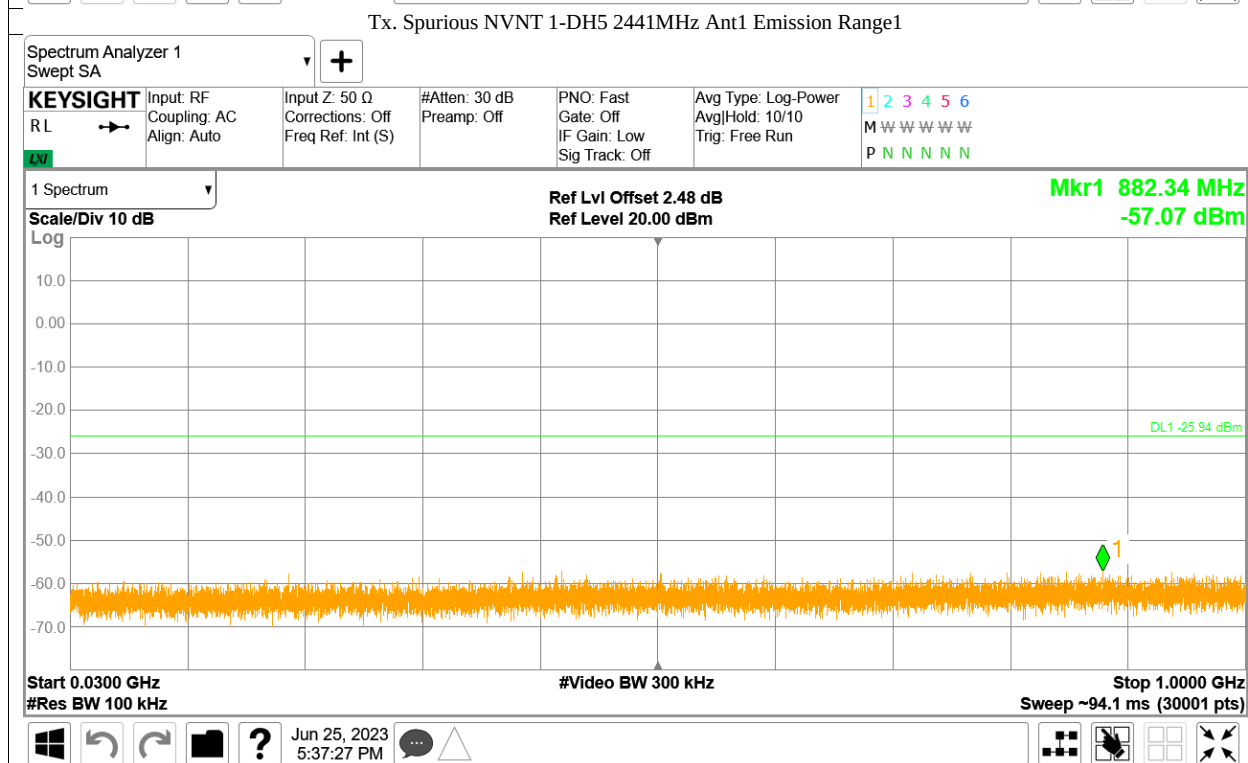
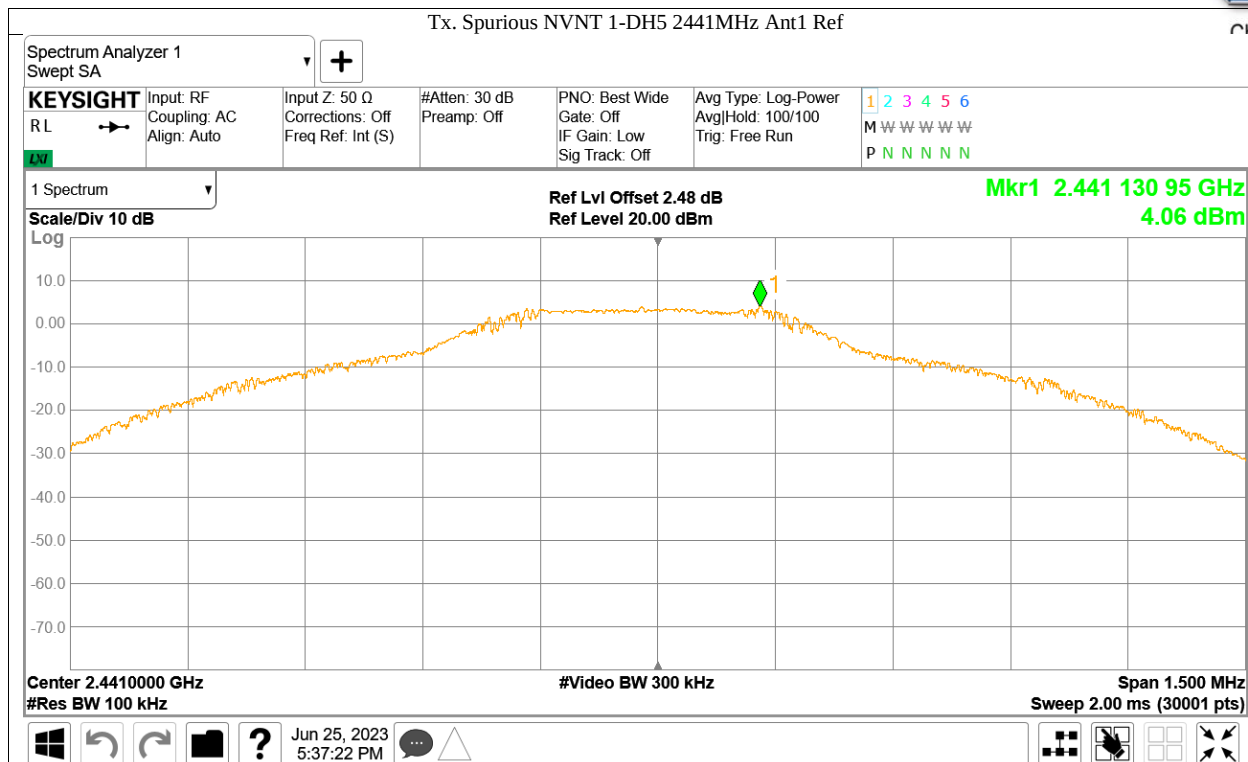
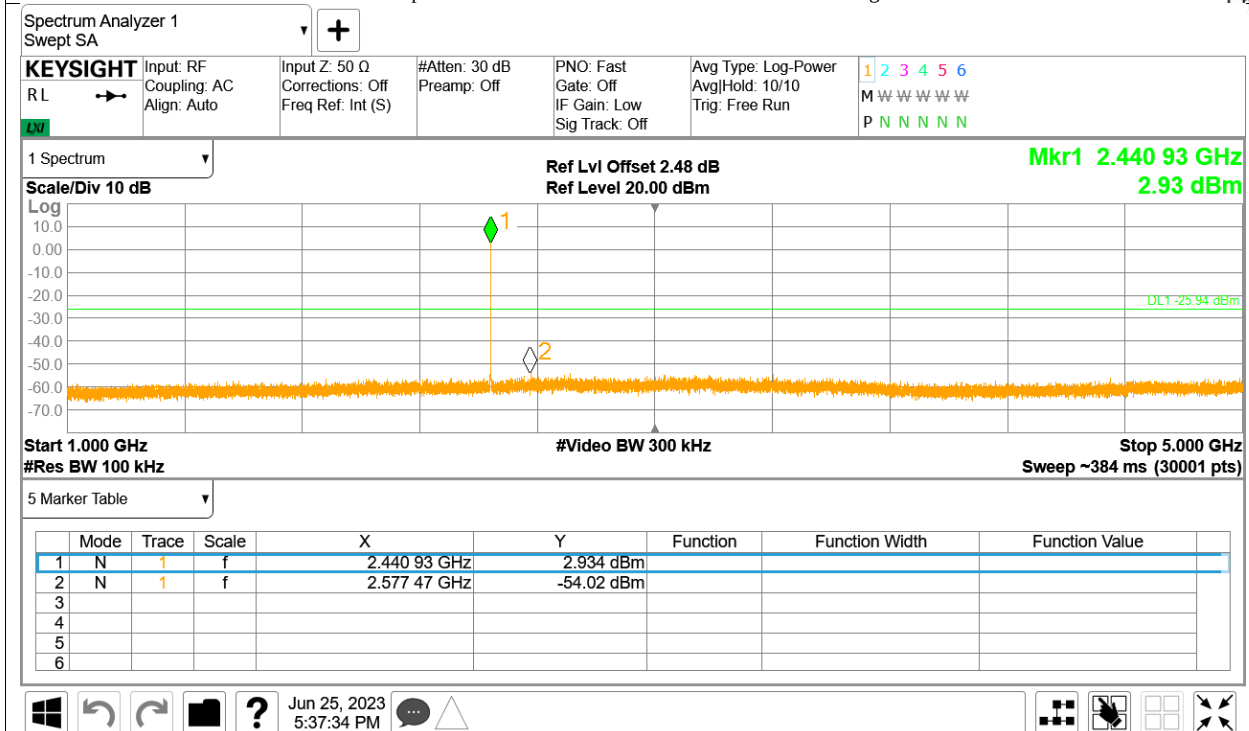


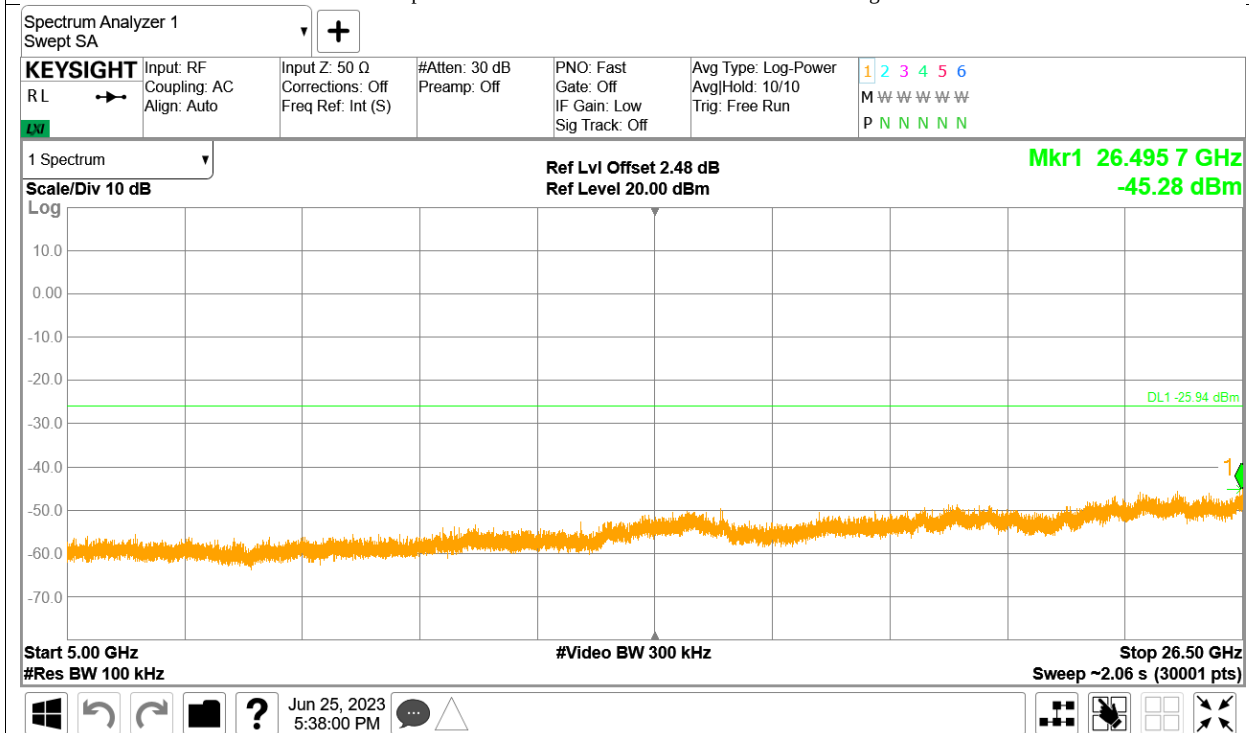


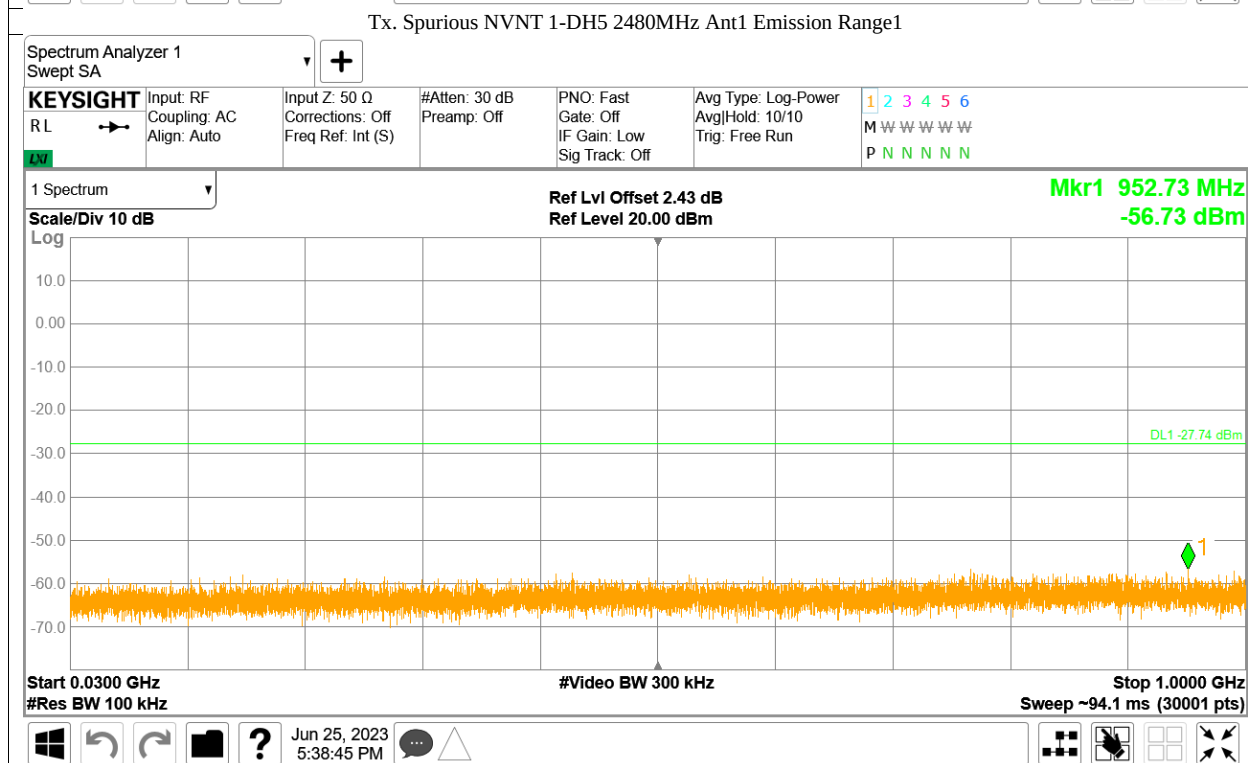
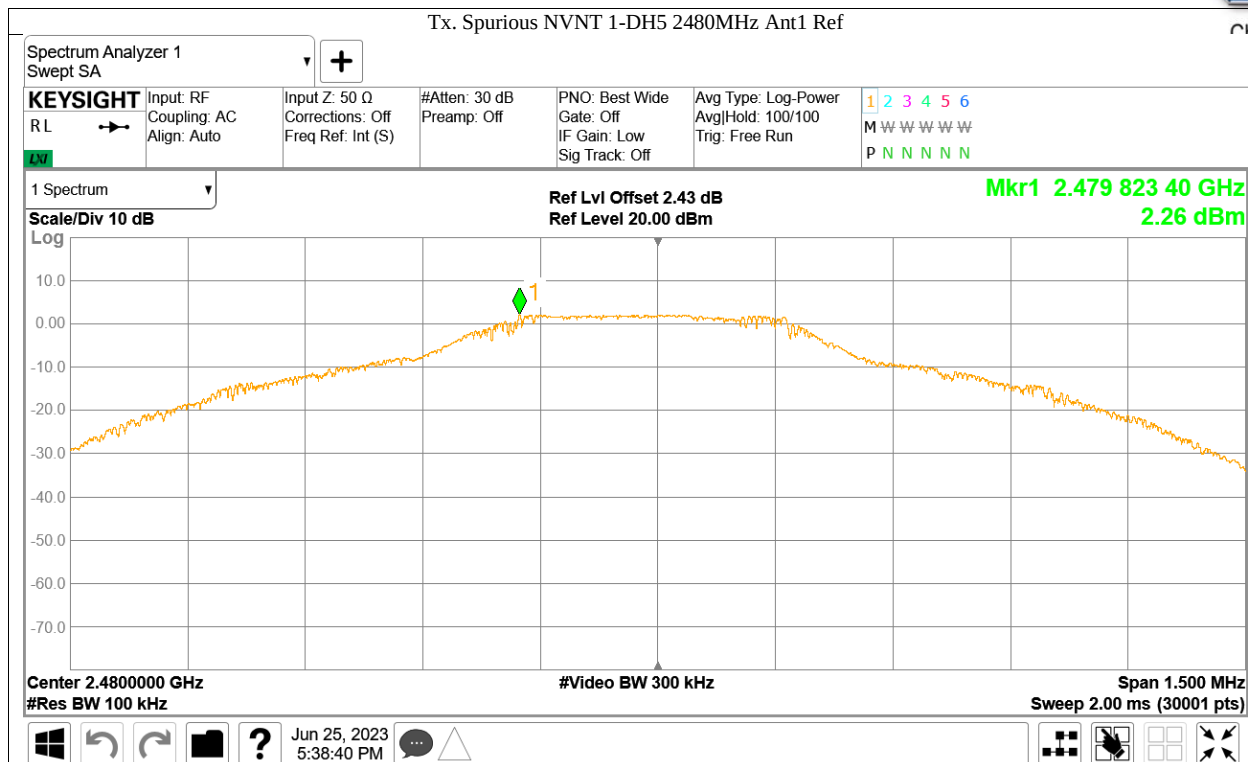
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission Range2

China



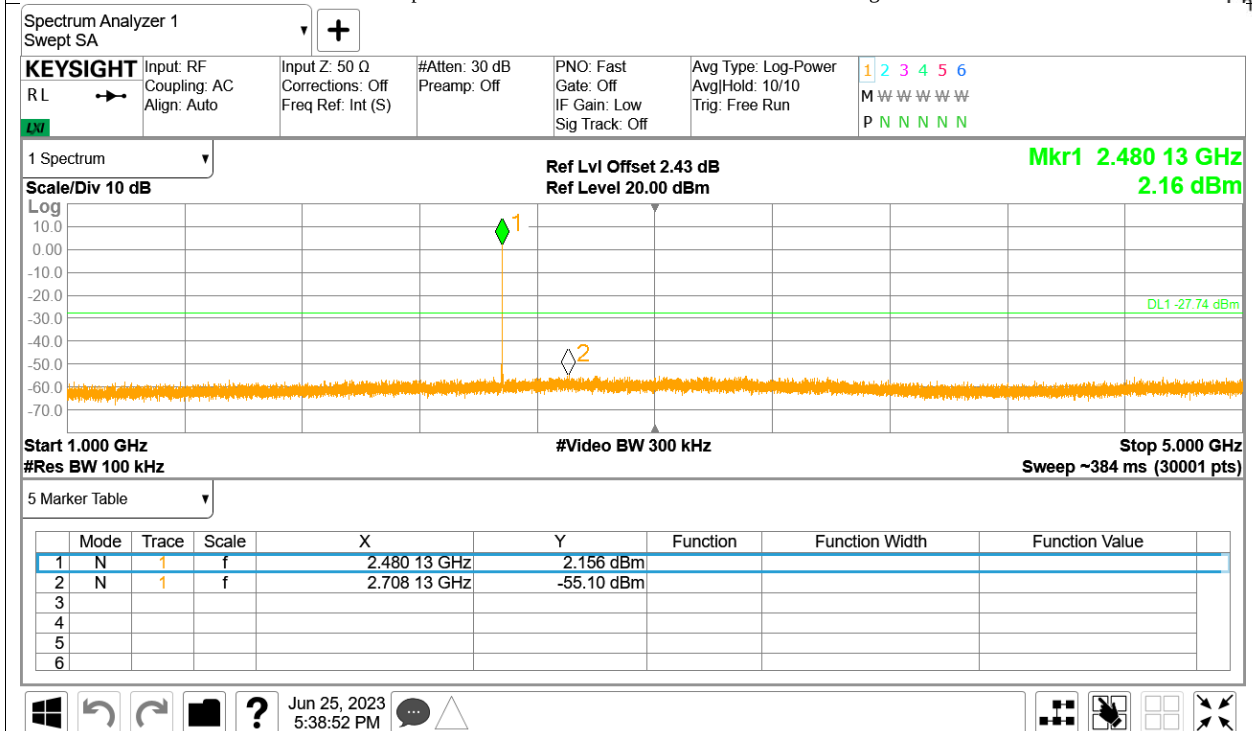
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission Range3



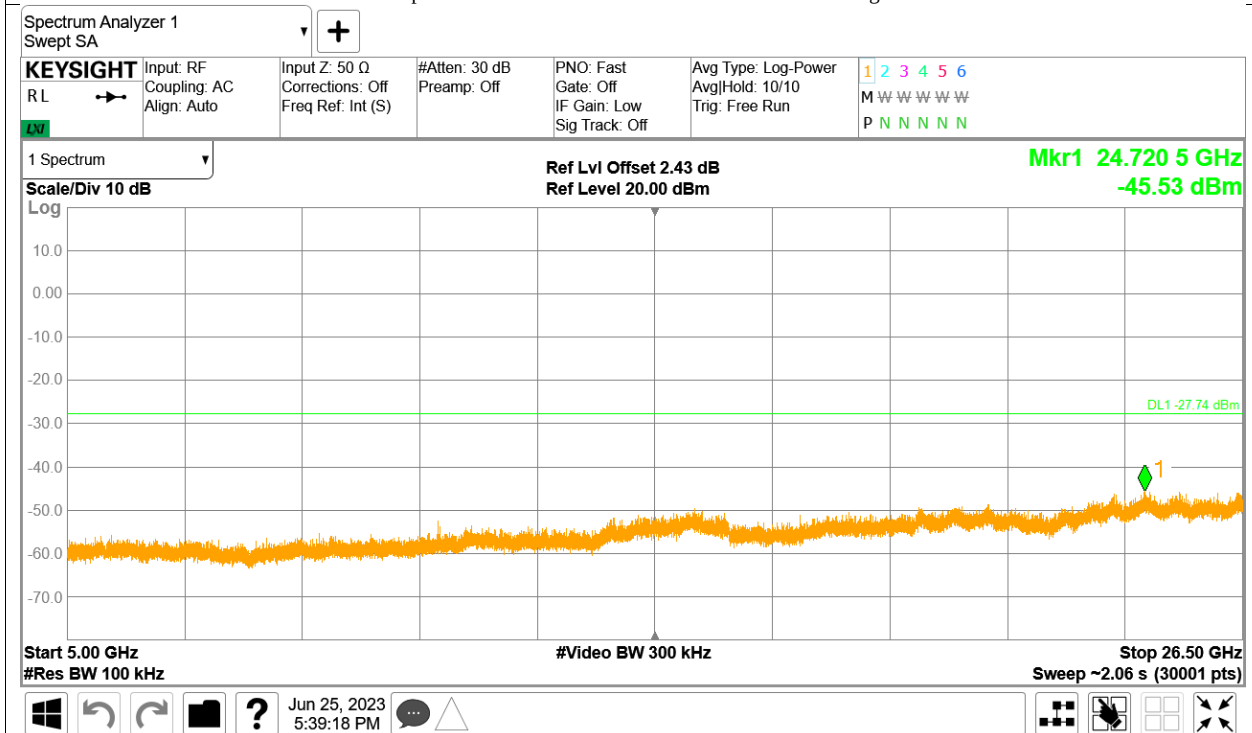


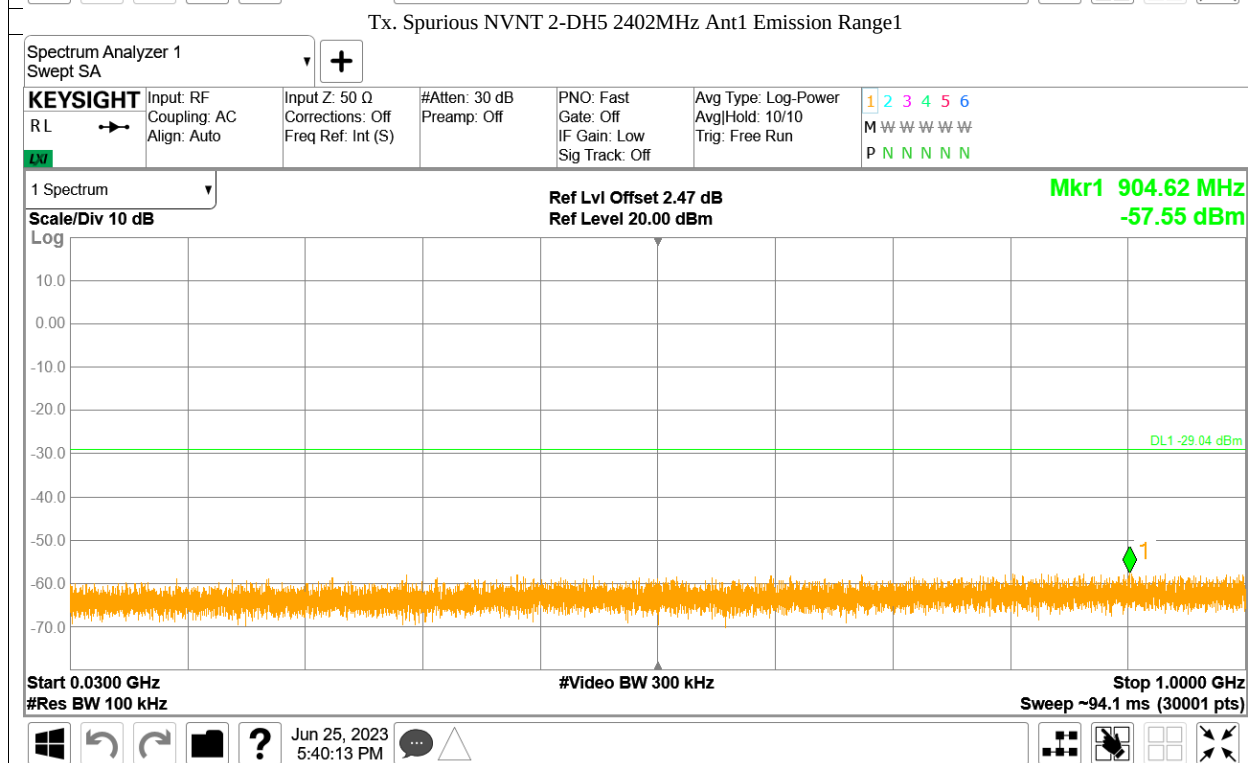
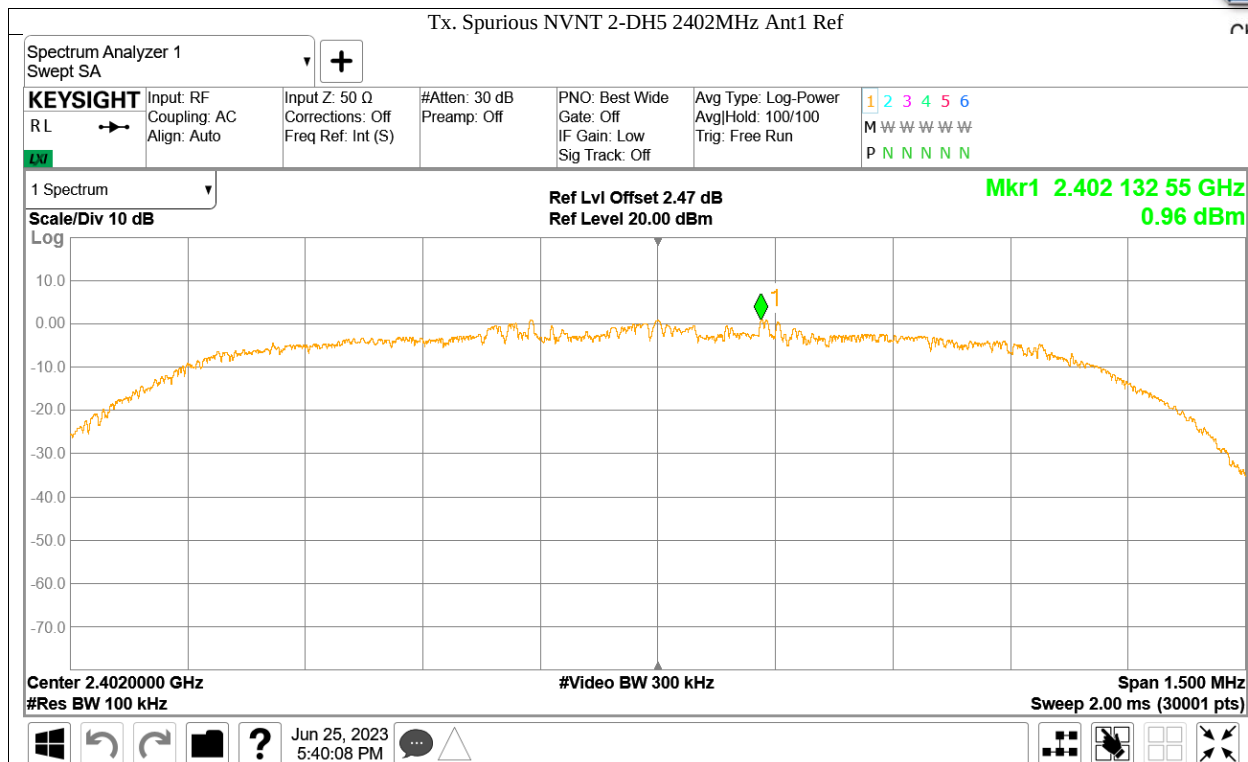
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission Range2

China



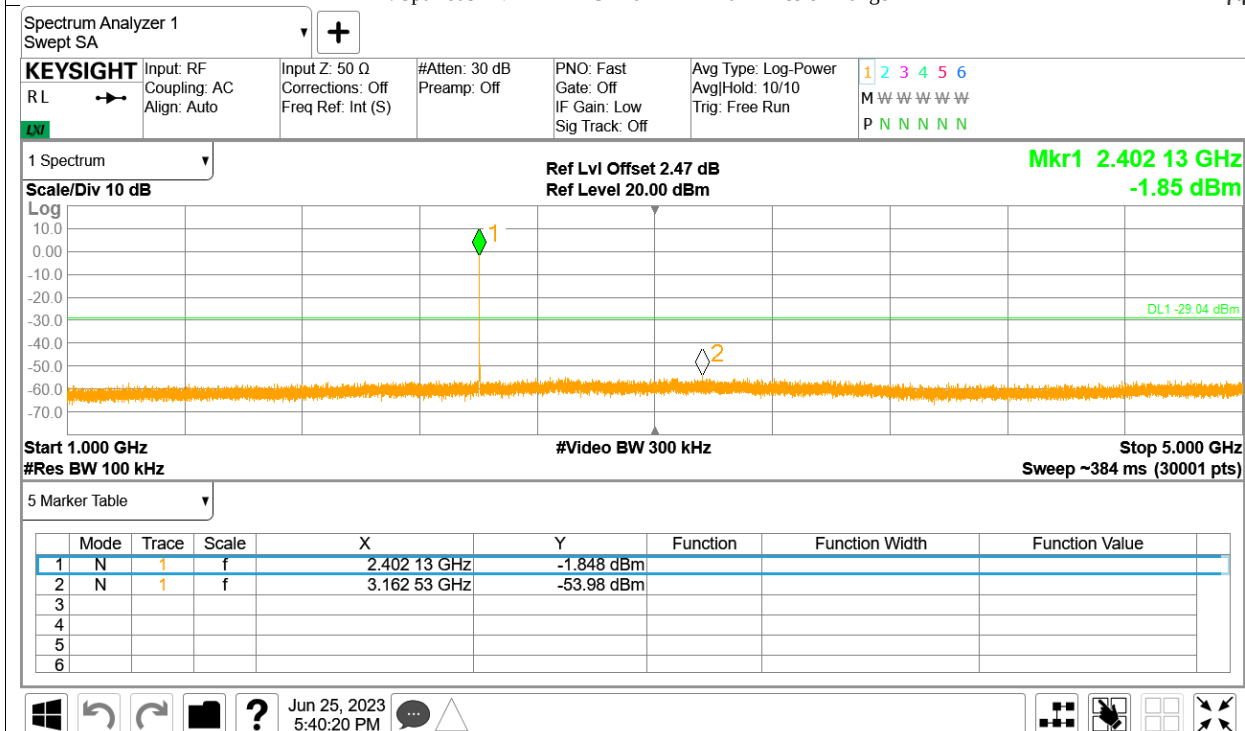
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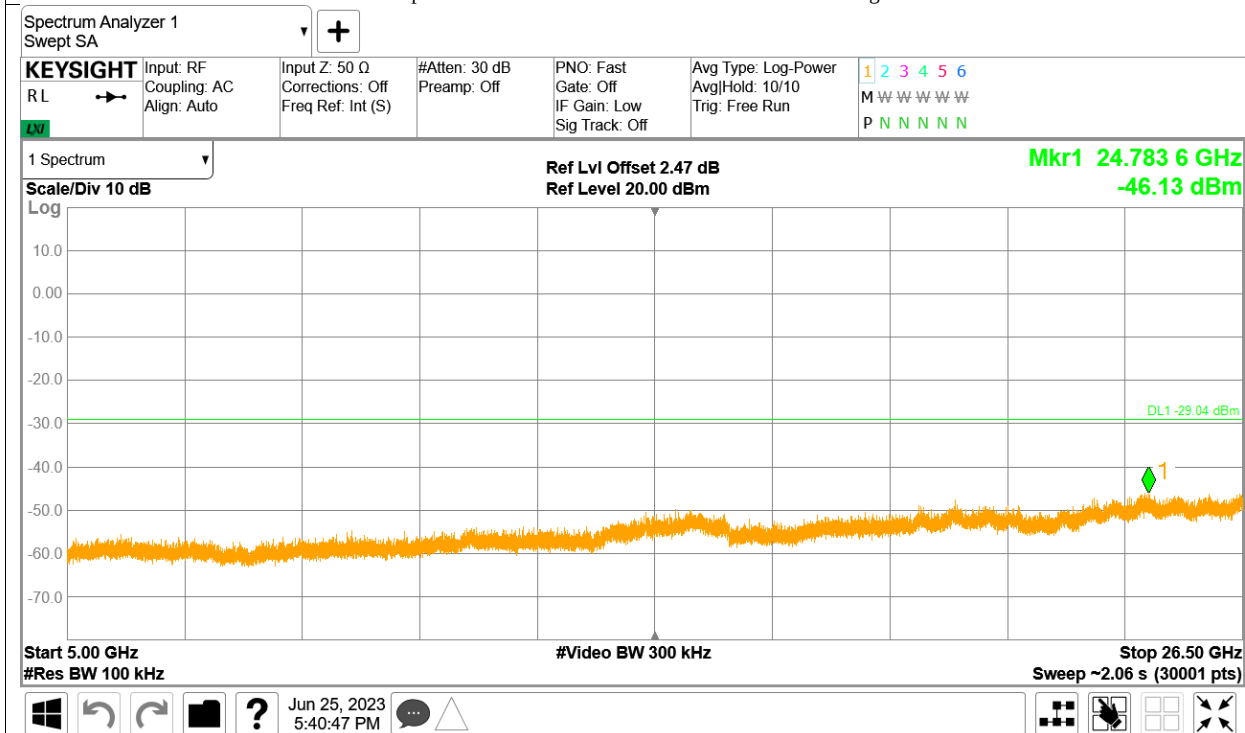


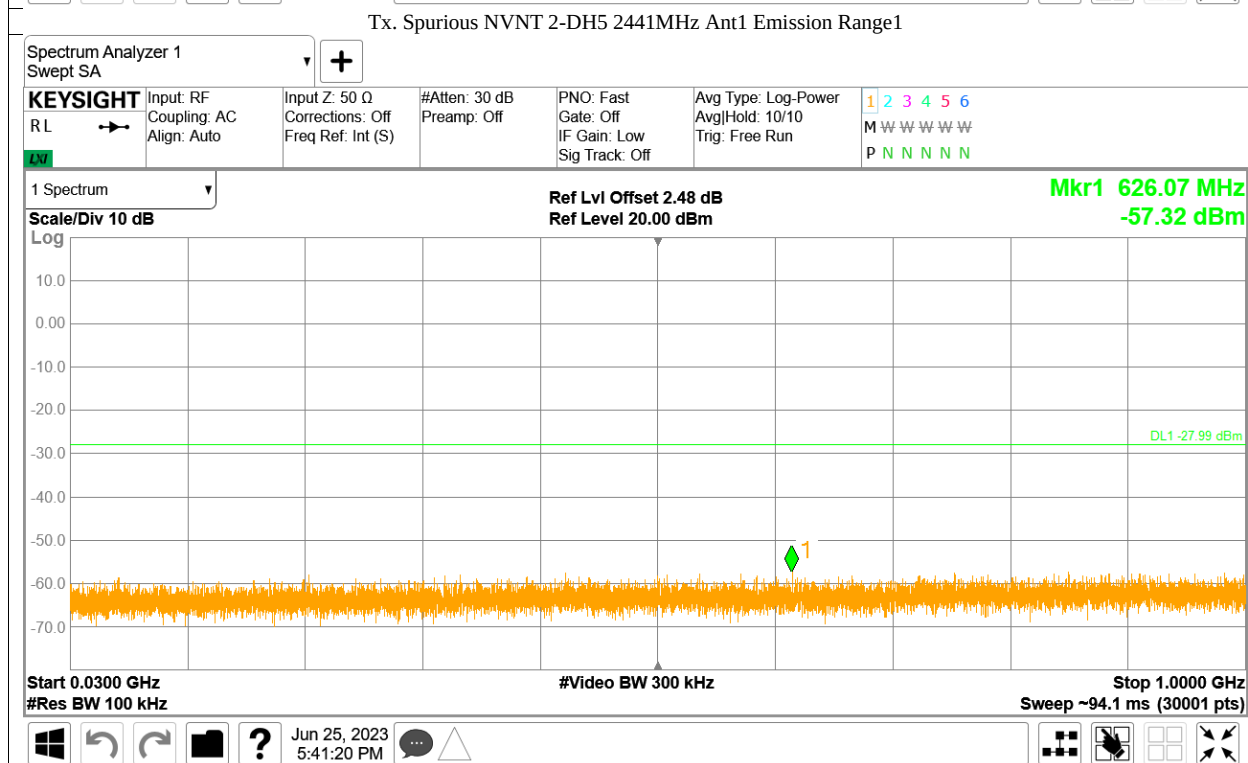
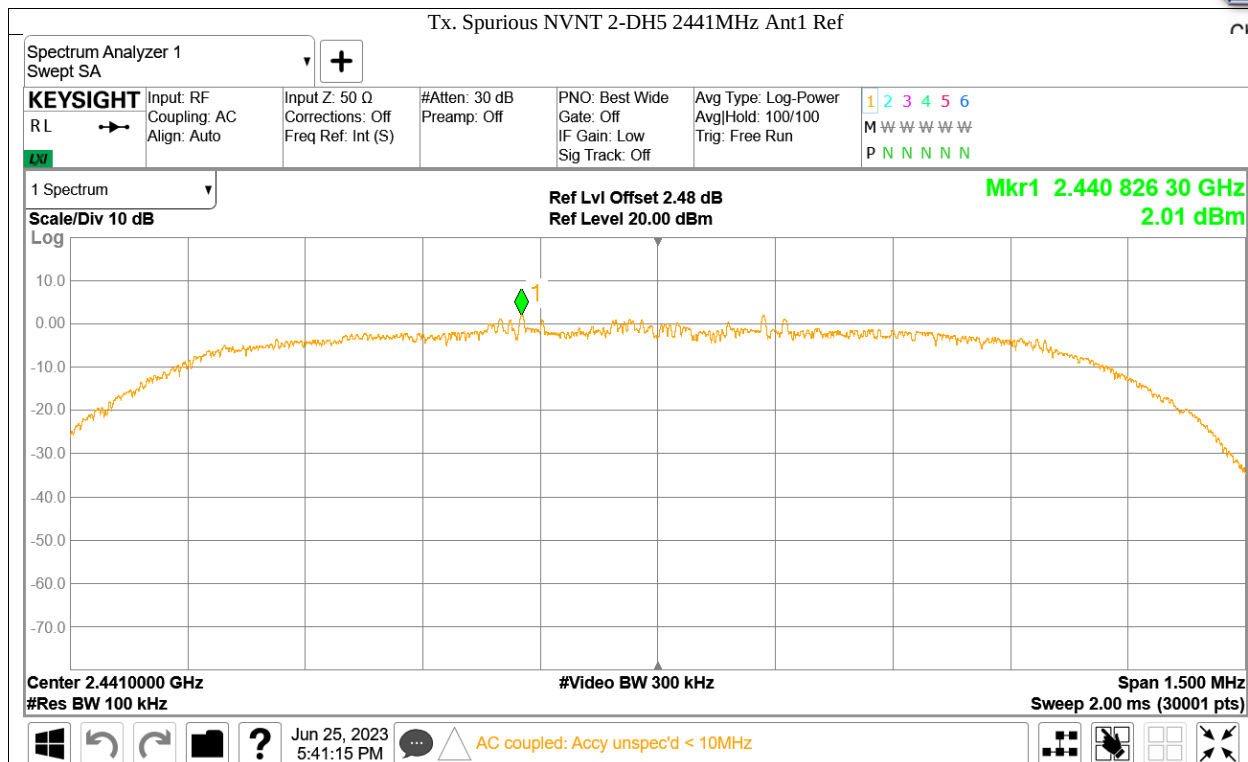
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China



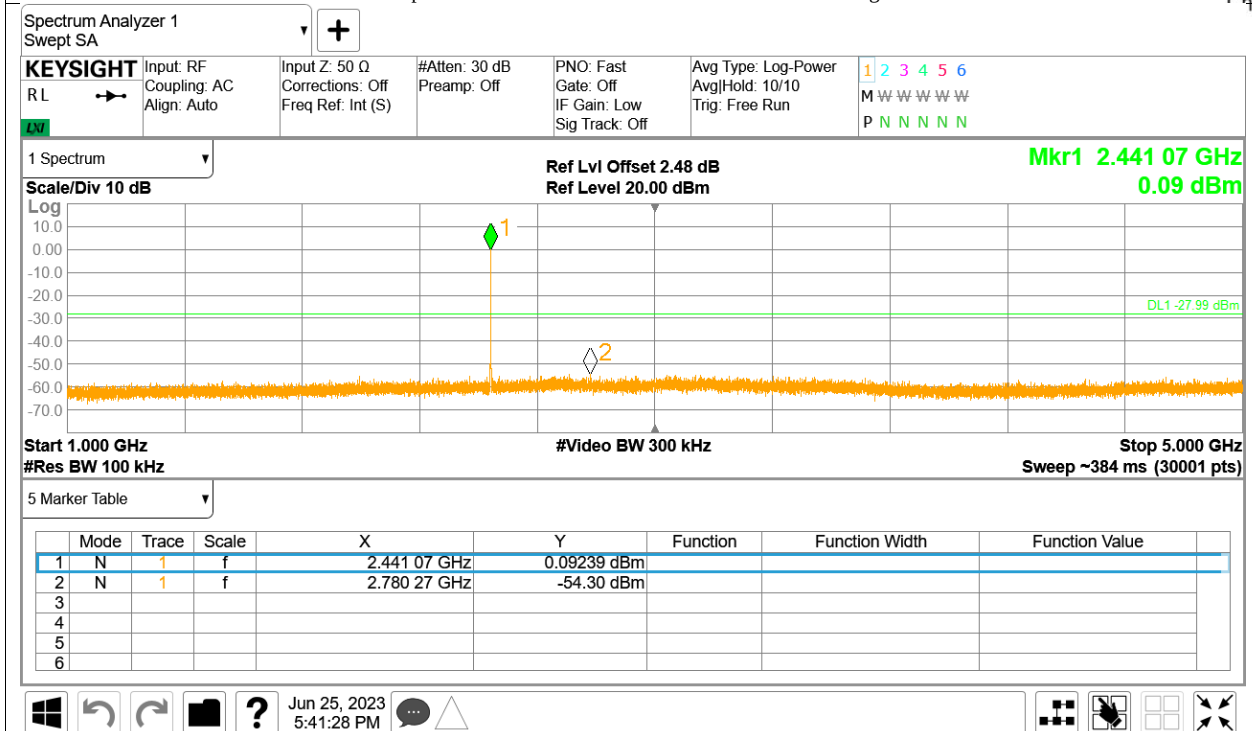
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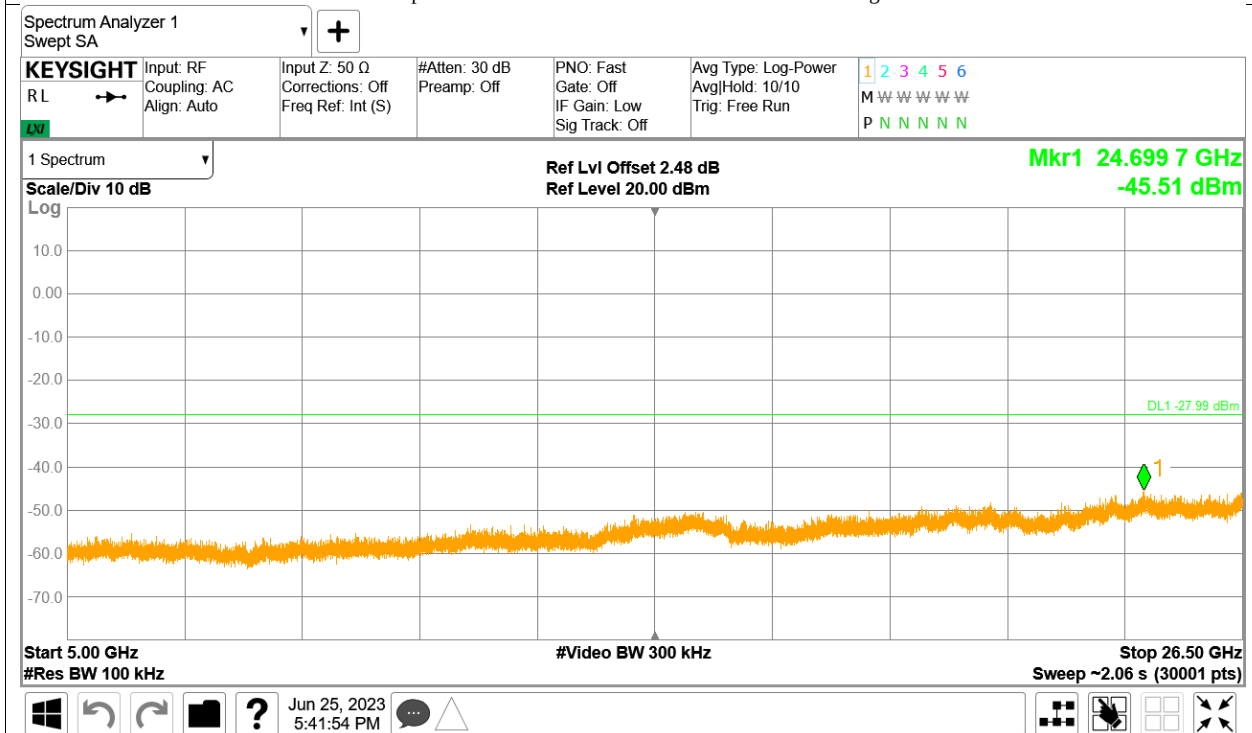


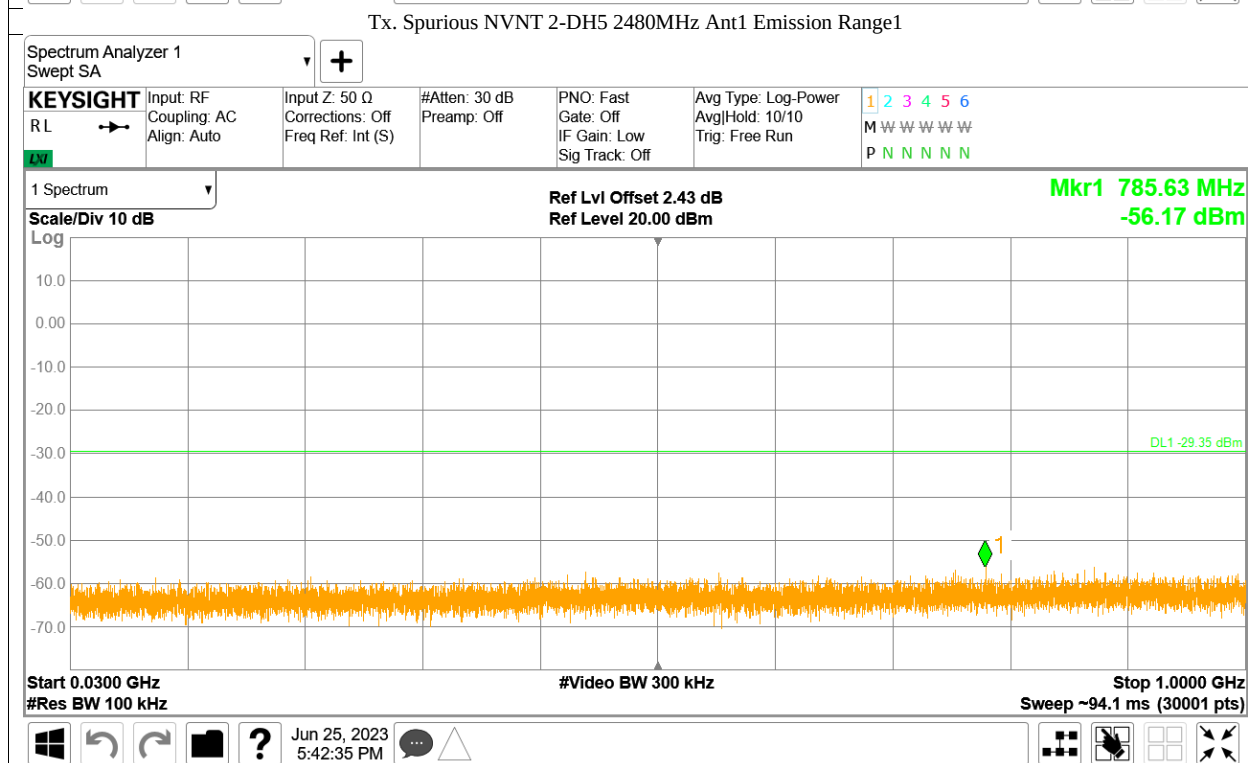
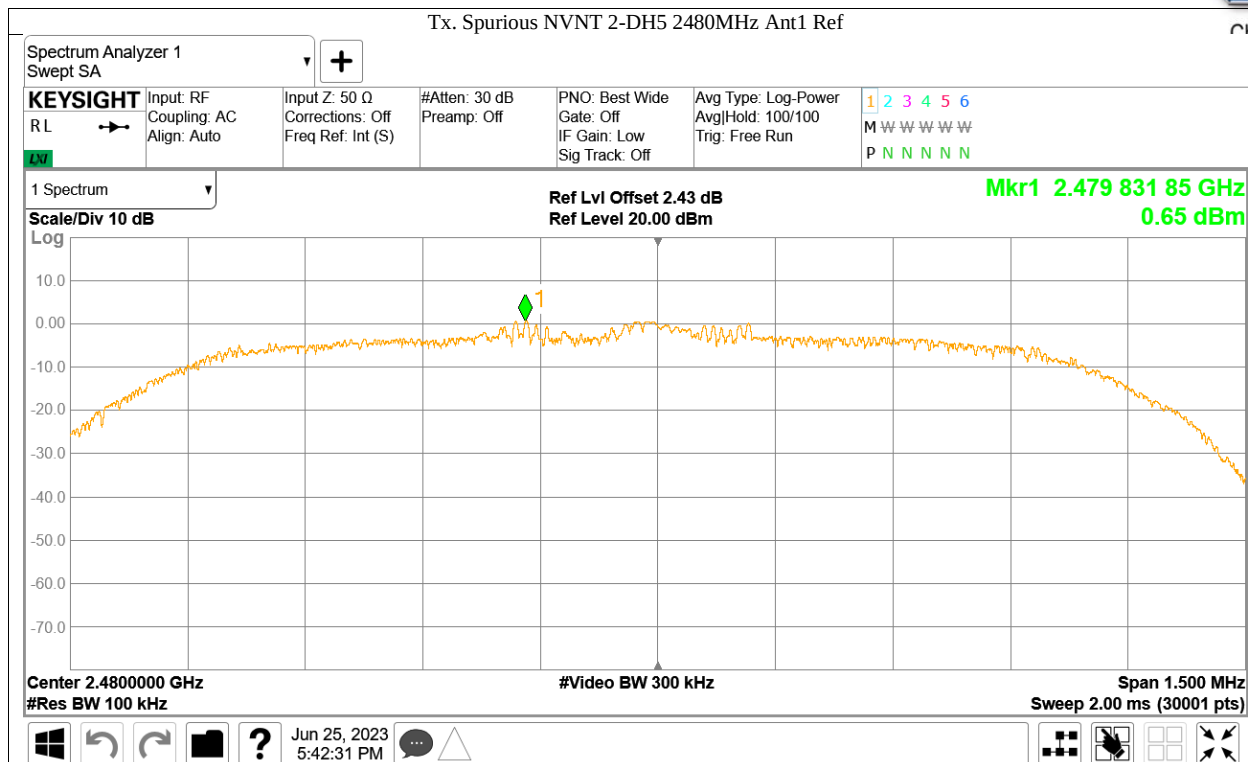
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China



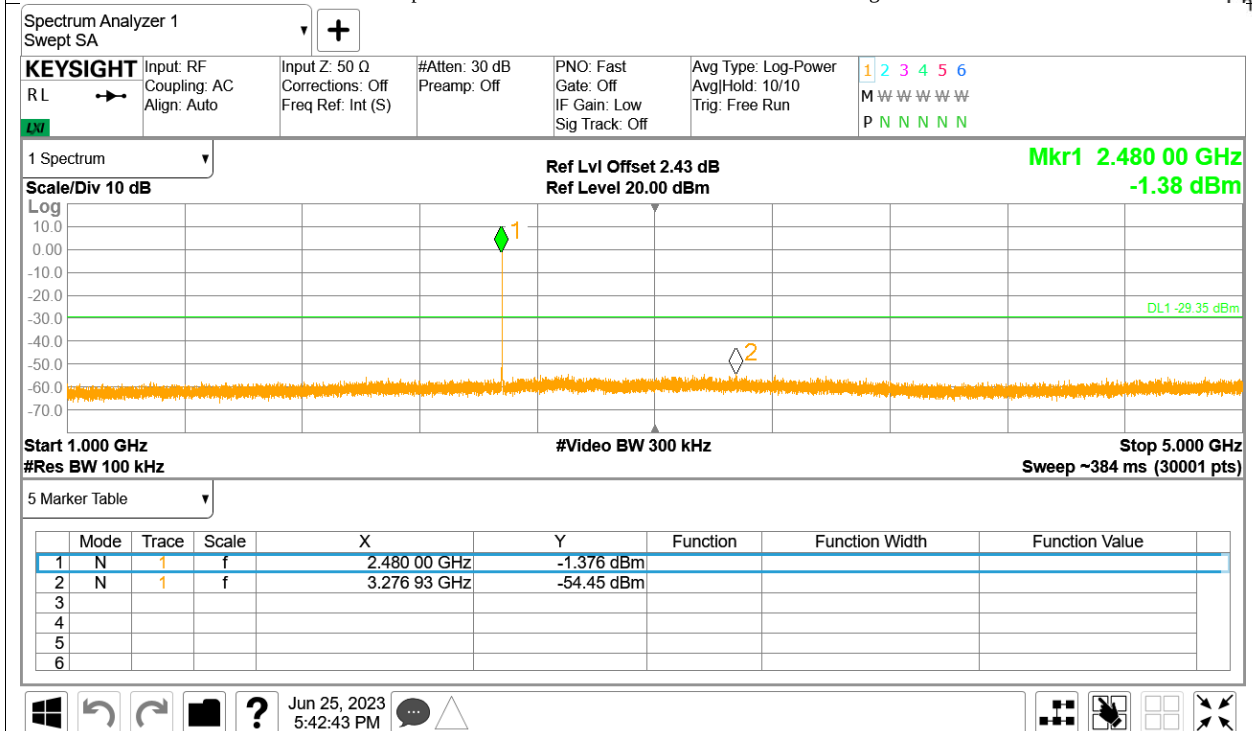
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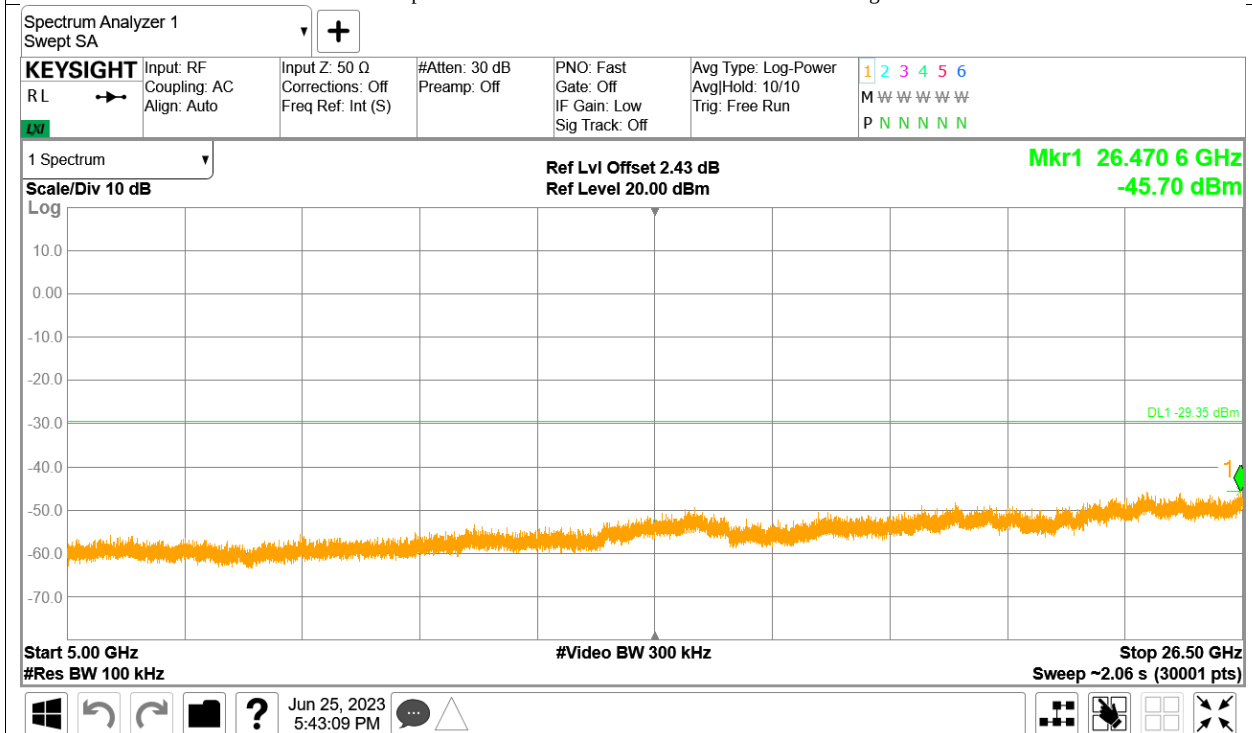


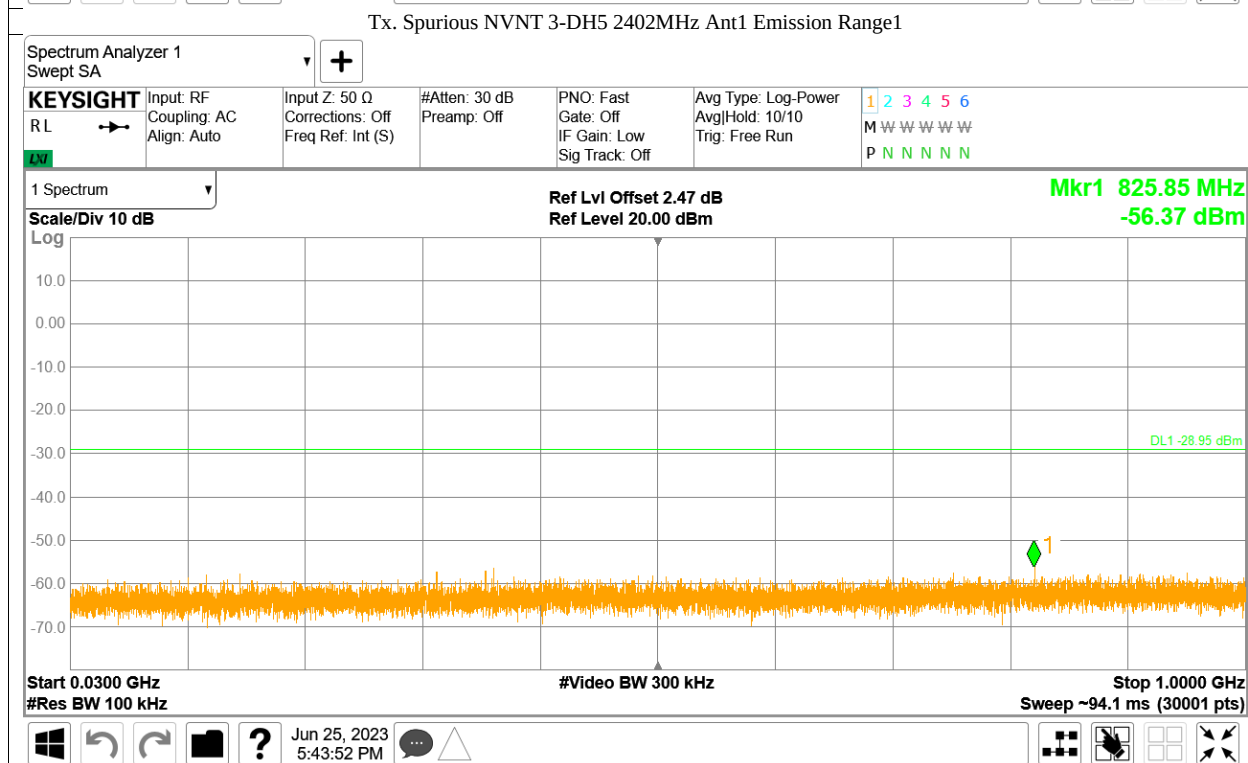
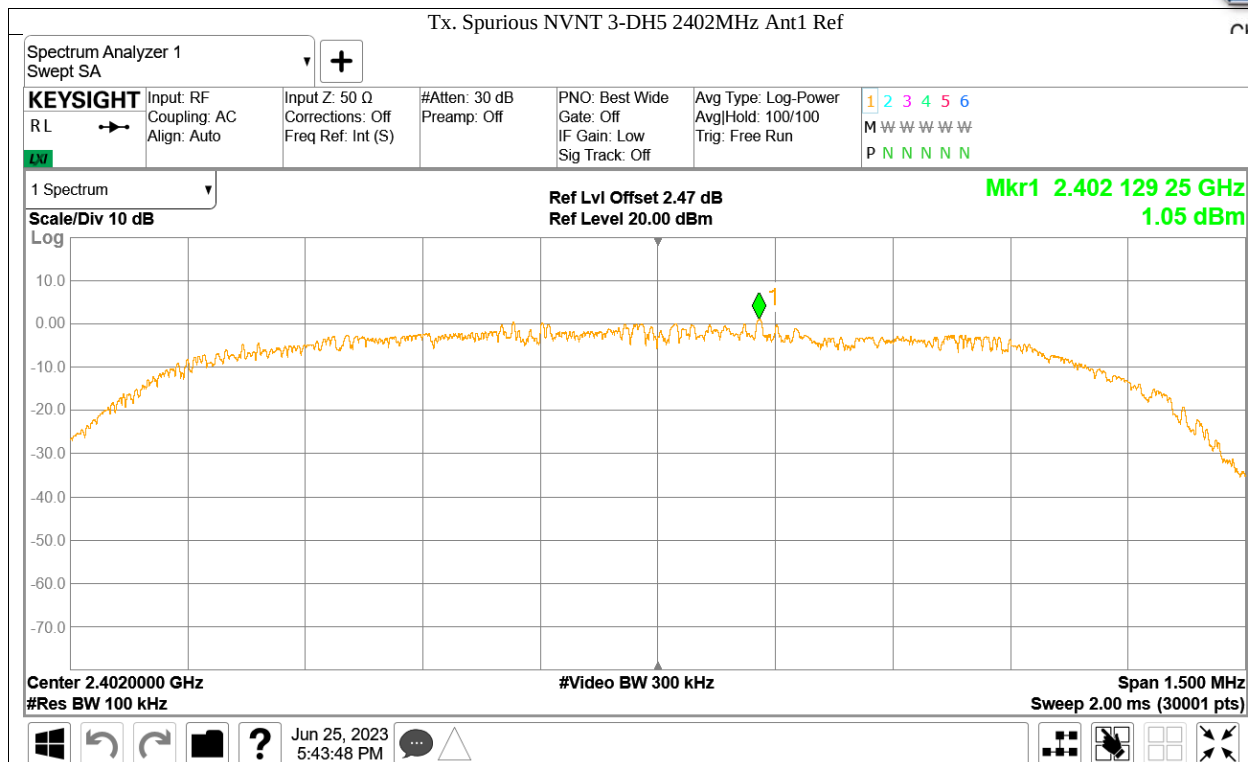
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission Range2

China



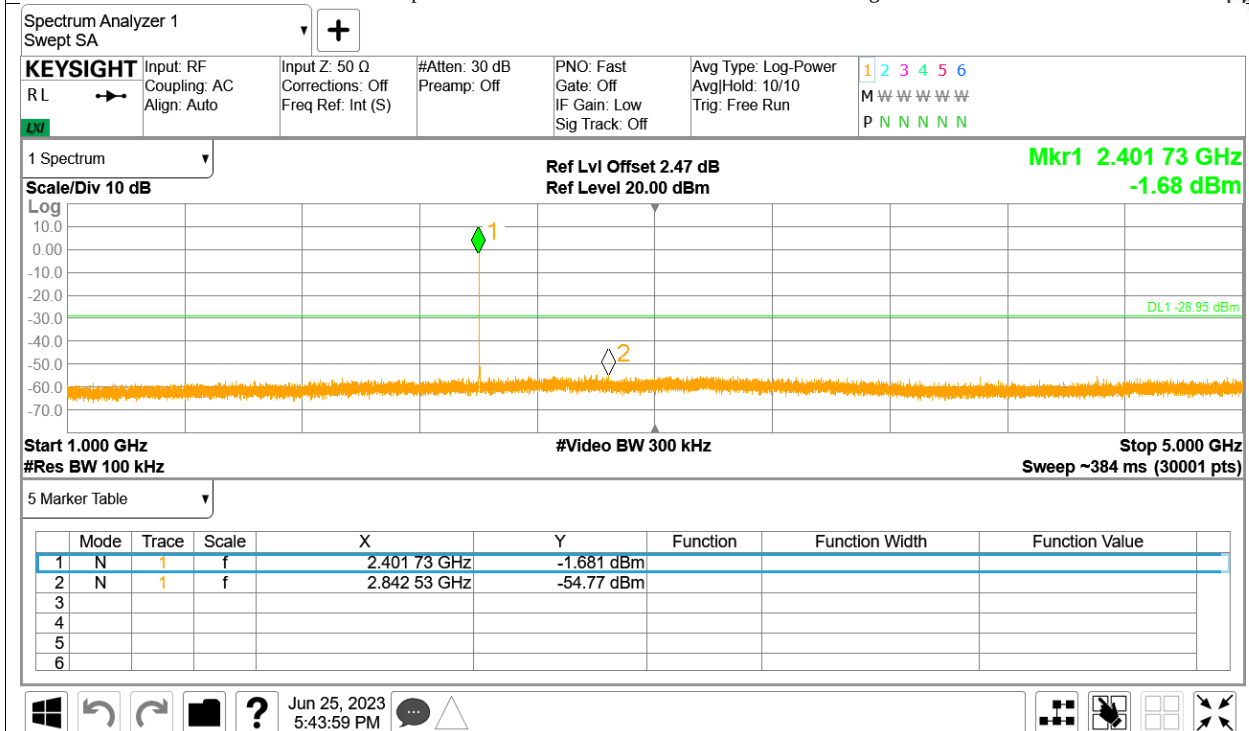
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission Range3



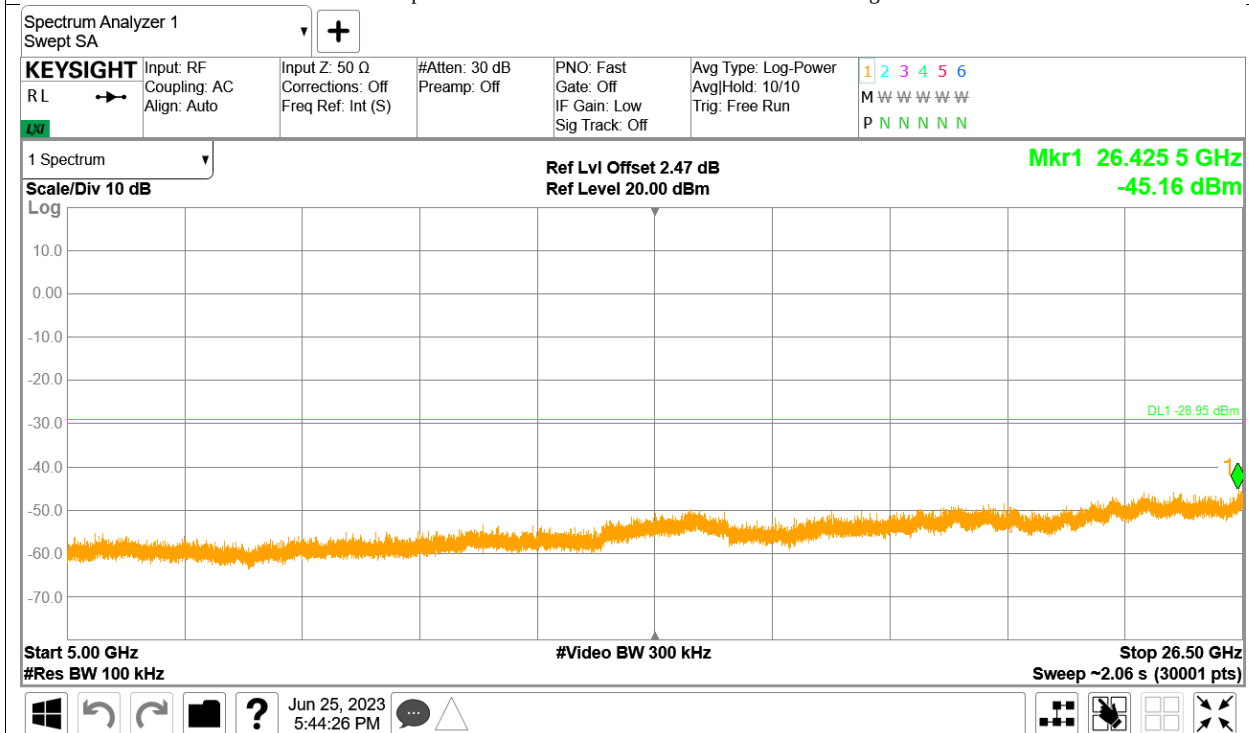


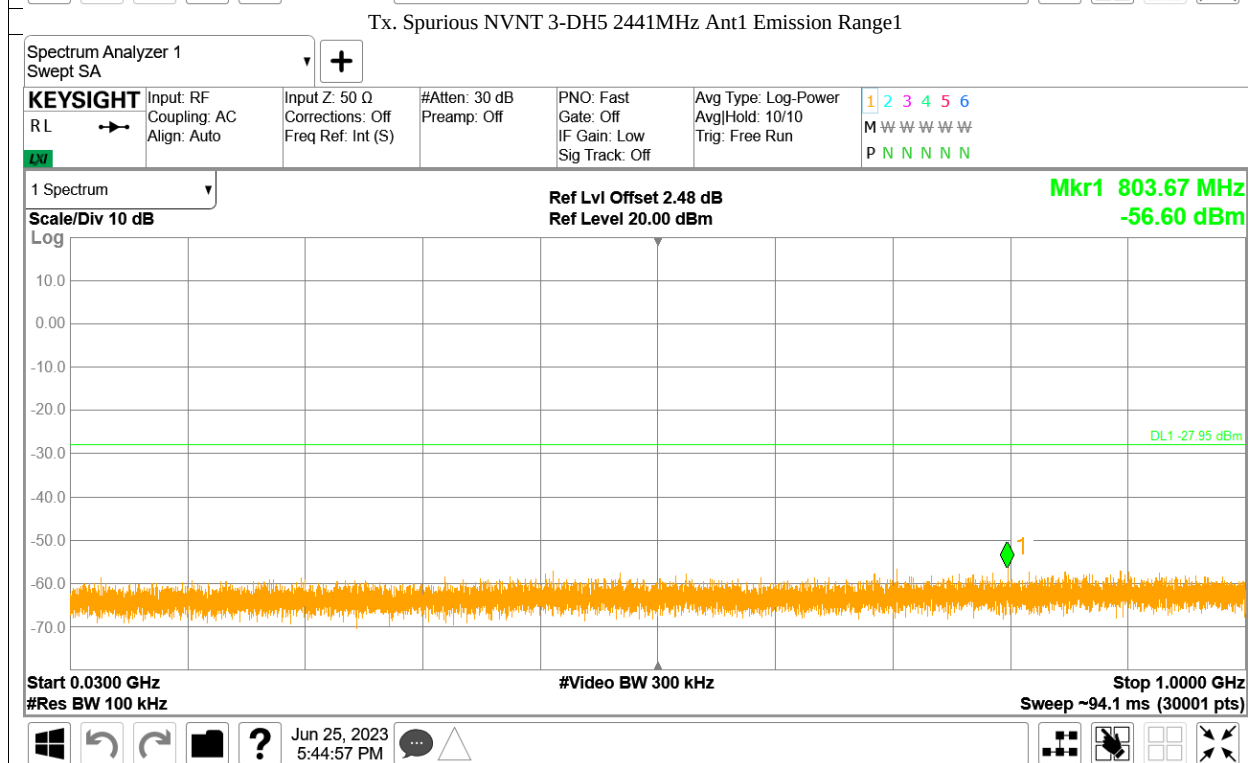
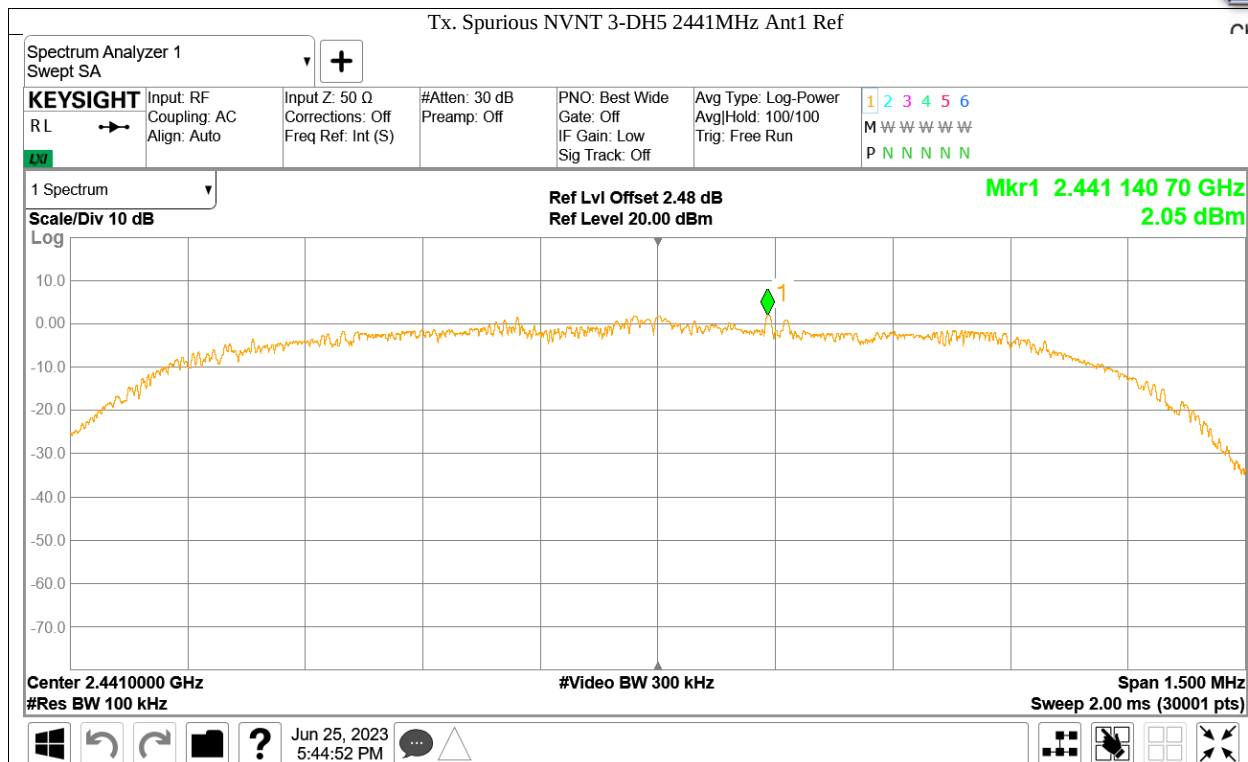
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission Range2

China



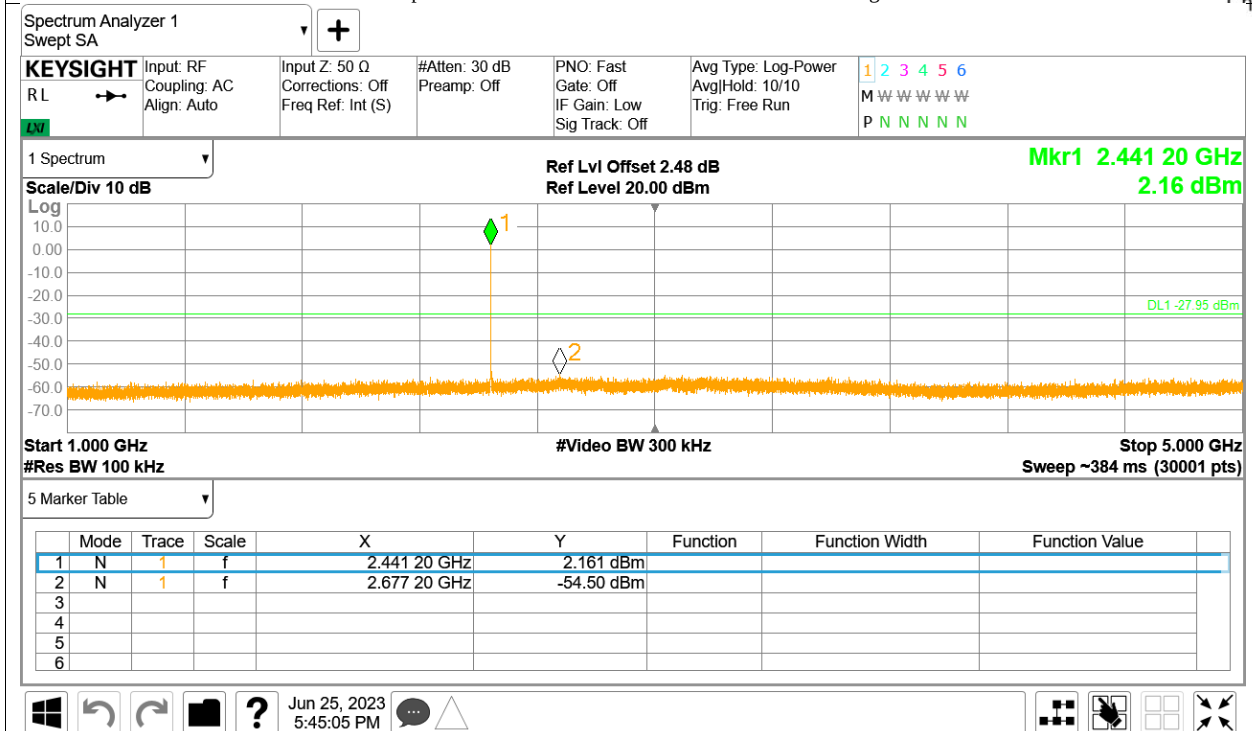
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission Range3



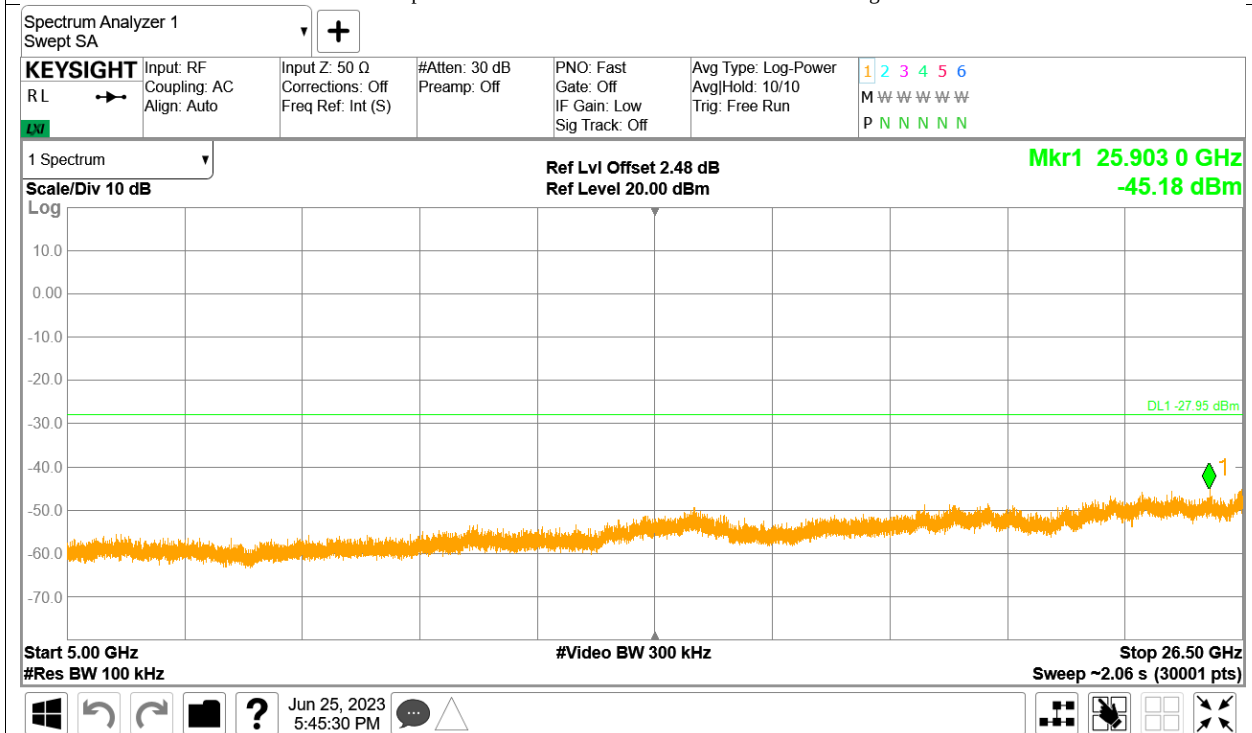


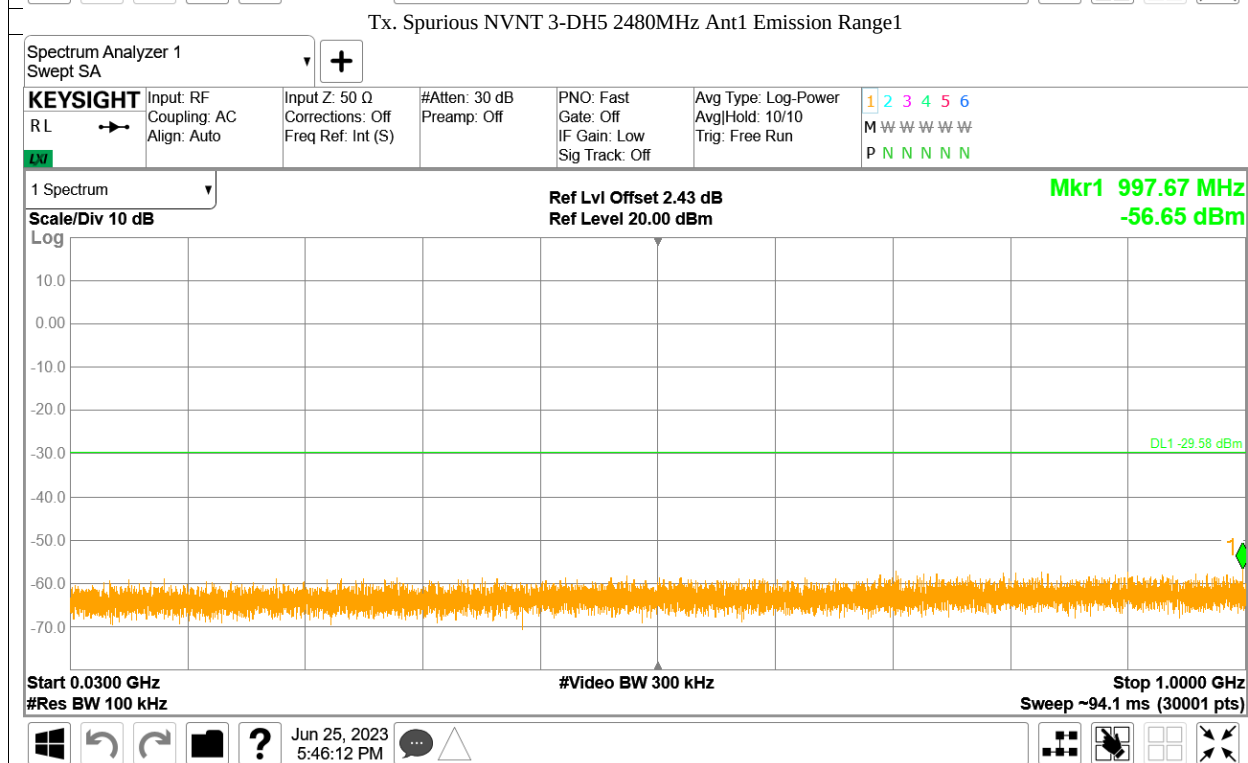
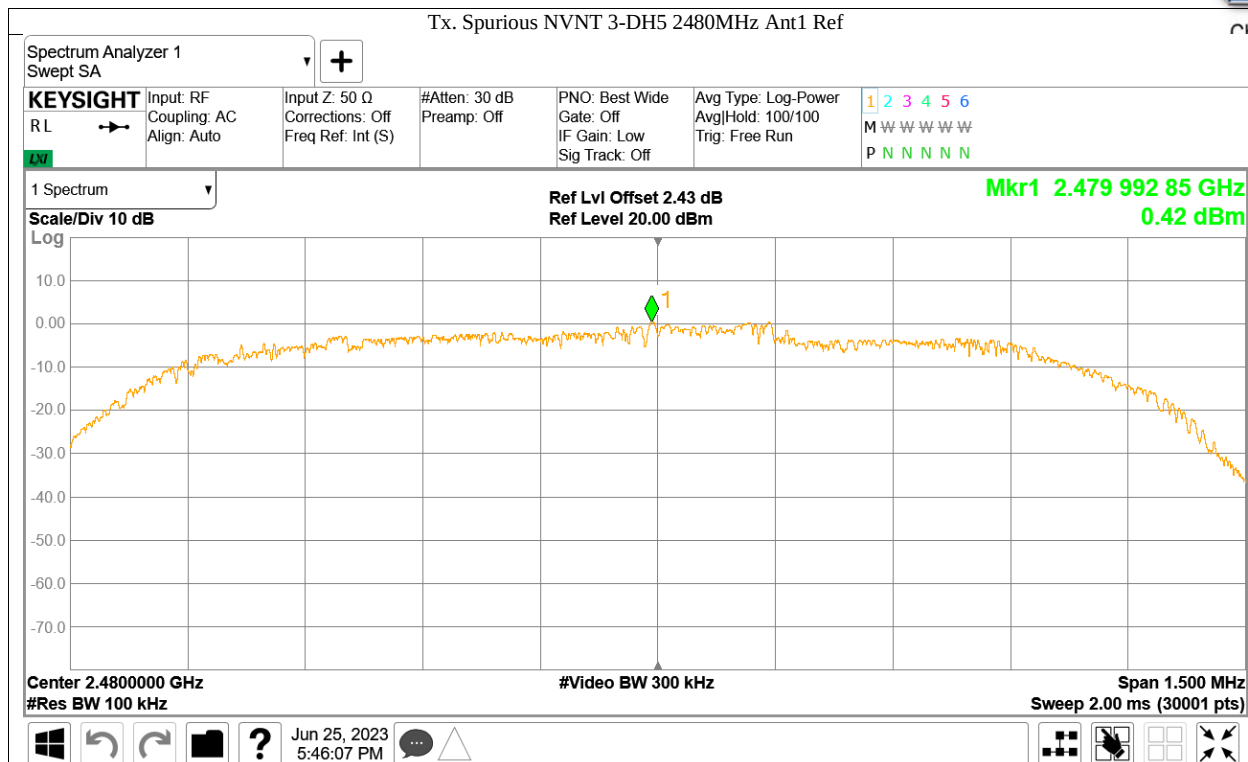
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission Range2

China



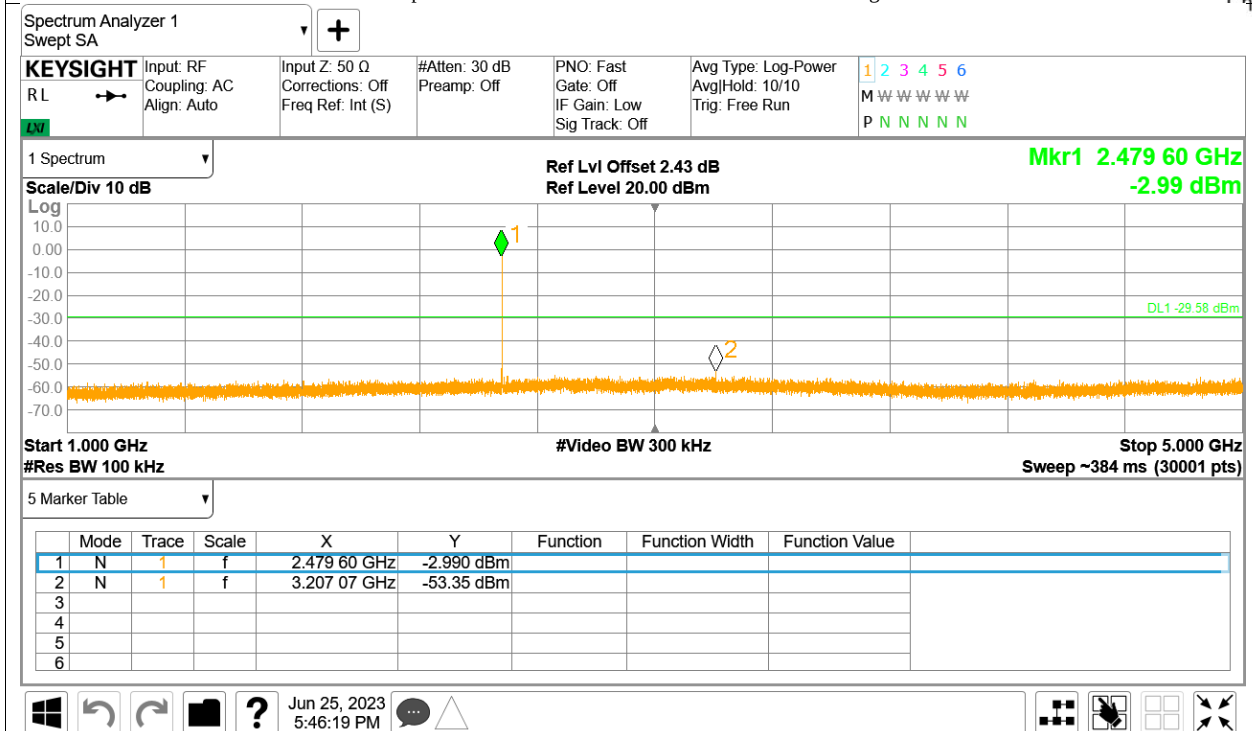
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission Range3



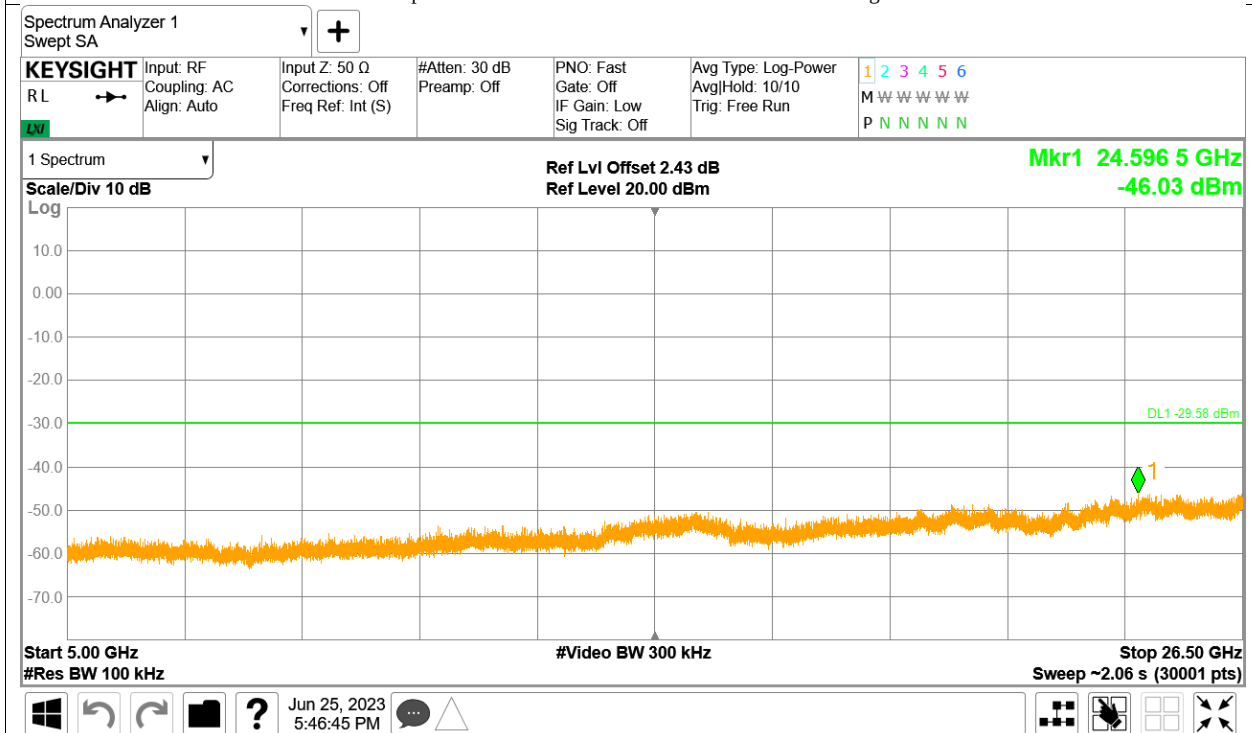


Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission Range2

China



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission Range3



9.8 Band edge testing

Test Method

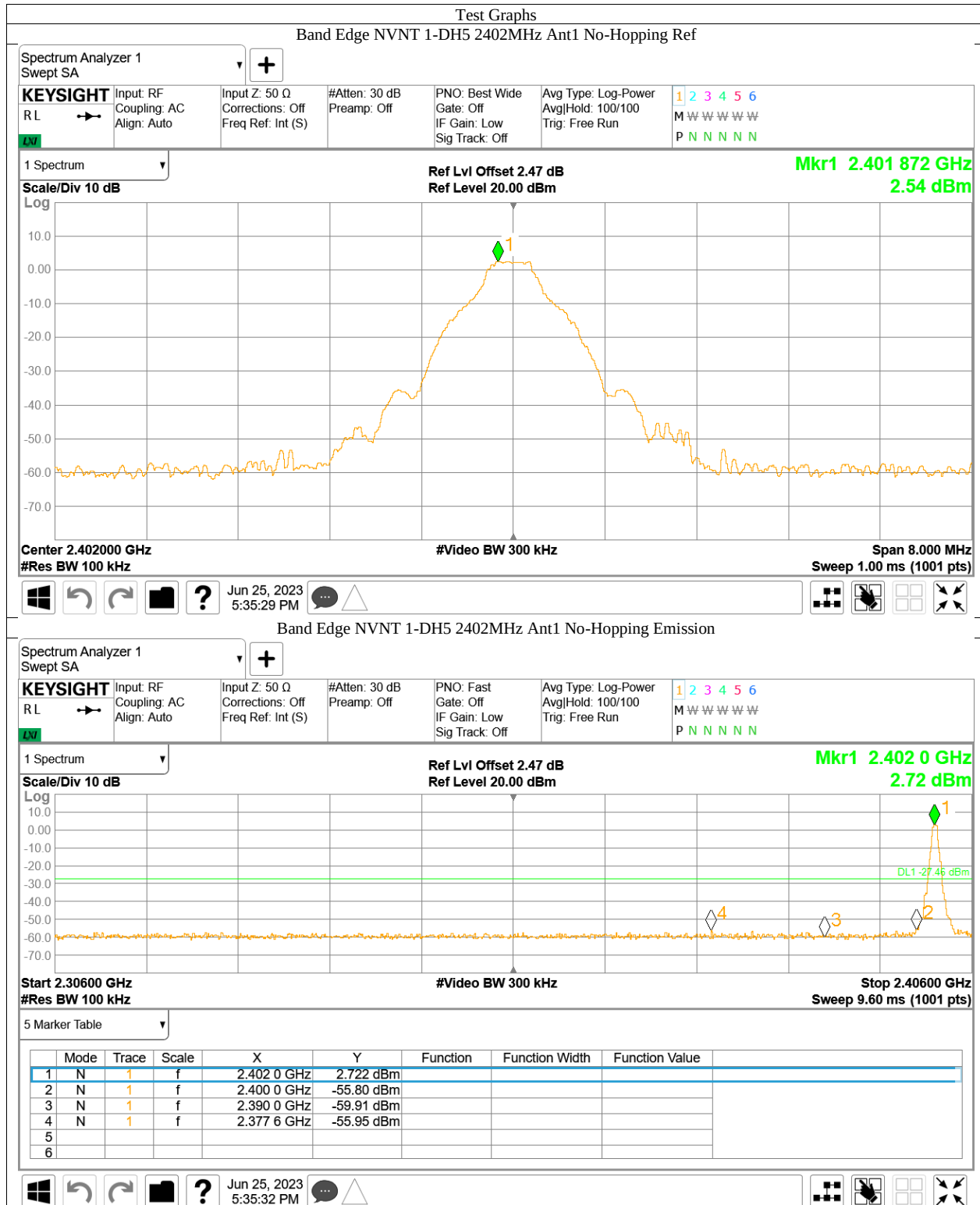
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency
6. Set to the maximum power setting and enable the EUT hopping mode, repeat the test.

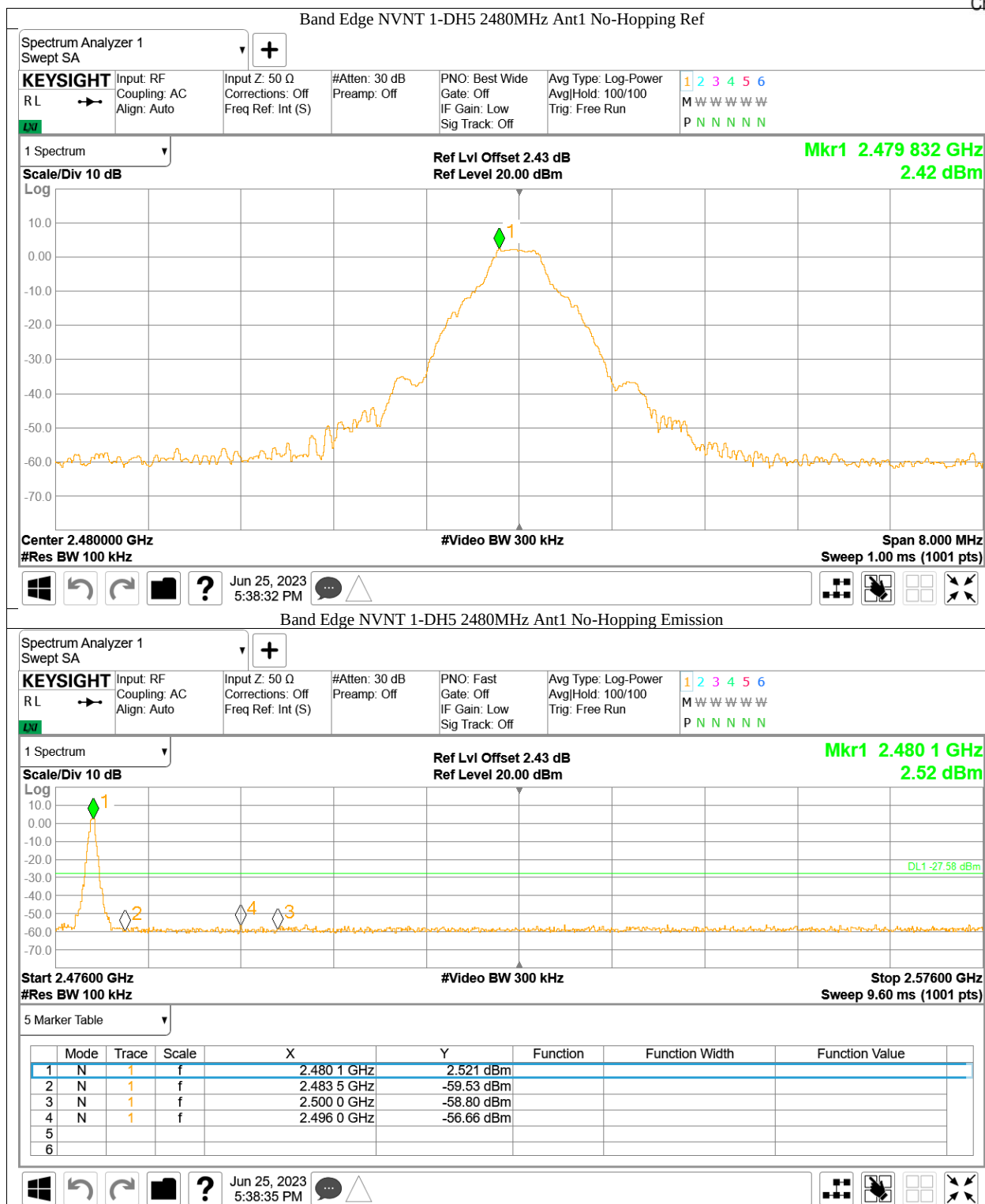
Limit:

In any 100kHz 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.

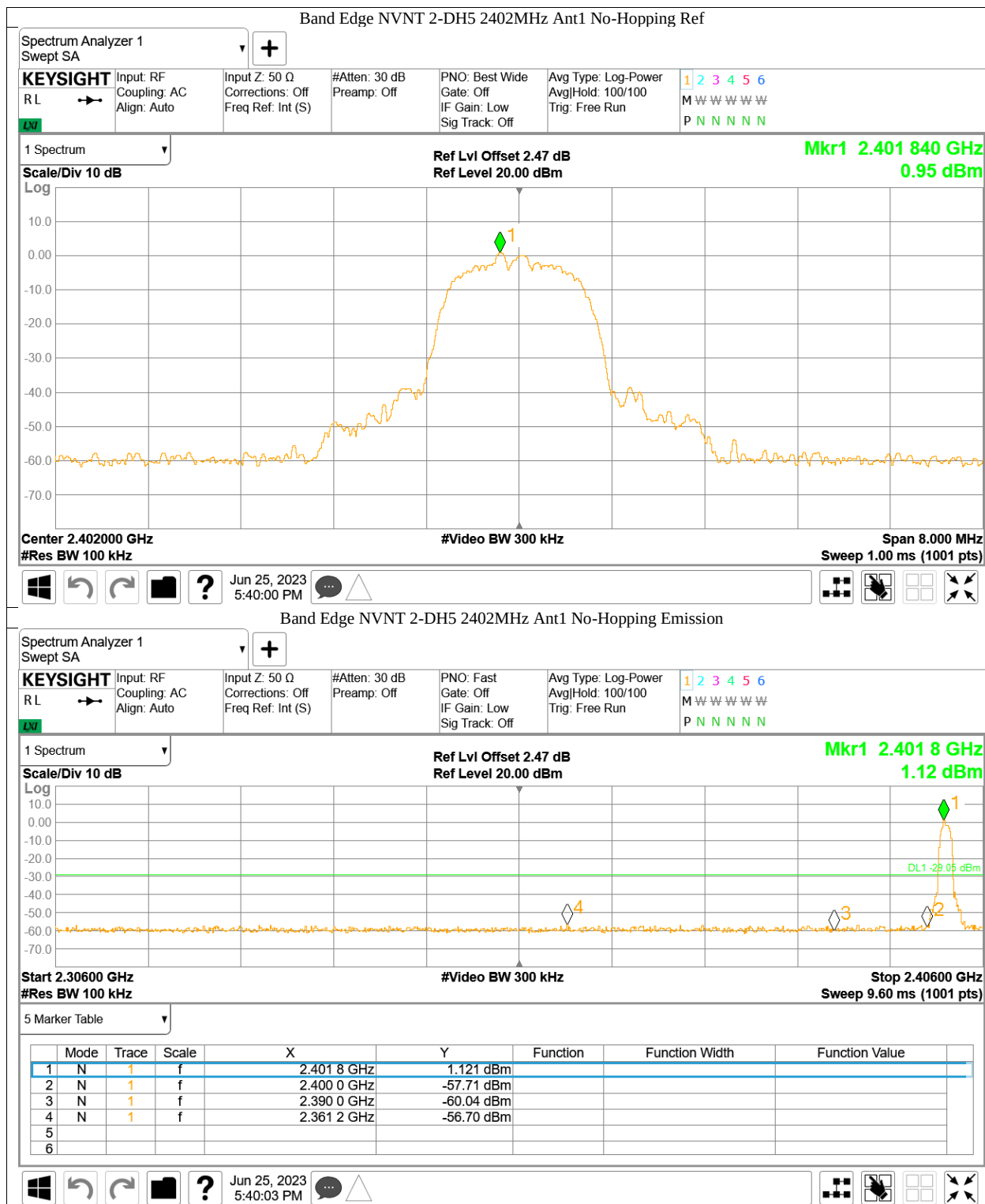
Band edge testing

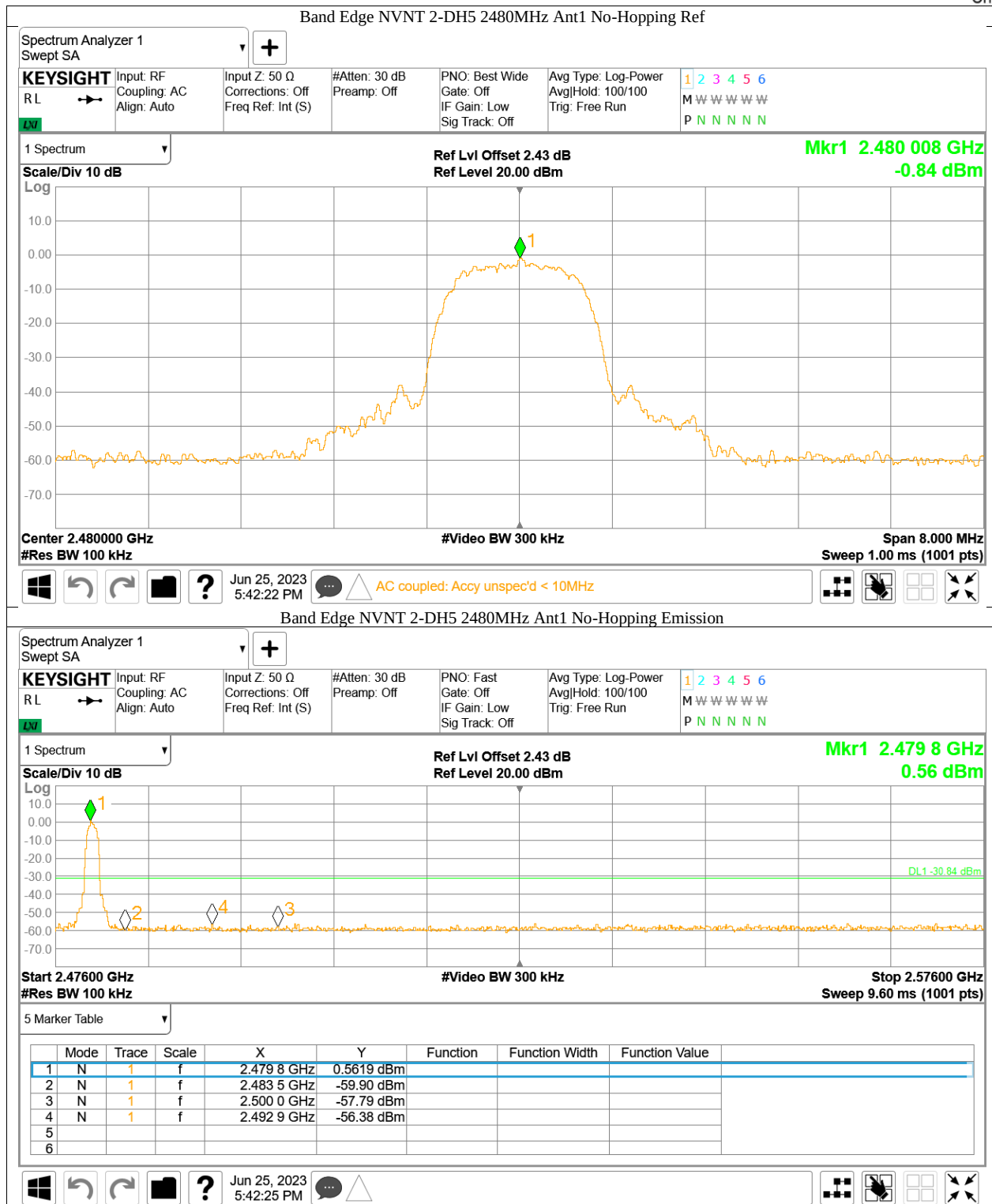
GFSK Modulation Test Result:
Hopping off mode:



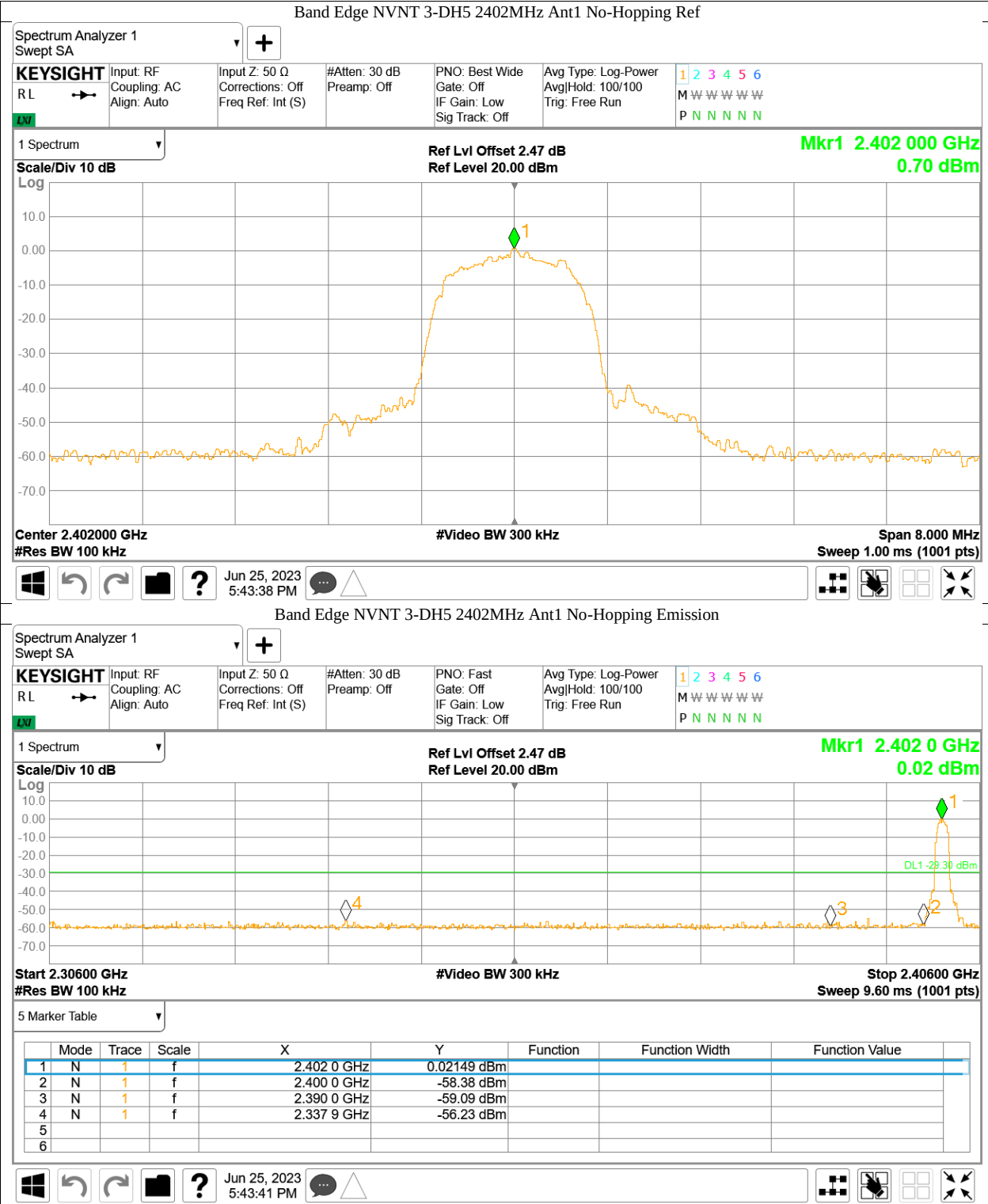


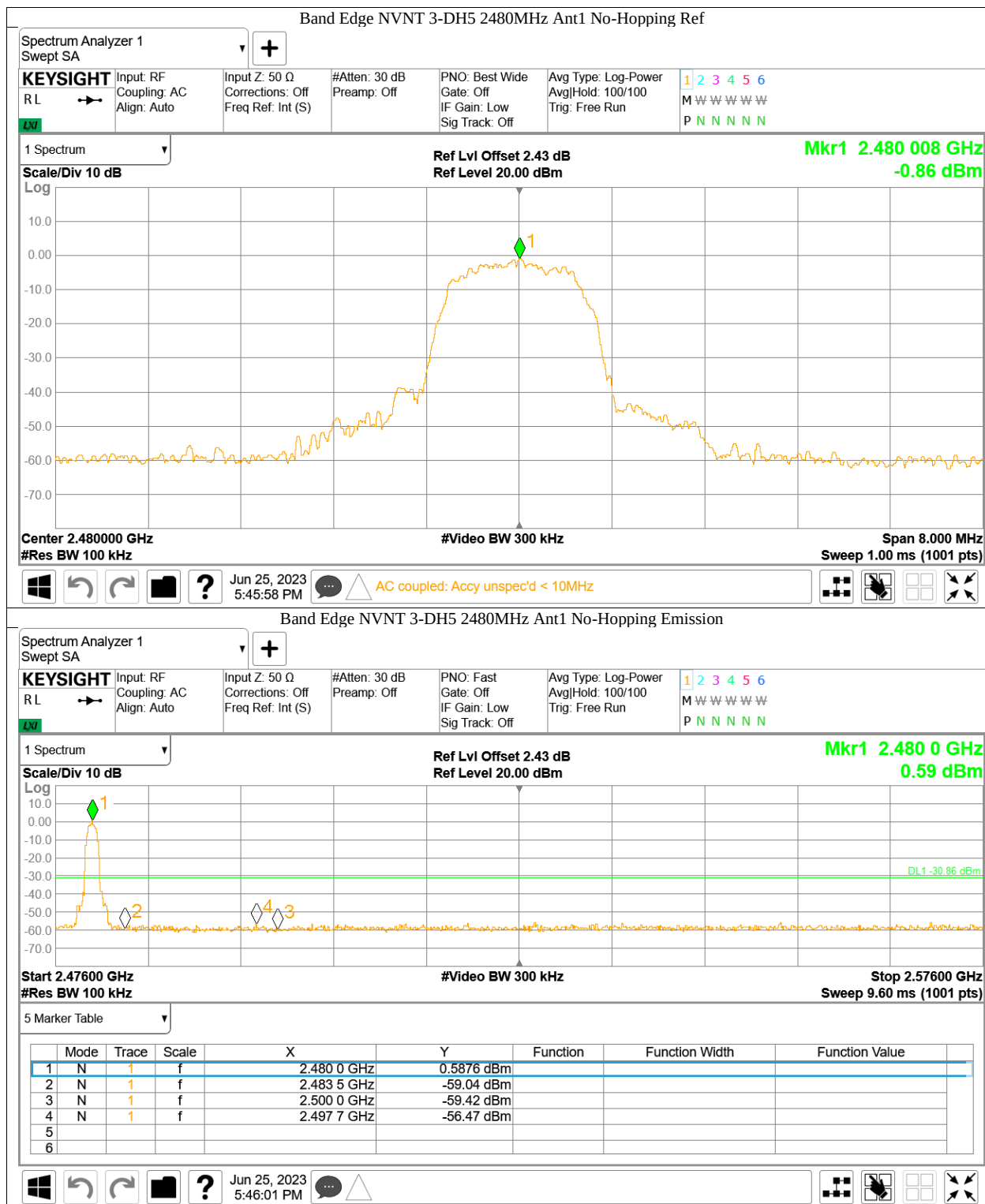
$\pi/4$ -DQPSK Modulation Test Result:
Hopping off mode:



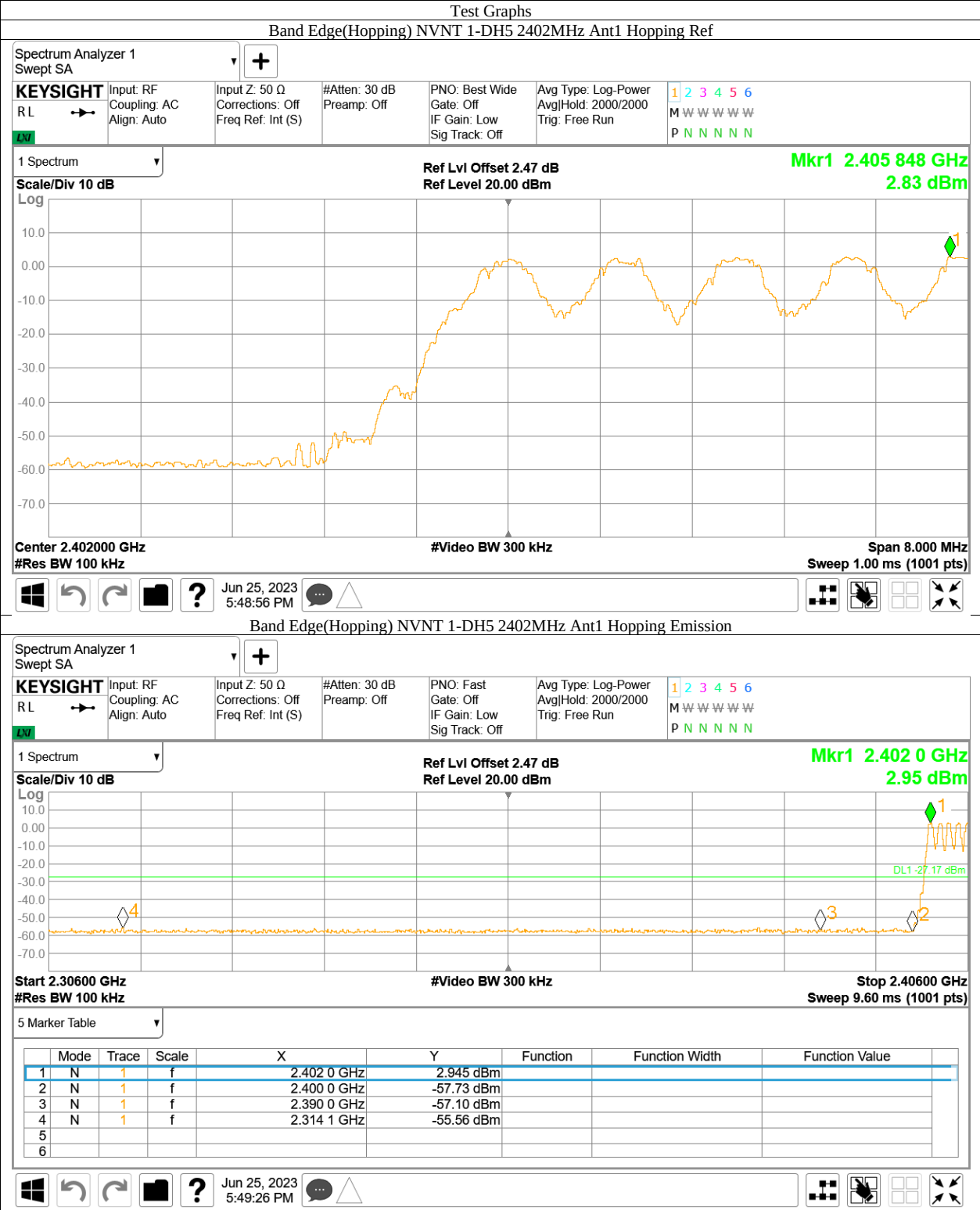


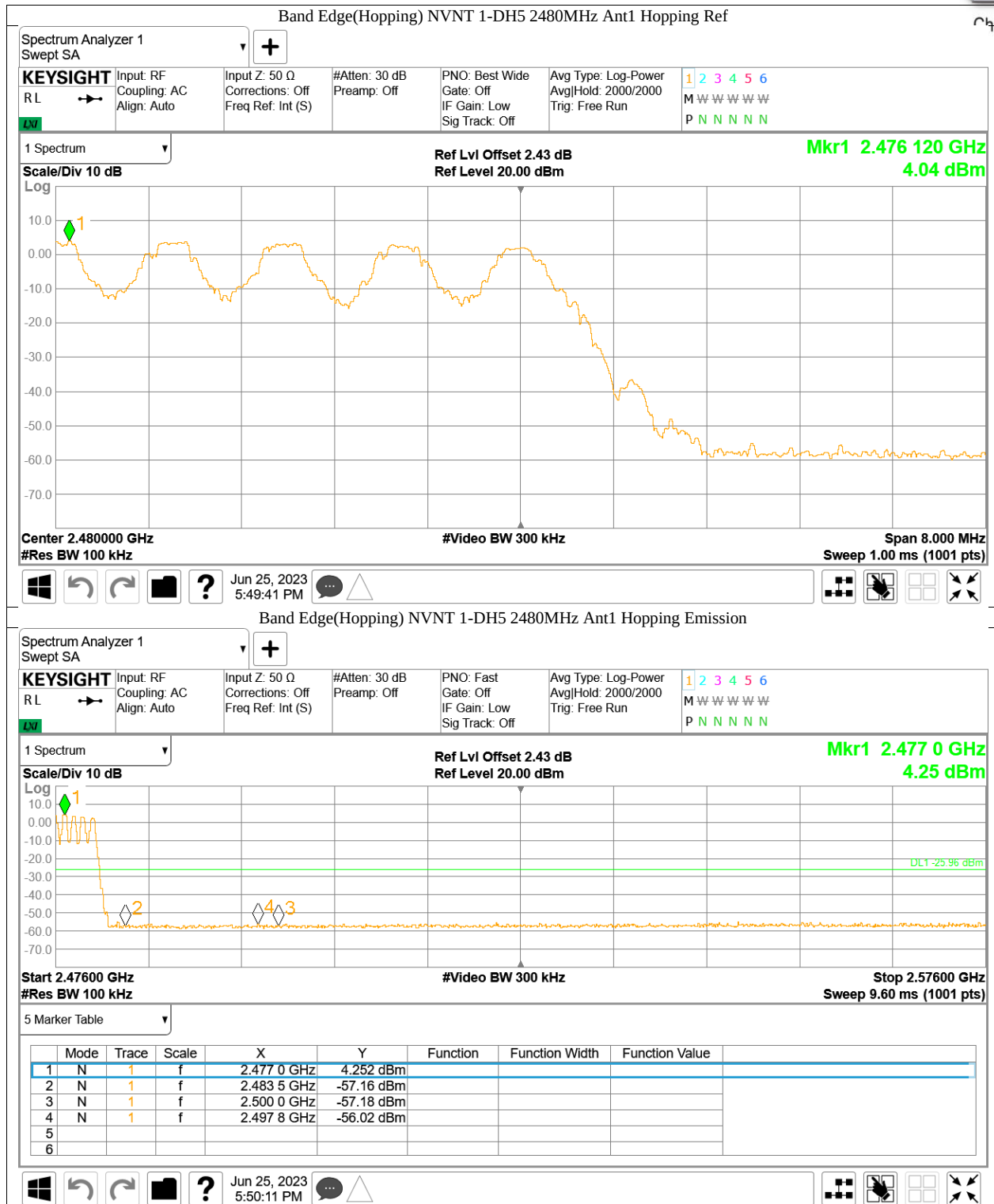
8DPSK Modulation Test Result:
Hopping off mode:



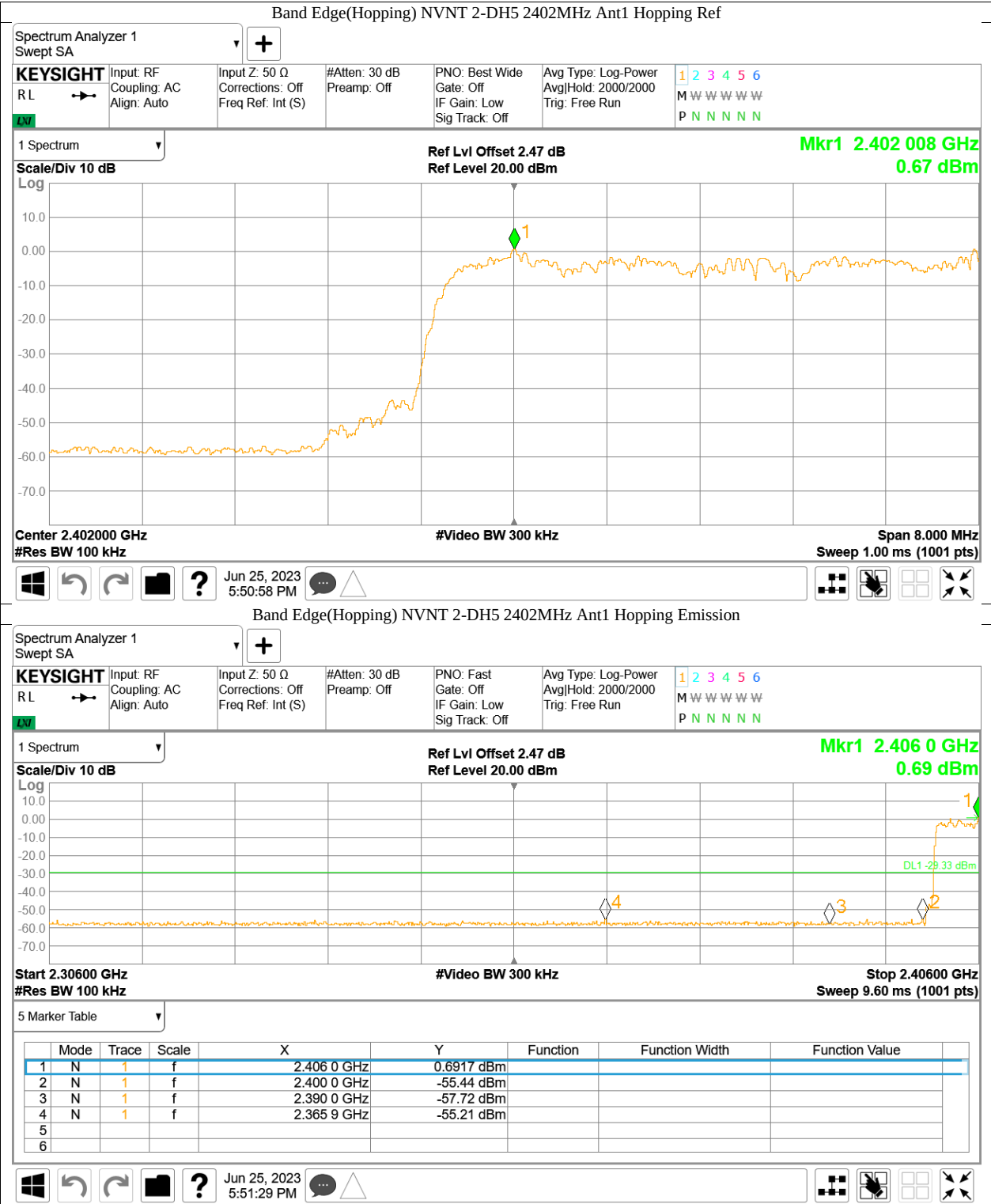


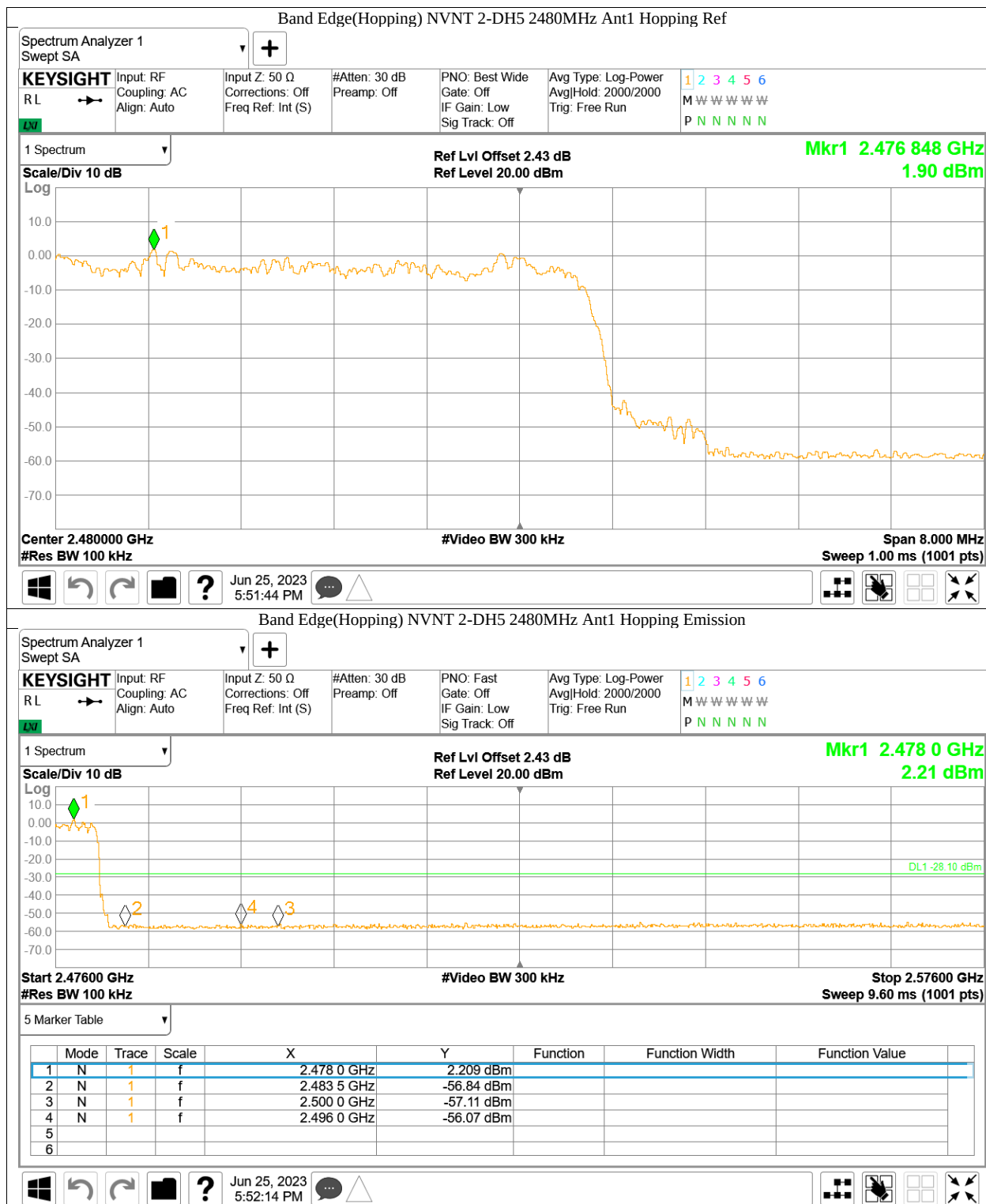
GFSK Modulation Test Result:
Hopping on mode:



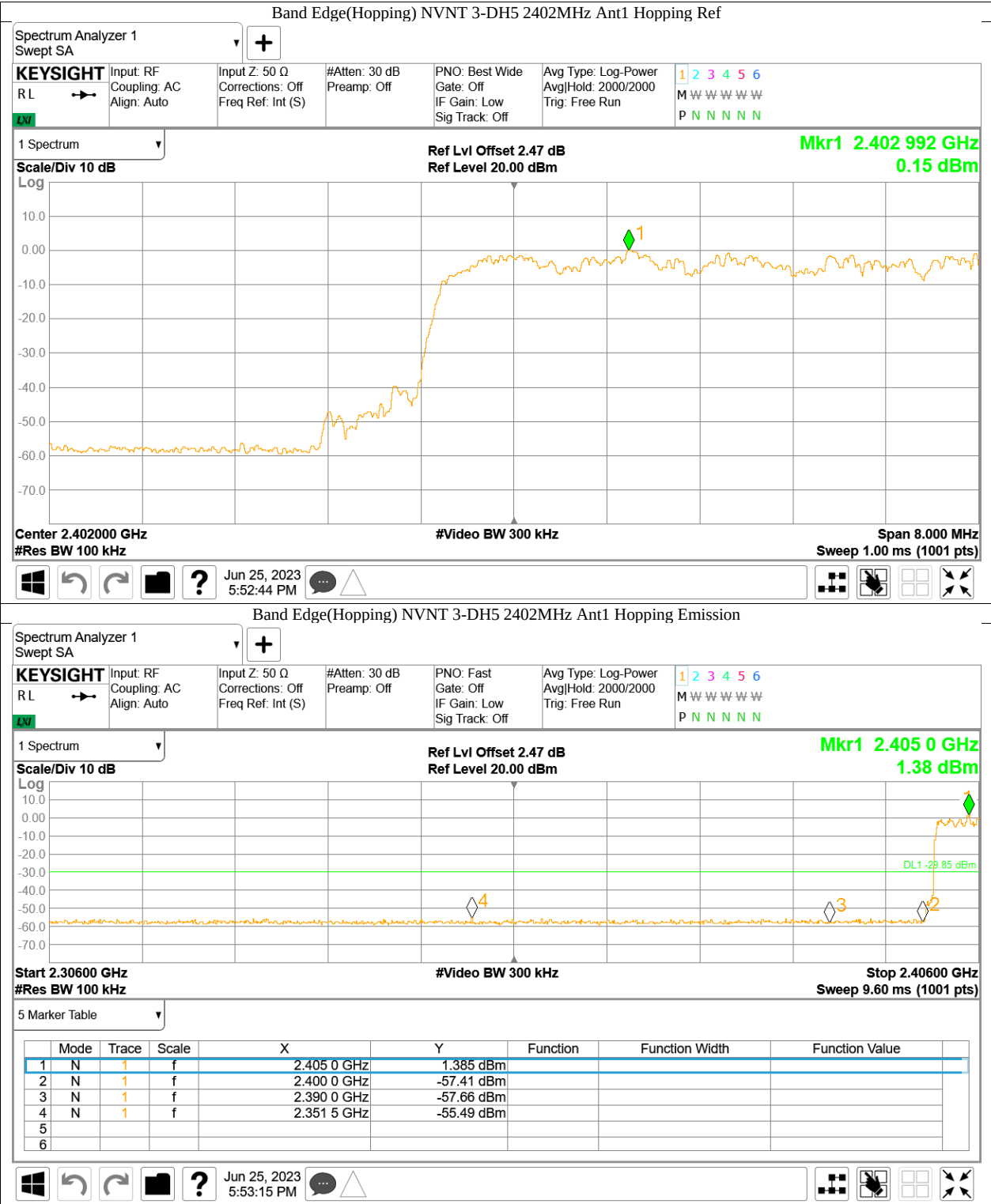


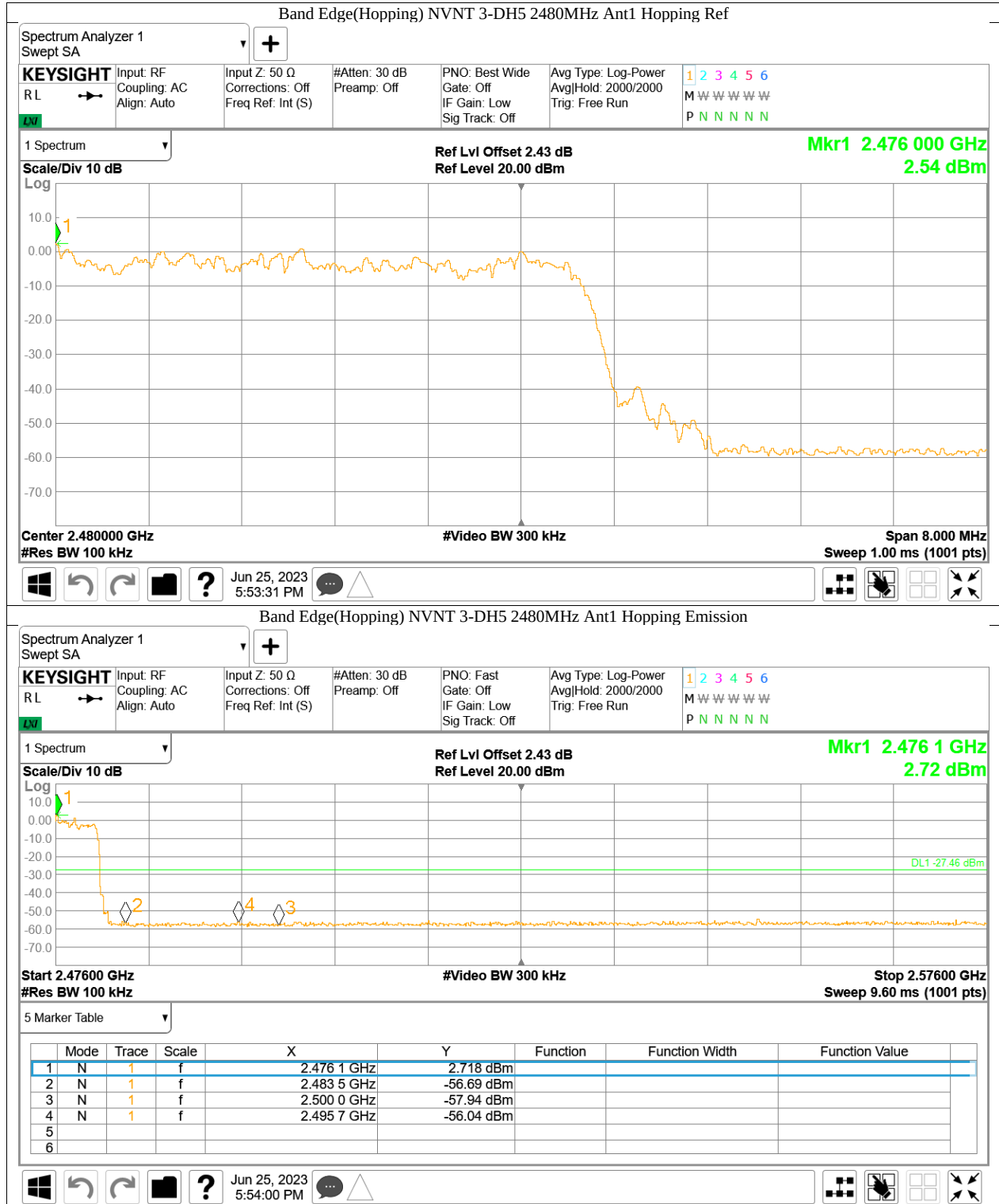
$\pi/4$ -DQPSK Modulation Test Result:
Hopping on mode:





8DPSK Modulation Test Result:
Hopping on mode:





9.9 Spurious radiated emissions for transmitter and receiver

Test Method

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. Use the following spectrum analyzer settings According to C63.10:

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious
 RBW = 100 kHz to 120 kHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious
 RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz

- a) RBW = 1MHz.
- b) $VBW \geq [3 \times RBW]$.
- c) Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \leq RBW / 2$.
 Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
- 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.

Limit

The radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Measured Distance Meters
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30	30	30

Frequency MHz	Field Strength uV/m	Field Strength dBμV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Spurious radiated emissions for transmitter and receiver

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Pre-scan with three orthogonal axis and worst case as X axis. The only worse case (which is subject to the maximum EIRP, π /4-DQPSK mode) test result is listed in the report.

Transmitting spurious emission test result as below:

Bluetooth Mode π /4-DQPSK Modulation 2402MHz, hopping off

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBuV/m		dBuV/m	
2384.02	45.08	Horizontal	74.0	PK	28.92	Pass
4804.00	44.30	Horizontal	74.0	PK	29.70	Pass
2383.18	45.32	Vertical	74.0	PK	28.68	Pass
4804.10	45.89	Vertical	74.0	PK	28.11	Pass

Bluetooth Mode π /4-DQPSK Modulation 2441MHz, hopping off

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBuV/m		dBuV/m	
4882.01	44.91	Horizontal	74.0	PK	29.09	Pass
4882.01	44.40	Vertical	74.0	PK	29.60	Pass

Bluetooth Mode π /4-DQPSK Modulation 2480MHz, hopping off

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBuV/m		dBuV/m	
2483.50	46.20	Horizontal	74.0	PK	27.80	Pass
4959.21	44.96	Horizontal	74.0	PK	29.04	Pass
2483.63	46.46	Vertical	74.0	PK	27.54	Pass
4959.81	45.01	Vertical	74.0	PK	28.99	Pass

Bluetooth Mode π /4-DQPSK Modulation 2402MHz, hopping on

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBuV/m		dBuV/m	
2383.81	45.85	Horizontal	74.0	PK	28.15	Pass
2385.14	45.91	Vertical	74.0	PK	28.09	Pass

Bluetooth Mode π /4-DQPSK Modulation 2402MHz, hopping on

Frequency	Emission Level	Polarization	Limit	Detector	Margin	Result
MHz	dBuV/m		dBuV/m		dBuV/m	
2483.74	46.04	Horizontal	74.0	PK	27.96	Pass
2483.66	45.89	Vertical	74.0	PK	28.11	Pass

Remark:

- (1) Emission level= Original Receiver Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
- (3) Margin = limit – Corrected Reading

The worst case of Radiated Emission below 1GHz:

30-1000MHz Radiated Emission

EUT Information

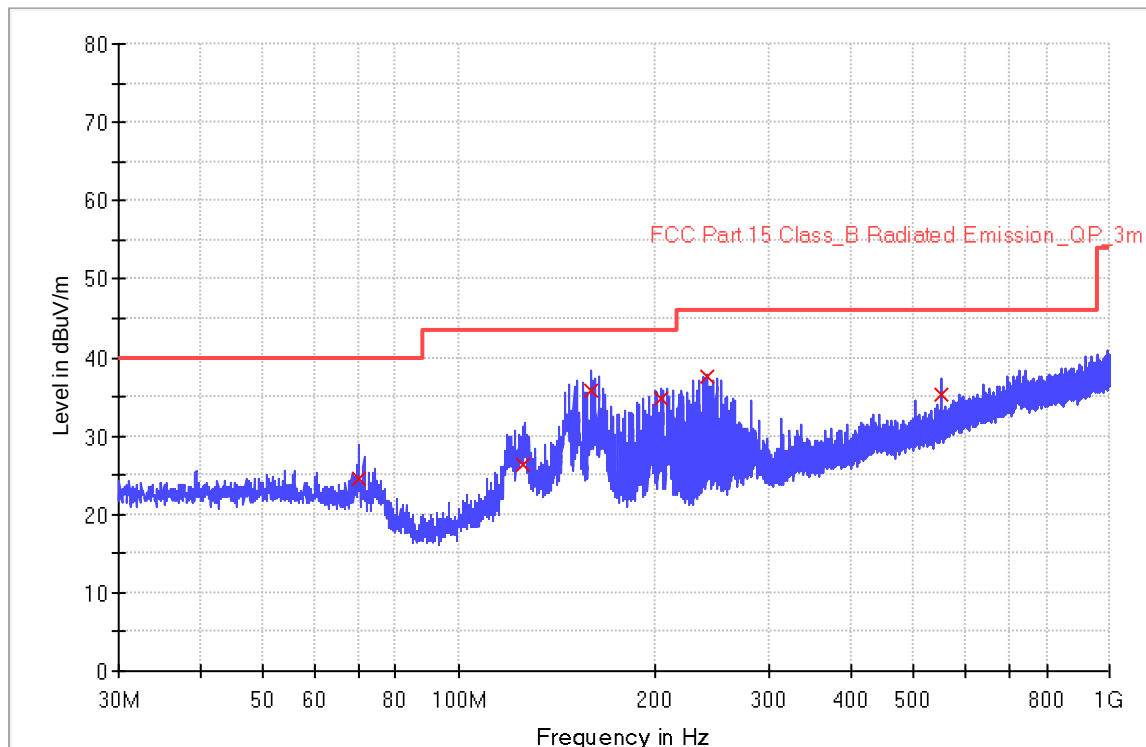
EUT Name:	Infrared Thermal Camera
Model	Fotric P7
Client:	FOTRIC INC.
Op Cond	Power on, TX_2441MHz,2DH5, DC 3.6V, T21.3, H56.3%, P100.6kPa
Operator:	Wang Yiquan
Standard	FCC part 15.209(a)
Comment:	Horizontal
Sample No.:	SHA-716542-2

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup:	RE_VULB9168
Receiver:	[ESR 3]
Level Unit:	dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamplifier
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
70.000000	24.5	1000.0	120.000	188.9	H	227.0	18.6	15.5	40.0
125.920000	26.4	1000.0	120.000	261.6	H	187.0	18.6	17.1	43.5
159.240000	35.7	1000.0	120.000	189.4	H	341.0	20.9	7.8	43.5
203.960000	34.7	1000.0	120.000	291.8	H	75.0	17.6	8.8	43.5
241.160000	37.7	1000.0	120.000	195.6	H	281.0	19.6	8.3	46.0
552.000000	35.4	1000.0	120.000	197.1	H	144.0	27.5	10.6	46.0

30-1000MHz Radiated Emission

EUT Information

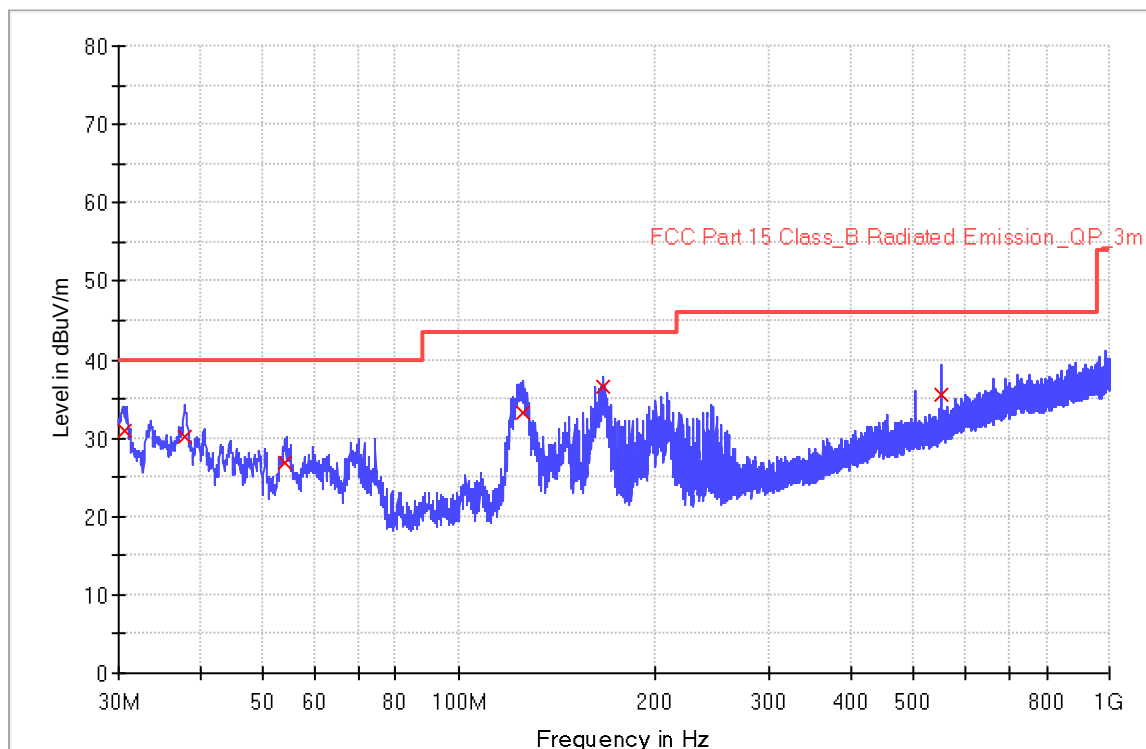
EUT Name: Infrared Thermal Camera
 Model: Fotric P7
 Client: FOTRIC INC.
 Op Cond: Power on, TX_2441MHz,2DH5, DC 3.6V, T21.3, H56.3%, P100.6kPa
 Operator: Wang Yiquan
 Standard: FCC part 15.209(a)
 Comment: Vertical
 Sample No.: SHA-716542-2

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup: RE_VULB9168
 Receiver: [ESR 3]
 Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
30.600000	30.8	1000.0	120.000	193.6	V	274.0	19.3	9.2	40.0
37.840000	30.1	1000.0	120.000	133.4	V	342.0	19.7	9.9	40.0
53.960000	26.9	1000.0	120.000	253.0	V	233.0	20.4	13.1	40.0
125.680000	33.1	1000.0	120.000	201.2	V	172.0	18.6	10.4	43.5
166.760000	36.6	1000.0	120.000	196.6	V	144.0	20.5	6.9	43.5
551.960000	35.5	1000.0	120.000	202.1	V	74.0	27.5	10.5	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

10 Test Equipment List

List of Test Instruments

Test Site1

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
C	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2022-8-1	2023-7-31
RE	EMI Test Receiver	Rohde & Schwarz	ESR3	101906	2022-8-1	2023-7-31
	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2022-8-1	2023-7-31
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	961	2019-9-23	2024-9-22
	Horn Antenna	Rohde & Schwarz	HF907	102393	2021-3-15	2024-3-14
	Pre-amplifier	Rohde & Schwarz	SCU-18D	19006451	2022-8-1	2023-7-31
	Loop antenna	Rohde & Schwarz	HFH2-Z2	100443	2022-6-13	2023-6-12
	Loop antenna	Rohde & Schwarz	HFH2-Z2	100443	2023-6-12	2024-6-11
	DOUBLE-RIDGED WAVEGUIDE HORN WITH PRE-AMPLIFIER (18 GHZ - 40 GHZ)	ETS-Lindgren	3116C-PA	002222727	2020-9-23	2023-9-22
CE	3m Semi-anechoic chamber	TDK	9X6X6	----	2021-5-8	2024-5-7
	EMI Test Receiver	Rohde & Schwarz	ESR3	101907	2022-8-1	2023-7-31
	LISN	Rohde & Schwarz	ENV216	101924	2022-8-1	2023-7-31

Measurement Software Information

Test Item	Software	Manufacturer	Version
C	MTS 8310	MWRFTtest	2.0.0.0
RE	EMC 32	Rohde & Schwarz	V10.50.40
CE	EMC 32	Rohde & Schwarz	V9.15.03

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- 20dB bandwidth and 99% Occupied Bandwidth
- Carrier frequency separation
- Number of hopping frequencies
- Dwell Time
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, LISN, 3.16dB
Radiated Disturbance	9kHz to 30MHz, 3.52dB 30MHz to 1GHz, 5.03dB (Horizontal) 5.12dB (Vertical) 1GHz to 18GHz, 5.49dB 18GHz to 40GHz, 5.63dB
RF Conducted Measurement	Power related: 1.16dB Frequency related: 6.00×10^{-8}

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.

12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.

13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

-----End of Test Report-----