

Spectrum Analyzer 1 Channel Power	Frequency V Ste
KEYSIGHT Input RF Input Z 50 Ω Atten: 40 dB Trig: Free Run Center Freq: 2.461930700 GHz R L → Coupling: DC Corr CCorr µW Path: Standard Gate: Off Avg]Hold: 100/100 R L → Align: Auto Freq Ref: Int (S) #PNO: Fast #IF Gain: Low Radio Std: None	Center Frequency 2.461930700 GHz
1 Graph Ref Lvl Offset 21.39 dB Scale/Div 10.0 dB Ref Value 30.00 dBm	Span 40.000 MHz CF Step
Log 20.0 10.0	4.000000 MHz Auto Man
0.00 -10.0 -20.0	Freq Offset 0 Hz
-30.0	
-50.0 -60.0 Center 2.46193 GHz #Video BW 3.0000 MHz* Span 40 MHz	z
#Res BW 430.00 kHz Sweep 1.00 ms (1001 pts 2 Metrics	
Total Channel Power 13.48 dBm / 17.5 MHz Total Power Spectral Density -58.95 dBm/Hz	Local
11N20SISO-Ant1-2462-PASS	

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8.4 MAXIMUM POWER SPECTRAL DENSITY

8.4.1 Applicable Standard

According to FCC Part15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02 According to RSS-247 5.2(b) and RSS-Gen 6.12

8.4.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter 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 section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

8.4.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.4.4 Test Procedure

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance

The transmitter output (antenna port) was connected to the spectrum analyzer Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz

Set the VBW to: 10 kHz.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

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

8.4.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

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TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-16.52	≤8.00	PASS
11B	Ant1	2437	-17.34	≤8.00	PASS
11B	Ant1	2462	-17.38	≤8.00	PASS
11G	Ant1	2412	-16.32	≤8.00	PASS
11G	Ant1	2437	-16.68	≤8.00	PASS
11G	Ant1	2462	-16.98	≤8.00	PASS
11N20SISO	Ant1	2412	-17.57	≤8.00	PASS
11N20SISO	Ant1	2437	-18.12	≤8.00	PASS
11N20SISO	Ant1	2462	-17.27	≤8.00	PASS



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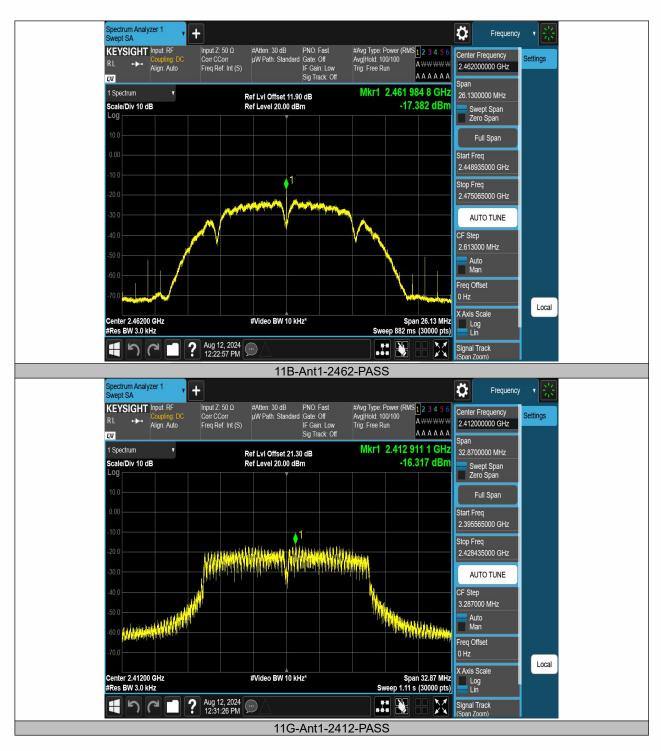
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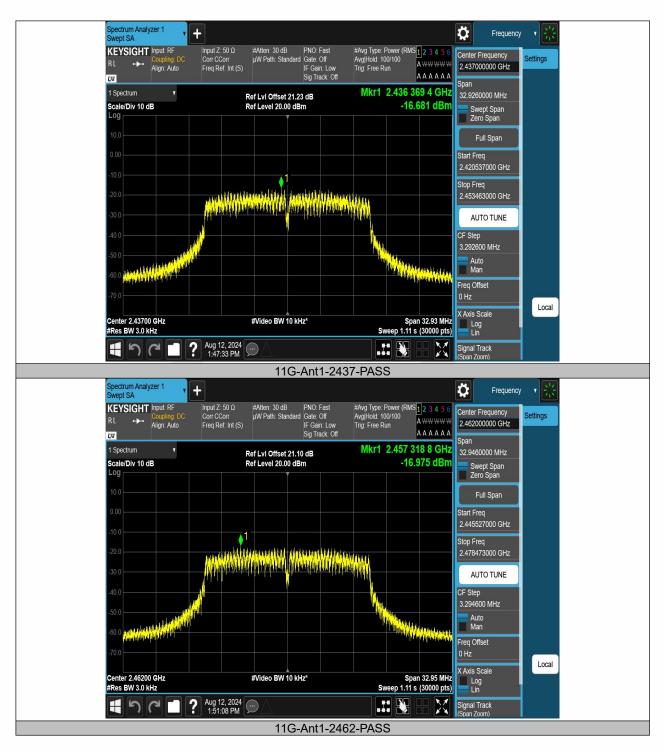




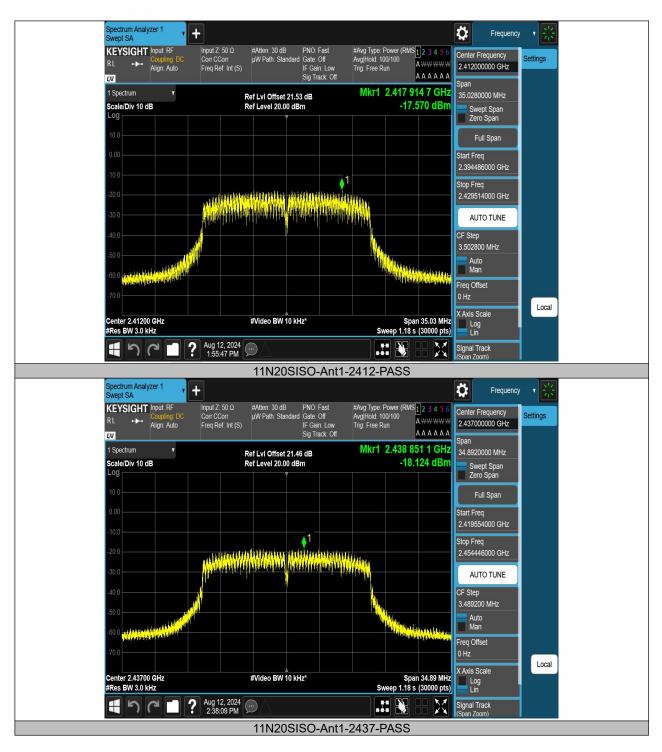




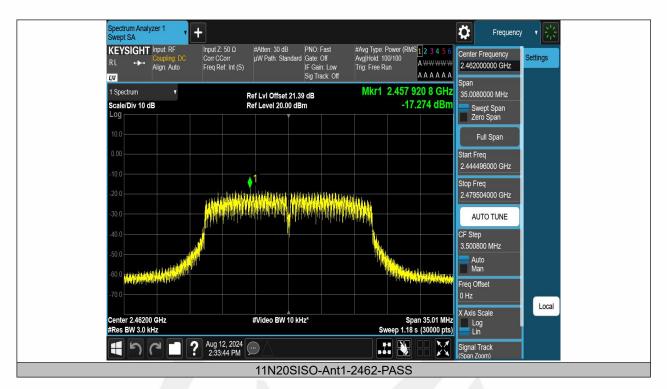












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8.5 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

8.5.1 Applicable Standard

According to FCC Part15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 According to RSS-247 5.5

8.5.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted undersection 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

8.5.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.5.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to \geq 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW \ge 3 x RBW.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Band-edge measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation Set RBW $\ge 1\%$ of the span=100kHz Set VBW $\ge 3 \times RBW$

Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

Emission level measurement

Set the center frequency and span to encompass frequency range to be measured.

Set the RBW = 100 kHz.

Set the VBW =300 kHz.

Set Detector = peak

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements. Report the three highest emissions relative to the limit.

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8.5.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

Band edge measurements

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.85	-45.74	≤-26.15	PASS
11B	Ant1	High	2462	2.86	-46.37	≤-27.15	PASS
11G	Ant1	Low	2412	2.48	-34.83	≤-27.52	PASS
11G	Ant1	High	2462	-0.54	-48.18	≤-30.54	PASS
11N20SISO	Ant1	Low	2412	2.31	-36.98	≤-27.69	PASS
11N20SISO	Ant1	High	2462	1.12	-46.39	≤-28.88	PASS

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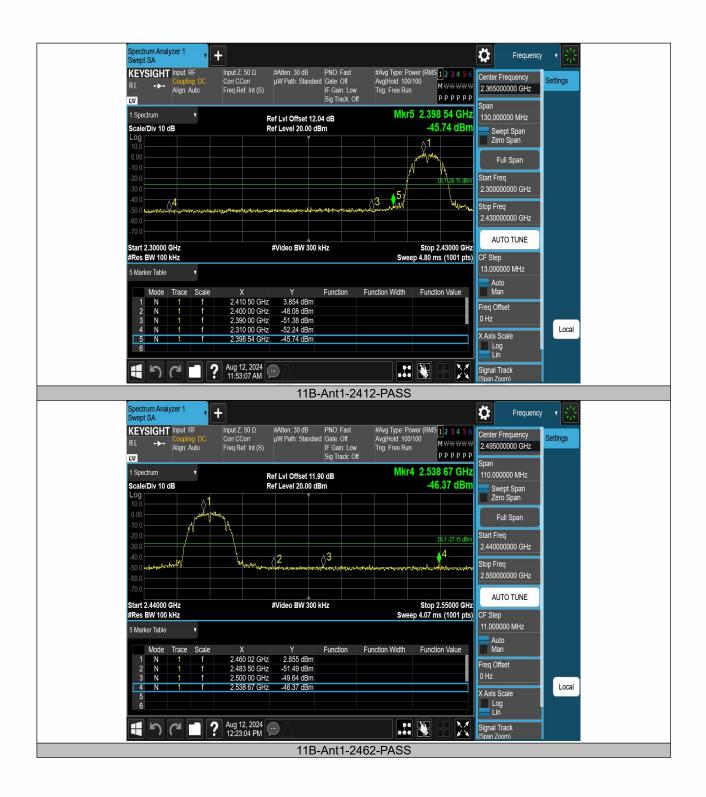
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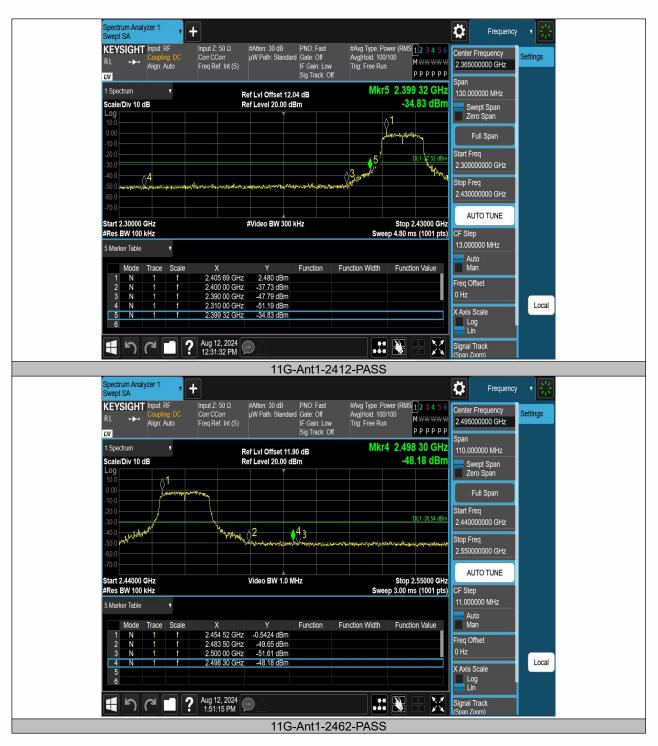
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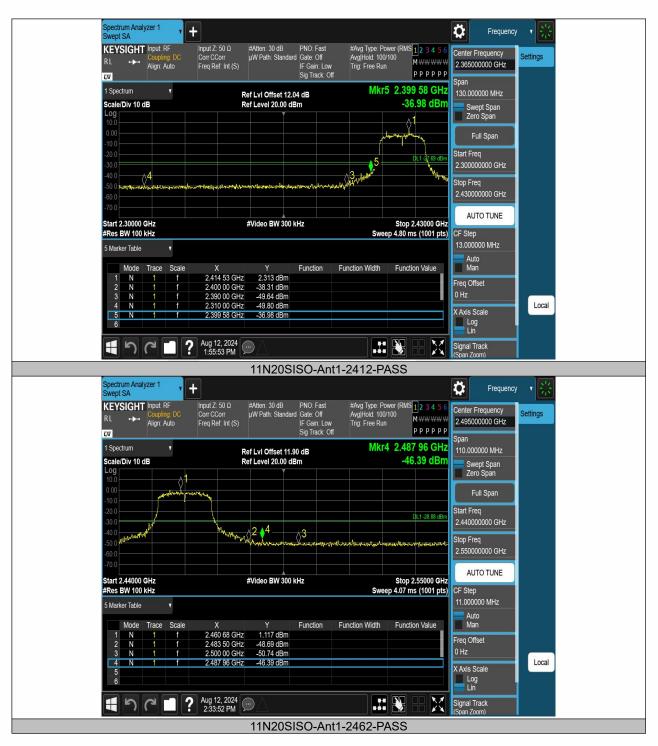






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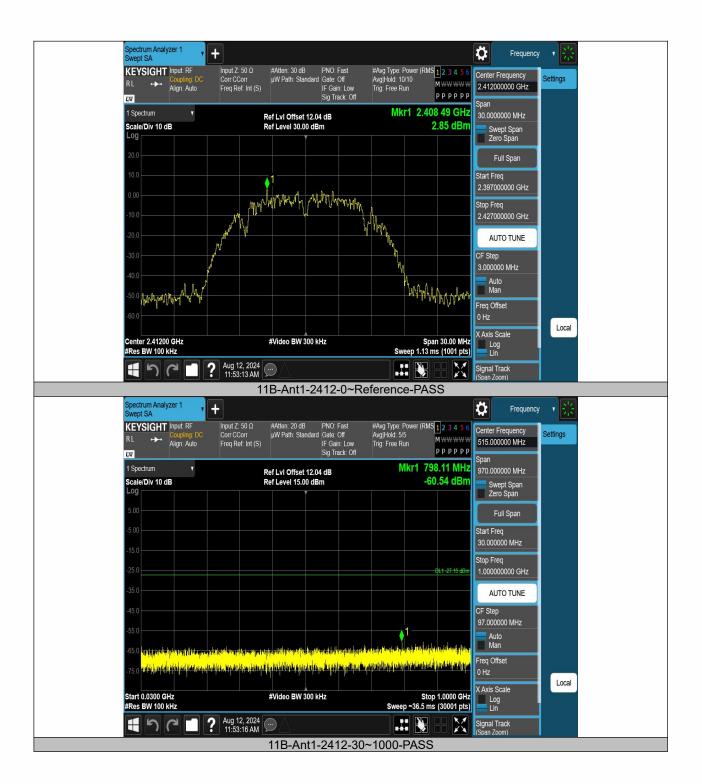
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TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	0~Reference	2.85	2.85		PASS
11B	Ant1	2412	30~1000	2.85	-60.55	≤-27.15	PASS
11B	Ant1	2412	1000~26500	2.85	-50.08	≤-27.15	PASS
11B	Ant1	2437	0~Reference	1.55	1.55		PASS
11B	Ant1	2437	30~1000	1.55	-61.76	≤-28.45	PASS
11B	Ant1	2437	1000~26500	1.55	-50.51	≤-28.45	PASS
11B	Ant1	2462	0~Reference	0.67	0.67		PASS
11B	Ant1	2462	30~1000	0.67	-62.2	≤-29.33	PASS
11B	Ant1	2462	1000~26500	0.67	-50.94	≤-29.33	PASS
11G	Ant1	2412	0~Reference	-1.04	-1.04		PASS
11G	Ant1	2412	30~1000	-1.04	-60.29	≤-31.04	PASS
11G	Ant1	2412	1000~26500	-1.04	-49.56	≤-31.04	PASS
11G	Ant1	2437	0~Reference	-0.94	-0.94		PASS
11G	Ant1	2437	30~1000	-0.94	-61.2	≤-30.94	PASS
11G	Ant1	2437	1000~26500	-0.94	-50.28	≤-30.94	PASS
11G	Ant1	2462	0~Reference	-2.03	-2.03		PASS
11G	Ant1	2462	30~1000	-2.03	-61.19	≤-32.03	PASS
11G	Ant1	2462	1000~26500	-2.03	-50.07	≤-32.03	PASS
11N20SISO	Ant1	2412	0~Reference	-1.96	-1.96		PASS
11N20SISO	Ant1	2412	30~1000	-1.96	-60.94	≤-31.96	PASS
11N20SISO	Ant1	2412	1000~26500	-1.96	-50.05	≤-31.96	PASS
11N20SISO	Ant1	2437	0~Reference	2.11	2.11		PASS
11N20SISO	Ant1	2437	30~1000	2.11	-61.5	≤-27.89	PASS
11N20SISO	Ant1	2437	1000~26500	2.11	-49.93	≤-27.89	PASS
11N20SISO	Ant1	2462	0~Reference	-2.13	-2.13		PASS
11N20SISO	Ant1	2462	30~1000	-2.13	-60.96	≤-32.13	PASS
11N20SISO	Ant1	2462	1000~26500	-2.13	-49.59	≤-32.13	PASS

Conducted Spurious Emission



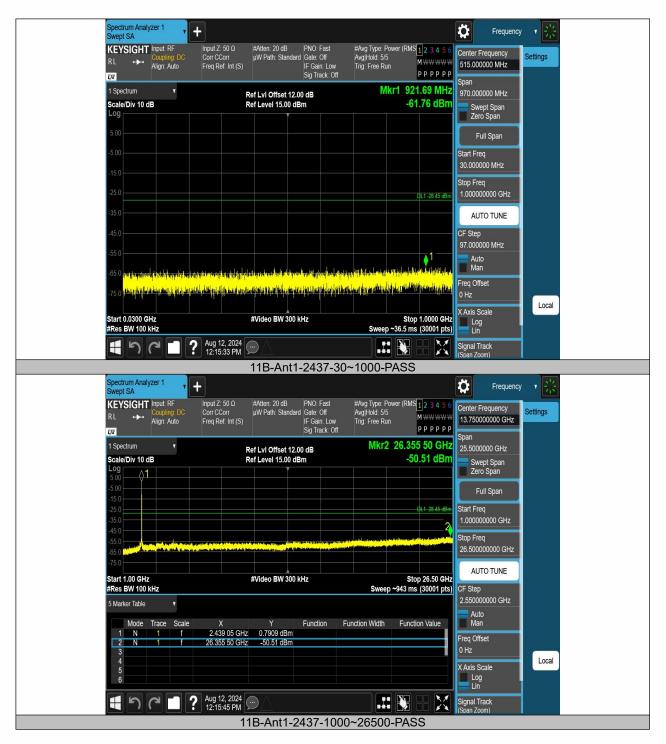




pectrum Analyzer 1 wept SA Ö + Frequency #Atten: 20 dB PNO: Fast µW Path: Standard Gate: Off IF Gain: Low Sig Track: Off Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF Center Frequency Settings Align: Auto 13,750000000 GHz рррррр L)(I Span Mkr2 25.799 60 GHz 1 Spectrum . 25.5000000 GHz Ref LvI Offset 12.04 dB Ref Level 15.00 dBm -50.08 dBm Scale/Div 10 dB Swept Span Zero Span Log Full Span Start Freq DL1 -27 15 dE 1 00000000 GHz Stop Freq 26.50000000 GHz AUTO TUNE #Video BW 300 kHz Start 1.00 GHz Stop 26.50 GHz #Res BW 100 kHz Sweep ~943 ms (30001 pts) CF Step 2.550000000 GHz 5 Marker Table Auto Man Function Function Width Function Value Mode Trace Scale 2.410 15 GHz 0.2984 dBm Freq Offse 25.799 60 GHz -50.08 dBm Local X Axis Scale 5 Log Lin モンマロ? Aug 12, 2024 🗩 \mathbb{X} .# 🔖 Signal Track 11B-Ant1-2412-1000~26500-PASS Spectrum Analyzer 1 Swept SA Ö + Frequency #Atten: 30 dB PNO: Fast µW Path: Standard Gate: Off IF Gain: Low Sig Track: Off Input Z: 50 Ω KEYSIGHT Input: RF #Avg Type: Power (RMS 1 2 3 4 5 6 Center Frequency Corr CCorr Freq Ref: Int (S) Avg|Hold: 10/10 Trig: Free Run Settings Align: Auto M₩₩₩₩\ 2.437000000 GHz рррррр L)XI Span Mkr1 2.438 98 GHz 1 Spectrum Ref LvI Offset 12.00 dB Ref Level 30.00 dBm 30.0000000 MHz 1.55 dBm Scale/Div 10 dB Swept Span Zero Span Loc Full Span Start Freq 2.422000000 GHz ATWAR LAWAR MANNAMA. Stop Freq 2.452000000 GHz AUTO TUNE CF Step 3.000000 MHz Auto Man on way have Maple Freq Offset Local X Axis Scale Span 30.00 MHz Sweep 1.13 ms (1001 pts) Center 2.43700 GHz #Video BW 300 kHz Log Lin #Res BW 100 kHz モッペロ? Aug 12, 2024 💬 \mathbf{X} .II 🔖 Signal Track 11B-Ant1-2437-0~Reference-PASS

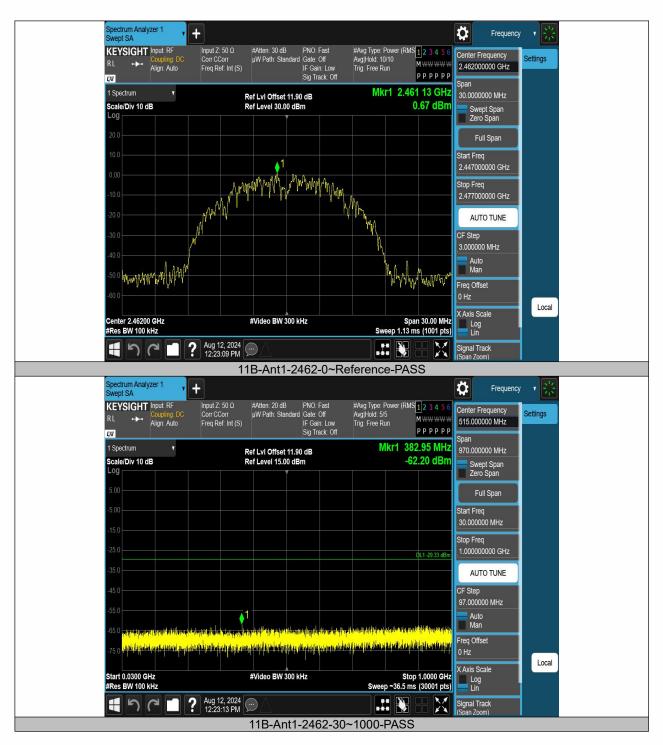
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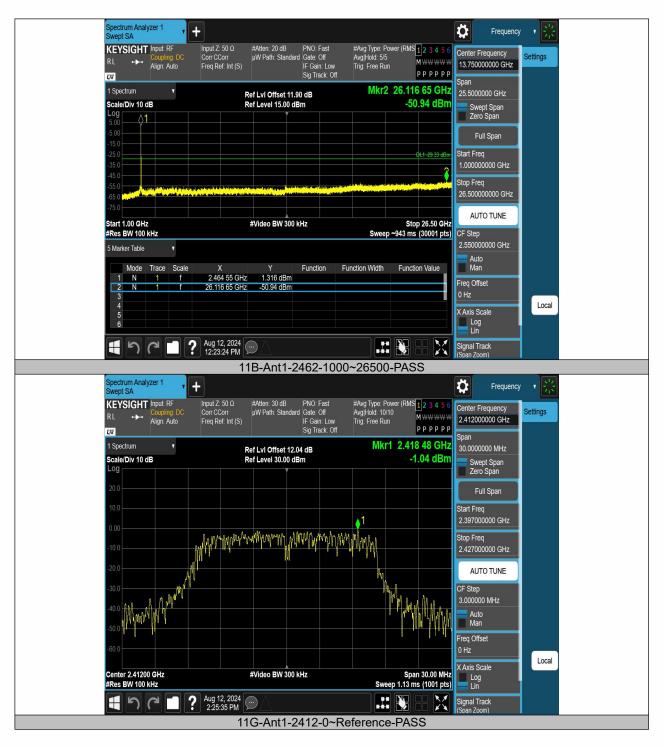


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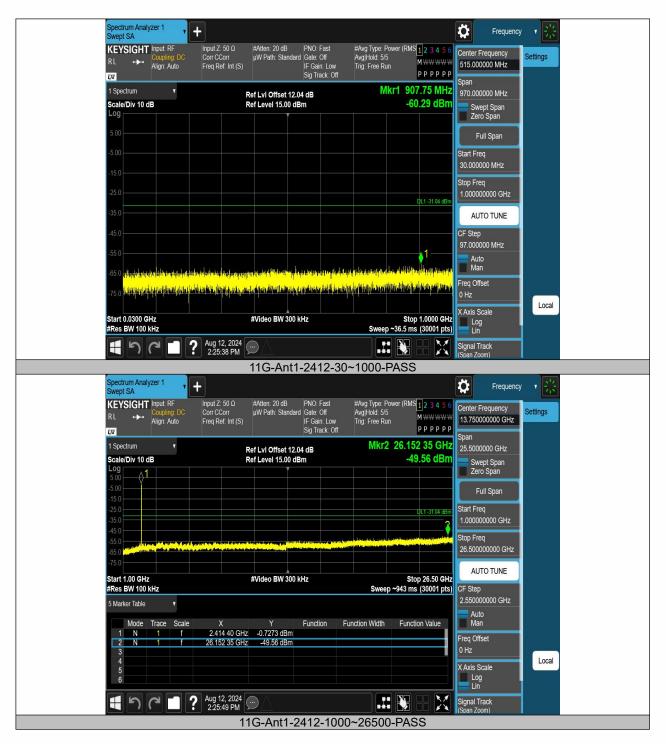






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