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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: 4G08

Report Type: Original Report	Product Type: AC1200 Dual-band Wi-Fi 4G+ LTE Router
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Report Date:	2025/2/10
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402A113224E-22B	Original Report	2025/2/10

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:		AC1200 Dual-band Wi-Fi 4G+ LTE Router
EUT Model:		4G08
Rated Input Voltage:		12Vdc from adapter
Adapter 1# Information	Model:	BN073-A12012E
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
Adapter 2# Information	Model:	BN073-A12012B
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
Serial Number:		RE Test:2WU8-1 RF Conducted Test:2WU8-4
EUT Received Date:		2025/1/2
EUT Received Status:		Good

Technical Specification

Operation Frequency Range (MHz):		802.11 a/n20/ac20: 5180-5240 802.11 n40/ac40: 5190-5230 802.11 ac80: 5210
RF Output Power (EIRP) (dBm):		22.9
Number of Chains	Transmit:	2
	Receive:	2
Antenna Gain (dBi)[▲]:		3.34
Antenna Gain (dBi)[▲]:		3.54
Beamforming Gain (dB)[▲]:		3
Modulation Type:		OFDM

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.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

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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Each test item follows the test standard(s) without deviation.

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.

For 5150~5250 MHz band(W52), 7 channels were provided. 802.11a /n ht20 mode was tested with 5180MHz; 802.11n ht40 mode was tested with 5190MHz; 802.11ac vht80 mode was tested with 5210 MHz:

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 “RTL819x 3.6[▲]” 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	
				Ant 1(Chain 0)	Ant 2(Chain 1)
5150-5250	802.11 a	5180	6 Mbps	103	98
		5240	6 Mbps	98	90
	802.11 n20	5180	HT MCS8	92	88
		5240	HT MCS8	86	85
	802.11 n40	5190	HT MCS8	90	84
		5230	HT MCS8	86	81
	802.11 ac20	5180	VHT MCS8	83	74
		5240	VHT MCS8	78	71
	802.11 ac40	5190	VHT MCS8	83	80
		5230	VHT MCS8	81	80
	802.11 ac80	5210	VHT MCS8	75	83

Beamforming

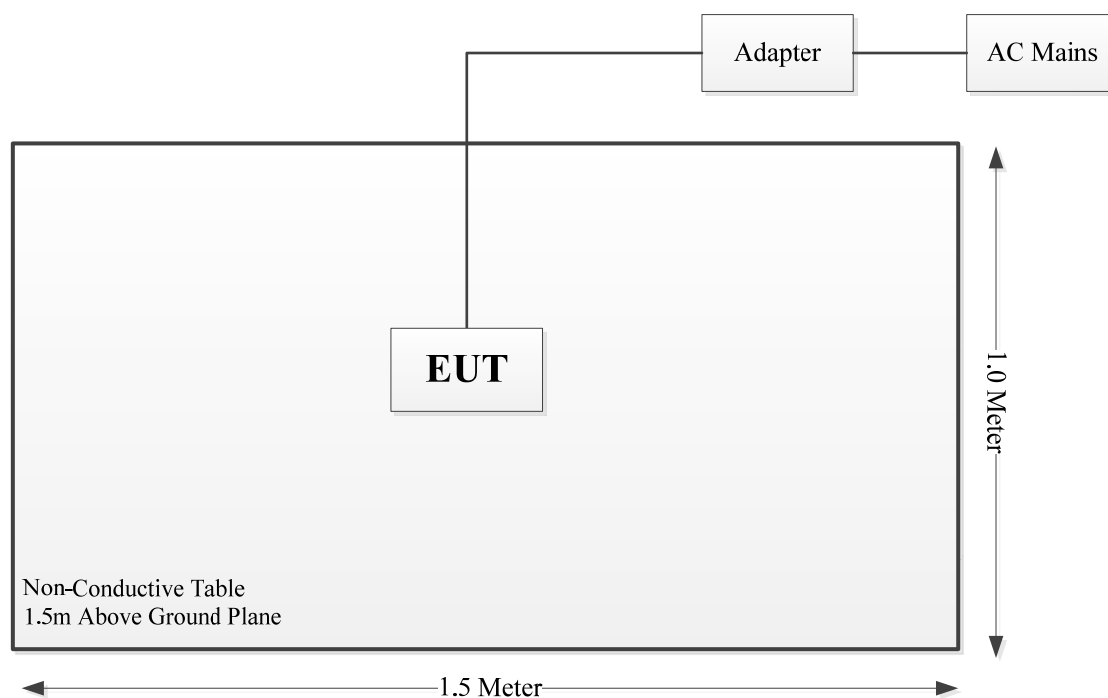
Band	Mode	Frequency (MHz)	Data rate (Mbps)	Power level	
				Ant 1(Chain 0)	Ant 2(Chain 1)
5150-5250	802.11 n20	5180	HT MCS8	84	83
		5240	HT MCS8	80	80
	802.11 n40	5190	HT MCS8	81	82
		5230	HT MCS8	84	82
	802.11 ac20	5180	VHT MCS8	85	79
		5240	VHT MCS8	80	76
	802.11 ac40	5190	VHT MCS8	85	77
		5230	VHT MCS8	81	78
	802.11 ac80	5210	VHT MCS8	84	79

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
DC Cable	No	No	1.5	EUT	Adapter

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	A060611-1	2023/9/6	2026/9/5
Narda	Coaxial Attenuator	779-6dB	04269	2023/9/6	2026/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2024/7/1	2025/6/30
Sonoma	Amplifier	310N	185914	2024/8/26	2025/8/25
R&S	EMI Test Receiver	ESCI	100224	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	2024/9/5	2025/9/4
Radiated emissions above 1GHz					
AH	Horn Antenna	SAS-571	1177	2023/2/22	2026/2/21
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
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
HUBER+SUHNER	Coaxial Cable	SUCOFLEX 126EA	MY369/26/26EA	2024/7/1	2025/6/30
Micro-Coax	Coaxial Cable	UFA210B	99G1448	2024/9/5	2025/9/4
Mini-Circuits	Preamplifier	ZVZ-183-S+	5696001267	2024/3/1	2025/2/28
QuinStar	Preamplifier	JS42-18004000-35-5P	1979277	2024/8/26	2025/8/25
R&S	Spectrum Analyzer	FSV40	101947	2024/9/5	2025/9/4
Sinoscite	Band Rejection Filter	BSF5150-5850MN	0899003	2024/2/21	2025/2/20
Micro-tronics	High Pass Filter	HPM50111	G217	2024/11/30	2025/11/29
Agilent	Signal Generator	E8247C	MY43321350	2024/9/5	2025/9/4
RF conducted					
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G-10dB	F-08-EM509	2024/6/7	2025/6/6
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G-10dB	F-08-EM510	2024/6/7	2025/6/6
R&S	Wideband Radio Communication Tester	CMW500	149216	2024/9/5	2025/9/4
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2024/9/6	2025/9/5
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

* 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 Site:	Radiated emissions below 1GHz	Radiated emissions above 1GHz	RF conducted	RF conducted (Adaptivity)
Temperature:	20.4 °C	21.5 °C	22.4~23.8°C	25.2°C
Relative Humidity:	35.0 %	38.0 %	46~54%	42%
ATM Pressure:	101.1 kPa	102.3 kPa	101.5~102.4kPa	101.2kPa
Tester:	Zoo Zou	Bill Yang	Harper Shen	Harper Shen
Test Date:	2025/1/20	2025/1/10	2025/1/12~2025/1/16	2025/1/22

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 do not works on DFS frequency 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. The test data 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. The test data 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. The test data 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 chain 0

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)			
10360.00	H	34.46	-50.69	13.42	0.61	-37.88	-30.00	7.88
10360.00	V	34.58	-49.50	13.42	0.61	-36.69	-30.00	6.69
193.58	H	41.29	-69.25	0.00	0.17	-69.42	-54.00	15.42
70.19	V	38.62	-67.90	-4.91	0.11	-72.92	-54.00	18.92

802.11 a chain 0**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)			
10480.00	H	34.10	-50.72	13.49	0.45	-37.68	-30.00	7.68
10480.00	V	34.88	-48.73	13.49	0.45	-35.69	-30.00	5.69
193.65	H	42.64	-67.90	0.00	0.17	-68.07	-54.00	14.07
71.26	V	39.25	-67.11	-4.37	0.11	-71.59	-54.00	17.59

802.11 a chain 1**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)			
10360.00	H	34.63	-50.52	13.42	0.61	-37.71	-30.00	7.71
10360.00	V	34.55	-49.53	13.42	0.61	-36.72	-30.00	6.72
192.35	H	42.34	-68.26	0.00	0.17	-68.43	-54.00	14.43
71.43	V	39.58	-66.75	-4.29	0.11	-71.15	-54.00	17.15

802.11 a chain 1**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)			
10480.00	H	34.19	-50.63	13.49	0.45	-37.59	-30.00	7.59
10480.00	V	34.21	-49.40	13.49	0.45	-36.36	-30.00	6.36
192.76	H	42.18	-68.40	0.00	0.17	-68.57	-54.00	14.57
71.53	V	39.87	-66.45	-4.24	0.11	-70.80	-54.00	16.80

802.11 n20**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)			
10360.00	H	34.25	-50.90	13.42	0.61	-38.09	-30.00	8.09
10360.00	V	34.78	-49.30	13.42	0.61	-36.49	-30.00	6.49
191.60	H	41.98	-68.66	0.00	0.17	-68.83	-54.00	14.83
72.31	V	39.75	-66.45	-3.85	0.11	-70.41	-54.00	16.41

802.11 n20**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)			
10480.00	H	34.10	-50.72	13.49	0.45	-37.68	-30.00	7.68
10480.00	V	34.66	-48.95	13.49	0.45	-35.91	-30.00	5.91
192.46	H	42.77	-67.83	0.00	0.17	-68.00	-54.00	14.00
71.66	V	39.86	-66.44	-4.17	0.11	-70.72	-54.00	16.72

802.11 n40

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)			
10380.00	H	34.82	-50.28	13.43	0.58	-37.43	-30.00	7.43
10380.00	V	34.89	-49.11	13.43	0.58	-36.26	-30.00	6.26
192.57	H	42.32	-68.27	0.00	0.17	-68.44	-54.00	14.44
72.14	V	39.60	-66.62	-3.93	0.11	-70.66	-54.00	16.66

802.11 n40

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)			
10460.00	H	34.15	-50.73	13.48	0.47	-37.72	-30.00	7.72
10460.00	V	34.81	-48.88	13.48	0.47	-35.87	-30.00	5.87
192.44	H	42.63	-67.97	0.00	0.17	-68.14	-54.00	14.14
72.46	V	39.45	-66.73	-3.77	0.11	-70.61	-54.00	16.61

802.11 ac20

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)			
10360.00	H	34.12	-51.03	13.42	0.61	-38.22	-30.00	8.22
10360.00	V	34.59	-49.49	13.42	0.61	-36.68	-30.00	6.68
192.64	H	41.41	-69.18	0.00	0.17	-69.35	-54.00	15.35
72.35	V	39.62	-66.57	-3.83	0.11	-70.51	-54.00	16.51

802.11 ac20

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)			
10480.00	H	34.58	-50.24	13.49	0.45	-37.20	-30.00	7.20
10480.00	V	34.68	-48.93	13.49	0.45	-35.89	-30.00	5.89
192.35	H	42.20	-68.40	0.00	0.17	-68.57	-54.00	14.57
72.51	V	39.27	-66.90	-3.75	0.11	-70.76	-54.00	16.76

802.11 ac40

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)			
10380.00	H	34.27	-50.83	13.43	0.58	-37.98	-30.00	7.98
10380.00	V	34.55	-49.45	13.43	0.58	-36.60	-30.00	6.60
192.22	H	42.57	-68.04	0.00	0.17	-68.21	-54.00	14.21
72.07	V	39.76	-66.48	-3.97	0.11	-70.56	-54.00	16.56

802.11 ac40**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)			
10460.00	H	34.77	-50.11	13.48	0.47	-37.10	-30.00	7.10
10460.00	V	34.59	-49.10	13.48	0.47	-36.09	-30.00	6.09
192.57	H	42.25	-68.34	0.00	0.17	-68.51	-54.00	14.51
72.76	V	39.16	-66.97	-3.62	0.11	-70.70	-54.00	16.70

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)			
10420.00	H	34.88	-50.11	13.45	0.53	-37.19	-30.00	7.19
10420.00	V	34.74	-49.11	13.45	0.53	-36.19	-30.00	6.19
192.21	H	42.57	-68.04	0.00	0.17	-68.21	-54.00	14.21
72.56	V	39.10	-67.06	-3.72	0.11	-70.89	-54.00	16.89

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

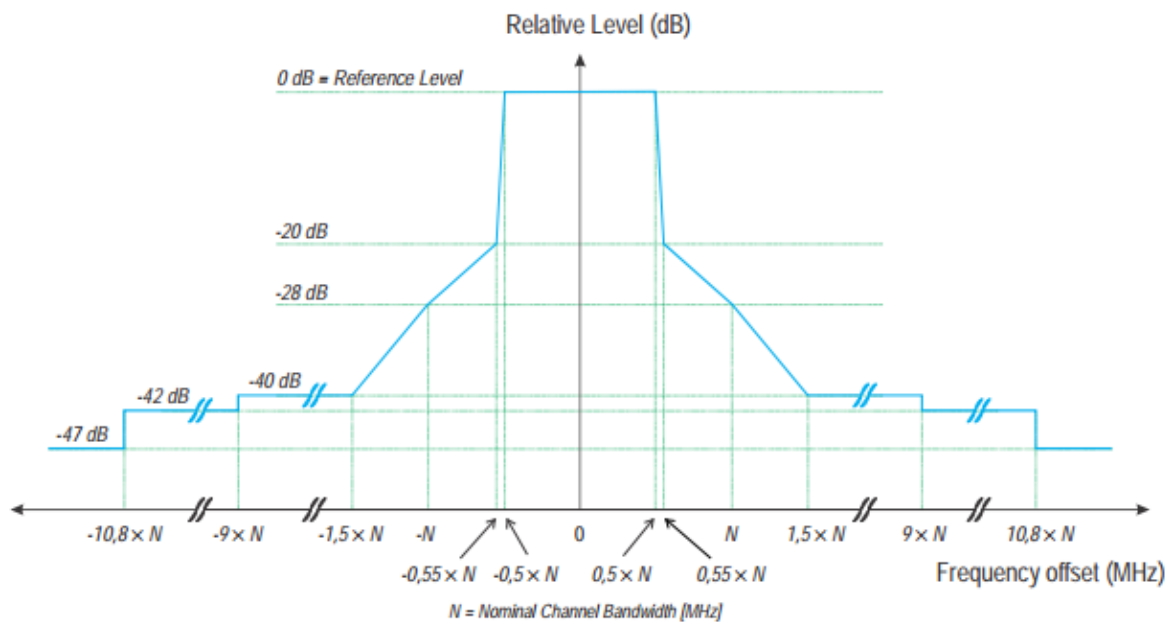


Figure 1: Transmit spectral power mask

Test Procedure

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

Test Data

Test Result: Compliant. The test data 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 chain 0

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)			
1395.60	H	36.14	-65.59	9.56	1.13	-57.16	-47.00	10.16
1771.20	V	36.30	-64.28	10.81	2.46	-55.93	-47.00	8.93
352.00	H	35.63	-72.05	0.00	0.19	-72.24	-57.00	15.24
425.00	V	35.74	-68.04	0.00	0.21	-68.25	-57.00	11.25

802.11 a chain 0

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)			
1696.30	H	36.13	-64.41	10.59	2.11	-55.93	-47.00	8.93
1770.40	V	35.74	-64.85	10.81	2.45	-56.49	-47.00	9.49
362.40	H	35.72	-71.77	0.00	0.19	-71.96	-57.00	14.96
368.70	V	36.45	-68.58	0.00	0.19	-68.77	-57.00	11.77

802.11 a chain 1

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)			
1688.40	H	35.77	-64.84	10.57	2.08	-56.35	-47.00	9.35
1698.70	V	35.98	-64.89	10.60	2.12	-56.41	-47.00	9.41
377.40	H	35.76	-71.45	0.00	0.19	-71.64	-57.00	14.64
452.70	V	36.67	-66.72	0.00	0.23	-66.95	-57.00	9.95

802.11 a chain 1

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)			
1331.40	H	36.88	-64.59	9.29	1.08	-56.38	-47.00	9.38
1578.90	V	37.02	-64.32	10.24	1.57	-55.65	-47.00	8.65
427.10	H	35.69	-70.73	0.00	0.21	-70.94	-57.00	13.94
462.50	V	35.45	-67.80	0.00	0.23	-68.03	-57.00	11.03

802.11 n20

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)			
1446.30	H	35.61	-66.33	9.77	1.17	-57.73	-47.00	10.73
1448.70	V	36.49	-65.08	9.78	1.17	-56.47	-47.00	9.47
425.70	H	35.90	-70.54	0.00	0.21	-70.75	-57.00	13.75
398.20	V	36.43	-67.75	0.00	0.19	-67.94	-57.00	10.94

802.11 n20

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)			
1569.20	H	36.46	-65.13	10.21	1.53	-56.45	-47.00	9.45
1742.40	V	35.56	-65.14	10.73	2.33	-56.74	-47.00	9.74
472.60	H	35.79	-70.00	0.00	0.24	-70.24	-57.00	13.24
358.10	V	35.44	-69.89	0.00	0.19	-70.08	-57.00	13.08

802.11 n40

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)			
1881.50	H	37.10	-61.92	11.14	2.96	-53.74	-47.00	6.74
1885.30	V	36.69	-63.44	11.16	2.98	-55.26	-47.00	8.26
411.30	H	35.20	-71.43	0.00	0.20	-71.63	-57.00	14.63
366.70	V	36.48	-68.60	0.00	0.19	-68.79	-57.00	11.79

802.11 n40

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)			
1956.30	H	35.88	-62.53	11.37	3.31	-54.47	-47.00	7.47
1956.80	V	37.20	-62.65	11.37	3.31	-54.59	-47.00	7.59
355.70	H	35.67	-71.94	0.00	0.19	-72.13	-57.00	15.13
412.60	V	36.39	-67.56	0.00	0.20	-67.76	-57.00	10.76

802.11 ac20

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)			
1470.30	H	37.10	-64.93	9.88	1.19	-56.24	-47.00	9.24
1478.50	V	36.44	-65.18	9.91	1.20	-56.47	-47.00	9.47
428.60	H	35.17	-71.23	0.00	0.21	-71.44	-57.00	14.44
317.50	V	35.39	-71.10	0.00	0.20	-71.30	-57.00	14.30

802.11 ac20

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)			
1746.30	H	36.11	-64.02	10.74	2.34	-55.62	-47.00	8.62
1748.40	V	35.88	-64.79	10.75	2.35	-56.39	-47.00	9.39
427.10	H	35.43	-70.99	0.00	0.21	-71.20	-57.00	14.20
357.20	V	35.40	-69.95	0.00	0.19	-70.14	-57.00	13.14

802.11 ac40

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)			
1880.30	H	36.69	-62.34	11.14	2.96	-54.16	-47.00	7.16
1885.40	V	36.78	-63.35	11.16	2.98	-55.17	-47.00	8.17
303.50	H	36.21	-72.37	0.00	0.20	-72.57	-57.00	15.57
391.40	V	35.54	-68.84	0.00	0.19	-69.03	-57.00	12.03

802.11 ac40

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)			
1639.40	H	35.78	-65.23	10.42	1.85	-56.66	-47.00	9.66
1670.40	V	36.24	-64.74	10.51	1.99	-56.22	-47.00	9.22
361.70	H	35.50	-72.00	0.00	0.19	-72.19	-57.00	15.19
425.70	V	36.37	-67.40	0.00	0.21	-67.61	-57.00	10.61

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)			
1711.20	H	36.33	-64.09	10.63	2.18	-55.64	-47.00	8.64
1746.30	V	35.78	-64.90	10.74	2.34	-56.50	-47.00	9.50
424.30	H	36.23	-70.22	0.00	0.21	-70.43	-57.00	13.43
377.20	V	36.25	-68.53	0.00	0.19	-68.72	-57.00	11.72

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.

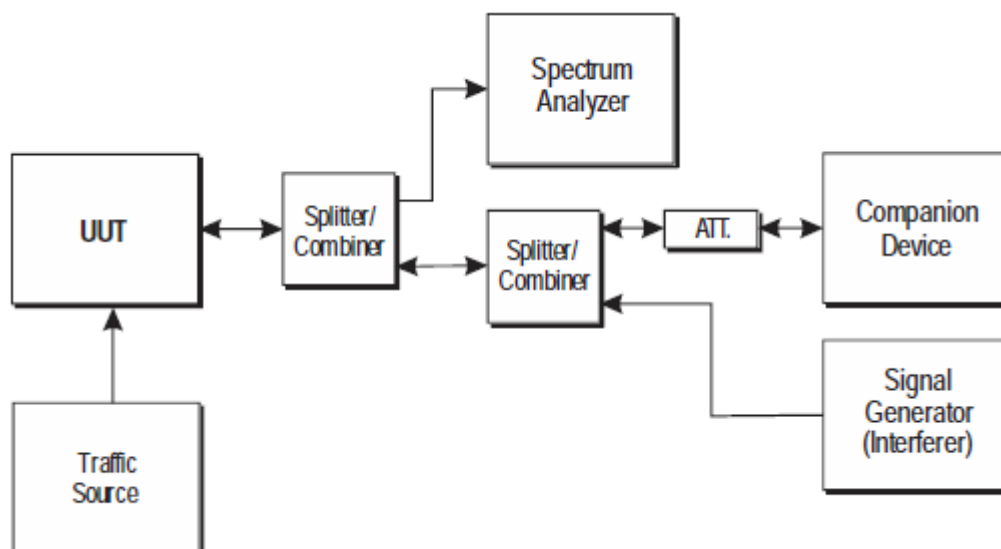
Limit

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



Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T430	AA887-03
Infinix	mobile phone	Infinix X6850	11334253AA000090

Test Data

Test Result: Compliant. The test data please refer to the Appendix.

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

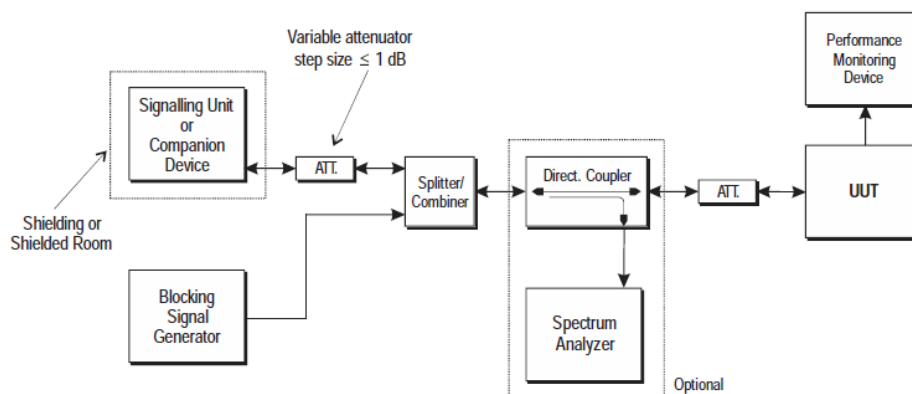


Figure 14: Test Set-up for receiver blocking

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)	-81	-75	5100	-53	-51	6.5	≤ 10
			4900	-47	-45	4.3	
			5000	-47	-42	5.1	
			5975	-47	-39	4.5	

EXHIBIT A – EUT PHOTOGRAPHS

For photos in this section, please refer to report No.: 2402A113224E-02 EXHIBIT A.

EXHIBIT B – TEST SETUP PHOTOGRAPHS

Radiated Emission Below 1GHz View



Radiated Emission Above 1GHz View



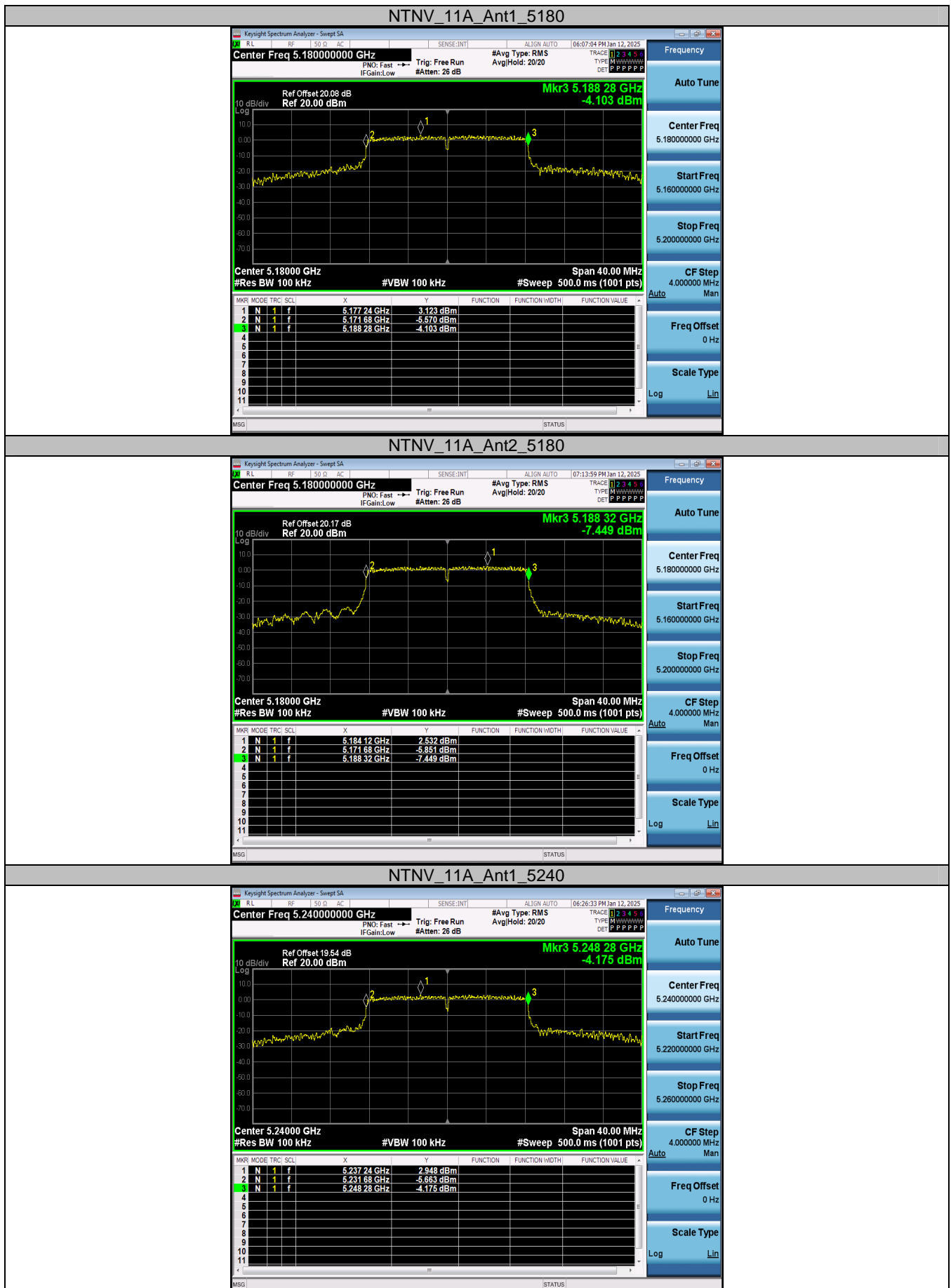
APPENDIX – RF CONDUCTED TEST DATA

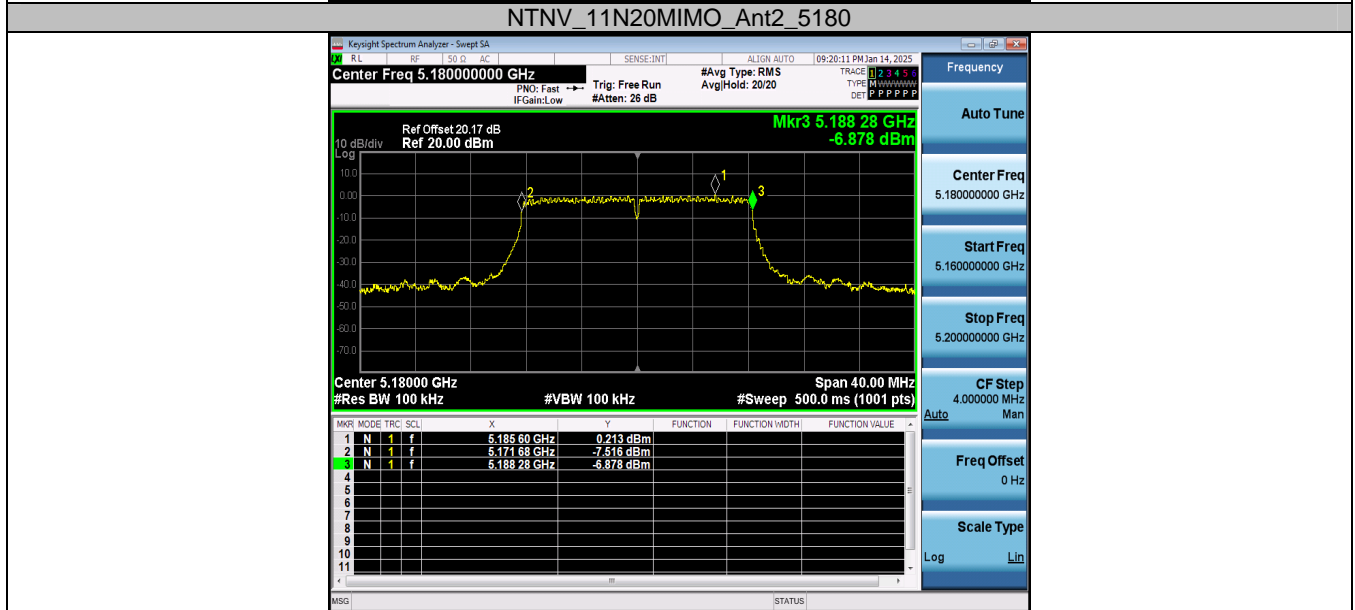
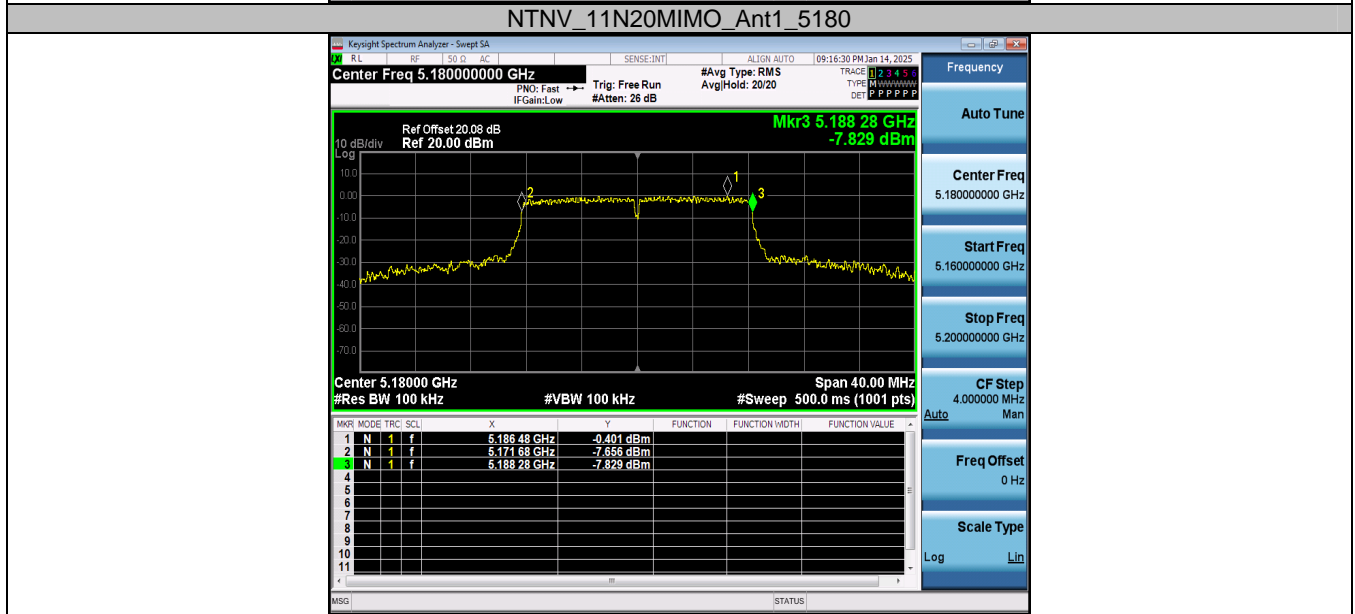
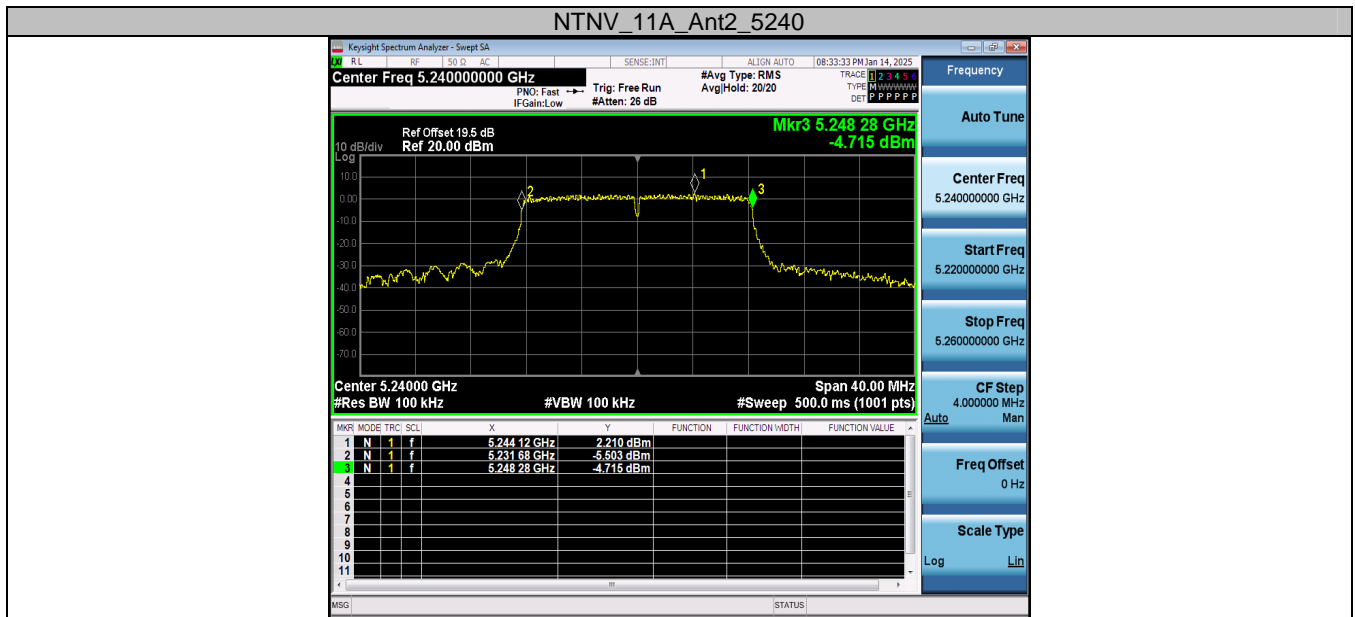
Appendix A: Carrier frequencies Test Result

Test Condition	TestMode	Antenna	Freq(MHz)	F1(MHz)	F2(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	11A	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.32	0.00000	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N20MIMO	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N40MIMO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
		Ant2	5190	5171.76	5208.24	0.00000	±20	PASS
		Ant1	5230	5211.68	5248.32	0.00000	±20	PASS
		Ant2	5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20MIMO	Ant1	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant2	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant1	5240	5231.08	5248.92	0.00000	±20	PASS
		Ant2	5240	5231.08	5248.88	-3.81679	±20	PASS
	11AC40MIMO	Ant1	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant2	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant1	5230	5211.76	5248.32	7.64818	±20	PASS
		Ant2	5230	5211.76	5248.32	7.64818	±20	PASS
	11AC80MIMO	Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
		Ant2	5210	5171.76	5248.24	0.00000	±20	PASS
LNTV	11A	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N20MIMO	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N40MIMO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
		Ant2	5190	5171.68	5208.24	-7.70713	±20	PASS
		Ant1	5230	5211.68	5248.32	0.00000	±20	PASS
		Ant2	5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20MIMO	Ant1	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant2	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant1	5240	5231.08	5248.92	0.00000	±20	PASS
		Ant2	5240	5231.08	5248.88	-3.81679	±20	PASS
	11AC40MIMO	Ant1	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant2	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant1	5230	5211.76	5248.32	7.64818	±20	PASS
		Ant2	5230	5211.76	5248.32	7.64818	±20	PASS
	11AC80MIMO	Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
		Ant2	5210	5171.76	5248.24	0.00000	±20	PASS
HTNV	11A	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.32	0.00000	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N20MIMO	Ant1	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant2	5180	5171.68	5188.28	-3.86100	±20	PASS
		Ant1	5240	5231.68	5248.28	-3.81679	±20	PASS
		Ant2	5240	5231.68	5248.28	-3.81679	±20	PASS
	11N40MIMO	Ant1	5190	5171.68	5208.24	-7.70713	±20	PASS
		Ant2	5190	5171.68	5208.24	-7.70713	±20	PASS
		Ant1	5230	5211.68	5248.32	0.00000	±20	PASS
		Ant2	5230	5211.68	5248.24	-7.64818	±20	PASS
	11AC20MIMO	Ant1	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant2	5180	5171.08	5188.88	-3.86100	±20	PASS
		Ant1	5240	5231.08	5248.92	0.00000	±20	PASS

	11AC40MIMO	Ant2	5240	5231.08	5248.92	0.00000	±20	PASS
		Ant1	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant2	5190	5171.76	5208.32	7.70713	±20	PASS
		Ant1	5230	5211.76	5248.32	7.64818	±20	PASS
	11AC80MIMO	Ant2	5230	5211.76	5248.32	7.64818	±20	PASS
		Ant1	5210	5171.76	5248.24	0.00000	±20	PASS
		Ant2	5210	5171.76	5248.24	0.00000	±20	PASS

Test Graphs (NTNV)

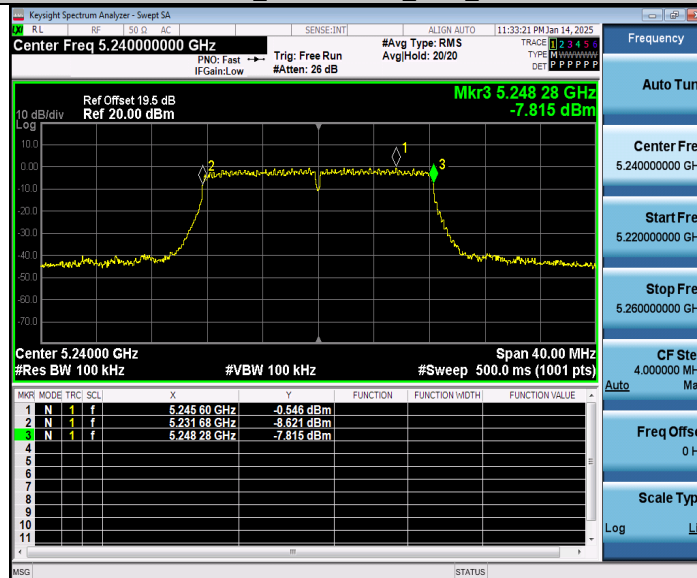




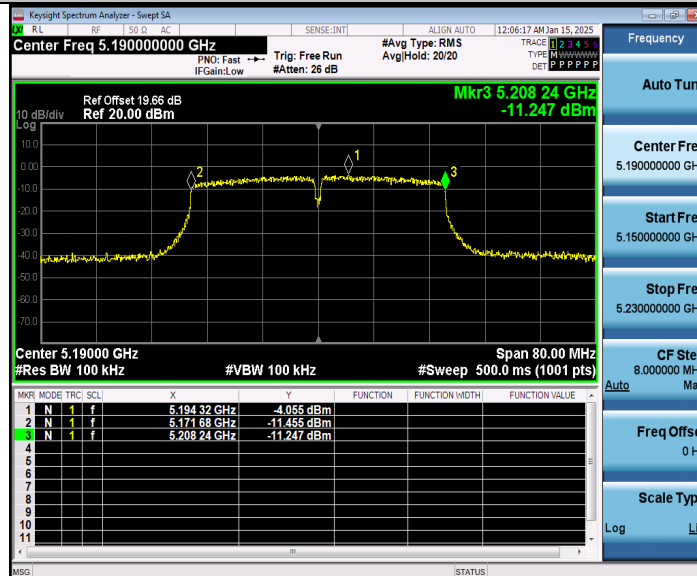
NTNV_11N20MIMO_Ant1_5240



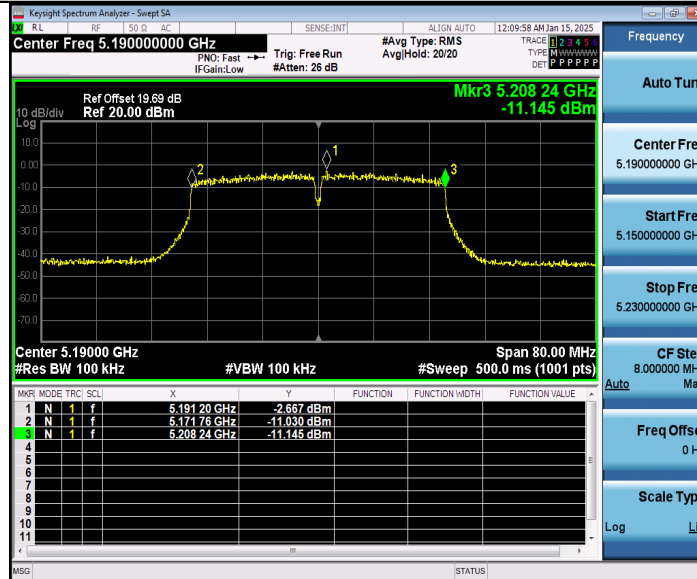
NTNV_11N20MIMO_Ant2_5240



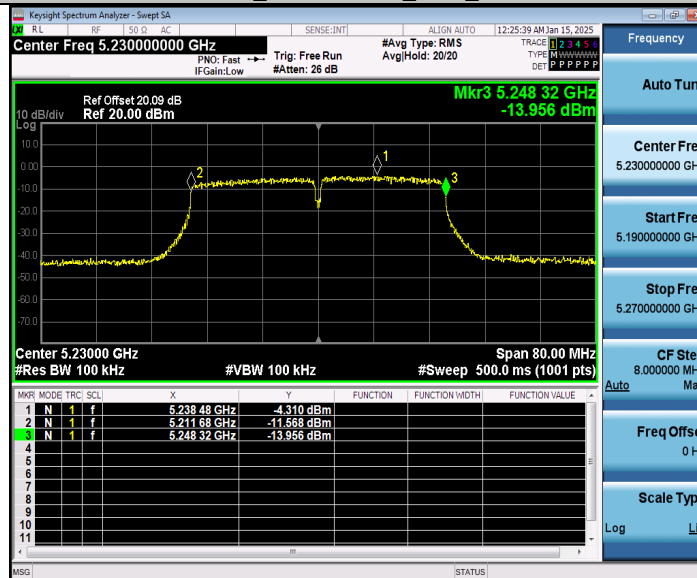
NTNV_11N40MIMO_Ant1_5190



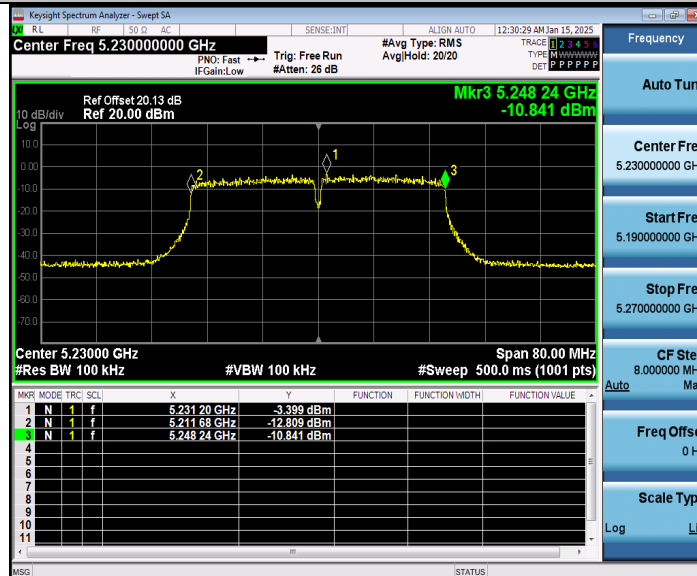
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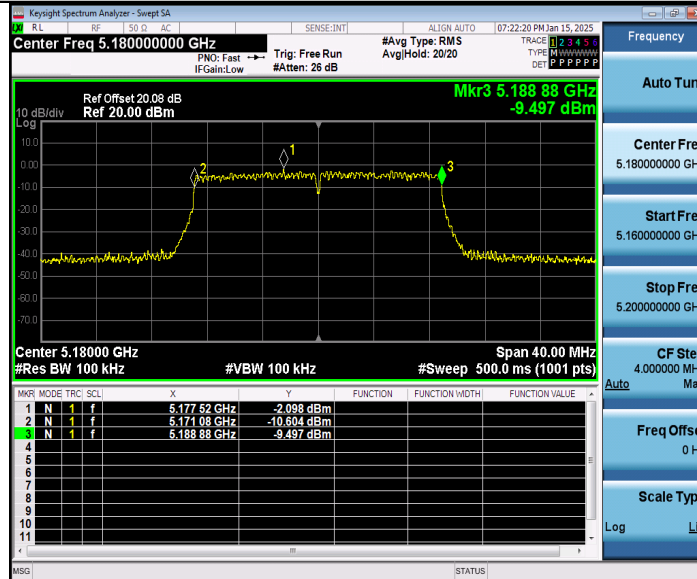
NTNV_11N40MIMO_Ant1_5230



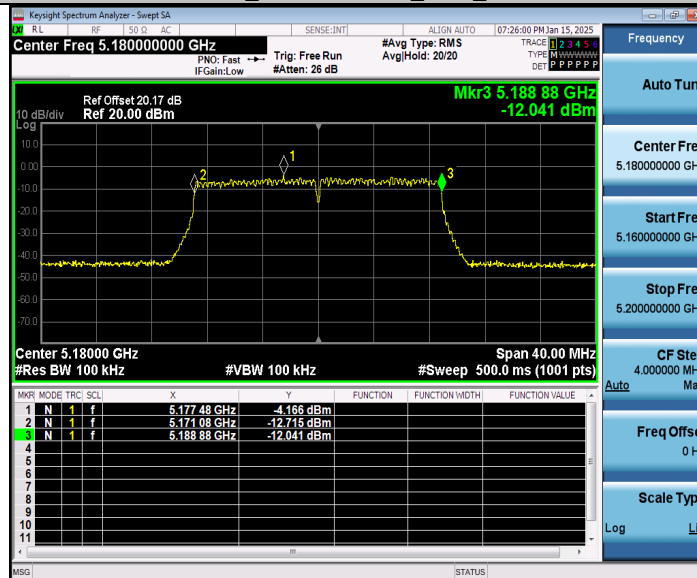
NTNV_11N40MIMO_Ant2_5230



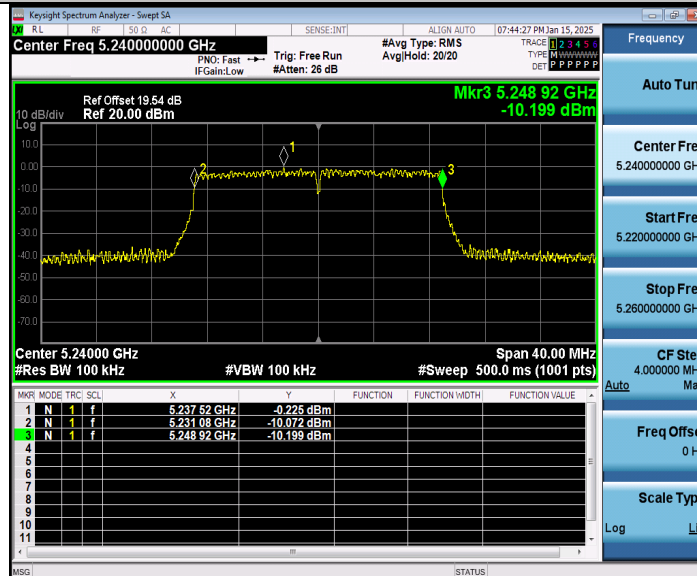
NTNV_11AC20MIMO_Ant1_5180



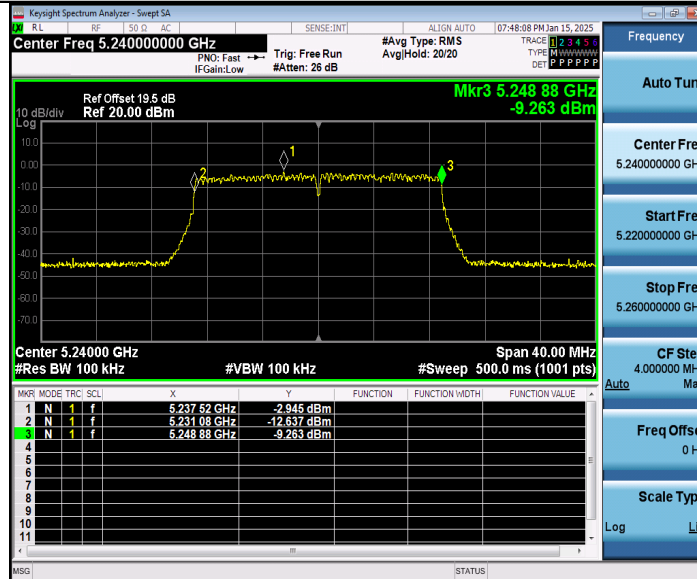
NTNV_11AC20MIMO_Ant2_5180



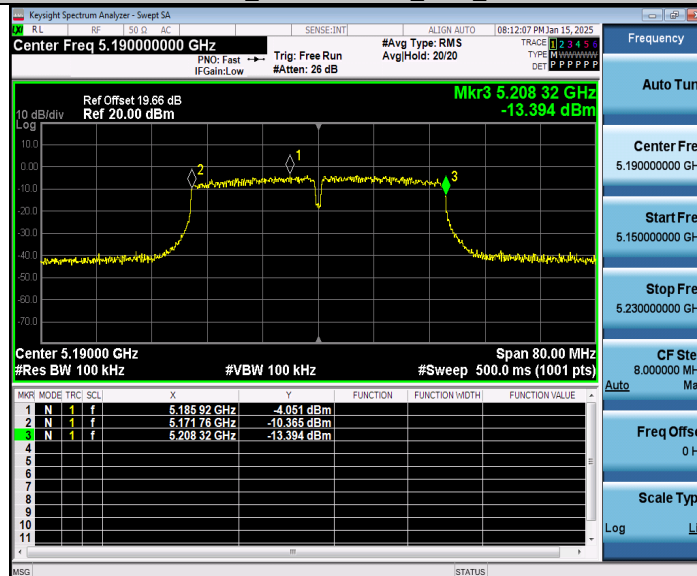
NTNV_11AC20MIMO_Ant1_5240



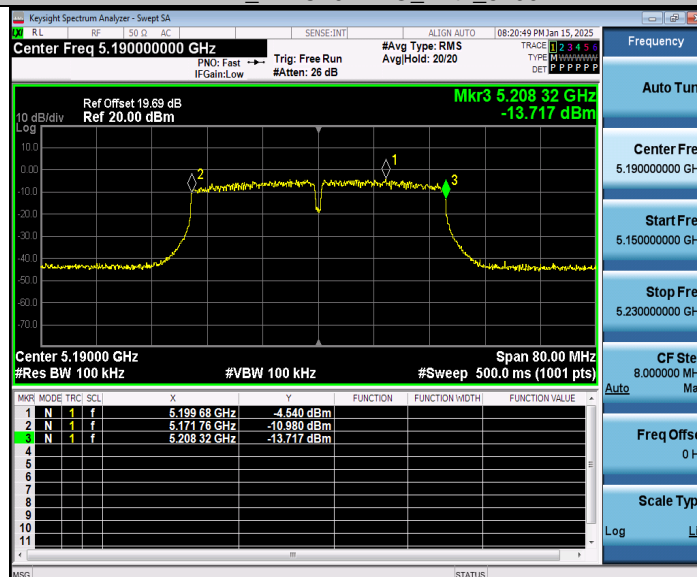
NTNV_11AC20MIMO_Ant2_5240



NTNV_11AC40MIMO_Ant1_5190



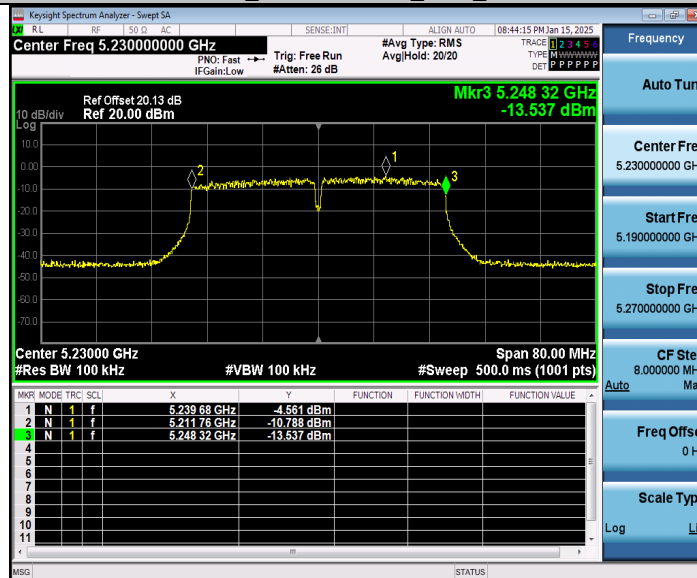
NTNV_11AC40MIMO_Ant2_5190



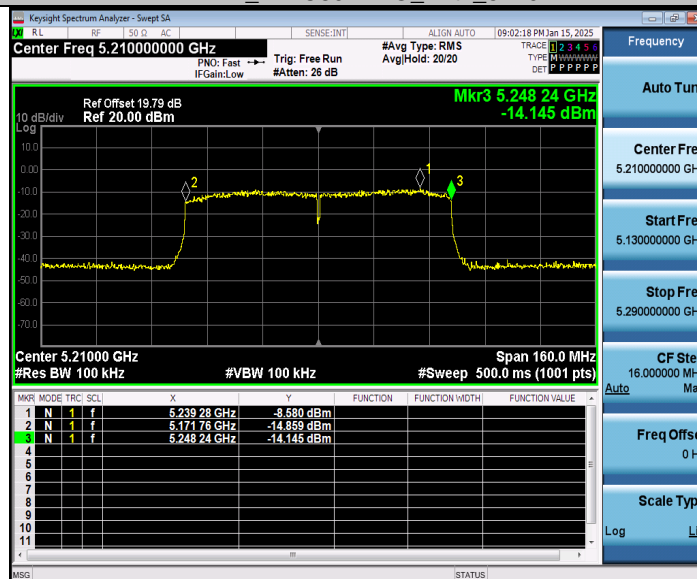
NTNV_11AC40MIMO_Ant1_5230

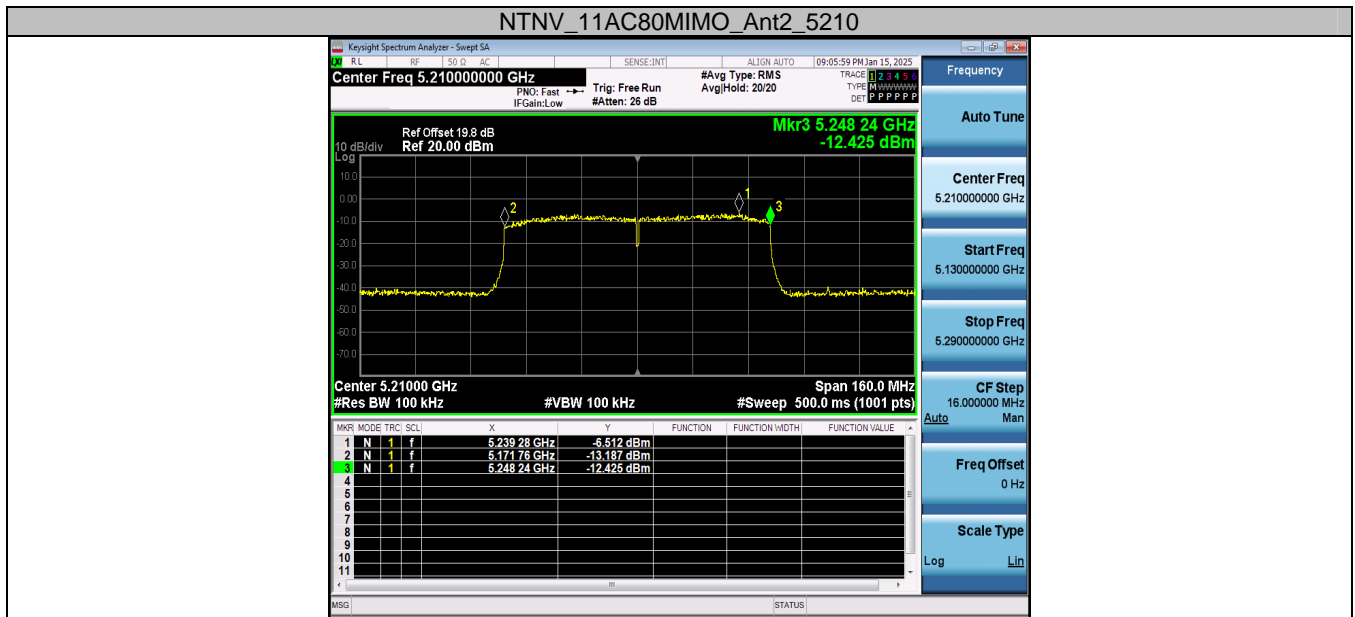


NTNV_11AC40MIMO_Ant2_5230



NTNV_11AC80MIMO_Ant1_5210





Appendix B: RF Output Power Test Result

Test Condition	Test Mode	Antenna	Freq(MHz)	Result [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
NTNV	11A	Ant1	5180	19.08	3.34	22.42	23	PASS
		Ant2	5180	18.91	3.54	22.45	23	PASS
		Ant1	5240	19.44	3.34	22.78	23	PASS
		Ant2	5240	18.89	3.54	22.43	23	PASS
	11N20MI MO	Ant1	5180	16.23	3.34	19.57	23	PASS
		Ant2	5180	16.15	3.54	19.69	23	PASS
		total	5180	19.20	3.54	22.74	23	PASS
		Ant1	5240	15.75	3.34	19.09	23	PASS
		Ant2	5240	16.46	3.54	20.00	23	PASS
		total	5240	19.13	3.54	22.67	23	PASS
	11N40MI MO	Ant1	5190	16.14	3.34	19.48	23	PASS
		Ant2	5190	16.50	3.54	20.04	23	PASS
		total	5190	19.33	3.54	22.87	23	PASS
		Ant1	5230	16.12	3.34	19.46	23	PASS
		Ant2	5230	16.38	3.54	19.92	23	PASS
		total	5230	19.26	3.54	22.80	23	PASS
	11AC20 MIMO	Ant1	5180	15.75	3.34	19.09	23	PASS
		Ant2	5180	16.16	3.54	19.70	23	PASS
		total	5180	18.97	3.54	22.51	23	PASS
		Ant1	5240	16.20	3.34	19.54	23	PASS
		Ant2	5240	16.30	3.54	19.84	23	PASS
		total	5240	19.26	3.54	22.80	23	PASS
	11AC40 MIMO	Ant1	5190	16.21	3.34	19.55	23	PASS
		Ant2	5190	16.16	3.54	19.70	23	PASS
		total	5190	19.20	3.54	22.74	23	PASS
		Ant1	5230	16.35	3.34	19.69	23	PASS
		Ant2	5230	16.26	3.54	19.80	23	PASS
		total	5230	19.32	3.54	22.86	23	PASS
	11AC80 MIMO	Ant1	5210	16.17	3.34	19.51	23	PASS
		Ant2	5210	16.27	3.54	19.81	23	PASS
		total	5210	19.23	3.54	22.77	23	PASS
LTVN	11A	Ant1	5180	19.13	3.34	22.47	23	PASS
		Ant2	5180	18.94	3.54	22.48	23	PASS
		Ant1	5240	19.47	3.34	22.81	23	PASS
		Ant2	5240	18.92	3.54	22.46	23	PASS
	11N20MI MO	Ant1	5180	16.25	3.34	19.59	23	PASS
		Ant2	5180	16.18	3.54	19.72	23	PASS
		total	5180	19.23	3.54	22.77	23	PASS
		Ant1	5240	15.78	3.34	19.12	23	PASS
		Ant2	5240	16.48	3.54	20.02	23	PASS
		total	5240	19.15	3.54	22.69	23	PASS
	11N40MI MO	Ant1	5190	16.17	3.34	19.51	23	PASS
		Ant2	5190	16.53	3.54	20.07	23	PASS
		total	5190	19.36	3.54	22.90	23	PASS
		Ant1	5230	16.14	3.34	19.48	23	PASS
		Ant2	5230	16.41	3.54	19.95	23	PASS
		total	5230	19.29	3.54	22.83	23	PASS
	11AC20 MIMO	Ant1	5180	15.78	3.34	19.12	23	PASS
		Ant2	5180	16.18	3.54	19.72	23	PASS
		total	5180	18.99	3.54	22.53	23	PASS
		Ant1	5240	16.24	3.34	19.58	23	PASS
		Ant2	5240	16.33	3.54	19.87	23	PASS
		total	5240	19.30	3.54	22.84	23	PASS
	11AC40 MIMO	Ant1	5190	16.25	3.34	19.59	23	PASS
		Ant2	5190	16.19	3.54	19.73	23	PASS
		total	5190	19.23	3.54	22.77	23	PASS
		Ant1	5230	16.37	3.34	19.71	23	PASS
		Ant2	5230	16.28	3.54	19.82	23	PASS
		total	5230	19.34	3.54	22.88	23	PASS
	11AC80	Ant1	5210	16.20	3.34	19.54	23	PASS

HTNV	MIMO	Ant2	5210	16.30	3.54	19.84	23	PASS
		total	5210	19.26	3.54	22.80	23	PASS
	11A	Ant1	5180	19.05	3.34	22.39	23	PASS
		Ant2	5180	18.88	3.54	22.42	23	PASS
		Ant1	5240	19.41	3.34	22.75	23	PASS
		Ant2	5240	18.84	3.54	22.38	23	PASS
	11N20MI MO	Ant1	5180	16.21	3.34	19.55	23	PASS
		Ant2	5180	16.10	3.54	19.64	23	PASS
		total	5180	19.17	3.54	22.71	23	PASS
		Ant1	5240	15.72	3.34	19.06	23	PASS
		Ant2	5240	16.44	3.54	19.98	23	PASS
		total	5240	19.11	3.54	22.65	23	PASS
	11N40MI MO	Ant1	5190	16.12	3.34	19.46	23	PASS
		Ant2	5190	16.47	3.54	20.01	23	PASS
		total	5190	19.31	3.54	22.85	23	PASS
		Ant1	5230	16.10	3.34	19.44	23	PASS
		Ant2	5230	16.35	3.54	19.89	23	PASS
		total	5230	19.24	3.54	22.78	23	PASS
	11AC20 MIMO	Ant1	5180	15.72	3.34	19.06	23	PASS
		Ant2	5180	16.14	3.54	19.68	23	PASS
		total	5180	18.95	3.54	22.49	23	PASS
		Ant1	5240	16.16	3.34	19.50	23	PASS
		Ant2	5240	16.25	3.54	19.79	23	PASS
	11AC40 MIMO	total	5240	19.22	3.54	22.76	23	PASS
		Ant1	5190	16.17	3.34	19.51	23	PASS
		Ant2	5190	16.14	3.54	19.68	23	PASS
		total	5190	19.17	3.54	22.71	23	PASS
		Ant1	5230	16.32	3.34	19.66	23	PASS
		Ant2	5230	16.24	3.54	19.78	23	PASS
	11AC80 MIMO	total	5230	19.29	3.54	22.83	23	PASS
		Ant1	5210	16.14	3.34	19.48	23	PASS
		Ant2	5210	16.25	3.54	19.79	23	PASS
		total	5210	19.21	3.54	22.75	23	PASS

Note: The duty cycle factor was added into the result.

Beamforming

Test Condition	Test Mode	Antenna	Freq(MHz)	Result [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
NTNV	11N20MI MO	Ant1	5180	12.87	3.34	16.21	23	PASS
		Ant2	5180	13.09	3.54	16.63	23	PASS
		total	5180	15.99	6.54	22.53	23	PASS
		Ant1	5240	13.43	3.34	16.77	23	PASS
		Ant2	5240	12.96	3.54	16.50	23	PASS
		total	5240	16.21	6.54	22.75	23	PASS
	11N40MI MO	Ant1	5190	13.26	3.34	16.60	23	PASS
		Ant2	5190	13.05	3.54	16.59	23	PASS
		total	5190	16.17	6.54	22.71	23	PASS
		Ant1	5230	13.43	3.34	16.77	23	PASS
		Ant2	5230	13.27	3.54	16.81	23	PASS
		total	5230	16.36	6.54	22.90	23	PASS
	11AC20 MIMO	Ant1	5180	12.89	3.34	16.23	23	PASS
		Ant2	5180	13.18	3.54	16.72	23	PASS
		total	5180	16.05	6.54	22.59	23	PASS
		Ant1	5240	13.18	3.34	16.52	23	PASS
		Ant2	5240	12.92	3.54	16.46	23	PASS
		total	5240	16.06	6.54	22.60	23	PASS
	11AC40 MIMO	Ant1	5190	13.50	3.34	16.84	23	PASS
		Ant2	5190	13.05	3.54	16.59	23	PASS
		total	5190	16.29	6.54	22.83	23	PASS
		Ant1	5230	13.38	3.34	16.72	23	PASS
		Ant2	5230	13.38	3.54	16.92	23	PASS
		total	5230	16.39	6.54	22.93	23	PASS
	11AC80 MIMO	Ant1	5210	13.23	3.34	16.57	23	PASS
		Ant2	5210	13.13	3.54	16.67	23	PASS
		total	5210	16.19	6.54	22.73	23	PASS
LTVN	11N20MI MO	Ant1	5180	12.91	3.34	16.25	23	PASS
		Ant2	5180	13.12	3.54	16.66	23	PASS
		total	5180	16.03	6.54	22.57	23	PASS
		Ant1	5240	13.45	3.34	16.79	23	PASS
		Ant2	5240	12.98	3.54	16.52	23	PASS
		total	5240	16.23	6.54	22.77	23	PASS
	11N40MI MO	Ant1	5190	13.29	3.34	16.63	23	PASS
		Ant2	5190	13.08	3.54	16.62	23	PASS
		total	5190	16.20	6.54	22.74	23	PASS
		Ant1	5230	13.45	3.34	16.79	23	PASS
		Ant2	5230	13.29	3.54	16.83	23	PASS
		total	5230	16.38	6.54	22.92	23	PASS
	11AC20 MIMO	Ant1	5180	12.92	3.34	16.26	23	PASS
		Ant2	5180	13.21	3.54	16.75	23	PASS
		total	5180	16.08	6.54	22.62	23	PASS
		Ant1	5240	13.20	3.34	16.54	23	PASS
		Ant2	5240	12.95	3.54	16.49	23	PASS
		total	5240	16.09	6.54	22.63	23	PASS
	11AC40 MIMO	Ant1	5190	13.54	3.34	16.88	23	PASS
		Ant2	5190	13.08	3.54	16.62	23	PASS
		total	5190	16.33	6.54	22.87	23	PASS
		Ant1	5230	13.42	3.34	16.76	23	PASS
		Ant2	5230	13.41	3.54	16.95	23	PASS
		total	5230	16.43	6.54	22.97	23	PASS
	11AC80 MIMO	Ant1	5210	13.25	3.34	16.59	23	PASS
		Ant2	5210	13.15	3.54	16.69	23	PASS
		total	5210	16.21	6.54	22.75	23	PASS
HTNV	11N20MI MO	Ant1	5180	12.84	3.34	16.18	23	PASS
		Ant2	5180	13.05	3.54	16.59	23	PASS
		total	5180	15.96	6.54	22.50	23	PASS
		Ant1	5240	13.41	3.34	16.75	23	PASS
		Ant2	5240	12.94	3.54	16.48	23	PASS
		total	5240	16.19	6.54	22.73	23	PASS
	11N40MI MO	Ant1	5190	13.24	3.34	16.58	23	PASS
		Ant2	5190	13.02	3.54	16.56	23	PASS

		total	5190	16.14	6.54	22.68	23	PASS
		Ant1	5230	13.41	3.34	16.75	23	PASS
		Ant2	5230	13.25	3.54	16.79	23	PASS
	11AC20 MIMO	total	5230	16.34	6.54	22.88	23	PASS
		Ant1	5180	12.86	3.34	16.20	23	PASS
		Ant2	5180	13.15	3.54	16.69	23	PASS
		total	5180	16.02	6.54	22.56	23	PASS
		Ant1	5240	13.16	3.34	16.50	23	PASS
		Ant2	5240	12.90	3.54	16.44	23	PASS
		total	5240	16.04	6.54	22.58	23	PASS
	11AC40 MIMO	Ant1	5190	13.48	3.34	16.82	23	PASS
		Ant2	5190	13.02	3.54	16.56	23	PASS
		total	5190	16.27	6.54	22.81	23	PASS
		Ant1	5230	13.35	3.34	16.69	23	PASS
		Ant2	5230	13.36	3.54	16.90	23	PASS
	11AC80 MIMO	total	5230	16.37	6.54	22.91	23	PASS
		Ant1	5210	13.21	3.34	16.55	23	PASS
		Ant2	5210	13.10	3.54	16.64	23	PASS
		total	5210	16.17	6.54	22.71	23	PASS

Note: The duty cycle factor and beamforming gain were added into the result.

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	5.87	0.56	6.43	3.34	9.77	10	PASS
	Ant2	5180	6.01	0.24	6.25	3.54	9.79	10	PASS
	Ant1	5240	6.10	0.30	6.40	3.34	9.74	10	PASS
	Ant2	5240	5.62	0.53	6.15	3.54	9.69	10	PASS
11N20MIMO	Ant1	5180	3.08	0.47	3.55	3.34	6.89	10	PASS
	Ant2	5180	2.90	0.39	3.29	3.54	6.83	10	PASS
	total	5180	---	---	6.43	3.54	9.97	10	PASS
	Ant1	5240	2.54	0.47	3.01	3.34	6.35	10	PASS
	Ant2	5240	2.94	0.50	3.44	3.54	6.98	10	PASS
	total	5240	---	---	6.24	3.54	9.78	10	PASS
11N40MIMO	Ant1	5190	-0.93	1.28	0.35	3.34	3.69	10	PASS
	Ant2	5190	-1.51	1.88	0.37	3.54	3.91	10	PASS
	total	5190	---	---	3.37	3.54	6.91	10	PASS
	Ant1	5230	-0.94	1.09	0.15	3.34	3.49	10	PASS
	Ant2	5230	-1.76	0.99	-0.77	3.54	2.77	10	PASS
	total	5230	---	---	2.72	3.54	6.26	10	PASS
11AC20MIMO	Ant1	5180	-0.66	3.42	2.76	3.34	6.10	10	PASS
	Ant2	5180	-2.75	6.02	3.27	3.54	6.81	10	PASS
	total	5180	---	---	6.03	3.54	9.57	10	PASS
	Ant1	5240	0.11	1.86	1.97	3.34	5.31	10	PASS
	Ant2	5240	-2.37	3.55	1.18	3.54	4.72	10	PASS
	total	5240	---	---	4.60	3.54	8.14	10	PASS
11AC40MIMO	Ant1	5190	-2.97	3.47	0.50	3.34	3.84	10	PASS
	Ant2	5190	-3.66	4.07	0.41	3.54	3.95	10	PASS
	total	5190	---	---	3.47	3.54	7.01	10	PASS
	Ant1	5230	-1.43	2.50	1.07	3.34	4.41	10	PASS
	Ant2	5230	-1.85	3.01	1.16	3.54	4.70	10	PASS
	total	5230	---	---	4.13	3.54	7.67	10	PASS
11AC80MIMO	Ant1	5210	-7.92	5.01	-2.91	3.34	0.43	10	PASS
	Ant2	5210	-5.75	3.01	-2.74	3.54	0.80	10	PASS
	total	5210	---	---	0.19	3.54	3.73	10	PASS

Test Graphs





















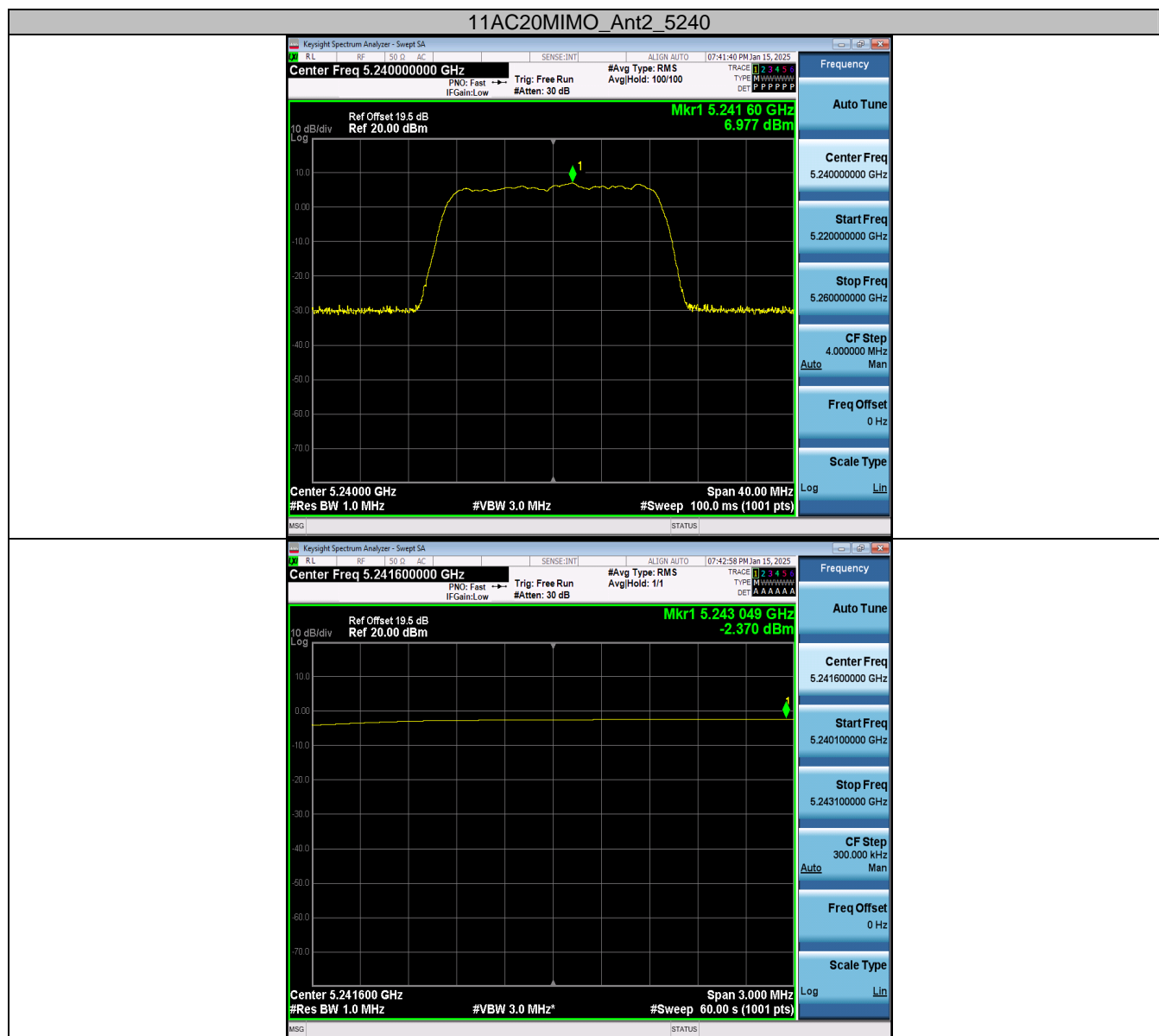
























Beamforming

Test Mode	Antenna	Freq(MHz)	Result [dBm/MHz]	DC Factor [dB]	PD [dBm/MHz]	Gain [dBi]	EIRP PSD [dBm/MHz]	Limit [dBm]	Verdict
11N20MIMO	Ant1	5180	-0.22	0.00	-0.22	3.34	3.12	10	PASS
	Ant2	5180	0.59	0.00	0.59	3.54	4.13	10	PASS
	total	5180	---	---	3.21	3.54	9.75	10	PASS
	Ant1	5240	0.51	0.00	0.51	3.34	3.85	10	PASS
	Ant2	5240	0.26	0.00	0.26	3.54	3.80	10	PASS
	total	5240	---	---	3.40	3.54	9.94	10	PASS
11N40MIMO	Ant1	5190	-2.91	0.00	-2.91	3.34	0.43	10	PASS
	Ant2	5190	-3.25	0.00	-3.25	3.54	0.29	10	PASS
	total	5190	---	---	-0.07	3.54	6.47	10	PASS
	Ant1	5230	-1.55	0.00	-1.55	3.34	1.79	10	PASS
	Ant2	5230	-1.88	0.00	-1.88	3.54	1.66	10	PASS
	total	5230	---	---	1.30	3.54	7.84	10	PASS
11AC20MIMO	Ant1	5180	0.05	0.00	0.05	3.34	3.39	10	PASS
	Ant2	5180	0.53	0.00	0.53	3.54	4.07	10	PASS
	total	5180	---	---	3.31	3.54	9.85	10	PASS
	Ant1	5240	0.42	0.00	0.42	3.34	3.76	10	PASS
	Ant2	5240	-0.12	0.00	-0.12	3.54	3.42	10	PASS
	total	5240	---	---	3.17	3.54	9.71	10	PASS
11AC40MIMO	Ant1	5190	-2.12	0.00	-2.12	3.34	1.22	10	PASS
	Ant2	5190	-2.52	0.00	-2.52	3.54	1.02	10	PASS
	total	5190	---	---	0.69	3.54	7.23	10	PASS
	Ant1	5230	-2.14	0.00	-2.14	3.34	1.20	10	PASS
	Ant2	5230	-2.11	0.00	-2.11	3.54	1.43	10	PASS
	total	5230	---	---	0.89	3.54	7.43	10	PASS
11AC80MIMO	Ant1	5210	-5.70	0.00	-5.70	3.34	-2.36	10	PASS
	Ant2	5210	-6.64	0.00	-6.64	3.54	-3.10	10	PASS
	total	5210	---	---	-3.13	3.54	3.41	10	PASS

Test Graphs













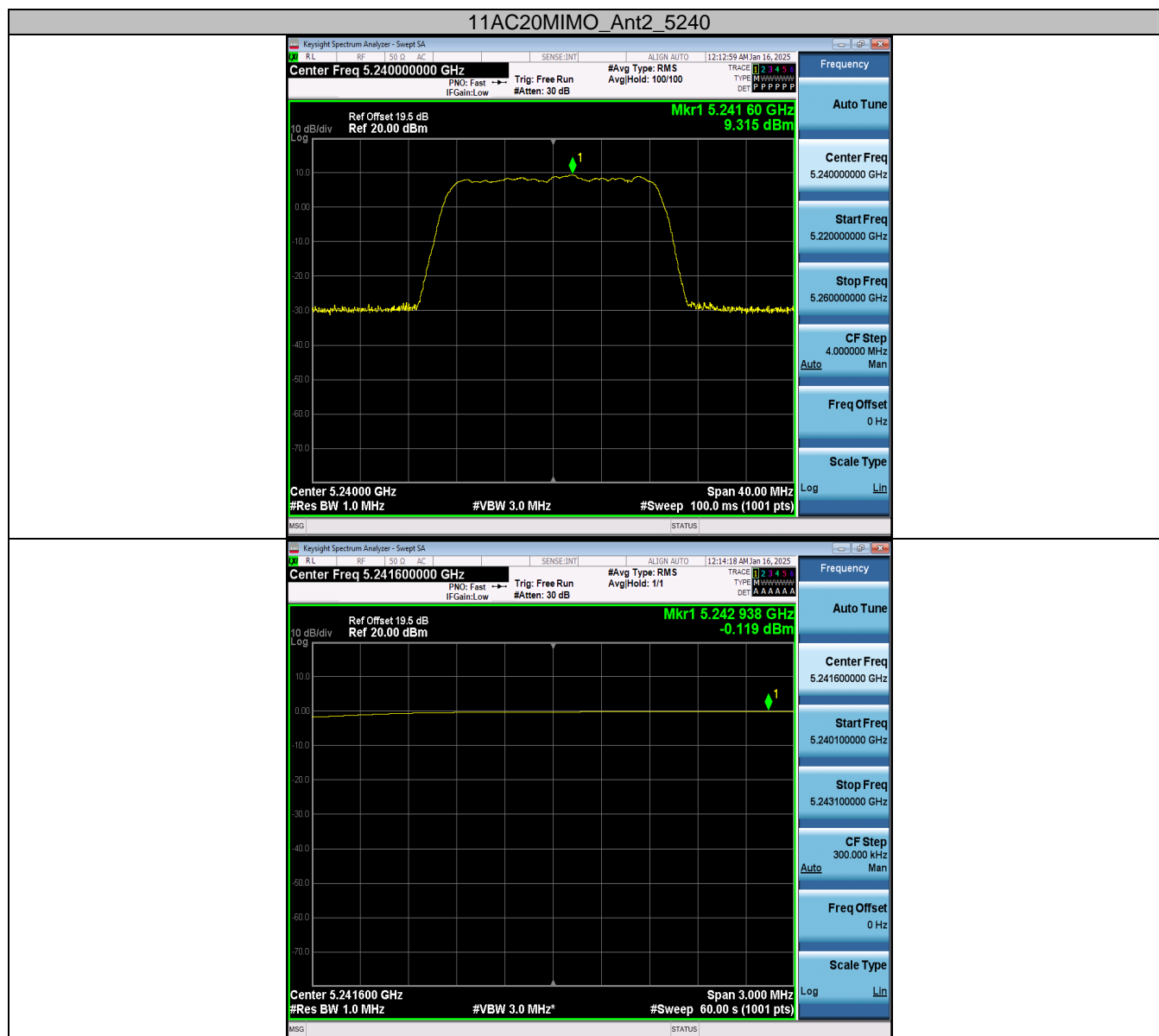


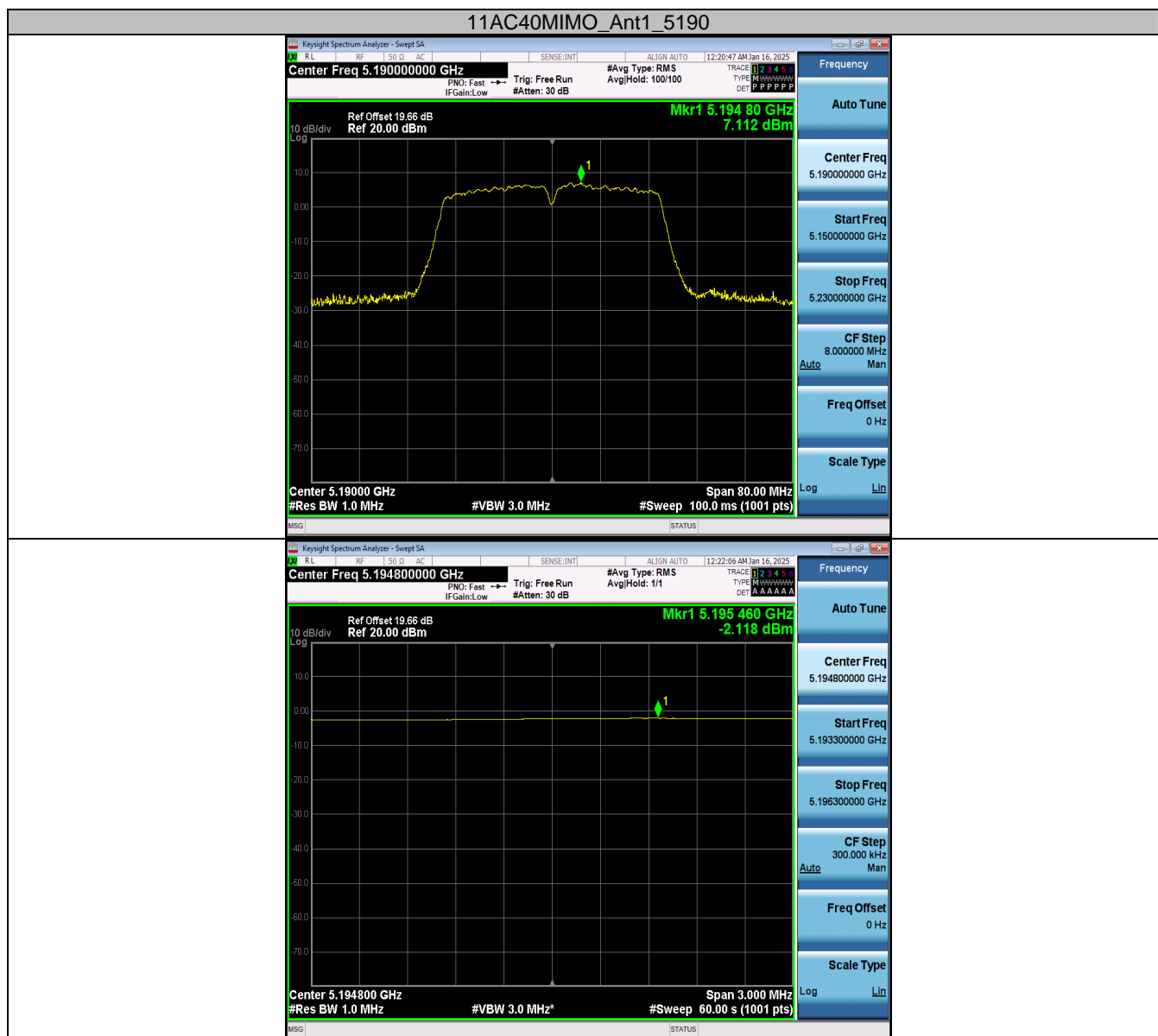








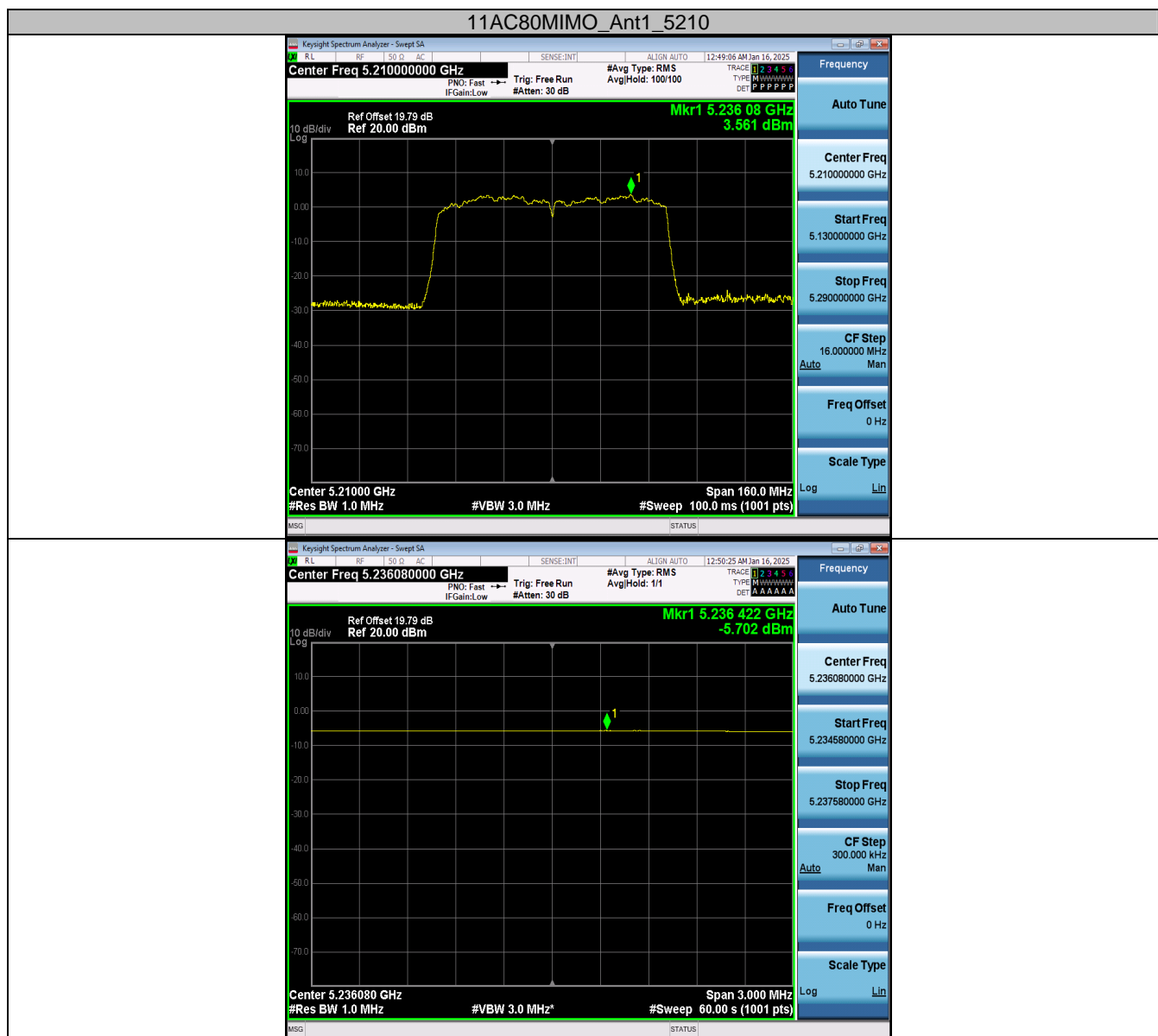










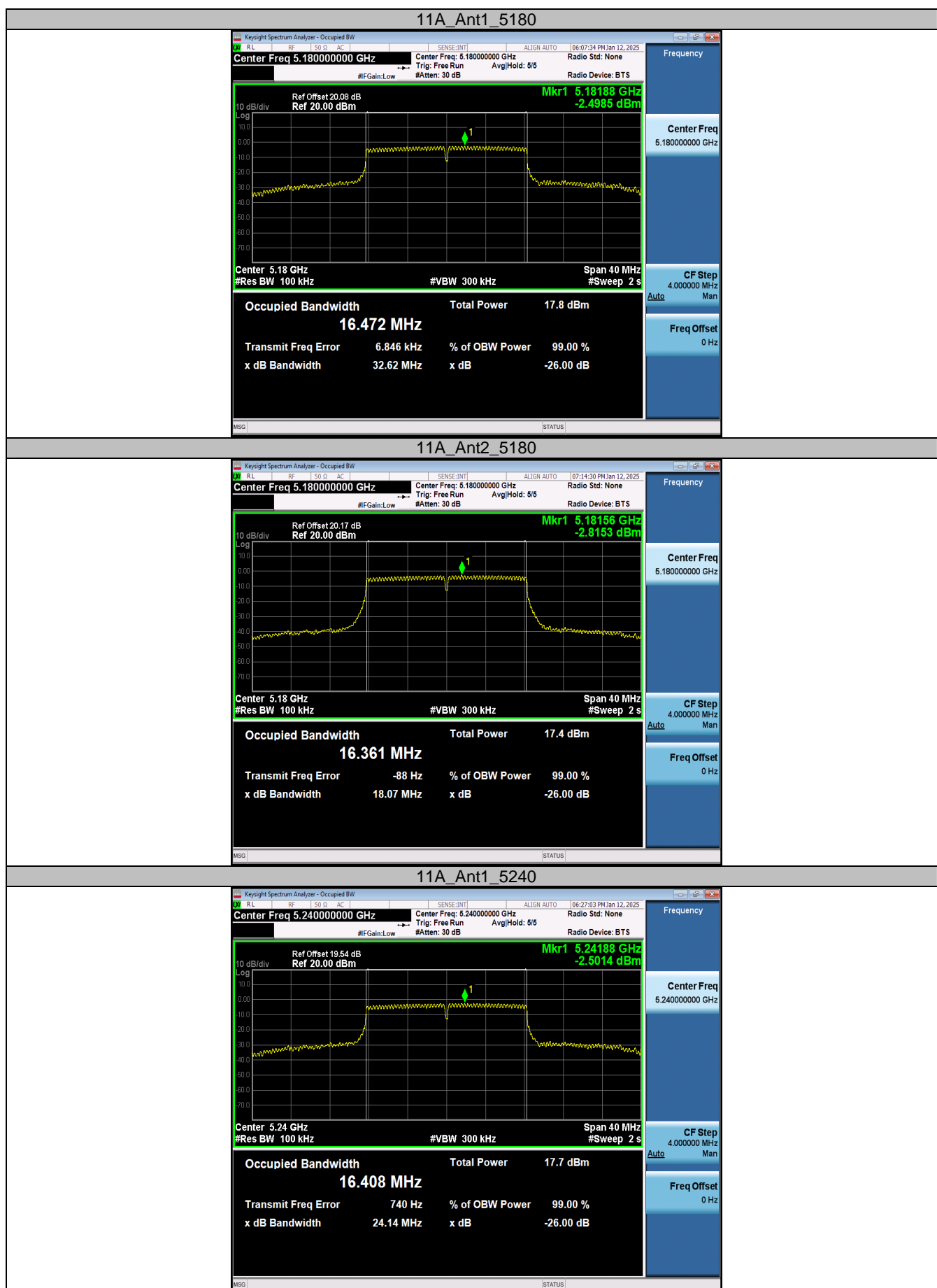




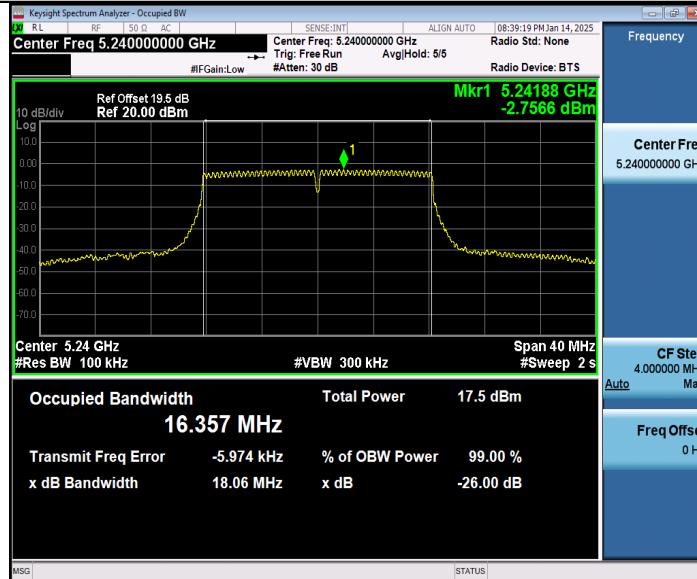
Appendix D: Occupied Channel Bandwidth Test Result

Test Mode	Antenna	Freq(MHz)	OCB[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.472	16 to 20	PASS
	Ant2	5180	16.361	16 to 20	PASS
	Ant1	5240	16.408	16 to 20	PASS
	Ant2	5240	16.357	16 to 20	PASS
11N20MIMO	Ant1	5180	16.369	16 to 20	PASS
	Ant2	5180	16.363	16 to 20	PASS
	Ant1	5240	16.361	16 to 20	PASS
	Ant2	5240	16.358	16 to 20	PASS
11N40MIMO	Ant1	5190	36.022	32 to 40	PASS
	Ant2	5190	36.026	32 to 40	PASS
	Ant1	5230	36.083	32 to 40	PASS
	Ant2	5230	36.103	32 to 40	PASS
11AC20MIMO	Ant1	5180	17.593	16 to 20	PASS
	Ant2	5180	17.594	16 to 20	PASS
	Ant1	5240	17.586	16 to 20	PASS
	Ant2	5240	17.586	16 to 20	PASS
11AC40MIMO	Ant1	5190	36.038	32 to 40	PASS
	Ant2	5190	36.010	32 to 40	PASS
	Ant1	5230	36.075	32 to 40	PASS
	Ant2	5230	36.065	32 to 40	PASS
11AC80MIMO	Ant1	5210	75.335	64 to 80	PASS
	Ant2	5210	75.240	64 to 80	PASS

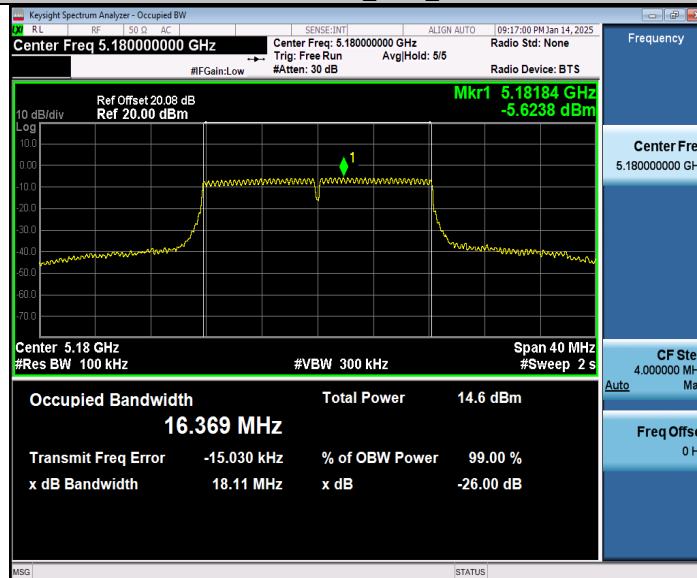
Test Graphs



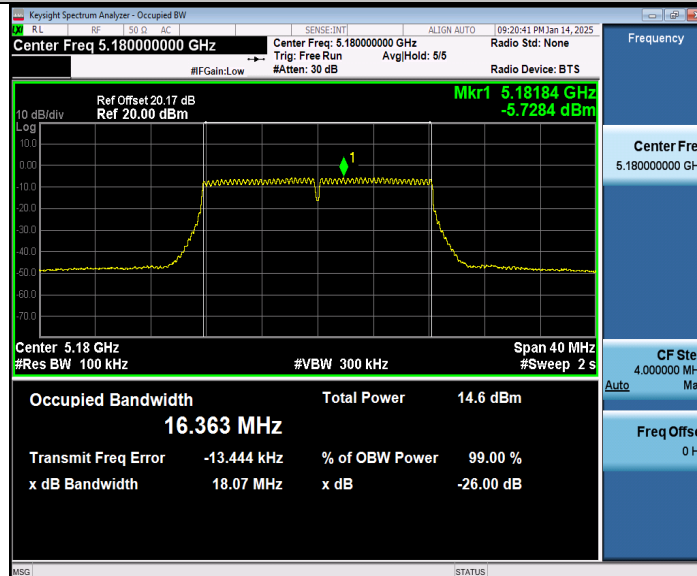
11A_Ant2_5240



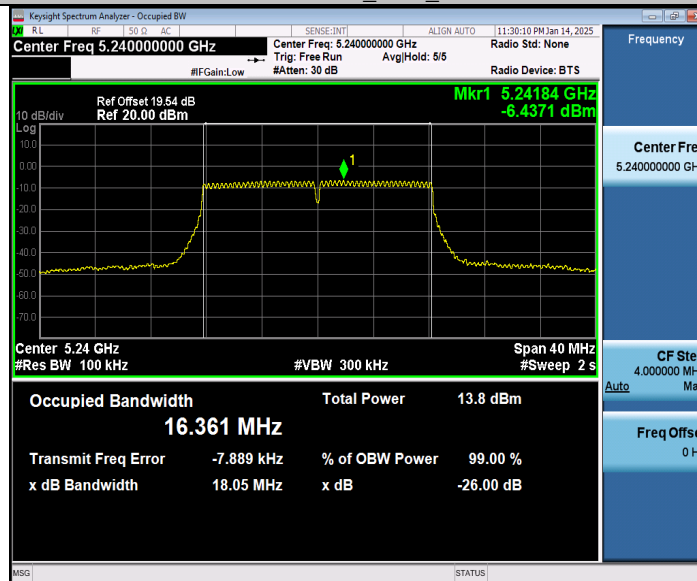
11N20MIMO_Ant1_5180



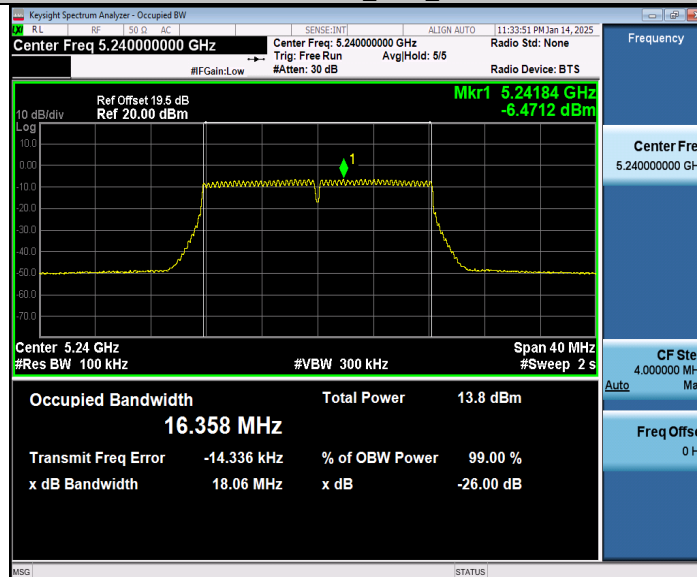
11N20MIMO_Ant2_5180



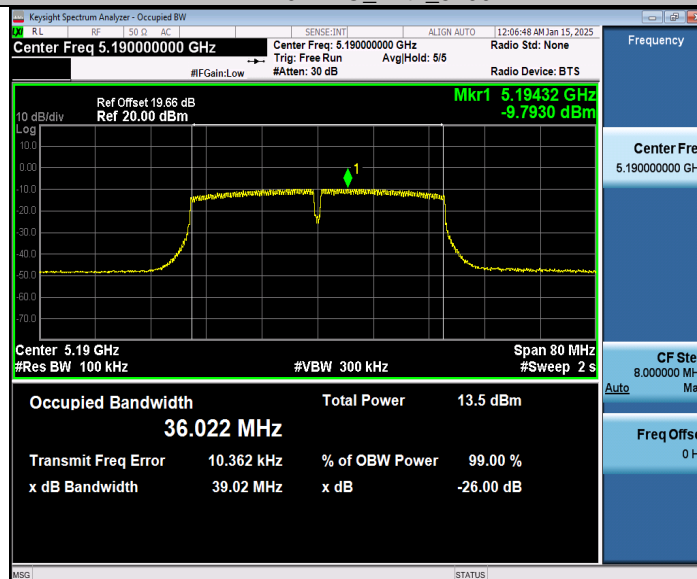
11N20MIMO_Ant1_5240

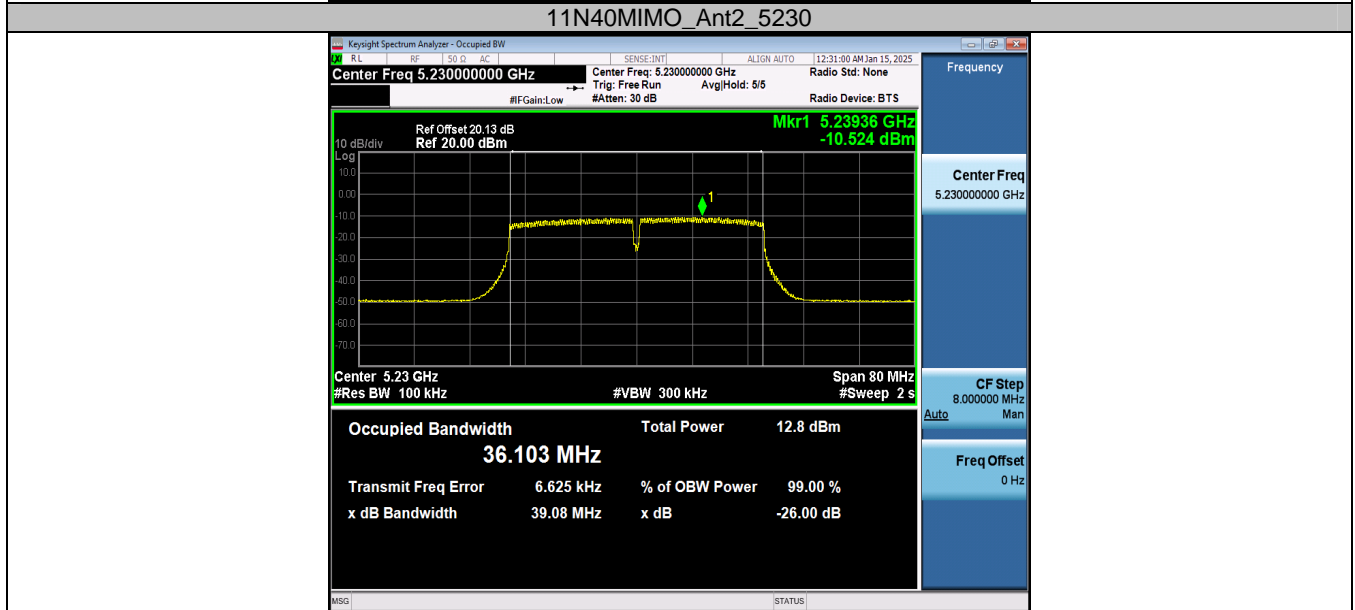
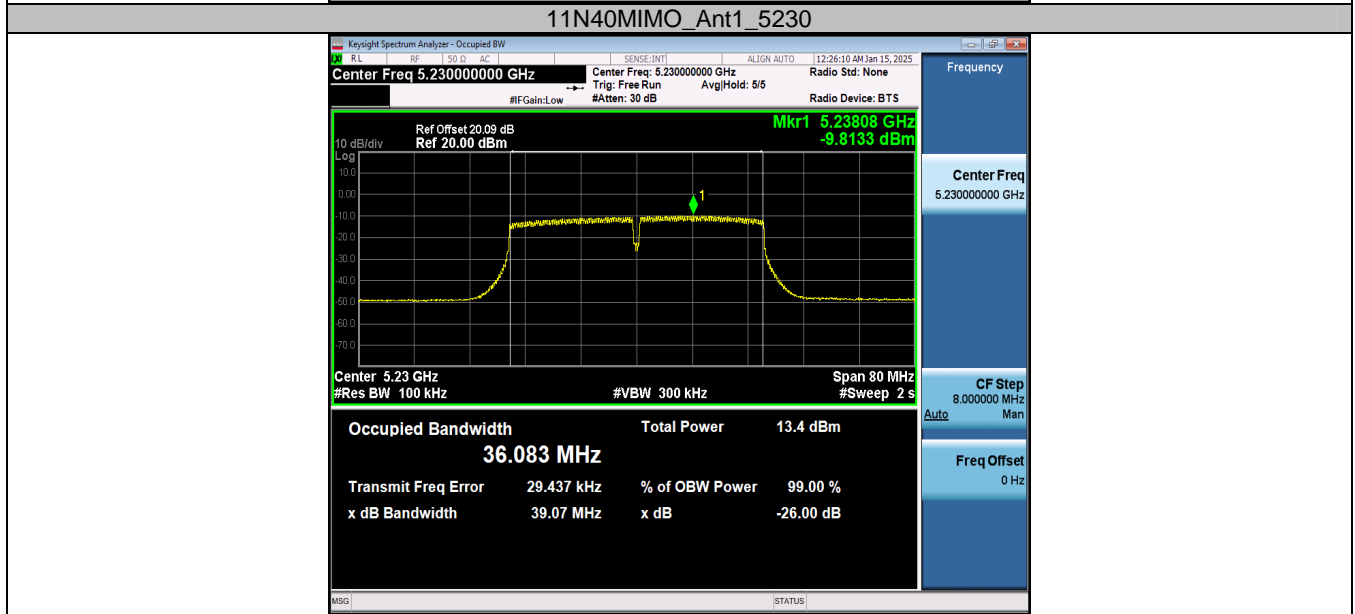
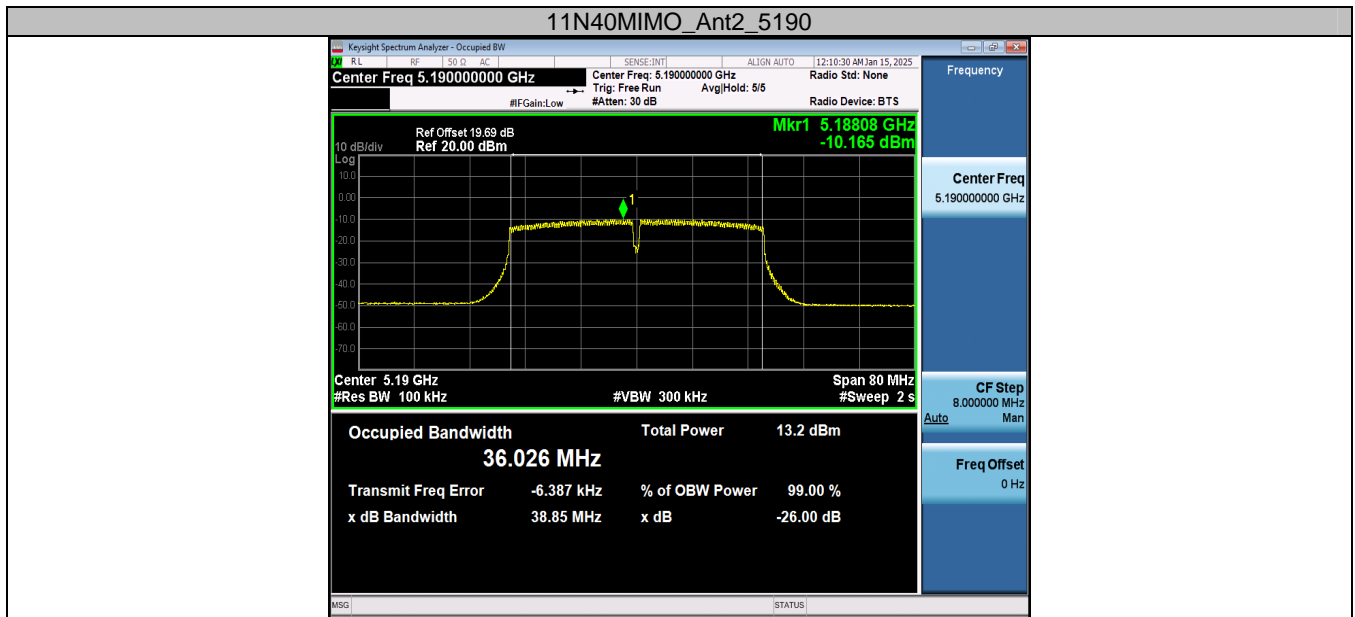


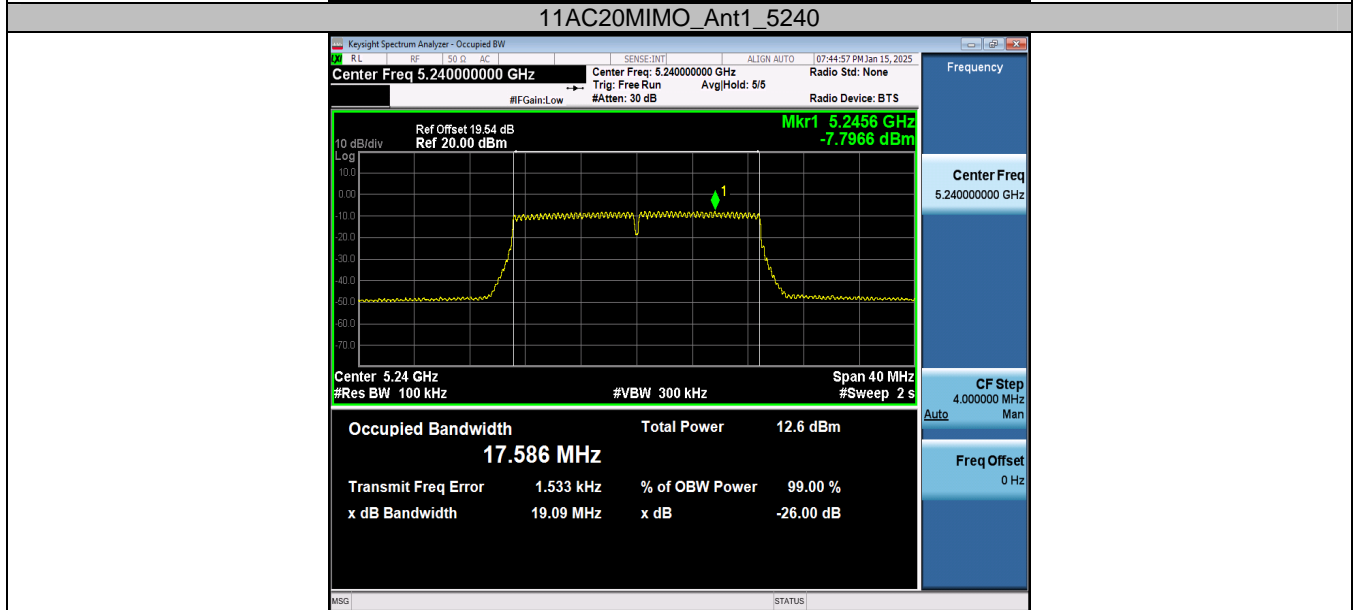
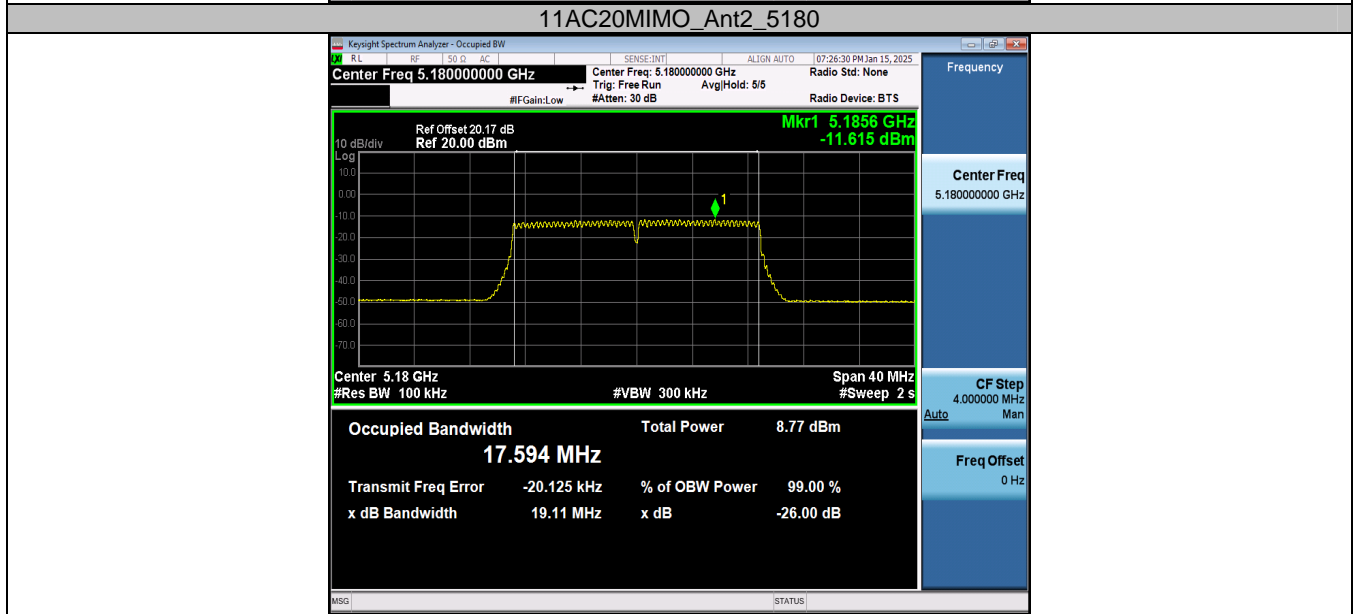
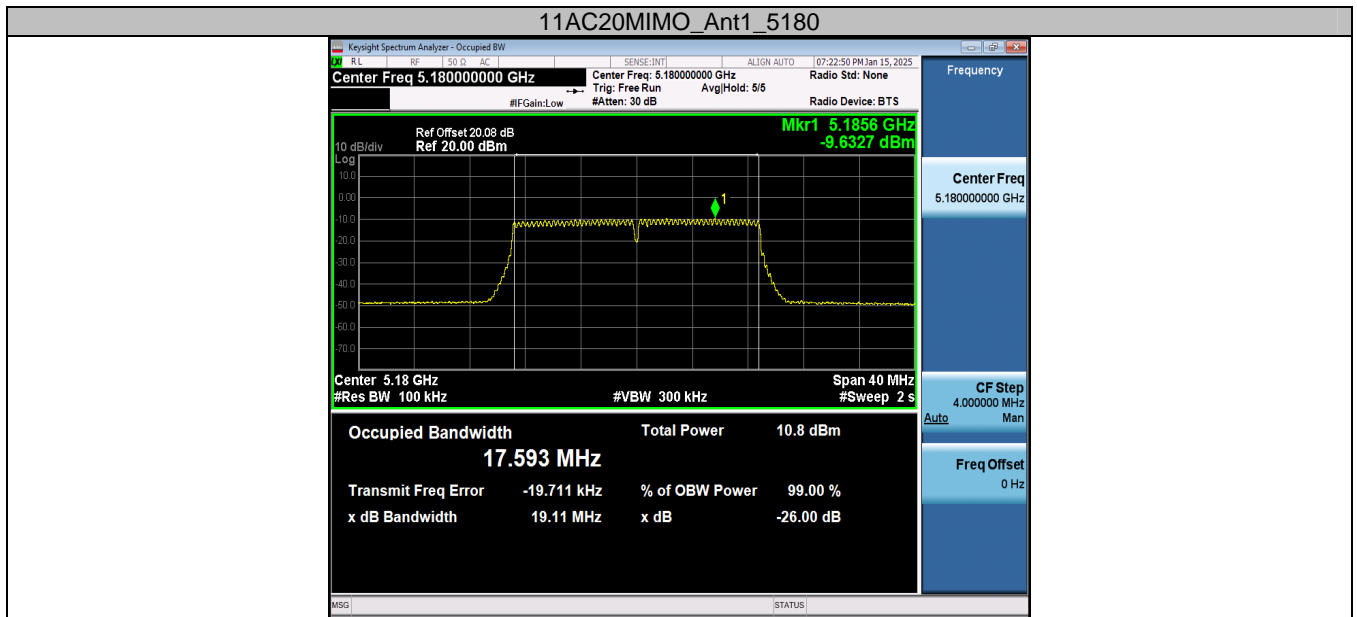
11N20MIMO_Ant2_5240

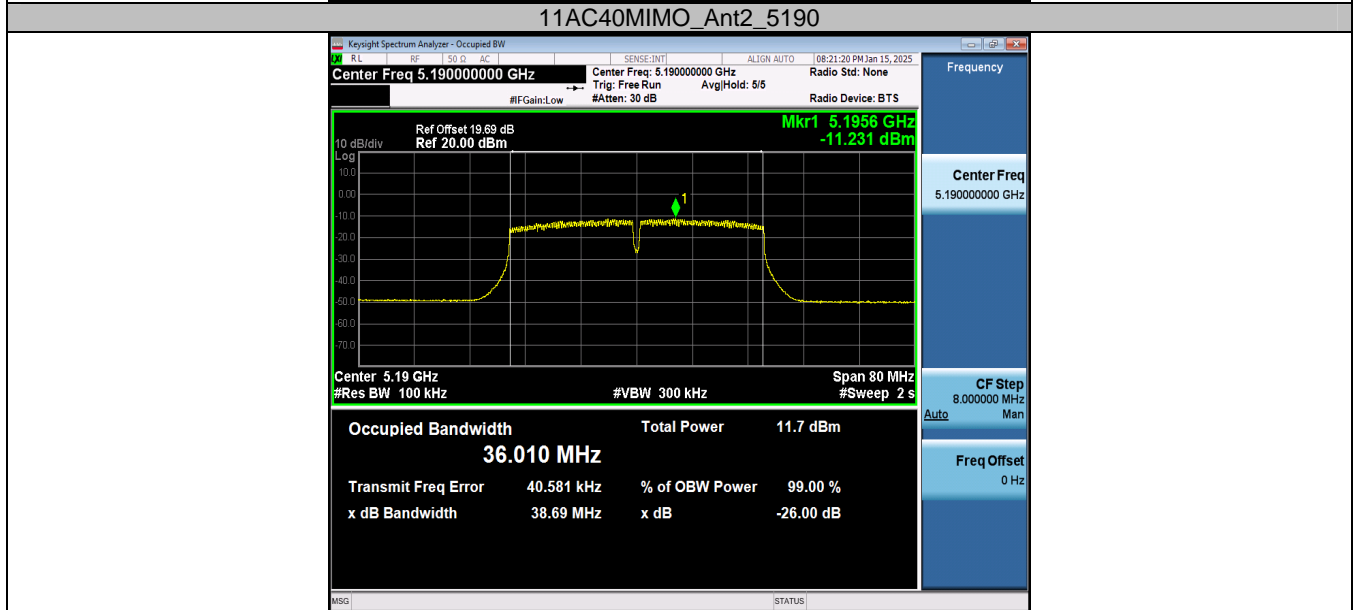
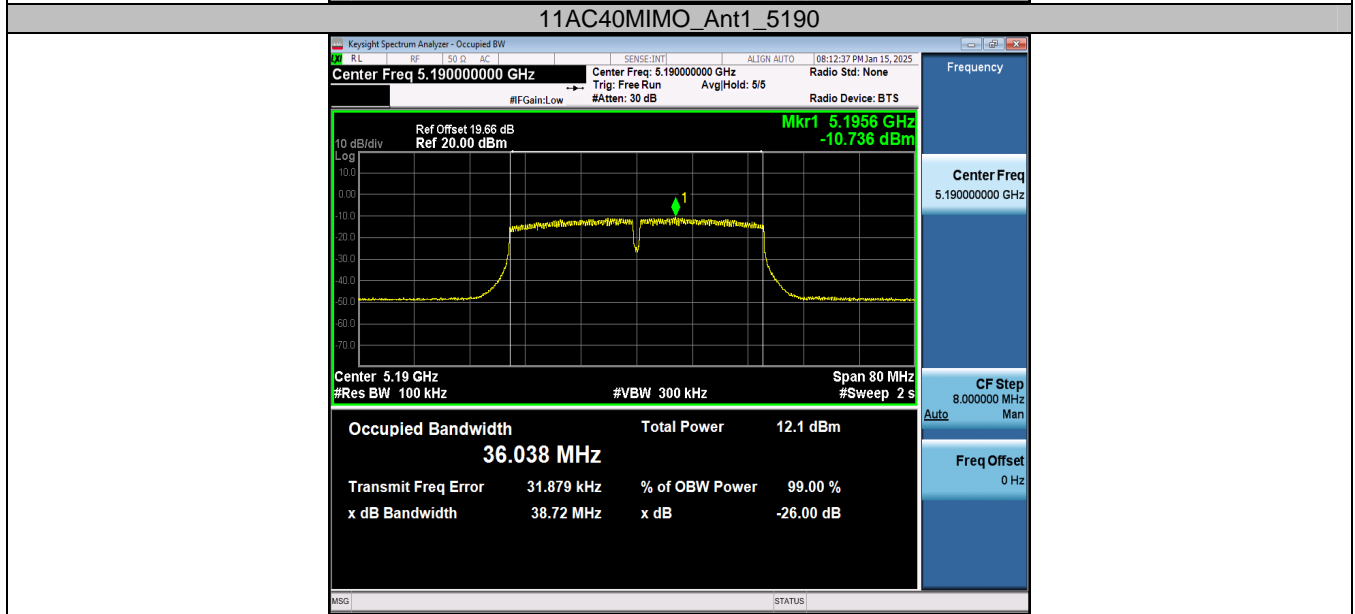
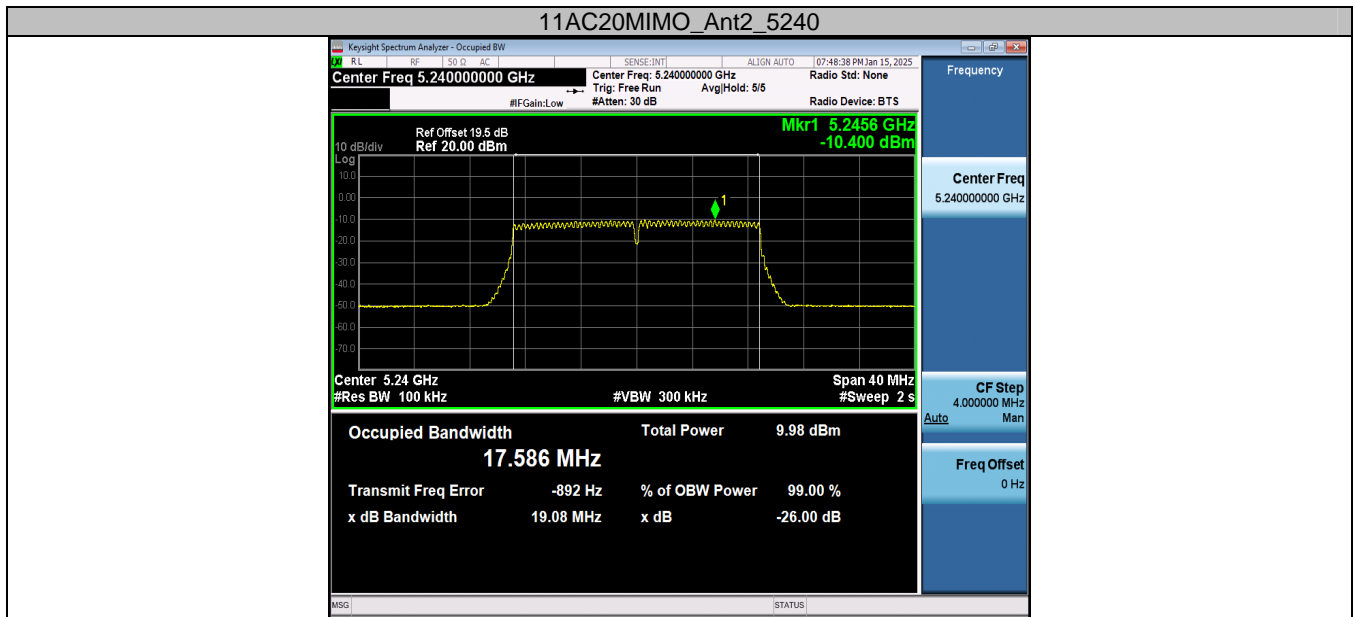


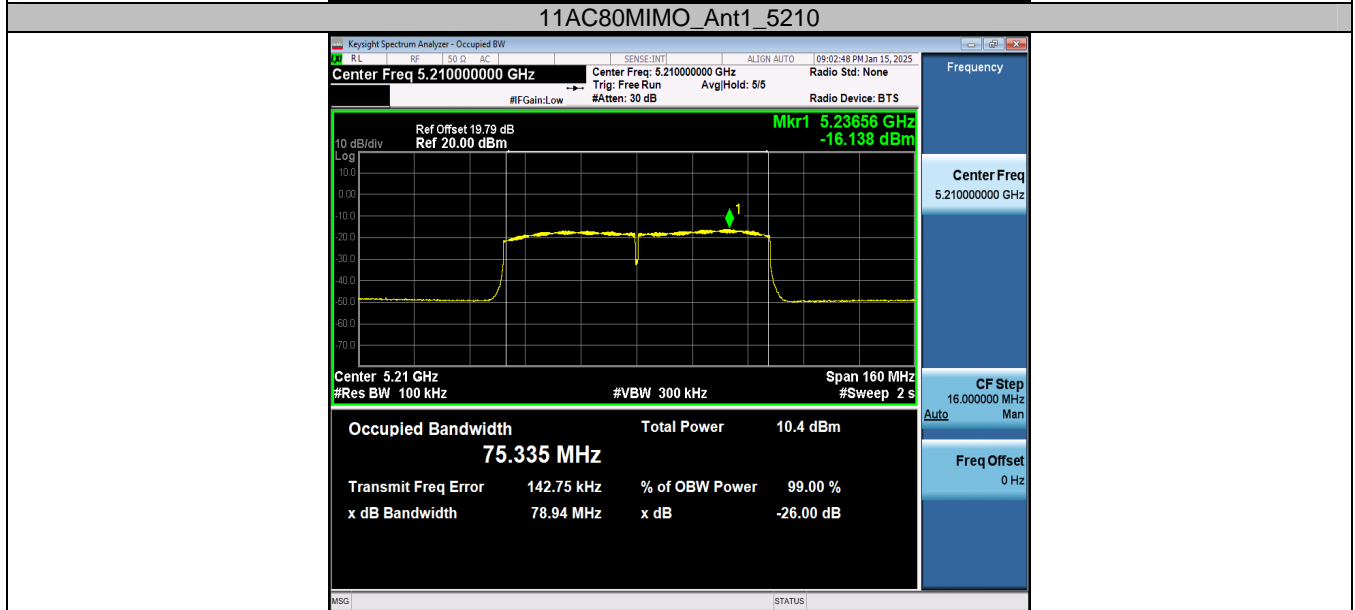
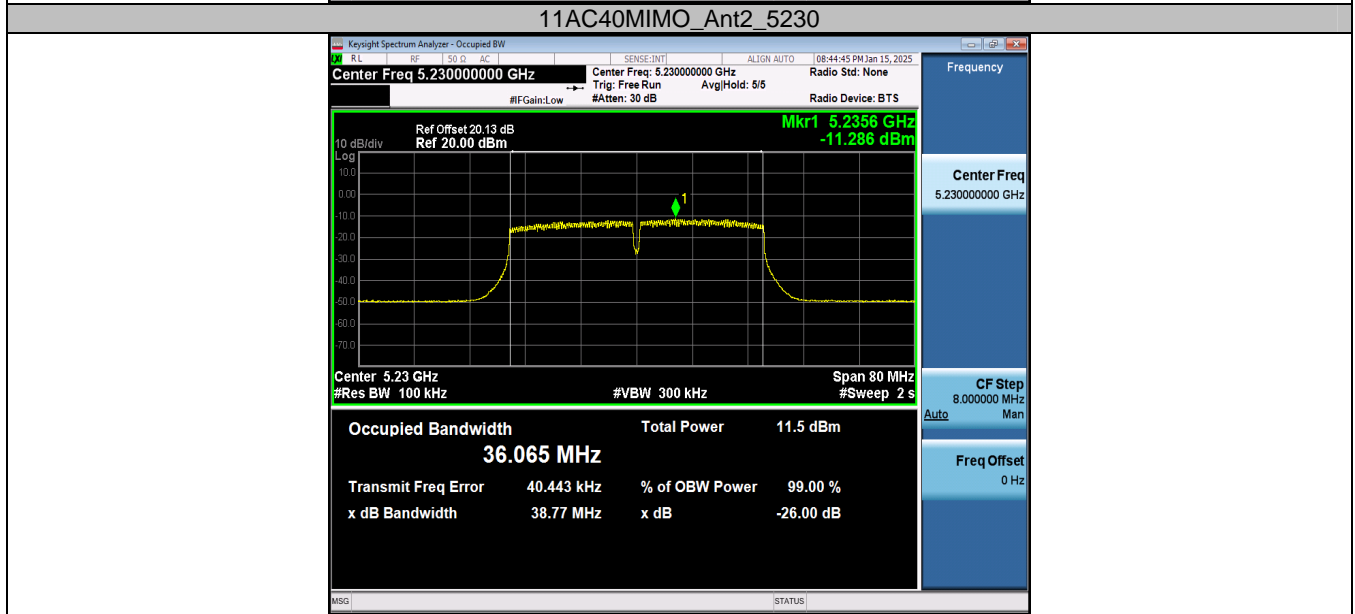
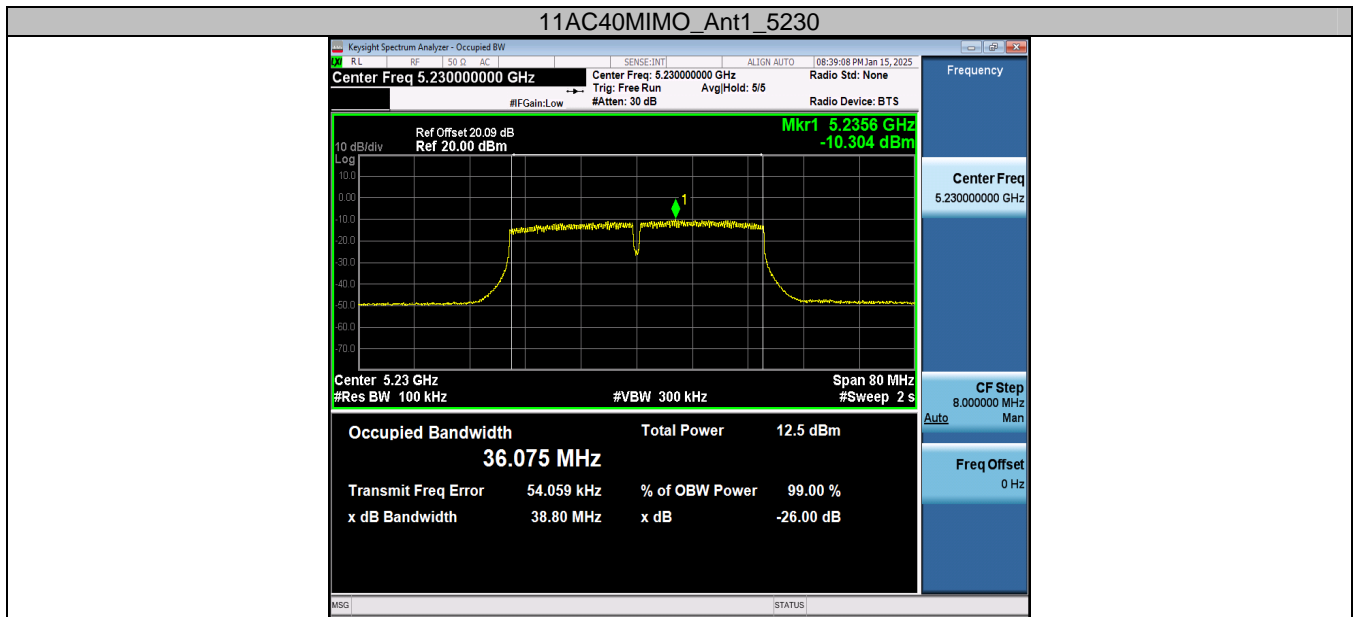
11N40MIMO_Ant1_5190

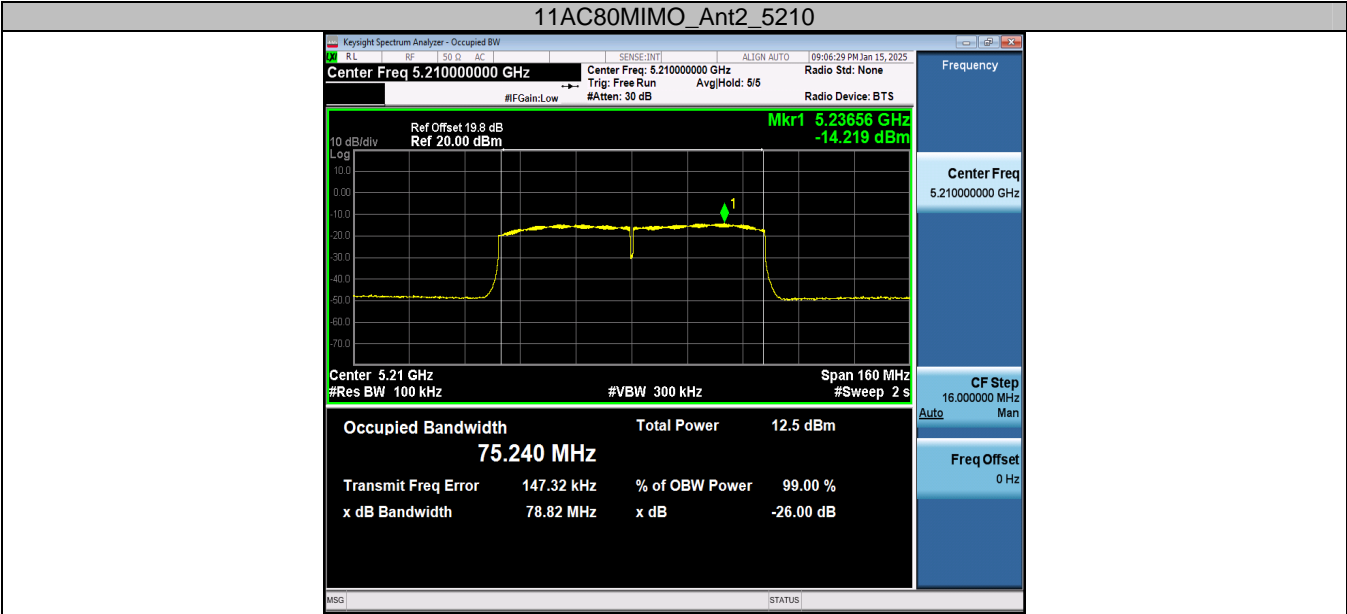












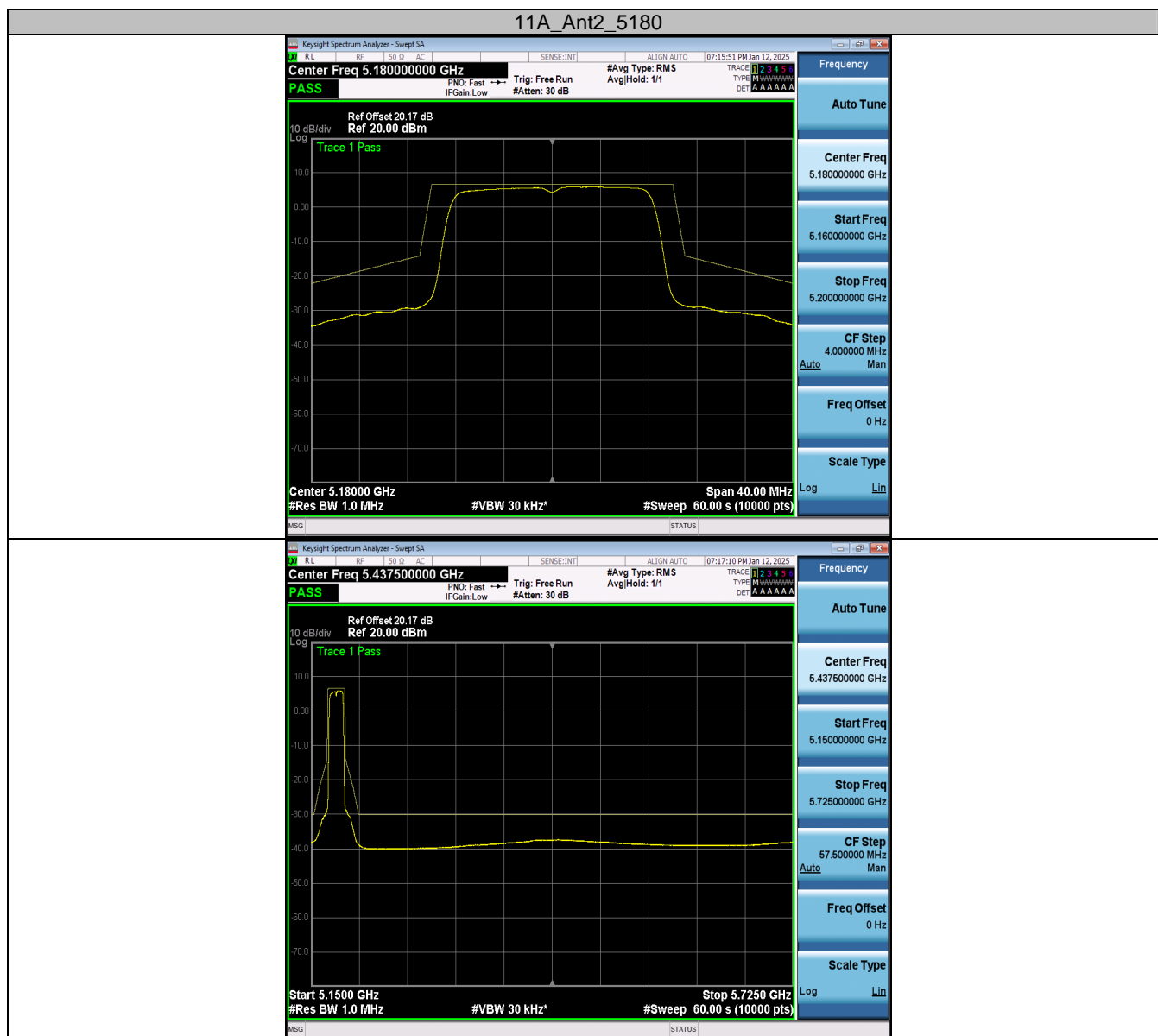
Appendix E: Transmitter unwanted emissions within the 5 GHz RLAN bands

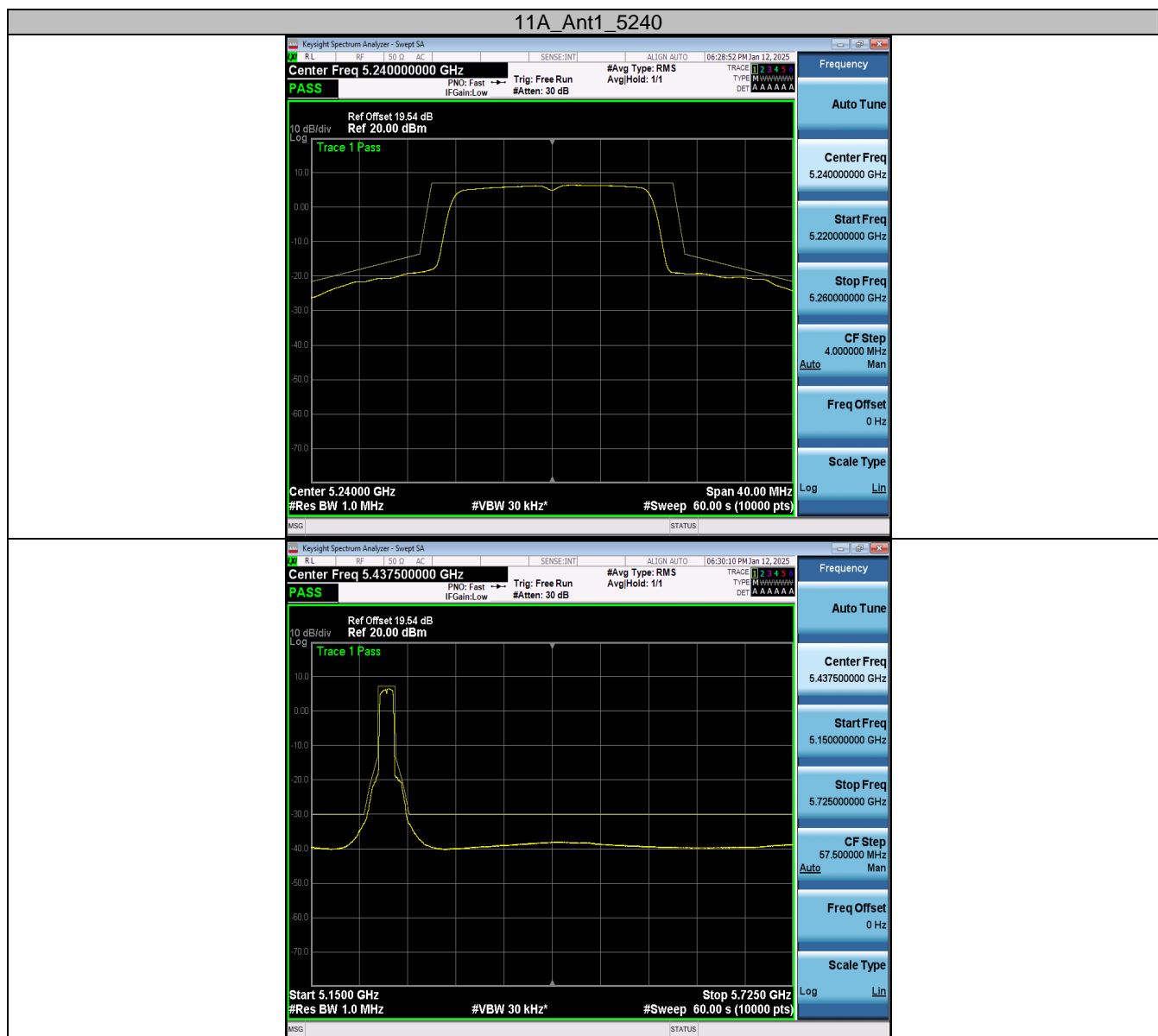
Test Result

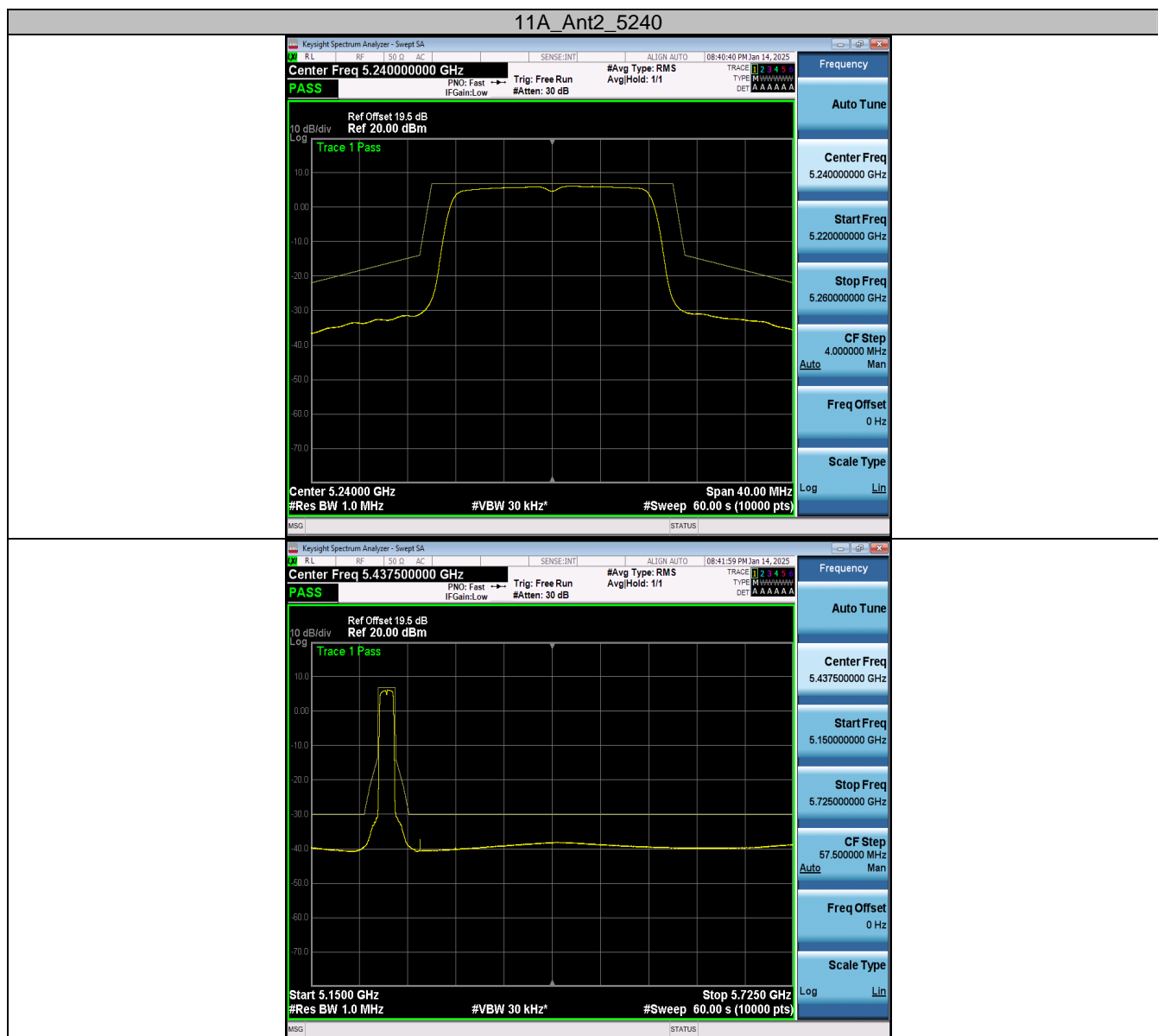
Test Mode	Antenna	Freq(MHz)	Result [dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	See test graph	See test graph	PASS
	Ant2	5180	See test graph	See test graph	PASS
	Ant1	5240	See test graph	See test graph	PASS
	Ant2	5240	See test graph	See test graph	PASS
11N20MIMO	Ant1	5180	See test graph	See test graph	PASS
	Ant2	5180	See test graph	See test graph	PASS
	Ant1	5240	See test graph	See test graph	PASS
	Ant2	5240	See test graph	See test graph	PASS
11N40MIMO	Ant1	5190	See test graph	See test graph	PASS
	Ant2	5190	See test graph	See test graph	PASS
	Ant1	5230	See test graph	See test graph	PASS
	Ant2	5230	See test graph	See test graph	PASS
11AC20MIMO	Ant1	5180	See test graph	See test graph	PASS
	Ant2	5180	See test graph	See test graph	PASS
	Ant1	5240	See test graph	See test graph	PASS
	Ant2	5240	See test graph	See test graph	PASS
11AC40MIMO	Ant1	5190	See test graph	See test graph	PASS
	Ant2	5190	See test graph	See test graph	PASS
	Ant1	5230	See test graph	See test graph	PASS
	Ant2	5230	See test graph	See test graph	PASS
11AC80MIMO	Ant1	5210	See test graph	See test graph	PASS
	Ant2	5210	See test graph	See test graph	PASS

Test Graphs







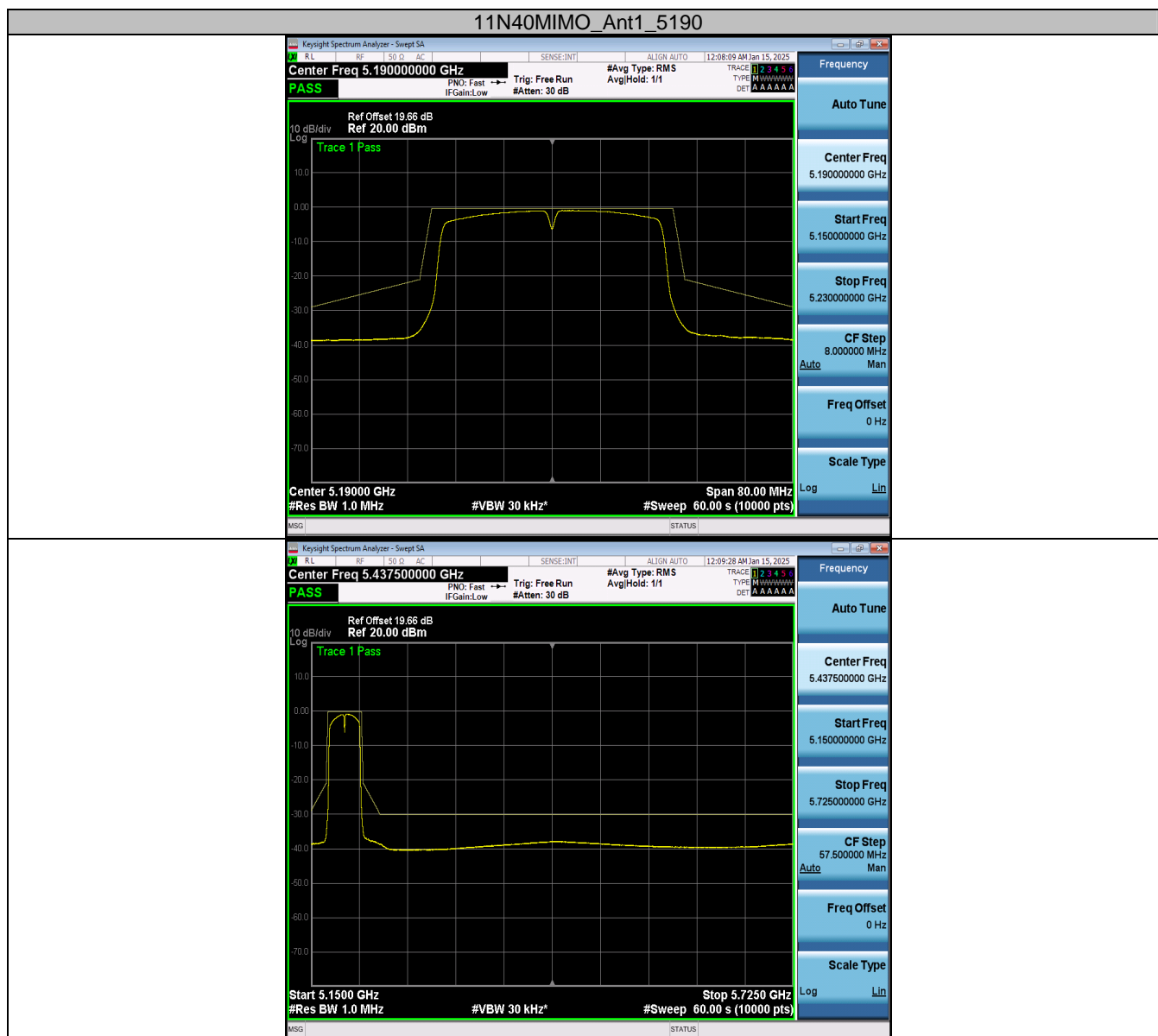






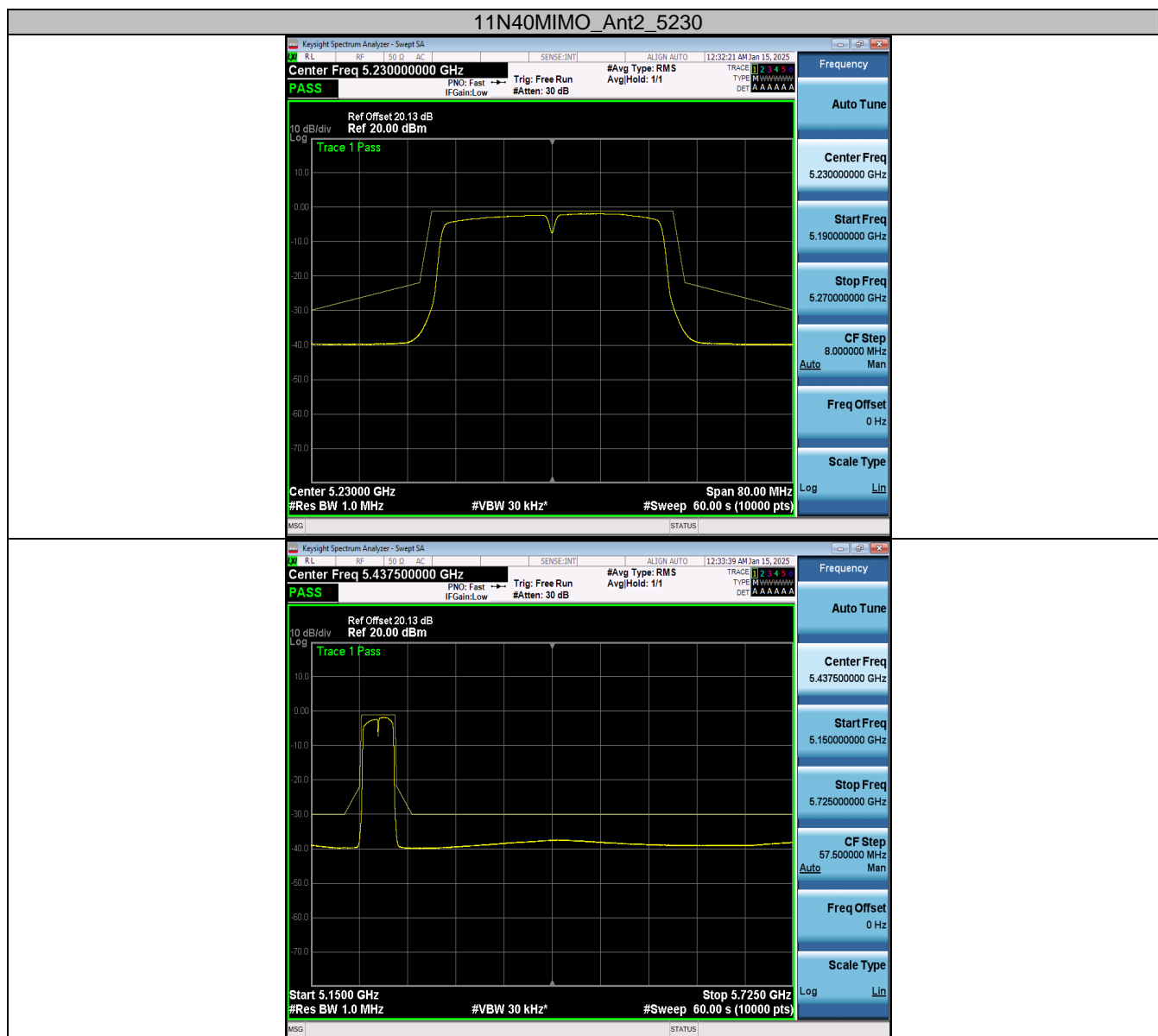












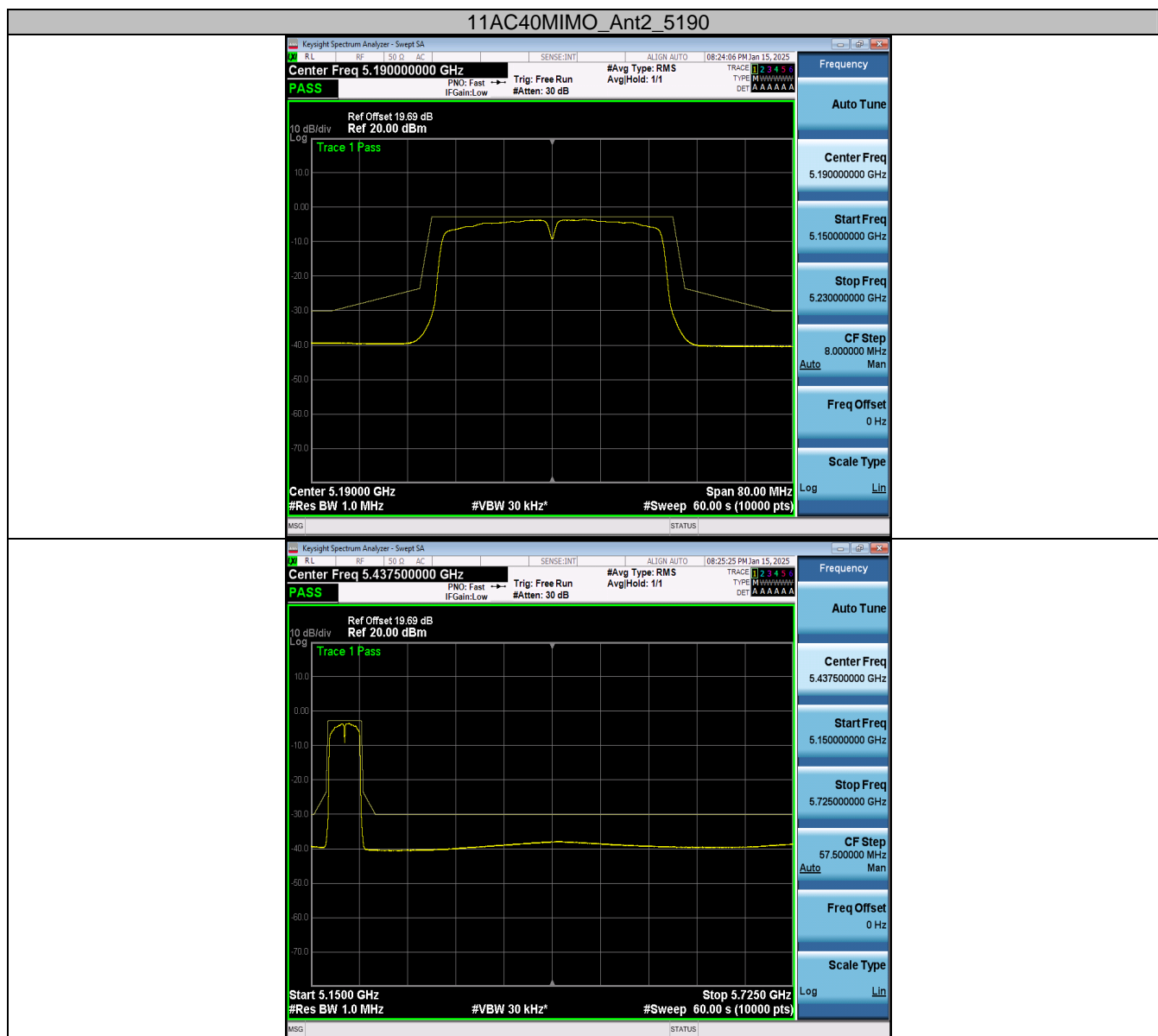


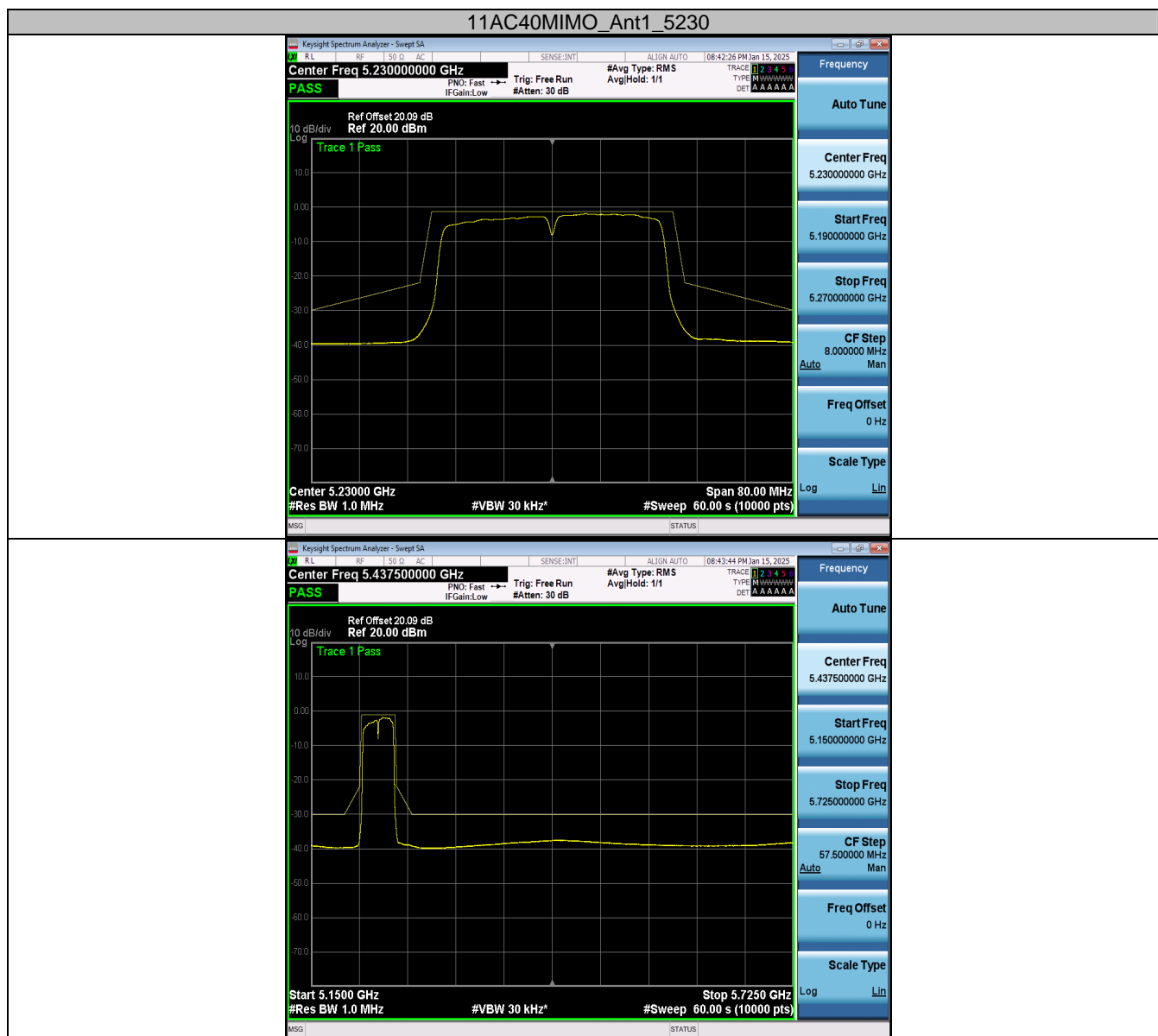


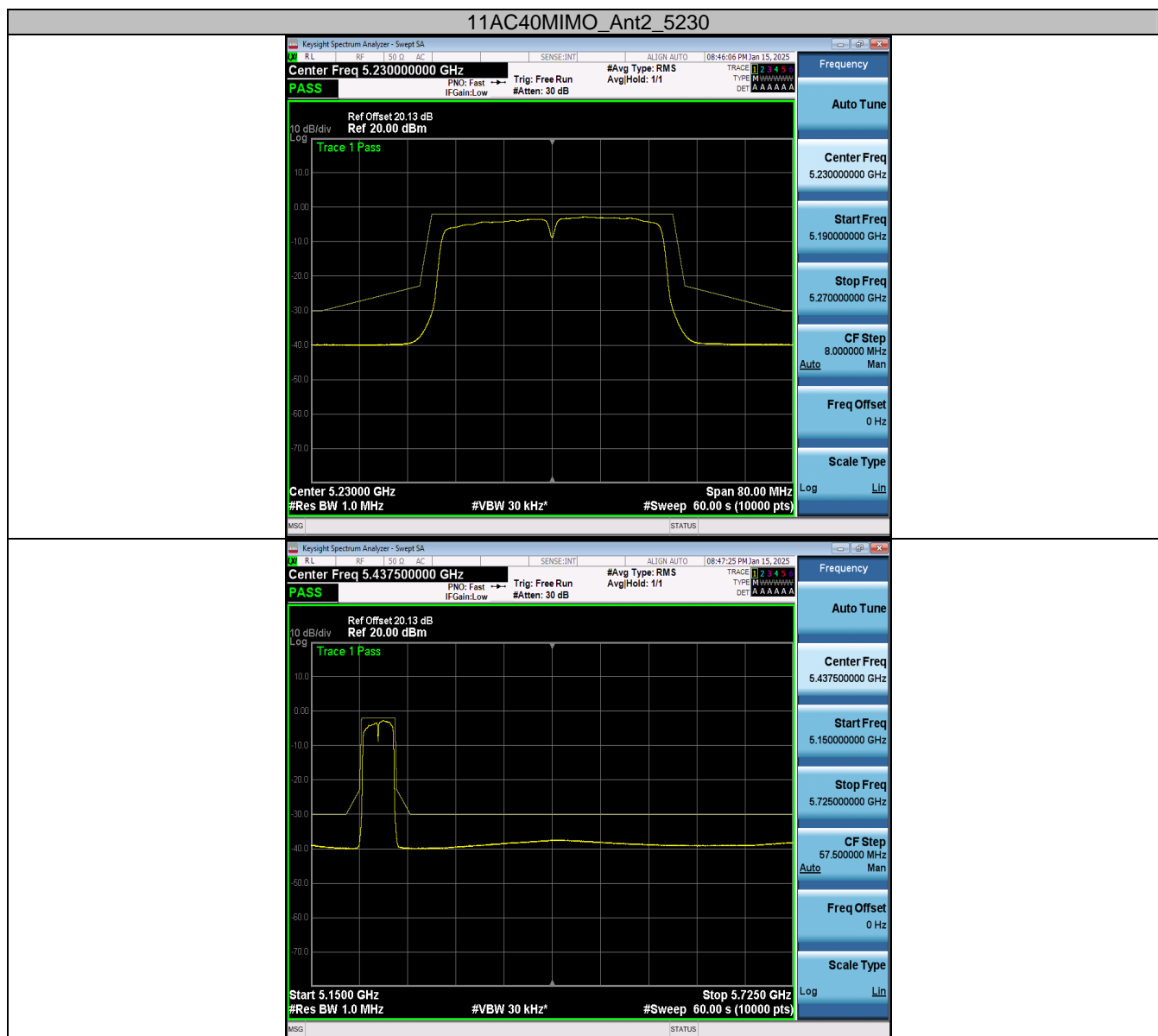


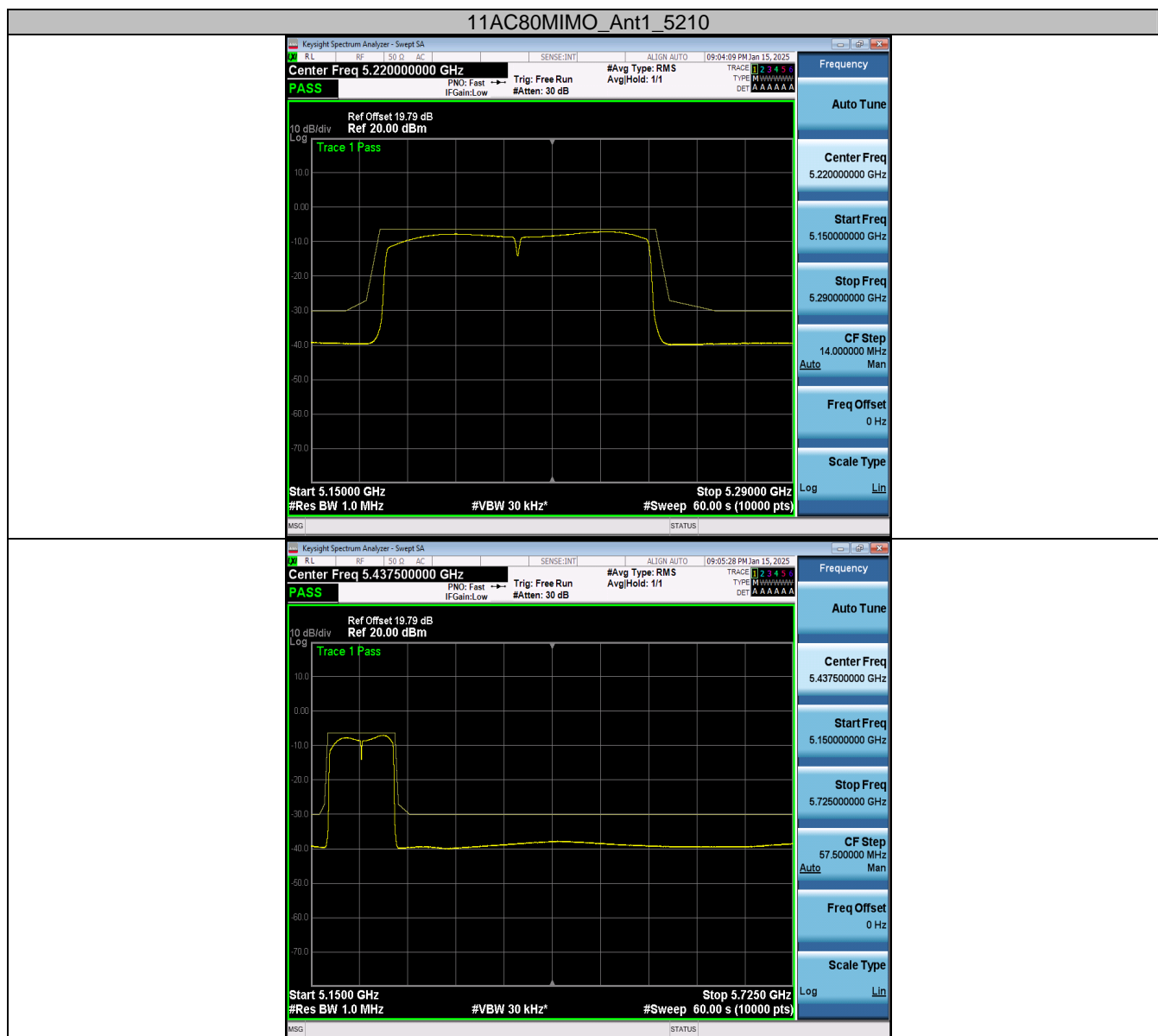


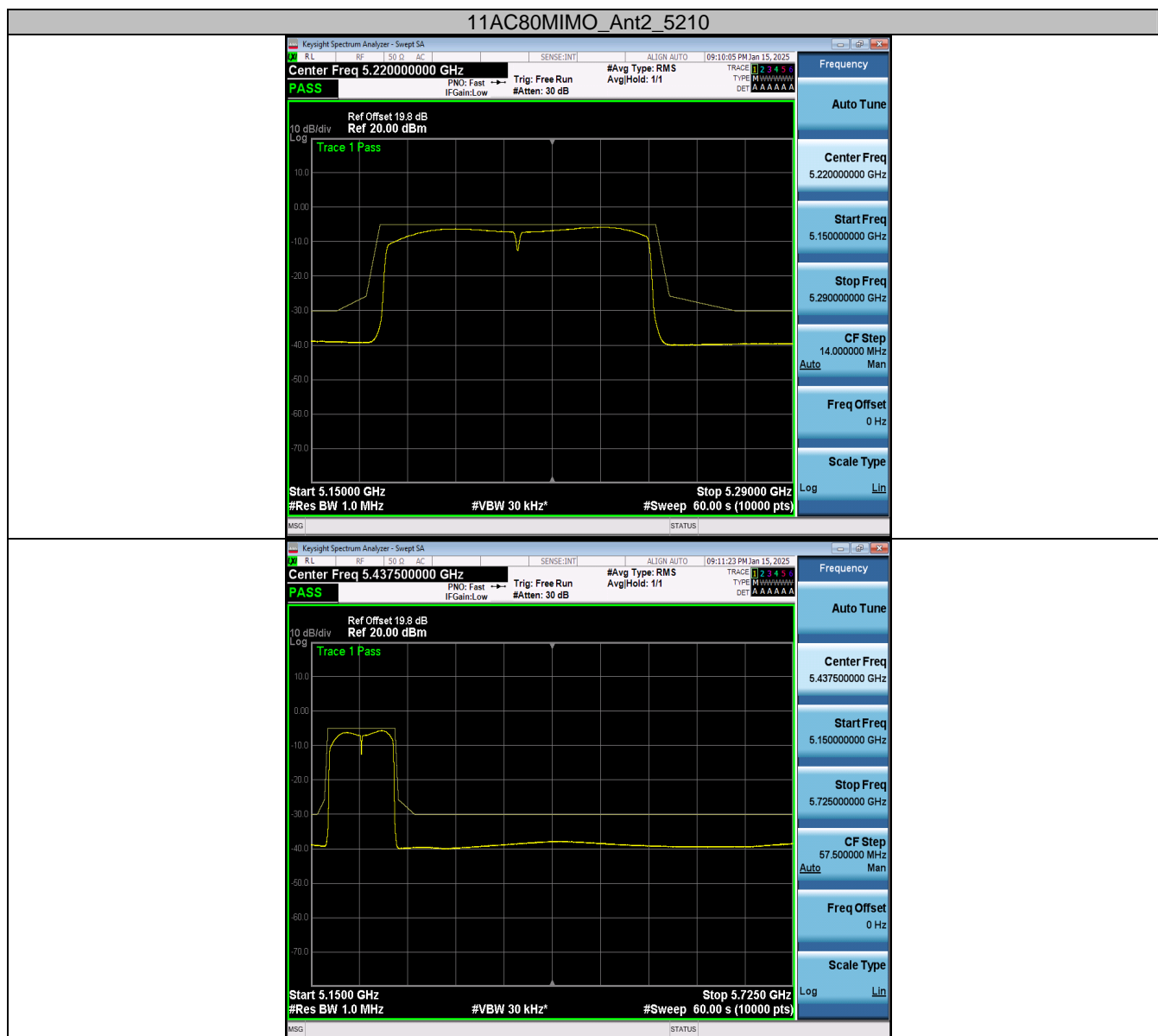








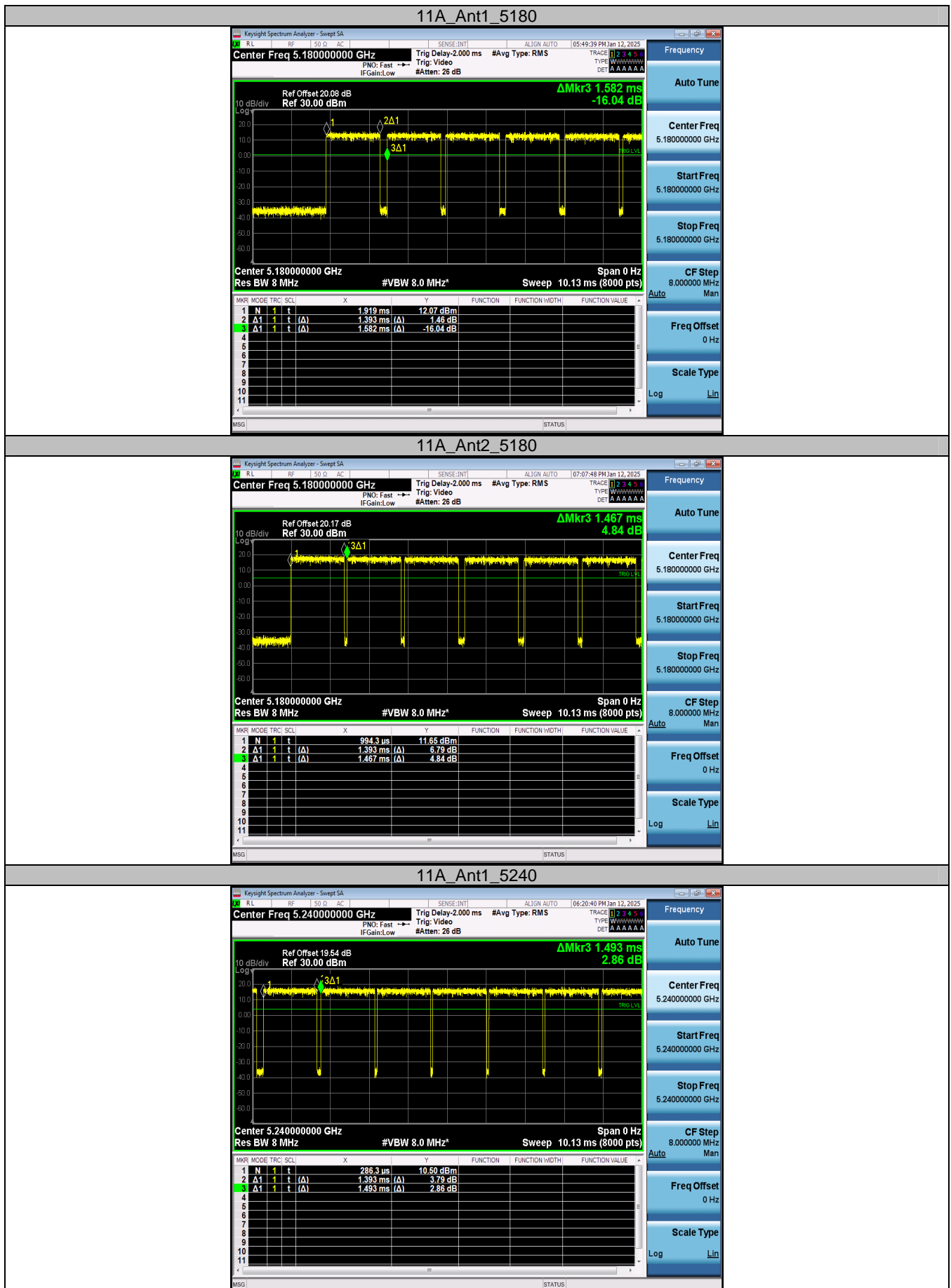


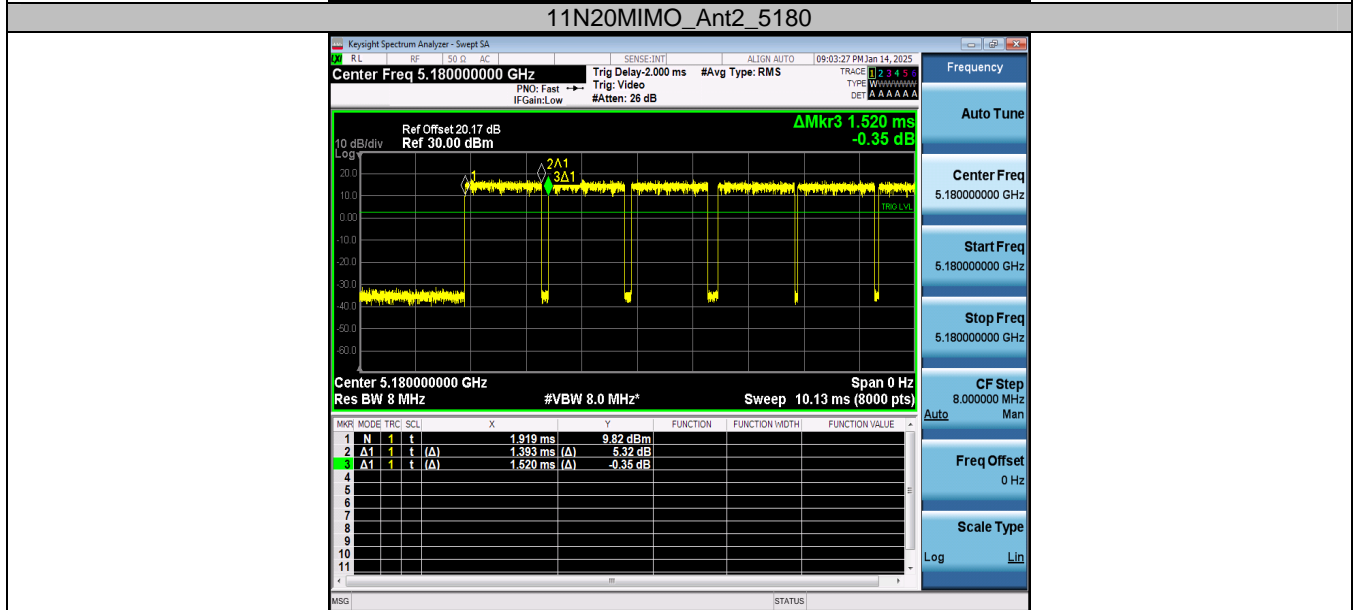
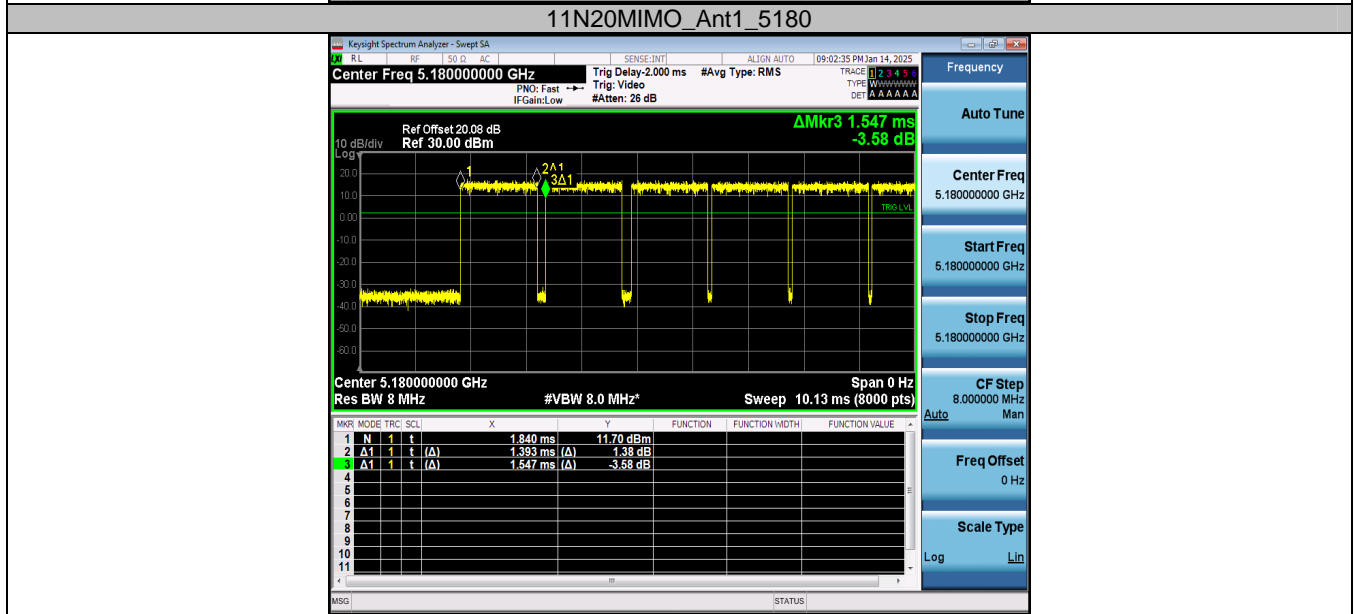
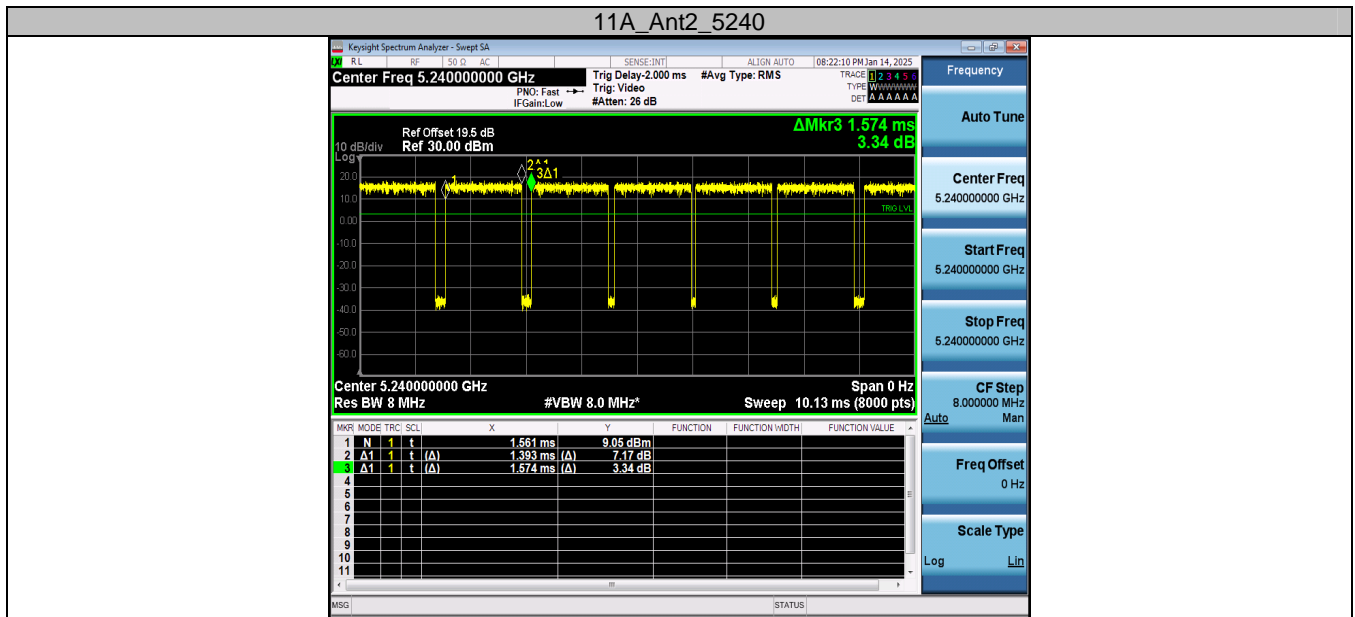


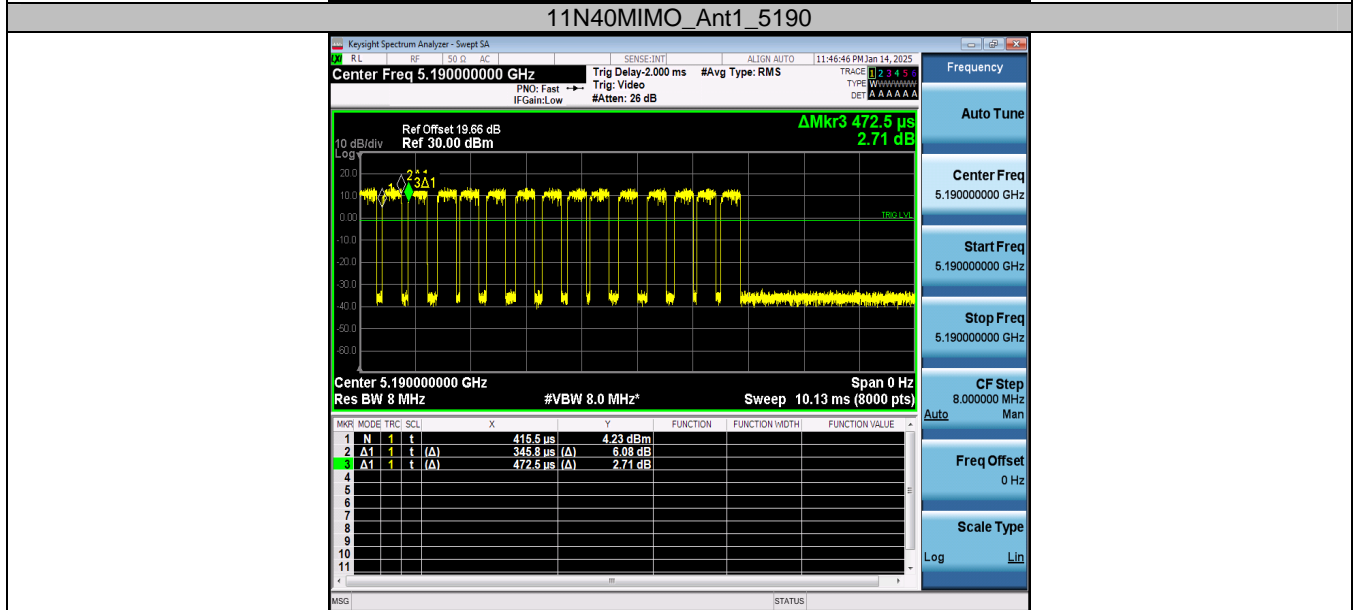
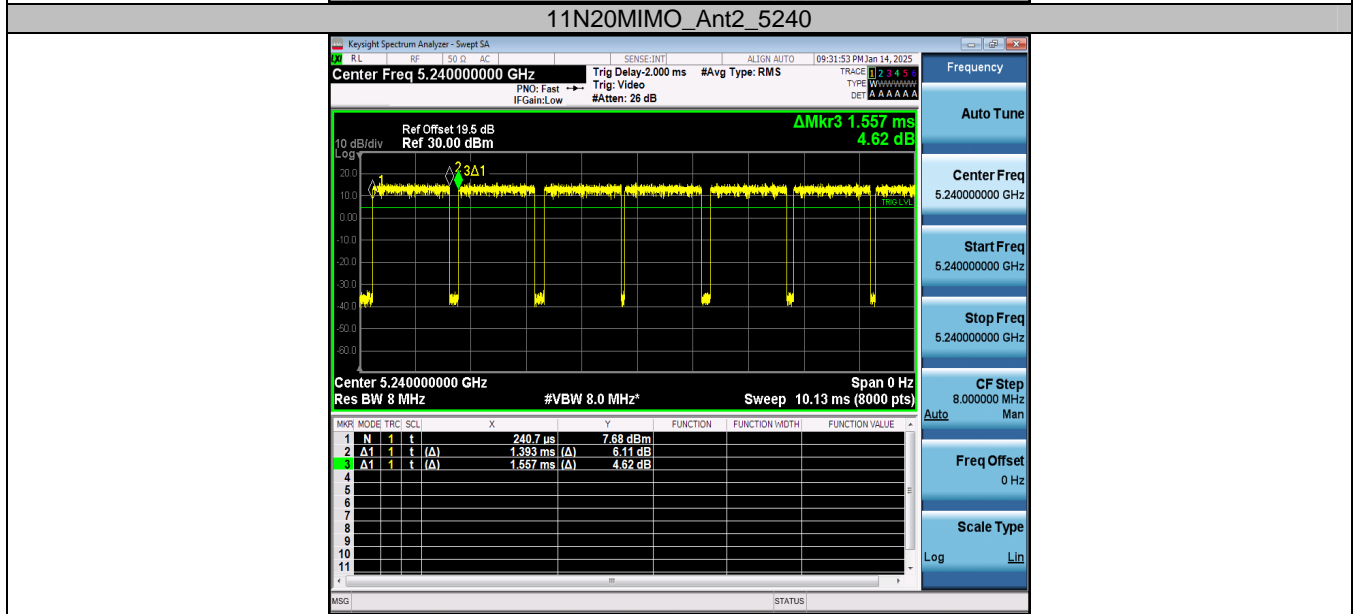
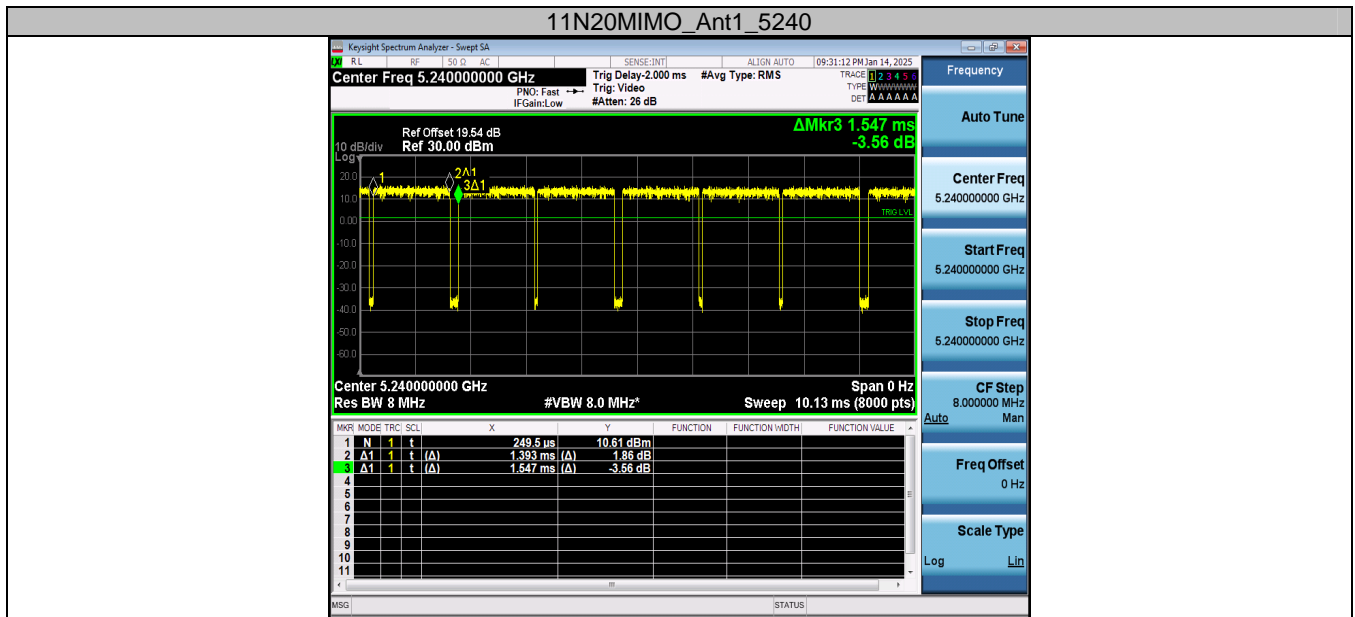
Appendix F: Duty Cycle Test Result

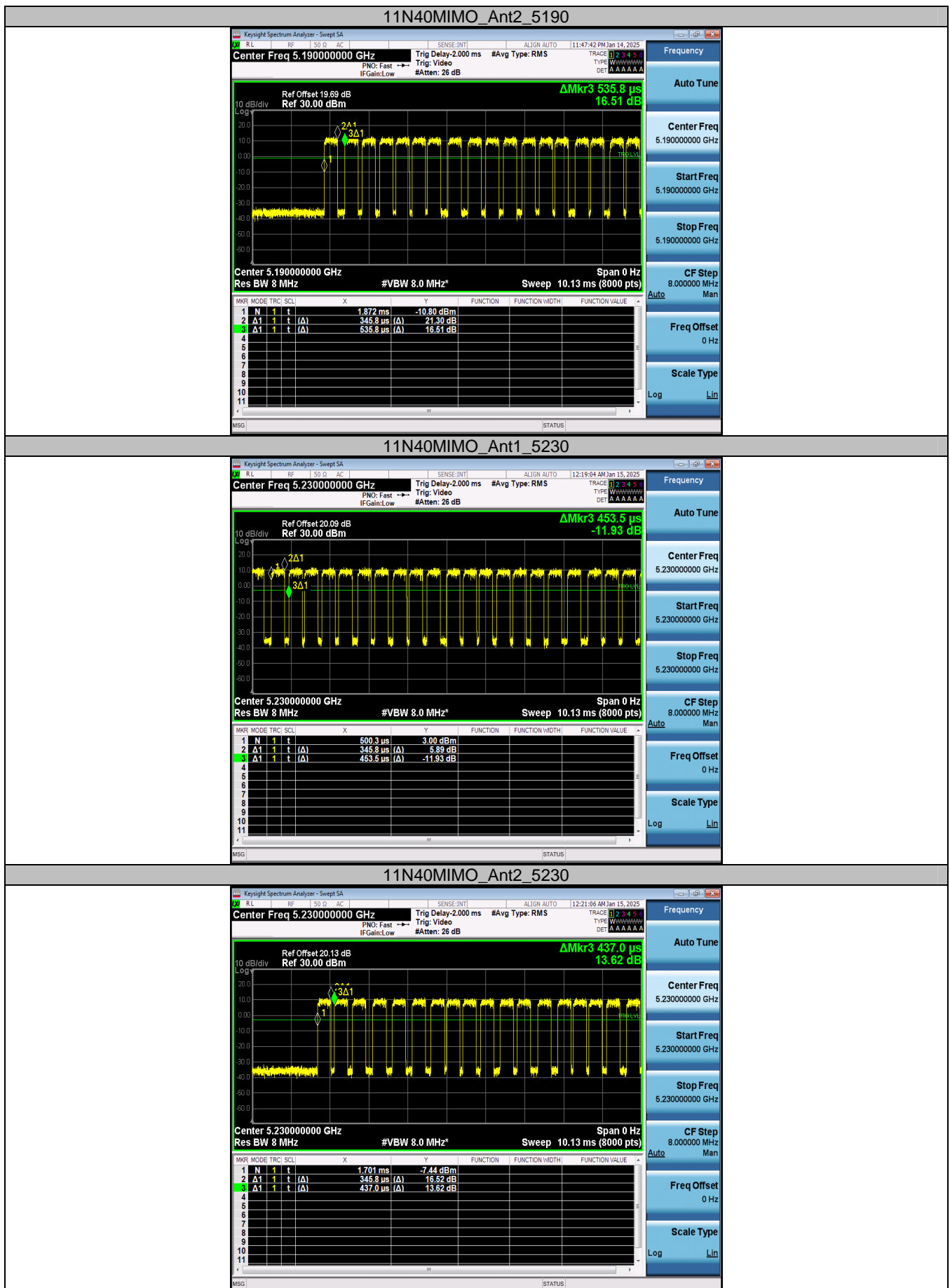
Test Mode	Antenna	Freq(MHz)	TransmissionDuration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factor [dB]	Verdict
11A	Ant1	5180	1.39	1.58	87.97	0.56	PASS
	Ant2	5180	1.39	1.47	94.56	0.24	PASS
	Ant1	5240	1.39	1.49	93.29	0.30	PASS
	Ant2	5240	1.39	1.57	88.54	0.53	PASS
11N20MIMO	Ant1	5180	1.39	1.55	89.68	0.47	PASS
	Ant2	5180	1.39	1.52	91.45	0.39	PASS
	Ant1	5240	1.39	1.55	89.68	0.47	PASS
	Ant2	5240	1.39	1.56	89.10	0.50	PASS
11N40MIMO	Ant1	5190	0.35	0.47	74.47	1.28	PASS
	Ant2	5190	0.35	0.54	64.81	1.88	PASS
	Ant1	5230	0.35	0.45	77.78	1.09	PASS
	Ant2	5230	0.35	0.44	79.55	0.99	PASS
11AC20MIMO	Ant1	5180	0.15	0.33	45.45	3.42	PASS
	Ant2	5180	0.06	0.24	25.00	6.02	PASS
	Ant1	5240	0.15	0.23	65.22	1.86	PASS
	Ant2	5240	0.15	0.34	44.12	3.55	PASS
11AC40MIMO	Ant1	5190	0.09	0.20	45.00	3.47	PASS
	Ant2	5190	0.09	0.23	39.13	4.07	PASS
	Ant1	5230	0.09	0.16	56.25	2.50	PASS
	Ant2	5230	0.09	0.18	50.00	3.01	PASS
11AC80MIMO	Ant1	5210	0.06	0.19	31.58	5.01	PASS
	Ant2	5210	0.06	0.12	50.00	3.01	PASS

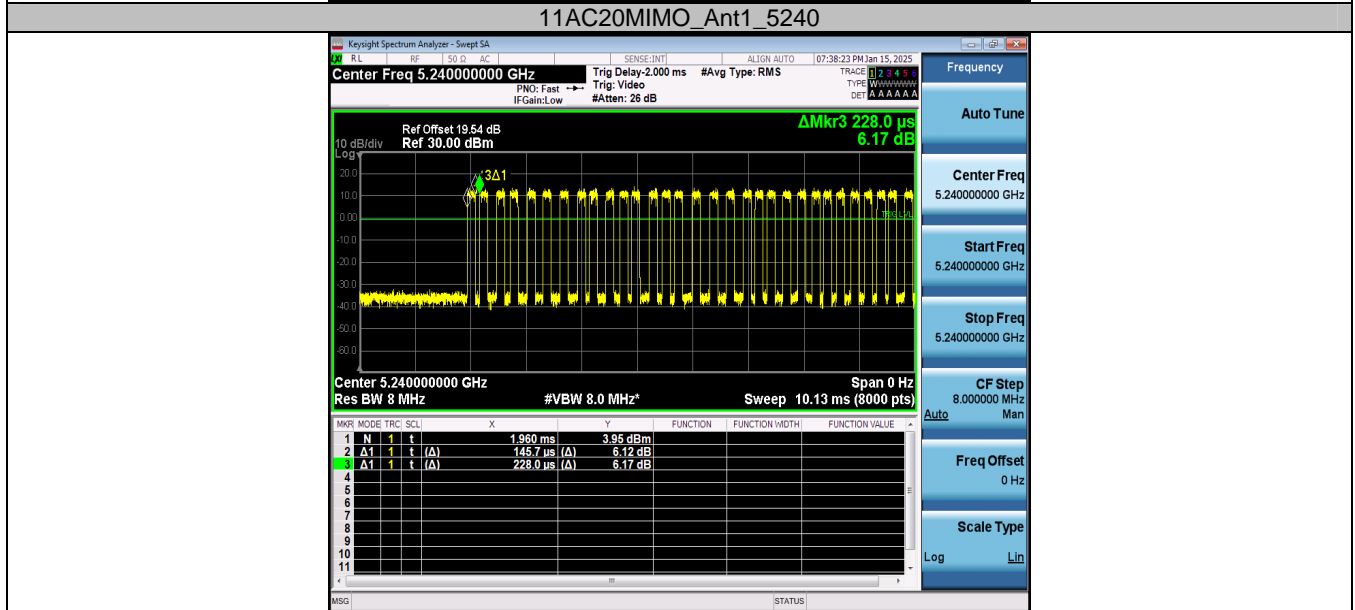
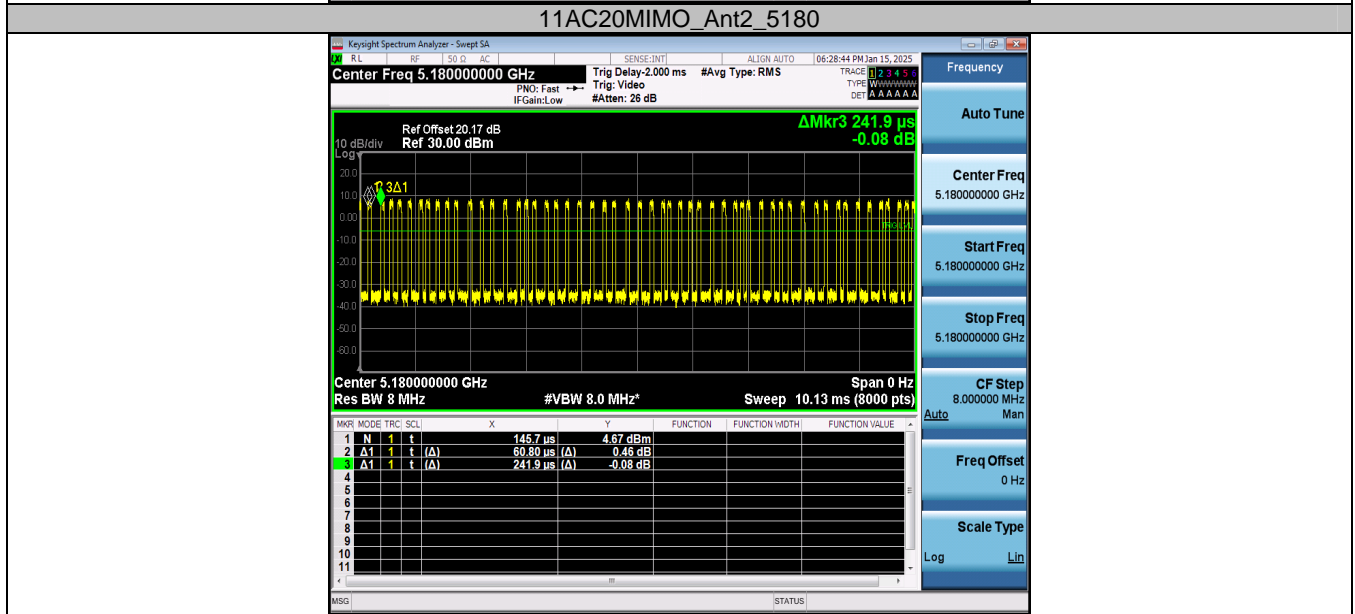
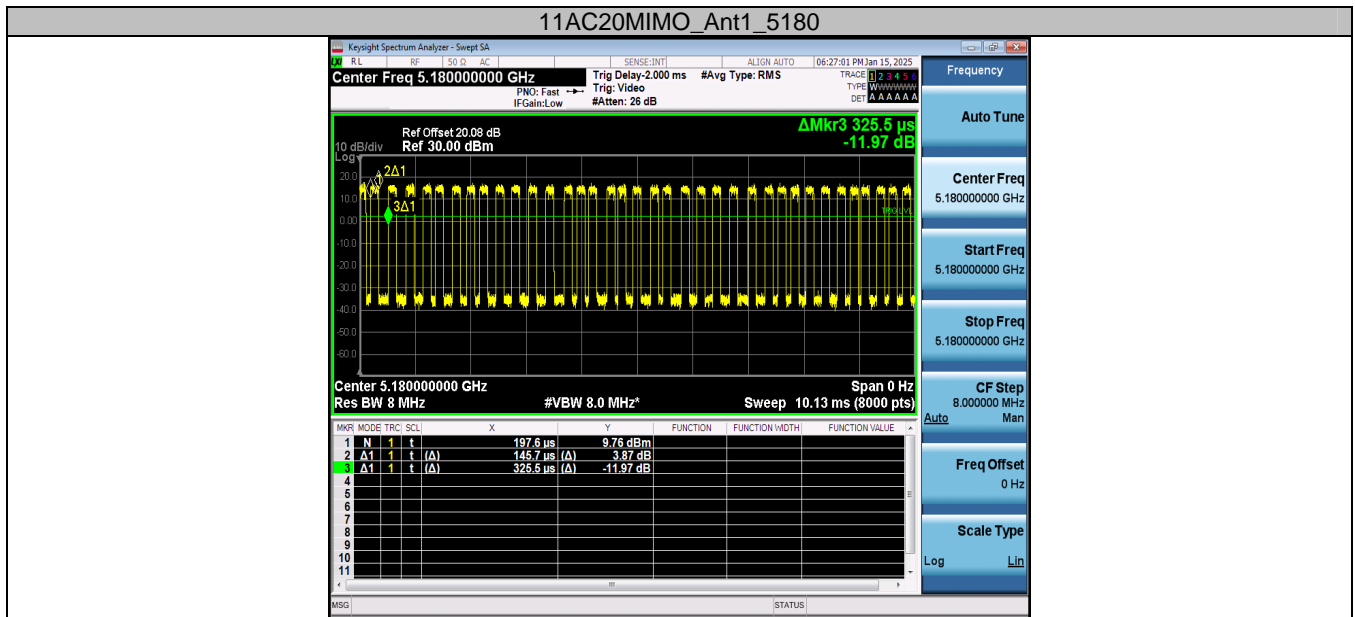
Test Graphs

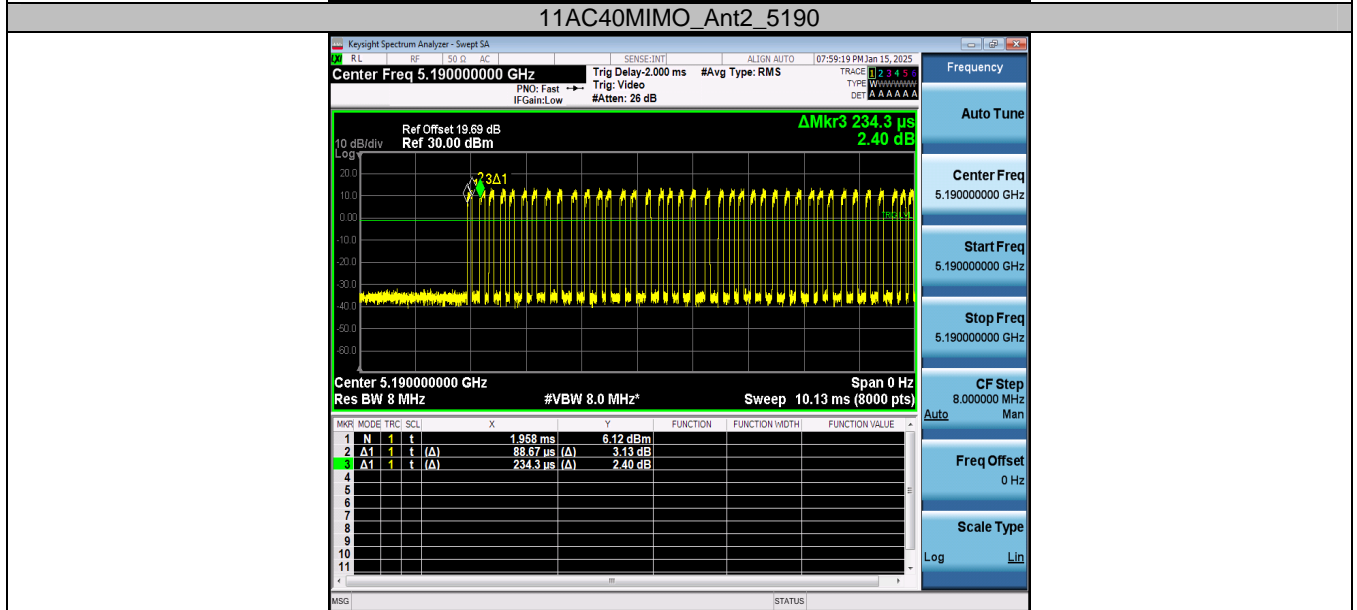
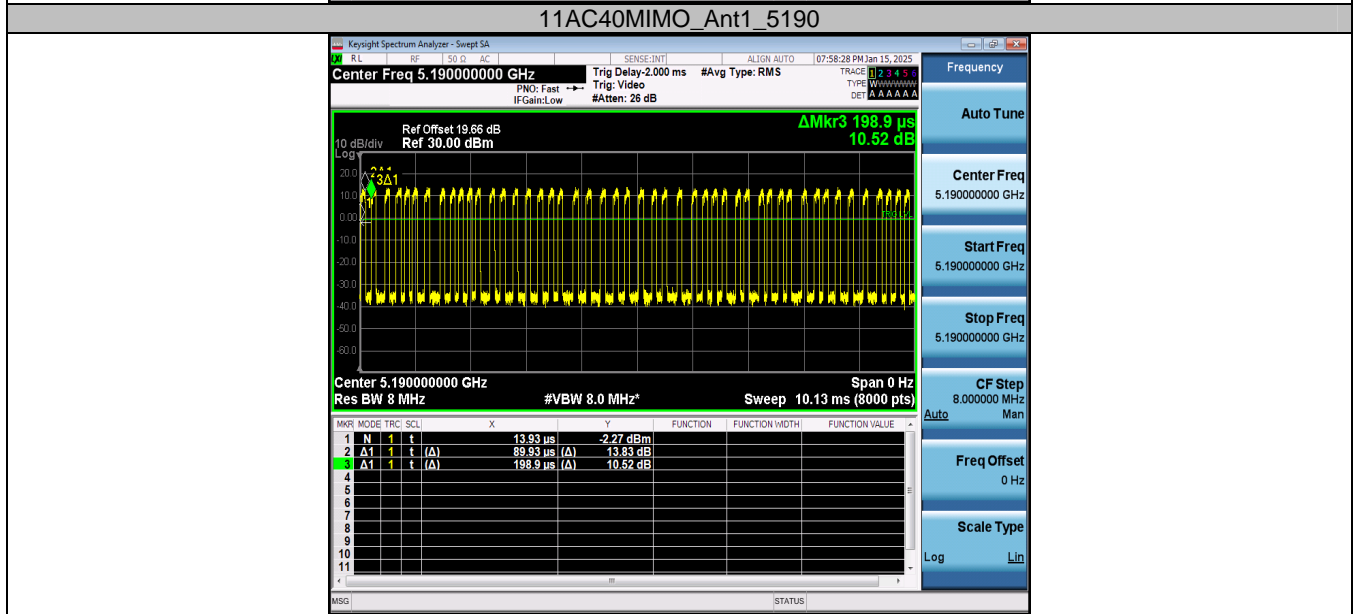
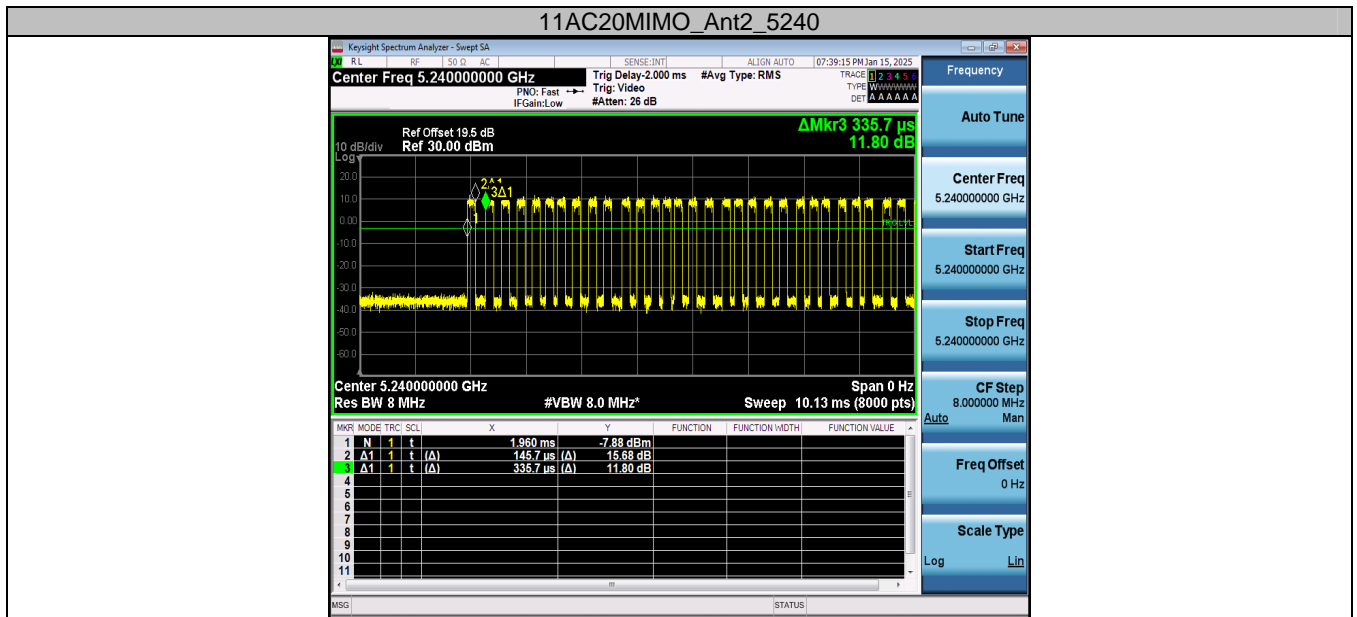


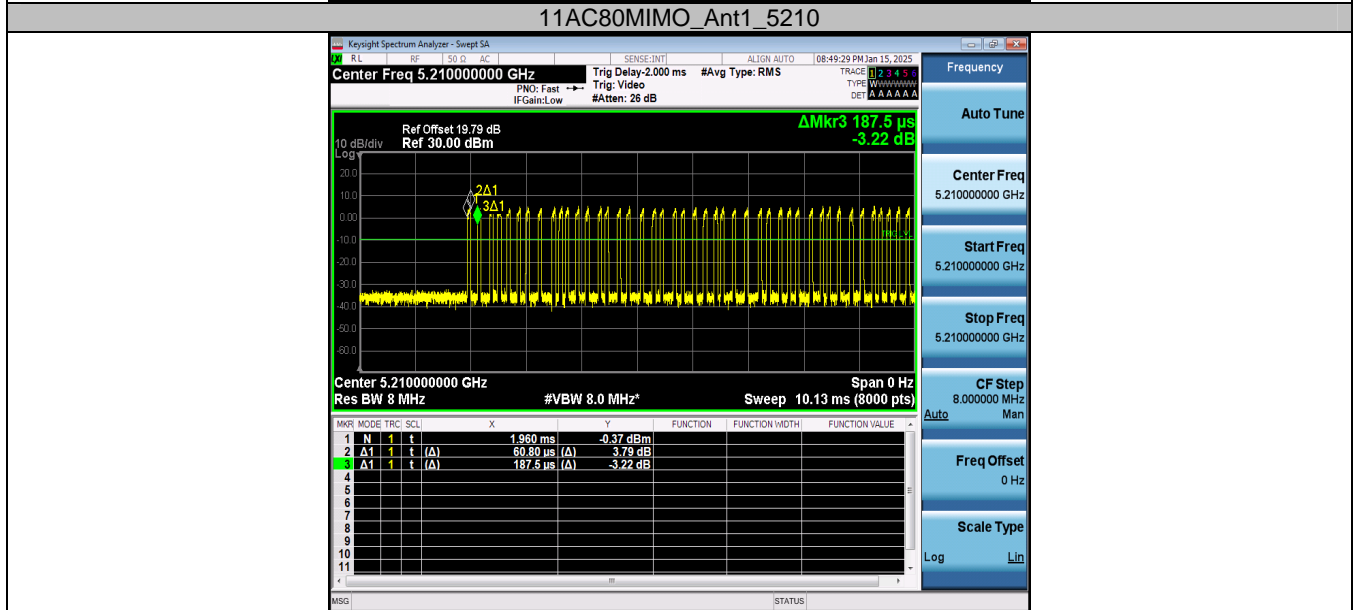
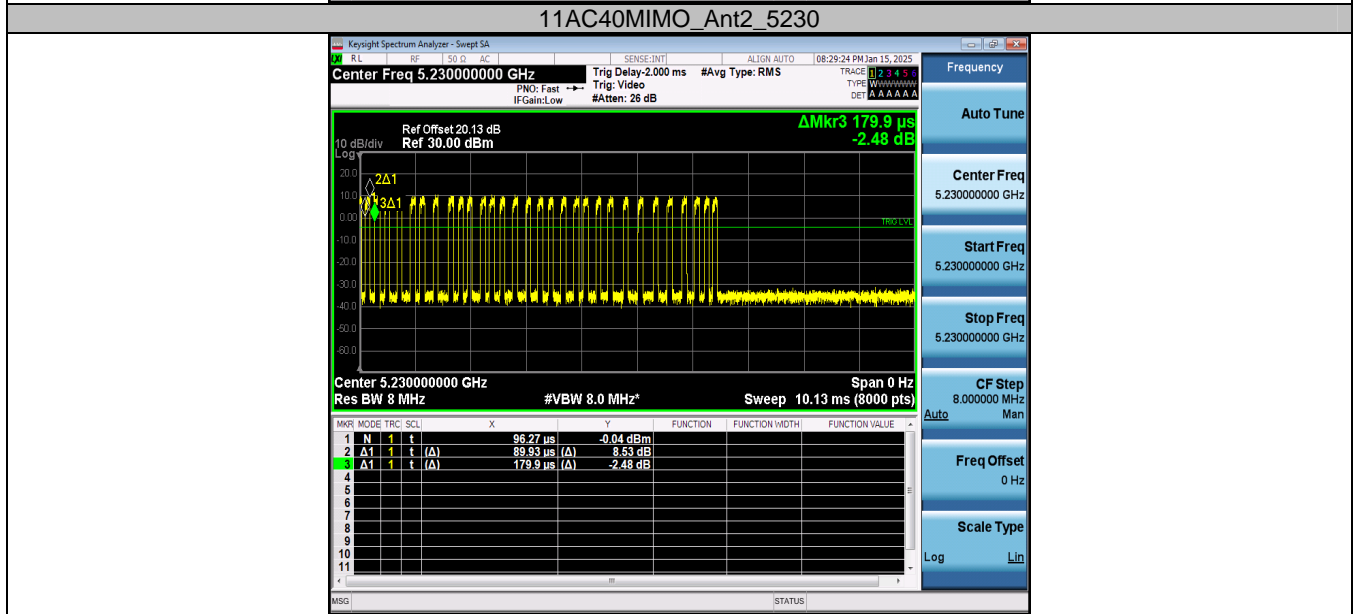
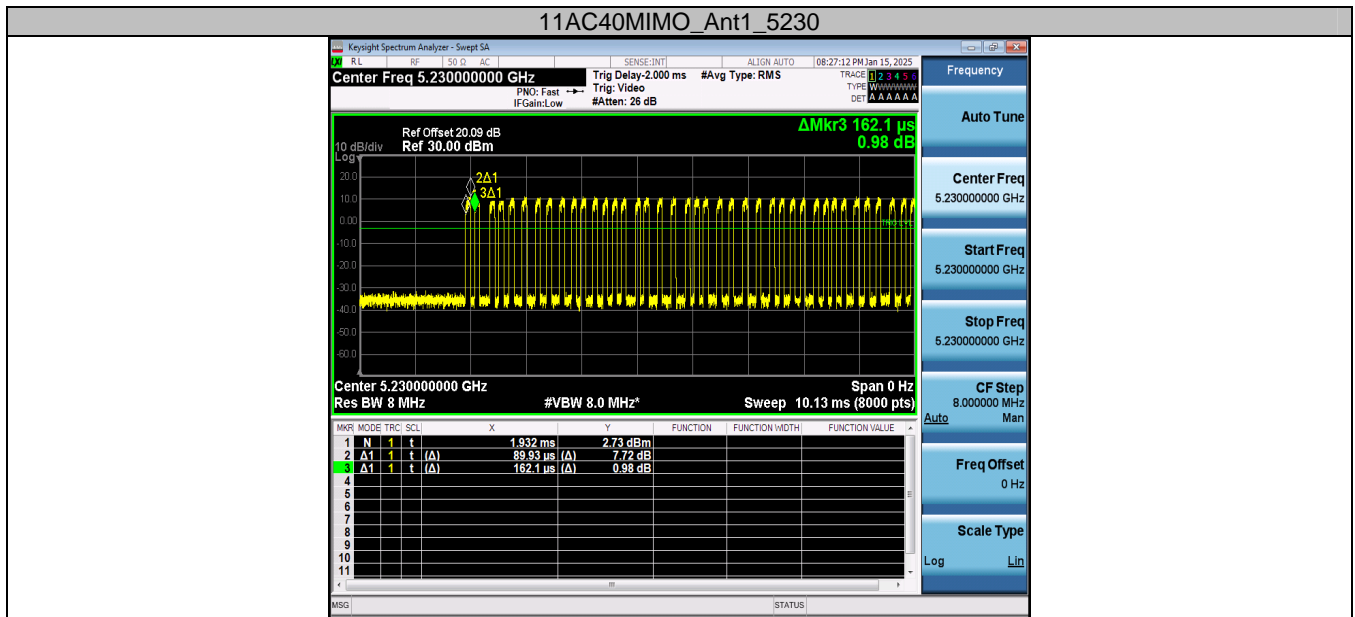












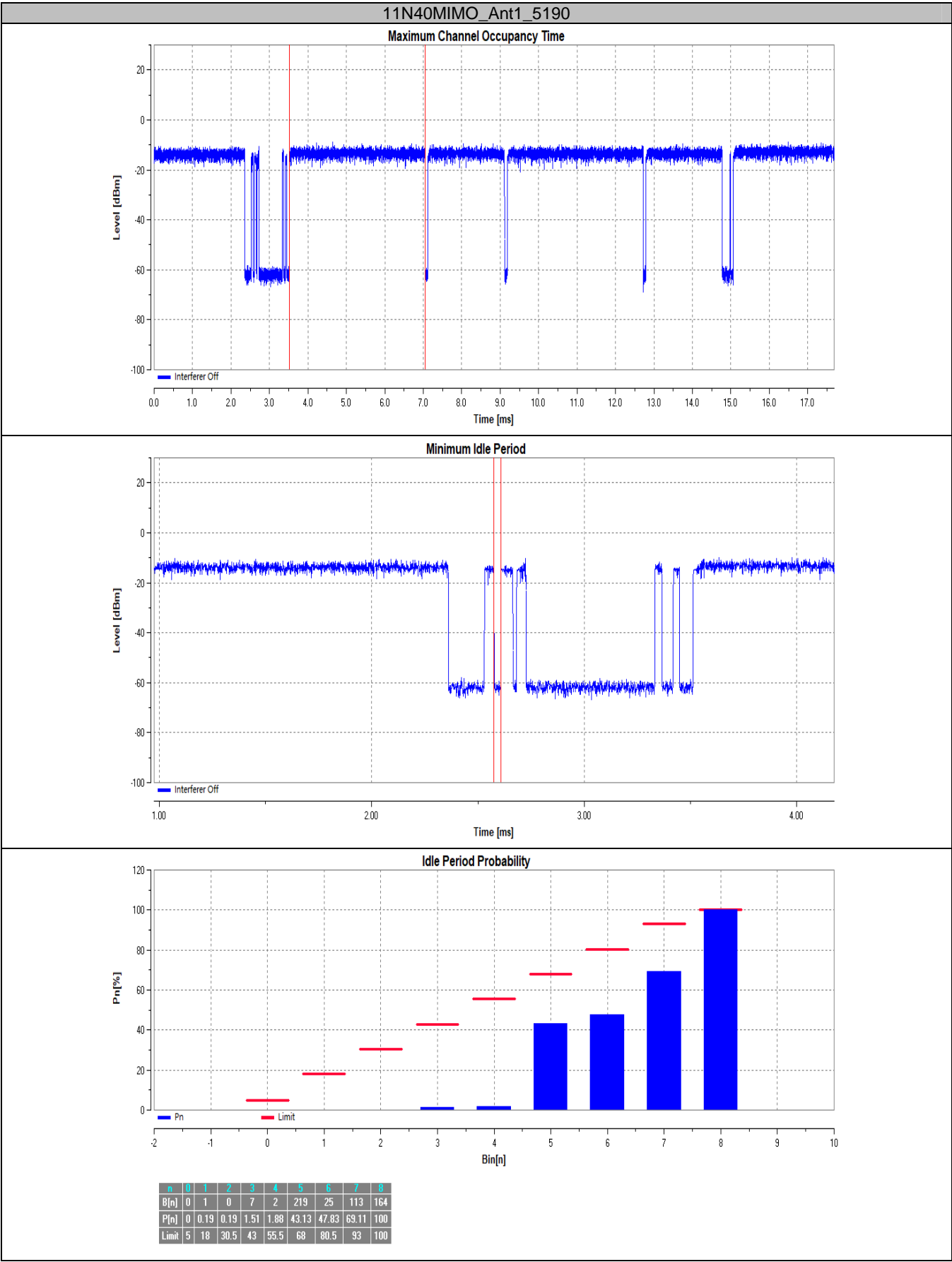


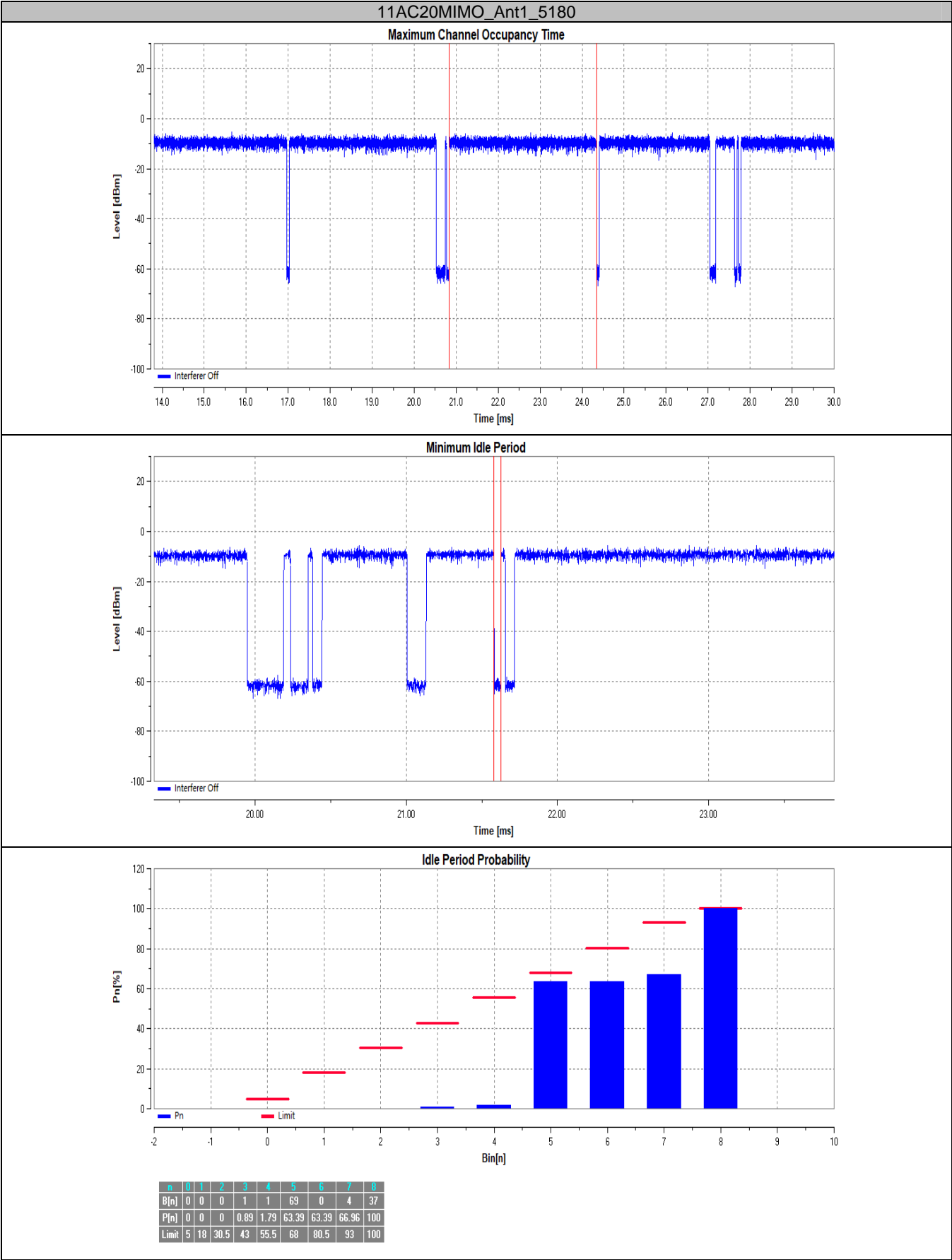
Appendix G:Adaptivity Test Result

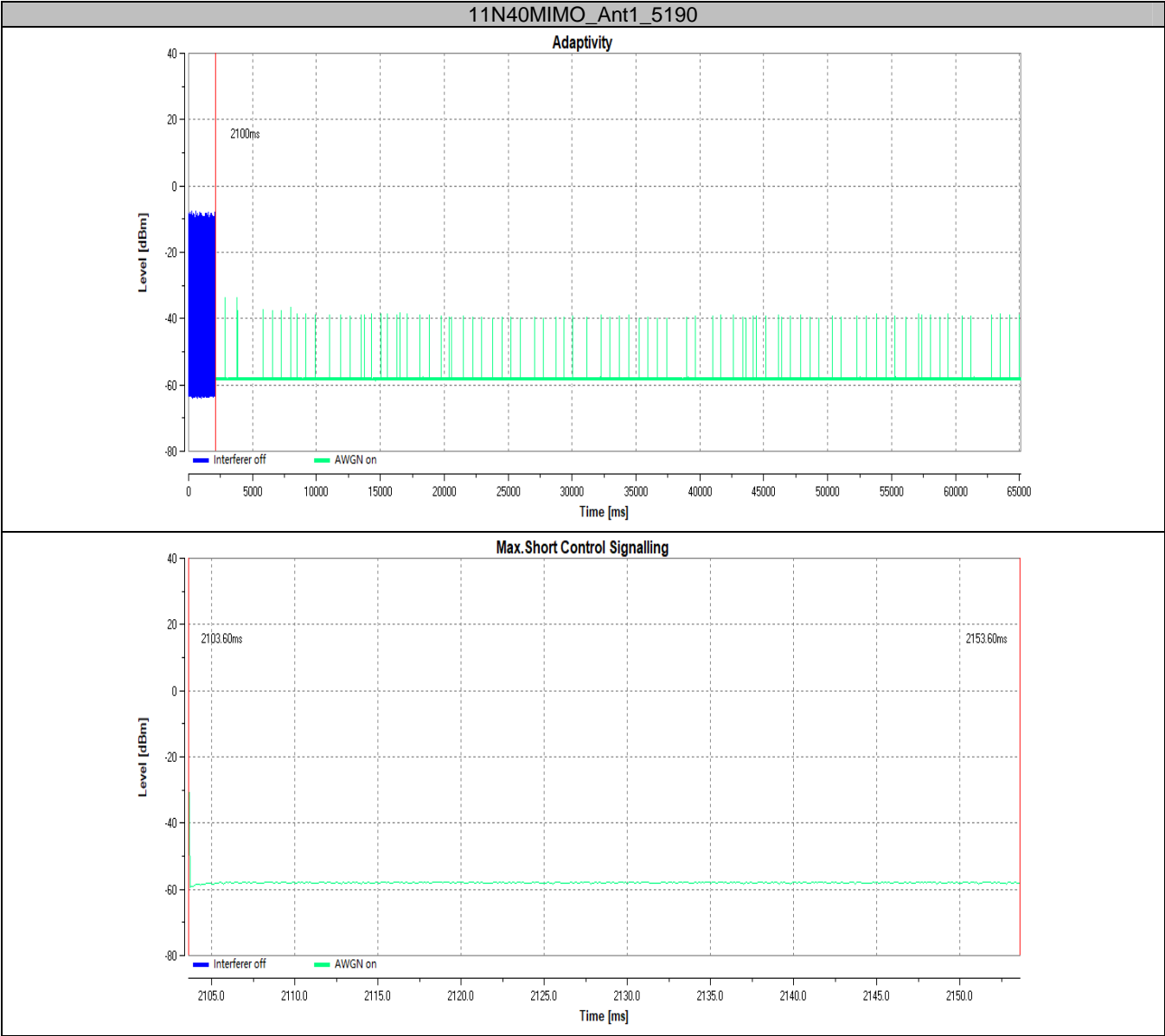
Test Mode	Antenna	Freq(MHz)	Priority Class	COT Num [n]	Max. COT [ms]	Limit [ms]	Min.Idle Time[ms]	Limit [ms]	Idle Period probability	Verdict
11N40MIMO	Ant1	5190	3	10031	3.537	4.000	0.032	0.027	See the graph	PASS
11AC20MIMO	Ant1	5180	3	10012	3.511	4.000	0.045	0.027	See the graph	PASS

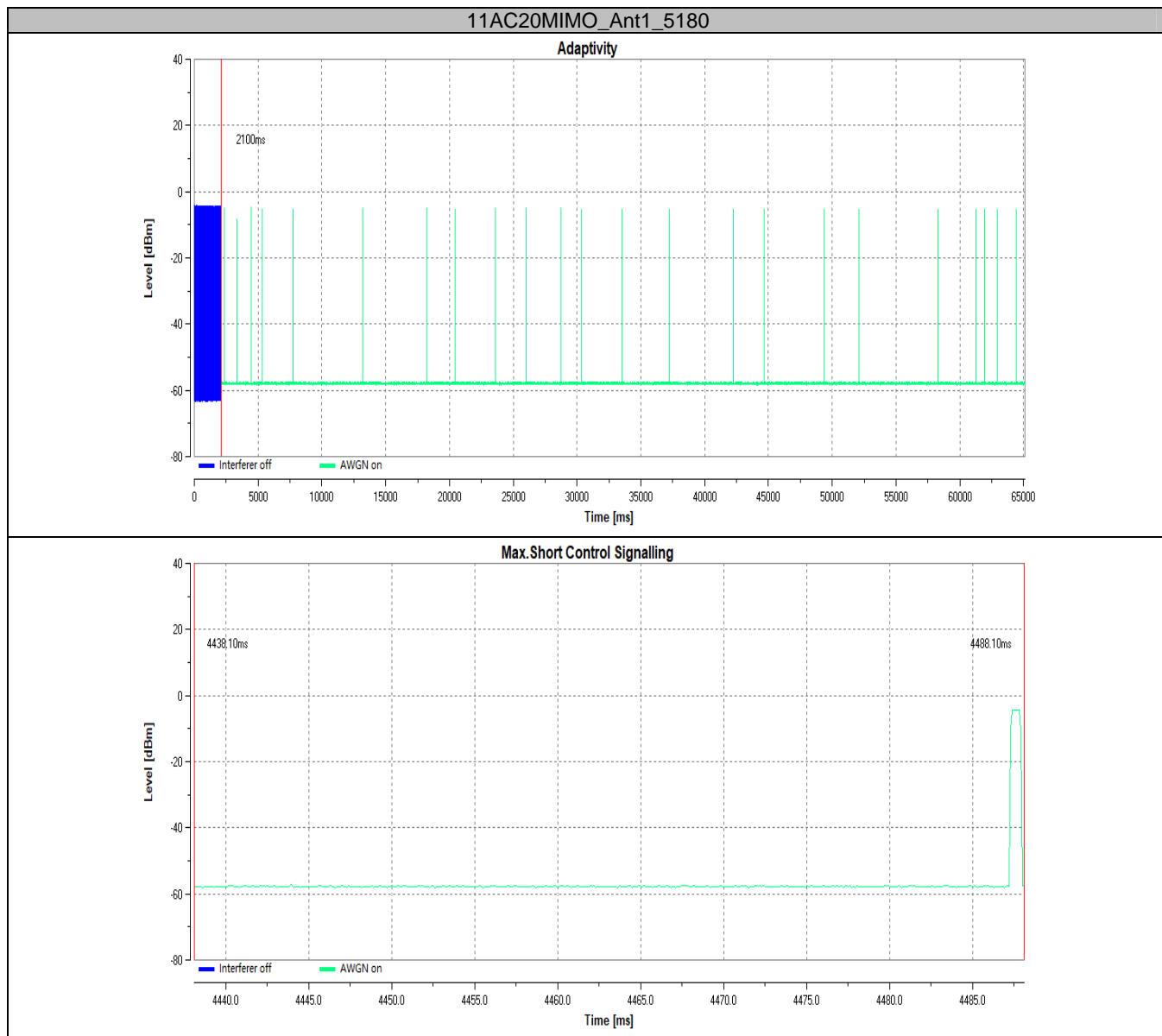
Test Mode	Antenna	Freq(MHz)	Interference Type	Add interference Time [ms]	Interference Level [dBm/MHz]	Max. Short Control number [n]	Limit [n]	Max. Short ControlTime [ms]	Limit [ms]	Verdict
11N40MIMO	Ant1	5190	AWGN	2100	-71.66	0	50	0.10	2.5	PASS
11AC20MIMO	Ant1	5180	AWGN	2100	-71.66	1	50	0.70	2.5	PASS
			OFDM	2100	-71.66	1	50	0.60	2.5	PASS
			LTE	2100	-71.66	1	50	0.70	2.5	PASS

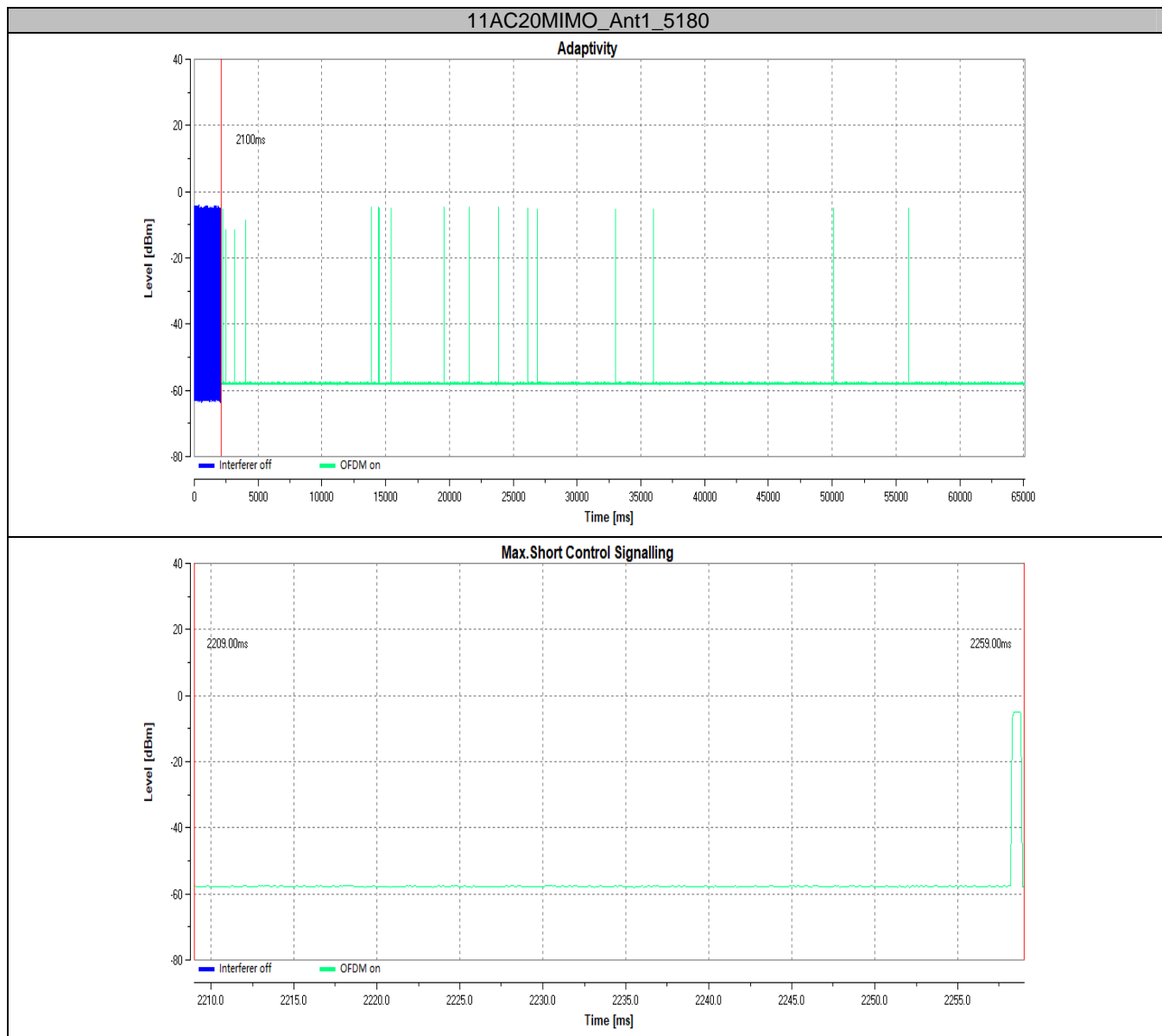
Test Graphs

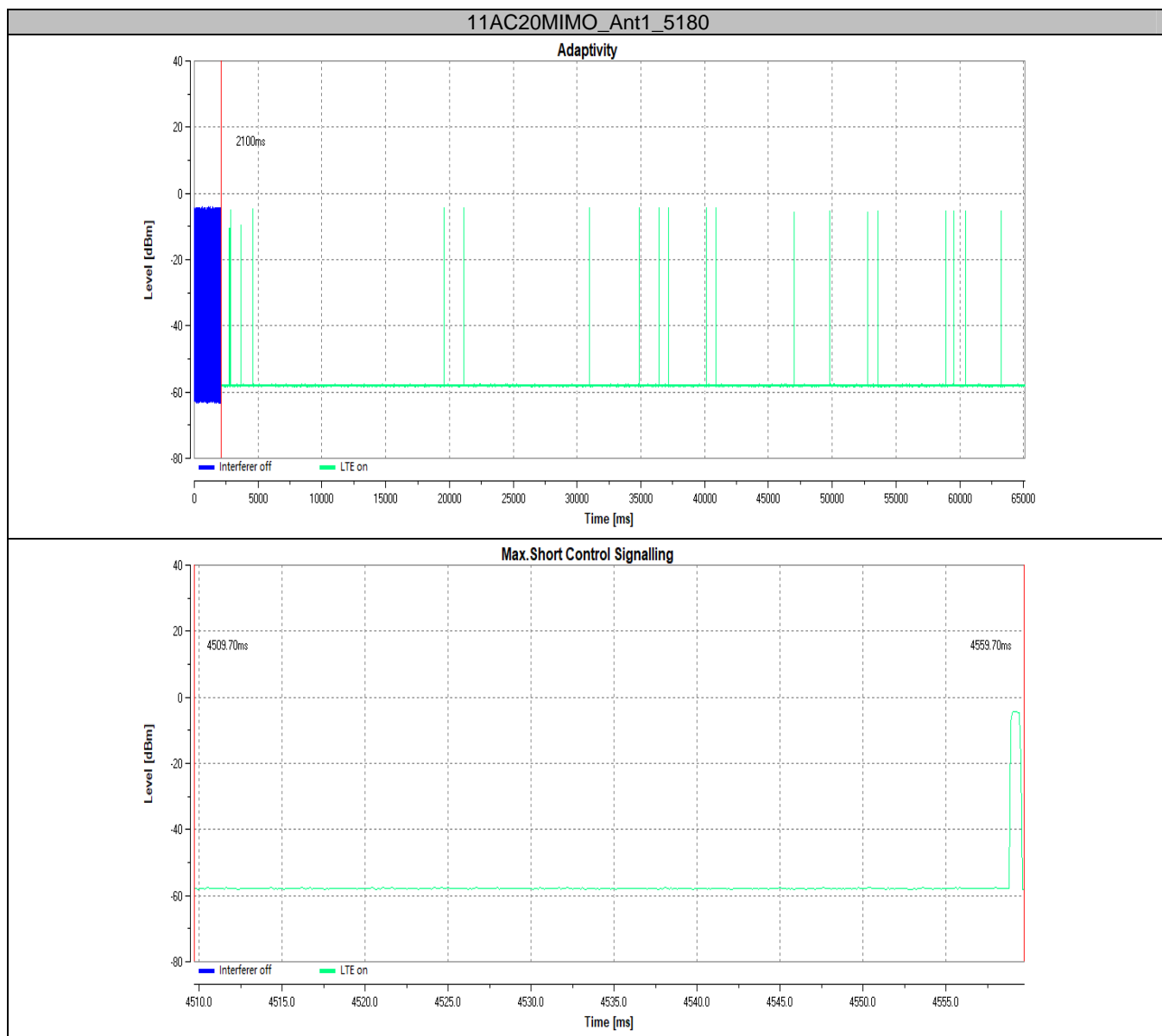












*****END OF REPORT*****