

TEST REPORT

Report Number: 15984605E1V2

Applicant : GROUNDPROBE PTY LTD
72 NEWMARKET ROAD,
WINDSOR, QLD 4030, AUSTRALIA

Model : SSR-FX

FCC ID : S491225S5SSRFO

EUT Description : SLOPE STABILITY RADAR MODULE

Test Standard(s) : FCC CFR 47 PART 90 SUBPART F & I

Date Of Issue:
2026-10-13

Prepared by:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2026-08-17	Initial Issue	Thu Chan
V2	2026-10-13	Updated Statement on Page 35 per TCB's Feedback	GP Chin

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	GROUNDPROBE PTY LTD 72 NEWMARKET ROAD, WINDSOR, QLD 4030, AUSTRALIA		
Model	SSR-FX		
Brand	GROUNDPROBE PTY LTD		
FCC ID	S491225S5SSRFO		
EUT Description	SLOPE STABILITY RADAR MODULE		
Serial Number	25H026, SYN409		
Sample Receipt Date	11-14-2025		
Date Tested	11-17-2025 to 11-25-2025		
Applicable Standards	FCC PART 90 Subpart F & I		
Test Results	COMPLIES		
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. Will constitute fraud and shall nullify the document.			
Approved & Released By:		Prepared & Reviewed By:	
			
Thu Chan Staff Engineer UL Verification Services, Inc.		Kin Wong Laboratory Engineer Associate UL Verification Services, Inc.	
Co-Reviewed By:			
			
Huahan Li Senior Test Engineer UL Verification Services, Inc.			

2. TEST RESULTS SUMMARY

Requirement Description	FCC Requirement Clause	Test Limit	Test Condition	Result
Duty Cycle	N/A	N/A	Conducted	Compliant
Modulation	2.1047	N/A	-	Compliant
Occupied Bandwidth	2.1049	N/A	Conducted	Compliant
RF Output Power	2.1046 90.205(r)	N/A	Conducted	Compliant
Frequency Stability	2.1055	Fundamental emissions are contained within allocated frequency band	Conducted	Compliant
Conducted Spurious Emissions	2.1051 2.1057(a)(1)	-13 dBm/MHz for all out-of-band emissions	Conducted	Compliant
Radiated Spurious Emissions	2.1053(a) 2.1057(a)(1)	-13 dBm/MHz for all out-of-band emissions	Radiated	Compliant
RF Exposure	1.1310	1 mW/cm ² for near-field and far-field power density	-	Compliant

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 90
- FCC OET Bulletin 65
- ANSI C63.26-2015
- ANSI C63.4-2014

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☐	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☐	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

5. CALIBRATION AND UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

PARAMETER	U _{LAB}
Conducted Antenna Port Emission Measurement	1.94 dB
RF Power Measurement Direct Method Using Power Meter	1.3 (Peak), 0.45 (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Worst Case Conducted Disturbance, 9 KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9 KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Temperature	±0.9 °C
Voltages	±0.45 %
Time	±0.02 %

Uncertainty figures are valid to a confidence level of 95%.

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a slope stability radar (SSR) module with high power amplifier (HPA) that detects the movements and potential hazards of mine sites. The SSR-FX model is a 2D real aperture radar suited to broad area monitoring and has an Omni antenna variant for improved radar resolution.

Part Number	Serial Number	Description
GP39055	25H026	Radio Frequency Module (RFM)
GP39274	SYN409	High Power Amplifier (HPA)
GP36150	N/A	FX Coaxial Feed Cable
0339-06	A	Waveguide to coaxial output transition

6.2. DESCRIPTION OF AVAILABLE ANTENNAS

The EUT utilizes 2 options of external slotted waveguide antenna. Antenna Option 1 (FX) has a size of 183 cm (L) x 12.1 cm (W) with a maximum gain of 30 dBi. Antenna Option 2 (Omni) has a size of 281 cm (L) x 14.2 cm (W) with a maximum gain of 32 dBi.

6.3. SOFTWARE AND FIRMWARE

The software version used on the test is 0.1.2385 (b5b921f7e193+5). The firmware version is SSR RCE v7.92.

6.4. WORST CASE MODE

The worst case (highest power and widest bandwidth) waveform is LR_CNK64096A6.

Waveform	Bandwidth	Power (During 'On' Time)	Power
	(MHz)	(dBm)	(mW)
LR_CNK64096A6	84.359	28.76	751.6

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Peripheral Support Equipment List			
Description	Manufacturer	Model Number	Serial Number
Laptop	Lenovo	21JK-00Q4AU	PF-5GW9JB

I/O CABLES

I/O Cable List						
Cable No.	Port	No. of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	Standard Circular Connector 20AWG 19 Pin Plug, Male	UNSHIELDED	5	Breakout cable for DC power
2	ETH	1	M12 X Coded	SHIELDED	5	Ethernet connection for programming waveforms

TEST SETUP

The EUT is powered via an adjustable DC power supply, set at 24 VDC nominal. The waveform modes were configured by the test software, MonitorIQ version 0.1.2385 (b5b921f7e193+5).

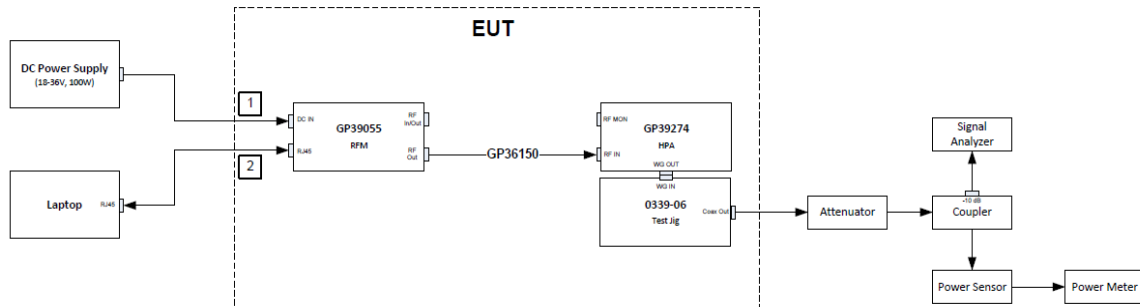
The RF module (GP39055) is connected with a coaxial feed cable (GP36150) to high power amplifier (GP39274). The output port of the high-power amplifier, which is a waveguide, is the antenna port, therefore all conducted measurements were made at the antenna port utilizing a waveguide to coaxial adaptor (0339-06).

Radiated tests were conducted by terminating the antenna port with 50-Ohm termination.

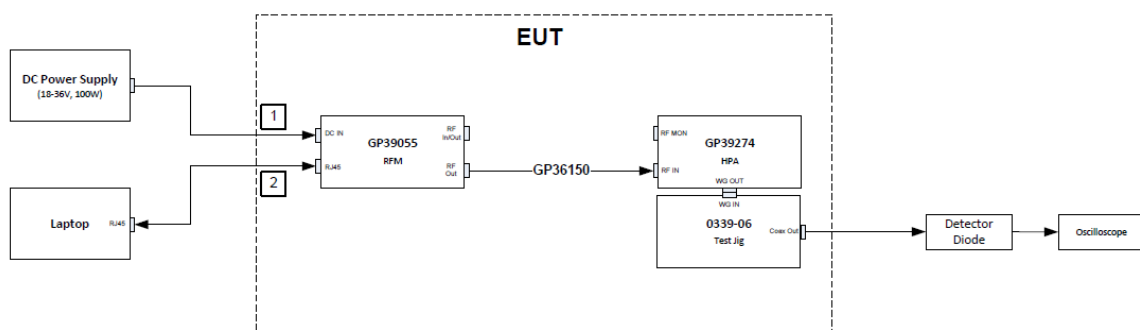
Two waveforms, LR_CNK64096A6 and ER_CNK68192HBA7, were tested for report purposes.

SETUP DIAGRAM

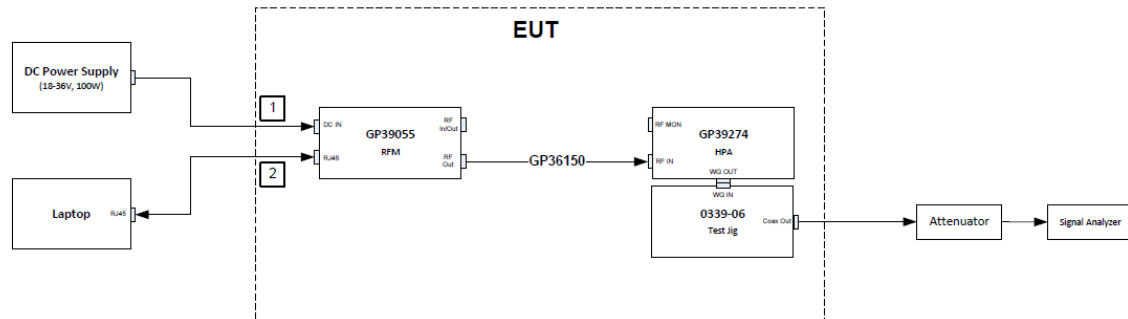
CONDUCTED – Fundamental & Frequency Stability



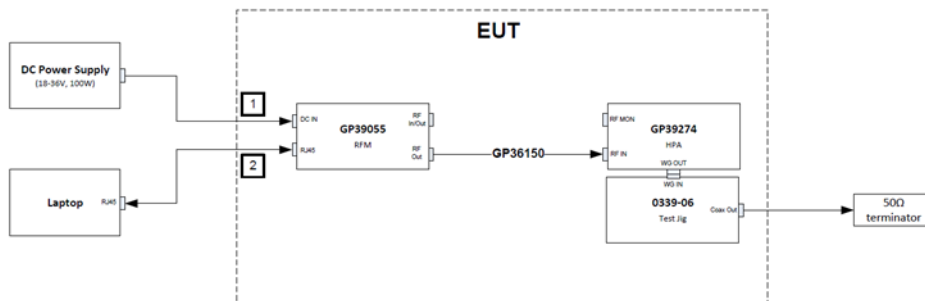
CONDUCTED – Duty Cycle



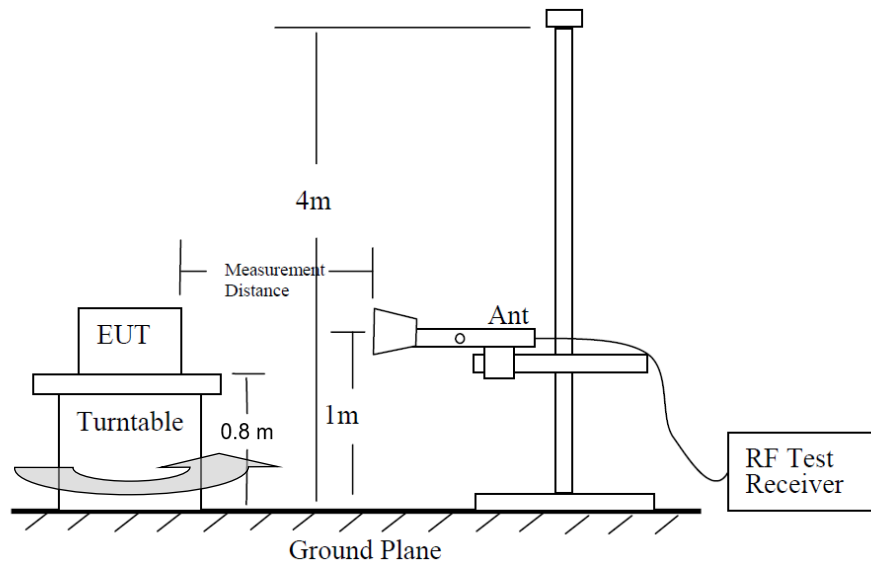
CONDUCTED - Spurious Emissions



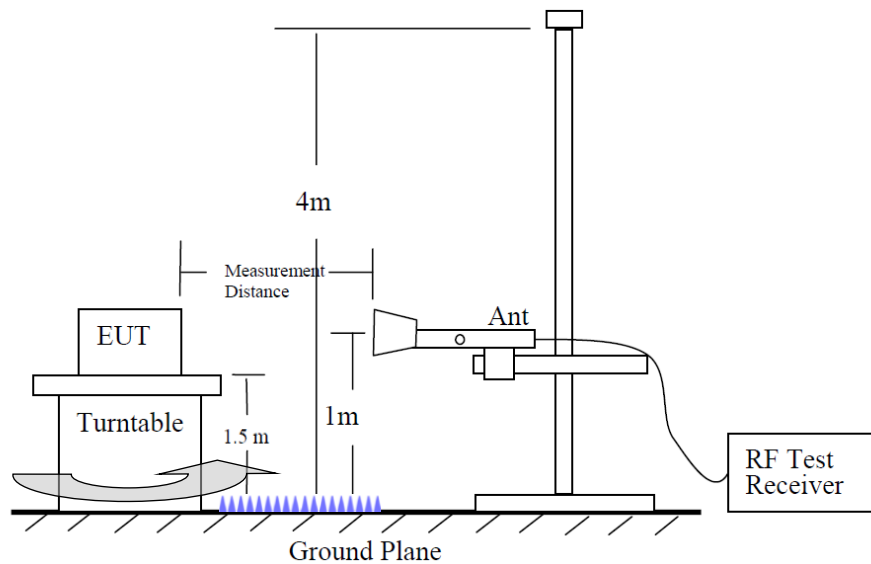
RADIATED – Spurious Emissions

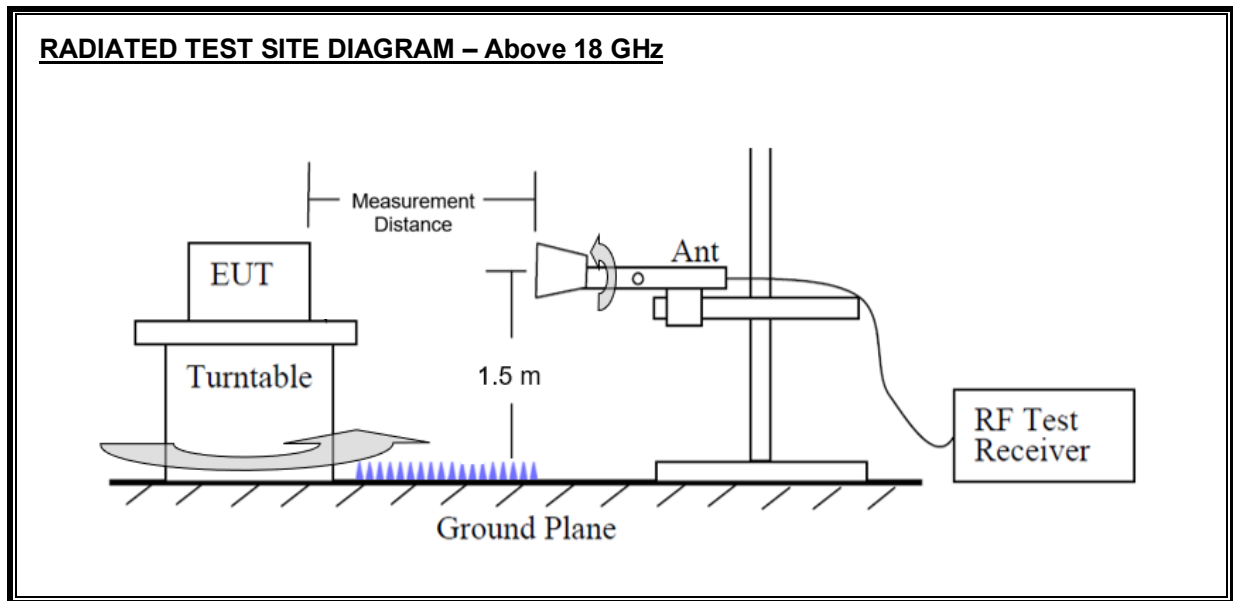


RADIATED TEST SITE DIAGRAM – Below 1 GHz



RADIATED TEST SITE DIAGRAM – 1 - 18 GHz





FAR-FIELD DISTANCE AND MEASUREMENT DISTANCE

The equipment under test was transmitting while connected to its integral antenna and placed on a turntable.

The measurement distance is in the far field per formula $2D^2/\lambda$ where D is the larger dimension of the antenna. For fundamental or band edge emissions, the largest far-field distance of either the EUT antenna or measurement antenna shall be used. For above 18 GHz spurious emissions, the far-field distance will be based on the measured antenna. In this case, the measurement antenna has the largest far-field distance. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest EIRP reading on the receive spectrum analyzer.

Frequency Range (GHz)	Wavelength (m)	Far Field Distance (m)	Measurement Distance Used (m)
18-26.5	0.0113	3.13	3.30
26.5-40	0.0075	2.61	3.00

Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst-case polarization/positioning.

7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Local ID	Cal Due
Spectrum Analyzer, 2 Hz to 50 GHz	Rohde & Schwarz	FSW50	215756	02-28-2026
EMI Test Receiver, 1 Hz to 44 GHz	Rohde & Schwarz	ESW44	191429	02-28-2026
Antenna, Horn 18-26.5 GHz	Com-Power	AH-826	222324	09-30-2026
Antenna, Horn 26.5-40 GHz	Com-Power	AH-640	222328	09-30-2026
Antenna, Double Ridge Guide Horn 1 to 18 GHz	ETS	3117	206807	04-30-2027
RF Filter Box, 1-18GHz	UL-FR1	NA	171013	07-30-2026
Amplifier, 9KHz to 1GHz	Sonoma Instrument	310N	230856	07-31-2026
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB1	80293	05-31-2027
Walkin Environmental Chamber	Espec	Espec EWPX674(2)- (2)12NAL	135570	04-30-2026
Digital Multimeter	Fluke	115	246585	02-28-2026
DC Power Supply	TDK-LAMBDA	GEN30-50	56306	CNR
Rf Amplifier, 18-26.5GHz	AMPLICAL	AMP18G26-35-7-MI	196113	10-31-2026
Rf Amplifier 26-40GHz	AMPLICAL	AMP26G40-34-10-MI	196397	10-31-2026
350 MHz High Definition Oscilloscope	Teledyne LeCroy	HDO6034	125097	01-31-2026
Diode Detector 0.01 to 33 GHz	Keysight Technologies Inc	8474C	81041	CNR
Power Meter	Keysight Technologies Inc	N1913A	81027	01-31-2026
Power Sensor, 50MHz to 50GHz, - 30dBm to 20dBm	Keysight Technologies Inc	8487A	80153	01-31-2026
Directional Coupler	KRYTAR	152610	246237	11-30-2026
UL EMC Radiated Software	Version	Rev.9.5.25 Aug 2025		
mmWave Automation Tool Software	Version	V2025.3.0		

*Equipment was used to perform tests prior to the calibration due date.

All horn antennas at and above the 33-50 GHz band are standard gain horns. In accordance with ANSI C63.26:2015, Clause 4.5.3 (a), Standard gain horns need not be periodically recalibrated, unless damage or deterioration is suspected or known to have occurred. The connector shall be checked periodically for damage. If a standard gain horn is not periodically recalibrated, its critical dimensions (see Annex A of IEEE Std 1309™-2013) shall be verified and documented on an annual basis.

UL measures the critical dimensions on an annual basis and checks for damage and deterioration before each test.

8. APPLICABLE LIMITS AND TEST RESULTS

8.1. DUTY CYCLE

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The fundamental signal is measured in conducted setup with the signal feeding to a RF diode detector and measured by an oscilloscope, the duty cycle is then calculated.

TESTED BY

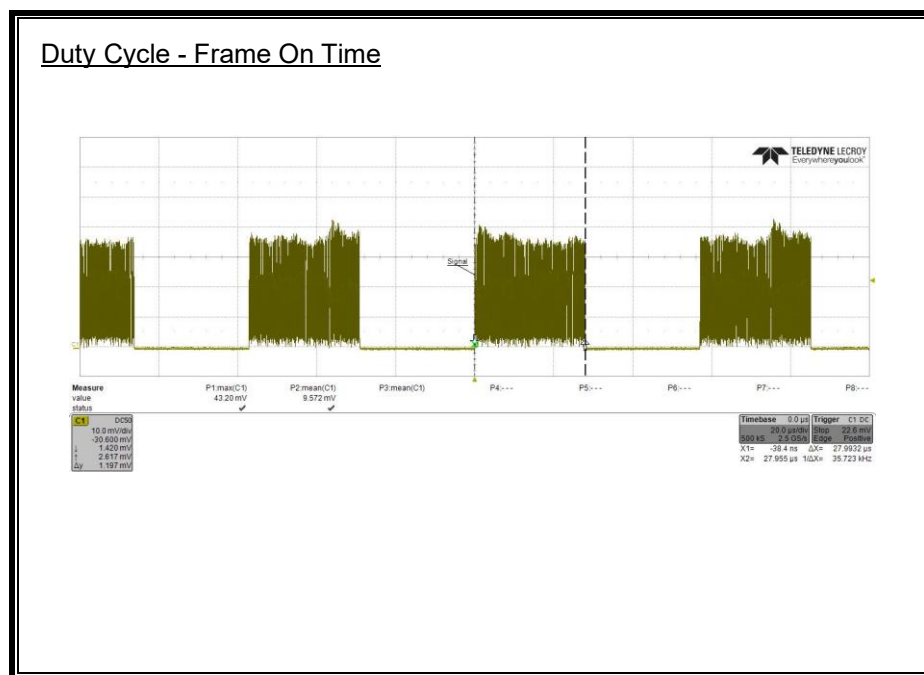
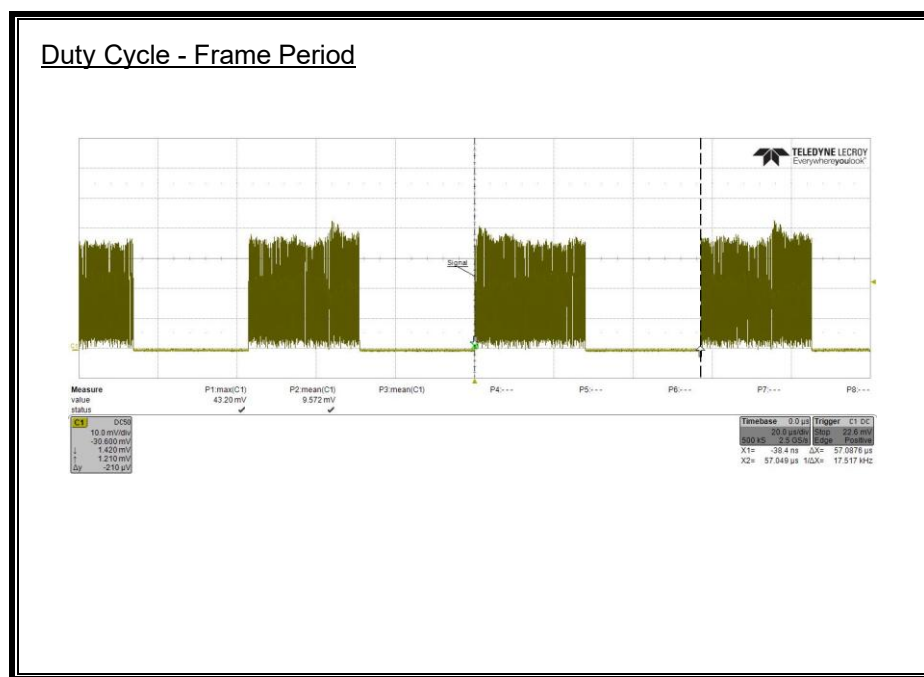
Employee ID: 24303
Test Date: 11-20-2025
Test Location: 01-mmW-A

RESULTS

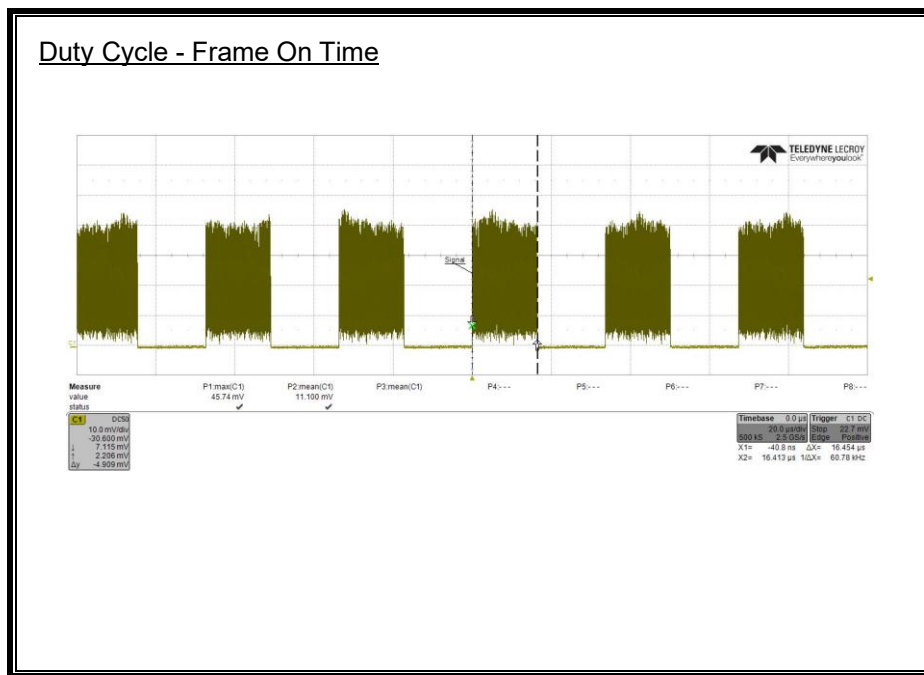
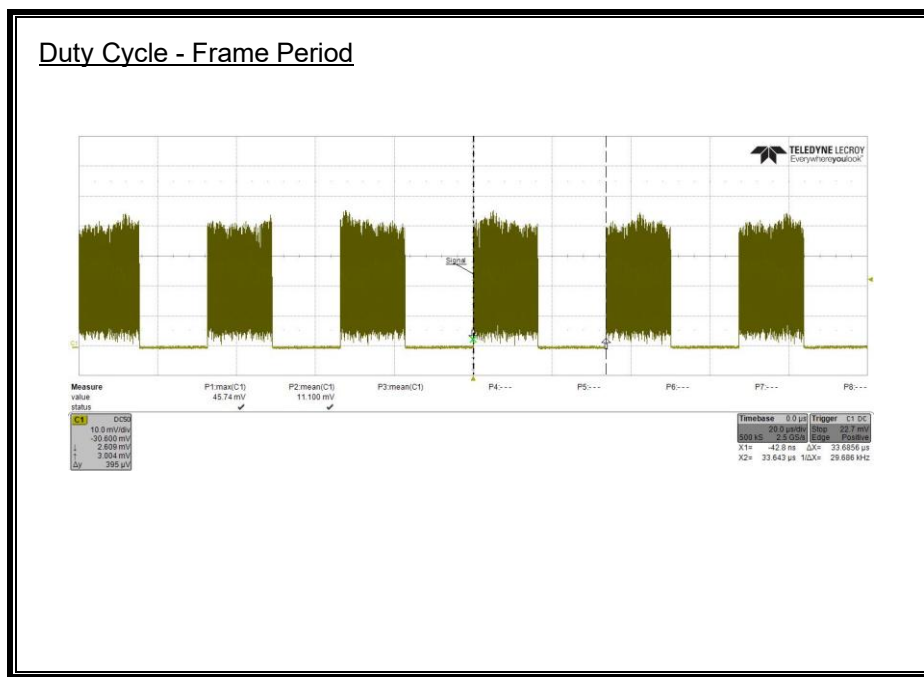
Waveform	ON Time (usec)	Period (usec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Corr Fac (dB)
ER_CNK68192HBA7	27.99	57.09	0.490	49.0%	3.09
LR_CNK64096A6	16.45	33.69	0.488	48.8%	3.11

Duty Cycle Correction Factor (dB) = $10 * \log (\text{Duty Cycle})$

8.1.1. Waveform – ER_CNK68192HBA7



8.1.2. Waveform – LR_CNK64096A6



8.2. MODULATION

APPLICABLE RULE

§2.1047

DECLARATION

The EUT employs Pulse Modulation, with amplitude modulation applied during the ON time of the pulse.

8.3. OCCUPIED BANDWIDTH

RULE PART

§2.1049

LIMIT

For reporting purposes only.

TEST PROCEDURE

ANSI C63.26-2015 Clause 5.4.4

99% bandwidth measurement function of the signal analyzer was used to measure the occupied bandwidth.

- RBW = 1 ~ 5% of OBW
- VBW = 3 x RBW
- Span = 1.5x of OBW, typical
- Detection = Peak
- Trace Mode = Max Hold
- Sweep = Auto Couple
- The trace was allowed to stabilize

The occupied bandwidth stability with variation of temperature (–30°C to + 50°C) and primary supply voltage is measured for determining the worst case (widest) of occupied bandwidth.

The EUT requires a 24 VDC nominal supply voltage, this correlated to the DC supply voltage being varied from 20.4 VDC to 27.6 VDC at test.

TESTED BY

Employee IDs: 24303, 103479
Test Date: 11-20-2025
Test Location: Environmental Chamber

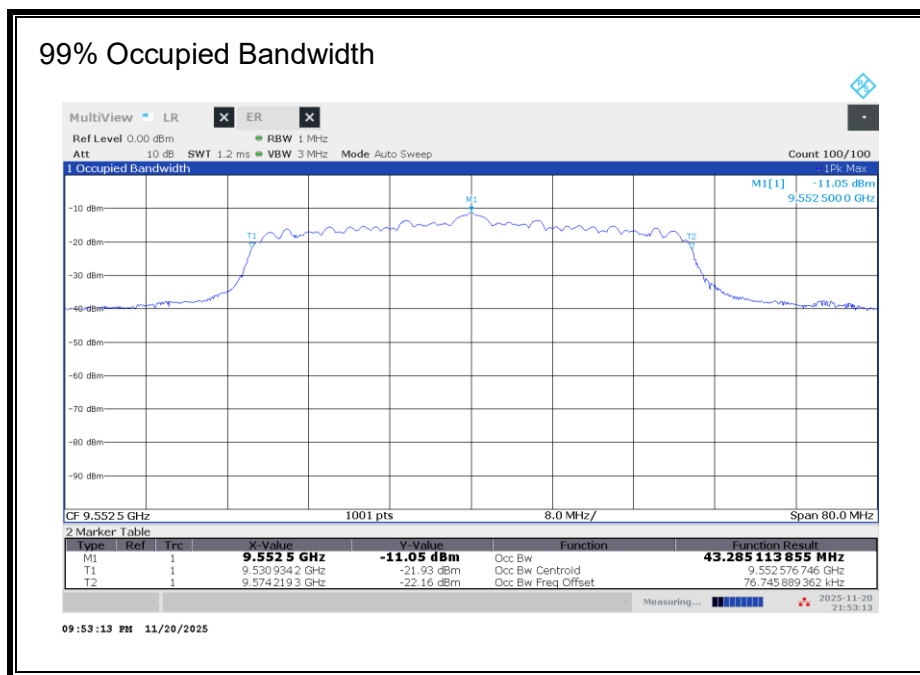
RESULTS

See the following pages

8.3.1. Waveform – ER_CNK68192HBA7

Frequency vs. Temperatures & Voltages

Temp	20.4 V _{DC}	24.0 V _{DC}	27.6 V _{DC}
	99% OBW	99% OBW	99% OBW
(°C)	(MHz)	(MHz)	(MHz)
50	43.116	43.122	43.122
40	43.120	43.138	43.116
30	43.045	43.060	43.049
20	43.063	43.075	43.060
10	43.137	43.119	43.142
0	43.078	43.071	43.075
-10	43.150	43.183	43.205
-20	43.063	43.059	43.062
-30	43.235	43.256	43.285

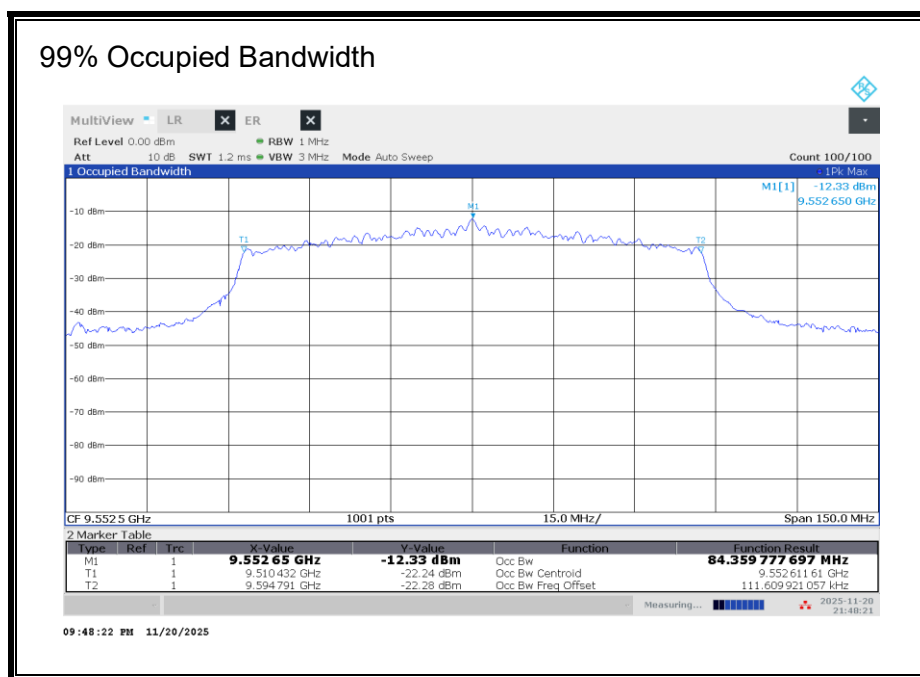


Widest 99% Occupied Bandwidth is 43.285 MHz at -30°C / 27.6 VDC.

8.3.2. Waveform – LR_CNK64096A6

Frequency vs. Temperatures & Voltages

Temp	20.4 V _{DC}	24.0 V _{DC}	27.6 V _{DC}
	99% OBW	99% OBW	99% OBW
(°C)	(MHz)	(MHz)	(MHz)
50	84.224	84.207	84.214
40	84.205	84.213	84.226
30	84.185	84.224	84.218
20	84.338	84.309	84.329
10	84.301	84.299	84.306
0	84.271	84.251	84.279
-10	84.307	84.283	84.289
-20	84.344	84.355	84.336
-30	84.359	84.344	84.331



Widest 99% Occupied Bandwidth is 86.359 MHz at -30°C / 20.4 VDC.

8.4. RF OUTPUT POWER

RULE PART(S)

§2.1046

§90.205 (r) *All other frequency bands.* Requested transmitter power will be considered and authorized on a case-by-case basis.

LIMIT

Reporting requirement only for Equipment Authorization.

Authorized power is determined upon Station licensing.

TEST PROCEDURE

The maximum mean power is measured by power sensor and power meter in a conducted setup.

Total Correction Factor = Measurement Cable Loss + Power Splitter Loss + Attenuator Loss

Where,

Measurement Cable Loss = Path Loss of Cable @ 9.5525 GHz
Power Splitter Loss = Path Loss of Power Splitter @ 9.5525 GHz
Attenuator Loss = Path Loss of Attenuator @ 9.5525 GHz

A total correction factor of 23.18 dB is applied to the reading of the power meter during test.

The average power sensor corrected measurement is then converted to average power during the ON time by factoring in the duty cycle factors, calculated in Section 8.1.

The output power stability with variation of temperature (-30°C to $+50^{\circ}\text{C}$) and primary supply voltage is measured for determining the worst case (highest level) of output power.

The EUT requires a 24 VDC nominal supply voltage, this correlated to the DC supply voltage being varied from 20.4 VDC to 27.6 VDC at test.

TESTED BY

Employee IDs: 24303, 103479
Test Date: 11-20-2025
Test Location: Environmental Chamber

RESULTS

See the following pages.

8.4.1. Waveform – ER_CNK68192HBA7

Mean Power vs. Temperatures & Voltages						
Temp	Output Power (dBm)					
(°C)	20.4 V _{DC}		24.0 V _{DC}		27.6 V _{DC}	
	Measured	During ON Time	Measured	During ON Time	Measured	During ON Time
50	22.03	25.12	22.02	25.11	22.01	25.10
40	22.31	25.40	22.31	25.40	22.31	25.40
30	22.77	25.86	22.76	25.85	22.75	25.84
20	23.00	26.09	23.00	26.09	23.00	26.09
10	23.08	26.17	23.09	26.18	23.09	26.18
0	23.65	26.74	23.65	26.74	23.65	26.74
-10	24.16	27.25	24.16	27.25	24.16	27.25
-20	24.94	28.03	24.93	28.02	24.92	28.01
-30	24.77	27.86	24.77	27.86	24.78	27.87

Highest mean output power at on-time for ER_CNK68192HBA7 waveform is 28.03 dBm at -20°C / 20.4 VDC.

8.4.2. Waveform – LR_CNK64096A6

Mean Power vs. Temperatures & Voltages						
Temp	Output Power (dBm)					
(°C)	20.4 V _{DC}		24.0 V _{DC}		27.6 V _{DC}	
	Measured	During ON Time	Measured	During ON Time	Measured	During ON Time
50	22.62	25.73	22.65	25.76	22.64	25.75
40	23.04	26.15	23.03	26.14	22.98	26.09
30	23.36	26.47	23.39	26.50	23.41	26.52
20	23.67	26.78	23.67	26.78	23.64	26.75
10	23.78	26.89	23.76	26.87	23.76	26.87
0	24.33	27.44	24.35	27.46	24.35	27.46
-10	24.84	27.95	24.85	27.96	24.85	27.96
-20	25.62	28.73	25.62	28.73	25.65	28.76
-30	25.55	28.66	25.53	28.64	25.51	28.62

Highest mean output power at ON time for LR_CNK64096A6 waveform is 28.76 dBm at -20°C / 27.6 VDC.

8.5. FREQUENCY STABILITY

RULE PART(S)

§2.1055 (a)(1) The frequency stability shall be measured with variation of ambient temperature as follows: From -30° to $+50^{\circ}$ centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

§2.1055 (d)(1) The frequency stability shall be measured with variation of primary supply voltage as follows: Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

TEST PROCEDURES

ANSI C63.26-2015 Section 5.6

Test procedures for temperature variation:

- Position the EUT in temperature/humidity chamber with power off.
 - Set the chamber temperature to 50°C and stabilize the EUT for at least 30 minutes.
 - Record maximum change in frequency within one minute after powering the EUT.
 - Decrease chamber temperature at 10°C intervals from 50°C to -30°C . Record maximum change in frequency at each temperature.
 - A period of at least 30 minutes is provided to allow stabilization of the equipment at each temperature level.
- Temp. = -30°C to $+50^{\circ}\text{C}$

Test procedures for voltage variation:

- Position the EUT in temperature/humidity chamber with power off.
 - Set the chamber temperature to 20°C .
 - Record maximum frequency change within one minute after powering the EUT.
 - The primary supply voltage is varied from 85% to 115% of the nominal value for hand-carried, battery-powered equipment. Primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
- Voltage = (85% - 115%)
 - Nominal: 24.0 VDC; Low: 20.4 VDC; High: 27.6 VDC

The maximum peak to peak delta was calculated as follows:

Maximum Peak to Peak Delta = $(\text{Min } F_L - \text{Max } F_L) + (\text{Min } F_H - \text{Max } F_H)$
Min F_L = Minimum value from all F_L readings
Max F_L = Maximum value from all F_L readings
Min F_H = Minimum value from all F_H readings
Max F_H = Maximum value from all F_H readings

TESTED BY

Employee IDs: 24303, 103479
Test Date: 11-20-2025
Test Location: Environmental Chamber

RESULTS

See the following pages.

8.5.1. Waveform – ER_CNK68192HBA7

Temp	20.4 V _{DC}		24.0 V _{DC}		27.6 V _{DC}	
	F _L	F _H	F _L	F _H	F _L	F _H
(°C)	(GHz)	(GHz)	(GHz)	(GHz)	(GHz)	(GHz)
50	9.53100	9.57412	9.53100	9.57412	9.53101	9.57413
40	9.53100	9.57412	9.53100	9.57414	9.53101	9.57413
30	9.53104	9.57409	9.53103	9.57409	9.53104	9.57409
20	9.53103	9.57410	9.53103	9.57410	9.53103	9.57409
10	9.53099	9.57413	9.53099	9.57411	9.53099	9.57413
0	9.53103	9.57411	9.53103	9.57410	9.53103	9.57410
-10	9.53098	9.57413	9.53096	9.57414	9.53096	9.57417
-20	9.53101	9.57407	9.53101	9.57407	9.53101	9.57407
-30	9.53098	9.57422	9.53094	9.57420	9.53093	9.57422

Maximum Peak to Peak Delta 0.0003 GHz (0.3 MHz)

8.5.2. Waveform – LR_CNK64096A6

Temp	20.4 V _{DC}		24.0 V _{DC}		27.6 V _{DC}	
	F _L	F _H	F _L	F _H	F _L	F _H
(°C)	(GHz)	(GHz)	(GHz)	(GHz)	(GHz)	(GHz)
50	9.51055	9.59477	9.51055	9.59476	9.51056	9.59477
40	9.51055	9.59476	9.51056	9.59477	9.51055	9.59477
30	9.51058	9.59476	9.51054	9.59477	9.51055	9.59477
20	9.51045	9.59479	9.51049	9.59480	9.51047	9.59480
10	9.51052	9.59482	9.51051	9.59480	9.51051	9.59482
0	9.51047	9.59474	9.51047	9.59472	9.51045	9.59473
-10	9.51047	9.59478	9.51049	9.59478	9.51048	9.59477
-20	9.51042	9.59477	9.51041	9.59477	9.51042	9.59476
-30	9.51043	9.59479	9.51042	9.59477	9.51045	9.59478

Maximum Peak to Peak Delta 0.0003 GHz (0.3 MHz)

8.6. CONDUCTED SPURIOUS EMISSIONS

APPLICABLE RULES

§2.1051 The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

§2.1057 (a) (1) In all of the measurements set forth in §§2.1051 and 2.1053, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below: If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

LIMIT

§90.210 (c) (3) *Emission Mask C*. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P in watts) as follows: On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB.

For frequencies outside the authorized band of 9500 to 10,000 MHz, the attenuation must be at least $43 + 10 \log(P_m)$ dB. P_m is defined as the mean power of the radar in Watts. This equation will result in a -13 dBm limit line, regardless of the value of P_m :

$$P_m \text{ (dBW)} - \text{attenuation} = P_m \text{ (dBW)} - (43 + 10 \log(P_m)) = -43 \text{ dBW} = -13 \text{ dBm}.$$

$$\text{Max. Declared Output Power, } P = 35 \text{ dBm} = 3.16278\text{W}$$

$$\text{Limit} = 35 - (43 + 10 \log (P)) = 35 - 48 = -13 \text{ dBm}$$

TEST PROCEDURE

The conducted spurious emission is measured using spectrum analyzer. EUT is programmed for its worst-case pulse radar operation mode with highest output power, which is LR_CNK64096A6 waveform.

A correction factor of cable loss is applied to the reading of the spectrum analyzer at test.

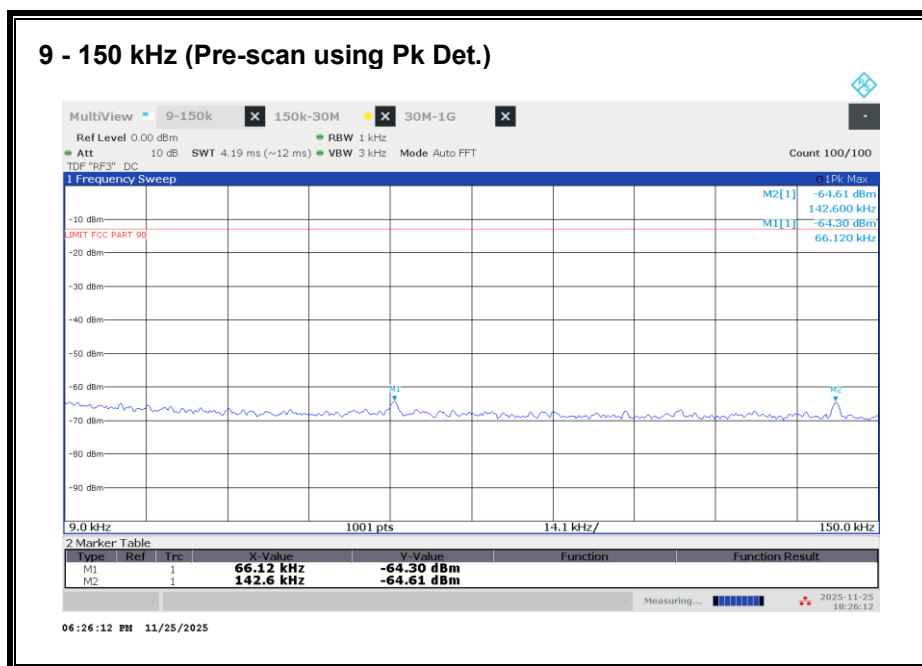
TESTED BY

Employee IDs: 24303, 103479
Test Date: 11-25-2025
Test Location: 01-mmW-A

RESULTS

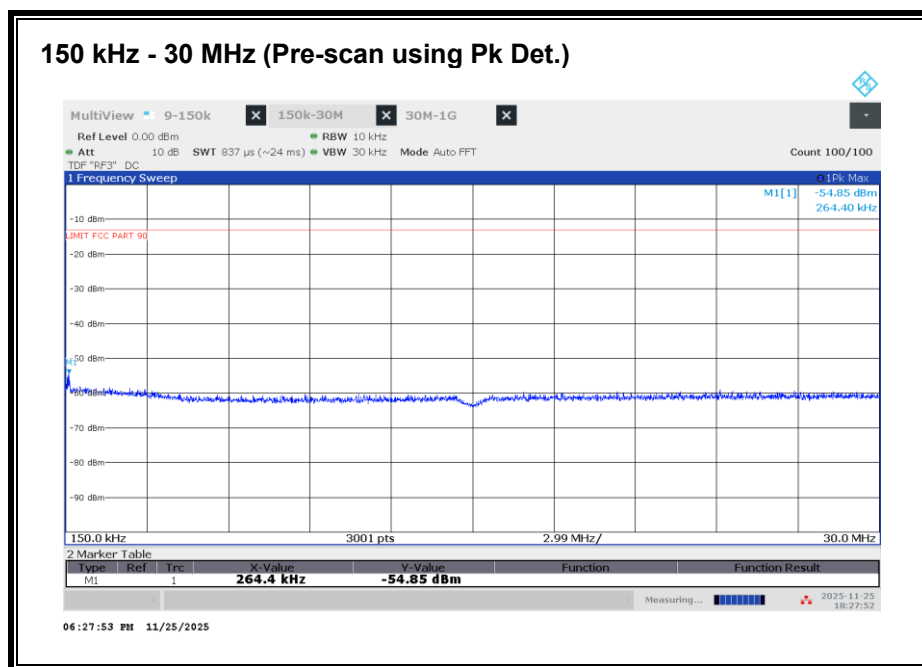
See the following pages.

8.6.1. 9 – 150 kHz



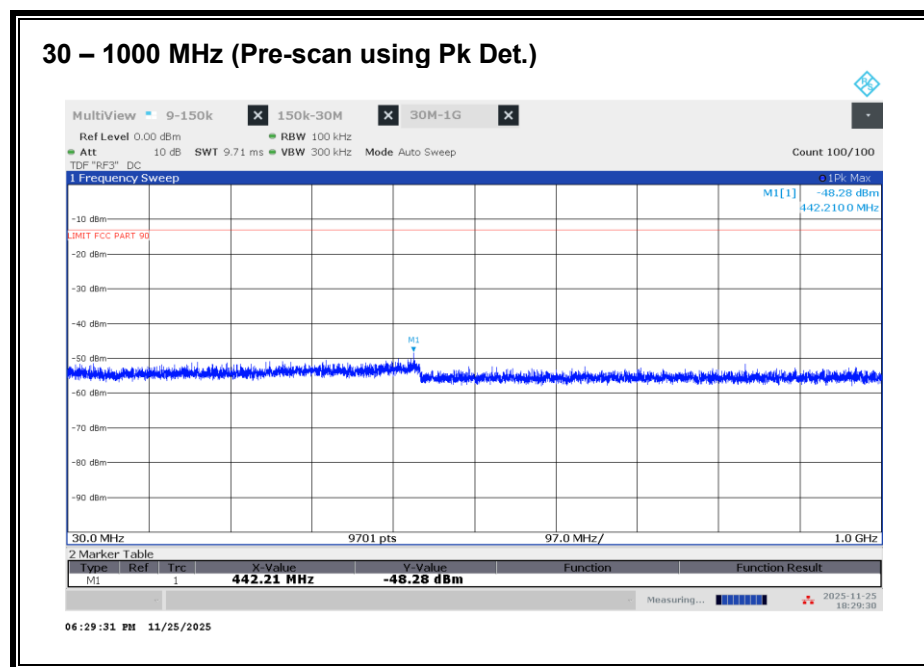
Freq. (kHz)	Detection	Corrected Power (dBm)	Average Limit (dBm)	Margin (dB)
66.12	Peak	-64.30	-13.00	-51.30
142.6	Peak	-64.61	-13.00	-51.61

8.6.2. 150 kHz – 30 MHz



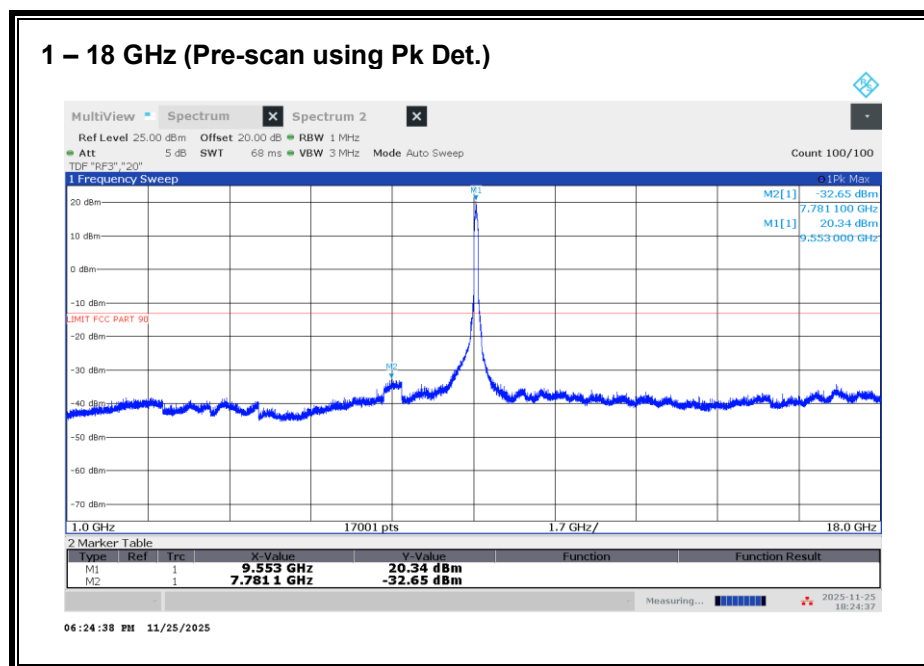
Freq.	Detection	Corrected Power	Average Limit	Margin
(kHz)		(dBm)	(dBm)	(dB)
264.4	Peak	-54.85	-13.00	-41.85

8.6.3. 30 – 1000 MHz



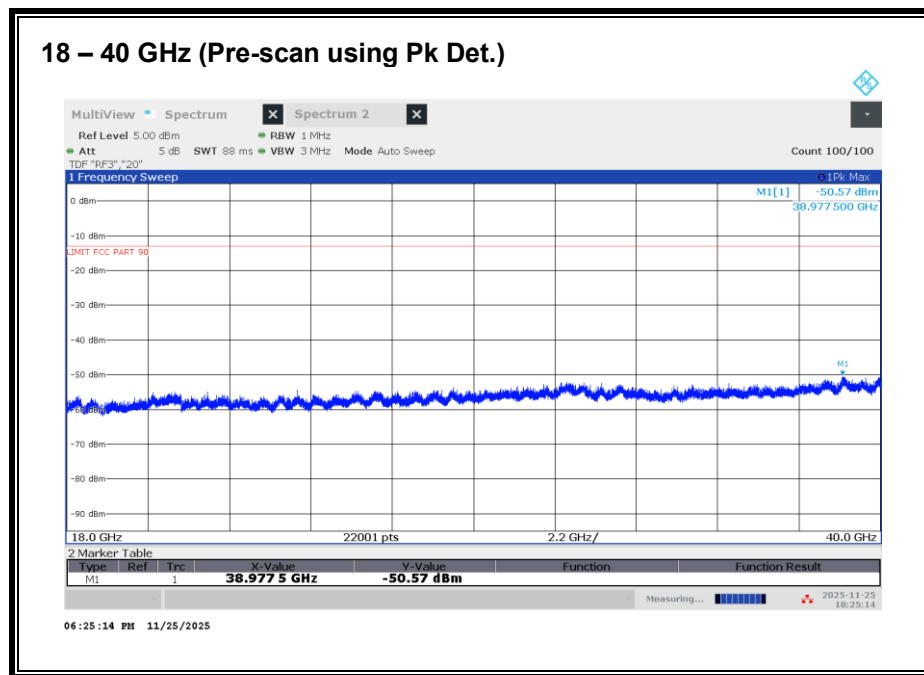
No emission detected using Peak Detection.

8.6.4. 1 - 18 GHz



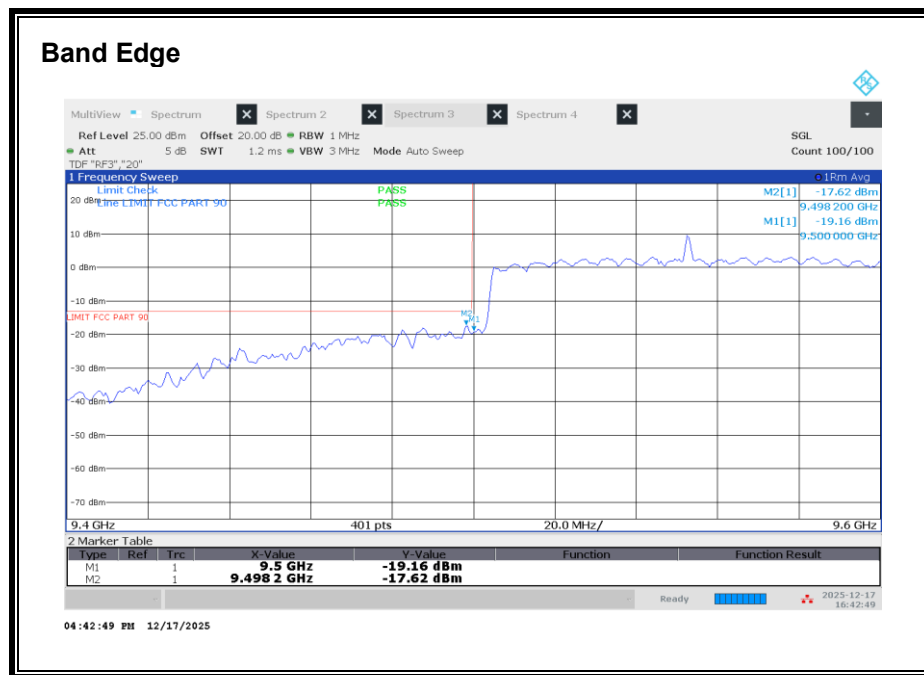
No emission detected using Peak Detection.
Marker M1 is the fundamental signal.
Marker M2 is the test system noise floor.

8.6.5. 18 – 40 GHz



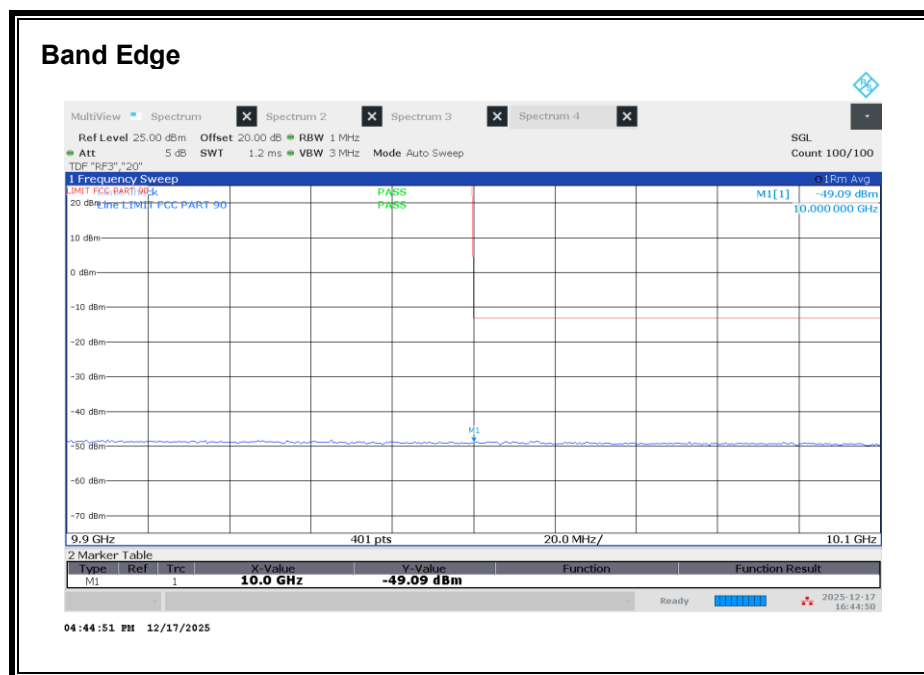
No emission detected using Peak Detection.

8.6.6. Band Edge Emission, Low Side



Freq.	Detection	Measured Power	Duty Cycle Factor	Corrected Power	Average Limit	Margin
(GHz)		(dBm)	(dB)	(dBm)	(dBm)	(dB)
9.500	Avg	-19.16	3.11	-16.05	-13.00	-3.05
9.498	Avg	-17.62	3.11	-14.51	-13.00	-1.51

8.6.7. Band Edge Emission, High Side



Freq.	Detection	Measured Power	Duty Cycle Factor	Corrected Power	Average Limit	Margin
(GHz)		(dBm)	(dB)	(dBm)	(dBm)	(dB)
10.000	Avg	-49.09	3.11	-45.98	-13.00	-32.98

8.7. RADIATED SPURIOUS EMISSIONS

RULE PART(S)

§2.1053 (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate.

§2.1057 (a) (1) In all of the measurements set forth in §2.1051 and §2.1053, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below: If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

LIMIT

§90.210 (c) (3) *Emission Mask C*. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P in watts) as follows: On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB.

For frequencies outside the authorized band of 9500 to 10,000 MHz, the attenuation must be at least $43 + 10 \log(P_m)$ dB. P_m is defined as the mean power of the radar in Watts. This equation will result in a -13 dBm limit line, regardless of the value of P_m : $P_m \text{ (dBW)} - \text{attenuation} = P_m \text{ (dBW)} - (43 + 10 \log(P_m)) = -43 \text{ dBW} = -13 \text{ dBm}$.

Max. Declared Output Power, $P = 35 \text{ dBm} = 3.16278\text{W}$

Limit = $35 - (43 + 10 \log (P)) = 35 - 48 = -13 \text{ dBm}$

TEST PROCEDURES

ANSI C63.26-2015 Clause 5.5 and Annex C.5.2.

Based on the pre-scan test results, the readings of emission in 9 kHz – 30 MHz range are attenuated more than 20 dB below the limit, therefore RSE was further investigated from 30 MHz – 40 GHz.

The signal output is scanned using a peak detector. Any spurious or harmonic within 6 dB of the limit is measured using average detectors.

EIRP of RSE was calculated using the equations on ANSI C63.26-2015 Annex C.5.2. The total correction factor of cable loss, horn antenna gain, LNA gain, and far-field path loss were calculated using equations C.8 and C.9, and pre-loaded into spectrum analyzer.

Sample calculation of EIRP:

$$\begin{aligned}\text{Total Correction Factor} &= \text{Cable Loss (dB)} - \text{Horn Ant Gain (dBi)} - \text{LNA Gain (dB)} + \text{Path Loss (dB)} \\ &= 4 - 23 - 30 + 71 \\ &= 22 \text{ dB}\end{aligned}$$

EIRP = P_{measured}(dBm), where Total Correction Factor preloaded.

The highest power waveform LR_CNK64096A6 is used for worst case radiated emissions.

TESTED BY

Employee IDs: 24303, 103479, 27780
Test Dates: 11-24-2025 to 11-25-2025
Test Location Below 18 GHz: 04-RDE-L
Test Location Above 18 GHz: 01-mmW-A

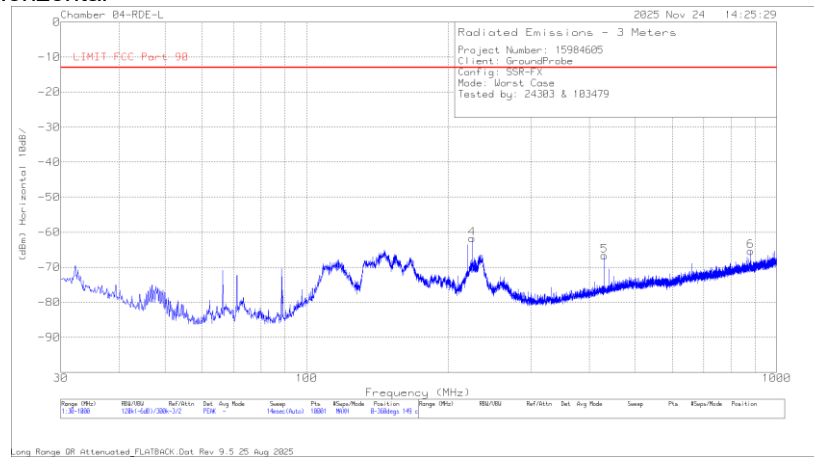
RESULTS

See the following pages.

8.7.1. 30 – 1000 MHz

30 – 1000 MHz (Pre-scan using Pk Det.)

Horizontal



Vertical

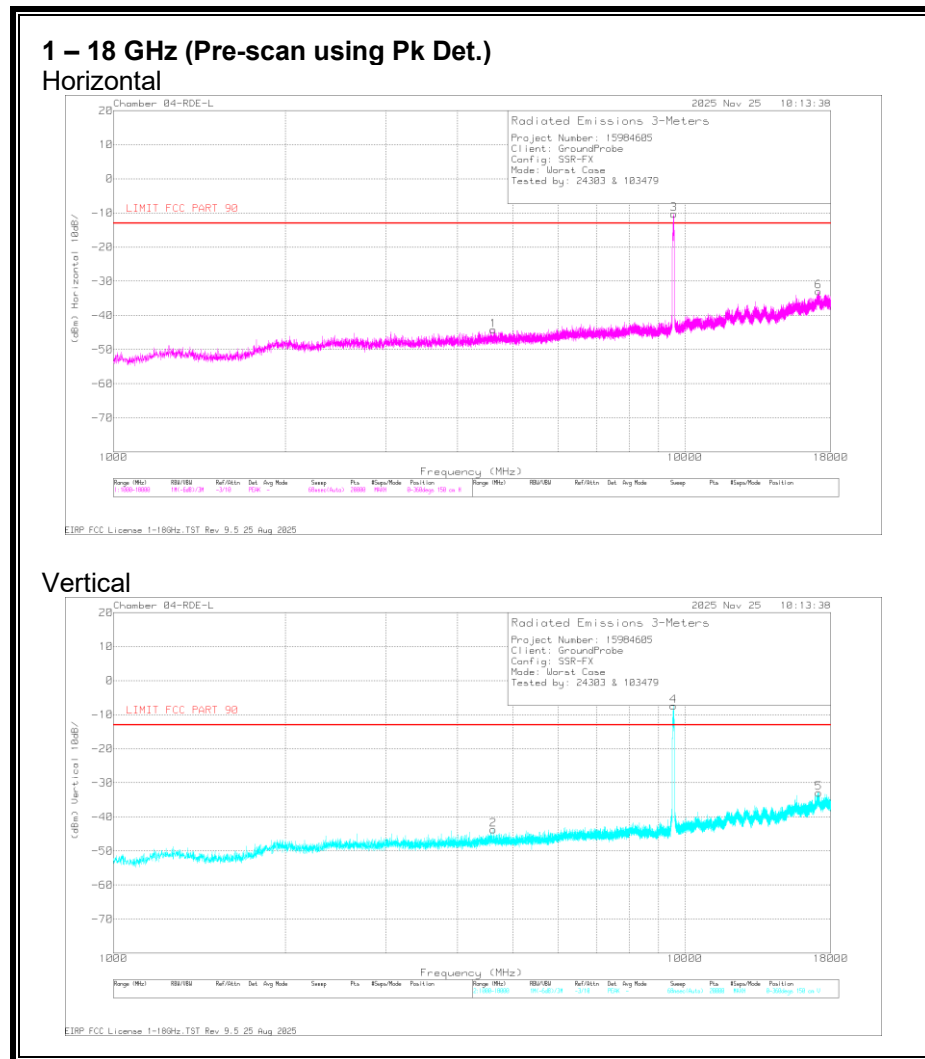


Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	174374 ACF (dB/m)	Amp/CbIs (dB)	Unit Conversion (dB)	Corrected Reading (dBm)	FCC Part 90 Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.231	-61.06	Pk	25.4	-31.8	11.8	-55.66	-13	-42.66	0-360	149	H
2	88.491	-56.27	Pk	13.5	-31.3	11.8	-62.27	-13	-49.27	0-360	149	H
3	880.011	-74.15	Pk	27.9	-27.8	11.8	-62.25	-13	-49.25	0-360	149	H
4	224.970	-59.90	Pk	16.8	-30.4	11.8	-61.70	-13	-48.70	0-360	149	V
5	430.028	-71.08	Pk	22.4	-29.7	11.8	-66.58	-13	-53.58	0-360	149	V
6	880.011	-77.17	Pk	27.9	-27.8	11.7	-65.27	-13	-52.27	0-360	149	V

Pk - Peak detector

8.7.2. 1 - 18 GHz



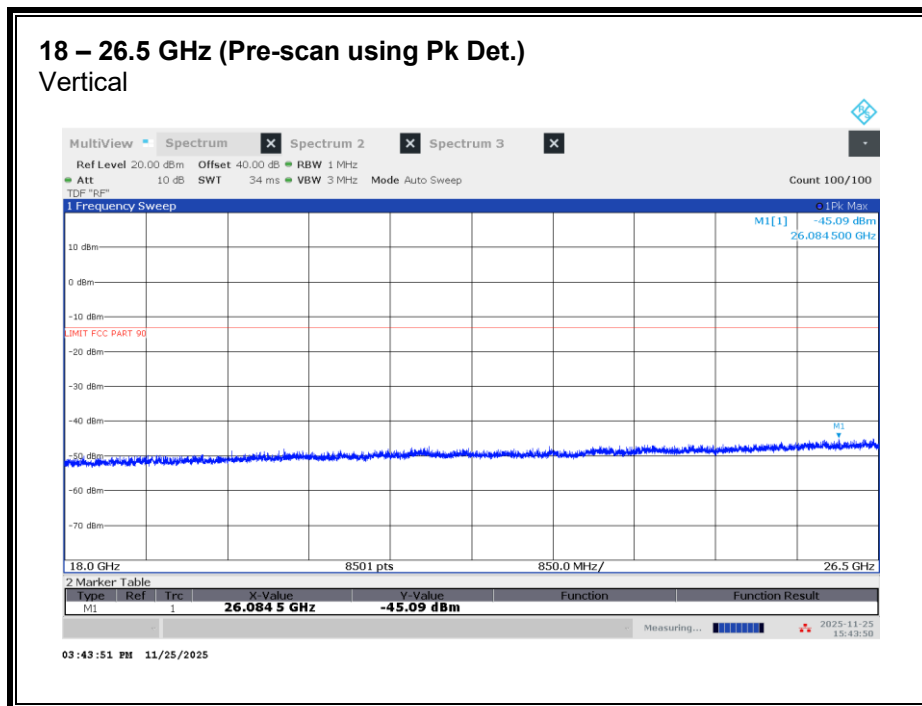
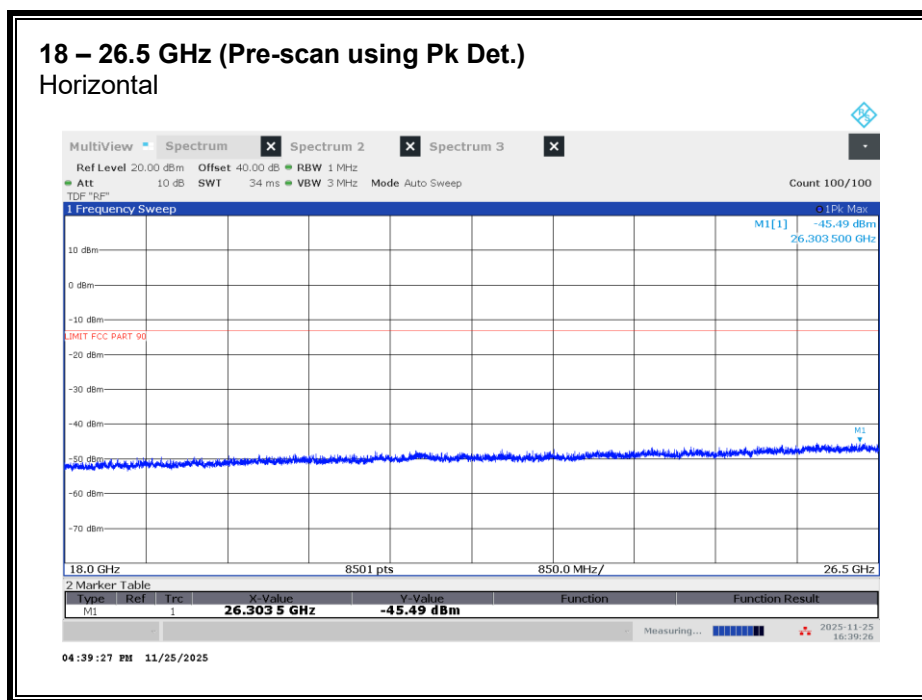
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206807 ACF (dBm)	Amp/Cbl (dB)	Unit Conversion (dB)	10 DB PAD	Corrected Reading (dBm)	FCC PART 90 LIMIT (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	4622.883	-55.47	Pk	34.5	-45	11.8	10	-44.17	-13	-31.27	0-360	150	H
2	4621.183	-54.92	Pk	34.5	-45	11.8	10	-43.62	-13	-30.72	0-360	150	V
*3	9562.483	-26.51	Pk	36.8	-42.3	11.8	10	-10.21	-13	2.79	0-360	150	H
*4	9957.383	-23.62	Pk	36.8	-42.3	11.8	10	-7.32	-13	5.68	0-360	150	V
5	17139.766	-56.20	Pk	41.8	-40.2	11.8	10	-32.80	-13	-19.80	0-360	150	V
6	17138.916	-56.21	Pk	41.8	-40.2	11.8	10	-32.81	-13	-19.81	0-360	150	H

Pk - Peak detector

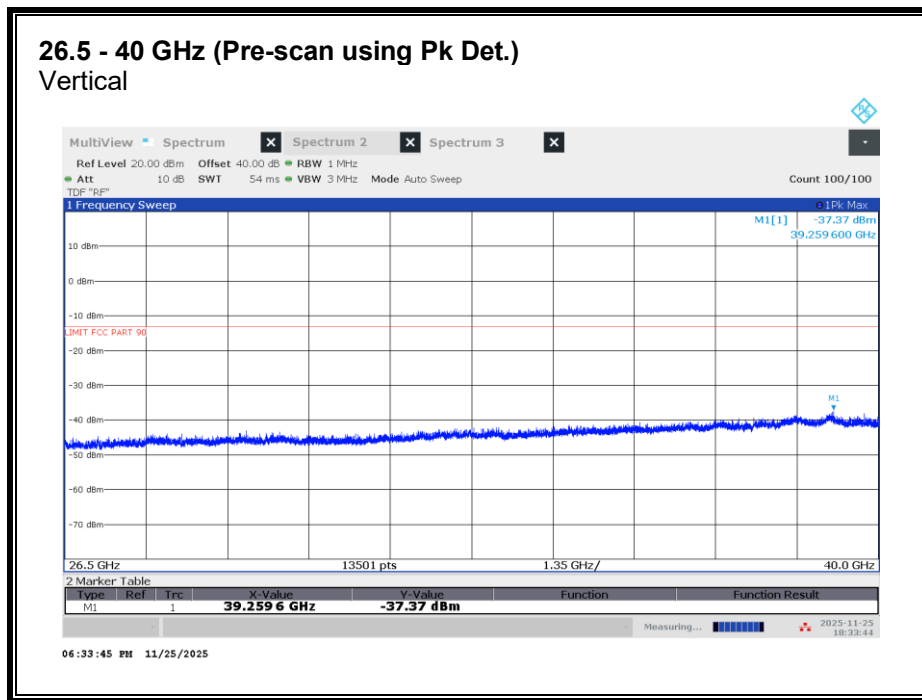
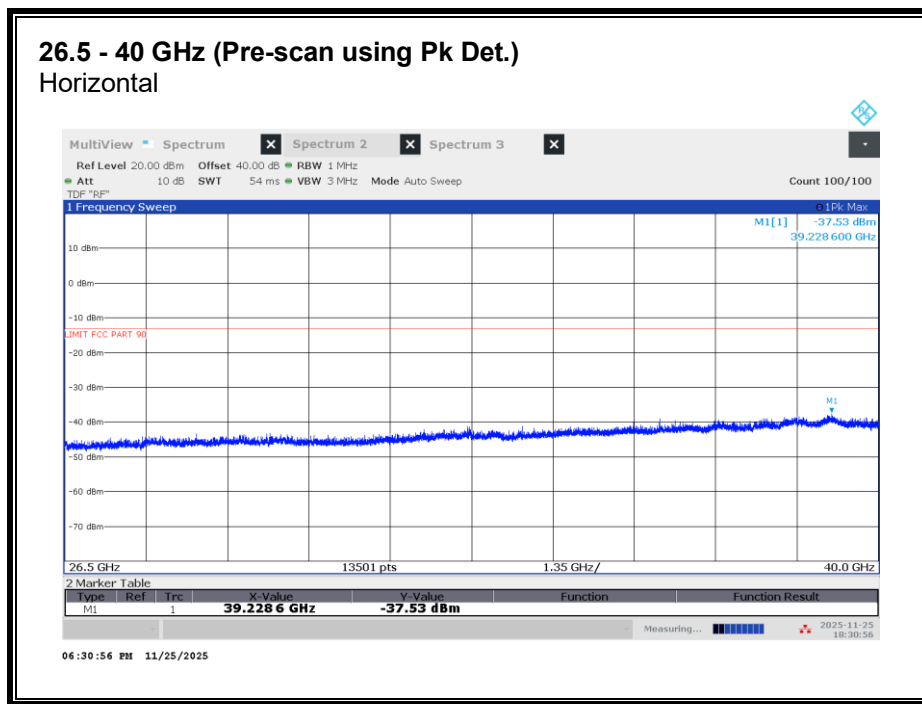
* Markers 3 and 4 are the fundamental signal.

8.7.3. 18 – 26.5 GHz



Using peak detection, no emissions below a 20 dB margin were detected.

8.7.4. 26.5 - 40 GHz

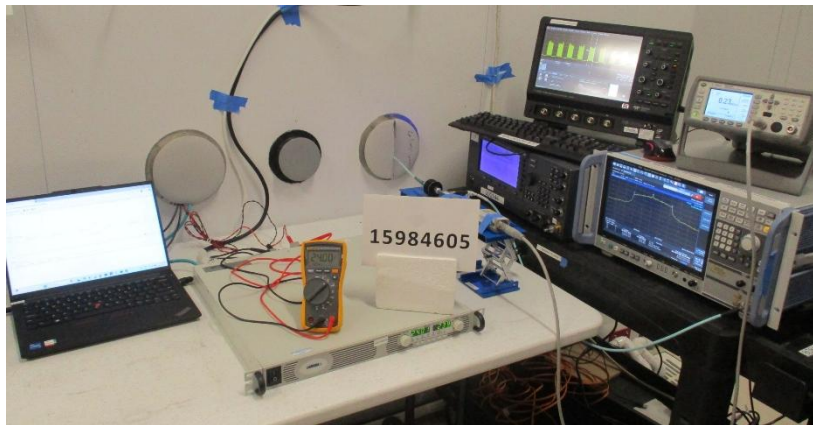
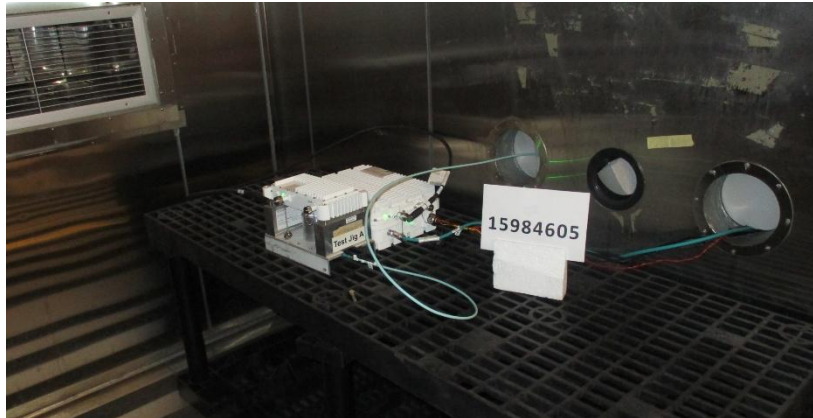


Using peak detection, no emissions below a 20 dB margin were detected.

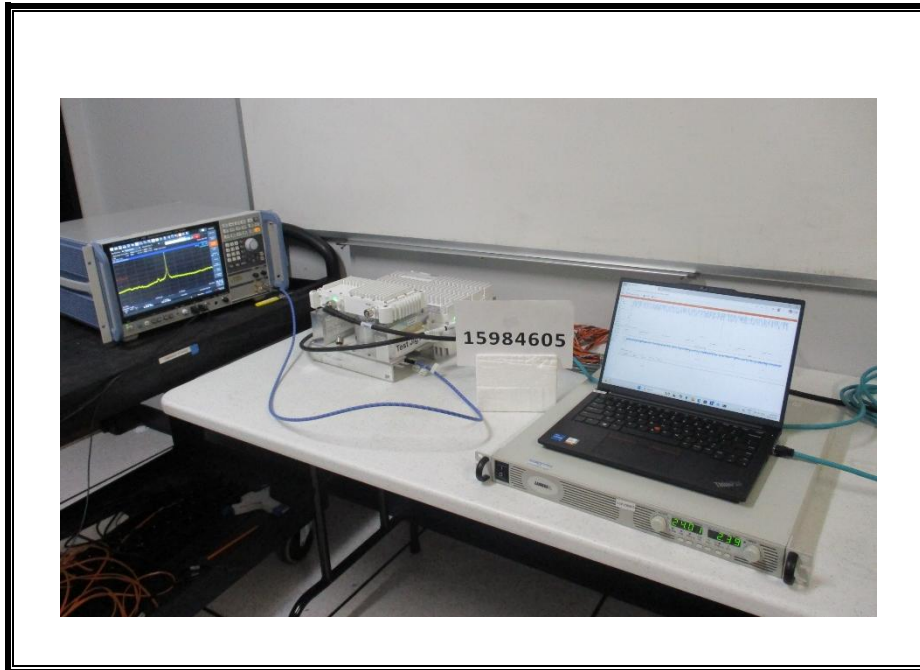
9. SETUP PHOTOS

POWER, BANDWIDTH, FREQUENCY STABILITY SETUP

TEMPERATURE CHAMBER



CONDUCTED RF MEASUREMENT SETUP

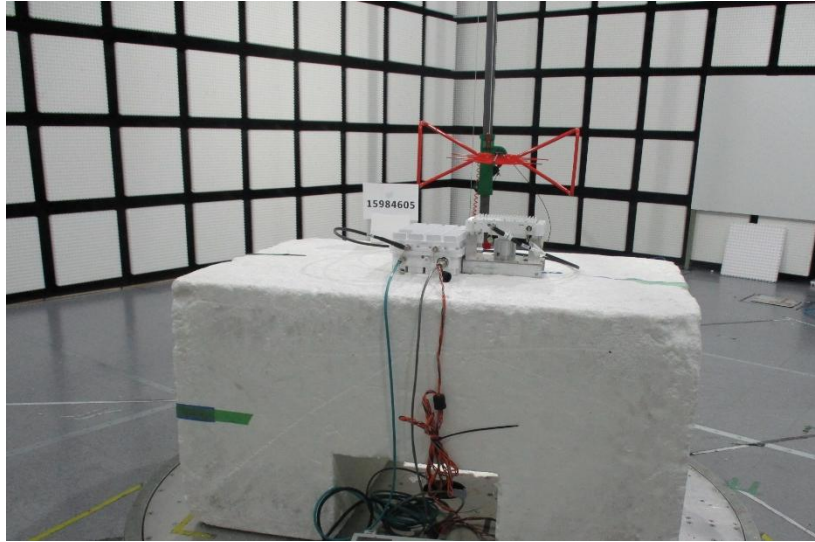


RADIATED RF MEASUREMENT SETUP, LOW 1 GHz

FRONT

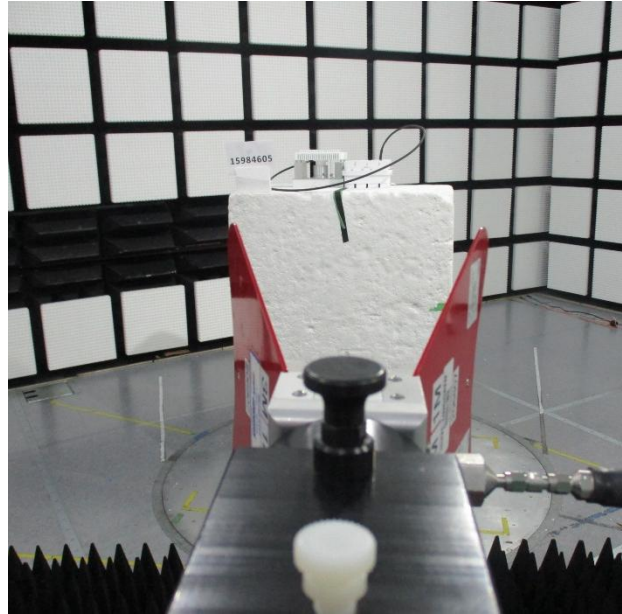


BACK

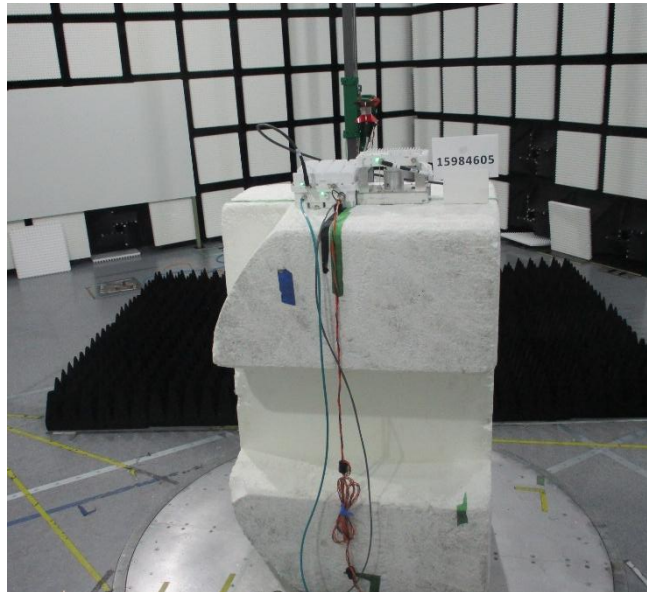


RADIATED RF MEASUREMENT SETUP, ABOVE 1 GHz

FRONT



BACK



END OF REPORT