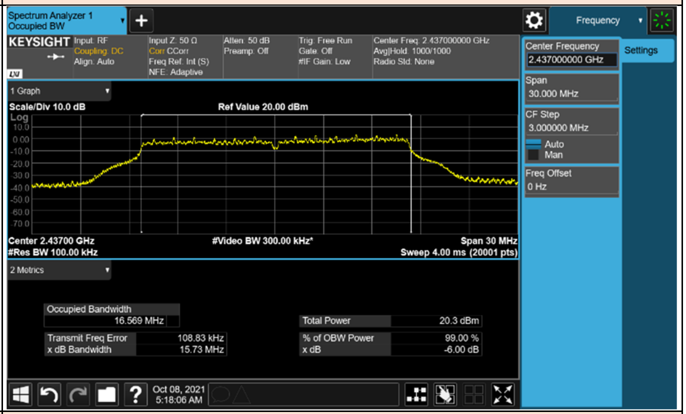
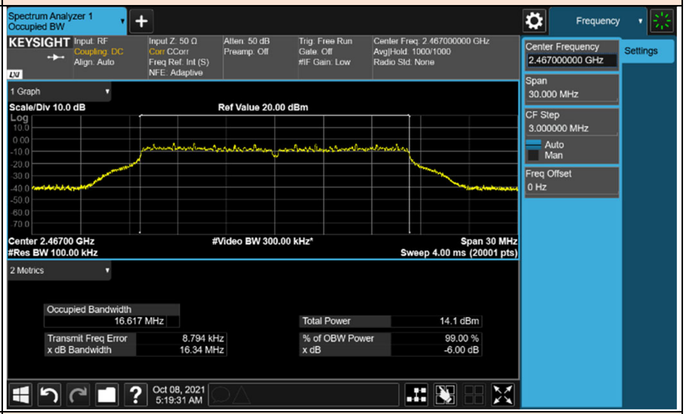
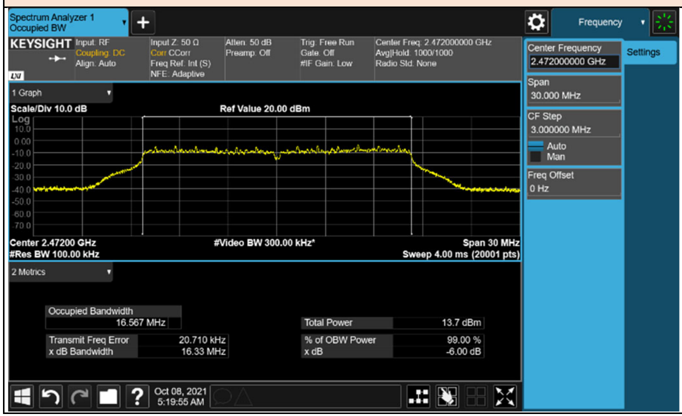
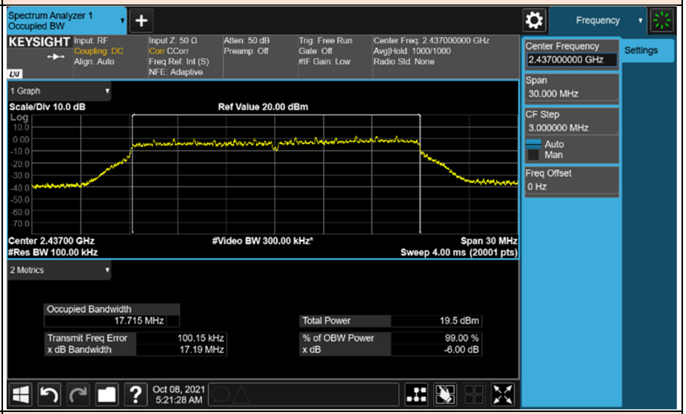
<table>
<tr><th colspan="2">802.11g</th></tr>
<tr><th>2 412 MHz</th><th>2 437 MHz</th></tr>
<tr><td>
</td>
<td>
</td></tr>
<tr><th>2 462 MHz</th><th>2 467 MHz</th></tr>
<tr><td>
</td>
<td>
</td></tr>
<tr><th>2 472 MHz</th><th>-</th></tr>
<tr><td>
</td>
<td>-</td></tr>
</table>

802.11n(HT20)

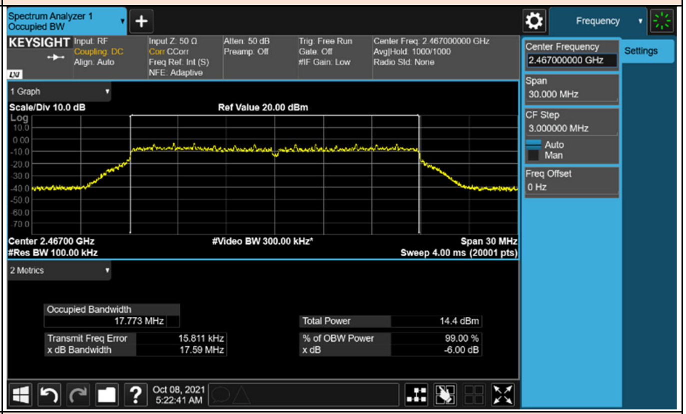
2 412 MHz

2 437 MHz

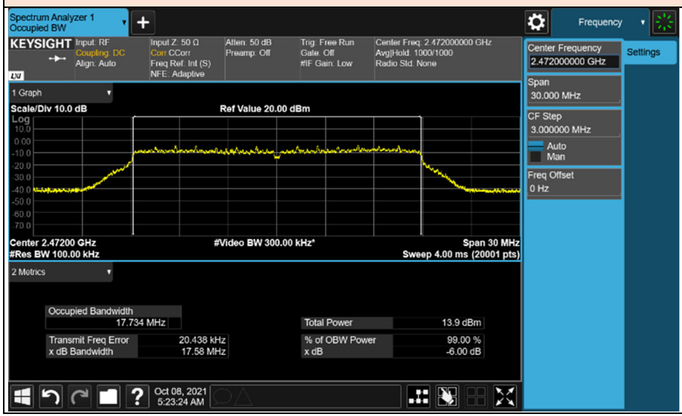


2 462 MHz

2 467 MHz



2 472 MHz



-

-

3.3 Maximum Peak Output Power

3.3.1 Regulation

§15.247(b)(3) : For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

§15.247(b)(4) : The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Test Procedure

General

Section 15.247 permits the maximum conducted (average) output power to be measured as an alternative to the maximum peak conducted output power for demonstrating compliance to the limit. When this option is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth (see ANSI C63.10 for measurement guidance).

When using a spectrum analyzer or EMI receiver to perform these measurements, it shall be capable of utilizing a number of measurement points in each sweep that is greater than or equal to twice the span/RBW to set a bin-to-bin spacing of ≤ RBW/2 so that narrowband signals are not lost between frequency bins.

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level. The intent is to test at 100 % duty cycle; however a small reduction in duty cycle (to no lower than 98 %) is permitted, if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

If continuous transmission (or at least 98 % duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level, with the transmit duration as long as possible, and the duty cycle as high as possible during which sweep triggering/signal gating techniques may be used to perform the measurement over the transmission duration.

3.3.2.1 Maximum peak conducted output power

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

RBW ≥ DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.

b) Set VBW ≥ [3 × RBW].

c) Set span ≥ [3 × RBW].

d) Sweep time = auto couple.

e) Detector = peak.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

Measurement using a power meter (PM)

Method AVGPM is a measurement using an RF average power meter, as follows:

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements maybe performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied:
   1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
   2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
   3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
b) If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal as described in 11.6.
c) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
d) Adjust the measurement in dBm by adding [10 log(1/D)], where D is the duty cycle

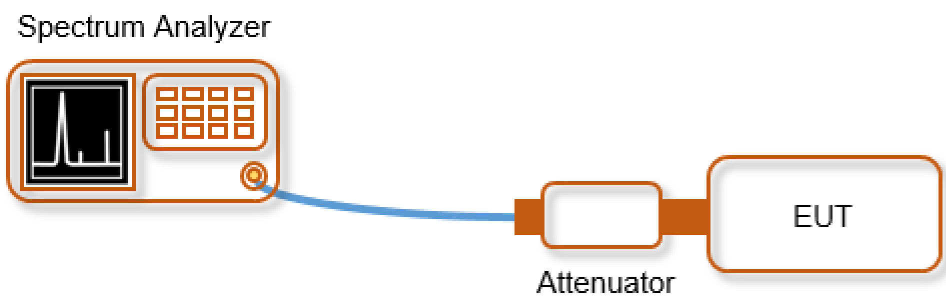
Notes:

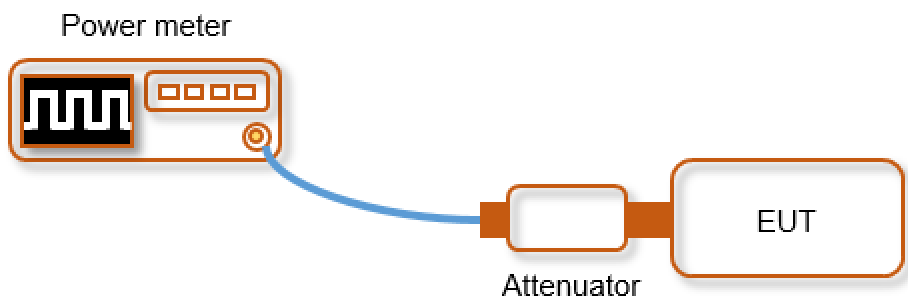
A peak responding power sensor is used, where the power sensor system video bandwidth is greater than the occupied bandwidth of the EUT.

3.3.3 Deviation from Test Standard

No deviation.

3.3.4 Test Setup





3.3.5 Test Result

[Test Result of Peak Power]

Frequency Range [MHz]	Antenna Gain [dBi]	Correlated Directional Gain [dBi]	Power Limit [dBm]	Max. Power [dBm]
2 412 - 2 472	-7.70	N/A	30.00	24.23

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.34 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Peak Power Result [dBm]	Power Limit [dBm]
802.11b	1	2 412	20.01	20.01	30.00
	6	2 437	20.33	20.33	
	11	2 462	21.10	21.10	
	12	2 467	12.23	12.23	
	13	2 472	11.79	11.79	
802.11g	1	2 412	23.63	23.63	30.00
	6	2 437	23.56	23.56	
	11	2 462	24.23	24.23	
	12	2 467	17.28	17.28	
	13	2 472	16.84	16.84	
802.11n (HT20)	1	2 412	23.98	23.98	30.00
	6	2 437	23.42	23.42	
	11	2 462	23.46	23.46	
	12	2 467	18.63	18.63	
	13	2 472	18.75	18.75	

[Test Result of Average Power]

Frequency Range [MHz]	Antenna Gain [dBi]	Correlated Directional Gain [dBi]	Power Limit [dBm]	Max. Power [dBm]
2 412 - 2 472	-7.70	N/A	30.00	17.76

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.34 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Average Power Result [dBm]	Power Limit [dBm]
802.11b	1	2 412	16.71	16.71	30.00
	6	2 437	17.06	17.06	
	11	2 462	17.76	17.76	
	12	2 467	8.69	8.69	
	13	2 472	8.07	8.07	
802.11g	1	2 412	14.86	15.18	30.00
	6	2 437	14.73	15.05	
	11	2 462	15.36	15.68	
	12	2 467	8.36	8.68	
	13	2 472	8.00	8.32	
802.11n (HT20)	1	2 412	14.22	14.56	30.00
	6	2 437	13.55	13.89	
	11	2 462	14.43	14.77	
	12	2 467	8.41	8.75	
	13	2 472	8.02	8.36	

3.4 Power Spectral Density

3.4.1 Regulation

§15.247(e) : 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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.4.2 Test Procedure

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

a) Set analyzer center frequency to DTS channel center frequency.

b) Set the span to 1.5 times the DTS bandwidth.

c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.

d) Set the VBW ≥ [3 × RBW].

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

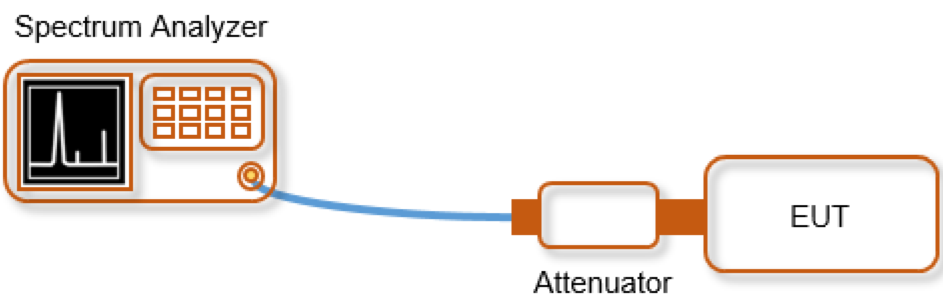
i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

3.4.3 Deviation from Test Standard

No deviation.

3.4.4 Test Setup



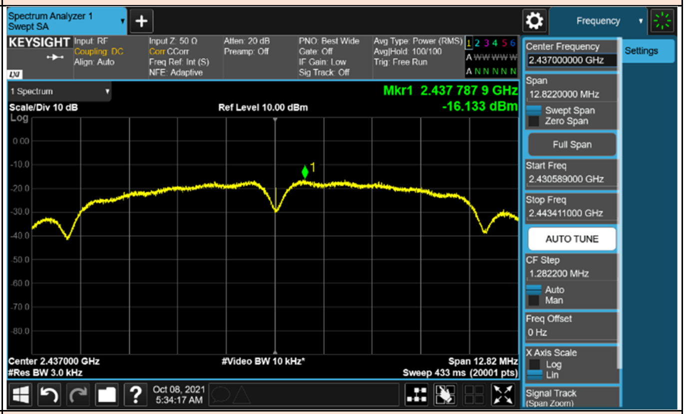
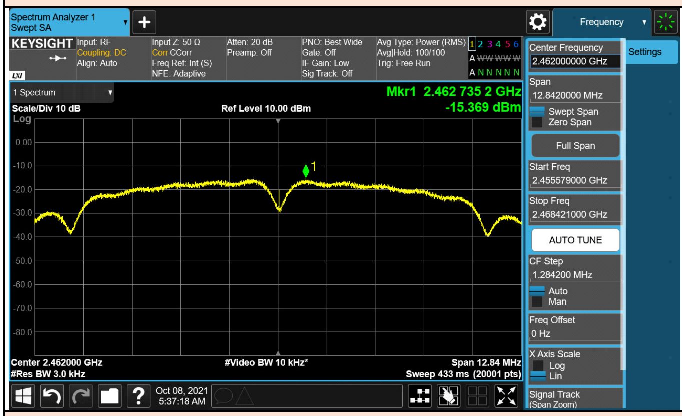
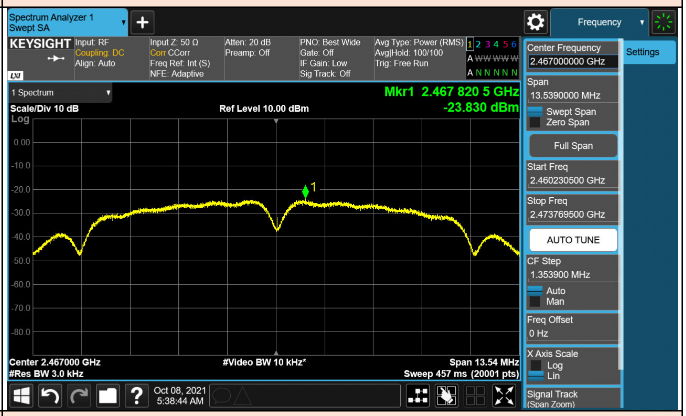
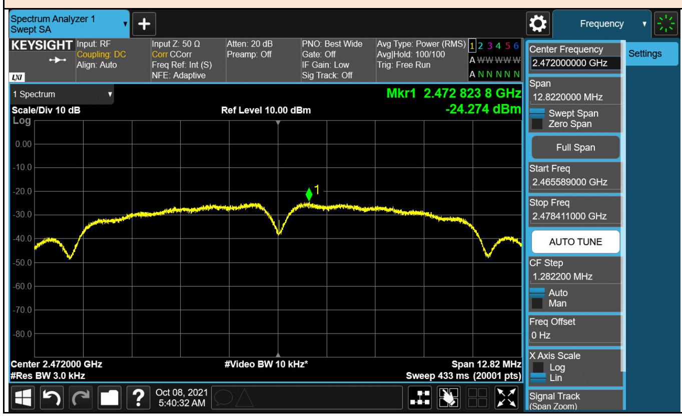
3.4.5 Test Result

[Test Data of Power Spectral Density]

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.34 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Result [dBm]	Margin [dB]	Power Limit [dBm]
802.11b	1	2 412	-16.28	-16.28	24.28	8.00
	6	2 437	-16.13	-16.13	24.13	
	11	2 462	-15.37	-15.37	23.37	
	12	2 467	-23.83	-23.83	31.83	
	13	2 472	-24.27	-24.27	32.27	
802.11g	1	2 412	-16.61	-16.29	24.29	8.00
	6	2 437	-16.51	-16.19	24.19	
	11	2 462	-15.76	-15.44	23.44	
	12	2 467	-23.49	-23.17	31.17	
	13	2 472	-23.52	-23.20	31.20	
802.11n (HT20)	1	2 412	-19.42	-19.08	27.08	8.00
	6	2 437	-19.52	-19.18	27.18	
	11	2 462	-19.80	-19.46	27.46	
	12	2 467	-26.20	-25.86	33.86	
	13	2 472	-16.18	-15.84	23.84	

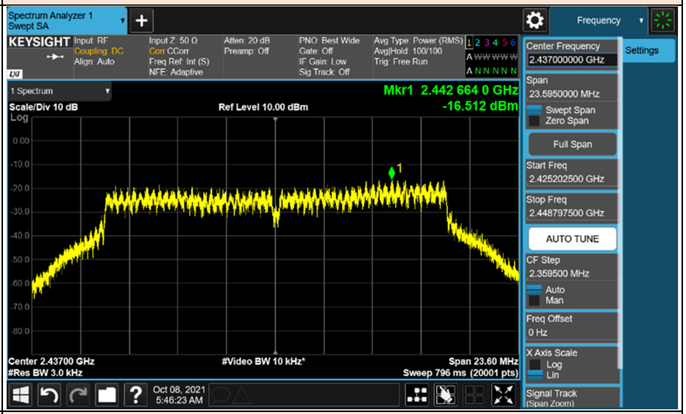
[Test Plot of Power Spectral Density]

802.11b	
2 412 MHz	2 437 MHz
	
2 462 MHz	2 467 MHz
	
2 472 MHz	-
	-

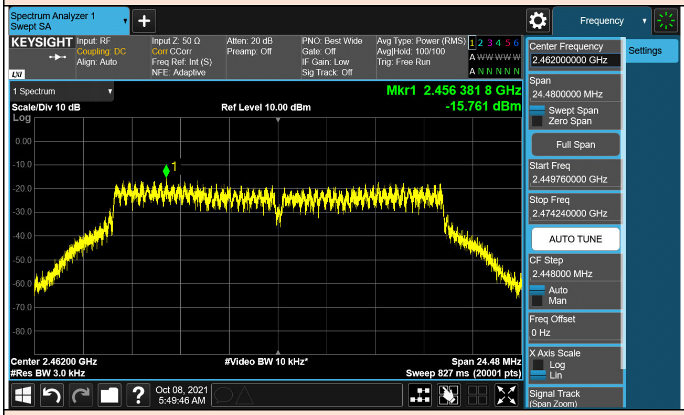
802.11g

2 412 MHz

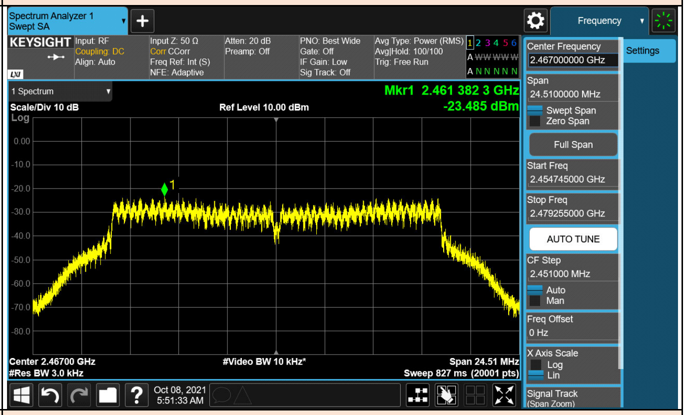
2 437 MHz



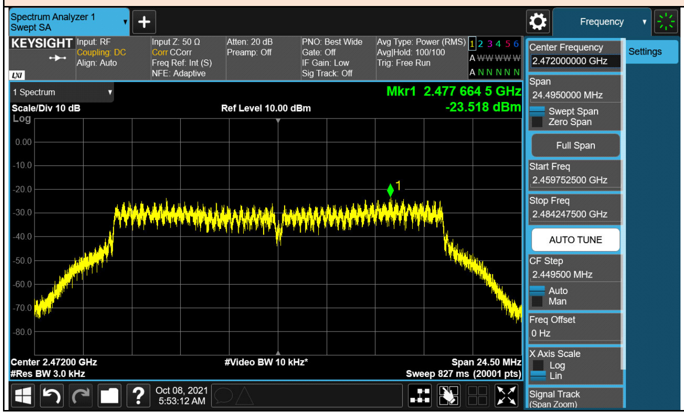
2 462 MHz



2 467 MHz



2 472 MHz



-

-