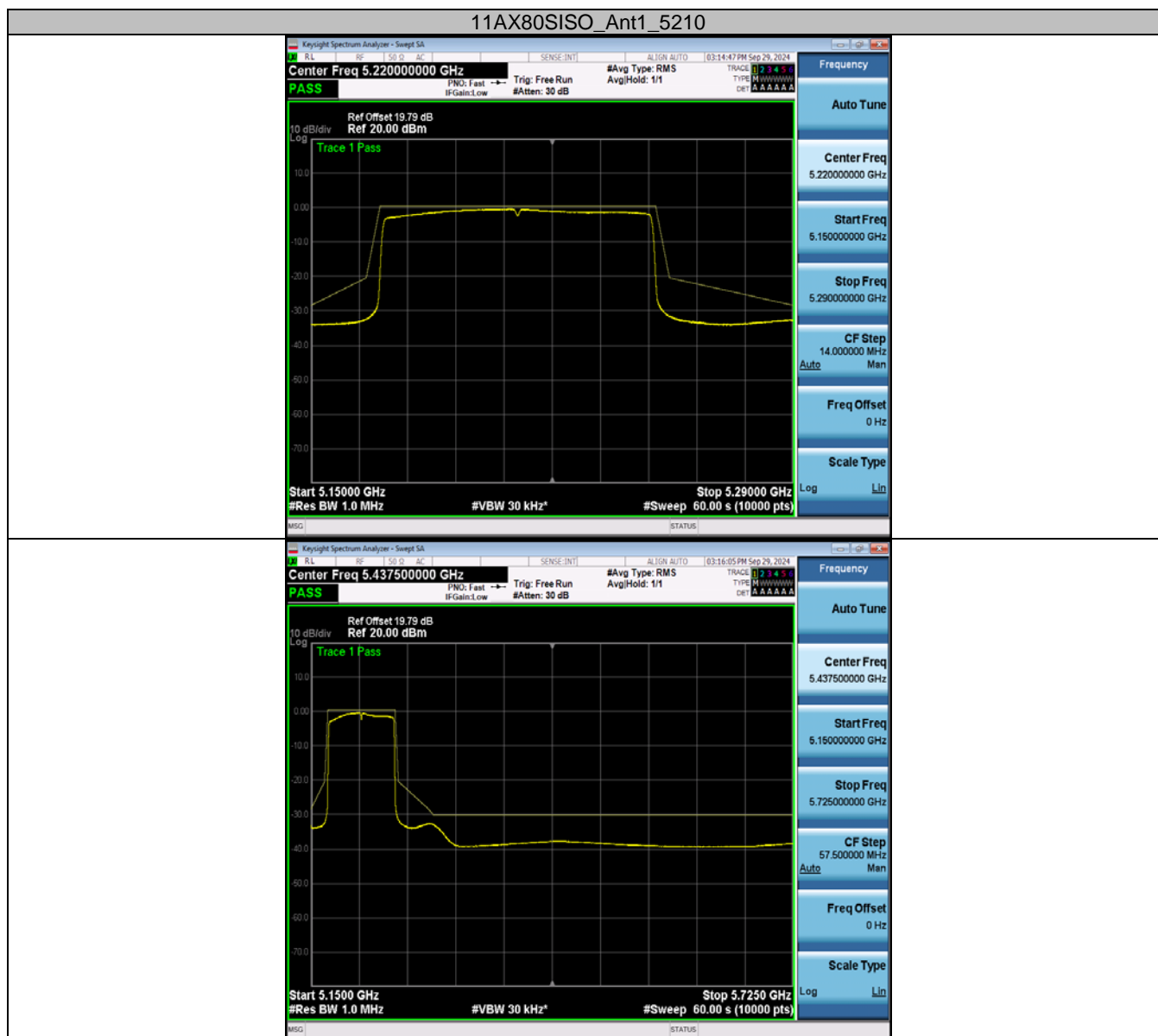










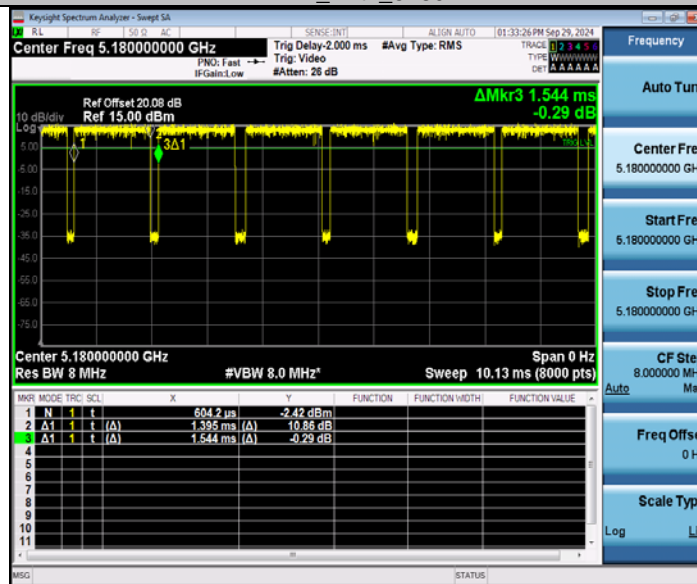


Appendix F: Duty Cycle Test Result

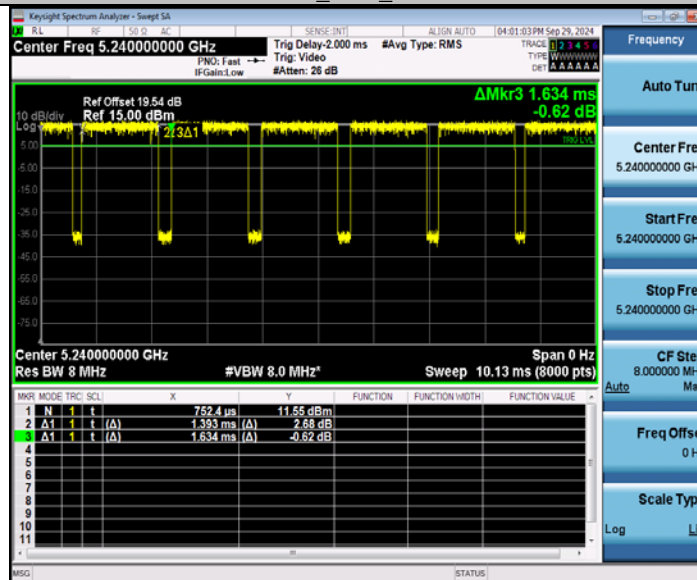
Test Mode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Verdict
11A	Ant1	5180	1.39	1.54	90.26	PASS
		5240	1.39	1.63	85.28	PASS
11N20SISO	Ant1	5180	5.08	5.24	96.95	PASS
		5240	5.08	5.28	96.21	PASS
11N40SISO	Ant1	5190	4.89	4.98	98.19	PASS
		5230	4.89	5.01	97.60	PASS
11AC20SISO	Ant1	5180	5.09	5.21	97.70	PASS
		5240	5.09	5.21	97.70	PASS
11AC40SISO	Ant1	5190	4.90	5.07	96.65	PASS
		5230	4.90	5.01	97.80	PASS
11AC80SISO	Ant1	5210	4.52	4.60	98.26	PASS
11AX20SISO	Ant1	5180	3.87	4.01	96.51	PASS
		5240	3.87	4.11	94.16	PASS
11AX40SISO	Ant1	5190	3.86	3.95	97.72	PASS
		5230	3.86	4.05	95.31	PASS
11AX80SISO	Ant1	5210	3.69	3.78	97.62	PASS

Test Graphs

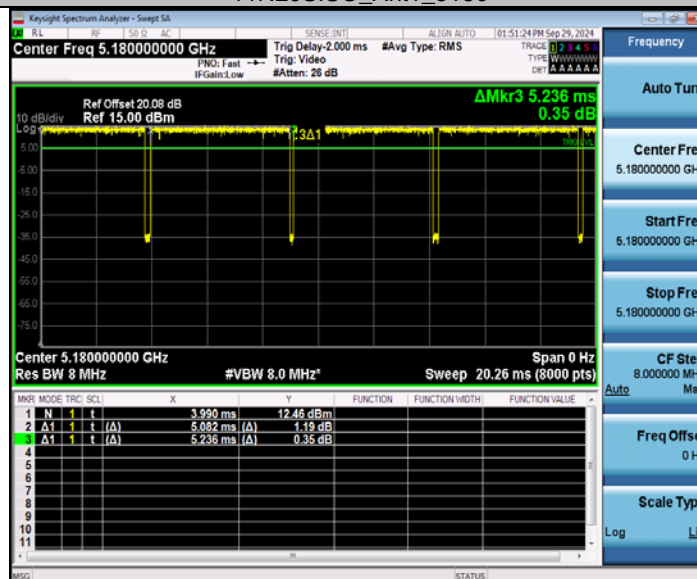
11A_Ant1_5180



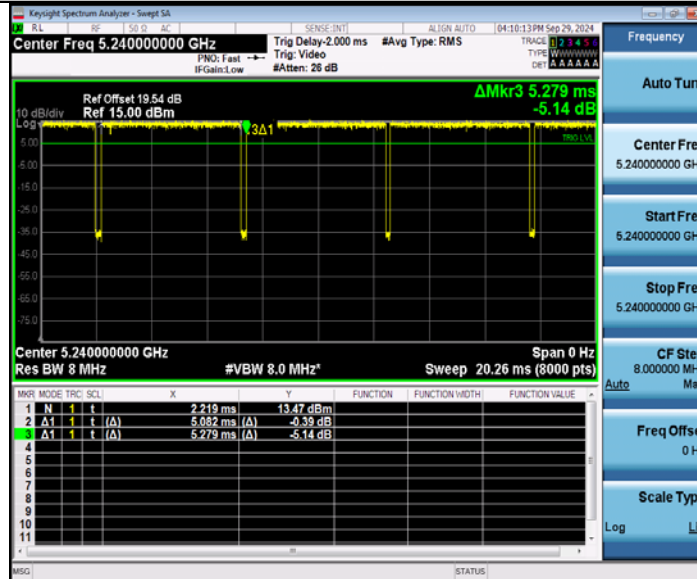
11A_Ant1_5240



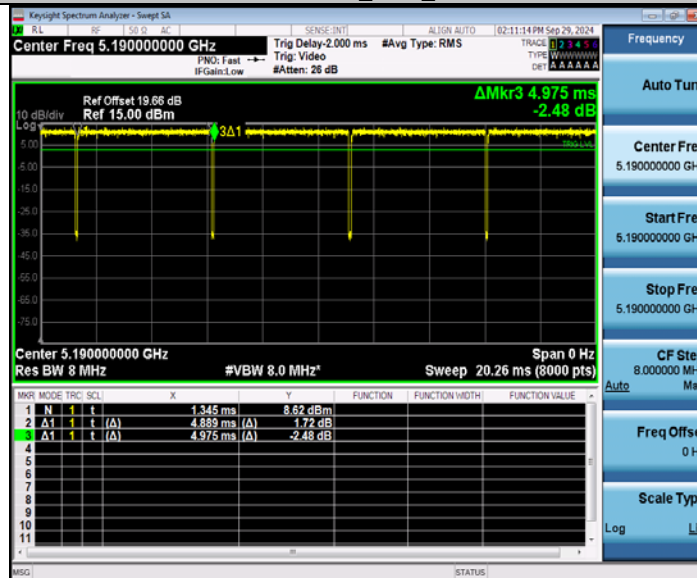
11N20SISO_Ant1_5180



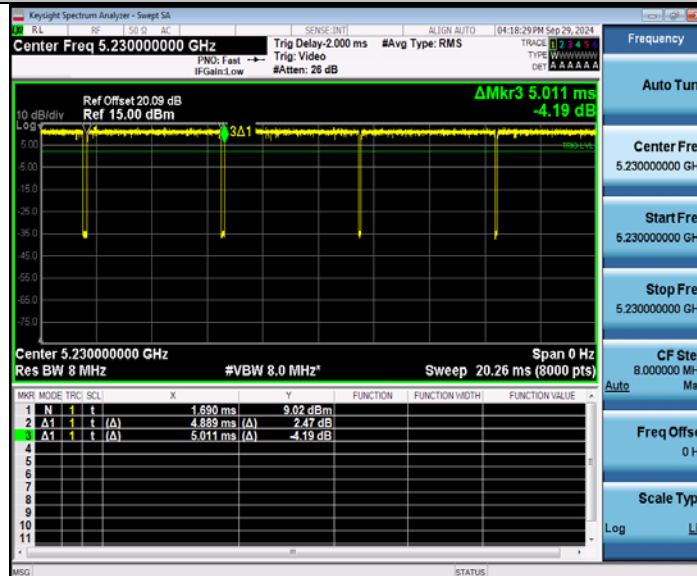
11N20SISO_Ant1_5240



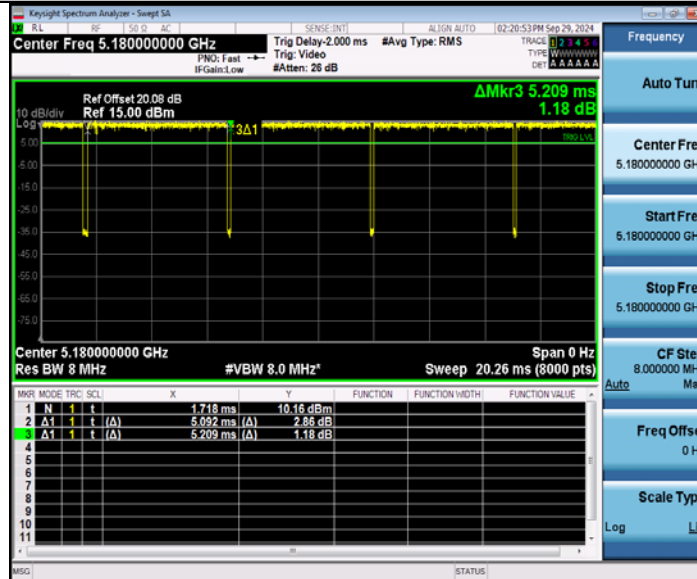
11N40SISO_Ant1_5190



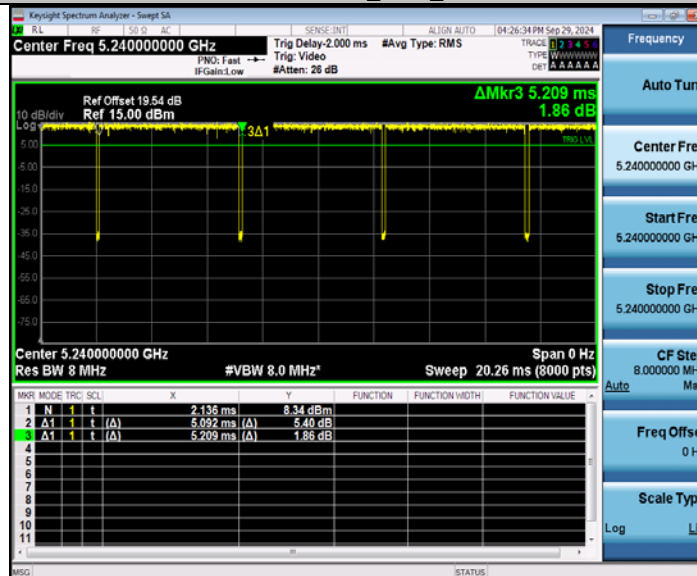
11N40SISO_Ant1_5230



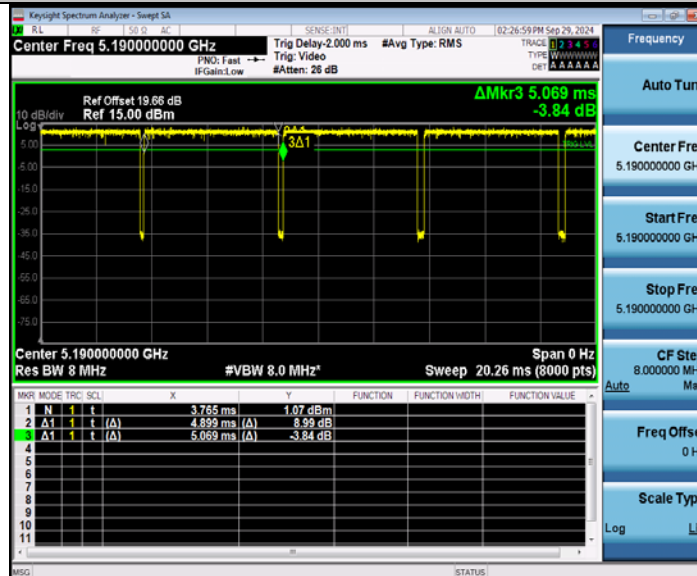
11AC20SISO_Ant1_5180



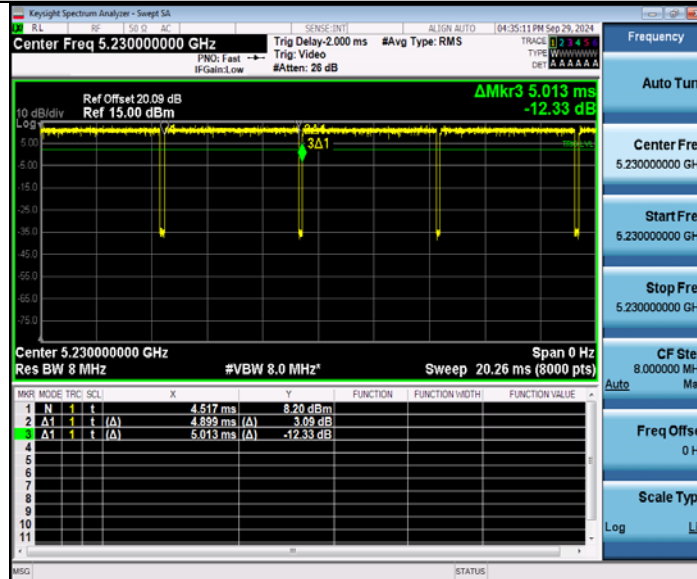
11AC20SISO_Ant1_5240



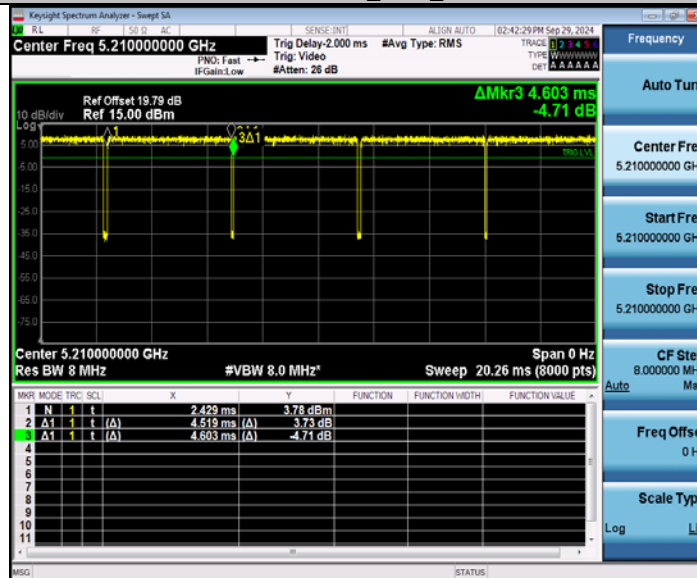
11AC40SISO_Ant1_5190



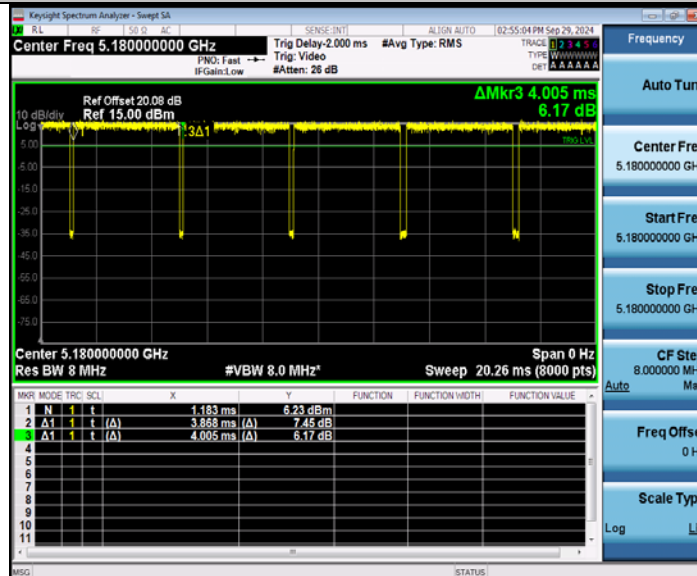
11AC40SISO_Ant1_5230



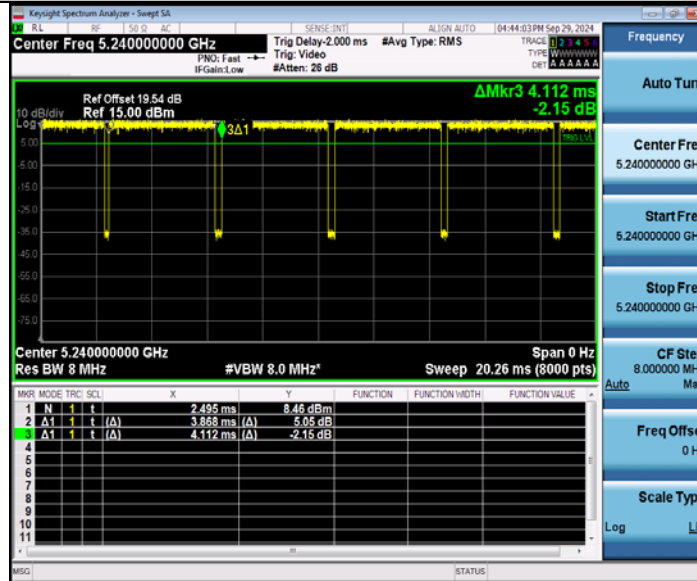
11AC80SISO_Ant1_5210



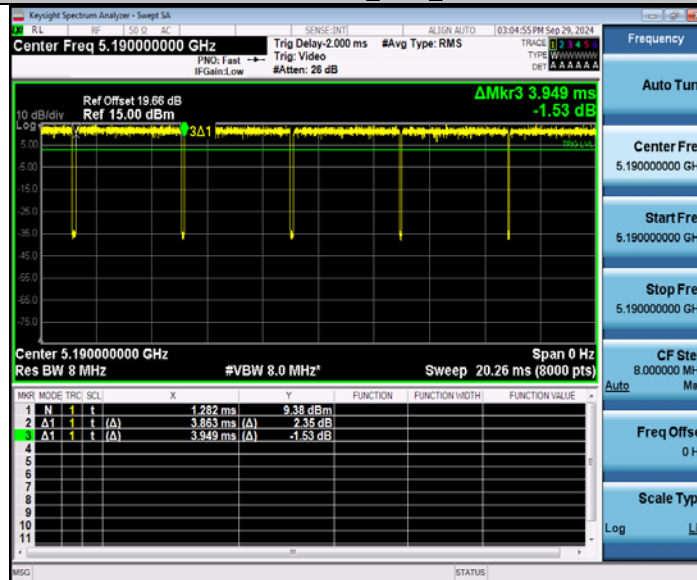
11AX20SISO_Ant1_5180



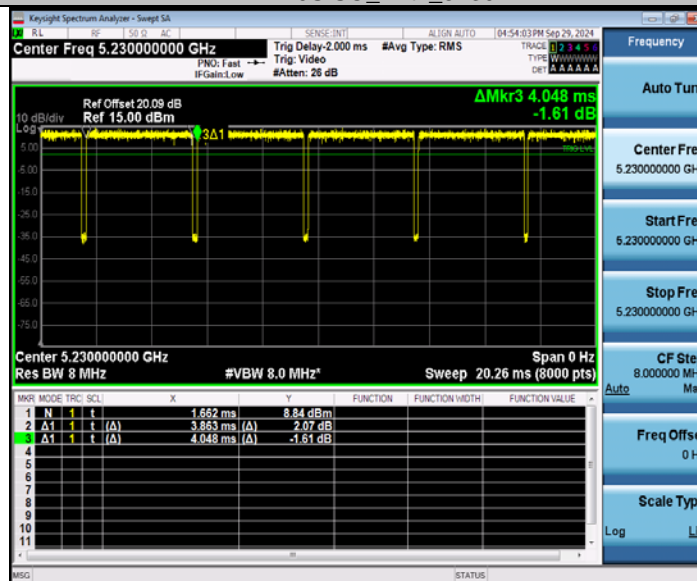
11AX20SISO_Ant1_5240

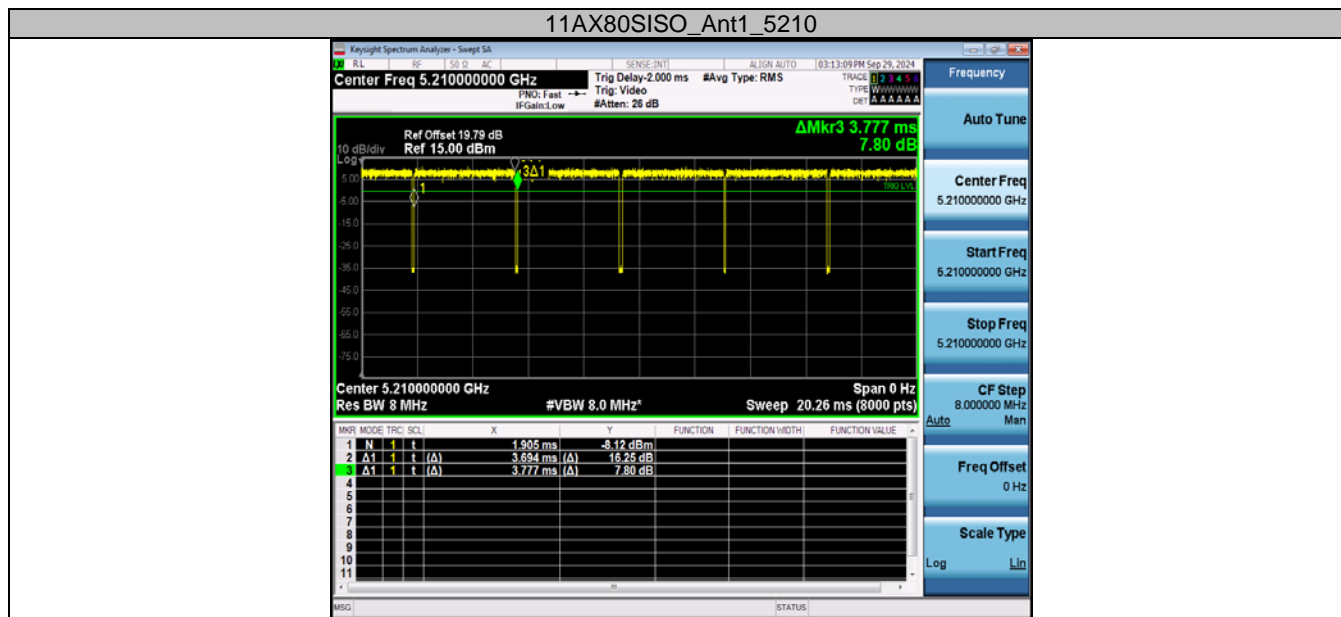


11AX40SISO_Ant1_5190



11AX40SISO_Ant1_5230





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