



Engineering Solutions & Electromagnetic Compatibility Services

**Certification Application Report
FCC Part 15.245 & ISED RSS-210**

Test Lab: Rhein Tech Laboratories, Inc. Tel: 703-689-0368 360 Herndon Parkway www.rheintech.com Suite 1400 atcbinfo@rheintech.com Herndon, VA 20170		Applicant: FlightScope (Pty) Ltd Tel: +27 21 880 2160 1 Quantum Street Stellenbosch 7600 South Africa	
FCC ID IC	QXP-JR230 4612A-JR230	Test Report Date	August 8, 2024
Platform	N/A	Report #	2023134DXT
Model	Mevo Range	RTL Quote #	QRTL23-134A
American National Standard Institute	ANSI C63.10-2020: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices		
FCC Classification	FDS - Field Disturbance Sensor		
FCC Rule Part	FCC Rules Part 15.245: Operation within the bands 902–928 MHz, 2435–2465 MHz, 5785–5815 MHz, 10500–10550 MHz, and 24075–24175 MHz (12-18-23)		
ISED Standard(s)	RSS-210 Issue 10: Licence-Exempt Radio Apparatus: Category I Equipment RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus		
Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
24080 - 24160	N/A	N/A	897KN0N

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, ANSI C63.10, and ISED RSS-210 and RSS-Gen.

Signature: 

Date: August 8, 2024

Typed/Printed Name: Desmond A. Fraser

Position: President

*This report may not be reproduced, except in full, without the written approval of Rhein Tech Laboratories, Inc. and FlightScope (Pty) Ltd. The test results relate only to the item(s) tested.
This replaces Report R1.3-df.*

*These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB.
Refer to certificate and scope of accreditation AT-1445.*

Table of Contents

1	General Information	4
1.1	Scope	4
1.2	Description of EUT	4
1.3	Test Facility	4
1.4	Measurement Uncertainty	4
1.5	Related Submittal(s)/Grant(s)	4
1.6	Modifications	4
2	Test Information	5
2.1	Test Result Summary	5
2.2	Test System Details	5
2.3	EUT Exercise Description	5
2.4	Configuration of Tested System	6
3	Conducted Emissions – FCC 15.207, ISED RSS-Gen 8.8	7
3.1	Conducted Emissions Measurements	7
3.2	Test Limits	7
3.3	Measurement Uncertainty	7
3.4	Conducted Emissions Test Data	8
4	Radiated Emissions – FCC 15.209, FCC 15.245(b), ISED RSS-210 F.1, RSS-Gen 8.9 and 8.10	13
4.1	Radiated Emissions Measurements	13
4.2	Test Limits	13
4.3	Measurement Uncertainty	13
4.4	Field Strength Calculations	14
4.5	Radiated Emissions Test Data	15
5	Occupied Bandwidth – ISED RSS-Gen 6.7	19
5.1	99% Bandwidth Test Procedure	19
5.2	Measurement Uncertainty	19
5.3	99% dB Bandwidth Test Results	19
6	Conclusion	23

Table of Figures

Figure 2-1: Configuration of System Under Test	6
--	---

Table of Tables

Table 2-1: Test Result Summary	5
Table 2-2: Equipment Under Test (EUT)	5
Table 3-1: Conducted Emission Limits per 15.207	7
Table 3-2: Conducted Emissions Environmental Factors	8
Table 3-3: Conducted Emissions Test Equipment	12
Table 4-1: Radiated Emission Limits per 15.209	13
Table 4-2: Radiated Emission Limits per 15.245	13
Table 4-3: Radiated Emissions Environmental Factors	15
Table 4-4: Radiated Emissions – Fundamental – Average	15
Table 4-5: Radiated Emissions – Fundamental – Peak	15
Table 4-6: Radiated Emissions – 24.08 GHz – Harmonics and Spurious – Average	15
Table 4-7: Radiated Emissions – 24.08 GHz – Harmonics and Spurious – Peak	15
Table 4-8: Radiated Emissions – 24.12 GHz – Harmonics and Spurious – Average	16
Table 4-9: Radiated Emissions – 24.12 GHz – Harmonics and Spurious – Peak	16
Table 4-10: Radiated Emissions – 24.16 GHz – Fundamental and Harmonics – Average	16
Table 4-11: Radiated Emissions – 24.16 GHz – Fundamental and Harmonics – Peak	16
Table 4-12: Radiated Emissions – Unintentional (Quasi-Peak and Average Detectors)	17
Table 4-13: Radiated Emissions Test Equipment	18
Table 5-1: 99% Bandwidth Environmental Factors	19
Table 5-2: 99% Bandwidth Test Data	19
Table 5-3: 99% Bandwidth Test Equipment	22

Table of Plots

Plot 3-1: Conducted Emissions – Neutral (Receive Mode)	8
Plot 3-2: Conducted Emissions – Phase (Receive Mode)	9
Plot 3-3: Conducted Emissions – Neutral (Transmit Mode)	10
Plot 3-4: Conducted Emissions – Phase (Transmit Mode)	11
Plot 5-1: 99% Bandwidth, 24.08 GHz	20
Plot 5-2: 99% Bandwidth, 24.12 GHz	21
Plot 5-3: 99% Bandwidth, 24.16 GHz	22

Table of Appendixes

Appendix A: Test Configuration Photographs	24
--	----

Table of Photographs

Photograph 1: Mevo Range with Dongle In Port	24
Photograph 2: Radiated Emissions Testing – Front View (Below 1 GHz)	25
Photograph 3: Radiated Emissions Testing – Rear View (Below 1 GHz)	26
Photograph 4: Radiated Emissions Testing – Front View (Above 1 GHz)	27
Photograph 5: Radiated Emissions Testing – Rear View (Above 1 GHz)	28
Photograph 6: AC Conducted Emissions Testing – Front View	29
Photograph 7: AC Conducted Emissions Testing – Rear View	30

1 General Information

1.1 Scope

This is an original FCC and ISCED certification application report for the FlightScope Mevo Range sensor.

Applicable Standards:

- FCC Part 15.245: Operation within the bands 902–928 MHz, 2435–2465 MHz, 5785–5815 MHz, 10500–10550 MHz, and 24075–24175 MHz
- ISCED RSS-210: Licence-Exempt Radio Apparatus: Category I Equipment
- ISCED RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus

1.2 Description of EUT

Equipment Under Test	Range Sensor
Model	Mevo Range
Power	12VDC
Modulation Type	CW
Frequency Range	24.08 – 24.16 GHz
Antenna Connector Type	N/A
Antenna Type	Microstrip patch antenna

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc., 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170.

ISCED CAB ID: US0079, Company Number: 2956A.

1.4 Measurement Uncertainty

The measurement uncertainty complies with CISPR 16-4-2 limits and is not used to adjust measurements for compliance determination. Expanded uncertainty (U) for each scope, calculated per ANSI/NCSL Z540-2-1997 (R2002) with a type B evaluation, is provided in this RTL report. While this demonstrates RTL's commitment to transparency, compliance decisions are based solely on comparing measured values directly to the relevant standards' limits.

1.5 Related Submittal(s)/Grant(s)

This is an original application for certification for FlightScope (Pty) Ltd., Model: Mevo Range, FCC ID: QXP-JR230, IC: 4612A-JR230.

The RX portion of the EUT is authorized via SDoC.

1.6 Modifications

No modifications were made to the equipment during testing in order to achieve compliance with these standards.

2 Test Information

2.1 Test Result Summary

Table 2-1: Test Result Summary

Test	FCC Reference	ISED Reference	Result
AC Power Conducted Emissions	15.207	RSS-Gen 8.8	Pass
Radiated Emissions	15.209	RSS-210 F.1; RSS-Gen 8.9, 8.10	Pass
Field Strength of Fundamentals and Harmonics	15.245 (b)	RSS-210 F.1	Pass
99% Bandwidth	N/A	RSS-Gen 6.7/ TRC-43	N/A

2.2 Test System Details

The test samples were received on October 26, 2023. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following table.

Table 2-2: Equipment Under Test (EUT)

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Range Sensor	FlightScope (Pty) Ltd.	Mevo Range	M2R-001022	QXP-JR230	Unshielded Power	24302

2.3 EUT Exercise Description

The EUT was configured for testing in a manner simulating a typical end-user configuration. When the EUT detects ball movement that exceeds a pre-set threshold, it tracks the disturbance and measures a time record of the ball speed. The measurement terminates when the tracked ball disappears, e.g., typically when the ball lands or moves outside the sensor's range or field of view. When this happens, the EUT stops transmitting while it calculates the results. When the measurement analysis is complete, the EUT publishes the results to the mobile application. Once the results are published, the EUT prepares for another shot by switching on the transmitter. Continuous transmitting sweep is not inherent in the design. It can only perform single-transmission. Hence, the EUT cannot be measured in continuous sweep mode.

EDIMAX dongle EW-7811UTC, FCC ID: NDD9578111305; IC: 4701A-78111401, is included with the Mevo Range for customer convenience and was installed during testing.

FlightScope provided EUT test software FS Mevo+ Firmware V0.18.

All circuitry, clocks, and oscillators were powered and active. All I/O ports were cabled and loaded.

The EUT was powered by its Li-Ion battery. The battery was charged with +12.0 VDC from a DC power supply via the charging cable.

The power button was pressed, and a series of beeping sounds could be heard. Once the beeping sounds subsided, the EUT was ready for testing.

For radiated emissions, the DIP switches on the EUT were set to transmit at 24.08 GHz, 24.12 GHz and 24.16 GHz for low, middle and high channels respectively.

For all tests, the EUT was operated in its most EMC-sensitive configuration.

2.4 Configuration of Tested System

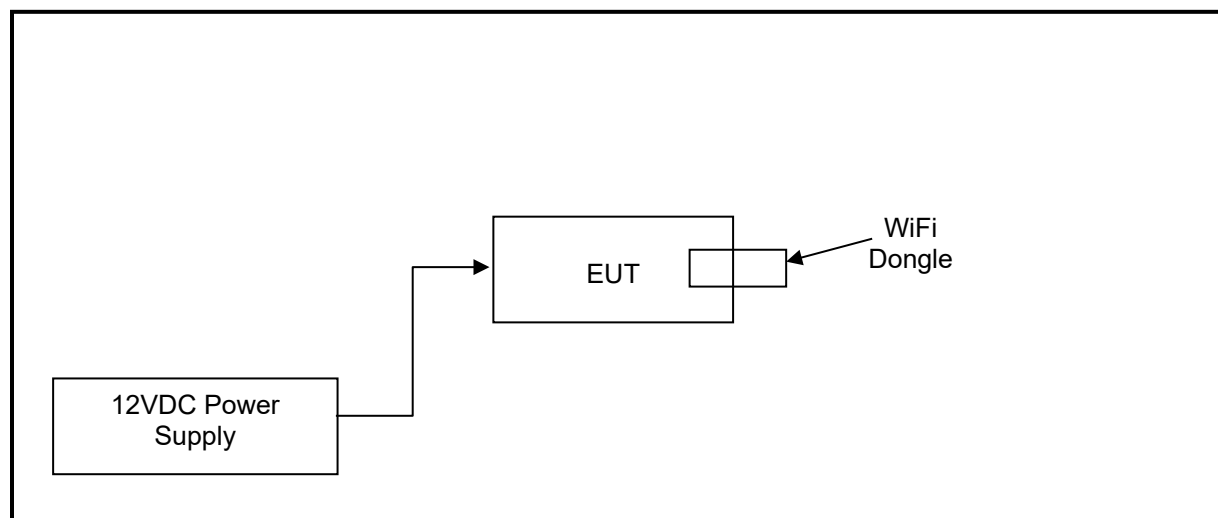


Figure 2-1: Configuration of System Under Test

3 Conducted Emissions – FCC 15.207, ISED RSS-Gen 8.8

3.1 Conducted Emissions Measurements

The power line conducted emission measurements were performed in a type shielded enclosure. The EUT was placed on a wooden table. Power was fed to the EUT through a 50-ohm/50 microhenry Line Impedance Stabilization Network (LISN). The EUT LISN was fed power through an AC filter box mounted on the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT's auxiliary equipment. This peripheral LISN was also fed AC power.

The spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. Video filter less than 10 times the resolution bandwidth is not used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz.

3.2 Test Limits

Table 3-1: Conducted Emission Limits per 15.207

Frequency (MHz)	Quasi-Peak (dB μ V)	Average (dB μ V)
0.15 – 0.50	66 to 56	56 to 46
0.5 – 5.0	66	46
5 – 30	60	50

3.3 Measurement Uncertainty

Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor $k = 2$.

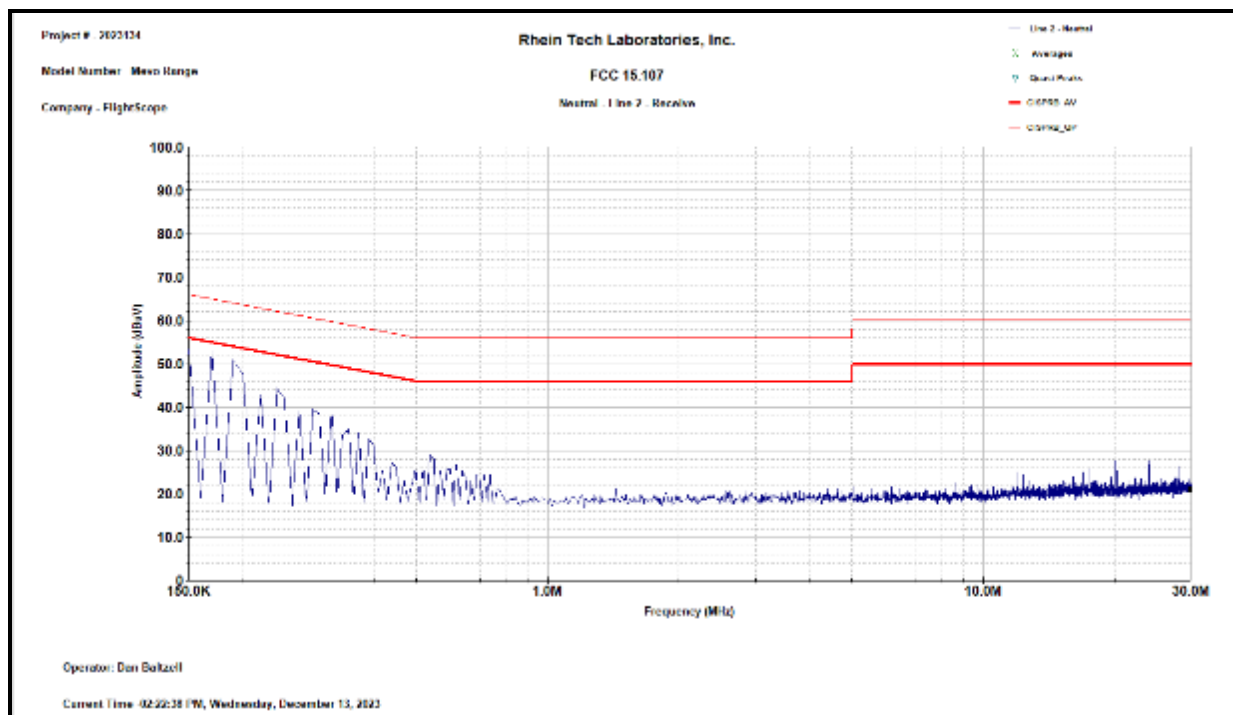
Conducted Emissions: ± 3.6 dB

3.4 Conducted Emissions Test Data

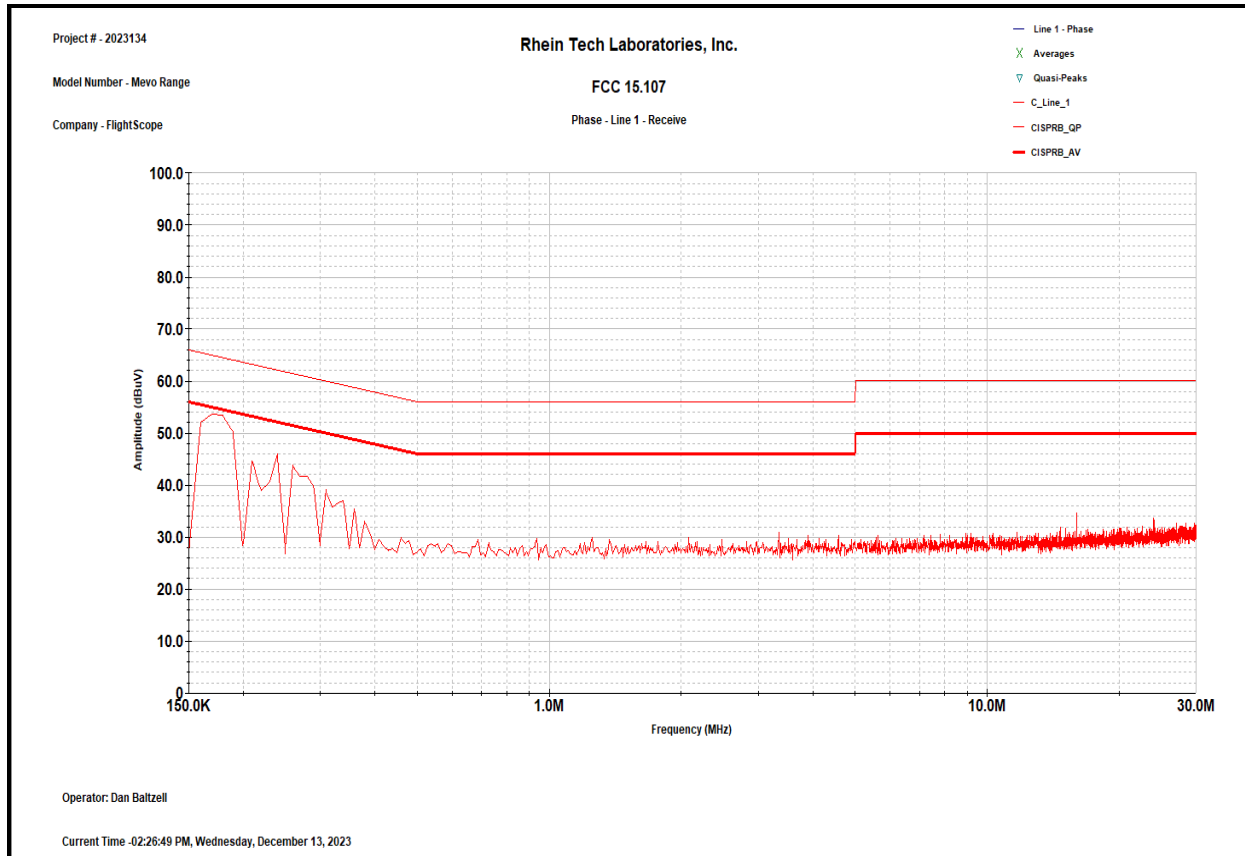
Table 3-2: Conducted Emissions Environmental Factors

Date	Temperature (°F)	Humidity (%)	Atmospheric Pressure (kPa)
12/13/2023	22	25	103.5

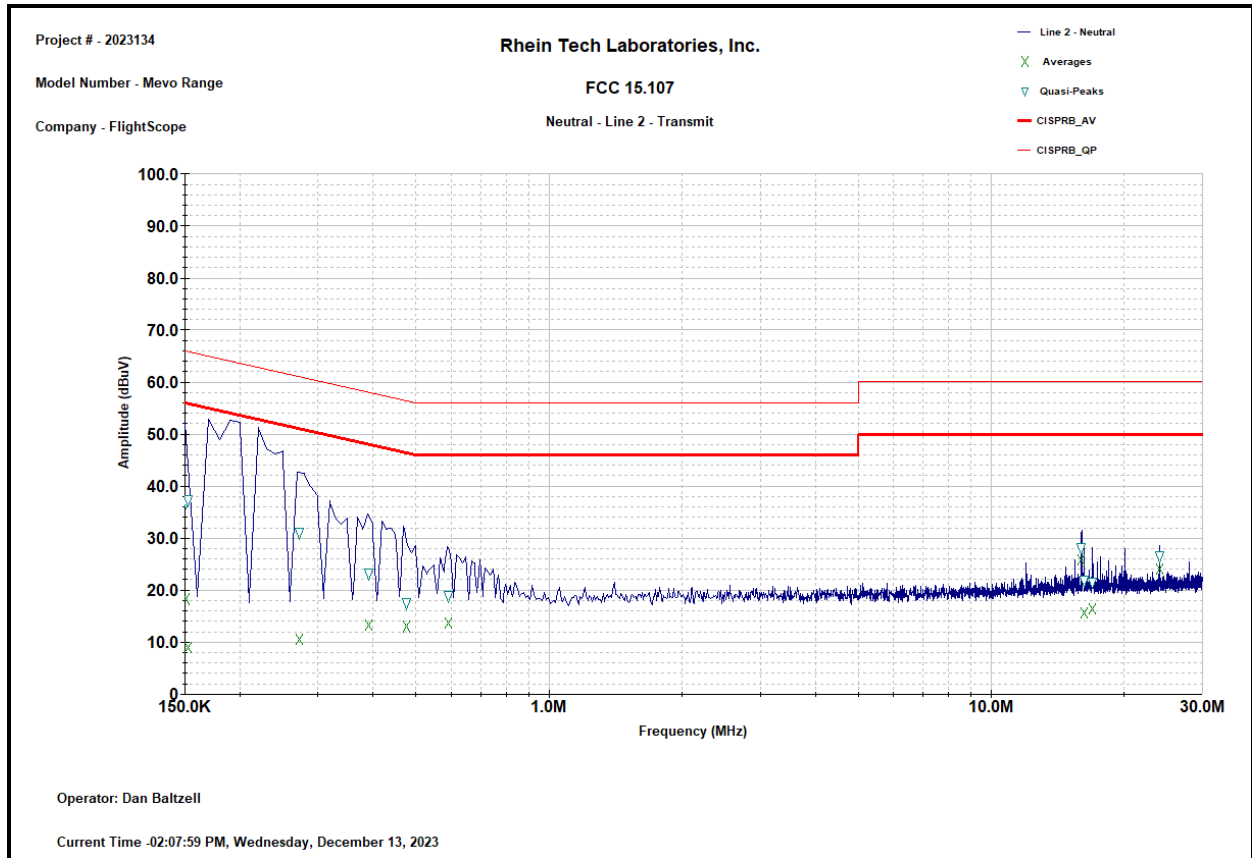
Plot 3-1: Conducted Emissions – Neutral (Receive Mode)



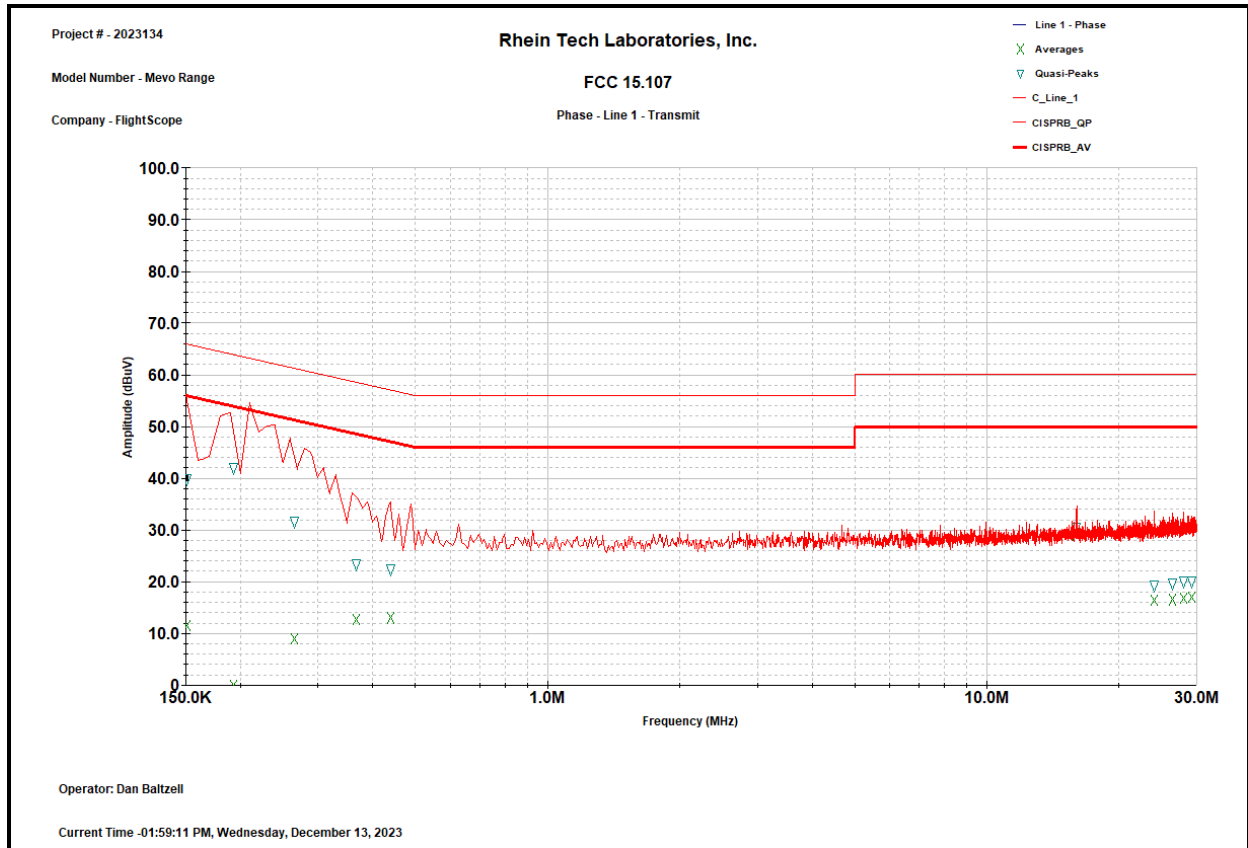
Plot 3-2: Conducted Emissions – Phase (Receive Mode)



Plot 3-3: Conducted Emissions – Neutral (Transmit Mode)



Plot 3-4: Conducted Emissions – Phase (Transmit Mode)



Result: Pass

Test Personnel

Daniel W. Baltzell		December 13, 2023
EMC Test Engineer	Signature	Date of Test

Table 3-3: Conducted Emissions Test Equipment

RTL Asset #	Part Type	Manufacturer	Model	Serial Number	Calibration Due Date
900339	Quasi-Peak Adapter	Hewlett Packard	85650A	2521A00743	09/16/2024
900728	Filter	Solar	Type 8130-7.0	N/A	05/08/2026
900930	Spectrum Analyzer Display	Hewlett Packard	85662A	3144A20839	N/A
900931	Spectrum Analyzer (100 Hz – 22 GHz)	Hewlett Packard	8566B	3138A07771	02/26/2025
901083	16A LISN	AFJ International	LS16/110VAC	16010020080	02/16/2025
N/A	Tile! Test Software	ETS-Lindgren	7.1.3.20	N/A	N/A

4 Radiated Emissions – FCC 15.209, FCC 15.245(b), ISSED RSS-210 F.1, RSS-Gen 8.9 and 8.10

4.1 Radiated Emissions Measurements

Before final radiated emissions measurements were made on the OATS, the EUT was scanned indoors at both one and three-meter distances. This was done in order to determine its emission spectrum signal. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction, and frequency. This process was repeated during final radiated emission measurements on the OATS, at each frequency, in order to ensure that maximum emission amplitudes were measured. Final radiated emissions measurements were made on the OATS at a distance of 1 meter and interpolated to 3 meters for fundamental and harmonics; unintentional emissions were measured at 3 meters. The EUT was placed on a non-conductive turntable. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emissions' maximum levels. Measurements were taken using both horizontal and vertical antenna polarization. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz for frequencies below 1 GHz and 1 MHz for frequencies above 1 GHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

4.2 Test Limits

Table 4-1: Radiated Emission Limits per 15.209

Frequency (MHz)	Field Strength (μV/m)	Measure Distance (m)
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

Table 4-2: Radiated Emission Limits per 15.245

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (mV/m)
24075 – 24175	2500.0	25.0

Notes: 100 μV/m ≈ 40.0 dBμV/m

150 μV/m ≈ 43.5 dBμV/m

200 μV/m ≈ 46.0 dBμV/m

500 μV/m ≈ 54.0 dBμV/m

2500 mV/m ≈ 128.0 dBμV/m

25.0 mV/m ≈ 88.0 dBμV/m

Emissions radiated outside the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

4.3 Measurement Uncertainty

Measurement uncertainty: 30 MHz to 6 GHz = ±4.8 dB; from 6 GHz and above = ±5.2 dB. This measurement uncertainty is expanded for a 95% confidence level received with a coverage factor k=2 for the entire frequency range.

4.4 Field Strength Calculations

The field strength is calculated by adding the antenna Factor and Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FI(\text{dB}\mu\text{V}/\text{m}) = \text{SAR}(\text{dB}\mu\text{V}) + \text{SCF}(\text{dB}/\text{m})$$

FI = Field Intensity
SAR = Spectrum Analyzer Reading
SCF = Site Correction Factor

The Site Correction Factor (SCF) used in the above equation is determined empirically, and is expressed in the following equation:

$$\text{SCF}(\text{dB}/\text{m}) = -\text{PG}(\text{dB}) + \text{AF}(\text{dB}/\text{m}) + \text{CL}(\text{dB})$$

SCF = Site Correction Factor
PG = Pre-amplifier Gain
AF = Antenna Factor
CL = Cable Loss

The field intensity in microvolts per meter can then be determined according to the following equation:

$$FI(\mu\text{V}/\text{m}) = 10^{FI(\text{dB}\mu\text{V}/\text{m})/20}$$

For example, assume a signal at a frequency of 125 MHz has a received level measured as 49.3 dB μ V. The total Site Correction Factor (antenna factor plus cable loss minus preamplifier gain) for 125 MHz is -11.5 dB/m. The actual radiated field strength is calculated as follows:

$$49.3 \text{ dB}\mu\text{V} - 11.5 \text{ dB} = 37.8 \text{ dB}\mu\text{V}/\text{m}$$

$$10^{37.8/20} = 10^{1.89} = 77.6 \mu\text{V}/\text{m}$$

4.5 Radiated Emissions Test Data

Table 4-3: Radiated Emissions Environmental Factors

Date	Temperature (°C)	Humidity (%)	Atmospheric Pressure (kPa)
12/14/2023	22.6	20.0	102.3
8/1/2024	24.3	36.0	100.5

Table 4-4: Radiated Emissions – Fundamental – Average

Emission Frequency (GHz)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
24.08	77.7	42.3	120.0	128.0	-8.0	PASS
24.12	75.8	42.3	118.1	128.0	-9.9	PASS
24.16	76.4	42.3	118.7	128.0	-9.3	PASS

Table 4-5: Radiated Emissions – Fundamental – Peak

Emission Frequency (GHz)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
24.08	78.1	42.3	120.4	148.0	-27.6	PASS
24.12	77.4	42.3	119.7	148.0	-28.3	PASS
24.16	77.2	42.3	119.5	148.0	-28.6	PASS

Table 4-6: Radiated Emissions – 24.08 GHz – Harmonics and Spurious – Average

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.16	V	0	1.0	22.1	45.1	67.2	77.5	-10.3	PASS
72.24	V	0	1.0	22.2	44.1	66.3	77.5	-11.2	PASS
96.32	V	0	1.0	9.5	45.9	55.4	88.0	-32.6	PASS

Table 4-7: Radiated Emissions – 24.08 GHz – Harmonics and Spurious – Peak

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.16	V	0	1.0	26.6	45.1	71.7	97.5	-25.8	PASS
72.24	V	0	1.0	25.7	44.1	69.8	97.5	-27.7	PASS
96.32	V	0	1.0	18.3	45.9	64.2	108.0	-43.8	PASS

Table 4-8: Radiated Emissions – 24.12 GHz – Harmonics and Spurious – Average

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.24	V	0	1.0	22.5	45.1	67.6	77.5	-9.9	PASS
72.36	V	0	1.0	22.7	44.1	66.8	77.5	-10.7	PASS
96.48	V	0	1.0	10.2	45.9	56.1	88.0	-31.9	PASS

Table 4-9: Radiated Emissions – 24.12 GHz – Harmonics and Spurious – Peak

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.24	V	0	1.0	25.9	45.1	71.0	97.5	-26.5	PASS
72.36	V	0	1.0	27.9	44.1	72.0	97.5	-25.5	PASS
96.48	V	0	1.0	19.6	45.9	65.5	108.0	-42.5	PASS

Table 4-10: Radiated Emissions – 24.16 GHz – Fundamental and Harmonics – Average

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.32	V	0	1.0	21.8	45.1	66.9	77.5	-10.6	PASS
72.48	V	0	1.0	21.1	44.1	65.2	77.5	-12.3	PASS
96.64	V	0	1.0	9.1	45.9	55.0	88.0	-33.0	PASS

Table 4-11: Radiated Emissions – 24.16 GHz – Fundamental and Harmonics – Peak

Emission Frequency (GHz)	Antenna Polarity (H/V)	Table Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
48.32	V	0	1.0	25.6	45.1	70.7	97.5	-26.8	PASS
72.48	V	0	1.0	27.7	44.1	71.8	97.5	-25.7	PASS
96.64	V	0	1.0	19.5	45.9	65.4	108.0	-42.6	PASS

Table 4-12: Radiated Emissions – Unintentional (Quasi-Peak and Average Detectors)

Emission Frequency (MHz)	Detector	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
432.003	QP	33.8	-7.8	26.0	46.0	-20.0
672.002	QP	24.9	-0.8	24.1	46.0	-21.9
696.003	QP	20.4	0.5	20.9	46.0	-25.1
792.000	QP	19.2	2.0	21.2	46.0	-24.8
816.000	QP	31.3	3.0	34.3	46.0	-11.7
840.000	QP	23.5	2.5	26.0	46.0	-20.0
864.000	QP	20.1	2.7	22.8	46.0	-23.2
912.000	QP	31.3	4.1	35.4	46.0	-10.6
936.000	QP	26.9	5.3	32.2	46.0	-13.8
960.000	QP	30.0	5.6	35.6	46.0	-10.4
1008.000	AV	36.3	5.3	41.6	54.0	-12.4
1056.000	AV	32.6	6.8	39.4	54.0	-14.6
1152.000	AV	33.0	6.7	39.7	54.0	-14.3
1200.000	AV	36.6	8.4	45.0	54.0	-9.0
1248.000	AV	29.5	9.1	38.6	54.0	-15.4
1296.000	AV	29.9	9.7	39.6	54.0	-14.4

Result: Pass

Test Personnel

Daniel W. Baltzell		December 14, 2023, August 1, 2024
EMC Test Engineer	Signature	Dates of Test

Table 4-13: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900321	EMCO	3161-03	Horn Antennas (4.0 – 8.2 GHz)	9508-1020	08/05/2024
900323	EMCO	3160-7	Horn Antennas (8.2 – 12.4 GHz)	9605-1054	08/05/2024
900356	EMCO	3160-08	Horn Antenna (12.4 – 18.0 GHz)	9607-1044	08/05/2024
900711	ATM	10-443-6R	Horn Antenna (75 - 110 GHz)	8051905-1	06/23/2025
900712	ATM	15-443-6R	Horn Antenna (50 - 75 GHz)	8051805-1	06/23/2025
900772	EMCO	3161-02	Horn Antenna (2 – 4 GHz)	9804-1044	08/05/2024
901669	ETS-Lindgren	3142E	Biconilog Antenna (30 MHz – 6000 MHz)	00166065	07/11/2025
900913	Hewlett Packard	85462A	RF Filter Section (100 kHz – 6.5 GHz)	3325A00159	09/16/2024
900914	Hewlett Packard	85460A	EMI Receiver Section (9 kHz – 6.5 GHz)	3330A00107	09/16/2024
901218	EMCO	3160-09	Horn Antenna (18.0 – 26.5 GHz)	960281-003	08/05/2024
901256	ATM	19-443-6R	Horn antenna (40 - 60 GHz, WR-19)	8041704-01	05/03/2025
901303	EMCO	3160-10	Horn Antenna (26.5 – 40.0 GHz)	960452-007	08/05/2024
901773	Rhode & Schwarz	FSW50	Spectrum Analyzer (2 Hz – 50 GHz)	101021	05/30/2025
901640	Rohde & Schwarz	FS-Z110	Mixer (75 – 110 GHz)	100010	05/03/2025
901586	Rohde & Schwarz	FS-Z75	Harmonic Mixer (50 – 75 GHz)	100098	01/23/2025
901775	Rosenberger	LU7-022-1000	1m SMA Cable	N/A	07/06/2025
901774	RF Depot	TMS-SFT-205	36" SMA Cable	N/A	07/06/2025
901729	Insulated Wire Inc.	KPS-1503-3150-KPS	20' SMK Cable	N/A	12/29/2024
900905	Rhein Tech Labs	PR-1040	OATS 1 Preamplifier 40dB (30 MHz – 2 GHz)	1006	05/10/2025
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	w/o top for wireless testing	N/A
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	N/A

5 Occupied Bandwidth – ISED RSS-Gen 6.7

5.1 99% Bandwidth Test Procedure

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g., on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample.” However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

5.2 Measurement Uncertainty

Measurement uncertainties shown for these tests are expanded uncertainty expressed at 95% confidence level using a coverage factor k=2.

99% Bandwidth: $\pm 1.0 \times 10^{-6}$ Hz

5.3 99% dB Bandwidth Test Results

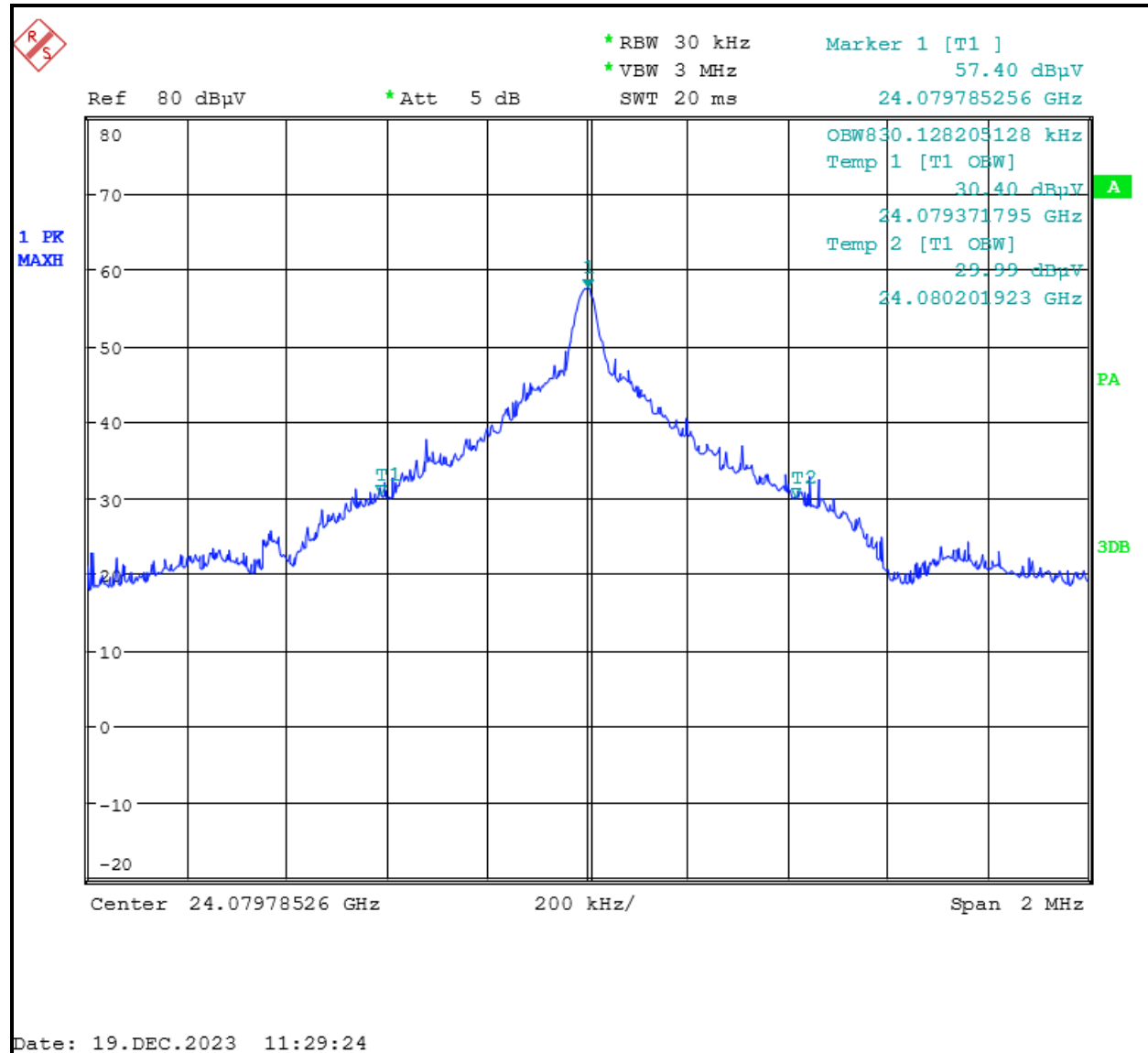
Table 5-1: 99% Bandwidth Environmental Factors

Date	Temperature (°F)	Humidity (%)	Atmospheric Pressure (kPa)
12/13/2023	22.0	25.0	103.5
12/18/2023	22.4	24.0	101.2
12/19/2023	22.6	20.0	102.3

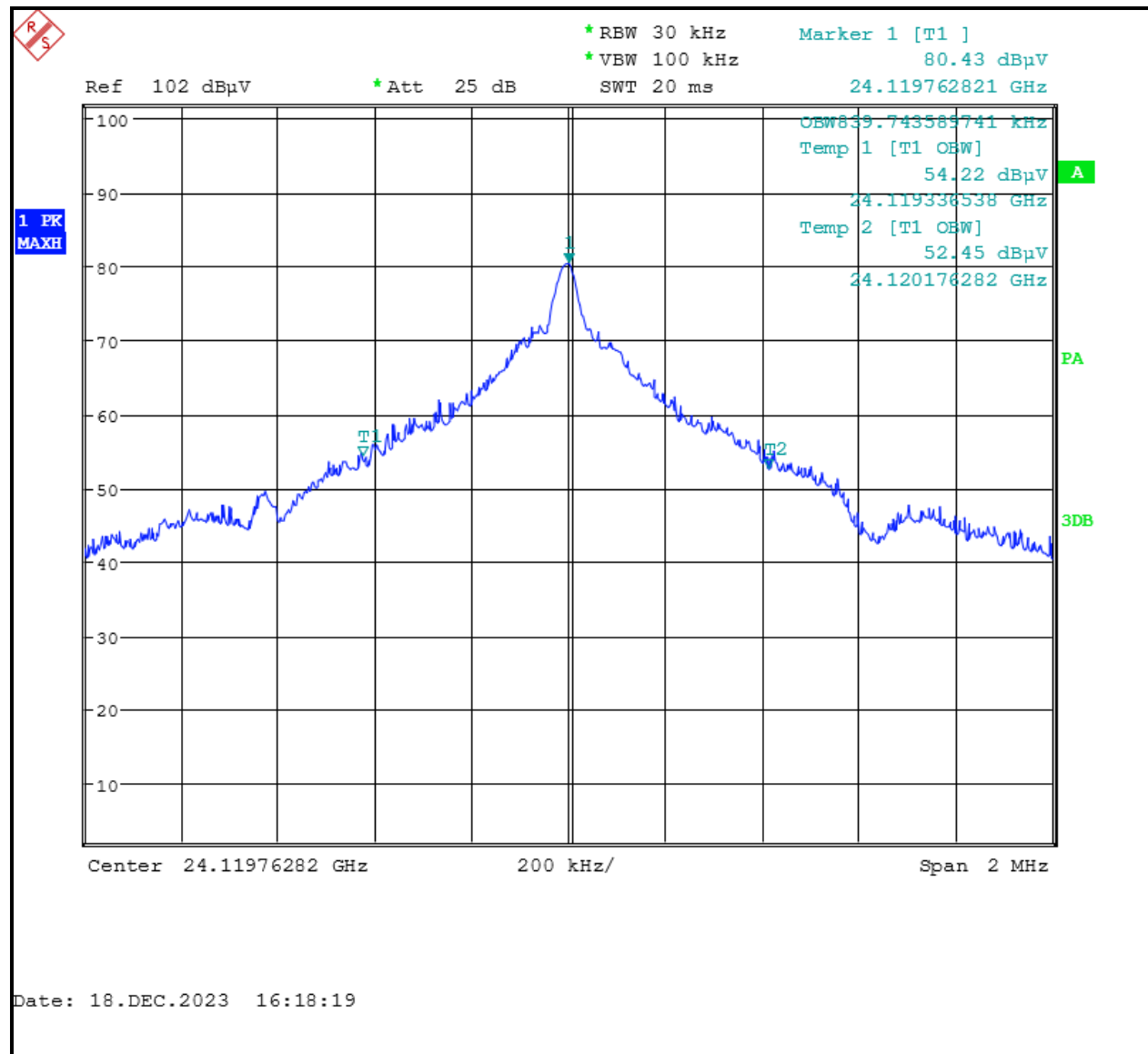
Table 5-2: 99% Bandwidth Test Data

Frequency (GHz)	99% Bandwidth (MHz)
24.08	0.830
24.12	0.840
24.16	0.897

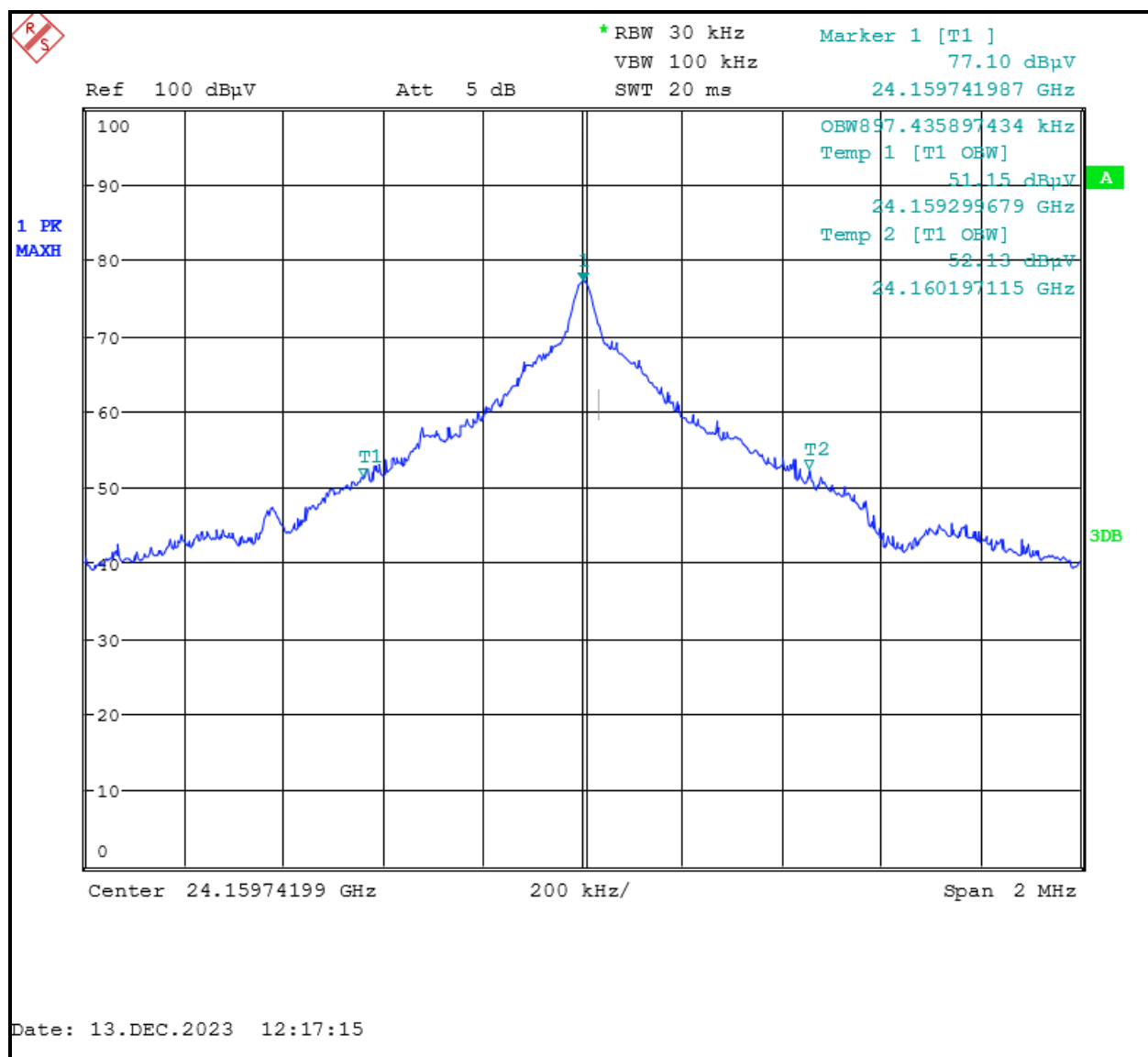
Plot 5-1: 99% Bandwidth, 24.08 GHz



Plot 5-2: 99% Bandwidth, 24.12 GHz



Plot 5-3: 99% Bandwidth, 24.16 GHz



Test Personnel

Daniel W. Baltzell		December 13-19, 2023
EMC Test Engineer	Signature	Dates of Test

Table 5-3: 99% Bandwidth Test Equipment

RTL Asset #	Part Type	Manufacturer	Model	Serial Number	Calibration Due Date
901581	Signal Analyzer (20 Hz –50 GHz)	Rohde & Schwartz	FSU	MY51250846	12/01/2024

Rhein Tech Laboratories, Inc.
360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

Client: FlightScope (Pty) Ltd
Model: Mevo Range
Standards: FCC 15.245/RSS-210
ID's: QXP-JR230/4612A-JR230
Report #: 2023134DXT

6 Conclusion

The data in this measurement report shows that the EUT as tested, FlightScope (Pty) Ltd Model Mevo Range, FCC ID: QXP-JR230, IC: 4612A-JR230, complies with the applicable requirements of Parts 2 and 15 of the FCC rules and regulations and ISSED RSS-210 and RSS-Gen.