

RF TEST REPORT

Applicant iRay Group

FCC ID 2ACHK-03210006

Product Lux HD 2530 Detector

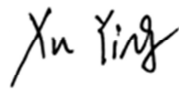
Brand 

Model Lux HD 2530

Report No. EFTA25070154-IE-08-R2

Issue Date November 11, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (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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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: (Original) September 7, 2024 ~ September 20, 2024 (Variant) September 17, 2025 ~ November 3, 2025 Date of Sample Received: (Original) August 1, 2024 (Variant) July 10, 2025			
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.			

Lux HD 2530 (Report No.: EFTA25070154-IE-08-R2) is a variant model of Lux HD 43 (Report No.: R2407A0993-R2).

The detailed product change description please refers to following table:

Model	Difference
Lux HD 43	Size: 460mm x 460mm x 15mm
Lux HD 2530	Size: 281.5mm x 332.3mm x 15mm

This report tests Unwanted Emissions and Conducted Emissions, and recorded in the report.

This report is also used for standard upgrade.

According to customer requirements the detailed standard upgrade please refers to following table:

Old Standard(s)	New Standard(s)
ANSI C63.10-2013	ANSI C63.10-2020

After technical evaluation, only test 6dB Bandwidth for Wi-Fi 2.4G and recorded in the report.

Other test results values all duplicated from original report (Report No.: R2407A0993-R2).

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

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.
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2. General Description of Equipment Under Test

2.1. Applicant and Manufacturer Information

Applicant	iRay Group
Applicant address	No. 999, Huanqiao Road, Pudong New Area 201315, Shanghai, China
Manufacturer	Carestream Health, Inc.
Manufacturer address	150 Verona Street, Rochester, NY, USA 14608

2.2. General Information

EUT Description		
Model	Lux HD 2530	
Lab internal SN	(Original)	R2407A0993/S01
	(Variant)	EFTA25070154-IE-08/S01 EFTA25070154-IE-03/S01
Hardware Version	FPGA MAIN: 3.18	
Software Version	SDK 4.1	
Power Supply	Battery / Adapter	
Antenna Type	Internal Antenna	
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)	
Antenna Gain	Antenna 1: 1.90 dBi Antenna 2: 3.80 dBi	
Additional Beamforming Gain	NA	
Direction Gain	Power: 3.80 dBi PSD: 6.81 dBi	
Operating Frequency Range(s)	802.11b/g/n(HT20)/ax(HE20): 2412 ~ 2462 MHz 802.11n(HT40)/ax(HE40): 2422 ~ 2452 MHz	
Modulation Type	802.11b: DSSS 802.11g/n: OFDM 802.11ax: OFDMA	
Max. Output Power	17.48 dBm	
EUT Accessory		
Medical Switching Power Supply	Manufacturer: Shenzhen Longxc Power Supply Co., LTD. Model: LXCP61-024300	
Rechargeable Li-ion Battery Pack	Manufacturer: Carestream Health, Inc. Model: BATTERY-KX DC 11.55V, 4700mAh	

CARESTREAM DRX-1	Manufacturer: Carestream Health, Inc. Model: DRX-TPC1 Input: 100-240V AC~50/60Hz 1.0A Output: 18V DC 2.0A
Control Box	Manufacturer: Carestream Health, Inc. Model: Control Box-WT
Note: 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 (2025) Radio Frequency Devices

ANSI C63.10-2020

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.

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		
	Antenna 1	Antenna 2	MIMO
802.11b	1 Mbps	1 Mbps	/
802.11g	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	802.11n HT20/40 802.11ax HE20/40
6dB Bandwidth	802.11b/g	--	802.11n HT20/40 802.11ax HE20/40
Band Edge	802.11b/g	--	802.11n HT20/40 802.11ax HE20/40
Power Spectral Density	O	O	802.11n HT20/40 802.11ax HE20/40
Spurious RF Conducted Emissions	802.11b/g	--	802.11n HT20/40 802.11ax HE20/40
Unwanted Emissions	802.11b/g	--	802.11n HT20/40 802.11ax HE20/40
Conducted Emission	--	--	802.11n HT20
Note: "O": test all bands			

5. Test Case

5.1. Maximum output power

Ambient Condition

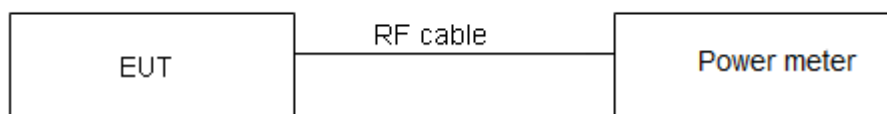
Temperature	Relative humidity
15°C ~ 35°C	20% ~ 80%

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	$\leq 1W$ (30dBm)
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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.

5.2. 99% Bandwidth and 6dB Bandwidth

Ambient Condition

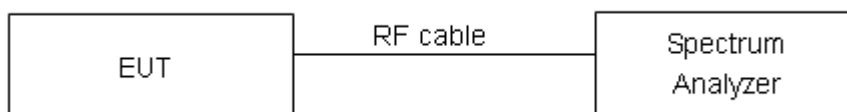
Temperature	Relative humidity
15°C ~ 35°C	20% ~ 80%

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.
Detector=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
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Measurement Uncertainty

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

5.3. Band Edge

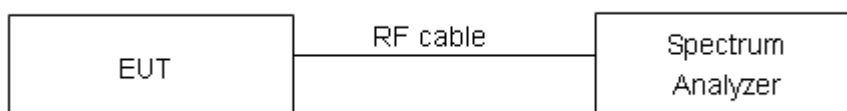
Ambient Condition

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 the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.” If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.”

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
2GHz-3GHz	1.407 dB

5.4. Power Spectral Density

Ambient Condition

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

Method of Measurement

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

Method AVGPSD-1 was used for this test.

- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- Set VBW $\geq [3 \times \text{RBW}]$
- Detector=power averaging (rms) or sample detector (when rms not available)
- Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span}/\text{RBW}]$
- Sweep time auto couple
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level.
- If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

Method AVGPSD-2 was used for this test.

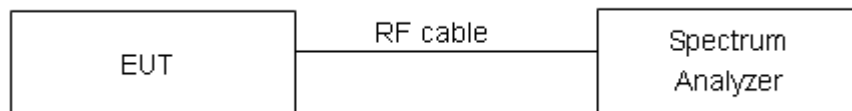
- Measure the duty cycle (D) of the transmitter output signal as described in 11.6
- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- Set VBW $\geq [3 \times \text{RBW}]$
- Detector= power averaging (rms) or sample detector (when rms not available)
- Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span}/\text{RBW}]$
- Sweep time =auto couple
- Do not use sweep triggering; allow sweep to "free run"
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level

l) Add $[10 \log(1/D)]$, where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time

m) If measured value exceeds requirement specified by regulatory agency then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

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(e) specifies that " For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. "

Limits	$\leq 8 \text{ dBm} / 3\text{kHz}$
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Measurement Uncertainty

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

5.5. Spurious RF Conducted Emissions

Ambient Condition

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

Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to 100 kHz and VBW to 300 kHz, Sweep is set to AUTO.

The test is in transmitting mode.

Test Setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. ”

Test Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	5.43	-24.57
	2437	6.56	-23.44
	2462	7.05	-22.95
802.11g	2412	4.59	-25.41
	2437	5.25	-24.75
	2462	6.12	-23.88
802.11n HT20	2412	0.95	-29.05
	2437	1.61	-28.39
	2462	0.85	-29.15
802.11n HT40	2422	-2.52	-32.52
	2437	-2.16	-32.16
	2452	-2.10	-32.10

802.11ax HE20	2412	0.57	-29.43
	2437	1.82	-28.18
	2462	1.80	-28.20
802.11ax HE40	2422	-2.34	-32.34
	2437	-1.87	-31.87
	2452	-1.90	-31.90

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
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

5.6. Unwanted Emission

Ambient Condition

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

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 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. Sweep the Restricted Band and the emissions less than 20 dB below the permissible value are reported.

The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

This method refer to ANSI C63.10.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:

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 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.

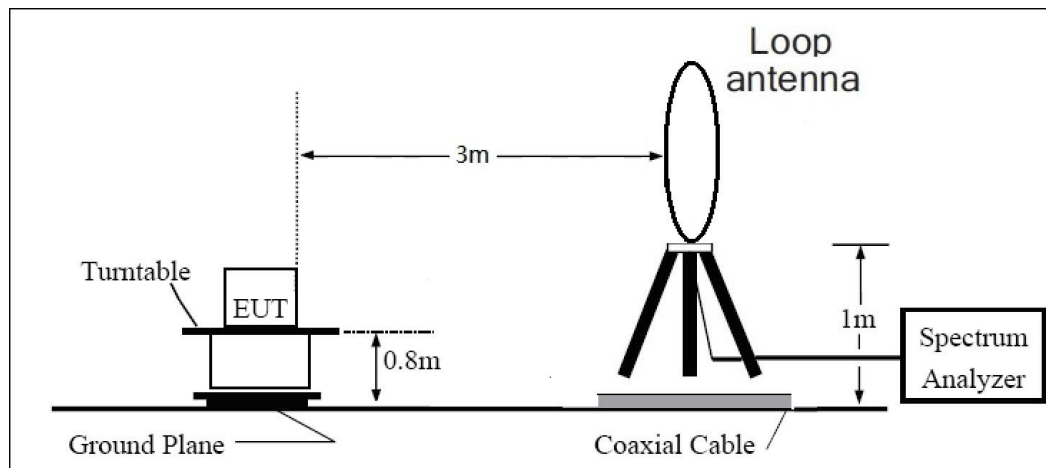
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

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.

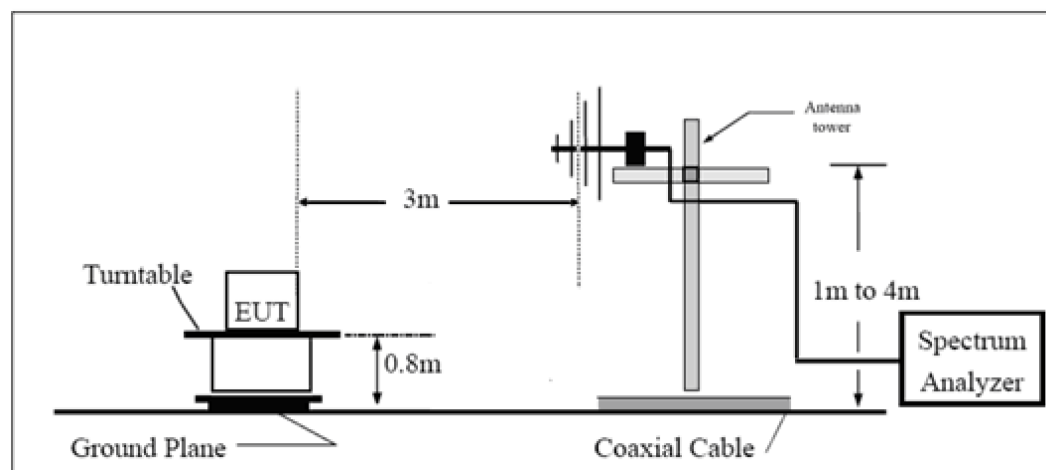
The test is in transmitting mode.

Test Setup

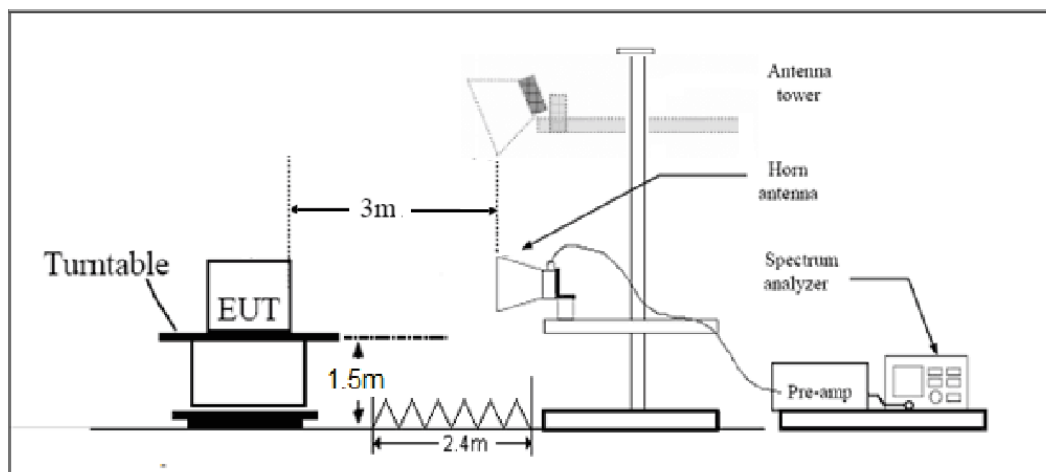
9kHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(μ V/m)	Field strength(dB μ V/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

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dB μ V/m

Average Limit=54 dB μ V/m

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

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			

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

5.7. Conducted Emission

Ambient Condition

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

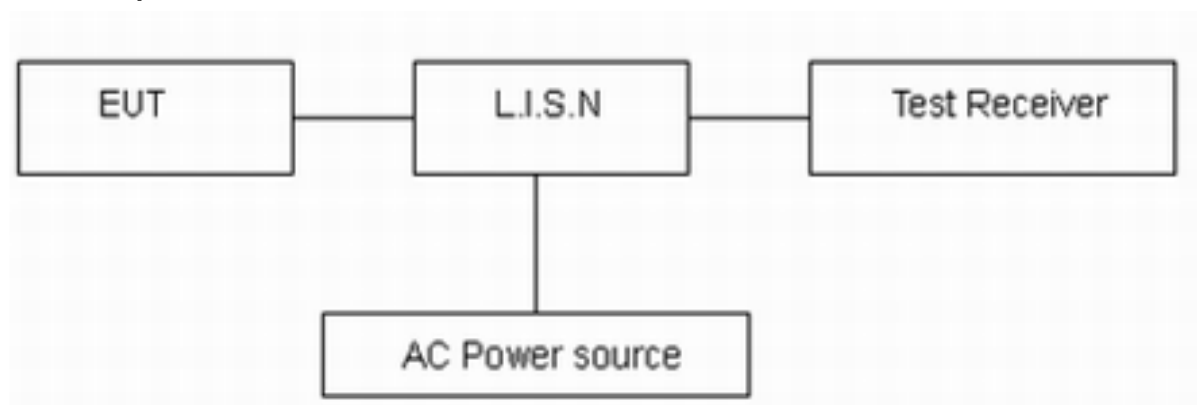
Methods of Measurement

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 L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, 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 120V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

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.

6. Test Results

6.1. Maximum output power

Power Index				
Packet Type	Frequency (MHz)/CH	SISO Antenna 1	SISO Antenna 1	MIMO
802.11b	2412/CH1	15	15	--
	2442/CH7	15	15	--
	2472/CH13	15	15	--
802.11g	2412/CH1	15	15	--
	2442/CH7	15	15	--
	2472/CH13	15	15	--
802.11n HT20	2412/CH1	13	13	13
	2442/CH7	13	13	13
	2472/CH13	13	13	13
802.11n HT40	2422/CH3	11	11	11
	2442/CH7	11	11	11
	2462/CH11	11	11	11
802.11ax HE20	2412/CH1	12	12	12
	2442/CH7	12	12	12
	2472/CH13	12	12	12
802.11ax HE40	2422/CH3	11	11	11
	2442/CH7	11	11	11
	2462/CH11	11	11	11

Test Mode	Duty cycle	Duty cycle correction Factor (dB)
802.11b	0.988	0.000
802.11g	0.935	0.290
802.11n HT20	0.980	0.090
802.11n HT40	0.959	0.180
802.11ax HE20	0.913	0.400
802.11ax HE40	0.846	0.730
Note: when Duty cycle ≥ 0.98 , Duty cycle correction Factor not required.		

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	15.00	15.00	30	PASS
	2437/CH 6	16.40	16.40	30	PASS
	2462/CH11	16.59	16.59	30	PASS
802.11g	2412/CH 1	15.35	15.64	30	PASS
	2437/CH 6	16.91	17.20	30	PASS
	2462/CH11	17.19	17.48	30	PASS
802.11n HT20	2412/CH 1	13.09	13.18	30	PASS
	2437/CH 6	13.62	13.71	30	PASS
	2462/CH11	14.18	14.27	30	PASS
802.11n HT40	2422/CH3	11.12	11.30	30	PASS
	2437/CH6	11.42	11.60	30	PASS
	2452/CH9	11.56	11.74	30	PASS
802.11ax HE20	2412/CH 1	12.00	12.40	30	PASS
	2437/CH 6	12.42	12.82	30	PASS
	2462/CH11	12.97	13.37	30	PASS
802.11ax HE40	2422/CH3	11.00	11.73	30	PASS
	2437/CH6	11.23	11.96	30	PASS
	2452/CH9	11.46	12.19	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	15.38	15.38	30	PASS
	2437/CH 6	15.76	15.76	30	PASS
	2462/CH11	15.52	15.52	30	PASS
802.11g	2412/CH 1	14.89	15.18	30	PASS
	2437/CH 6	16.04	16.33	30	PASS
	2462/CH11	15.77	16.06	30	PASS
802.11n HT20	2412/CH 1	12.69	12.78	30	PASS
	2437/CH 6	13.59	13.68	30	PASS
	2462/CH11	13.67	13.76	30	PASS
802.11n HT40	2422/CH3	11.08	11.26	30	PASS
	2437/CH6	11.46	11.64	30	PASS
	2452/CH9	11.70	11.88	30	PASS
802.11ax HE20	2412/CH 1	12.11	12.51	30	PASS
	2437/CH 6	12.63	13.03	30	PASS
	2462/CH11	12.77	13.17	30	PASS
802.11ax HE40	2422/CH3	10.90	11.63	30	PASS
	2437/CH6	11.33	12.06	30	PASS
	2452/CH9	11.62	12.35	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)			
802.11n HT20	2412/CH 1	13.00	13.09	12.92	13.01	16.06	30	PASS
	2437/CH 6	13.13	13.22	13.38	13.47	16.36	30	PASS
	2462/CH11	13.50	13.59	13.00	13.09	16.36	30	PASS
802.11n HT40	2422/CH3	10.69	10.87	10.60	10.78	13.84	30	PASS
	2437/CH6	10.90	11.08	10.92	11.10	14.10	30	PASS
	2452/CH9	11.04	11.22	10.99	11.17	14.20	30	PASS
802.11ax HE20	2412/CH 1	11.75	12.15	11.63	12.03	15.10	30	PASS
	2437/CH 6	12.00	12.40	12.25	12.65	15.54	30	PASS
	2462/CH11	12.47	12.87	11.98	12.38	15.64	30	PASS
802.11ax HE40	2422/CH3	10.48	11.21	10.44	11.17	14.20	30	PASS
	2437/CH6	10.64	11.37	10.75	11.48	14.44	30	PASS
	2452/CH9	10.92	11.65	10.94	11.67	14.67	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 = $G_{\text{ANT MAX}} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

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

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

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

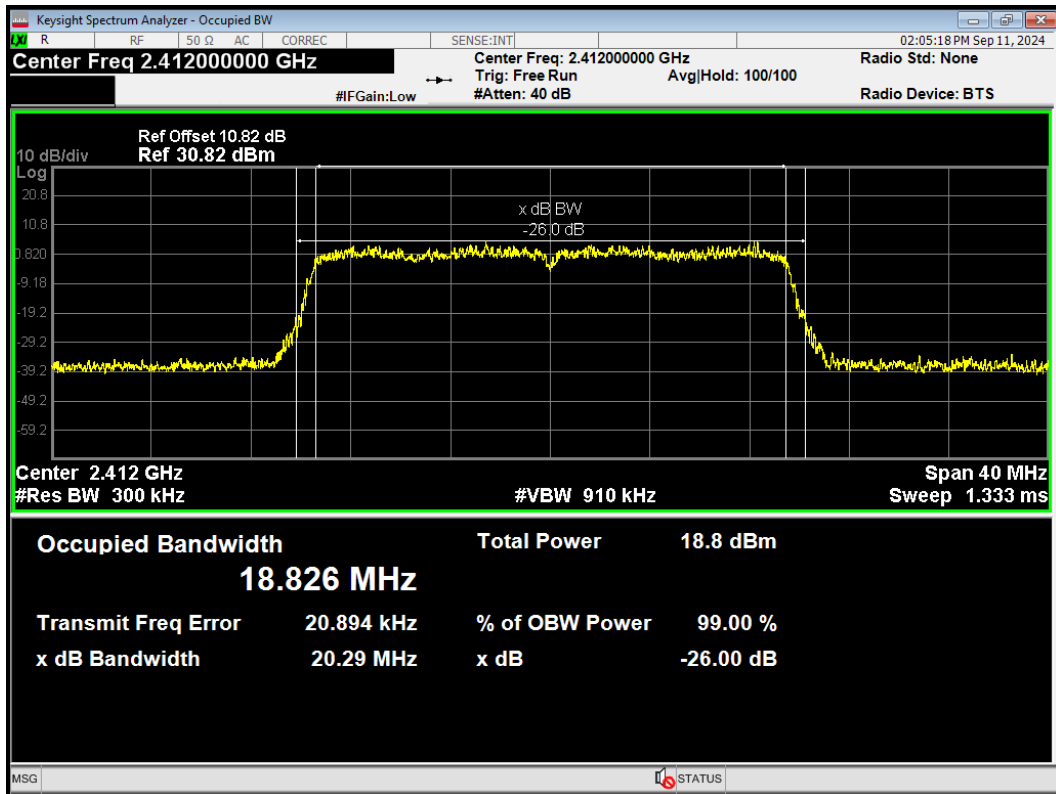
So directional gain = $G_{\text{ANT MAX}} + \text{Array Gain} = 3.80 + 0 = 3.80 \text{ dB} < 6 \text{ dB}$. So the power limit is 30dBm

6.2. 99% Bandwidth and 6dB Bandwidth

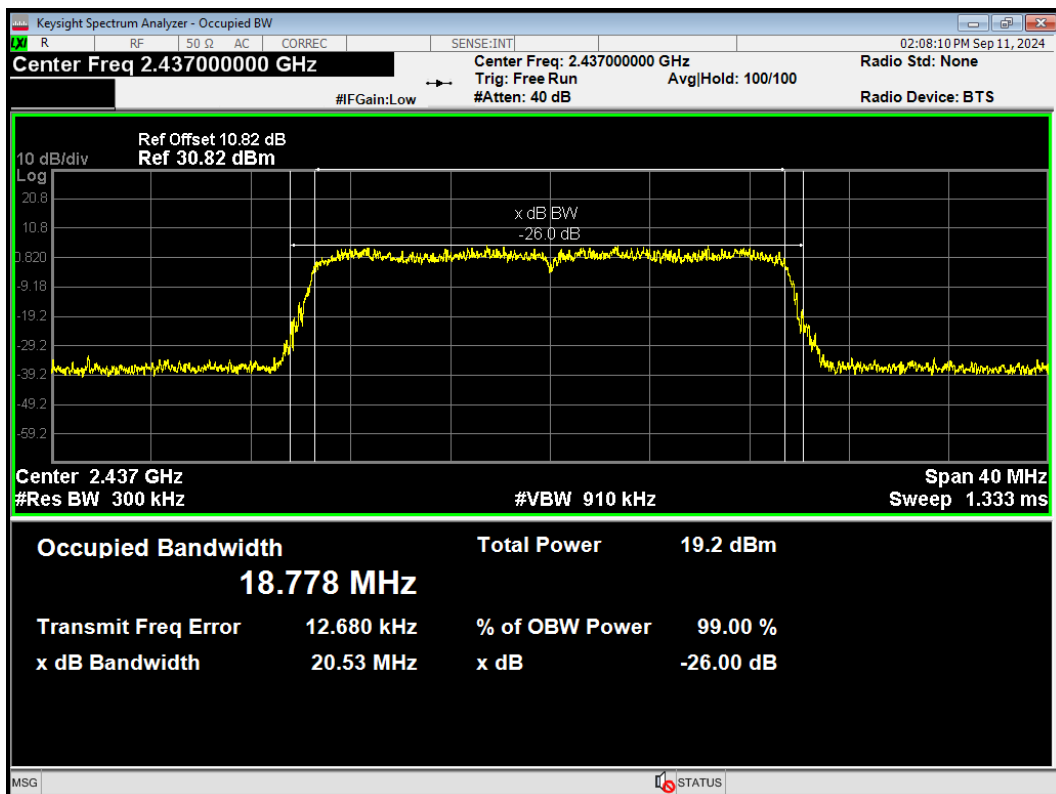
Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11b	2412	13.520	8.164	500	PASS
	2437	13.201	8.172	500	PASS
	2462	13.131	8.163	500	PASS
802.11g	2412	16.652	16.279	500	PASS
	2437	16.949	16.314	500	PASS
	2462	16.730	16.192	500	PASS
802.11n HT20	2412	17.678	17.106	500	PASS
	2437	17.674	17.397	500	PASS
	2462	17.664	17.613	500	PASS
802.11n HT40	2422	36.174	35.602	500	PASS
	2437	36.192	35.587	500	PASS
	2452	36.223	35.635	500	PASS
802.11ax HE20	2412	18.826	18.548	500	PASS
	2437	18.778	18.800	500	PASS
	2462	18.801	18.839	500	PASS
802.11ax HE40	2422	37.445	36.660	500	PASS
	2437	37.540	36.967	500	PASS
	2452	37.500	37.164	500	PASS

99%bandwidth

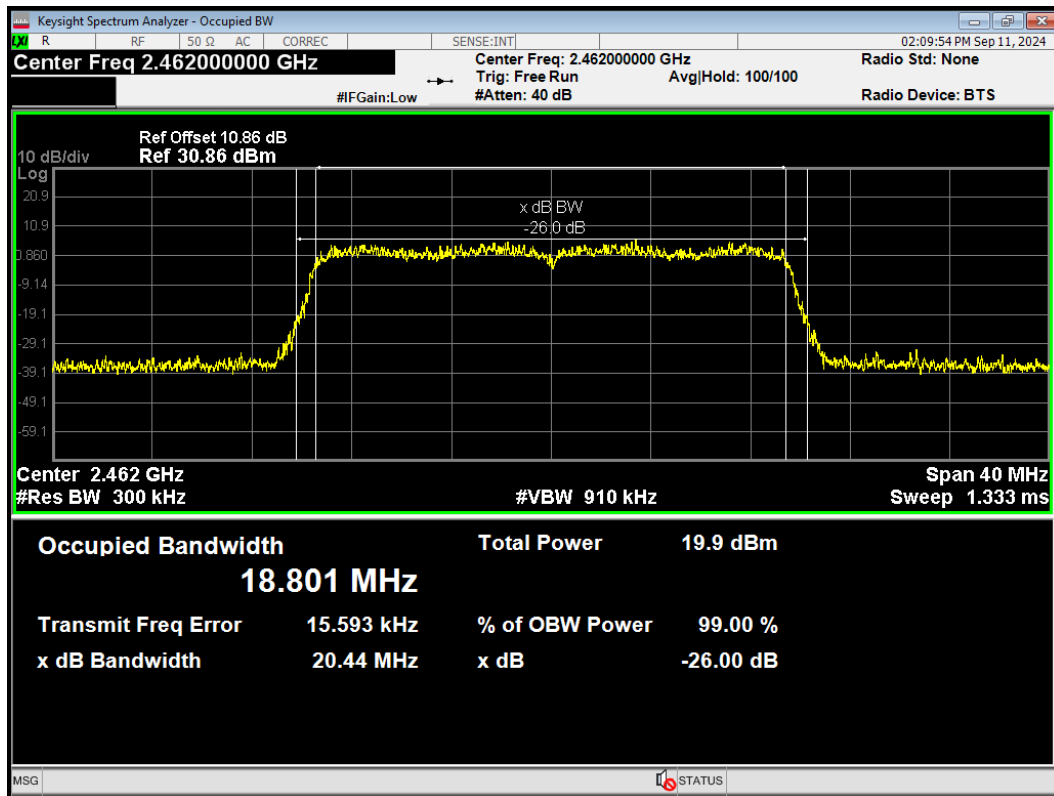
OBW 802.11ax(HE20) 2412MHz



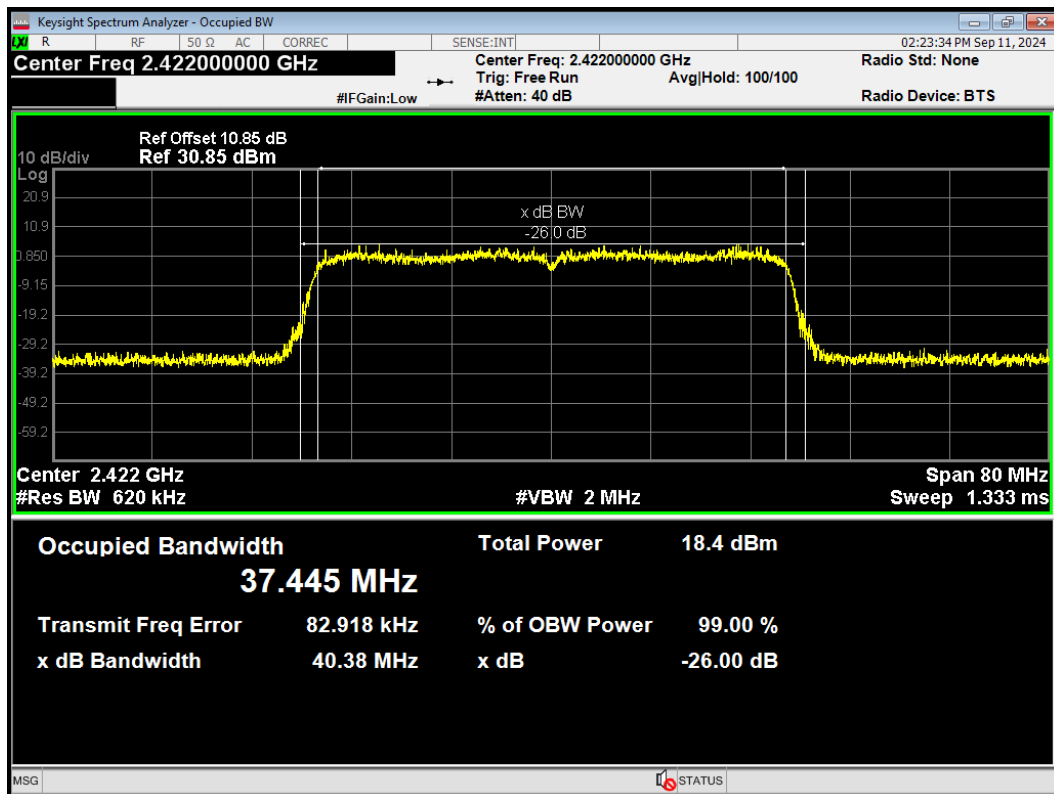
OBW 802.11ax(HE20) 2437MHz



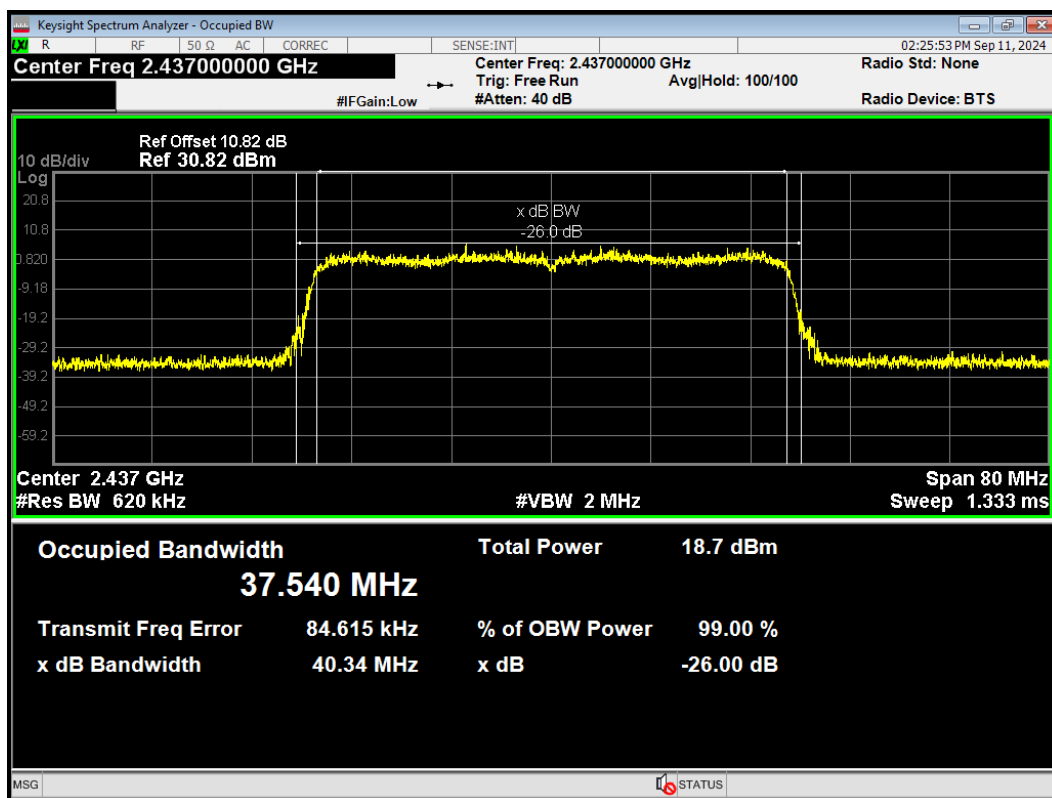
OBW 802.11ax(HE20) 2462MHz



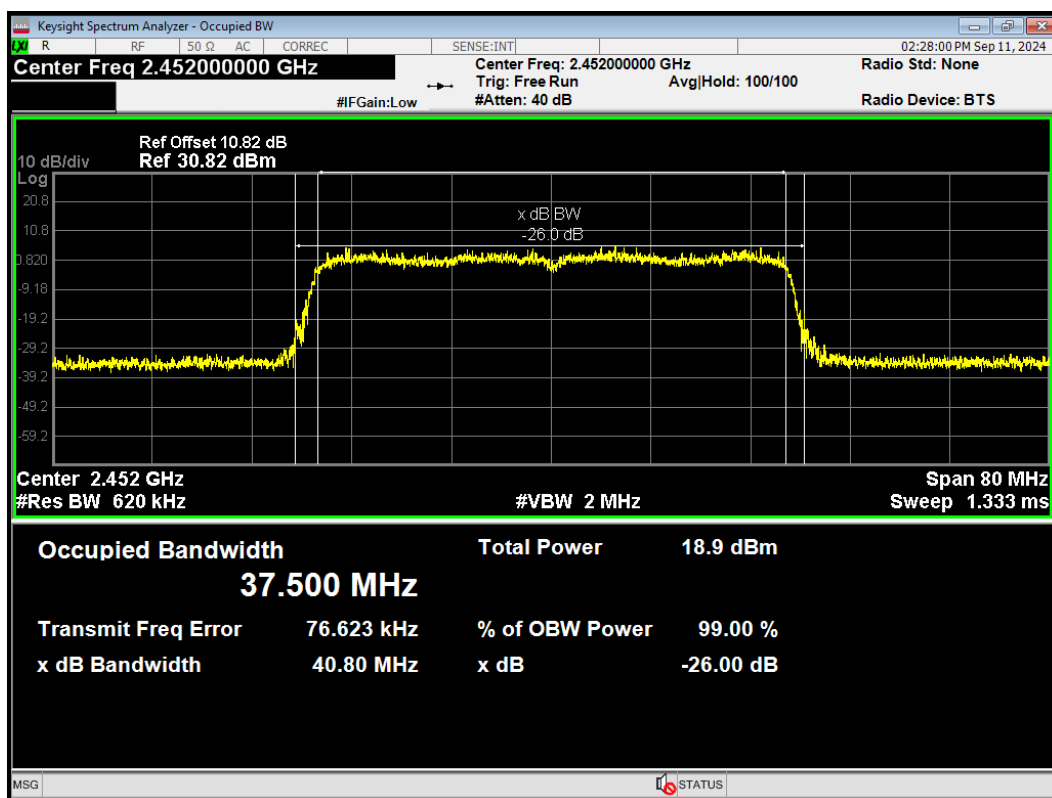
OBW 802.11ax(HE40) 2422MHz



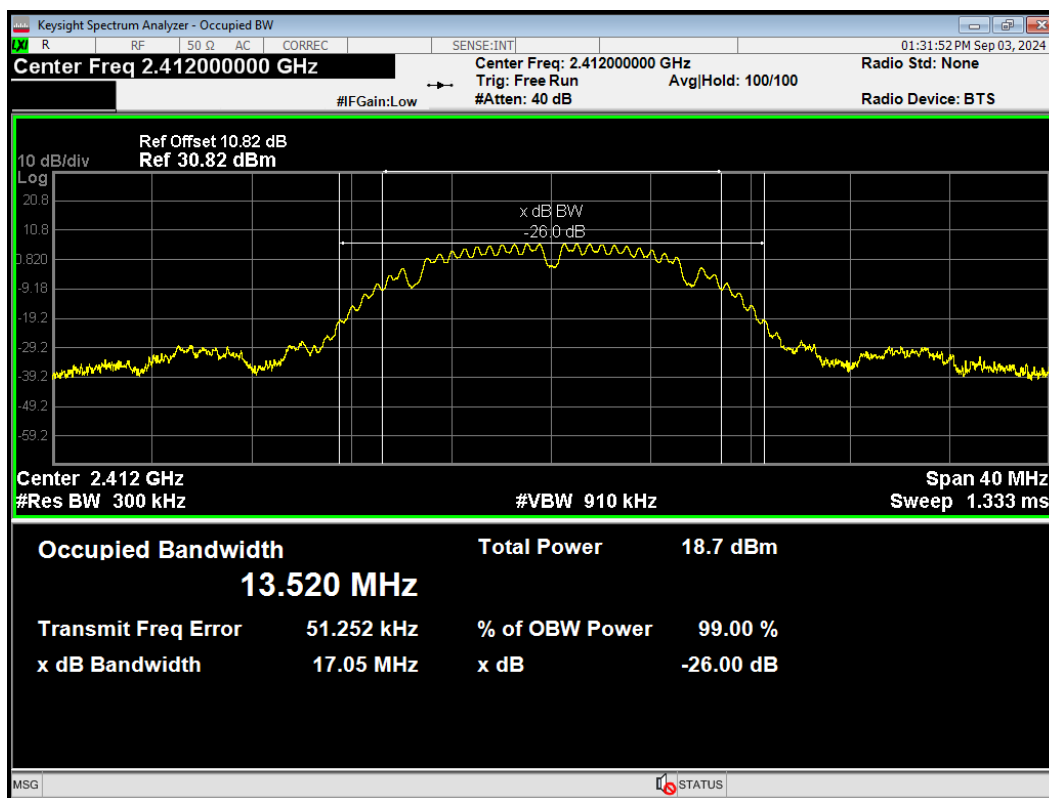
OBW 802.11ax(HE40) 2437MHz



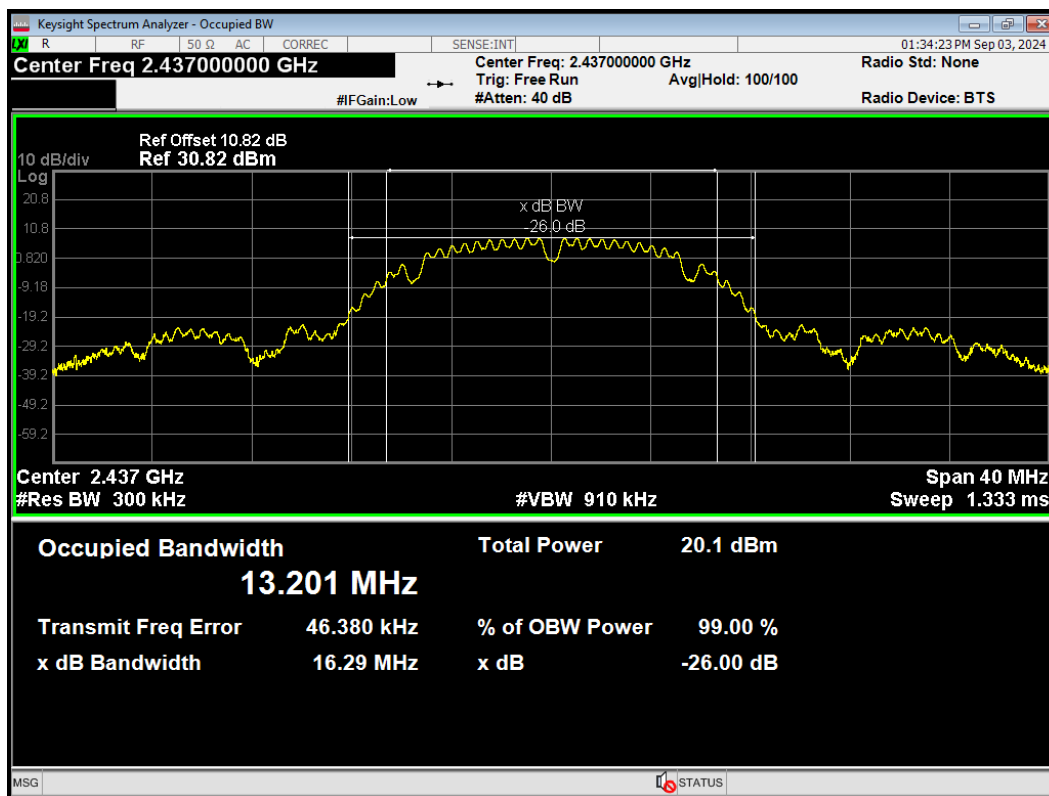
OBW 802.11ax(HE40) 2452MHz



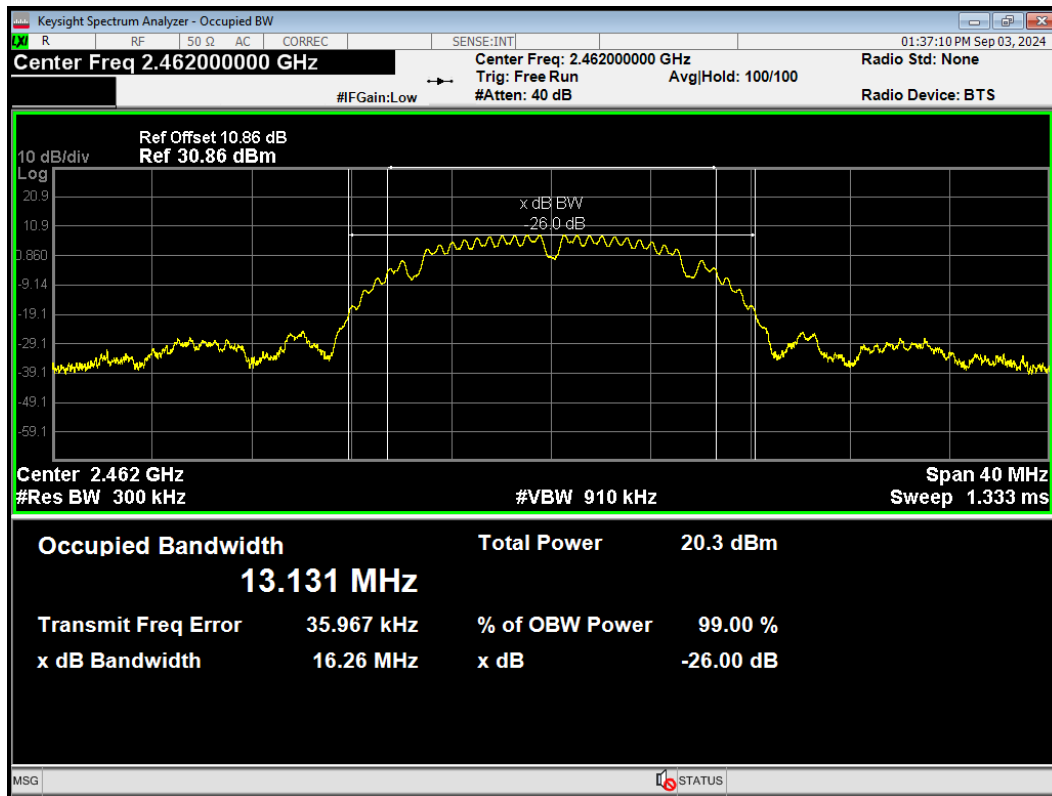
OBW 802.11b 2412MHz



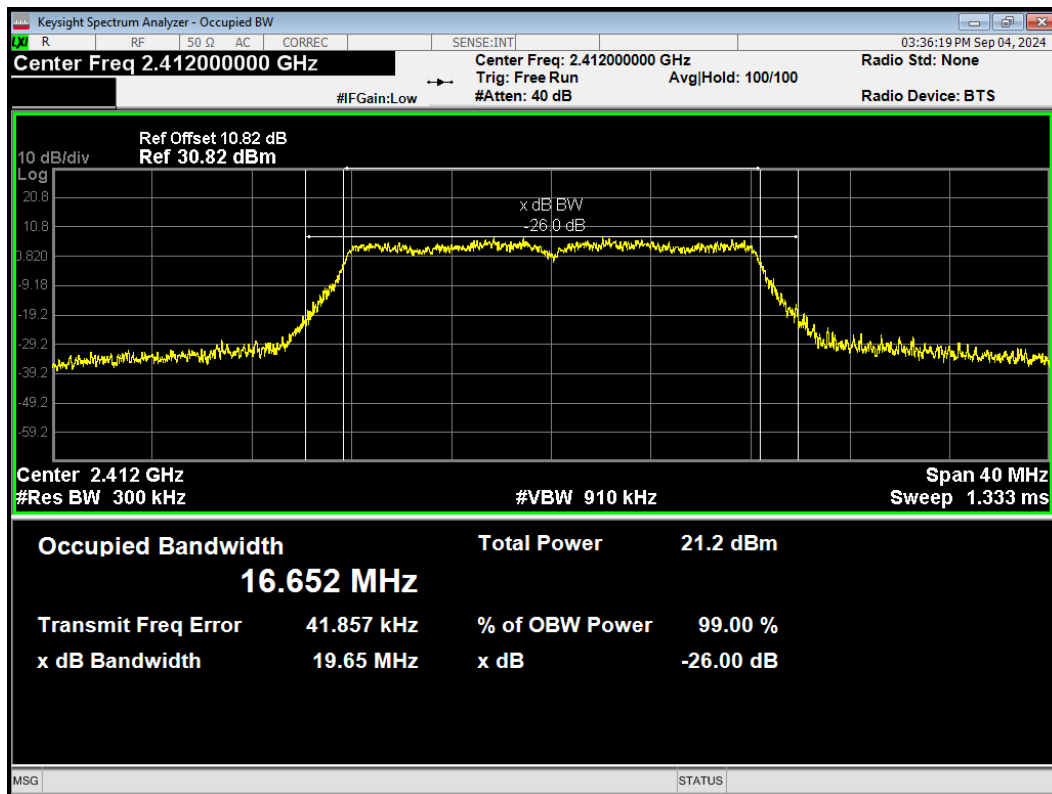
OBW 802.11b 2437MHz



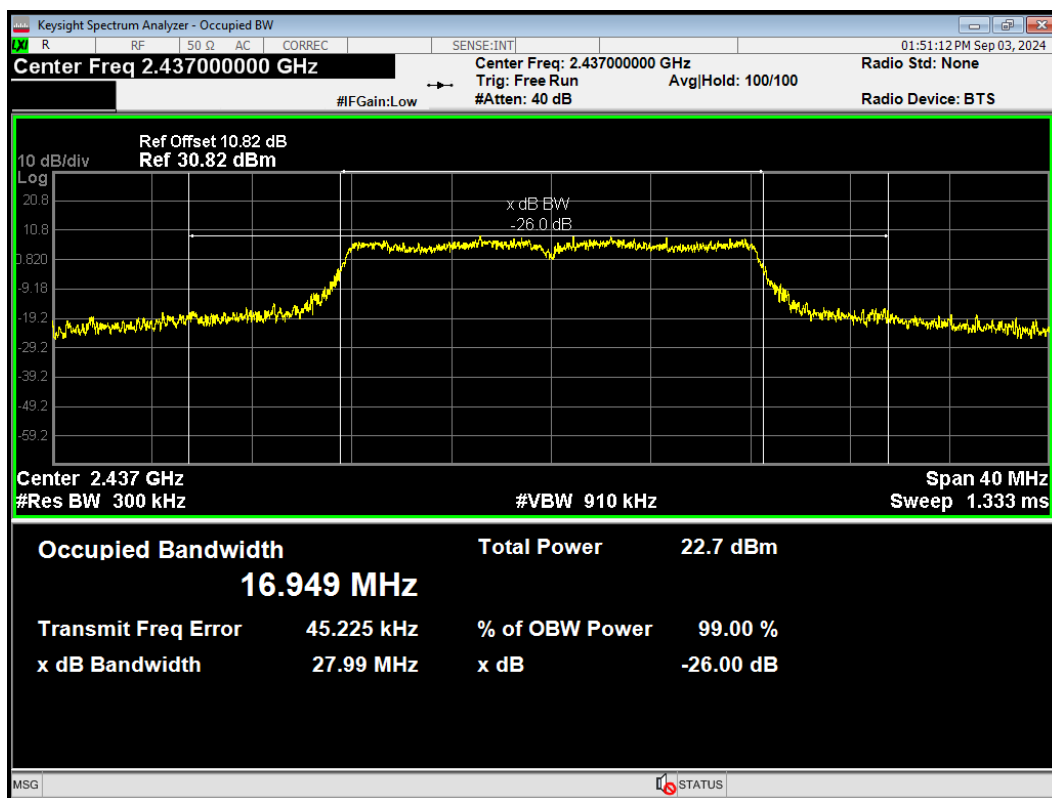
OBW 802.11b 2462MHz



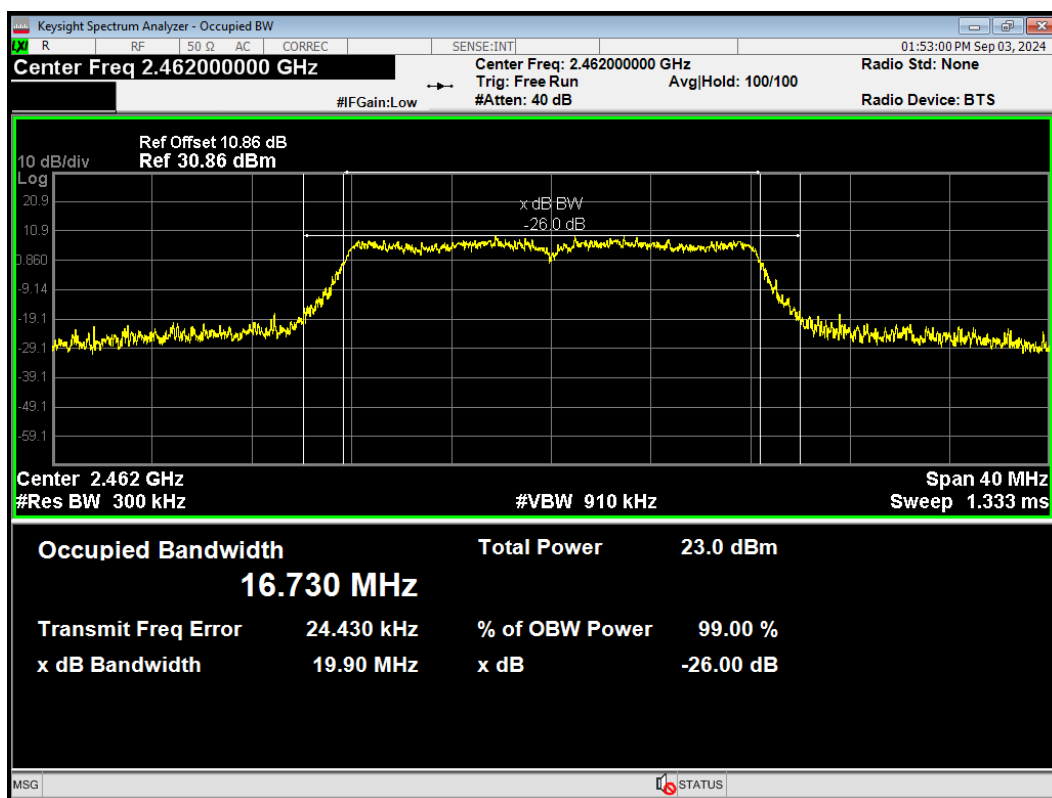
OBW 802.11g 2412MHz



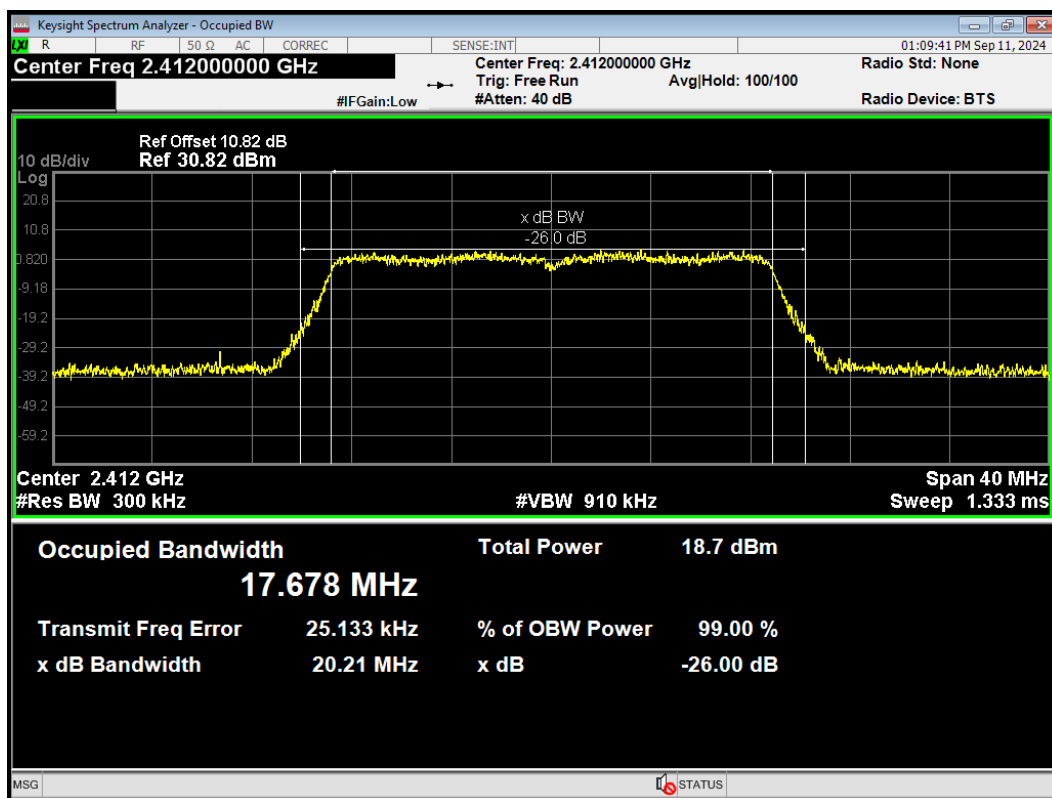
OBW 802.11g 2437MHz



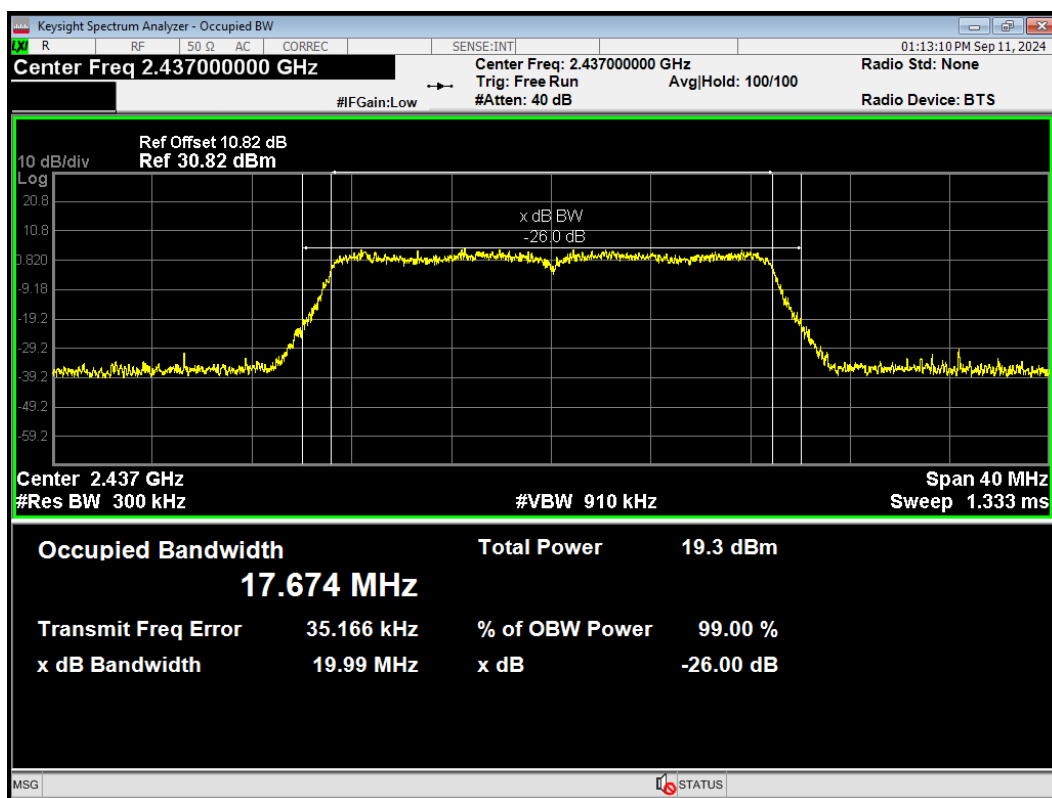
OBW 802.11g 2462MHz



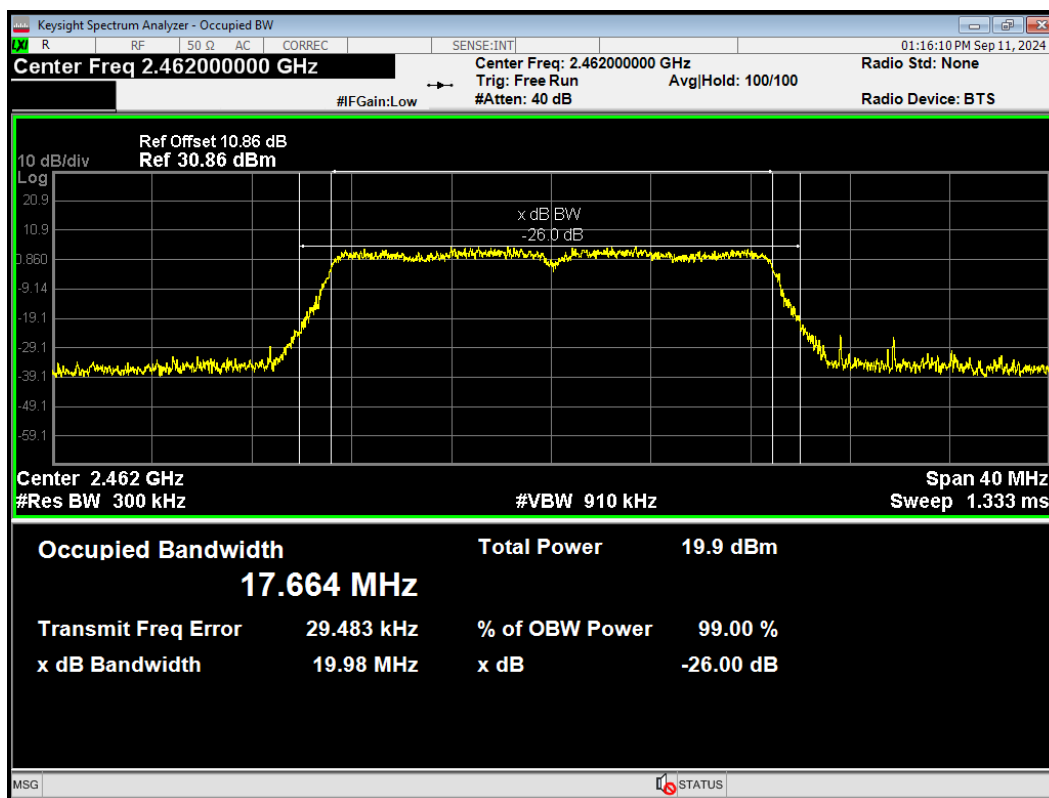
OBW 802.11n(HT20) 2412MHz



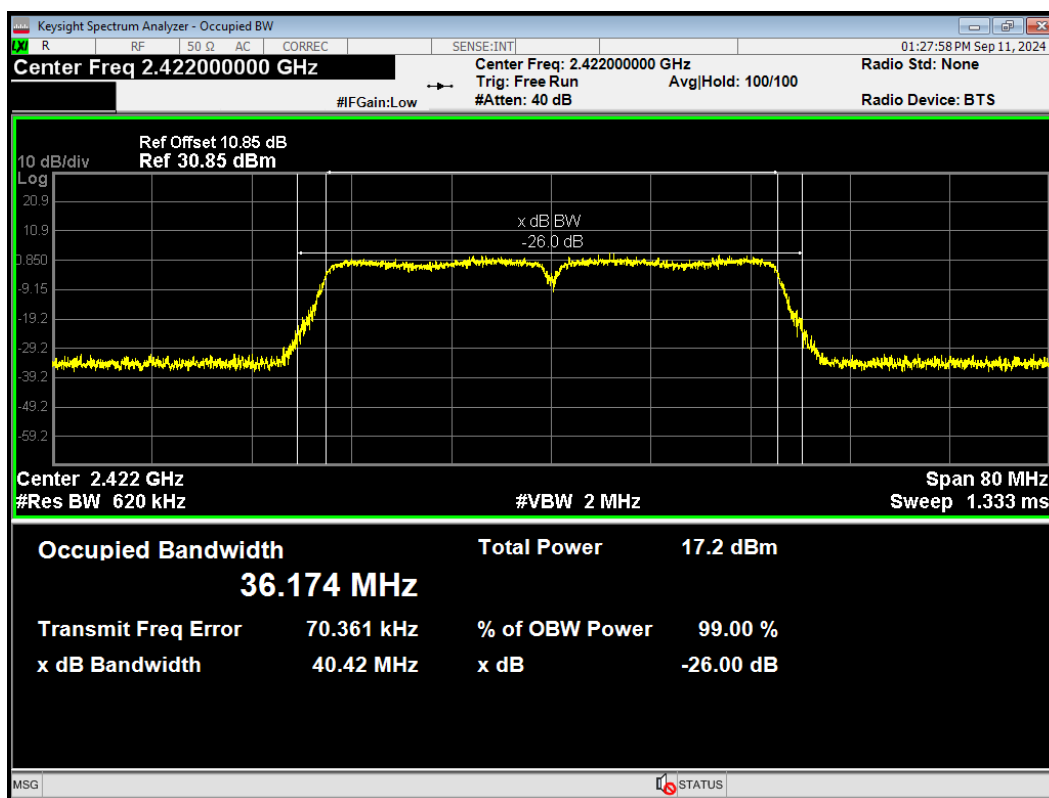
OBW 802.11n(HT20) 2437MHz



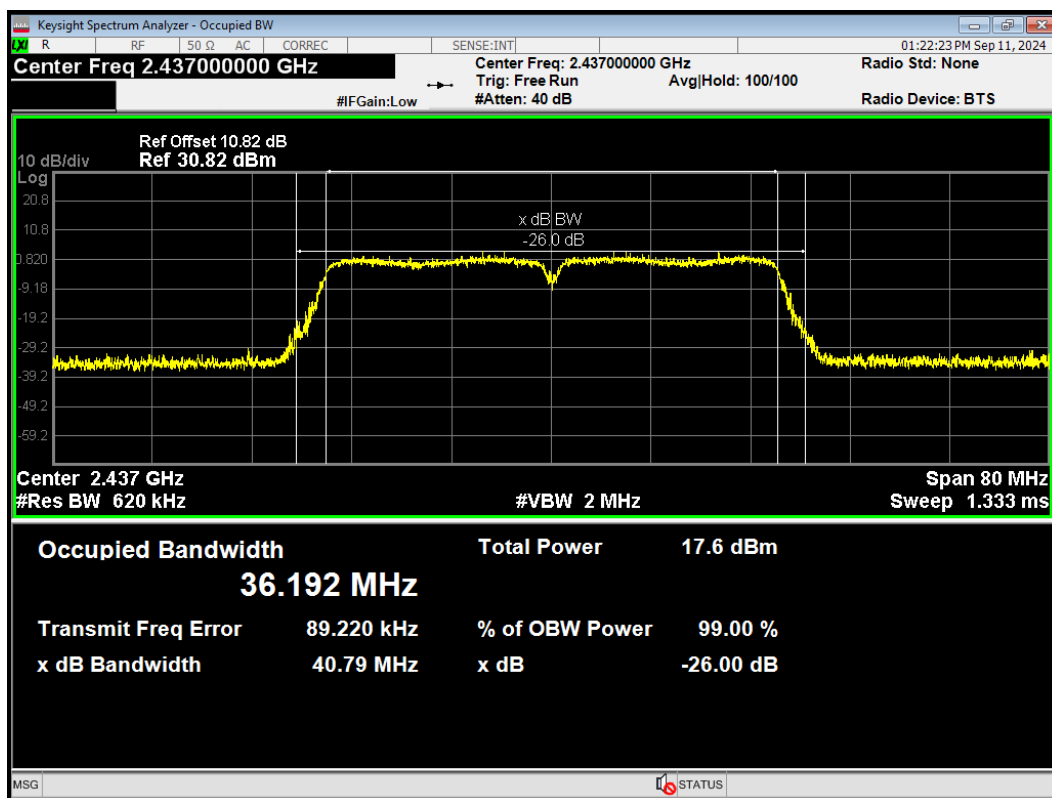
OBW 802.11n(HT20) 2462MHz



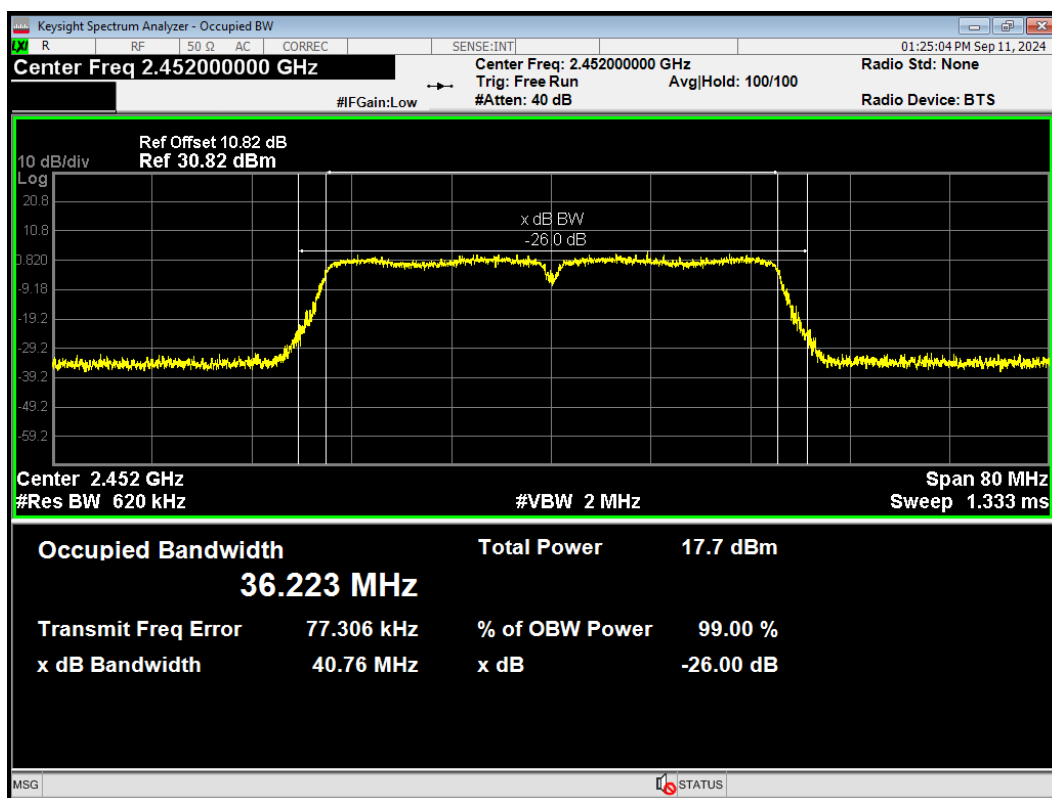
OBW 802.11n(HT40) 2422MHz



OBW 802.11n(HT40) 2437MHz

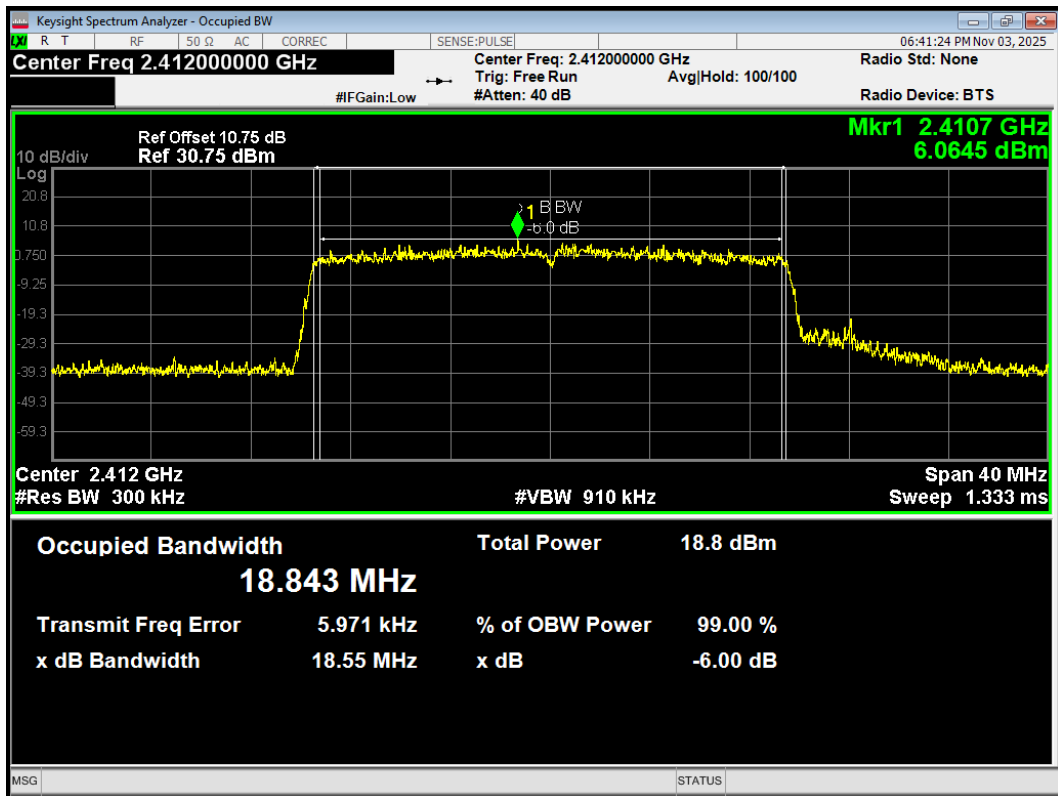


OBW 802.11n(HT40) 2452MHz

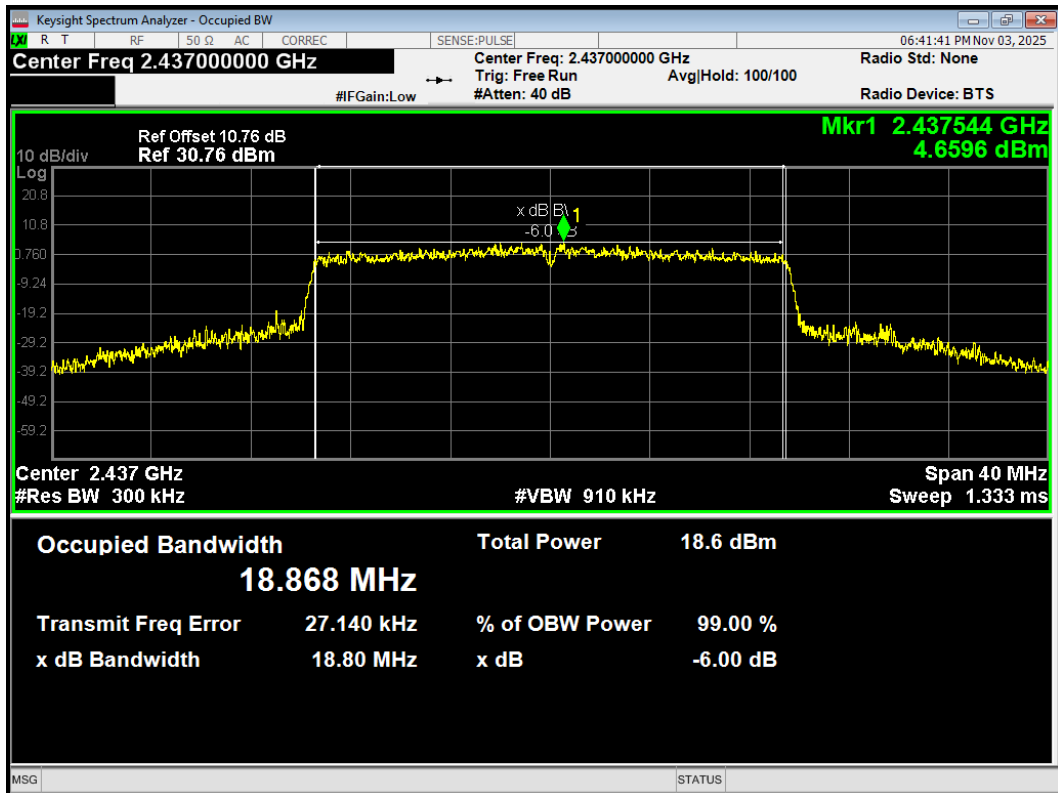


6 dB bandwidth

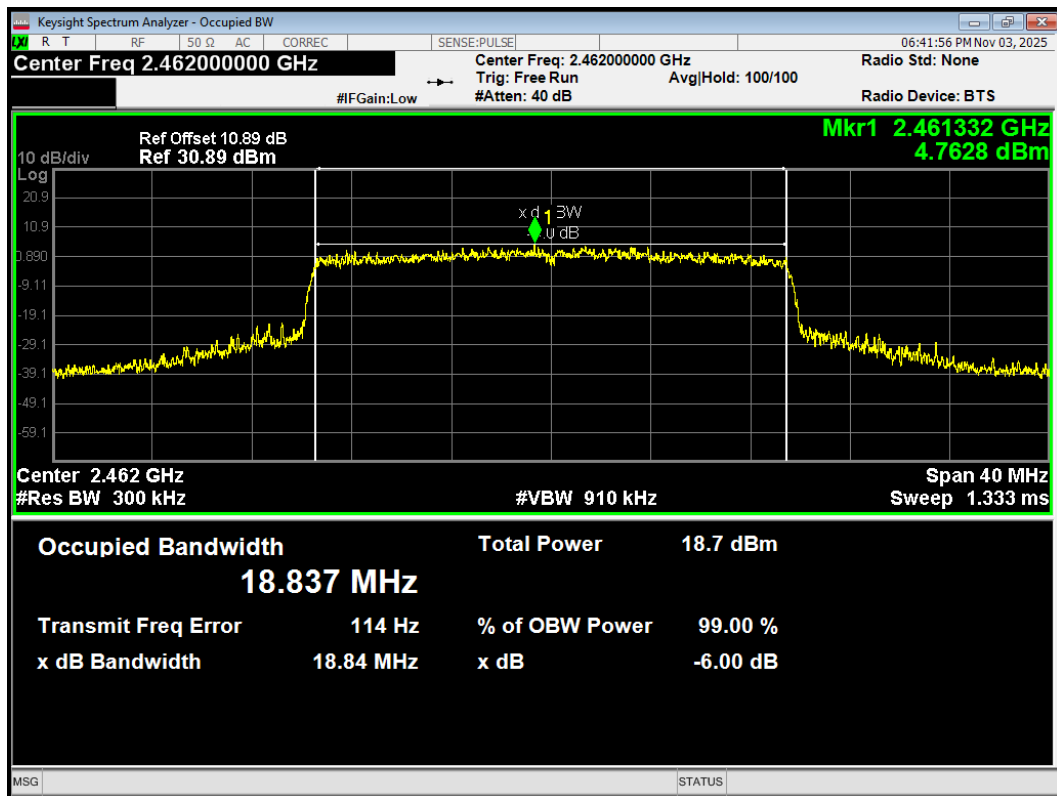
-6dB Bandwidth 802.11ax(HE20) 2412MHz



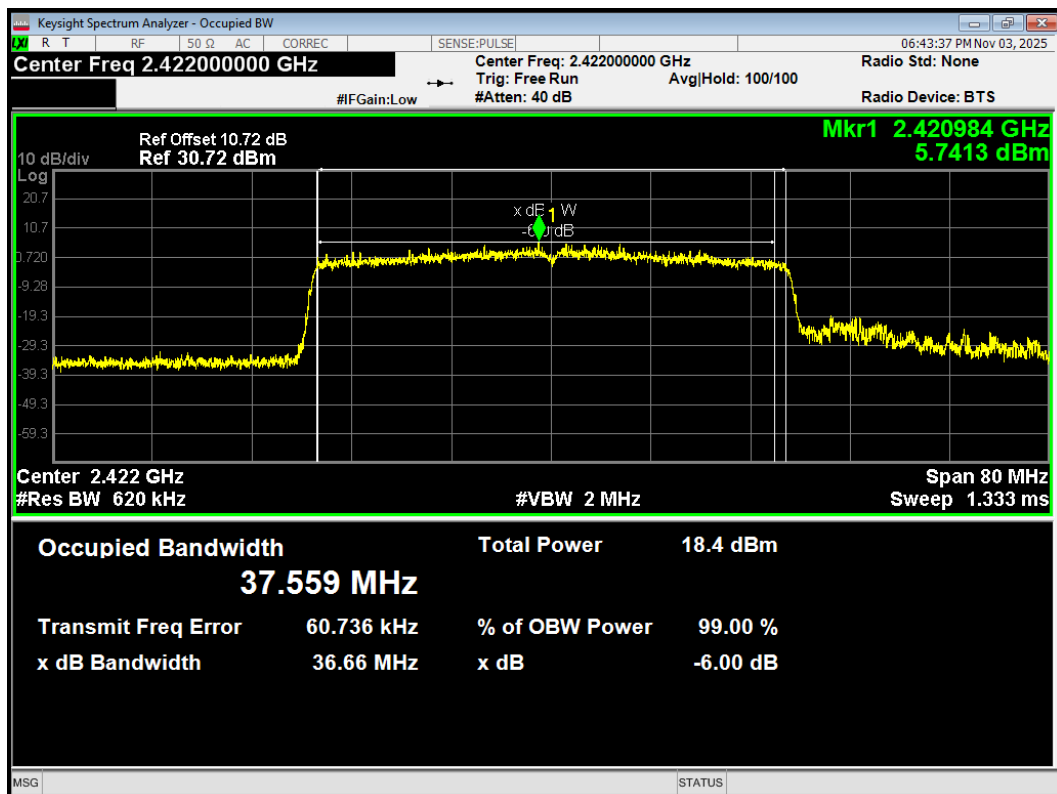
-6dB Bandwidth 802.11ax(HE20) 2437MHz



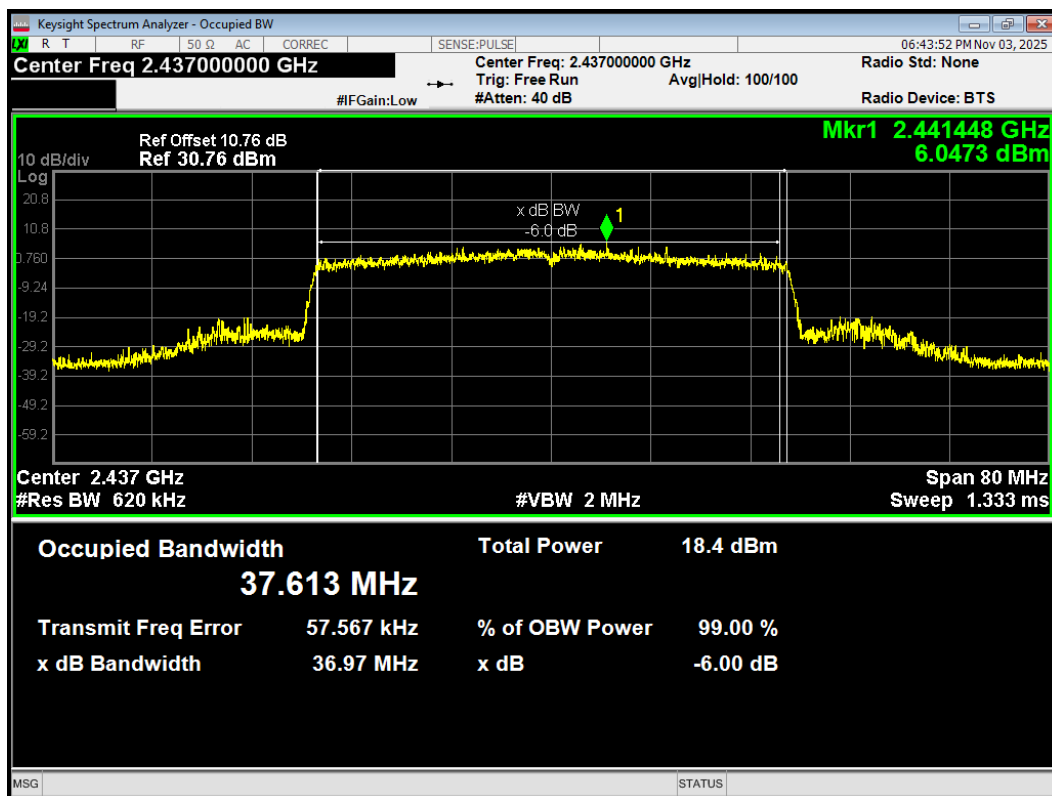
-6dB Bandwidth 802.11ax(HE20) 2462MHz



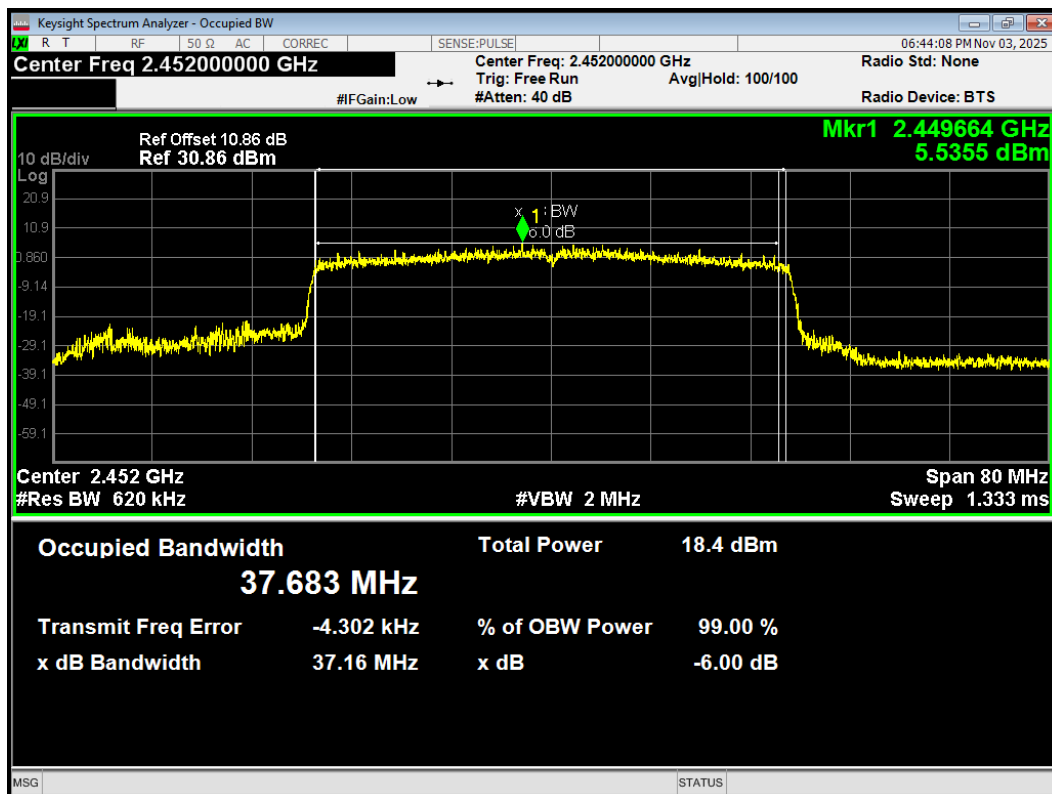
-6dB Bandwidth 802.11ax(HE40) 2422MHz



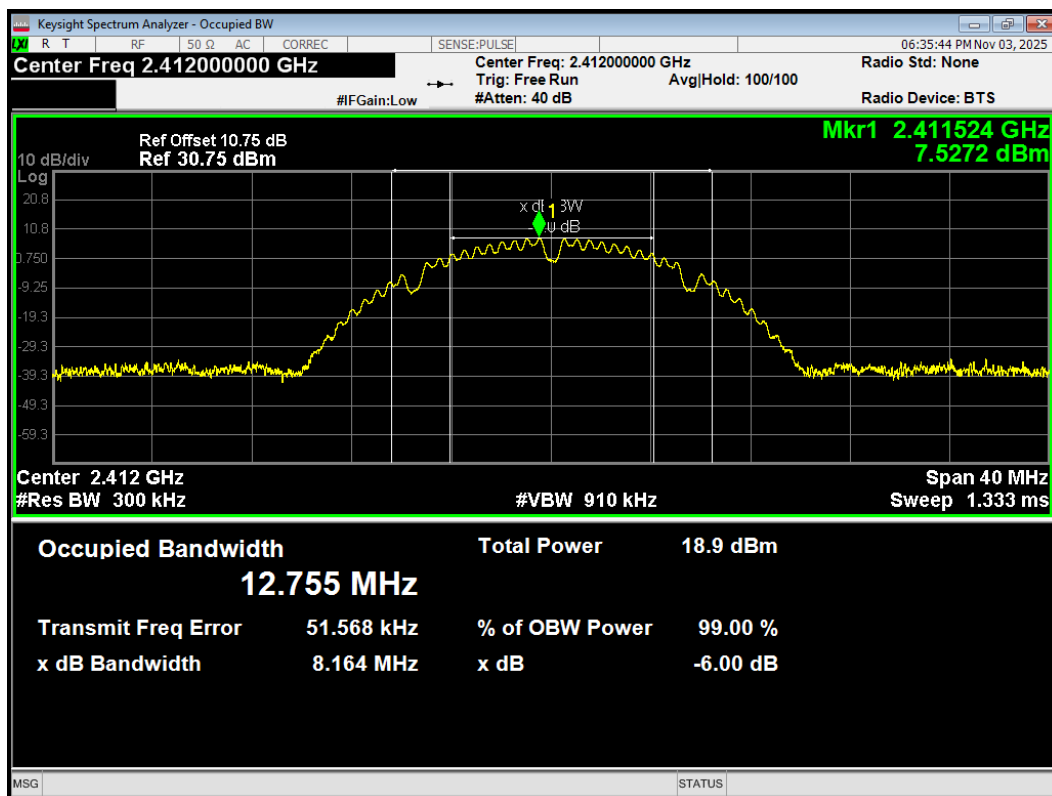
-6dB Bandwidth 802.11ax(HE40) 2437MHz



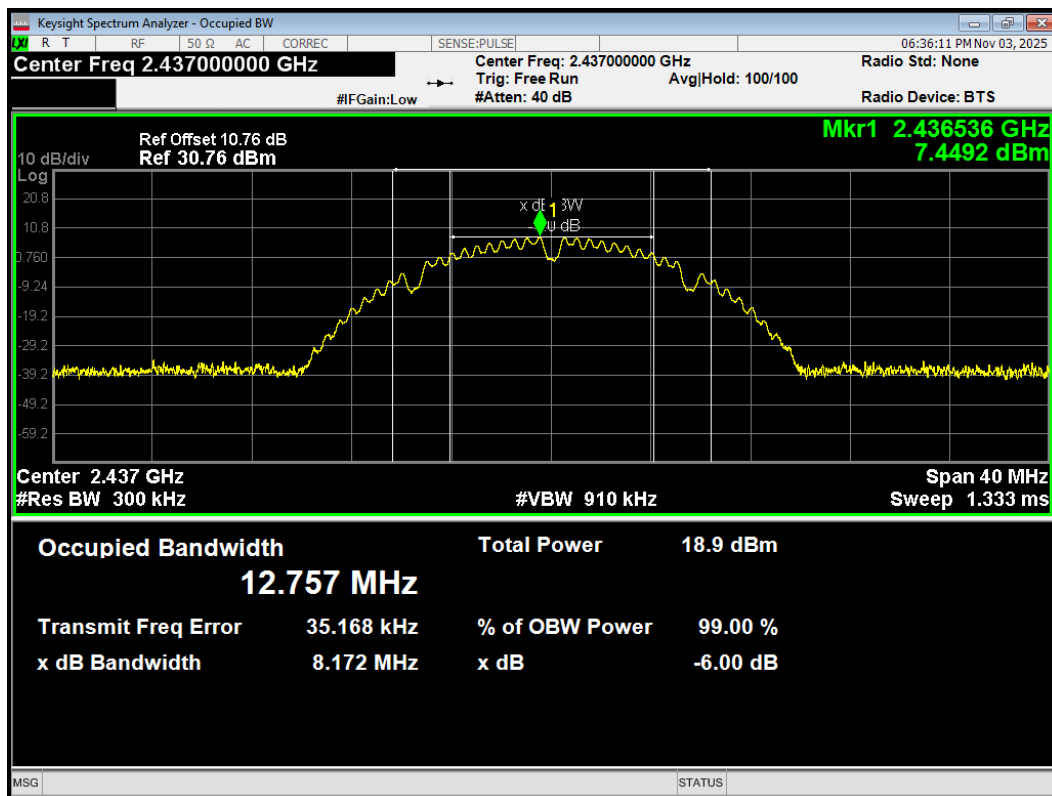
-6dB Bandwidth 802.11ax(HE40) 2452MHz



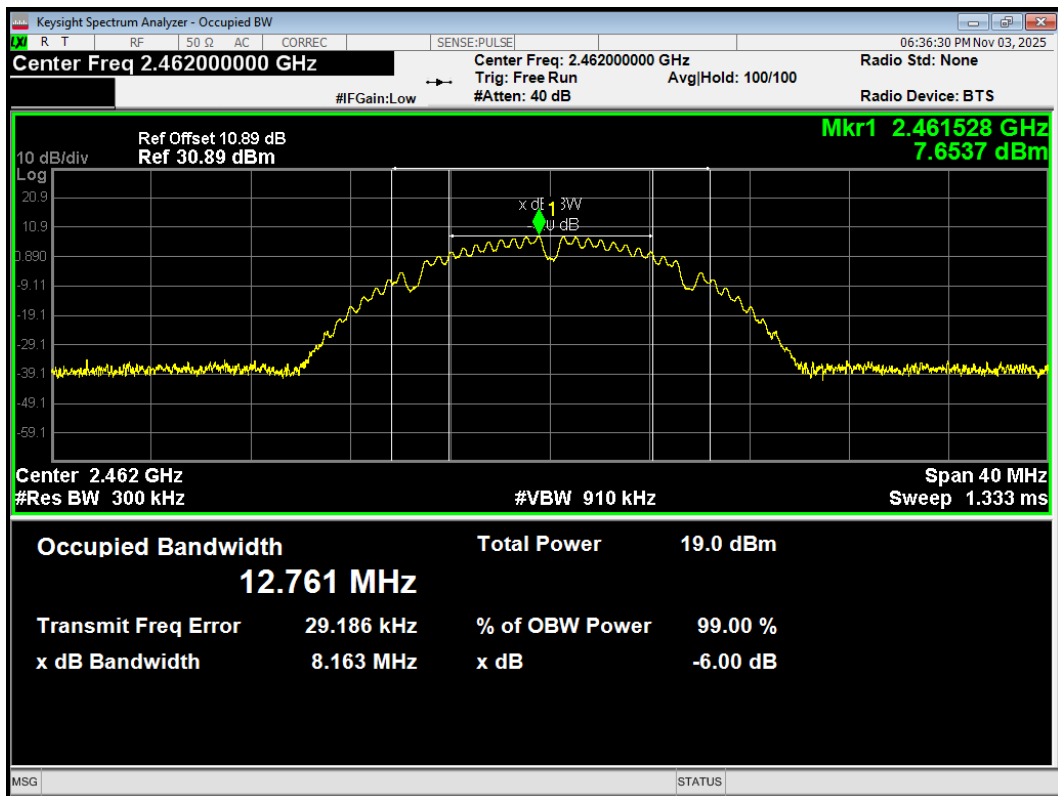
-6dB Bandwidth 802.11b 2412MHz



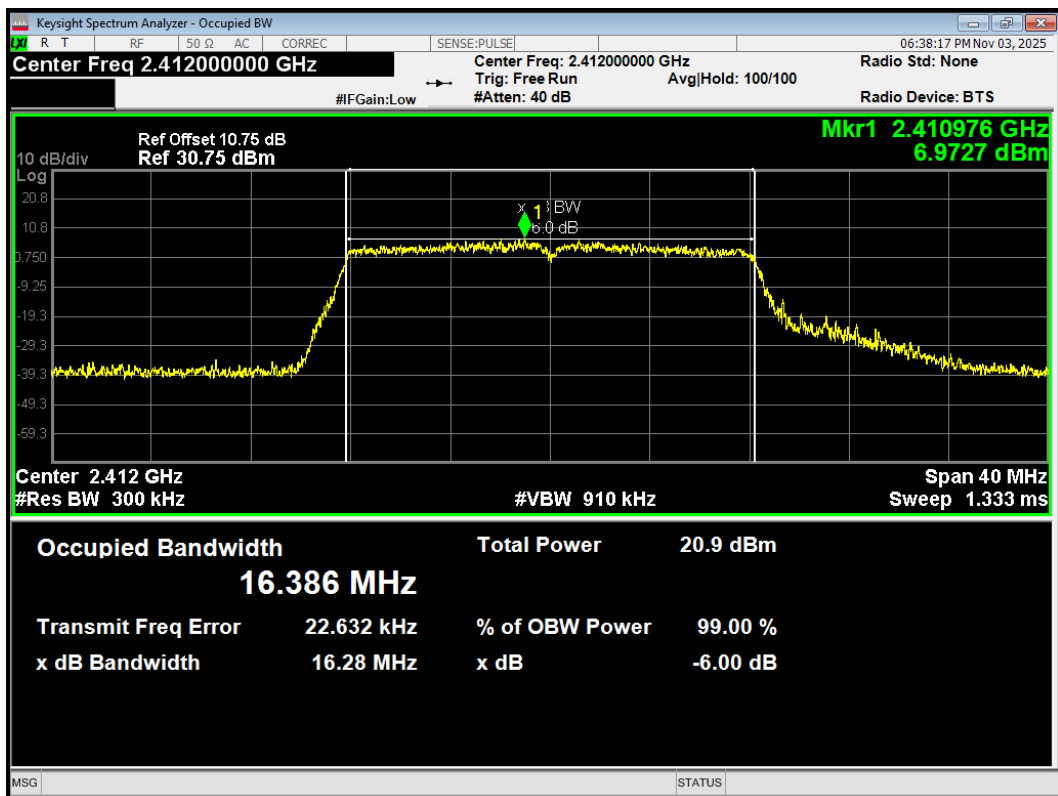
-6dB Bandwidth 802.11b 2437MHz



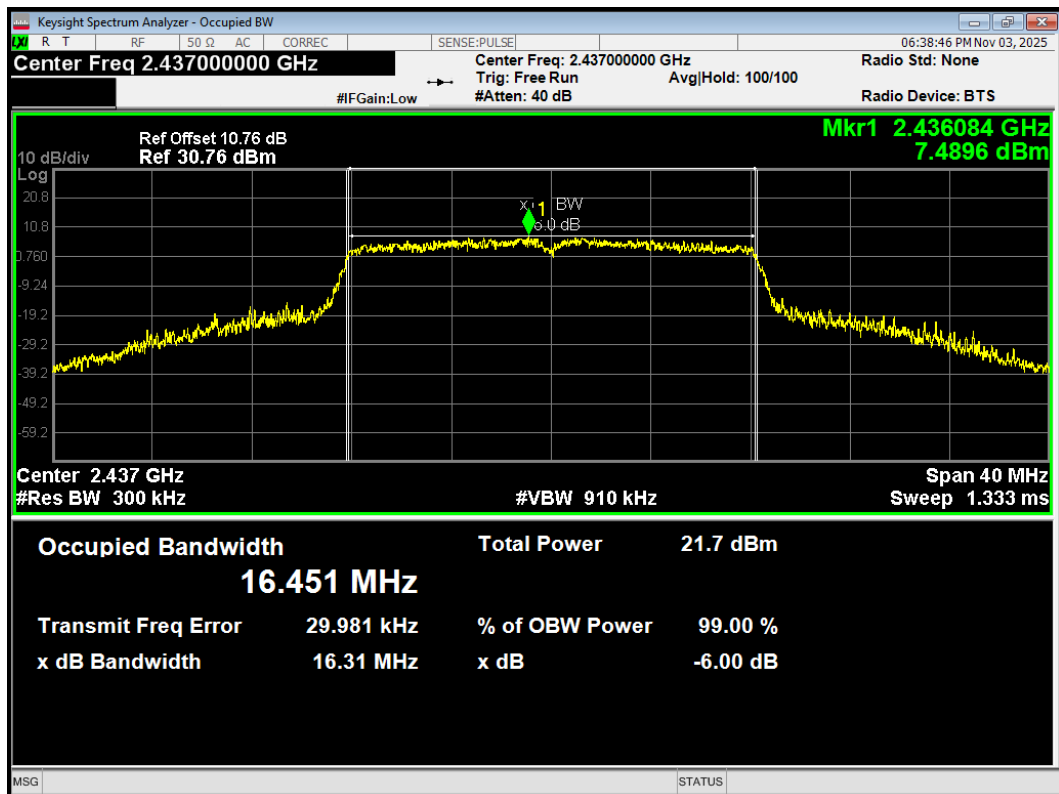
-6dB Bandwidth 802.11b 2462MHz



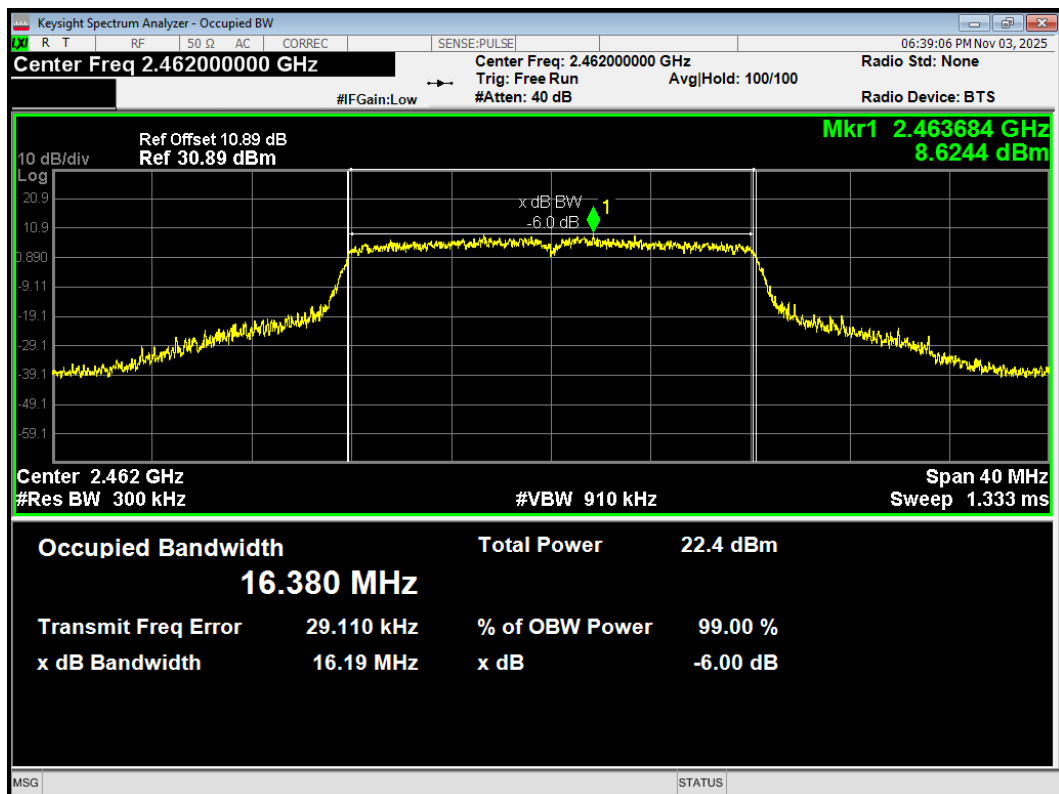
-6dB Bandwidth 802.11g 2412MHz



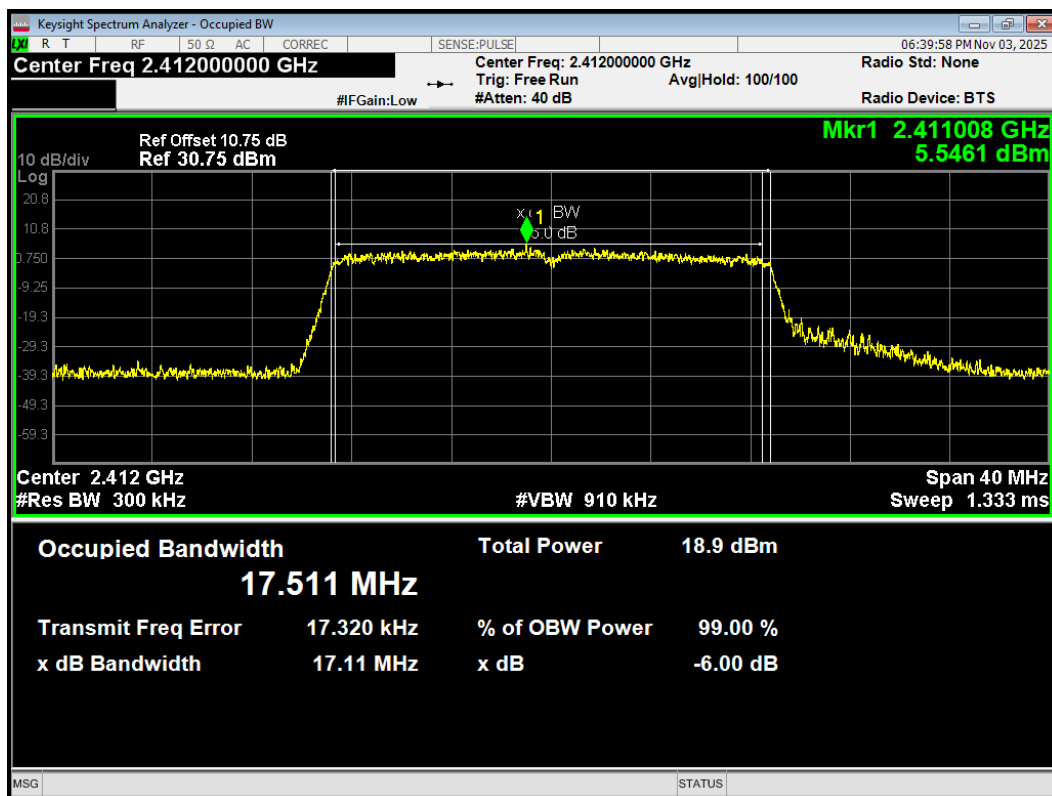
-6dB Bandwidth 802.11g 2437MHz



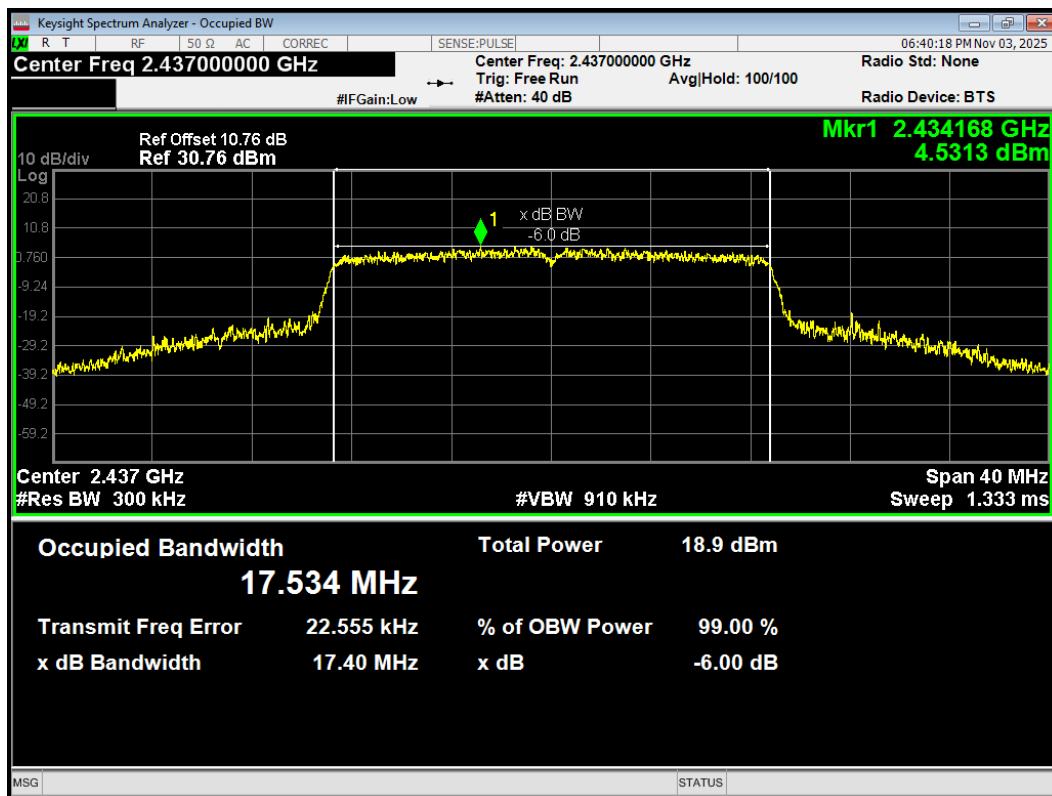
-6dB Bandwidth 802.11g 2462MHz



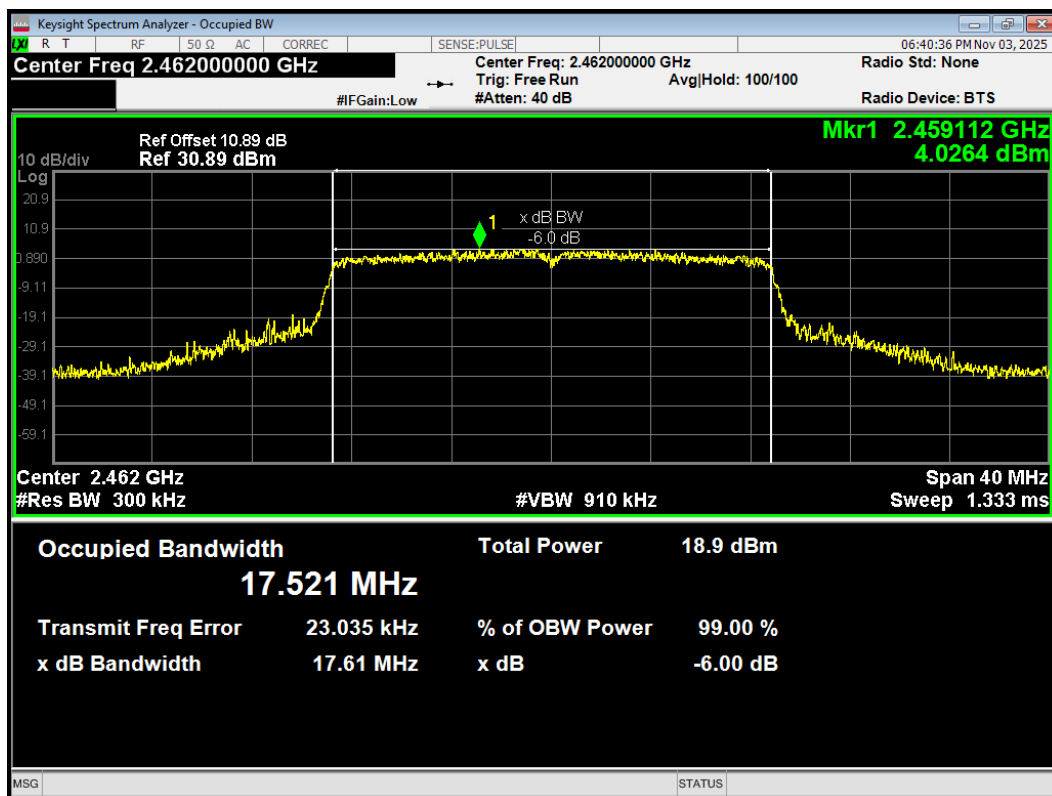
-6dB Bandwidth 802.11n(HT20) 2412MHz



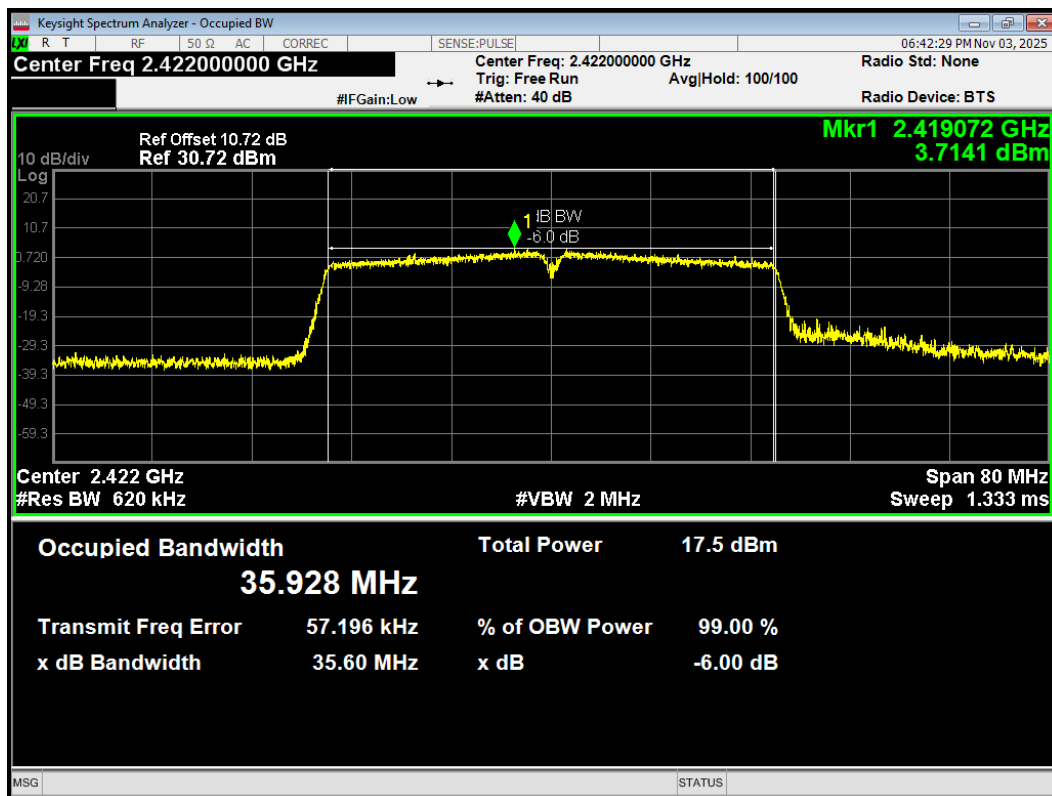
-6dB Bandwidth 802.11n(HT20) 2437MHz



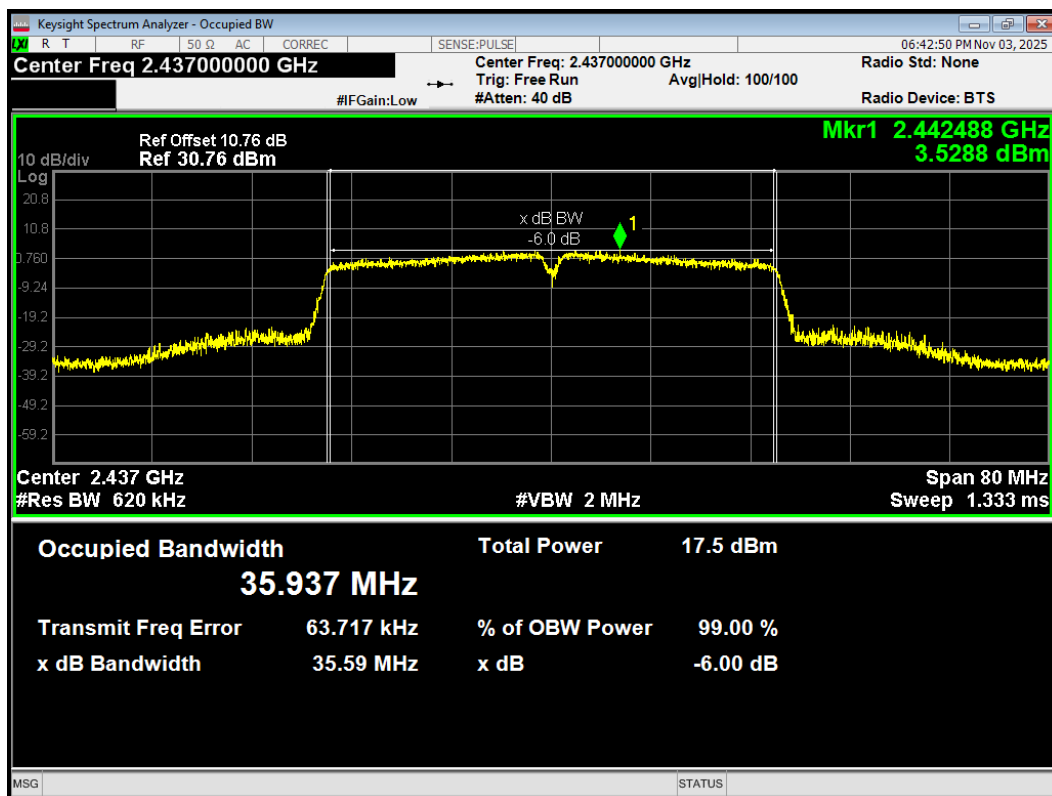
-6dB Bandwidth 802.11n(HT20) 2462MHz



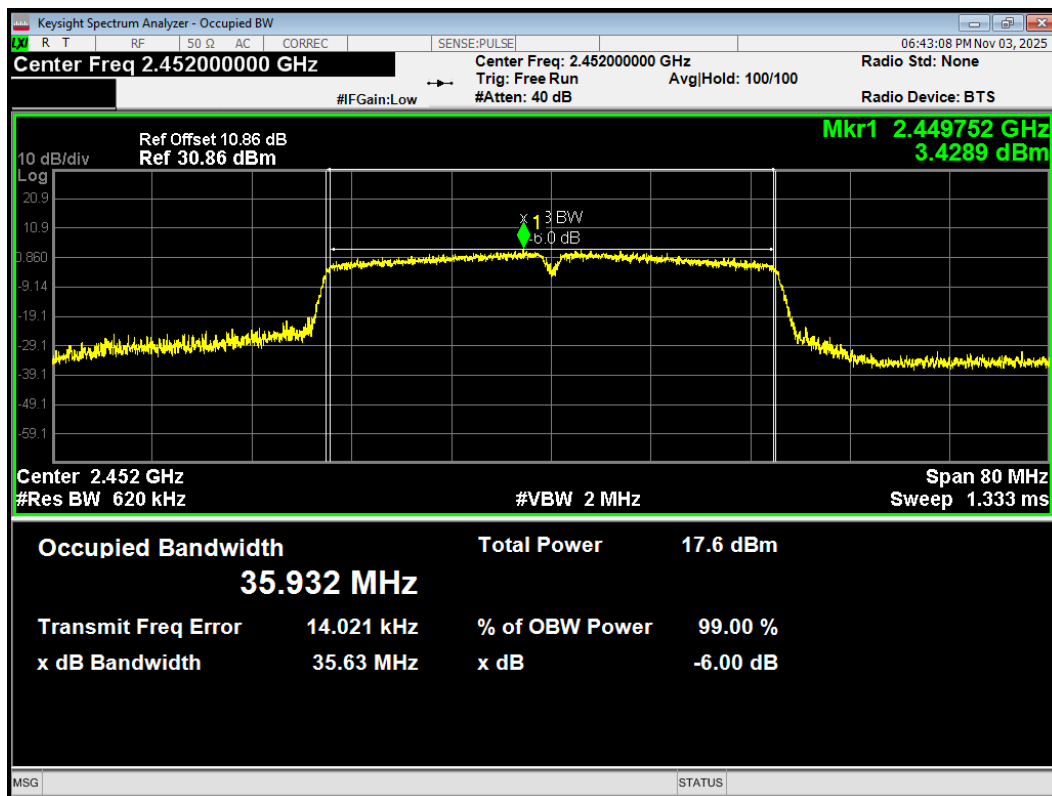
-6dB Bandwidth 802.11n(HT40) 2422MHz



-6dB Bandwidth 802.11n(HT40) 2437MHz

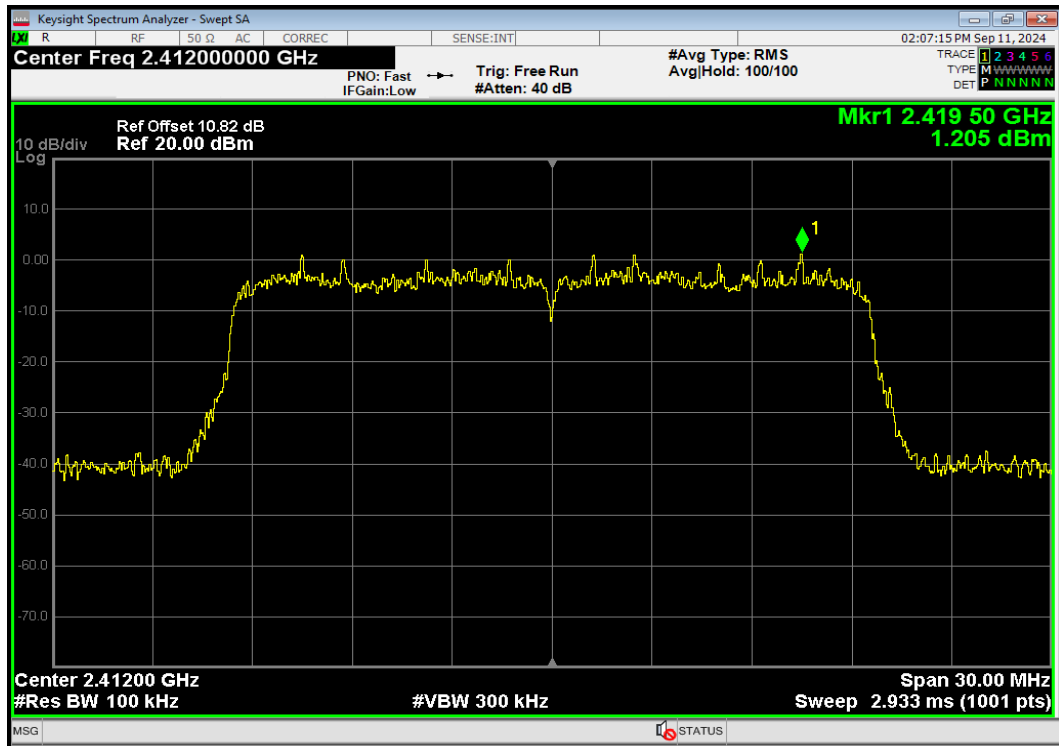


-6dB Bandwidth 802.11n(HT40) 2452MHz

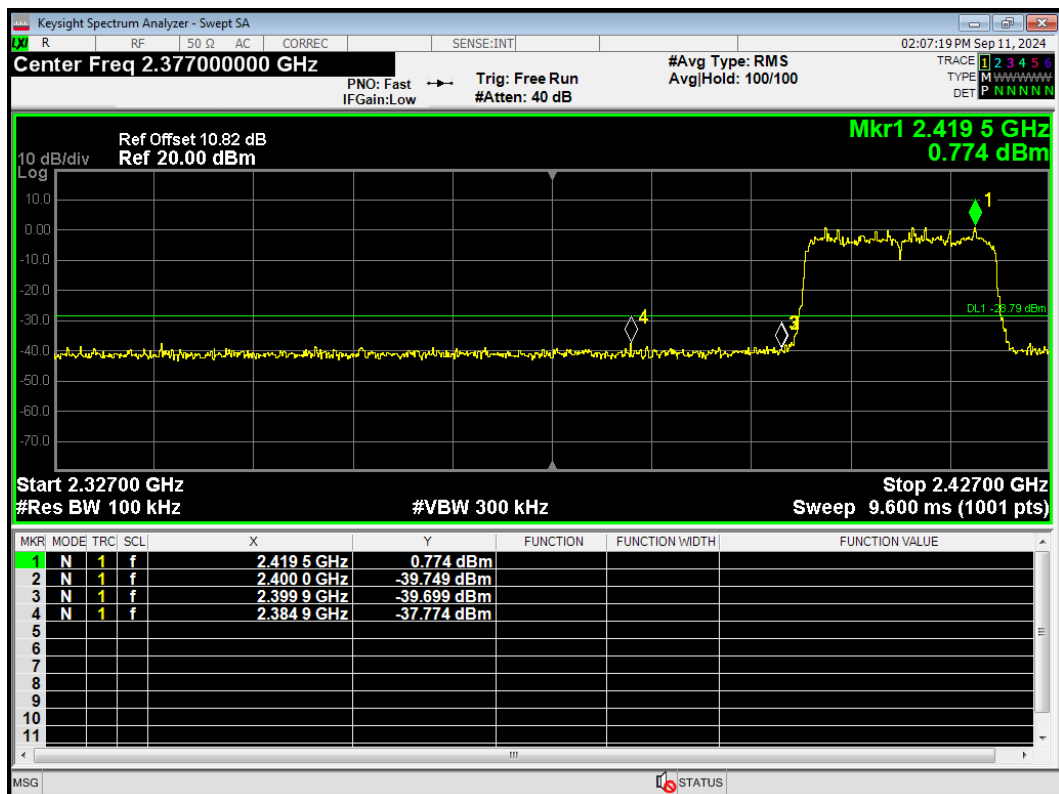


6.3. Band Edge

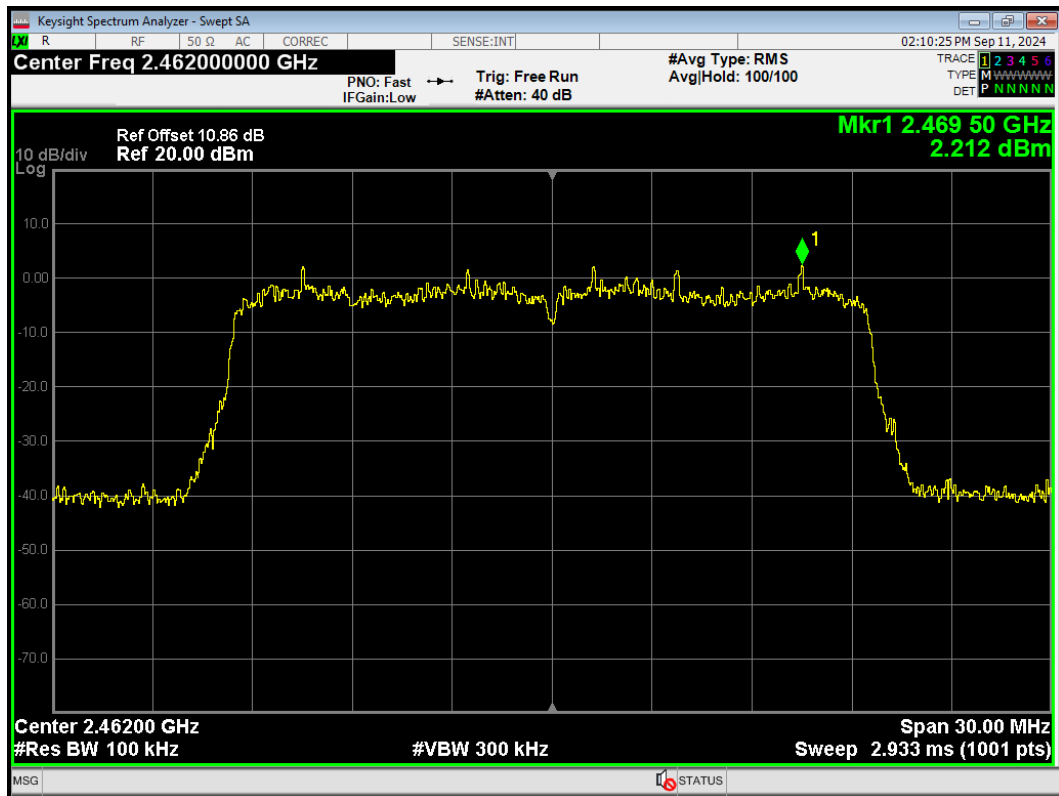
Band Edge 802.11ax(HE20) 2412MHz Ref



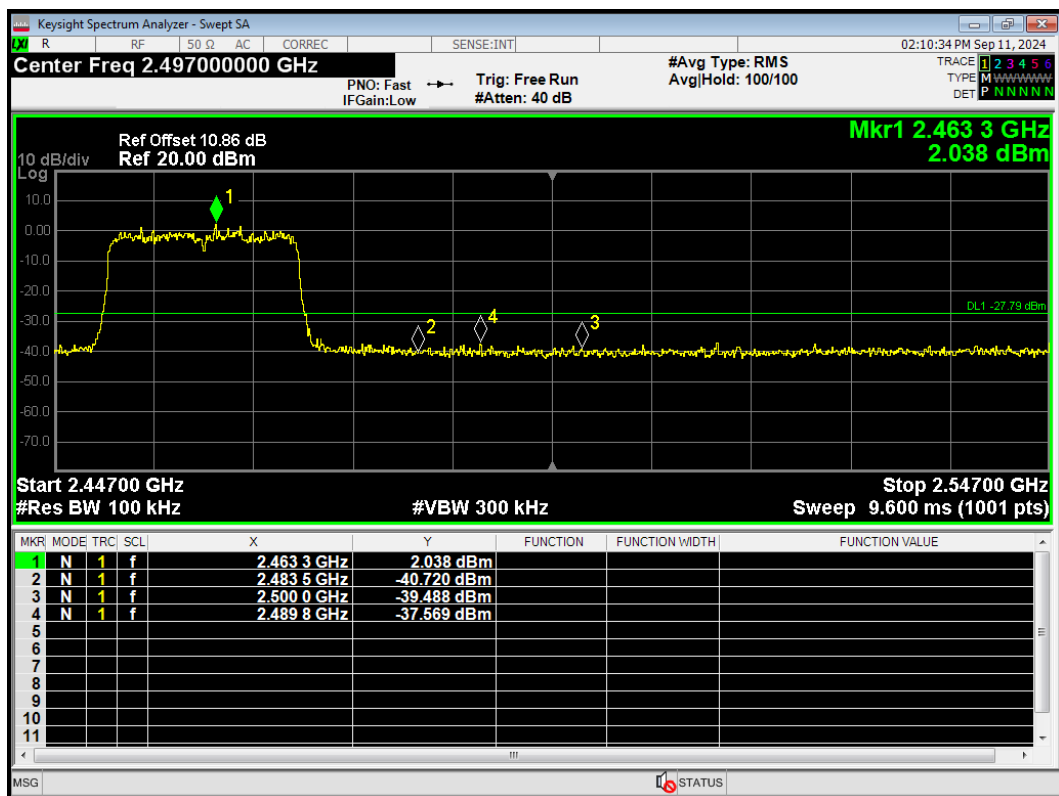
Band Edge 802.11ax(HE20) 2412MHz Emission



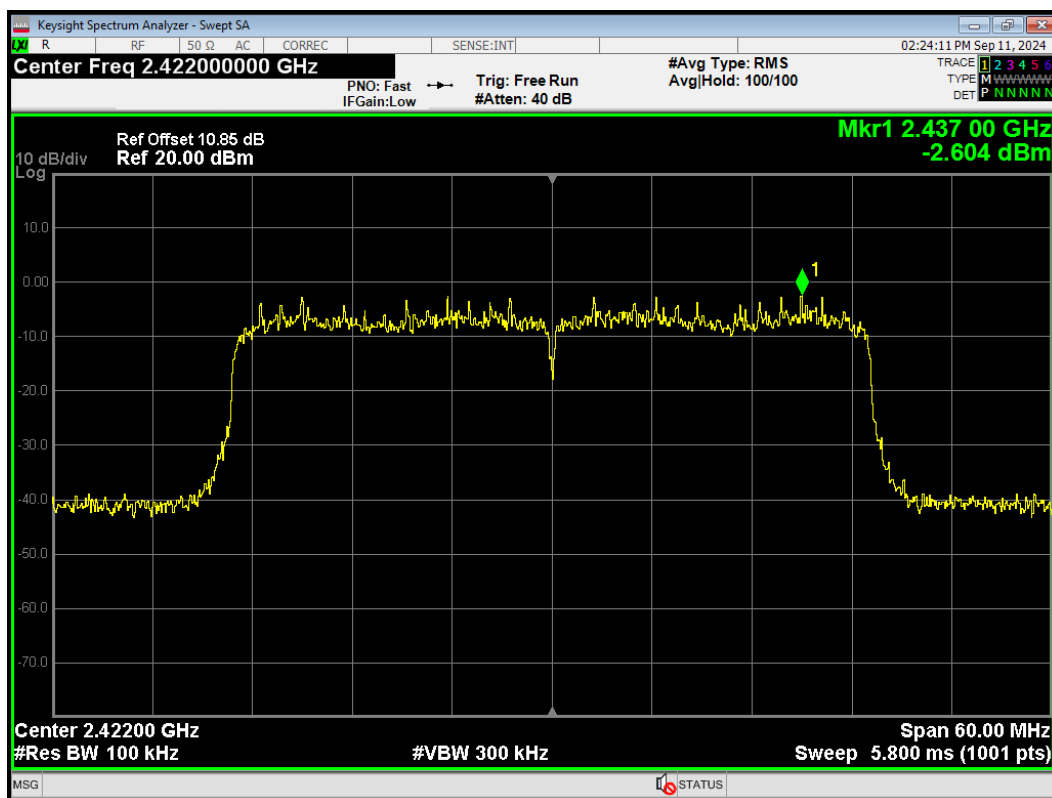
Band Edge 802.11ax(HE20) 2462MHz Ref



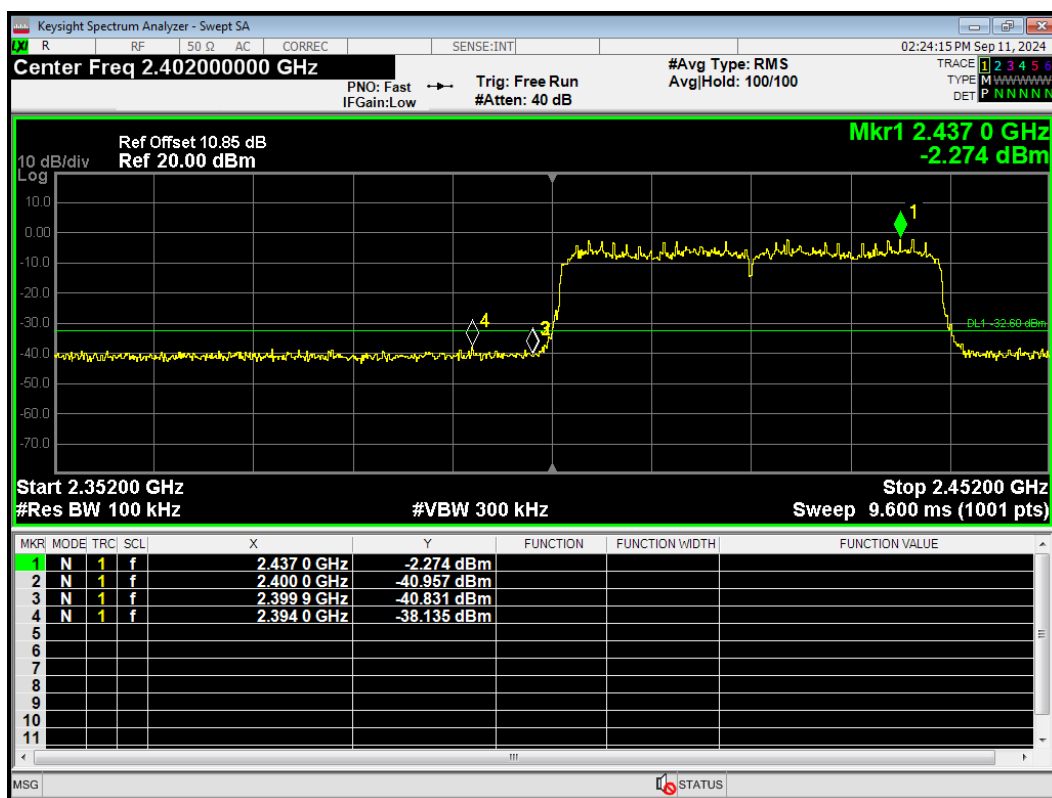
Band Edge 802.11ax(HE20) 2462MHz Emission



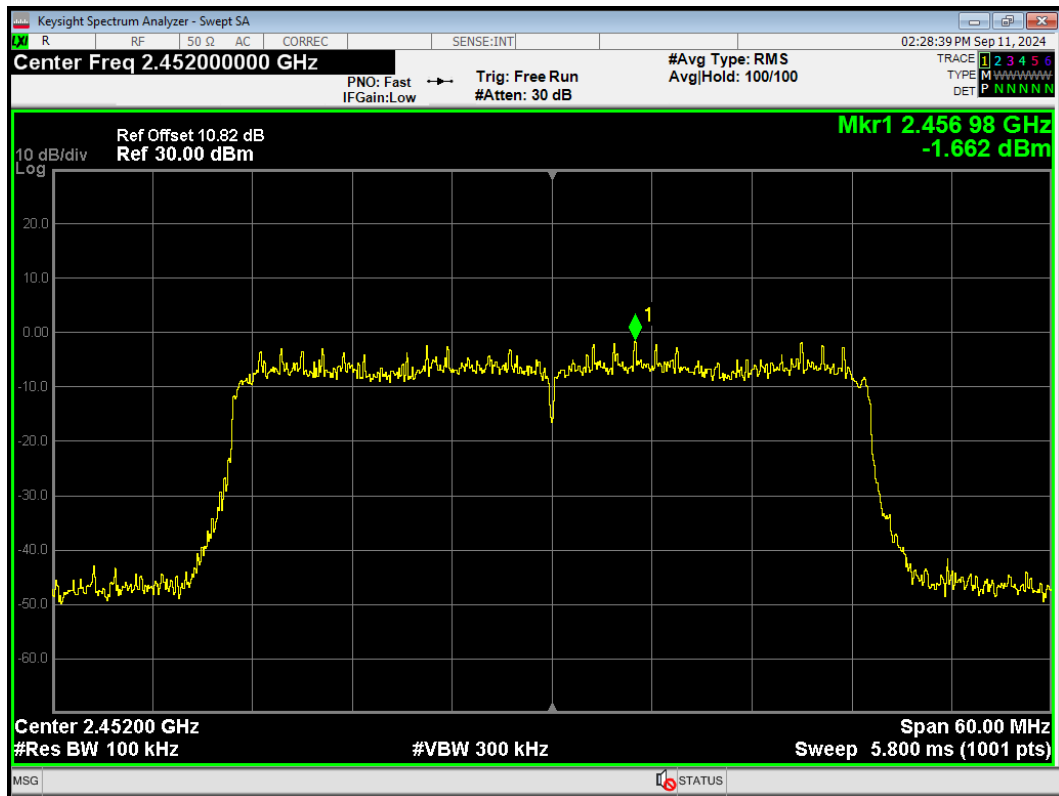
Band Edge 802.11ax(HE40) 2422MHz Ref



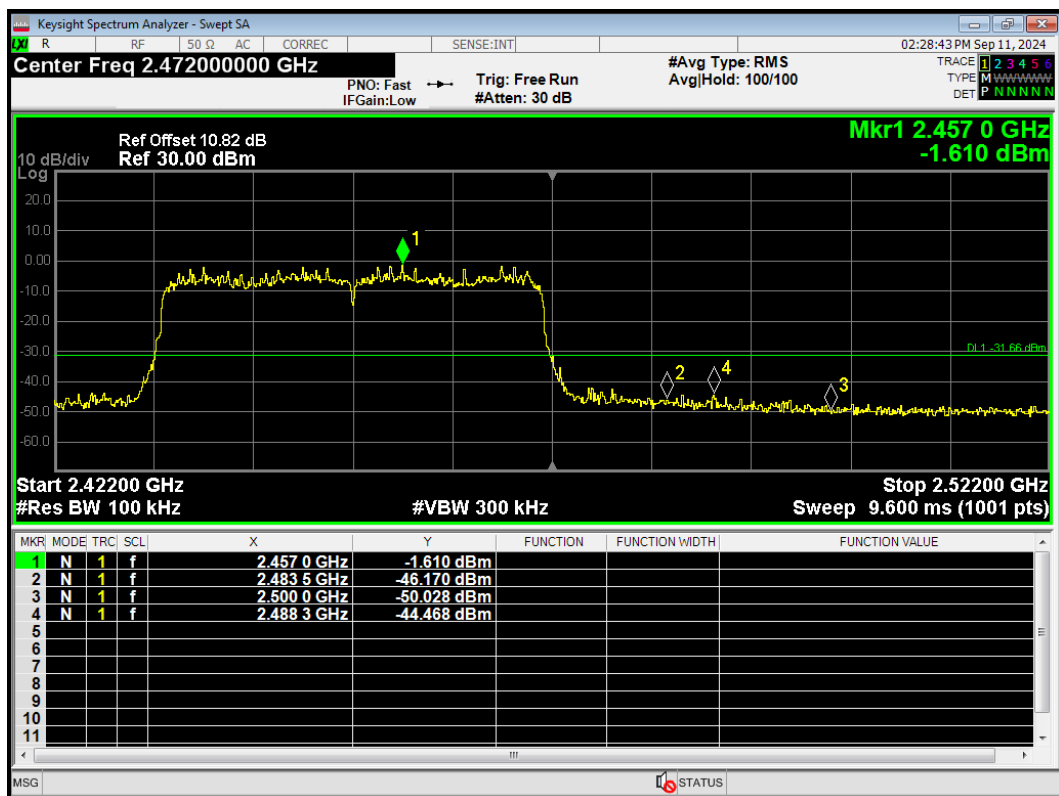
Band Edge 802.11ax(HE40) 2422MHz Emission



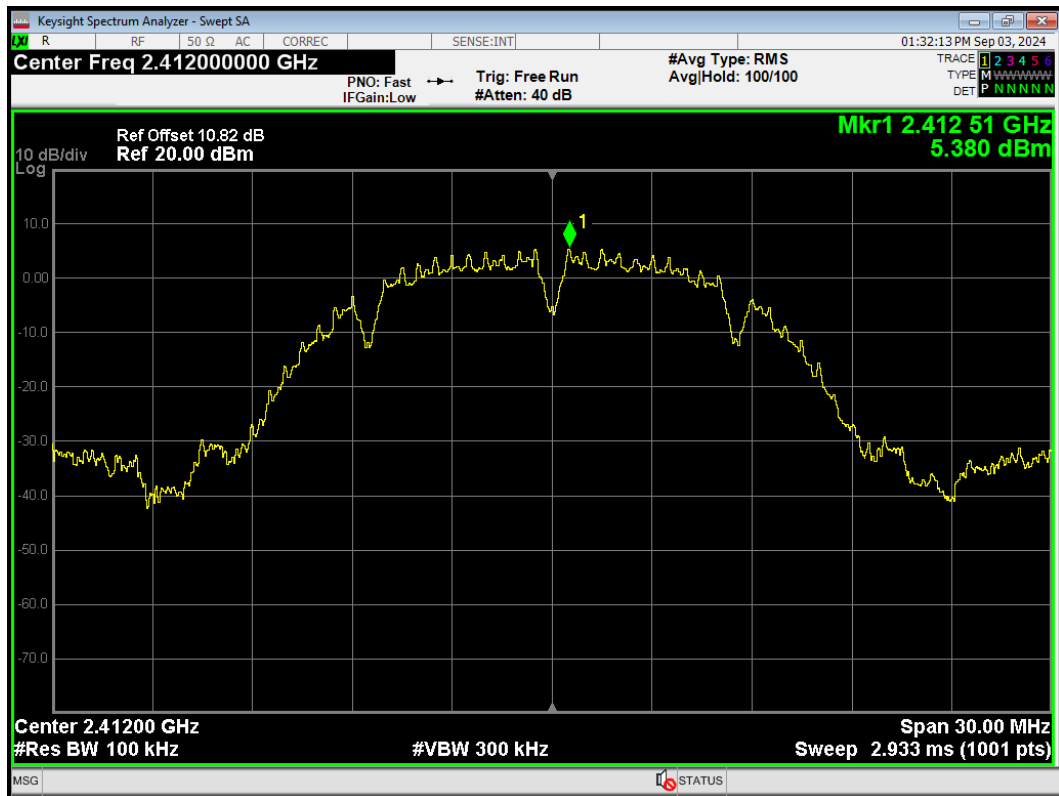
Band Edge 802.11ax(HE40) 2452MHz Ref



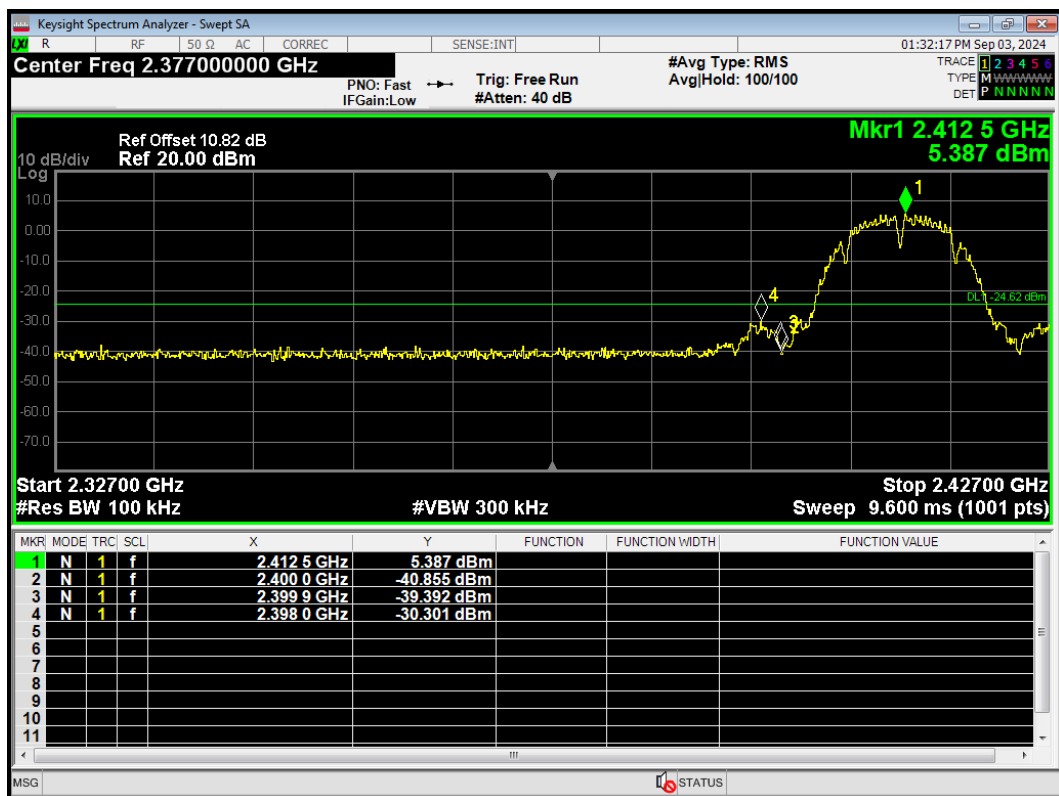
Band Edge 802.11ax(HE40) 2452MHz Emission



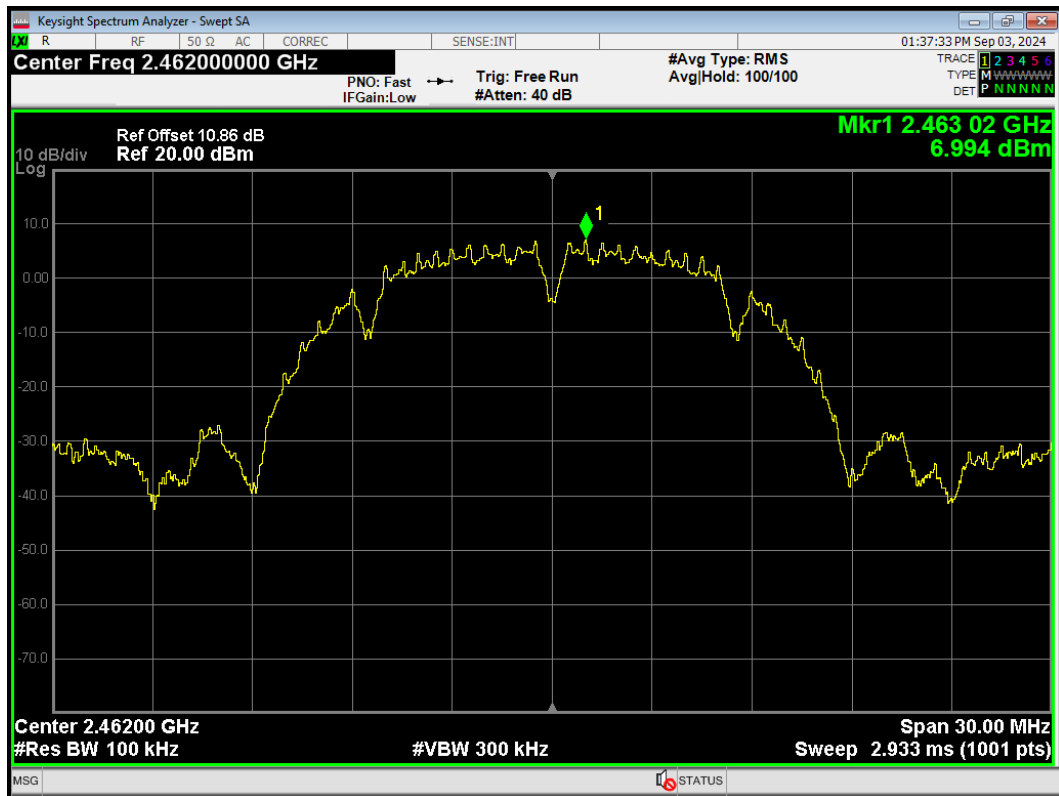
Band Edge 802.11b 2412MHz Ref



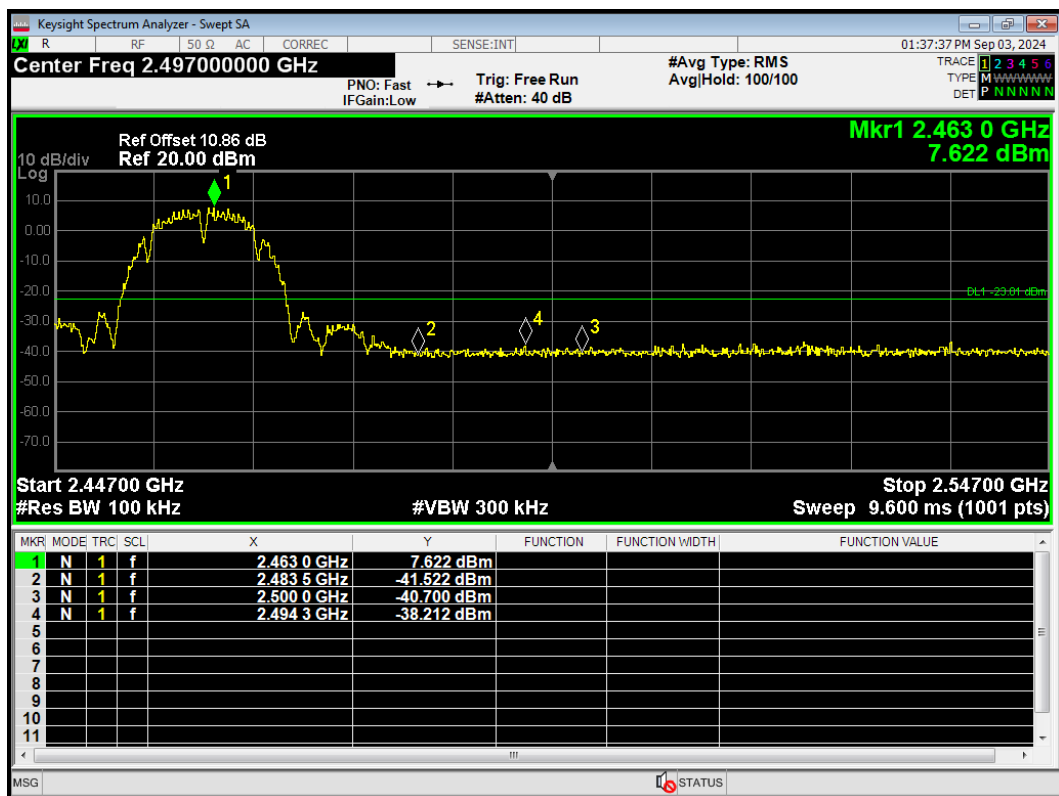
Band Edge 802.11b 2412MHz Emission



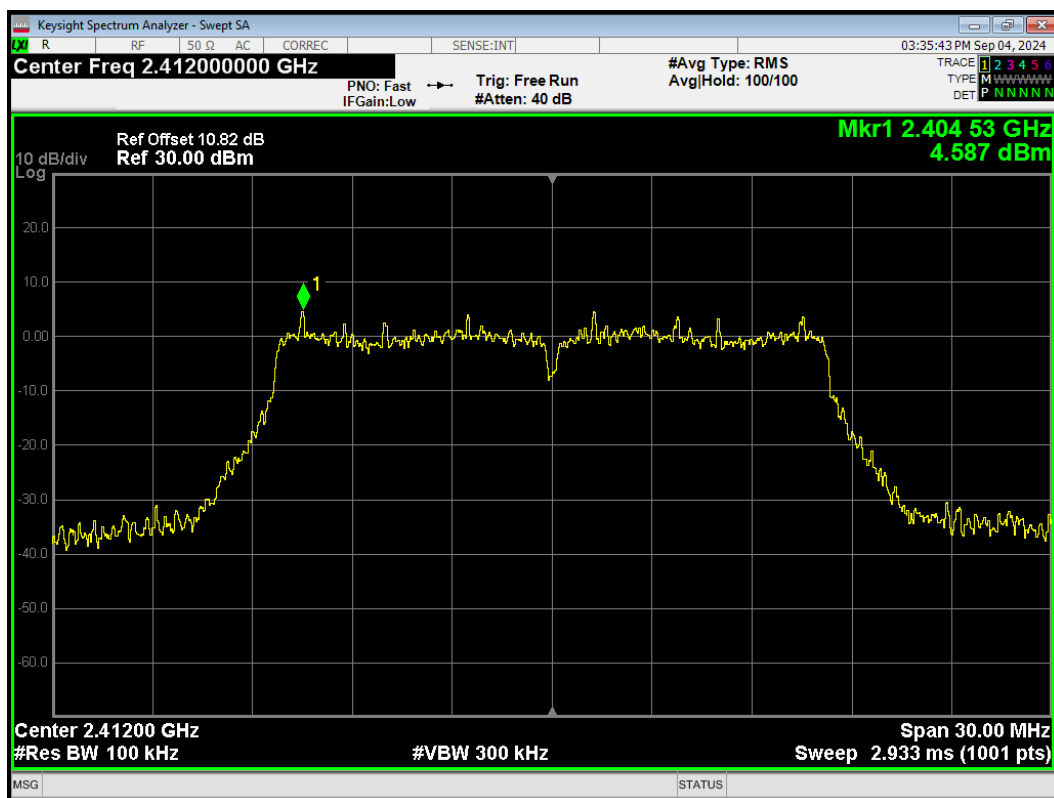
Band Edge 802.11b 2462MHz Ref



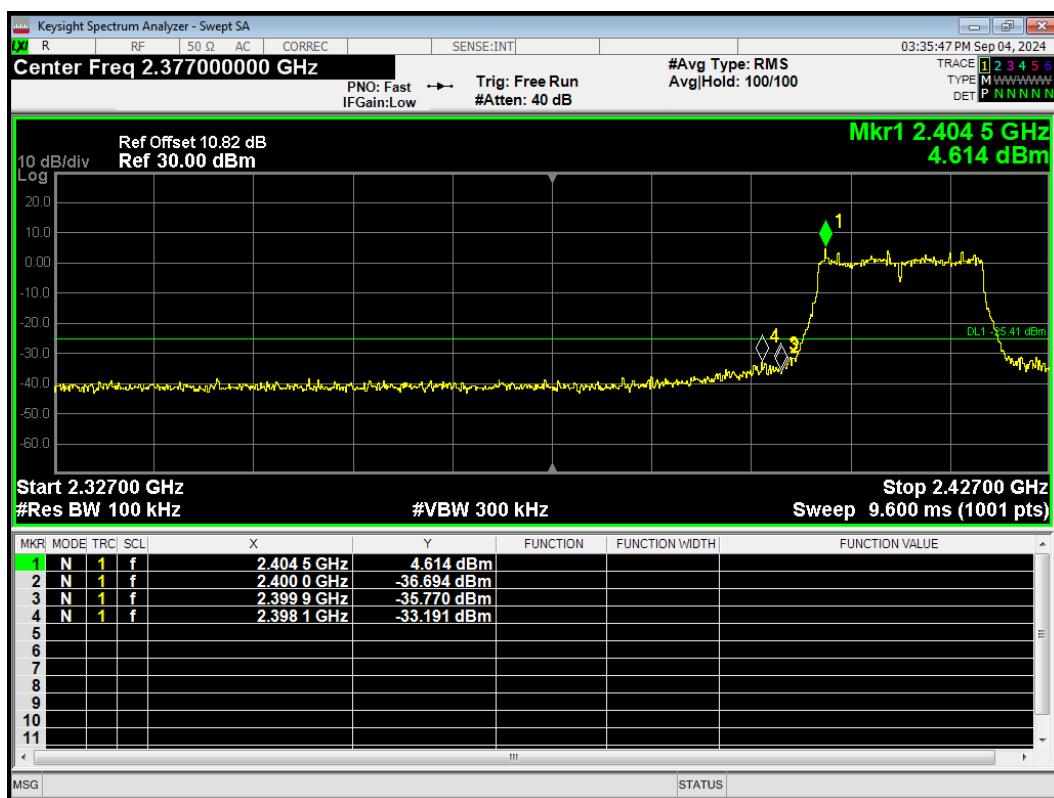
Band Edge 802.11b 2462MHz Emission



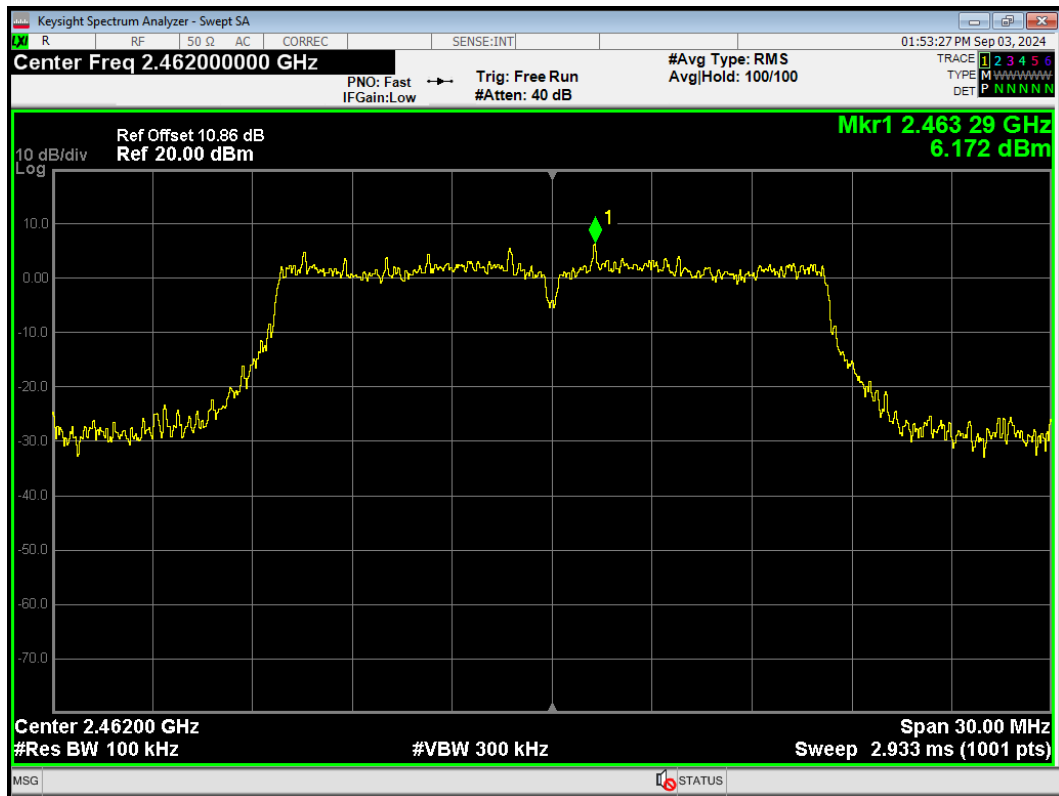
Band Edge 802.11g 2412MHz Ref



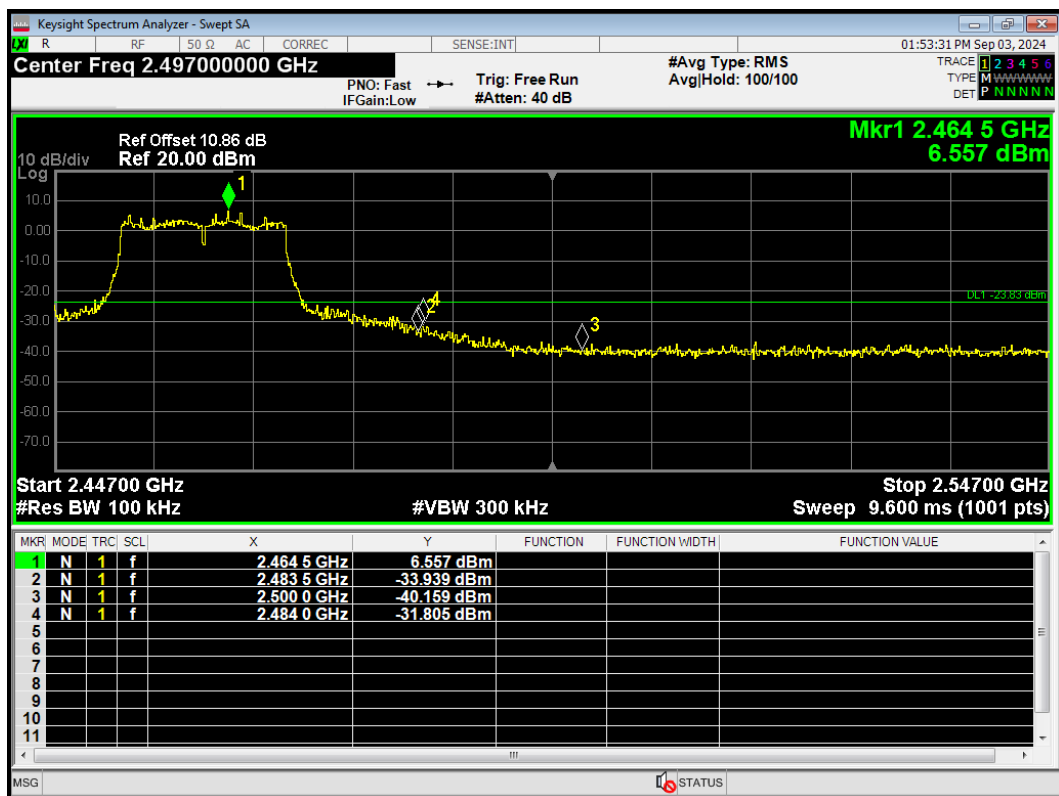
Band Edge 802.11g 2412MHz Emission



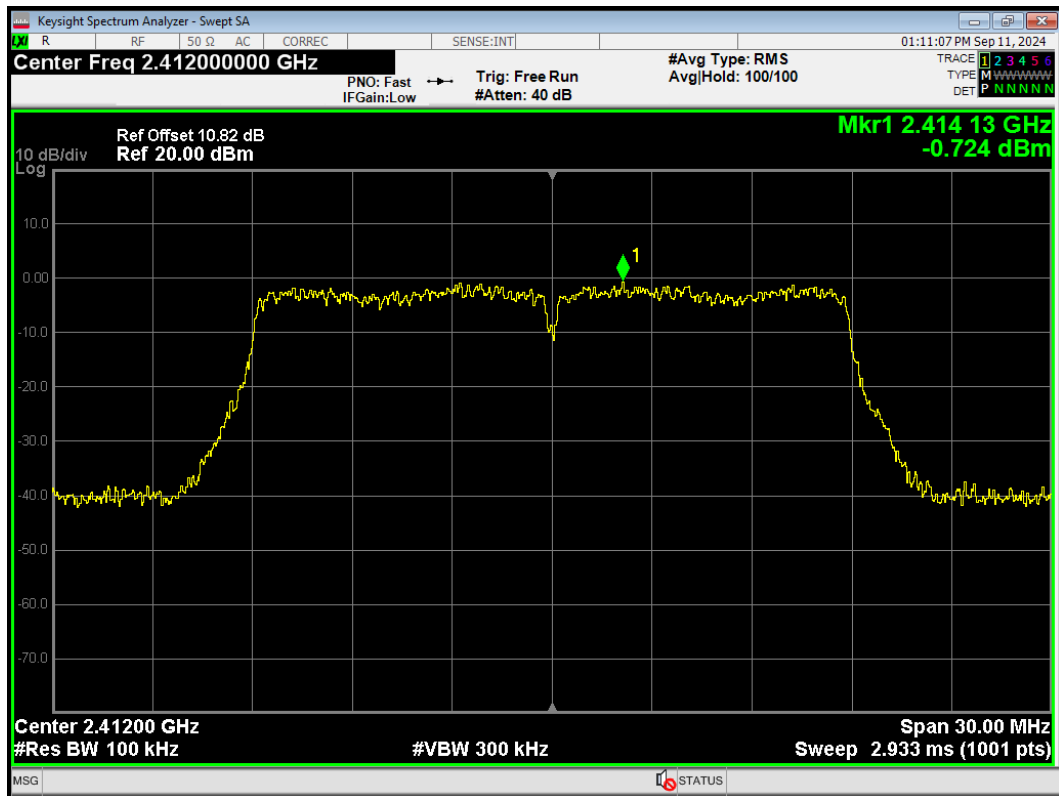
Band Edge 802.11g 2462MHz Ref



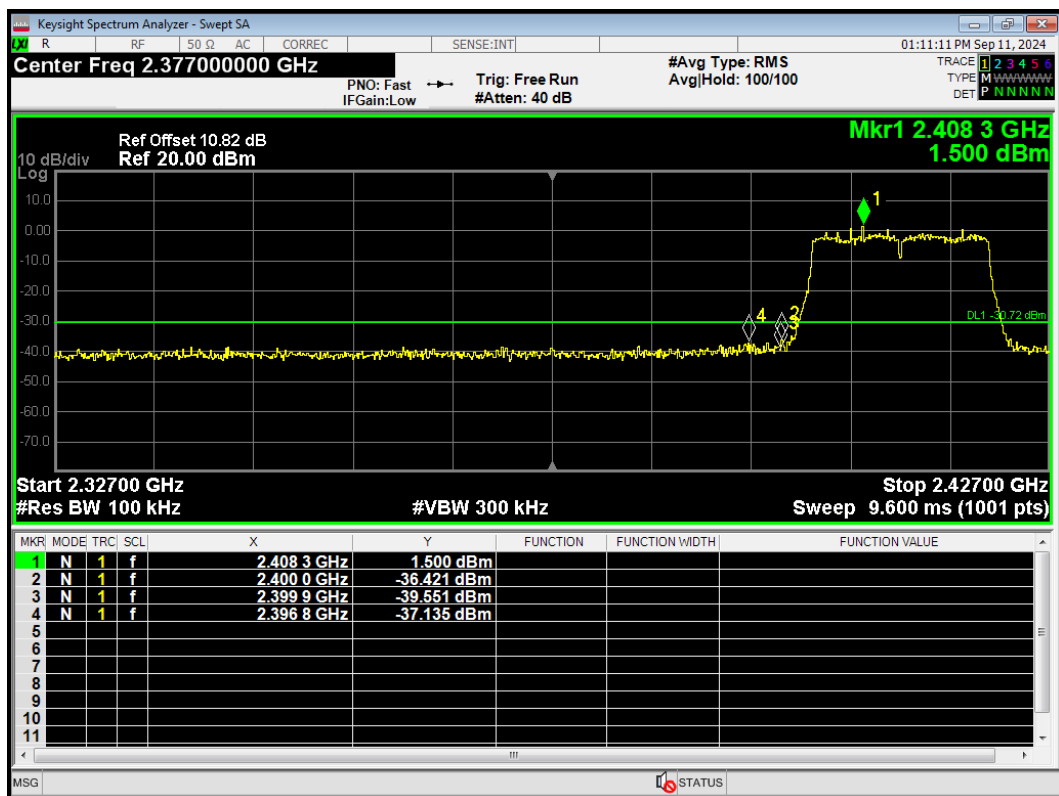
Band Edge 802.11g 2462MHz Emission



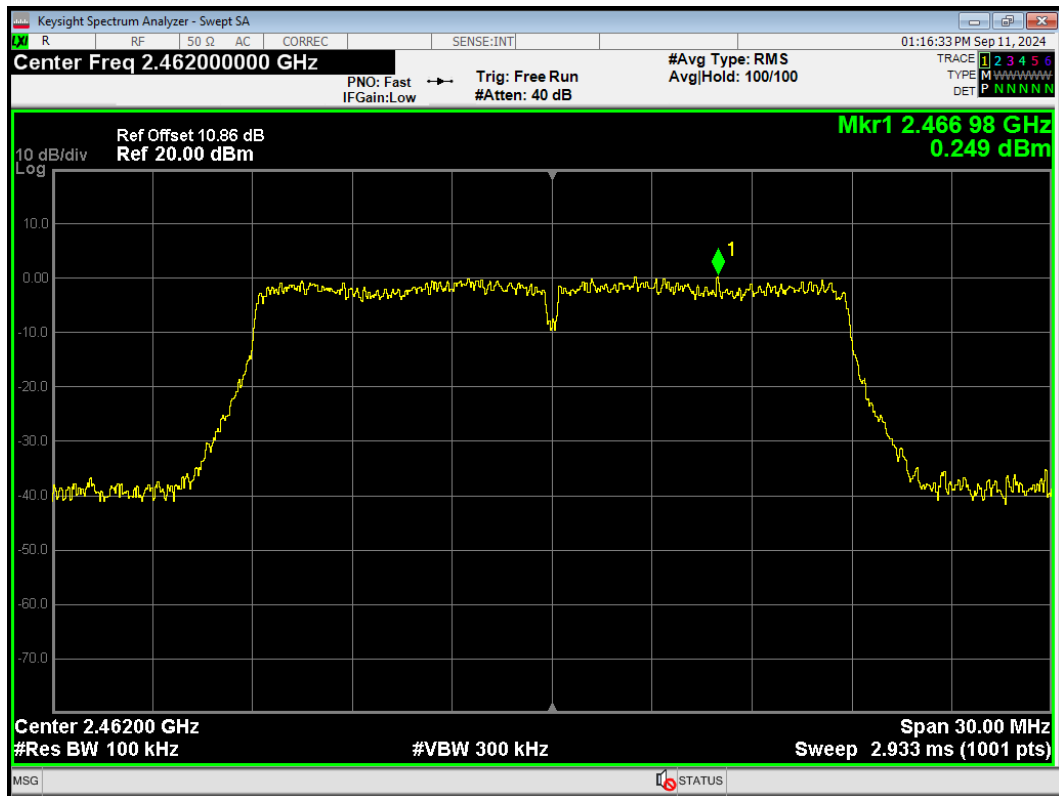
Band Edge 802.11n(HT20) 2412MHz Ref



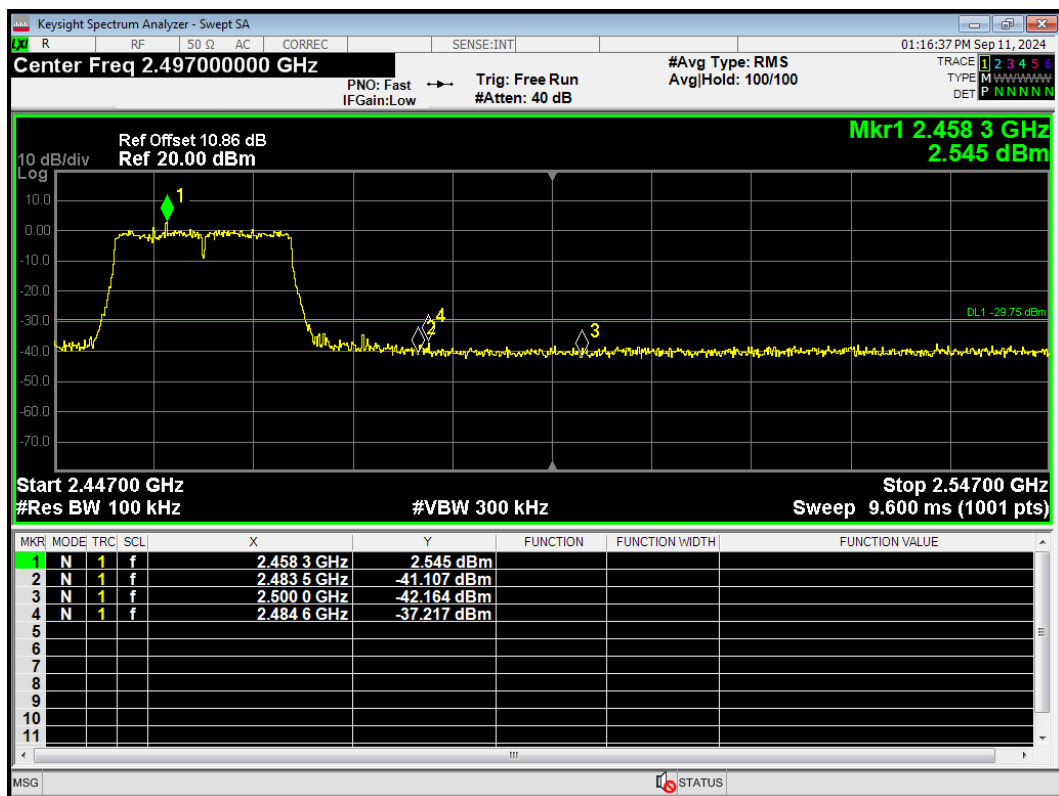
Band Edge 802.11n(HT20) 2412MHz Emission



Band Edge 802.11n(HT20) 2462MHz Ref



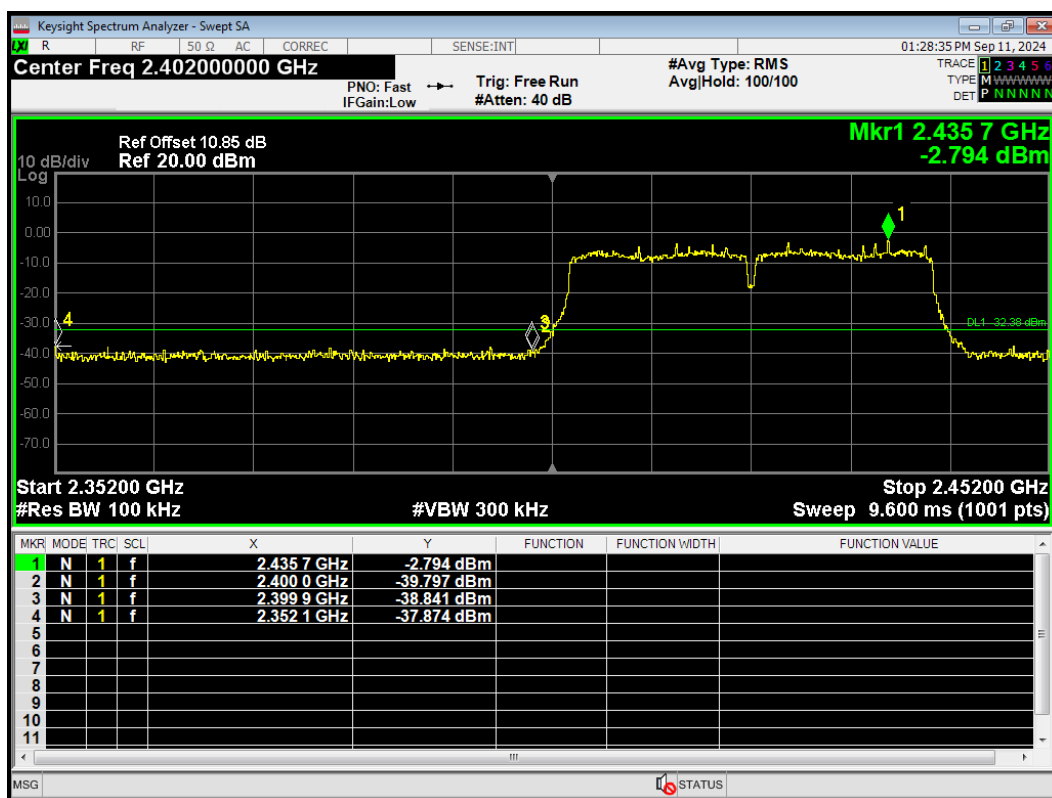
Band Edge 802.11n(HT20) 2462MHz Emission



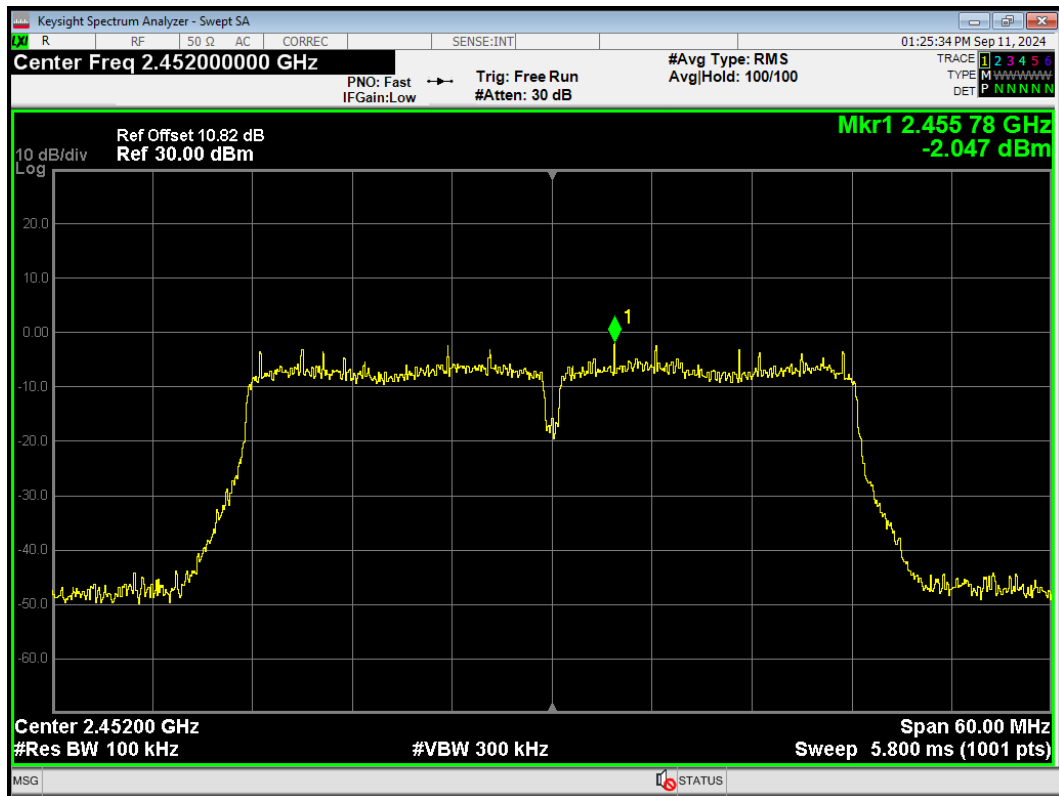
Band Edge 802.11n(HT40) 2422MHz Ref



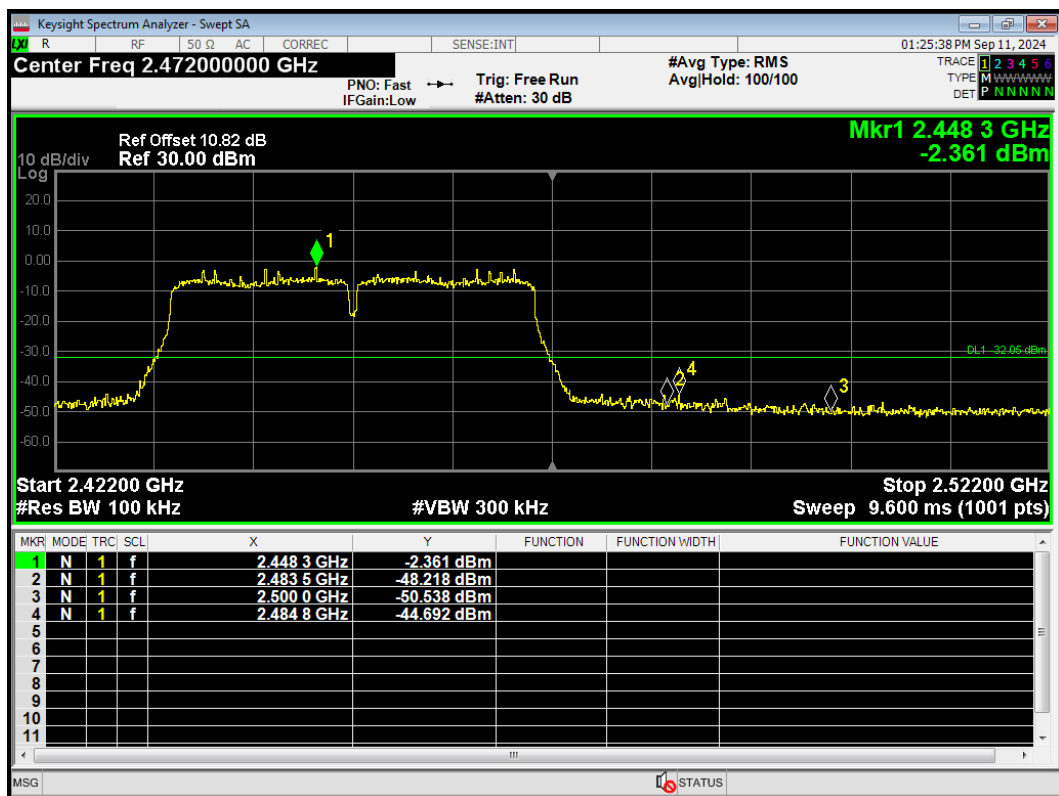
Band Edge 802.11n(HT40) 2422MHz Emission



Band Edge 802.11n(HT40) 2452MHz Ref



Band Edge 802.11n(HT40) 2452MHz Emission



6.4. Power Spectral Density

SISO Antenna 1

Test Mode	Carrier frequency (MHz) / Channel	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	2412/CH 1	-7.33	-17.33	8	PASS
	2437/CH 6	-5.88	-15.88	8	PASS
	2462/CH11	-5.64	-15.64	8	PASS
802.11g	2412/CH 1	-8.71	-18.42	8	PASS
	2437/CH 6	-7.21	-16.92	8	PASS
	2462/CH11	-6.74	-16.45	8	PASS
802.11n HT20	2412/CH 1	-11.48	-21.39	8	PASS
	2437/CH 6	-11.02	-20.93	8	PASS
	2462/CH11	-10.27	-20.18	8	PASS
802.11n HT40	2422/CH3	-16.24	-26.06	8	PASS
	2437/CH6	-15.36	-25.18	8	PASS
	2452/CH9	-15.83	-25.65	8	PASS
802.11ax HE20	2412/CH 1	-12.43	-22.03	8	PASS
	2437/CH 6	-12.97	-22.57	8	PASS
	2462/CH11	-12.31	-21.91	8	PASS
802.11ax HE40	2422/CH3	-16.25	-25.52	8	PASS
	2437/CH6	-15.39	-24.66	8	PASS
	2452/CH9	-15.54	-24.81	8	PASS
Note: Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + 10*log10(3/30)					

SISO Antenna 2

Test Mode	Carrier frequency (MHz) / Channel	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	2412/CH 1	-6.98	-16.98	8	PASS
	2437/CH 6	-6.44	-16.44	8	PASS
	2462/CH11	-6.82	-16.82	8	PASS
802.11g	2412/CH 1	-8.86	-18.57	8	PASS
	2437/CH 6	-7.64	-17.35	8	PASS
	2462/CH11	-8.29	-18.00	8	PASS
802.11n HT20	2412/CH 1	-11.59	-21.50	8	PASS
	2437/CH 6	-10.77	-20.68	8	PASS
	2462/CH11	-10.78	-20.69	8	PASS
802.11n HT40	2422/CH3	-16.00	-25.82	8	PASS
	2437/CH6	-15.57	-25.39	8	PASS
	2452/CH9	-14.94	-24.76	8	PASS
802.11ax HE20	2412/CH 1	-13.44	-23.04	8	PASS
	2437/CH 6	-12.95	-22.55	8	PASS
	2462/CH11	-11.06	-20.66	8	PASS
802.11ax HE40	2422/CH3	-15.27	-24.54	8	PASS
	2437/CH6	-15.89	-25.16	8	PASS
	2452/CH9	-14.42	-23.69	8	PASS
Note: Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + 10*log10(3/30)					

MIMO

Test Mode	Carrier frequency (MHz)/ Channel	Power Spectral Density				Total PSD (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
		Antenna 0		Antenna 1				
		Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)			
802.11n HT20	2412/CH 1	-11.43	-21.34	-11.21	-21.12	-18.22	7.19	PASS
	2437/CH 6	-11.22	-21.13	-10.69	-20.60	-17.85	7.19	PASS
	2462/CH11	-10.63	-20.54	-11.49	-21.40	-17.94	7.19	PASS
802.11n HT40	2422/CH3	-16.31	-26.13	-16.23	-26.05	-23.08	7.19	PASS
	2437/CH6	-16.43	-26.25	-16.15	-25.97	-23.10	7.19	PASS
	2452/CH9	-15.51	-25.33	-16.12	-25.94	-22.61	7.19	PASS
802.11ax HE20	2412/CH 1	-13.48	-23.08	-13.34	-22.94	-20.00	7.19	PASS
	2437/CH 6	-12.92	-22.52	-13.17	-22.77	-19.63	7.19	PASS
	2462/CH11	-11.80	-21.40	-12.63	-22.23	-18.78	7.19	PASS
802.11ax HE40	2422/CH3	-16.50	-25.77	-16.91	-26.18	-22.96	7.19	PASS
	2437/CH6	-16.44	-25.71	-15.95	-25.22	-22.45	7.19	PASS
	2452/CH9	-15.73	-25.00	-16.00	-25.27	-22.12	7.19	PASS

Note: 1. Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + $10 \cdot \log_{10}(3 / 30)$

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10 \log(10^{(\text{PSD antenna0 in dBm}/10)} + 10^{(\text{PSD antenna1 in dBm}/10)})$

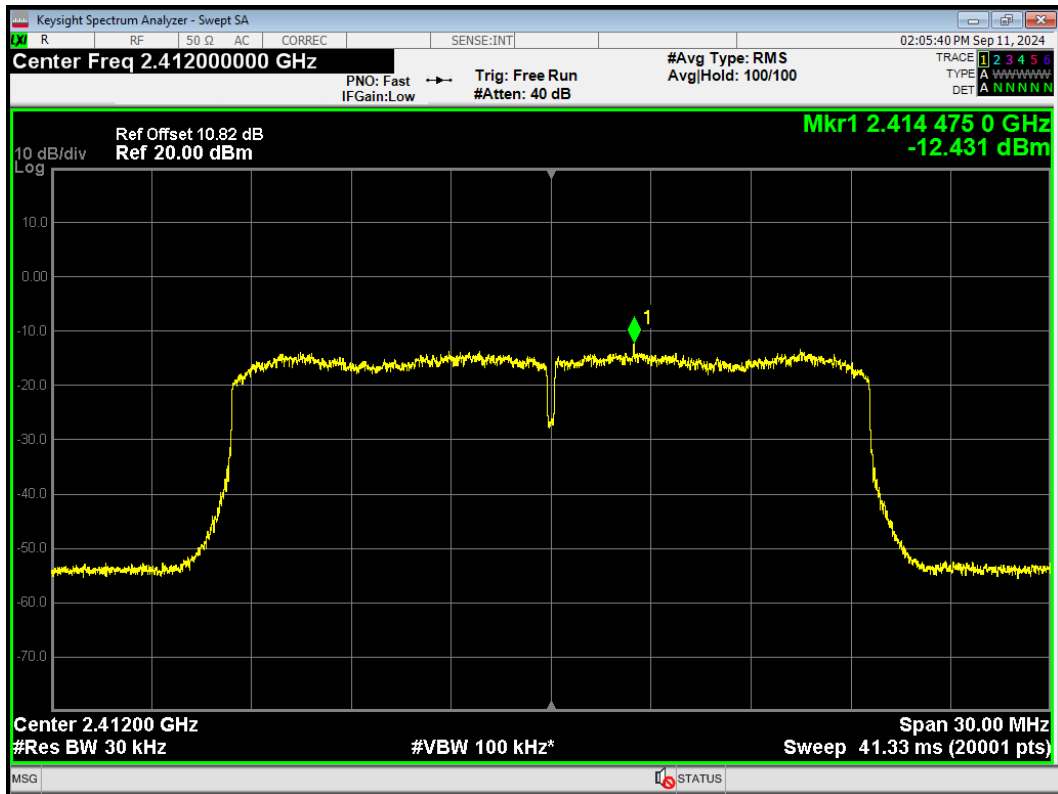
3. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by 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 = $G_{\text{ANT MAX}} + \text{Array Gain}$. For PSD measurements on all devices, Array Gain= $10 \log(\text{Nant}/\text{Nss})$ dB, so directional gain= $G_{\text{ANT MAX}} + \text{Array Gain} = 3.80 + 10 \log(2/1) = 6.81 > 6\text{dBi}$.

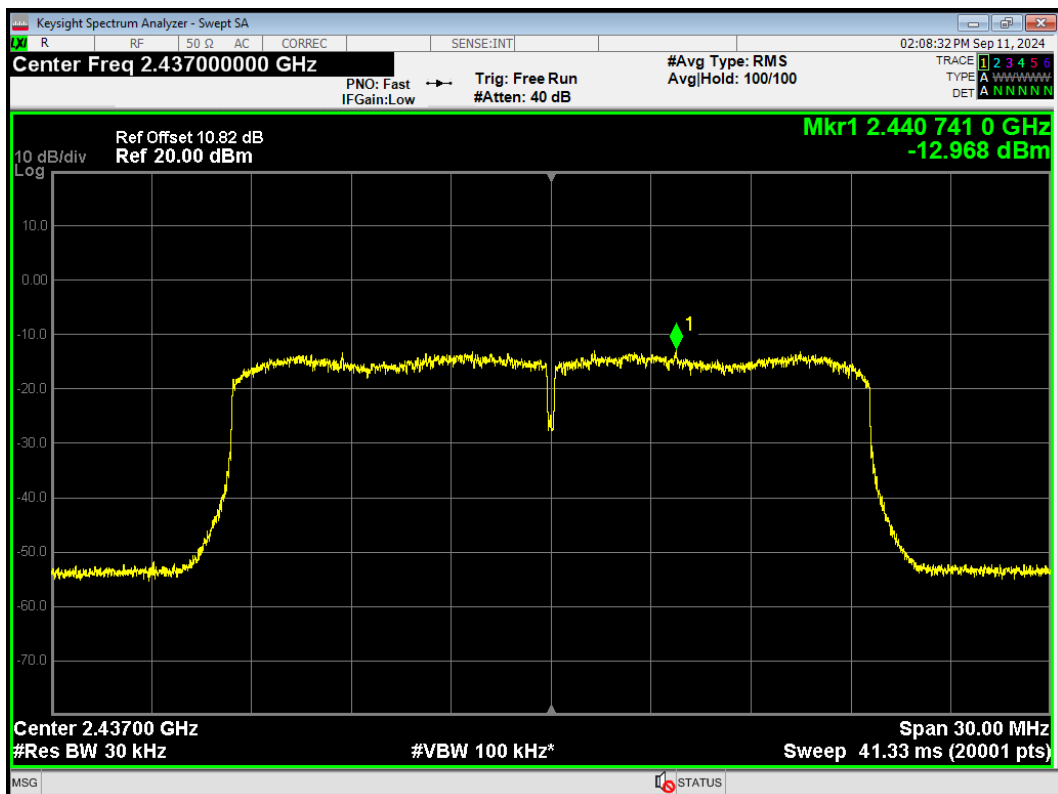
So the PSD limit is $8 + 6 - \text{MAX}(6, \text{directional gain}) \text{ dBm} = 7.19 \text{ dBm}$

SISO Antenna 1

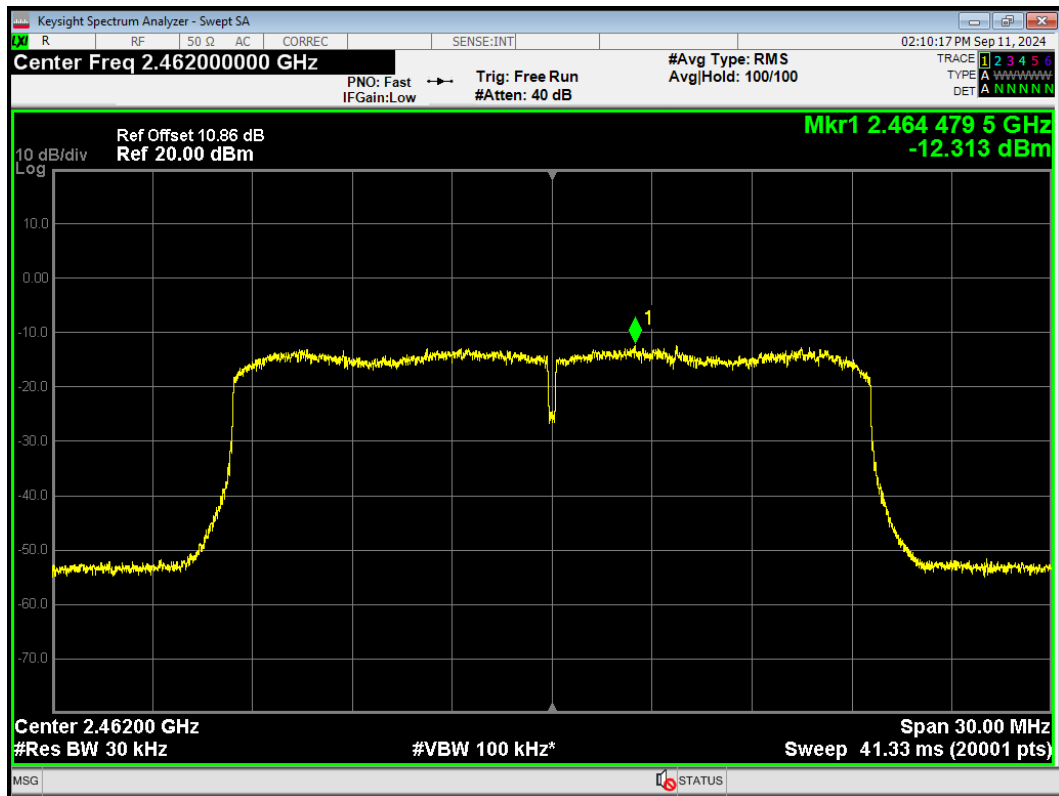
PSD 802.11ax(HE20) 2412MHz



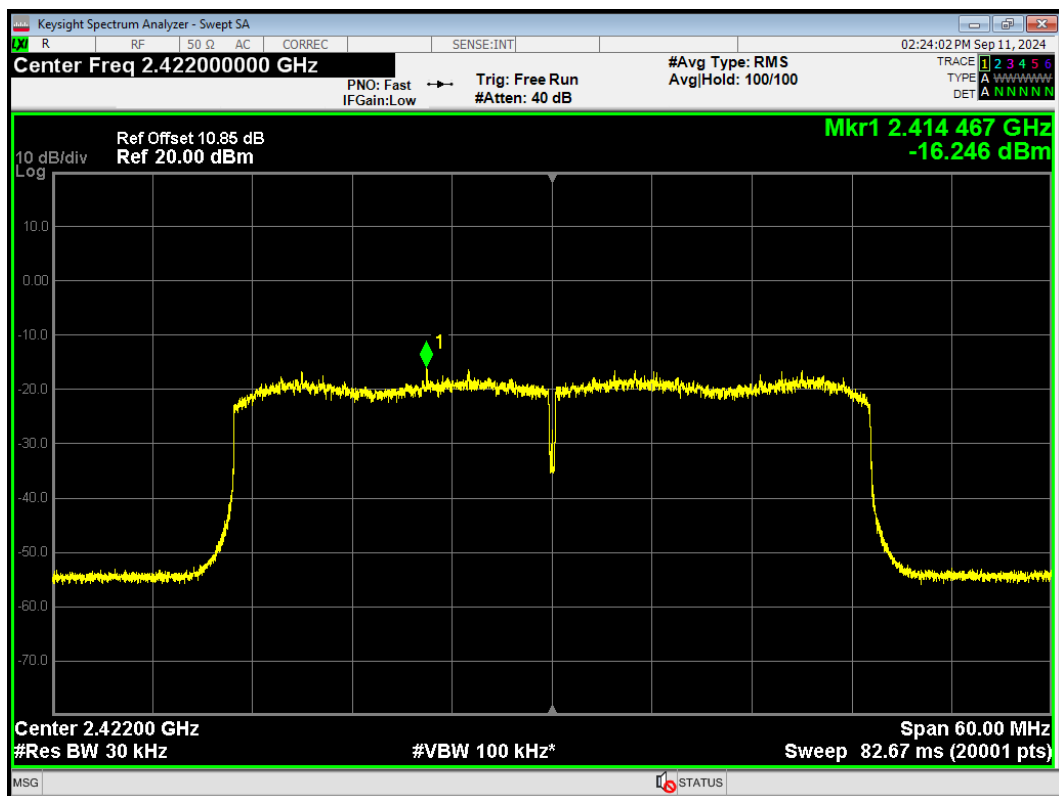
PSD 802.11ax(HE20) 2437MHz



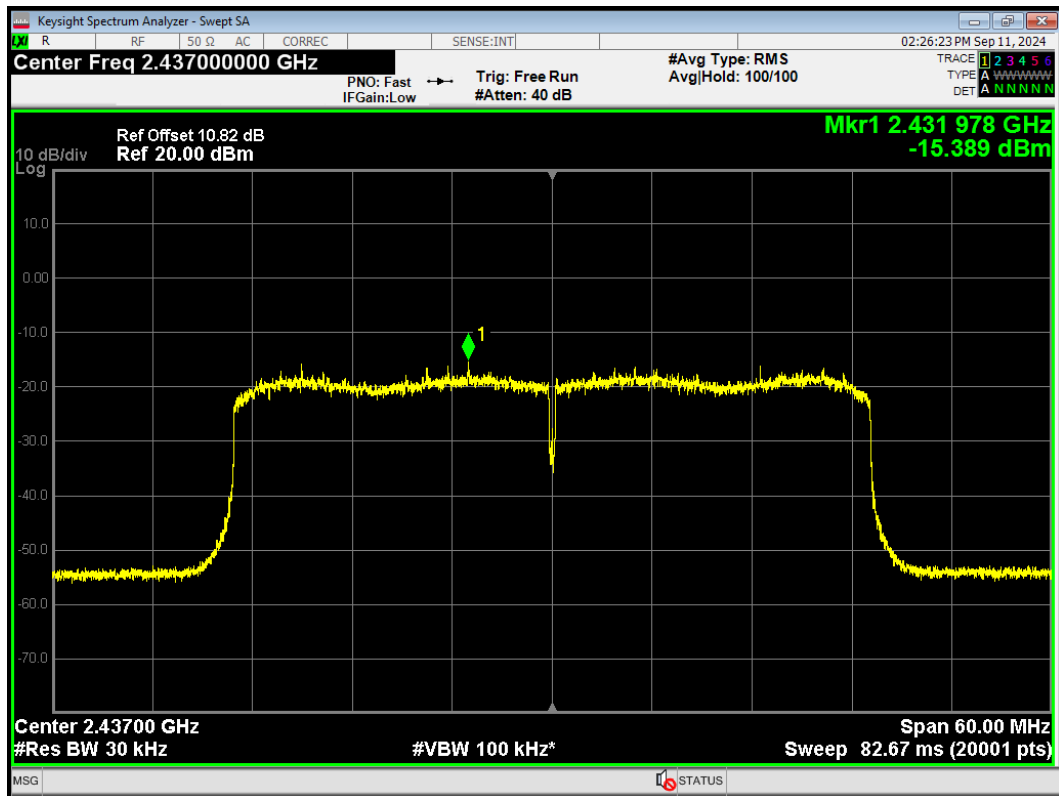
PSD 802.11ax(HE20) 2462MHz



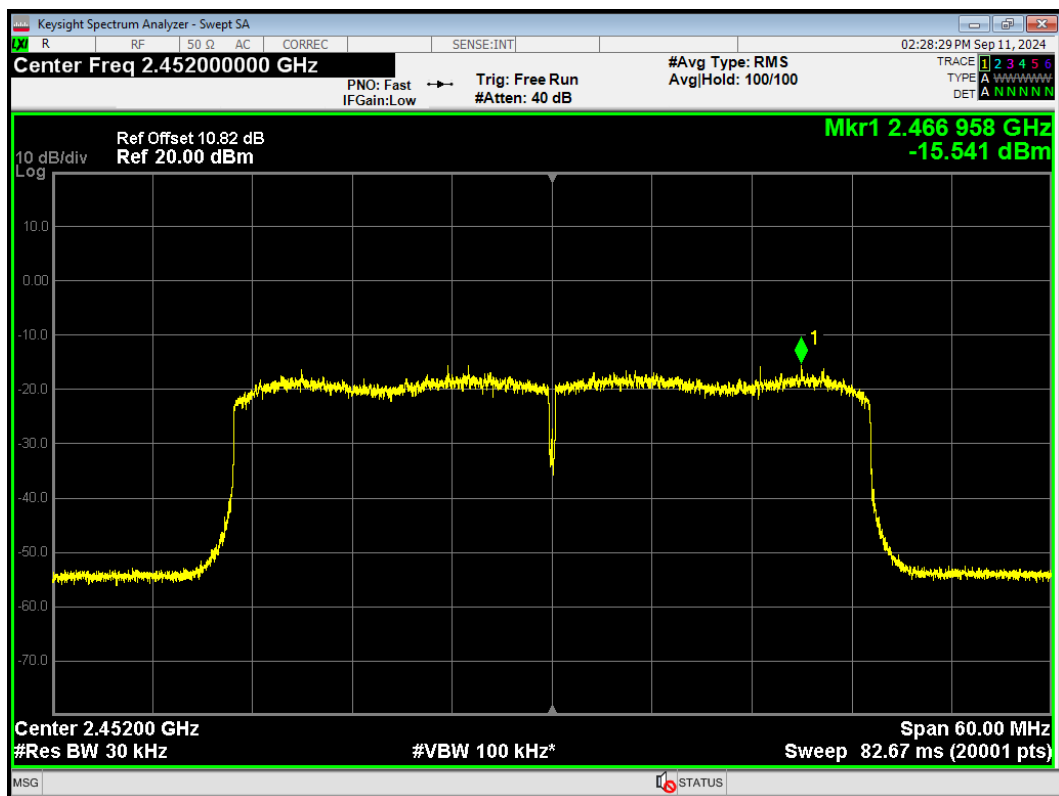
PSD 802.11ax(HE40) 2422MHz



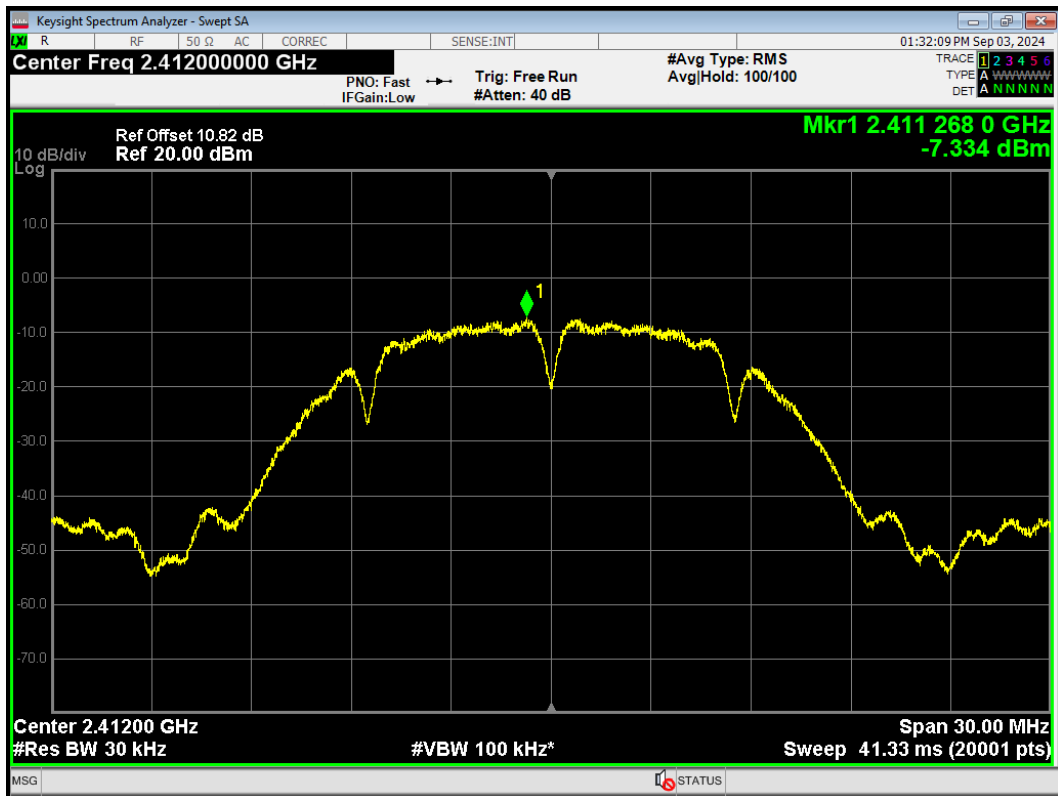
PSD 802.11ax(HE40) 2437MHz



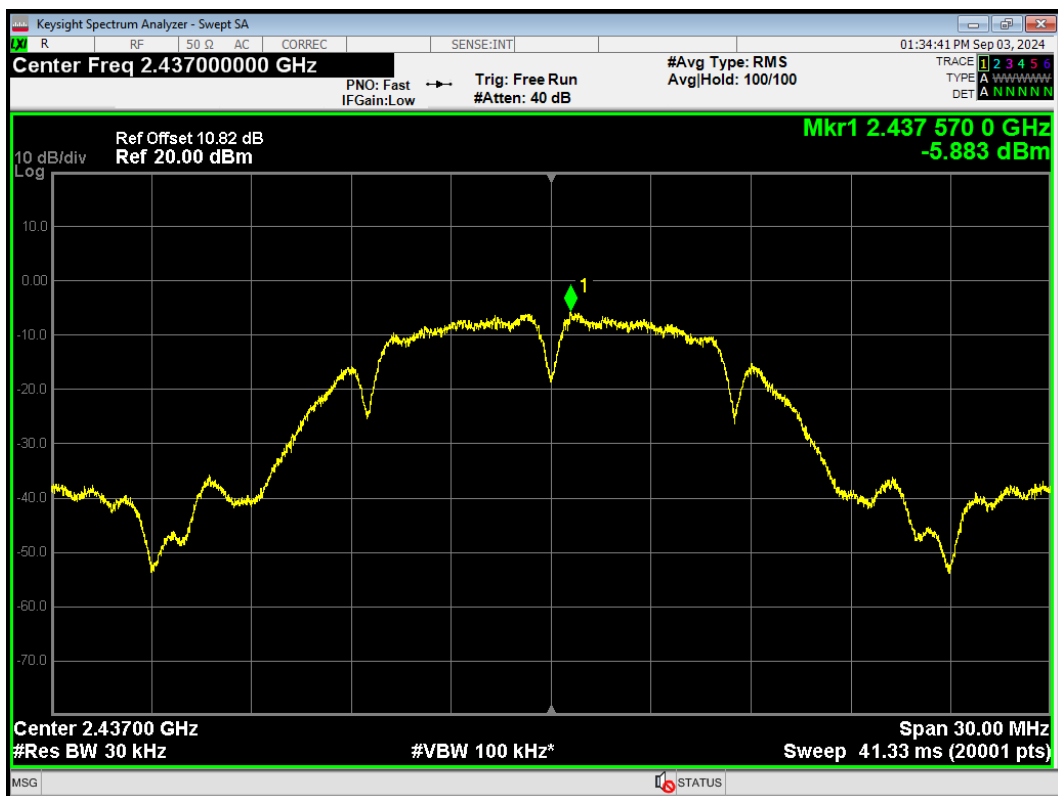
PSD 802.11ax(HE40) 2452MHz



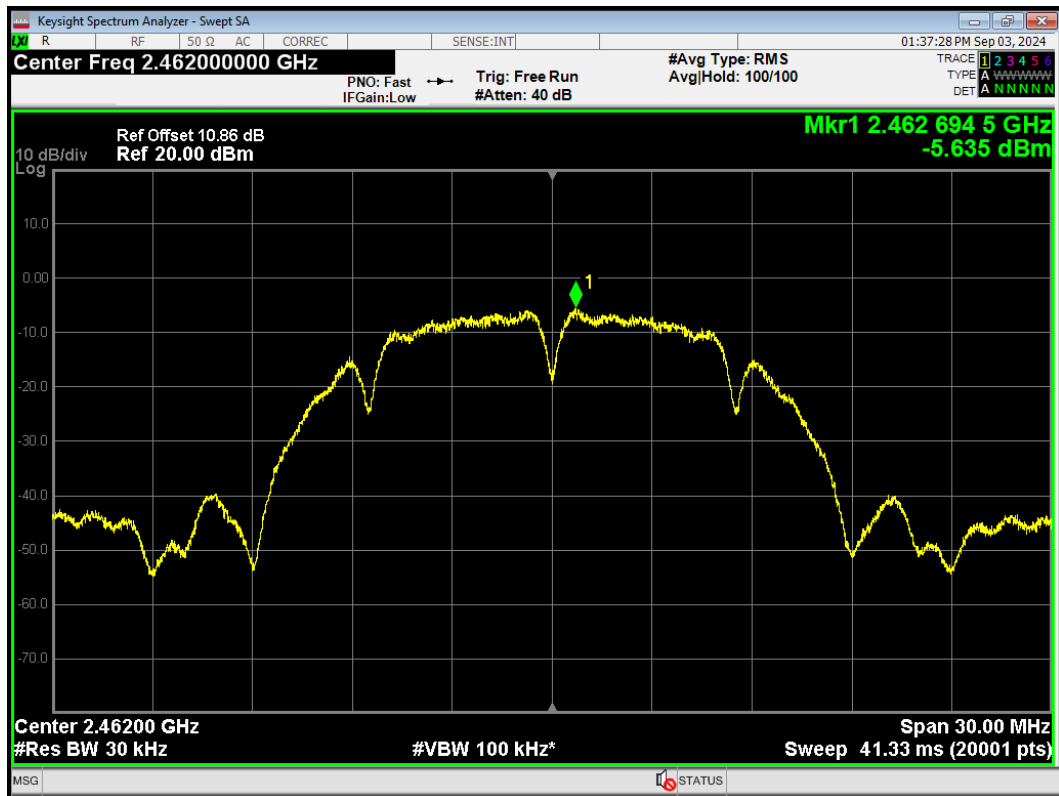
PSD 802.11b 2412MHz



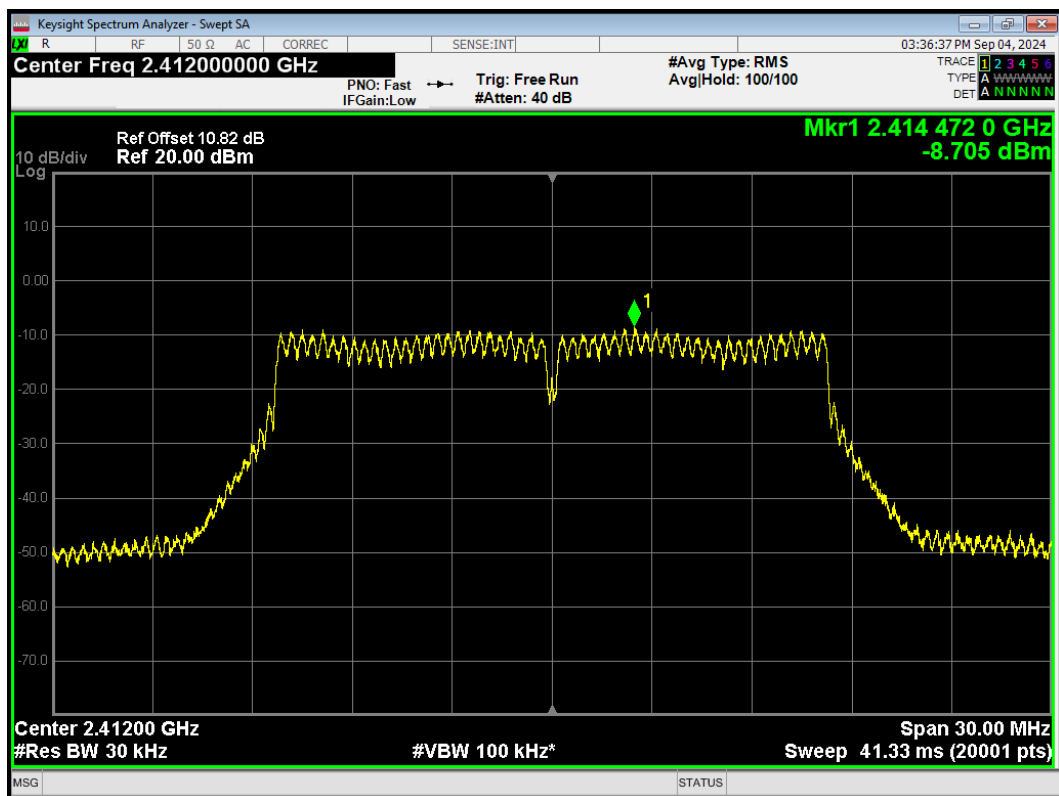
PSD 802.11b 2437MHz



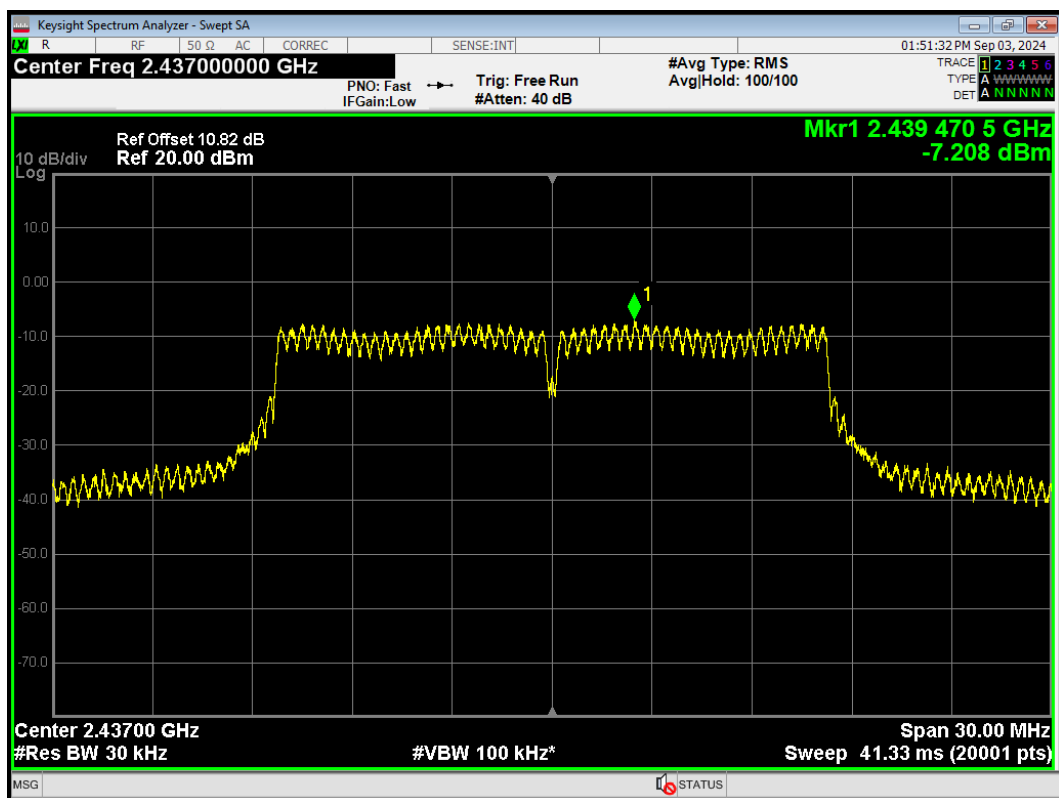
PSD 802.11b 2462MHz



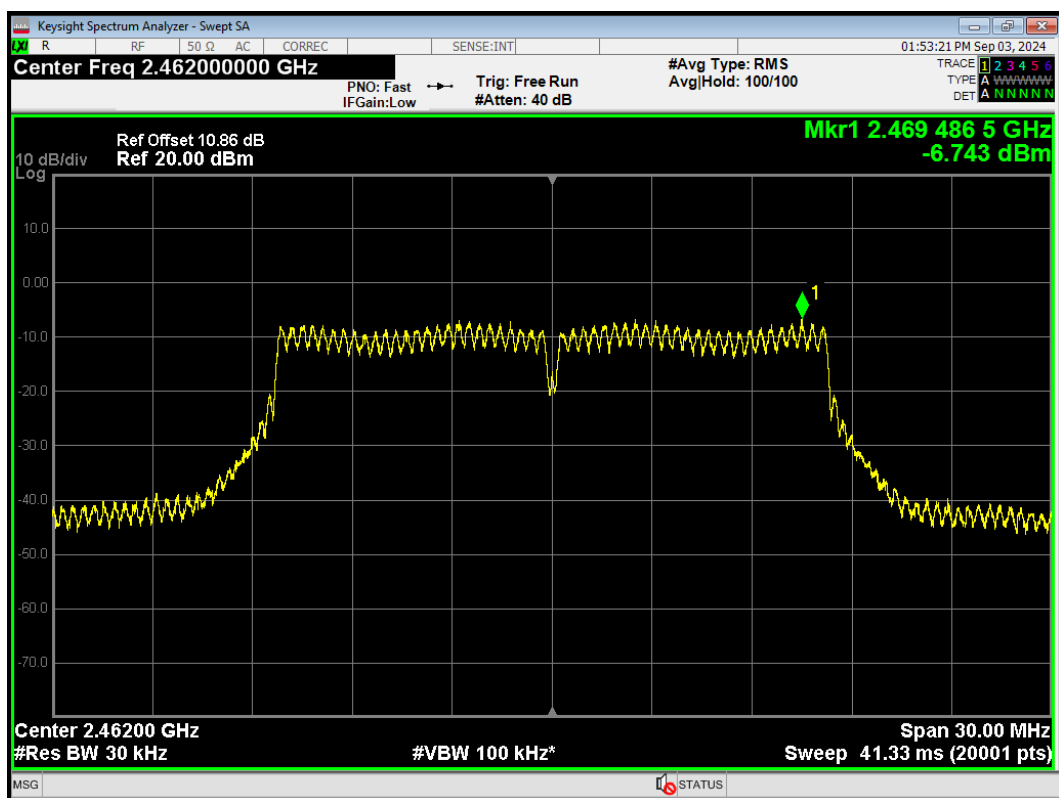
PSD 802.11g 2412MHz



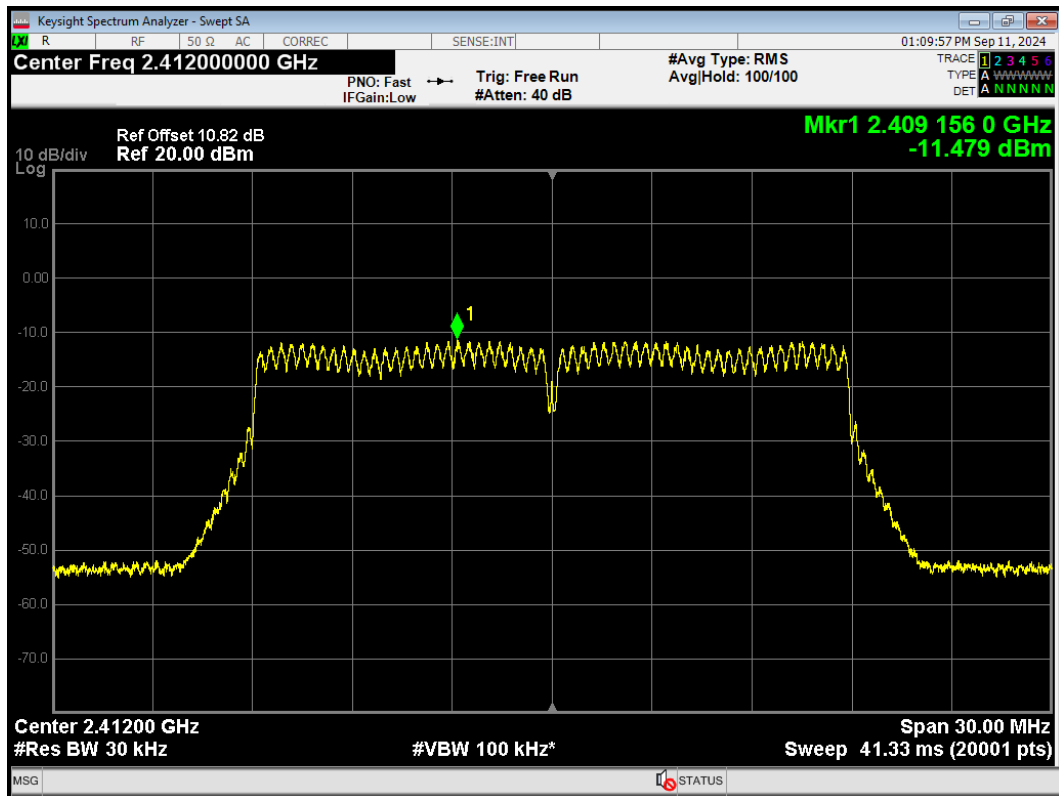
PSD 802.11g 2437MHz



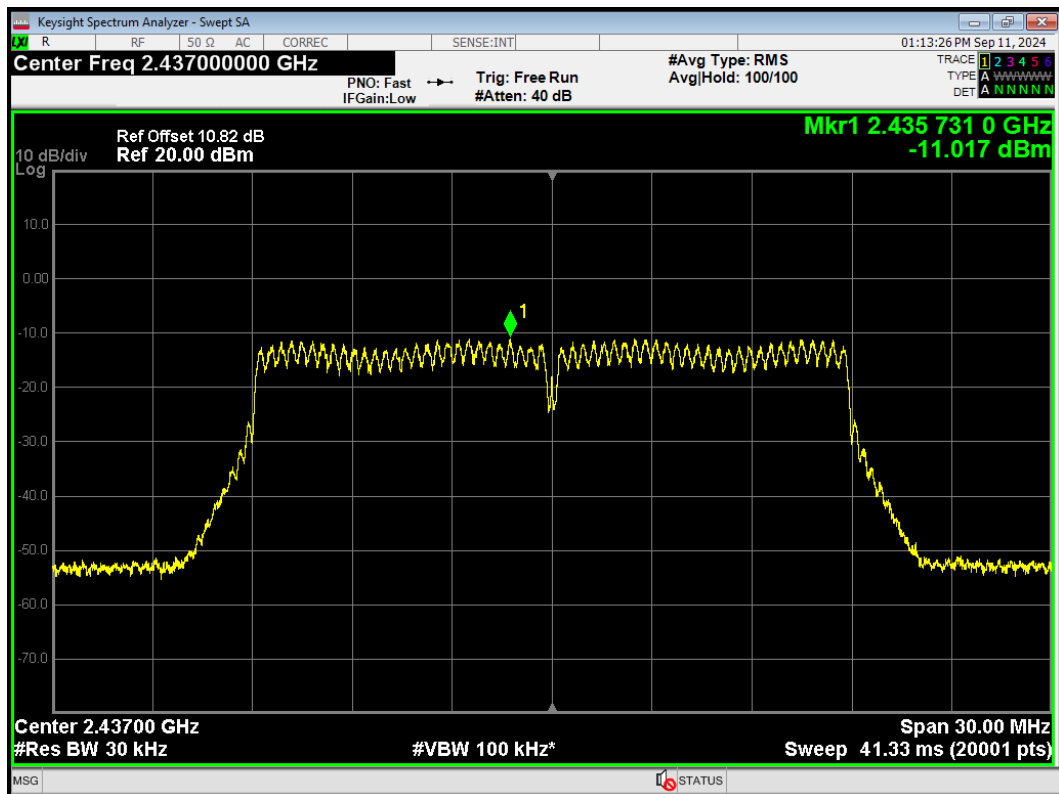
PSD 802.11g 2462MHz



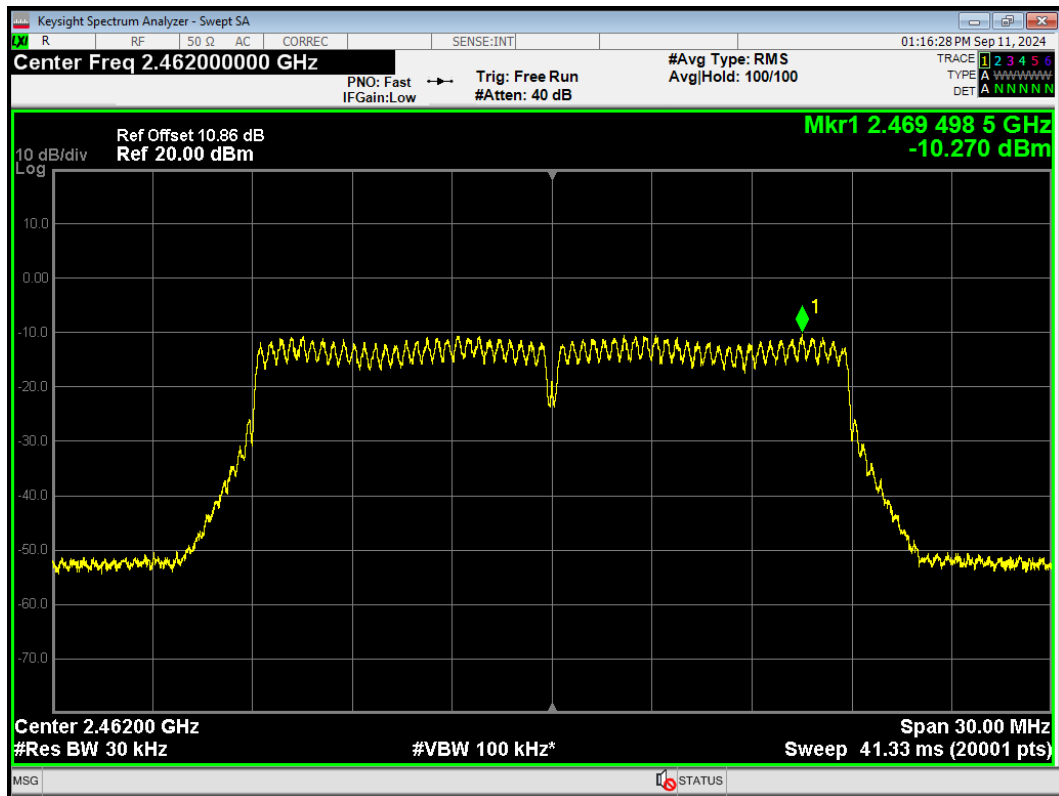
PSD 802.11n(HT20) 2412MHz



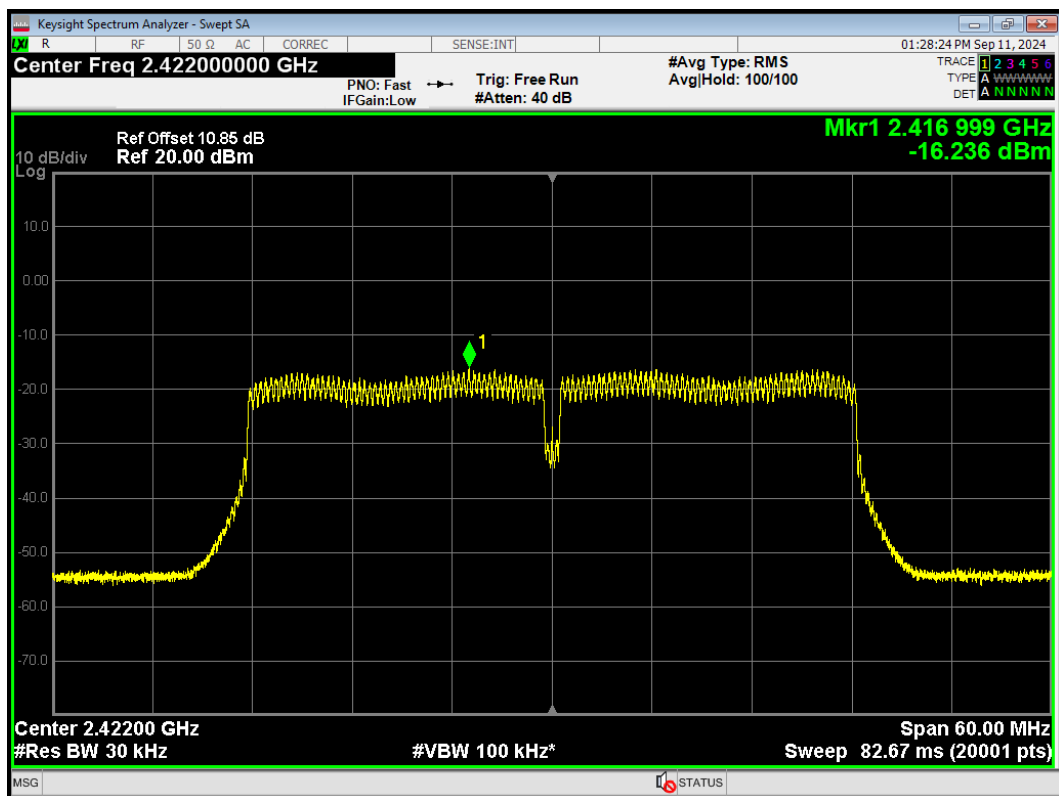
PSD 802.11n(HT20) 2437MHz



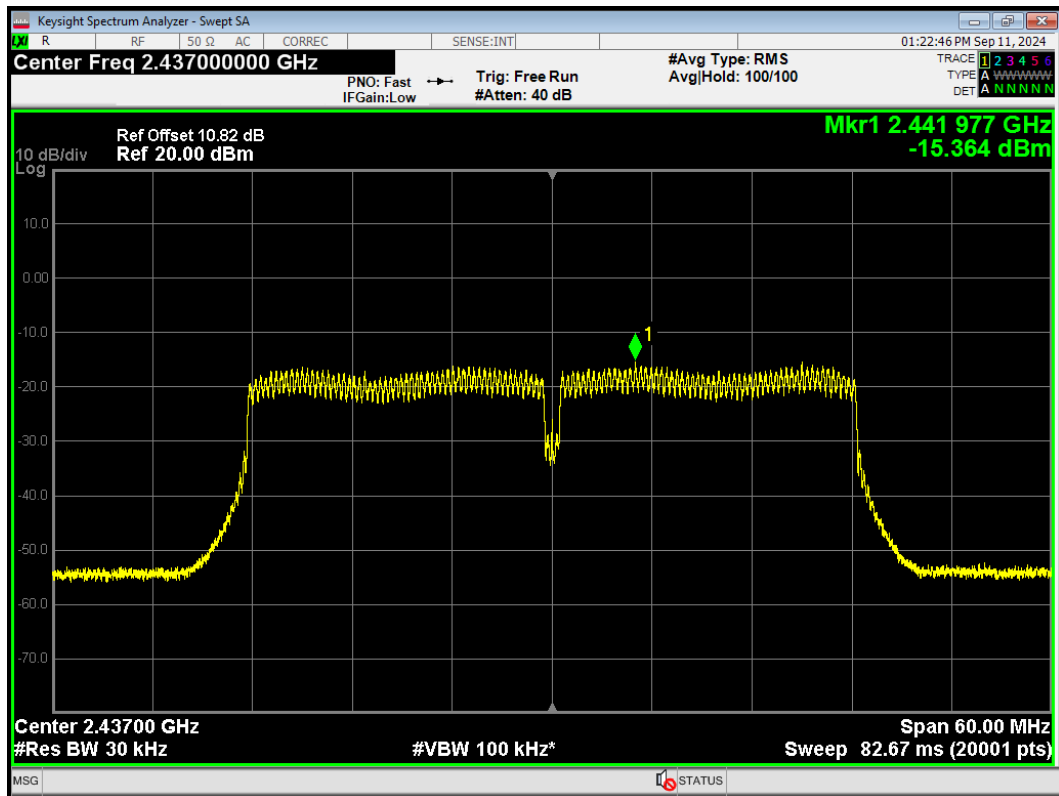
PSD 802.11n(HT20) 2462MHz



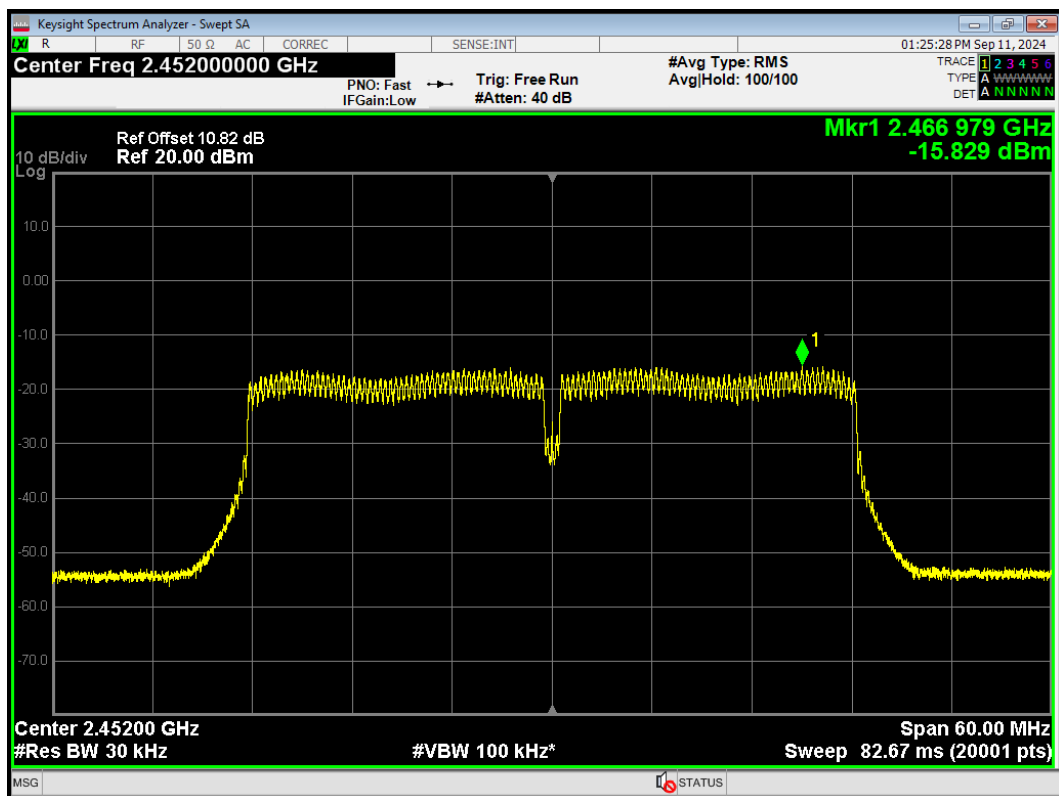
PSD 802.11n(HT40) 2422MHz



PSD 802.11n(HT40) 2437MHz

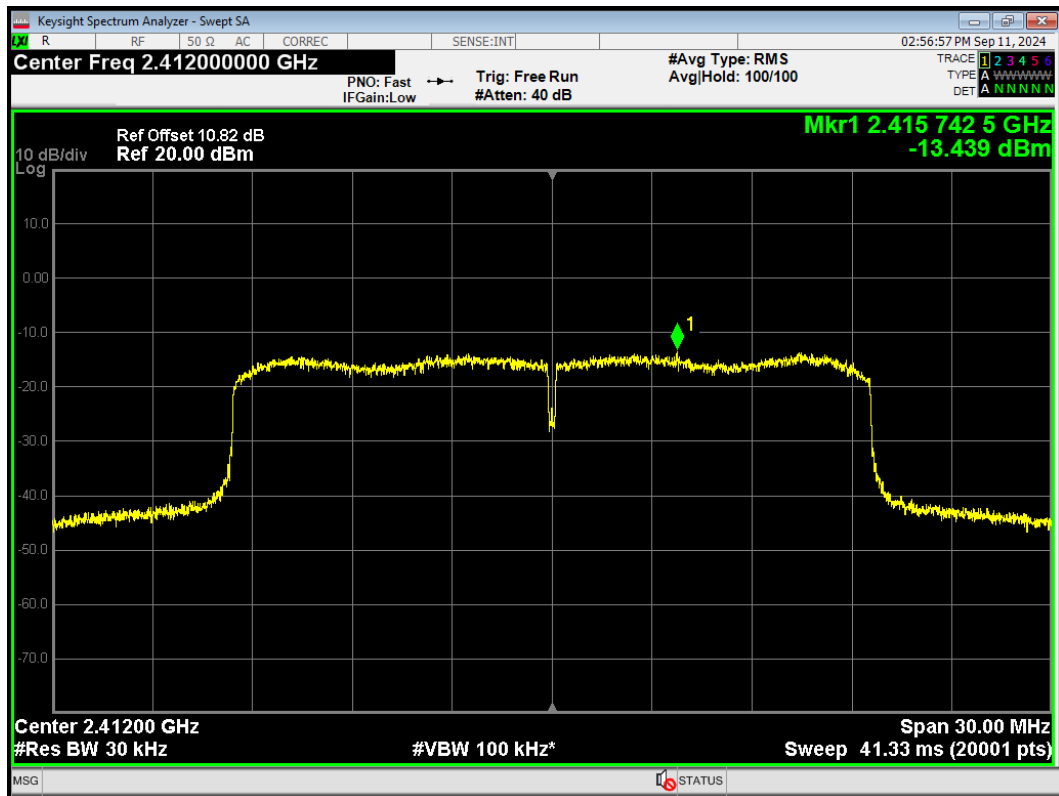


PSD 802.11n(HT40) 2452MHz

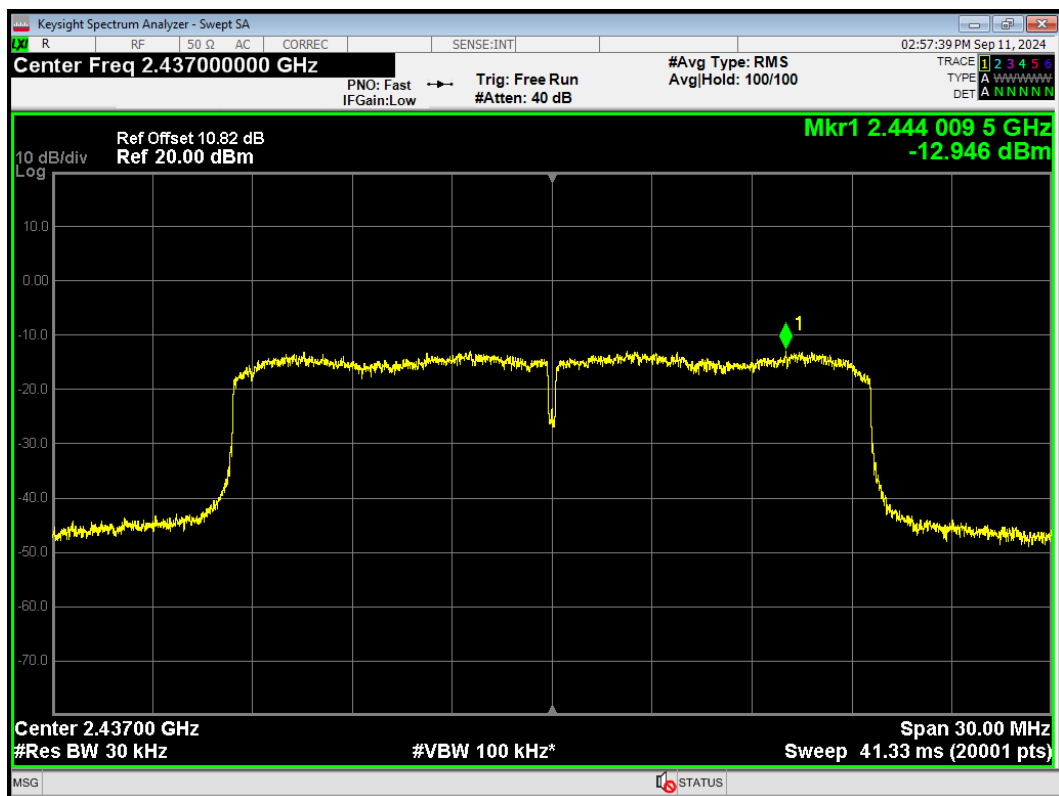


SISO Antenna 2

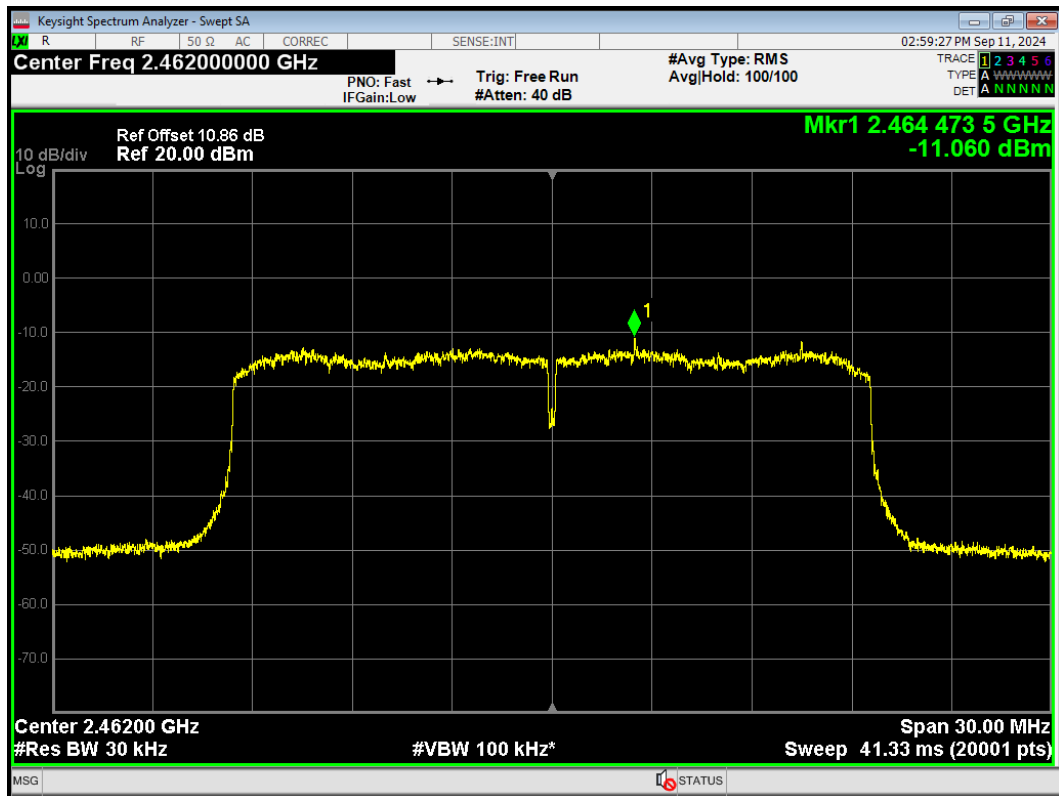
PSD 802.11ax(HE20) 2412MHz



PSD 802.11ax(HE20) 2437MHz



PSD 802.11ax(HE20) 2462MHz



PSD 802.11ax(HE40) 2422MHz

