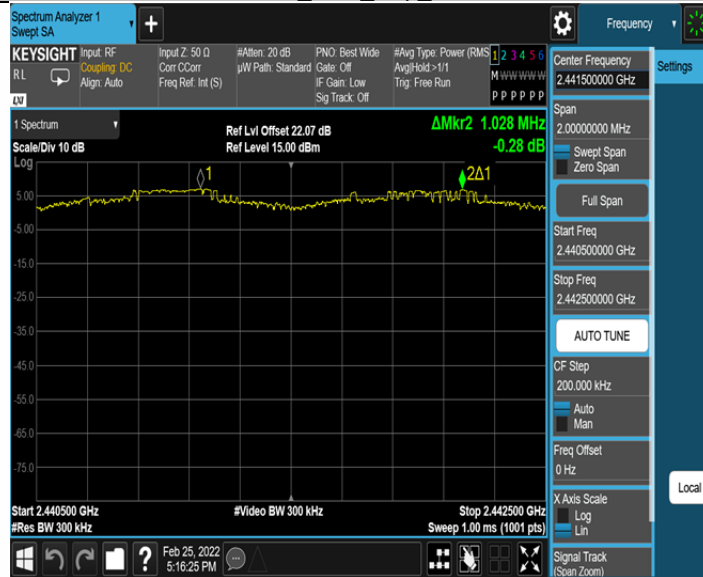
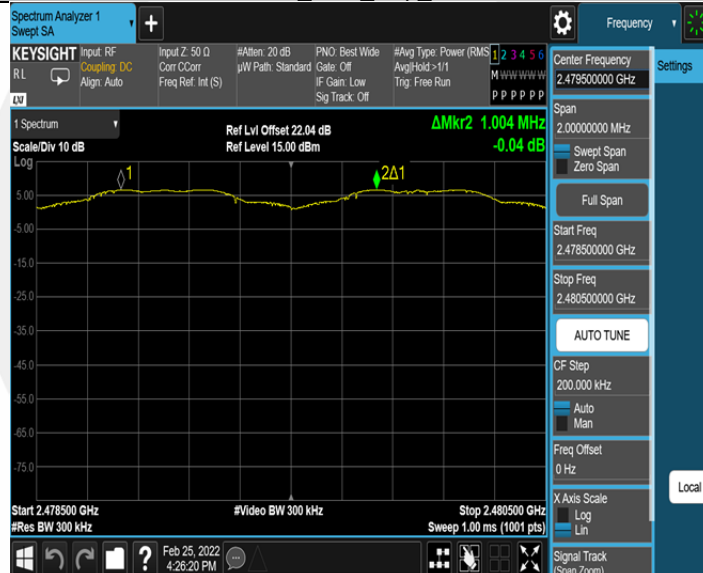




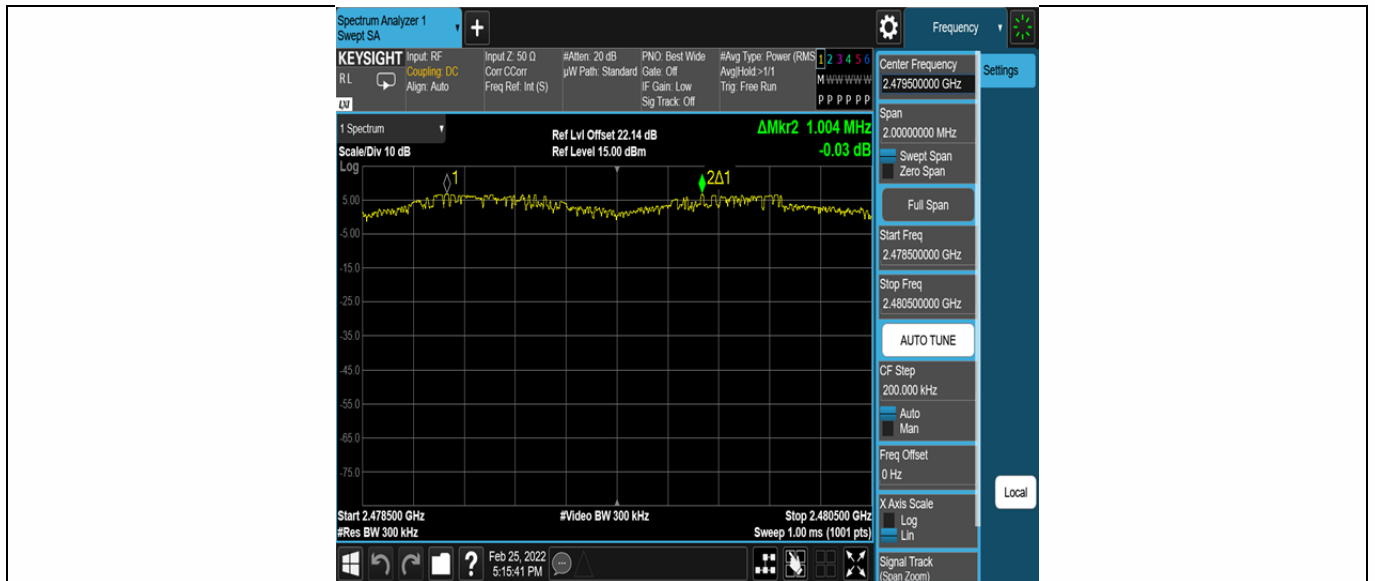
3DH5_Ant2_Hop_2441



3DH5_Ant1_Hop_2480



3DH5_Ant2_Hop_2480



9.3 NUMBER OF HOPPING FREQUENCIES

9.3.1 Applicable Standard

According to FCC Part 15.247(a)(1) and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02
According to IC RSS-247.5.1

9.3.2 Conformance Limit

Frequency hopping systems operating in the 2400-2483.5MHz band shall use at least 15 channels.

9.3.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.3.4 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation (2400-2483.5MHz)

RBW = 300KHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies.

Test Results

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

Note: N/A

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥ 15	PASS
	Ant2	Hop	79	≥ 15	PASS



9.4 AVERAGE TIME OF OCCUPANCY (DWELL TIME)

9.4.1 Applicable Standard

According to FCC Part 15.247(a)(1) and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02
According to IC RSS-247.5.1

9.4.2 Conformance Limit

For frequency hopping systems operating in the 2400-2483.5MHz band, the average time of occupancy on any channel shall not be greater than 0.4s within a period of 0.4s multiplied by the number of hopping channels employed.

9.4.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.4.4 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = zero span, centered on a hopping channel

RBW = 1 MHz

VBW $\geq$ RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak

Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section.

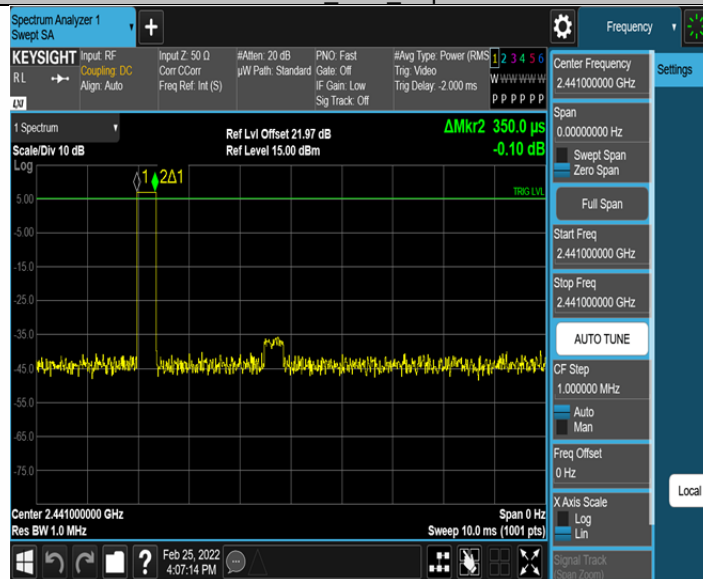
9.4.5 Test Results

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

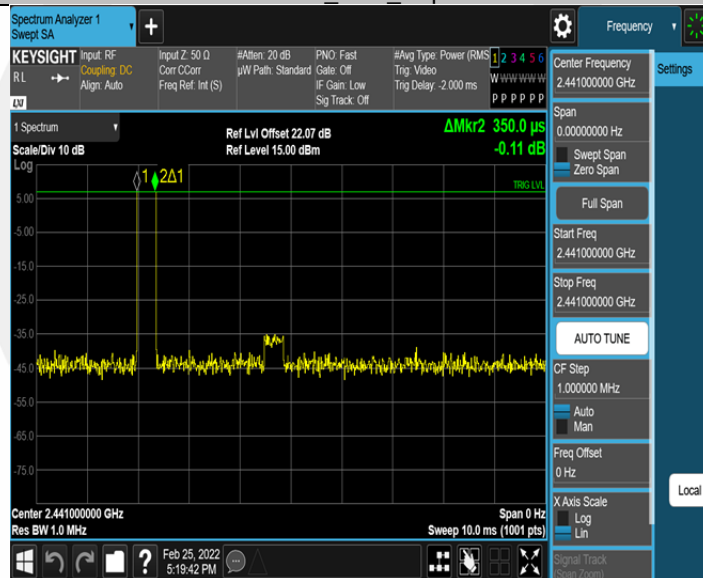
Note: TotalHops(DH1)=(1600/2/79)*31.6
TotalHops(DH3)=(1600/4/79)*31.6
TotalHops(DH5)=(1600/6/79)*31.6
Dwell Time= BurstWidth* TotalHops

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.35	320	0.112	≤ 0.4	PASS
	Ant2	Hop	0.35	320	0.112	≤ 0.4	PASS
DH3	Ant1	Hop	1.61	160	0.258	≤ 0.4	PASS
	Ant2	Hop	1.61	160	0.258	≤ 0.4	PASS
DH5	Ant1	Hop	2.86	106.67	0.305	≤ 0.4	PASS
	Ant2	Hop	2.86	106.67	0.305	≤ 0.4	PASS

DH1_Ant1_Hop

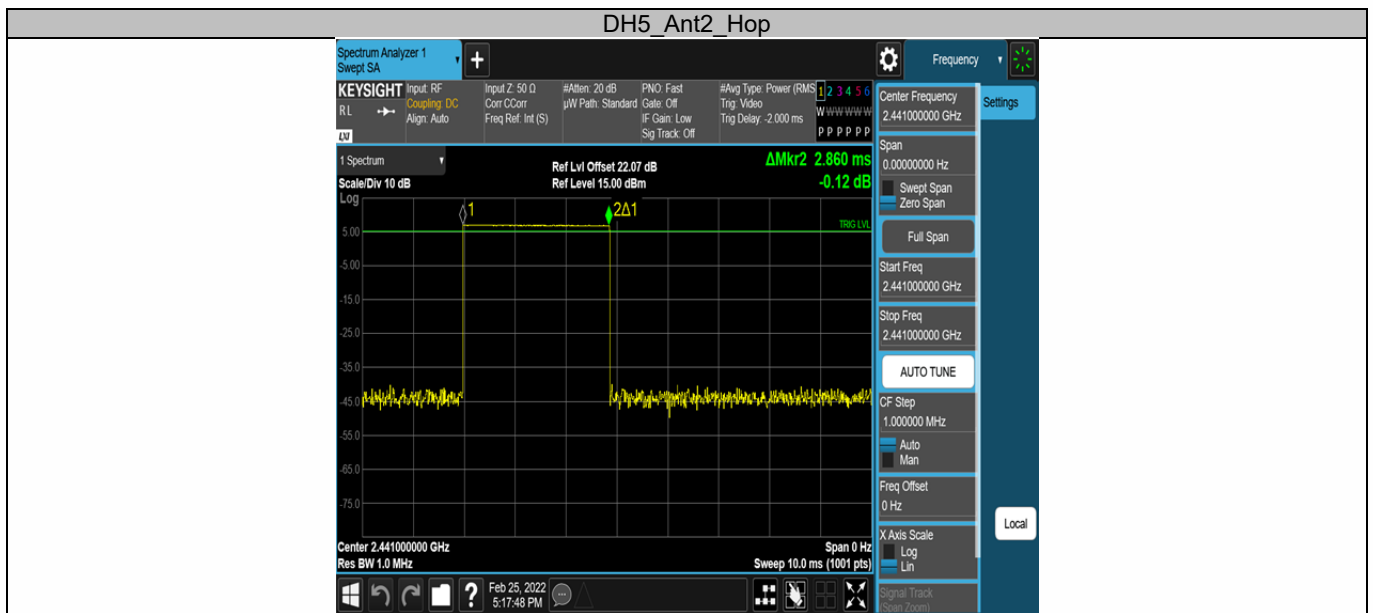


DH1_Ant2_Hop



DH3_Ant1_Hop





9.5 MAXIMUM PEAK CONDUCTED OUTPUT POWER

9.5.1 Applicable Standard

According to FCC Part 15.247(b)(1) and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02
According to IC RSS-247.5.4 and RSS-Gen 6.12

9.5.2 Conformance Limit

The max For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.5.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.5.4 Test Procedure

As an alternative to a peak power measurement, compliance with the limit can be based on a measurement of the maximum conducted output power.

Use the following spectrum analyzer settings:

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel (about 8MHz)

Set RBW > the 20 dB bandwidth of the emission being measured (about 3MHz)

Set VBW $\geq$ RBW

Set Sweep = auto

Set Detector function = peak

Set Trace = max hold

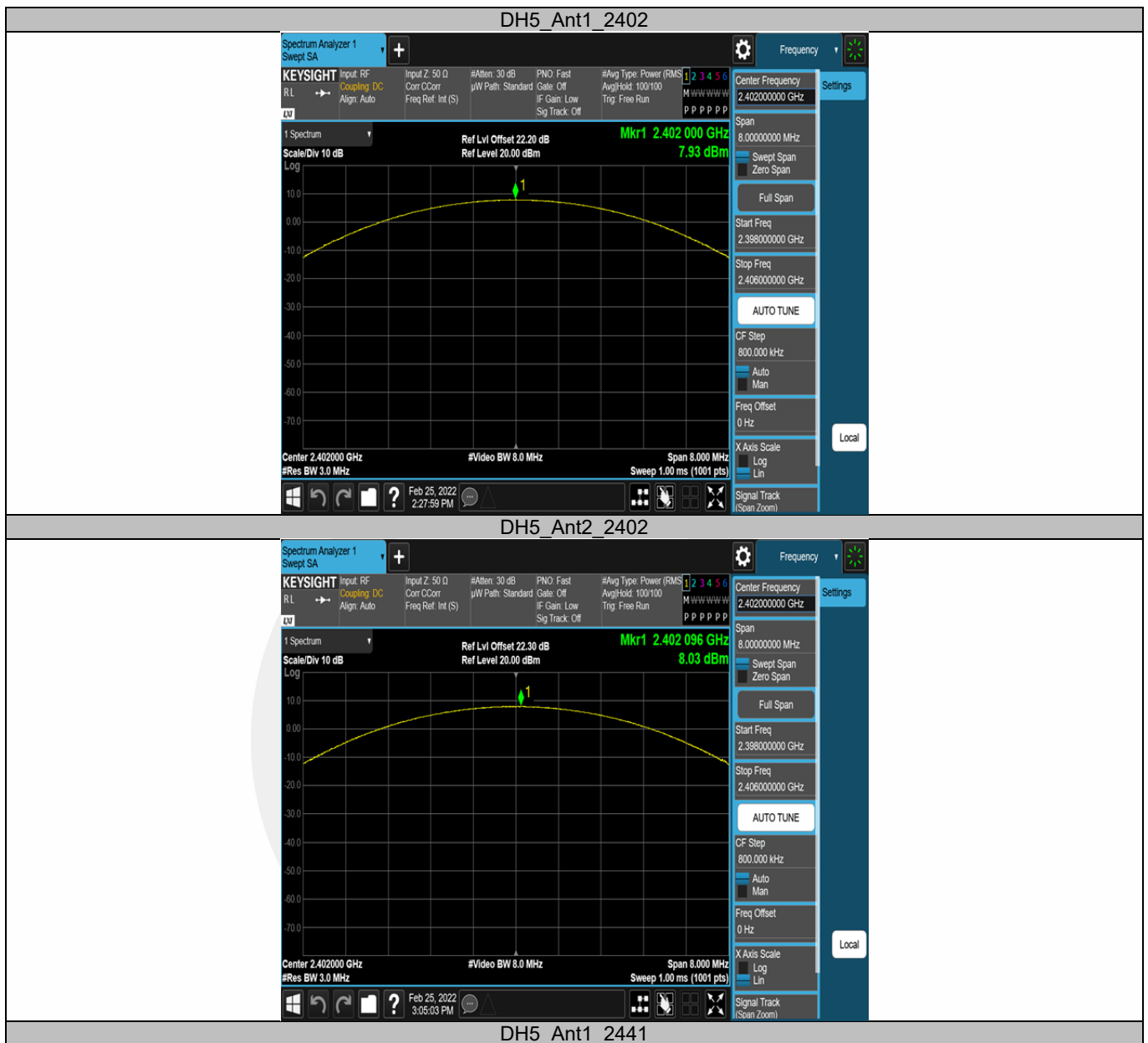
Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission to determine the peak amplitude level.

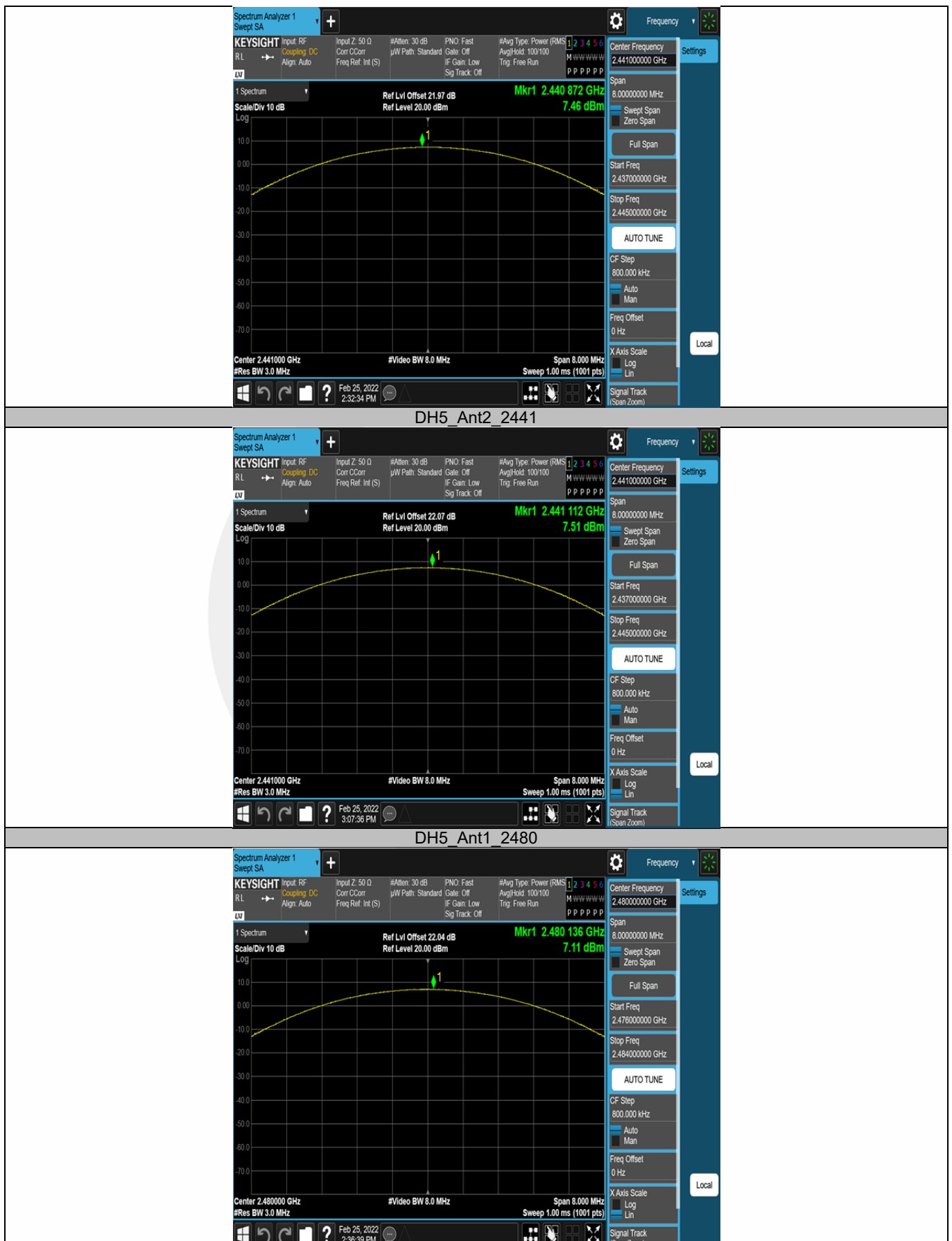
Test Results

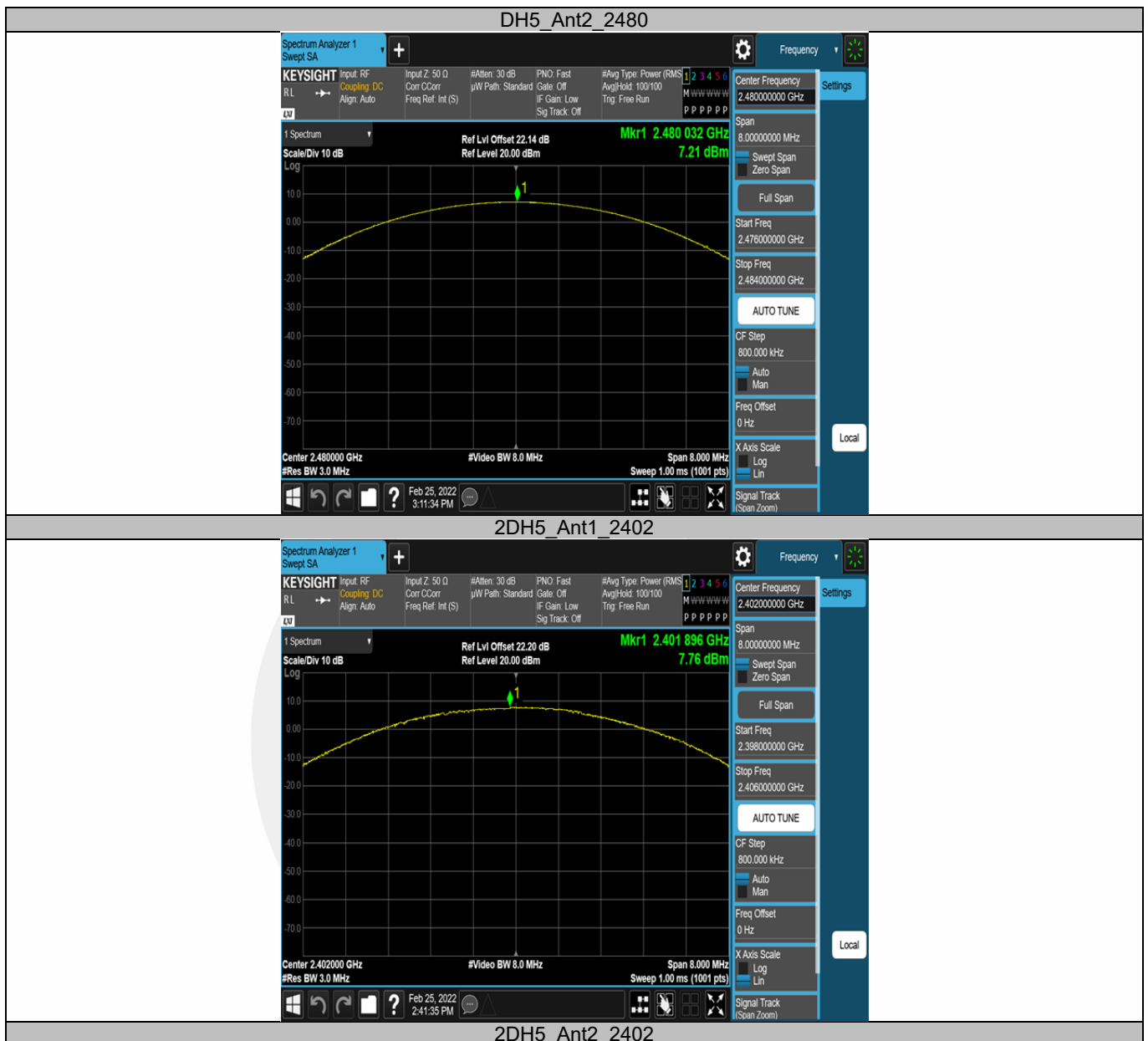
Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

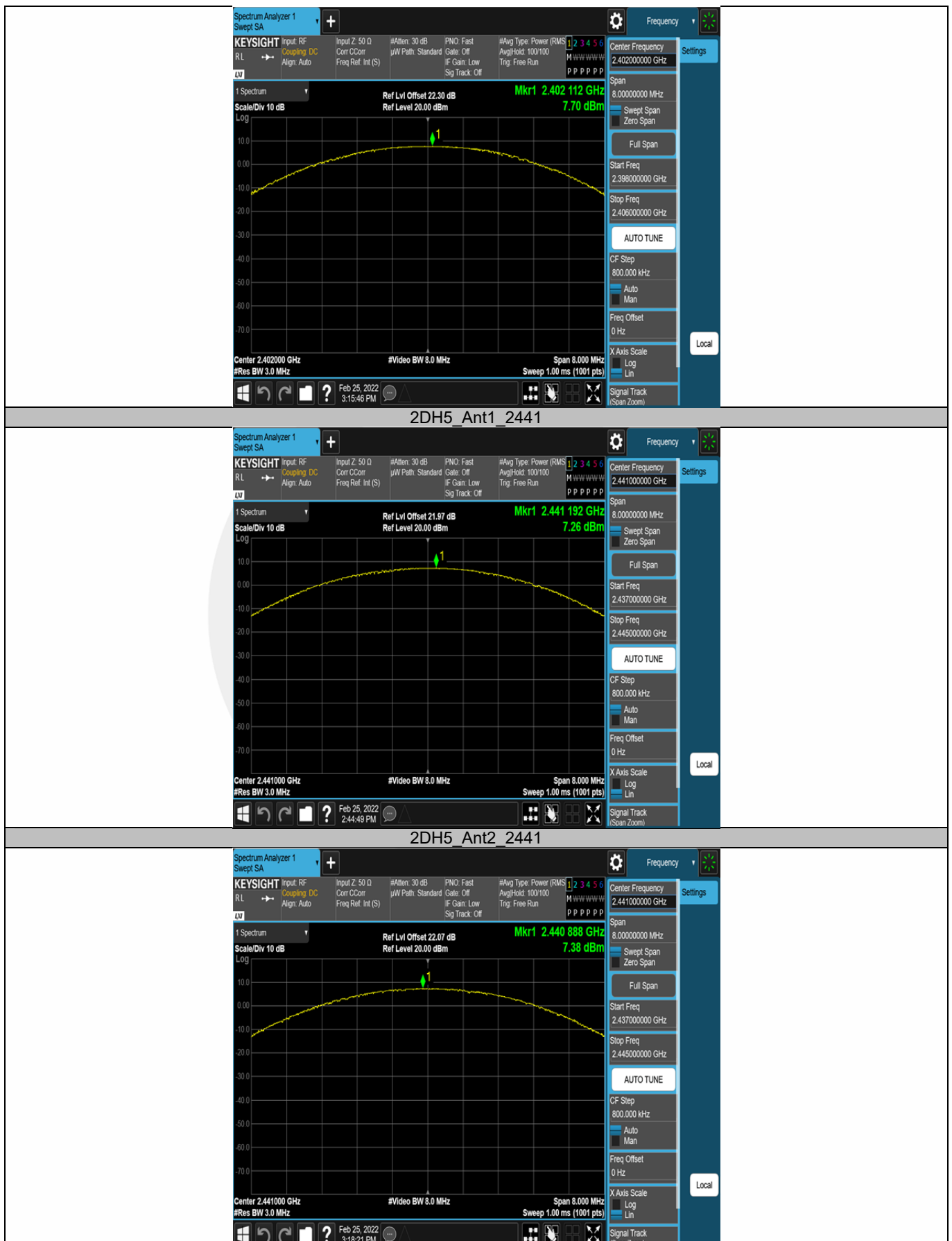
Note: N/A

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	7.93	≤20.97	PASS
	Ant2	2402	8.03	≤20.97	PASS
	Ant1	2441	7.46	≤20.97	PASS
	Ant2	2441	7.51	≤20.97	PASS
	Ant1	2480	7.11	≤20.97	PASS
	Ant2	2480	7.21	≤20.97	PASS
2DH5	Ant1	2402	7.76	≤20.97	PASS
	Ant2	2402	7.70	≤20.97	PASS
	Ant1	2441	7.26	≤20.97	PASS
	Ant2	2441	7.38	≤20.97	PASS
	Ant1	2480	6.94	≤20.97	PASS
	Ant2	2480	7.03	≤20.97	PASS
3DH5	Ant1	2402	7.84	≤20.97	PASS
	Ant2	2402	7.91	≤20.97	PASS
	Ant1	2441	7.29	≤20.97	PASS
	Ant2	2441	7.41	≤20.97	PASS
	Ant1	2480	6.97	≤20.97	PASS
	Ant2	2480	7.06	≤20.97	PASS

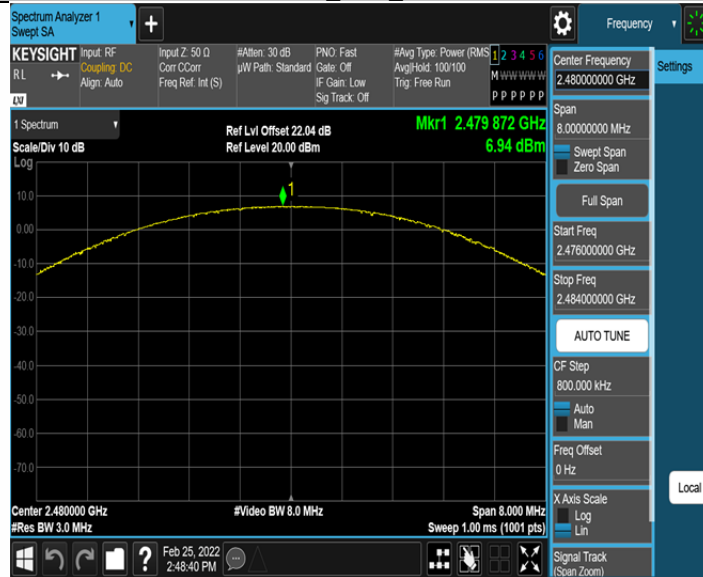




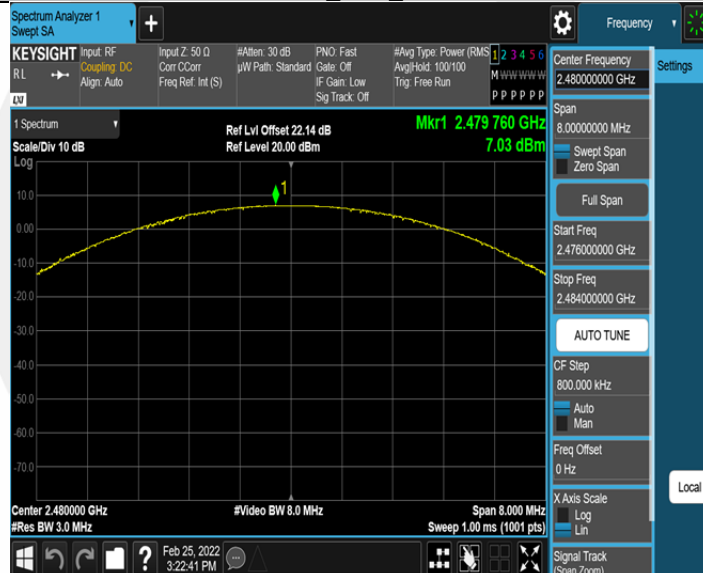




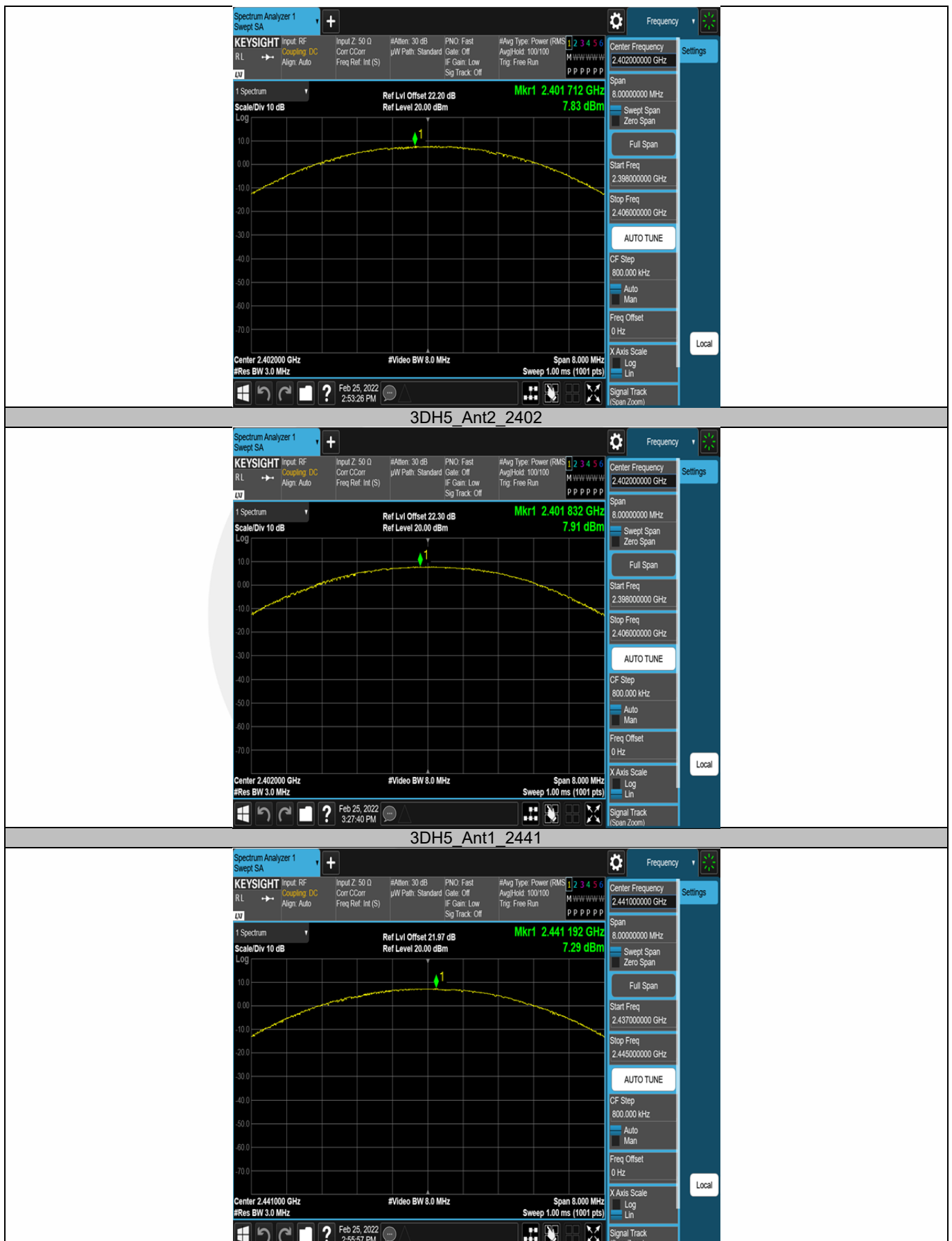
2DH5_Ant1_2480

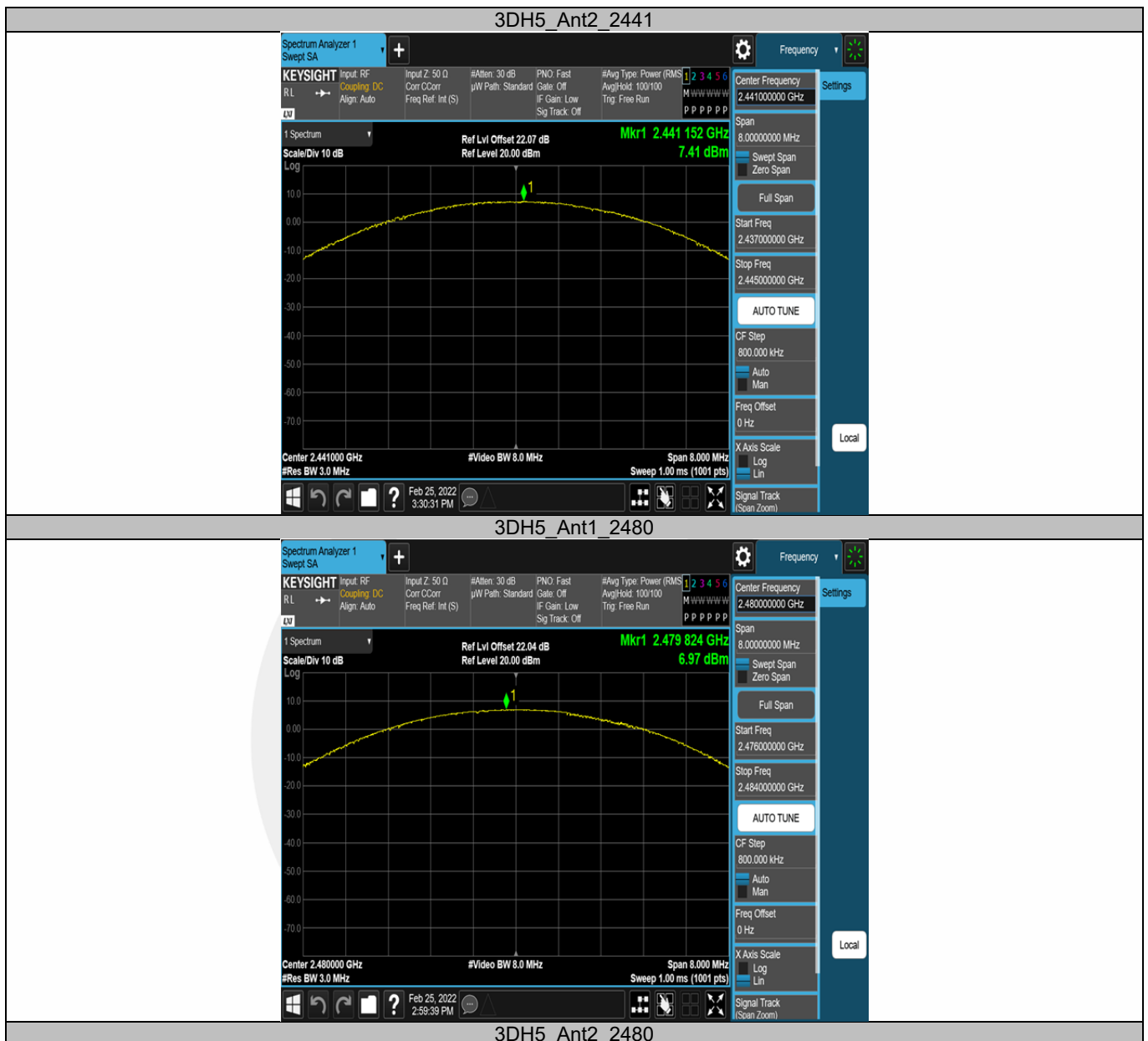


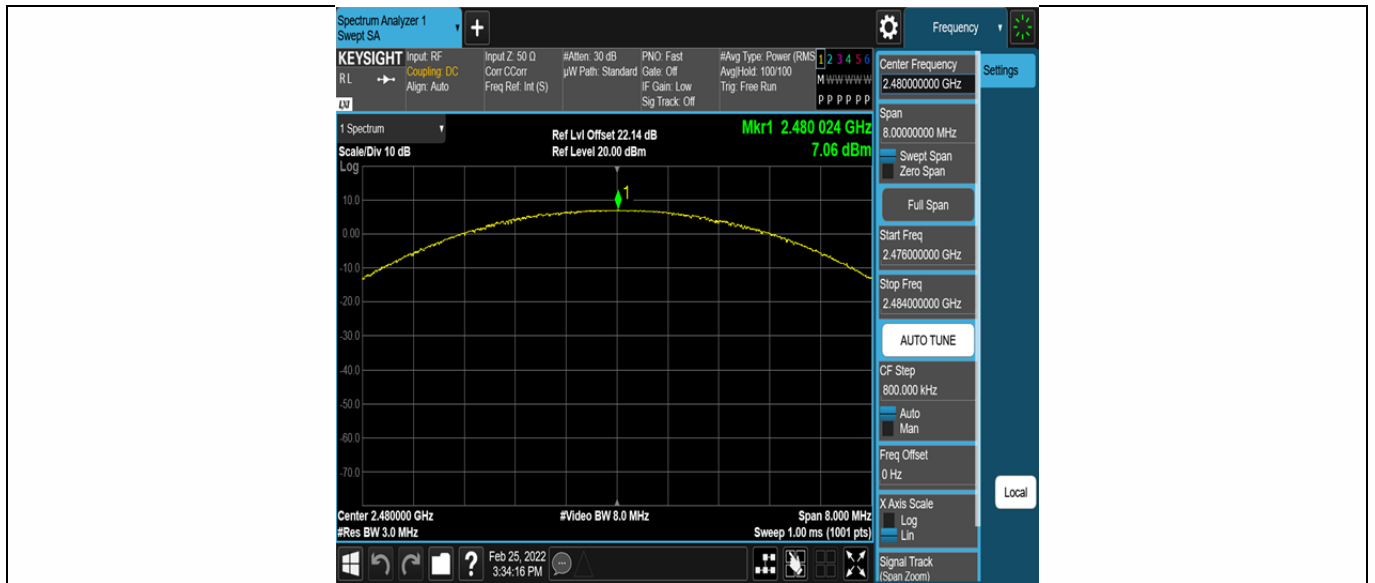
2DH5_Ant2_2480



3DH5_Ant1_2402







9.6 CONDUCTED SUPRIIOUS EMISSION

9.6.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 MEAS GUIDANCE v05r02
According to IC RSS-247 5.5

9.6.2 Conformance Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

9.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.6.4 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 DSS channel center frequency.

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

Set the RBW = 100 kHz. Set the VBW $\geq 3 \times$ 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 Maximum conduceted level.

Note that the channel found to contain the maximum conduceted 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 $\geq 1\%$ of the span=100kHz Set VBW $\geq 3 \times$ 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.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

■ Emission level measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.(30MHz to 25GHz). Set RBW = 100 kHz Set VBW $\geq$ RBW

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

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

9.6.5 Test Results

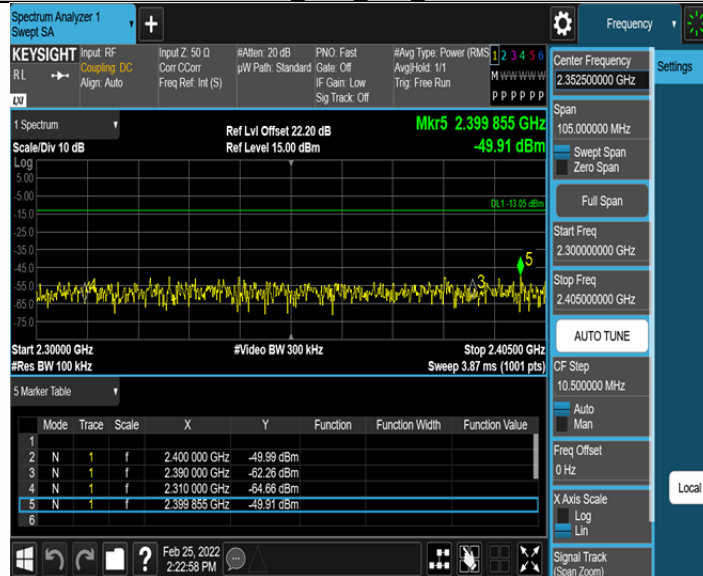
Temperature:	25°C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

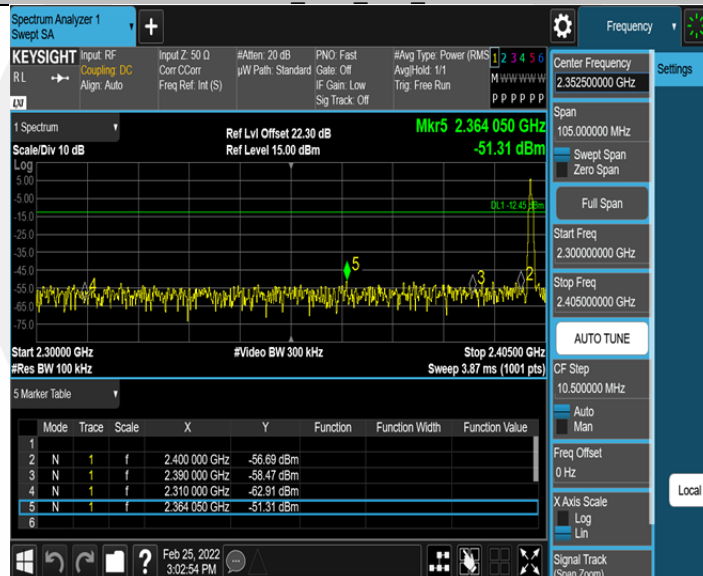
Band edge measurements

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	6.95	-49.91	≤-13.05	PASS
	Ant2	Low	2402	7.55	-51.31	≤-12.45	PASS
	Ant1	High	2480	6.30	-50.77	≤-13.70	PASS
	Ant2	High	2480	6.37	-49.90	≤-13.63	PASS
	Ant1	Low	Hop 2402	6.15	-38.50	≤-13.85	PASS
	Ant2	Low	Hop 2402	6.68	-47.89	≤-13.32	PASS
	Ant1	High	Hop 2480	6.21	-48.09	≤-13.80	PASS
	Ant2	High	Hop 2480	6.37	-48.50	≤-13.63	PASS
2DH5	Ant1	Low	2402	6.77	-51.26	≤-13.23	PASS
	Ant2	Low	2402	7.36	-51.35	≤-12.64	PASS
	Ant1	High	2480	6.40	-51.17	≤-13.60	PASS
	Ant2	High	2480	6.00	-50.14	≤-14.00	PASS
3DH5	Ant1	Low	2402	6.25	-50.52	≤-13.75	PASS
	Ant2	Low	2402	6.85	-50.63	≤-13.15	PASS
	Ant1	High	2480	6.69	-49.98	≤-13.31	PASS
	Ant2	High	2480	7.04	-50.42	≤-12.96	PASS

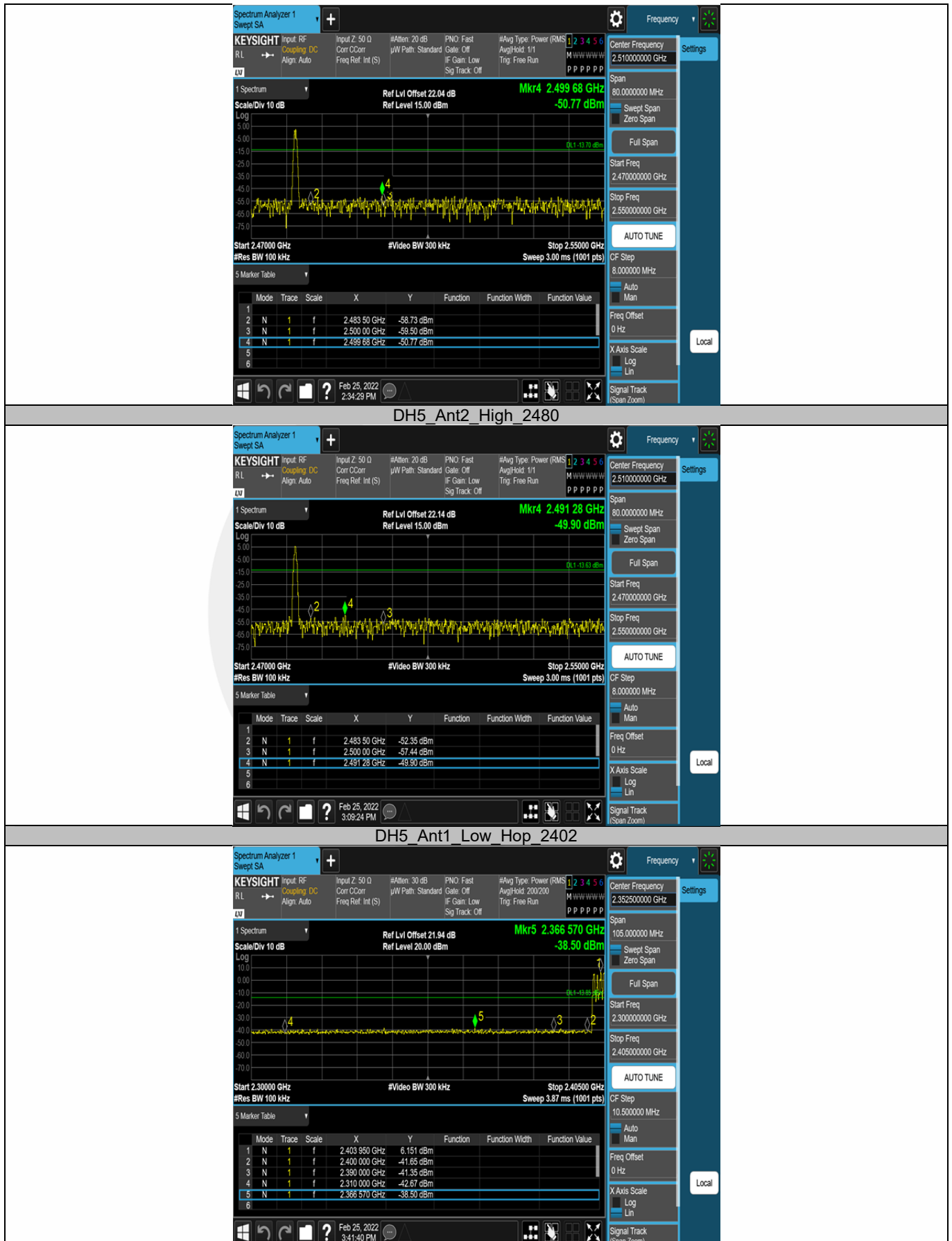
DH5_Ant1_Low_2402



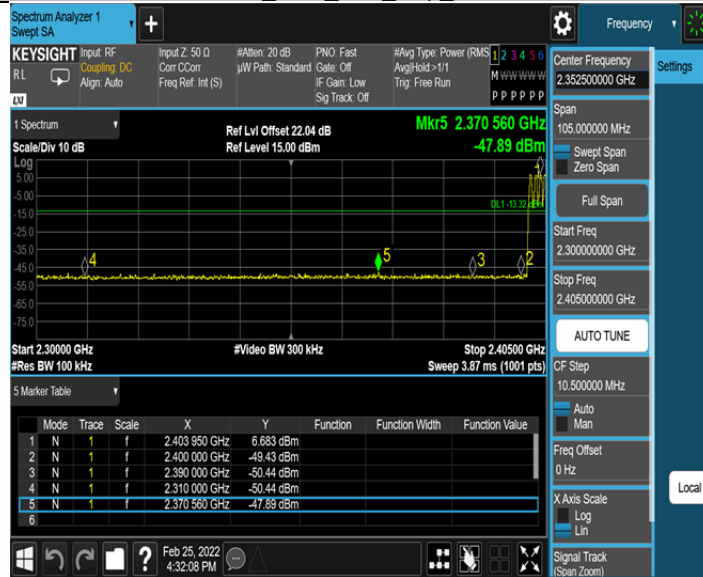
DH5_Ant2_Low_2402



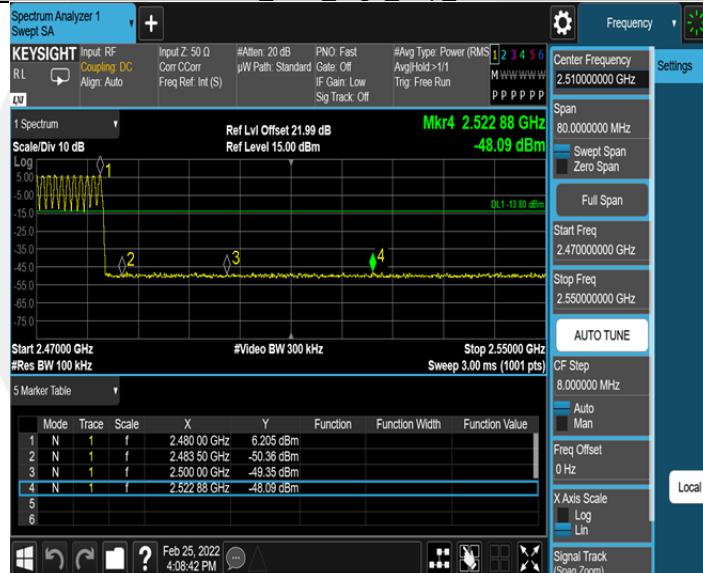
DH5_Ant1_High_2480



DH5_Ant2_Low_Hop_2402



DH5_Ant1_High_Hop_2480



DH5_Ant2_High_Hop_2480