RF TEST REPORT

Applicant	Play For Dream (Shanghai) Technologies Co., Ltd.
FCC ID	2BMM9-MRD3B01
Product	DREAM BOX
Brand	PLAY FOR DREAM
Model	D3-B
Report No.	R2411A1739-R1
Issue Date	January 10, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2024)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying *Approved by: Xu Kai*

Eurofins TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
TEL: +86-021-50791141/2/3
FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	Maximum output power	15.247(b)(3)	PASS
2	99% Bandwidth and 6dB Bandwidth	15.247(a)(2) C63.10 6.9	PASS
3	Power spectral density	15.247(e)	PASS
4	Band Edge	15.247(d)	PASS
5	Spurious RF Conducted Emissions	15.247(d)	PASS
6	Unwanted Emissions	15.247(d), 15.205, 15.209	PASS
7	Conducted Emissions	15.207	PASS
Date of Testing: December 9, 2024 ~ December 28, 2024 Date of Sample Received: December 6, 2024			
Note: 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.			

1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

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 measurements.

A2LA (Certificate Number: 3857.01)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform 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
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	https://www.eurofins.com/electrical-and-electronics
E-mail:	Kain.Xu@cpt.eurofinscn.com

2. General Description of Equipment Under Test

2.1. Applicant and Manufacturer Information

Applicant	Play For Dream (Shanghai) Technologies Co., Ltd.
Applicant address	Room 501, Building No 3, Caosong Road No.1, Xinqiao Town, Songjiang District, Shanghai City, China
Manufacturer	Play For Dream (Shanghai) Technologies Co., Ltd.
Manufacturer address	Room 501, Building No 3, Caosong Road No.1, Xinqiao Town, Songjiang District, Shanghai City, China

2.2. General Information

EUT Description		
Model	D3-B	
Lab internal SN	R2411A1739/S01	
Hardware Version	V3.0	
Software Version	V2.0.22	
Power Supply	AC adapter	
Antenna Type	Internal Antenna	
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)	
Antenna Gain	Wi-Fi 2.4GHz	Antenna 1: 2.80 dBi Antenna 2: 1.78 dBi
	Bluetooth LE	2.80 dBi
Additional Beamforming Gain	NA	
Direction Gain	Power: 2.80 dBi PSD: 5.81 dBi	
Operating Frequency Range(s)	802.11b/g/n(HT20)/ax(HE20): 2412 ~ 2462 MHz 802.11n(HT40)/ax(HE40): 2422 ~ 2452 MHz Bluetooth LE V5.2: 2402 ~2480 MHz	
Modulation Type	802.11b: DSSS 802.11g/n: OFDM 802.11ax: OFDMA Bluetooth LE: GFSK	
Max. Output Power	Wi-Fi 2.4GHz: 21.73 dBm Bluetooth LE: 7.56 dBm	
EUT Accessory		
Data Cable	Manufacturer: Guangdong Pinsheng Electronics Co., LTD 1000±30mm Cable	

HDMI Cable	Manufacturer: Shenzhen Zhishang Technology Co., LTD 1000mm Cable
Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.	

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 15C (2024) Radio Frequency Devices

ANSI C63.10-2013

Reference standard:

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

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.

The radiated 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 lie-down position (X axis) and the loop antenna is vertical, the others are vertical and horizontal. and the worst case was recorded.

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.

Test Mode	Data Rate
Bluetooth(Low Energy)	1Mbps; 2Mbps
Bluetooth (Low Energy) (S=2)	500kbps
Bluetooth (Low Energy) (S=8)	125kbps

Test Mode	Data Rate		
	Antenna 1	Antenna 2	MIMO
802.11b	1 Mbps	1 Mbps	1 Mbps
802.11g	6 Mbps	6 Mbps	6 Mbps
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ax HE20	MCS0	MCS0	MCS0
802.11ax HE40	MCS0	MCS0	MCS0

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

Test Cases	Antenna 1	Antenna 2	MIMO
Maximum output power	O	O	O
6dB Bandwidth	--	--	O
Band Edge	--	--	O
Power Spectral Density	O	O	O
Spurious RF Conducted Emissions	--	--	O
Unwanted Emissions	--	--	O
Conducted Emission	--	--	O
Note: “O”: test all bands			

TB Mode

Test Cases	Antenna 1	Antenna 2	MIMO
Maximum output power	O	O	O
6dB Bandwidth	--	--	O
Band Edge	--	--	O
Power Spectral Density	O	O	O
Spurious RF Conducted Emissions	--	--	O
Unwanted Emissions	--	--	O
Conducted Emission	--	--	O
Note: “O”: test all bands			

5. Test Case Results

5.1. Maximum output power

Ambient Condition

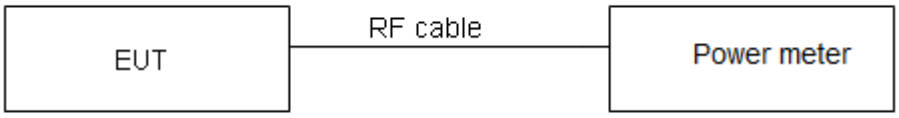
Temperature	Relative humidity
15°C ~ 35°C	20% ~ 80%

Methods of Measurement

During the process of the testing, The EUT was connected to Power meter with a known loss. The EUT is max power transmission with proper modulation.

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

Test Setup



Limits

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz: 1 Watt.”

Average Output Power	≤ 1W (30dBm)

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.

Test Results

Power Index					
Bluetooth (Low Energy)	Channel	1M	2M	S=2	S=8
	CH0	default	default	default	default
	CH19	default	default	default	default
	CH39	default	default	default	default

SISO Antenna Power Index								
Antenna	Channel	802.11b	802.11g	802.11n HT20	802.11ax HE20	Channel	802.11n HT40	802.11ax HE40
Antenna 1	CH1	18	18	18	18	CH3	17	17
	CH6	18	18	18	18	CH6	18	18
	CH11	18	18	18	17	CH9	15	15
Antenna 2	CH1	18	18	18	18	CH3	17	17
	CH6	18	18	18	18	CH6	18	18
	CH11	18	18	18	17	CH9	15	15

MIMO Antenna Power Index								
Antenna	Channel	802.11b	802.11g	802.11n HT20	802.11ax HE20	Channel	802.11n HT40	802.11ax HE40
Antenna 1	CH1	18	18	18	18	CH3	17	17
	CH6	18	18	18	18	CH6	18	18
	CH11	18	18	18	17	CH9	15	15
Antenna 2	CH1	18	18	18	18	CH3	17	17
	CH6	18	18	18	18	CH6	18	18
	CH11	18	18	18	17	CH9	15	15

TB Mode

Network Standards	Carrier frequency (MHz)	RU Index	Power Index			
			SISO Antenna 1	SISO Antenna 2	MIMO Antenna 1	MIMO Antenna 2
802.11ax HE20 26-Tones	2412	0	18	18	18	18
	2437	4	18	18	18	18
	2462	8	17	17	17	17
802.11ax HE20 52-Tones	2412	37	18	18	18	18
	2437	38	18	18	18	18
	2462	40	17	17	17	17
802.11ax HE20 106-Tones	2412	53	18	18	18	18
	2437	53	18	18	18	18
	2462	54	17	17	17	17
802.11ax HE20 242-Tones	2412	61	18	18	18	18
	2437	61	18	18	18	18
	2462	61	17	17	17	17
802.11ax HE40 26-Tones	2422	0	17	17	17	17
	2452	17	15	15	15	15
802.11ax HE40 484-Tones	2422	65	17	17	17	17

Test Mode	Duty cycle	Duty cycle correction Factor (dB)
Bluetooth LE (1M)	0.626	2.03
Bluetooth LE (2M)	0.329	4.82
Bluetooth LE (S=2)	0.570	2.44
Bluetooth LE (S=8)	0.828	0.82
802.11b	0.99	0.00
802.11g	1.00	0.00
802.11n HT20	1.00	0.00
802.11n HT40	1.00	0.00
802.11ax HE20	1.00	0.00
802.11ax HE40	1.00	0.00
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.		

TB Mode

Test Mode	Duty cycle	Duty cycle correction Factor(dB)
802.11ax HE20 26-Tones:RU Index 0	0.997	0.00
802.11ax HE20 26-Tones:RU Index 4	0.997	0.00
802.11ax HE20 26-Tones:RU Index 8	0.997	0.00
02.11ax HE20 52-Tones:RU Index 37	0.997	0.00
802.11ax HE20 52-Tones:RU Index 38	0.997	0.00
802.11ax HE20 52-Tones:RU Index 40	0.997	0.00
02.11ax HE20 106-Tones:RU Index 53	0.997	0.00
02.11ax HE20 106-Tones:RU Index 54	0.996	0.00
02.11ax HE20 242-Tones:RU Index 61	0.997	0.00
02.11ax HE40 26-Tones:RU Index 0	0.997	0.00
02.11ax HE40 26-Tones:RU Index 17	0.999	0.00
02.11ax HE40 484-Tones:RU Index 65	0.999	0.00

Test Mode	Carrier frequency (MHz)/ Channel	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
Bluetooth (Low Energy) (1M)	2402/CH0	4.06	6.09	30	PASS
	2440/CH19	5.38	7.41	30	PASS
	2480/CH39	5.13	7.16	30	PASS
Bluetooth (Low Energy) (2M)	2402/CH0	1.24	6.06	30	PASS
	2440/CH19	2.74	7.56	30	PASS
	2480/CH39	2.33	7.15	30	PASS
Bluetooth (Low Energy) (S=2)	2402/CH0	3.64	6.08	30	PASS
	2440/CH19	5.07	7.51	30	PASS
	2480/CH39	4.88	7.32	30	PASS
Bluetooth (Low Energy) (S=8)	2402/CH0	5.22	6.04	30	PASS
	2440/CH19	6.73	7.55	30	PASS
	2480/CH39	6.37	7.19	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 1

Test Mode	Carrier frequency (MHz)/ Channel	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11b	2412/CH 1	18.40	18.40	30	PASS
	2437/CH 6	18.36	18.36	30	PASS
	2462/CH11	18.04	18.04	30	PASS
802.11g	2412/CH 1	18.31	18.31	30	PASS
	2437/CH 6	18.29	18.29	30	PASS
	2462/CH11	18.21	18.21	30	PASS
802.11n HT20	2412/CH 1	18.45	18.45	30	PASS
	2437/CH 6	18.48	18.48	30	PASS
	2462/CH11	18.00	18.00	30	PASS
802.11n HT40	2422/CH3	17.17	17.17	30	PASS
	2437/CH6	18.62	18.62	30	PASS
	2452/CH9	14.92	14.92	30	PASS
802.11ax HE20	2412/CH 1	18.78	18.78	30	PASS
	2437/CH 6	18.52	18.52	30	PASS
	2462/CH11	16.82	16.82	30	PASS
802.11ax HE40	2422/CH3	16.99	16.99	30	PASS
	2437/CH6	18.32	18.32	30	PASS
	2452/CH9	14.61	14.61	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 2

Test Mode	Carrier frequency (MHz)/ Channel	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11b	2412/CH 1	18.60	18.60	30	PASS
	2437/CH 6	18.49	18.49	30	PASS
	2462/CH11	18.33	18.33	30	PASS
802.11g	2412/CH 1	18.55	18.55	30	PASS
	2437/CH 6	18.67	18.67	30	PASS
	2462/CH11	18.35	18.35	30	PASS
802.11n HT20	2412/CH 1	18.32	18.32	30	PASS
	2437/CH 6	18.31	18.31	30	PASS
	2462/CH11	18.11	18.11	30	PASS
802.11n HT40	2422/CH3	17.39	17.39	30	PASS
	2437/CH6	18.50	18.50	30	PASS
	2452/CH9	14.95	14.95	30	PASS
802.11ax HE20	2412/CH 1	18.50	18.50	30	PASS
	2437/CH 6	18.57	18.57	30	PASS
	2462/CH11	17.10	17.10	30	PASS
802.11ax HE40	2422/CH3	17.21	17.21	30	PASS
	2437/CH6	18.42	18.42	30	PASS
	2452/CH9	14.89	14.89	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO

Test Mode	Carrier frequency (MHz) / Channel	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11b	2412/CH 1	18.31	18.31	18.02	18.02	21.18	30	PASS
	2437/CH 6	18.44	18.44	18.24	18.24	21.35	30	PASS
	2462/CH11	17.99	17.99	18.06	18.06	21.04	30	PASS
802.11g	2412/CH 1	18.65	18.65	18.47	18.47	21.57	30	PASS
	2437/CH 6	18.52	18.52	18.59	18.59	21.57	30	PASS
	2462/CH11	18.03	18.03	18.09	18.09	21.07	30	PASS
802.11n HT20	2412/CH 1	18.49	18.49	18.32	18.32	21.42	30	PASS
	2437/CH 6	18.21	18.21	18.28	18.28	21.26	30	PASS
	2462/CH11	17.88	17.88	17.98	17.98	20.94	30	PASS
802.11n HT40	2422/CH3	17.21	17.21	17.34	17.34	20.29	30	PASS
	2437/CH6	18.61	18.61	18.53	18.53	21.58	30	PASS
	2452/CH9	14.89	14.89	15.02	15.02	17.97	30	PASS
802.11ax HE20	2412/CH 1	18.87	18.87	18.56	18.56	21.73	30	PASS
	2437/CH 6	18.55	18.55	18.63	18.63	21.60	30	PASS
	2462/CH11	17.09	17.09	16.99	16.99	20.05	30	PASS
802.11ax HE40	2422/CH3	17.18	17.18	17.36	17.36	20.28	30	PASS
	2437/CH6	18.50	18.50	18.49	18.49	21.51	30	PASS
	2452/CH9	14.74	14.74	14.93	14.93	17.85	30	PASS

Note: 1. Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =2.80+0=2.80 dBi<6dBi. So the power limit is 30dBm

TB Mode

SISO Antenna 1

Test Mode	Carrier frequency (MHz)/ Channel	RU Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20 26-Tones	2412/CH 1	0	18.65	18.65	30	PASS
	2437/CH 6	4	18.14	18.14	30	PASS
	2462/CH11	8	16.27	16.27	30	PASS
802.11ax HE20 52-Tones	2412/CH 1	37	18.64	18.64	30	PASS
	2437/CH 6	38	18.23	18.23	30	PASS
	2462/CH11	40	16.25	16.25	30	PASS
802.11ax HE20 106-Tones	2412/CH 1	53	18.57	18.57	30	PASS
	2437/CH 6	53	18.61	18.61	30	PASS
	2462/CH11	54	16.28	16.28	30	PASS
802.11ax HE20 242-Tones	2412/CH 1	61	18.79	18.79	30	PASS
	2437/CH 6	61	18.48	18.48	30	PASS
	2462/CH11	61	16.59	16.59	30	PASS
802.11ax HE40 26-Tones	2422/CH3	0	16.87	16.87	30	PASS
	2452/CH9	17	14.14	14.14	30	PASS
802.11ax HE40 484-Tones	2422/CH3	65	17.06	17.06	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor						

SISO Antenna 2

Test Mode	Carrier frequency (MHz)/ Channel	RU Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20 26-Tones	2412/CH 1	0	17.95	17.95	30	PASS
	2437/CH 6	4	17.56	17.56	30	PASS
	2462/CH11	8	15.82	15.82	30	PASS
802.11ax HE20 52-Tones	2412/CH 1	37	17.88	17.88	30	PASS
	2437/CH 6	38	17.72	17.72	30	PASS
	2462/CH11	40	15.84	15.84	30	PASS
802.11ax HE20 106-Tones	2412/CH 1	53	17.76	17.76	30	PASS
	2437/CH 6	53	17.87	17.87	30	PASS
	2462/CH11	54	15.82	15.82	30	PASS
802.11ax HE20 242-Tones	2412/CH 1	61	18.21	18.21	30	PASS
	2437/CH 6	61	17.95	17.95	30	PASS
	2462/CH11	61	16.21	16.21	30	PASS
802.11ax HE40 26-Tones	2422/CH3	0	16.27	16.27	30	PASS
	2452/CH9	17	13.88	13.88	30	PASS
802.11ax HE40 484-Tones	2422/CH3	65	16.93	16.93	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor						

MIMO

Test Mode	Carrier frequency (MHz)	RU Index	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
			Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11ax HE20 26-Tones	2412/CH 1	0	18.43	18.43	17.40	17.40	20.95	30	PASS
	2437/CH 6	4	17.92	17.92	17.67	17.67	20.80	30	PASS
	2462/CH11	8	16.04	16.04	15.68	15.68	18.87	30	PASS
802.11ax HE20 52-Tones	2412/CH 1	37	18.42	18.42	17.45	17.45	20.97	30	PASS
	2437/CH 6	39	17.88	17.88	17.75	17.75	20.83	30	PASS
	2462/CH11	40	16.01	16.01	15.67	15.67	18.86	30	PASS
802.11ax HE20 106-Tones	2412/CH 1	53	18.33	18.33	17.36	17.36	20.88	30	PASS
	2437/CH 6	53	18.38	18.38	18.16	18.16	21.28	30	PASS
	2462/CH11	54	16.12	16.12	15.75	15.75	18.95	30	PASS
802.11ax HE20 242-Tones	2412/CH 1	61	18.49	18.49	17.73	17.73	21.14	30	PASS
	2437/CH 6	61	18.43	18.43	18.18	18.18	21.32	30	PASS
	2462/CH11	61	16.48	16.48	16.10	16.10	19.30	30	PASS
802.11ax HE40 26-Tones	2422/CH3	0	16.82	16.82	16.08	16.08	19.47	30	PASS
	2452/CH9	17	13.90	13.90	14.07	14.07	17.00	30	PASS
802.11ax HE40 484-Tones	2422/CH3	65	17.08	17.08	16.69	16.69	19.90	30	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

Average Power with duty factor = Average Power Measured +Duty cycle correction factor

The Total Power $=10\log(10^{(\text{Power Antenna 1 in dBm}/10)}+10^{(\text{Power Antenna 2 in dBm}/10)}$.

2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =2.80+0=2.80dBi<6dBi. So limit is 30dBm.

5.2. 99% Bandwidth and 6dB Bandwidth

Ambient Condition

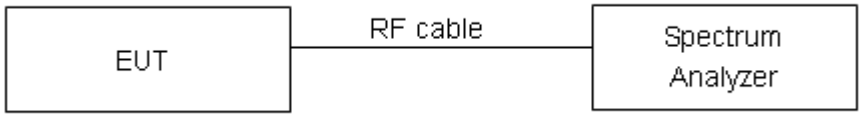
Temperature	Relative humidity
15°C ~ 35°C	20% ~ 80%

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.
Dector=Peak, Trace mode=max hold.

The EUT was connected to the spectrum analyzer through a known loss cable. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value.

Test Setup



Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz

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.

Test Results:

Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
Bluetooth (Low Energy) (1M)	2402	1.021	0.655	500	PASS
	2440	1.023	0.661	500	PASS
	2480	1.023	0.658	500	PASS
Bluetooth (Low Energy) (2M)	2402	2.007	1.124	500	PASS
	2440	2.014	1.107	500	PASS
	2480	2.002	1.111	500	PASS
Bluetooth (Low Energy) (S=2)	2402	1.015	0.660	500	PASS
	2440	1.015	0.653	500	PASS
	2480	1.012	0.671	500	PASS
Bluetooth (Low Energy) (S=8)	2402	1.043	0.630	500	PASS
	2440	1.043	0.622	500	PASS
	2480	1.046	0.651	500	PASS

Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11b	2412	13.087	8.120	500	PASS
	2437	13.057	8.080	500	PASS
	2462	13.062	8.000	500	PASS
802.11g	2412	16.532	16.320	500	PASS
	2437	16.495	16.280	500	PASS
	2462	16.518	16.360	500	PASS
802.11n HT20	2412	17.659	17.320	500	PASS
	2437	17.657	17.160	500	PASS
	2462	17.660	17.640	500	PASS
802.11n HT40	2422	36.145	35.520	500	PASS
	2437	36.084	36.320	500	PASS
	2452	36.120	35.520	500	PASS
802.11ax HE20	2412	18.979	18.800	500	PASS
	2437	18.967	18.920	500	PASS

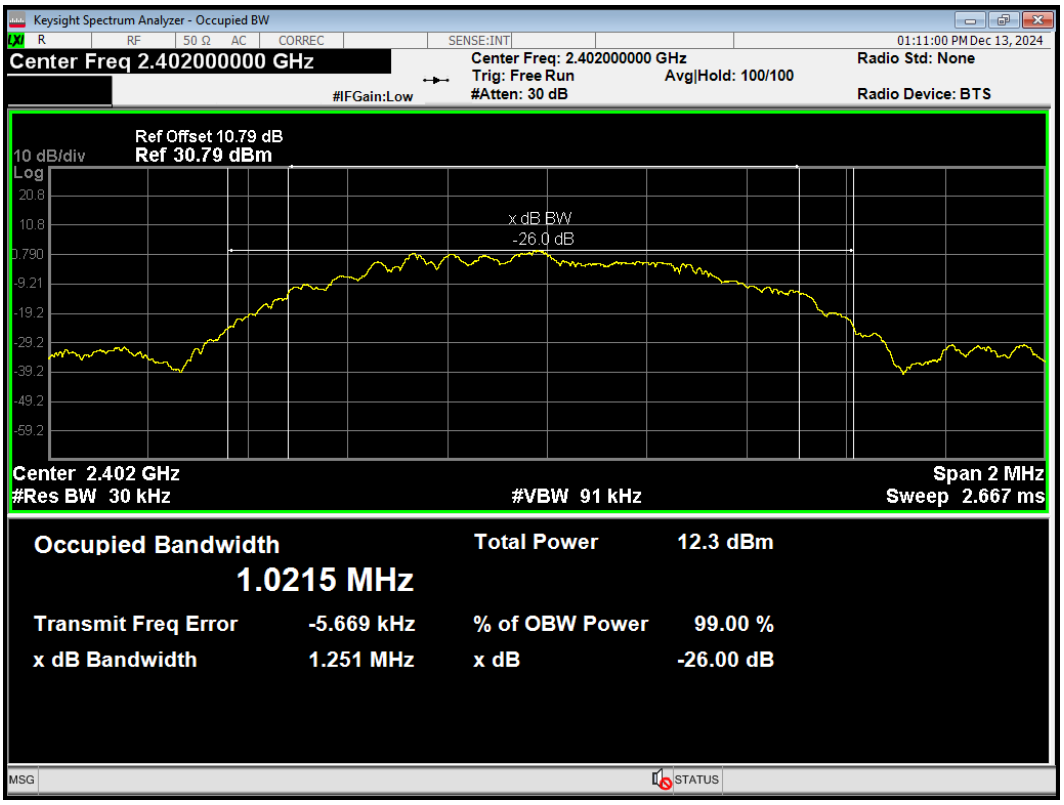
	2462	19.015	18.880	500	PASS
802.11ax HE40	2422	37.910	37.920	500	PASS
	2437	37.820	37.040	500	PASS
	2452	37.753	37.440	500	PASS

TB Mode

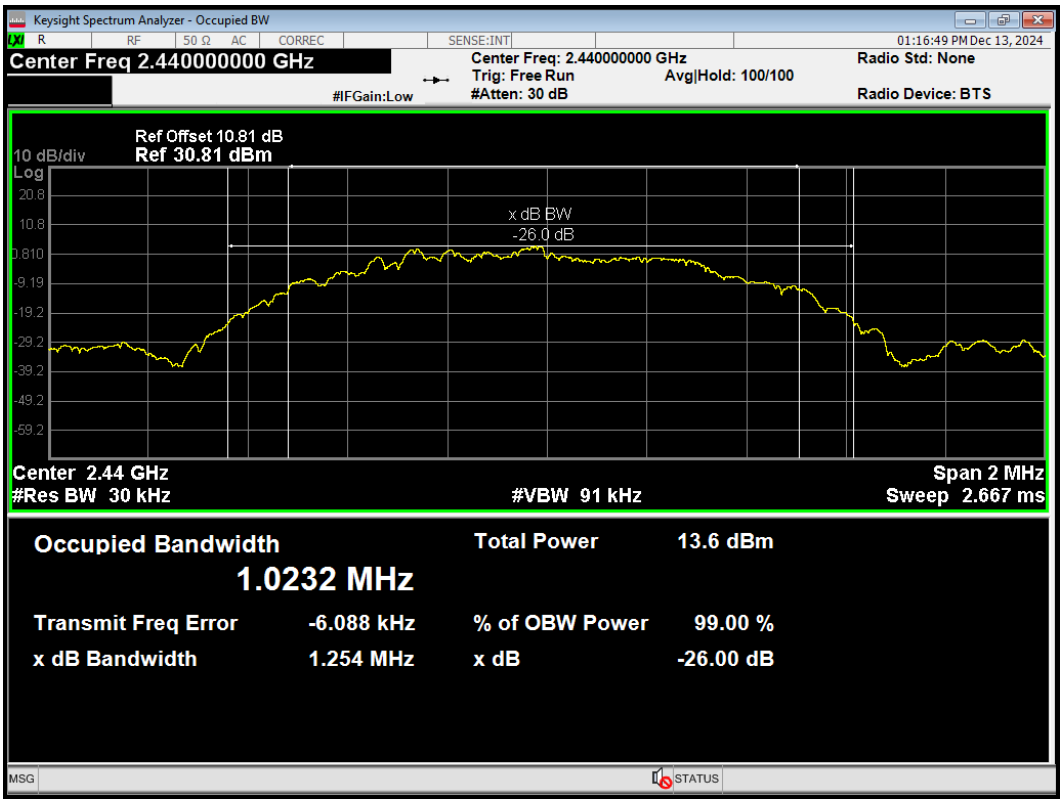
Test Mode	Carrier frequency (MHz)	RU Index	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11ax HE20 26-Tones	2412	0	17.295	2.065	500	PASS
	2437	4	17.139	8.802	500	PASS
	2462	8	18.042	2.040	500	PASS
802.11ax HE20 52-Tones	2412	37	17.153	8.268	500	PASS
	2437	38	16.188	4.995	500	PASS
	2462	40	18.332	13.240	500	PASS
802.11ax HE20 106-Tones	2412	53	18.021	17.156	500	PASS
	2437	53	18.151	15.902	500	PASS
	2462	54	18.204	15.869	500	PASS
802.11ax HE20 242-Tones	2412	61	19.046	19.011	500	PASS
	2437	61	19.038	19.070	500	PASS
	2462	61	19.022	19.089	500	PASS
802.11ax HE40 26-Tones	2422	0	37.633	2.026	500	PASS
	2452	17	37.988	2.055	500	PASS
802.11ax HE40 484-Tones	2422	65	37.972	38.119	500	PASS

99%bandwidth

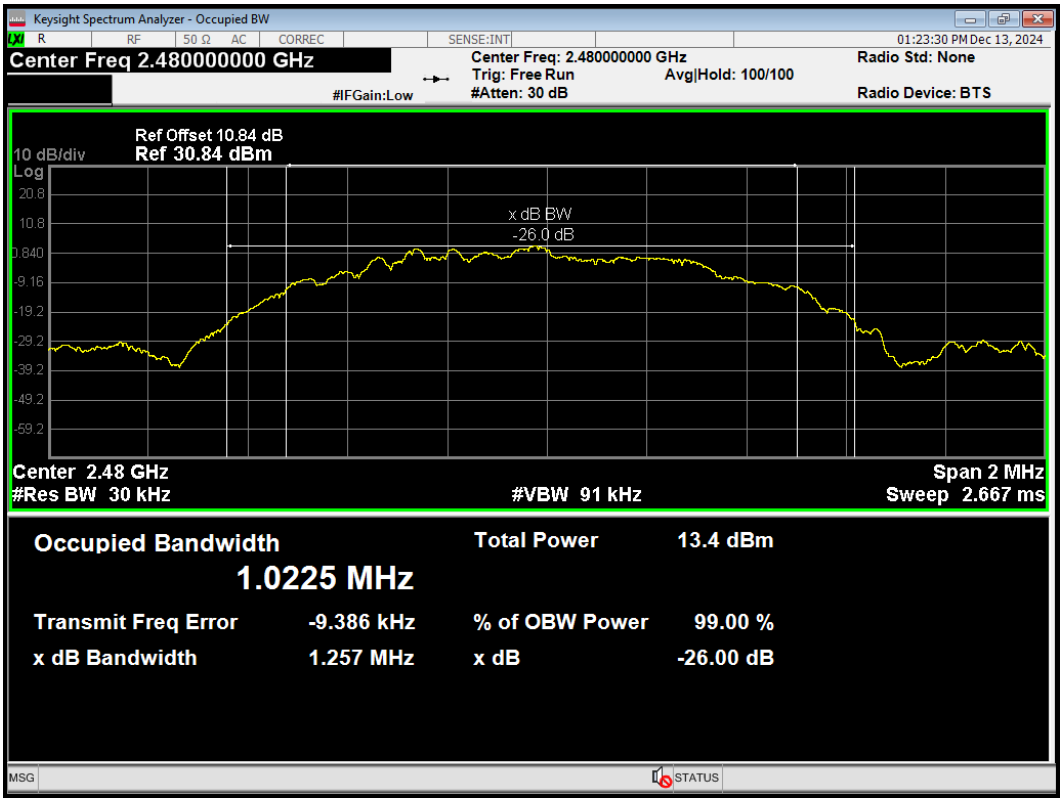
OBW Bluetooth LE (1M) 2402MHz



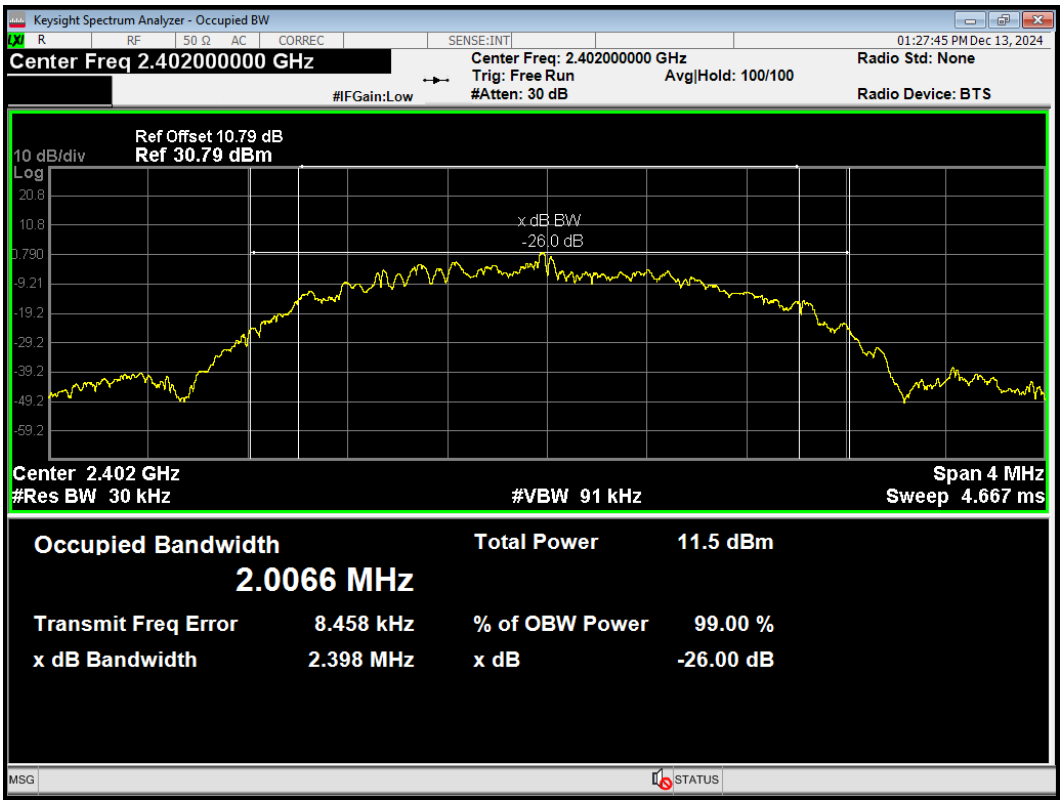
OBW Bluetooth LE (1M) 2440MHz



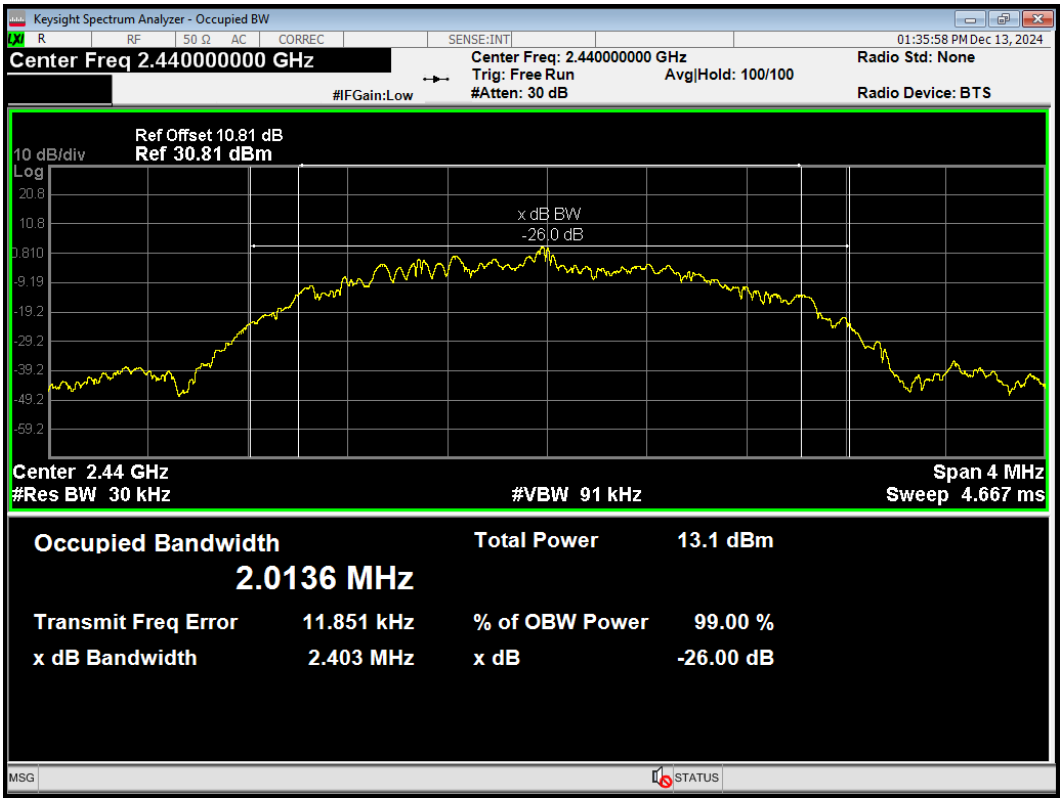
OBW Bluetooth LE (1M) 2480MHz



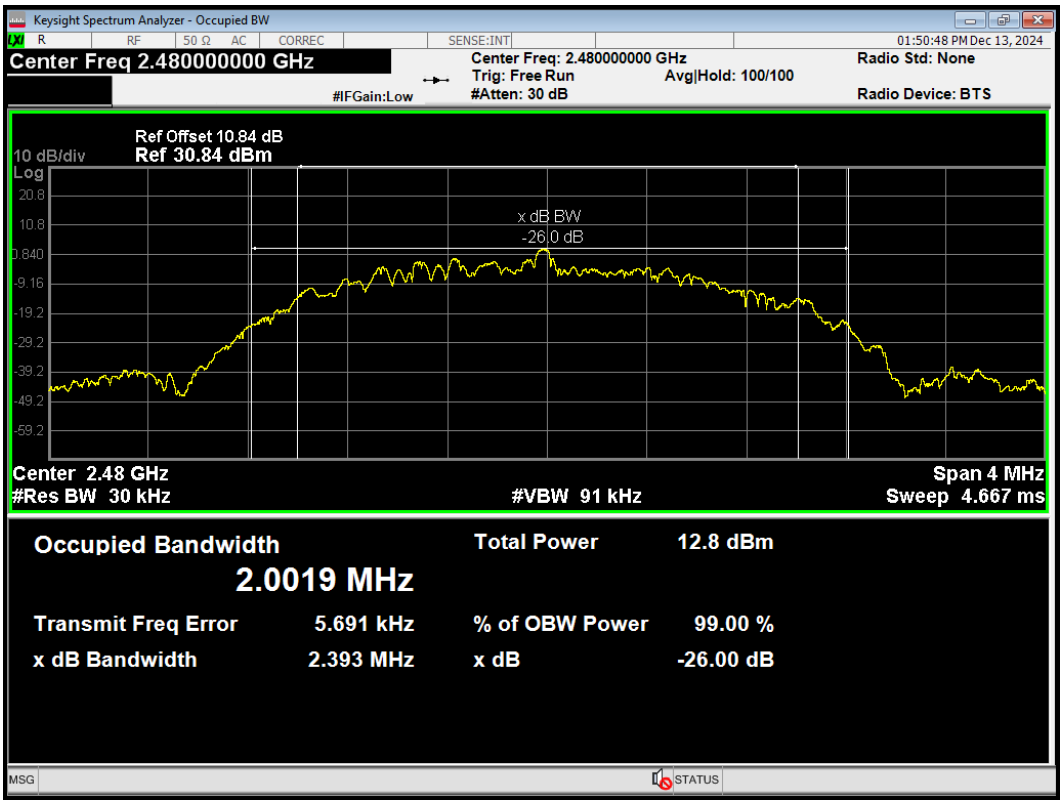
OBW Bluetooth LE (2M) 2402MHz



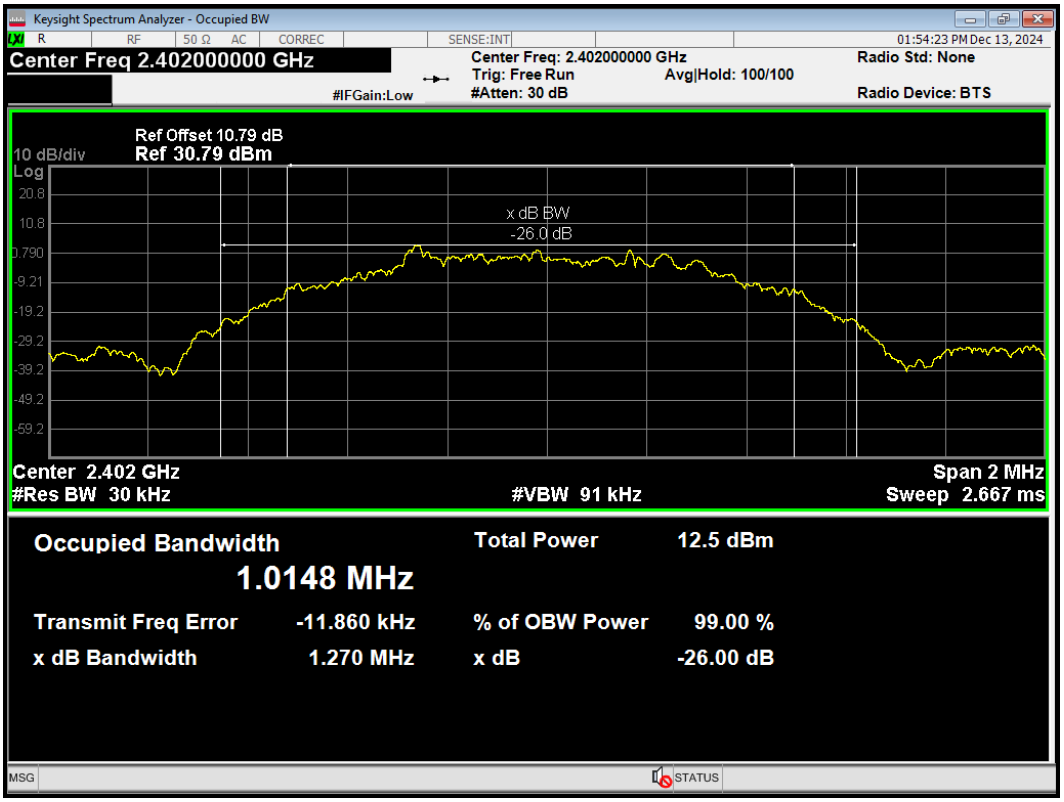
OBW Bluetooth LE (2M) 2440MHz



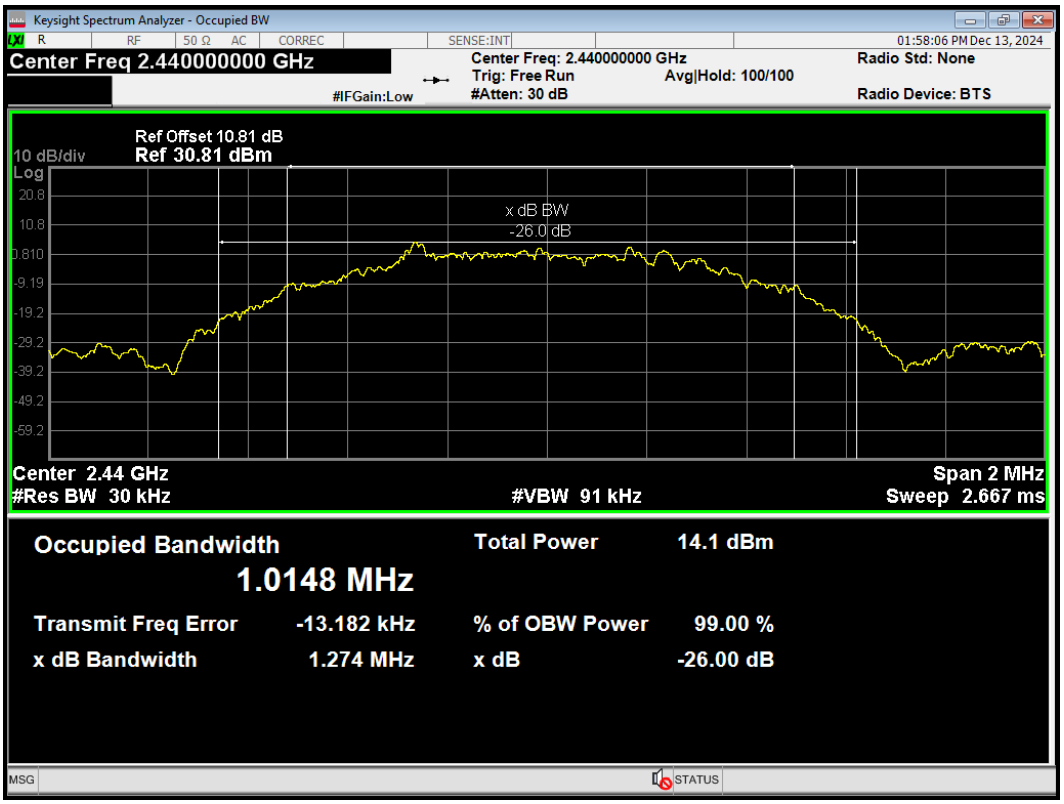
OBW Bluetooth LE (2M) 2480MHz



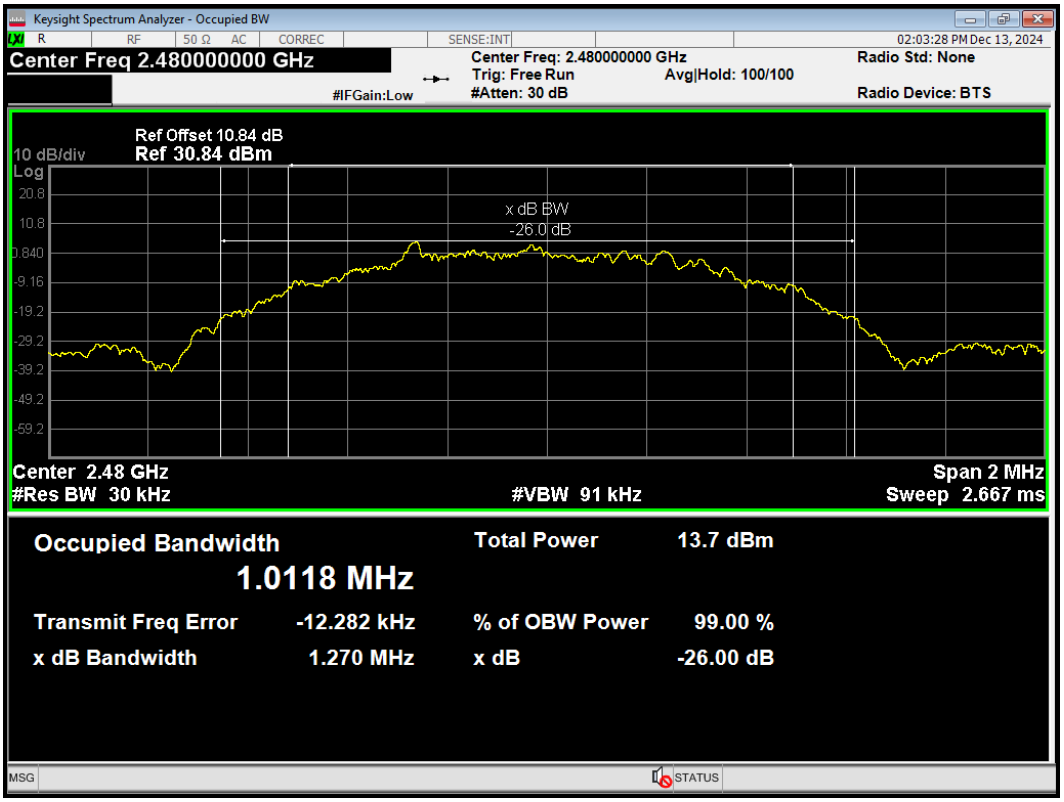
OBW Bluetooth LE (S=2) 2402MHz



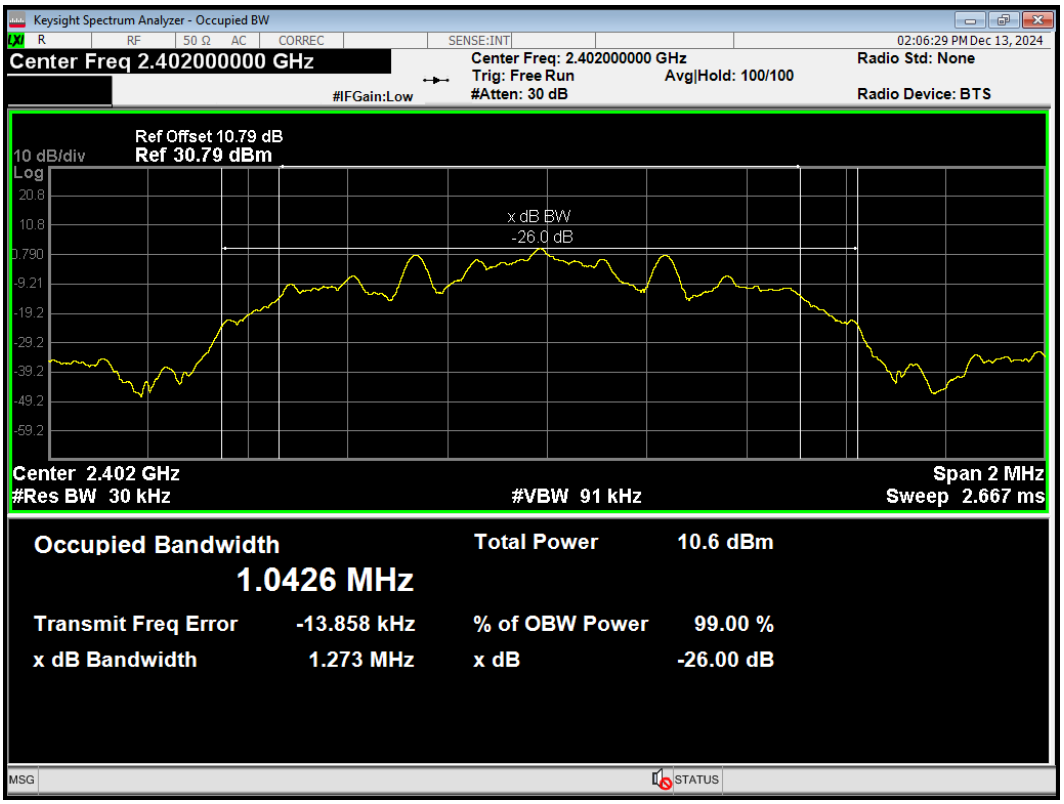
OBW Bluetooth LE (S=2) 2440MHz



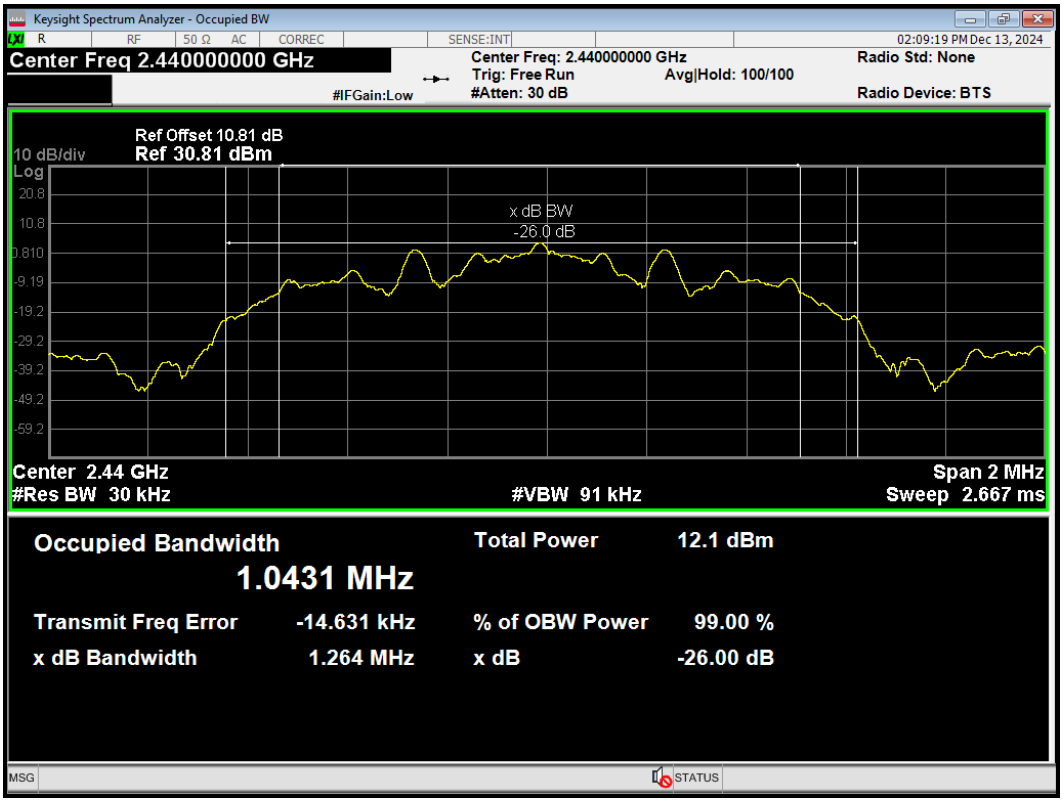
OBW Bluetooth LE (S=2) 2480MHz



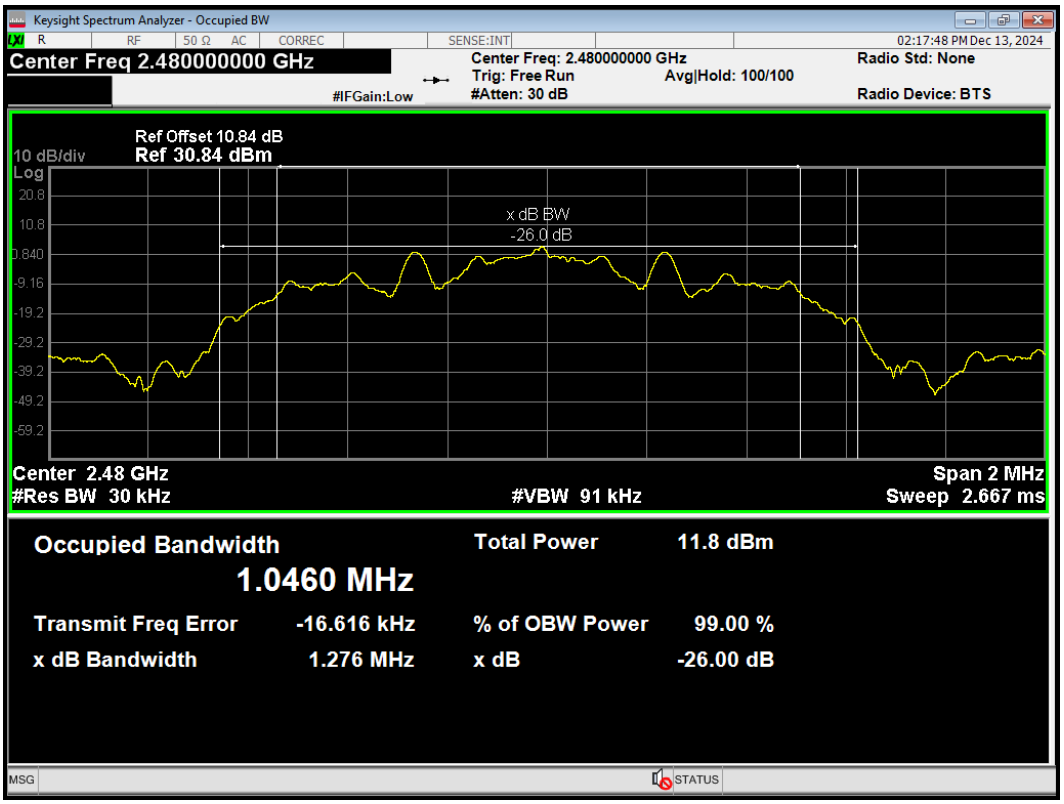
OBW Bluetooth LE (S=8) 2402MHz



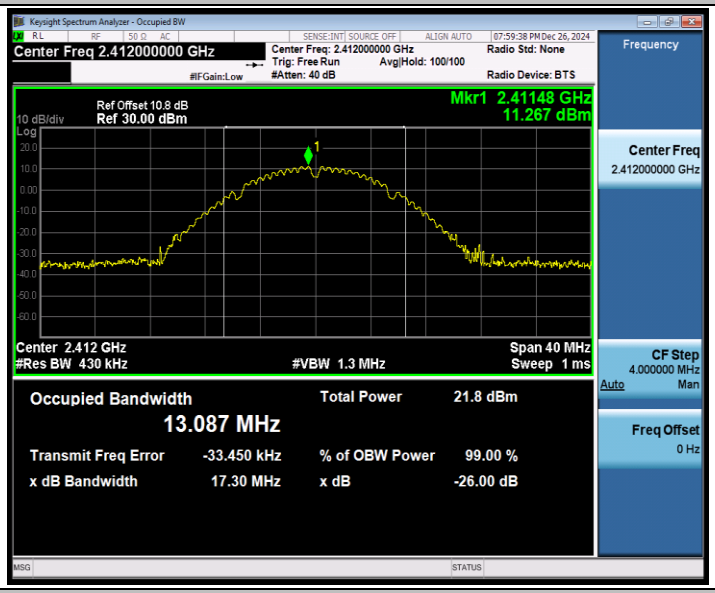
OBW Bluetooth LE (S=8) 2440MHz



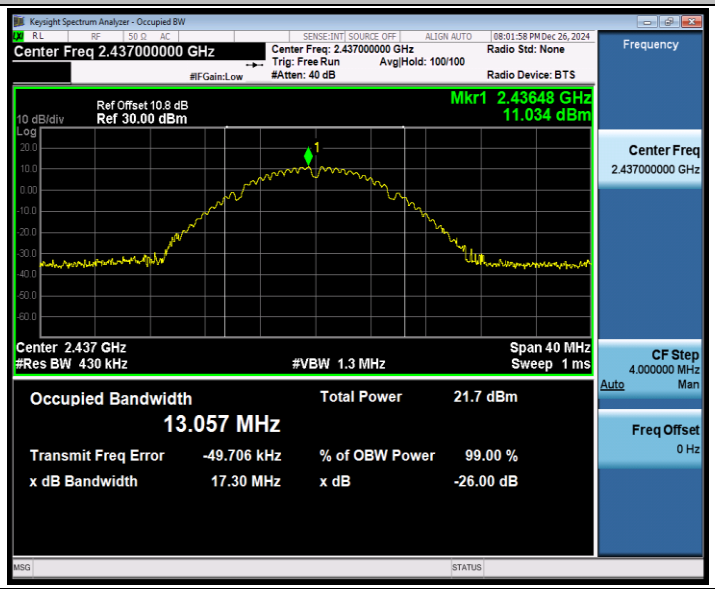
OBW Bluetooth LE (S=8) 2480MHz



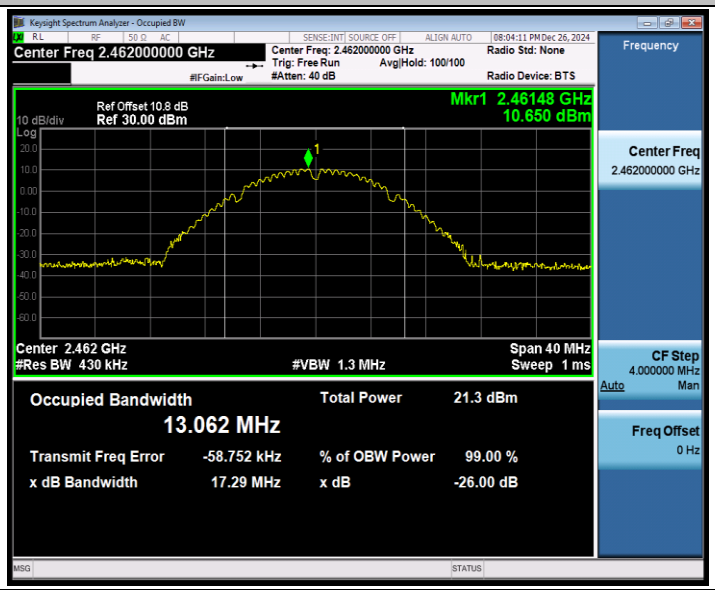
802.11b_2412



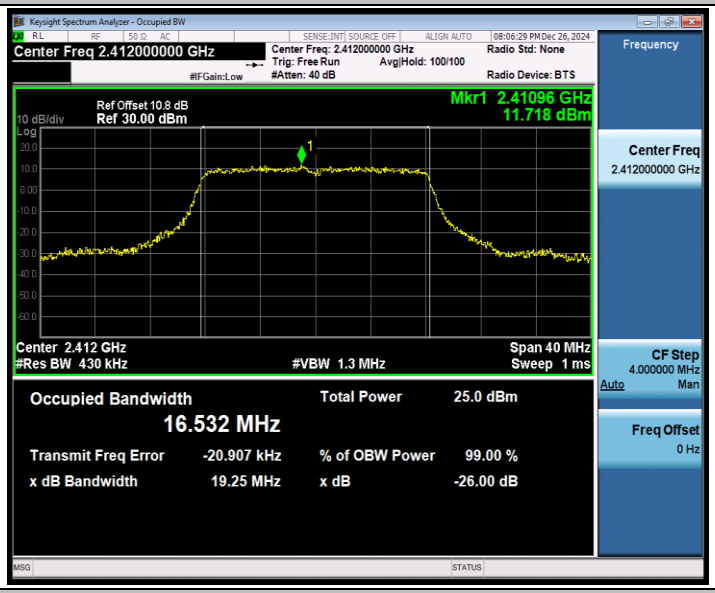
802.11b_2437



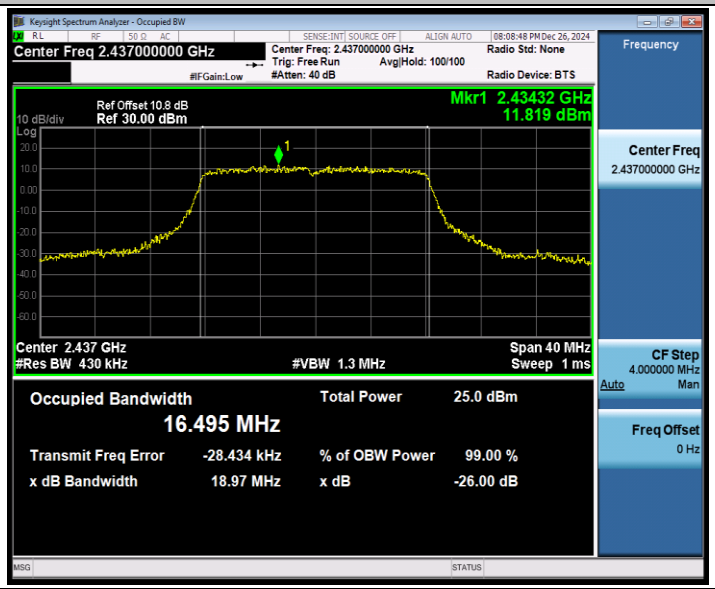
802.11b_2462



802.11g_2412



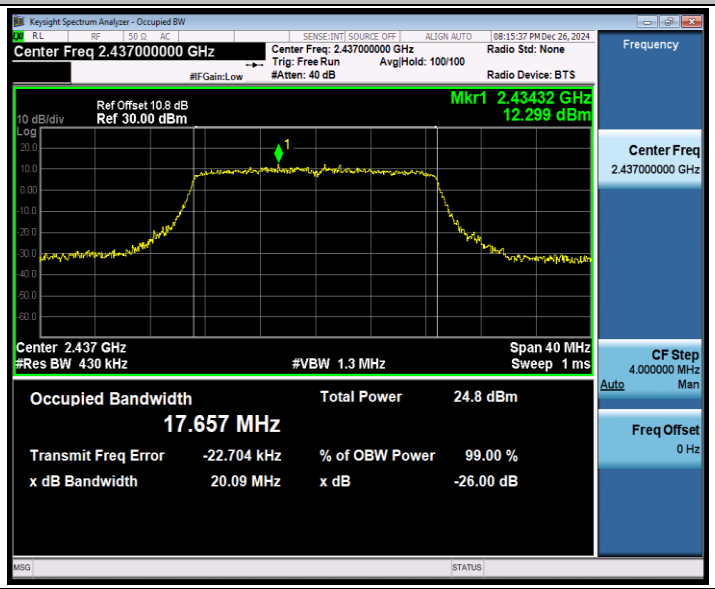
802.11g_2437



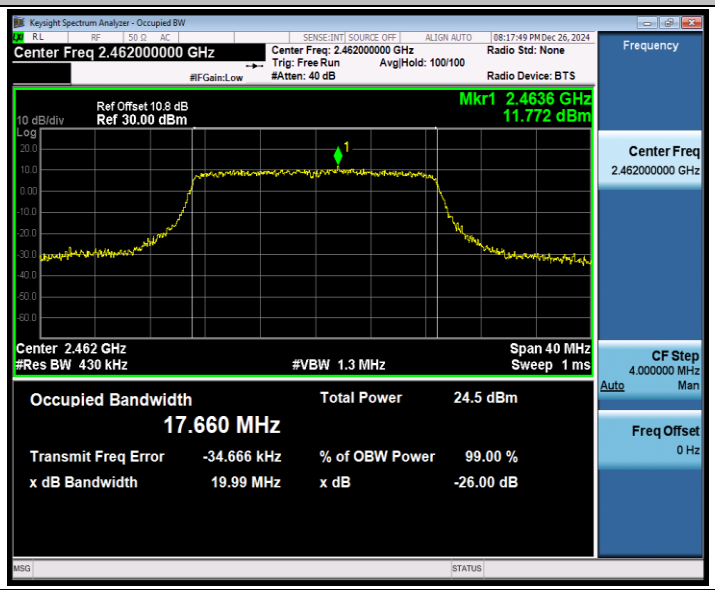
802.11g_2462

802.11n HT20_2412

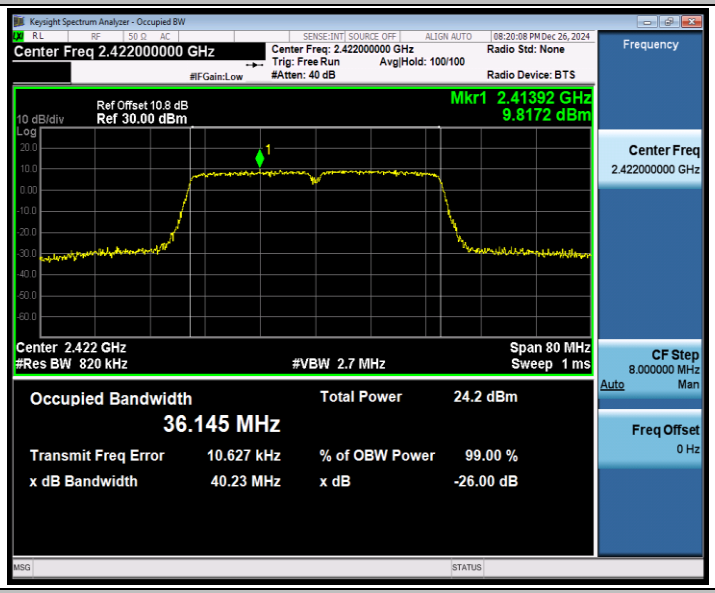
802.11n HT20_2437



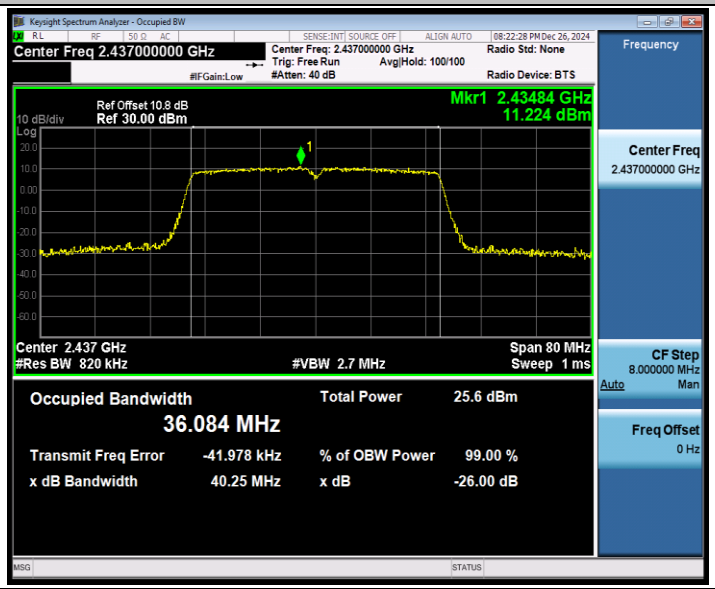
802.11n HT20_2462



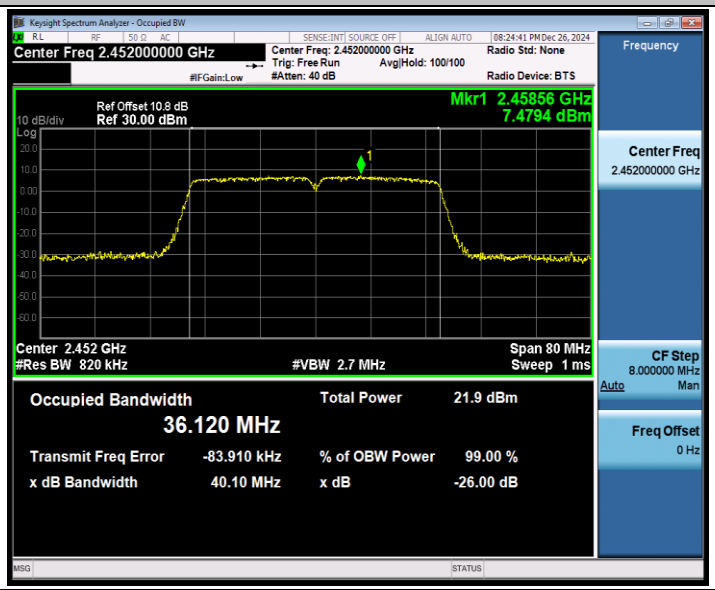
802.11n HT40_2422



802.11n HT40_2437

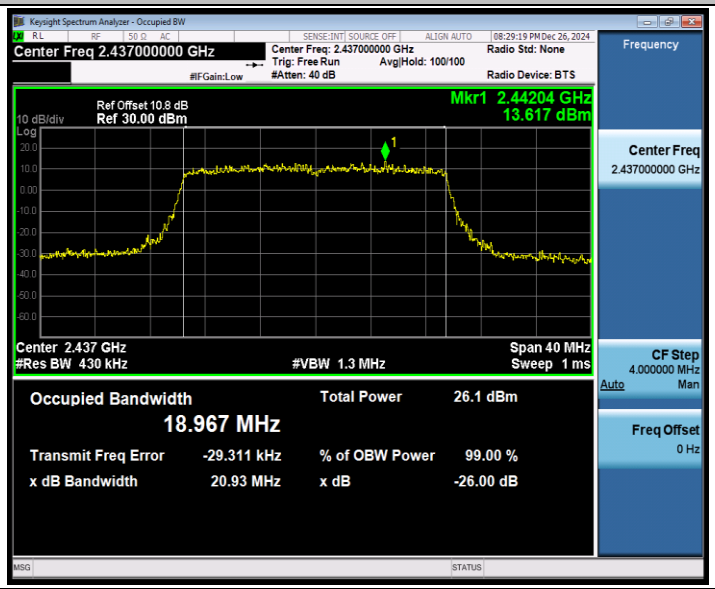


802.11n HT40_2452

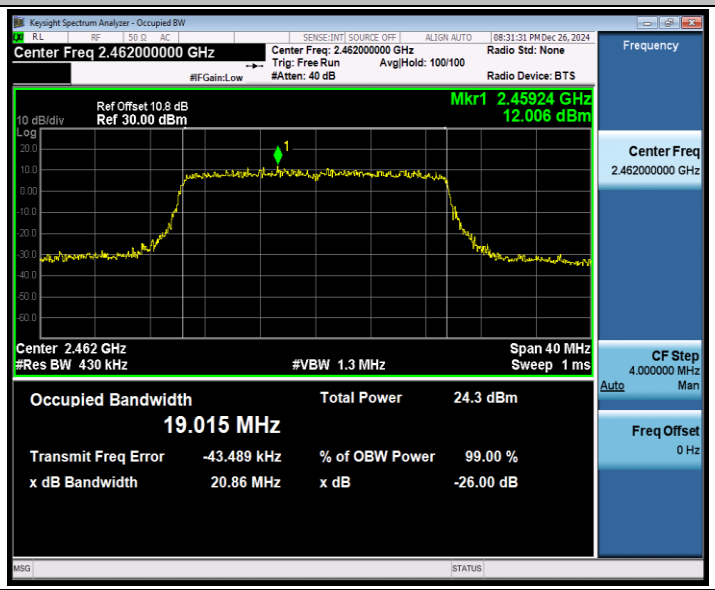


802.11ax HE20_2412

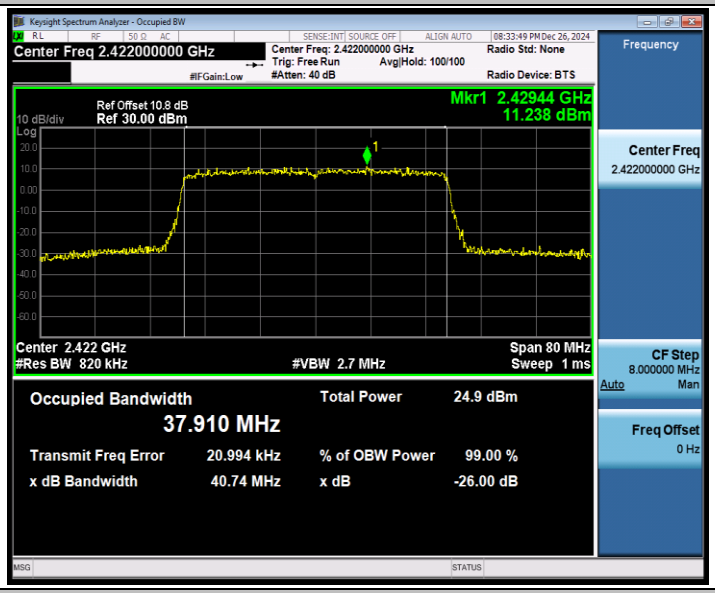
802.11ax HE20_2437



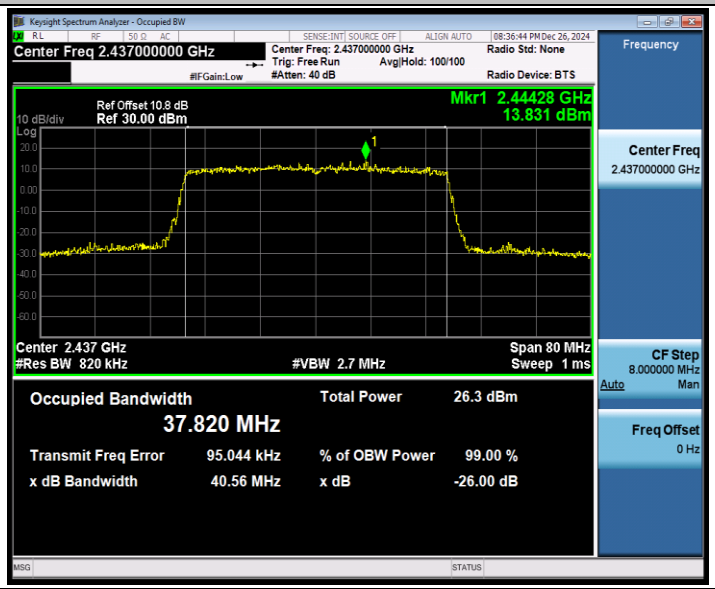
802.11ax HE20_2462



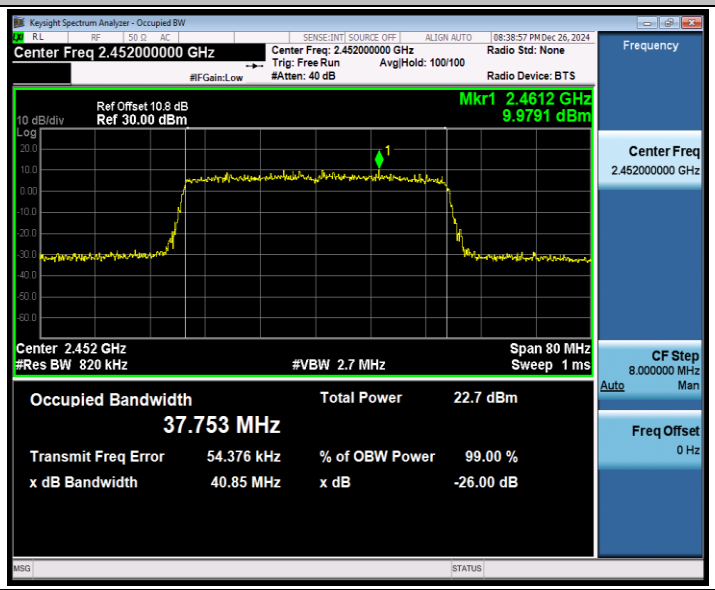
802.11ax HE40_2422



802.11ax HE40_2437

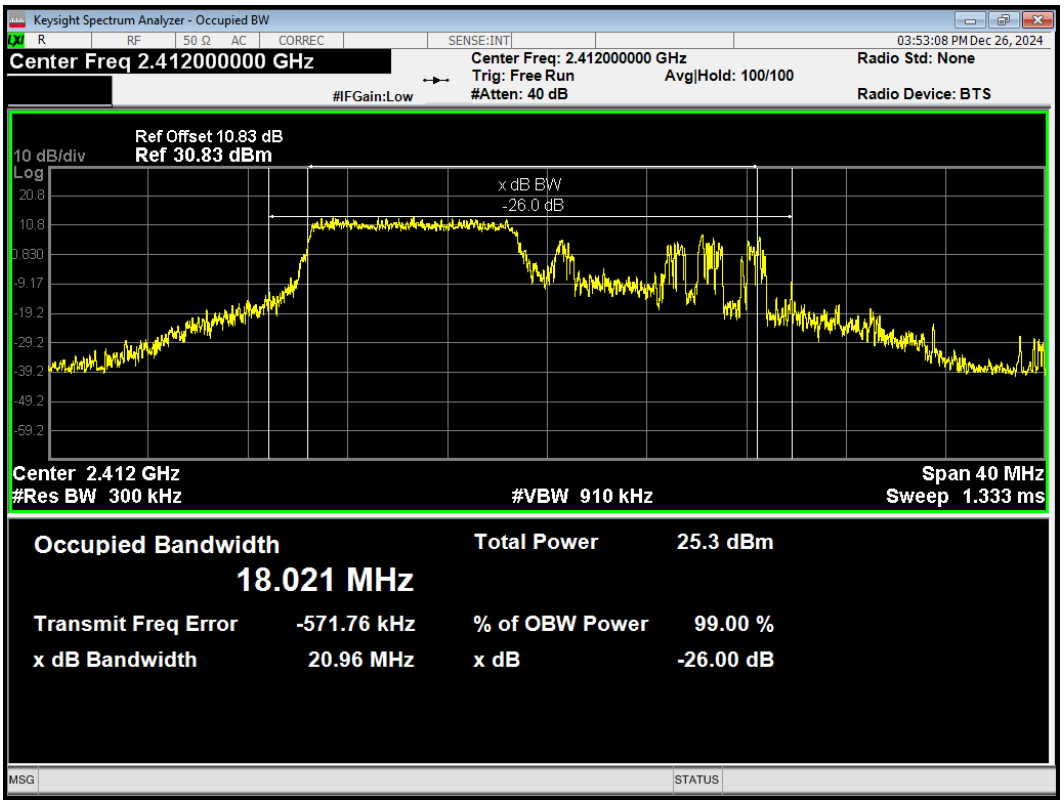


802.11ax HE40_2452

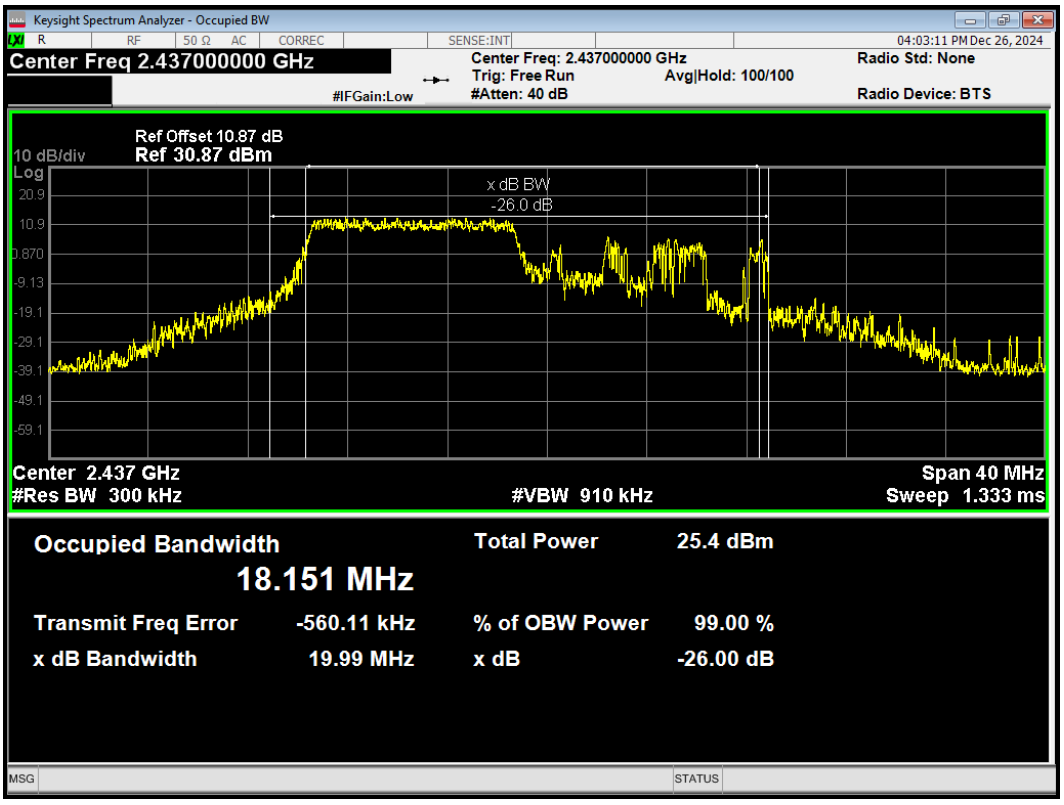


TB Mode

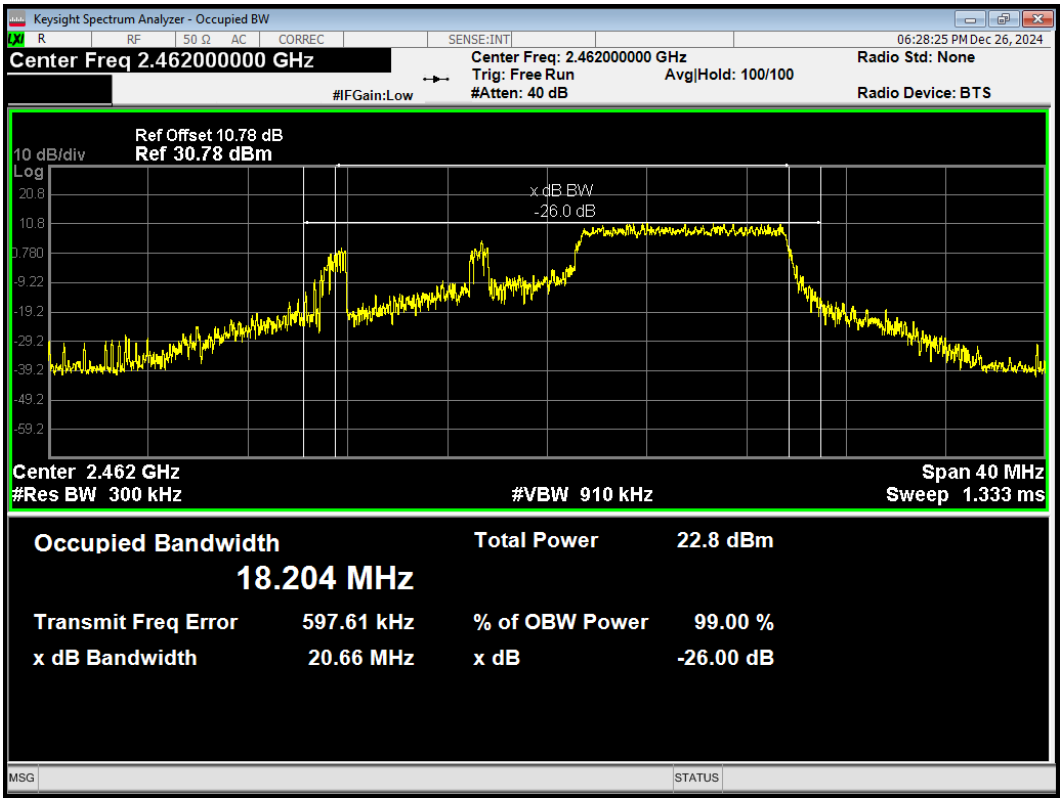
OBW 802.11ax(HE20) 106T 2412MHz



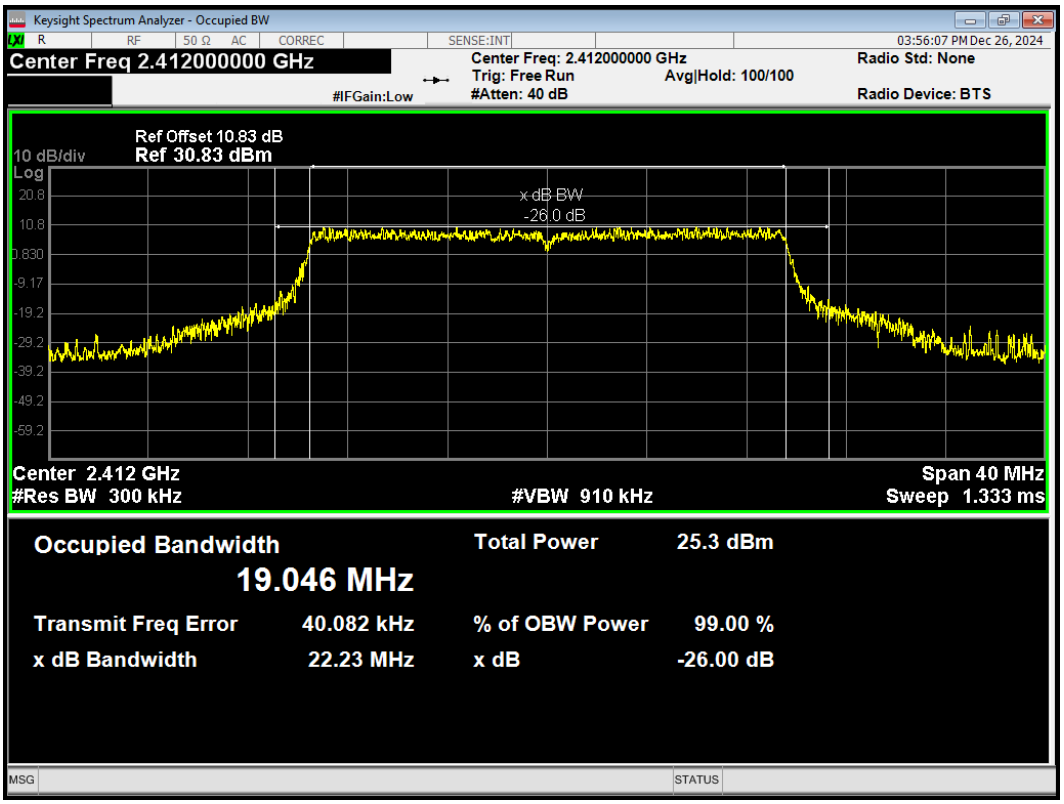
OBW 802.11ax(HE20) 106T 2437MHz



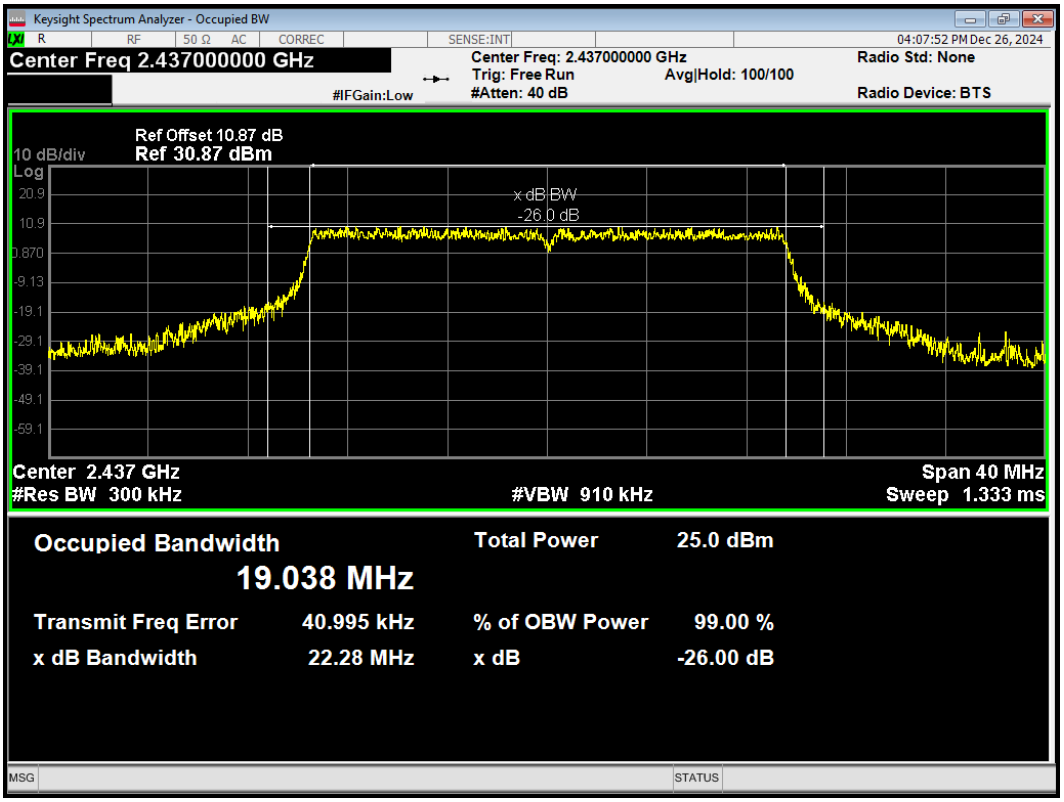
OBW 802.11ax(HE20) 106T 2462MHz



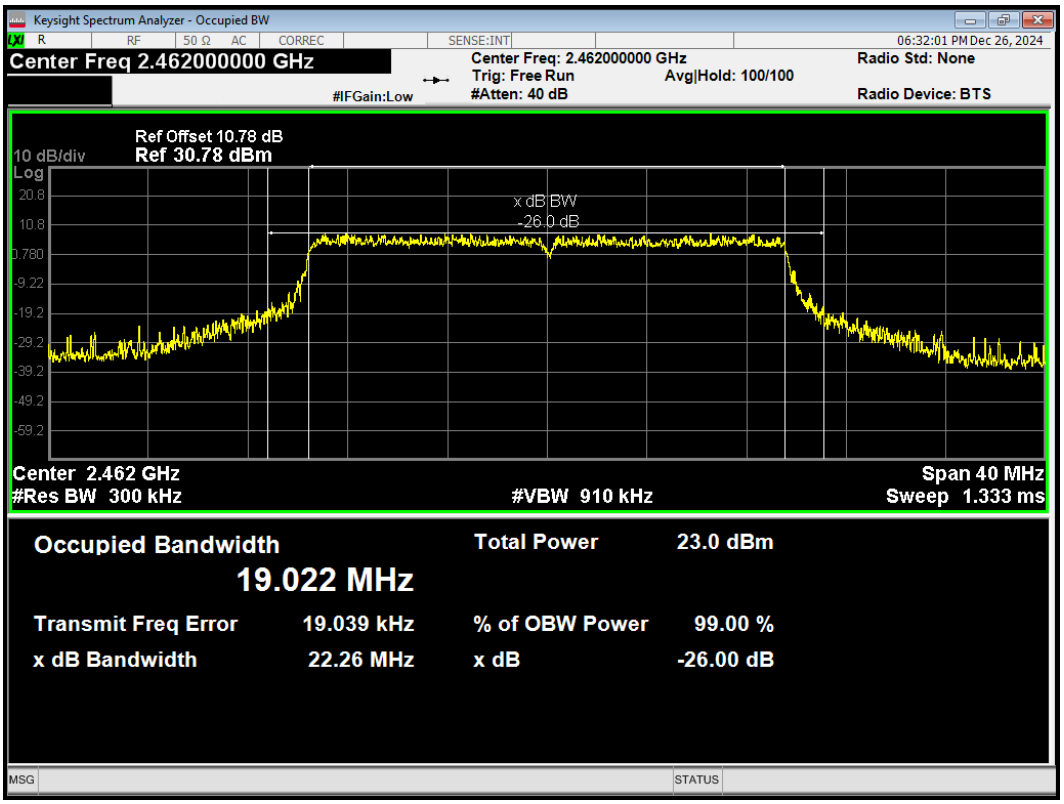
OBW 802.11ax(HE20) 242T 2412MHz



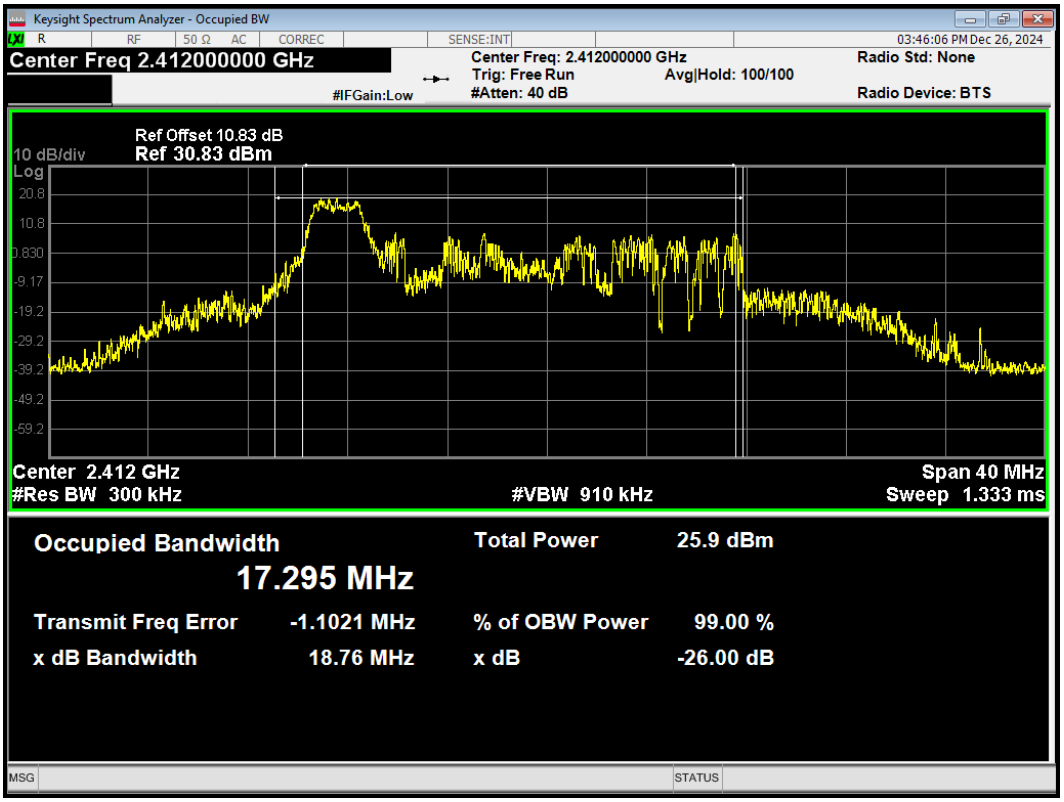
OBW 802.11ax(HE20) 242T 2437MHz



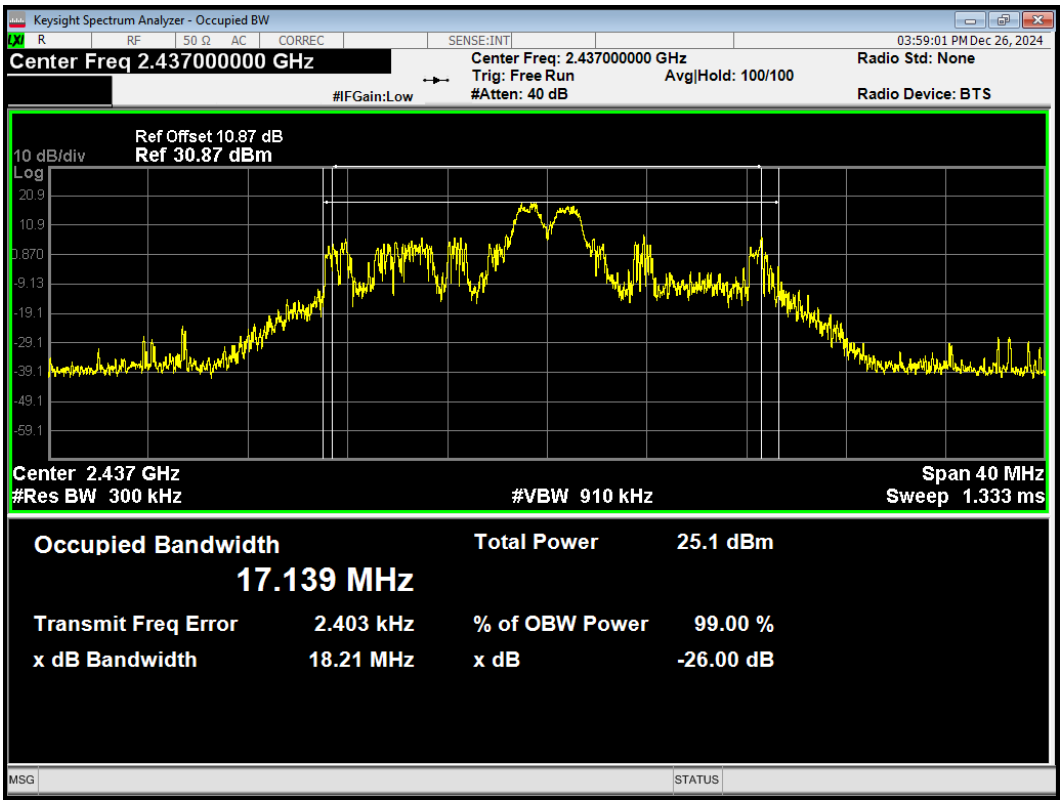
OBW 802.11ax(HE20) 242T 2462MHz



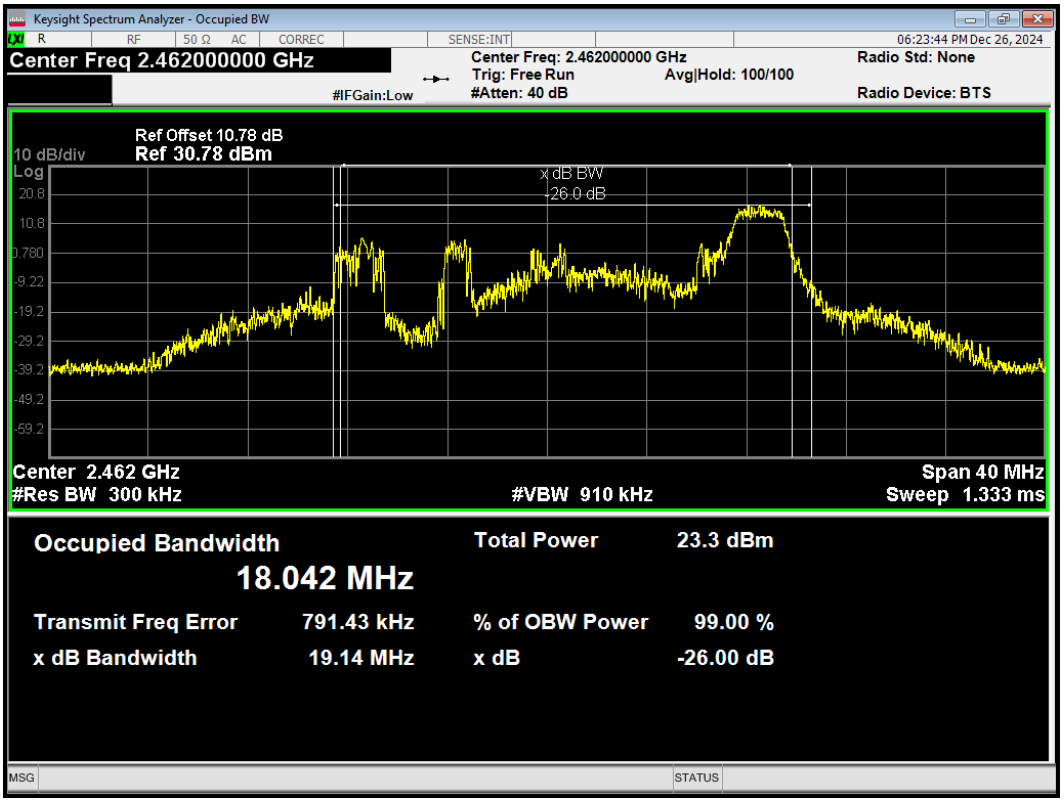
OBW 802.11ax(HE20) 26T 2412MHz



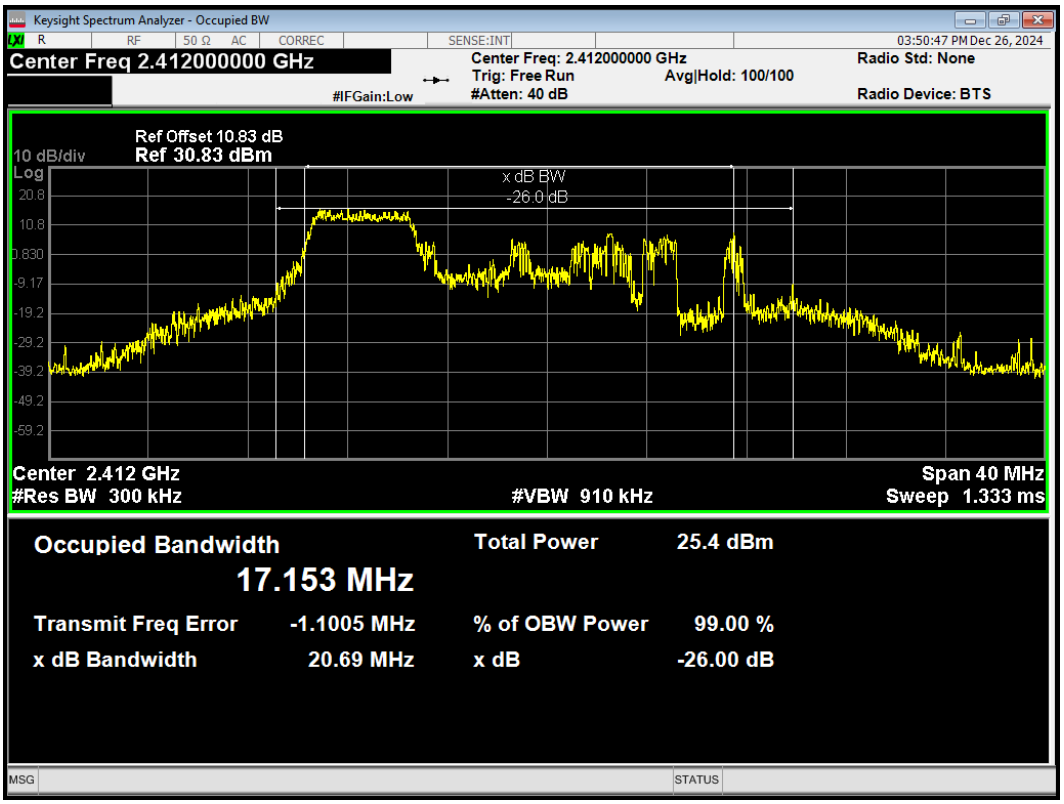
OBW 802.11ax(HE20) 26T 2437MHz



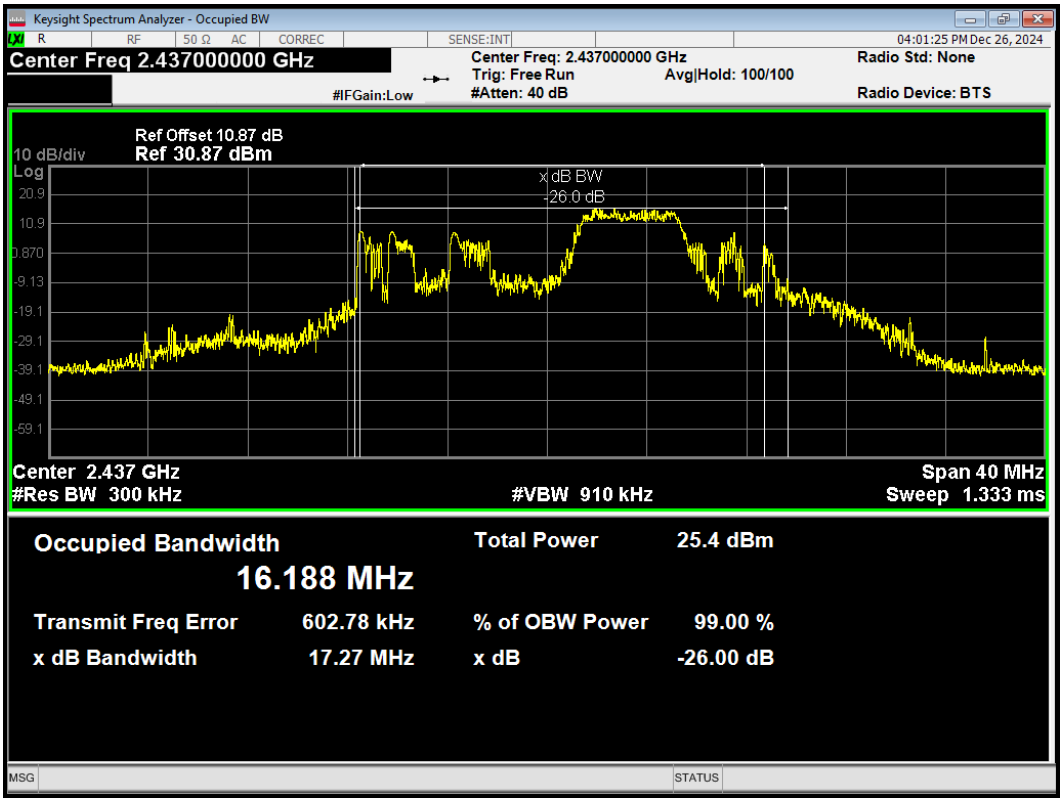
OBW 802.11ax(HE20) 26T 2462MHz



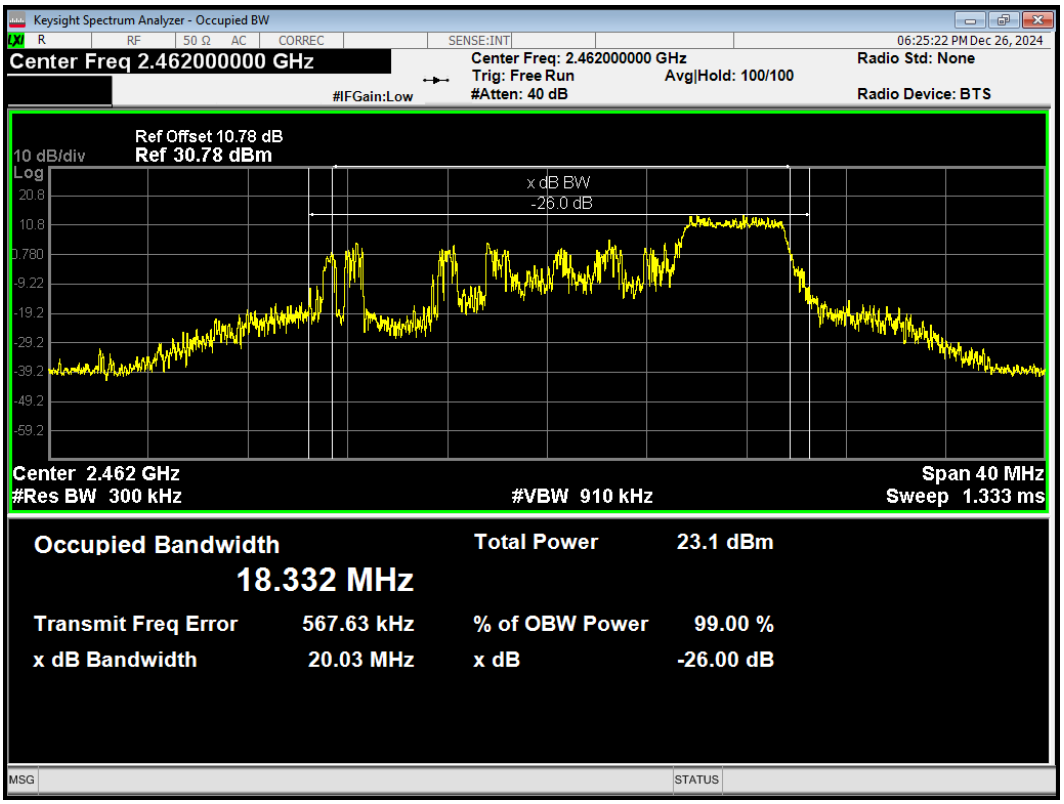
OBW 802.11ax(HE20) 52T 2412MHz



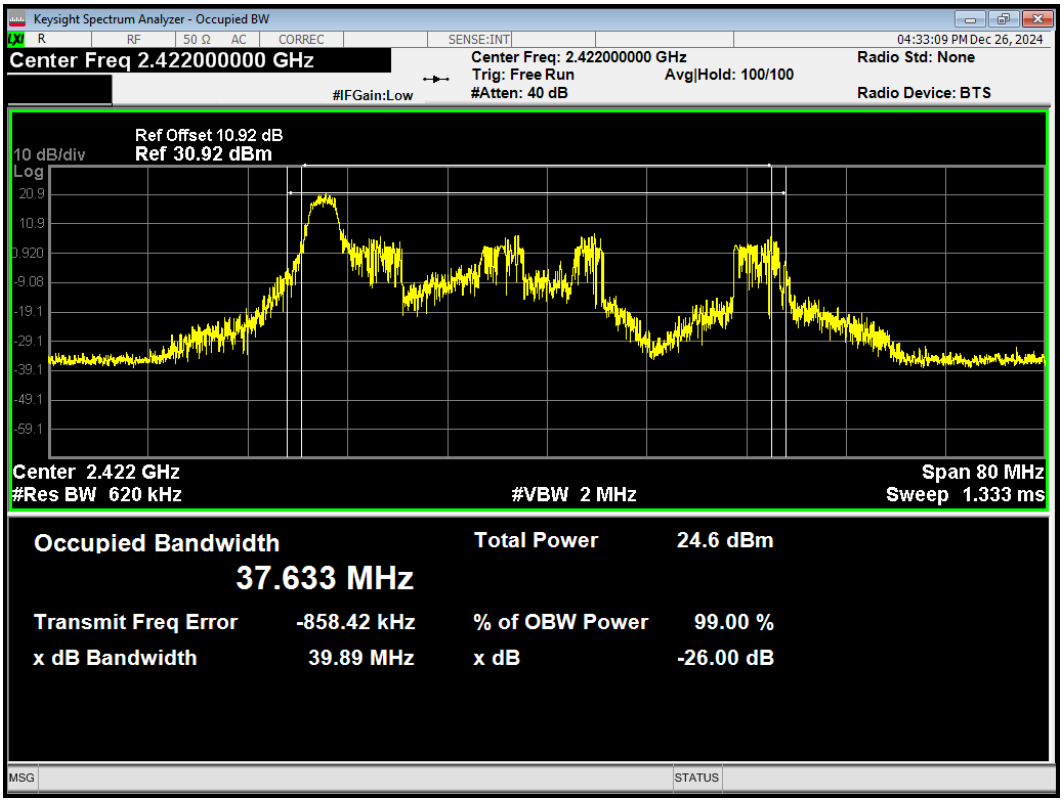
OBW 802.11ax(HE20) 52T 2437MHz



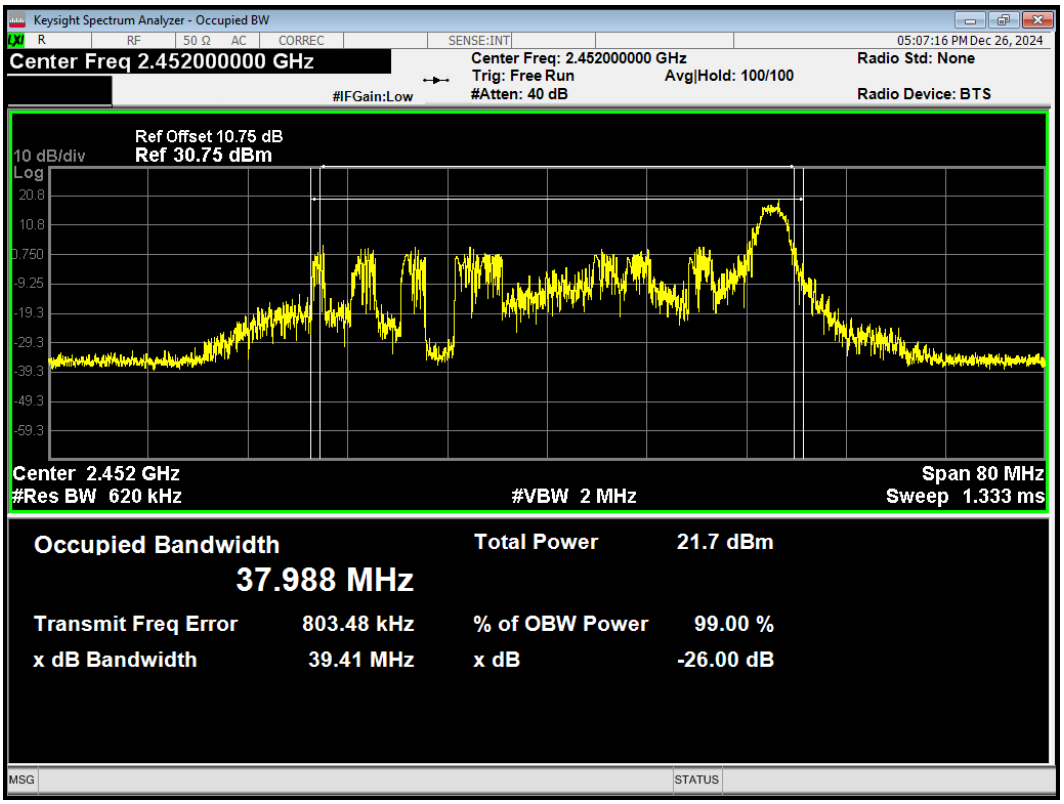
OBW 802.11ax(HE20) 52T 2462MHz



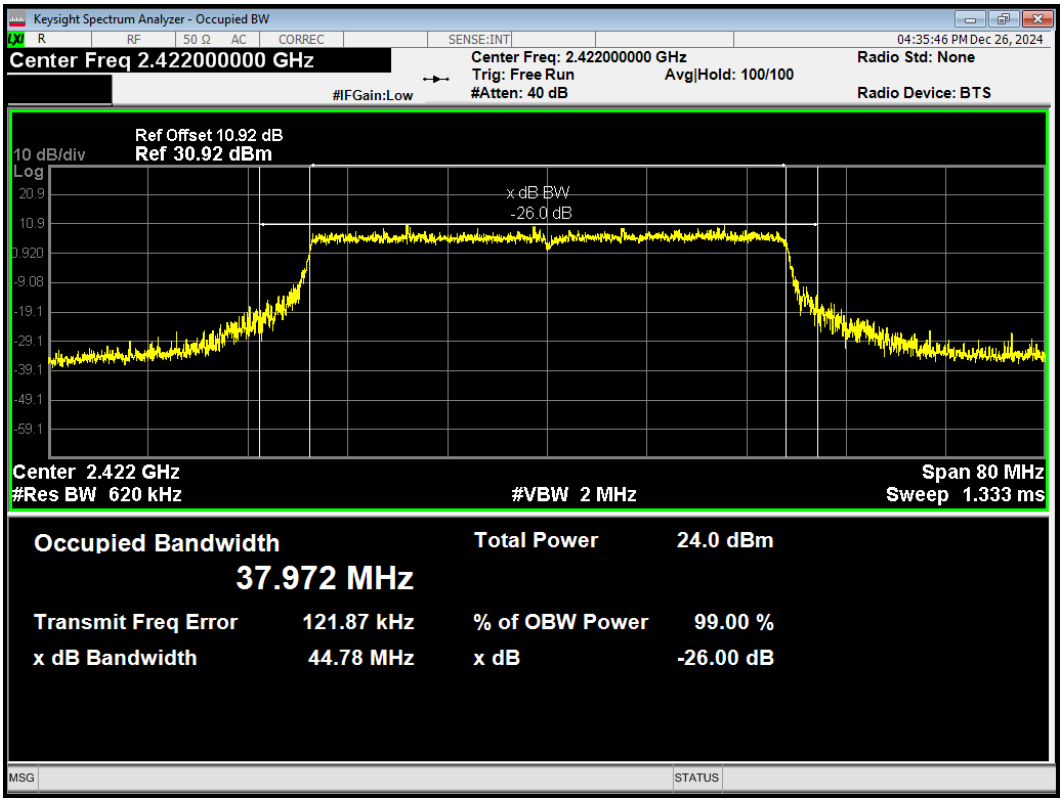
OBW 802.11ax(HE40) 26T 2422MHz



OBW 802.11ax(HE40) 26T 2452MHz

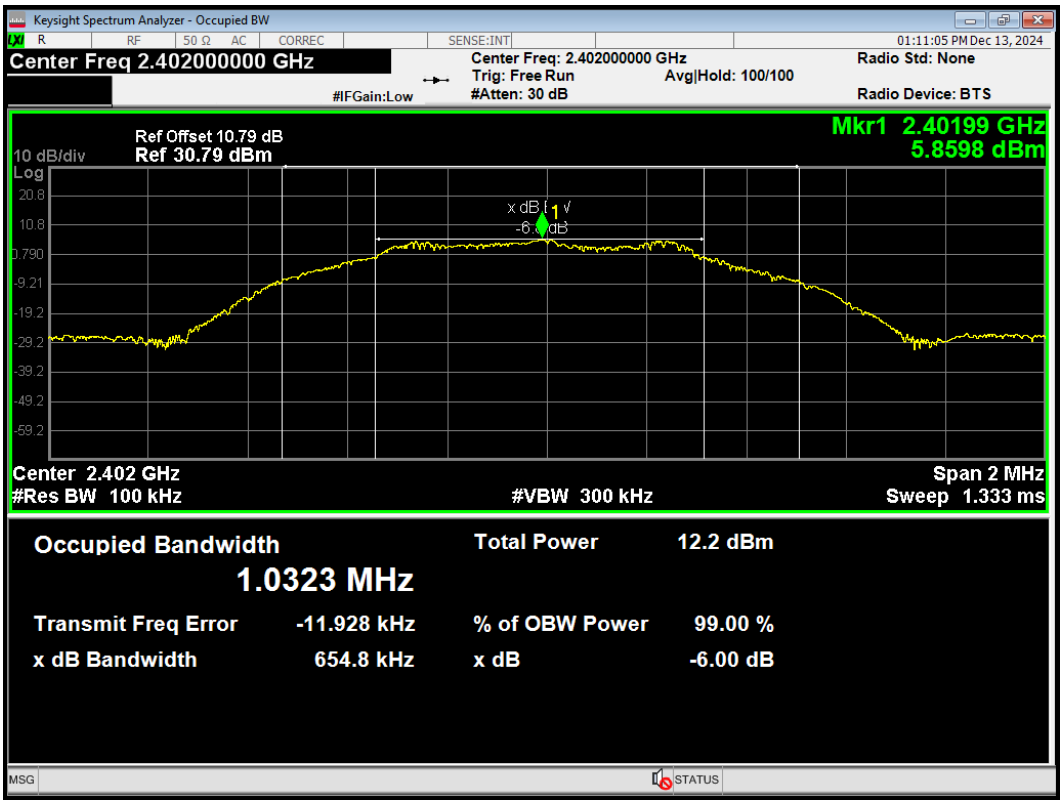


OBW 802.11ax(HE40) 484T 2422MHz

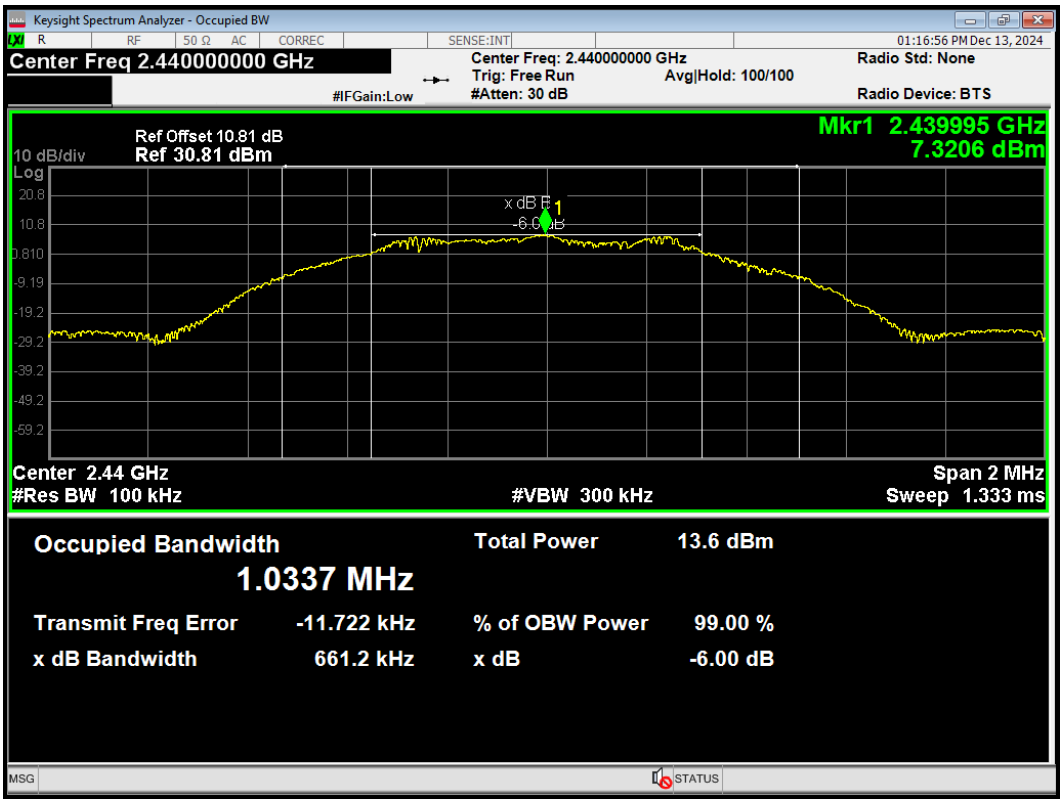


6 dB bandwidth

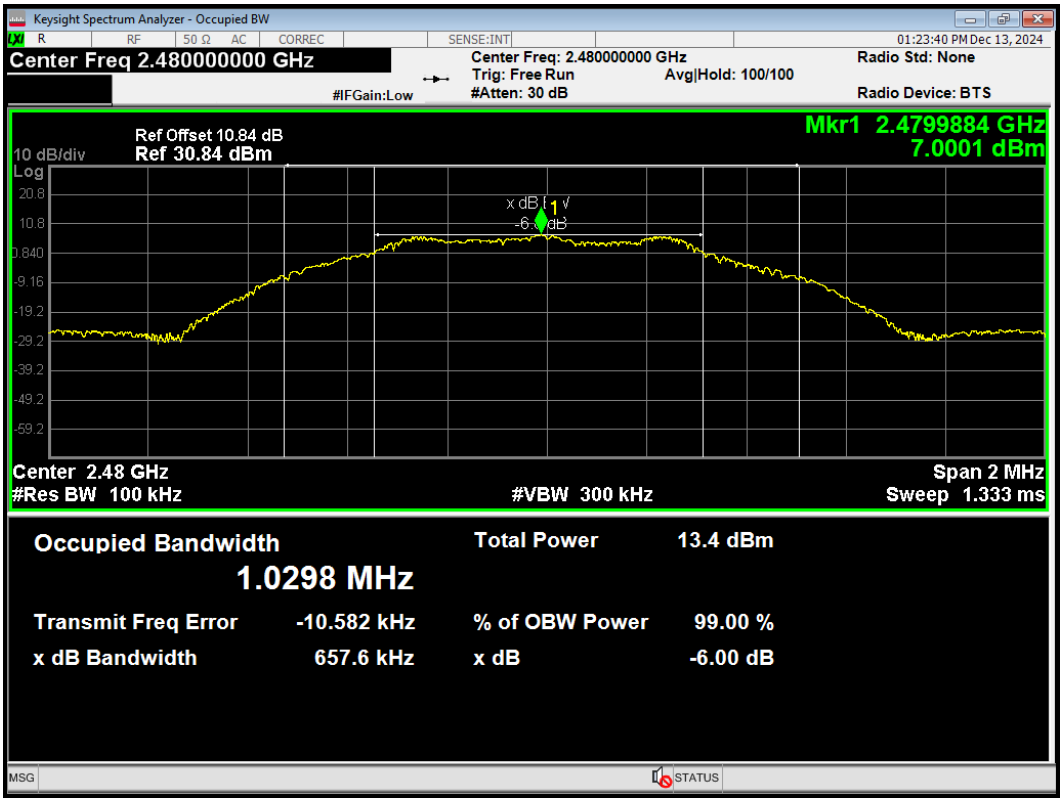
-6dB Bandwidth Bluetooth LE (1M) 2402MHz



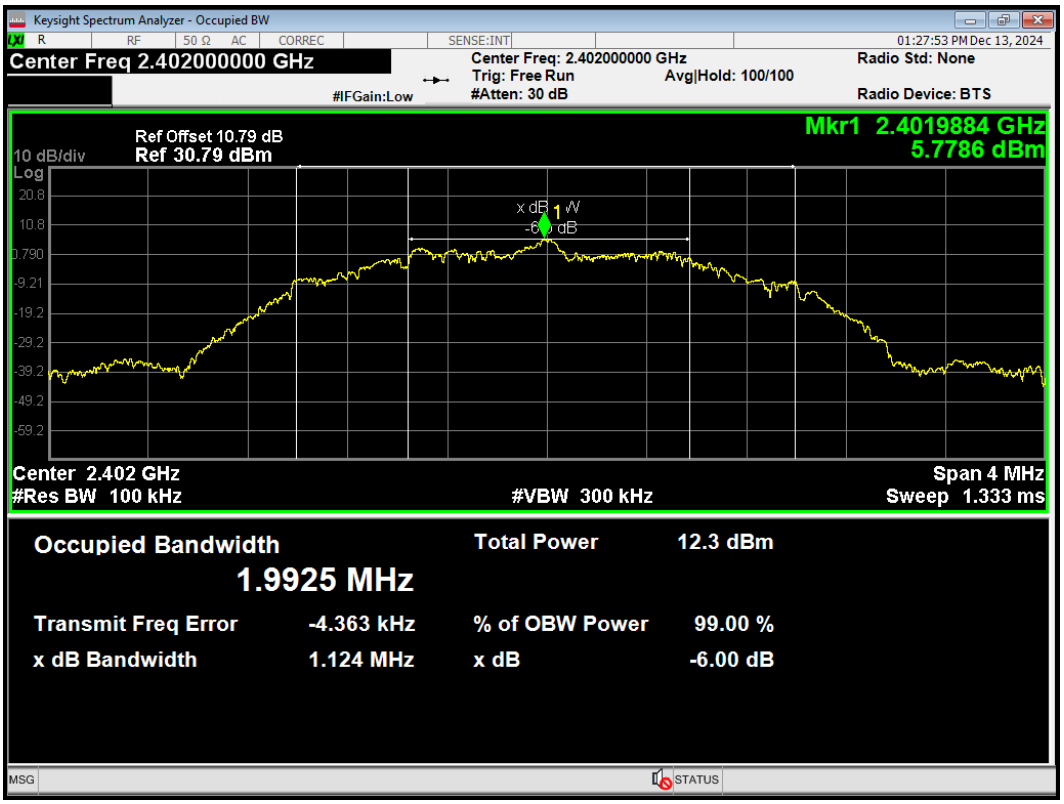
-6dB Bandwidth Bluetooth LE (1M) 2440MHz



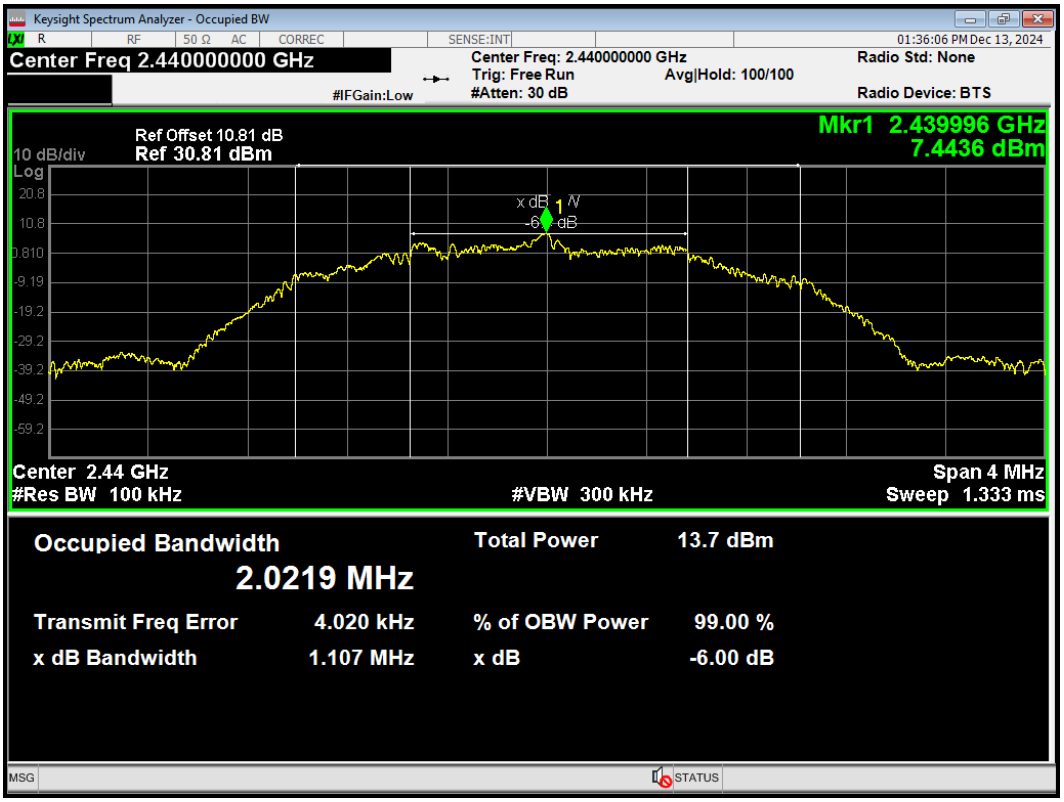
-6dB Bandwidth Bluetooth LE (1M) 2480MHz



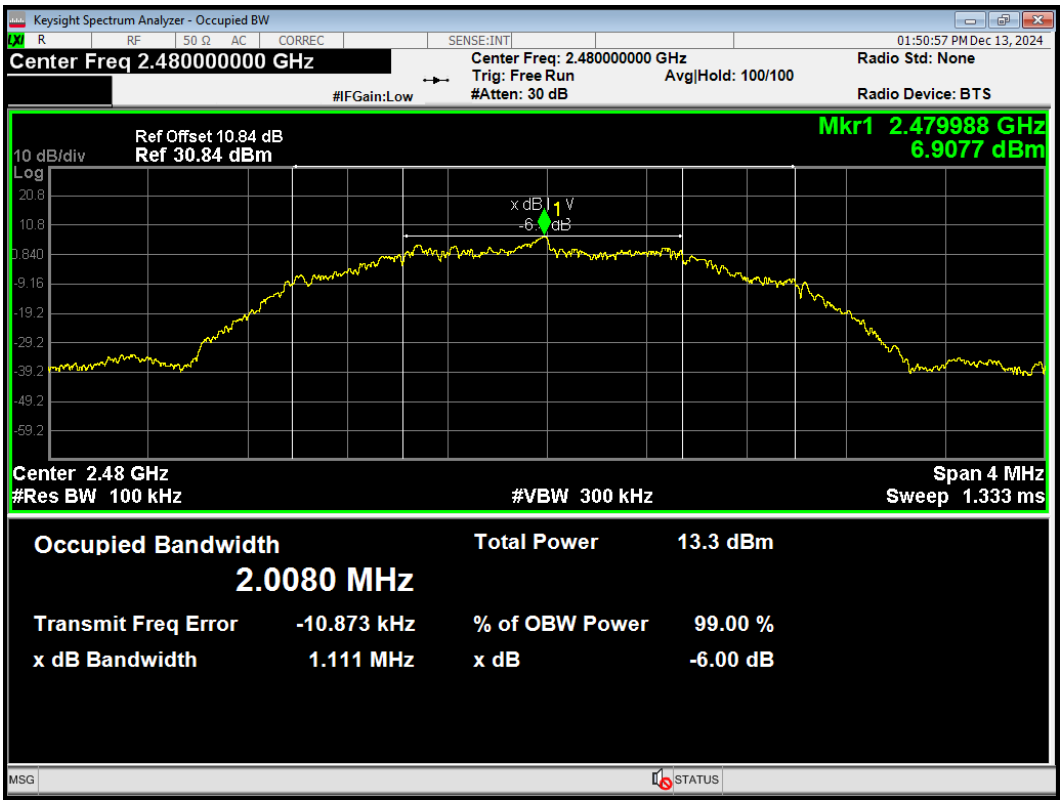
-6dB Bandwidth Bluetooth LE (2M) 2402MHz



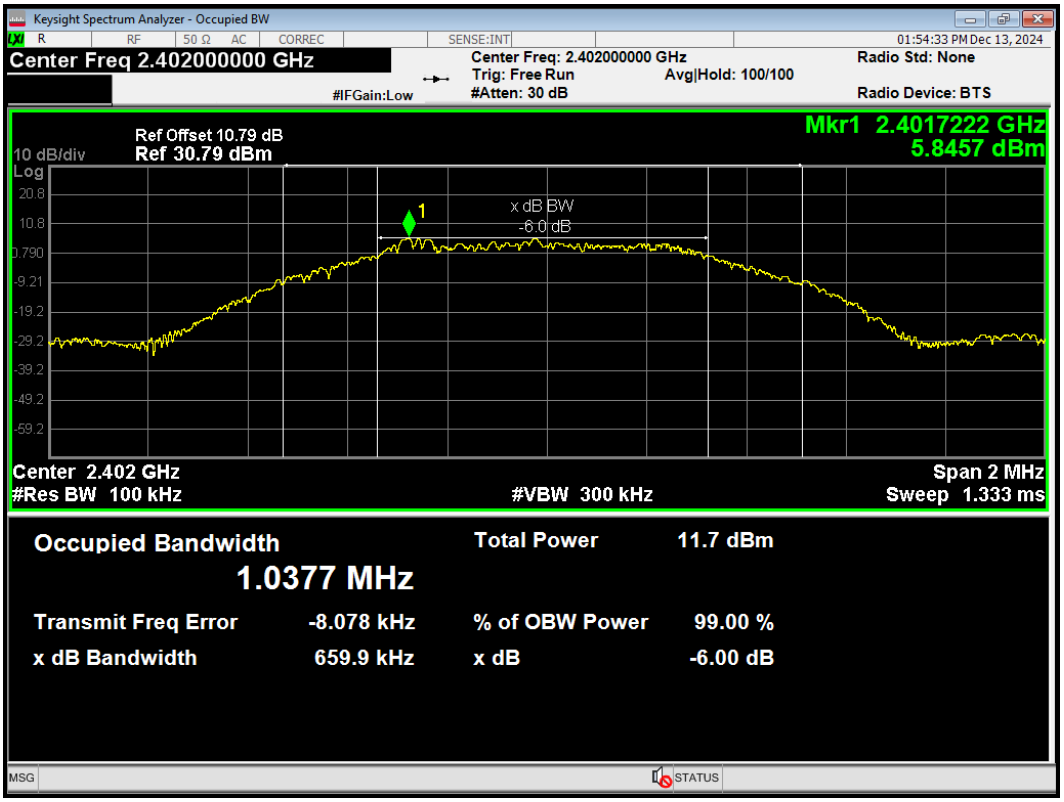
-6dB Bandwidth Bluetooth LE (2M) 2440MHz



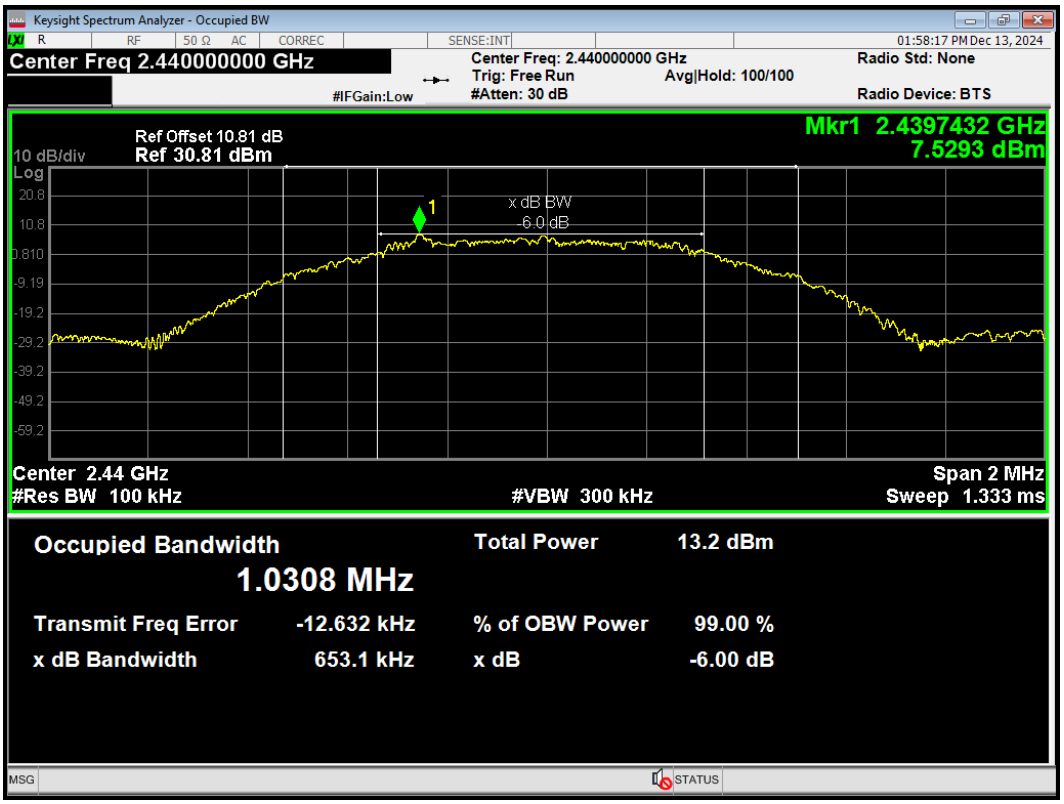
-6dB Bandwidth Bluetooth LE (2M) 2480MHz



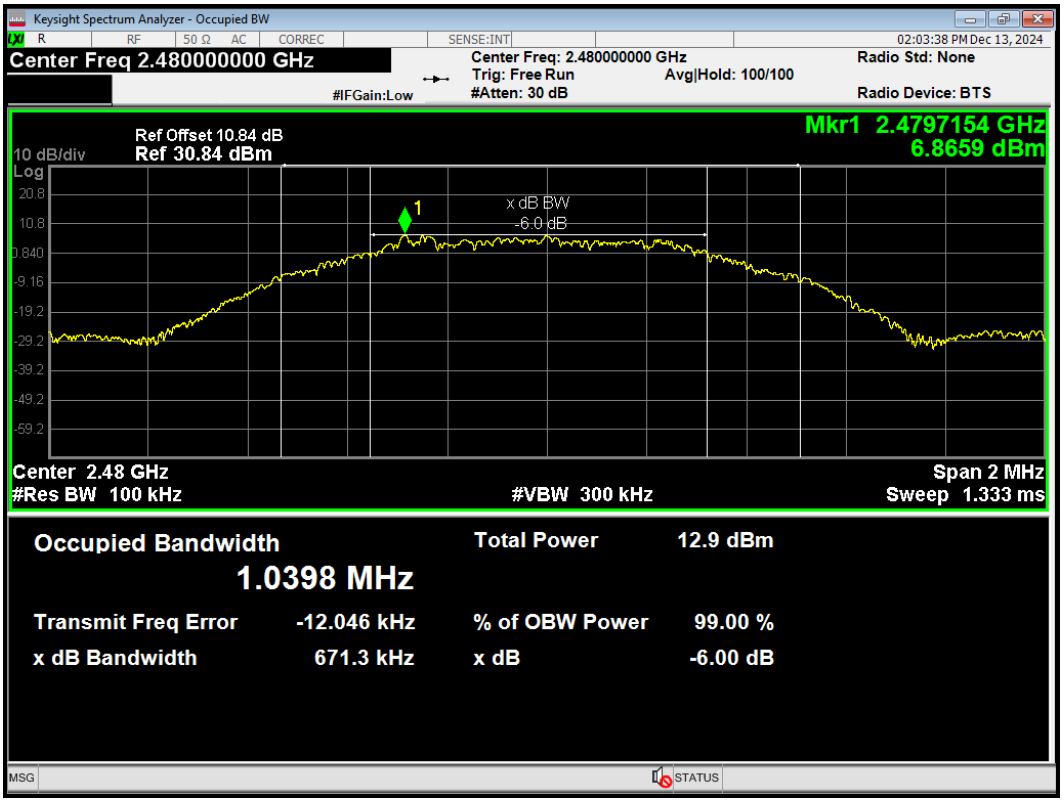
-6dB Bandwidth Bluetooth LE (S=2) 2402MHz



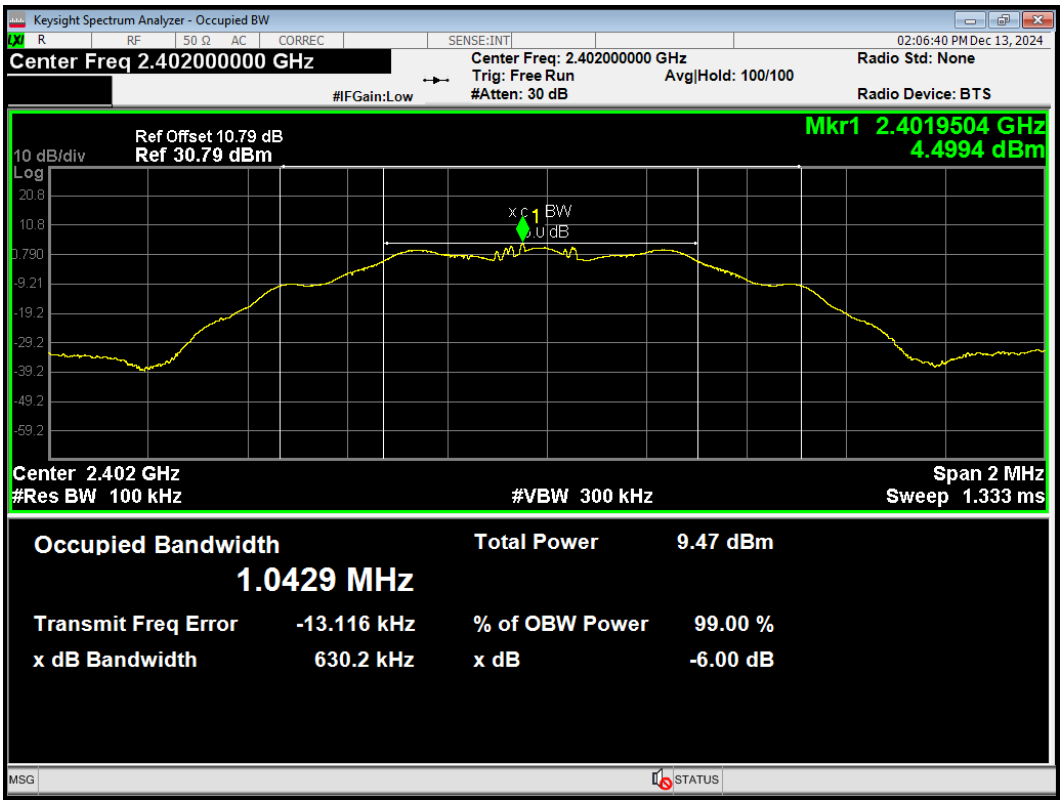
-6dB Bandwidth Bluetooth LE (S=2) 2440MHz



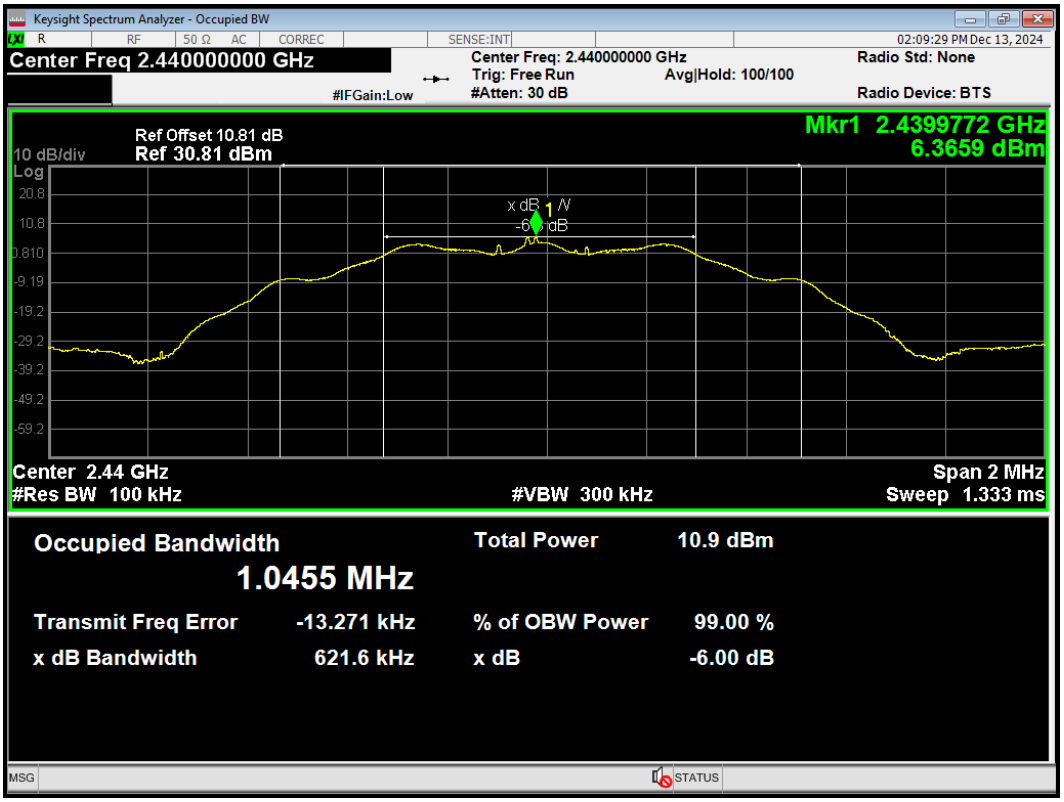
-6dB Bandwidth Bluetooth LE (S=2) 2480MHz



-6dB Bandwidth Bluetooth LE (S=8) 2402MHz



-6dB Bandwidth Bluetooth LE (S=8) 2440MHz



-6dB Bandwidth Bluetooth LE (S=8) 2480MHz