



HEADQUARTERS: 914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230 • PHONE (410) 354-3300 • FAX (410) 354-3313

5/6/2026

Nexxiot Inc
6175 Main Street, Ste 250
Frisco, TX 75034

Dear Kenneth Mannka,

Enclosed is the EMC Wireless test report for compliance testing of the Nexxiot Inc as tested to the requirements of FCC Part 15.247 and RSS-247 Issue 4 for Intentional Radiators. This test report pertains specifically to the 802.15.4 transmitter onboard which operates in the 2400-2483.5MHz band.

Thank you for using the services of Eurofins MET Labs. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
EUROFINS MET LABS

A handwritten signature in blue ink that reads "Nancy LaBrecque".

Nancy LaBrecque
Documentation Department

Reference: WIRA138975-FCC-IC-802.15.4-R3

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802.15.4 Test Report

for the

Nexxiot Inc
(Model:GHTLV)

Tested under
FCC Part 15.247 and RSS-247 Issue 4
For Intentional Radiators



Bryan Taylor, Team Lead
Electromagnetic Compatibility Lab



Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.



Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	1/7/2026	Initial Issue.
1	2/12/2026	TCB Reviewer Comments
2	4/28/2026	TCB Reviewer Comments
3	5/6/2026	TCB Reviewer Comments

List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dB μ A	Decibels above one microamp
dB μ V	Decibels above one microvolt
dB μ A/m	Decibels above one microamp per meter
dB μ V/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
FCC	Federal Communications Commission
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kilohertz
kPa	kilopascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	Megahertz
μ H	microhenry
μ	microfarad
μ s	microseconds
NEBS	Network Equipment-Building System
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
TWT	Traveling Wave Tube
V/m	Volts per meter
VCP	Vertical Coupling Plane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Globehopper TLV, with the requirements of FCC Part 15.247 and RSS-247 Issue 4. Nexxiot Inc should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the GHTLV, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15.247 and RSS-247 Issue 4, in accordance with Nexxiot Inc purchase order number CPO001598. All tests were conducted using measurement procedures ANSI C63.4-2014 and ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024.

FCC Reference 47 CFR Part 15.247	IC Reference RSS-247 Issue 4 RSS-GEN Issue 5	Description	Compliance	Note
Title 47 of the CFR, Part 15 §15.203	---	Antenna Requirement	Compliant	---
Title 47 of the CFR, Part 15 §15.207(a)	RSS-GEN(8.8)	Conducted Emission Limits	Not Applicable	The Globehopper TLV is battery powered and has no connection to AC mains
Title 47 of the CFR, Part 15 §15.247(a)(2)	RSS-247 (6.3.1)	6dB Occupied Bandwidth	Compliant	---
---	RSS-GEN(6.7)	99% Occupied Bandwidth	Compliant	---
Title 47 of the CFR, Part 15 §15.247(b)	RSS-247(6.3.2)	Peak Power Output	Compliant	---
Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205	RSS-GEN (6.13), (8.9), & (8.10)	Radiated Spurious Emissions Requirements	Compliant	---
Title 47 of the CFR, Part 15 §15.247(d)	RSS-247(6.6)	RF Conducted Spurious Emissions Requirements	Compliant	---
Title 47 of the CFR, Part 15; §15.247(e)	RSS-247(6.3.1)	Peak Power Spectral Density	Compliant	---

Table 1. Executive Summary

II. Equipment Configuration

A. Overview

Eurofins MET Labs was contracted by Nexxiot Inc to perform testing on the Globehopper TLV , under Nexxiot Inc's purchase order number CPO001598.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the GHTLV.

The results obtained relate only to the item(s) tested.

Product Name:	Globehopper TLV	
Model(s) Tested:	GHTLV	
Test Serial Numbers:	DUT-25-00036 and DUT-25-00037	
FCCID:	2AXRX-GHTLV	
ICID:	26682-GHTLV	
Equipment Specifications:	Primary Power:	3.6V Battery
	Type of Modulations:	802.15.4
	Equipment Code:	DTS
	Peak RF Output Power:	16.8dBm
	EUT Frequency Ranges:	2405MHz – 2480MHz
	Antenna Gain ¹ :	3.2 dBi
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: -20 to 50° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor, Veer Patel	
Report Date(s):	5/6/2026	

Table 2. EUT Summary Table

Name/Description	Model Number	Part Number	Serial Number	Rev. #
Conducted Sample	GHTLV	N.A.	DUT-25-00036	8
Radiated Sample	GHTLV	N.A.	DUT-25-00037	8

Table 3. EUT List

¹ The antenna gain information was provided by Nexxiot Inc and may affect compliance.

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
ANSI C63.4:2014	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024	American National Standard for Testing Unlicensed Wireless Devices
RSS-GEN, Issue 5	General Requirements and Information for the Certification of Radio Apparatus
RSS-247, Issue 4	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices

Table 4. References

C. Test Site

All testing was performed at Eurofins MET Labs, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

ISED Lab Info:

CAB Identifier: US0004
Company Number: 2043D

FCC Lab Info:

Designation Number: US1127

D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
Occupied Bandwidth Measurements	±4.52 Hz	2	95%
Conducted Power Measurements	±2.74 dB	2	95%
Power Spectral Density Measurements	±2.74 dB	2	95%
Conducted Spurious Emissions	±2.80 dB	2	95%
Conducted Emissions (Mains)	±2.97 dB	2	95%
Radiated Spurious Emissions (9kHz – 1GHz)	±2.95 dB	2	95%
Radiated Spurious Emissions (1GHz - 40GHz)	±3.54 dB	2	95%

Table 5. Uncertainty Calculations Summary

E. Description of Test Sample

The Globehopper TLV is a Solar/Battery Powered Gateway intended for tracking railroad assets.



Figure 1. Block Diagram of Test Configuration

F. Equipment Configuration

A laptop was connected to the test sample and software commands were used to force the radio to transmit on low, mid, or high channels.

G. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Name/Description	Manufacturer	Model Number	Serial Number	*Customer Supplied Calibration Data
AUX-01	RS-PRO	N.A.	7942831	N.A.
AUX-02	RS-PRO	N.A.	7942831	N.A.
AUX-03	RS-PRO	N.A.	7942831	N.A.
AUX-04	FTDI	N.A.	TTL-232RG-VIP-WE	N.A.
AUX-05	FTDI	N.A.	TTL-232RG-VIP-WE	N.A.
AUX-06	N.A.	N.A.	N.A.	N.A.
AUX-07	SEGGER	N.A.	N.A.	N.A.
AUX-08	HTRC	N.A.	N8 NiMH/NiCD Compact Charger	N.A.
AUX-09	Lenovo	N.A.	Thinkpad X1 Carbon Gen 5	N.A.
AUX-10	Silabs	N.A.	SLWSTK6020B	N.A.

Table 6. Support Equipment

H. Ports and Cabling Information

During the evaluation there were no external cables connected to the test sample.

I. Mode of Operation

A laptop was connected to the test sample and software commands were used to force the radio to transmit on low, mid, or high channels.

Transmit Band	Modulation	Channel Frequencies Tested	Test Tool Name	Test Tool Power Setting ²
2400 – 2483.5MHz	802.15.4	2405MHz / 2440MHz / 2480MHz	PuTTY Release 0.83	200

Table 7. Test Channels Utilized

J. Method of Monitoring EUT Operation

A spectrum analyzer was used to confirm proper transmitter operation.

K. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

L. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Nexxiot Inc upon completion of testing.

² Note the power settings are relative levels and do not necessarily correspond to the actual measured output power.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators**§ 15.203 Antenna Requirement**

Test Requirement: **§ 15.203:** 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 shall be considered sufficient to comply with the provisions of this section. 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.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

- a.) Antenna must be permanently attached to the unit.
- b.) Antenna must use a unique type of connector to attach to the EUT.
- c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The Globehopper TLV was compliant with this requirement. The antenna utilizes a unique connector and the antenna is completely internal to the device.

Test Engineer(s): Bryan Taylor

Test Date(s): 11/7/2025

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(a)(2) 6 dB Bandwidth

Test Requirements: § 15.247(a)(2): Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

For systems using digital modulation techniques, the EUT may operate in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

Test Procedure: The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately 1% of the total emission bandwidth, and the VBW > RBW. The 6 dB Bandwidth was measured and recorded. The measurements were performed on the low, mid and high channels.

Test Results The Globehopper TLV was compliant with § 15.247 (a)(2). The 6 dB Bandwidth was determined from the plots on the following pages.

Test Engineer(s): Bryan Taylor

Test Date(s): 11/10/2025

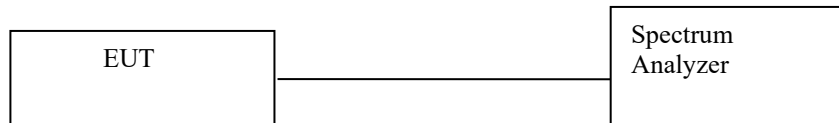
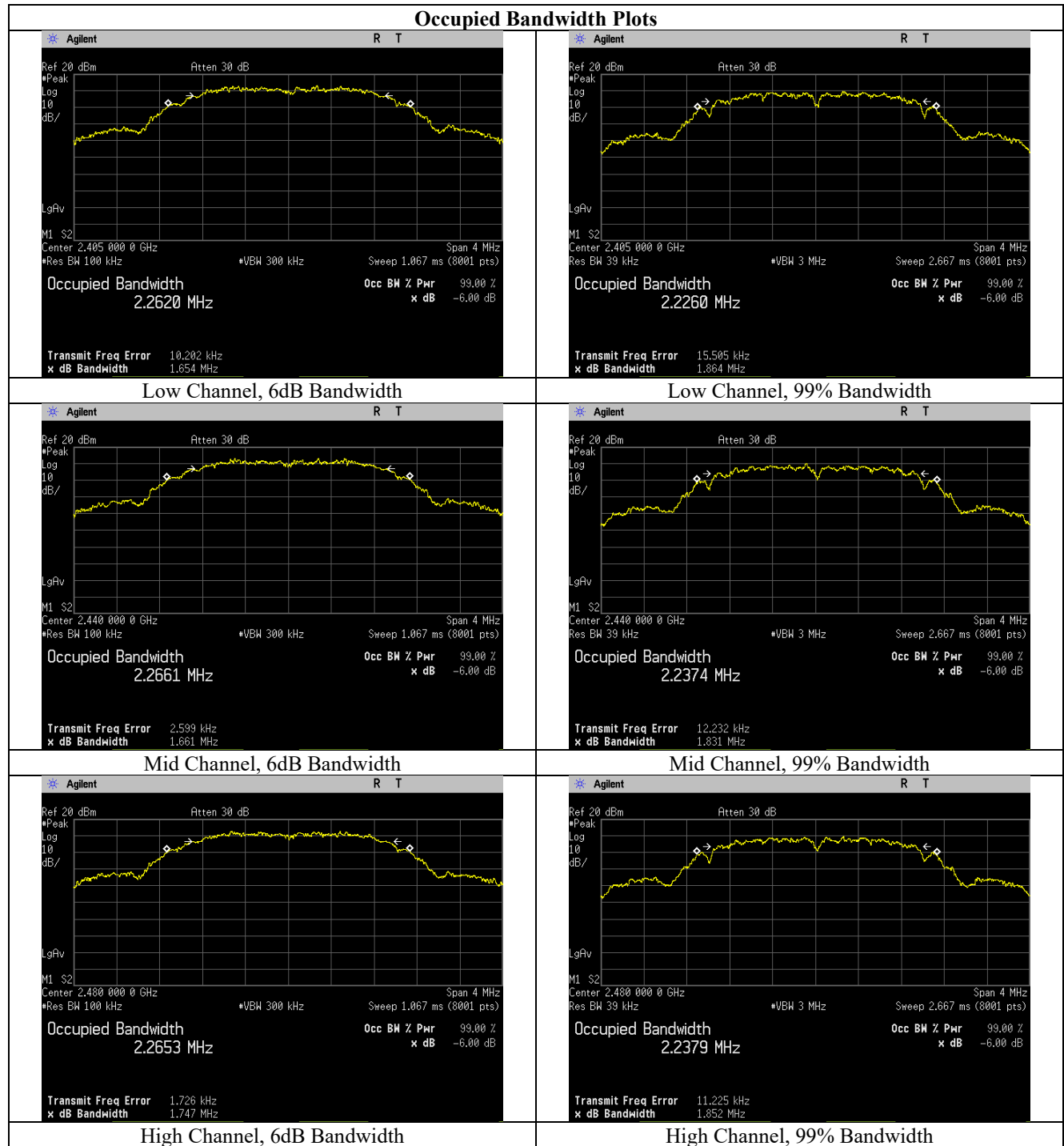


Figure 2. Block Diagram, Occupied Bandwidth Test Setup

Channel	Frequency (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Limit (MHz)	Result
Low	2405	2.226	1.654	> 0.5	Pass
Middle	2440	2.237	1.661	> 0.5	Pass
High	2480	2.238	1.747	> 0.5	Pass

Table 8. 99% Occupied Bandwidth, Test Results

Occupied Bandwidth Test Results



Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Peak Power Output

Test Requirements: §15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:

Digital Transmission Systems (MHz)	Output Limit (Watts)
902-928	1.000
2400-2483.5	1.000
5725- 5850	1.000

Table 9. Output Power Requirements from §15.247(b)

§15.247(c): if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in the Table 9, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band and using a point to point application may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Fixed, point-to-point operation excludes the use of point-to-multipoint systems, Omni-directional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

Test Procedure: The transmitter was connected to a calibrated spectrum analyzer. The analyzer reference level was offset by cable loss connecting to the test sample. The peak power was measured at the low, mid and high channels of each band at the maximum power level. The antenna gain provided by the manufacturer was added to the measured conducted power to arrive at the EIRP. The analyzer settings are shown in the following table:

RBW:	3MHz	Detector:	Peak	Reference Level:	30dBm
VBW:	10MHz	Sweep Time:	Auto	Internal Attenuation:	30dB

Figure 3. Analyzer Settings During Measurement

Test Software: TILE Version 7.4.2.5 (Manufactured by ETS Lindgren) was utilized to perform these measurements.

Test Results: The GLOBEHOPPER TLV was compliant with the Peak Power Output limits of §15.247(b).

Test Engineer(s): Bryan Taylor

Test Date(s): 11/06/2025 – 11/07/2025

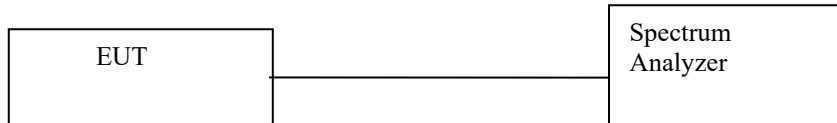
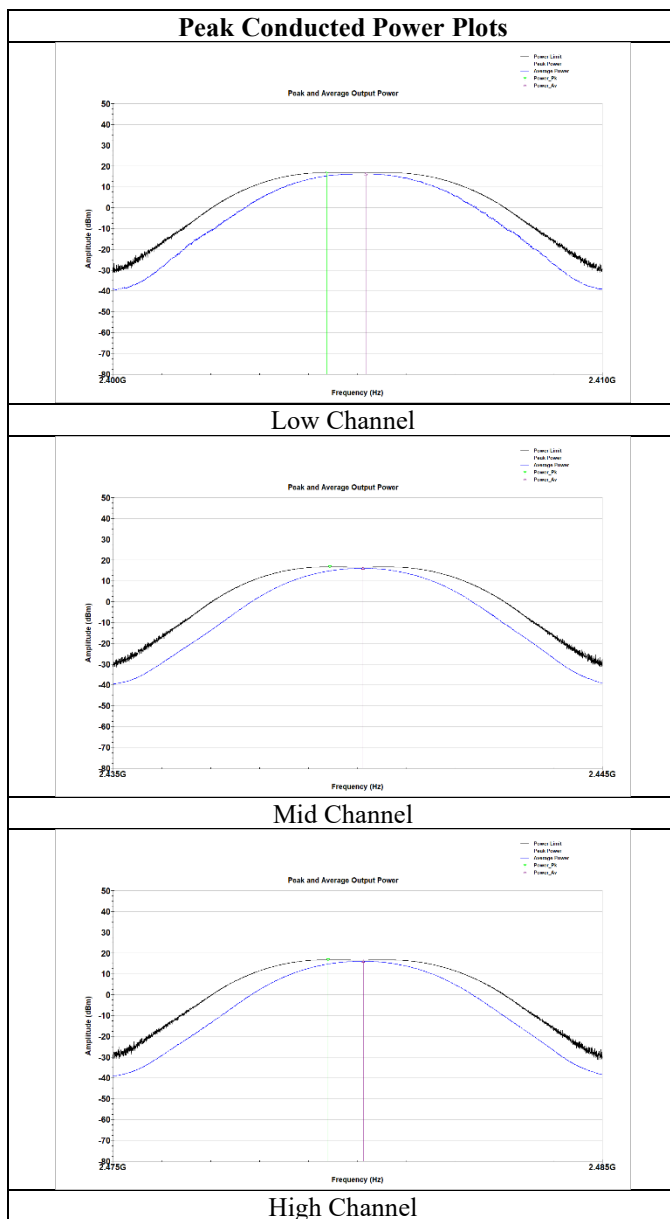


Figure 4. Peak Power Output Test Setup

Peak Power Output Test Results

Channel	Frequency (MHz)	Peak Conducted Power (dBm)	Peak Power Limit (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
Low	2405MHz	16.80	30	3.2	20	36	Pass
Middle	2440MHz	16.66	30	3.2	19.86	36	Pass
High	2480MHz	16.70	30	3.2	19.9	36	Pass

Table 10. Peak Power and EIRP, Test Results



Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(e) Peak Power Spectral Density

Test Requirements: §15.247(e): For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level. The RBW was set between 3kHz and 100 kHz. The VBW was set to 3x the RBW. The spectrum analyzer was set to an auto sweep time and a peak detector was used. Measurements were carried out at the low, mid and high channels. The analyzer settings are shown in the following table:

RBW:	3kHz	Detector:	Peak	Reference Level:	10dBm
VBW:	30kHz	Sweep Time:	Auto	Internal Attenuation:	30dB

Figure 5. Analyzer Settings During Measurement

Test Software: TILE Version 7.4.2.5 (Manufactured by ETS Lindgren) was utilized to perform these measurements.

Test Results: The GLOBEHOPPER TLV was compliant with the peak power spectral density limits of § 15.247 (e).

Test Engineer(s): Bryan Taylor

Test Date(s): 11/06/2025 – 11/07/2025

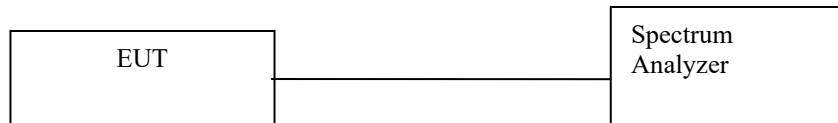
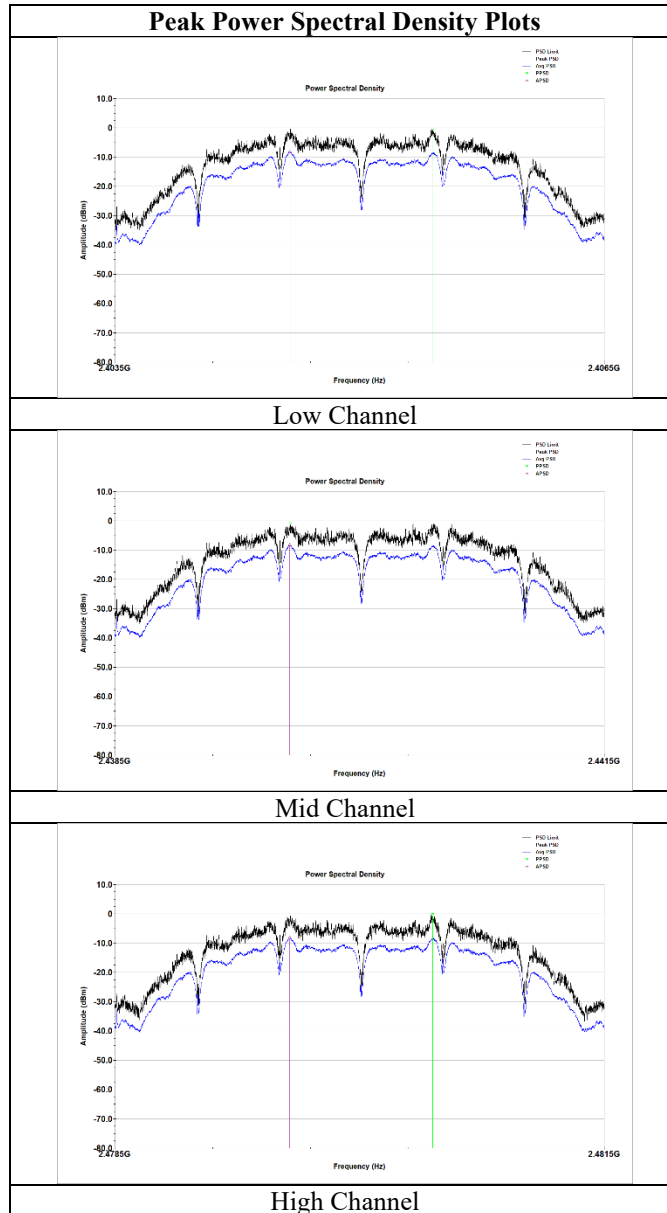


Figure 6. Block Diagram, Peak Power Spectral Density Test Setup

Channel	Frequency (MHz)	Peak Conducted PSD (dBm/3kHz)	Peak PSD Limit (dBm/3kHz)	Antenna Gain (dBi)	EIRP PSD (dBm/kHz)	Result
Low	2405MHz	-0.33	8	3.2	2.87	Pass
Middle	2440MHz	-0.79	8	3.2	2.41	Pass
High	2480MHz	-0.18	8	3.2	3.02	Pass

Table 11. Peak Power Spectral Density, Test Results



Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) RF Conducted Spurious Emissions Requirements

Test Requirement: **15.247(d)** In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Test Procedure: For intentional radiators with a digital device portion which operates below 10 GHz, the spectrum was investigated as per §15.33(a)(1) and §15.33(a)(4); i.e., the lowest RF signal generated or used in the device up to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level. The RBW was set to 100 kHz. The VBW was set to 3x the RBW. The spectrum analyzer was set to an auto sweep time and a peak detector was used. Measurements were carried out at the low, mid and high channels. The analyzer settings are shown in the following table:

RBW:	100kHz	Detector:	Peak	Reference Level:	30dBm
VBW:	300kHz	Sweep Time:	Auto	Internal Attenuation:	30dB

Figure 7. Analyzer Settings During Measurement

Test Software: TILE Version 7.4.2.5 (Manufactured by ETS Lindgren) was utilized to perform these measurements.

Test Results: The Globehopper TLV was compliant with the Conducted Spurious Emission limits of **§15.247(d)**.

Test Engineer(s): Bryan Taylor

Test Date(s): 11/06/2025 – 11/07/2025

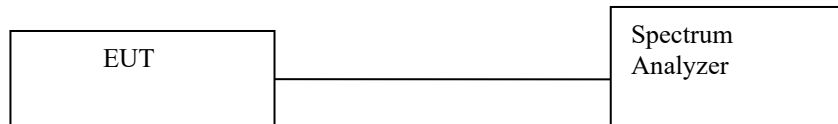
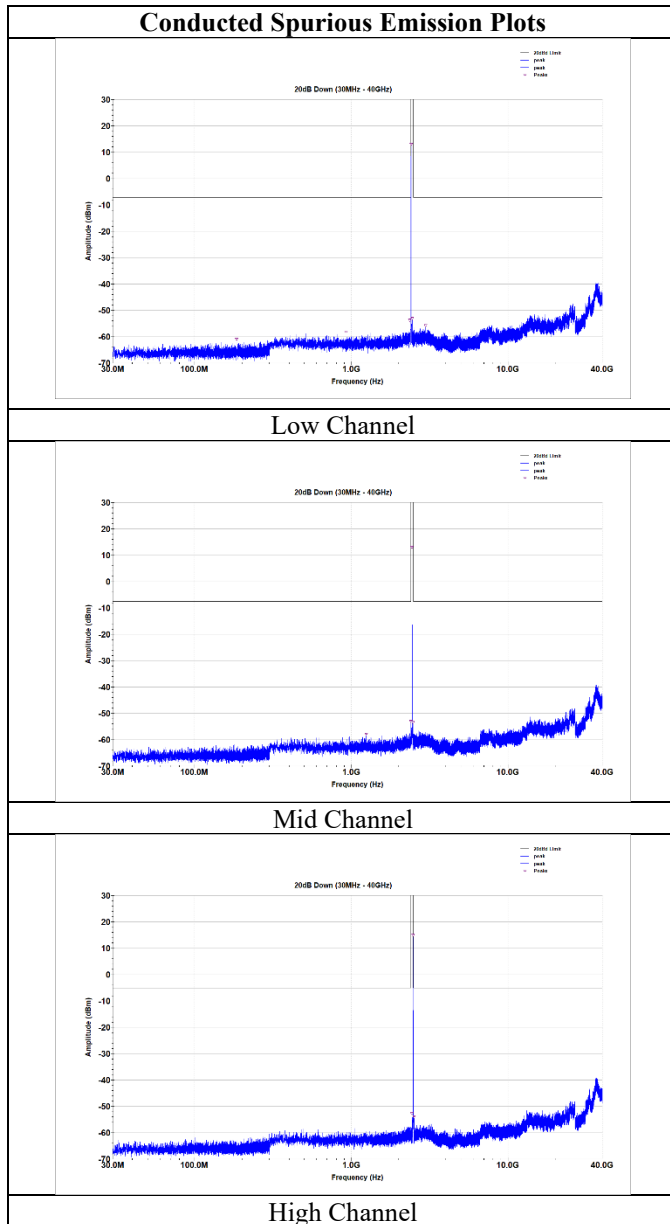
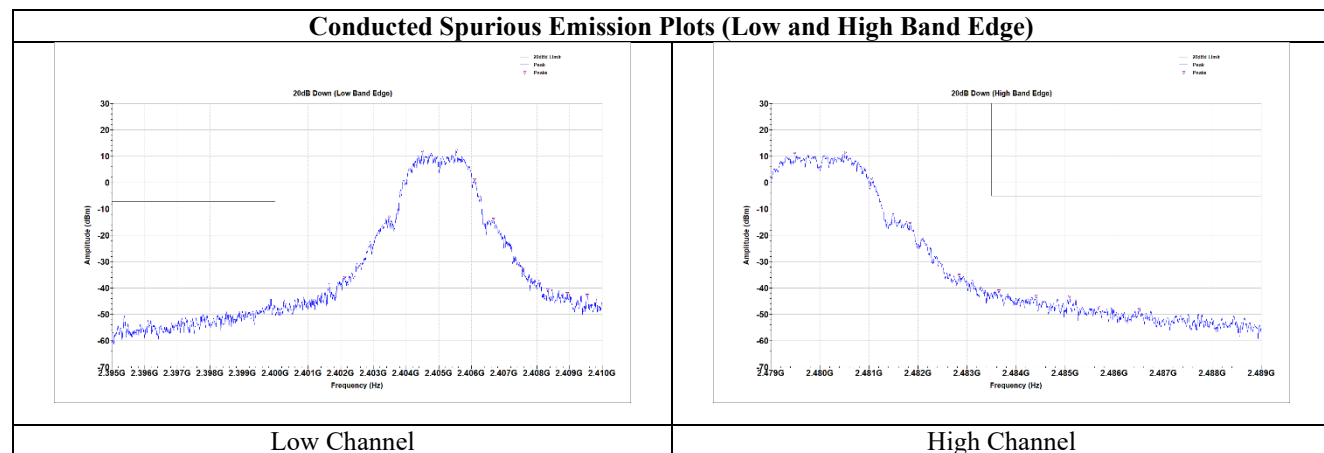


Figure 8. Block Diagram, Conducted Spurious Emissions Test Setup





Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

Test Requirements: §15.247(d); §15.205: Emissions outside the frequency band.

§15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

§15.205(a): Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110-----	16.42–16.423	399.9–410	4.5–5.15
¹ 0.495–0.505-----	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905-----	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128-----	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775-----	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775-----	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218-----	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825-----	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225-----	123–138	2200–2300	14.47–14.5
8.291–8.294-----	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366-----	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675-----	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475-----	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293-----	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025-----	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725-----	322–335.4	3600–4400	(²)

Table 12. Restricted Bands of Operation

¹ Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.

² Above 38.6

Test Requirement(s): § 15.209 (a): Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 13.

Frequency (MHz)	§ 15.209(a), Radiated Emission Limits (dBµV) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

Table 13. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

Test Procedures: The radiated methodology referenced in ANSI C63.10 was utilized in order to assess the unwanted emissions in the restricted bands.

A radiated scan was performed with the antenna of proper impedance installed. The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes if multiple mounting orientations are supported. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line.

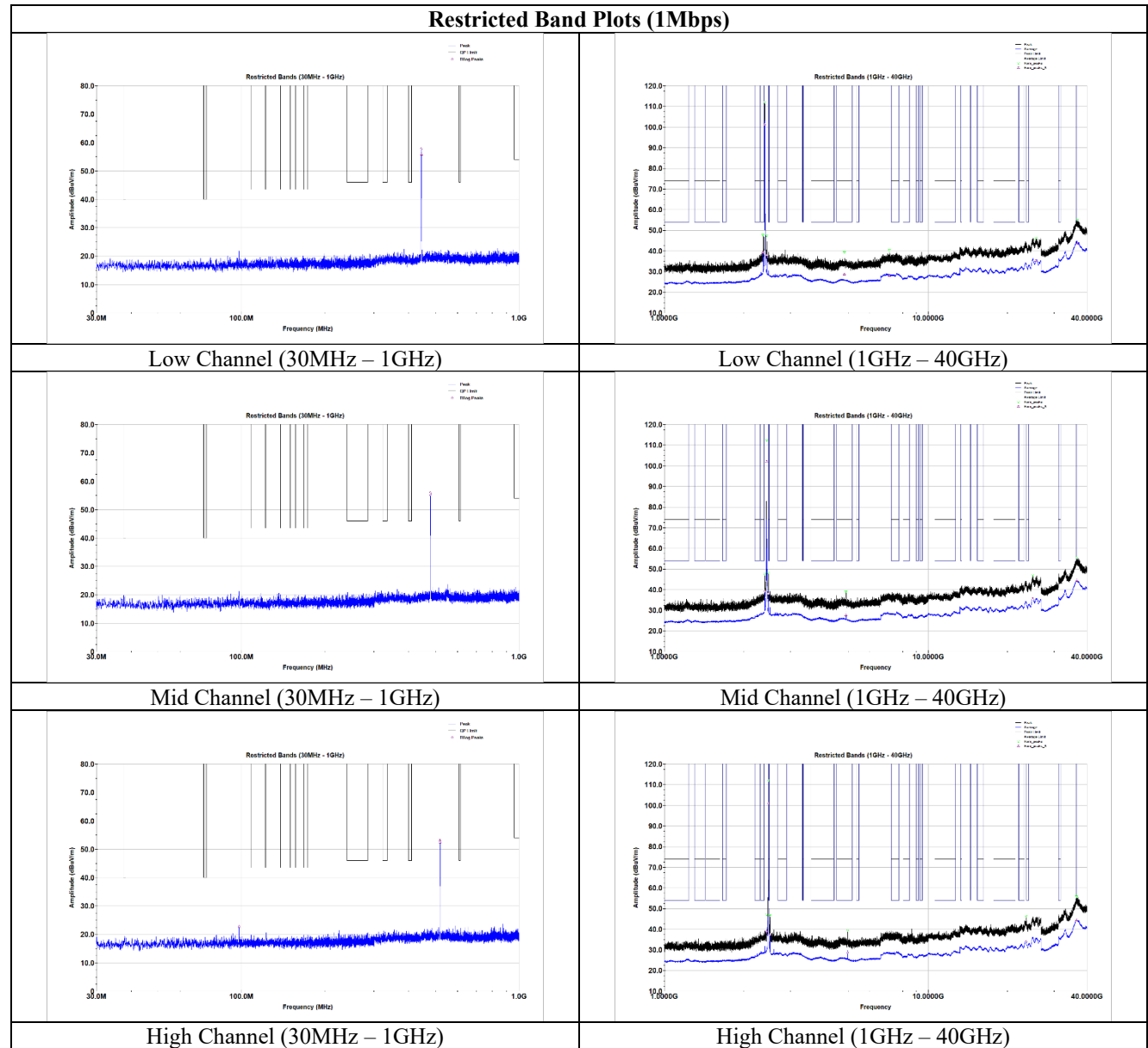
Radiated measurements below 30MHz were performed in a semi-anechoic chamber that has been correlated to an open area site.

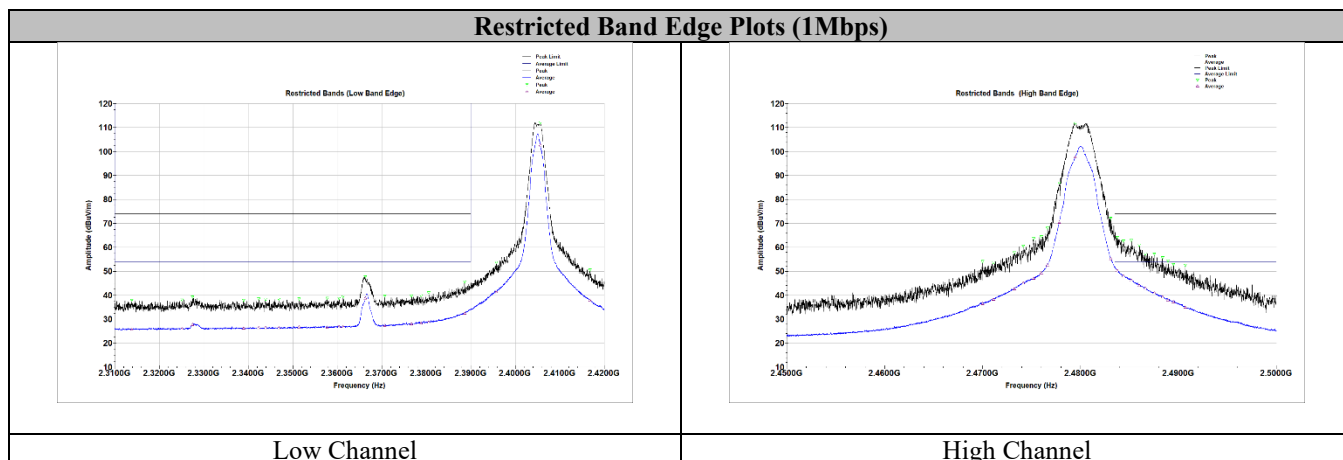
Test Software: TILE Version 7.4.2.5 (Manufactured by ETS Lindgren) and ELEKTRA Version 4.61 (Manufactured by Rohde&Schwarz) was utilized to perform these measurements.

Test Results: The GLOBEHOPPER TLV was compliant with the Radiated Spurious Emission limits of § 15.247(d).

Test Engineer(s): Veer Patel, Bryan Taylor

Test Date(s): 11/6/2025 – 11/11/2025





Frequency	Peak Reading (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Avg Reading (dBuV/m)	Avg Limit (dBuV/m)	Avg Margin (dBuV/m)	Result
2.357 GHz	38.73	74	35.27	26.57	54	27.43	Pass
2.360 GHz	38.58	74	35.42	26.8	54	27.2	Pass
2.361 GHz	39.41	74	34.59	26.88	54	27.12	Pass
2.366 GHz	47.73	74	26.27	38.71	54	15.29	Pass
2.370 GHz	39.72	74	34.28	27.28	54	26.72	Pass
2.376 GHz	39.7	74	34.3	28.14	54	25.86	Pass
2.378 GHz	39.89	74	34.11	28.31	54	25.69	Pass

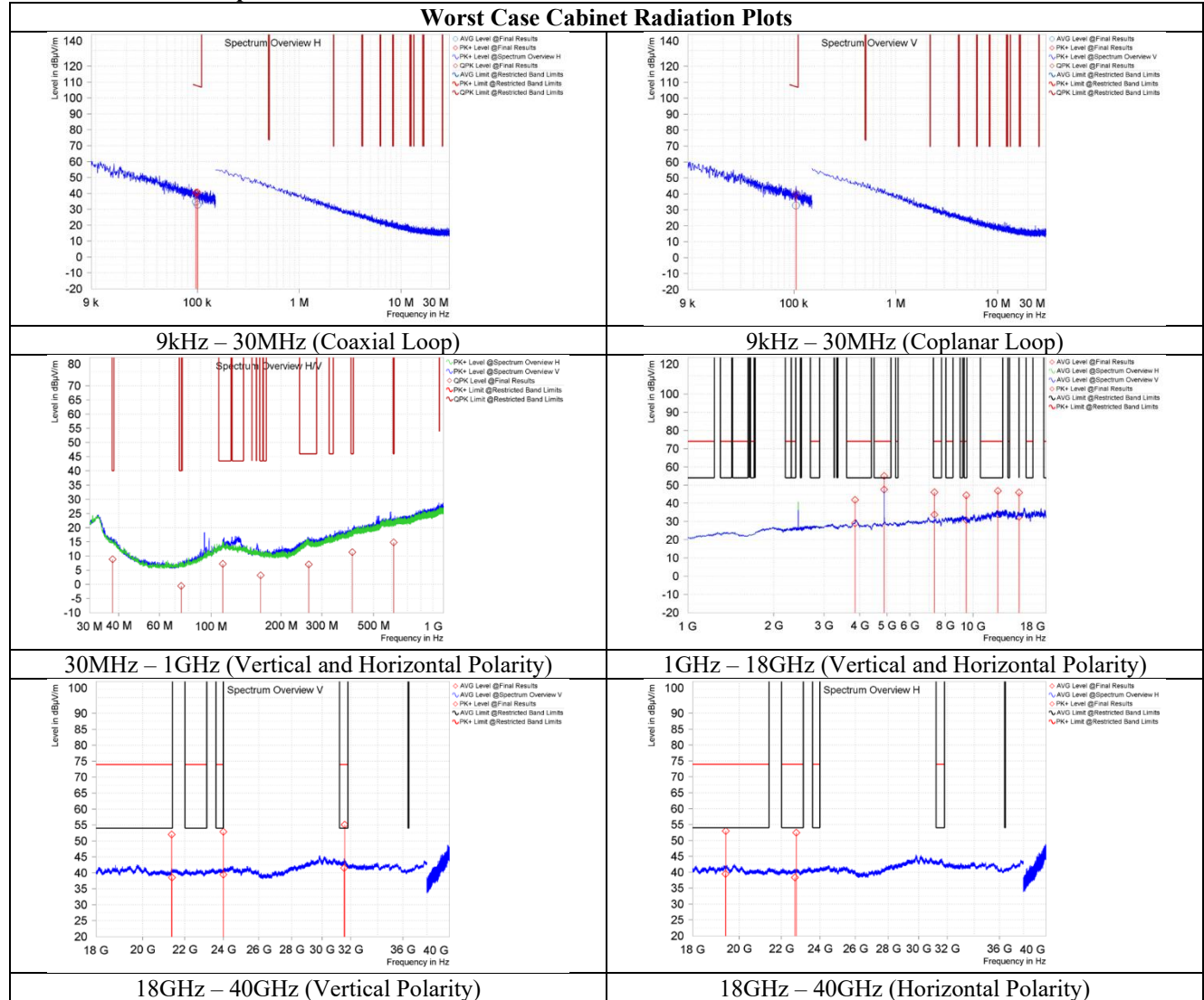
Figure 9. Restricted Band Edge Spurious Emissions (Low Band Edge)

Frequency	Peak Reading (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Avg Reading ³ (dBuV/m)	Avg Limit (dBuV/m)	Avg Margin (dBuV/m)	Result
2.4835GHz	68.04	74	5.96	51.70	54	2.3	
2.484 GHz	64.05	74	9.95	50.18	54	3.82	Pass
2.484 GHz	62.53	74	11.47	48.05	54	5.95	Pass
2.485 GHz	62.94	74	11.06	46.21	54	7.79	Pass
2.486 GHz	60.9	74	13.1	44.1	54	9.9	Pass
2.487 GHz	57.35	74	16.65	42.88	54	11.12	Pass
2.488 GHz	57.1	74	16.9	41.01	54	12.99	Pass
2.488 GHz	55.59	74	18.41	39.28	54	14.72	Pass
2.489 GHz	54.37	74	19.63	38.03	54	15.97	Pass
2.490 GHz	52.77	74	21.23	37.3	54	16.7	Pass

Figure 10. Restricted Band Edge Spurious Emissions (High Band Edge)

³ A duty cycle correction factor of -4.88dB was applied to these average readings

Worst Case Cabinet Spurious Emissions



Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.097	40.47	107.92	67.45	11.45	H	309.3	1.00	0.200	Pass
0.100	40.63	107.62	66.99	11.27	H	130.9	1.00	0.200	Pass
0.104	39.79	107.24	67.45	11.31	V	235.4	1.00	0.200	Pass

Figure 11. Worst Case Cabinet Radiation, 9kHz - 30MHz

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
37.740	8.83	40.00	31.17	-6.63	V	308.8	2.53	120.000	Pass
74.430	-0.56	40.00	40.56	-13.67	H	262.9	1.02	120.000	Pass
112.530	7.17	43.52	36.35	-7.62	V	325.4	1.35	120.000	Pass
163.560	3.16	43.52	40.36	-9.51	V	103.6	1.50	120.000	Pass
263.520	6.97	46.02	39.05	-5.61	H	148.6	2.86	120.000	Pass
405.510	11.32	46.02	34.70	-1.55	V	269.9	3.98	120.000	Pass
610.080	14.81	46.02	31.21	1.97	V	90.1	3.83	120.000	Pass

Figure 12. Radiated Spurious, 30MHz - 1GHz

Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Result
3,855.000	41.90	74.00	32.10	28.95	54.00	25.05	-1.95	H	211.5	1.37	Pass
4,879.000	55.03	74.00	18.97	47.52	54.00	6.48	-3.36	V	263.1	3.18	Pass
7,318.500	46.08	74.00	27.92	33.81	54.00	20.19	-2.80	V	247.3	4.00	Pass
9,467.000	44.37	74.00	29.63	30.77	54.00	23.23	-3.10	H	155.9	3.97	Pass
12,200.000	46.85	74.00	27.15	33.86	54.00	20.14	-1.91	H	125	1.24	Pass
14,494.000	45.89	74.00	28.11	32.52	54.00	21.48	-0.04	H	206.8	1.06	Pass
19,393.000	52.92	74.00	21.08	39.45	54.00	14.55	12.35	H	-0.1	2.00	Pass
21,369.500	52.02	74.00	21.98	38.52	54.00	15.48	12.77	V	190.4	4.00	Pass
22,674.500	52.43	74.00	21.57	38.36	54.00	15.64	13.91	H	360.2	3.00	Pass
24,000.000	52.86	74.00	21.14	39.43	54.00	14.57	14.52	V	355.4	4.00	Pass
31,539.000	55.12	74.00	18.88	41.53	54.00	12.47	16.81	V	102.1	2.00	Pass

Figure 13. Radiated Spurious, 1GHz to 40GHz

Electromagnetic Compatibility Criteria for Intentional Radiators

§ ANSI C63.10 Duty Cycle Correction Factor

Test Procedure: In order to obtain the average value of pulsed emissions ANSI C63.10 Section allows the use of a duty cycle correction factor defined as follows:

$$\text{DCF(dB)} = 20\log(\Delta) \text{ where:}$$

DCF = the duty cycle correction factor in dB

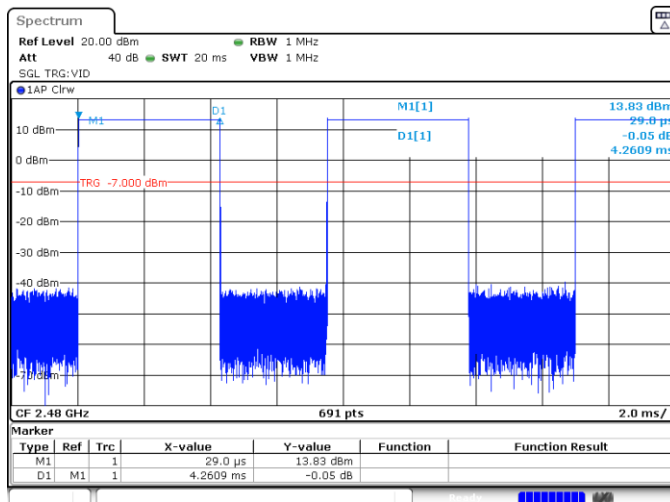
Δ = the duty cycle in decimal form over 100mS

The Globehopper TLV in normal operation will transmit a pulsed signal requiring the use of the duty cycle correction factor in order to achieve a true average value. In order to determine the duty cycle correction factor, the test sample was configured to transmit its worst-case pulse train. The duty cycle over 100mS was measured by setting a spectrum analyzer to zero span mode and capturing the number of pulses over 100mS. The on time of all pulses in this 100mS window was measured and divided by 100mS in order to arrive at the duty cycle. This duty cycle was then used to calculate the duty cycle correction factor via the formula above. When necessary, the duty cycle correction factor was applied to emissions where comparison to an average limit was required. When the DCF is utilized, a note will appear in the tabular data alongside the measurement.

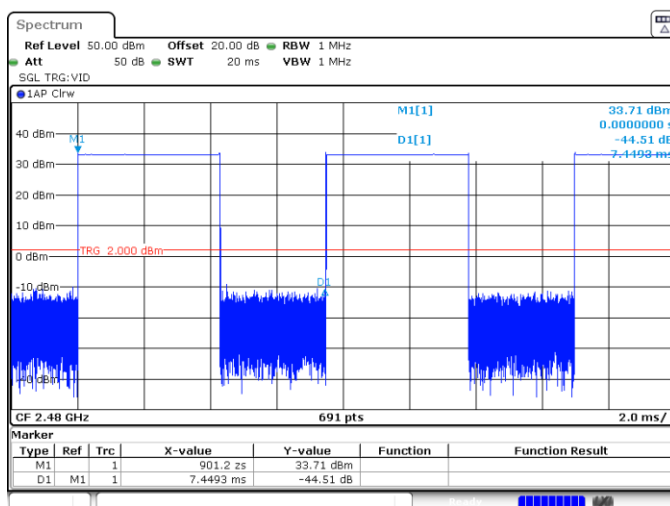
Results: The duty cycle correction factor was determined to be -4.88dB.

Test Engineer(s): Bryan Taylor

Test Date(s): 11/20/2025



“On Time” of one pulse = 4.26mS



Pulse Train Time = 7.45mS
 Duty Cycle = 4.26mS / 7.45mS = 0.57
 DCF = 20log(0.57) = -4.88

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

MET Asset #	Description	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1234	FSV Signal Analyzer	Rohde & Schwarz	FSV 40	03/13/2025	03/13/2027
1A1250	EMI Test Receiver	Rohde & Schwarz	ESW44	03/28/2025	03/28/2026
1A1262	Spectrum Analyzer	Agilent Technologies	E4448A	09/17/2025	09/17/2026
1A1176	Active Loop Antenna (9KHz-30MHz)	ETS-Lindgren	6502	08/22/2024	08/22/2026
1A1050	Bi-Log Antenna	Schaffner	CBL-6112D	03/05/2024	03/05/2026
1A1183	Double Ridged Waveguide Antenna	ETS Lindgren	3117	02/20/2024	02/20/2026
1A1180	Preamplifier	Miteq	AMF-7D-01001800-22-10P	04/16/2025	04/16/2026
1A1161	Horn Antenna (18-40GHz)	ETS - Lindgren	3116c	08/01/2025	08/01/2026
3A3377	Thermohygrometer with barometer	Omega	Q68706	03/31/2025	03/31/2026
1A1257	True-RMS Multimeter	Fluke	179	02/07/2025	02/07/2026
1A1099	Generator	Com-Power	CGO-51000	See Note	
1A1044	Generator	Com-Power	CG-520	See Note	
1A1073	Multi Device Controller	ETS	2090	See Note	
1A1074	System Controller	Panasonic	WV-CU101	See Note	
1A1080	Multi-Device	ETS	2090	See Note	

Table 14. Test Equipment Table 15. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

End of Report