

**FCC - TEST REPORT**Report Number : **709502605434-00B** Date of Issue: August 20, 2026Model : C11-F-K(L)Product Type : IMOU Smart LockApplicant : Hangzhou Huacheng Software Technology Co., Ltd.Address : 15th Floor, Building 3, No. 582, Liye Road, Changhe Street, Binjiang District, Hangzhou, ChinaManufacturer : Hangzhou Huacheng Software Technology Co., Ltd.Address : 15th Floor, Building 3, No. 582, Liye Road, Changhe Street, Binjiang District, Hangzhou, ChinaTest Result : ☒ **Positive** ☐ **Negative**Total pages including
Appendices : 81

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2 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
709502605434-00B	First Issue	08/20/2026

3 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Products Testing (Shanghai) Co., Ltd.
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Shanghai 201108,
P.R. China

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FCC Registration No.: 820234

FCC Designation Number: CN1183

ISED CAB identifier: CN0101

IC Registration No.: 31668



4 Description of the Equipment under Test

Product:	IMOU Smart Lock
Model no.:	C11-F-K(L)
FCC ID:	2BQWU-CUBO2-A1
Options and accessories:	NA
Rating:	DC 6V from Battery DC 5V from Type-C Port (by Power Bank) (Testing)
RF Transmission Frequency:	For BLE: 2402~2480 MHz For 2.4G Wi-Fi: 802.11b/g/n-HT20/ax-HE20: 2412~2462 MHz For 5G Wi-Fi: 802.11a/n-HT20/ax-HE20/ac-VHT20: 5180~5240 MHz (U-NII-1) 802.11a/n-HT20/ax-HE20/ac-VHT20: 5745~5825 MHz (U-NII-3)
No. of Operated Channel:	For BLE: 40 For 2.4G Wi-Fi: 11 for 802.11b/802.11g/802.11n(HT20)/802.11ax(HE20) For 5G Wi-Fi: U-NII-1: 4 for 802.11a/n-HT20/ax-HE20/ac-VHT20 U-NII-3: 5 for 802.11a/n-HT20/ax-HE20/ac-VHT20
Modulation:	For BLE: GFSK For 2.4G Wi-Fi: Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g/n Orthogonal Frequency-Division Multiple Access (OFDMA) for 802.11ax For 5G Wi-Fi: Orthogonal Frequency Division Multiplexing (OFDM) for 802.11a/n/ac Orthogonal Frequency-Division Multiple Access (OFDMA) for 802.11ax
Hardware Version:	Main PCB: V2.00 117_103 Radio module: V2.02 117_147

Software Version: V1.000.0000000.0.R

Data speed: For BLE: 1Mbps, 2Mbps

For Wi-Fi:

11b 1-11Mbps

11g 6-54Mbps

11n(HT20) 6.5-72.2Mbps

11ac(VHT20) 6.5 ~ 86.7Mbps

11ax(HE20) 7.313 ~ 143.382Mbps

Channel list:

For BLE:

Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

For 2.4G Wi-Fi:

802.11b/g/n(HT20)			
Ch	Fre(MHz)	Ch	Fre(MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

For 5G Wi-Fi:

Band (GHz)	Operating Channel Number	Channel center frequencies for 20MHz bandwidth (MHz)
5.15GHz~5.25GHz	36	5180
	40	5200
	44	5220
	48	5240
5.725GHz~5.825GHz	149	5745
	153	5765



	157	5785
	161	5805
	165	5825

Antenna Type: FPC Antenna

Antenna Gain: For BLE: 1.4 dBi
For 2.4G Wi-Fi: 1.4 dBi
For 5G Wi-Fi: 2.4 dBi

Description of the EUT: The Equipment Under Test (EUT) is a IMOU Smart Lock with BLE & WIFI Module. The EUT support Wi-Fi operated at 2.4GHz and 5GHz.

Test sample no.: SHA-1046750-2 (Radiated sample)
SHA-1046750-3 (Conducted sample)

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.



5 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2024 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Measurement Guidance v05r02 and ANSI C63.10-2020.



6 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition		Test Site	Test Result		
			Pass	Fail	N/A
§15.207	Conducted emission AC power port	Site 1	☒	☐	☐
§15.247 (b) (3)	Conducted peak (average) output power	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	Site 1	☒	☐	☐
§15.247(d)	Spurious RF conducted emissions	Site 1	☒	☐	☐
§15.247(d)	Band edge	Site 1	☒	☐	☐
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1	☒	☐	☐

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a FPC Internal Antenna, which 2.4G gain is 1.4 dBi and 5G gain is 2.4 dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.



7 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BQWU-CUBO2-A1, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

This report is only for 2.4GHz Wi-Fi.

We tested it and listed the worst data in this report.

SUMMARY:

All tests according to the regulations cited on page 7 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: June 23, 2026

Testing Start Date: June 26, 2026

Testing End Date: July 15, 2026

- TÜV SÜD Products Testing (Shanghai) Co., Ltd.

Reviewed by:

Prepared by:

Tested by:



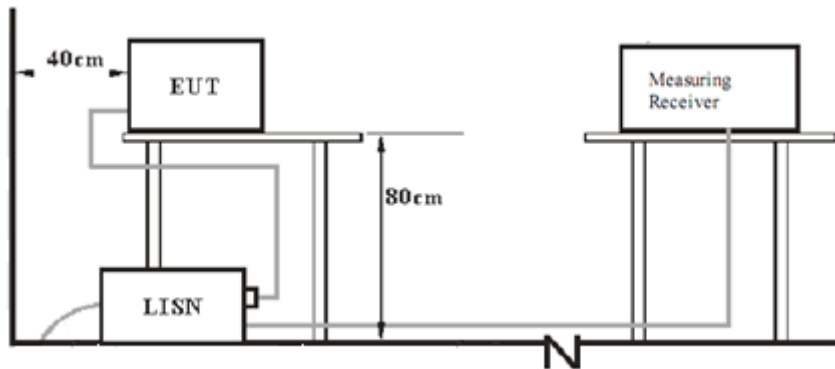
Hui TONG
Review Engineer

Wenqiang LU
Project Engineer

Doujun XU
Test Engineer

8 Test Setups

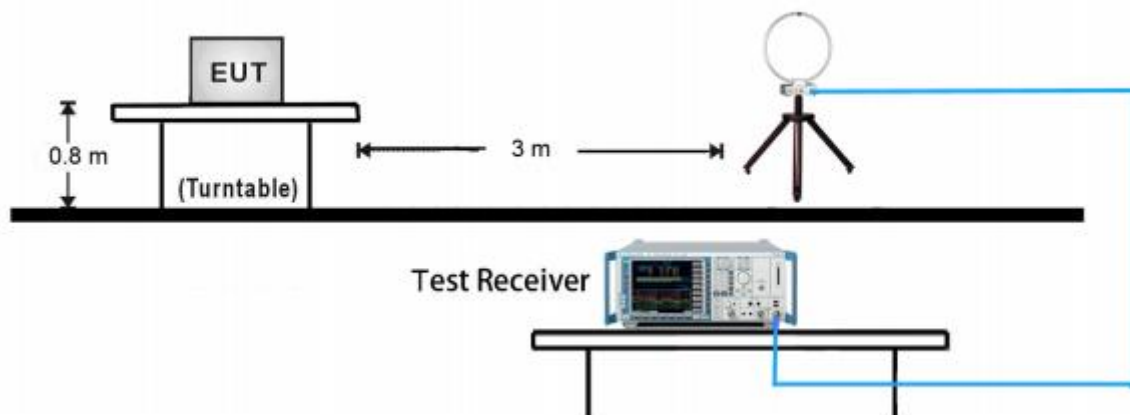
8.1 AC Power Line Conducted Emission test setups



Note: for floor-standing equipment, the supporting table (80 cm) shall be replaced by a insulating material (up to 12 mm thick).

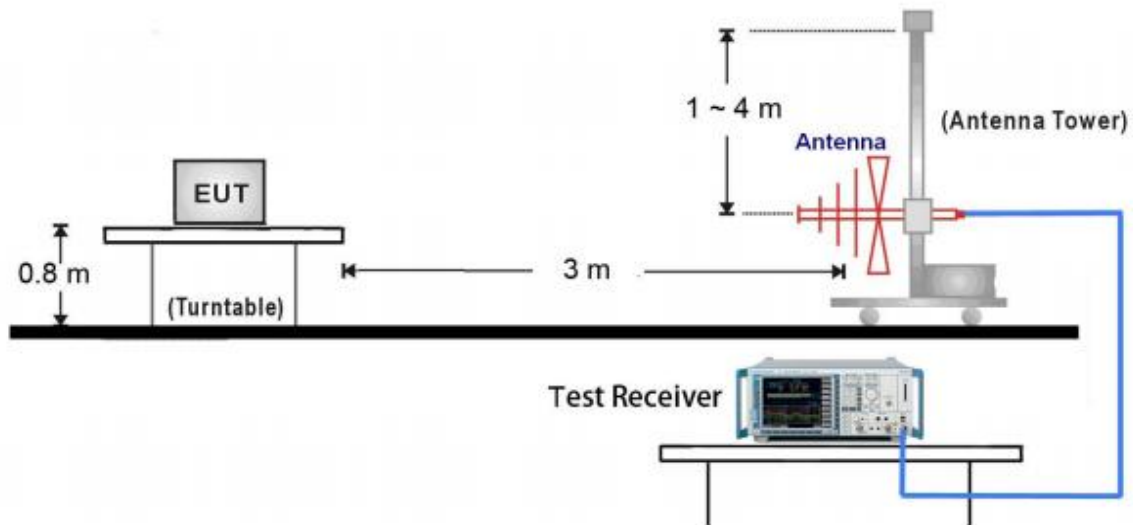
8.2 Radiated test setups

9kHz ~ 30MHz Test Setup:



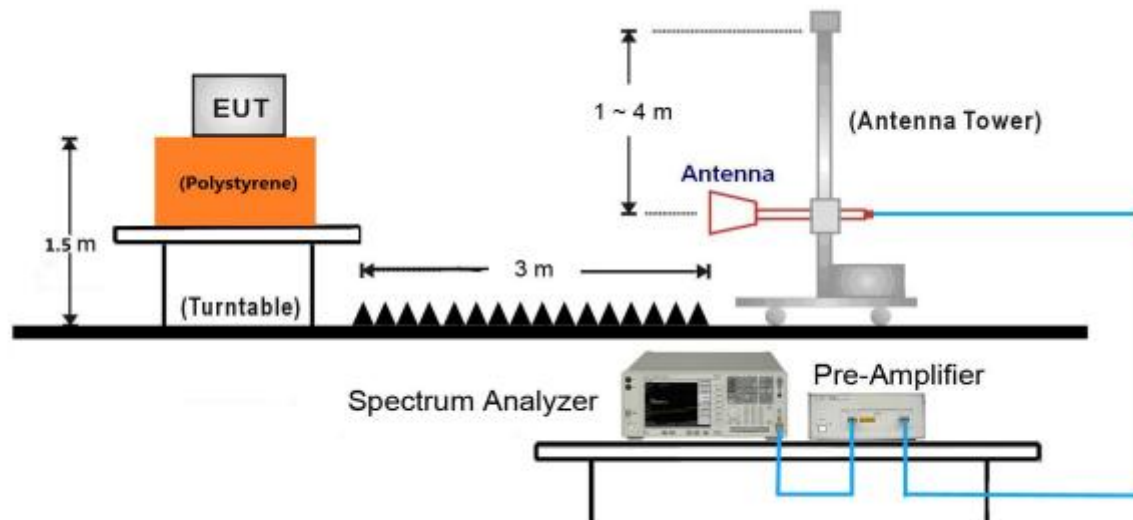
Note: for floor-standing equipment, the supporting table (80 cm) shall be replaced by a insulating material (up to 12 mm thick).

30MHz ~ 1GHz Test Setup:

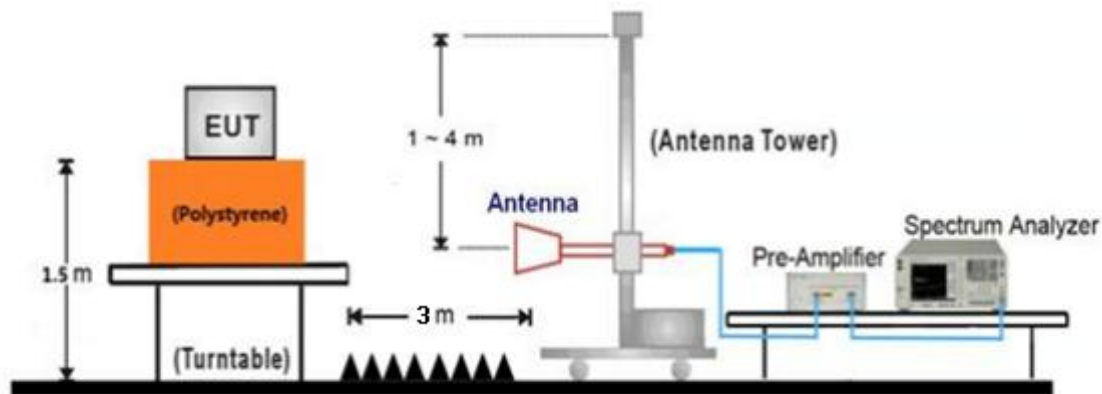


Note: for floor-standing equipment, the supporting table (80 cm) shall be replaced by a insulating material (up to 12 mm thick).

1GHz ~ 18GHz Test Setup:

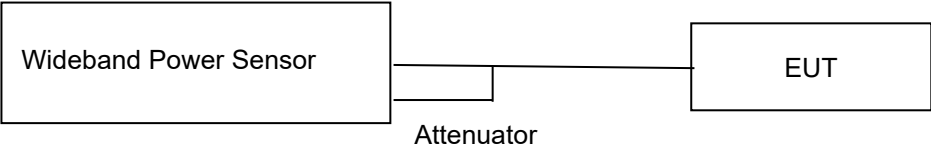


18GHz ~ 25GHz Test Setup:

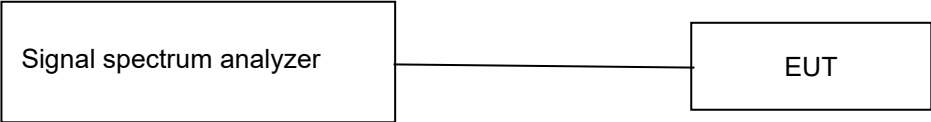


8.3 Conducted RF test setups

For Conducted peak output power



For other test items



9 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenove	E470	PF-OU5TS7 17/09

Test software: SecureCRT.exe, which used to control the EUT in continues transmitting mode.

The system was configured to 802.11b/g/n-HT20/ax-HE20 channel 1(2412MHz), 6(2437MHz), and 11(2462MHz).

Test Mode Applicability and Tested Channel Detail:

Mode	Tested Channel	Data Rate (Mbps)	Modulation	Index Value (Power level setting)
802.11b	1	1	CCK	16
	6	1	CCK	16
	11	1	CCK	16
802.11g	1	6	OFDM	16
	6	6	OFDM	16
	11	6	OFDM	16
802.11n HT20	1	MCS0 (6.5Mbps)	OFDM	16
	6	MCS0 (6.5Mbps)	OFDM	16
	11	MCS0 (6.5Mbps)	OFDM	16
802.11ax HE20	1	MCS0 (7.313Mbps)	OFDM	16
	6	MCS0 (7.313Mbps)	OFDM	16
	11	MCS0 (7.313Mbps)	OFDM	16

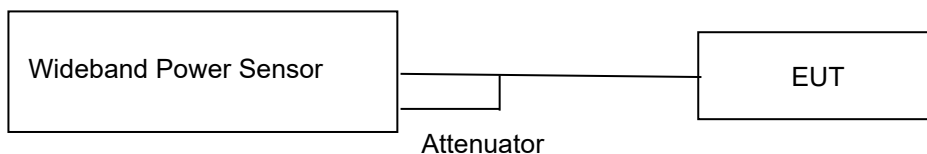
Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

10 Technical Requirement

10.1 Conducted peak output power

Test Method for conducted peak power

- 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.
- 4) Measure the peak power of the transmitter. This measurement is a peak over both the ON and OFF periods of the transmitter.



Wideband Power Sensor conducted test setup

Limits

According to §15.247 (b) (3), conducted peak output power limit as below:

	Frequency Range	Limit	Limit
	MHz	W	dBm
Conducted peak output power	2400-2483.5	≤1	≤30

Test result (conducted peak) as below table

B mode

Frequency (MHz)	Conducted Peak Output Power (dBm) §15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	17.57	≤30	Pass
2437MHz	17.72	≤30	Pass
2462MHz	17.88	≤30	Pass

G mode

Frequency (MHz)	Conducted Peak Output Power (dBm) §15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	25.28	≤30	Pass
2437MHz	25.42	≤30	Pass
2462MHz	25.57	≤30	Pass



N20 mode

Frequency (MHz)	Conducted Peak Output Power (dBm) §15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	25.09	≤30	Pass
2437MHz	25.20	≤30	Pass
2462MHz	25.38	≤30	Pass

AX20 mode

Frequency (MHz)	Conducted Peak Output Power (dBm) §15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	25.17	≤30	Pass
2437MHz	25.34	≤30	Pass
2462MHz	25.29	≤30	Pass

10.2 6dB bandwidth

Test Method for 6 dB Bandwidth

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. RBW=1% to 5% of the occupied bandwidth but not less than 100kHz, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
5. Use the automatic bandwidth measurement capability of an instrument, use the X dB bandwidth mode with X set to 6 dB.
6. Allow the trace to stabilize, record the 6 dB Bandwidth value.

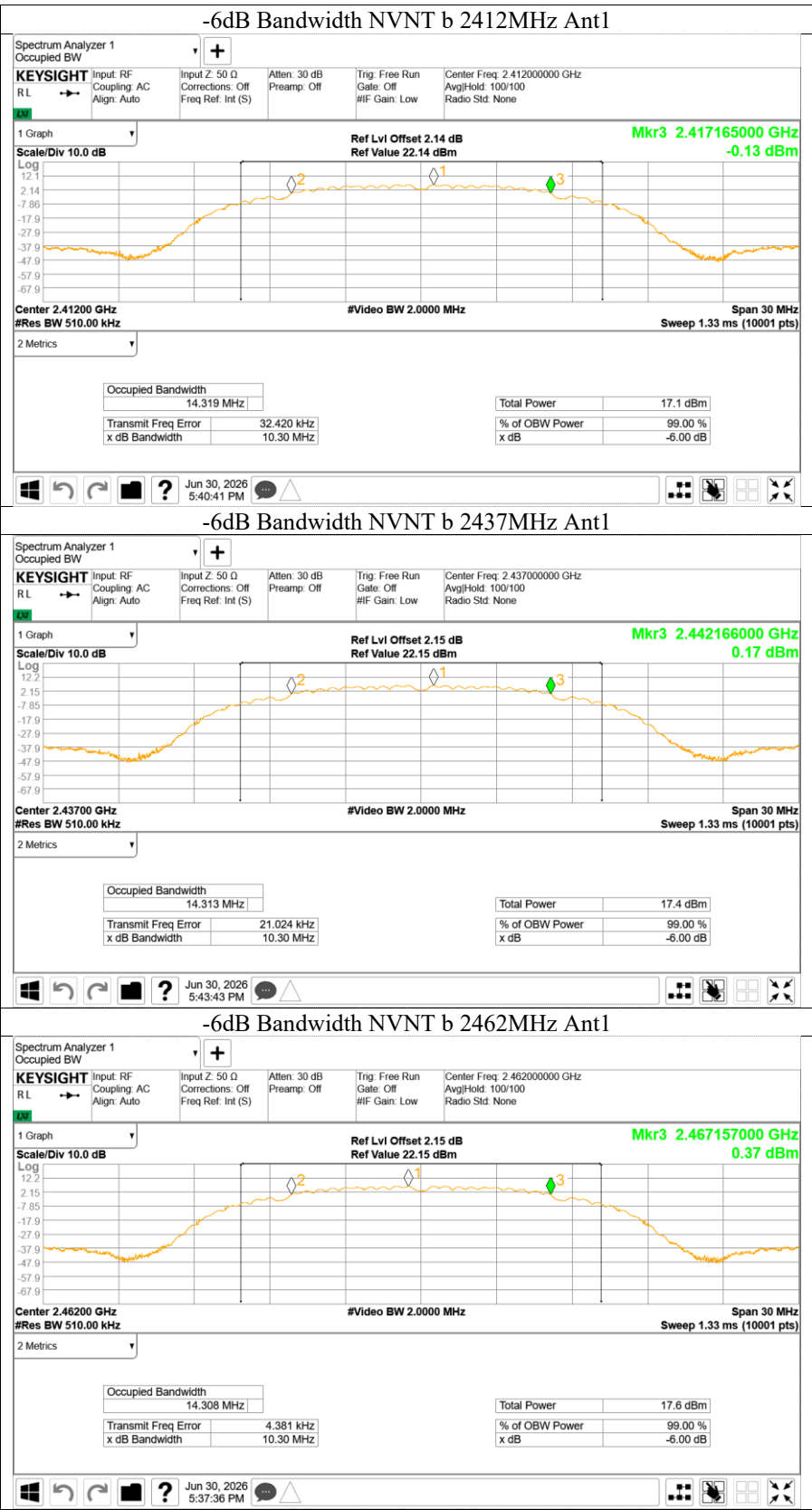
Limit

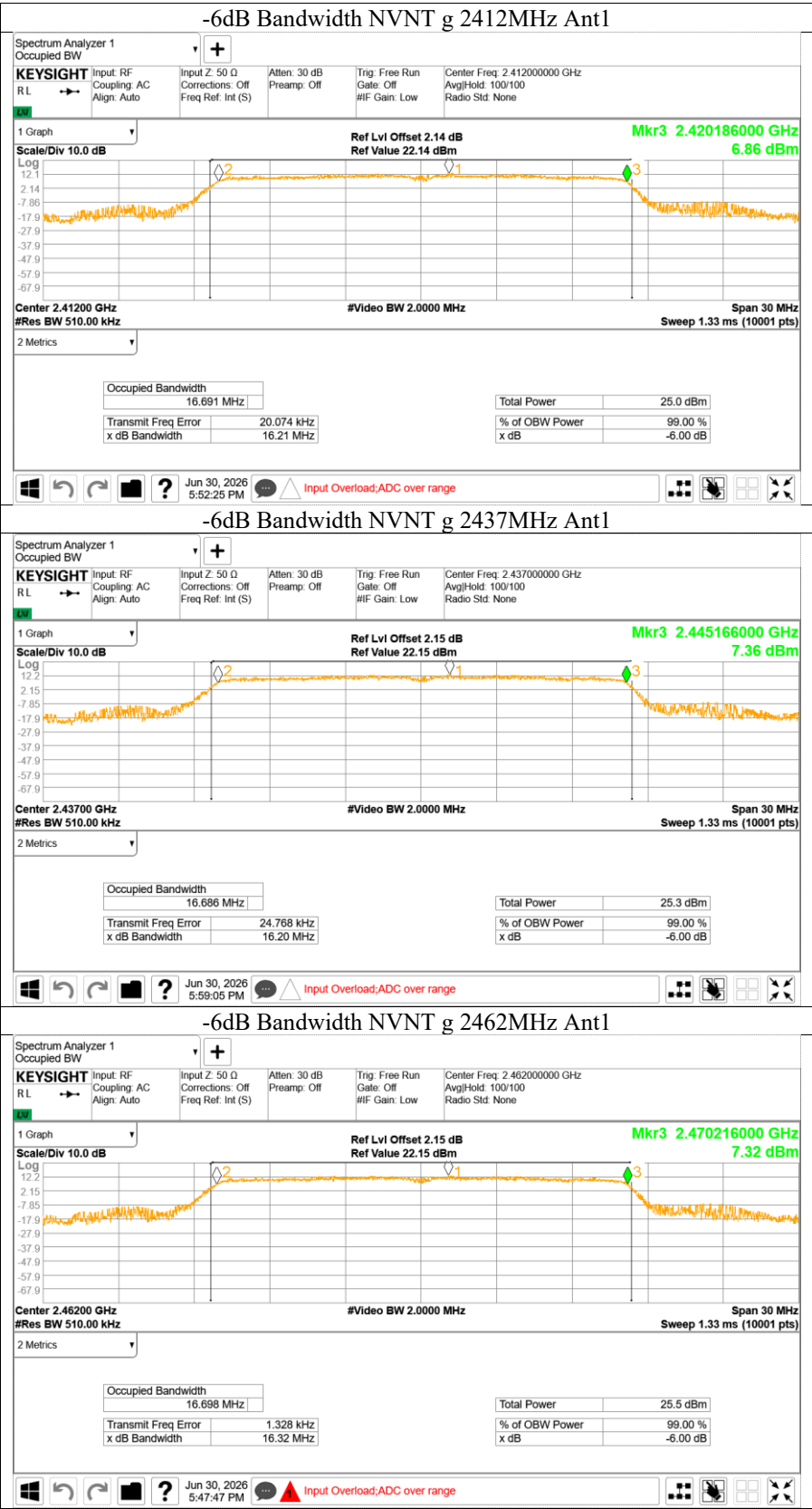
6dB bandwidth Limit [kHz]

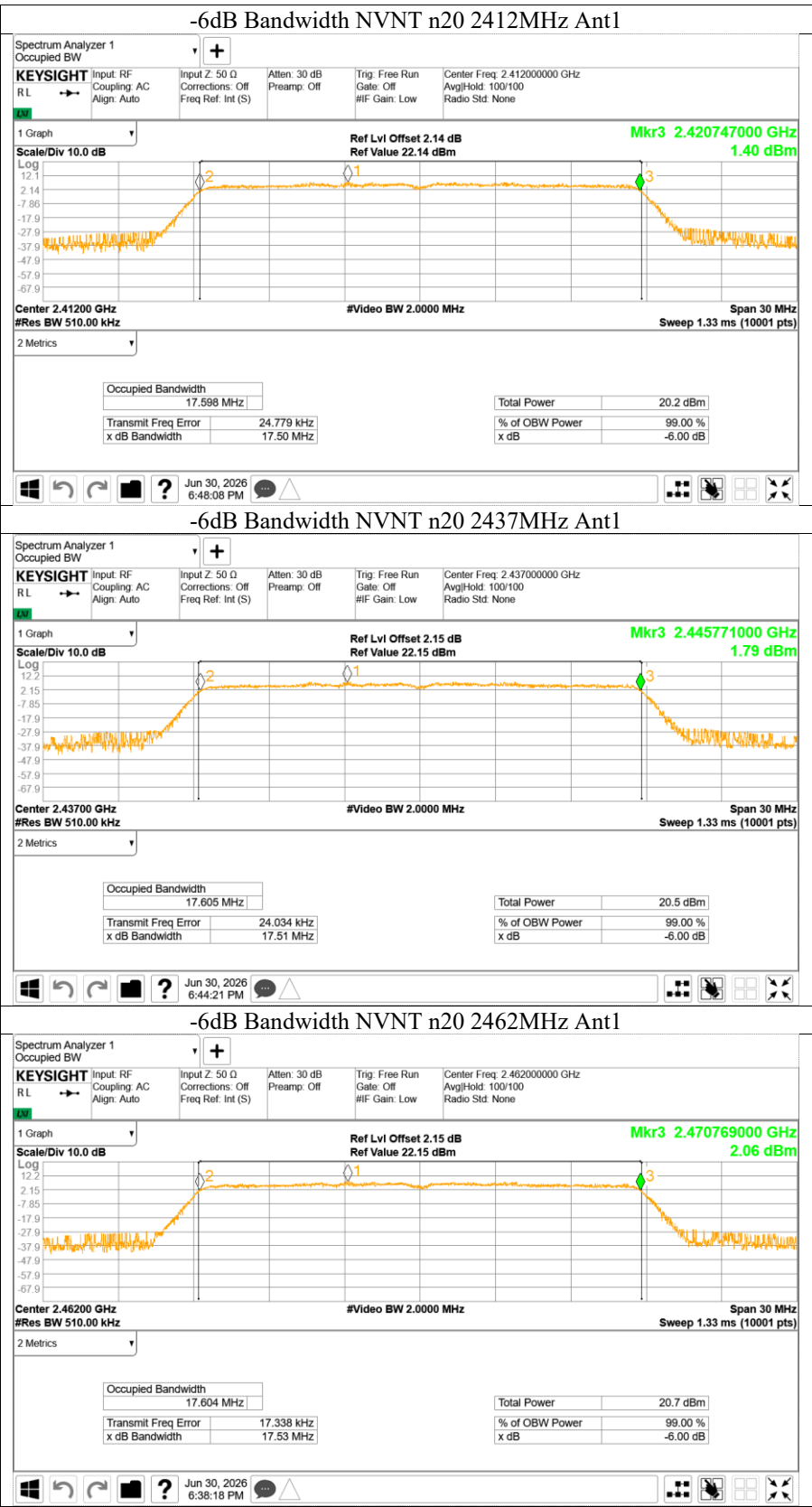
≥ 500

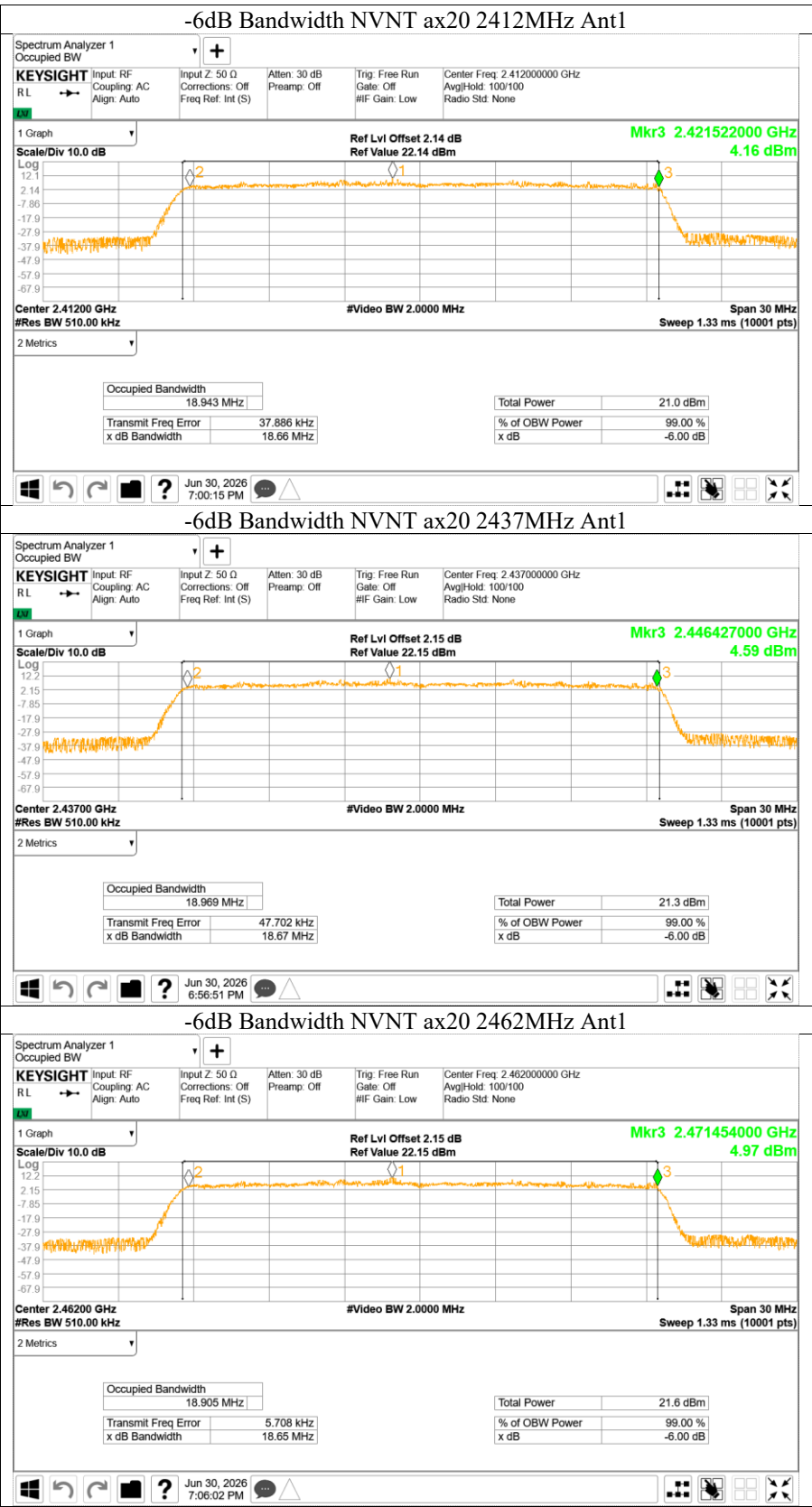
Test Result

Test Mode	Frequency MHz	6dB bandwidth (MHz)		Result
		result	limit	verdict
802.11b	2412	10.297	≥ 0.5	Pass
	2437	10.301	≥ 0.5	Pass
	2462	10.296	≥ 0.5	Pass
802.11g	2412	16.205	≥ 0.5	Pass
	2437	16.205	≥ 0.5	Pass
	2462	16.319	≥ 0.5	Pass
802.11n(HT20)	2412	17.502	≥ 0.5	Pass
	2437	17.511	≥ 0.5	Pass
	2462	17.53	≥ 0.5	Pass
802.11ax(HE20)	2412	18.664	≥ 0.5	Pass
	2437	18.668	≥ 0.5	Pass
	2462	18.653	≥ 0.5	Pass









10.3 Power spectral density

Test Method

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

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
5. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
6. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm/3KHz]
 ≤ 8

Test result
802.11 B

Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-10.73	Pass
Middle channel 2437MHz	-10.4	Pass
High channel 2462MHz	-10.26	Pass

802.11 G

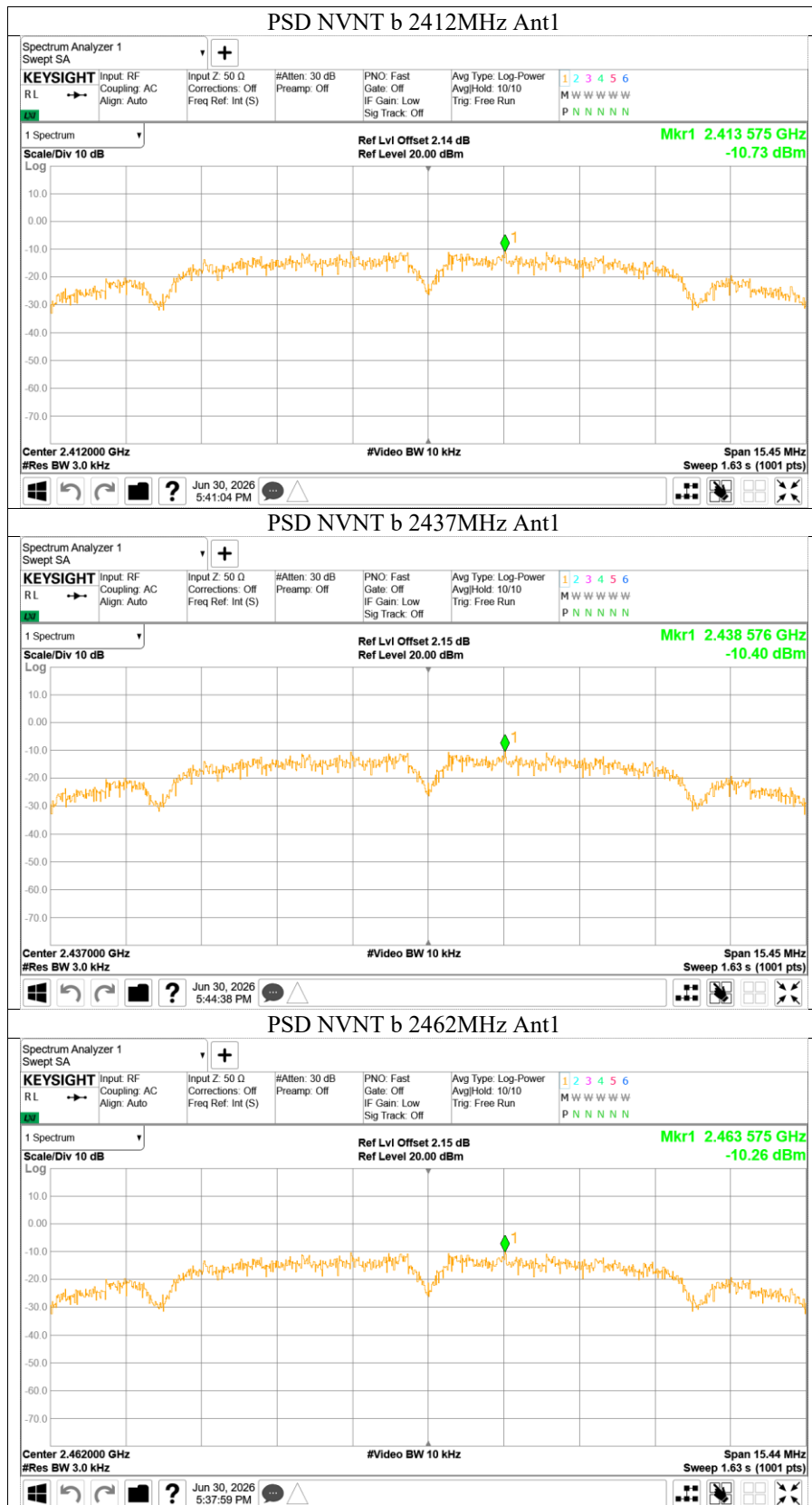
Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-5.78	Pass
Middle channel 2437MHz	-5.57	Pass
High channel 2462MHz	-5.33	Pass

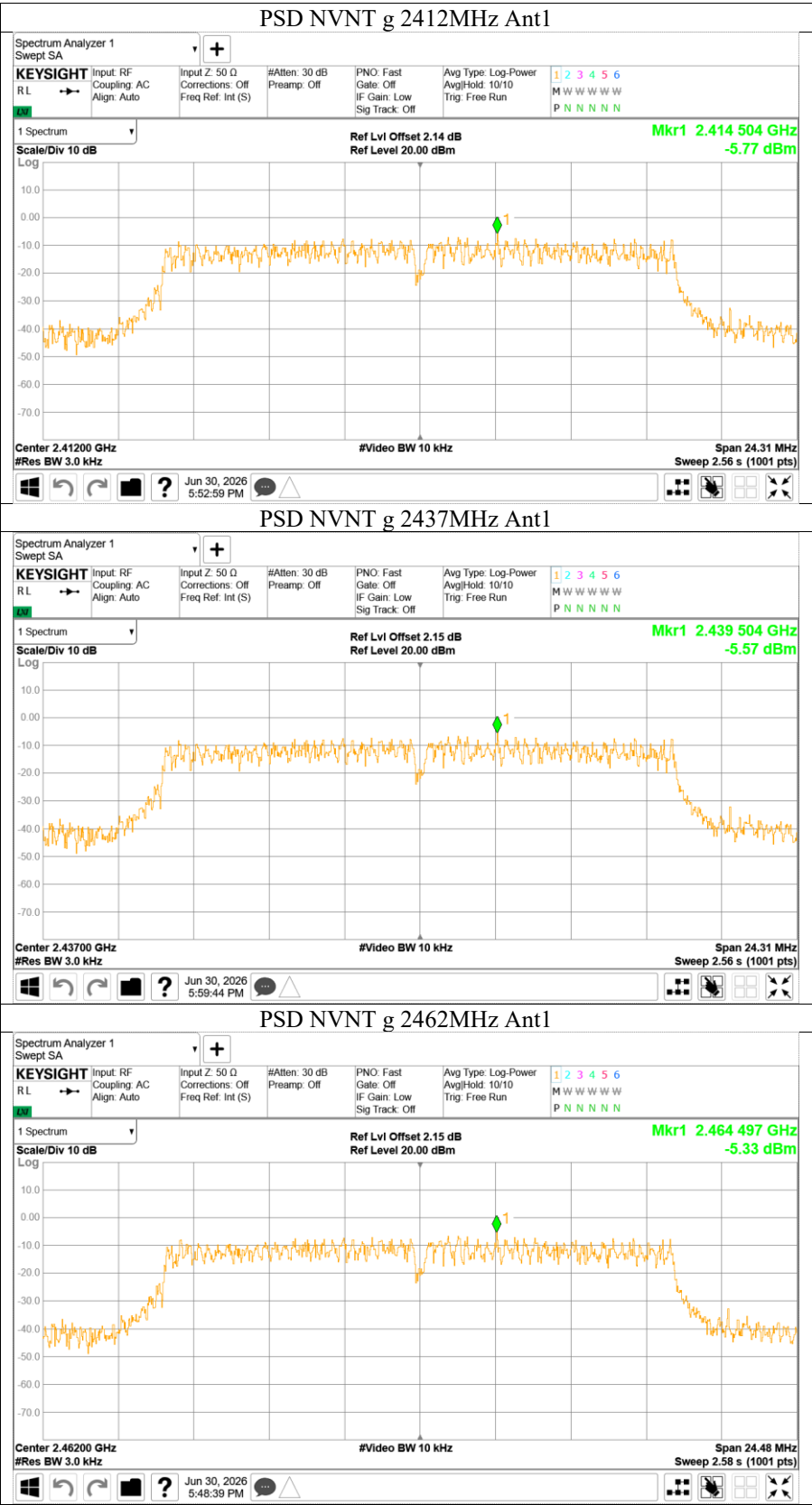
802.11 N20

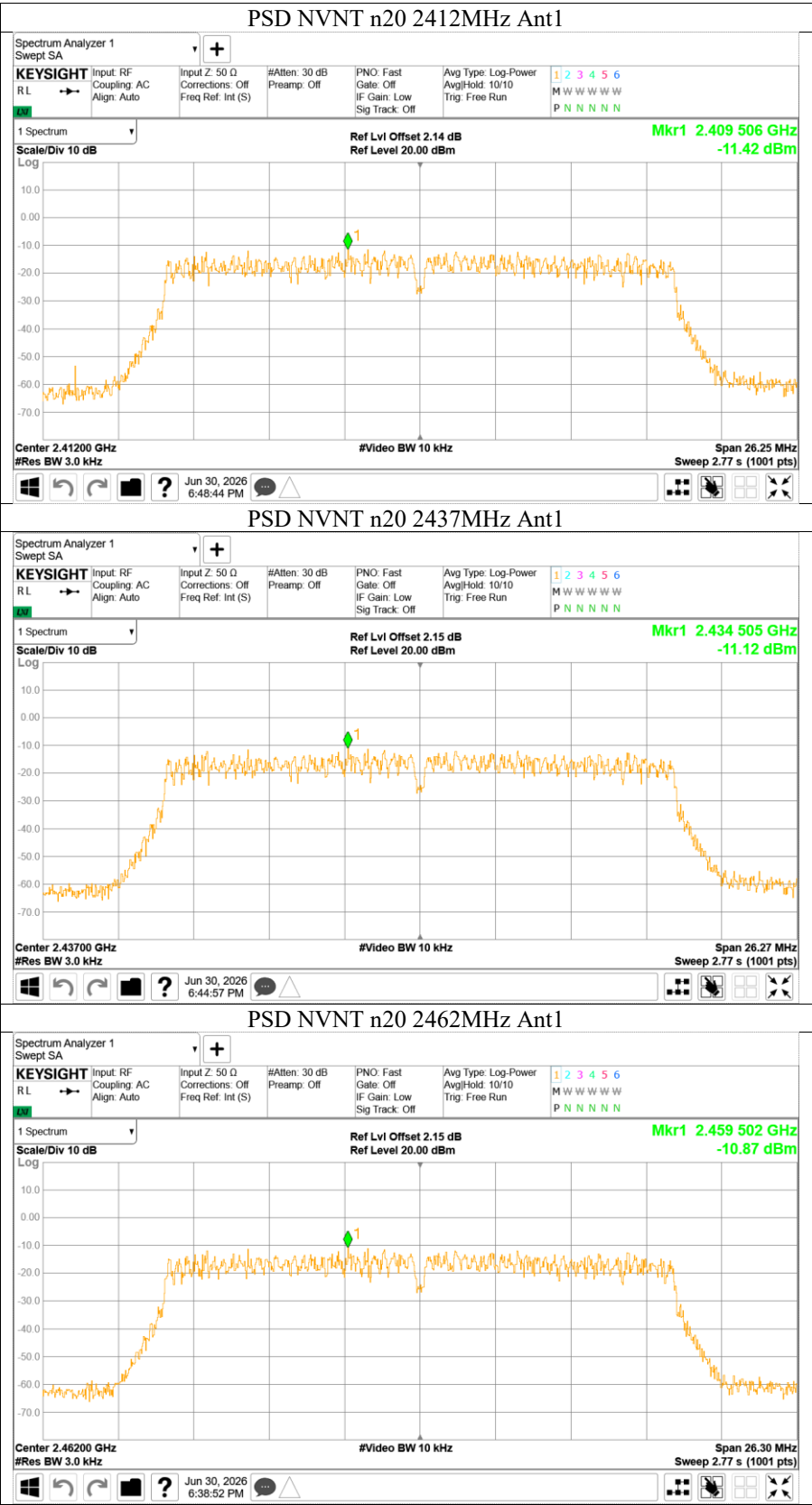
Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-11.43	Pass
Middle channel 2437MHz	-11.12	Pass
High channel 2462MHz	-10.87	Pass

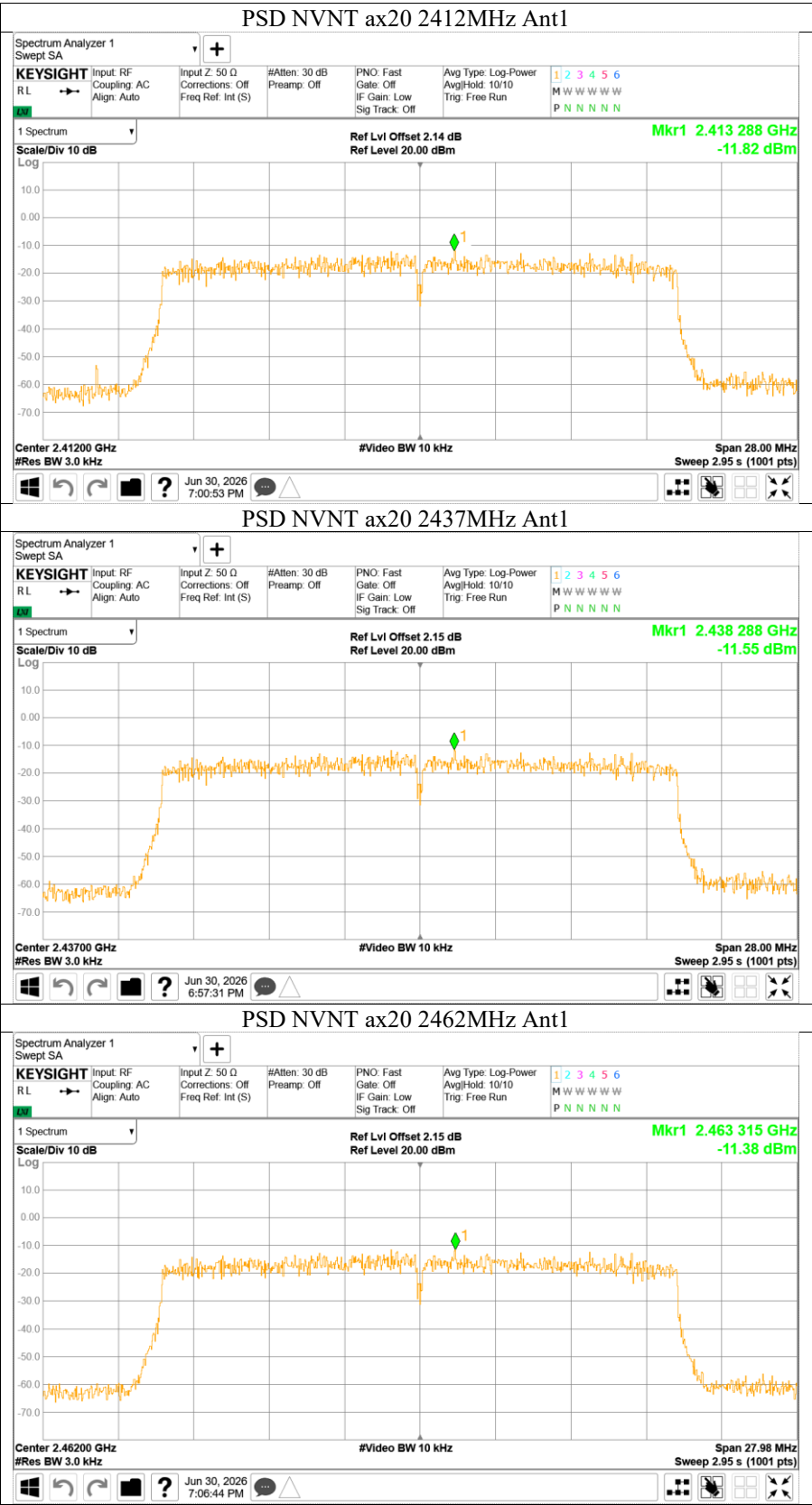
802.11 ax20

Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-11.82	Pass
Middle channel 2437MHz	-11.55	Pass
High channel 2462MHz	-11.38	Pass











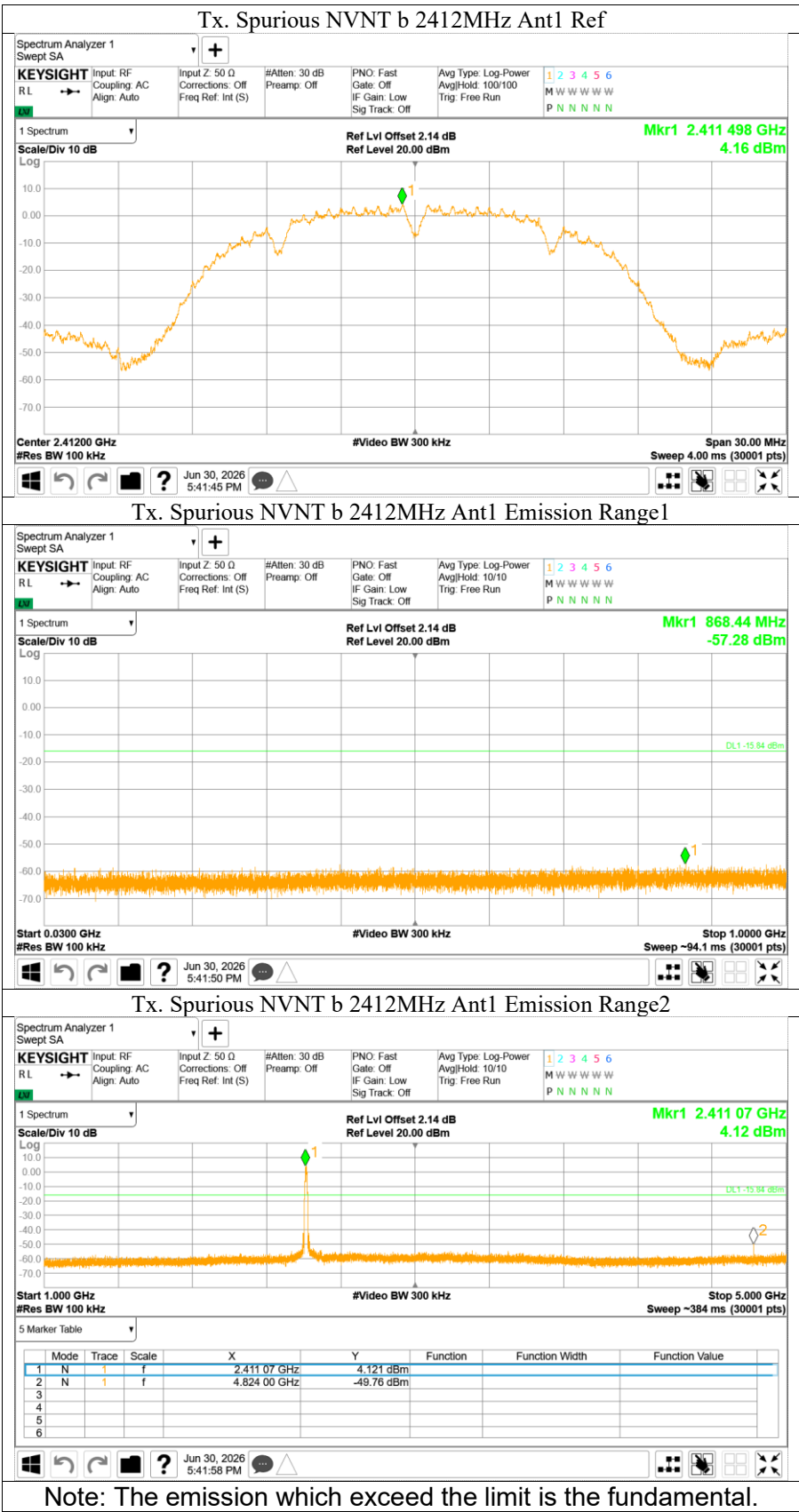
10.4 Spurious RF conducted emissions

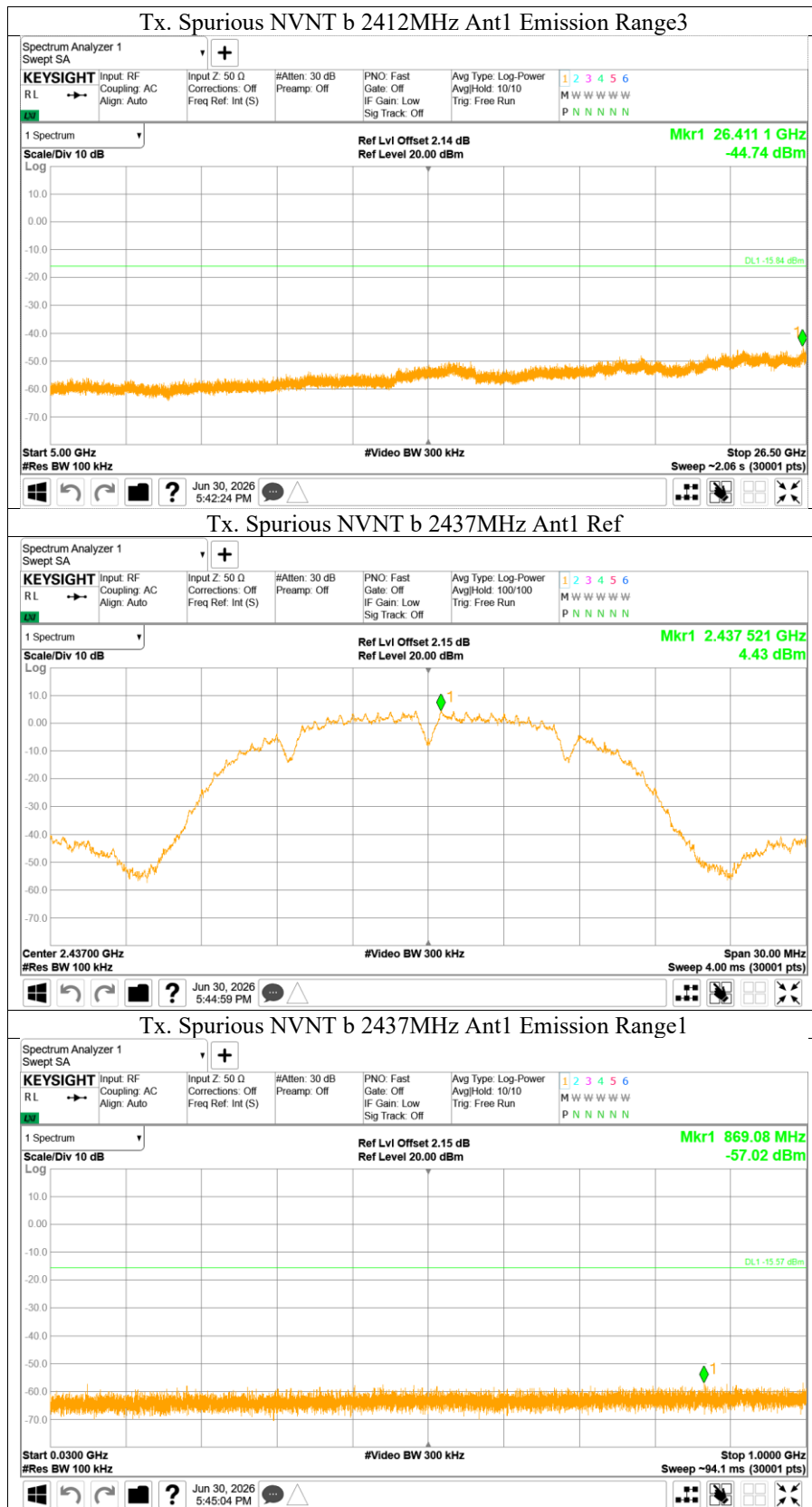
Test Method

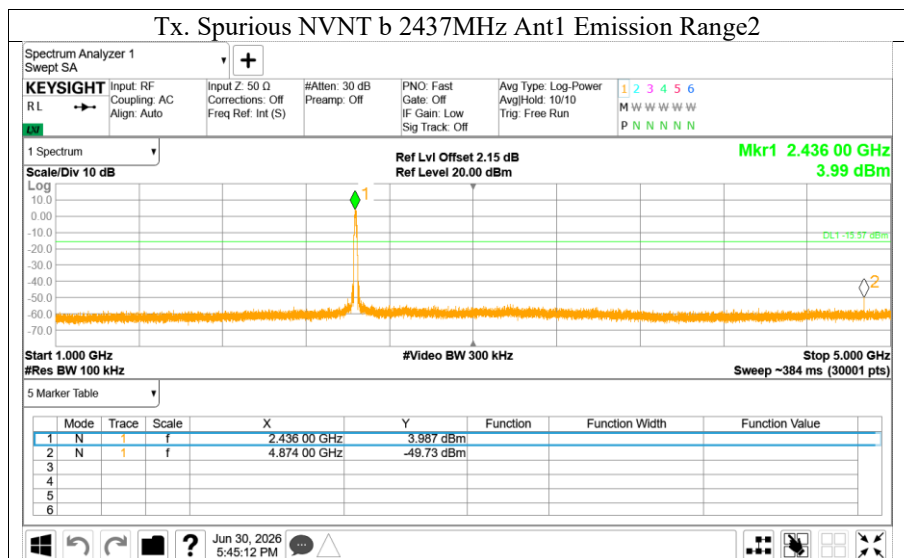
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. 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. Typically, several plots are required to cover this entire span.
RBW = 100 kHz, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
5. The level displayed must comply with the limit specified in this Section. Submit these plots.
6. Repeat above procedures until all frequencies measured were complete.

Limit

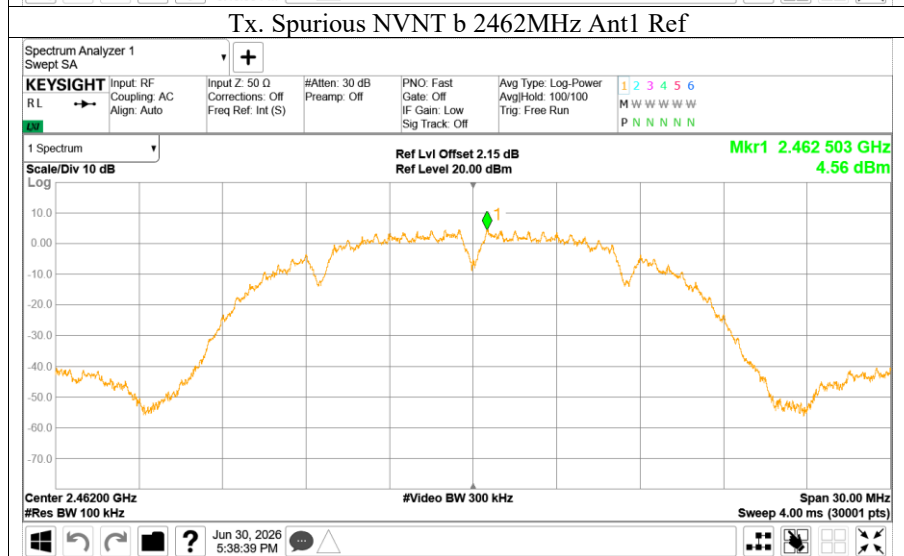
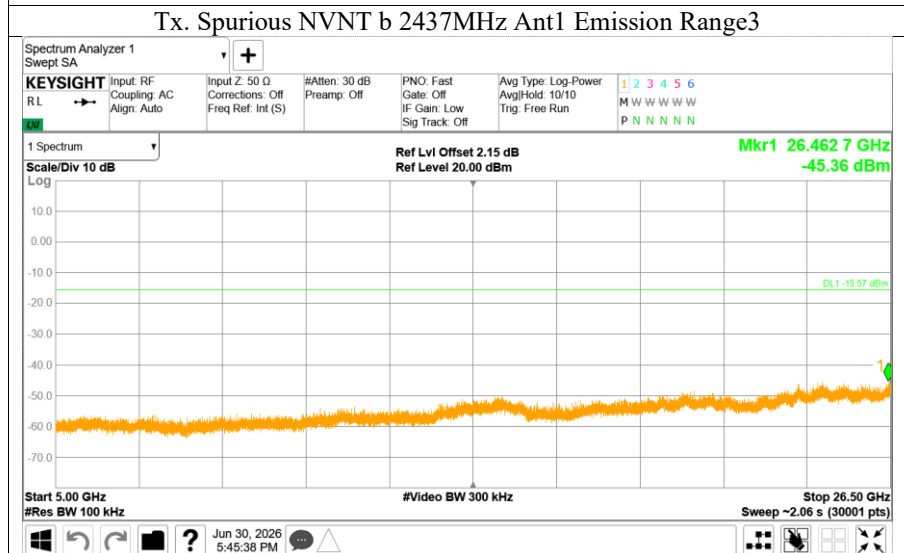
Frequency Range MHz	Limit (dBc)
30-25000	-20

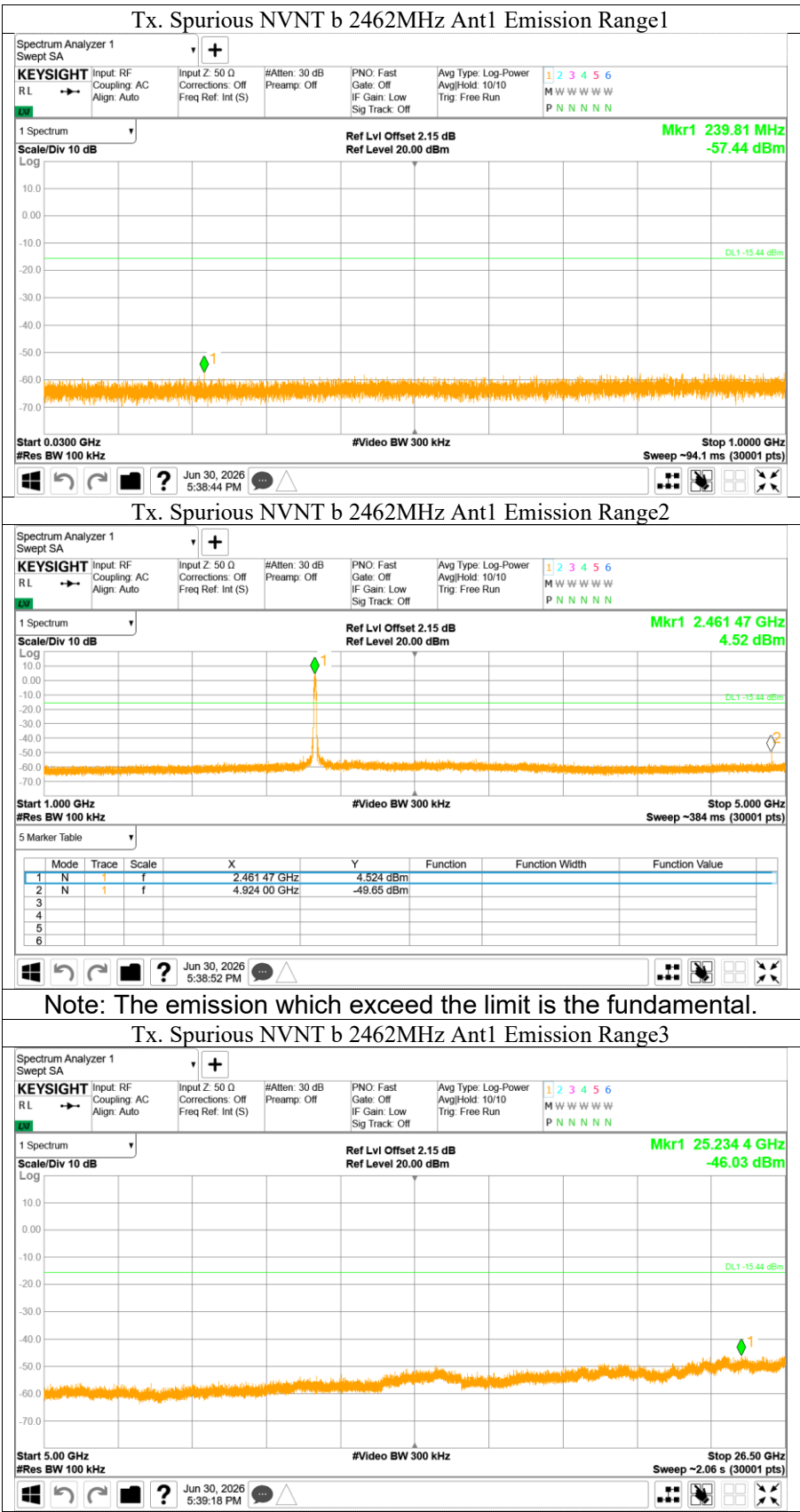


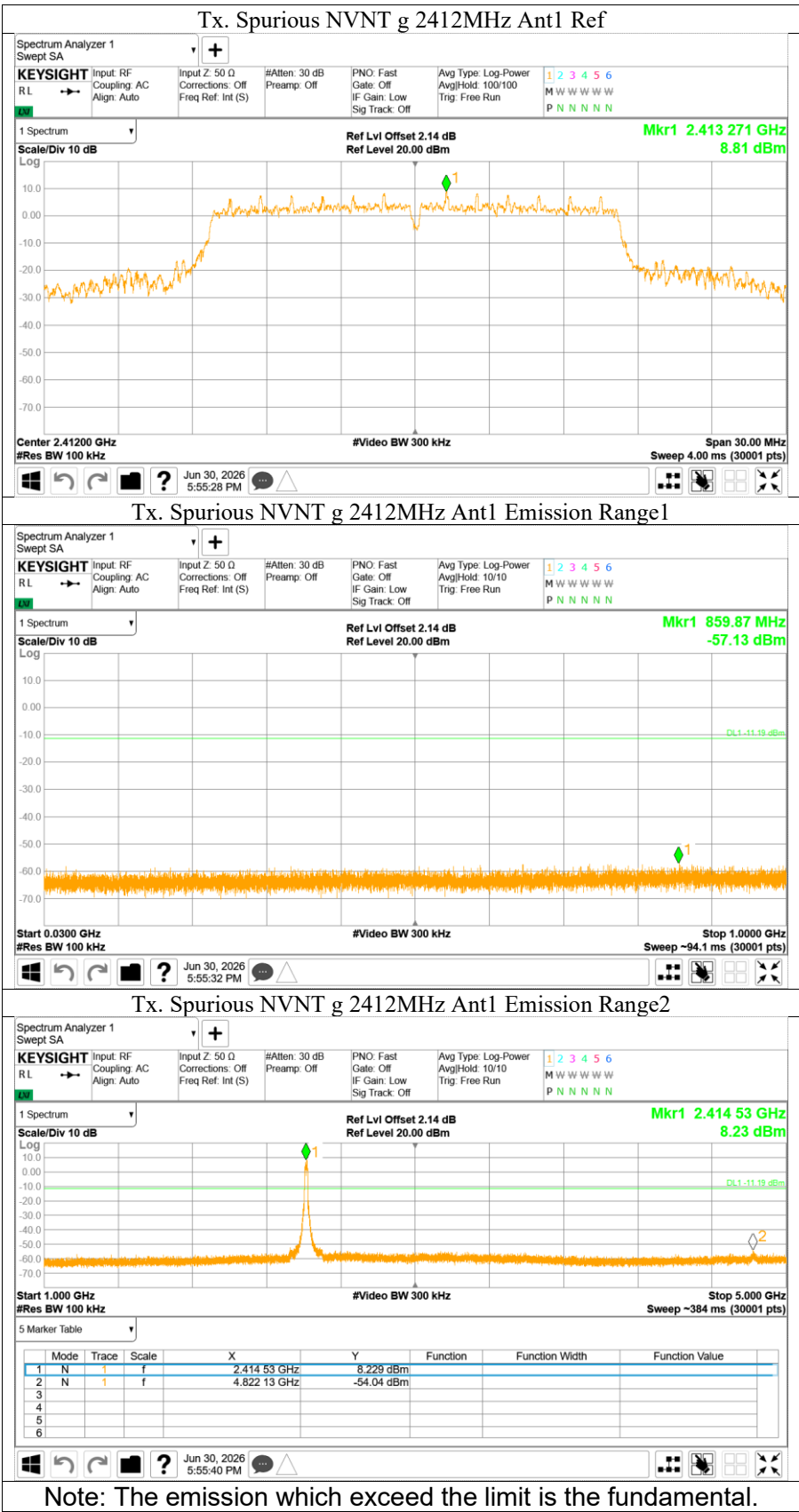


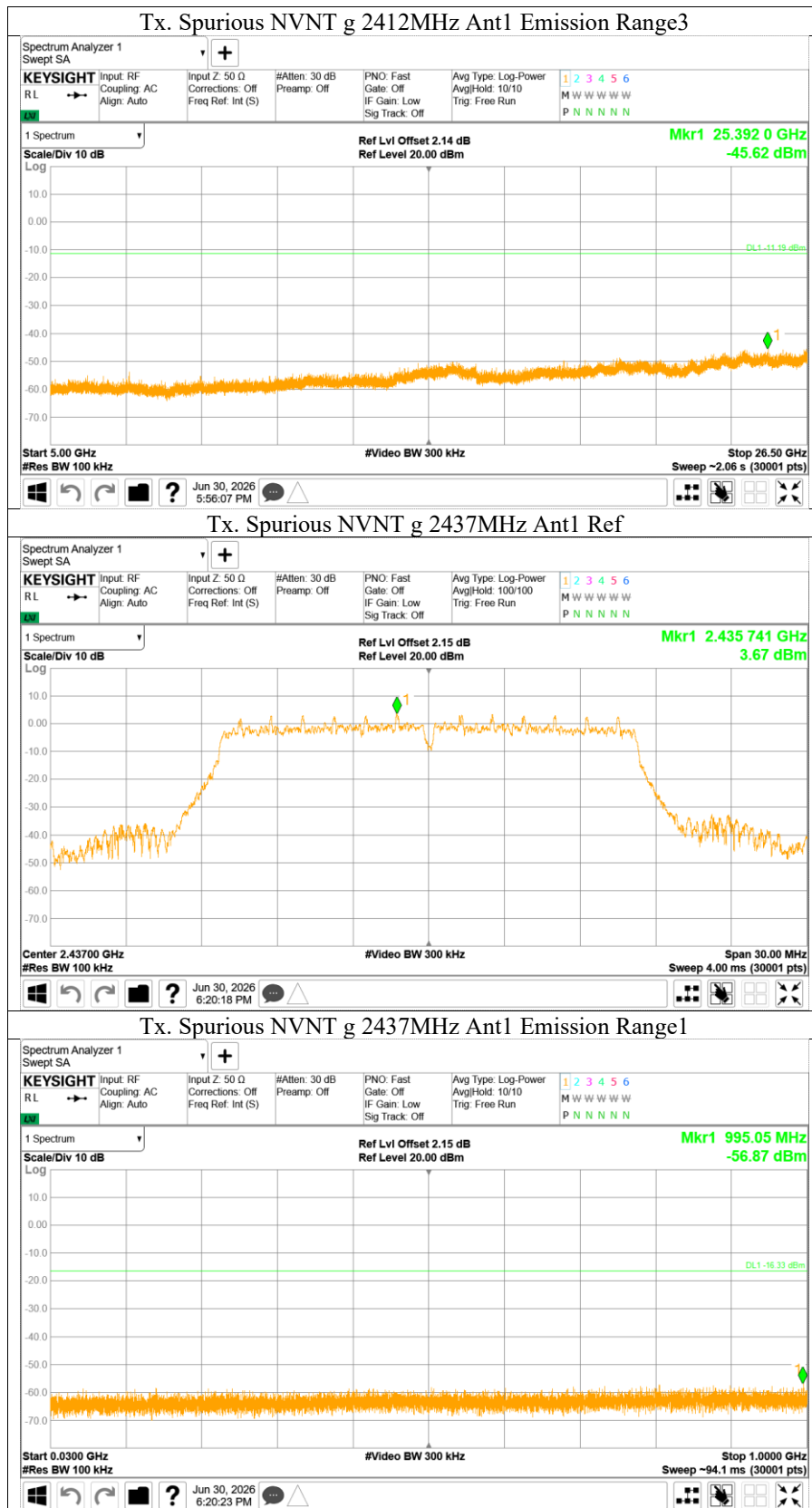


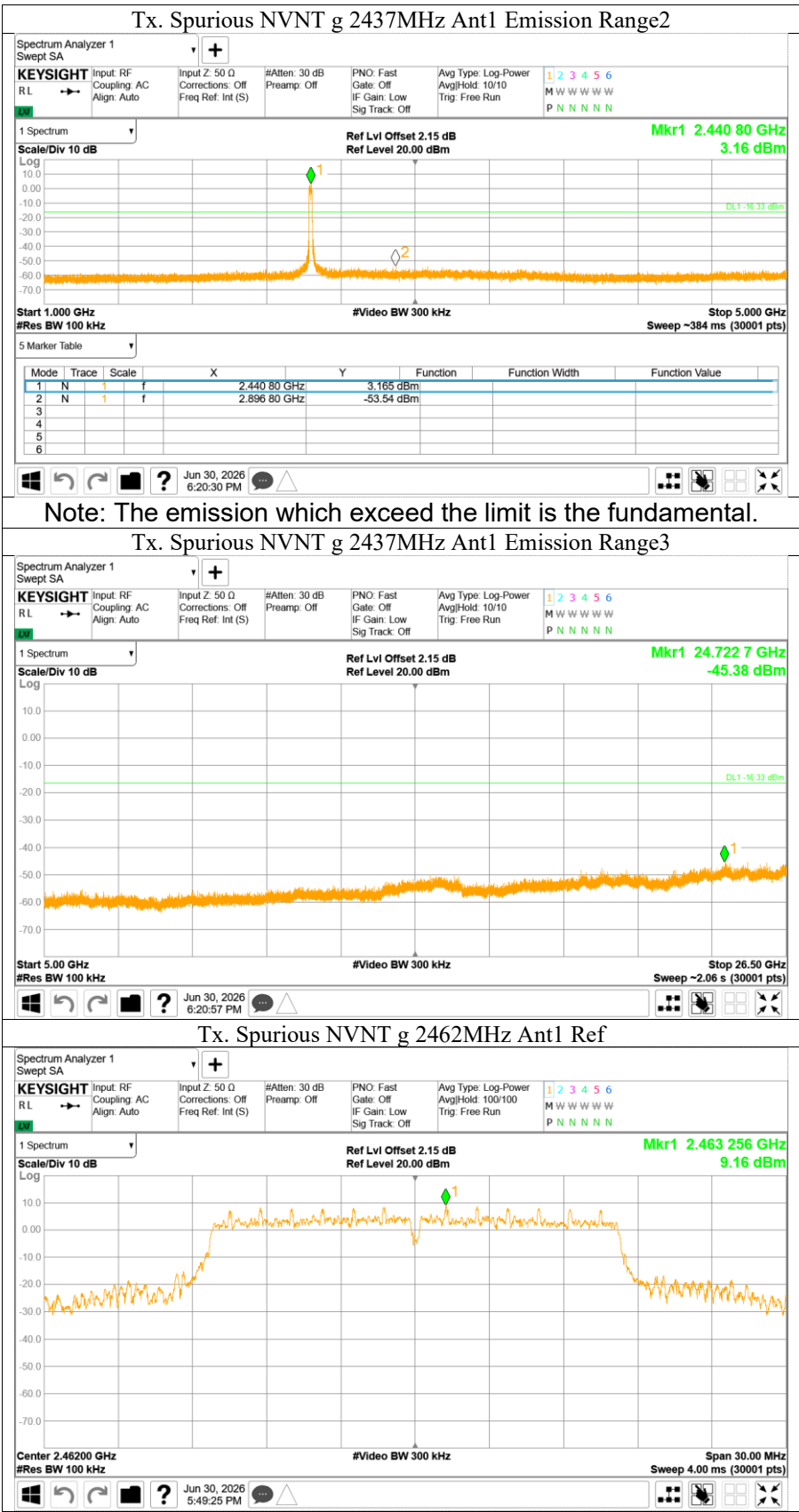
Note: The emission which exceed the limit is the fundamental.

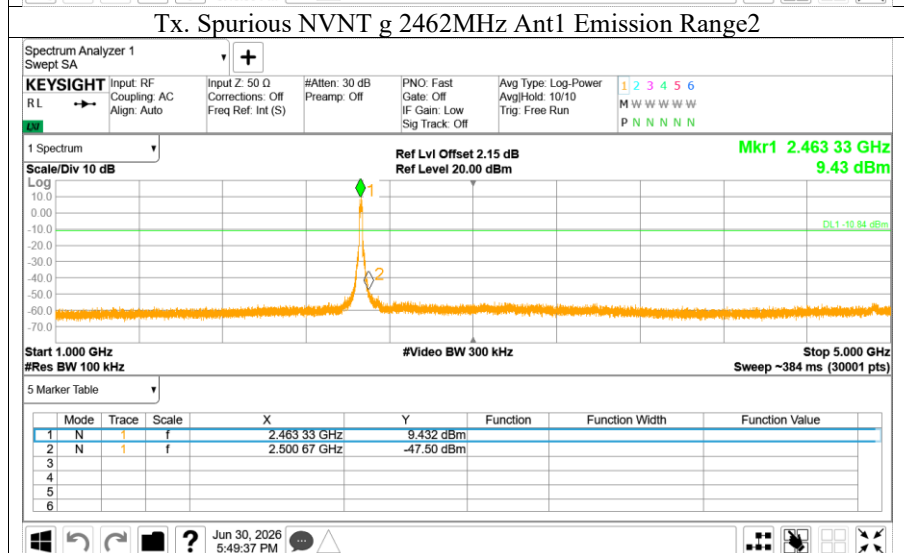
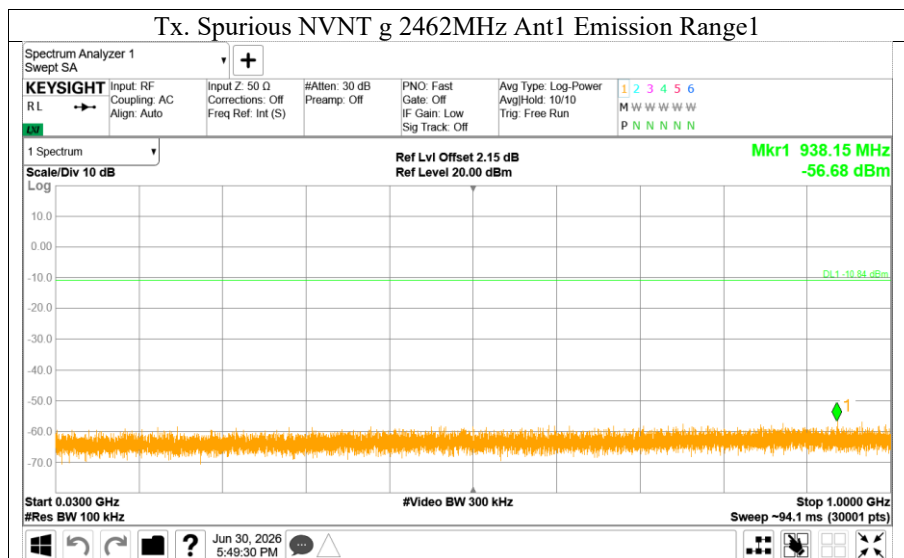












Note: The emission which exceed the limit is the fundamental.

