

JAPAN RADIO TEST REPORT

The Art of Utility AB

Bluetooth Speaker

Model Number: Mondo BT Speaker Medium

Applicant:	The Art of Utility AB
Address:	Hollandargatan 22, 113 59 Stockholm, Sweden
Prepared By:	EST Technology Co., Ltd.
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Report Number:	ESTE-R2409117
Date of Test:	Jul. 01, 2024 ~ Sep. 06, 2024
Date of Report:	Sep. 11, 2024

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Applicant: Address:	The Art of Utility AB Hollandargatan 22, 113 59 Stockholm, Sweden		
Manufacturer: Address:	Topalong Intelligent Technology (Dongguan) Co., Ltd Room 302, Building 3, No.7, Xinghua Road, Shijing, Dongcheng Subdistrict, Dongguan, Guangdong, China		
Factory: Address:	Topalong Intelligent Technology (Dongguan) Co., Ltd Room 302, Building 3, No.7, Xinghua Road, Shijing, Dongcheng Subdistrict, Dongguan, Guangdong, China		
E.U.T:	Bluetooth Speaker		
Model Number:	Mondo BT Speaker Medium		
Power Supply:	DC 11.1V; DC 20V From Adapter Input AC 100-240V, 50/60Hz		
Trade Name:	Mondo	Serial No.:	-----
Date of Receipt:	Jul. 01, 2024	Date of Test:	Jul. 01, 2024 ~ Sep. 06, 2024
Test Rule:	MIC Notice No.88 Appendix No.43 MIC Article 2 paragraph 1 item 19		
Equipment Rule:	MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the MIC rule requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. Date: Sep. 11, 2024		
Prepared by: Zephyr Zhu Zephyr Zhu / Assistant		Reviewed by: Seven Wang Seven Wang / Engineer	
		Approved by: Iceman Hu / Manager	
Other Aspects: None.			
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	Bluetooth Speaker
Model Number	:	Mondo BT Speaker Medium
Software Version	:	N/A
Hardware Version	:	N/A
Operation frequency	:	2402MHz~2480MHz
Number of channel	:	79
Declared Rated Power	:	GFSK: 0.06mW/MHz $\pi/4$ -DQPSK: 0.06mW/MHz 8-DPSK: 0.06mW/MHz
Conducted Antenna Power	:	GFSK: 0.0536mW/MHz $\pi/4$ -DQPSK: 0.0308mW/MHz 8-DPSK: 0.0305mW/MHz
Modulation Type	:	BT BDR(1Mbps): GFSK BT EDR(2Mbps): $\pi/4$ -DQPSK BT EDR(3Mbps): 8-DPSK
Sample Type	:	Prototype production

Note: For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

1.2. Antenna Information

Ant No.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	Internal	-	2.89
Note: 1. The antenna gain is declared by the customer and the laboratory is not responsible for the accuracy of the antenna gain. 2. The test results of this report only apply to the sample as received.					

1.3. Information of RF Cable

Cable Loss(dB)	Provided by
1.0	The Art of Utility AB
Note: 1. The customer declared the loss value of the RF Cable. and the test results of this report only apply to the sample as received. 2. The laboratory is not responsible for the accuracy of the cable loss.	

2.SUMMARY OF TEST

2.1.Summary of test result

No.	Description of Test Item	Results
1	Frequency Tolerance	PASS
2	Occupied Bandwidth& Spread Bandwidth	PASS
3	Spurious Emission Intensity	PASS
4	Antenna Power& Antenna Power Tolerance & EIRP Power	PASS
5	Dwell Time	PASS
6	Secondary Radiated Emissions	PASS
7	Interference Prevention Function	PASS
8	Construction Protection Confirmation Method	PASS

2.2. Test Facilities

EMC Lab : Accredited by CNAS, CHINA
Registration No.: L5288
This Accreditation is valid until: November 12, 2029

Recognized by FCC, USA
Designation Number: CN1215
This Recognition is valid until: January 31, 2026

Accredited by A2LA, USA
Registration No.: 4366.01
This Accreditation is valid until: January 31, 2026

Recognized by Industry Canada
CAB identifier No.: CN0035
This Recognition is valid until: January 31, 2026

Recognized by VCCI, Japan
Registration No.: C-14103; T-20073; R-13663;
R-20103; G-20097
Date of registration: Apr. 20, 2020
This Recognition is valid until: Apr. 19, 2026

Recognized by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Recognized by Intertek
Registration No.: 2011-RTL-L2-64
Date of registration: November 08, 2018

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan,
Guangdong, China

2.3.Measurement uncertainty

Uncertainty for Radiated Spurious Emission test in RF chamber	± 4.60 dB(Polarize: H) (Bilog antenna 30M~1000MHz)
	± 4.68 dB(Polarize: V) (Bilog antenna 30M~1000MHz)
	± 4.96 dB (Horn antenna 1000M~25000MHz)
Uncertainty for Conduction Spurious emission test	0.26 dB
Uncertainty for Output power test	1.08dB
Uncertainty for Power density test	0.26 dB
Uncertainty for Temperature and humidity test	2%
	1°C
Uncertainty for Frequency range test	7×10^{-8}
Uncertainty for Bandwidth test	7×10^{-8}
Uncertainty for DC power test	0.042 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

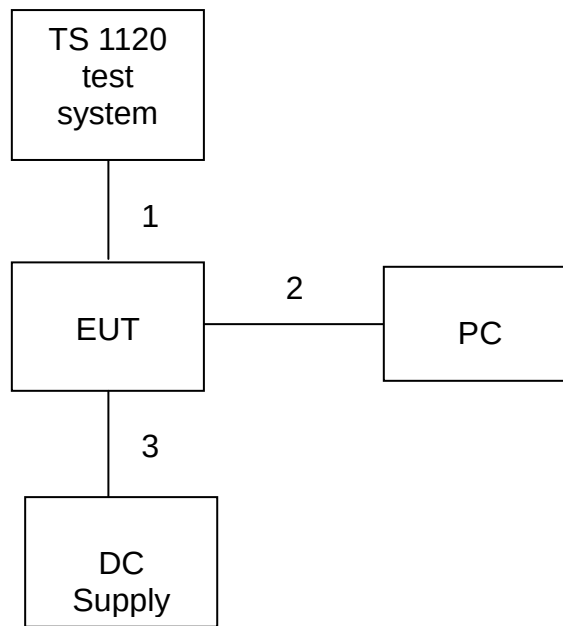
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

2.4.Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	Equipment No.	Series No.
PC	Laptop computer	Lenovo	Think pad E485	EST-E315	PF-1E3QZY

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1m	RF Cable
2	NO	NO	0.3m	USB Cable
3	NO	NO	1.2m	DC Cable

2.5. Block Diagram



(EUT: Bluetooth Speaker)

2.6. Test Mode

Combining all the rates, modulations, and packet types, the Pre-scans had been carried out. The worst case test mode was selected for the final test as listed below
(The modulation type GFSK , $\pi/4$ -DQPSK and 8-DPSK were the worst case test mode).

Test Item	Modulation Type	Operating Mode	Packet Type	Test Channel
Frequency Tolerance	-	Carrier	-	Low/Middle/High
Occupied Bandwidth& Spread Bandwidth	GFSK& $\pi/4$ -DQPSK&8-DPSK	Hopping	DH5	All Channel Hopping
Spurious Emission Intensity	GFSK& $\pi/4$ -DQPSK&8-DPSK	Non Hopping	DH5	Low/Middle/High
Antenna Power& Antenna Power Tolerance &EIRP Power	GFSK& $\pi/4$ -DQPSK&8-DPSK	Hopping	DH5	All Channel Hopping
Dwell Time	GFSK& $\pi/4$ -DQPSK&8-DPSK	Hopping	DH1/DH3/DH5	Middle(All Channel Hopping)
Secondary Radiated Emissions	GFSK& $\pi/4$ -DQPSK&8-DPSK	Receive	-	-
Interference Prevention Function	Normal Use			

2.7.Power Setting of Test Software

Software Name	Actions BT FCC Tool V2.25		
Frequency(MHz)	2402	2441	2480
GFSK(1Mbps)	10	10	10
$\pi/4$ -DQPSK(2Mbps)	10	10	10
8-DPSK(3Mbps)	10	10	10

2.8.Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	-	-

2.9. Test Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
TS 1120	Tonscend	/	/			
Test Software	Tonscend	TS1120-3	3.3.38	LISAI	June 11,24	June 10,25
RF Control Unit	Tonscend	JS0806-2	EST-E134	LISAI	June 11,24	June 10,25
WiFi-7GHz Band Extender	Tonscend	TS-WF7U	EST-E135	LISAI	June 11,24	June 10,25
Signal and Spectrum Analyzer	Rohde &Schwarz	FSV 40	EST-E136	LISAI	June 11,24	June 10,25
Wireless Connectivity Tester	Rohde &Schwarz	CMW 500	EST-E137	LISAI	June 11,24	June 10,25
MXG Vector Signal Generator	Keysight	N5182B	EST-E138	LISAI	June 11,24	June 10,25
MXG Vector Signal Generator	Keysight	N5181A	EST-E139	LISAI	June 11,24	June 10,25
DC Power Supply	Agilent	E3642A	EST-E140	LISAI	June 11,24	June 10,25
AC Source	CHANGJIANG	3KV	EST215-007	LISAI	June 11,24	June 10,25

Note: The calibration agency listed on the table corresponds to item ii c) of Article 24-2 paragraph 4.

2.10. Power Supply of Test

Input Voltage(V)	Normal	Low(-10%)	High(+10%)
	11.1	9.99	12.21
Supply voltage to the RF circuitry(V)	3.30	3.29	3.31
Voltage variation(%)	Ref	-0.30	0.30

Note:

1. Voltage variation(%)=[(High or Low supply voltage to the RF circuitry-Normal supply voltage to the RF circuitry)/Normal supply voltage to the RF circuitry]×100.
2. If the Voltage variation supplied to the radio part (excluding power supply circuit) of the EUT is kept within +/- 1% when input voltage from an external power supply variation by +/- 10%, the test shall be measured with the rated voltage only.

3.FREQUENCY TOLERANCE

3.1.Limit

±50ppm

3.2.Test Setup



3.3.Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	10KHz
VBW	10KHz
Span	1MHz
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

3.4.Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power over fixed single hopping channel.
- Allow trace to stabilize, use the marker function to mark the highest emission level,record the frequency of the highest emission level.
- Repeat above procedures until all channels and test modes were measured.
- Record the results in the test report.

3.5.Environment Conditions of Test Site

Temperature	25.2℃	Relative Humidity	52%
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3.6.Test Result

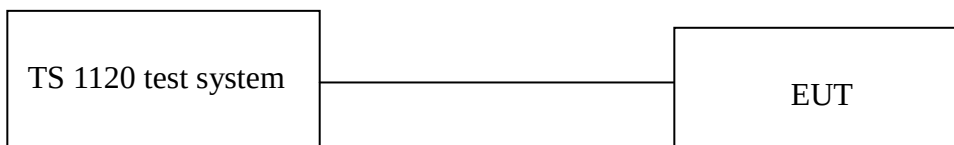
Refer to section 11: Appendix A

4.OCCUPIED BANDWIDTH& SPREAD BANDWIDTH

4.1.Limit

Item	Limits
Occupied Bandwidth	FH: $\leq 83.5\text{MHz}$ FH+DS: $\leq 83.5\text{MHz}$ FH+OFDM: $\leq 83.5\text{MHz}$ OFDM: 20MHz system $\leq 26\text{MHz}$ & $26\text{MHz} < 40\text{MHz}$ system $\leq 40\text{MHz}$ Other: $\leq 26\text{MHz}$

4.2.Test Setup



4.3.Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	Less than 3% of the acceptable value(Limit)
VBW	Comparable to RBW
Span	2-3.5 times the acceptable value
Sweep Time	Minimum amount of time to ensure measurement accuracy (in the case of burst waves, 1 burst per sample)
Detector	Peak
Trace Mode	Max Hold

4.4.Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 4.3.
- Set the EUT transmit continuously with maximum output power in all channel hopping mode.
- Allow trace to stabilize, use the 99% power bandwidth function to measure occupied bandwidth.
- Repeat step a to c, use the 90% power bandwidth function to measure spread bandwidth.
- Repeat above procedures until all test mode were measured.
- Record the results in the test report.

4.5.Environment Conditions of Test Site

Temperature	25.2℃	Relative Humidity	52%
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4.6.Test Result

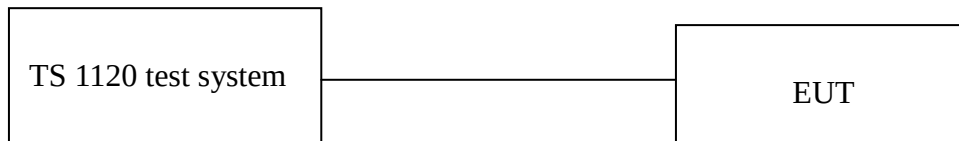
Refer to section 11: Appendix C & D

5.SPURIOUS EMISSION INTENSITY

5.1.Limit

Item	Limits
Spurious Emission Intensity	30MHz~1000MHz: $\leq 2.5\mu\text{W}/\text{MHz}(-26\text{dBm}/\text{MHz})$ 1000MHz~2387MHz: $\leq 2.5\mu\text{W}/\text{MHz}(-26\text{dBm}/\text{MHz})$ 2387MHz~2400MHz: $\leq 25\mu\text{W}/\text{MHz}(-16\text{dBm}/\text{MHz})$ 2483.5MHz~2496.5MHz: $\leq 25\mu\text{W}/\text{MHz}(-16\text{dBm}/\text{MHz})$ 2496.5 MHz~12750MHz: $\leq 2.5\mu\text{W}/\text{MHz}(-26\text{dBm}/\text{MHz})$

5.2.Test Setup



5.3.Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	1MHz
VBW	1MHz
Sweep Time	Minimum amount of time to ensure measurement accuracy
Sweep Mode	Single sweep
Detector	Positive peak
Trace Mode	Max Hold

5.4.Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 5.3.
- Set the EUT transmit continuously with maximum output power in all channel hopping mode.
- Allow trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission.
- Repeat above procedures until all test mode were measured.
- Record the results in the test report.

5.5.Environment Conditions of Test Site

Temperature	25.2℃	Relative Humidity	52%
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5.6.Test Result

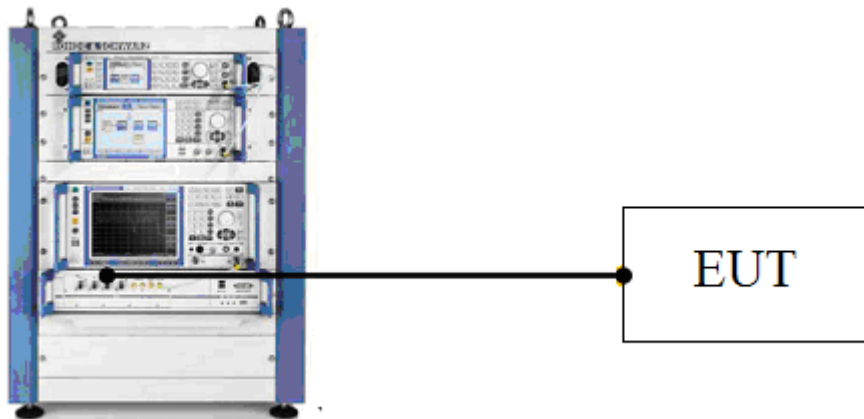
Refer to section 11: Appendix E

6.ANTENNA POWER& ANTENNA POWER TOLERANCE& EIRP POWER

6.1.Limit

Item	Limits
Antenna Power	(1) FH,FH+DS,FH+OFDM (using 2427MHz~2470.75MHz) : $\leq 3\text{mW/MHz}$ (2) Spread spectrum system,but other than (1): $\leq 10\text{mW/MHz}$ (3) OFDM, but other than (1) When occupied bandwidth $\leq 26\text{MHz}$: $\leq 10\text{mW/MHz}$ When $26\text{MHz} < \text{occupied bandwidth} \leq 40\text{MHz}$: $\leq 5\text{mW/MHz}$ (4) other than (1),(2),(3): $\leq 10\text{mW}$
EIRP Power	(1) For Omni-directional antenna: $\leq 6.91\text{dBm/MHz}$
Antenna Power Tolerance	+20% (Base on manufacturer declare rated power)

6.2.Test Setup



6.3.Test Procedure

- Connect EUT antenna terminal to the power meter with RF cable.
- Set the EUT transmit continuously with maximum output power in all channel hopping mode.
- Through the test software in TS 8897 to control a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level.
- Repeat above procedures until all test mode were measured.
- Record the results in the test report.

6.4.Environment Conditions of Test Site

Temperature	25.2°C	Relative Humidity	52%
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6.5.Test Result

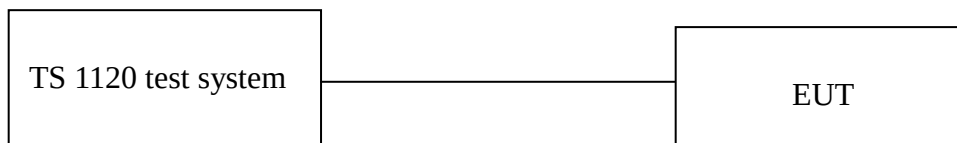
Refer to section 11: Appendix B

7.DWELL TIME

7.1.Limit

Item	Limits
Dwell Time	FH , FH+DS , FH+OFDM : 0.4 sec or lees (The total sum of holding time at arbitrary frequencies within the time multiplied 0.4 sec by the spreading rate)

7.2.Test Setup



7.3.Spectrum Analyzer Setting

Duty Cycle Measurement	
Spectrum Parameters	Setting
RBW	1MHz
VBW	1MHz
Span	Zero
Sweep Time	Hopping Repetition Period
Sweep Mode	Single sweep
Detector	Peak
Trigger condition	Video Trigger

MAX Number	
Spectrum Parameters	Setting
RBW	1MHz
VBW	3MHz
Span	Zero
Sweep Time	31.6s
Detector	Peak
Trace Mode	Max Hold

7.4. Test Procedure

For Duty Cycle Measurement :

- a. Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- b. Spectrum analyzer setting parameters in accordance with section 7.3.
- c. Set the EUT transmit continuously with maximum output power in all channel hopping mode.
- d. Adjust sweep time on the spectrum analyzer to capture at least one period of the pulse train of the EUT.
- a. Allow trace to stabilize, use the marker-delta function to measure the on time and off time of the signal.
- e. Repeat above procedures until all packet types and test mode were measured.
- f. Record the results in the test report.

For Spread Bandwidth Measurement

- a. Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- b. Spectrum analyzer setting parameters in accordance with section 7.3.
- c. Set the EUT transmit continuously with maximum output power in all channel hopping mode.
- d. Allow trace to stabilize, use the 90% power bandwidth function to measure spread bandwidth.
- e. Repeat above procedures until all packet types and test mode were measured.
- f. Record the results in the test report.

7.5. Environment Conditions of Test Site

Temperature	25.2°C	Relative Humidity	52%
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7.6. Test Result

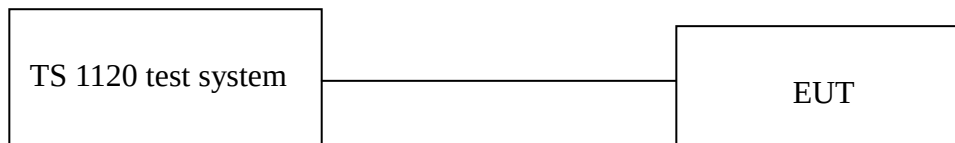
Refer to section 11: Appendix G

8. SECONDARY RADIATED EMISSIONS

8.1. Limit

Item	Limits
Secondary Radiated Emissions	Lower than 1GHz : $\leq 4 \text{ nW}(-54\text{dBm})$
	1GHz or higher : $\leq 20 \text{ nW}(-47\text{dBm})$

8.2. Test Setup



8.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	100KHz(Below 1GHz)/1MHz(Above 1GHz)
VBW	100KHz(Below 1GHz)/1MHz(Above 1GHz)
Sweep Time	Minimum amount of time to ensure measurement accuracy
Sweep Mode	Single sweep
Detector	Positive peak
Trace Mode	Max Hold

8.4. Test Procedure

- g. Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- h. Spectrum analyzer setting parameters in accordance with section 8.3.
- i. Set the EUT transmit to receive mode.
- j. Allow trace to stabilize, use the marker function to mark the highest emission level.
- k. Repeat above procedures until all channels were measured.
- l. Record the results in the test report.

8.5. Environment Conditions of Test Site

Temperature	25.2°C	Relative Humidity	52%
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8.6. Test Result

Refer to section 11: Appendix F

9.INTERFERENCE PREVENTION FUNCTION

9.1.Limit

EUT shall have a function to transmit or receive identification code automatically, and the length of identification code ≥ 48 bits

9.2.Test Setup



9.3.Test Procedure

- Open the BT function of EUT .
- Peripheral equipment and EUT are connected through BT function.
- Use special software on peripheral devices to get the MAC address of EUT.
- Record MAC address.

9.4.Environment Conditions of Test Site

Temperature	23.3℃	Relative Humidity	53.6%	Test Voltage	DC 11.1V
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9.5. Test Result

Identification Code	Length(bits)	Limit(bits)	Result
F4:4E:FD:77:53:9E	48	≥48	Pass

F4:4E:FD:77:53:9E

10. CONSTRUCTION PROTECTION CONFIRMATION METHOD

10.1. Limit

The high-frequency section and modulation section (except for the antenna system) shall not be capable of being opened easily.

10.2. Test Result

RF and Modulation parts are mounted on PCB with surface mount technology.

11.APPENDIX

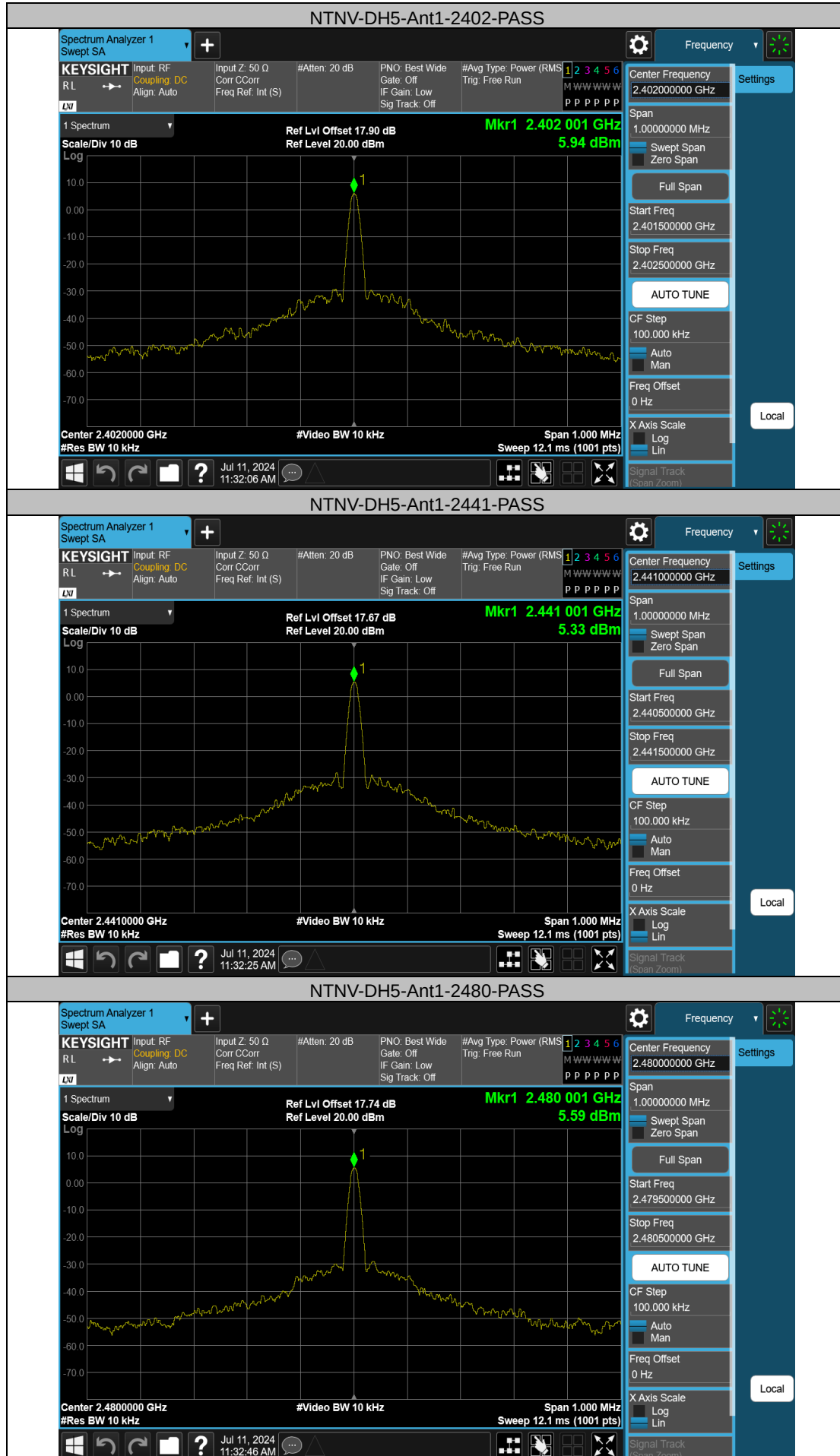
Appendix A: Frequency_Error

Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Center Freq [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	DH5	Ant1	2402	2402.001	0.41632	±50	PASS
NTNV	DH5	Ant1	2441	2441.001	0.40967	±50	PASS
NTNV	DH5	Ant1	2480	2480.001	0.40323	±50	PASS

Note: Result[ppm]= (CenterFreq - Channel)/Channel*1000000

Test Graphs



Appendix B: Antenna Power Test Result

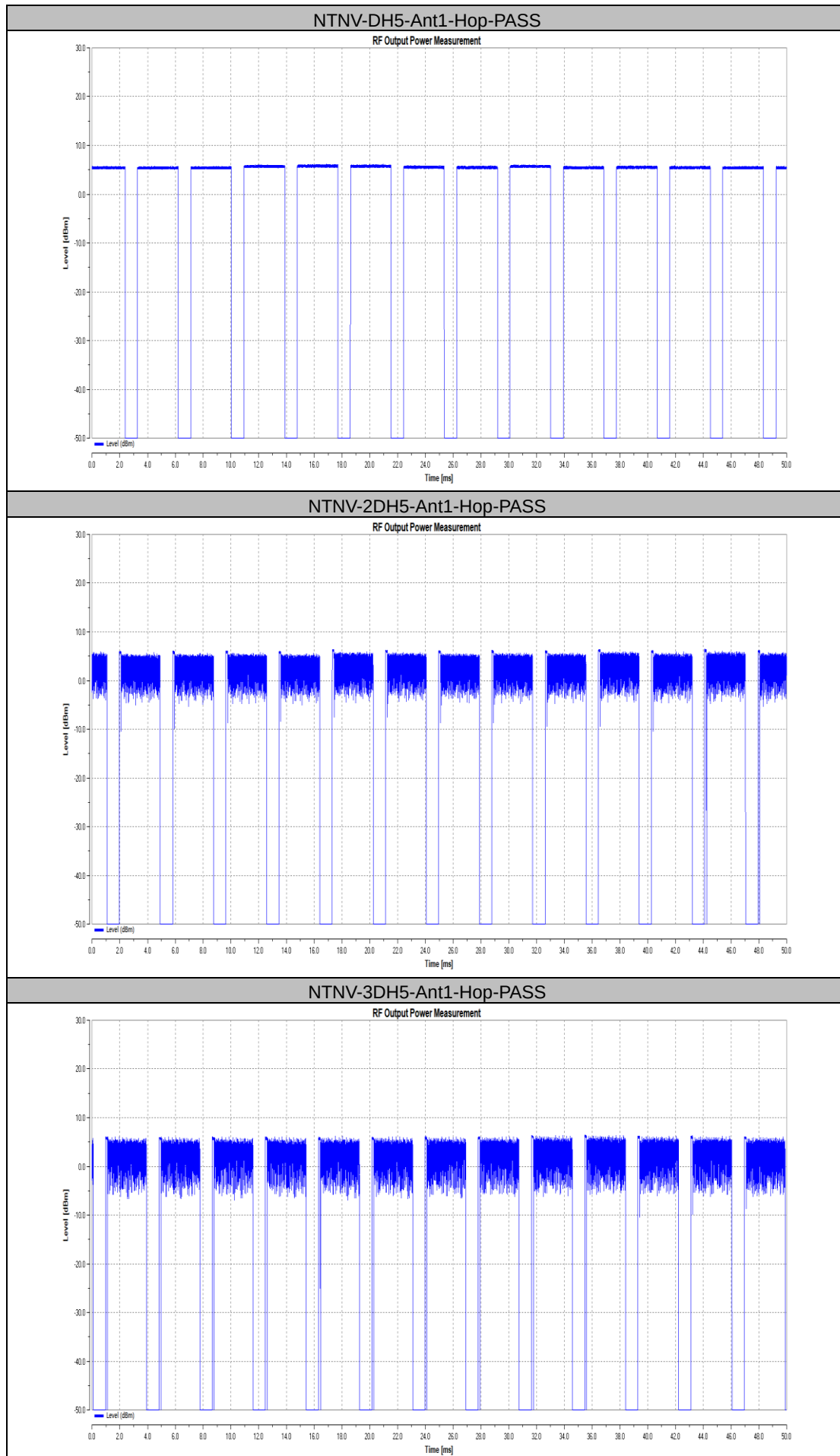
Antenna Power									
Test Condition	Test Mode	Antenna	Frequency [MHz]	Result (dBm)	Result(mW)	90% BW (MHz)	Result (mW /MHz)	Limit (mW/MHz)	Verdict
NTNV	DH5	Ant1	Hop	5.85	3.8459	71.808	0.0536	≤3	PASS
NTNV	2DH5	Ant1	Hop	3.47	2.2233	72.234	0.0308	≤3	PASS
NTNV	3DH5	Ant1	Hop	3.41	2.1928	71.862	0.0305	≤3	PASS

Note: Result(mW)= $10^{(\text{Test Result(dBm)}/10)}$

Tolerance								
Test Condition	Test Mode	Antenna	Frequency [MHz]	Power (mW/MHz)	Rated Power (mW/MHz)	Result (%)	Limit (%)	Verdict
NTNV	DH5	Ant1	Hop	0.0536	0.06	-10.74	+20	PASS
NTNV	2DH5	Ant1	Hop	0.0308	0.06	-48.70	+20	PASS
NTNV	3DH5	Ant1	Hop	0.0305	0.06	-49.14	+20	PASS

EIRP								
Test Condition	Test Mode	Antenna	Frequency [MHz]	Power (dBm/MHz)	Gain	EIRP (dBm/MHz)	Limit (dBm/MHz)	Verdict
NTNV	DH5	Ant1	Hop	-12.71	2.89	-9.82	≤6.91	PASS
NTNV	2DH5	Ant1	Hop	-15.12	2.89	-12.23	≤6.91	PASS
NTNV	3DH5	Ant1	Hop	-15.15	2.89	-12.26	≤6.91	PASS

Test Result



Appendix C: Occupied Bandwidth Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.761	≤ 83.5	PASS
NTNV	2DH5	Ant1	Hop	78.706	≤ 83.5	PASS
NTNV	3DH5	Ant1	Hop	78.720	≤ 83.5	PASS

Test Graphs



Appendix D: Spread Bandwidth Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	71.808	-	-
NTNV	2DH5	Ant1	Hop	72.234	-	-
NTNV	3DH5	Ant1	Hop	71.862	-	-

Test Graphs



Appendix E: Spurious Emission of TX

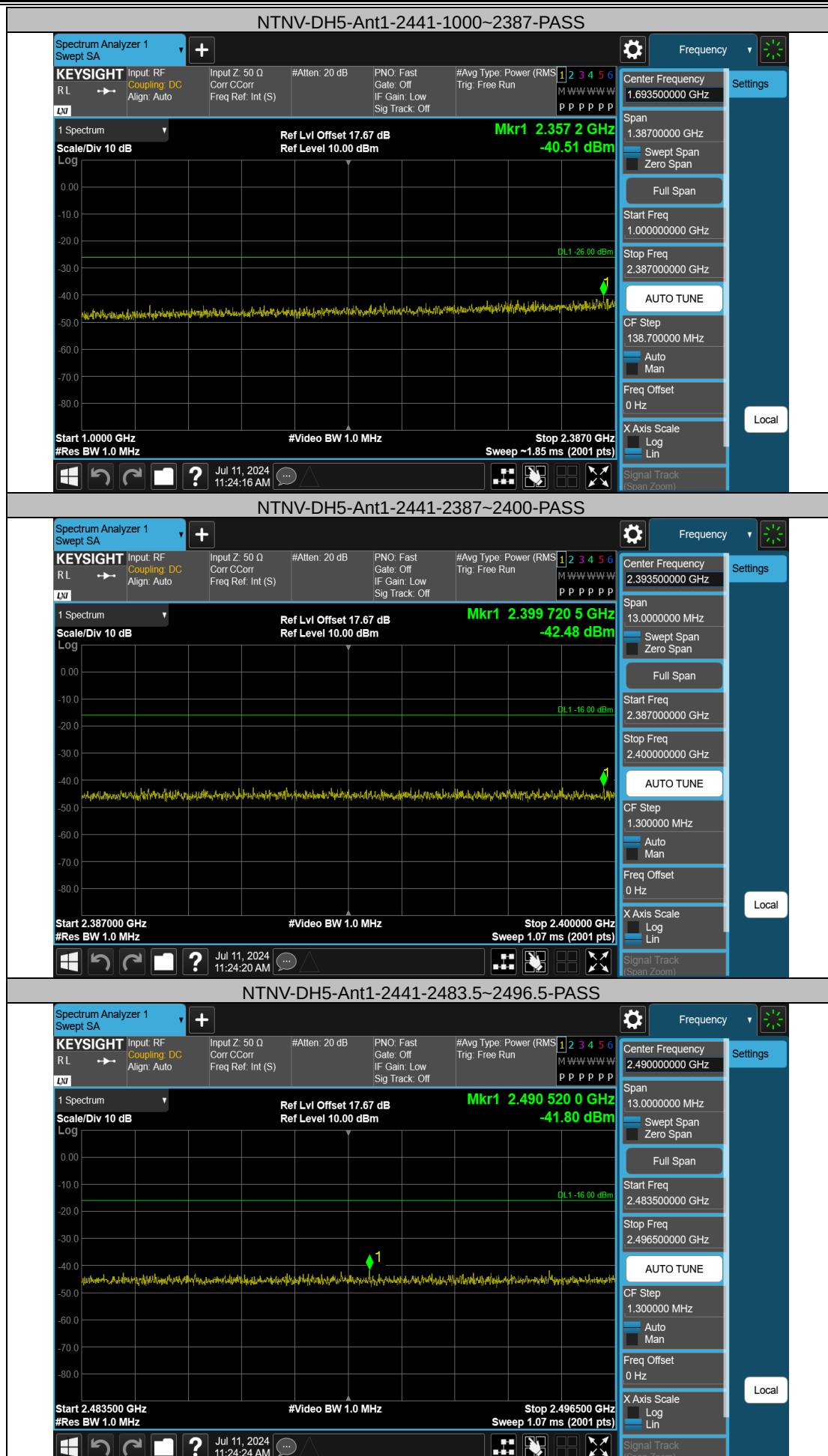
Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	892.82	-43.00	≤-26	0.05012	≤2.5	PASS
NTNV	DH5	Ant1	2402	1000~2387	2335.68	-40.81	≤-26	0.08299	≤2.5	PASS
NTNV	DH5	Ant1	2402	2387~2400	2400.00	-34.49	≤-16	0.35563	≤25	PASS
NTNV	DH5	Ant1	2402	2483.5~2496.5	2492.56	-42.14	≤-16	0.06109	≤25	PASS
NTNV	DH5	Ant1	2402	2496.5~12750	3800.75	-37.33	≤-26	0.18493	≤2.5	PASS
NTNV	DH5	Ant1	2441	30~1000	579.51	-43.46	≤-26	0.04508	≤2.5	PASS
NTNV	DH5	Ant1	2441	1000~2387	2357.18	-40.51	≤-26	0.08892	≤2.5	PASS
NTNV	DH5	Ant1	2441	2387~2400	2399.72	-42.48	≤-16	0.05649	≤25	PASS
NTNV	DH5	Ant1	2441	2483.5~2496.5	2490.52	-41.80	≤-16	0.06607	≤25	PASS
NTNV	DH5	Ant1	2441	2496.5~12750	4882.49	-36.59	≤-26	0.21928	≤2.5	PASS
NTNV	DH5	Ant1	2480	30~1000	920.95	-43.64	≤-26	0.04325	≤2.5	PASS
NTNV	DH5	Ant1	2480	1000~2387	2106.13	-41.49	≤-26	0.07096	≤2.5	PASS
NTNV	DH5	Ant1	2480	2387~2400	2395.83	-42.24	≤-16	0.05970	≤25	PASS
NTNV	DH5	Ant1	2480	2483.5~2496.5	2488.45	-41.62	≤-16	0.06887	≤25	PASS
NTNV	DH5	Ant1	2480	2496.5~12750	4960.42	-36.11	≤-26	0.24491	≤2.5	PASS
NTNV	2DH5	Ant1	2402	30~1000	892.82	-43.49	≤-26	0.04477	≤2.5	PASS
NTNV	2DH5	Ant1	2402	1000~2387	2284.36	-41.68	≤-26	0.06792	≤2.5	PASS
NTNV	2DH5	Ant1	2402	2387~2400	2400.00	-29.71	≤-16	1.06905	≤25	PASS
NTNV	2DH5	Ant1	2402	2483.5~2496.5	2487.06	-41.85	≤-16	0.06531	≤25	PASS
NTNV	2DH5	Ant1	2402	2496.5~12750	3834.58	-37.31	≤-26	0.18578	≤2.5	PASS
NTNV	2DH5	Ant1	2441	30~1000	890.88	-43.09	≤-26	0.04909	≤2.5	PASS
NTNV	2DH5	Ant1	2441	1000~2387	2372.44	-40.70	≤-26	0.08511	≤2.5	PASS
NTNV	2DH5	Ant1	2441	2387~2400	2389.11	-42.83	≤-16	0.05212	≤25	PASS
NTNV	2DH5	Ant1	2441	2483.5~2496.5	2489.81	-41.96	≤-16	0.06368	≤25	PASS
NTNV	2DH5	Ant1	2441	2496.5~12750	3787.42	-36.99	≤-26	0.19999	≤2.5	PASS
NTNV	2DH5	Ant1	2480	30~1000	843.35	-43.62	≤-26	0.04345	≤2.5	PASS
NTNV	2DH5	Ant1	2480	1000~2387	2335.68	-41.50	≤-26	0.07079	≤2.5	PASS
NTNV	2DH5	Ant1	2480	2387~2400	2390.57	-41.97	≤-16	0.06353	≤25	PASS
NTNV	2DH5	Ant1	2480	2483.5~2496.5	2483.89	-41.55	≤-16	0.06998	≤25	PASS
NTNV	2DH5	Ant1	2480	2496.5~12750	3843.81	-36.94	≤-26	0.20230	≤2.5	PASS
NTNV	3DH5	Ant1	2402	30~1000	712.88	-42.83	≤-26	0.05212	≤2.5	PASS
NTNV	3DH5	Ant1	2402	1000~2387	2357.87	-41.29	≤-26	0.07430	≤2.5	PASS
NTNV	3DH5	Ant1	2402	2387~2400	2400.00	-29.19	≤-16	1.20504	≤25	PASS
NTNV	3DH5	Ant1	2402	2483.5~2496.5	2484.01	-41.67	≤-16	0.06808	≤25	PASS
NTNV	3DH5	Ant1	2402	2496.5~12750	7198.76	-37.34	≤-26	0.18450	≤2.5	PASS
NTNV	3DH5	Ant1	2441	30~1000	927.74	-43.66	≤-26	0.04305	≤2.5	PASS
NTNV	3DH5	Ant1	2441	1000~2387	2330.13	-41.07	≤-26	0.07816	≤2.5	PASS
NTNV	3DH5	Ant1	2441	2387~2400	2393.31	-42.56	≤-16	0.05546	≤25	PASS
NTNV	3DH5	Ant1	2441	2483.5~2496.5	2485.78	-41.95	≤-16	0.06383	≤25	PASS
NTNV	3DH5	Ant1	2441	2496.5~12750	4881.46	-36.79	≤-26	0.20941	≤2.5	PASS
NTNV	3DH5	Ant1	2480	30~1000	909.79	-43.26	≤-26	0.04721	≤2.5	PASS
NTNV	3DH5	Ant1	2480	1000~2387	2361.34	-41.49	≤-26	0.07096	≤2.5	PASS
NTNV	3DH5	Ant1	2480	2387~2400	2389.67	-42.41	≤-16	0.05741	≤25	PASS
NTNV	3DH5	Ant1	2480	2483.5~2496.5	2487.71	-41.95	≤-16	0.06383	≤25	PASS
NTNV	3DH5	Ant1	2480	2496.5~12750	4959.39	-36.59	≤-26	0.21928	≤2.5	PASS

Test Graphs





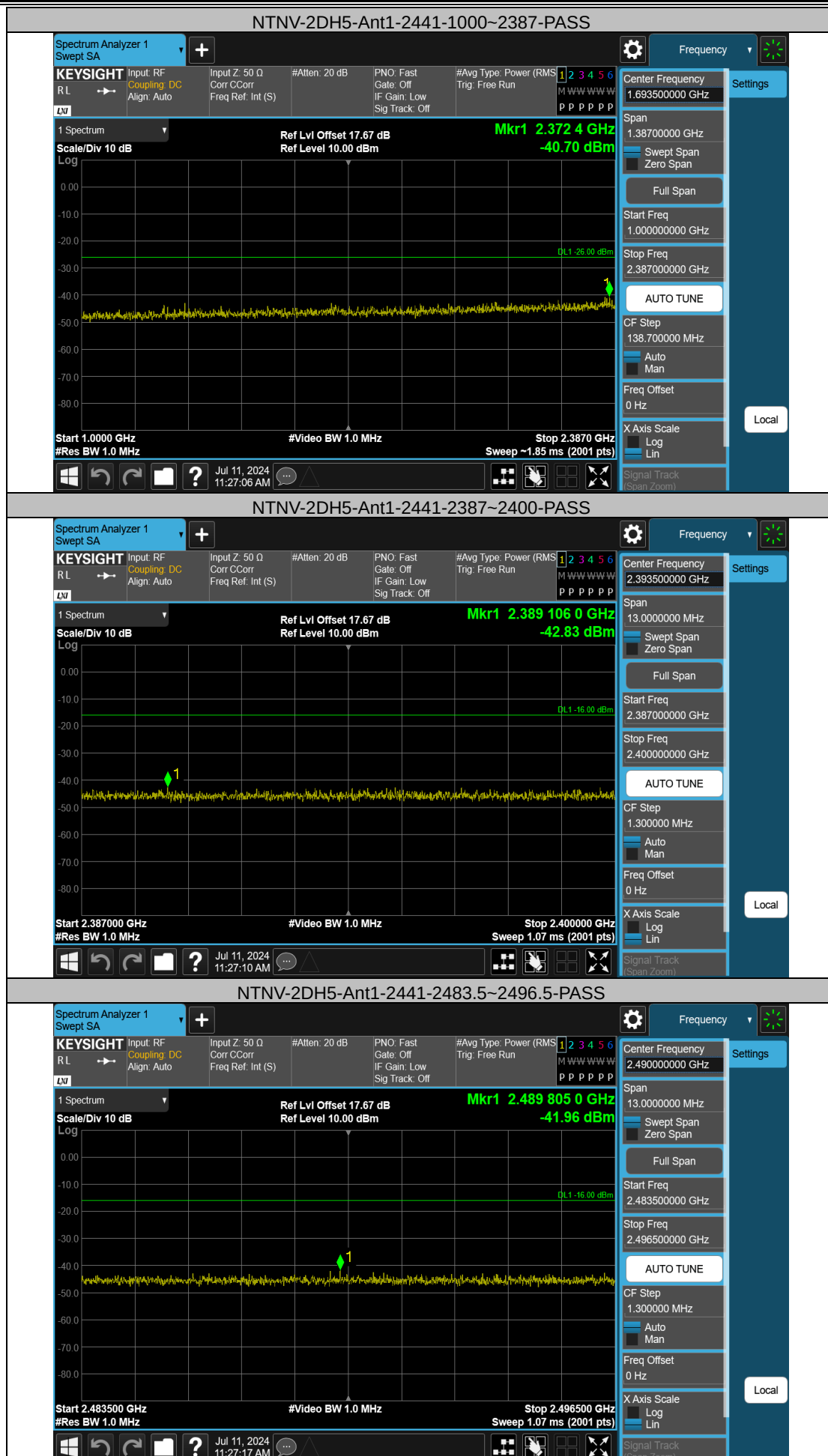




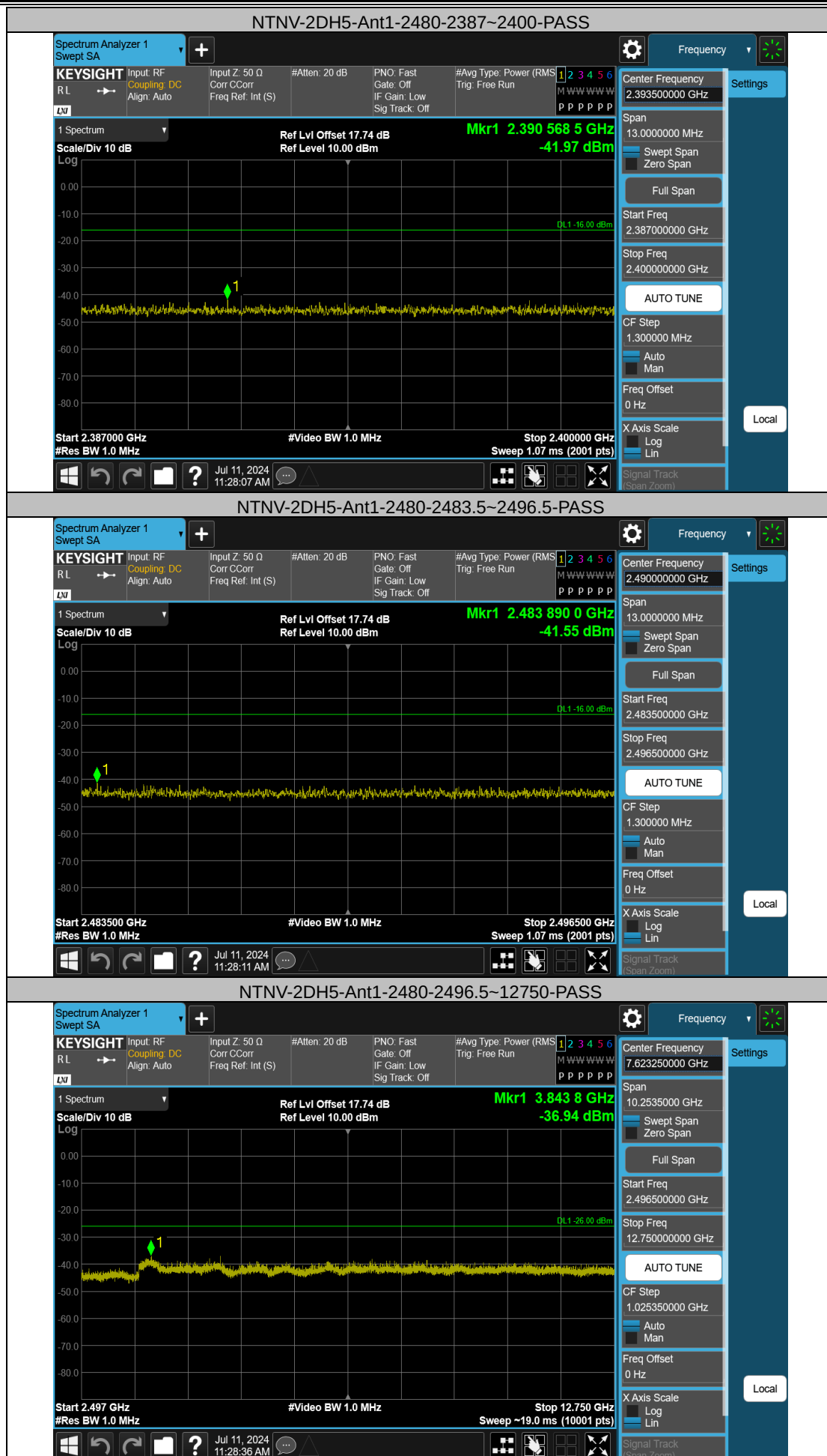


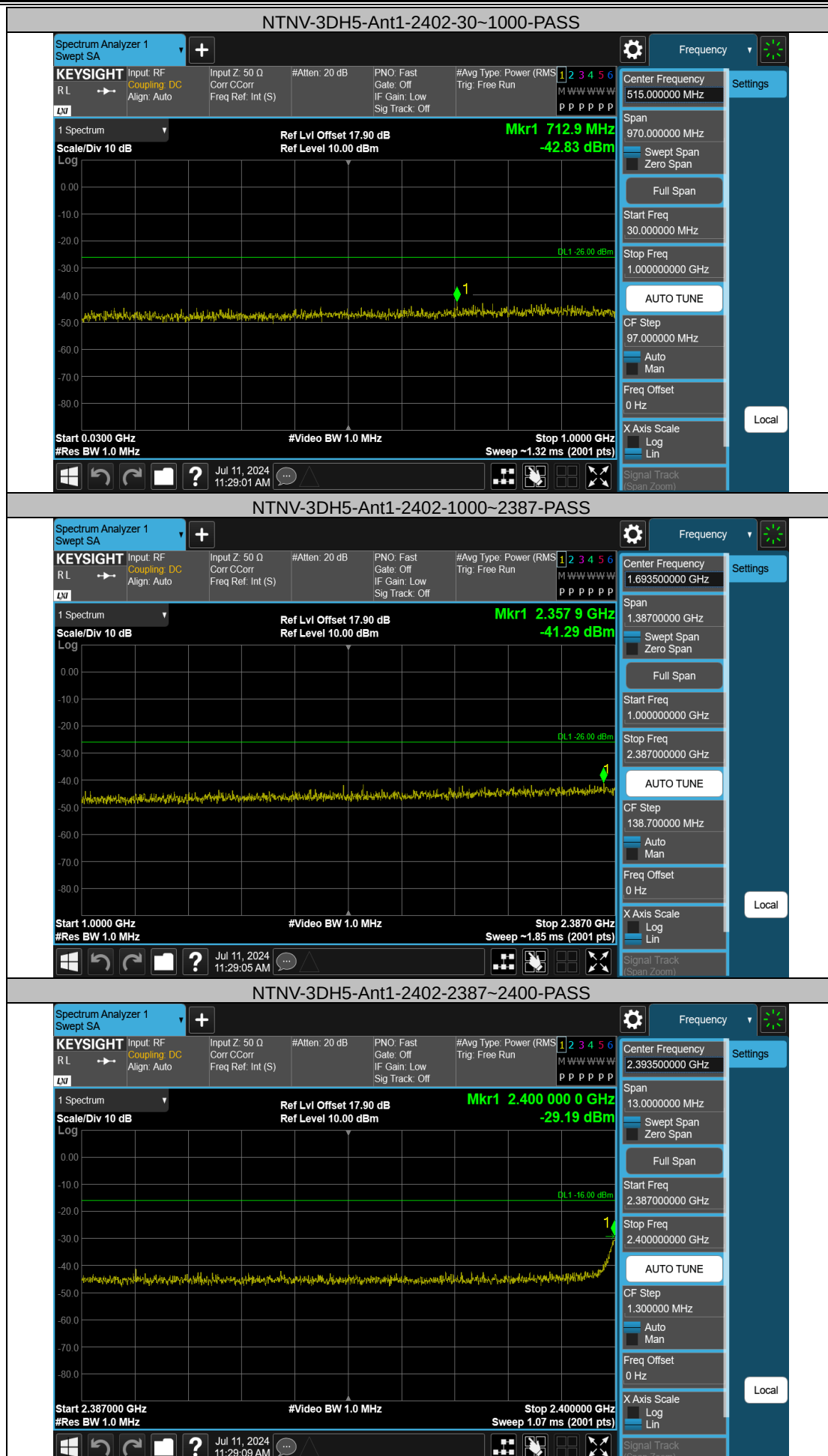




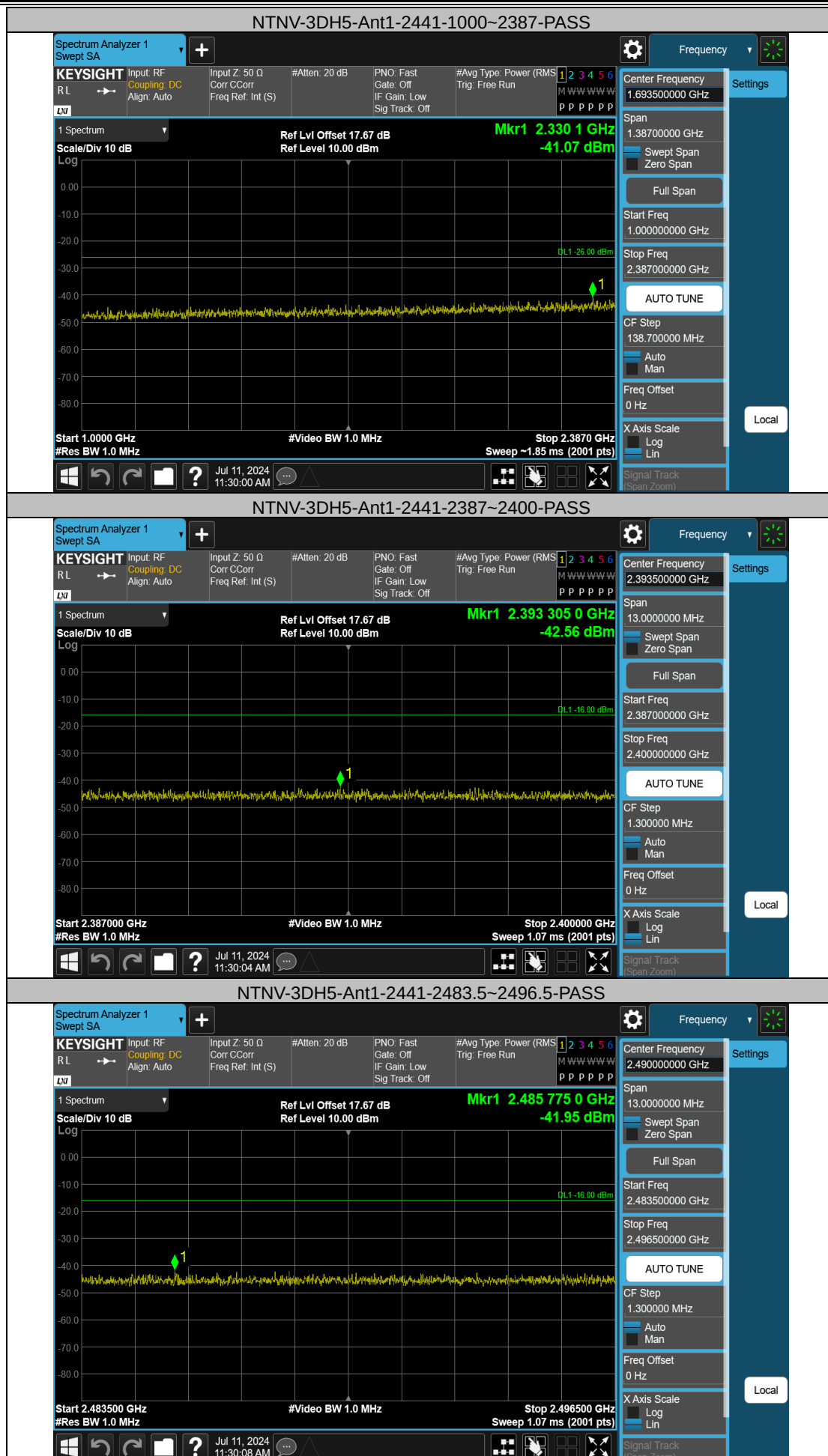














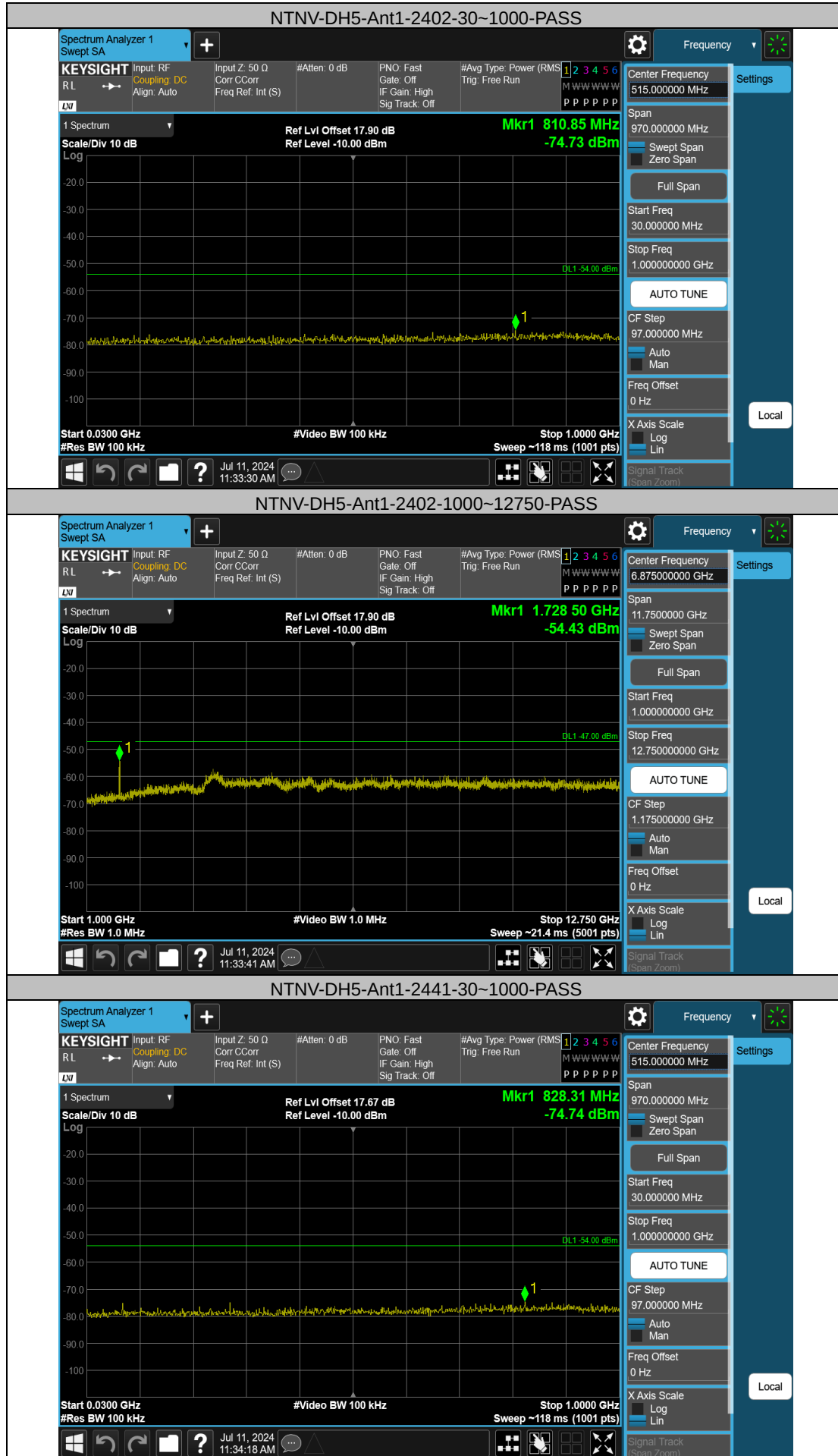


Appendix F: Spurious Emission of RX

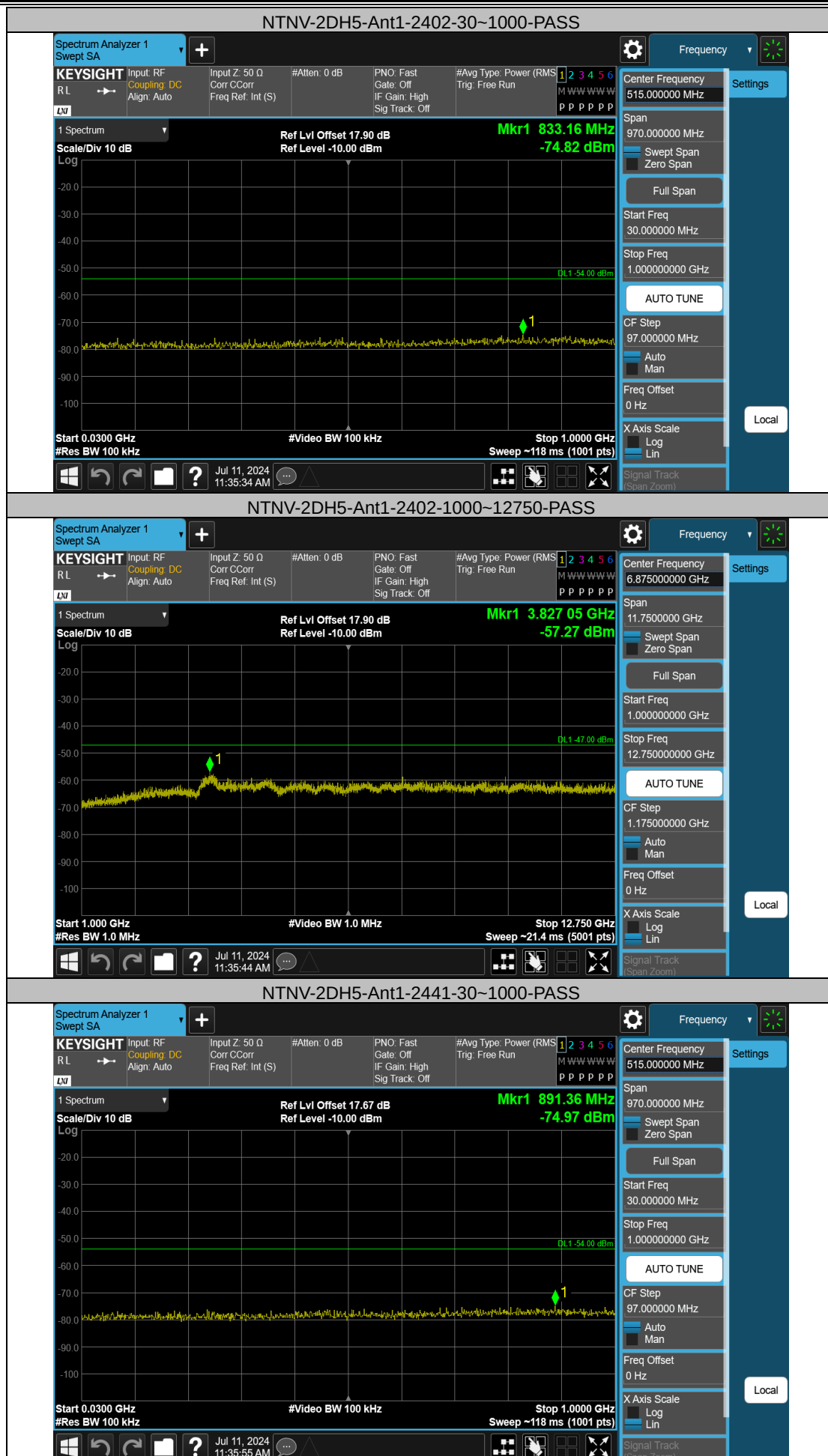
Test Result

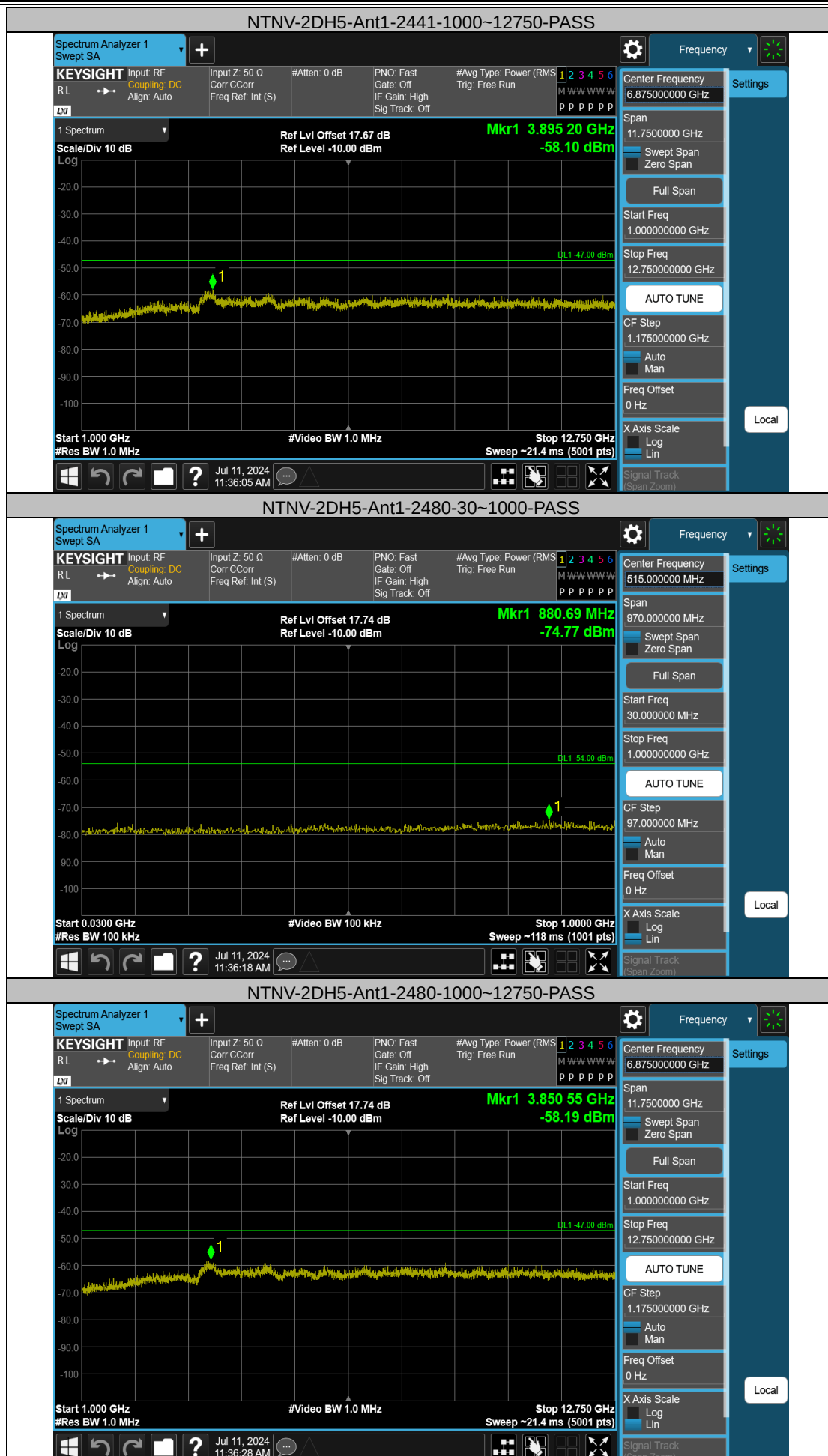
Test Condition	Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	810.85	-74.73	≤-54	0.03365	≤4	PASS
NTNV	DH5	Ant1	2402	1000~12750	1728.50	-54.43	≤-47	3.60579	≤20	PASS
NTNV	DH5	Ant1	2441	30~1000	828.31	-74.74	≤-54	0.03357	≤4	PASS
NTNV	DH5	Ant1	2441	1000~12750	3890.50	-57.19	≤-47	1.90985	≤20	PASS
NTNV	DH5	Ant1	2480	30~1000	827.34	-74.62	≤-54	0.03451	≤4	PASS
NTNV	DH5	Ant1	2480	1000~12750	3747.15	-57.59	≤-47	1.74181	≤20	PASS
NTNV	2DH5	Ant1	2402	30~1000	833.16	-74.82	≤-54	0.03296	≤4	PASS
NTNV	2DH5	Ant1	2402	1000~12750	3827.05	-57.27	≤-47	1.87499	≤20	PASS
NTNV	2DH5	Ant1	2441	30~1000	891.36	-74.97	≤-54	0.03184	≤4	PASS
NTNV	2DH5	Ant1	2441	1000~12750	3895.20	-58.11	≤-47	1.54525	≤20	PASS
NTNV	2DH5	Ant1	2480	30~1000	880.69	-74.77	≤-54	0.03334	≤4	PASS
NTNV	2DH5	Ant1	2480	1000~12750	3850.55	-58.19	≤-47	1.51705	≤20	PASS
NTNV	3DH5	Ant1	2402	30~1000	990.30	-73.94	≤-54	0.04036	≤4	PASS
NTNV	3DH5	Ant1	2402	1000~12750	3789.45	-57.55	≤-47	1.75792	≤20	PASS
NTNV	3DH5	Ant1	2441	30~1000	616.85	-74.67	≤-54	0.03412	≤4	PASS
NTNV	3DH5	Ant1	2441	1000~12750	3838.80	-57.91	≤-47	1.61808	≤20	PASS
NTNV	3DH5	Ant1	2480	30~1000	799.21	-74.57	≤-54	0.03491	≤4	PASS
NTNV	3DH5	Ant1	2480	1000~12750	3770.65	-58.05	≤-47	1.56675	≤20	PASS

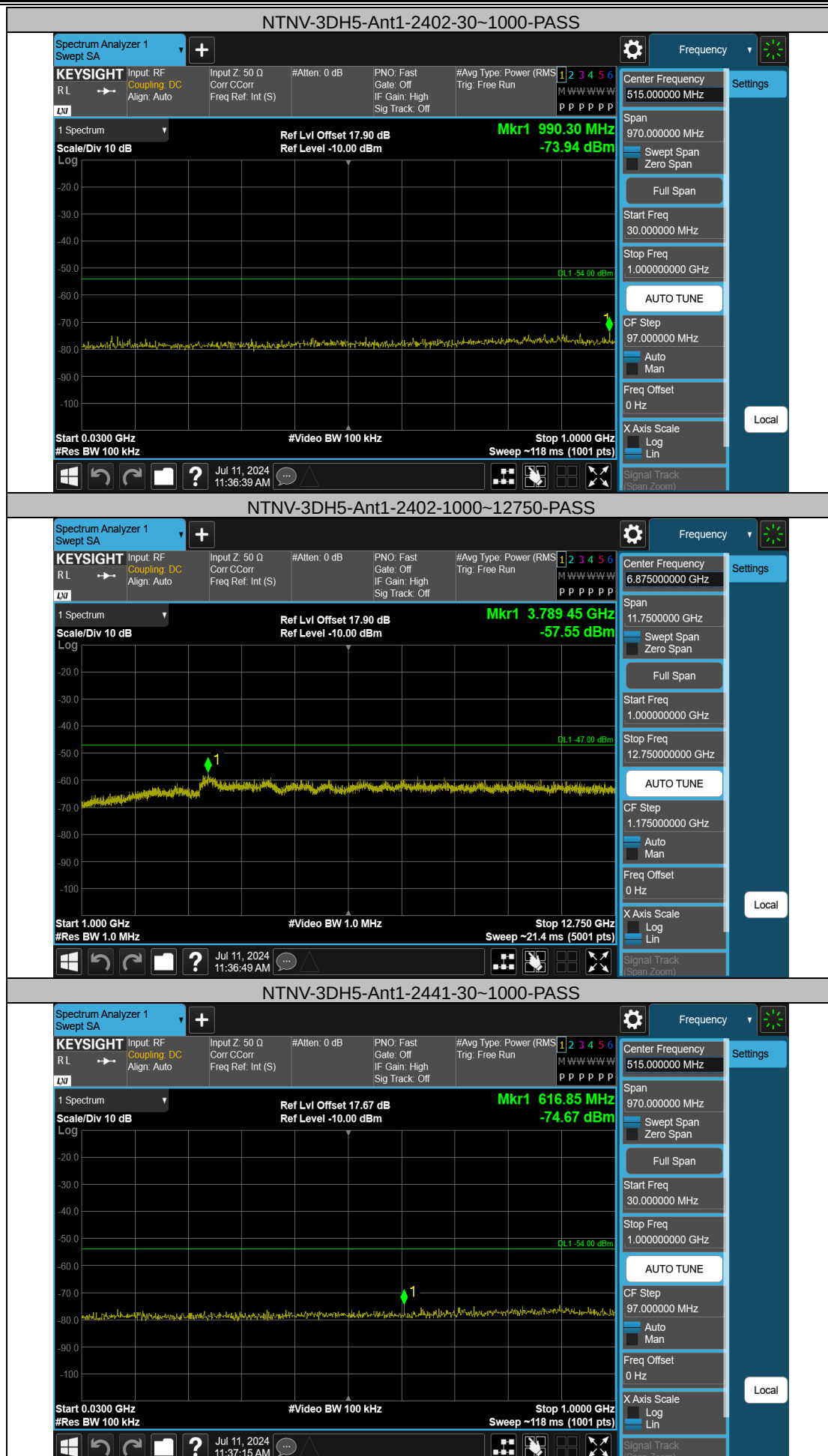
Test Graphs

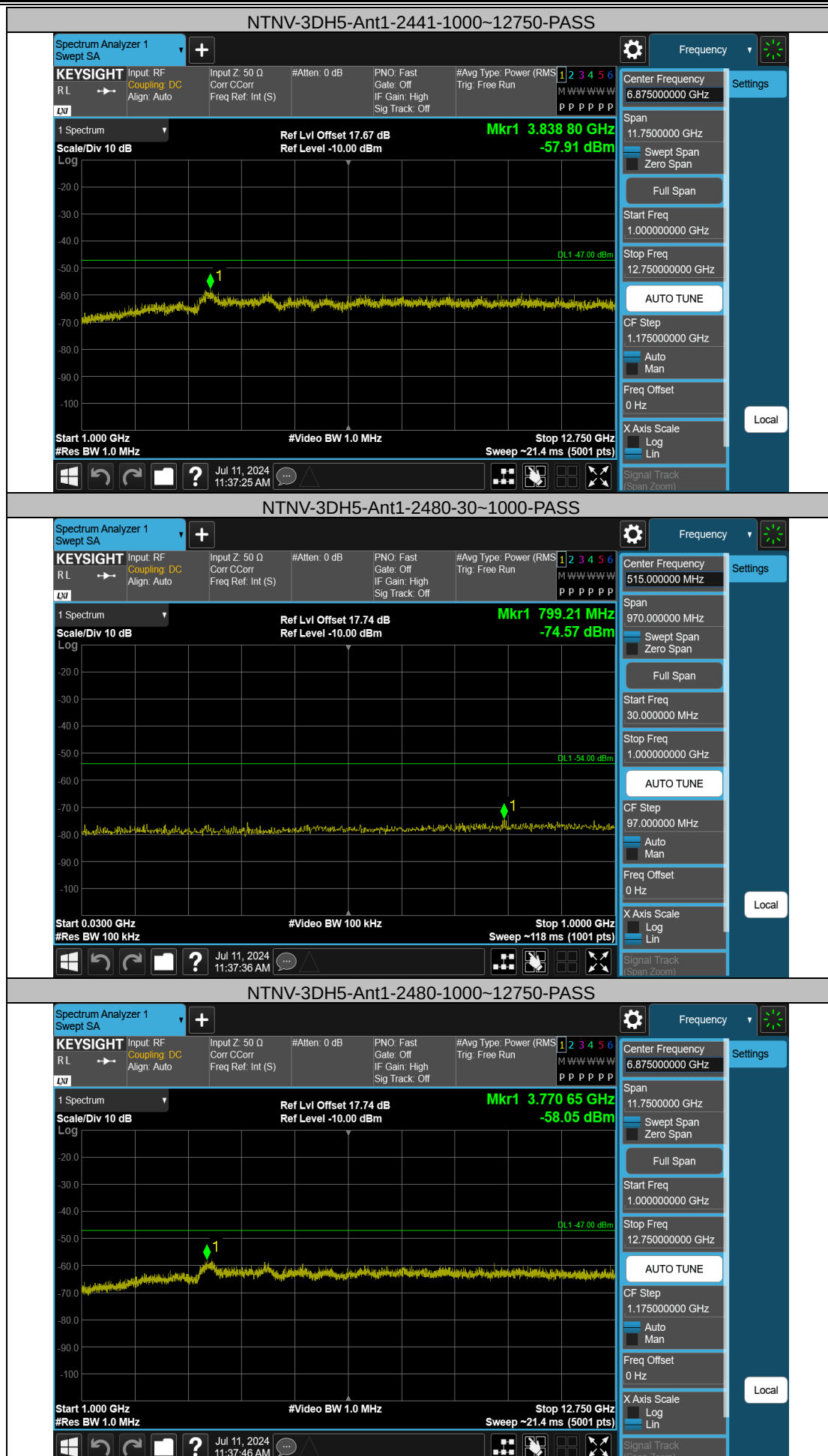








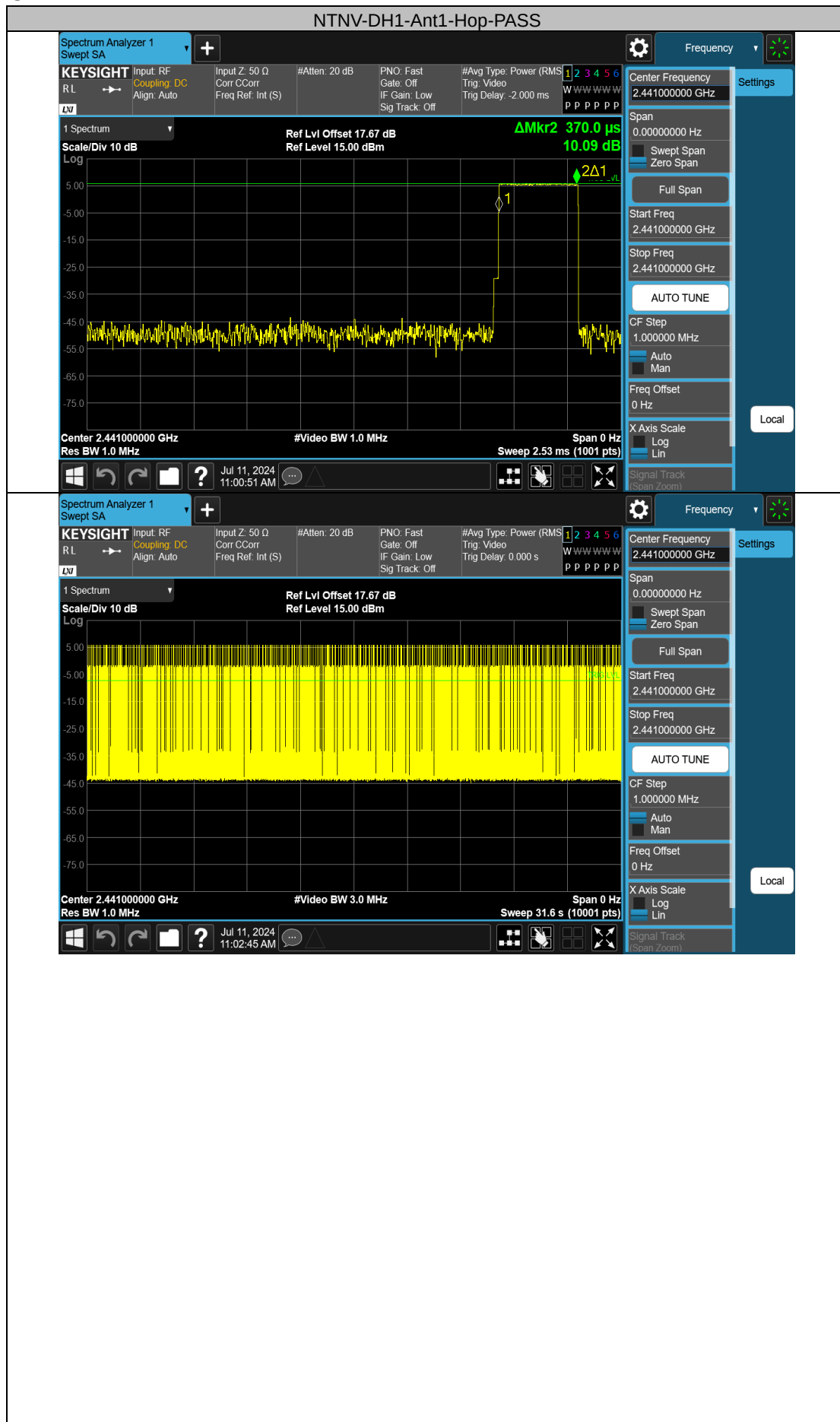


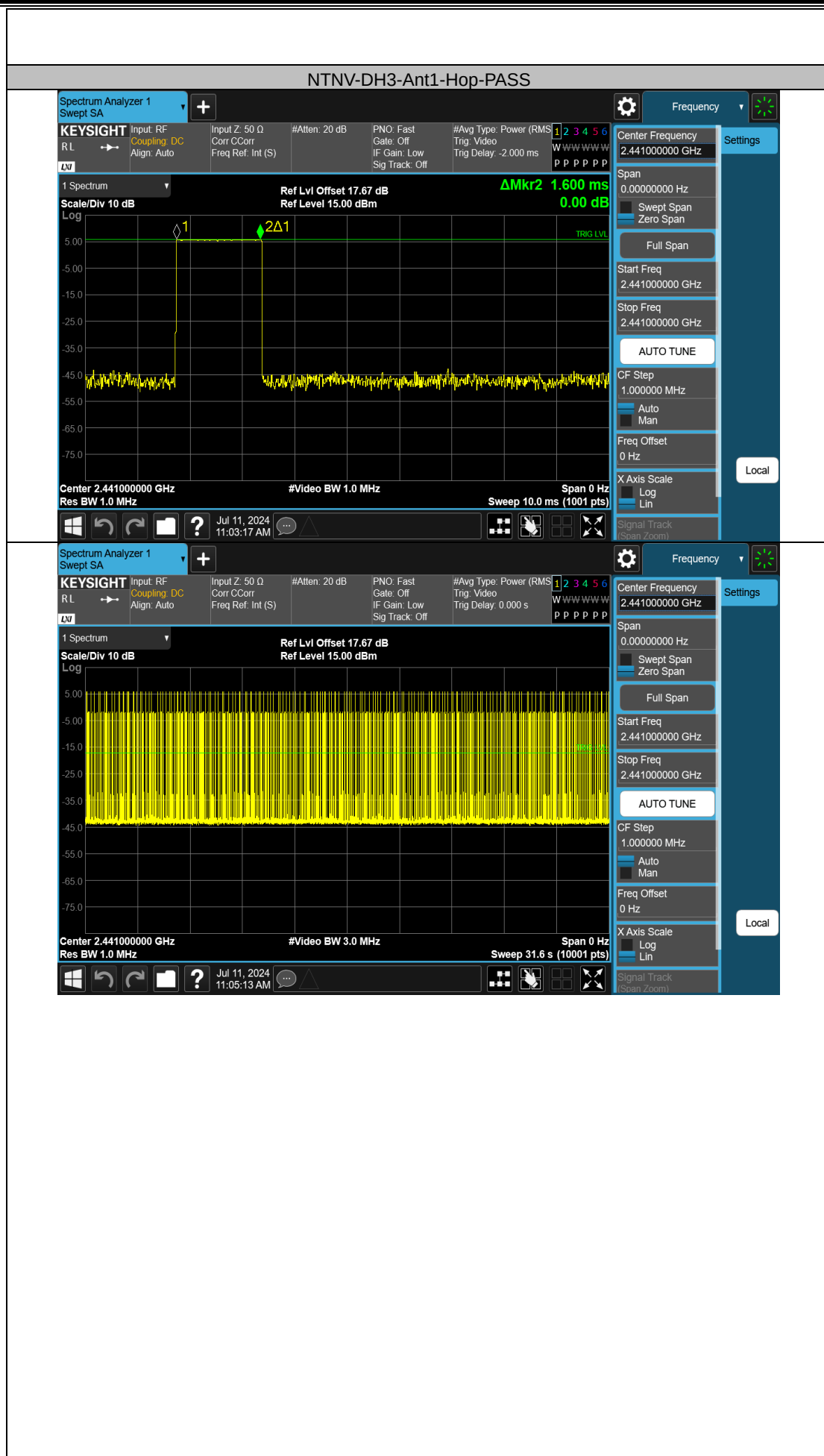


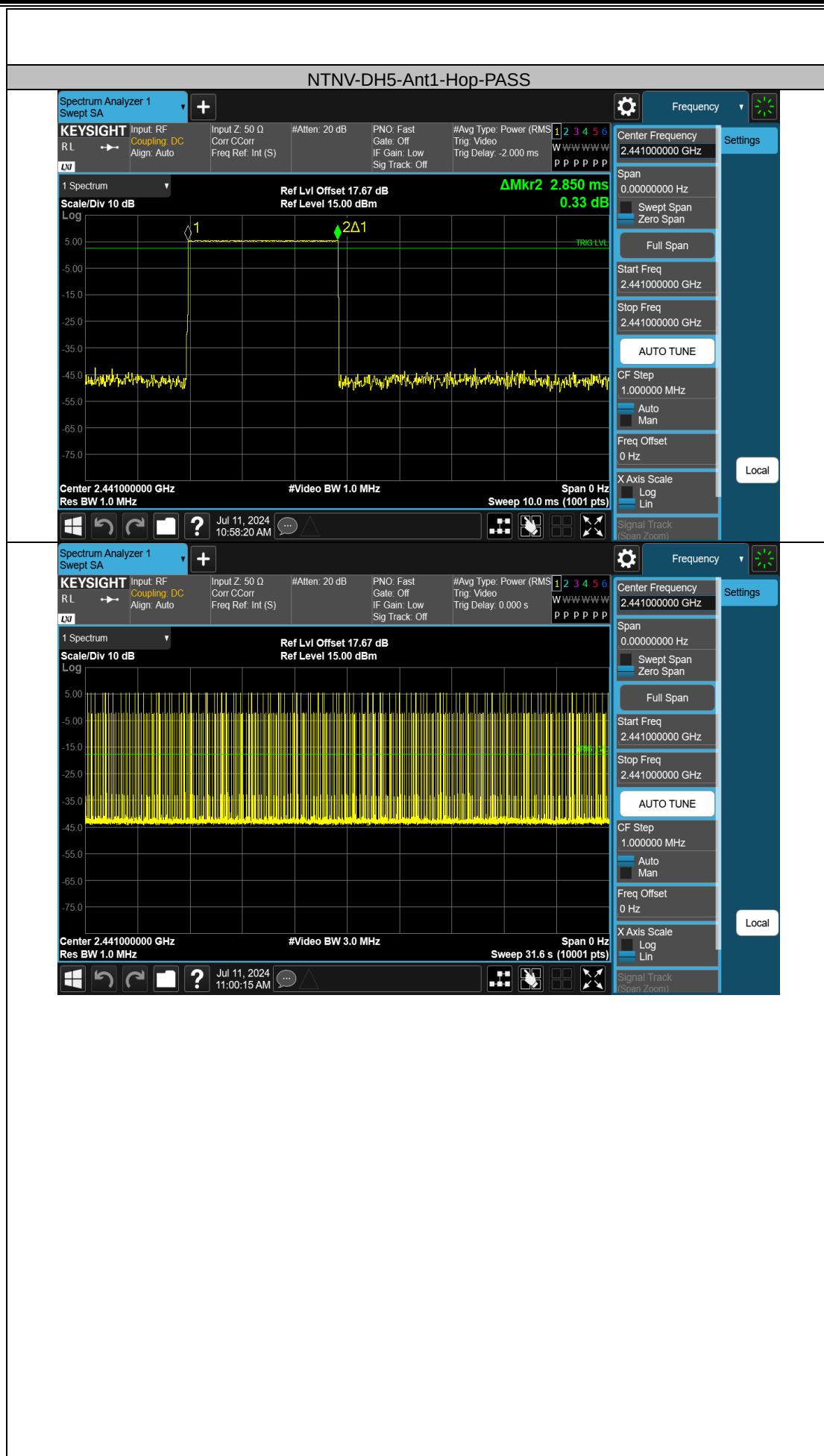
Appendix G: Dwell Time Test Result

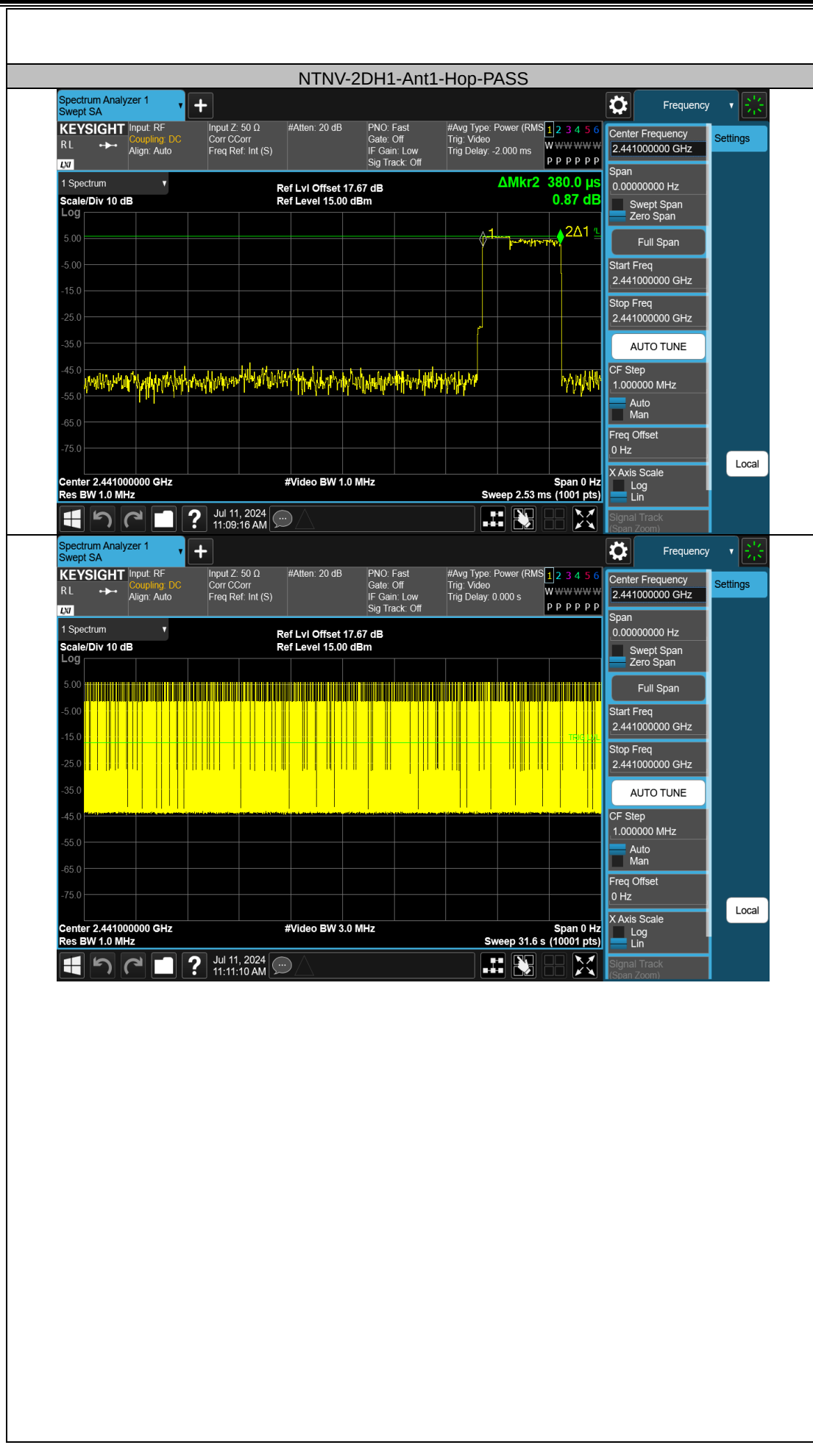
Test Condition	Test Mode	Antenna	Frequency [MHz]	Burst Width [ms]	Total Hops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH1	Ant1	Hop	0.37	314	0.116	≤0.4	PASS
NTNV	DH3	Ant1	Hop	1.60	160	0.256	≤0.4	PASS
NTNV	DH5	Ant1	Hop	2.85	107	0.305	≤0.4	PASS
NTNV	2DH1	Ant1	Hop	0.38	314	0.119	≤0.4	PASS
NTNV	2DH3	Ant1	Hop	1.62	160	0.259	≤0.4	PASS
NTNV	2DH5	Ant1	Hop	2.87	106	0.304	≤0.4	PASS
NTNV	3DH1	Ant1	Hop	0.38	315	0.12	≤0.4	PASS
NTNV	3DH3	Ant1	Hop	1.62	160	0.259	≤0.4	PASS
NTNV	3DH5	Ant1	Hop	2.87	106	0.304	≤0.4	PASS

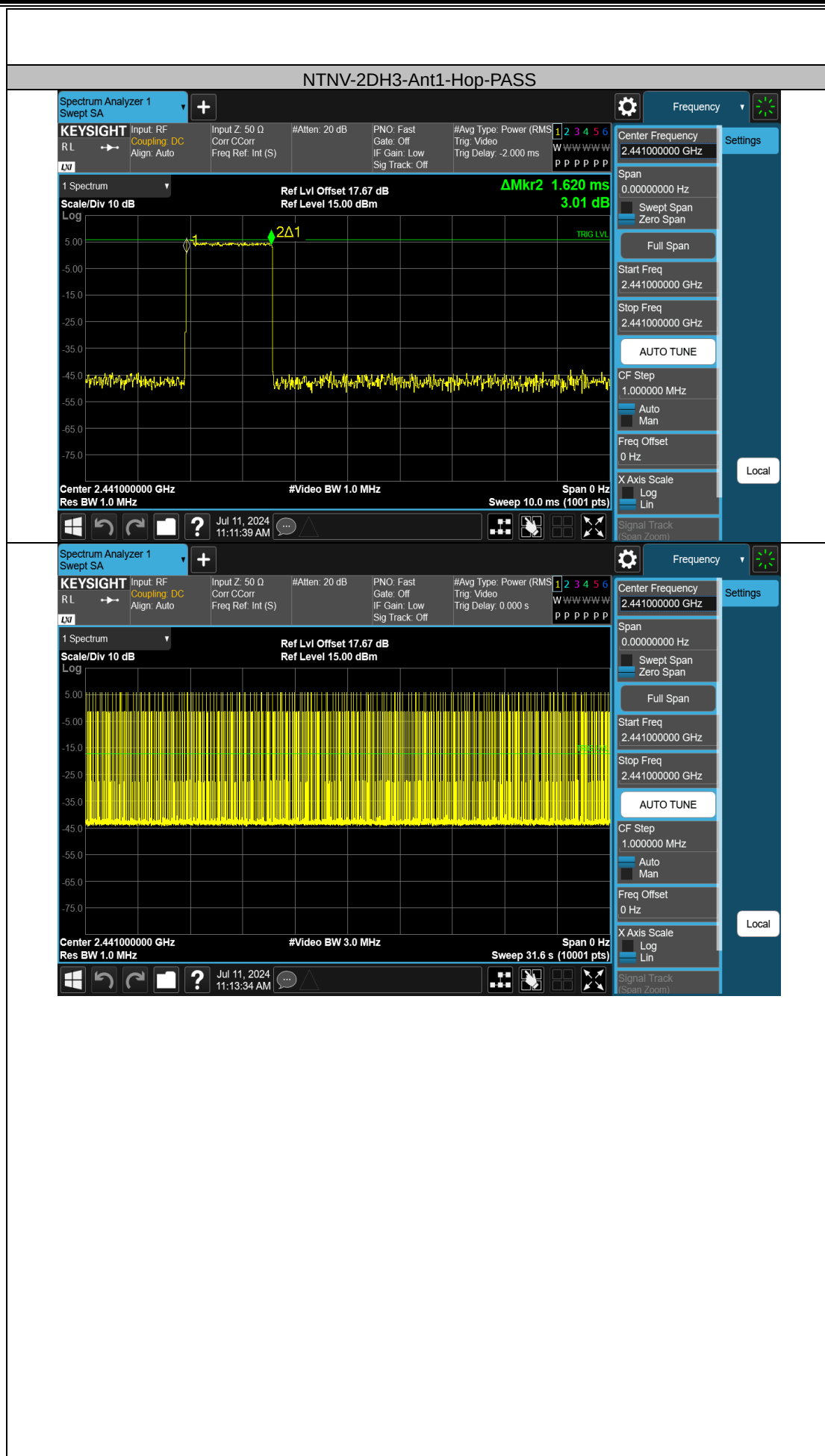
Test Graphs

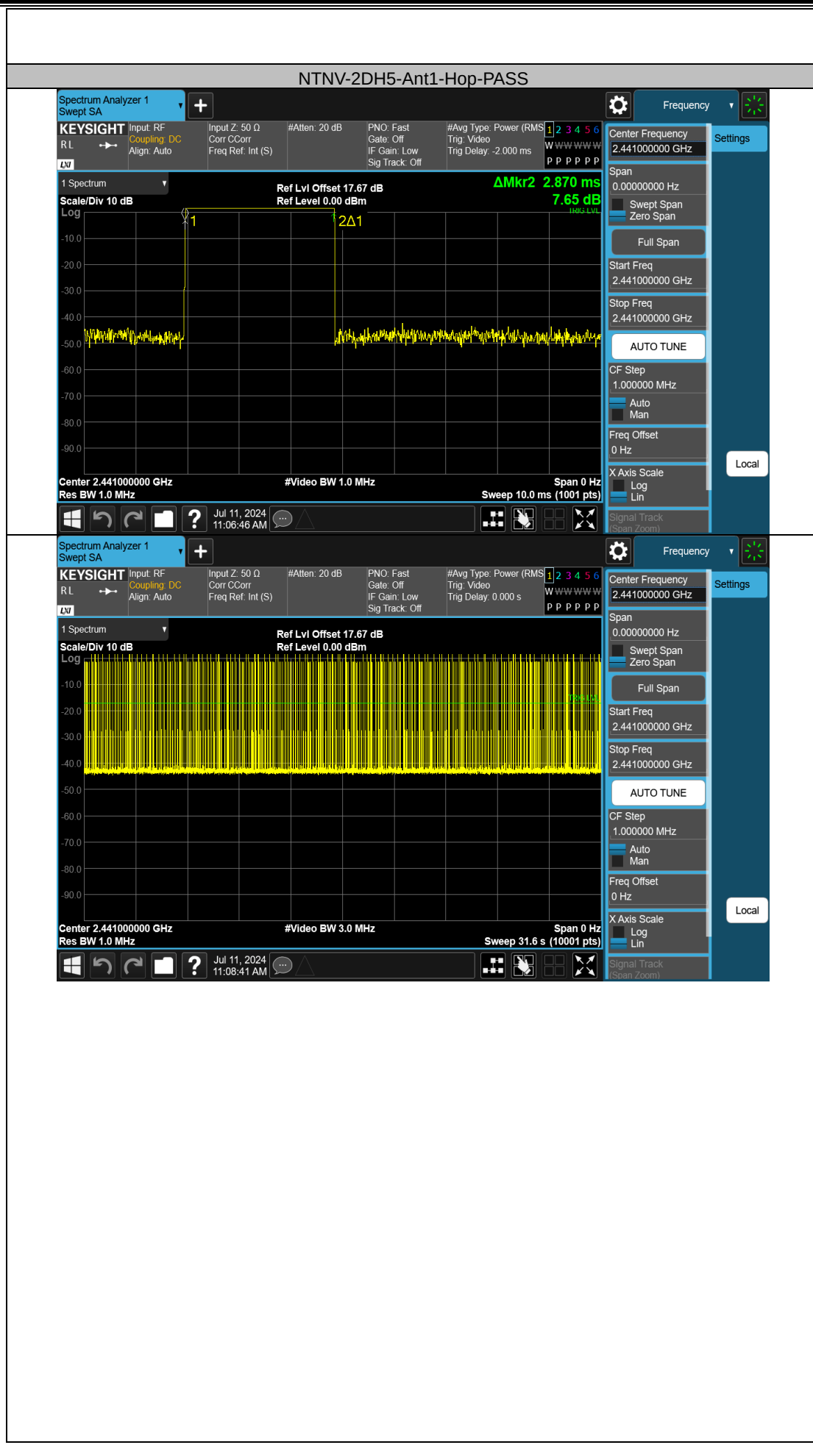


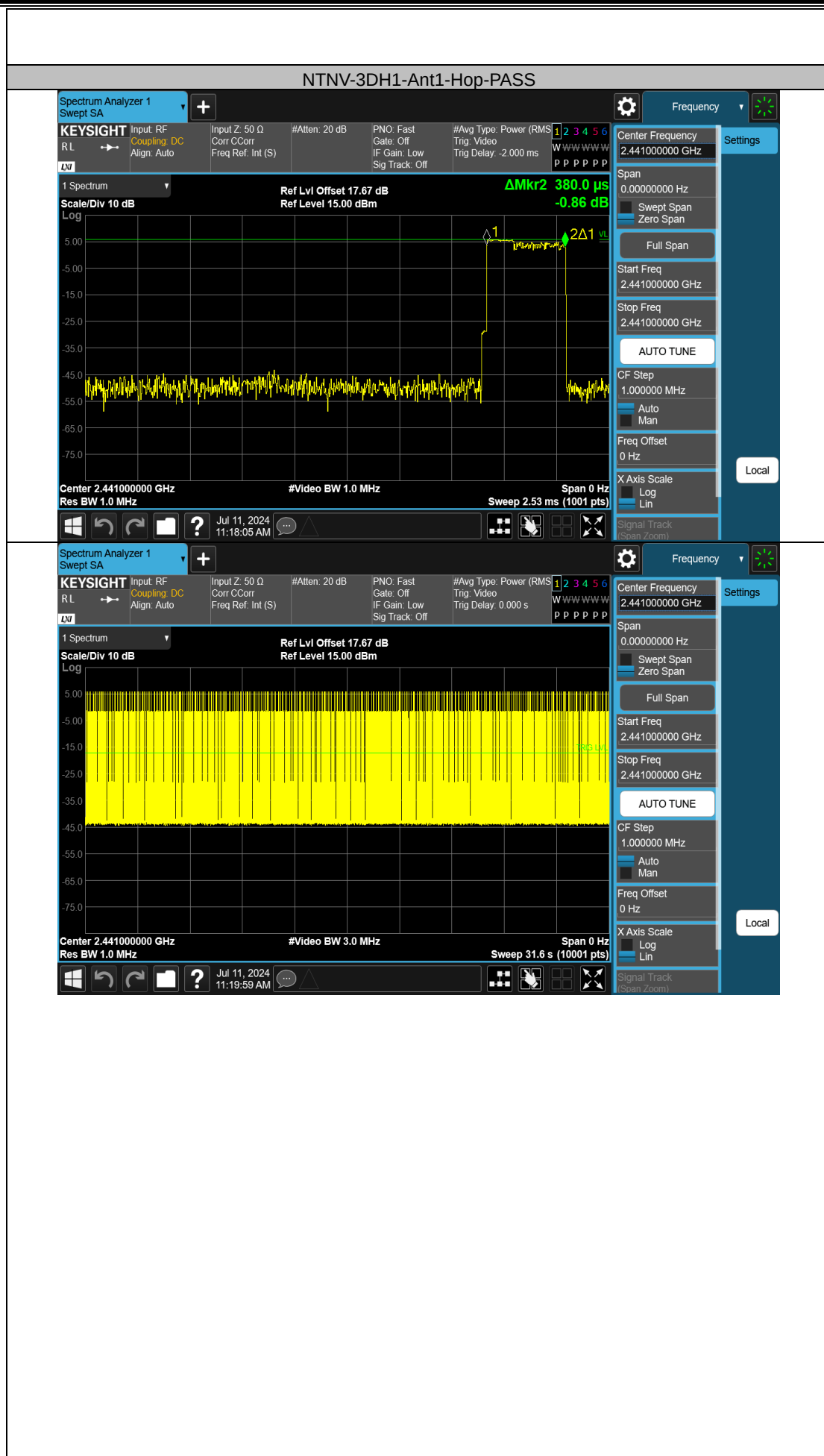


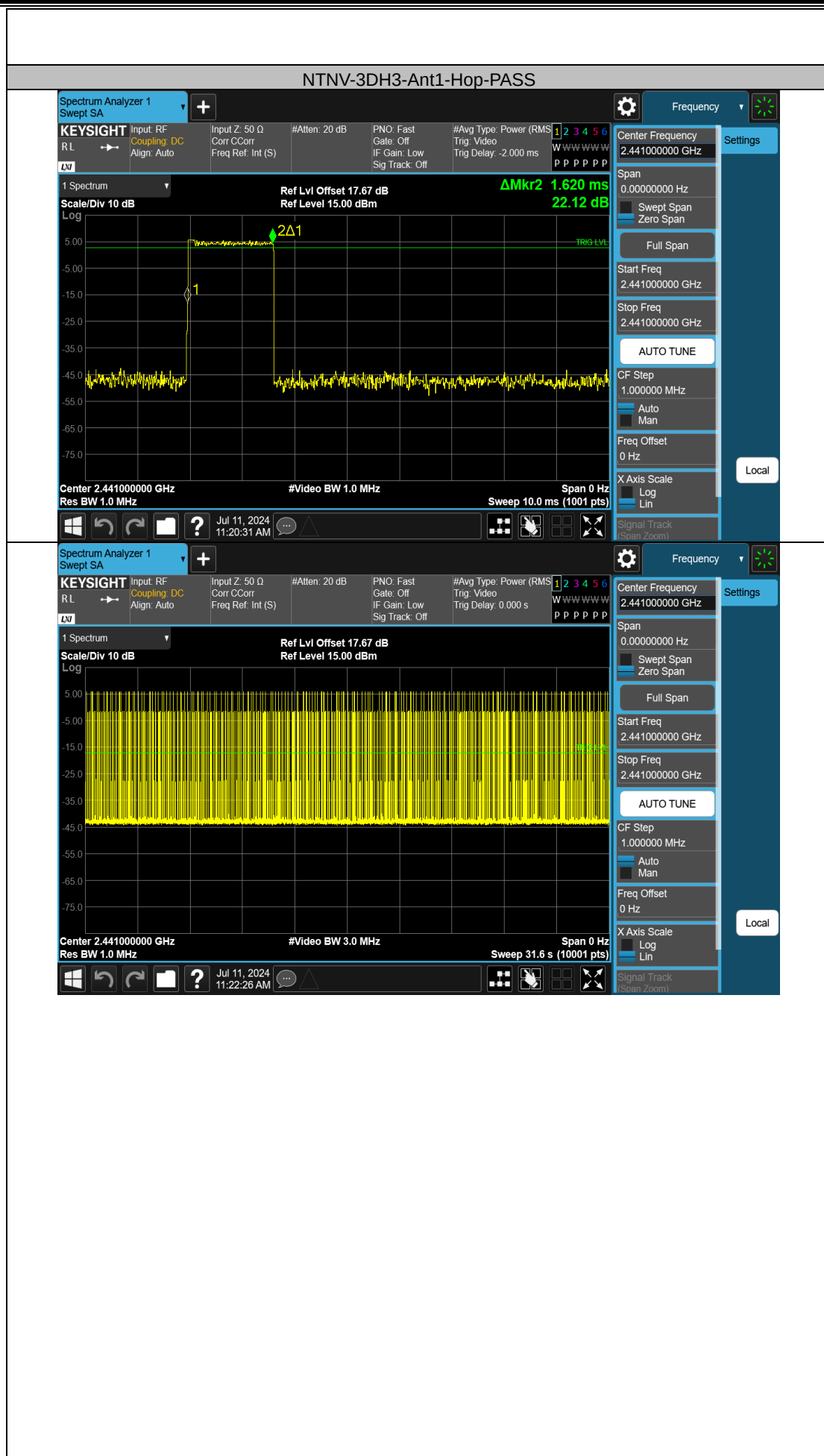


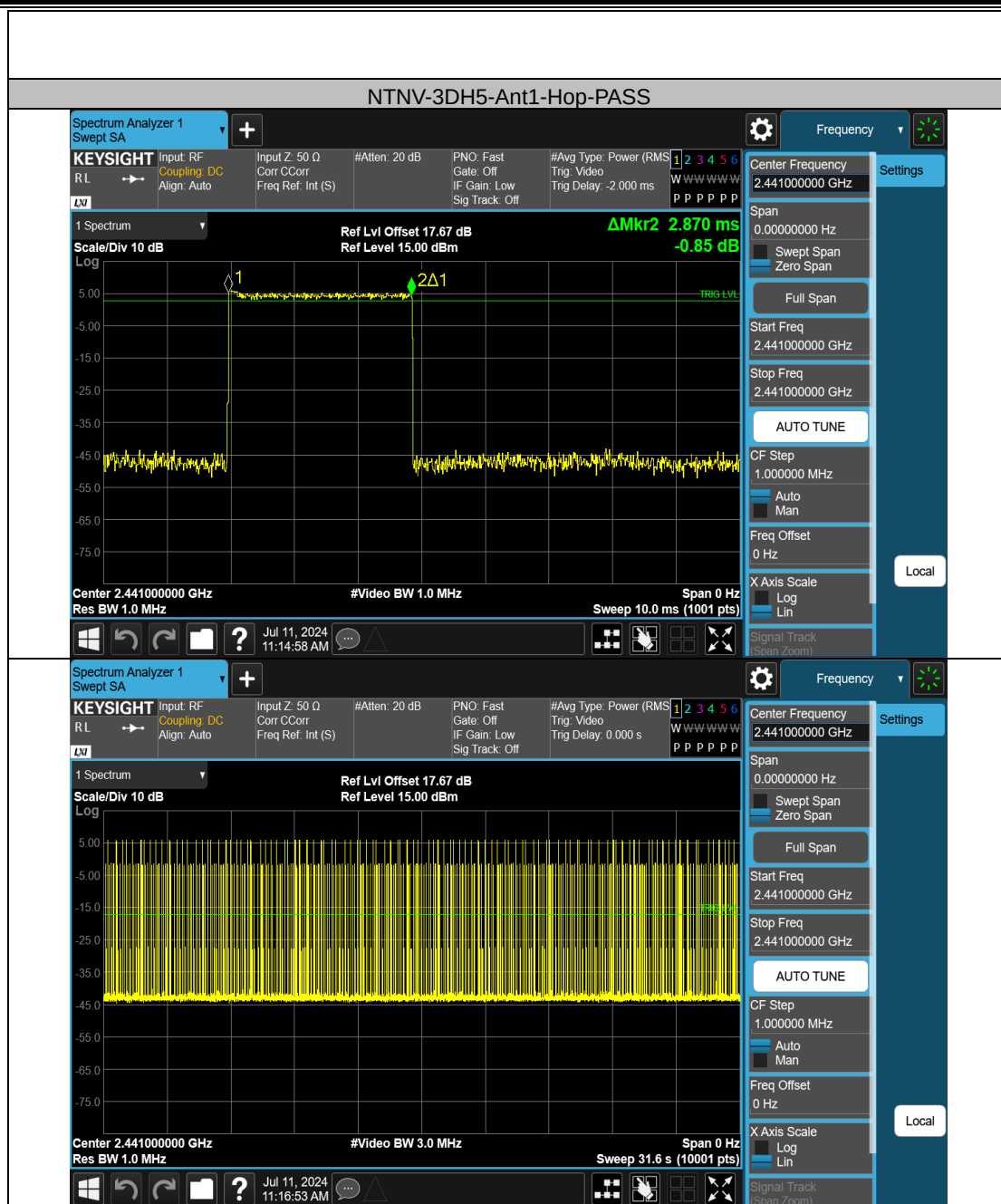




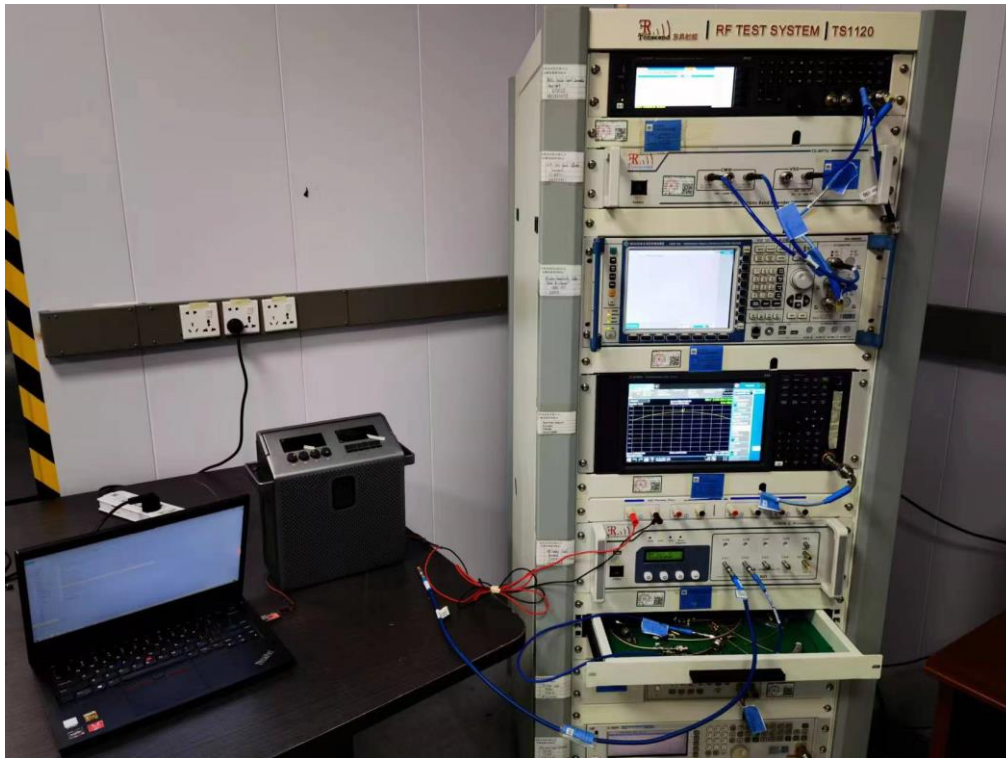








12.TEST SETUP PHOTO



13. EUT PHOTO

External Photos

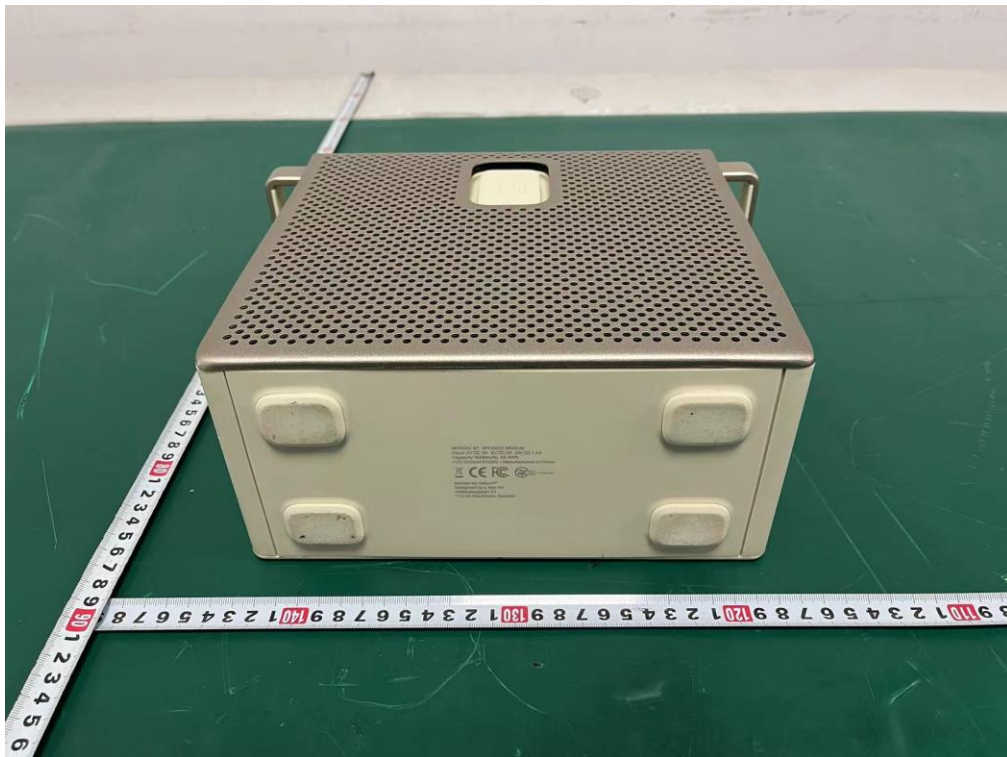
M/N: Mondo BT Speaker Medium



External Photos
M/N: Mondo BT Speaker Medium

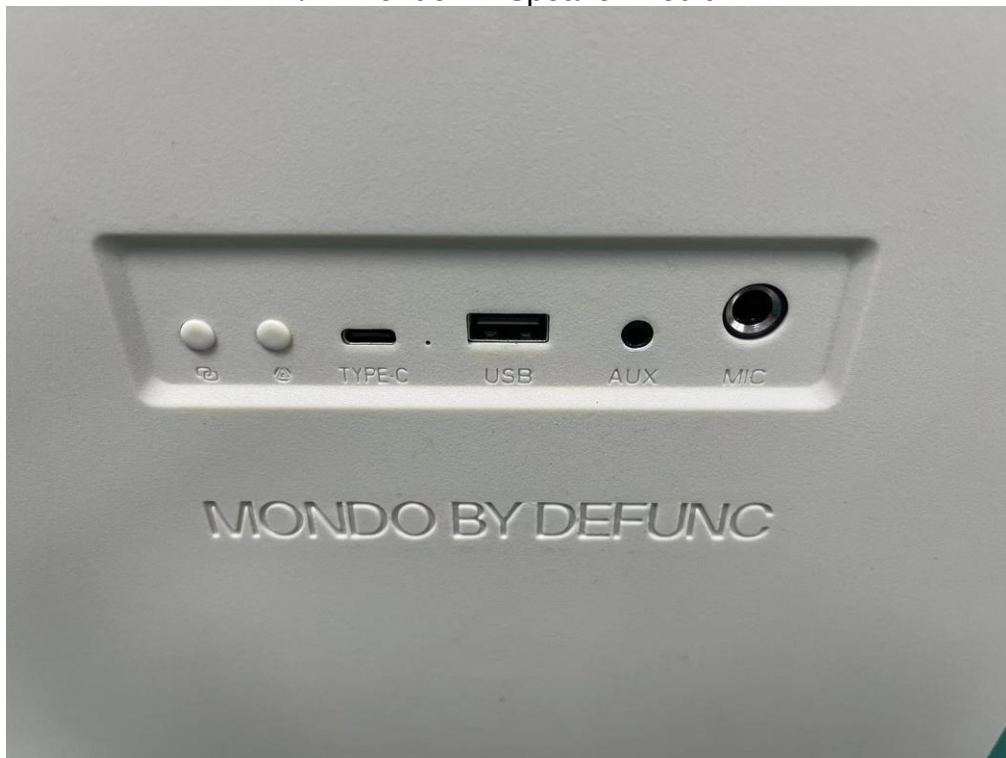


External Photos
M/N: Mondo BT Speaker Medium



External Photos

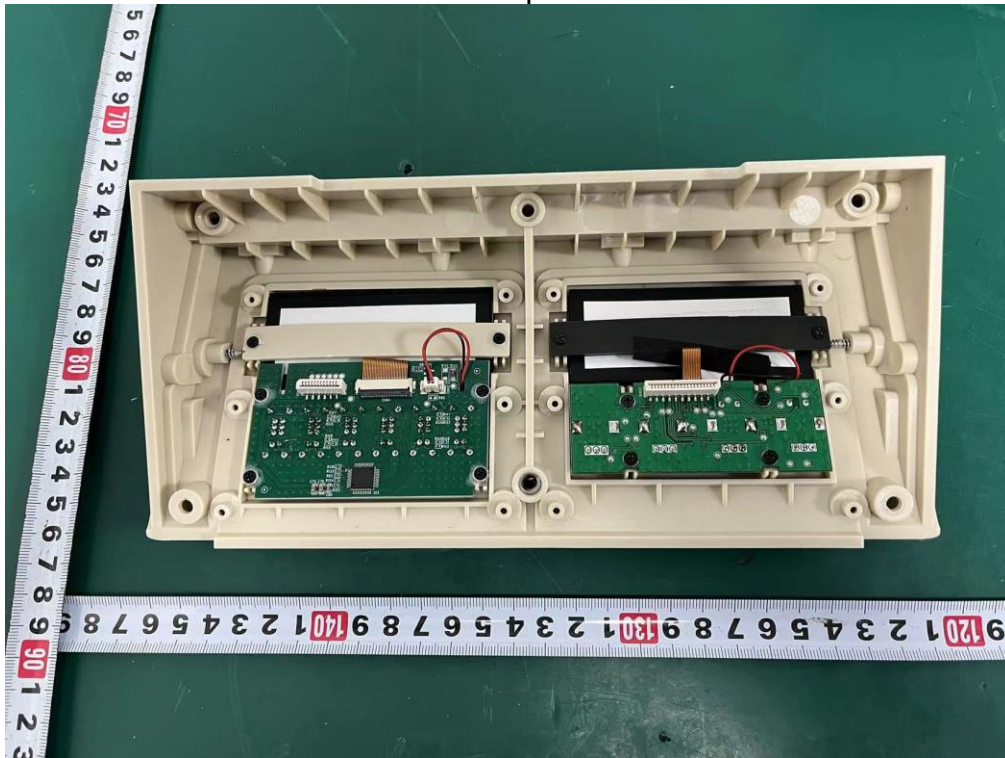
M/N: Mondo BT Speaker Medium



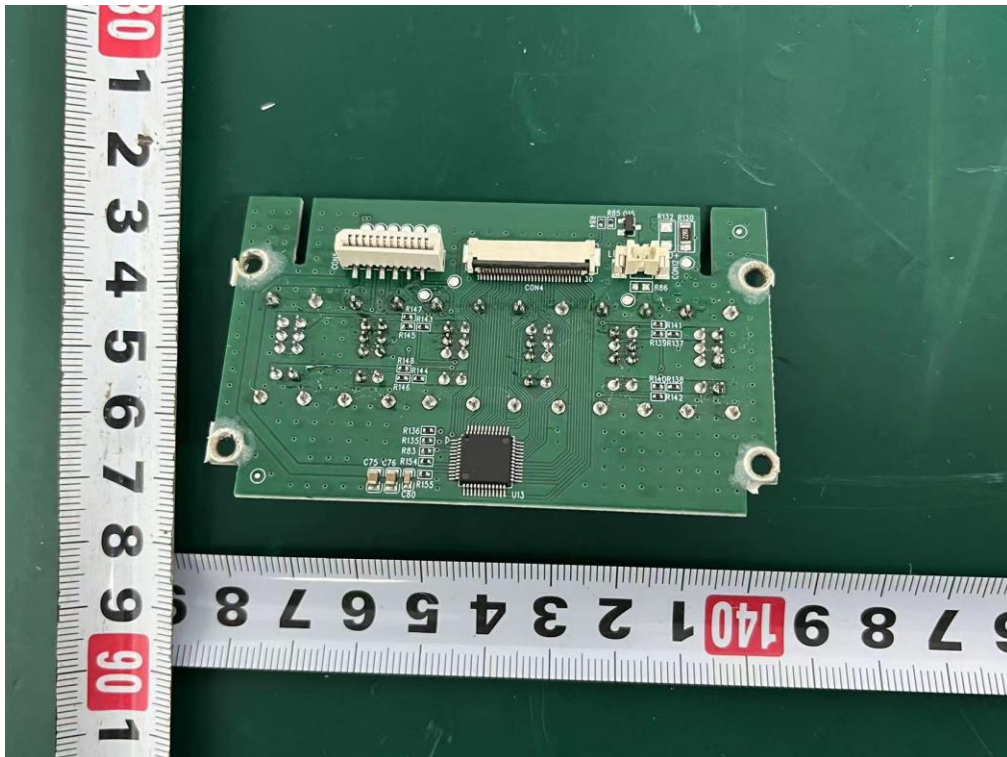
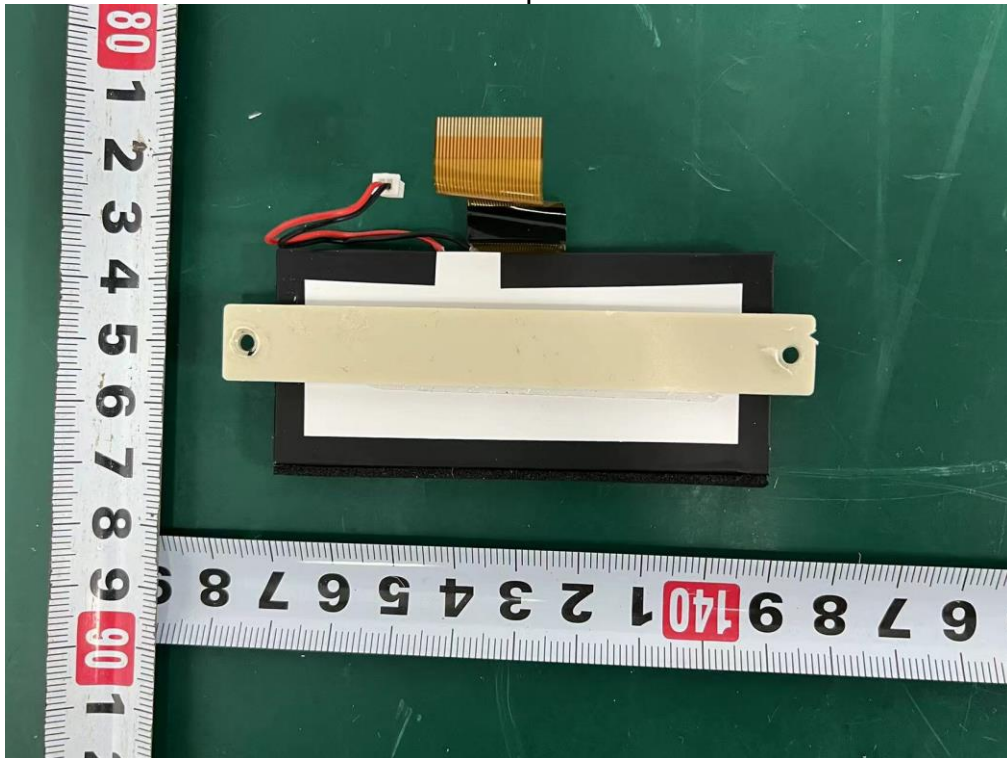
Internal Photos
M/N: Mondo BT Speaker Medium



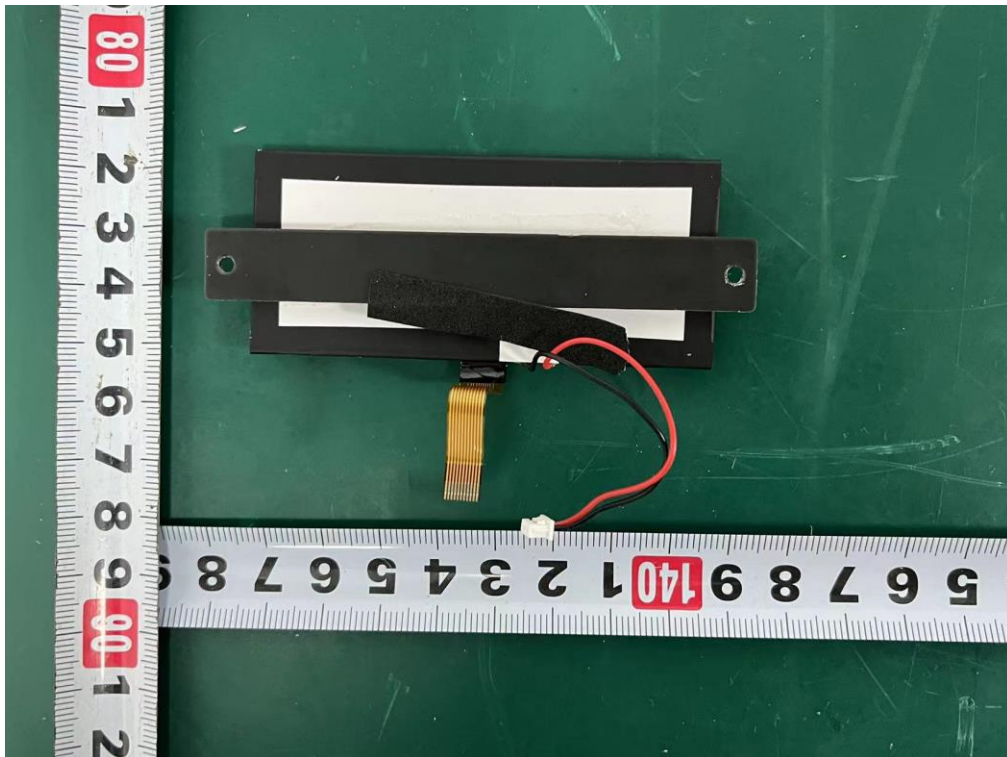
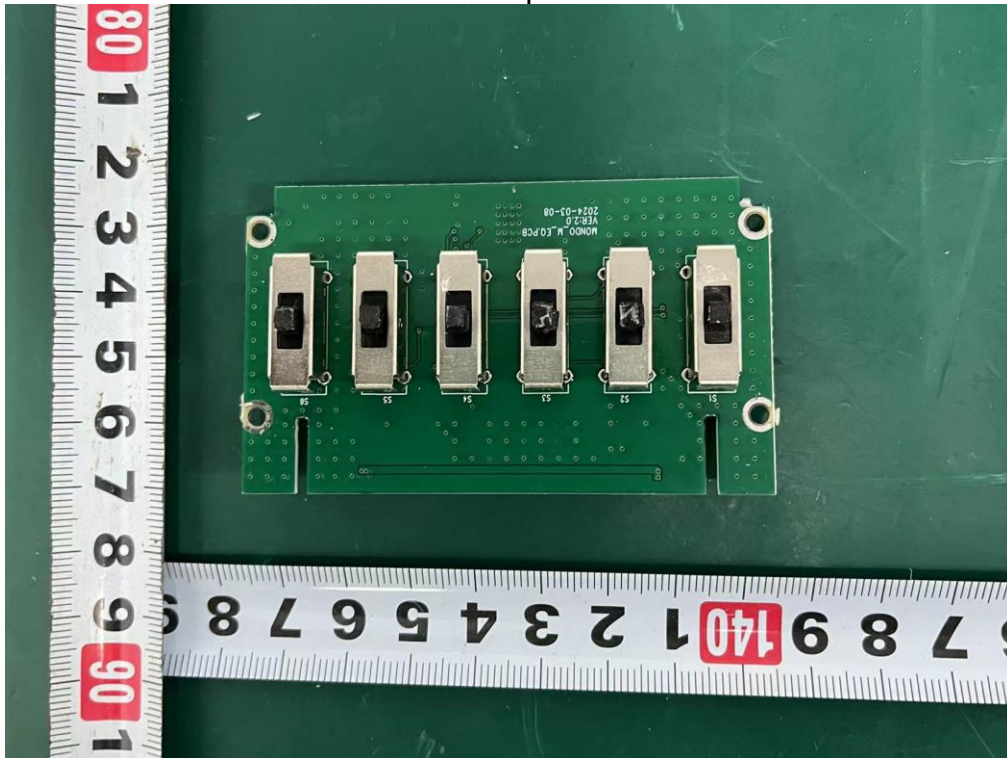
Internal Photos M/N: Mondo BT Speaker Medium



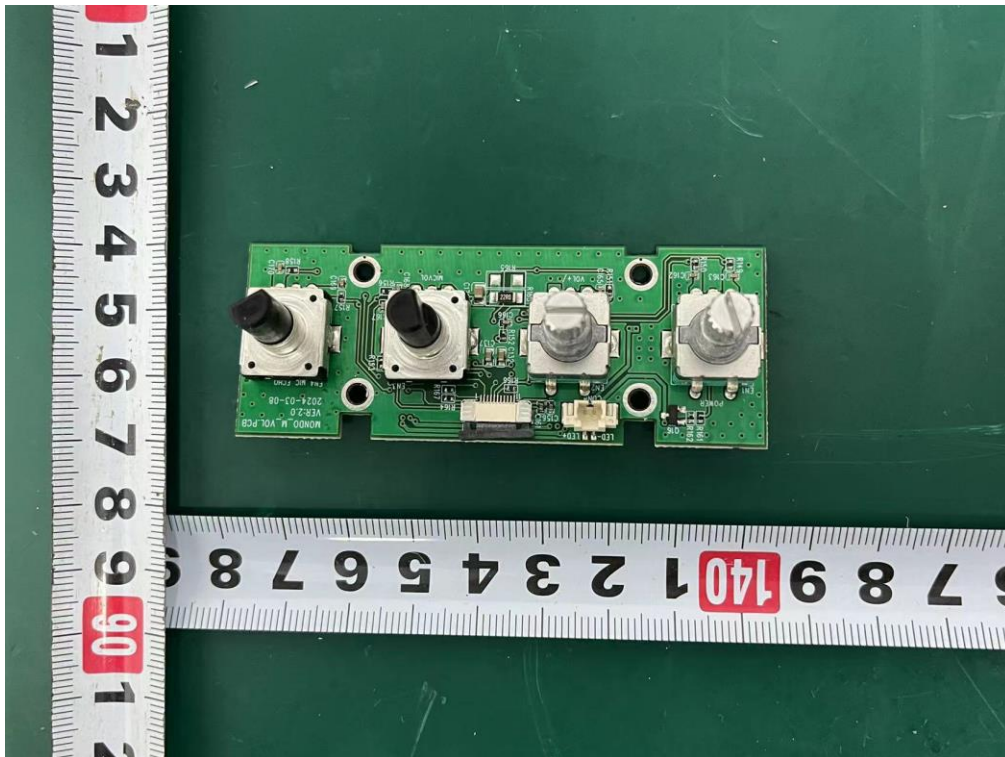
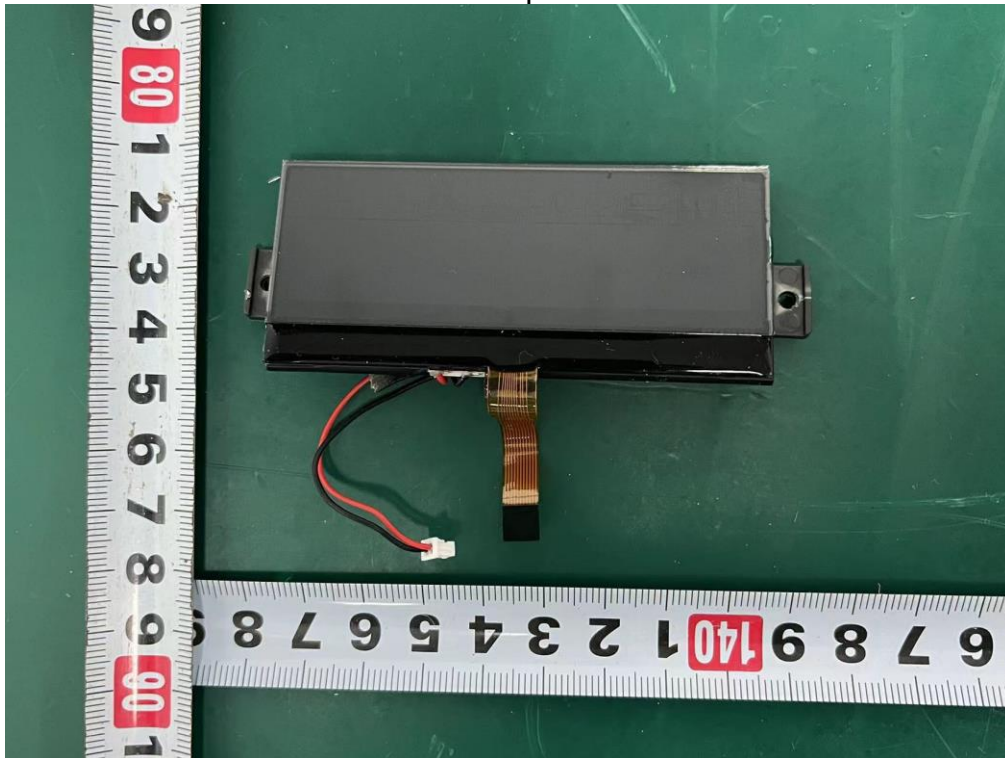
Internal Photos
M/N: Mondo BT Speaker Medium



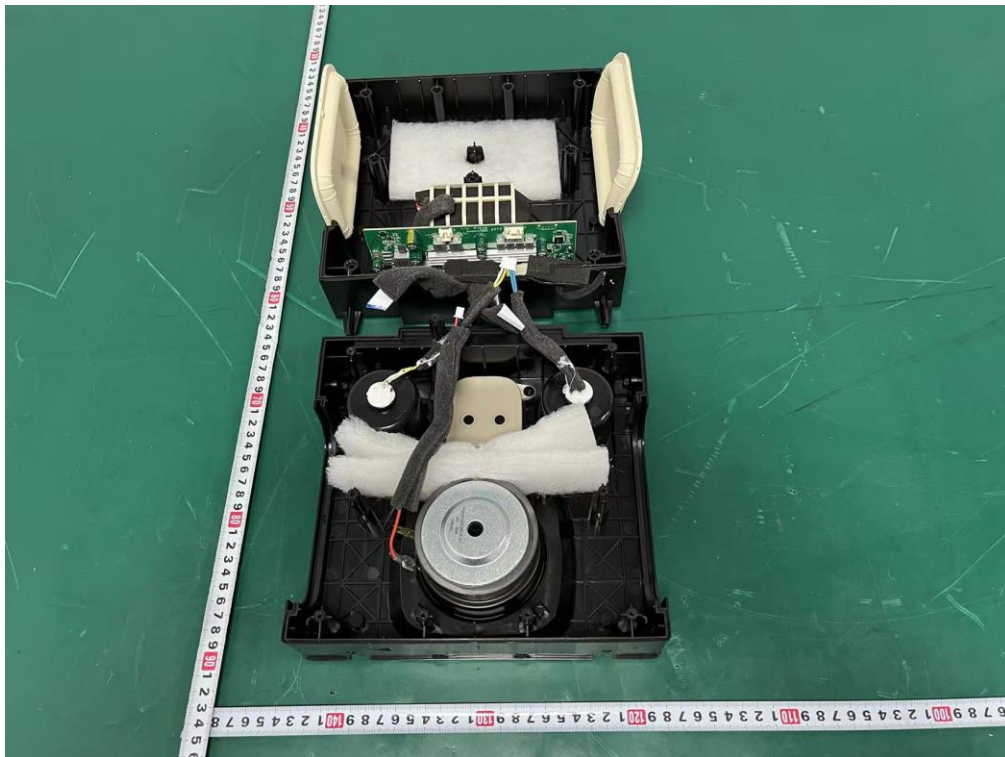
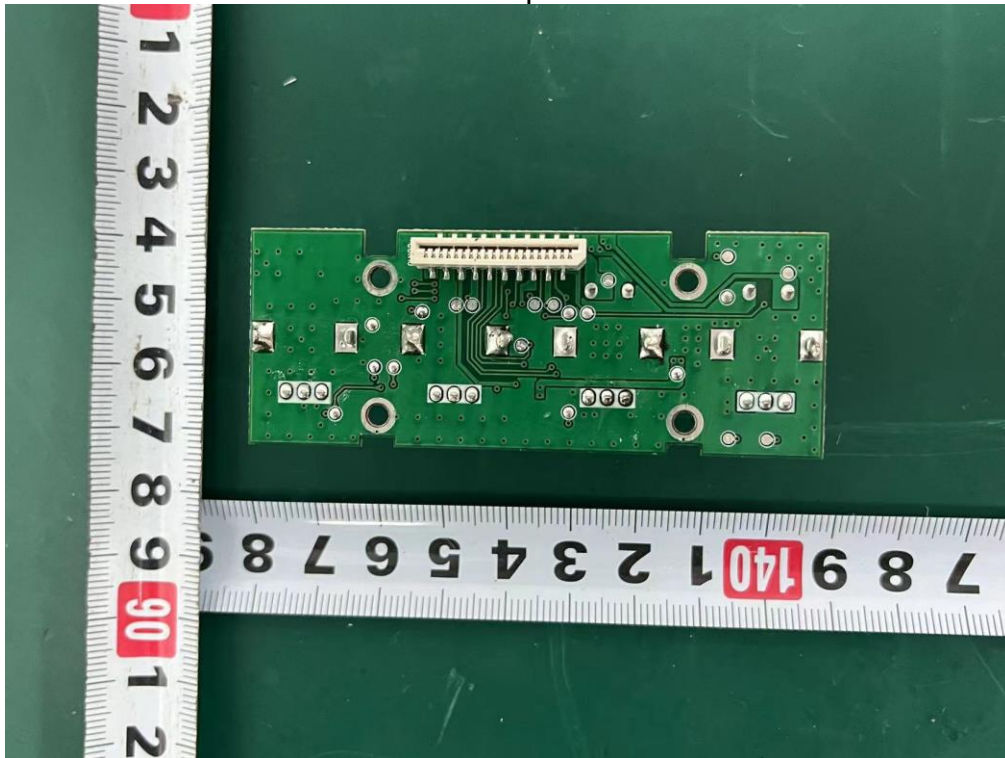
Internal Photos
M/N: Mondo BT Speaker Medium



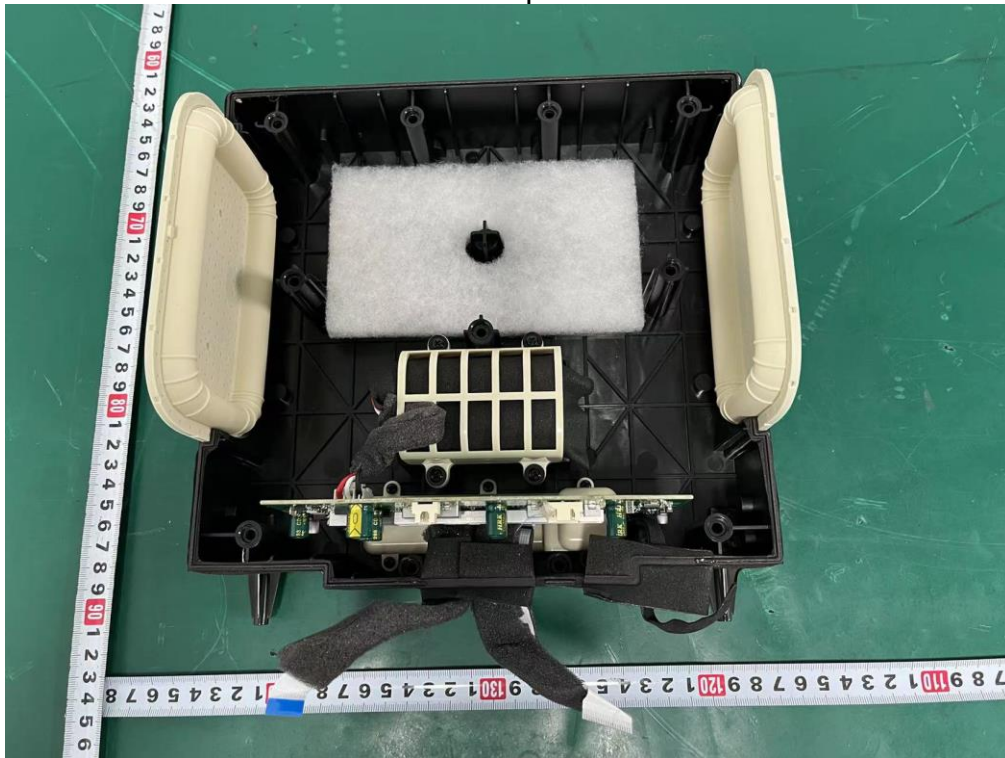
Internal Photos
M/N: Mondo BT Speaker Medium



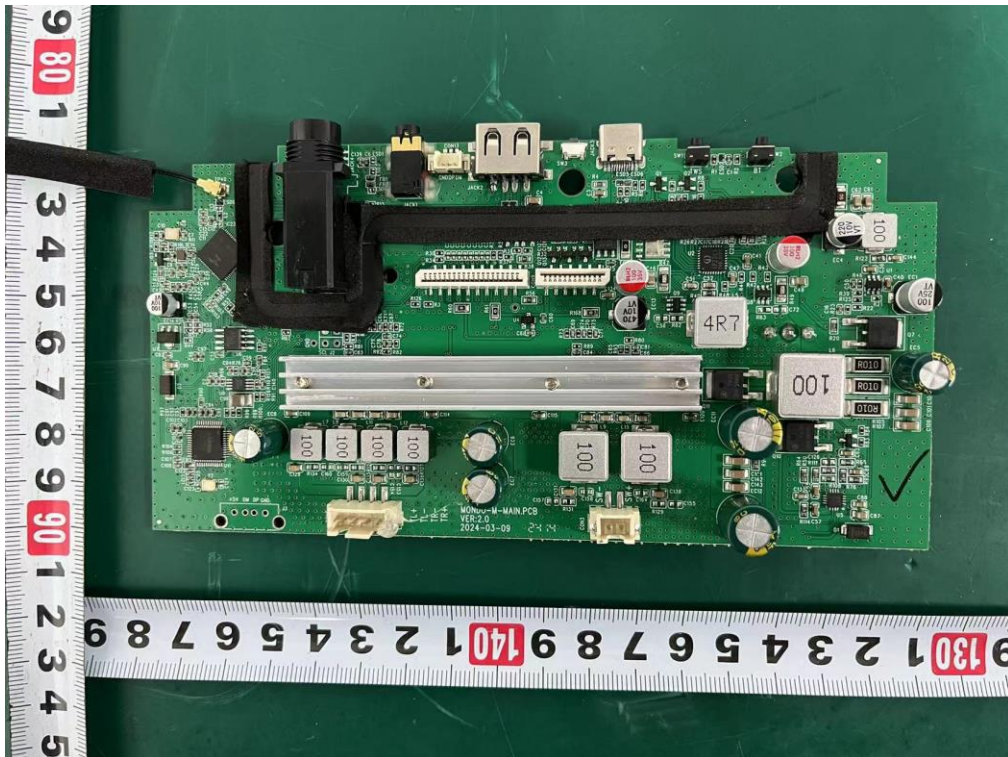
Internal Photos
M/N: Mondo BT Speaker Medium



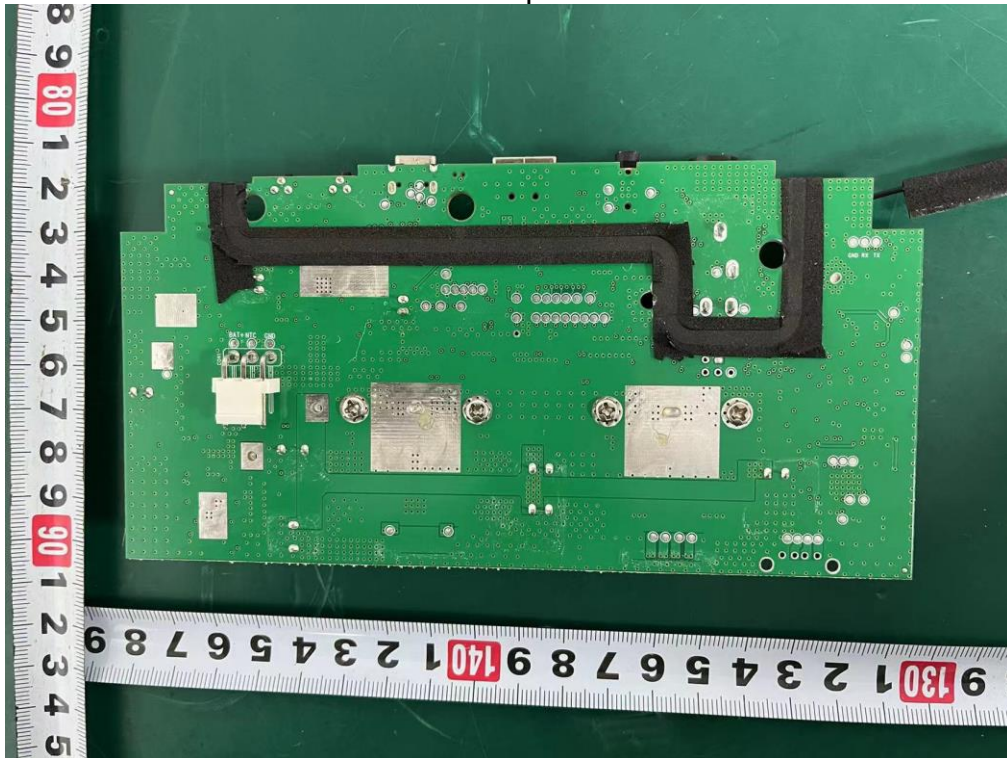
Internal Photos M/N: Mondo BT Speaker Medium



Internal Photos
M/N: Mondo BT Speaker Medium



Internal Photos
M/N: Mondo BT Speaker Medium



Internal Photos
M/N: Mondo BT Speaker Medium



End of Test Report