VERIFICATION TEST REPORT

FCC Part 24, 27
ISED RSS 130, 133, 139

Report No.: REDF01-U4 Rev A

Company: Red Flag Cargo Security Systems LLC

Model Name: LXE-G-1

VERIFICATION TEST REPORT

Company: Red Flag Cargo Security Systems LLC

Model Name: LXE-G-1

To: FCC Part 24, 27 & ISED RSS 130, 133, 139

Test Report Serial No.: REDF01-U4 Rev A

This report supersedes: NONE

Applicant: Red Flag Cargo Security Systems LLC
10545 W Donges Ct
Milwaukee, Wisconsin 53224
USA

Issue Date: 2nd November 2026

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
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A2LA ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2017. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf



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Accredited Laboratory

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for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

CORPORATE SEAL 1978 A2LA

Presented this 30th day of December 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2027

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

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1.2. RECOGNITION

MiCOM Labs, Inc is widely recognized for its wireless testing and certification capabilities. In addition to being recognized for Testing and Certification under Phase 2 Mutual Recognition Agreements (MRA) with Canada, Europe, United Kingdom and Japan, our international recognition includes Conformity Assessment Body (CAB) designation status under agreements with Asia Pacific (APEC) MRA Phase 1 countries giving acceptance of MiCOM Labs test reports. MiCOM Labs test reports are accepted globally.

Country	Recognition Body	Status	MRA Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 Test Firm Designation#: US1084
Canada	Industry Canada (ISED)	FCB	APEC MRA 2	US0159 ISED#: 4143A
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	Japan MRA 2	RCB 210
	Japan Approvals Institute for Telecommunication Equipment (JATE)			
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA 2	NB 2280
United Kingdom	Department for Business, Energy & Industrial Strategy (BEIS)	AB	UK MRA 2	AB 2280
Indonesia	Minister of Communication and Digital Education Keputusan Menteri Komunikasi Dan Digital	Number 13 List of Overseas Test Labs	--	Lab nº50/2025 of Decree nº13
Mexico	Instituto Federal de Telecomunicaciones (IFT)	CAB	Mexico MRA 1	US0159
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)			
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)			
Singapore	Infocomm Development Authority (IDA)			
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)			
Vietnam	Ministry of Communication (MIC)			

TCB – Telecommunications Certification Bodies (TCB)
FCB – Foreign Certification Body
CAB – Conformity Assessment Body
NB – Notified Body
AB – Approved Body
MRA – Mutual Recognition Agreement
Phase I - recognition for product testing
Phase II – recognition for both product testing and certification

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1.3. PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf



Accredited Product Certification Body

A2LA has accredited

MICOM LABS

Pleasanton, CA

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 *Requirements for bodies certifying products, processes and services*. This product certification body also meets the *A2LA R322 – Specific Requirements – Notified Body Accreditation Requirements* and *A2LA R308 - Specific Requirements - ISO-IEC 17065 - Telecommunication Certification Body Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a management system.

Presented this 30th day of December 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2027

For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.

United States of America – Telecommunication Certification Body (TCB)
Industry Canada – Certification Body, CAB Identifier – US0159
Europe – Notified Body (NB), NB Identifier - 2280
UK – Approved Body (AB), AB Identifier - 2280
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

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2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	28th October 2026	Draft for client review.
Rev A	2nd November 2026	Initial release.

In the above table the latest report revision will replace all earlier versions.

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3. TEST RESULT CERTIFICATE

Manufacturer:	Red Flag Cargo Security Systems LLC 10545 W Donges Ct Milwaukee, Wisconsin 53224 USA	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton, California 94566 USA
Model:	LXE-G-1	**Telephone:**	+1 925 462 0304
Equipment Type:	Cellular / GNSS Electronic High-Security Cable Seal	**Fax:**	+1 925 462 0306
S/N's:	TTB00001		
Test Date(s):	22nd October 2026	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC Part 24, 27 & ISED RSS 130 ISSUE 2, 133 ISSUE 7, 139 ISSUE 4	**EQUIPMENT COMPLIES**

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs, Inc.

Gordon Hurst
President & CEO MiCOM Labs, Inc.

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4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	A2LA	24th Feb 2025	R105 - Requirement's When Making Reference to A2LA Accreditation Status
II	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
III	M 3003	Edition 6 March 2024	Expression of Uncertainty and Confidence in Measurements
IV	RSS-130 Issue 2	February 2019	RSS-130 Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
V	RSS-133 Issue 7	July 2024	RSS-133 2GHz Personal Communications Services. This Radio Standards Specification (RSS) sets out the requirements for certification of transmitters and receivers used in radio communications systems to provide Personal Communications Services (PCS) in the bands 1850-1915 MHz and 1930-1995 MHz.
VI	RSS-139 Issue 4	October 2022	RSS-139 Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz
VII	ANSI C63.26	2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
VIII	FCC Part 24E	2026	Subpart E—Broadband PCS; (c) This subpart sets out the regulations licensing and operations of personal communications services authorized in the 1850-1910 and 1930-1990 MHz bands.
IX	FCC Part 27C	2026	Miscellaneous Wireless Communications Services This part is for the provision of wireless communications services in the following bands. (2) 746-758MHz, 775-788MHz, and 805-806MHz. (3) 698-746MHz, 1710-1755MHz

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4.2. Test and Uncertainty Procedure

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

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5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Scope Of Test Program

Red Flag Cargo Security Systems LLC, LXE-G-1

The scope of the test program was to test the Red Flag Cargo Security Systems LLC, LXE-G-1 for compliance to the following standards:

FCC Part 24 Subpart E – Broadband PCS
This subpart sets out the regulations governing the licensing and operations of personal communications services authorized in the 1850-1910 and 1930-1990MHz bands.

FCC Part 27 Subpart C – Miscellaneous Wireless Communications Services
This subpart sets out the technical standards and emission limits under which spectrum is made available and licensed for the provision of wireless communications services in the 698–746 MHz, 745–758 MHz, 775–788 MHz, 805–806 MHz and 1710–1755 MHz bands.

Industry Canada RSS-130 Issue 2
This Radio Standards Specification (RSS) sets out the requirements for equipment operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz bands.

Industry Canada RSS-133 Issue 7
RSS-133 2 GHz Personal Communications Services sets out the requirements for certification of transmitters and receivers used in radio communications systems to provide Personal Communications Services (PCS) in the bands 1850-1915 MHz and 1930-1995 MHz.

Industry Canada RSS-139 Issue 4
RSS-139 Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz

Note: Radiated spurious emissions testing was performed as a spot-check evaluation on LTE Band 4 Mid-Channel (1732.5 MHz). This report serves as a verification evaluation of the pre-certified cellular module integrated into the host device (LXE-G-1) per modular integration guidelines. The host unit was evaluated in a standalone configuration operating in Continuous Wave (CW) mode utilizing its internal, integral antenna. No external antennas, RF cables, or external connectors were attached or evaluated during testing.

For RF testing of the pre-certified nRF9160 module tested by DEKRA Testing and Certification, S.A.U. refer to the following test report numbers:
NIE: 59675RRF.001, FCC Part 24 & Part 27; RSS-130, RSS-133, RSS-139 Dated 2019-06-06
NIE: 59675RRF.002, FCC Part 24 & Part 27; RSS-130, RSS-133, RSS-139 Dated 2019-06-06

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5.2. Technical Details

Details	Description
Purpose:	Test of the Red Flag Cargo Security Systems LLC, LXE-G-1 to requirements of FCC Part 24E, 27C & ISED RSS-130, 133, 139
Applicant:	Red Flag Cargo Security Systems LLC 10545 W Donges Ct Milwaukee Wisconsin 53224, USA
Manufacturer:	Same as above
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	REDF01-U4
Date EUT received:	8th October 2026
Standard(s) applied:	FCC Part 24E, 27C & ISED RSS 130 ISSUE 2, 133 ISSUE 7, 139 ISSUE 4
Dates of test (from - to):	22nd October 2026
No of Units Tested:	1
Type of Equipment:	Cellular / GNSS Electronic High-security Cable Seal
Product Family Name:	LXE High-Security GPS Seal
Model(s):	LXE-G-1
Location for use:	Outdoors
Declared Frequency Range(s):	LTE-M (3GPP Cat-M1): - LTE Band 4: TX 1710 – 1755 MHz / RX 2110 – 2155 MHz GNSS Receiver: - GPS L1 C/A: 1575.42 MHz (Receive-only)
Type of Modulation:	QPSK, 16-QAM (LTE-M / 3GPP Cat-M1)
EUT Modes of Operation:	QPSK / 16QAM
Transmit/Receive Operation:	Transceiver
Rated Input Voltage and Current:	$3V_{DC}$ (Client Declared)
Operating Temperature Range:	-40ºC to +60 ºC (Client Declared)
Equipment Dimensions:	W: 85 mm, H: 100 mm, L: 75mm
Weight:	255 g (9 oz)
Hardware Rev:	2026.2
Software Rev:	LXE-2026.1.3

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5.3. Equipment Model(s) and Serial Number(s)

Type (EUT/ Support)	Equipment Description	Manufacturer	Model No.	Serial No.
EUT	Cellular / GNSS Electronic High-security Cable Seal	Red Flag Cargo Security Systems LLC	LXE-G-1	TTB00001

5.4. Cabling and I/O Ports

Equipment has no I/O ports.

5.5. Antenna Details

The antenna specifications were declared by the client/manufacturer. These parameters are referenced for information only and were not measured by the test laboratory.

Type	Manufacturer	Model	Family	Gain	BF Gain	Dir BW	X-Pol
Integral	Ignion/Fractus	TRIO mXTEND (NN03-310)	Chip	1710 – 2690 MHz 2.4 dBi	N/A	Omni	N/A

BF Gain - Beamforming Gain
Dir BW - Directional BeamWidth
X-Pol - Cross Polarization

Note: 1: Supported operating band of the pre-certified module. Radiated spurious emissions spot-check verification was performed strictly on LTE Band 4 for this evaluation.
Note: 2: GPS L1 (1575.42 MHz) is exempt from testing in the U.S. under 47 CFR § 15.101(b) due to operating above 960 MHz, and exempt from Canadian certification requirements under ISED RSS-310 as Category II equipment.

5.6. Test Configurations

Cellular testing was performed with the EUT set to operate at the following configurations:

Technology	Band
LTE	B4

- The LXE-G-1 was battery powered and pre-configured for CW test mode.
- Equipment was set to transmit a continuous, unmodulated carrier Mid Channel of LTE Band 4 uplink (1710-1755 MHz) @ 1732.5 MHz
- Nominal setting: 10 dBm (10 mW).

5.7. Operational Modes

The EUT (LXE-G-1) was evaluated as a standalone, battery-powered portable device. Testing was conducted with the device in its final commercial enclosure with the integrated internal antenna intact.

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Note: The device is powered by an internal CR17505 lithium battery (3.0 V_{DC} nominal) per manufacturer declaration. Due to the sealed enclosure, the battery voltage was not independently verified by the laboratory.

5.8. Equipment Modifications

The following modifications were required to bring the equipment into compliance:
1. NONE

5.9. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:
1. NONE

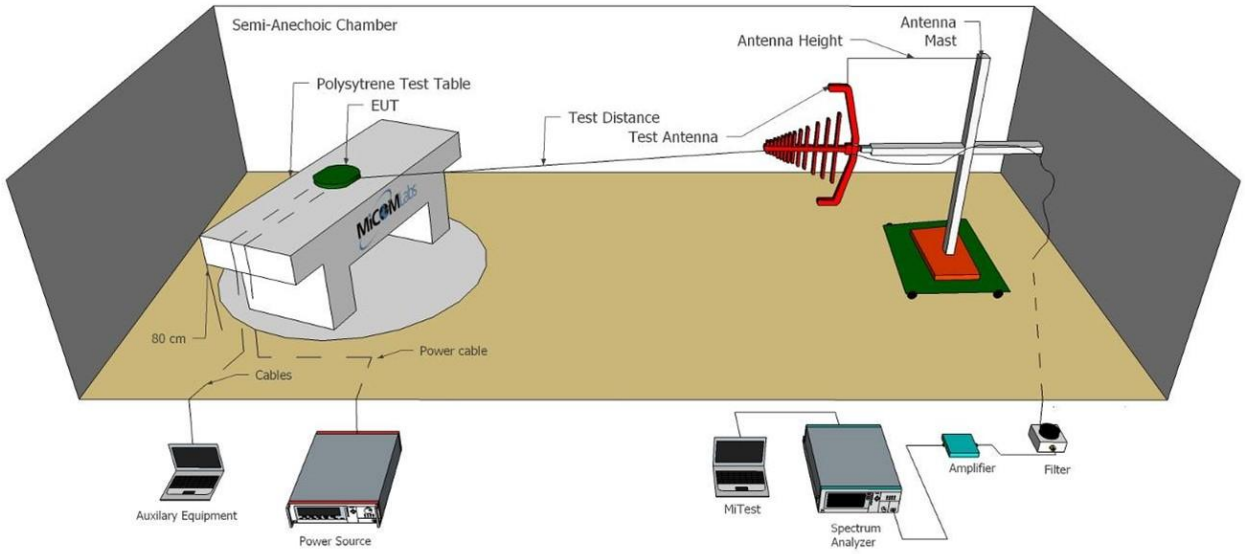
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6. TEST EQUIPMENT CONFIGURATION(S)

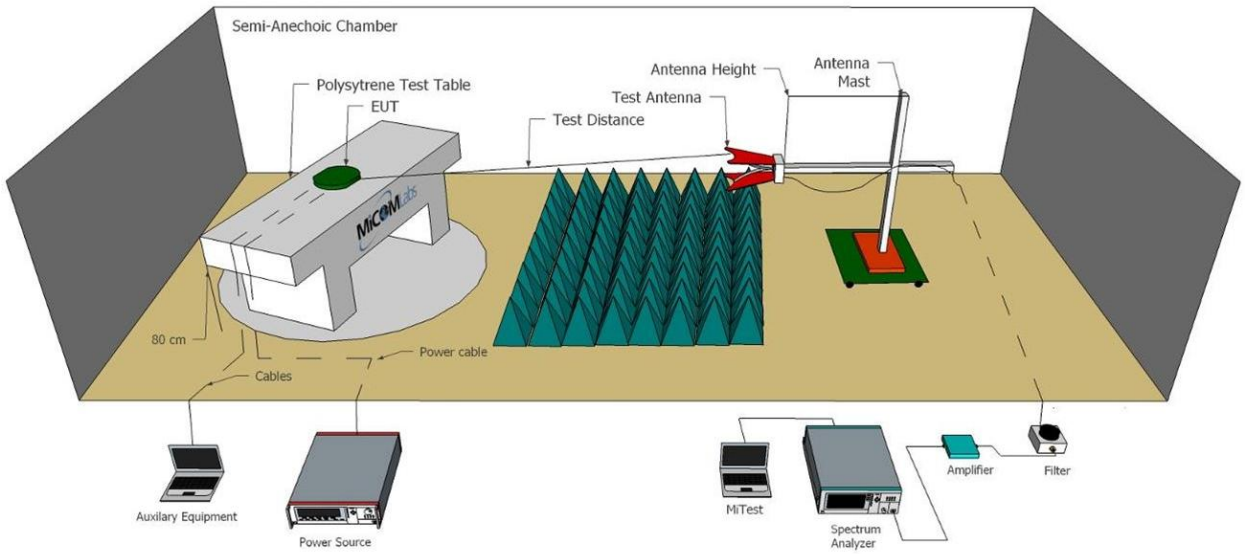
6.1. Radiated Emissions

The following tests were performed using the radiated test set-up shown in the diagram below. Radiated emissions above and below 1GHz.

Radiated Emissions Below 1GHz Test Setup



Radiated Emissions Above 1GHz Test Setup



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Test Equipment Utilized

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
266	10 Hz to 50GHz MXA Signal Analyzer	Keysight	N9020B	MY60110791	17 Jun 2027
298	3M Radiated Emissions Chamber Maintenance Check	MiCOM	3M Chamber	298	30 Jan 2027
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	5 Dec 2026
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	18 Aug 2027
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	7 Dec 2026
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	18 Aug 2027
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	Not Required
416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	18 Aug 2027
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	18 Aug 2027
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	18 Aug 2027
465	Low Pass Filter DC-1000 MHz	Mini-Circuits	NLP-1200+	VUU01901402	18 Aug 2027
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	22 Jun 2027
510	Barometer/Thermometer	Digi Sense	68000-49	170871375	4 Jan 2027
554	Precision SMA Cable	Fairview Microwave	SCE18060101-400CM	554	22 Jun 2027
555	Rhode & Schwarz Receiver (Firmware Version : 3.10 SP1)	Rhode & Schwarz	ESW 44	101893	14 Aug 2027
560	LTE Filter 1710-1785 MHz	Warison	WFIL-N1710-1785F-05	560	25 Aug 2027
602	Cable - 3M Chamber Bulkhead to Receiver	Mini-Circuits	CBN-2M-DMSM	602	22 Jun 2027
CC-05	Radiated Emissions Confidence Check	MiCOM	CC-05	None	30 Jan 2027

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7. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Test and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for conducted RF testing.



The MiCOM Labs "MiTest" Automated Test System" (Patent Pending)

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8. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
Transmitter Spurious Emissions	Complies	View Data

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9. TEST RESULTS

9.1. Radiated Emissions

9.1.1 Restricted Frequency Bands

Reference FCC Part 15.205

Frequency Band			
MHz	**MHz**	**MHz**	**GHz**
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
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	2690-2900	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	Above 38.6
13.36-13.41			

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.

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(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.

(8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

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9.1.2 Test Conditions

Radiated Test Conditions for Transmitter Spurious Emissions			
Standard:	FCC Part 24E, 27C; ISED RSS-130, 133, 139	**Ambient Temp. (ºC):**	19.2 – 20.5
Test Heading:	Spurious Emissions	**Rel. Humidity (%):**	47 - 52
Standard Section(s):	FCC 24E: 238(a); FCC 27C: 27.53 (c), (g), (h); RSS-130: 4.7, RSS-133: 5.6; RSS-139: 5.6	**Pressure (mBars):**	1004 - 1008
Reference Document(s):	See Normative References		

Test Procedure
Testing was performed under ambient laboratory conditions with reference to the test configuration identified in the test setup. The EUT was set to transmit at selected cellular technologies frequency bands and modulation schemes. Radiated spurious emissions were measured across the frequency ranges of 30 MHz to 1 GHz and 1 GHz to 18 GHz in both horizontal and vertical antenna polarizations.

Limits Out of Band and Spurious Emissions:

Band 2:
FCC 24E: §24.238 Emission limitations for Broadband PCS equipment.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-133: 5.6 Unwanted emission limits
Unwanted emissions shall be measured in terms of average values while the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified in table 3, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

For the unwanted emission limits, in the 1 MHz bands immediately outside and adjacent to the frequency block group, the power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth (OBW). Beyond these 1 MHz bands, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth may be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% of the OBW, as applicable.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the table 3.

Table 3: Unwanted emission limits for all equipment	
Offset frequency from the edge of the frequency block group (MHz)	**Unwanted emission limit**
≤ 1	-13 dBm/(1% of OBW)
> 1	-13 dBm/MHz

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Band 4, 12,13:
FCC Part 27 Subpart C — Emission limits for Miscellaneous Wireless Communications Services.

(c) Operations in the 746–758 MHz and 776–788 MHz bands: On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 $\log_{10}$(P) dB. On any frequency in the 1559–1610 MHz band, emissions shall not exceed -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals.

(g) Operations in the 600 MHz and 698–746 MHz bands: The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) by at least 43 + 10 $\log_{10}$(P) dB. Compliance is based on a resolution bandwidth of 100 kHz or greater. In the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(h) AWS emission limits—(1) *General protection levels.* Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB.

RSS-130: 4.7.1 The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

RSS-139: 6.6 Transmitter Unwanted Emissions
(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.
(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

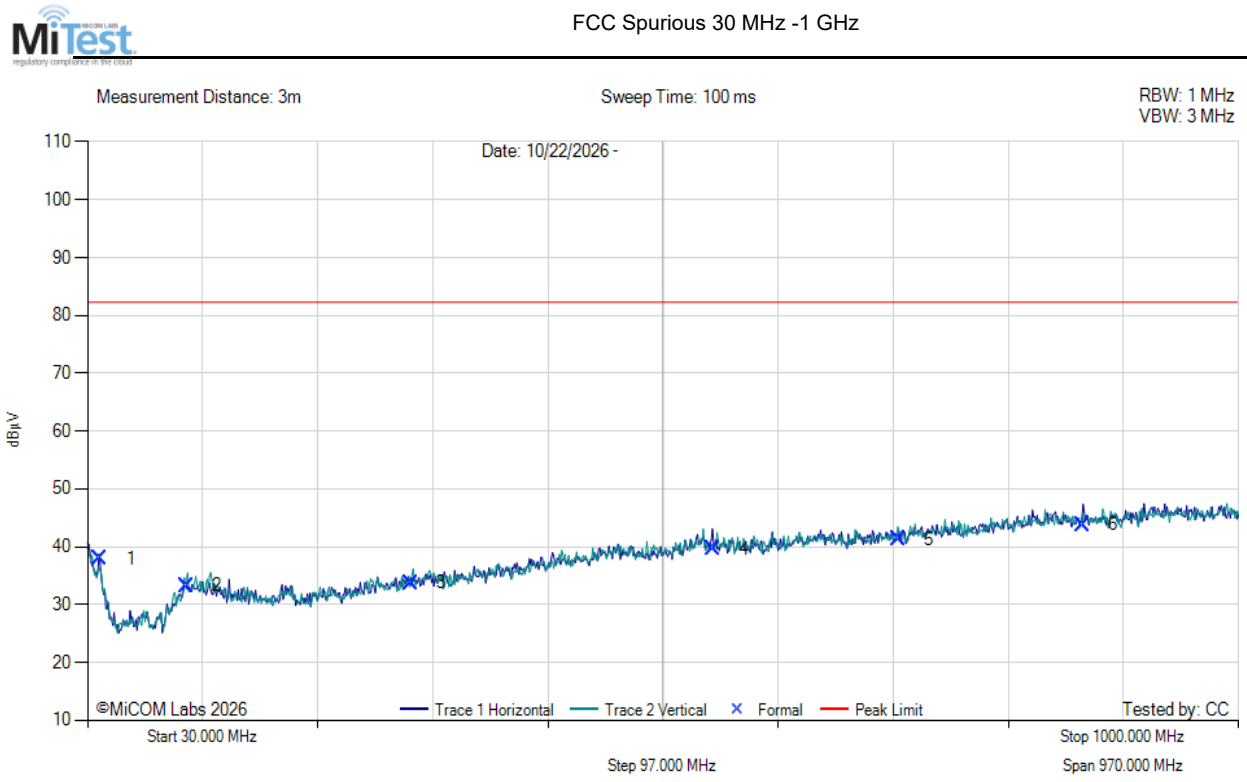
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9.2 Data

9.2.1 Tx Spurious [30 MHz-1 GHz]

Equipment Configuration for FCC SPURIOUS 30 MHz -1 GHz			
Antenna:	nRF9160 LTE-M	**Variant:**	LTE
Antenna Gain (dBi):	??	**Modulation:**	QPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	LTE B4	**Data Rate:**	--
Power Setting:	10 dBm (10 mW)	**Tested By:**	CC

Test Measurement Results



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	40.82	44.49	4.05	-10.60	37.94	MaxP	Horizontal	116	103	82.3	-44.4	Pass
2	113.42	39.68	4.40	-10.79	33.29	MaxP	Vertical	110	298	82.3	-49.0	Pass
3	302.70	39.51	5.20	-10.98	33.73	MaxP	Vertical	141	229	82.3	-48.6	Pass
4	557.69	39.33	6.07	-5.83	39.58	MaxP	Horizontal	101	150	82.3	-42.7	Pass
5	713.38	38.40	6.68	-3.74	41.34	MaxP	Vertical	101	172	82.3	-41.0	Pass
6	868.97	38.07	7.31	-1.58	43.79	MaxP	Horizontal	110	88	82.3	-38.5	Pass

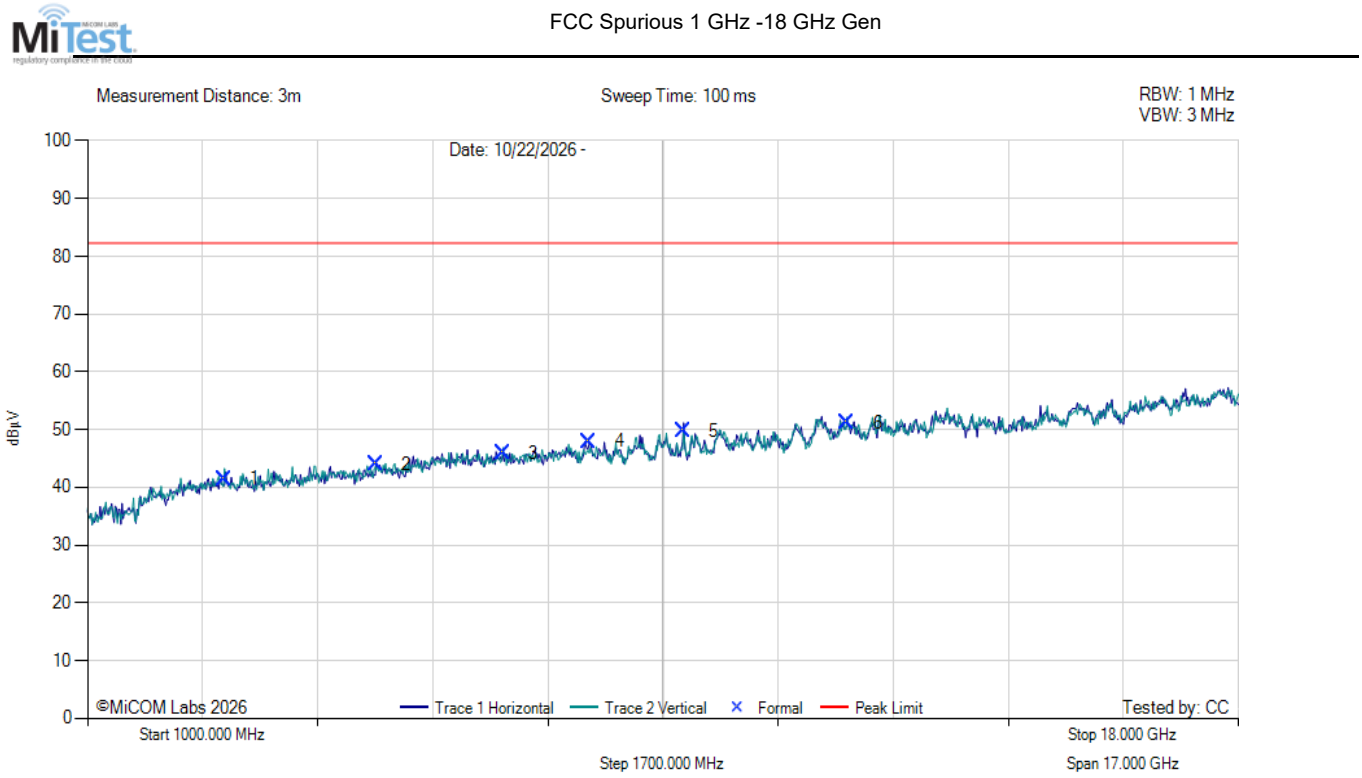
Test Notes: 30MHz-1GHz LXE-G-1 Tx B4 Mid 1732.5 MHz, SN-TTB00001

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9.2.2 Tx Spurious [1 GHz-18GHz]

Equipment Configuration for FCC SPURIOUS 1 GHz -18 GHz			
Antenna:	nRF9160 LTE-M	**Variant:**	LTE
Antenna Gain (dBi):	??	**Modulation:**	QPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	LTE B4	**Data Rate:**	--
Power Setting:	10 dBm (10 mW)	**Tested By:**	CC

Test Measurement Results



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	3024.35	48.74	3.91	-11.19	41.46	MaxP	Vertical	129	271	82.3	-40.8	Pass
2	5266.35	50.32	5.39	-11.72	44.00	MaxP	Horizontal	110	247	82.3	-38.3	Pass
3	7137.62	47.24	6.36	-7.65	45.95	MaxP	Vertical	117	30	82.3	-36.3	Pass
4	8411.62	48.75	7.06	-7.86	47.95	MaxP	Horizontal	103	54	82.3	-34.3	Pass
5	9805.06	48.58	7.27	-6.16	49.69	MaxP	Horizontal	110	261	82.3	-32.6	Pass
6	12221.30	48.28	9.14	-6.29	51.14	MaxP	Vertical	101	227	82.3	-31.2	Pass

Test Notes: 1-18GHz, LXE-G-1 Tx B4 Mid 1732.5 MHz, SN-TTB00001

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