



FCC TEST REPORT

FCC ID: TYM-C190

On Behalf of

AVAYA LLC

Avaya Room System

Model No.: C190

Prepared for : AVAYA LLC
Address : 12121 Grant Street, Thornton, Colorado, United States

Prepared By : Shenzhen PSI Testing Co., Ltd.
1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West
Address : Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong,
China

Report Number : psi2406029-C01-R63
Date of Receipt : April 24, 2024
Date of Test : April 25, 2024-August 7, 2024
Date of Report : August 8, 2024
Version Number : V0

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TEST REPORT DECLARATION

Applicant : AVAYA LLC
Address : 12121 Grant Street, Thornton, Colorado, United States
Manufacturer : AVAYA LLC
Address : 12121 Grant Street, Thornton, Colorado, United States
EUT Description : Avaya Room System
(A) Model No. : C190
(B) Trademark : AVAYA
(C) Product Code : 700517297

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart E

RSS-247 Issue 2, ANSI C63.4:2014, ANSI C63.10:2013

Test Result: PASS

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart E&RSS-247 limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

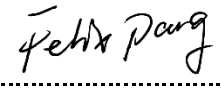
After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....:

Felix Pang

Test Engineer



Approved by (name + signature).....:

Simple Guan

Project Manager



Date of issue.....:

August 8, 2024

Revision History

Revision	Issue Date	Revisions	Revised By
V0	August 8, 2024	Initial released Issue	Felix Pang



1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	Section 15.203 Section 7.1.4 RSS-Gen Issue 5	PASS
AC Power Line Conducted Emission	Section 15.207 Section 7.2.4 RSS-GEN(8.8), ANSI C63.10	PASS
occupied bandwidth	Section 15.407 (e)	PASS
Peak Transmit Power	Section 15.407(a), RSS-247 5.4(2)	PASS
Power Spectral Density	Section 15.407(a), RSS-247 5.2(2)	PASS
Undesirable Emission	Section 15.407(b), RSS-247 5.5	PASS
Radiated Emission	Section 15.407(b)&15.209 Section 5.5 RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10	PASS
Band Edge	15.205, RSS-247 Issue 2, ANSI C63.10	PASS
Frequency Stability	15.407(f), RSS-GEN(6.11)	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Frequency Stability: The manufacturer stated in the user's manual.
3. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.
4. The data in this report is referenced from report psi2404111-C01-R12 and is consistent with its original data results.

1.1 Measurement Uncertainty

Item	Uncertainty
Uncertainty for Power Line Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31dB(Polarize: V)
	4.30dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB
Uncertainty for Power Spectral Density	0.39 dB
Occupied-Bandwidth	968Hz
Conducted-Spurious Emission	1.26dB

2 General Information

2.1 General Description of EUT

EUT Name : Avaya Room System
 Model : C190
 Diff : N/A
 Test Voltage : DC 12V from adapter

Radio Technology : 5G WIFI

Operation frequency : 802.11a/802.11ac20/802.11n(HT20)/802.11ax20: 5180-5240MHz, 5260-5320MHz, 5500-5700MHz, 5745-5845MHz
 : 802.11ac40/802.11n(HT40)/802.11ax40: 5190-5230MHz, 5270-5310MHz, 5510-5670MHz, 5755-5795MHz
 : 802.11ac80/802.11ax80: 5210MHz, 5290MHz, 5530MHz, 5775MHz
 Channel separation : 20MHz for 802.11a/802.11ac20/802.11n(HT20)/.11ax20
 : 40MHz for 802.11ac40/ 802.11n(HT40)/802.11ax40
 : 80MHz for 802.11ac80/802.11ax80
 Modulation technology: : IEEE 802.11n: OFDM (64QAM,16QAM,QPSK,BPSK)
 : IEEE 802.11a: OFDM (64QAM,16QAM,QPSK,BPSK)
 : IEEE 802.11ac: OFDM (64QAM,16QAM, 256QAM,QPSK,BPSK)
 : IEEE 802.11ax: OFDMA (64QAM,16QAM,QPSK,BPSK,256QAM,1024QAM)
 Antenna Type : Internal antenna, Maximum Gain is 2.93dBi.

PMN : Avaya Room System
 HVIN : C190

Software version : V1.0
 Hardware version : V1.0
 FVIN

Note : Antenna information is provided by applicant.
 : Testing lab is not responsible for the accuracy of the information.

2.2 Test mode

Transmitting mode Keep the EUT in transmitting with modulation.
EUT was test with 99% duty cycle at its maximum power control level.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission
Registration Number: 916281

September 21, 2023 Certificated by IC
Registration Number: 31123
CAB identifier: CN0158

2.4 Description of Support Units

Accessories : AC ADAPTER 1
Manufacturer : SHEN ZHEN TRANSIN TECHNOLOGIES CO., LTD
Model : TS-A036-120300M
Rating : Input: 100-240V~50/60Hz 1.2A
Output: DC 12.0V/3.0A

Accessories : AC ADAPTER 2
Manufacturer : Mass Power Electronics Inc.
Model : S042-1B120300M2
Rating : Input: 100-240V~50/60Hz 1.0A
Output: DC 12.0V/3.0A

Accessories : AC ADAPTER 3
Manufacturer : EDACPOWER ELEC.
Model : EA10681U-120
Rating : Input: 100-240V~50/60Hz 2.0A
Output: DC 12.0V/6.0A

Note: The product comes with three adapters for use, all of which have been tested. The report reflects the data of the worst TS-A036-120300M adapter model.

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

2.8 Additional instructions

Software (Used for test) from client

Channel	Power level
Lowest	Default
Middle	Default
Highest	Default

2.9 Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	26℃
Humidity range:	25-75%	54%
Pressure range:	86-106kPa	98kPa

3 Test Instruments list

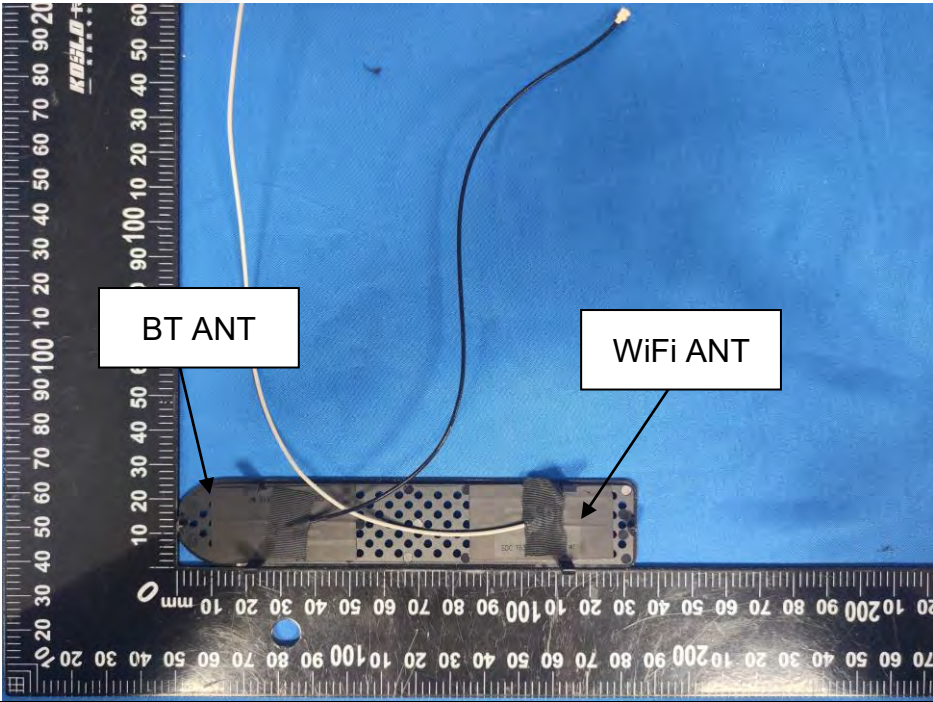
Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2023.12.19	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2023.12.19	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2023.12.19	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2022.12.26	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2023.12.19	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2022.12.26	2 Year
9.	Amplifier	SKET	LAPA_01G18G-45dB	SK2022032901	/	2023.12.19	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.25	2 Year
11.	Amplifier	SKET	LNPA_0118G-45	SK2020010801	/	2023.12.19	1 Year
12.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02-1111533-Fz	/	2023.12.19	1 Year
13.	RF Sensor Unit	Tachoy	TR1029-2	20220428P008	/	2023.12.19	1 Year
14.	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2023.12.19	1 Year
15.	Temp. & Humid Chamber	Auchno	9606	/	/	2023.12.19	1 Year
16.	Regulated DC Power Supply	Xinouhua	ADC120V10A	202211251638		2023.12.19	1 Year

For Test Software Information

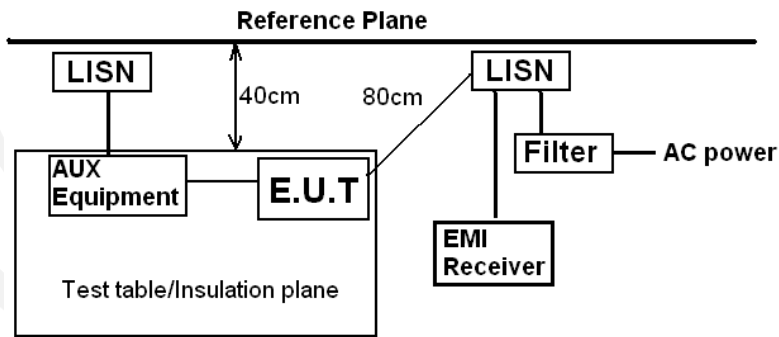
Item	Software Name	Manufacturer	Version
RE	EZ EMC	Farad	PSI-3A1
CE	EZ EMC	Farad	PSI-3A1
RF	RTS	TACHOY	V1.0.0

4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203, RSS-GEN(6.8)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
Internal antenna, Maximum Gain is 2.93dBi, for 5180-5240MHz, 5260-5320MHz, 5500-5700MHz, 5745-5845MHz 	

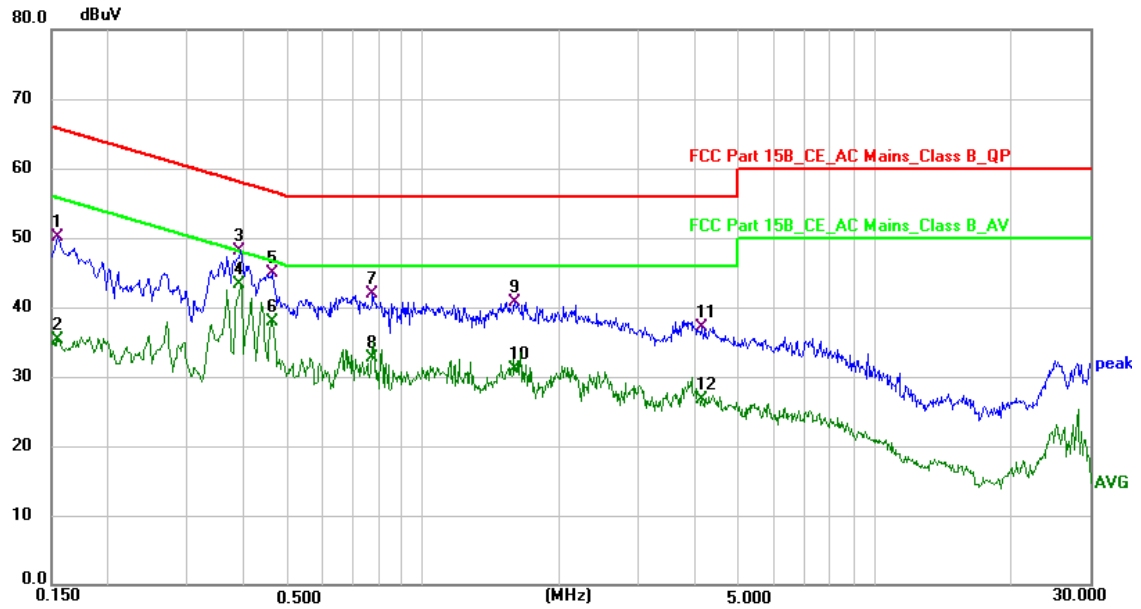
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207, RSS-Gen §8.8		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 3.0 for details		
Test mode:	Refer to section 2.2 for details		
Test results:	Pass		

Measurement Data

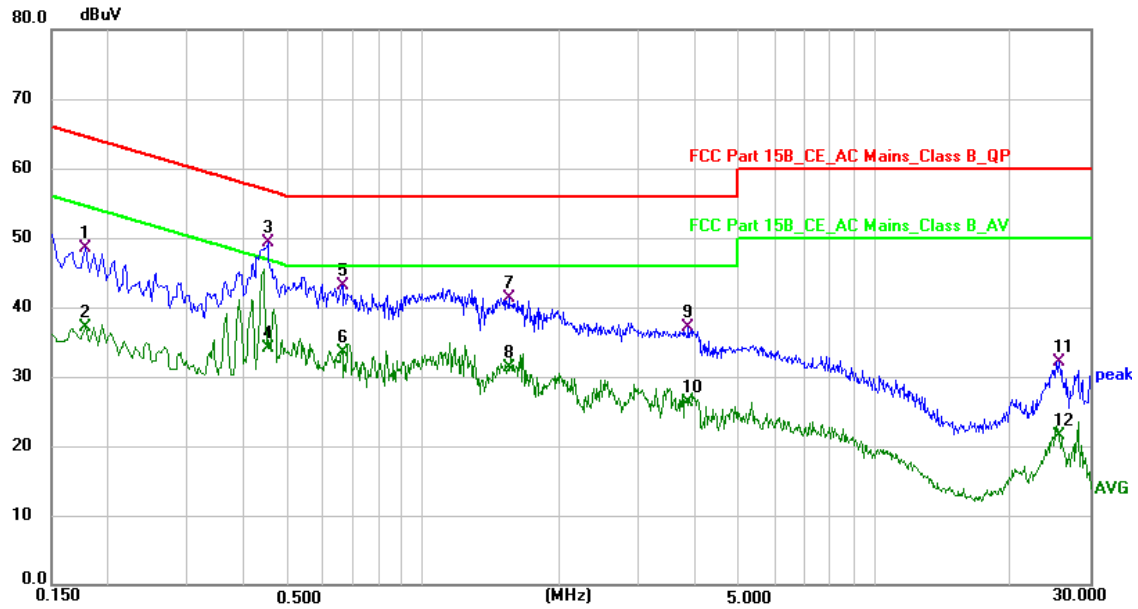
An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1547	40.07	9.94	50.01	65.74	-15.73	QP	P
2	0.1547	25.34	9.94	35.28	55.74	-20.46	AVG	P
3	0.3933	38.54	9.64	48.18	57.99	-9.81	QP	P
4 *	0.3933	33.69	9.64	43.33	47.99	-4.66	AVG	P
5	0.4620	35.10	9.80	44.90	56.66	-11.76	QP	P
6	0.4620	28.10	9.80	37.90	46.66	-8.76	AVG	P
7	0.7740	32.39	9.42	41.81	56.00	-14.19	QP	P
8	0.7740	23.38	9.42	32.80	46.00	-13.20	AVG	P
9	1.5940	31.36	9.40	40.76	56.00	-15.24	QP	P
10	1.5940	21.62	9.40	31.02	46.00	-14.98	AVG	P
11	4.1420	27.66	9.40	37.06	56.00	-18.94	QP	P
12	4.1420	17.24	9.40	26.64	46.00	-19.36	AVG	P

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

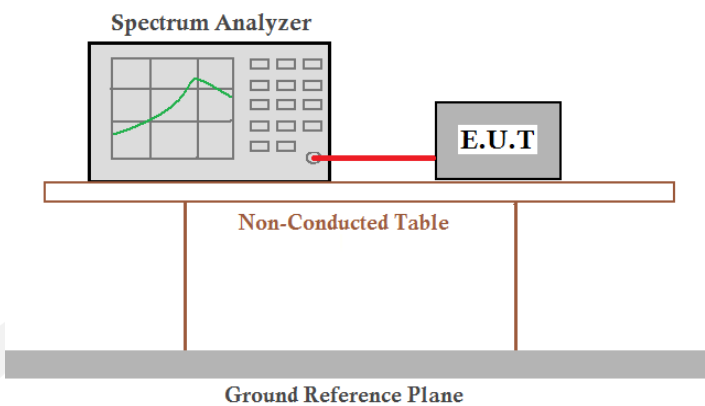
Neutral:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1780	38.50	9.93	48.43	64.58	-16.15	QP	P
2	0.1780	27.16	9.93	37.09	54.58	-17.49	AVG	P
3 *	0.4500	39.58	9.66	49.24	56.88	-7.64	QP	P
4	0.4500	24.42	9.66	34.08	46.88	-12.80	AVG	P
5	0.6620	33.35	9.78	43.13	56.00	-12.87	QP	P
6	0.6620	23.77	9.78	33.55	46.00	-12.45	AVG	P
7	1.5460	32.00	9.37	41.37	56.00	-14.63	QP	P
8	1.5460	21.90	9.37	31.27	46.00	-14.73	AVG	P
9	3.8660	27.54	9.56	37.10	56.00	-18.90	QP	P
10	3.8660	16.80	9.56	26.36	46.00	-19.64	AVG	P
11	25.6540	21.47	10.59	32.06	60.00	-27.94	QP	P
12	25.6540	10.90	10.59	21.49	50.00	-28.51	AVG	P

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

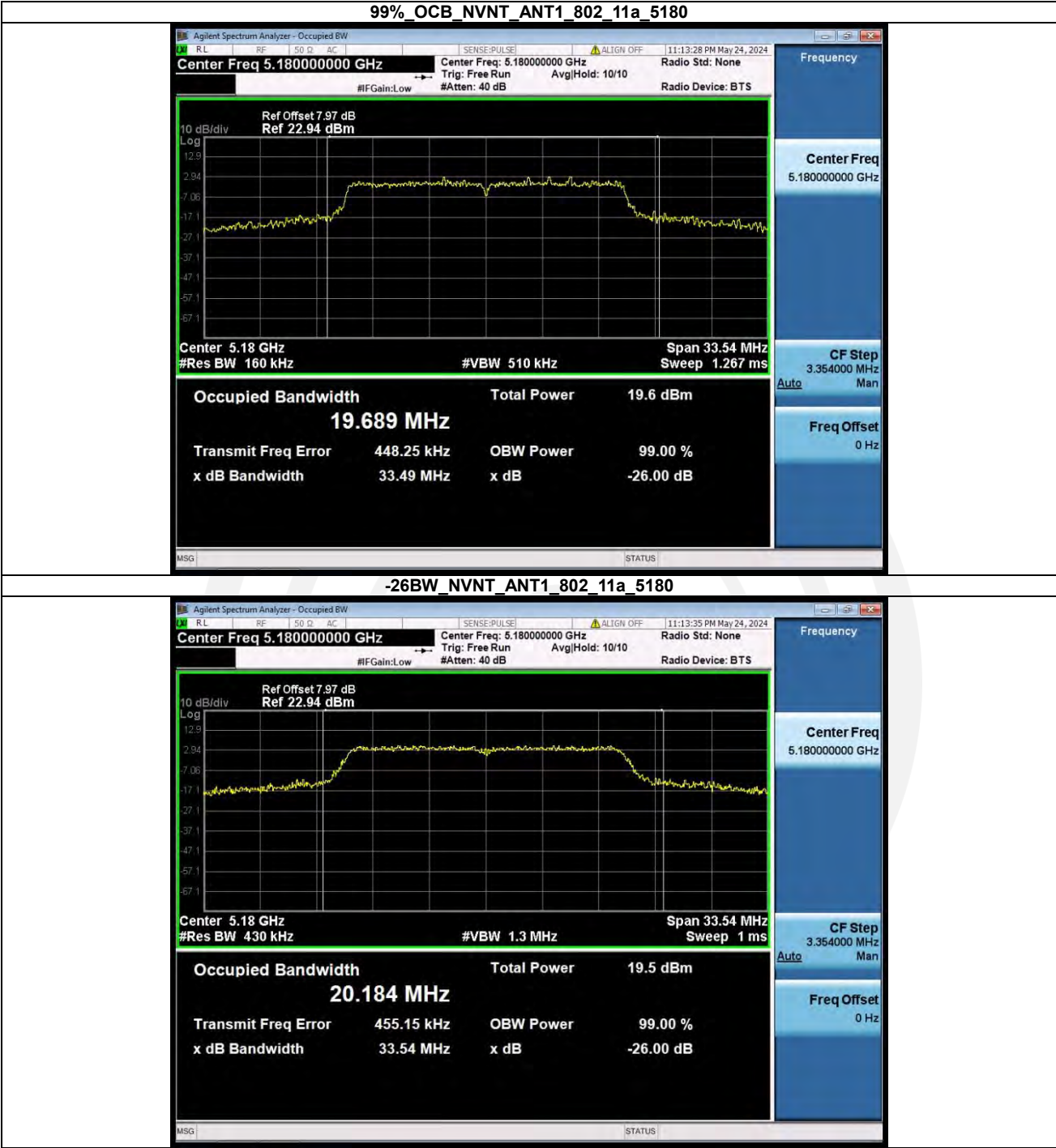
All modes and channels have been tested and only the A 5180MHz mode with the worst data is listed.

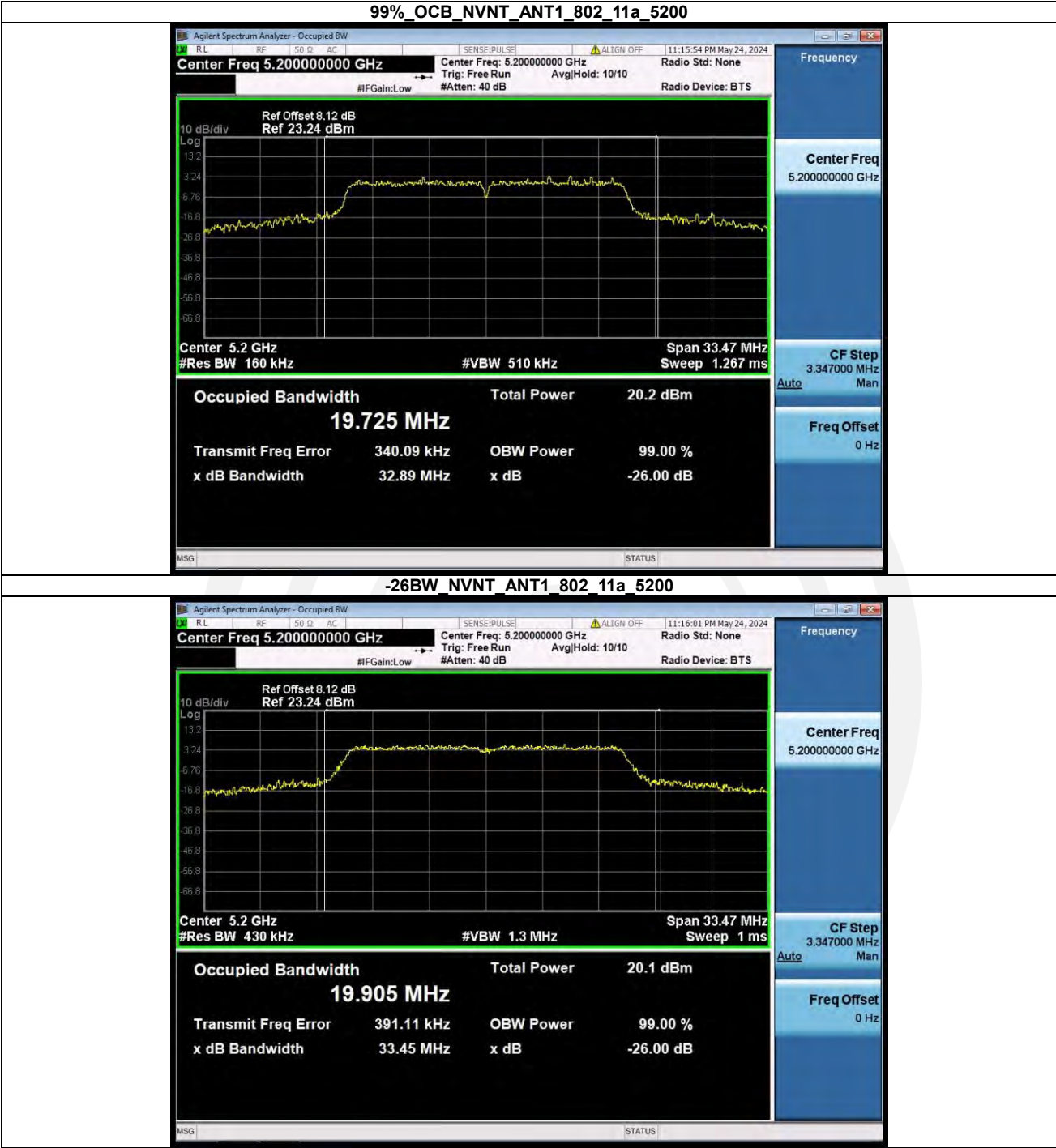
4.3 Emission Bandwidth and 99% Occupied Bandwidth

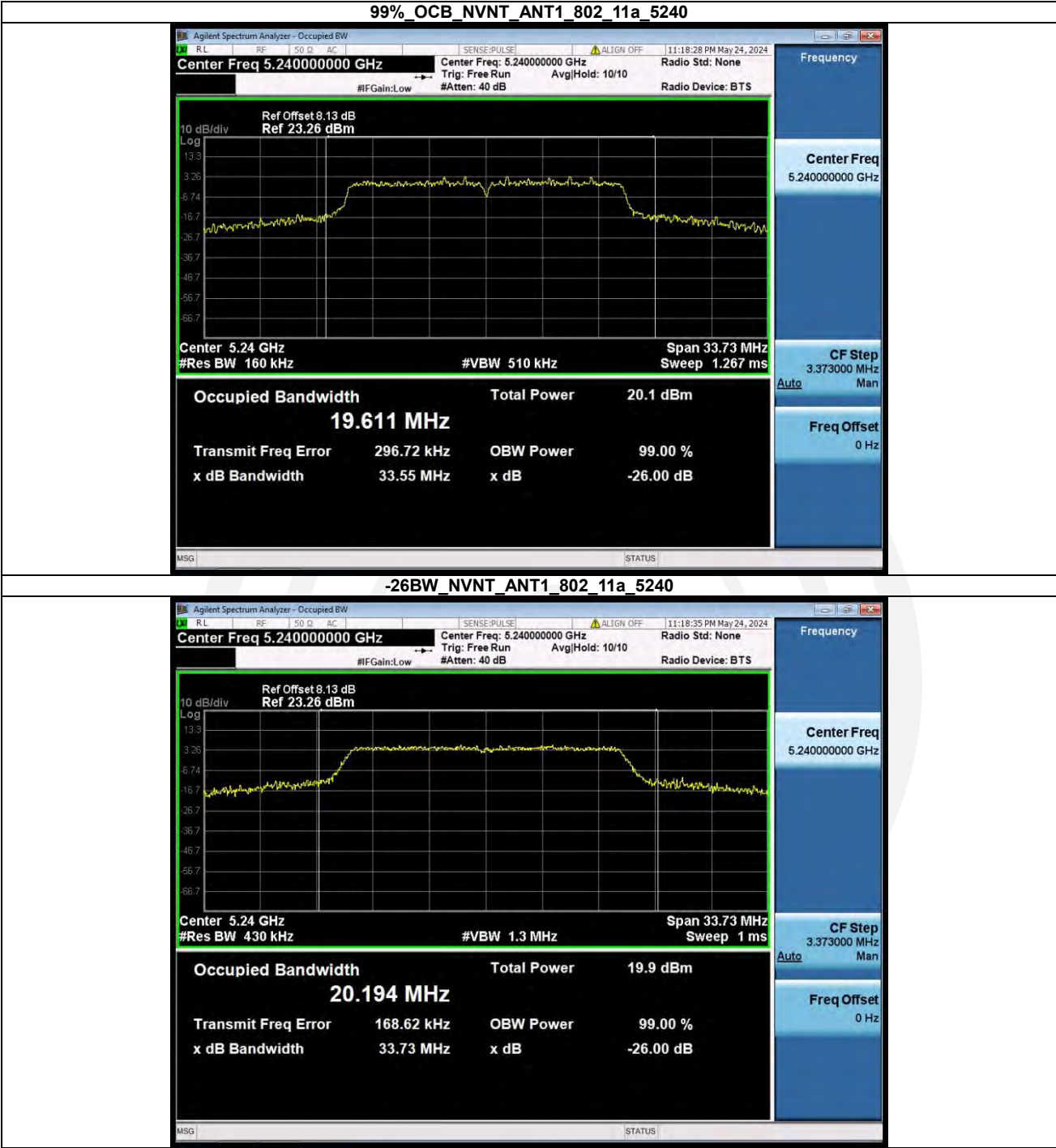
Test Requirement:	FCC Part15 E Section 15.407, RSS-Gen §6.7; RSS-247 §6.2
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	>500kHz for 6 dB bandwidth
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a green trace on its screen, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a 'Non-Conducted Table'. This table is supported by two vertical legs that rest on a 'Ground Reference Plane', which is represented by a thick grey horizontal bar at the bottom of the setup.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

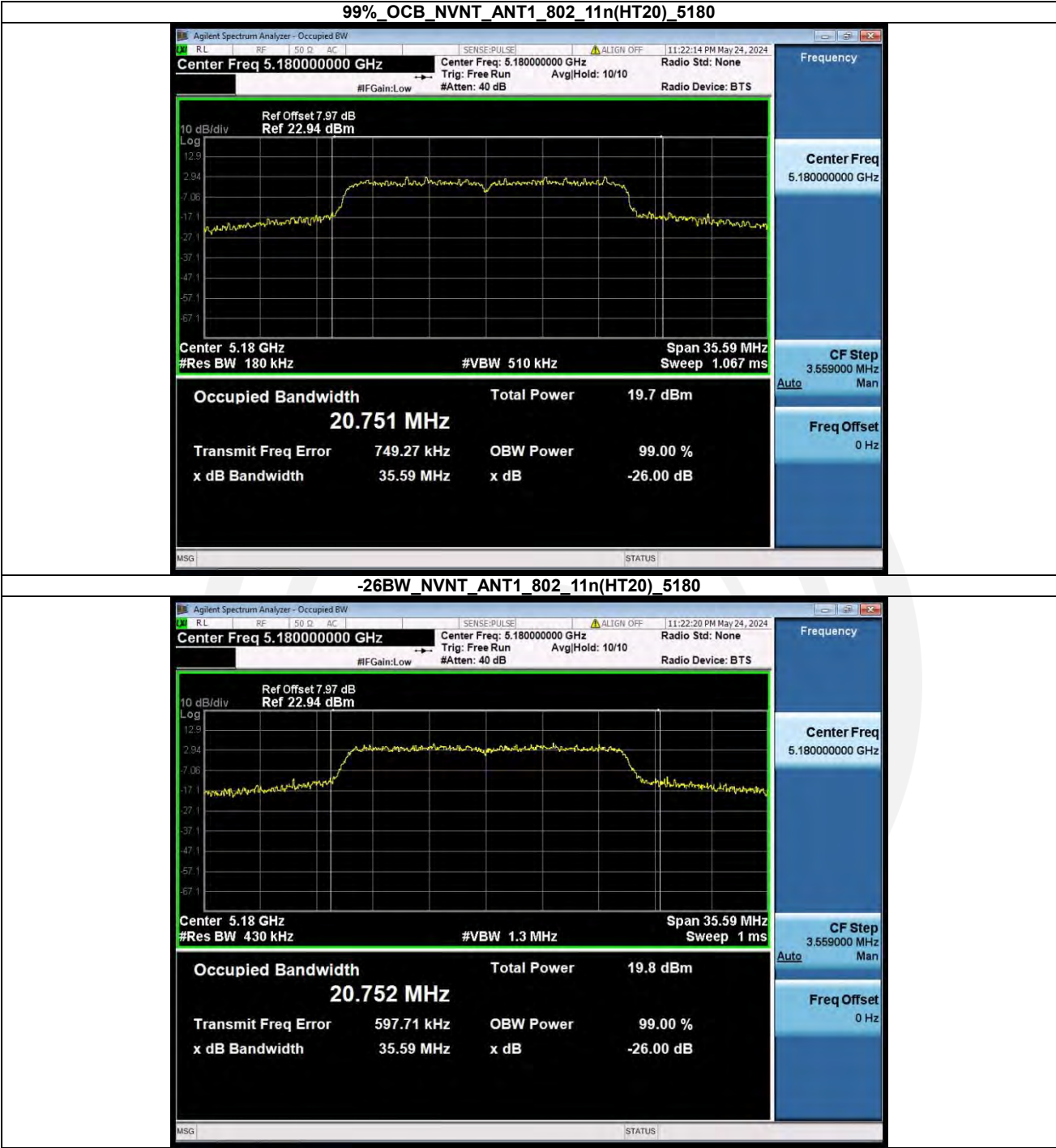
Measurement Data:**Band 1 (5150-5250 MHz):**

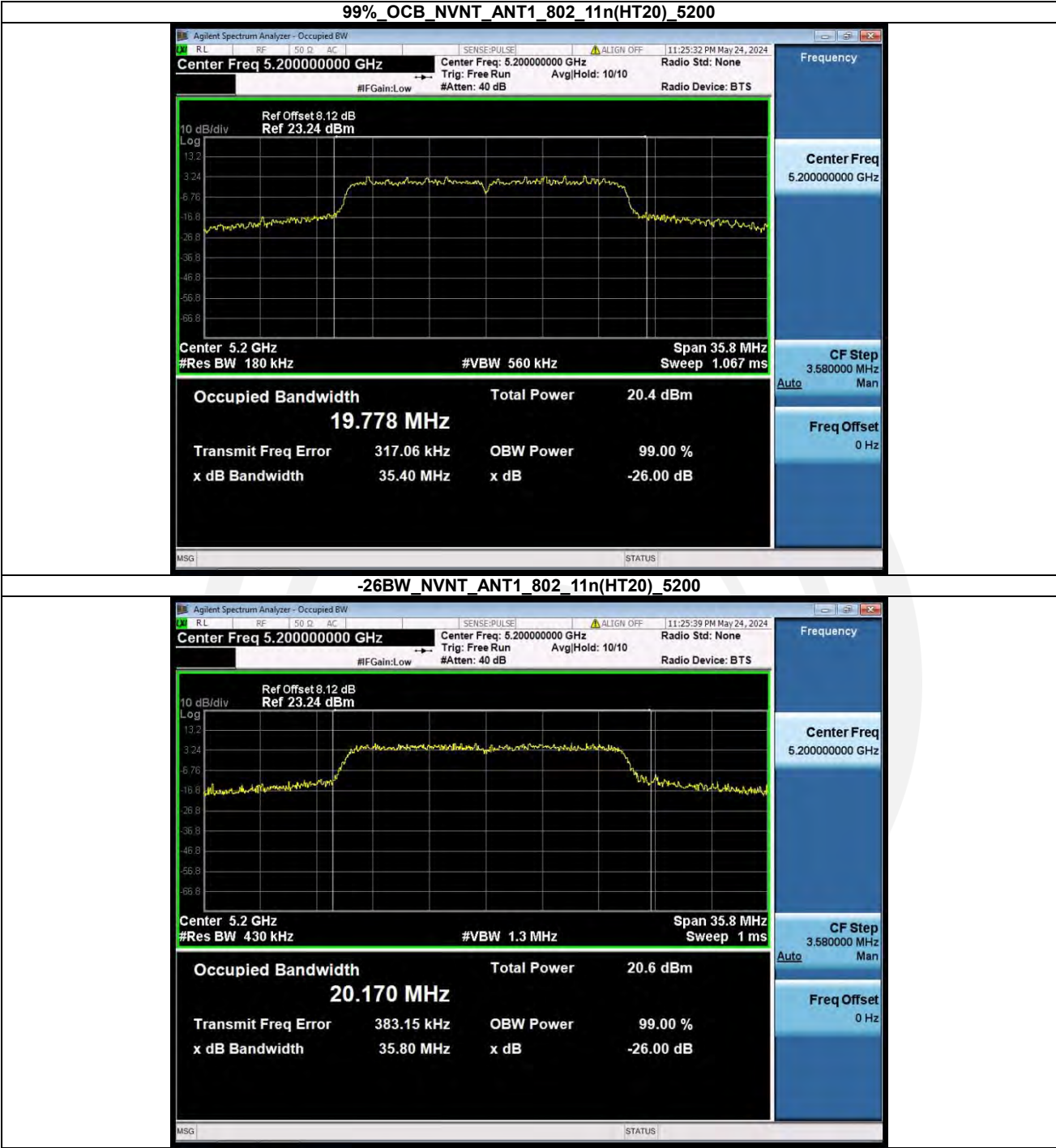
Condition	Antenna	Modulation	Frequency(MHz)	26dB_Emission_Bandwidth(MHz)	Occupied Bandwidth(MHz)
NVNT	ANT1	802.11a	5180.00	33.54	19.69
NVNT	ANT1	802.11a	5200.00	33.45	19.73
NVNT	ANT1	802.11a	5240.00	33.73	19.61
NVNT	ANT1	802.11n(HT20)	5180.00	35.59	20.75
NVNT	ANT1	802.11n(HT20)	5200.00	35.80	19.78
NVNT	ANT1	802.11n(HT20)	5240.00	35.60	19.60
NVNT	ANT1	802.11ac(VHT20)	5180.00	35.69	20.21
NVNT	ANT1	802.11ac(VHT20)	5200.00	32.27	17.81
NVNT	ANT1	802.11ac(VHT20)	5240.00	35.26	17.92
NVNT	ANT1	802.11n(HT40)	5190.00	70.93	36.49
NVNT	ANT1	802.11n(HT40)	5230.00	69.30	36.72
NVNT	ANT1	802.11ac(VHT40)	5190.00	66.84	36.40
NVNT	ANT1	802.11ac(VHT40)	5230.00	72.38	36.54
NVNT	ANT1	802.11ac(VHT80)	5210.00	152.17	81.01
NVNT	ANT1	802.11ax(HE20)	5180.00	19.79	17.47
NVNT	ANT1	802.11ax(HE20)	5200.00	19.89	17.64
NVNT	ANT1	802.11ax(HE20)	5240.00	19.93	17.62
NVNT	ANT1	802.11ax(HE40)	5190.00	39.95	35.86
NVNT	ANT1	802.11ax(HE40)	5230.00	40.10	36.01
NVNT	ANT1	802.11ax(HE80)	5210.00	79.45	75.24

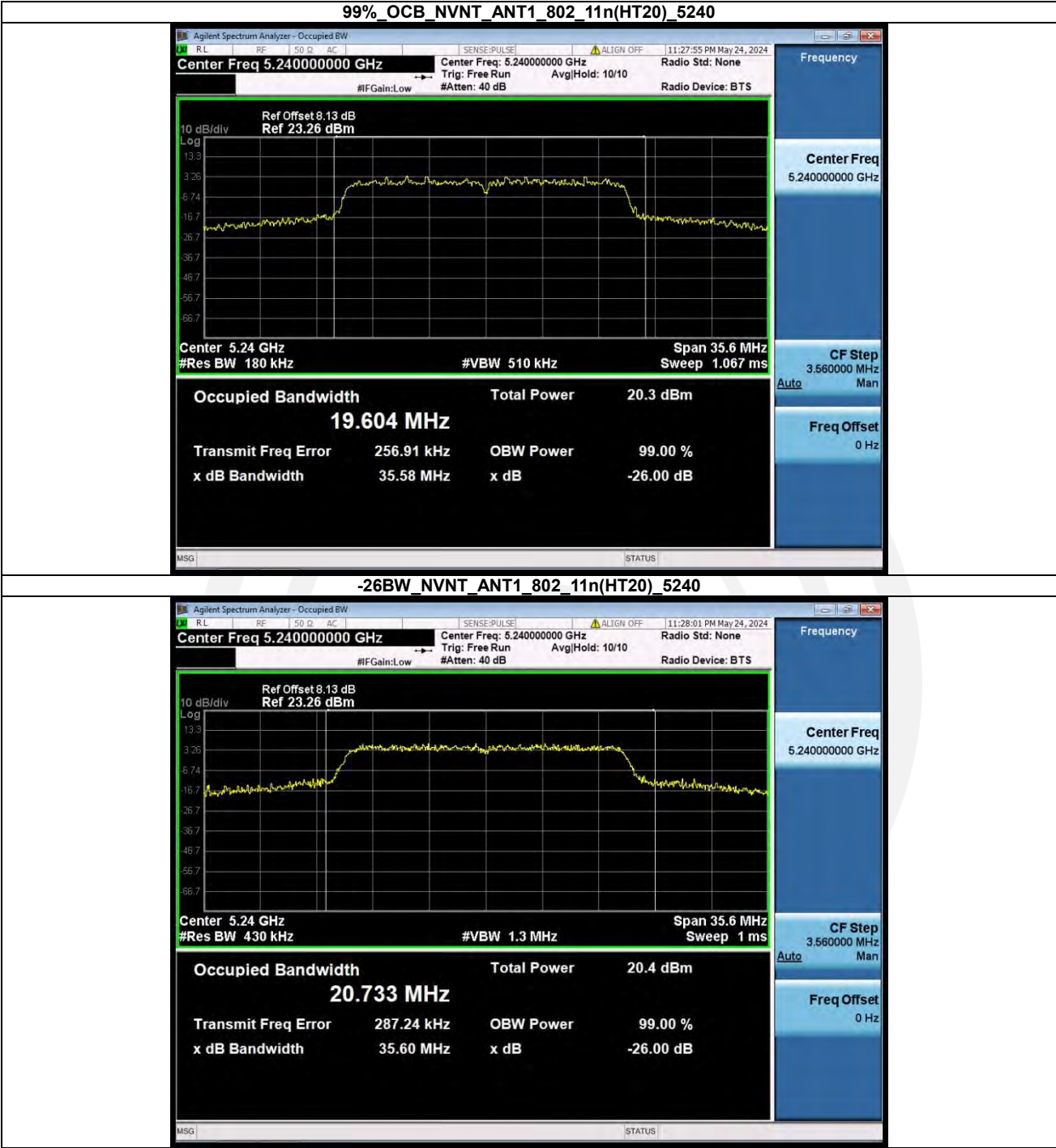


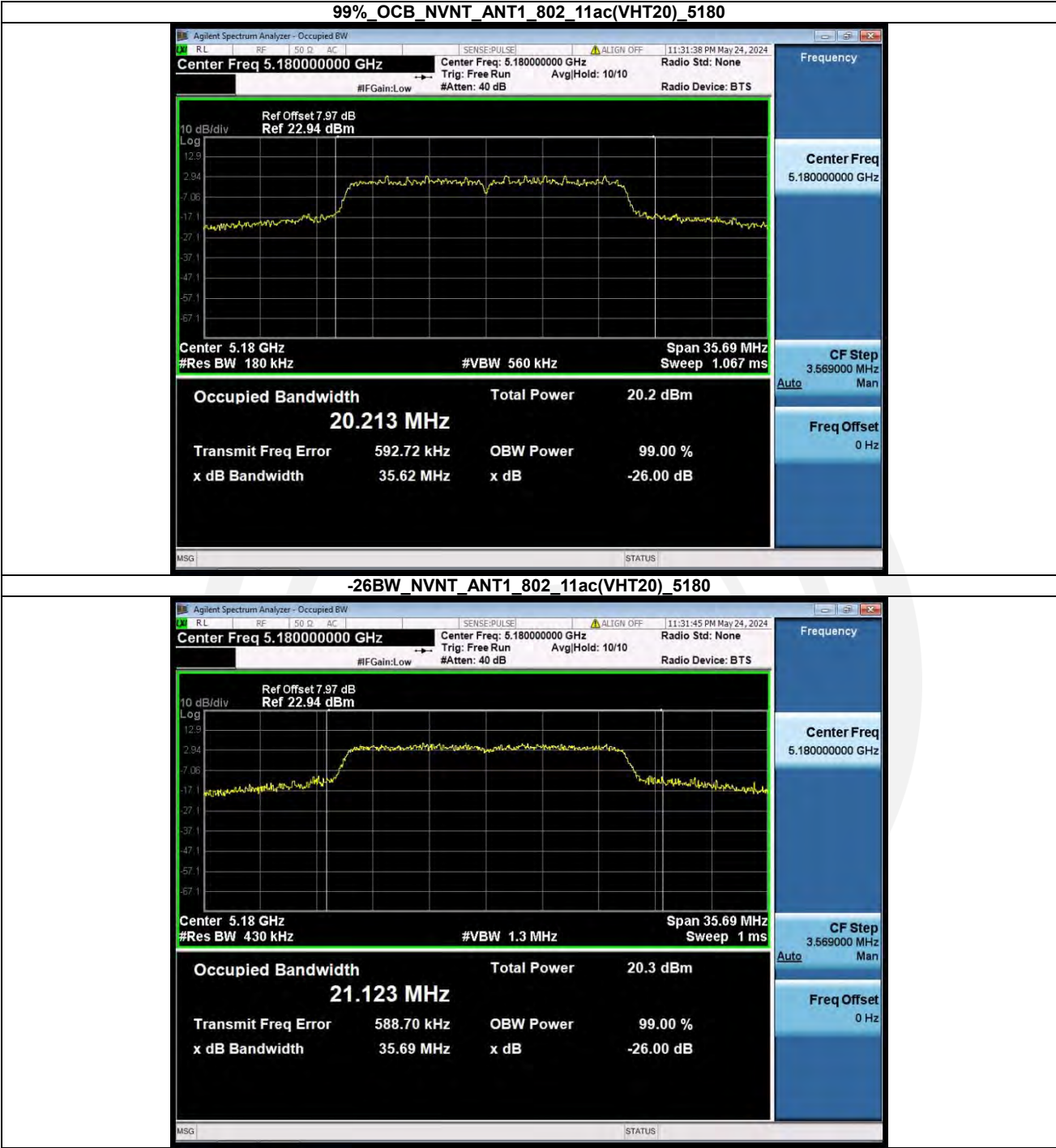


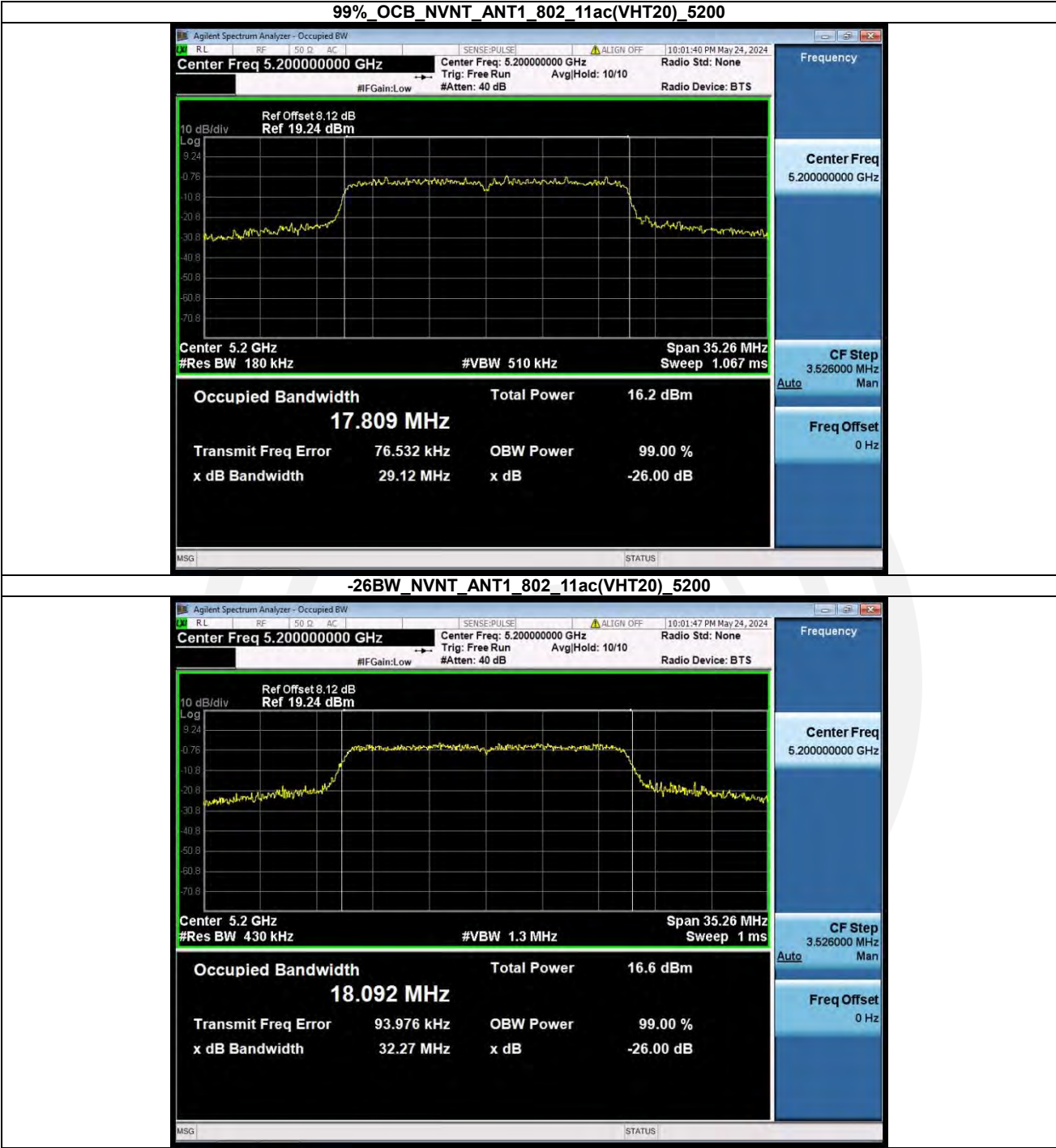


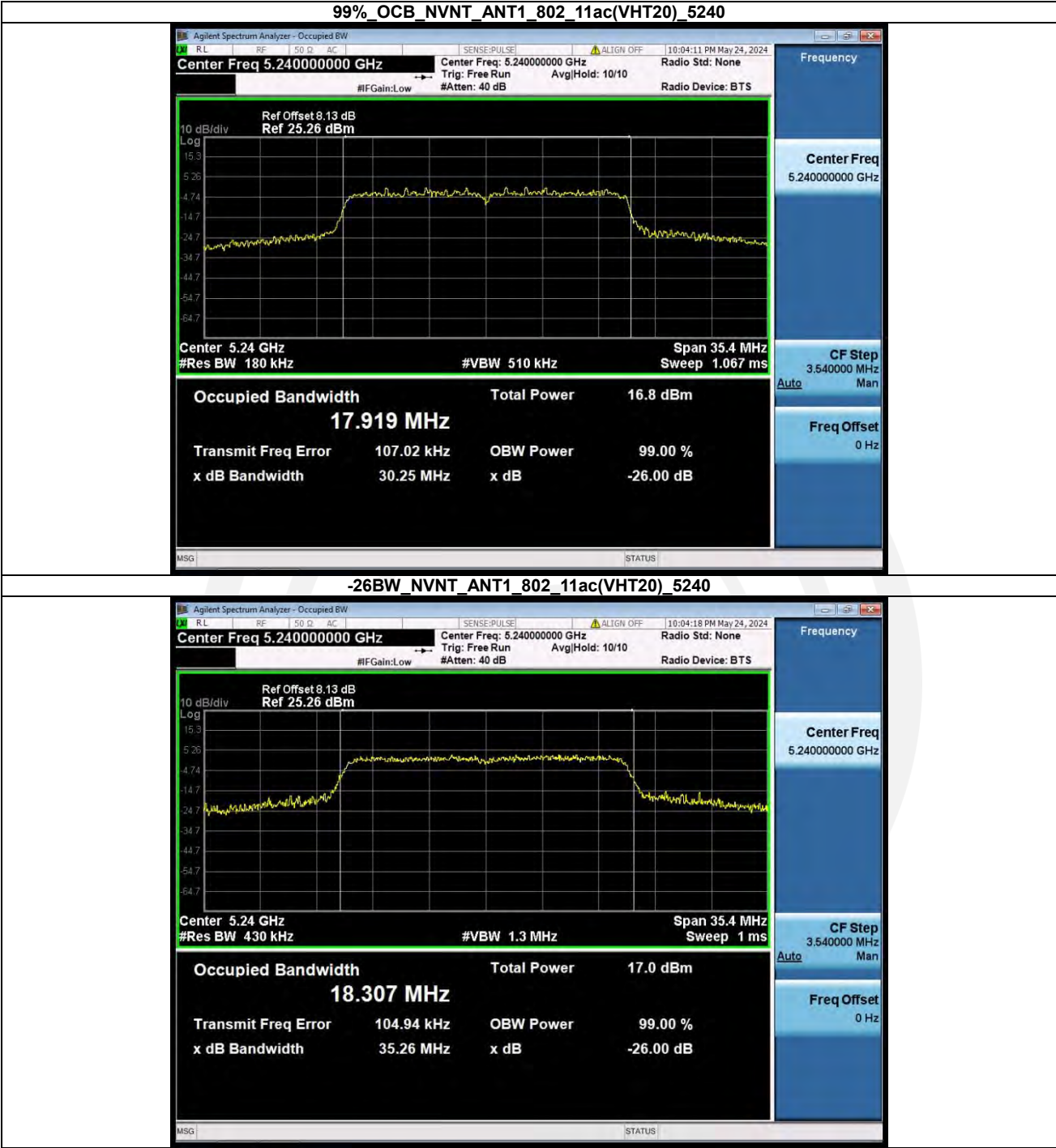


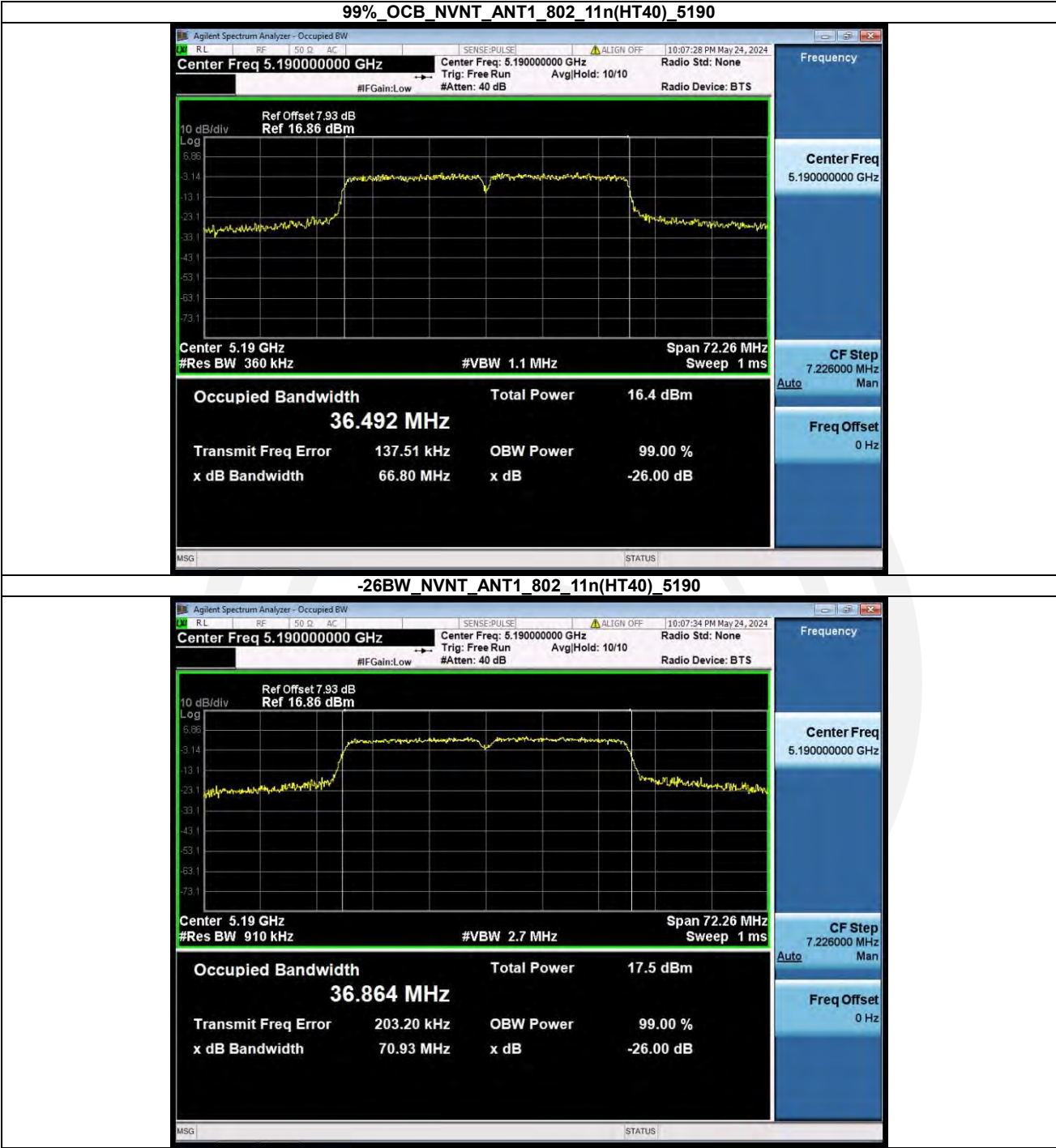


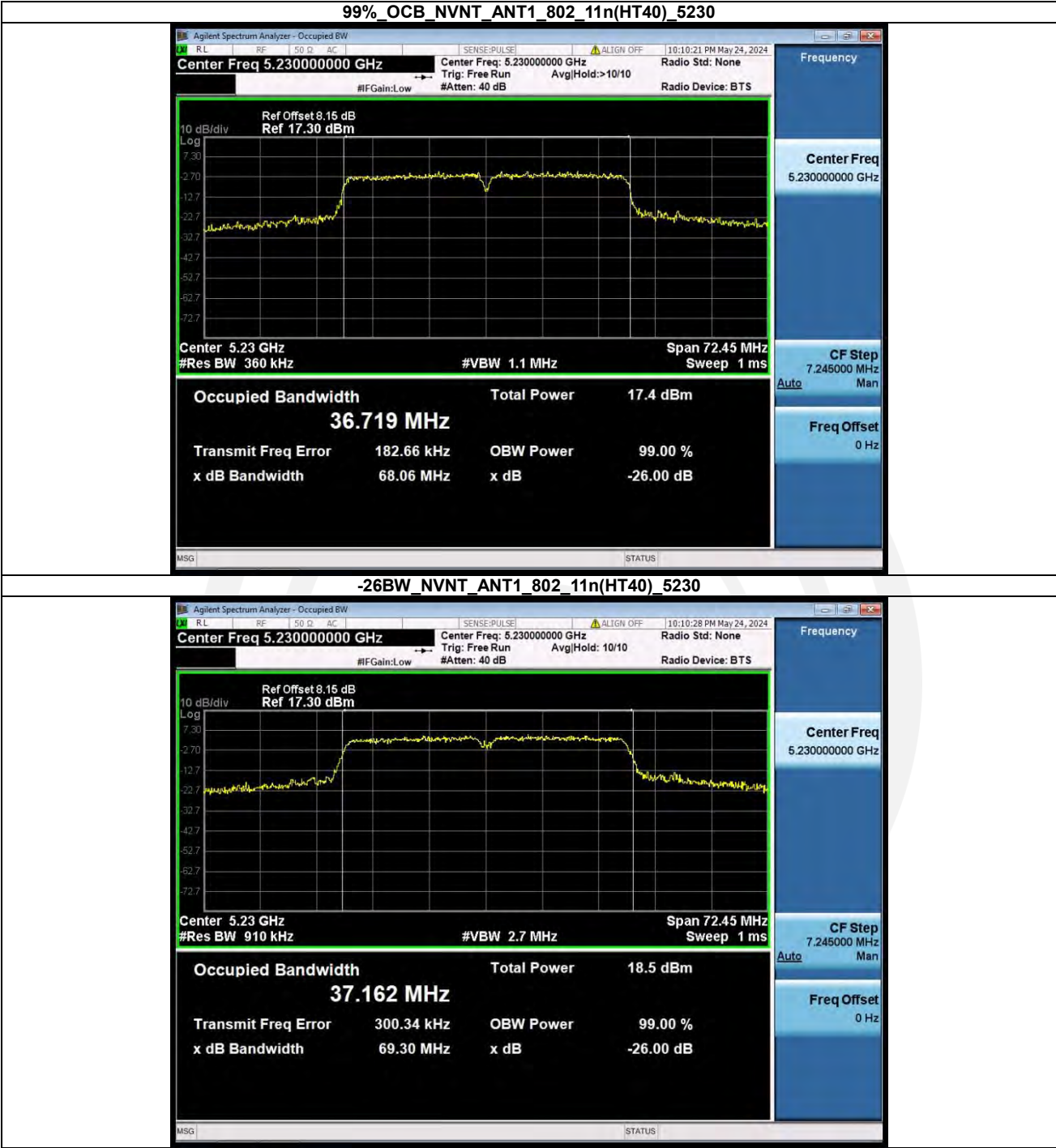


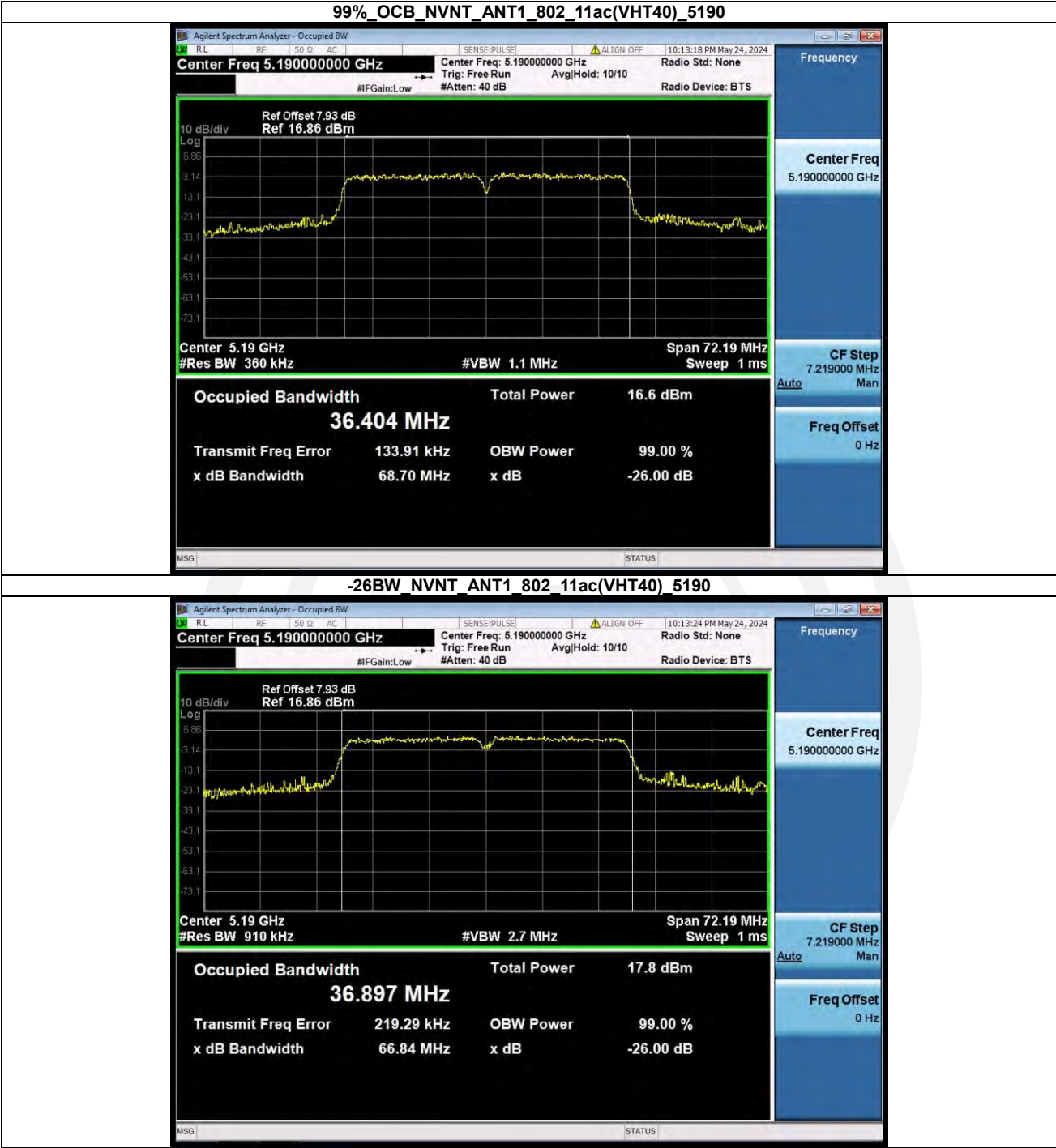


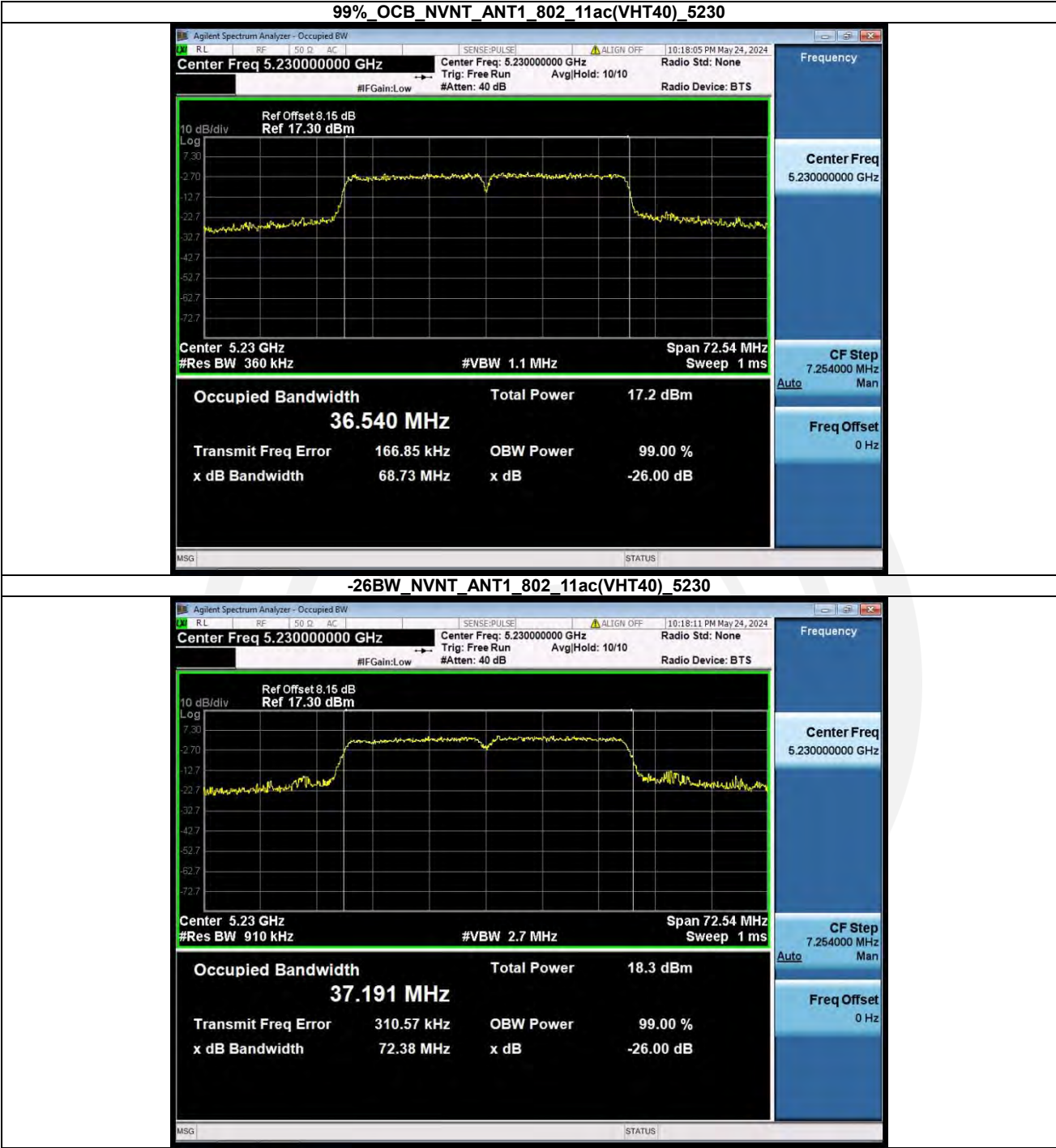


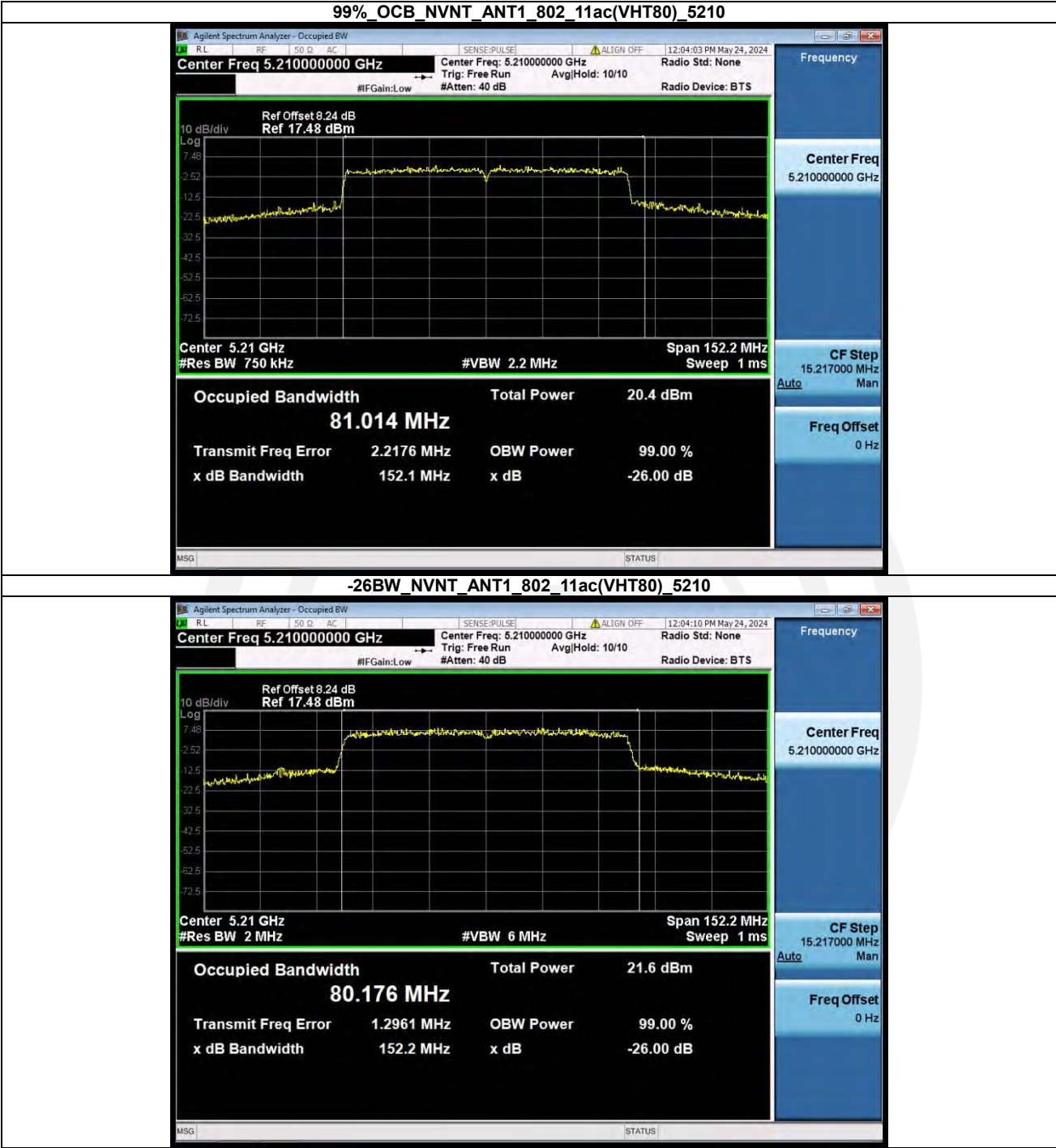


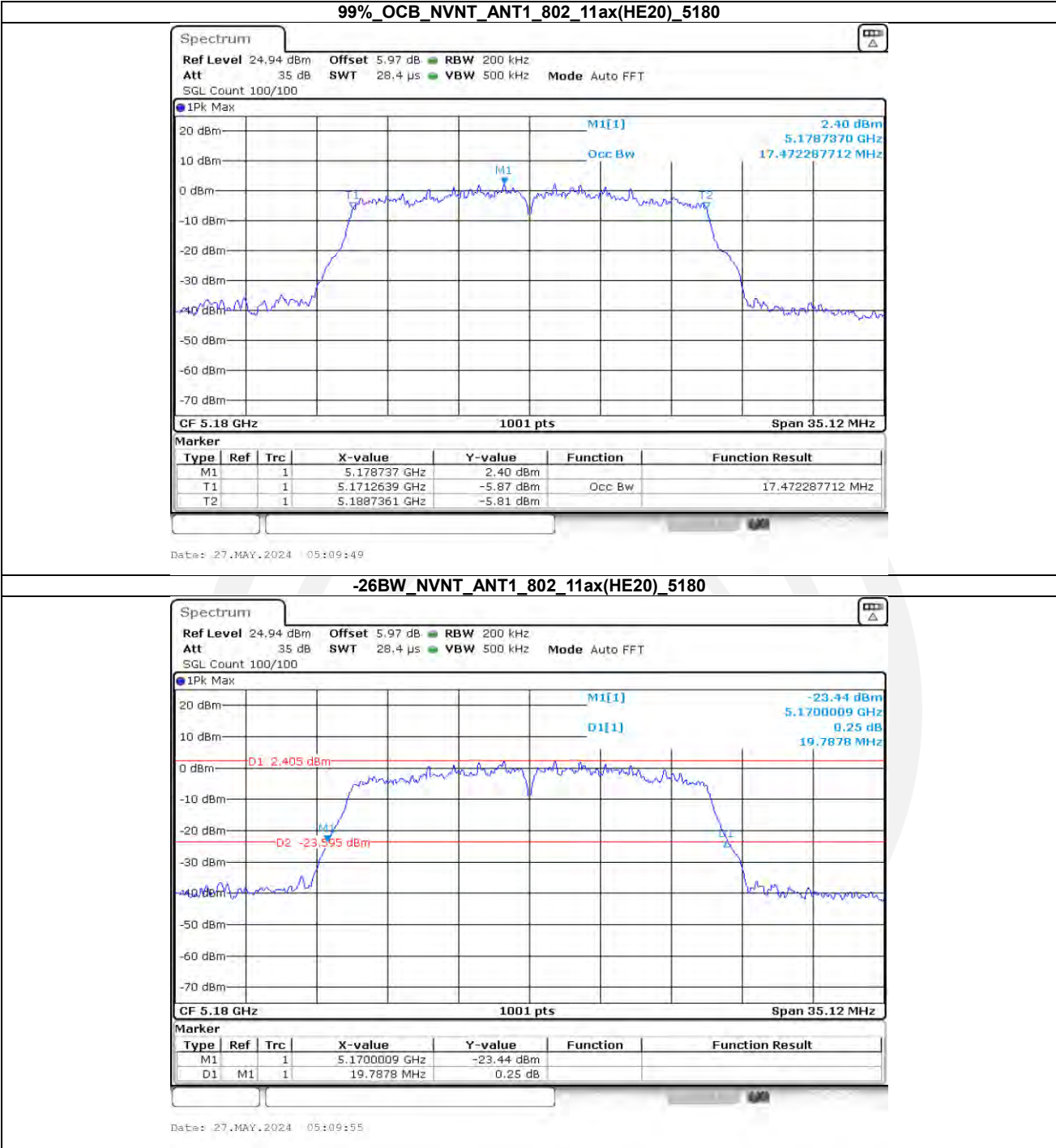






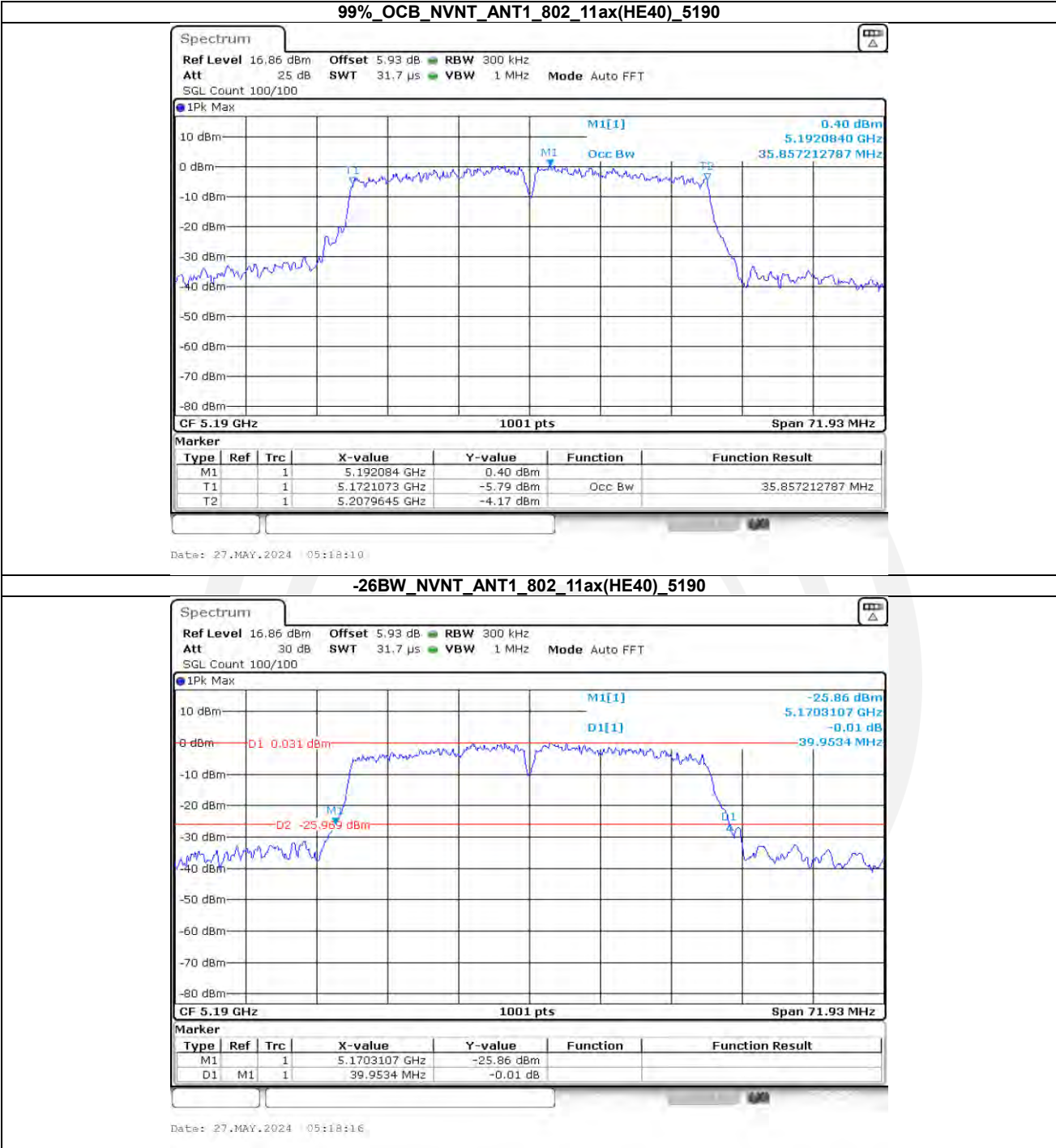


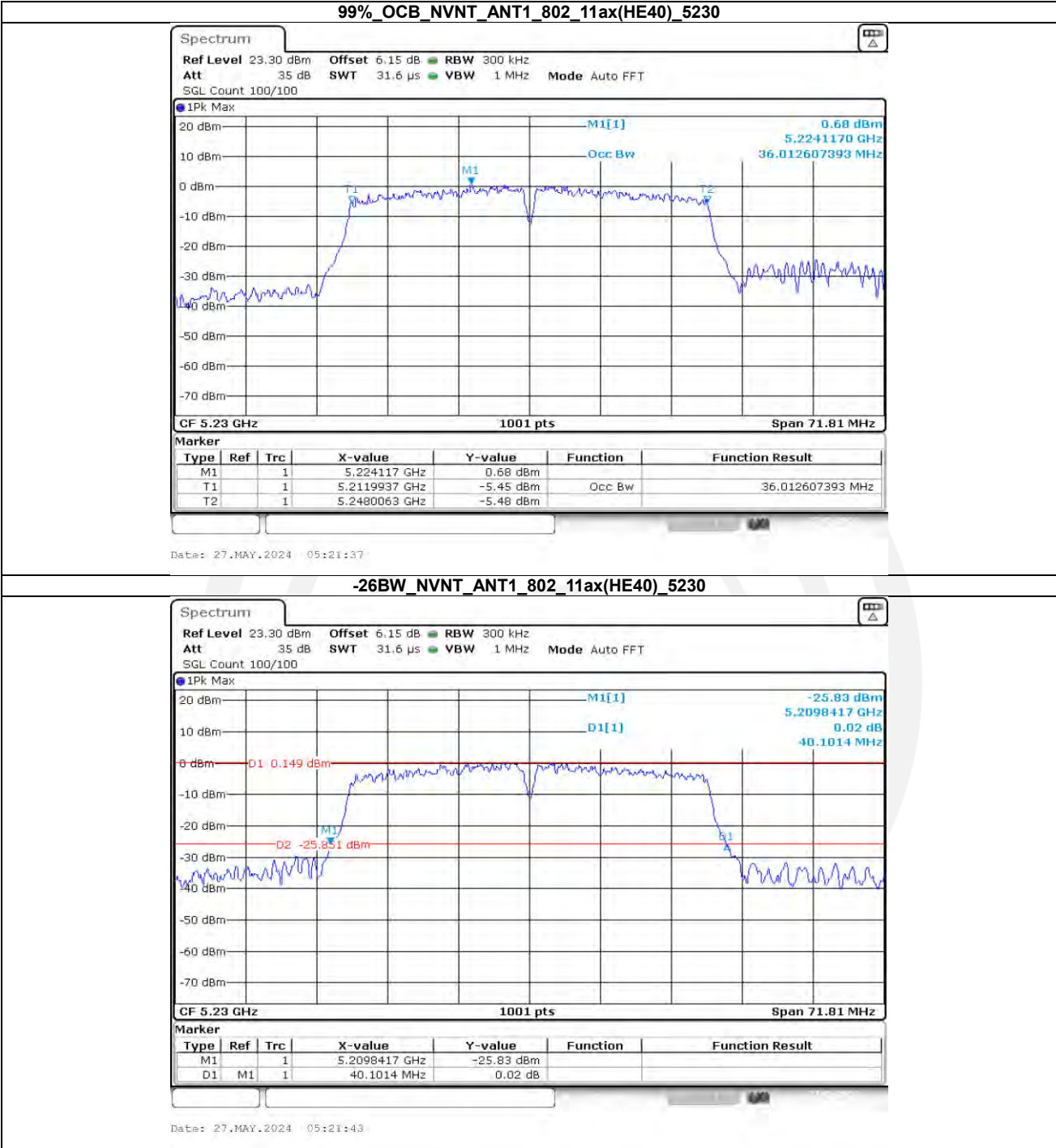


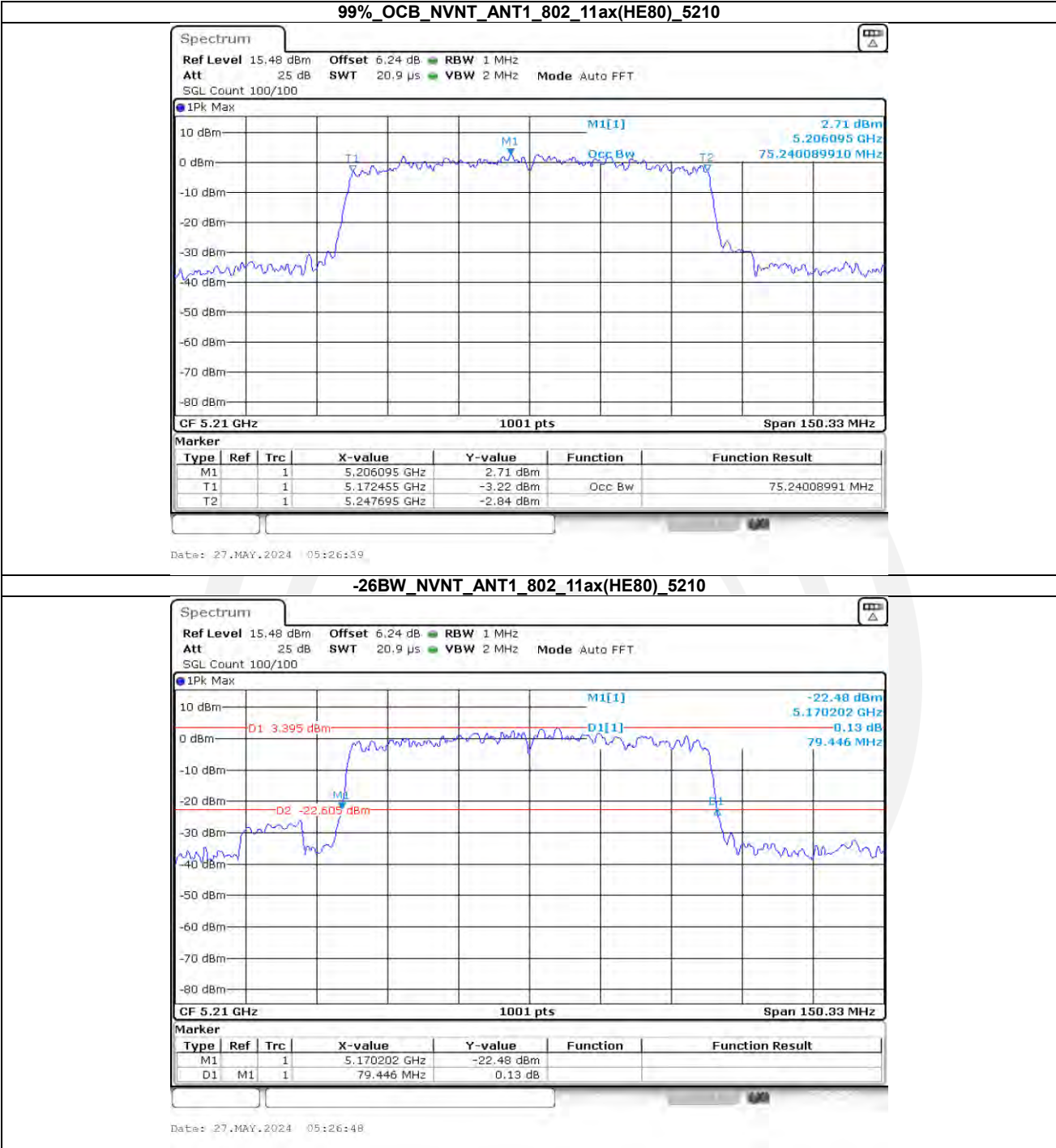






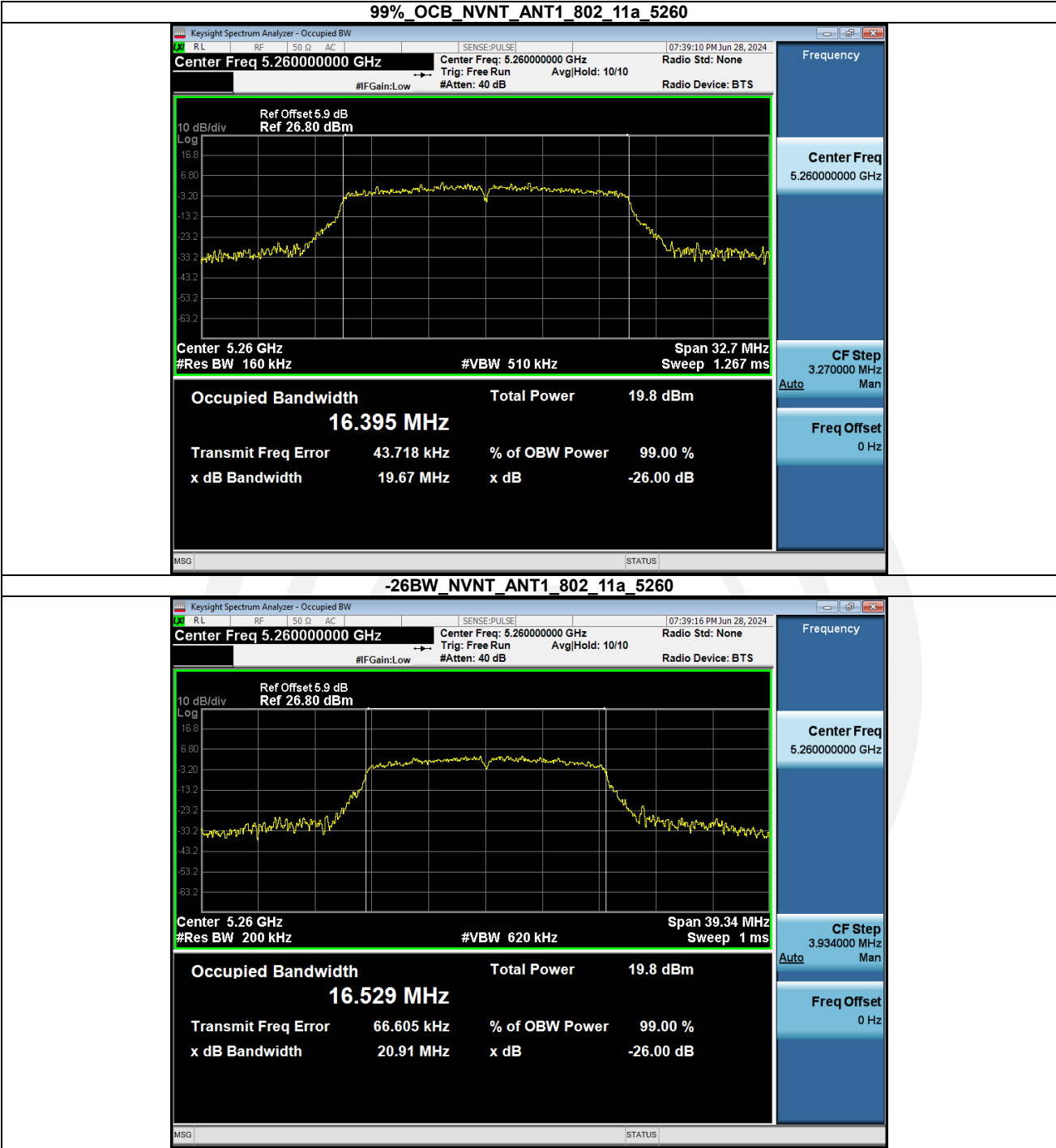


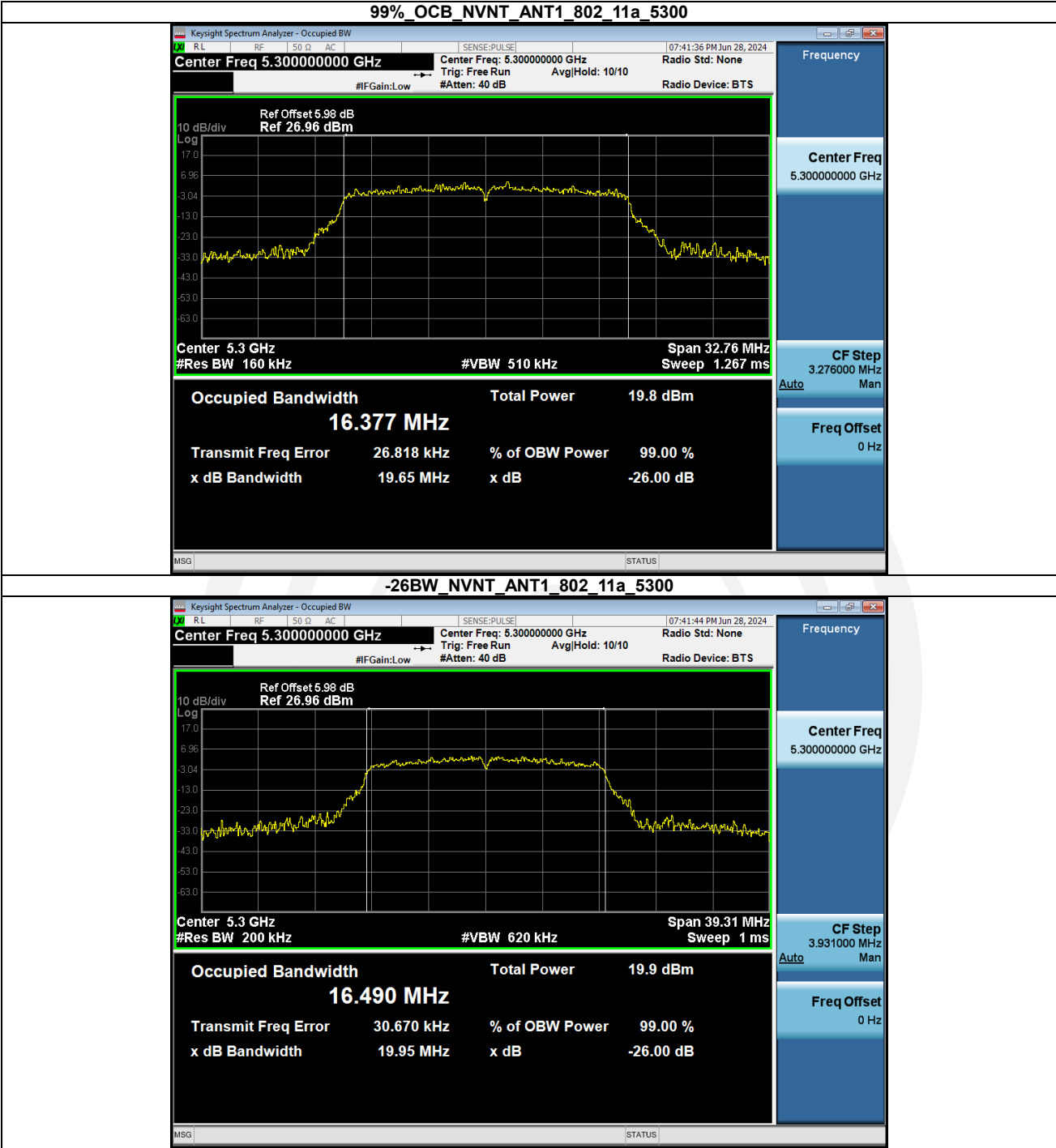


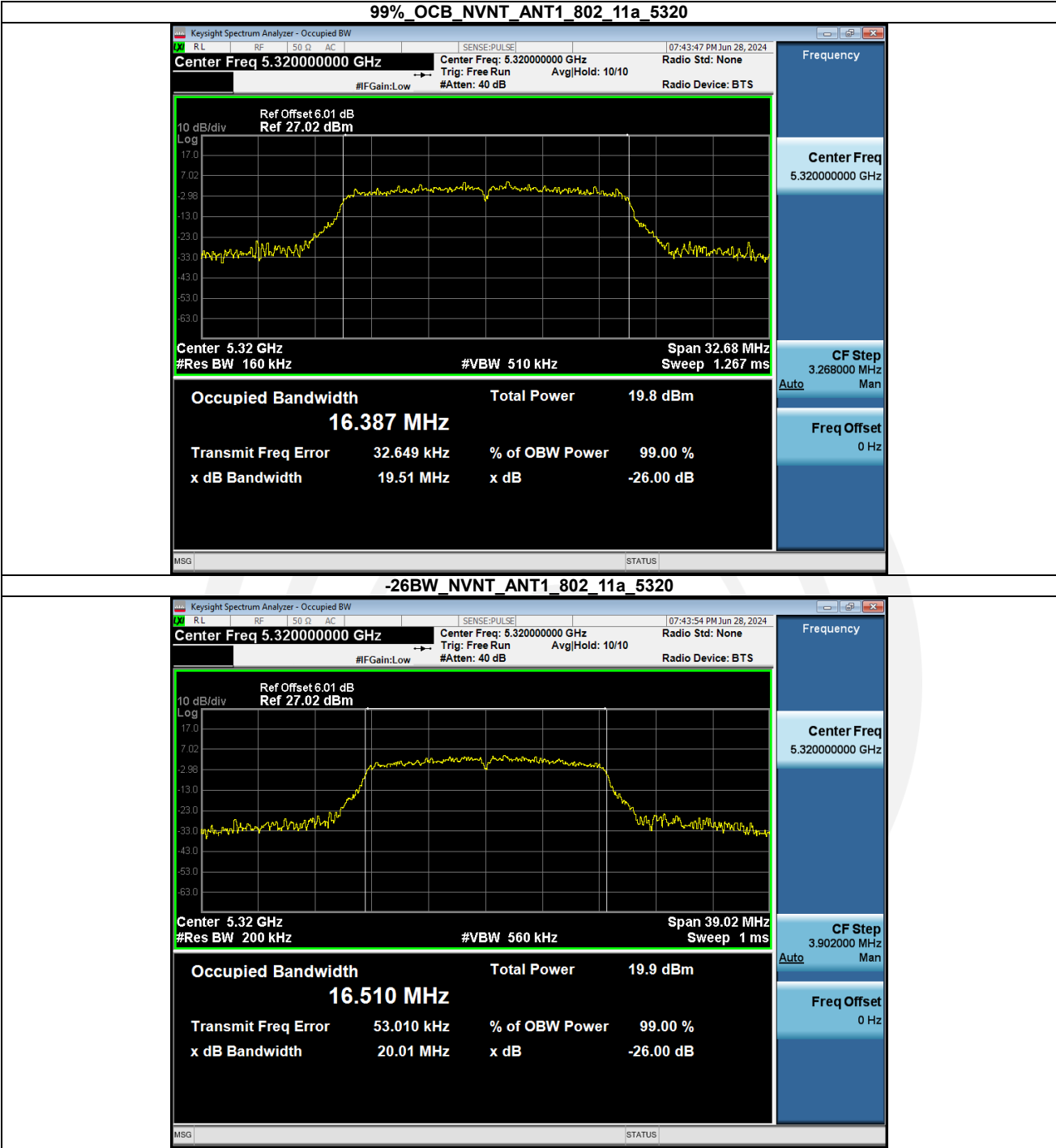


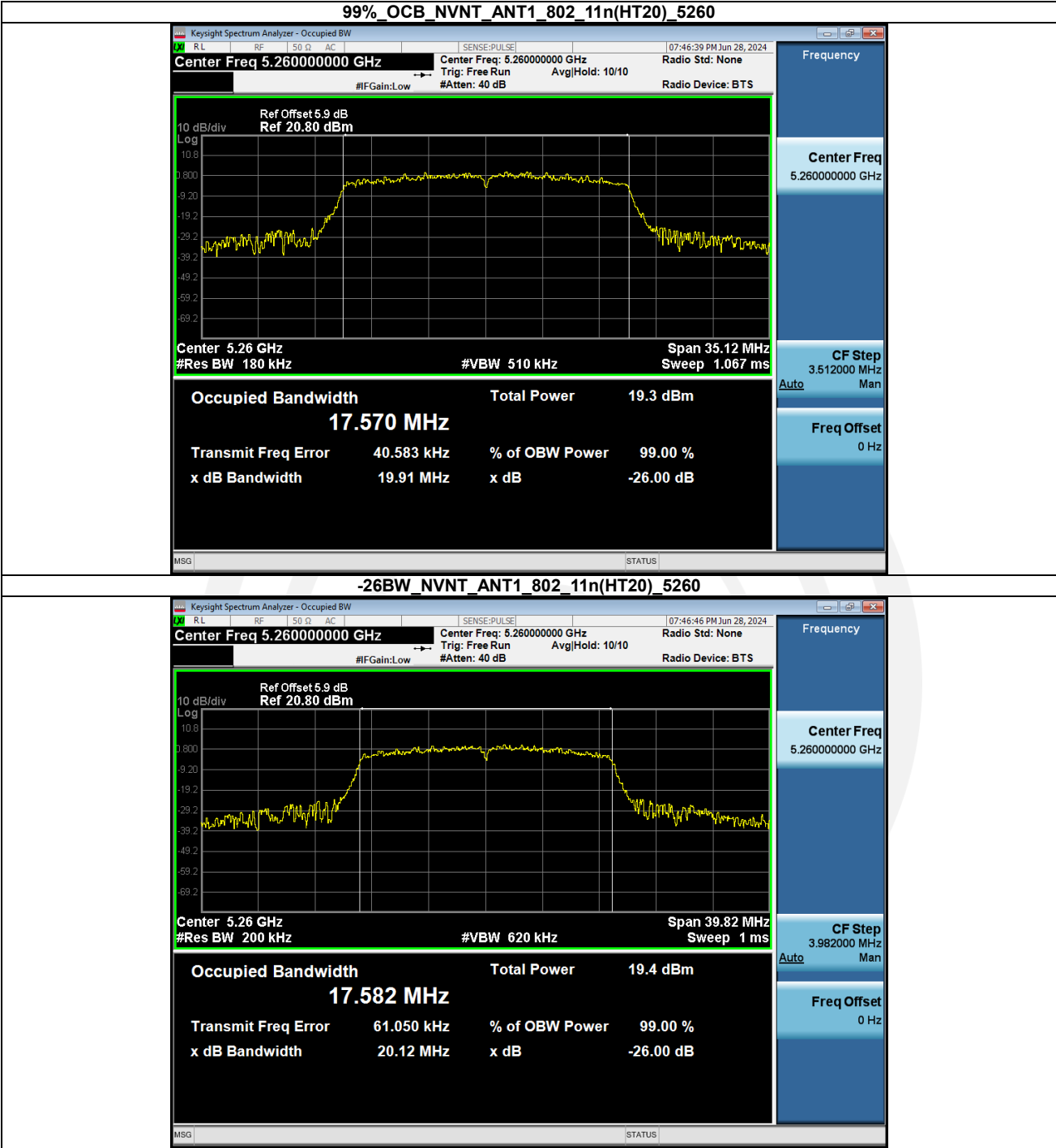
Band 2 (5260-5320 MHz):

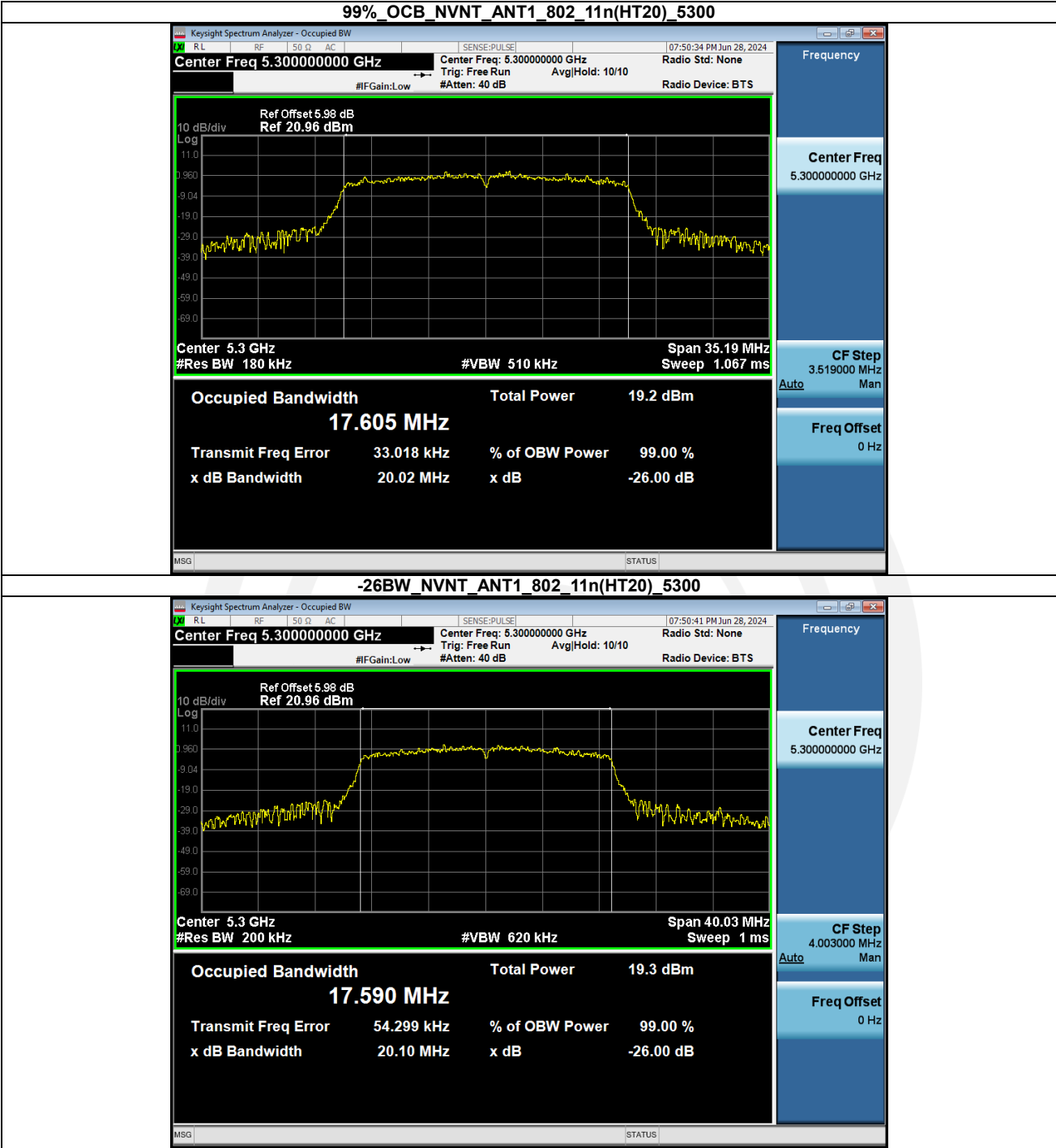
Condition	Antenna	Modulation	Frequency(MHz)	26dB_Emission_Bandwidth(MHz)	Occupied Bandwidth(MHz)
NVNT	ANT1	802.11a	5260.00	20.91	16.39
NVNT	ANT1	802.11a	5300.00	19.95	16.38
NVNT	ANT1	802.11a	5320.00	20.01	16.39
NVNT	ANT1	802.11n(HT20)	5260.00	20.12	17.57
NVNT	ANT1	802.11n(HT20)	5300.00	20.10	17.60
NVNT	ANT1	802.11n(HT20)	5320.00	20.05	17.57
NVNT	ANT1	802.11ac(VHT20)	5260.00	20.19	17.57
NVNT	ANT1	802.11ac(VHT20)	5300.00	20.19	17.56
NVNT	ANT1	802.11ac(VHT20)	5320.00	20.04	17.61
NVNT	ANT1	802.11n(HT40)	5270.00	40.85	36.07
NVNT	ANT1	802.11n(HT40)	5310.00	41.95	36.07
NVNT	ANT1	802.11ac(VHT40)	5270.00	40.06	36.00
NVNT	ANT1	802.11ac(VHT40)	5310.00	40.11	36.00
NVNT	ANT1	802.11ac(VHT80)	5290.00	80.89	75.32
NVNT	ANT1	802.11ax(HE20)	5260.00	20.15	17.53
NVNT	ANT1	802.11ax(HE20)	5300.00	20.07	17.55
NVNT	ANT1	802.11ax(HE20)	5320.00	20.17	17.56
NVNT	ANT1	802.11ax(HE40)	5270.00	40.43	35.92
NVNT	ANT1	802.11ax(HE40)	5310.00	40.16	35.96
NVNT	ANT1	802.11ax(HE80)	5290.00	80.70	75.33

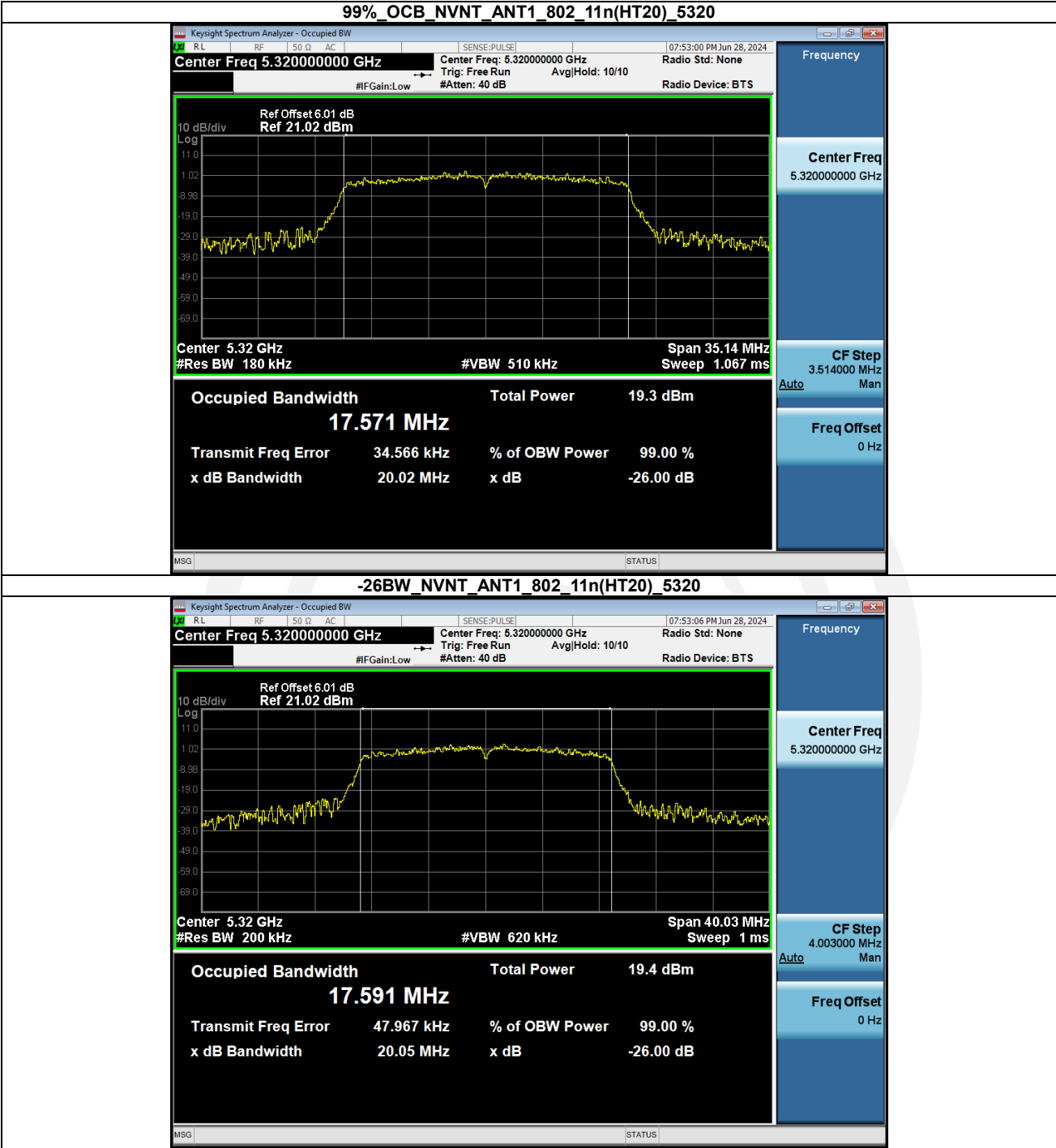


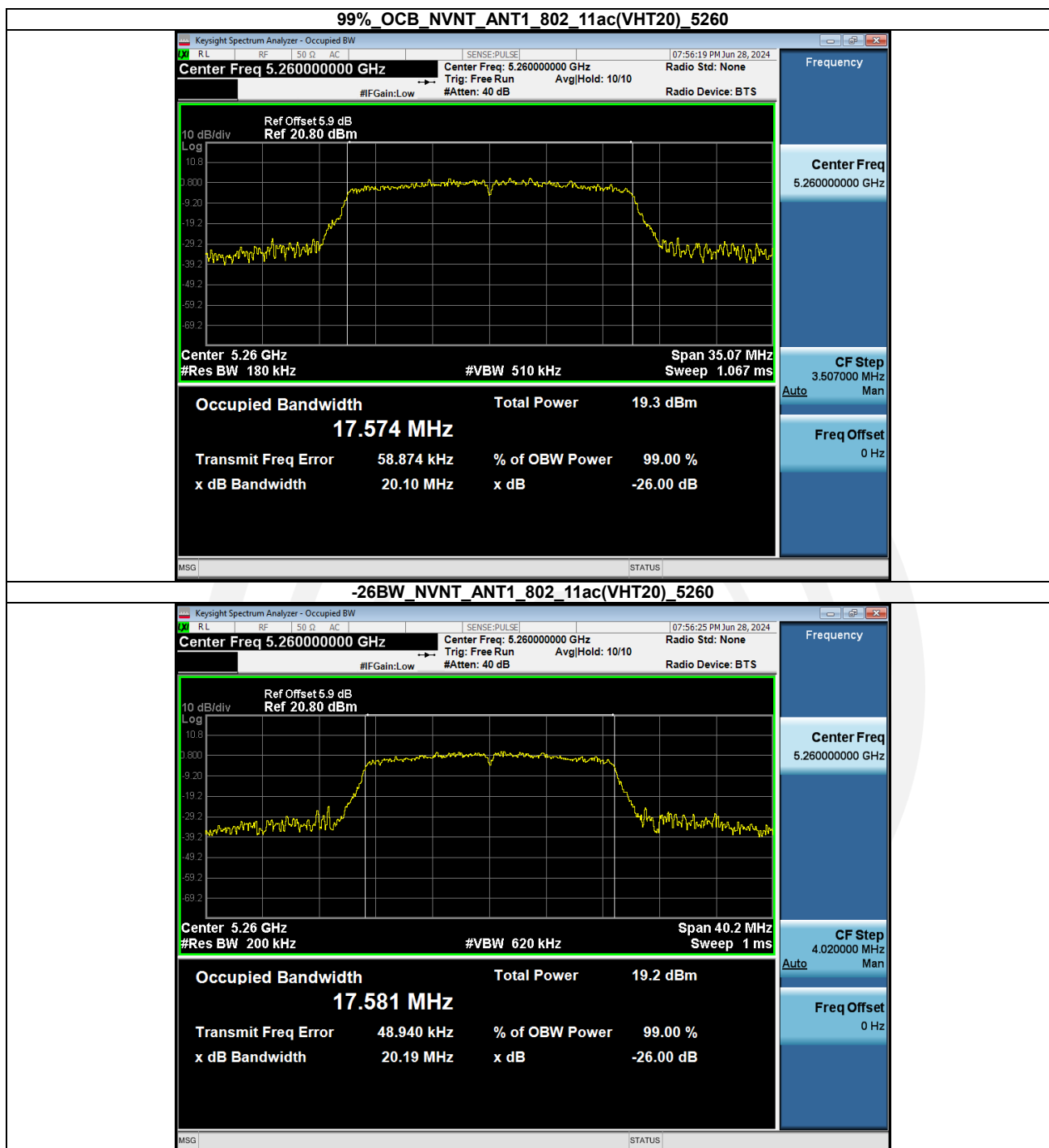


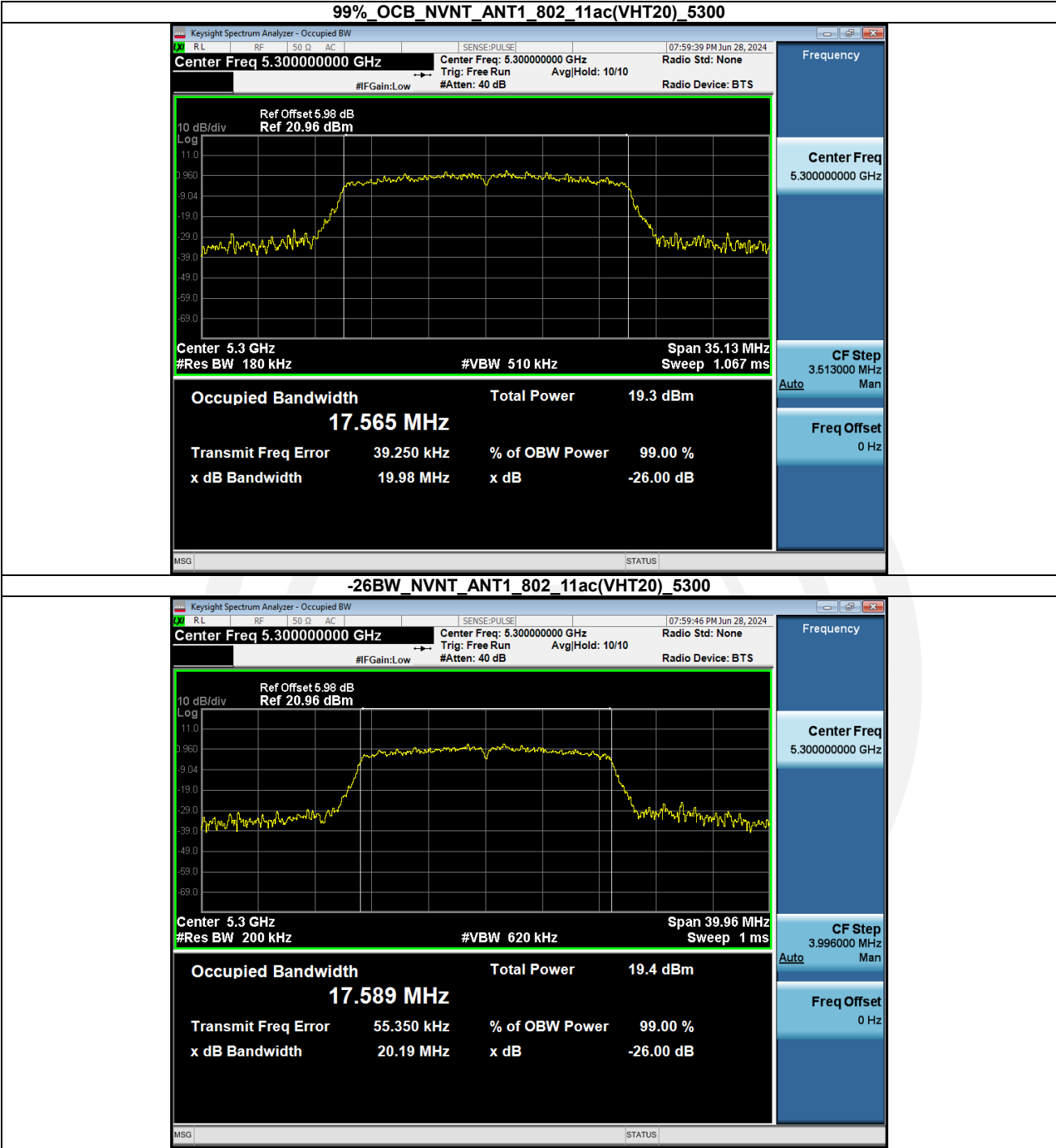


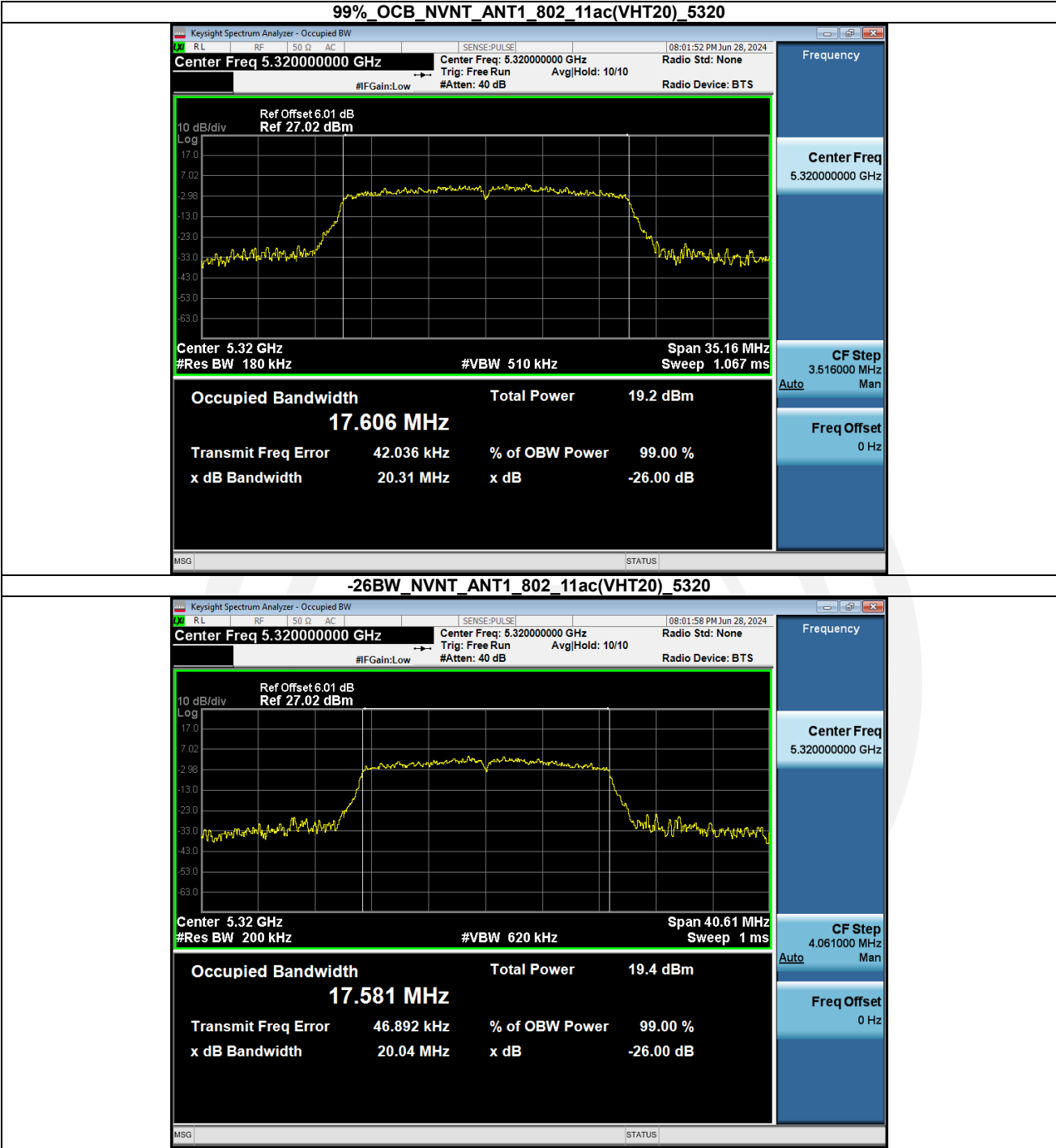


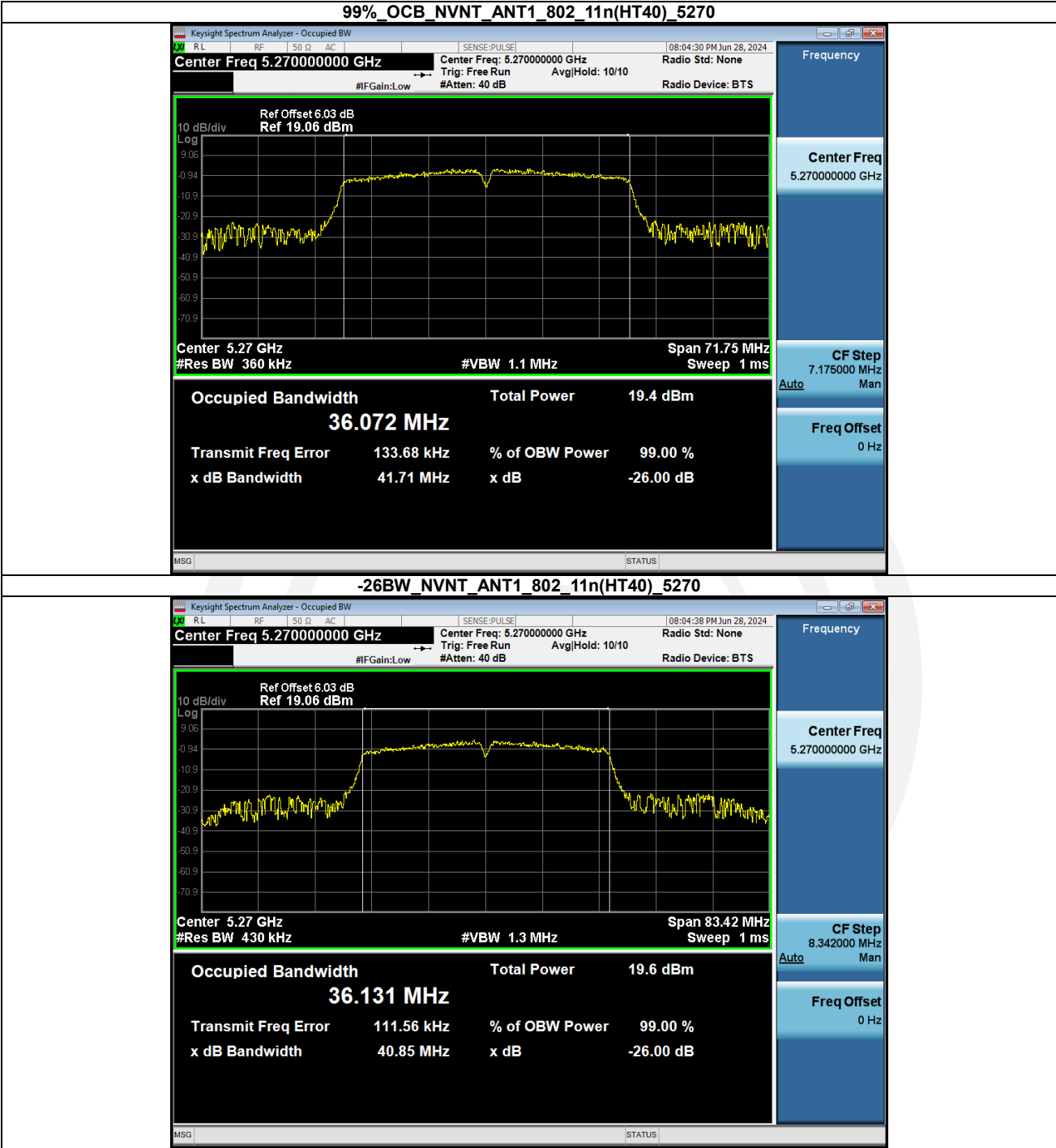


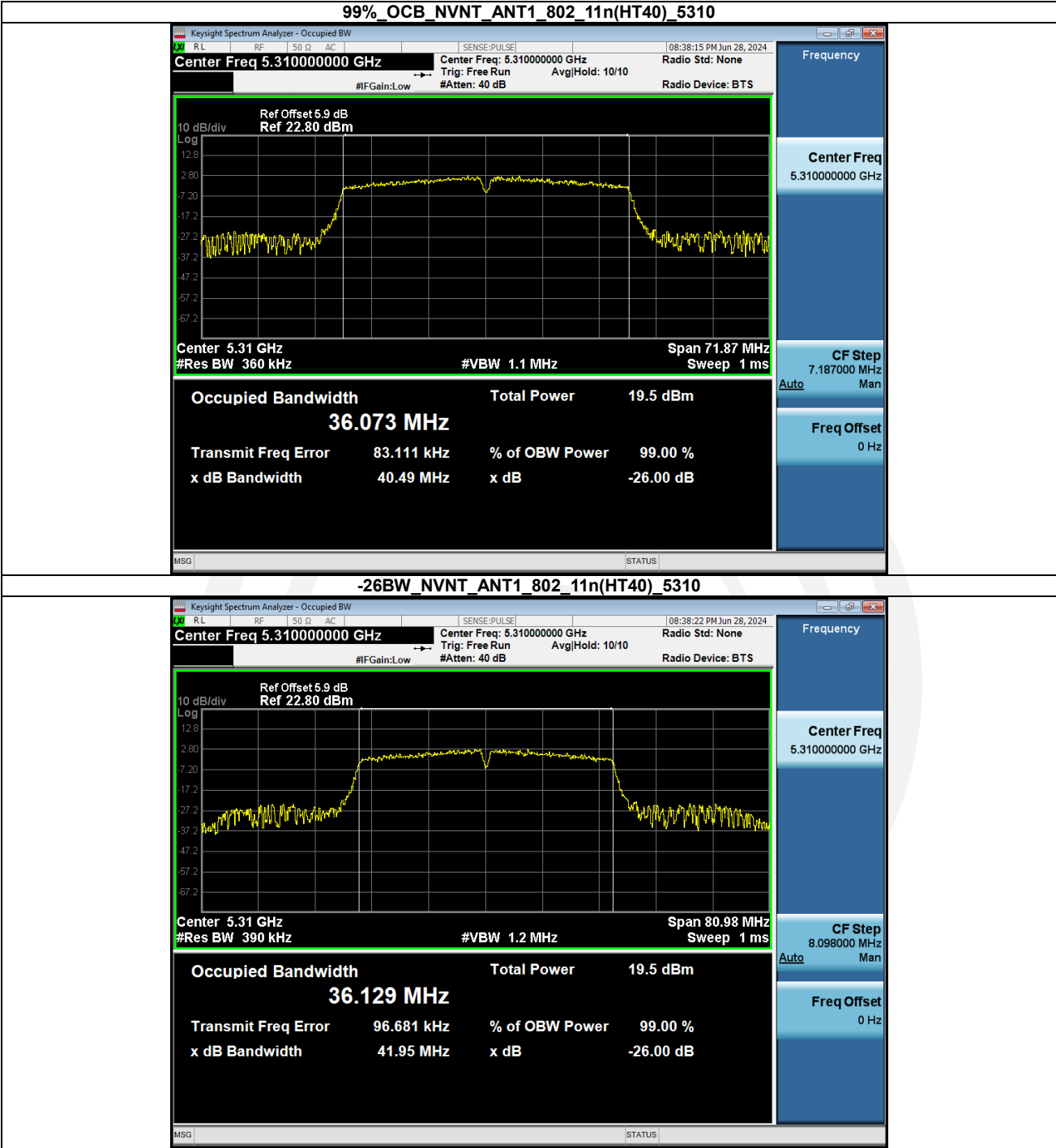


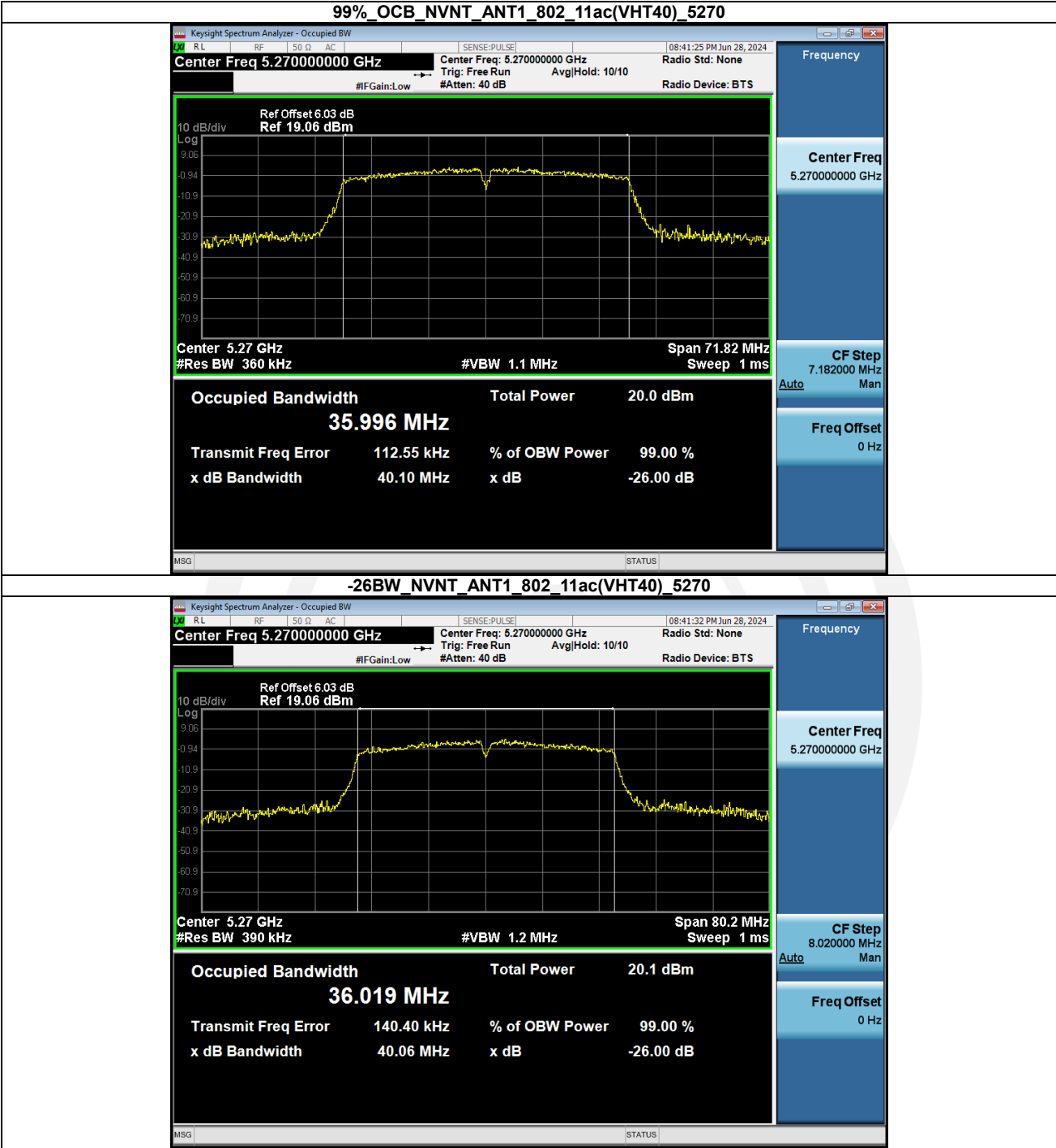


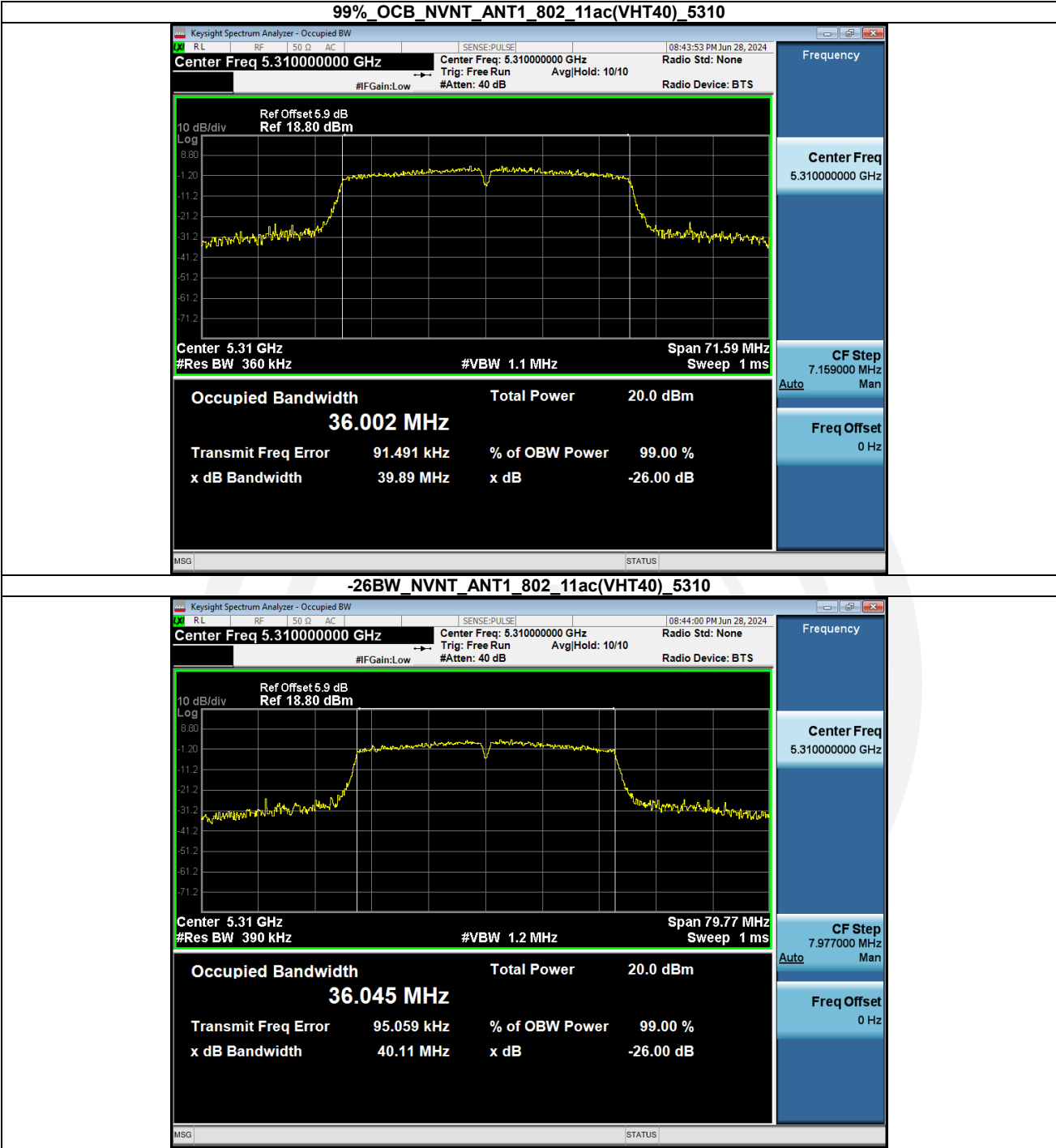


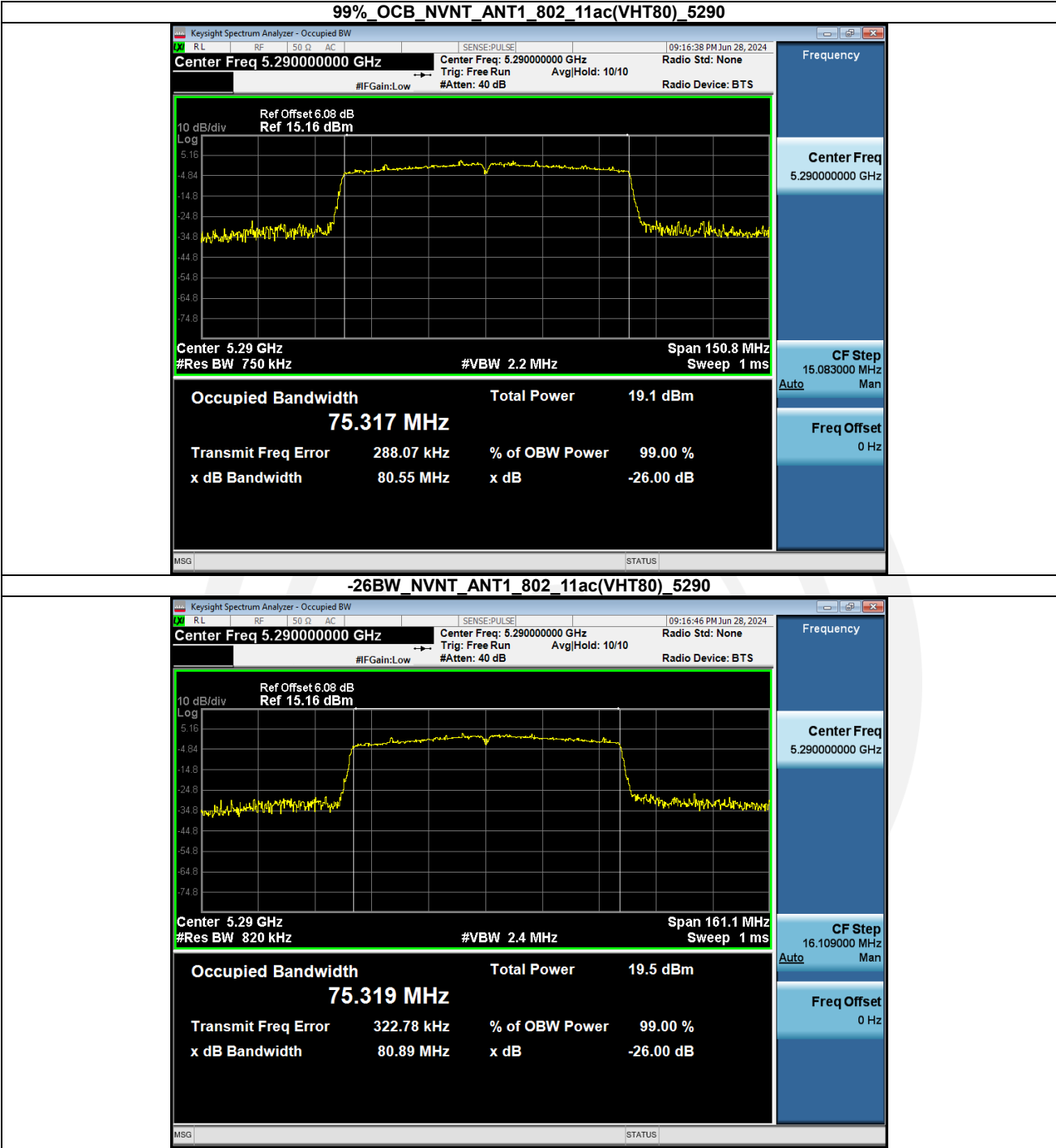


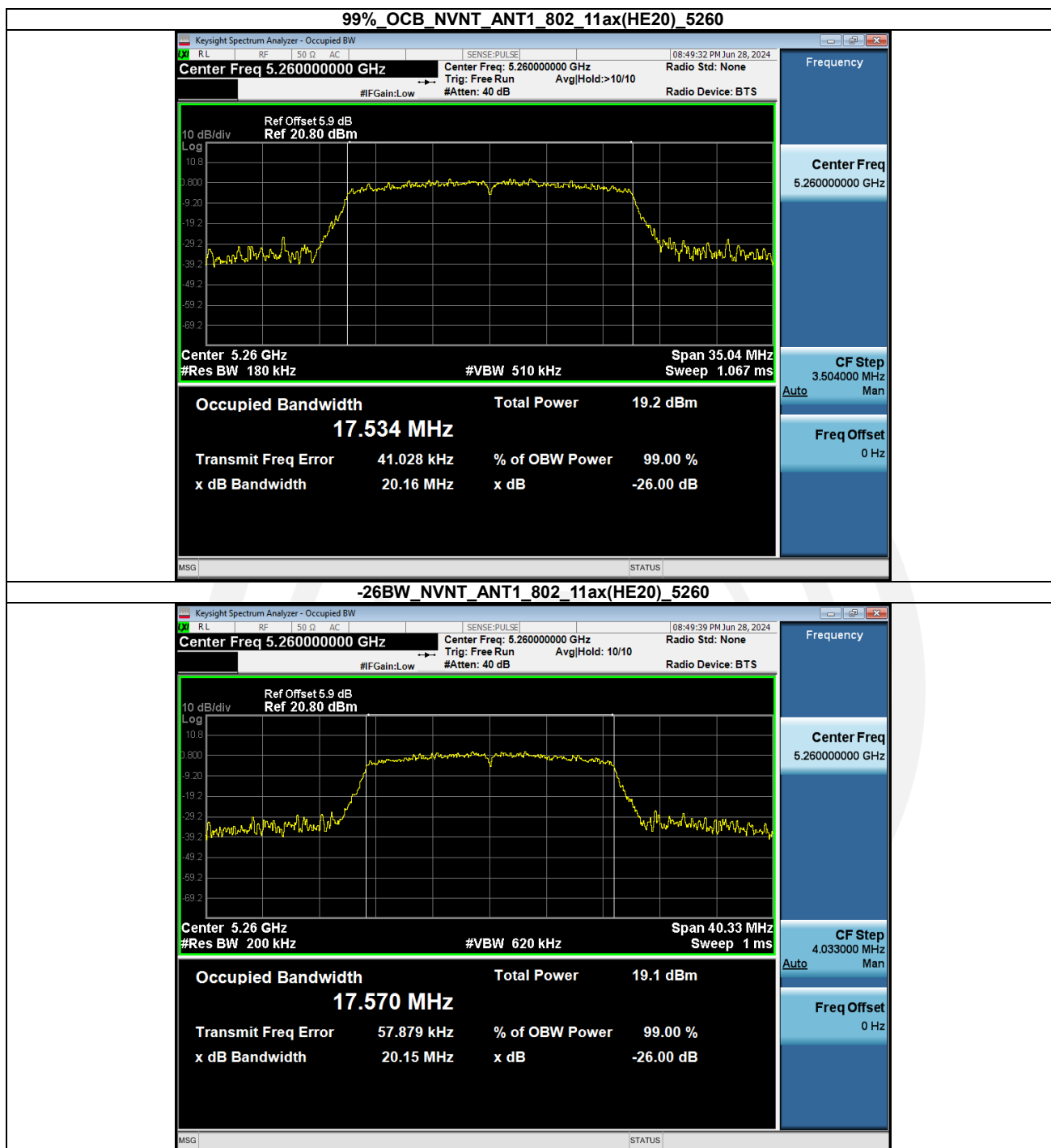


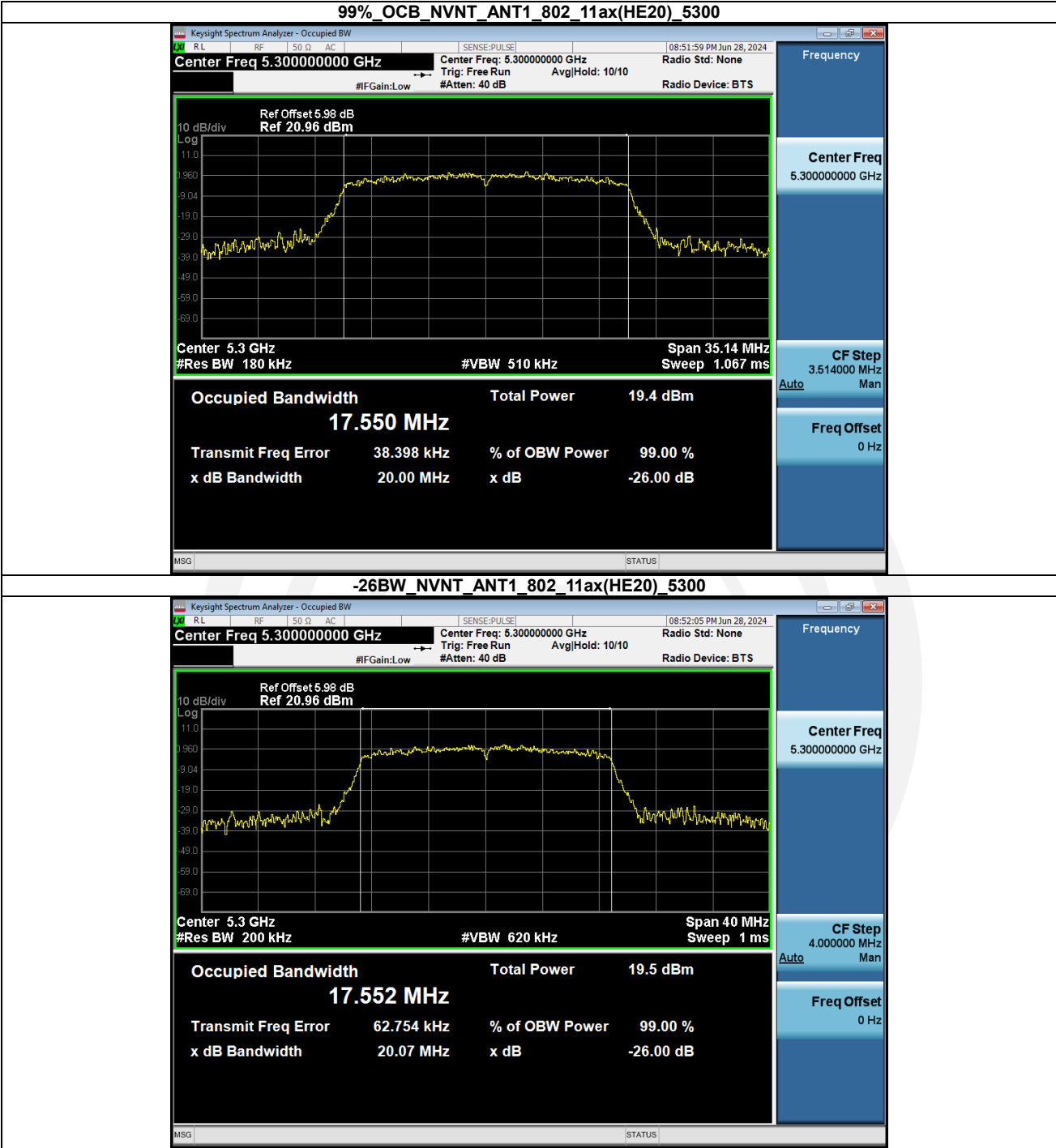


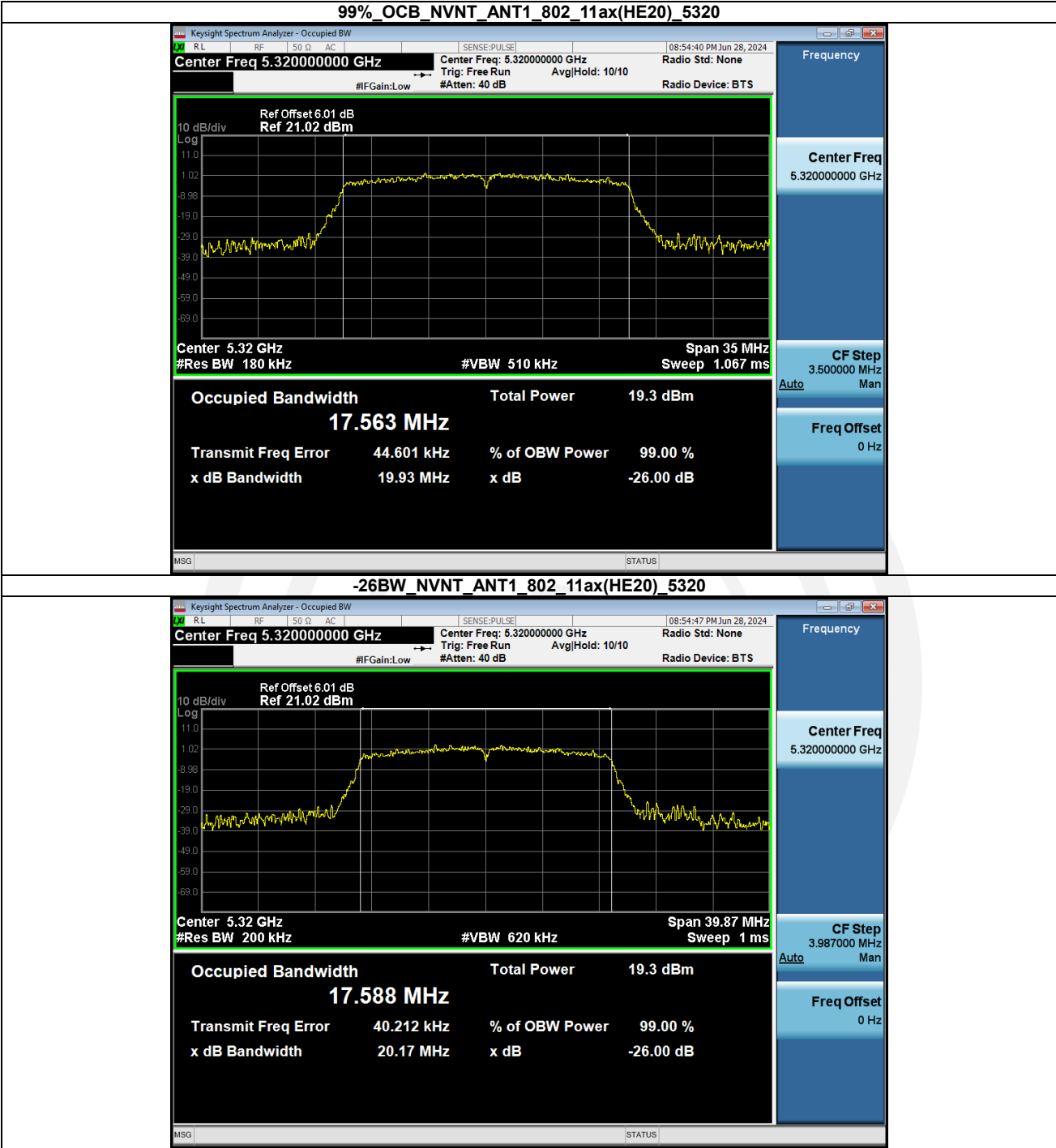


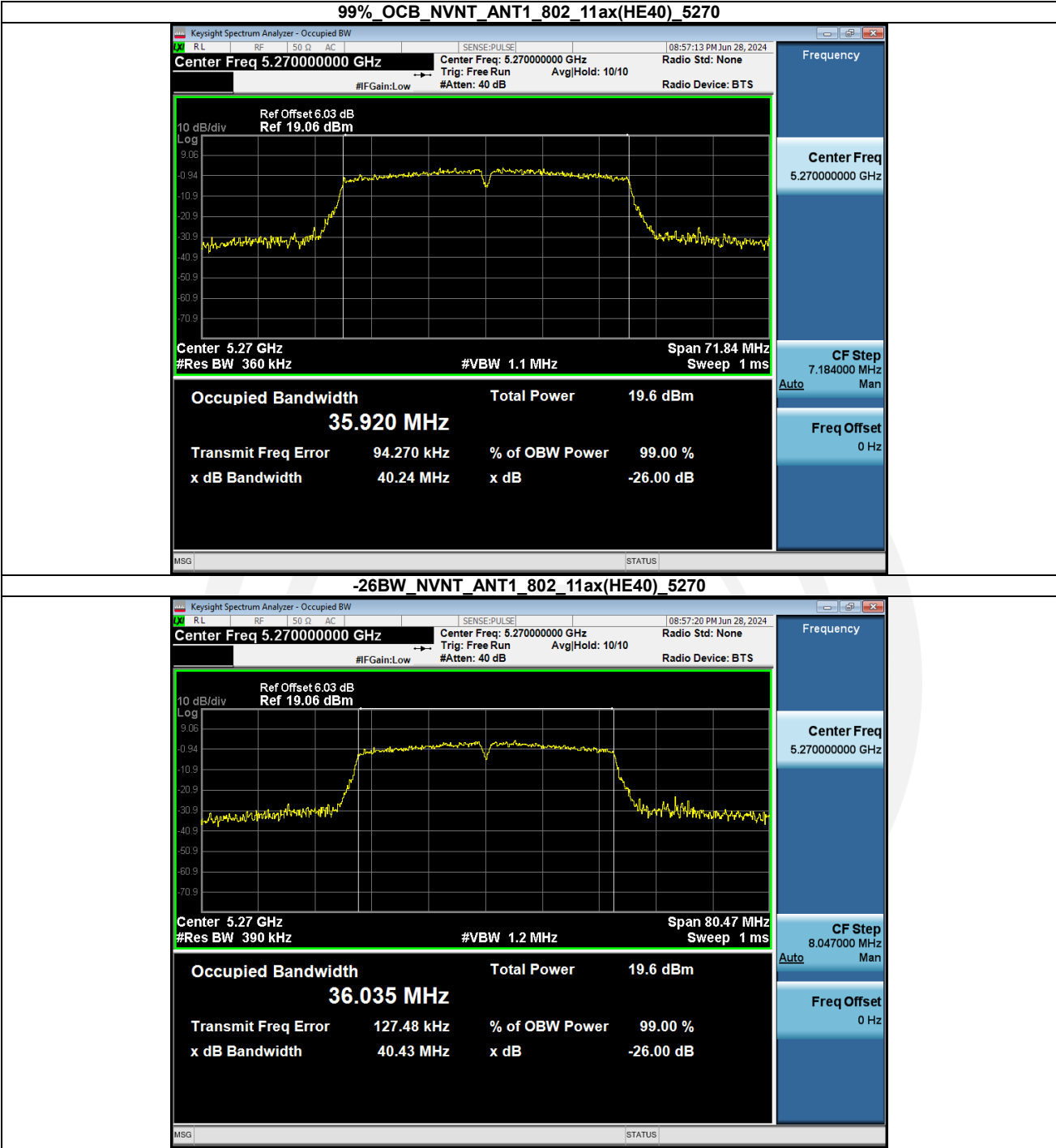


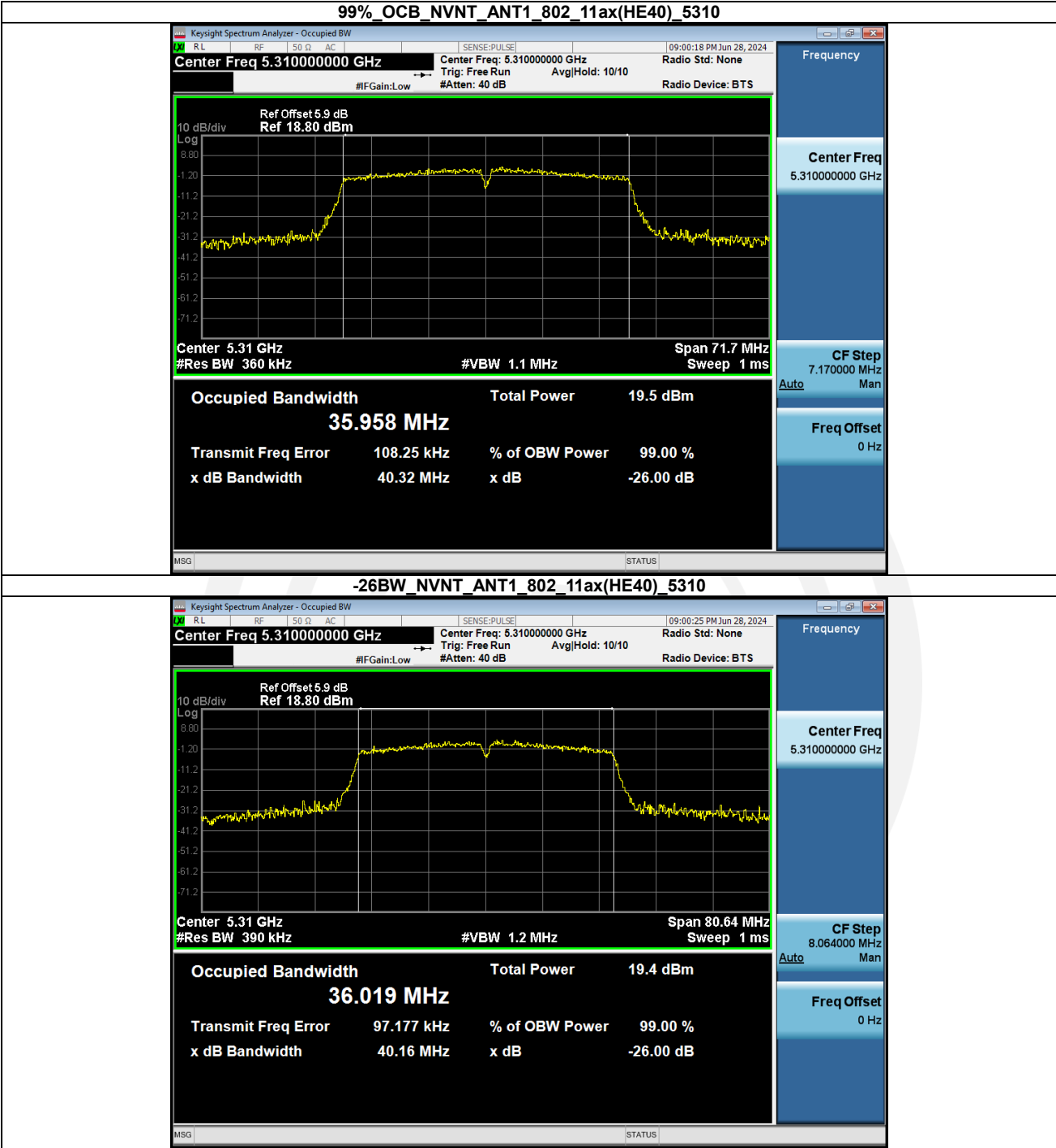


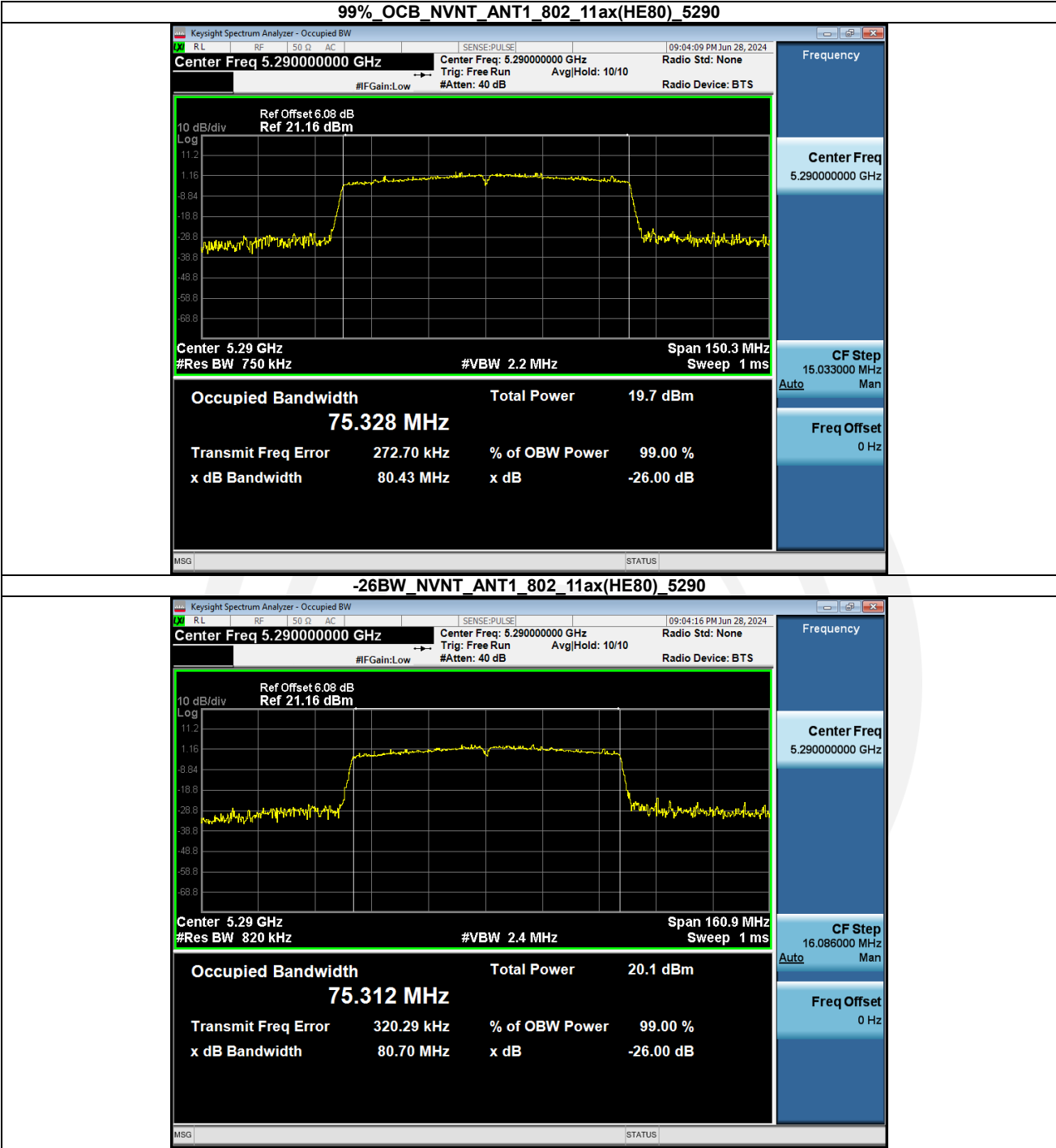












Band 3 (5500-5570 MHz):

Condition	Antenna	Modulation	Frequency(MHz)	26dB_Emission_Bandwidth(MHz)	Occupied Bandwidth(MHz)
NVNT	ANT1	802.11a	5500	22.41	16.50
NVNT	ANT1	802.11a	5600	24.16	16.45
NVNT	ANT1	802.11a	5700.00	20.89	16.44
NVNT	ANT1	802.11n(HT20)	5500	22.93	17.63
NVNT	ANT1	802.11n(HT20)	5600	21.40	17.62
NVNT	ANT1	802.11n(HT20)	5700.00	22.61	17.61
NVNT	ANT1	802.11ac(VHT20)	5500	20.79	17.60
NVNT	ANT1	802.11ac(VHT20)	5600	20.25	17.59
NVNT	ANT1	802.11ac(VHT20)	5700.00	20.27	17.58
NVNT	ANT1	802.11n(HT40)	5510	40.57	36.04
NVNT	ANT1	802.11n(HT40)	5590	40.76	36.07
NVNT	ANT1	802.11n(HT40)	5670	45.30	36.05
NVNT	ANT1	802.11ac(VHT40)	5510	40.49	35.96
NVNT	ANT1	802.11ac(VHT40)	5590	40.56	36.00
NVNT	ANT1	802.11ac(VHT40)	5670	40.47	35.96
NVNT	ANT1	802.11ac(VHT80)	5530	80.90	75.25
NVNT	ANT1	802.11ac(VHT80)	5610	81.13	75.37
NVNT	ANT1	802.11ax(HE20)	5500.00	20.43	17.59
NVNT	ANT1	802.11ax(HE20)	5600.00	20.41	17.58
NVNT	ANT1	802.11ax(HE20)	5700.00	20.32	17.57
NVNT	ANT1	802.11ax(HE40)	5510.00	45.06	36.09
NVNT	ANT1	802.11ax(HE40)	5590.00	41.76	36.06
NVNT	ANT1	802.11ax(HE40)	5670.00	40.99	35.98
NVNT	ANT1	802.11ax(HE80)	5530.00	82.50	75.25
NVNT	ANT1	802.11ax(HE80)	5610.00	81.22	75.28

