RF TEST REPORT

Applicant	Shanghai Sunmi Technology Co.,Ltd.
FCC ID	2AH25T5F2ALN
Product	Wireless data POS System
Brand	SUNMI
Model	T5F2A
Report No.	EFTA25110159-IE-02-R7V2
Issue Date	March 12, 2026

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2025)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	January 30, 2026
Rev.1	Updated information.	February 10, 2026
Rev.2	Updated description.	March 12, 2026
Note: This revised report (Report No.: EFTA25110159-IE-02-R7V2) supersedes and replaces the previously issued report (Report No.: EFTA25110159-IE-02-R7V1). Please discard or destroy the previously issued report and dispose of it accordingly.		

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Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	Antenna Requirement	15.203	PASS
2	99% OBW & Emission Bandwidth	15.407(a) C63.10 12.4	PASS
3	Maximum Equivalent Isotopically Radiated Power (E.I.R.P.)	15.407(a)	PASS
4	Peak Power Spectral Density (E.I.R.P.)	15.407(a)	PASS
5	Frequency Stability	15.407(g)	PASS
6	In-Band Emission (Mask)	15.407(b)(7)	PASS
7	Contention-Based Protocol	15.407(d)(6)	PASS
8	Unwanted Emissions	15.407(b)	PASS
9	Conducted Emissions	15.207	PASS

Date of Testing: (Original) July 30, 2025 ~ November 25, 2025
(Variant) November 15, 2025 ~ March 12, 2026
Date of Sample Received: (Original) J July 28, 2025
(Variant) November 13, 2025

Note: PASS: The EUT complies with the essential requirements in the standard.
FAIL: The EUT does not comply with the essential requirements in the standard.
All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

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2AH25T5F2ALN (Report No.: EFTA25110159-IE-02-R7V2) is a variant model of 2AH25T5F2AN (Report No.: EFTA25070074-IE-02-R7V1).

The differences between variant and original is as below:

Description		CPU	Frequency Band	Front Camera	eSIM	NFC	Scanner	LCD
Original (Main test prototype)	Configuration 1	6225	2G:B2/3/5/8 3G:B1/2/4/5/6/8/19 4G:B1/2/3/4/5/7/8/12/13/17/18/19/20/25/26/28/30/66/71/34/38/39/40/41	Y	Y	Y	Y	TXDY675EBAPUB-13V9
Variant	Configuration 3 P06120005	4325	2G:B2/3/5/8 3G:B1/2/4/5/6/8/19 4G:B1/2/3/4/5/7/8/18/19/20/26/28/34/38/39/40/41	N	Y	Y	Y	TXDY675EBAPUB-13V8
Variant	Configuration 4 P06120001	4325	2G:B2/3/5/8 3G:B1/2/4/5/6/8/19 4G:B1/2/3/4/5/7/8/18/19/20/26/28/34/38/39/40/41	N	Y	Y	N	TXDY675EBAPUB-13V8

The detailed product change description please refers to the *Difference Declaration Letter*.

Tested Cases refer to the following table:

Test Case	Original	Variant (Configuration 3 P06120005)	Variant (Configuration 4 P06120001)
Antenna Requirement	Pass	Only tested with worst case of Original	Not test
99% OBW & Emission Bandwidth	Pass	Only tested with worst case of Original	Not test
Maximum Equivalent Isotopically Radiated Power (E.I.R.P.)	Pass	Only tested with worst case of Original	Not test
Peak Power Spectral Density (E.I.R.P.)	Pass	Only tested with worst case of Original	Not test
Frequency Stability	Pass	Only tested with worst case of Original	Not test
In-Band Emission (Mask)	Pass	Only tested with worst case of Original	Not test
Contention-Based Protocol	Pass	Only tested with worst case of Original	Not test
Unwanted Emissions	Pass	Only tested with worst case of Original	Only tested with worst case of Original
Conducted Emissions	Pass	Full Test	Full Test

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1. Test Laboratory

1.1. Notes of the Test Report

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1.2. Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
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2. General Description of Equipment Under Test

2.1. Applicant and Manufacturer Information

Applicant	Shanghai Sunmi Technology Co.,Ltd.
Applicant address	Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
Manufacturer	Shanghai Sunmi Technology Co.,Ltd.
Manufacturer address	Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China

2.2. General Information

EUT Description			
Model	T5F2A		
SN	Original	Conducted	VB01256TJ0085
	Radiated	Radiated	VB03256TJ0055
IMEI	Variant	Conducted	IMEI 1: 861616080500094 IMEI 2: 861616080500292
Lab internal SN	Variant	Radiated	Configuration 3: 251113-02-018 Configuration 4: 251113-02-014
Hardware Version	SM08_MB_V1.1		
Software Version	4.0.0		
Power Supply	Battery / AC adapter		
Antenna Type	Internal Antenna		
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)		
Antenna Gain	U-NII-5	Antenna 1: 0.25 dBi Antenna 2: -3.38 dBi	
	U-NII-6	Antenna 1: 0.55 dBi Antenna 2: -4.89 dBi	
	U-NII-7	Antenna 1: 1.21 dBi Antenna 2: -1.31 dBi	
	U-NII-8	Antenna 1: 0.72 dBi Antenna 2: 0.09 dBi	
Directional Gain	U-NII-5	For Power:0.25 dBi For PSD: 3.26 dBi	
	U-NII-6	For Power: 0.55 dBi For PSD: 3.56 dBi	
	U-NII-7	For Power: 1.21 dBi For PSD: 4.22 dBi	

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	U-NII-8	For Power: 0.72 dBi For PSD: 3.73 dBi
Operating Frequency Range(s)	U-NII-5 (5925MHz-6425MHz) U-NII-6 (6425MHz-6525MHz) U-NII-7 (6525MHz-6875MHz) U-NII-8 (6875MHz-7125MHz)	
Modulation Type	802.11ax (HE20/ HE40/ HE80): OFDMA	
Max. EIRP	10.92 dBm	
Operating temperature range	-10 °C to 55 °C	
Operating voltage range	6.60 VDC to 8.90 VDC	
Testing temperature range	-30 °C to 50 °C	
Testing voltage range	6.60 VDC – 7.74 VDC – 8.90 VDC	
State DC voltage	7.74 VDC	
EUT Accessory		
Adapter 1	Manufacturer: Shenzhen Tianyin Electronics Co.,Ltd Model: TD-661G120167UF01	
Adapter 2	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: UC13US	
Battery	Manufacturer: Guangdong Highpower New Energy Technology Co., Ltd. Model: HPPE	
USB Cable 1	Manufacturer: Saibao (Jiangxi) Industry Co., LTD Model: SSM-A033A 1500cm	
USB Cable 2	Manufacturer: Saibao (Jiangxi) Industry Co., LTD Model: SSM-A063A 1500cm	
Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.		

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3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15E (2025) Unlicensed National Information Infrastructure Devices
ANSI C63.10-2020

Reference standard:

KDB 987594 D01 U-NII 6GHz General Requirements v03r01

KDB 987594 D02 U-NII 6GHz EMC Measurement v03

KDB 987594 D04 UN6GHZ Pre-Approval Guidance Checklist v03

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

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4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Mode	Data Rate
	MIMO
802.11ax (HE20)	MCS0
802.11ax (HE40)	MCS0
802.11ax (HE80)	MCS0

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The worst case Antenna mode for each of the following tests for Wi-Fi:

Test Cases	MIMO
Emission Bandwidth	O
Maximum Equivalent Isotopically Radiated Power (E.I.R.P.)	O
Peak Power Spectral Density (E.I.R.P.)	O
Frequency Stability	O
In-Band Emission (Mask)	O
Contention-Based Protocol	O
Unwanted Emissions	O
Conducted Emissions	O
Note：“O”: test all bands	

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Wireless Technology and Frequency Range

Wireless Technology		Channel/ Frequency (MHz)	Channel/ Frequency (MHz)	Channel/ Frequency (MHz)
		Bandwidth 20 MHz	Bandwidth 40 MHz	Bandwidth 80 MHz
Wi-Fi	U-NII-5	1/5955	3/5965	7/5985
		5/5975		
		9/5995	11/6005	
		13/6015		
		17/6035	19/6045	23/6065
		21/6055		
		25/6075	27/6085	
		29/6095		
		33/6115	35/6125	39/6145
		37/6135		
		41/6155	43/6165	
		45/6175		
		49/6195	51/6205	55/6225
		53/6215		
		57/6235	59/6245	
		61/6255		
		65/6275	67/6285	71/6305
		69/6295		
		73/6315	75/6325	
		77/6335		
		81/6355	83/6365	87/6385
		85/6375		
		89/6395	91/6405	
		93/6415		
	U-NII-6	97/6435	99/6445	103/6465
		101/6455		
		105/6475	107/6485	
		109/6495		
		113/6515	115/6525	119/6545
	U-NII-7	117/6535		
		121/6555	123/6565	
		125/6575		
		129/6595	131/6605	135/6625
		133/6615		
		137/6635	139/6645	
		141/6655		

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		145/6675	147/6685	151/6705
		149/6695		
		153/6715	155/6725	
		157/6735		
		161/6755	163/6765	167/6785
		165/6775		
		169/6795	171/6805	
		173/6815		
		177/6835	179/6845	183/6865
		181/6855		
		185/6875	187/6885	
	U-NII-8	189/6895		
		193/6915	195/6925	199/6945
		197/6935		
		201/6955	203/6965	
		205/6975		
		209/6995	211/7005	215/7025
		213/7015		
		217/7035	219/7045	
		221/7055		
		225/7075	227/7085	--
		229/7095		
		233/7115	--	

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5. Test Case

5.1. 99% OBW & Emission Bandwidth

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

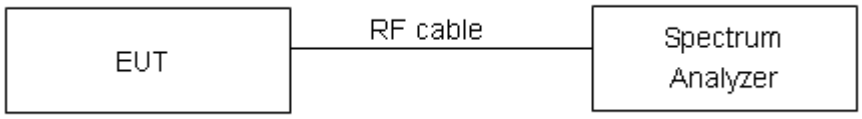
FOR 99% OCCUPIED BANDWIDTH

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

FOR 26dB BANDWIDTH

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

Test Setup



Limits

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320MHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

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5.2. Maximum Equivalent Isotopically Radiated Power (E.I.R.P.)

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

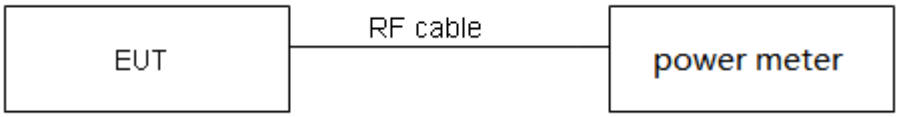
Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test Setup

For Power output Measurement



Limits

For the 5.925 ~ 6.425 GHz band:
For standard power access point and fixed client device: e.i.r.p < 36 dBm , For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125 mW (21 dBm).
For indoor access point: e.i.r.p < 30 dBm.
For subordinate device control of an indoor access point: e.i.r.p < 30 dBm.
For client device control of a standard power access point: e.i.r.p < 30 dBm.
For client device control of an indoor access point: e.i.r.p < 24 dBm.
For the 6.425 ~ 6.525 GHz band:
For indoor access point: e.i.r.p < 30 dBm.
For client device control of an indoor access point: e.i.r.p < 24 dBm.
For the 6.525 ~ 6.875 GHz band:
For standard power access point and fixed client device: e.i.r.p < 36 dBm , For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125 mW (21 dBm).
For indoor access point: e.i.r.p < 30 dBm.
For subordinate device control of an indoor access point: e.i.r.p < 30 dBm.
For client device control of a standard power access point: e.i.r.p < 30 dBm.
For client device control of an indoor access point: e.i.r.p < 24 dBm.
For the 6.875 ~ 7.125 GHz band:
For indoor access point: e.i.r.p < 30 dBm.
For client device control of an indoor access point: e.i.r.p < 24 dBm.

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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

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5.3. Peak Power Spectral Density (E.I.R.P.)

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

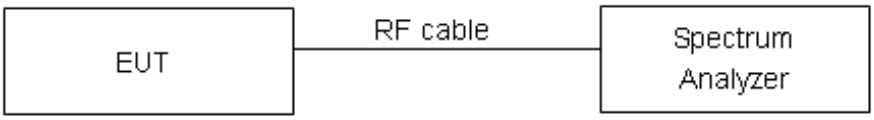
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

For the 5.925 ~ 6.425 GHz band:
For standard power access point and fixed client device: e.i.r.p PSD < 23 dBm/MHz.
For indoor access point: e.i.r.p PSD < 5 dBm/MHz.
For subordinate device control of an indoor access point: e.i.r.p PSD < 5 dBm/MHz.
For client device control of a standard power access point: e.i.r.p PSD < 17 dBm/MHz.
For client device control of an indoor access point: e.i.r.p PSD < -1 dBm/MHz.
For the 6.425 ~ 6.525 GHz band:
For indoor access point: e.i.r.p PSD < 5 dBm/MHz.
For client device control of an indoor access point: e.i.r.p PSD < -1 dBm/MHz.
For the 6.525 ~ 6.875 GHz band:
For standard power access point and fixed client device: e.i.r.p PSD < 23 dBm/MHz.
For indoor access point: e.i.r.p PSD < 5 dBm/MHz.
For subordinate device control of an indoor access point: e.i.r.p PSD < 5 dBm/MHz.
For client device control of a standard power access point: e.i.r.p PSD < 17 dBm/MHz.
For client device control of an indoor access point: e.i.r.p PSD < -1 dBm/MHz.
For the 6.875 ~ 7.125 GHz band:

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For indoor access point: e.i.r.p PSD < 5 dBm/MHz.

For client device control of an indoor access point: e.i.r.p PSD < -1 dBm/MHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2, *U*= 0.75dB.

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5.4. Frequency Stability

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
e. Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Limit

The frequency of the carrier signal shall be maintained within band of operation.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

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5.5. In-Band Emission (Mask)

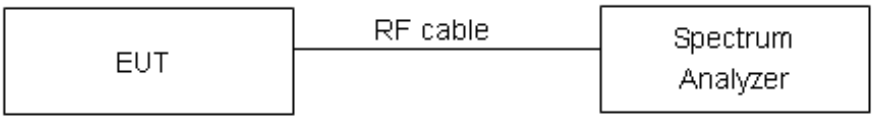
Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

1. Connect output of the antenna port to a spectrum analyzer and adjust appropriate attenuation.
2. Measure the 26 dB EBW using the test procedure 12.4.1 of ANSI C63.10. (Determine the channel edge.)
3. Measure the power spectral density (for emissions mask reference) using the following procedure:
   a) Set the span to encompass the entire 26 dB EBW of the signal.
   b) Set RBW = same RBW used for 26 dB EBW measurement.
   c) Set VBW ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / RBW].
   e) Sweep time = auto.
   f) Detector = RMS (i.e., power averaging)
   g) Trace average at least 100 traces in power averaging (rms) mode.
   h) Use the peak search function on the instrument to find the peak of the spectrum.
4. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
   a) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
   b) Suppressed by 28 dB at one channel bandwidth from the channel center.
   c) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
5. Adjust the span to encompass the entire mask as necessary and clear trace.
6. Trace average at least 100 traces in power averaging (rms) mode.
7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

Test Setup



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Limits

Test Item	Frequencies (MHz)	(X) dBc*1
Emission Mask	At 1 MHz outside of channel edge	20
	At one channel bandwidth from the channel center*2	28
	t one- and one-half times the channel bandwidth away from channel center*3	40
	More than one- and one-half times the channel bandwidth	40

*1: The power spectral density must be suppressed by “x” dB

*2: At frequencies between one megahertz outside an unlicensed device’s channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression,

3: At frequencies between one and one- and one-half times an unlicensed device’s channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression.

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5.6. Contention-Based Protocol

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

a. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation o not overload the signal analyzer 2 receiver.
b. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters (set as following section 4.7.5 EUT operating condition).
c. Determine number of times detection threshold test as following table,

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leqq BW_{Inc}$	Once	Same as EUT transmission
$BW_{Inc} < BW_{EUT} \leqq 2xBW_{Inc}$	Once	Contained within BW_{EUT}
$2xBW_{Inc} < BW_{EUT} \leqq 4xBW_{Inc}$	Twice. (Incumbent transmission is contained within BW_{EUT})	Closely to the lower edge and upper edge of the EUT Channel
$BW_{EUT} > 4xBW_{Inc}$	Three times	Closely to the lower edge ,in the middle and upper edge of the EUT Channel

d. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use step c table to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
e. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT.
f. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
g. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
h. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
i. Refer to step c table to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step d, choose a different center frequency for the AWGN signal and repeat the process.

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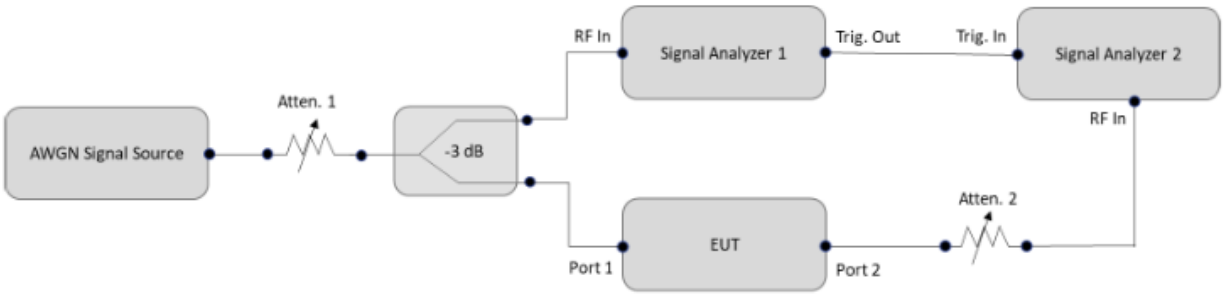
Test Setup



Limits

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62dBm (The threshold is referenced to a 0dBi antenna gain.) or lower. Additionally, indoor low-power devices must detect co-channel energy with 90% or greater certainty.

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5.7. Unwanted Emission

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9KHz, VBW=30KHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
a) Peak emission levels are measured by setting the instrument as follows:
Above 1GHz
PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
b) Average emission levels are measured by setting the instrument as follows:
Above 1GHz
AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific

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emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Reduce the video bandwidth until no significant variations in the displayed signal are observed in subsequent traces, provided the video bandwidth is no less than 1 Hz. For regulatory requirements that specify averaging only over the transmit duration (e.g., digital transmission system [DTS] and Unlicensed National Information Infrastructure [U-NII]), the video bandwidth shall be greater than [1 / (minimum transmitter on time)] and no less than 1 Hz.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

The test is in transmitting mode.

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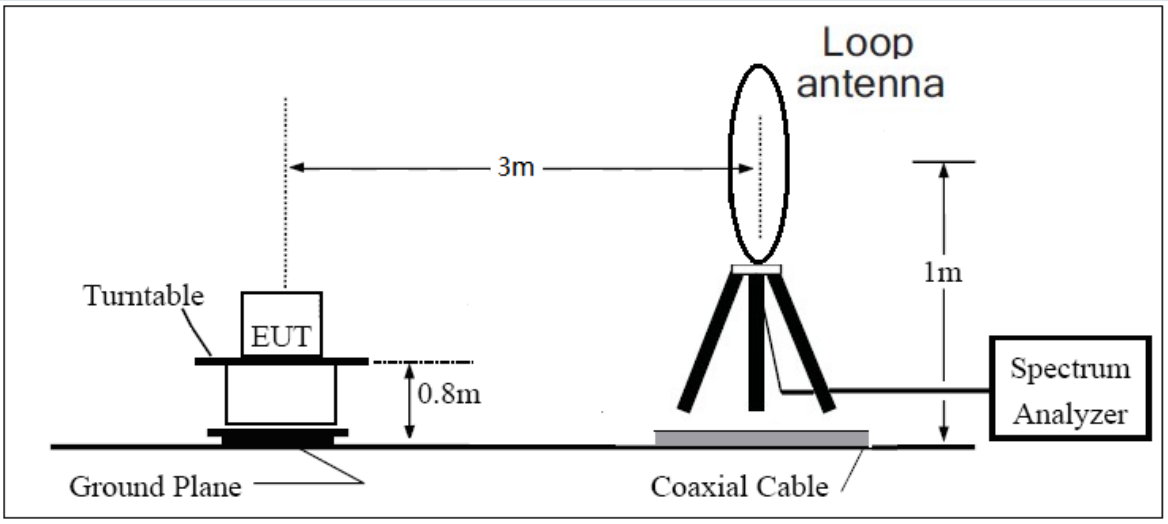
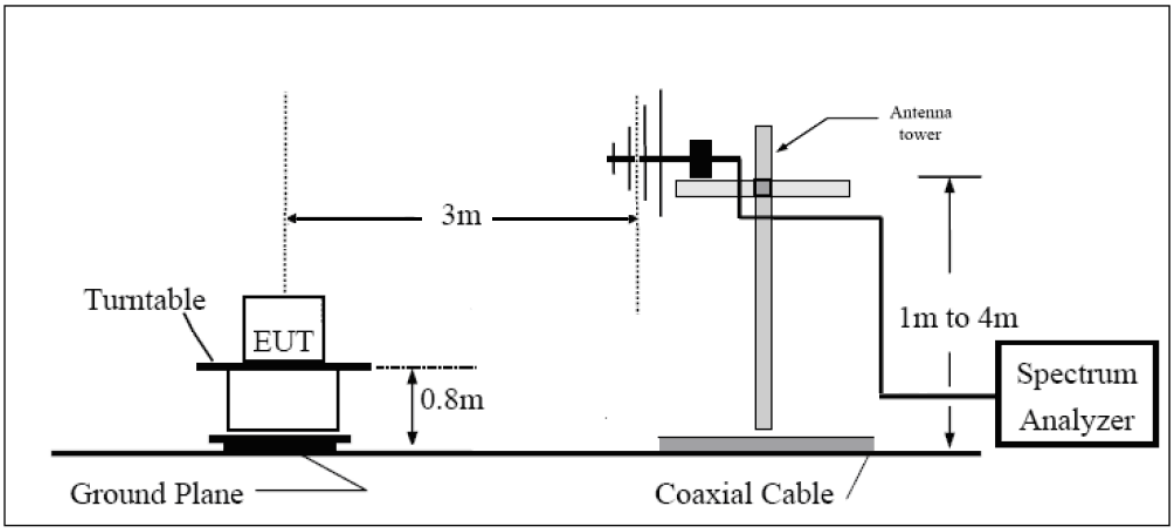
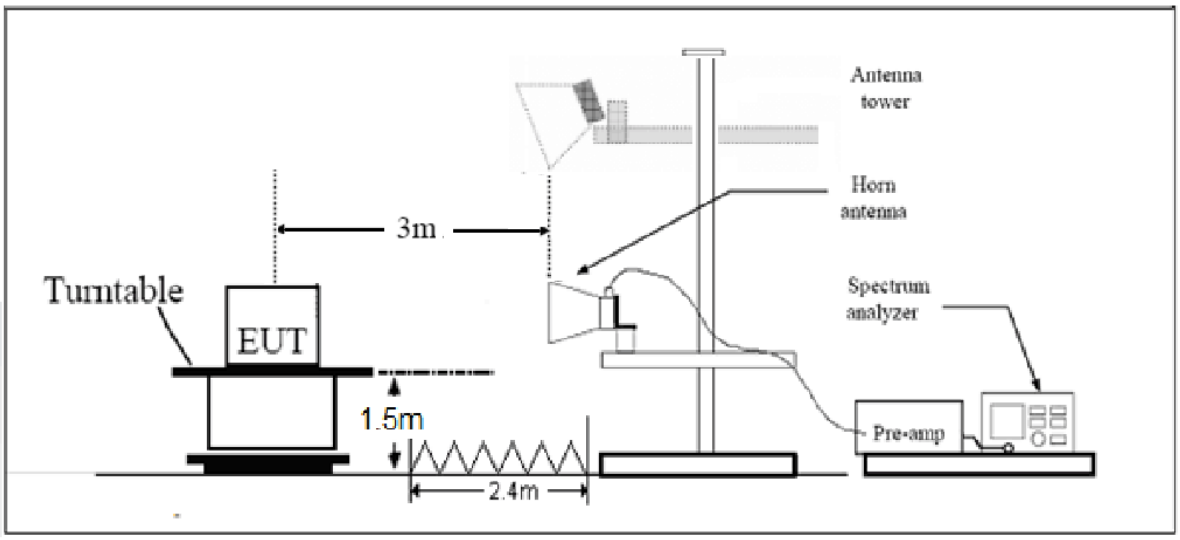
9kHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

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Limits

(1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBμV/m).

Note: the following formula is used to convert the EIRP to field strength

§1、E[dBμV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and

d = distance at which field strength limit is specified in the rules;

§2、E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Frequency of emission (MHz)	Field strength(μV/m)	Field strength(dBμV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

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5.8. Conducted Emission

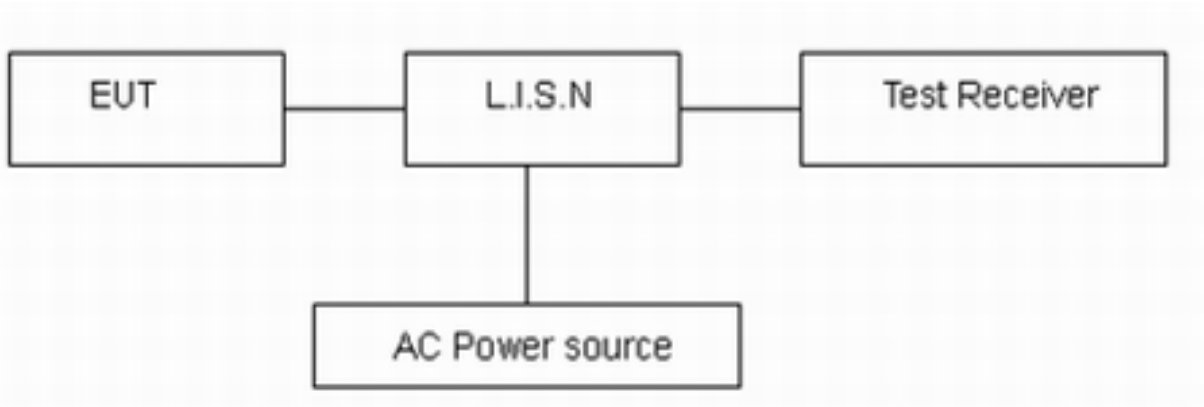
Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Methods of Measurement

The EUT IS placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10.Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9kHz, VBW is set to 30kHz The measurement result should include both L line and N line.
The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-peak**	**Average**
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50
Note1: *Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.69 dB.

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6. Test Results

6.1. 99% OBW & Emission Bandwidth

Original

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Mode	Channel/ Frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11ax HE20	1/5955	19.022	20.984	PASS
	45/6175	19.008	21.553	PASS
	93/6415	19.018	21.494	PASS
802.11ax HE40	3/5965	37.610	40.116	PASS
	43/6165	37.672	39.905	PASS
	91/6405	37.551	39.854	PASS
802.11ax HE80	7/5985	76.904	81.697	PASS
	39/6145	76.905	82.422	PASS
	87/6385	76.905	82.283	PASS

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Mode	Channel/ Frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11ax HE20	97/6435	19.029	21.582	PASS
	105/6475	19.044	21.109	PASS
	113/6515	19.011	21.102	PASS
802.11ax HE40	99/6445	37.597	40.178	PASS
	107/6485	37.543	40.182	PASS
	115/6525	37.567	39.750	PASS
802.11ax HE80	103/6465	76.989	81.733	PASS
	119/6545	76.999	82.251	PASS

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Mode	Channel/ Frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11ax HE20	117/6535	19.043	21.128	PASS
	149/6695	19.018	21.466	PASS
	181/6855	19.026	21.342	PASS
	185/6875	19.00	21.304	PASS
802.11ax HE40	115/6525	37.576	39.888	PASS
	123/6565	37.618	39.912	PASS
	147/6685	37.530	39.976	PASS
	179/6845	37.549	40.021	PASS
	187/6885	37.623	40.257	PASS
802.11ax HE80	119/6545	76.987	82.295	PASS
	135/6625	77.053	82.892	PASS
	151/6705	77.017	82.382	PASS
	167/6785	77.076	82.699	PASS
	183/6865	77.069	82.520	PASS

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Mode	Channel/ Frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11ax HE20	185/6875	19.022	21.299	PASS
	189/6895	19.041	21.148	PASS
	209/6995	19.051	21.369	PASS
	229/7095	19.022	21.371	PASS
802.11ax HE40	187/6885	37.649	39.871	PASS
	203/6965	37.592	40.074	PASS
	227/7085	37.584	39.961	PASS
802.11ax HE80	183/6865	77.029	82.826	PASS
	199/6945	77.031	82.181	PASS
	215/7025	76.950	82.318	PASS

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Minimum 26 dB bandwidth

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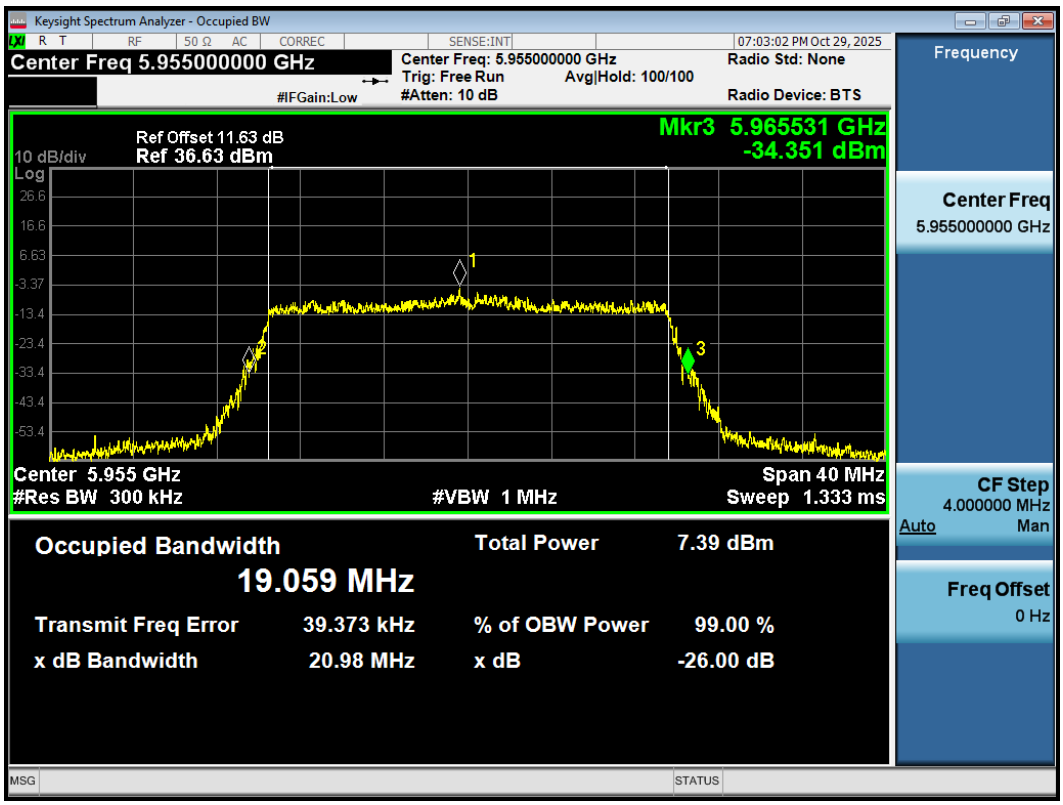
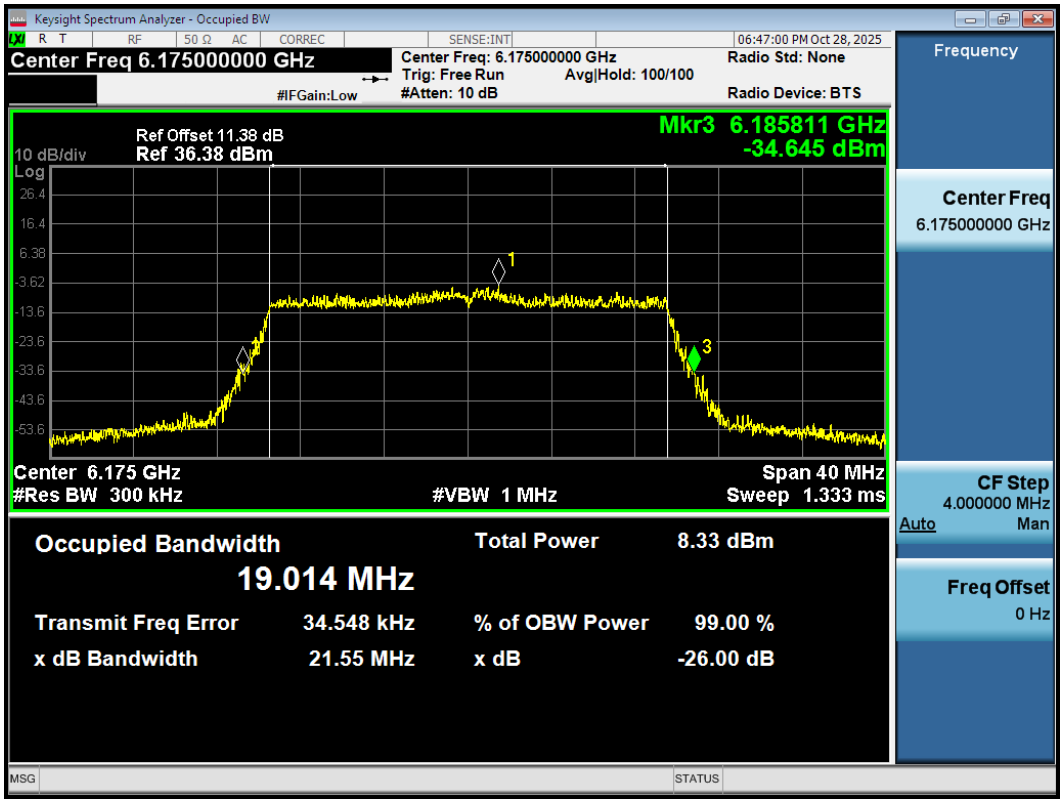
-26dB Bandwidth ax20 5955MHz



-26dB Bandwidth ax20 6175MHz



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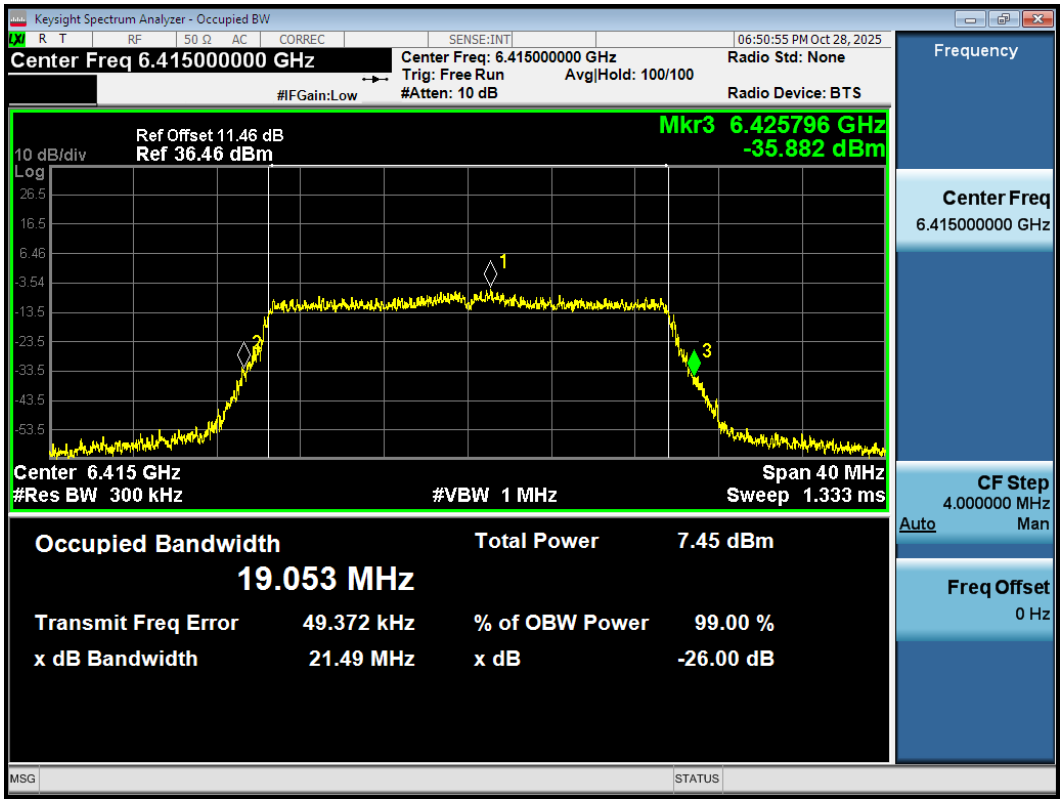
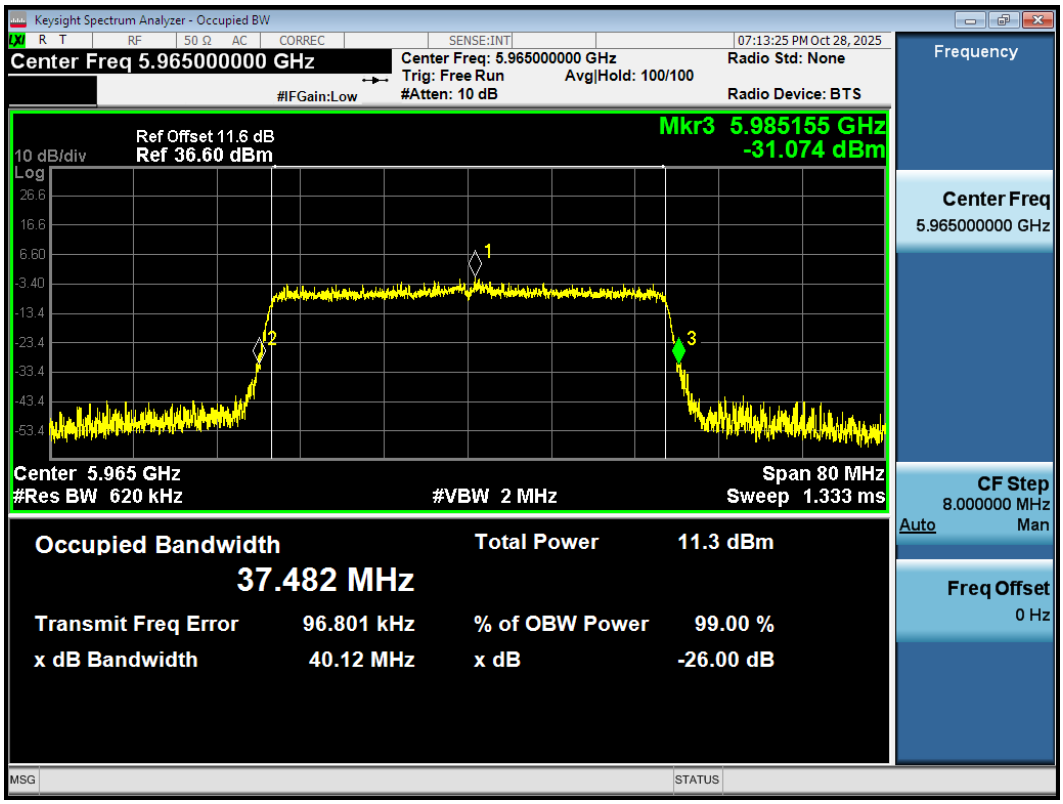
-26dB Bandwidth ax20 6415MHz



-26dB Bandwidth ax40 5965MHz



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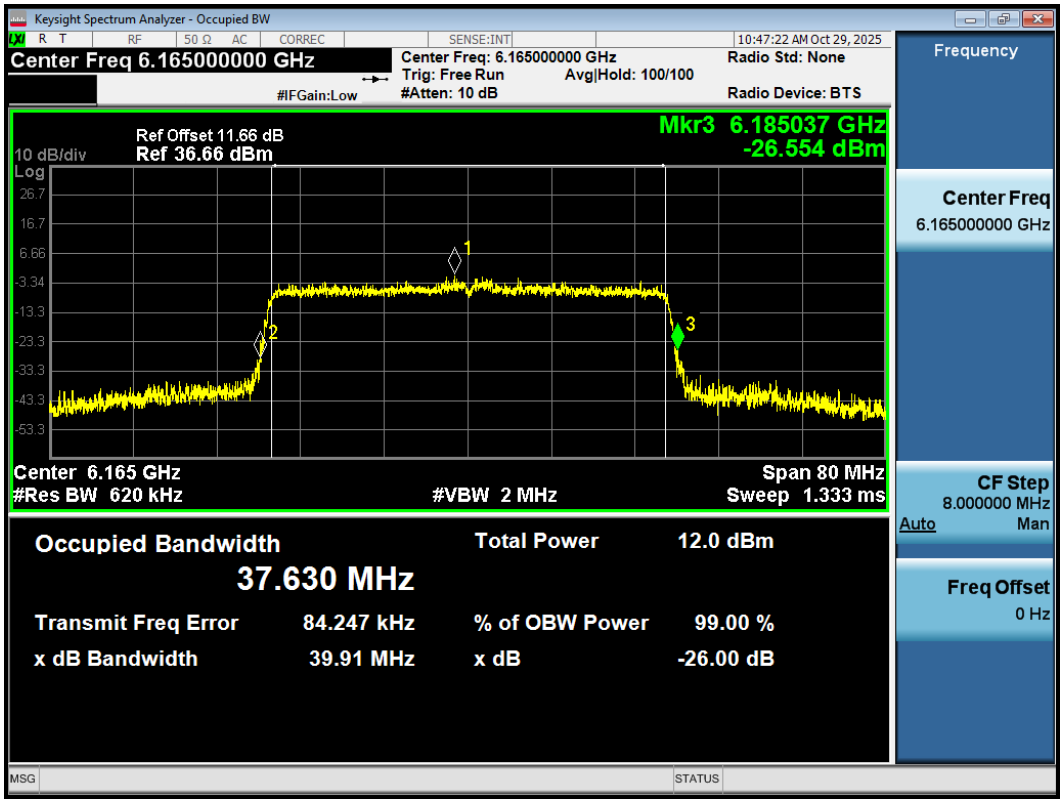
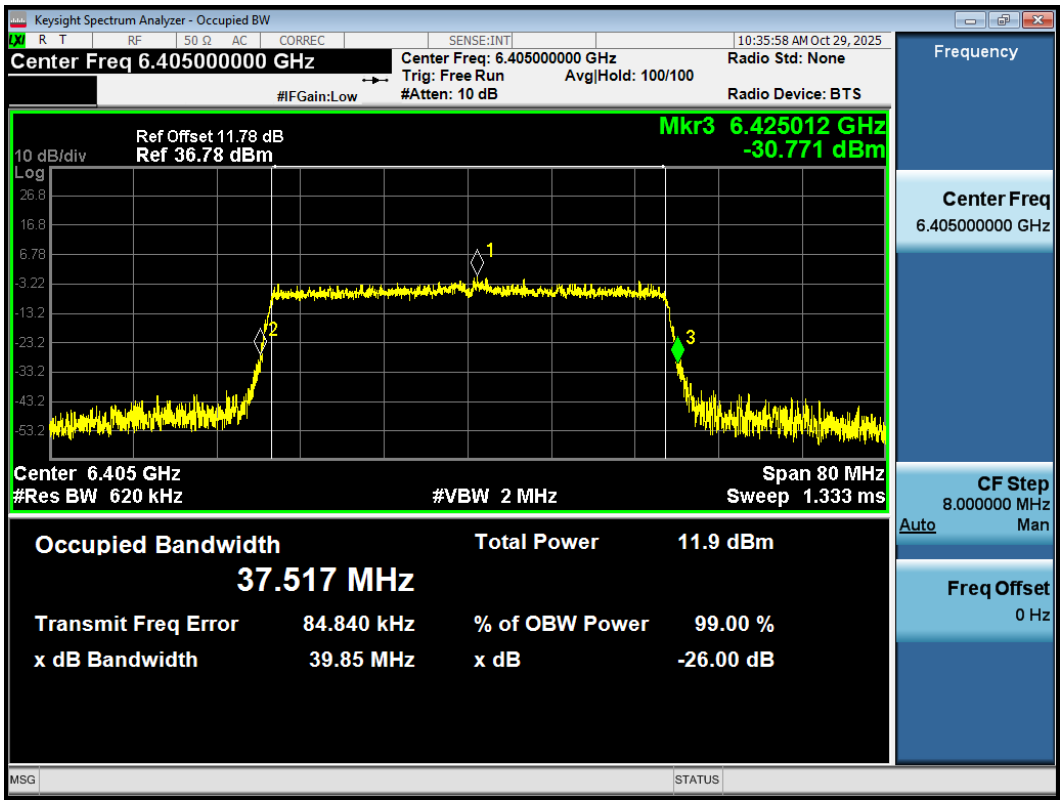
-26dB Bandwidth ax40 6165MHz



-26dB Bandwidth ax40 6405MHz



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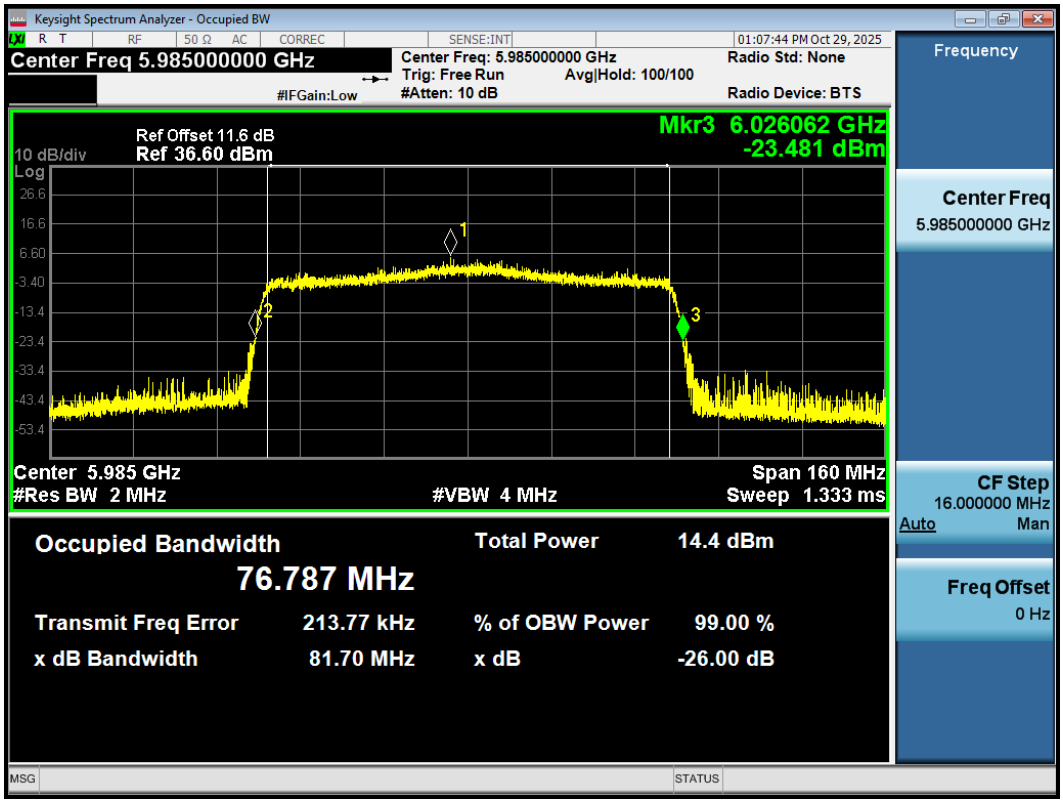
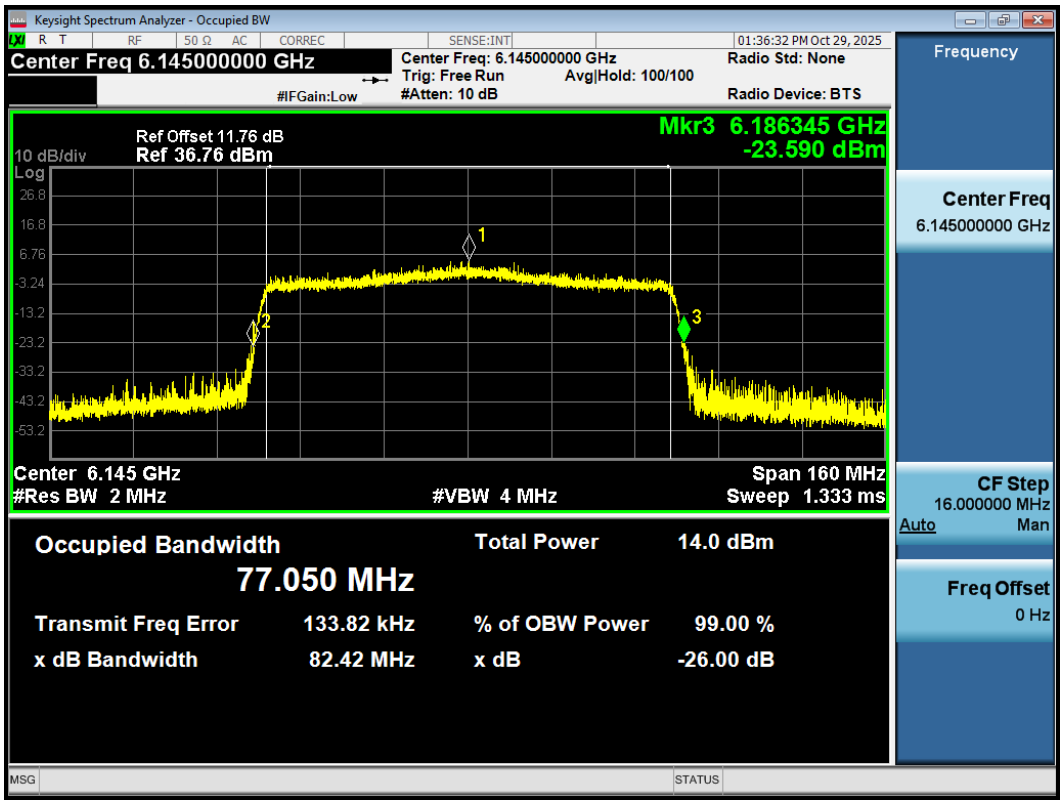
-26dB Bandwidth ax80 5985MHz



-26dB Bandwidth ax80 6145MHz



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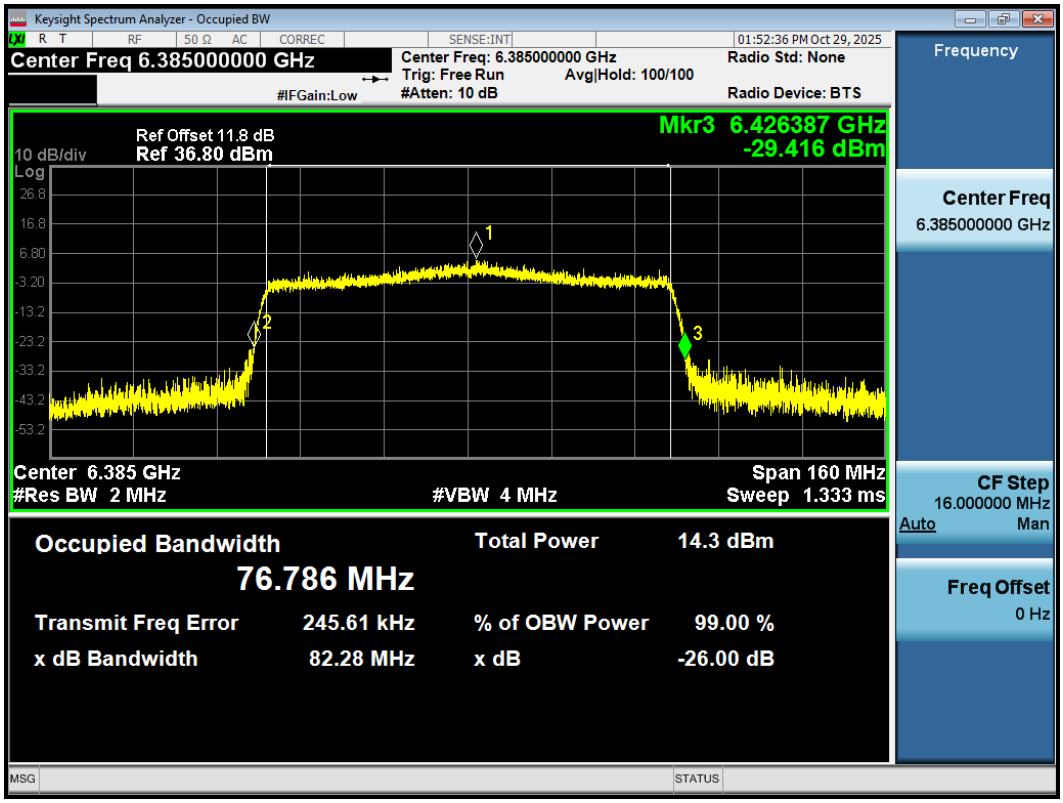
-26dB Bandwidth ax80 6385MHz



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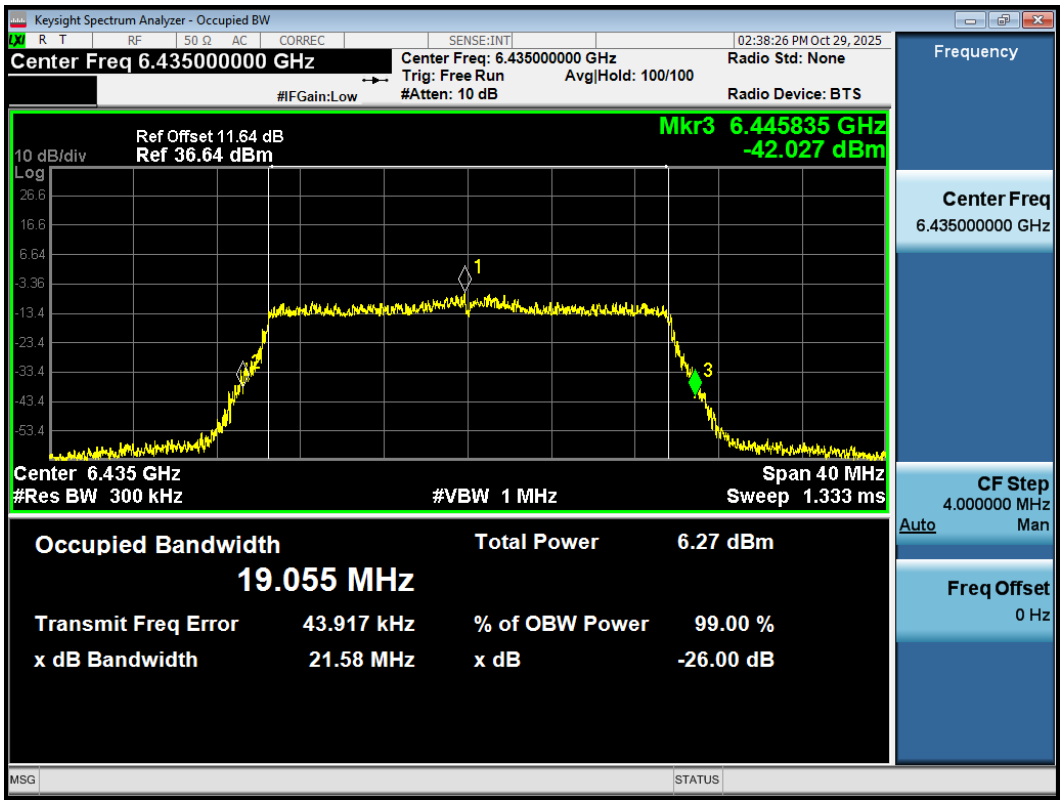
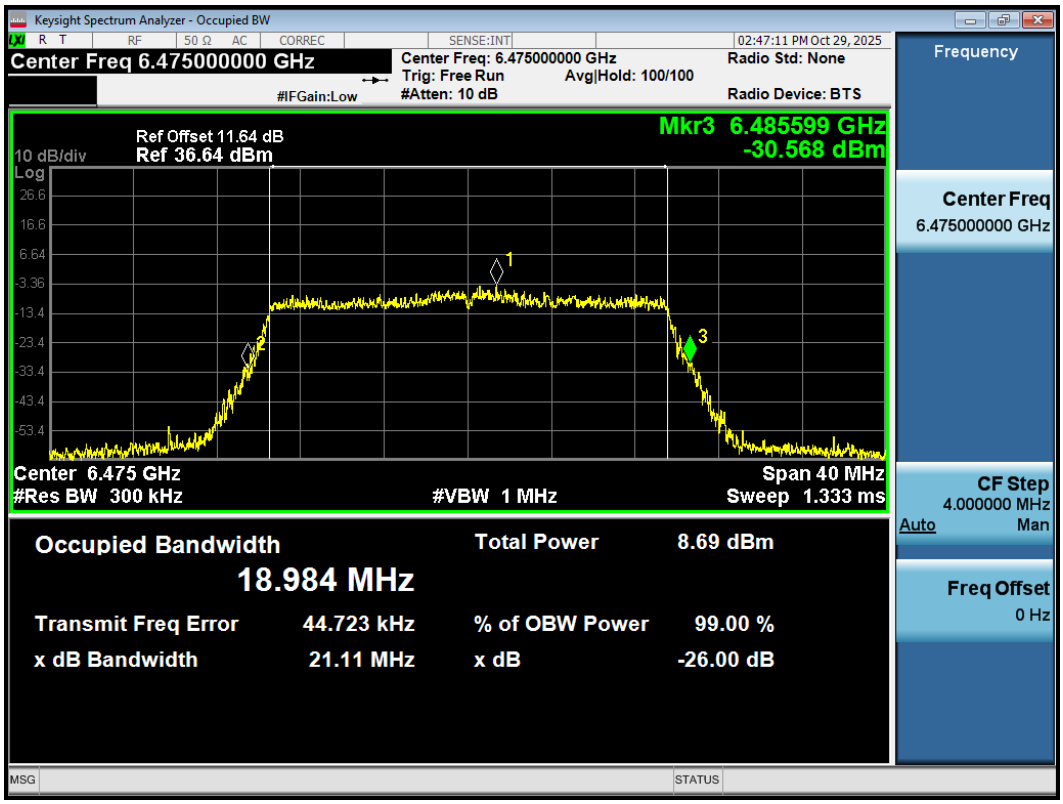
-26dB Bandwidth ax20 6435MHz



-26dB Bandwidth ax20 6475MHz



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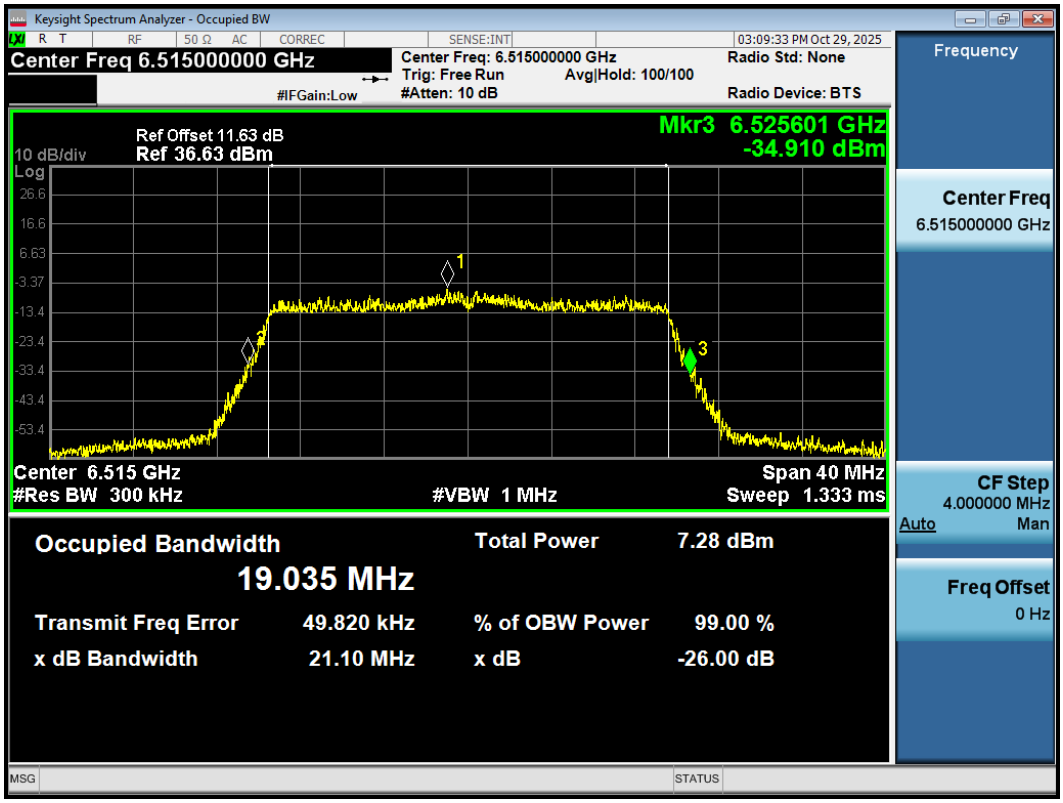
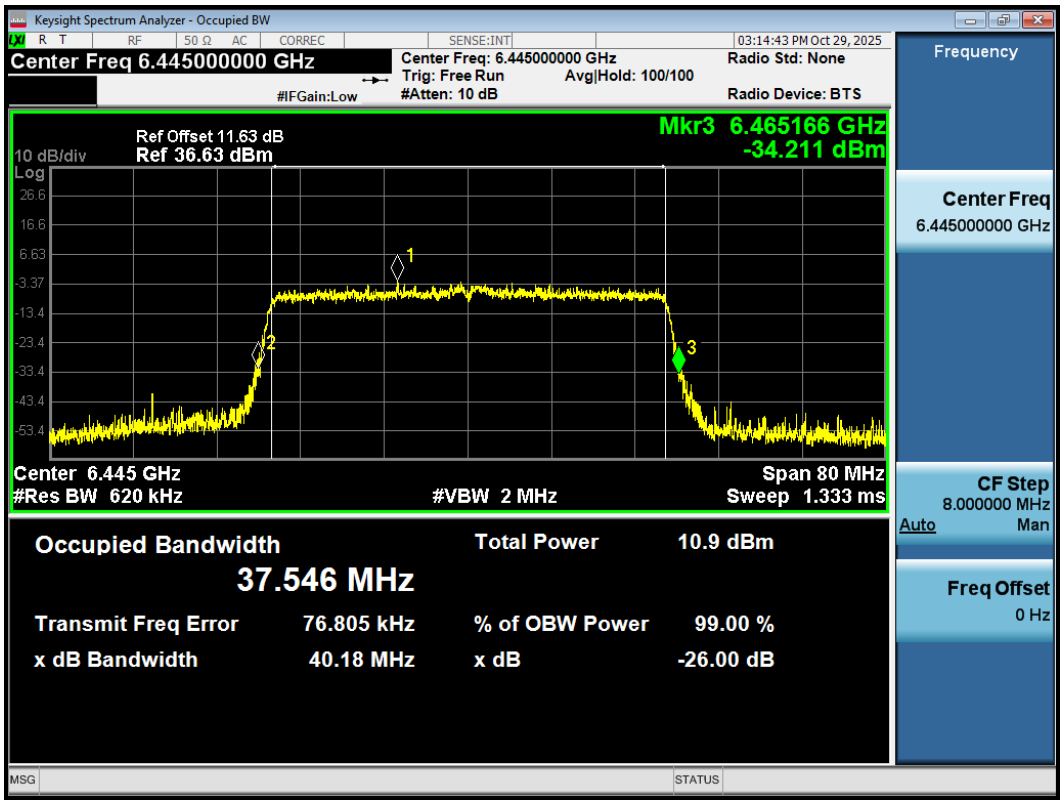
-26dB Bandwidth ax20 6515MHz



-26dB Bandwidth ax40 6445MHz



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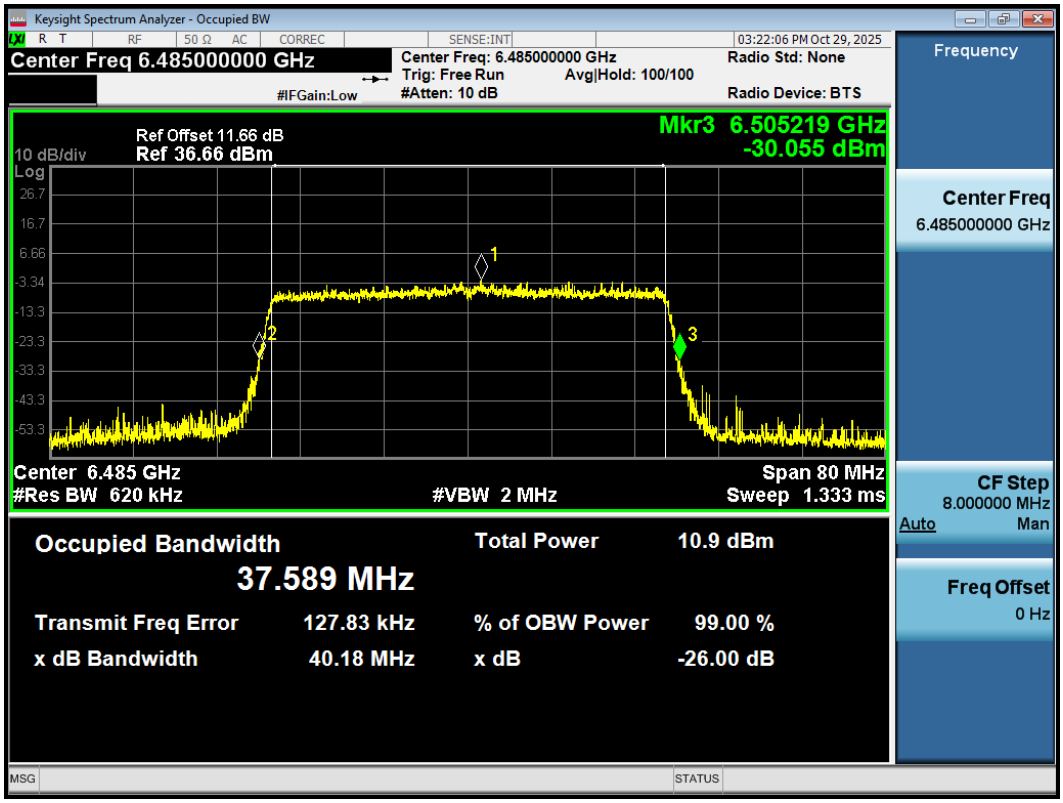
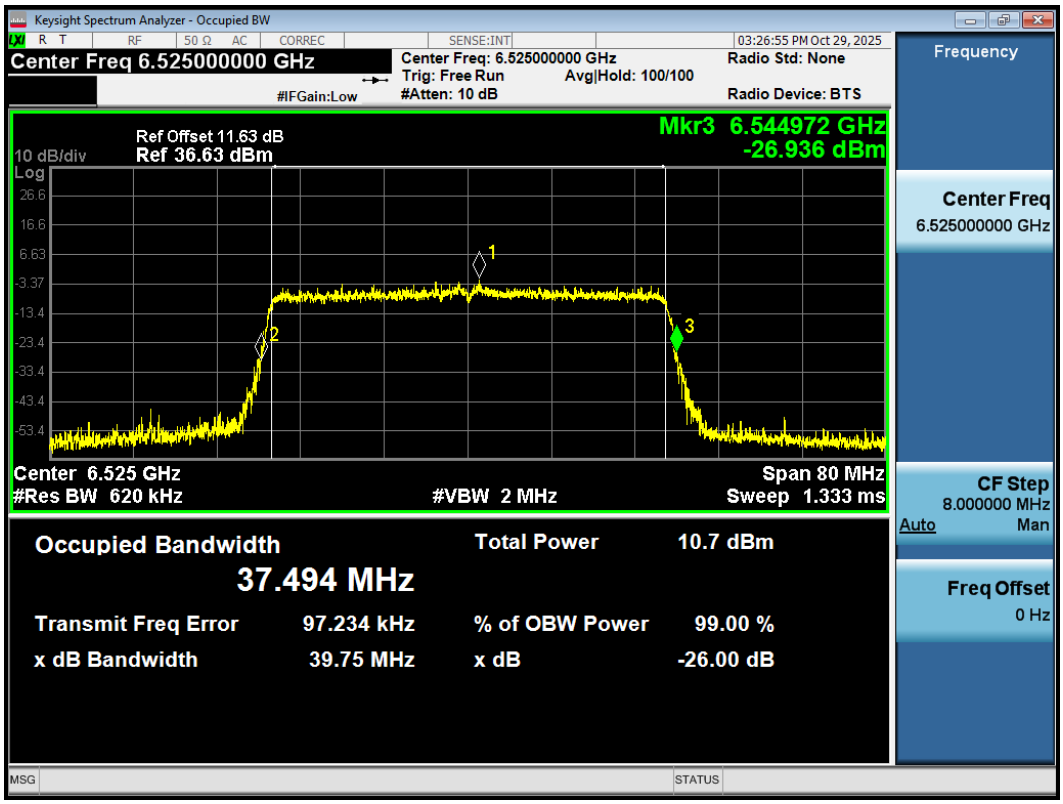
-26dB Bandwidth ax40 6485MHz



-26dB Bandwidth ax40 6525MHz



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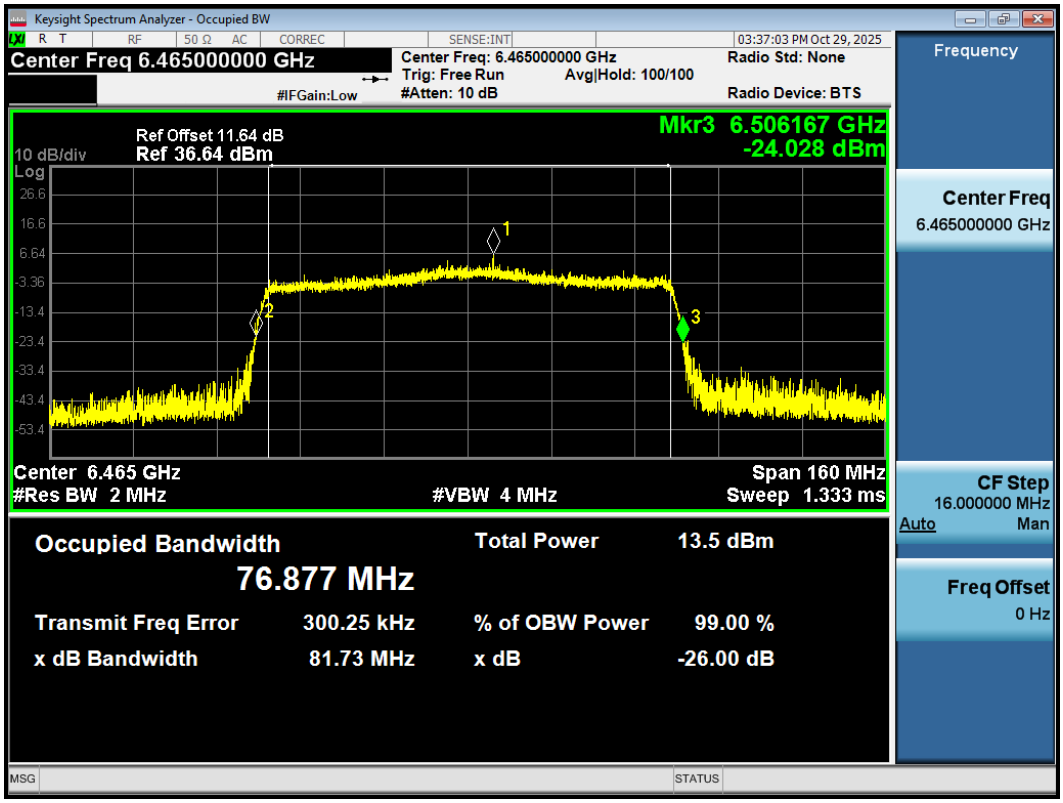
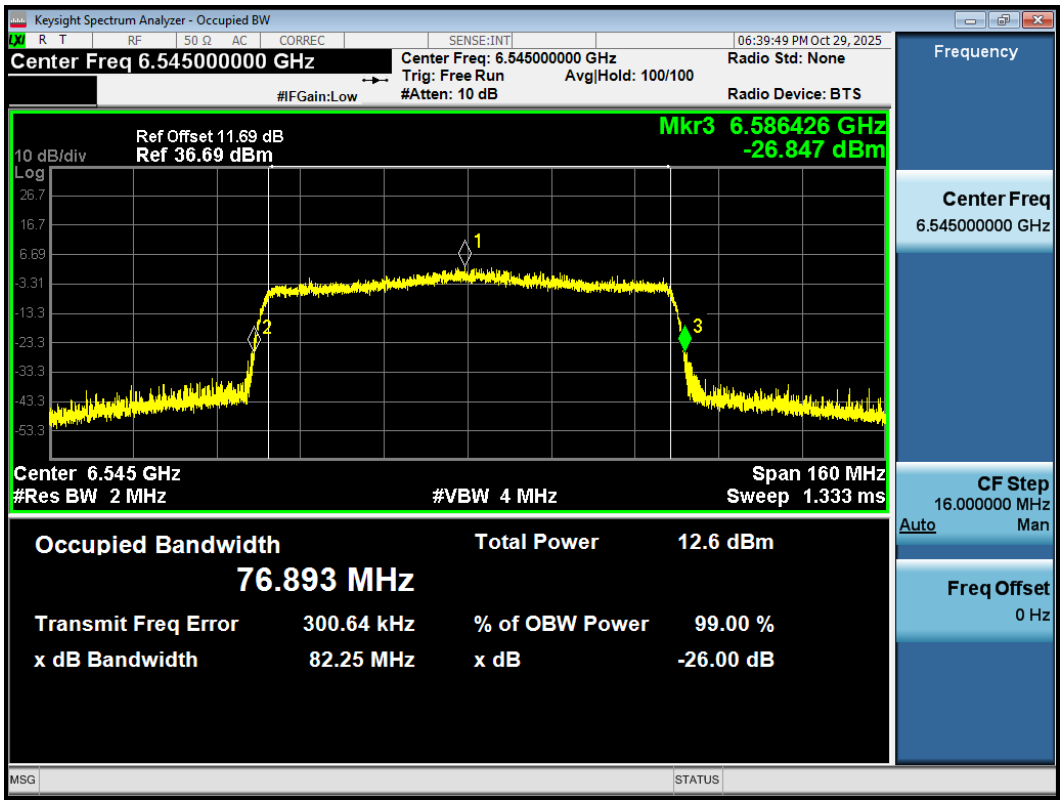
-26dB Bandwidth ax80 6465MHz



-26dB Bandwidth ax80 6545MHz



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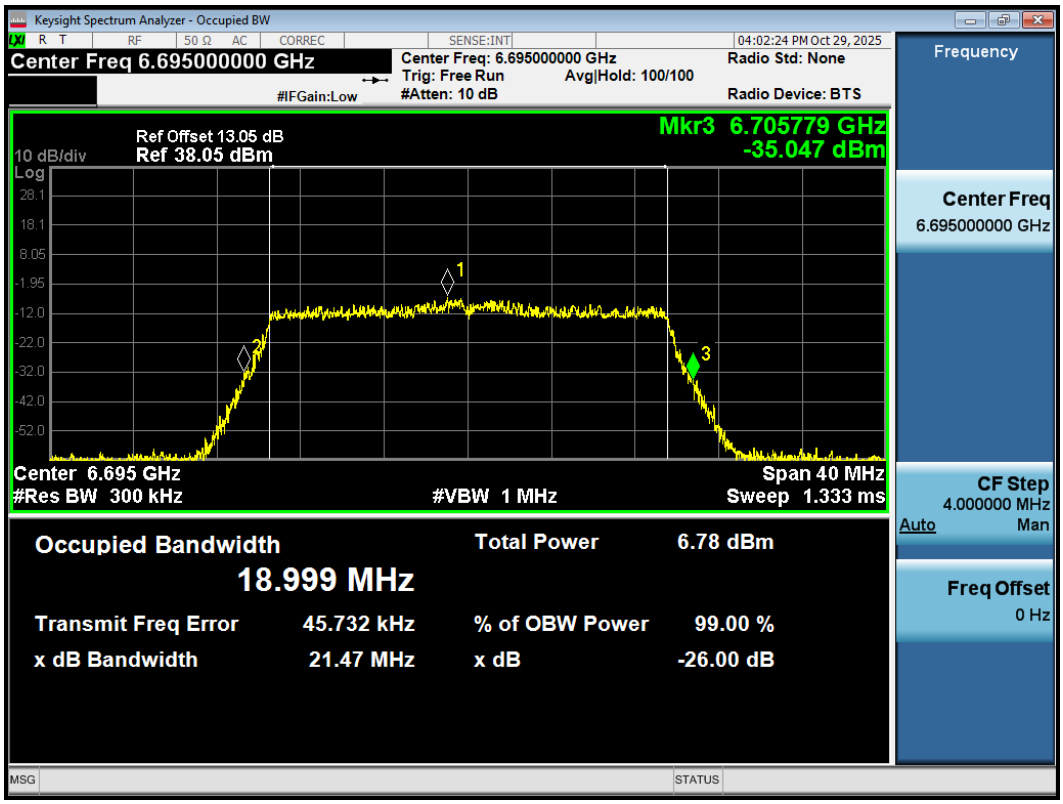
-26dB Bandwidth ax20 6535MHz

-26dB Bandwidth ax20 6695MHz



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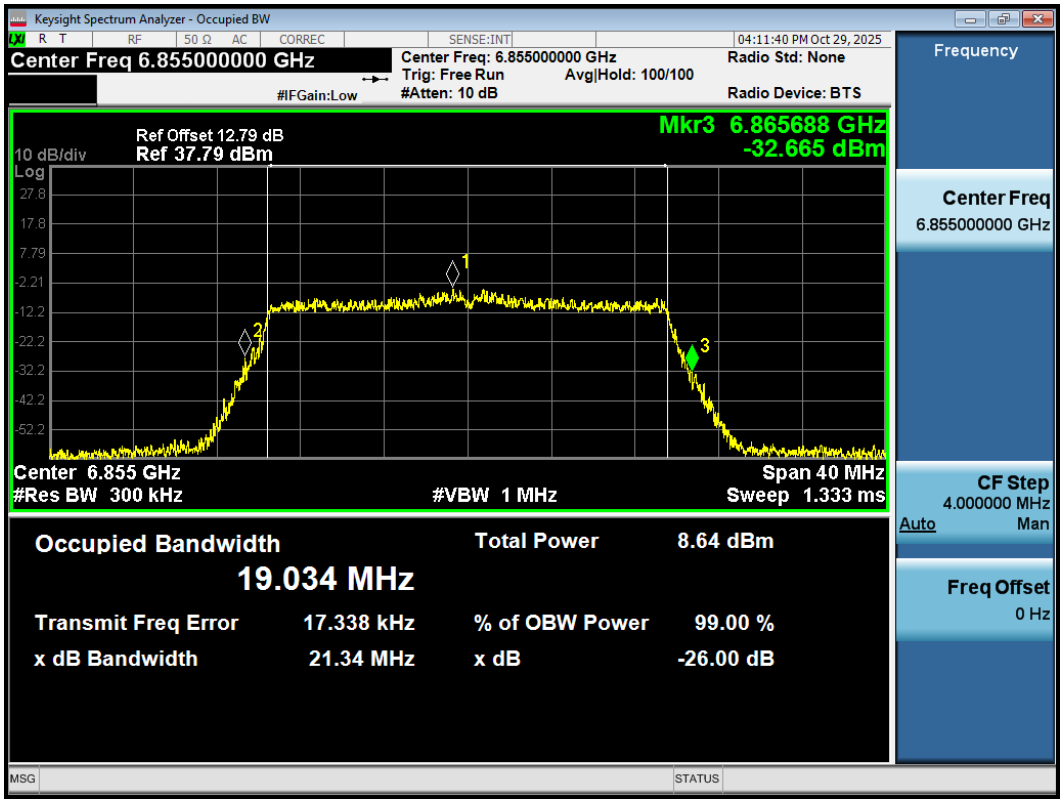
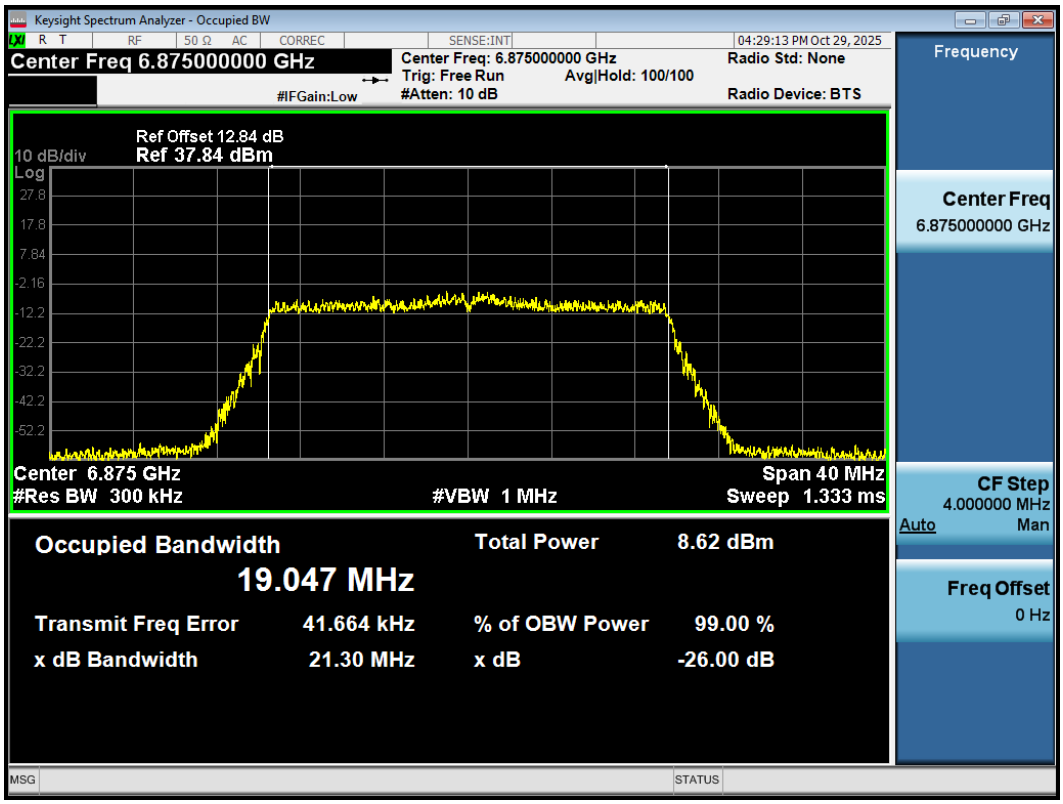
-26dB Bandwidth ax20 6855MHz



-26dB Bandwidth ax20 6875MHz



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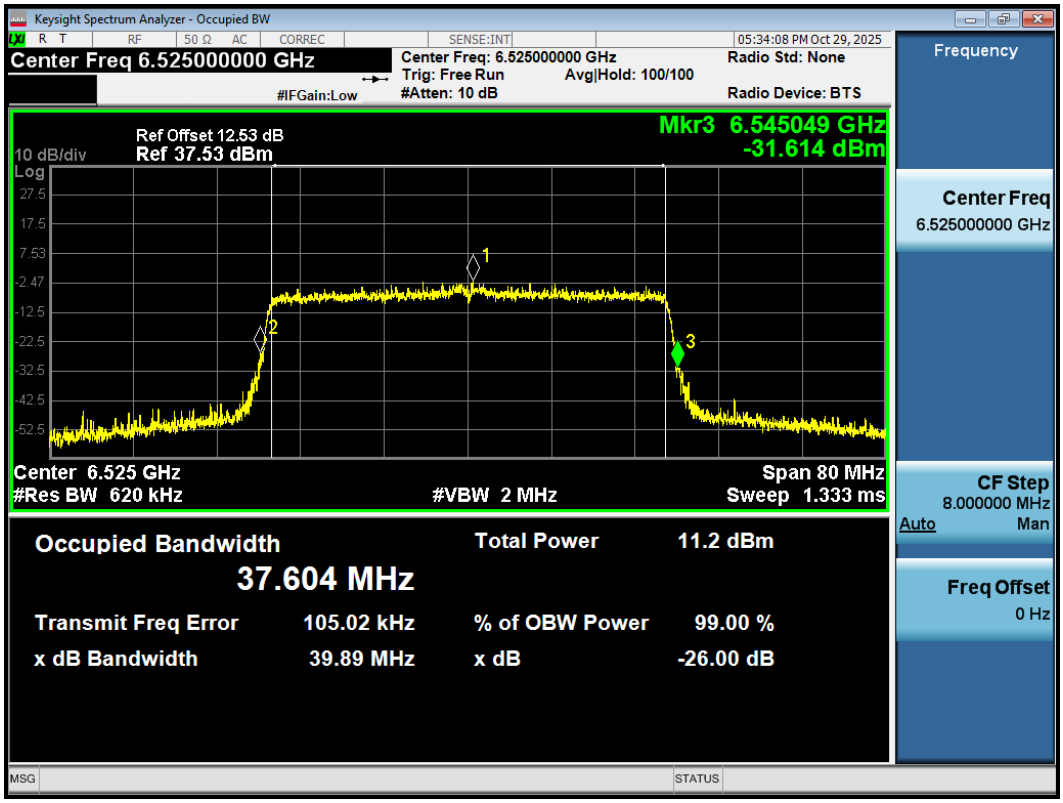
-26dB Bandwidth ax40 6525MHz



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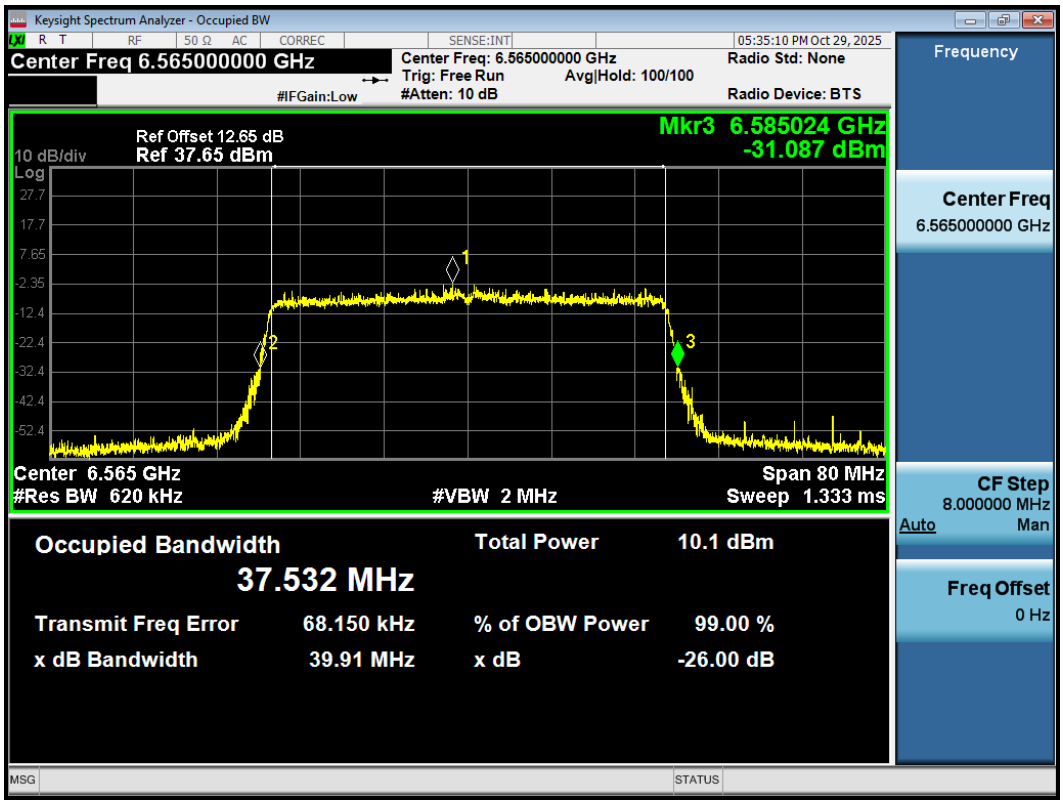

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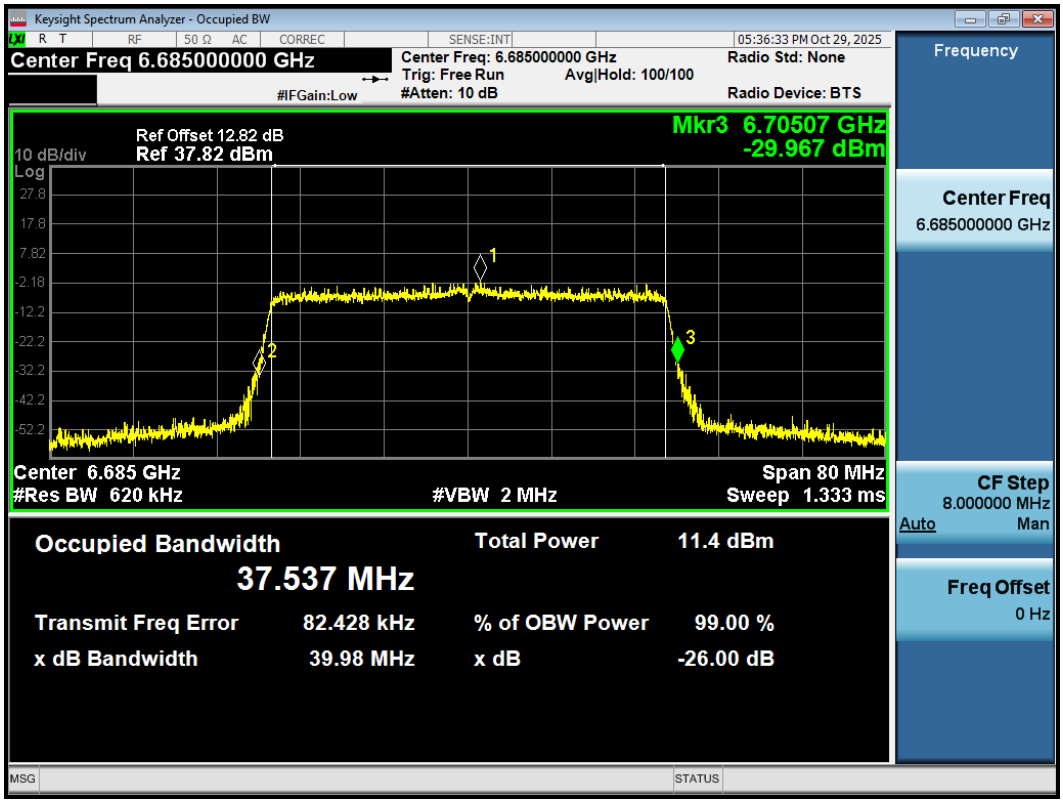
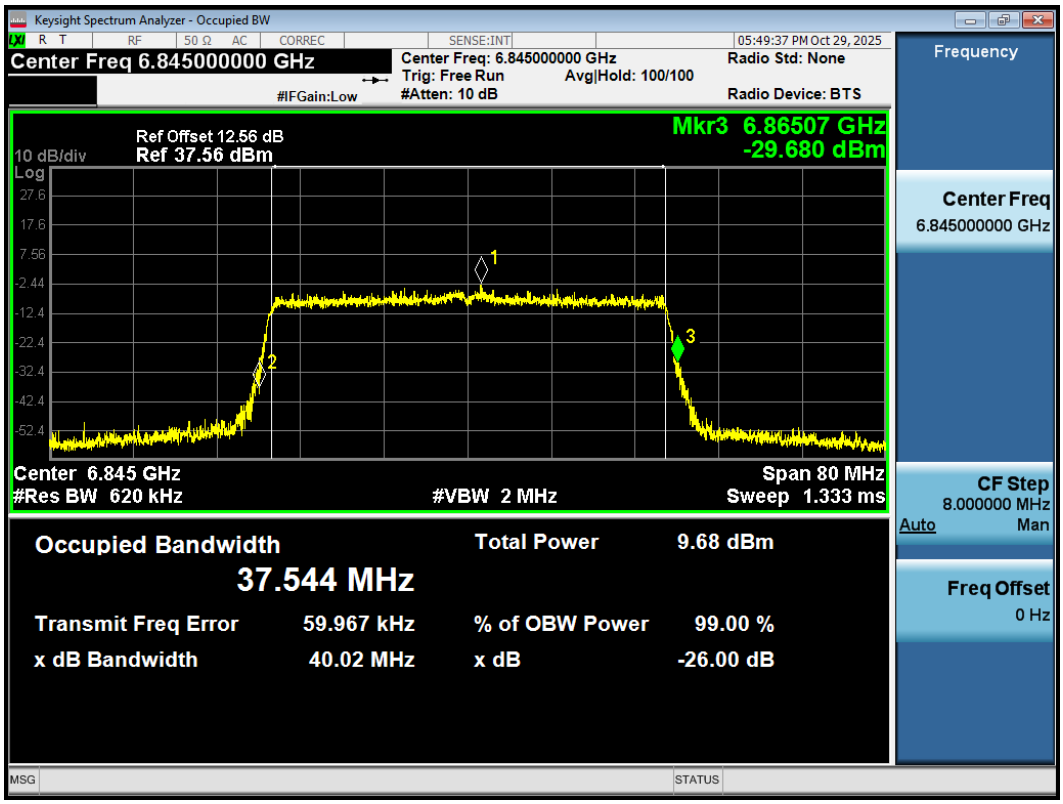
-26dB Bandwidth ax40 6685MHz



-26dB Bandwidth ax40 6845MHz



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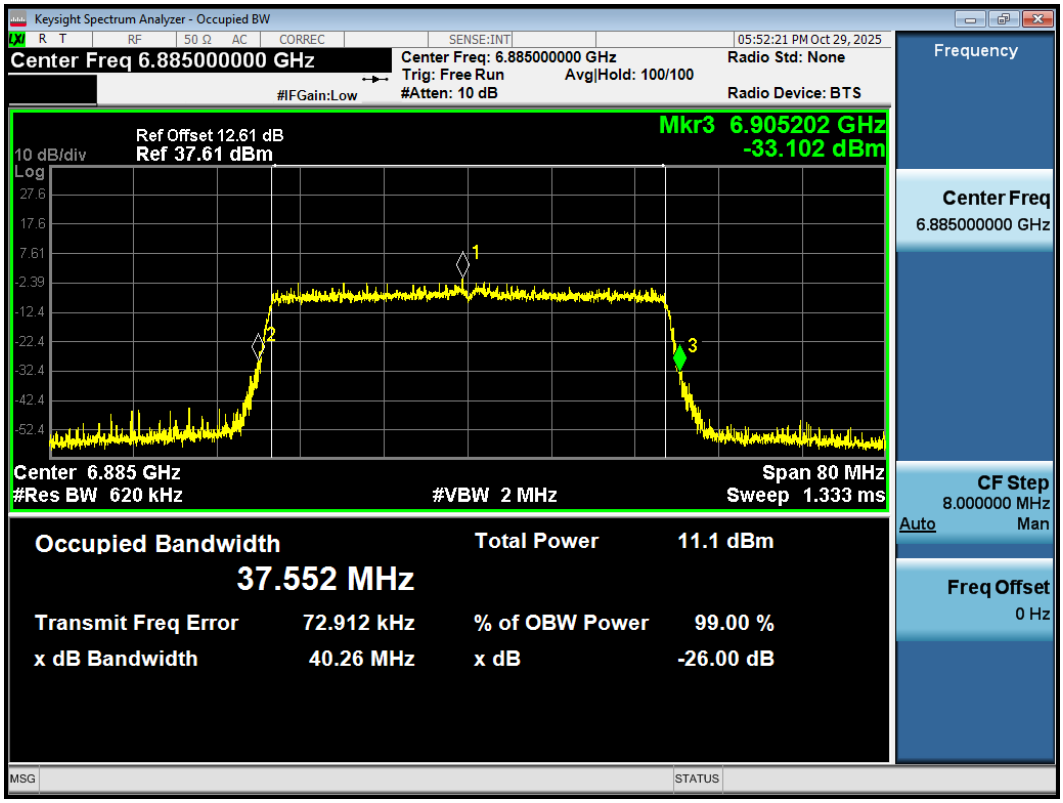
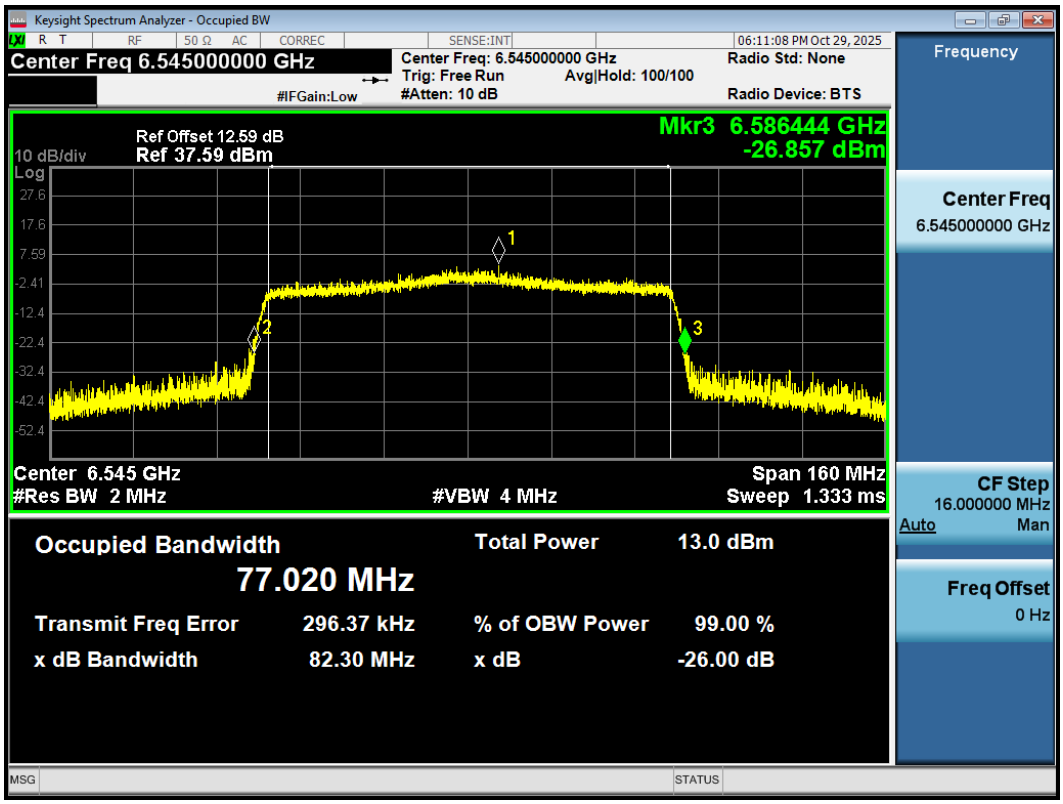
-26dB Bandwidth ax40 6885MHz



-26dB Bandwidth ax80 6545MHz



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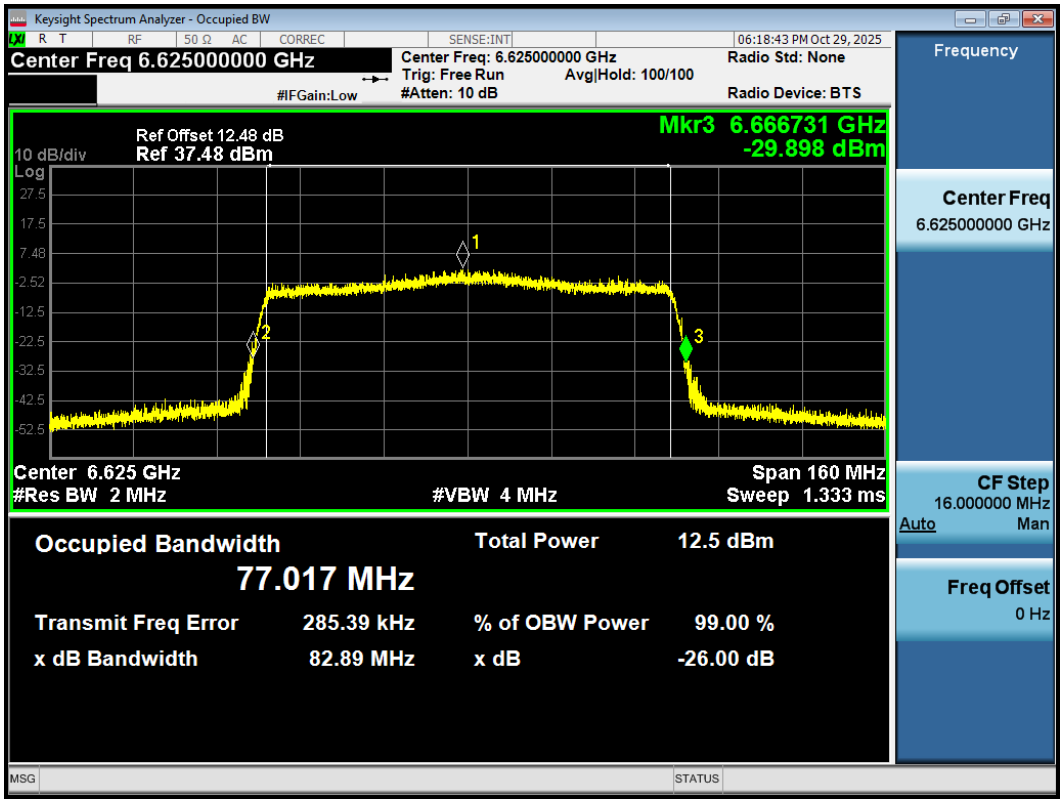
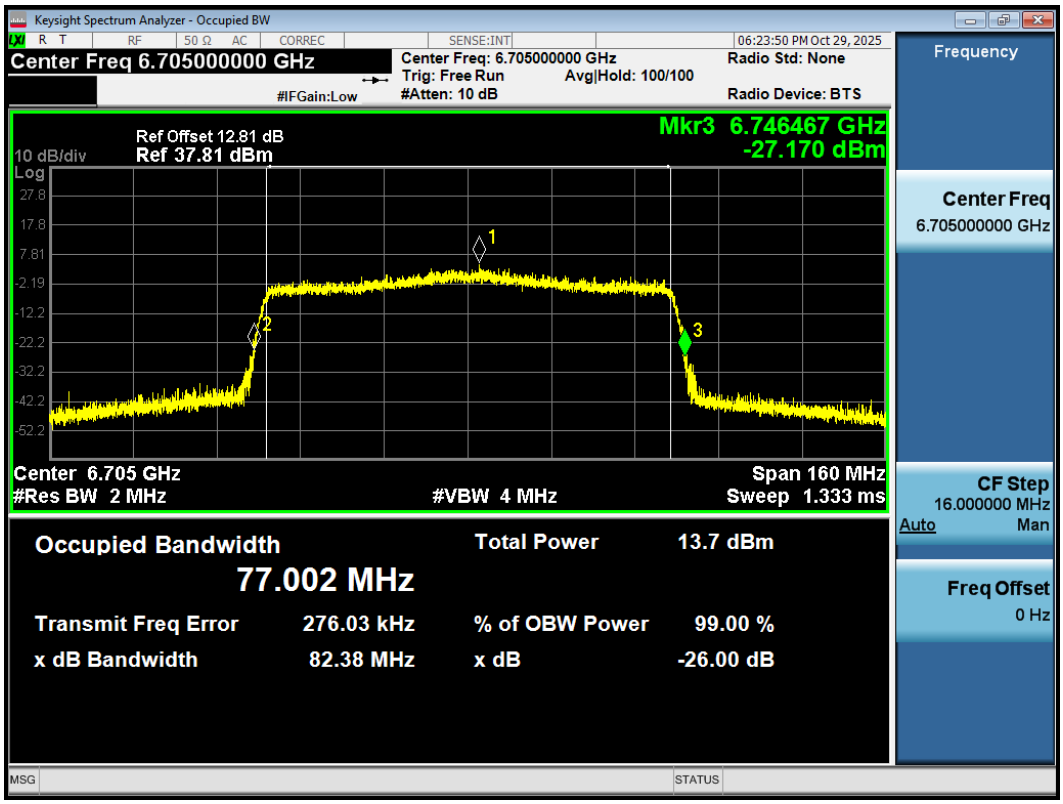
-26dB Bandwidth ax80 6625MHz



-26dB Bandwidth ax80 6705MHz



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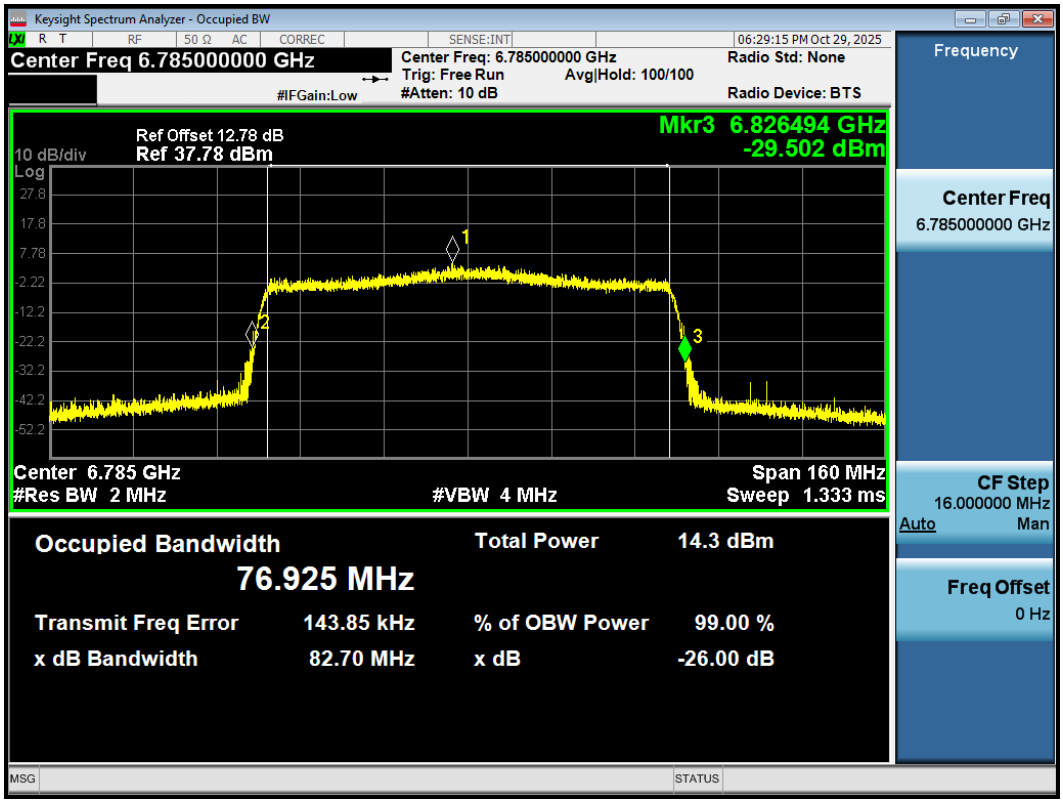
-26dB Bandwidth ax80 6785MHz



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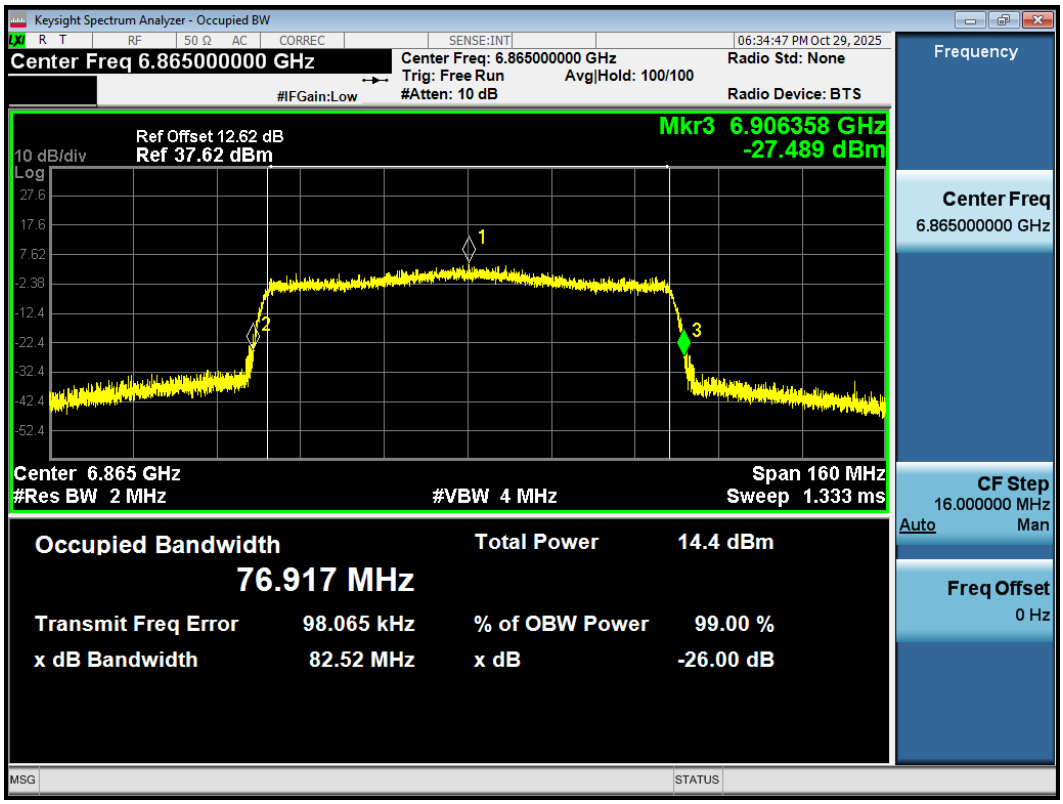

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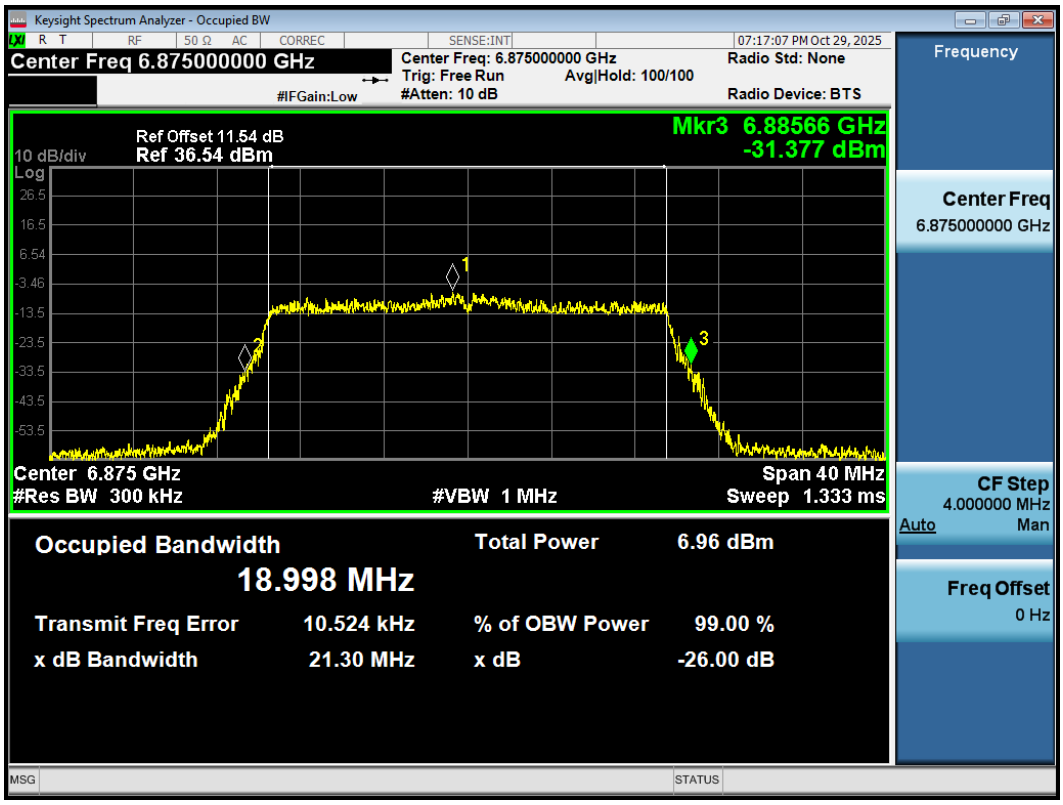
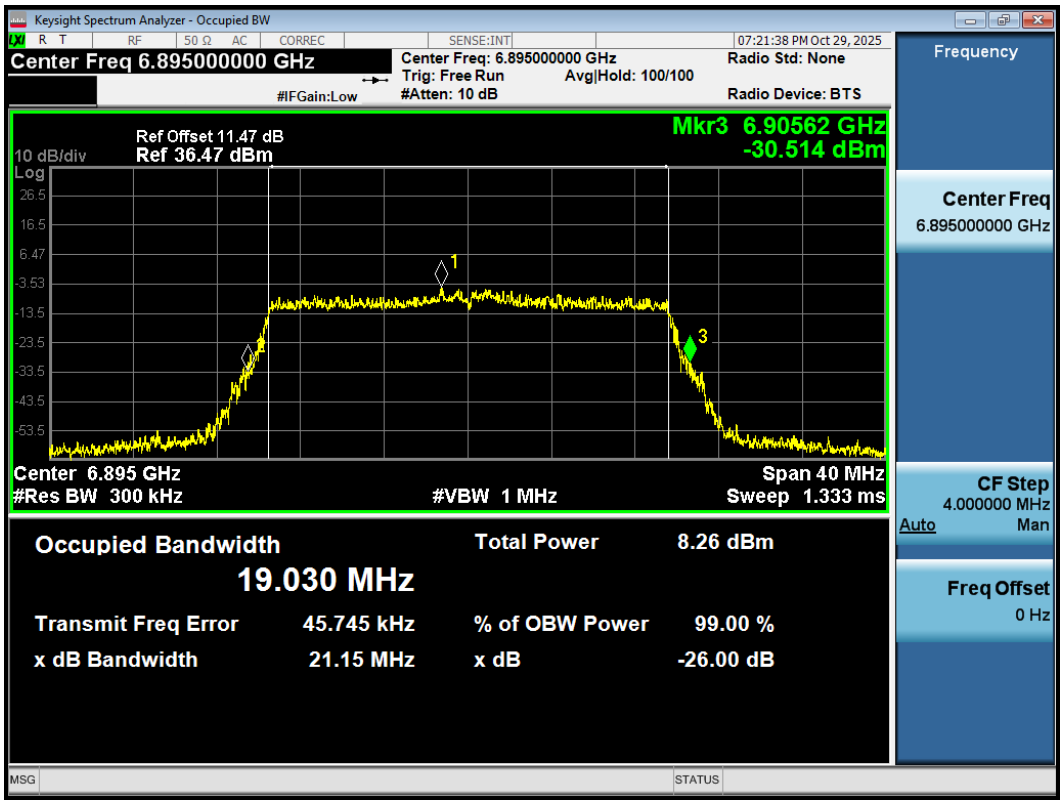
U-NII-8

-26dB Bandwidth ax20 6875MHz



-26dB Bandwidth ax20 6895MHz



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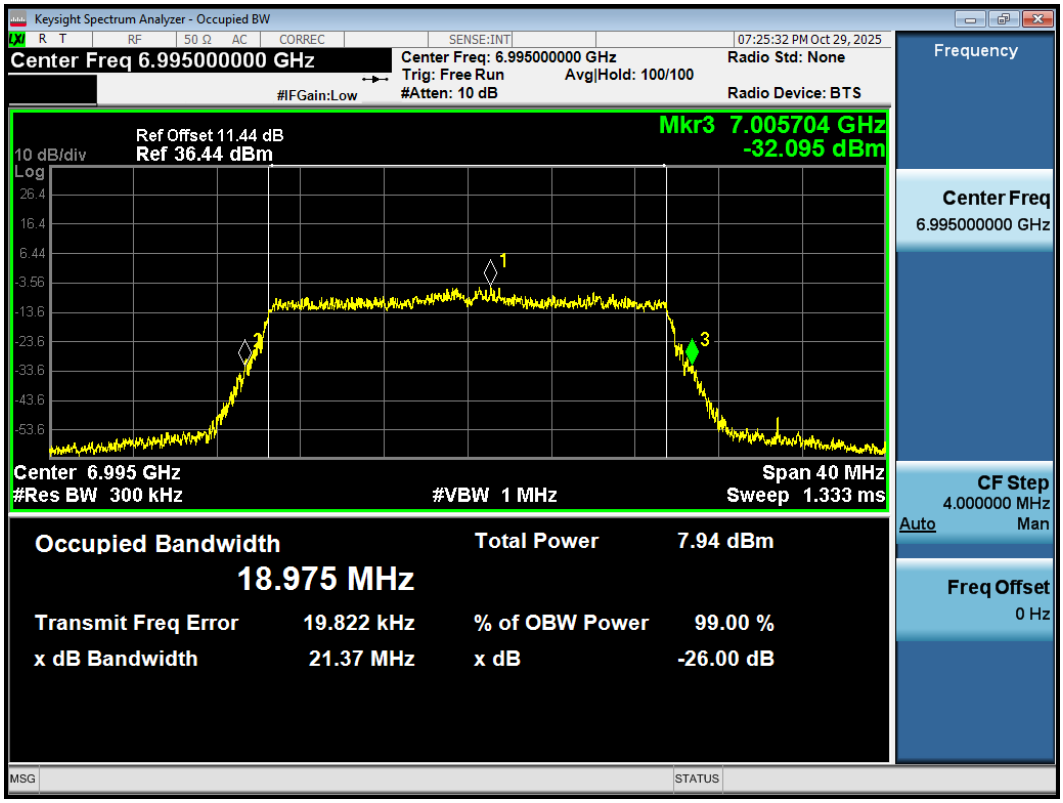
-26dB Bandwidth ax20 6995MHz



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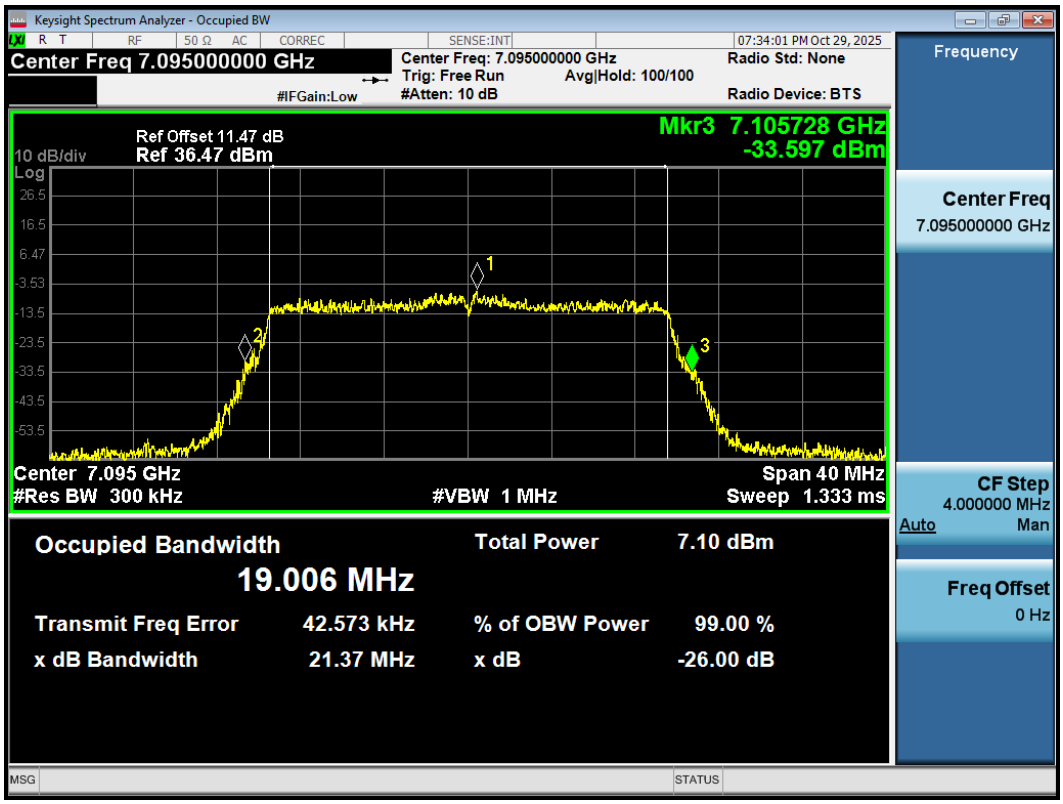

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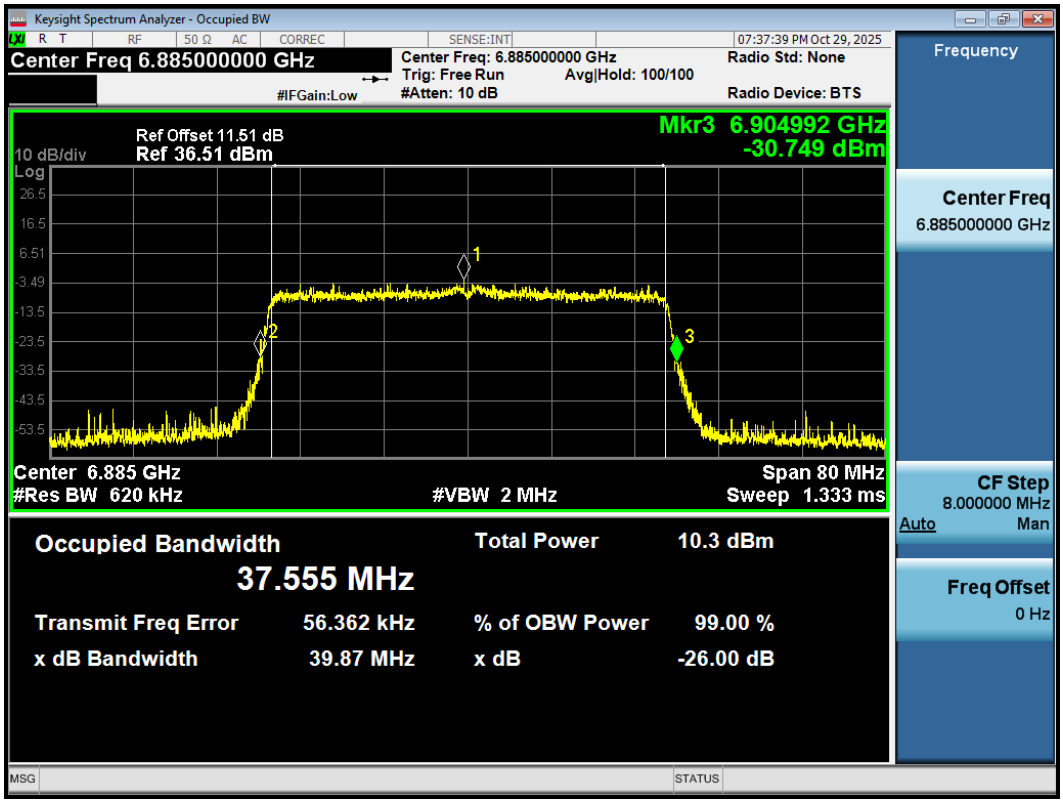
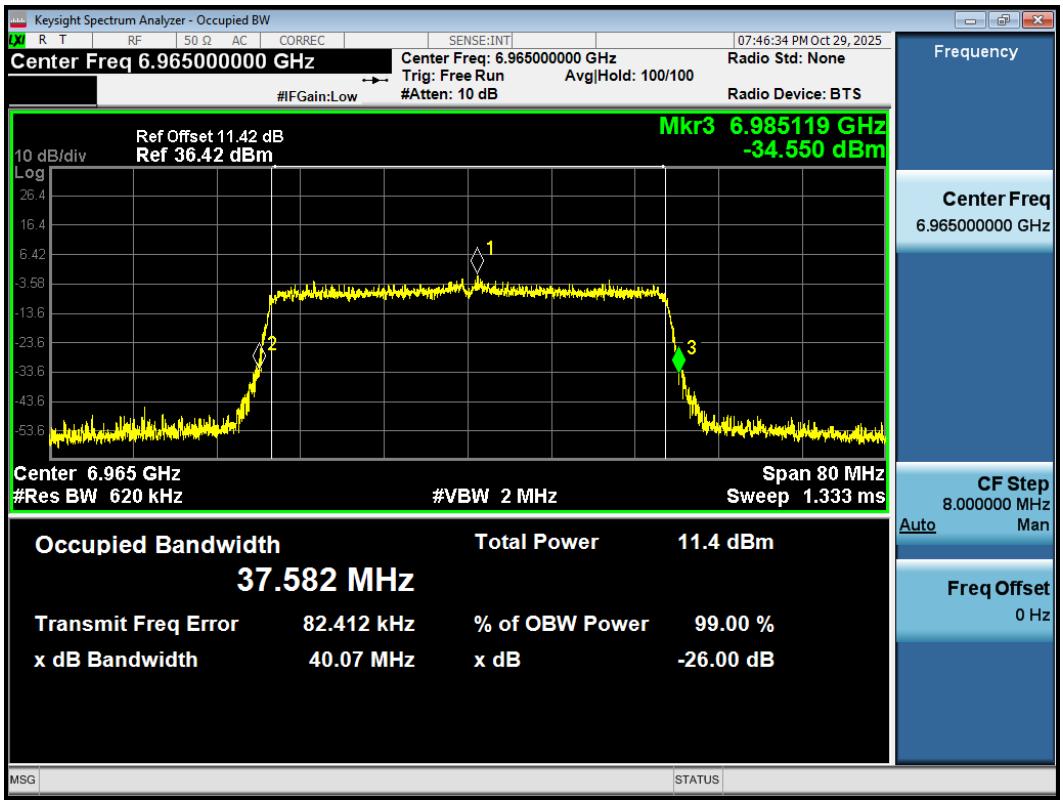


-26dB Bandwidth ax40 6965MHz



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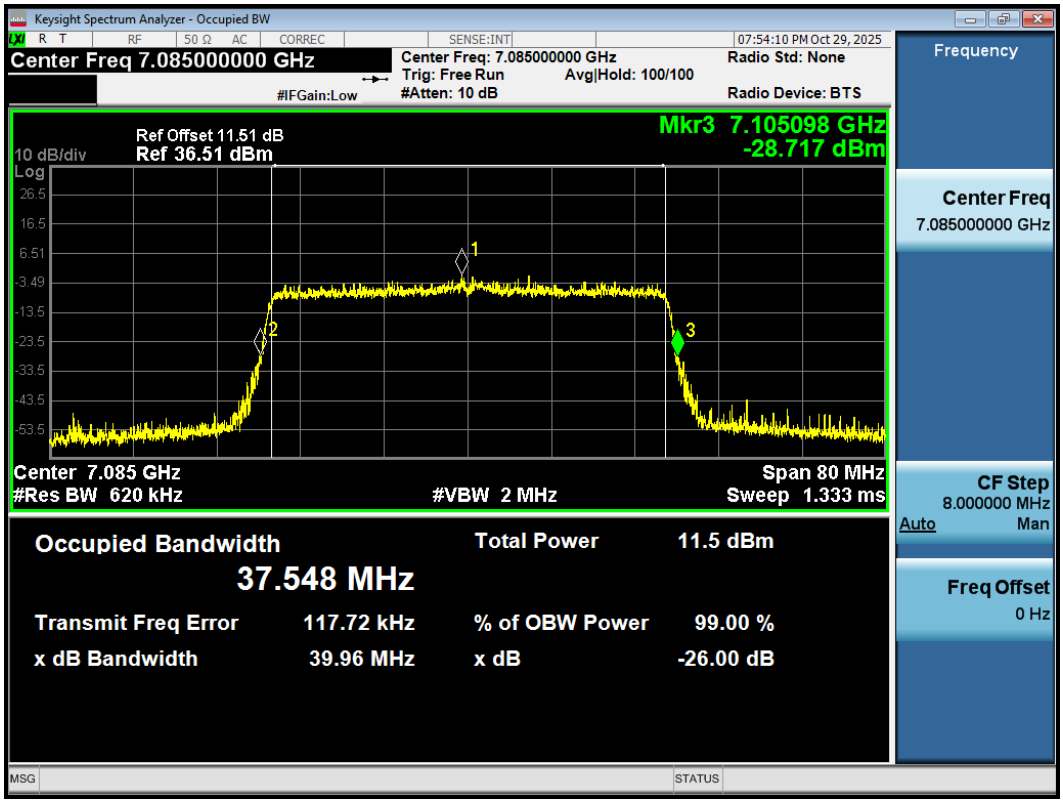
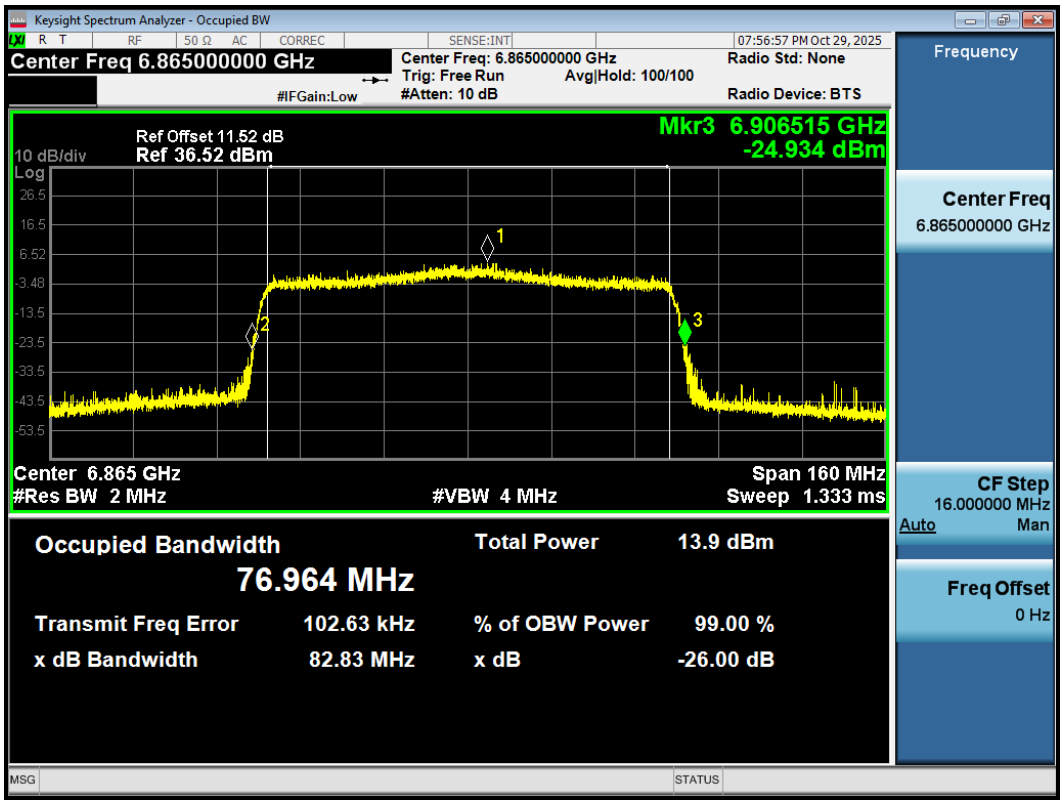
-26dB Bandwidth ax40 7085MHz



-26dB Bandwidth ax80 6865MHz



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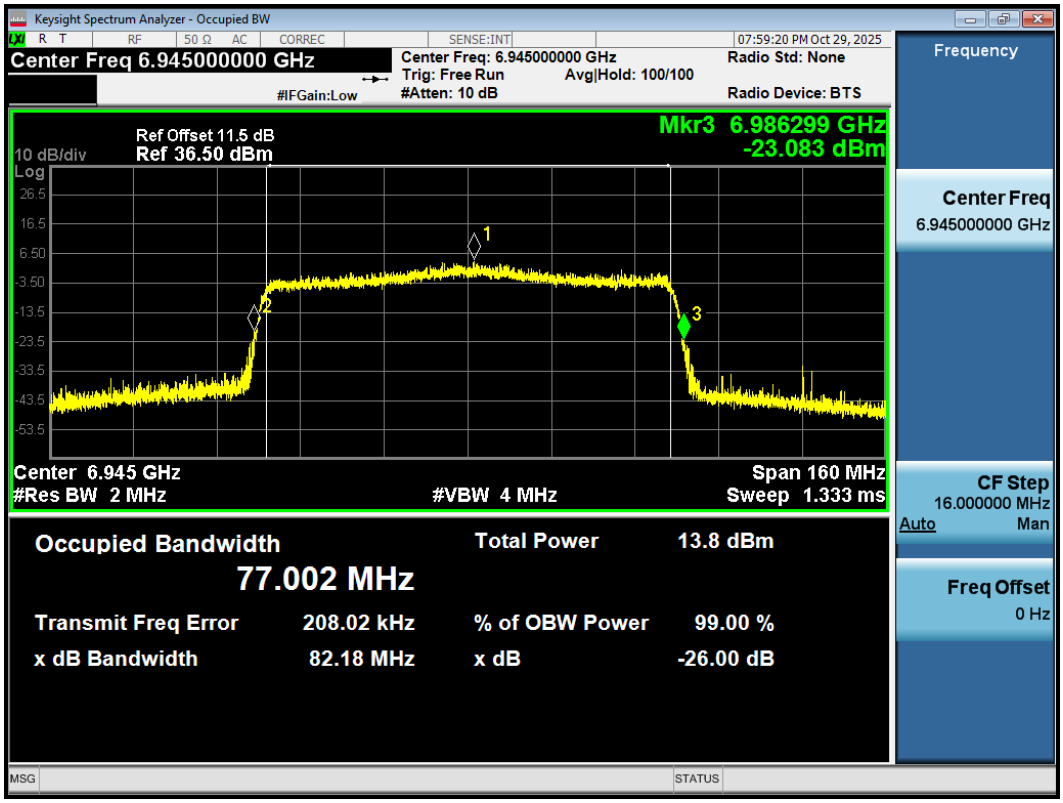
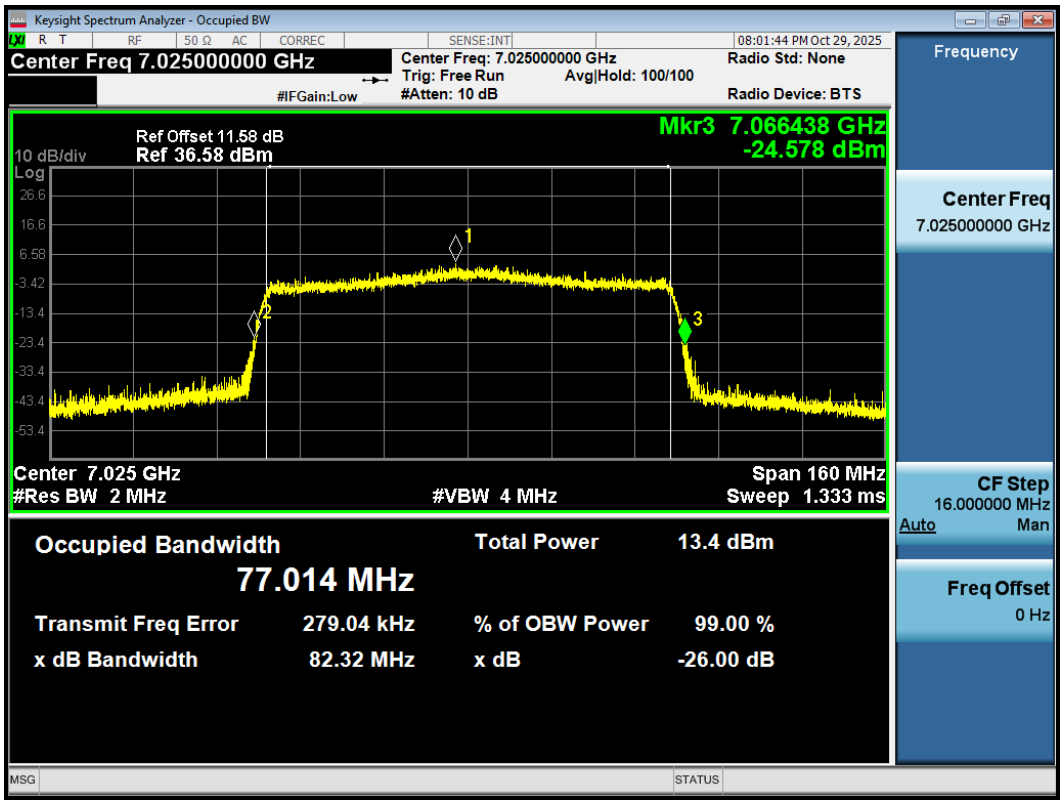
-26dB Bandwidth ax80 6945MHz



-26dB Bandwidth ax80 7025MHz



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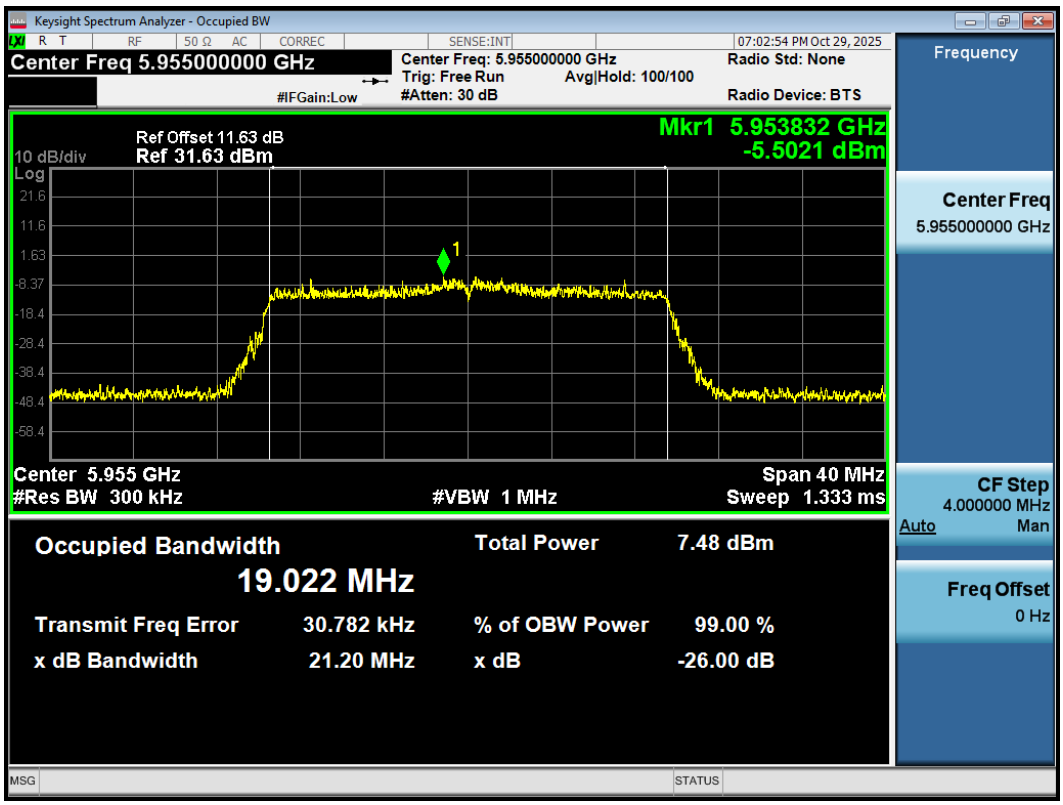
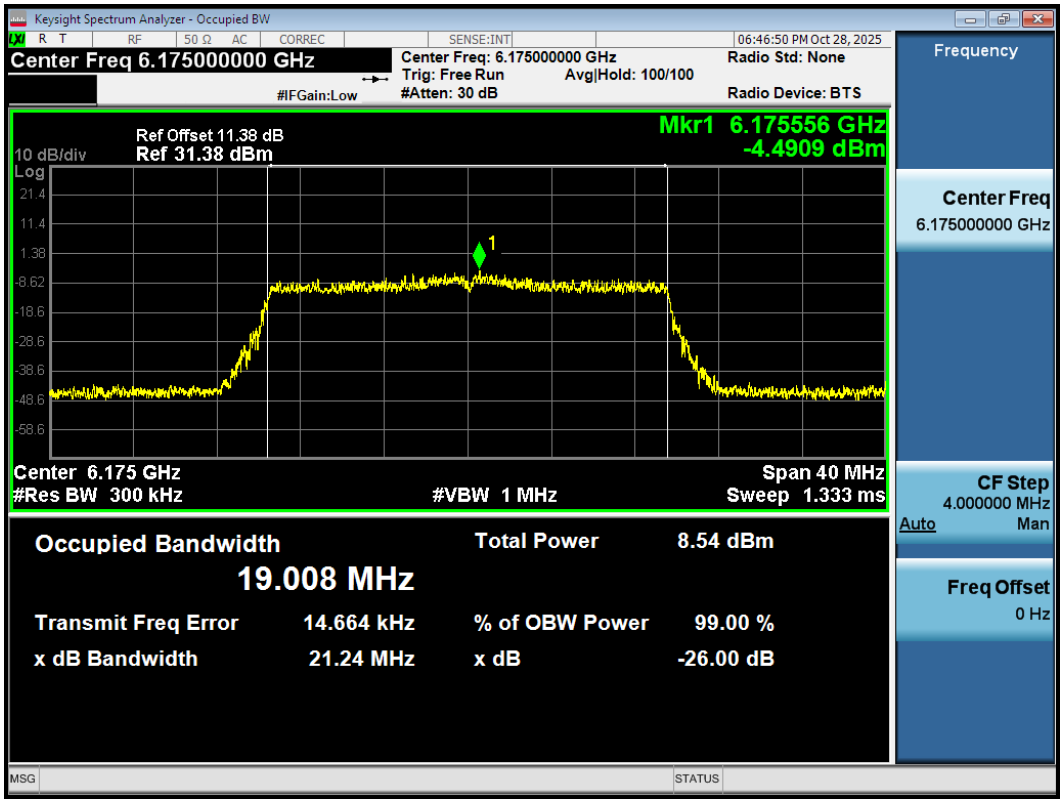
99% bandwidth

U-NII-5

OBW ax20 5955MHz



OBW ax20 6175MHz



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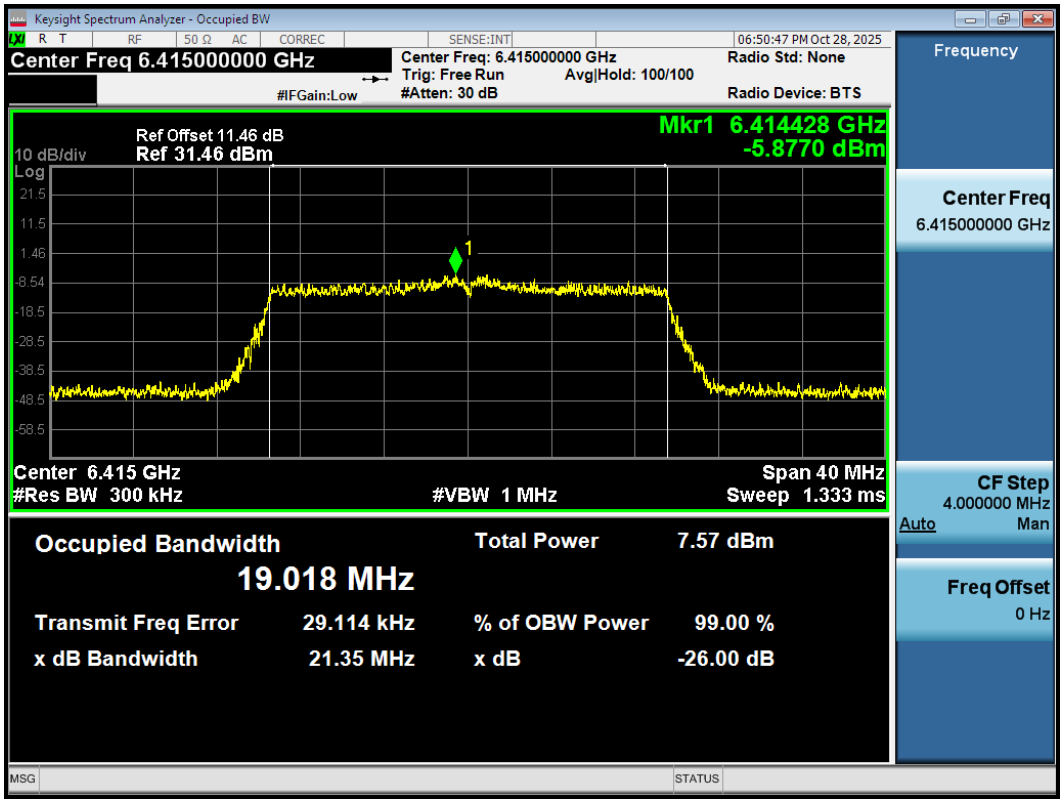
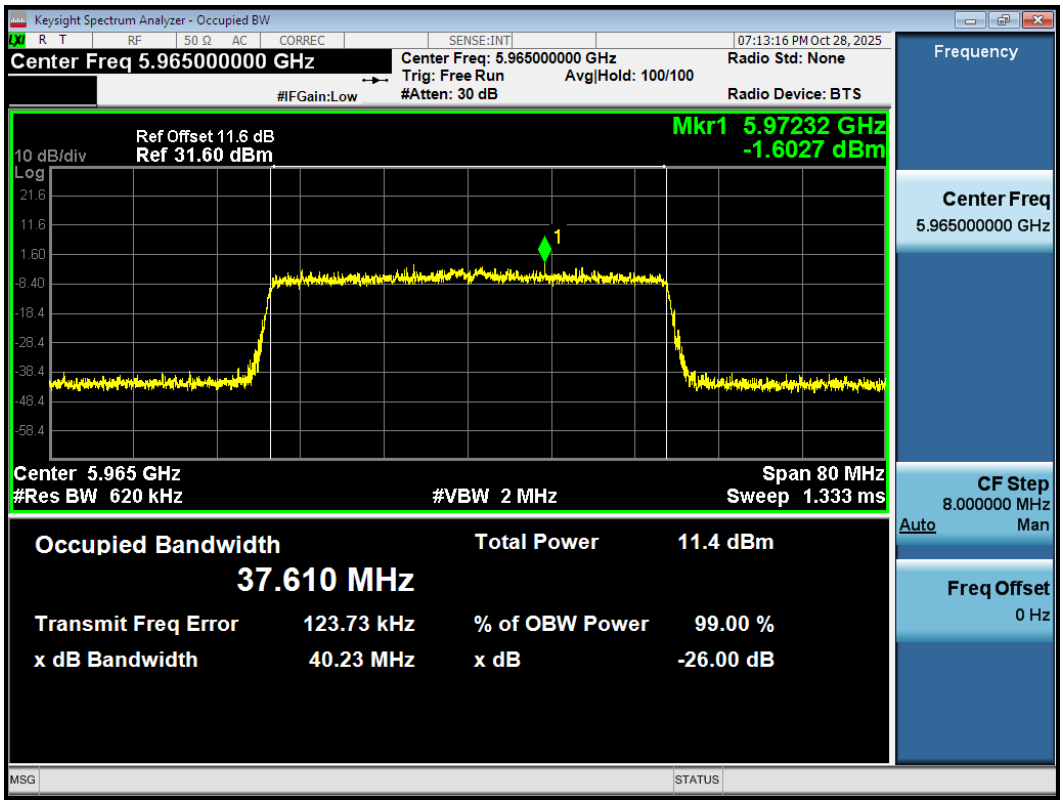
OBW ax20 6415MHz



OBW ax40 5965MHz



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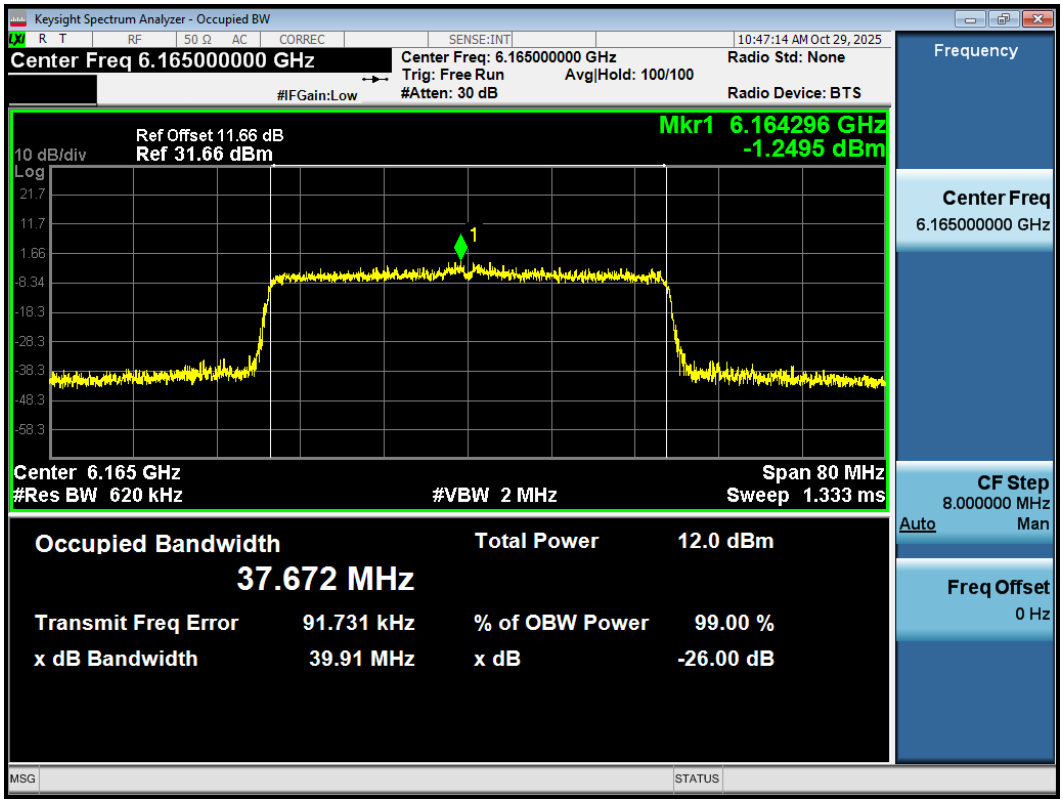
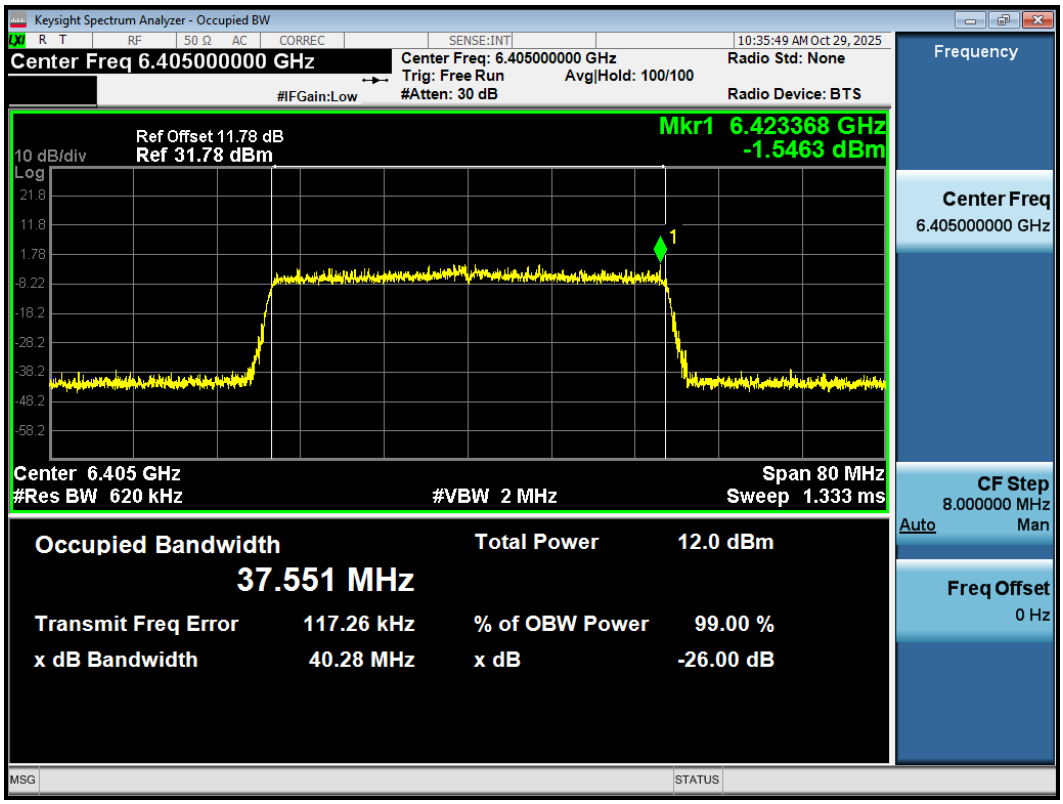
OBW ax40 6165MHz



OBW ax40 6405MHz



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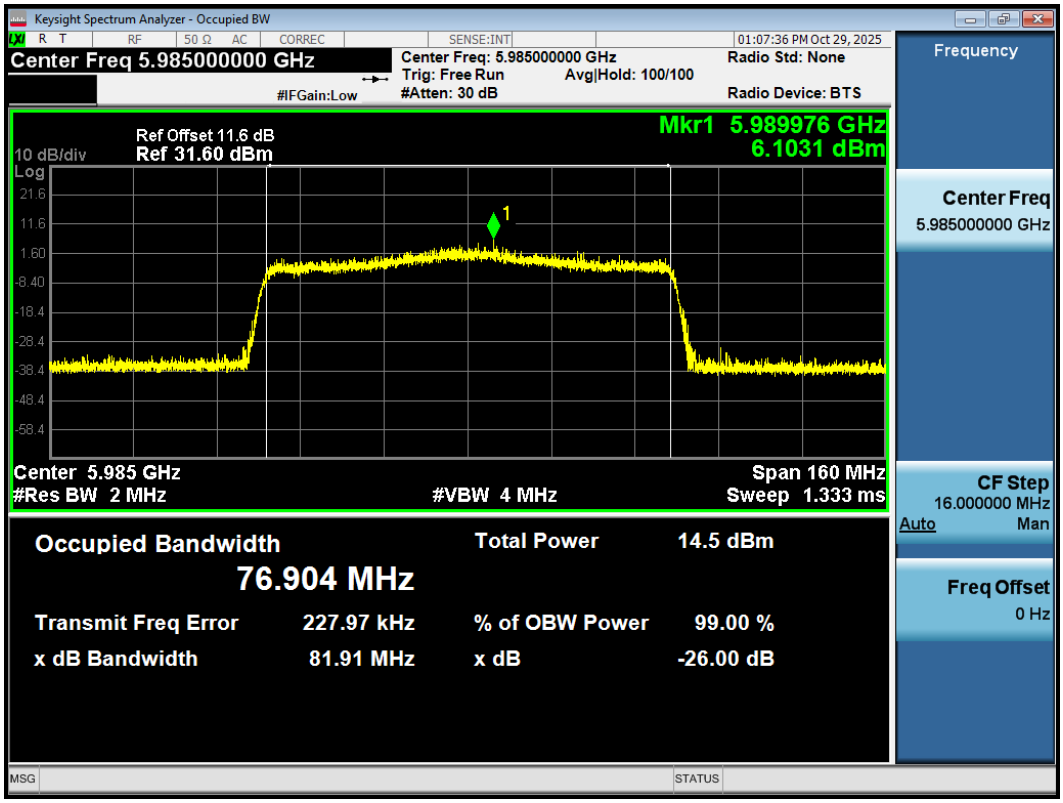
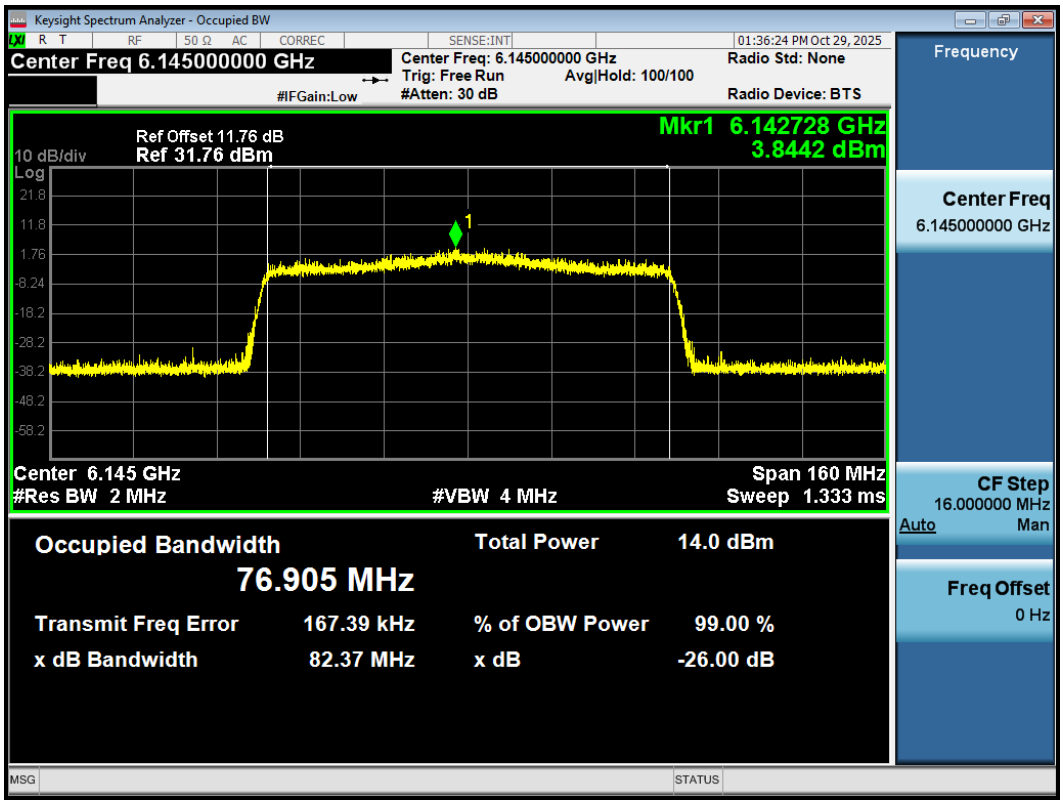
OBW ax80 5985MHz



OBW ax80 6145MHz



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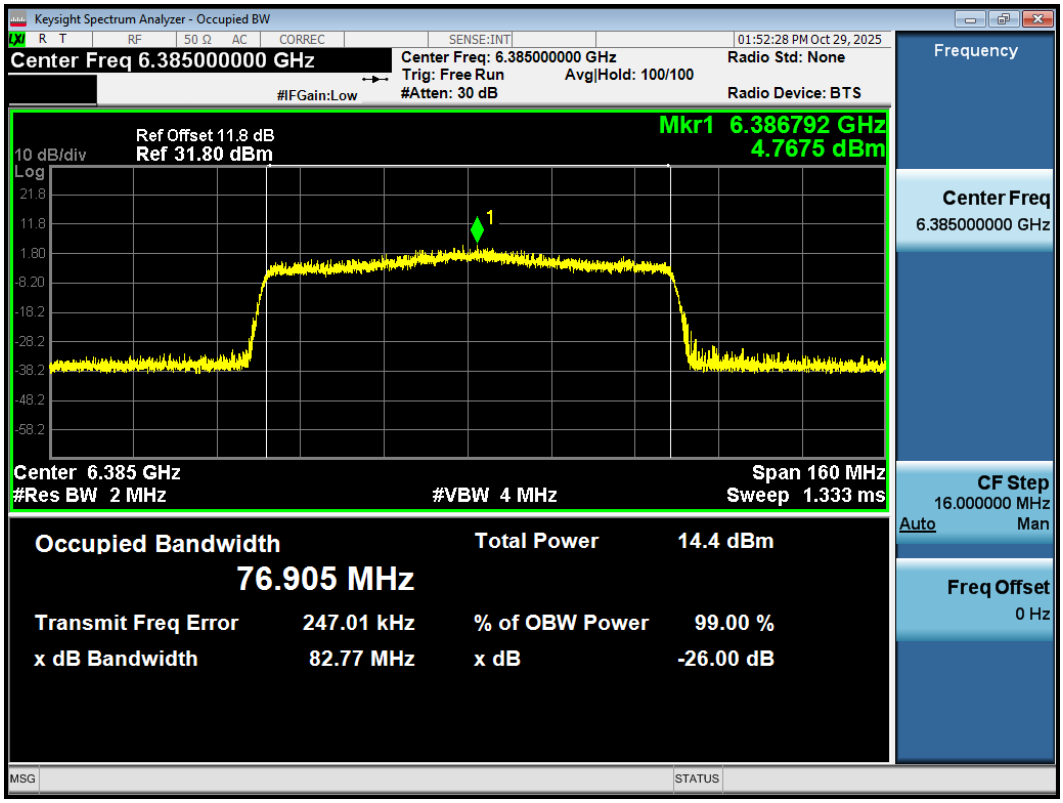
OBW ax80 6385MHz



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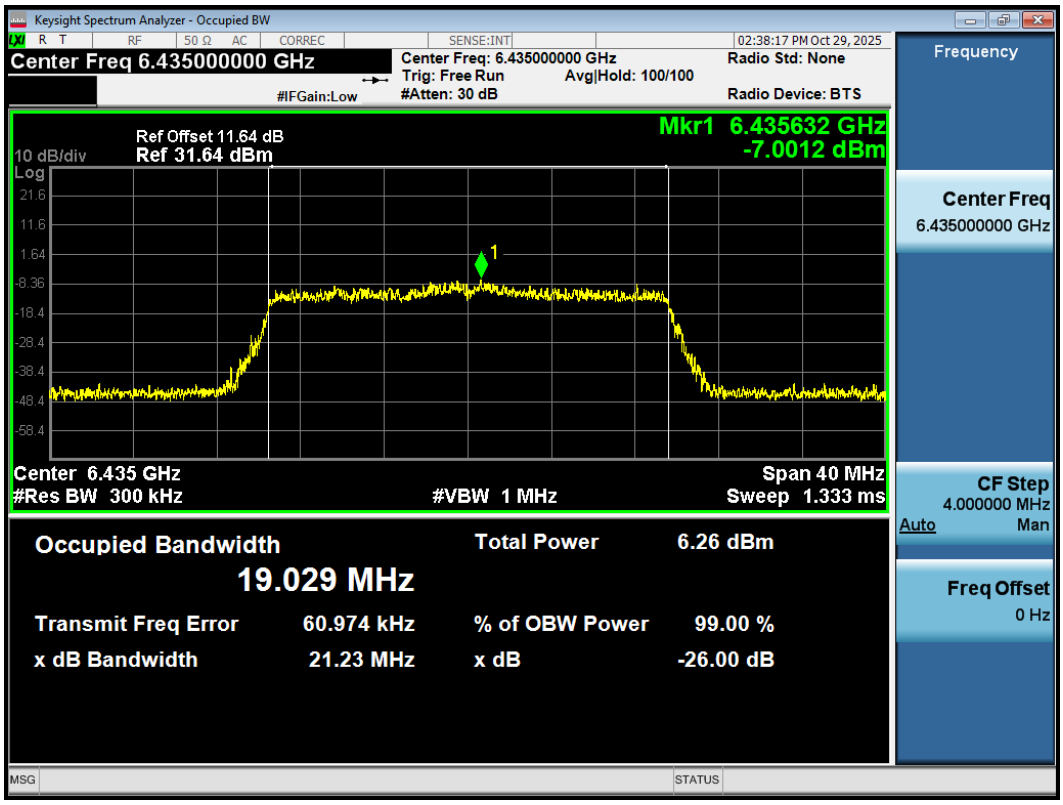
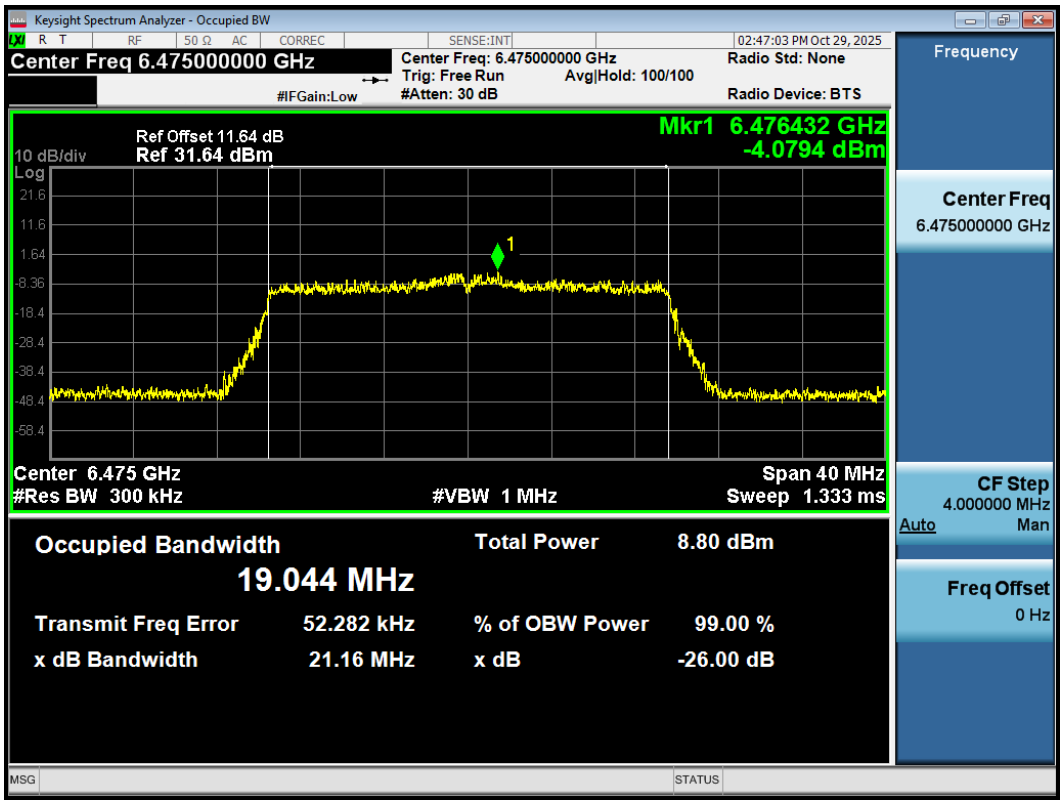
U-NII-6

OBW ax20 6435MHz



OBW ax20 6475MHz



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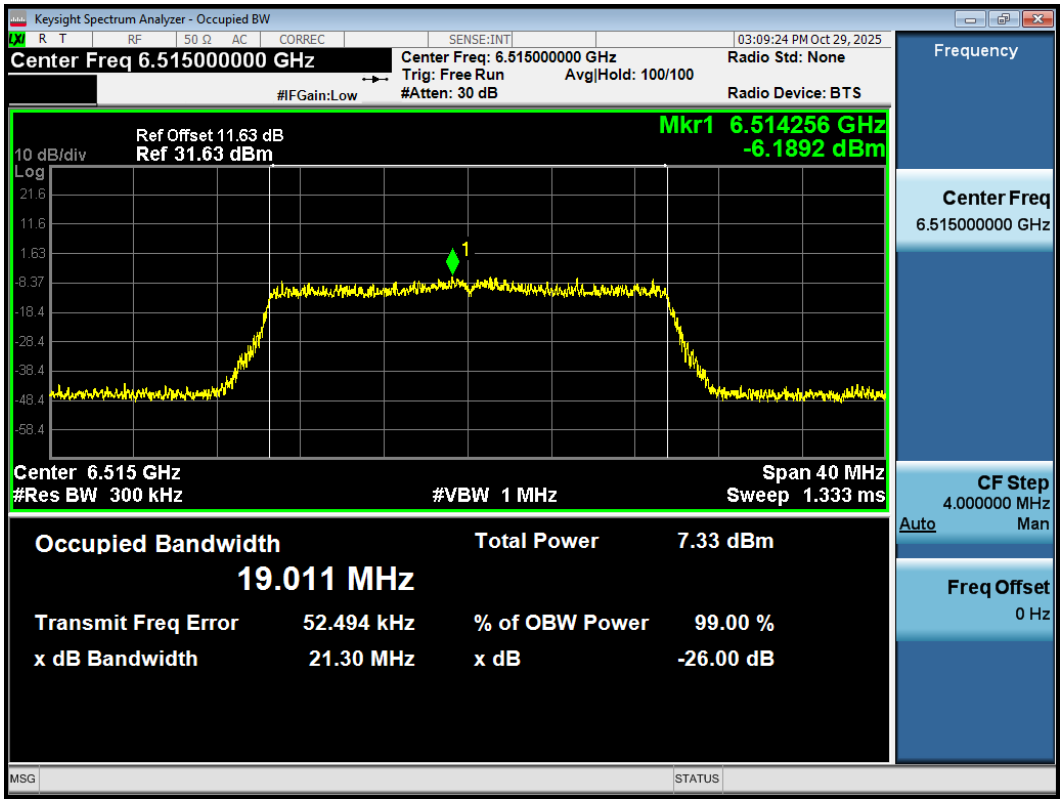
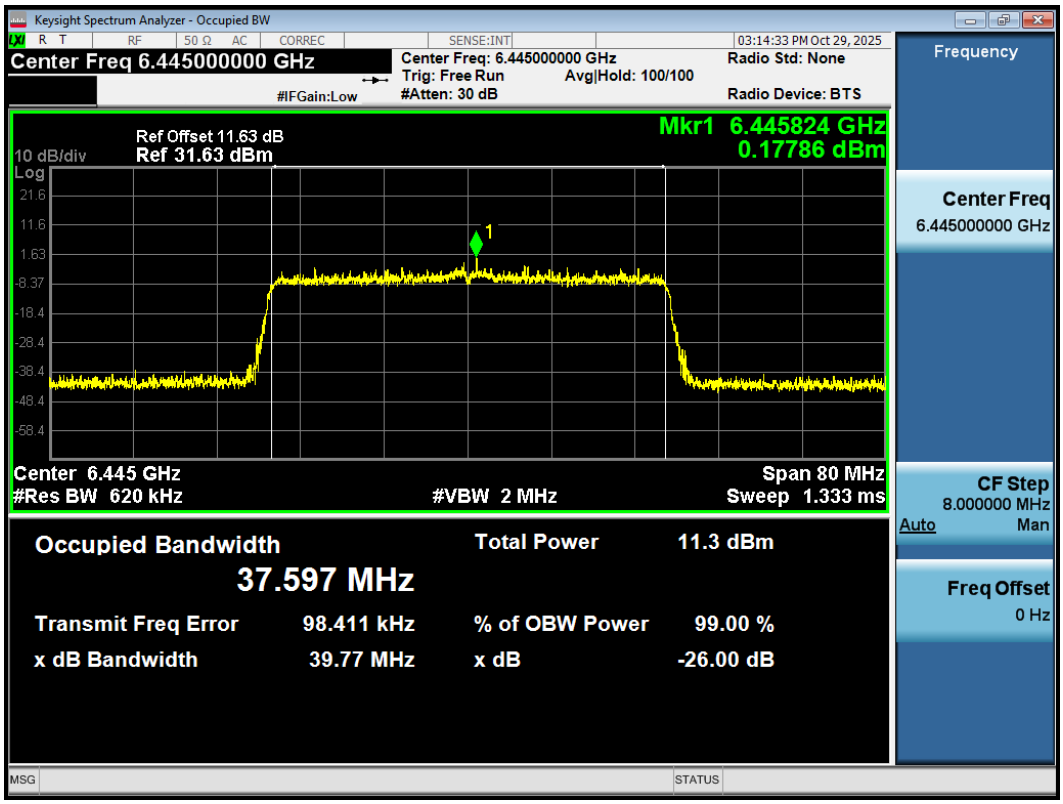
OBW ax20 6515MHz



OBW ax40 6445MHz



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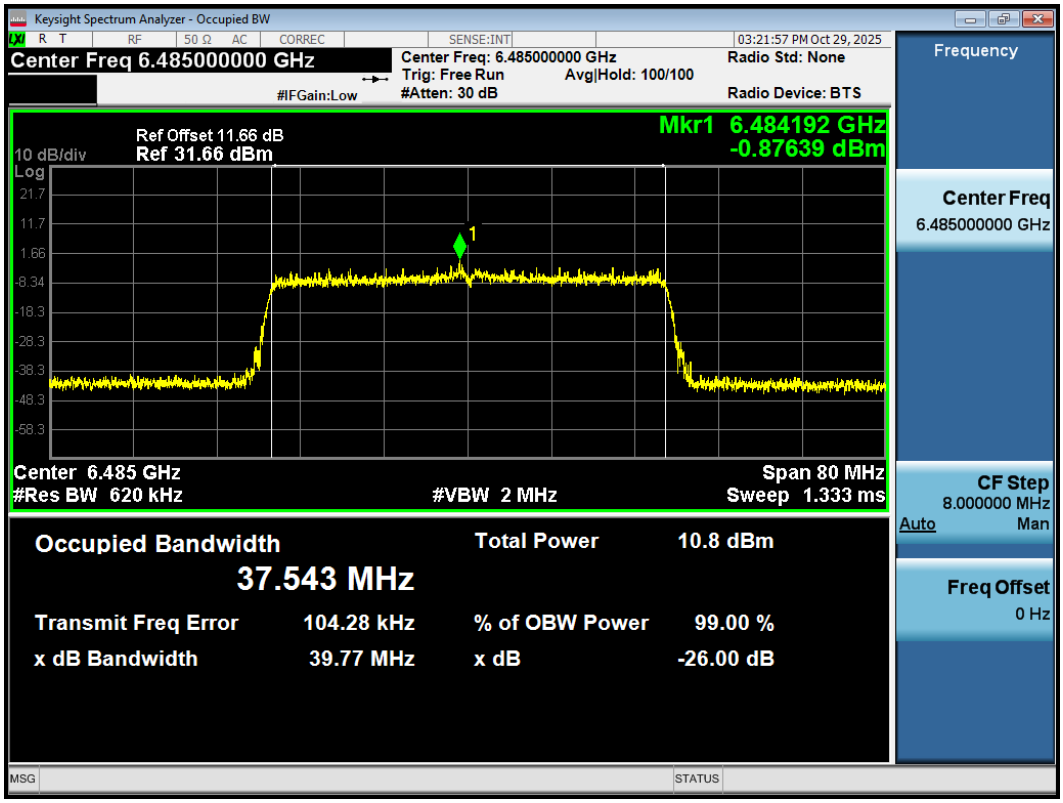
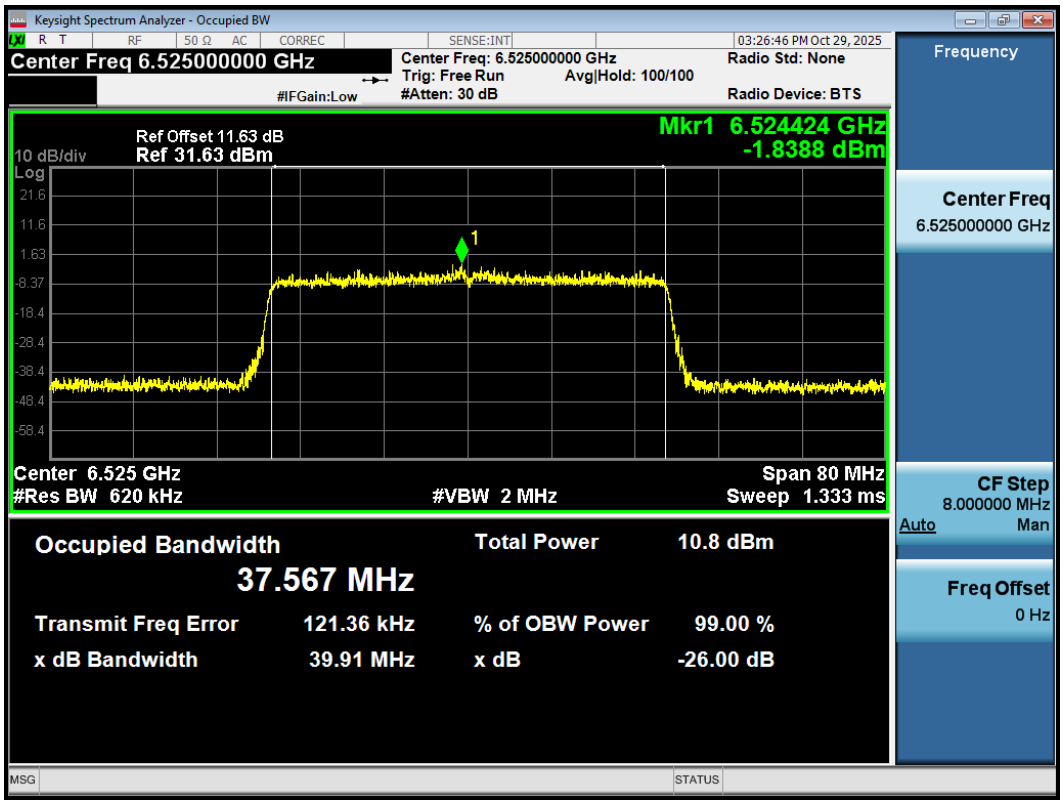
OBW ax40 6485MHz



OBW ax40 6525MHz



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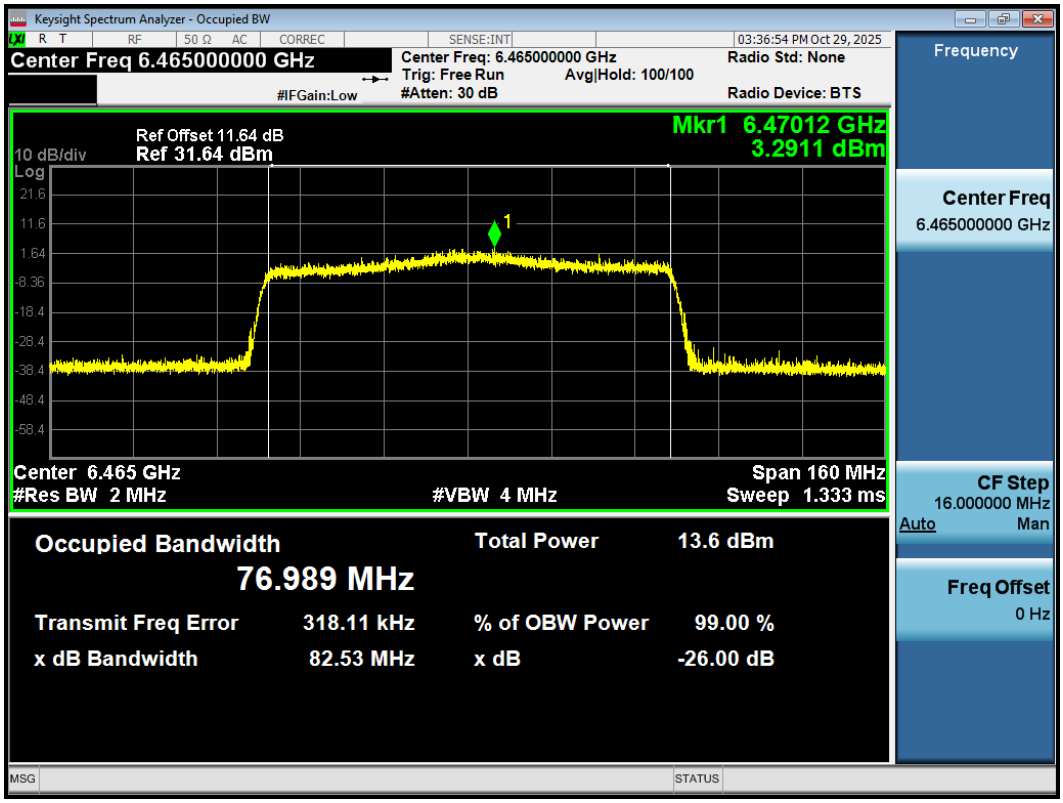
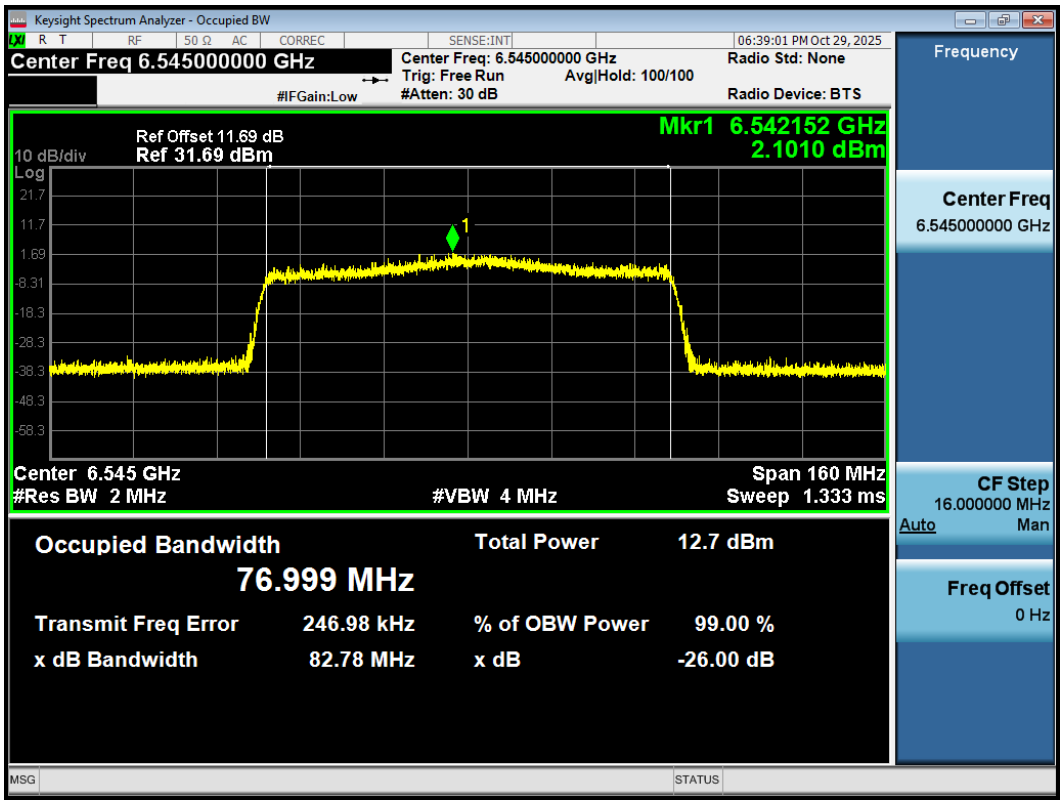
OBW ax80 6465MHz



OBW ax80 6545MHz



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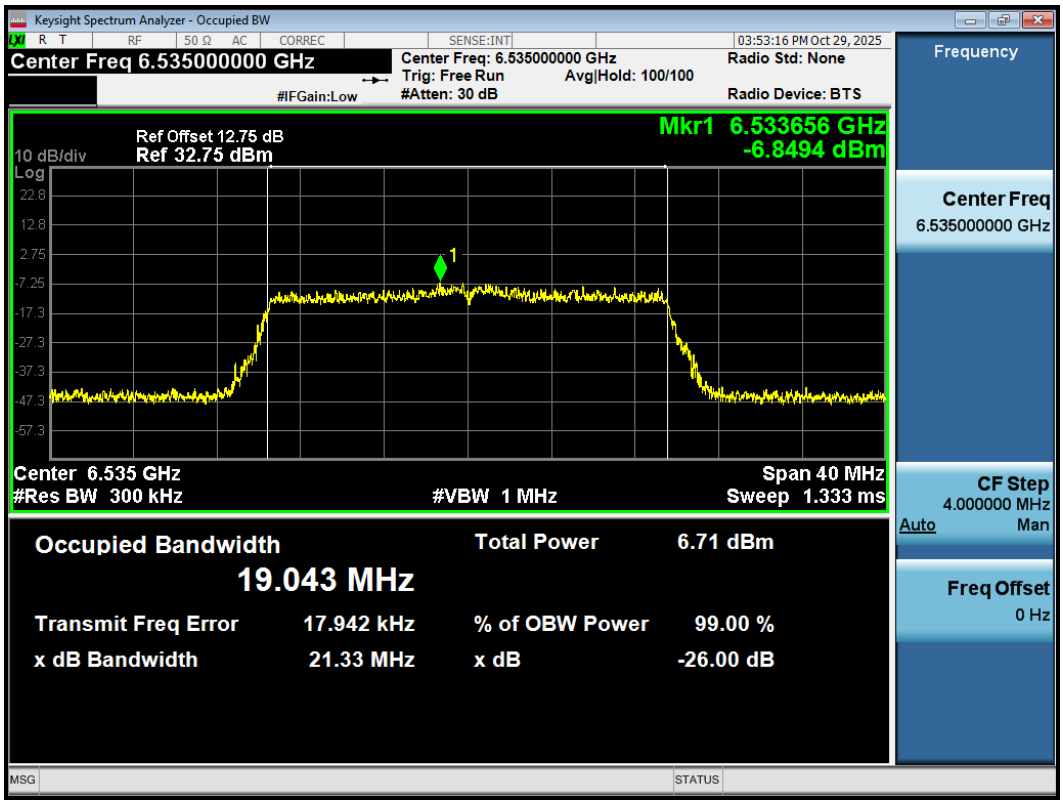
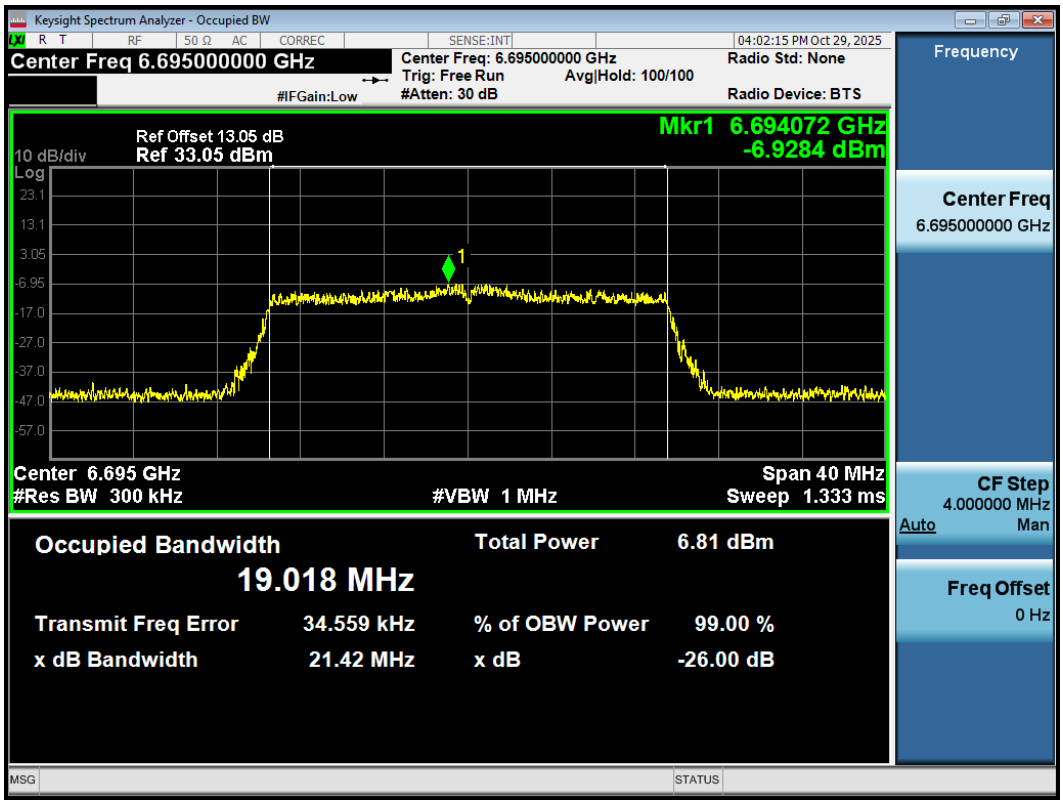
U-NII-7

OBW ax20 6535MHz



OBW ax20 6695MHz



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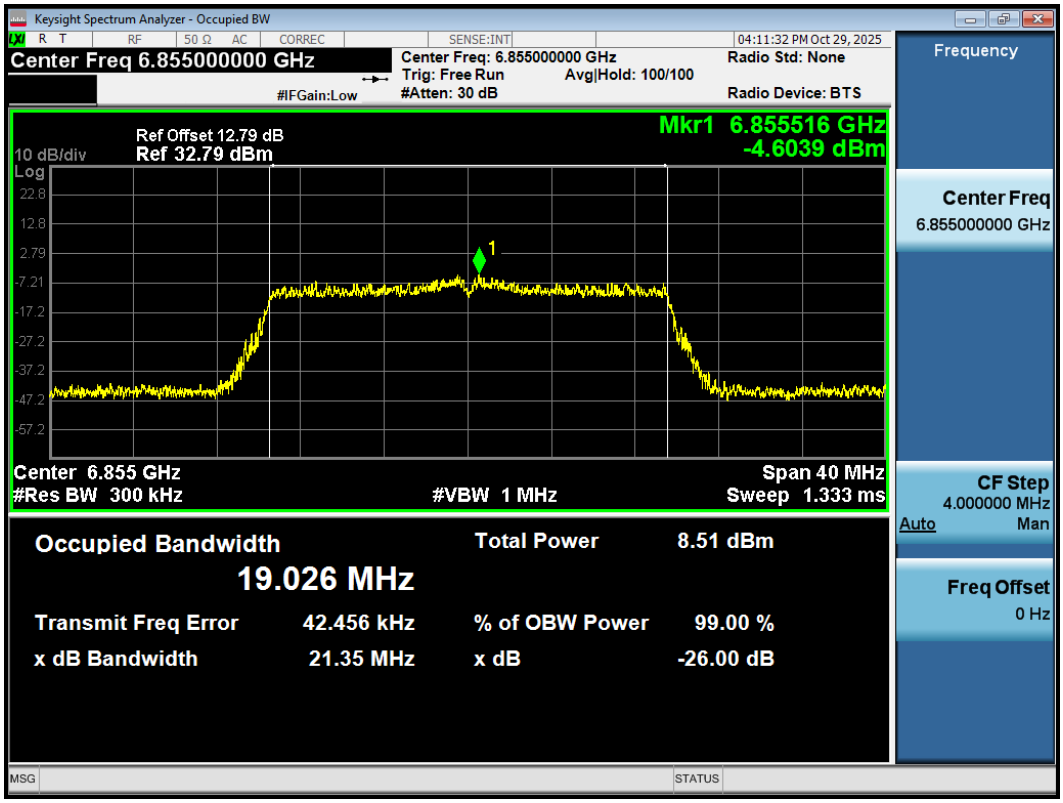
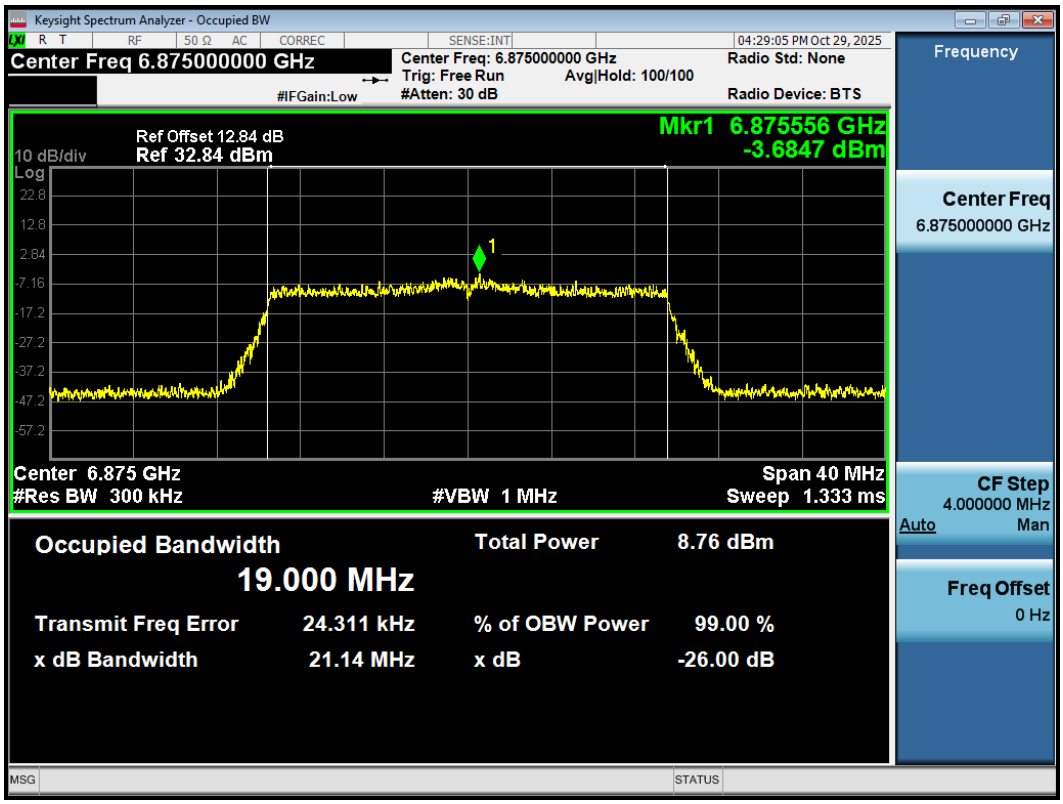
OBW ax20 6855MHz



OBW ax20 6875MHz



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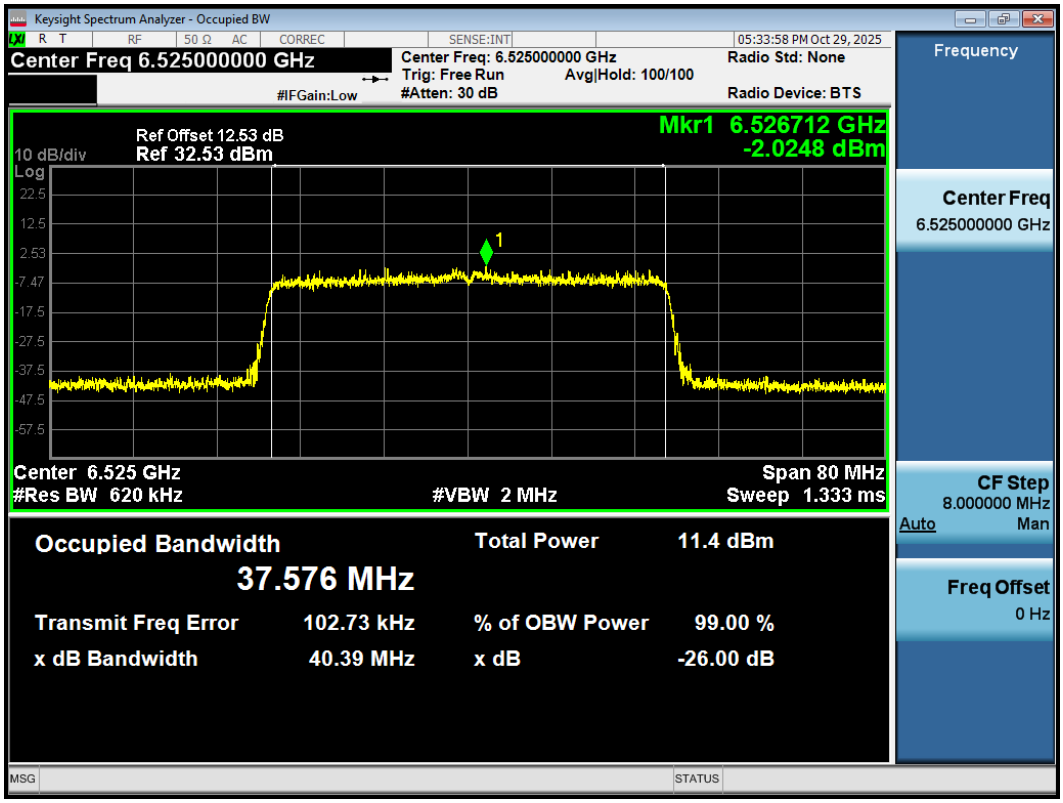
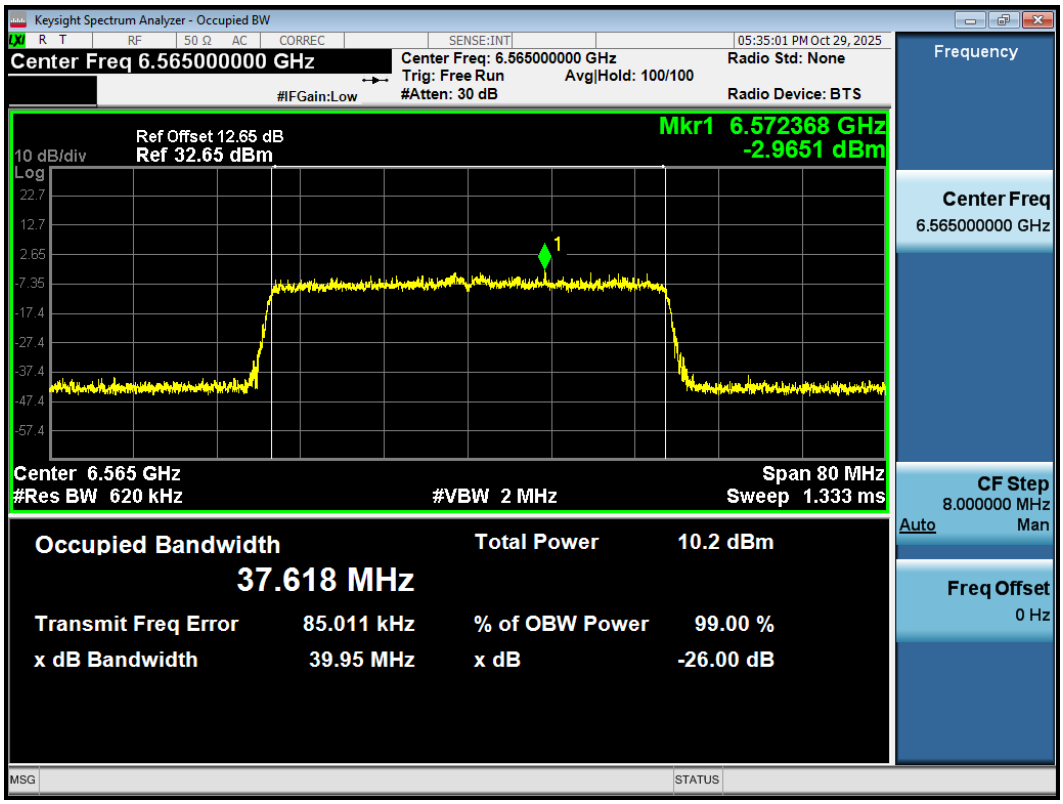
OBW ax40 6525MHz



OBW ax40 6565MHz



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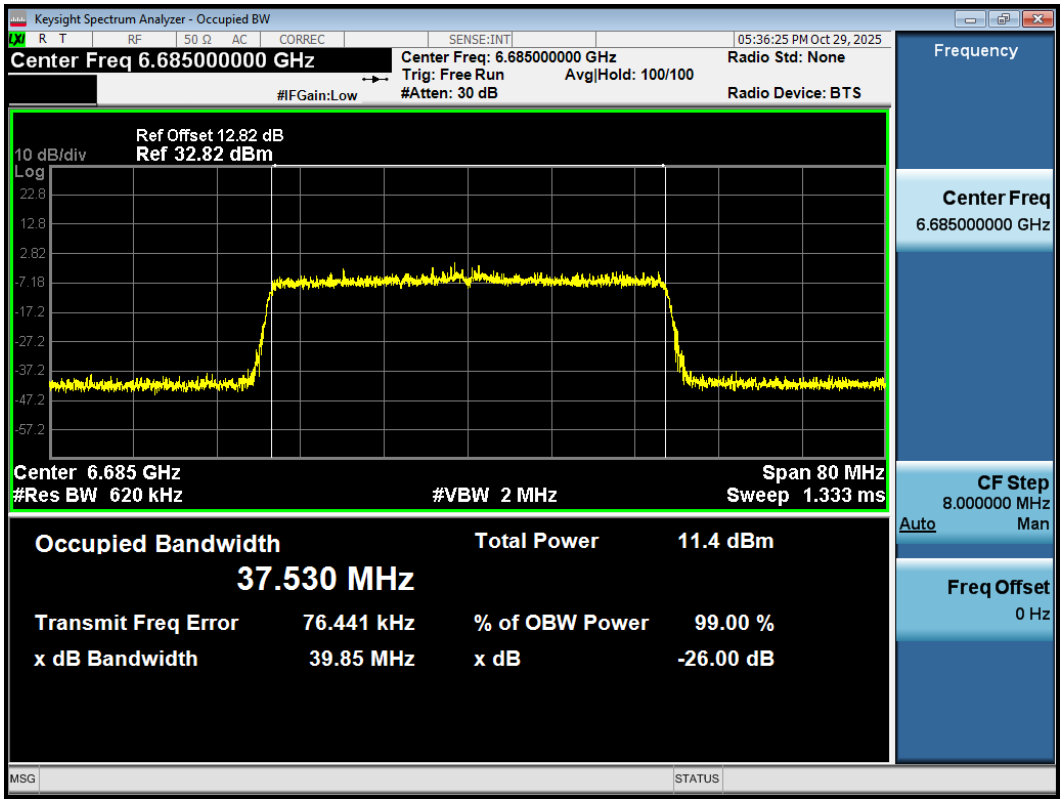
OBW ax40 6685MHz



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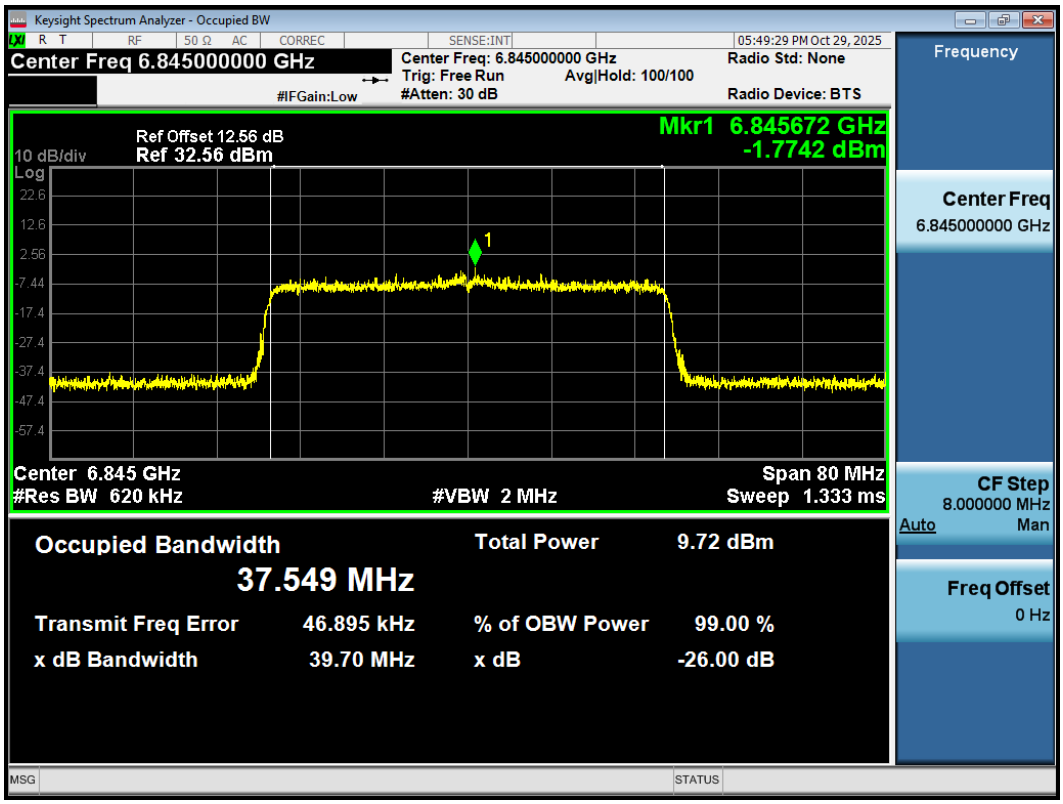

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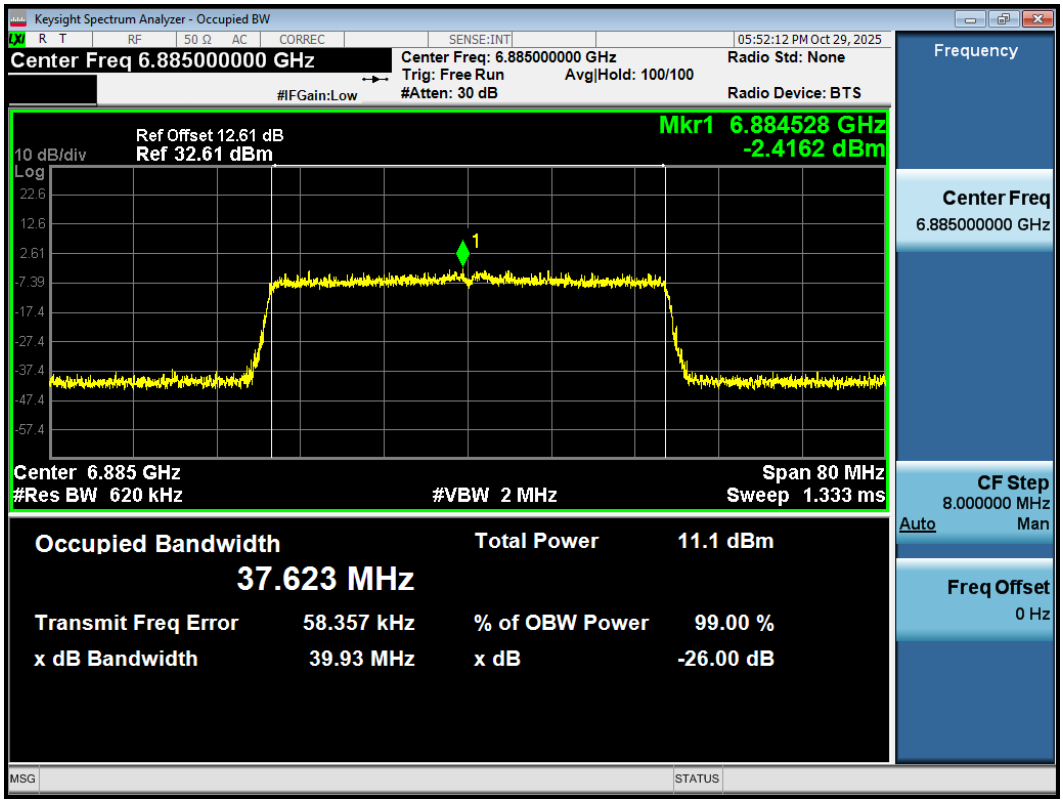
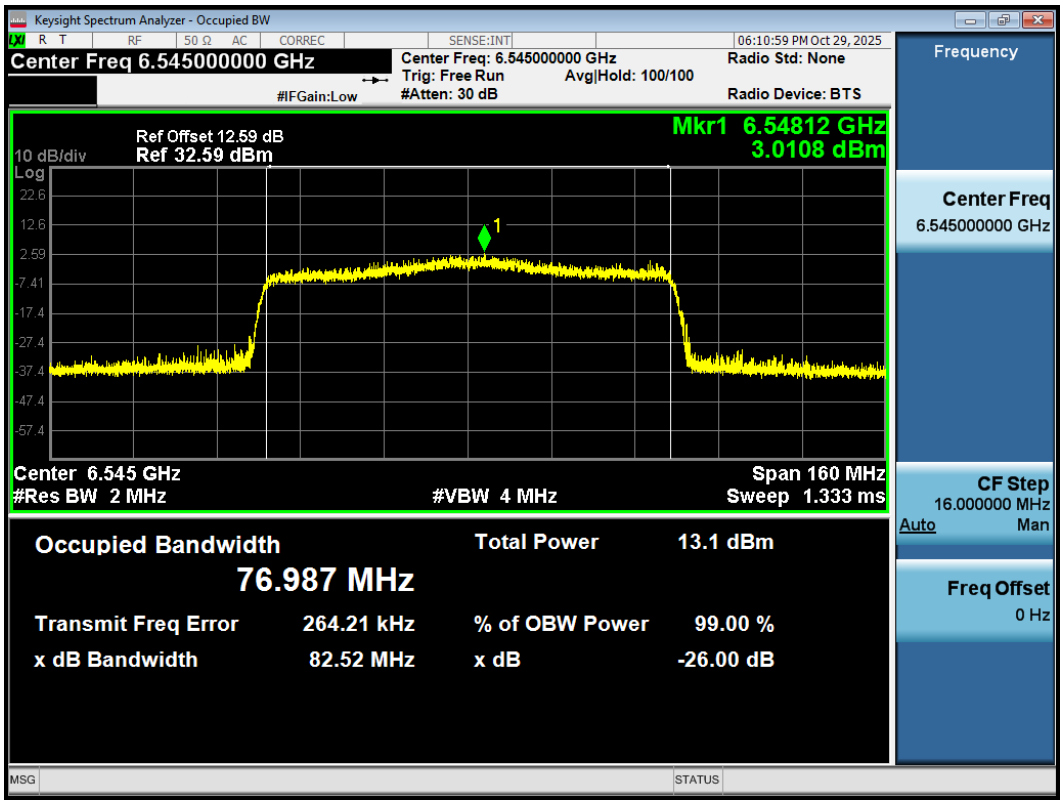
OBW ax40 6885MHz



OBW ax80 6545MHz



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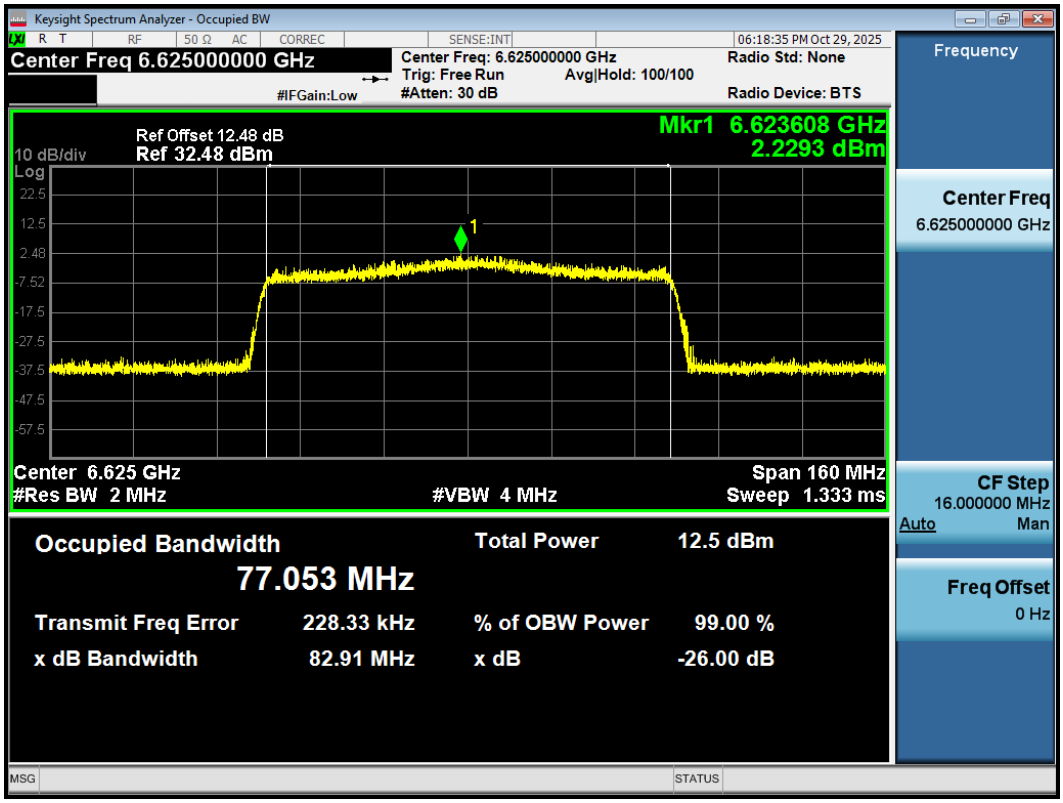
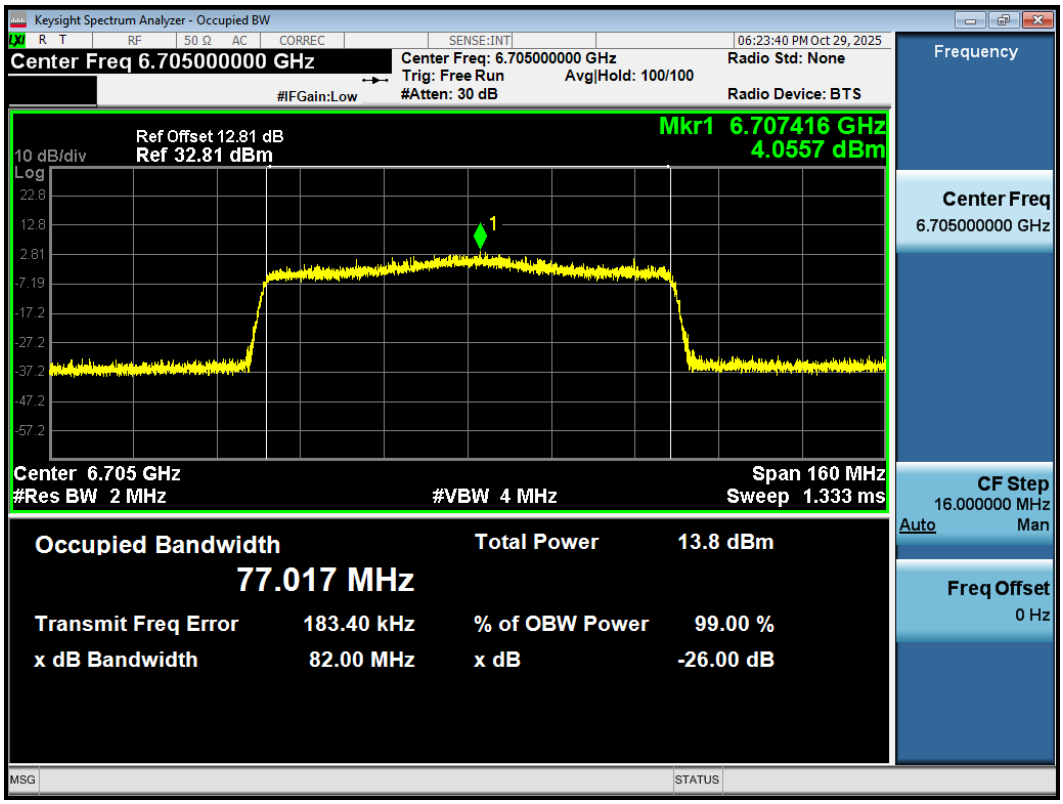
OBW ax80 6625MHz



OBW ax80 6705MHz



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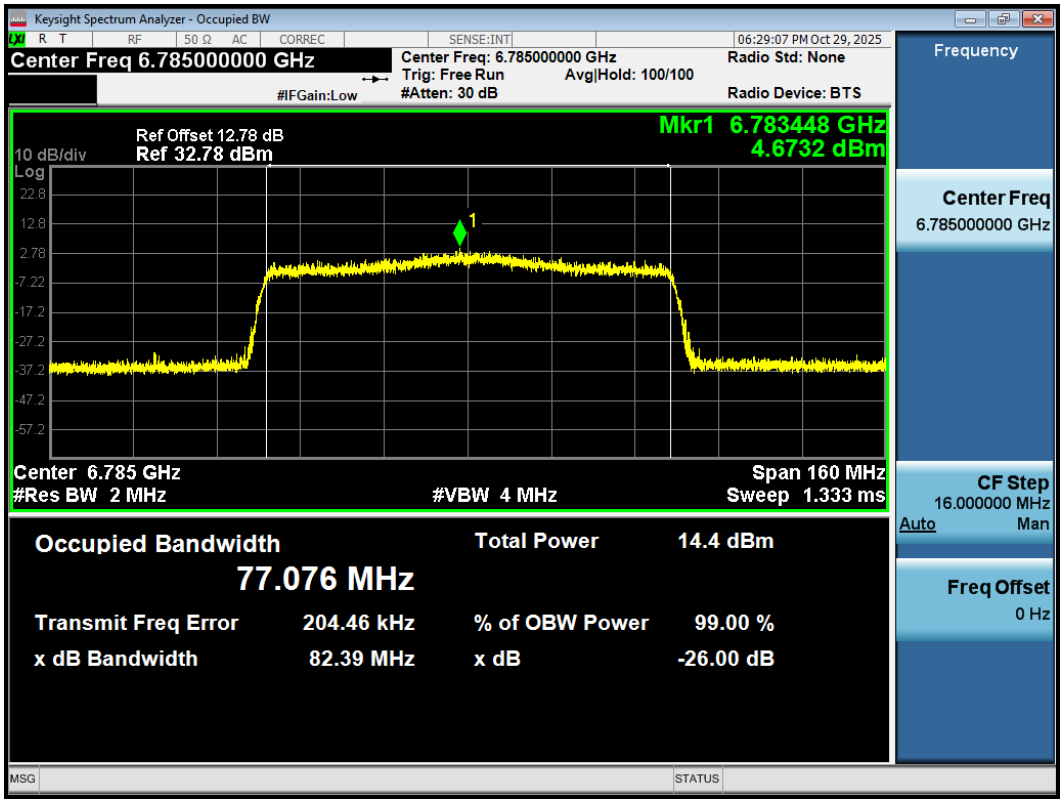
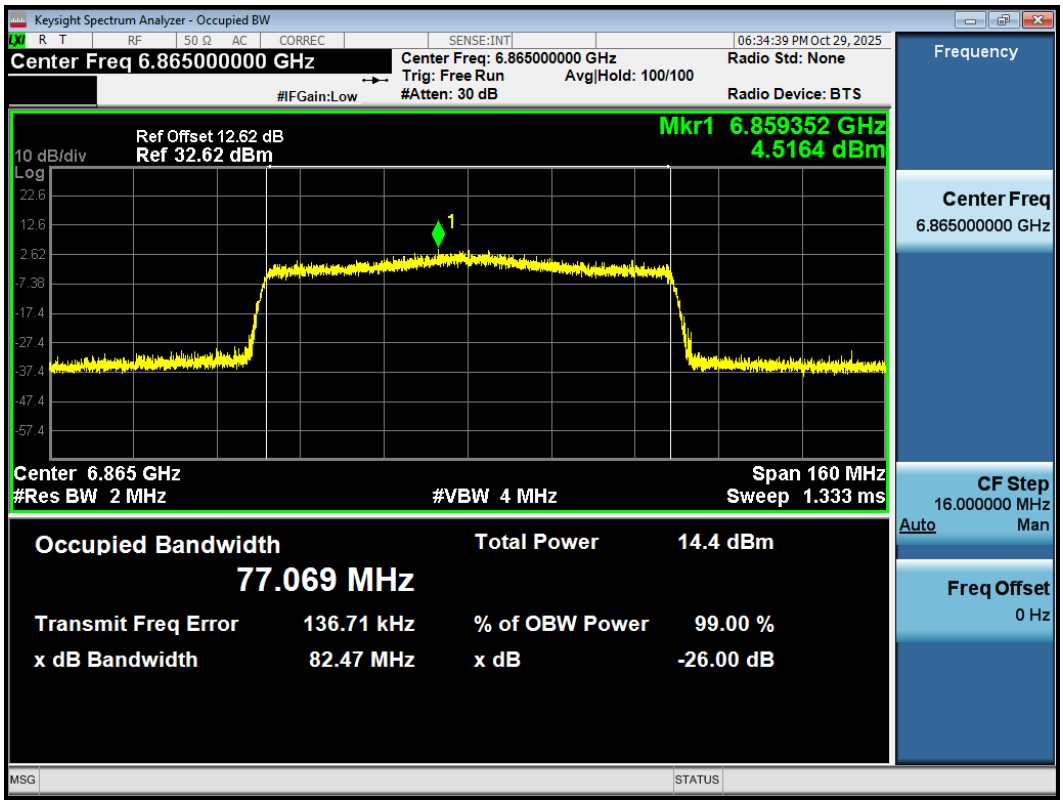
OBW ax80 6785MHz



OBW ax80 6865MHz



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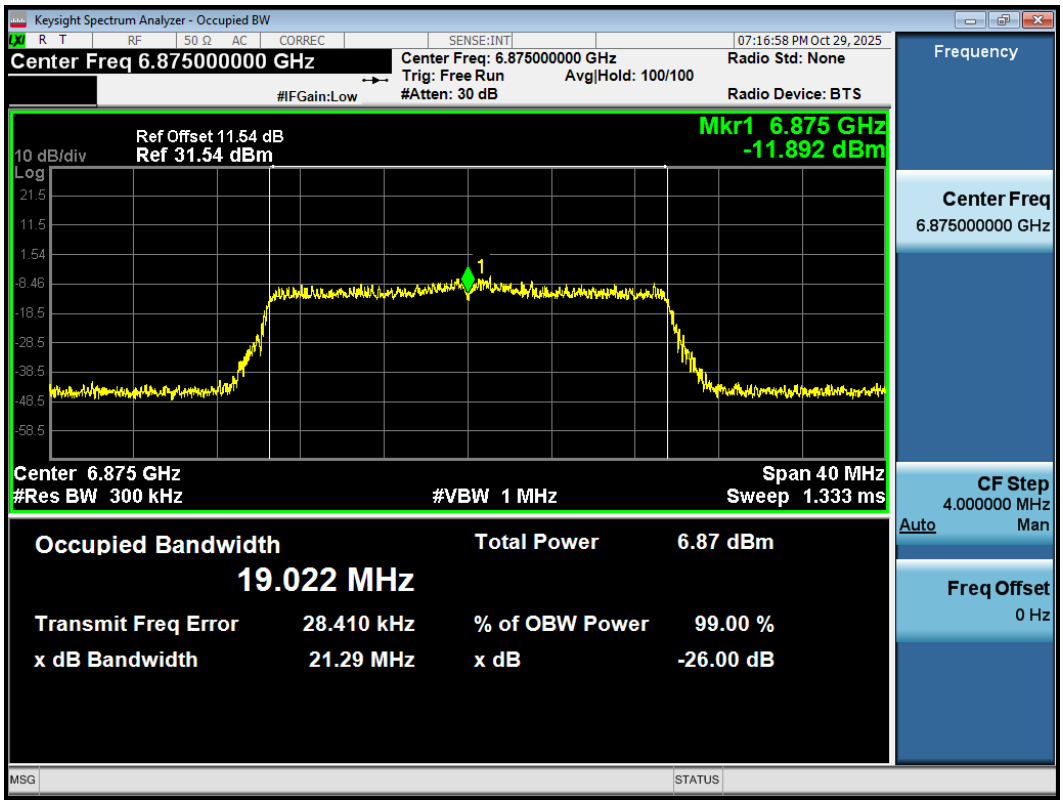
U-NII-8

OBW ax20 6875MHz



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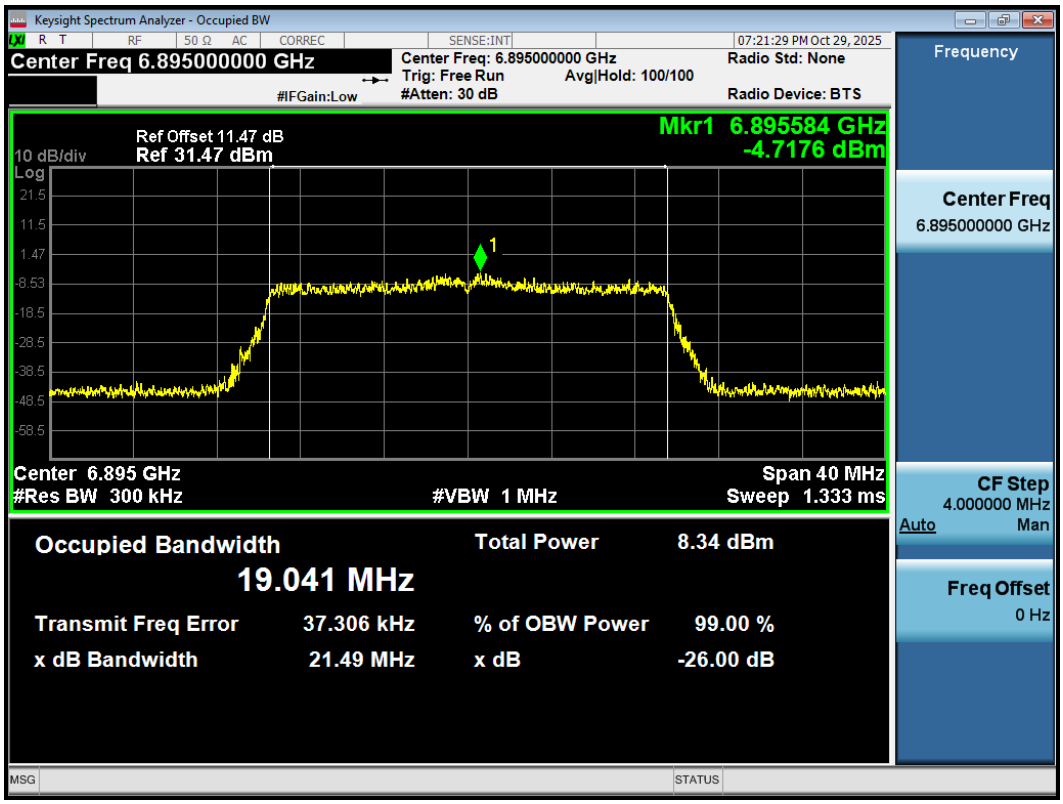

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