CERTIFICATION TEST REPORT

Report Number. : 4791150642-E1V2

Applicant	:	REMOTE SOLUTION CO., LTD. 326-14, Apo-daero, Nam-myeon, Gimcheon-si, Gyeongsangbuk-do, 39662, Korea
Model	:	GY3LE
FCC ID	:	TX4GY3LE
IC		11438A-GY3LE
EUT Description	:	Bluetooth LE Wireless Device
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-247 Issue 3 INDUSTRY CANADA RSS-GEN Issue 5

Date Of Issue:
2024-03-18

Prepared by:
UL KOREA LTD.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

IAS ACCREDITED Testing Laboratory TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-02-05	Initial issue	Dexter(Hyunsik) Yun
V2	2024-03-18	Updated to address TCB's question	Dexter(Hyunsik) Yun

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: REMOTE SOLUTION CO., LTD.

EUT DESCRIPTION: Bluetooth LE Wireless Device

MODEL NUMBER: GY3LE

SERIAL NUMBER: 3C131QUAO00030, 3C131QUAO0005N (CONDUCTED); 3C131QUAO0007Z, 3C131QUAO0008D, 3C131QUAO0002A (RADIATED);

DATE TESTED: 2024-01-03 ~ 2024-01-12

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies
INDUSTRY CANADA RSS-247 Issue 3	Complies
INDUSTRY CANADA RSS-GEN Issue 5	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. ANSI C63.10-2013.
5. IC RSS-GEN Issue 5.
6. IC RSS-247 Issue 3.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☒ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord Loss (dB) + Cable Loss (dB)
44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
RF Output Power	1.30 dB
Power Spectral Density	1.30 dB
Occupied Bandwidth	0.20 %
Conducted Spurious Emissions	1.30 dB
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.92 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.06 dB
Radiated Disturbance, 18 GHz to 40 GHz	6.02 dB

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

4.4. DECISION RULES

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a Bluetooth LE Wireless Device.
This test report addresses the DTS (BLE) operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range[MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	1 Mbps	Peak	9.527	8.968
		Average	9.492	8.896

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 internal antenna was Permanently attached.
Therefore this E.U.T Complies with the requirement of §15.203.

The radio utilizes an internal(pattern) antenna with ANT1's maximum gain of 2.81 dBi and ANT2's maximum gain of 4.16 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z.
It was determined that below table's orientation was the worst-case orientation.

ANT1	ANT2
X	X

Radiated harmonics spurious 1~18 GHz Low/Mid/High channels,18-26GHz were performed with the EUT set at the 2Tx Diversity mode. Radiated emission below 1GHz was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For Radiated band-edge and spurious test, tests were performed on 2Tx Diversity mode.

All radiated and power line conducted tests were performed attached with travel adapter for the worst-case condition mode.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop PC	LG Electronics	15UD490	001QCFT576955	DoC
Telink Debugger	Telink	-	-	N/A
Data Cable	-	-	-	N/A

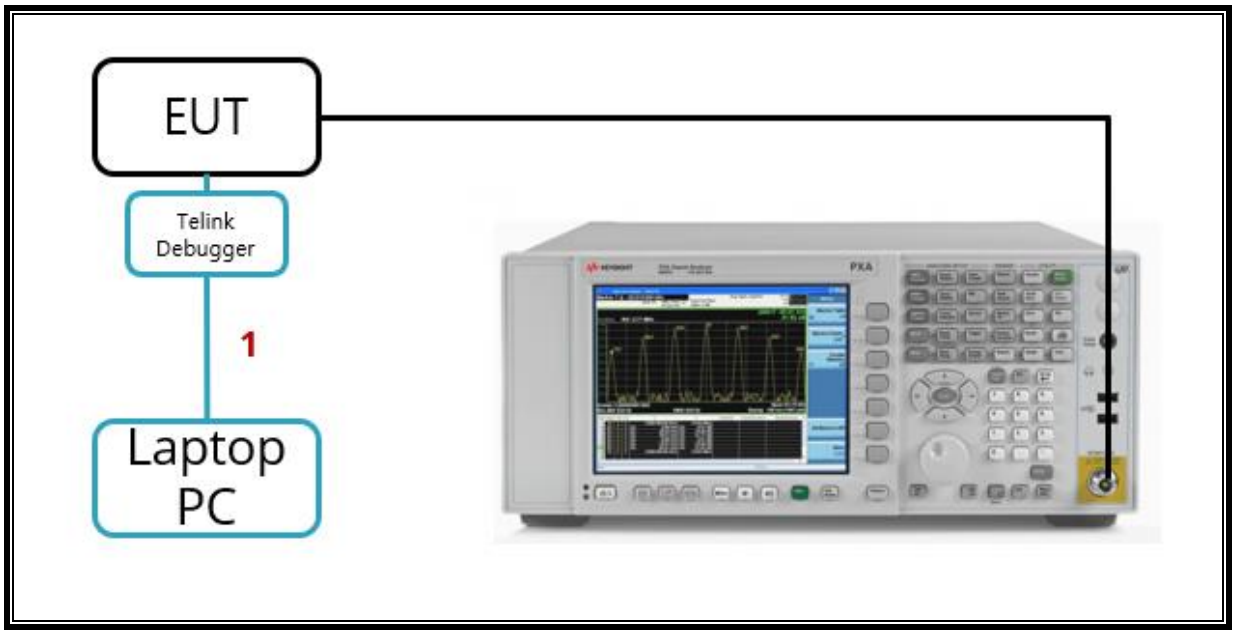
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Data Cable	1	C Type	Non-Shielded	1.0 m	N/A

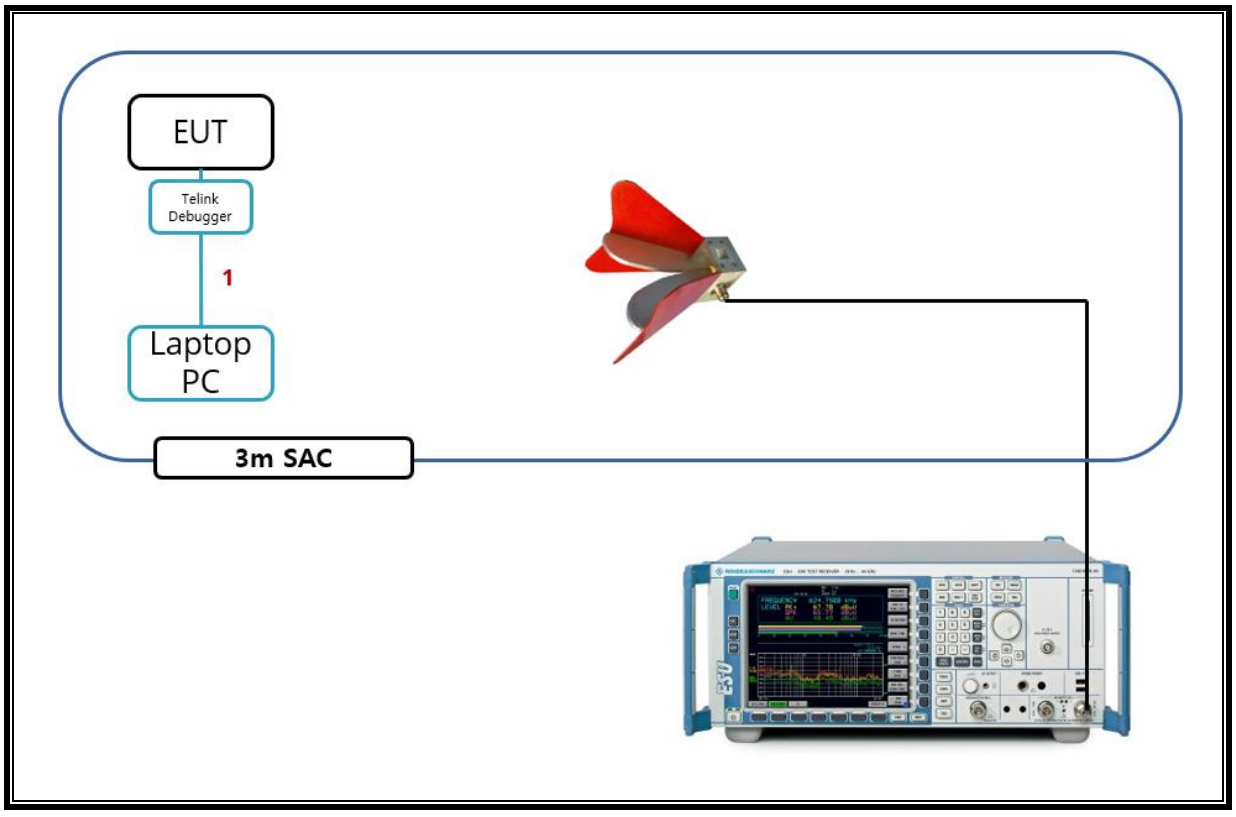
TEST SETUP

The EUT operates during testing using a laptop and a hub.
Test software(provided by customer) exercised the EUT to enable BLE mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2013, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2013, Section 11.9.1.1 RBW ≥ DTS bandwidth

POWER SPECTRAL DENSITY : ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

Out-of-band Emissions (Conducted) : ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands: ANSI C63.10-2013, Section 11.12 Emissions in restricted frequency bands and Section 11.13 Band-edge measurements

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**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	2024-08-15
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2024-08-02
Preamplifier	ETS	3116C-PA	00168841	2024-07-25
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2024-07-24
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2024-07-25
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2024-07-24
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-01-03
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2024-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A001	2024-07-23
Attenuator	PASTERNACK	PE7087-10	A008	2024-07-27
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2024-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2024-07-24
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2024-07-23
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2024-07-23
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2024-07-23
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	2024-07-24
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	

8. TEST RESULTS SUMMARY

FCC Part Section	IC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2(a)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	Complies
2.1051, 15.247(d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20 dBc		Complies
15.247 (b)(3)	RSS-247 5.4(d)	TX conducted output power	< 30 dBm		Complies
15.247(e)	RSS-247 5.4(b)	PSD	< 8 dBm/3kHz		Complies
15.207(a)	RSS-GEN Clause 7&8.8	AC Power Line conducted emissions	Section 11	Power Line conducted	N/A
15.205, 15.209	RSS-GEN Clause 8.9 & 8.10	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

N/A: Not Applicable (non-rechargeable battery is used and there is no external input port)

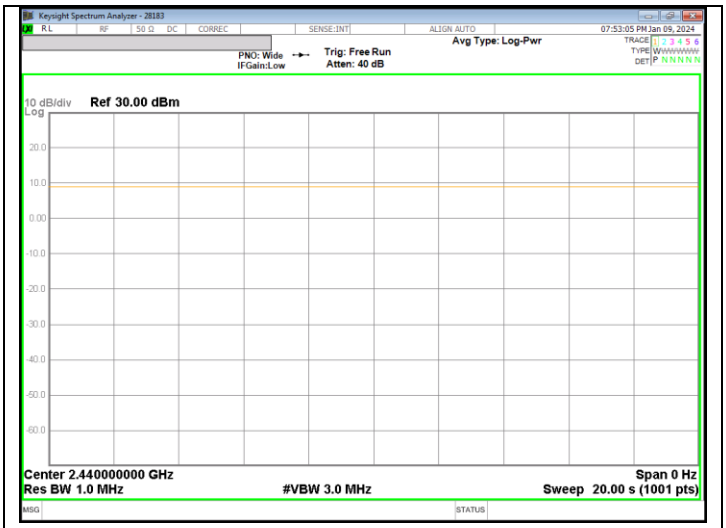
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

Mode	On time [msec]	Period [msec]	Duty cycle x [Linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2 400 ~ 2 483.5 MHz Bands						
1 Mbps	100 % Duty cycle					



1 Mbps

9.2. 6 dB & 99% BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
RSS-247 5.2(a)

6dB Bandwidth
The minimum 6 dB bandwidth shall be at least 500 kHz.

Occupied Bandwidth
None; for reporting purposes only.

RESULTS

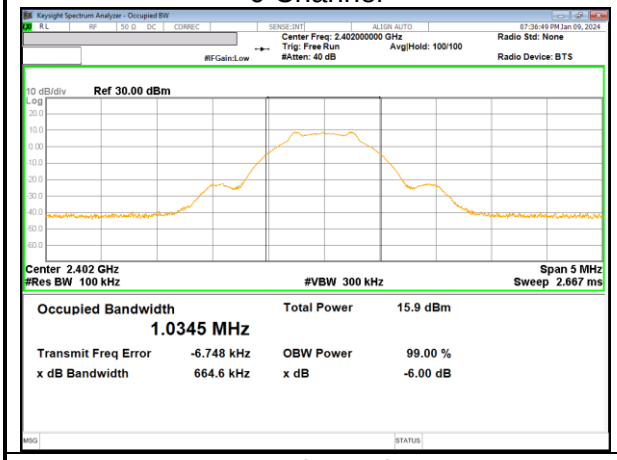
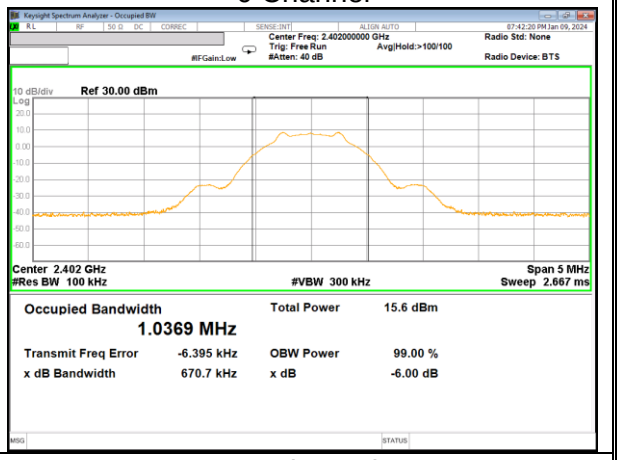
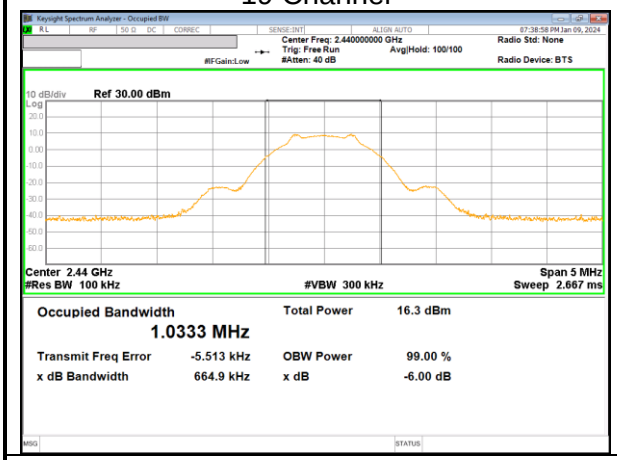
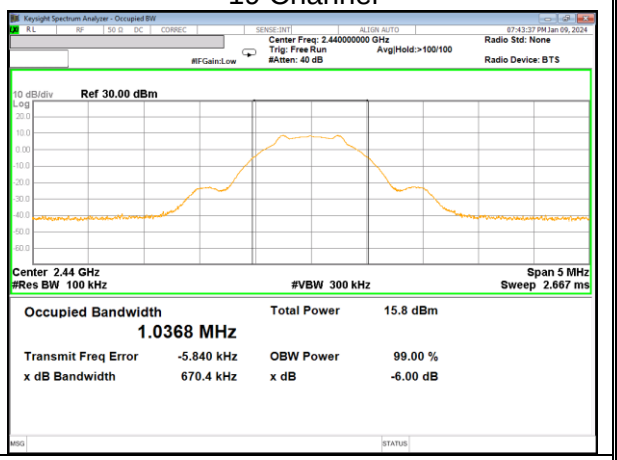
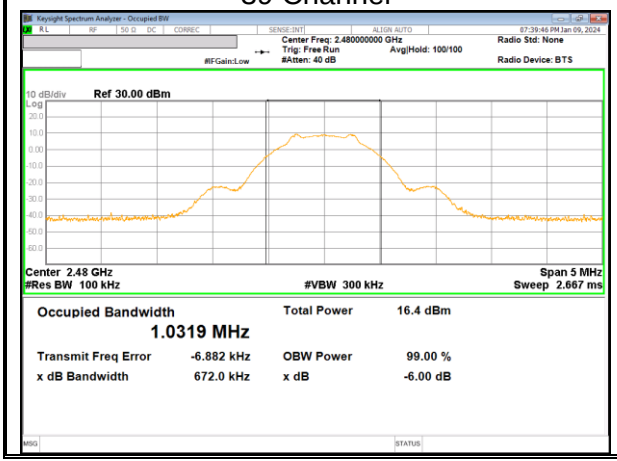
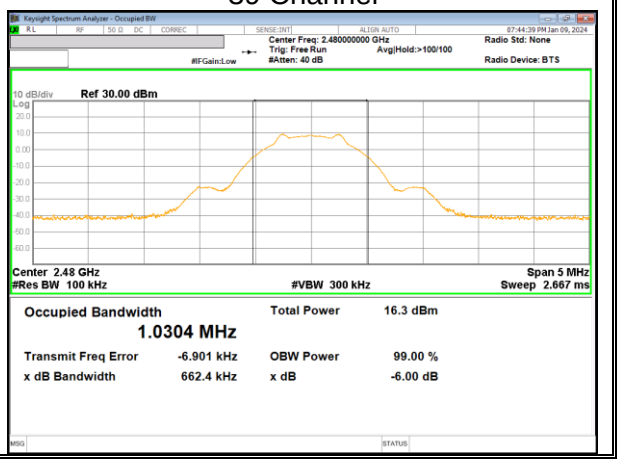
9.2.1. 6dB BANDWIDTH TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps	ANT1	0	2 402	664.6	500.0
		19	2 440	664.9	
		39	2 480	672.0	
	ANT2	0	2 402	670.7	
		19	2 440	670.4	
		39	2 480	662.4	
Worst				**662.4**	**500.0**

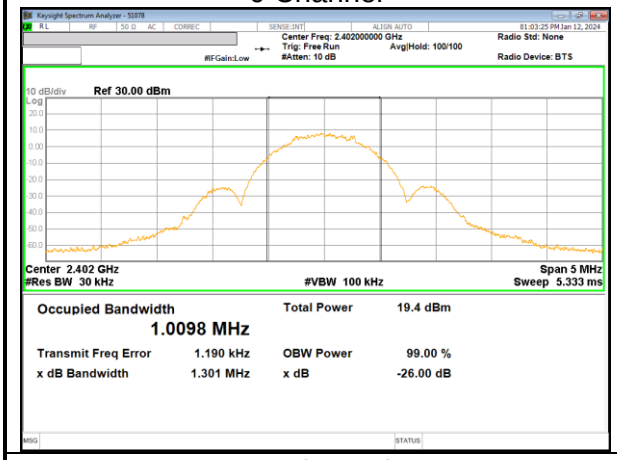
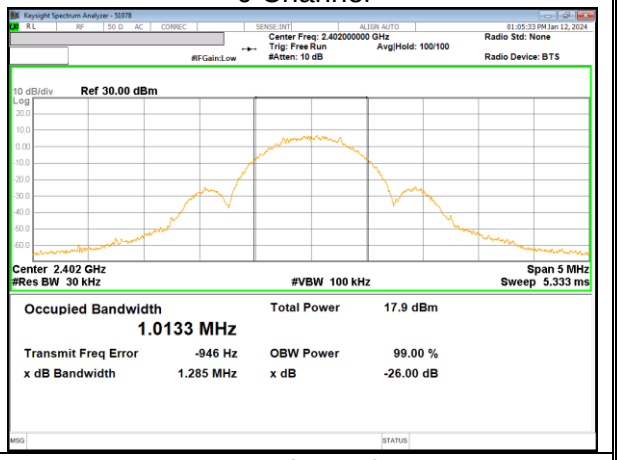
9.2.2. 99% BANDWIDTH TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	99% Bandwidth [kHz]	Limit [kHz]
1 Mbps	ANT1	0	2 402	1 009.8	-
		19	2 440	1 021.2	
		39	2 480	1 012.3	
	ANT2	0	2 402	1 013.3	
		19	2 440	1 017.4	
		39	2 480	1 018.8	

9.2.3. 6 dB BANDWIDTH PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

9.2.4. 99% BANDWIDTH PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
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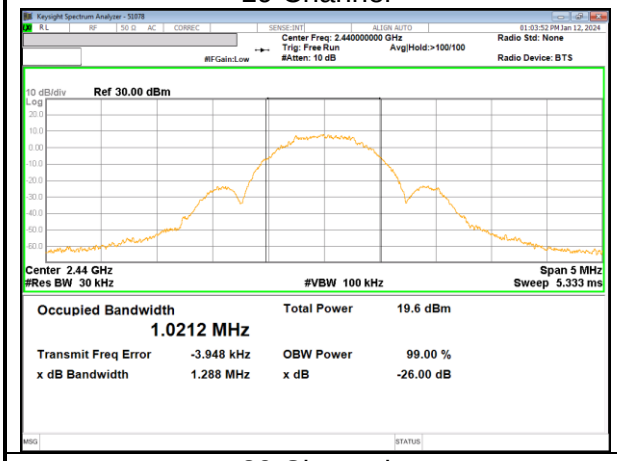	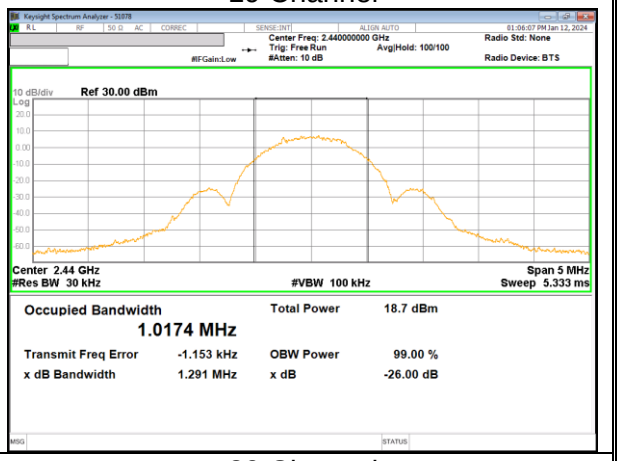
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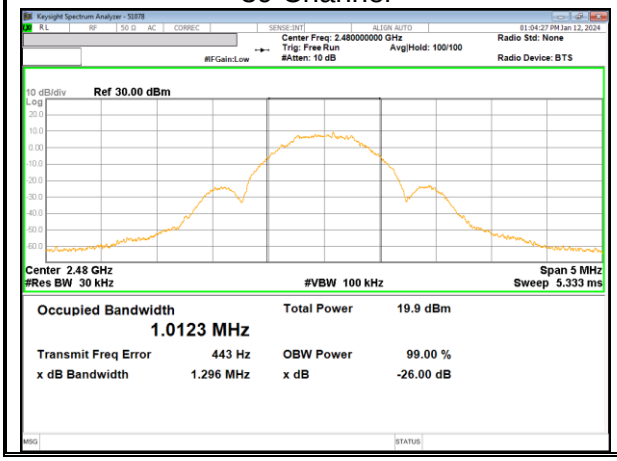
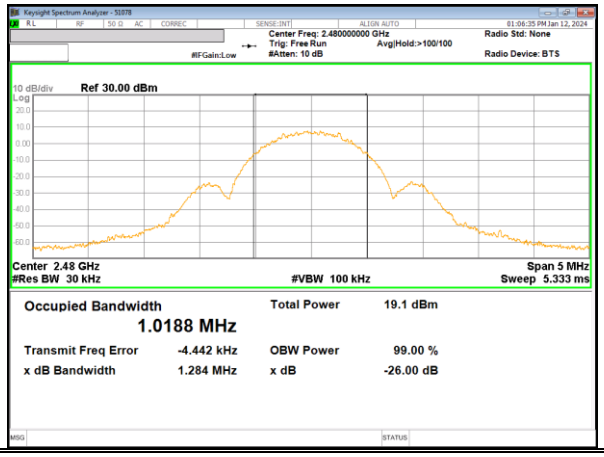
	

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

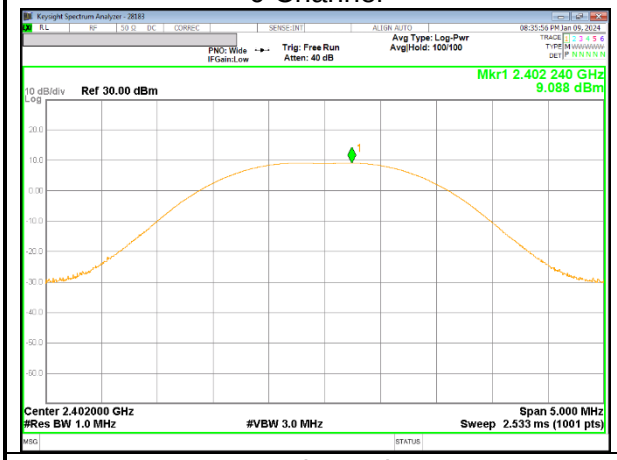
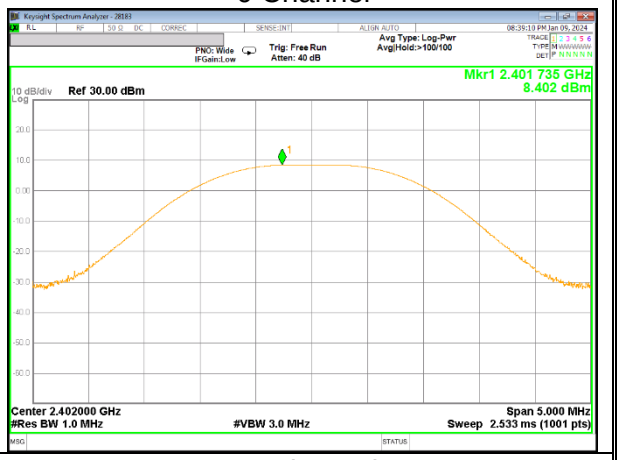
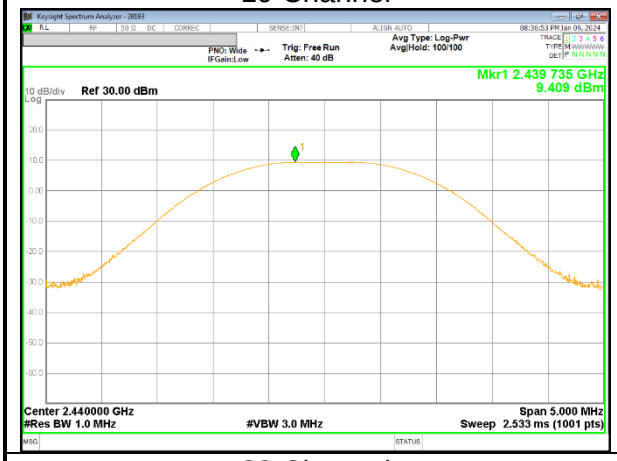
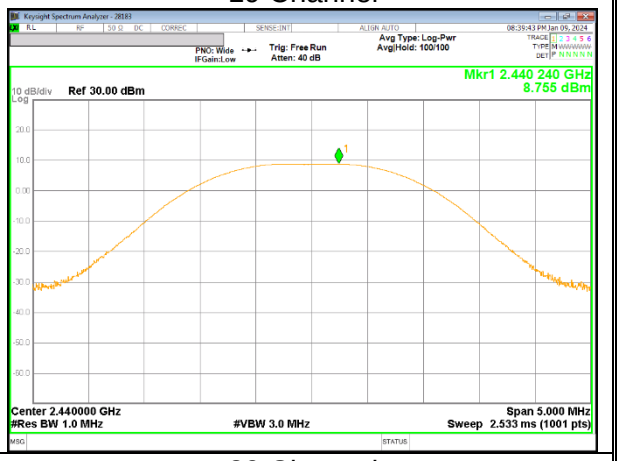
TEST PROCEDURE

Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer(RBW ≧ DTS bandwidth).

RESULTS

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps	ANT1	0	2 402	9.088	30.000	-20.912
		19	2 440	9.409		-20.591
		39	2 480	9.527		-20.473
	ANT2	0	2 402	8.402		-21.598
		19	2 440	8.755		-21.245
		39	2 480	9.208		-20.792
Worst				**9.527**		**-20.473**

9.3.1. PEAK POWER PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
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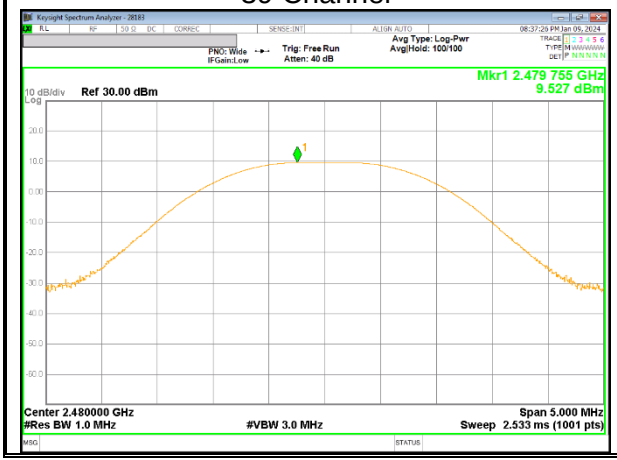
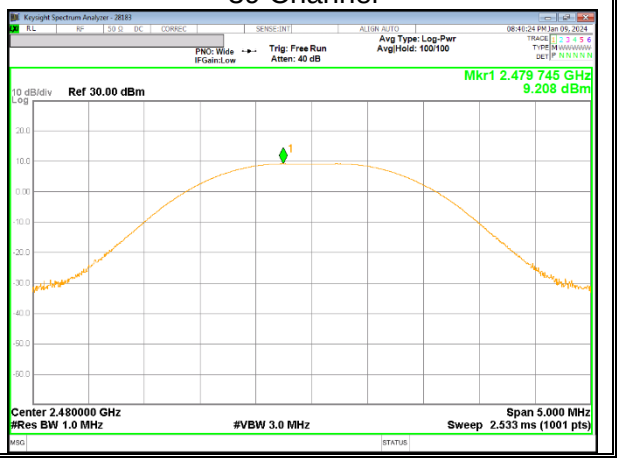
	

9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor were entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Mode	Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
1 Mbps	ANT1	0	2 402	8.975	7.898
		19	2 440	9.379	8.668
		39	2 480	9.492	8.896
	ANT2	0	2 402	8.284	6.736
		19	2 440	8.621	7.280
		39	2 480	9.072	8.075

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)
RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

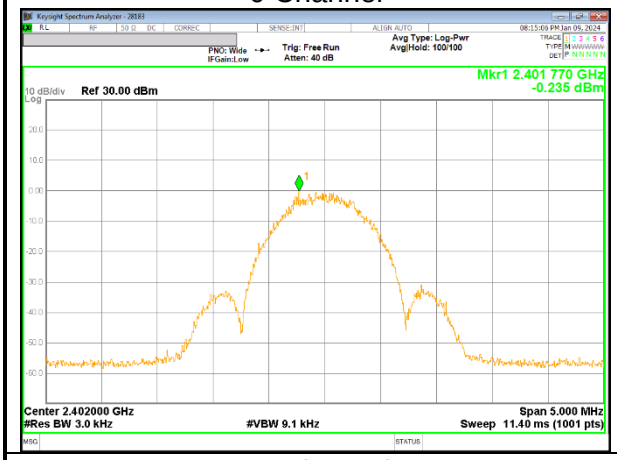
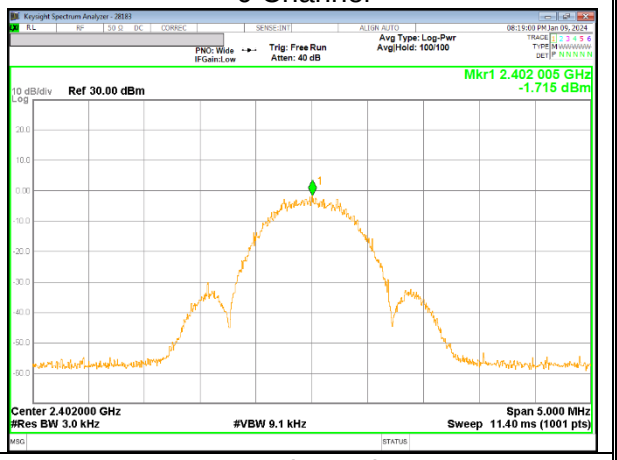
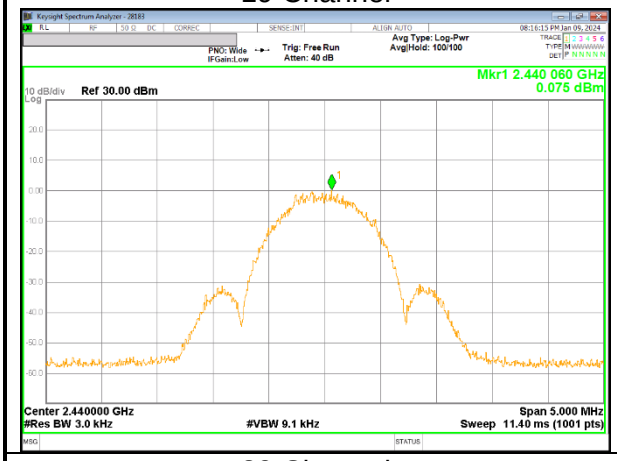
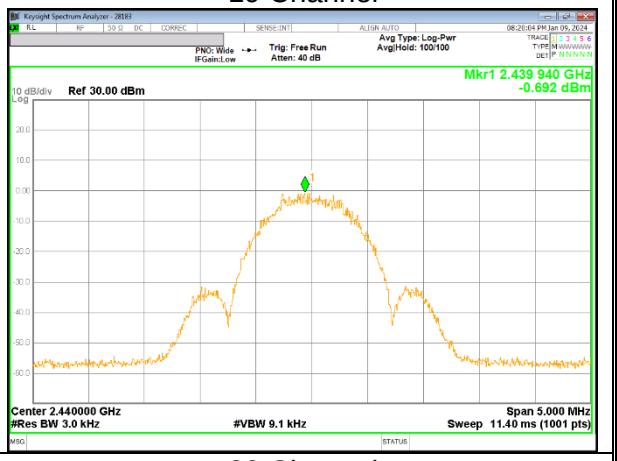
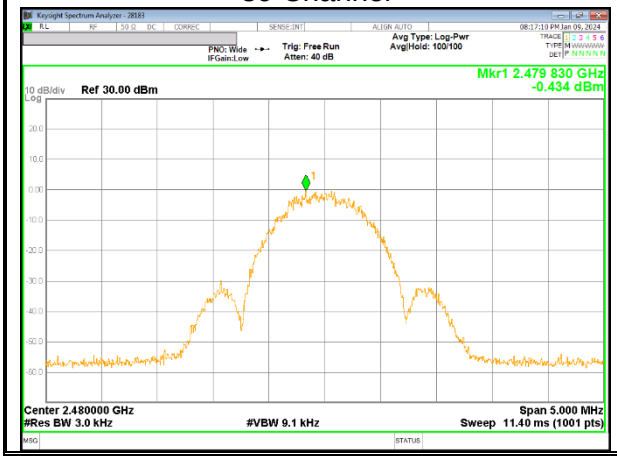
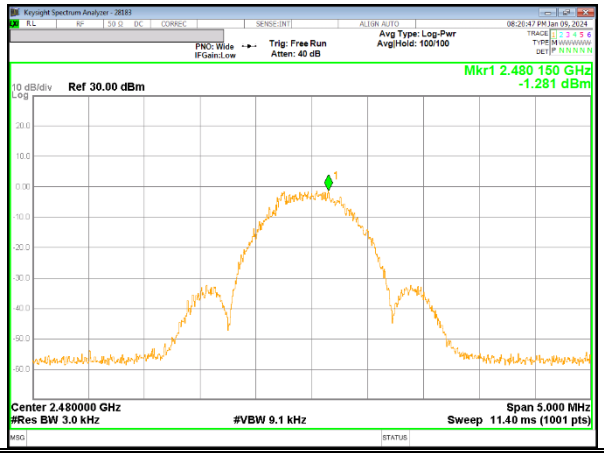
ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps	ANT1	0	2 402	-0.235	8.00	-8.235
		19	2 440	0.075		-7.925
		39	2 480	-0.434		-8.434
	ANT2	0	2 402	-1.715		-9.715
		19	2 440	-0.692		-8.692
		39	2 480	-1.281		-9.281
Worst				**0.075**		**-7.925**

9.5.2. PSD TEST PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

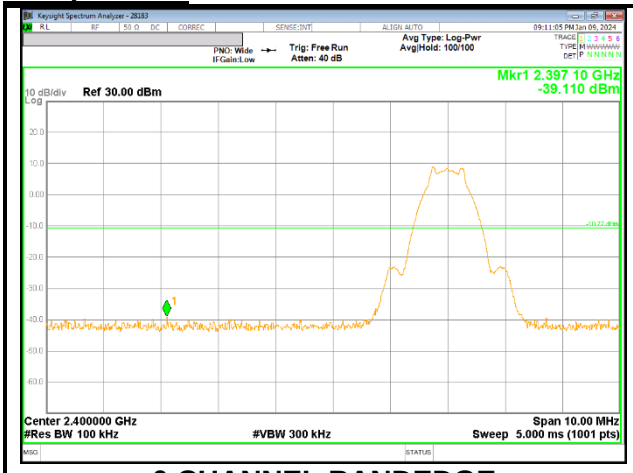
FCC §15.247 (d)
RSS-247 (5.5)

Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

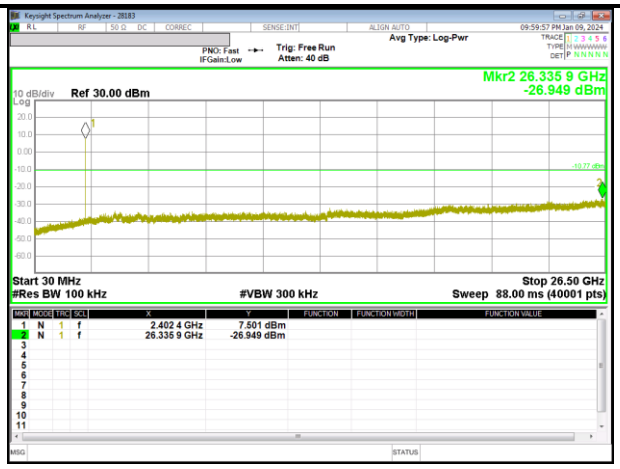
RESULTS

9.6.1. TEST PLOTS

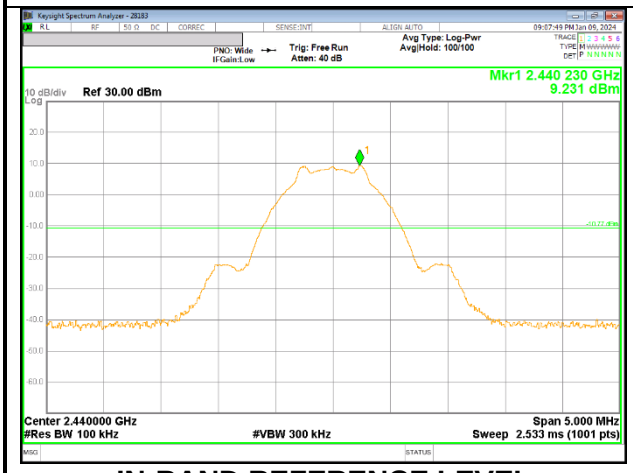
1 Mbps ANT1



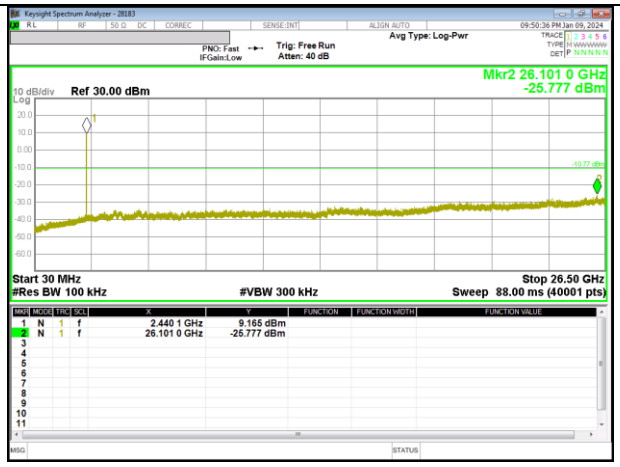
0 CHANNEL BANDEDGE



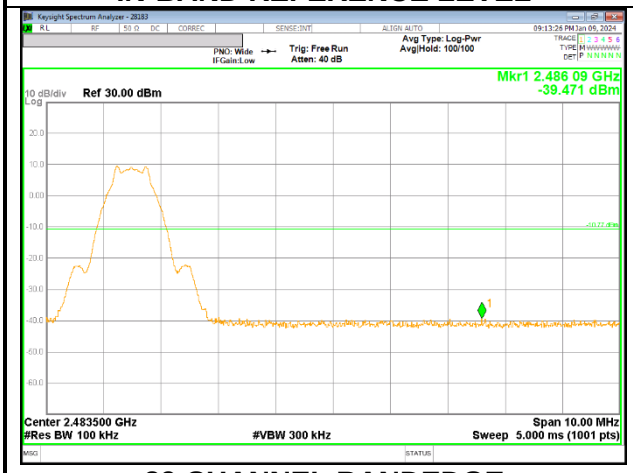
OUT-OF-BAND 0 CHANNEL



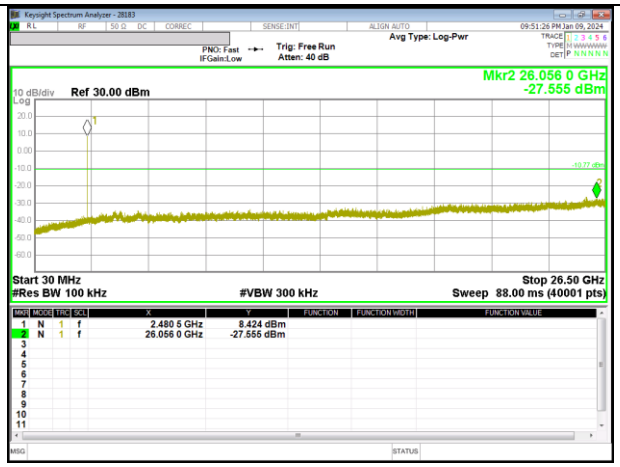
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

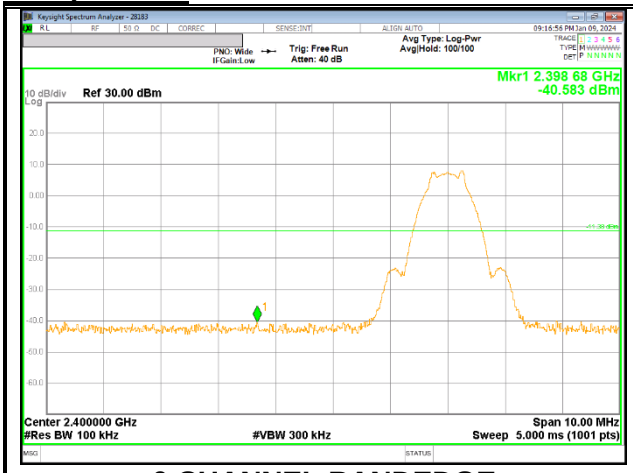


39 CHANNEL BANDEDGE

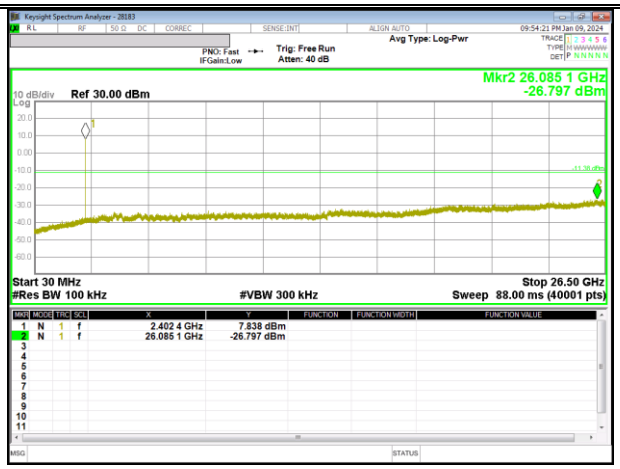


OUT-OF-BAND 39 CHANNEL

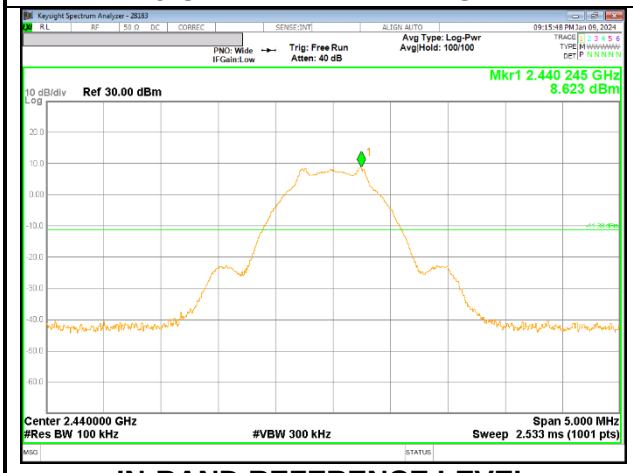
1 Mbps ANT2



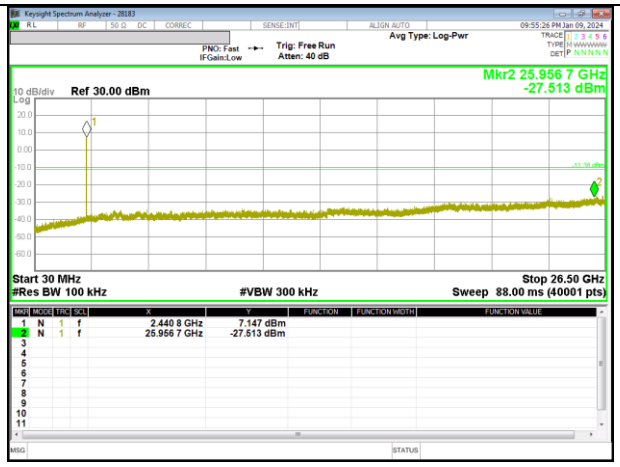
0 CHANNEL BANDEDGE



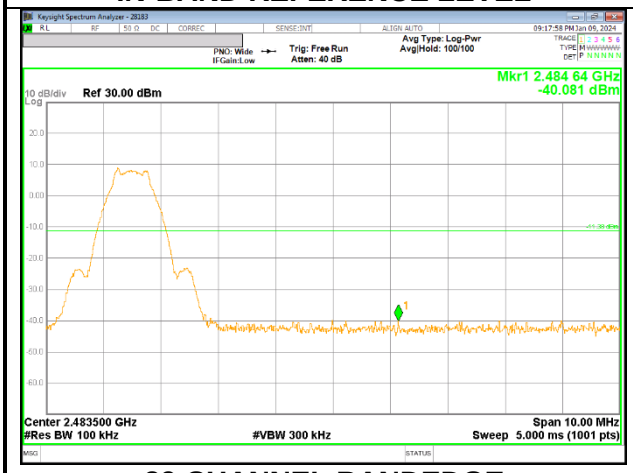
OUT-OF-BAND 0 CHANNEL



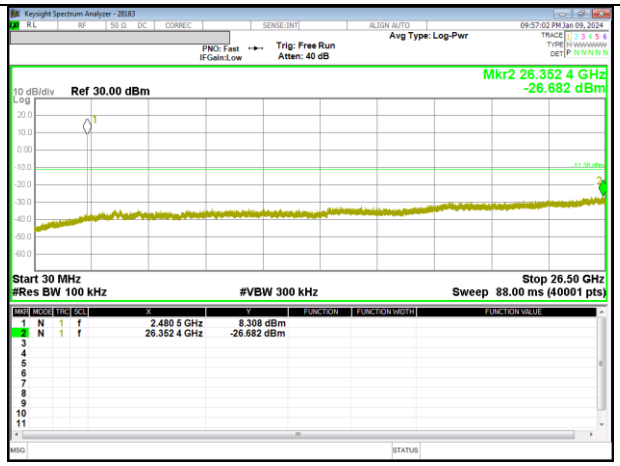
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL



39 CHANNEL BANDEDGE



OUT-OF-BAND 39 CHANNEL

10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209 / IC RSS-Gen (8.9) & (8.10)

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and no add duty cycle factor for average measurements (100 %).

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

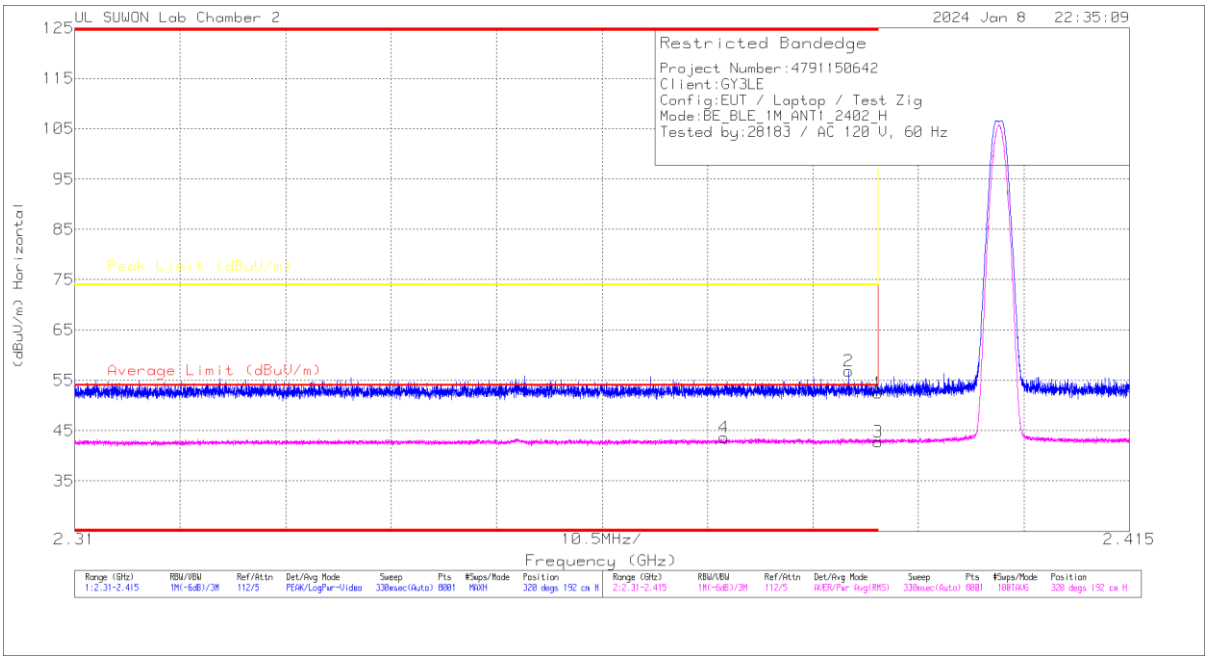
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 1 Mbps ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

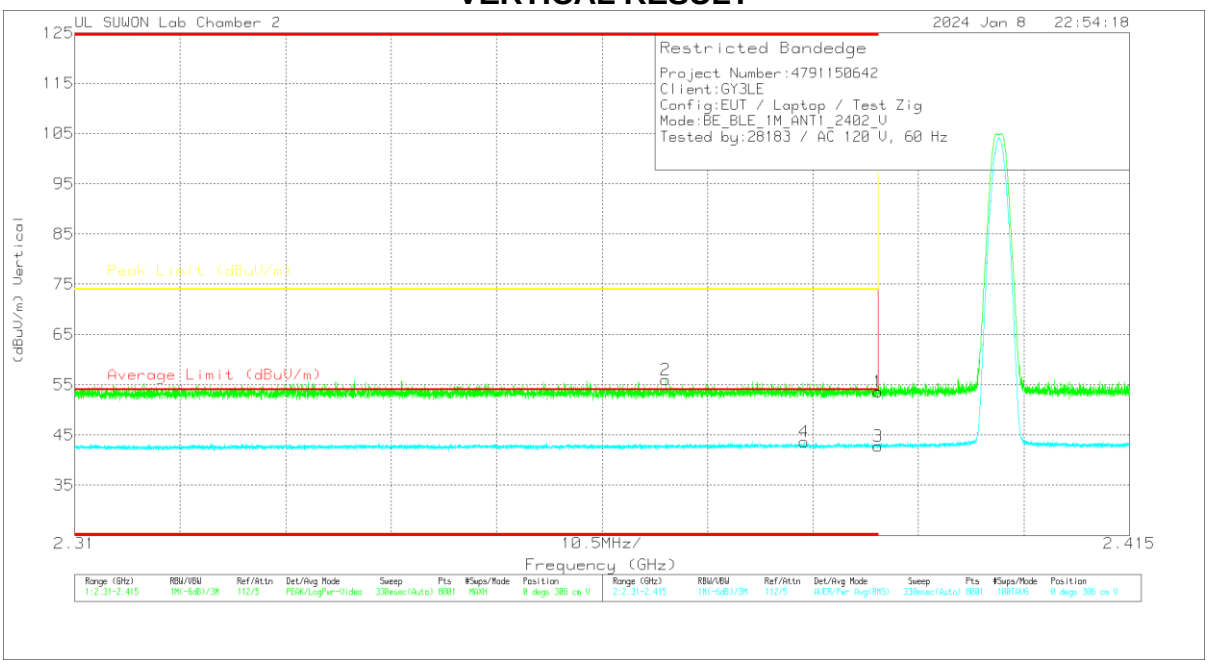


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.41	Pk	31.7	-19.6	0	52.51	-	-	74	-21.49	320	192	H
2	* 2.38702	44.81	Pk	31.7	-19.6	0	56.91	-	-	74	-17.09	320	192	H
3	* 2.39	30.73	RMS	31.7	-19.6	0	42.83	54	-11.17	-	-	320	192	H
4	* 2.37463	31.54	RMS	31.7	-19.6	0	43.64	54	-10.36	-	-	320	192	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



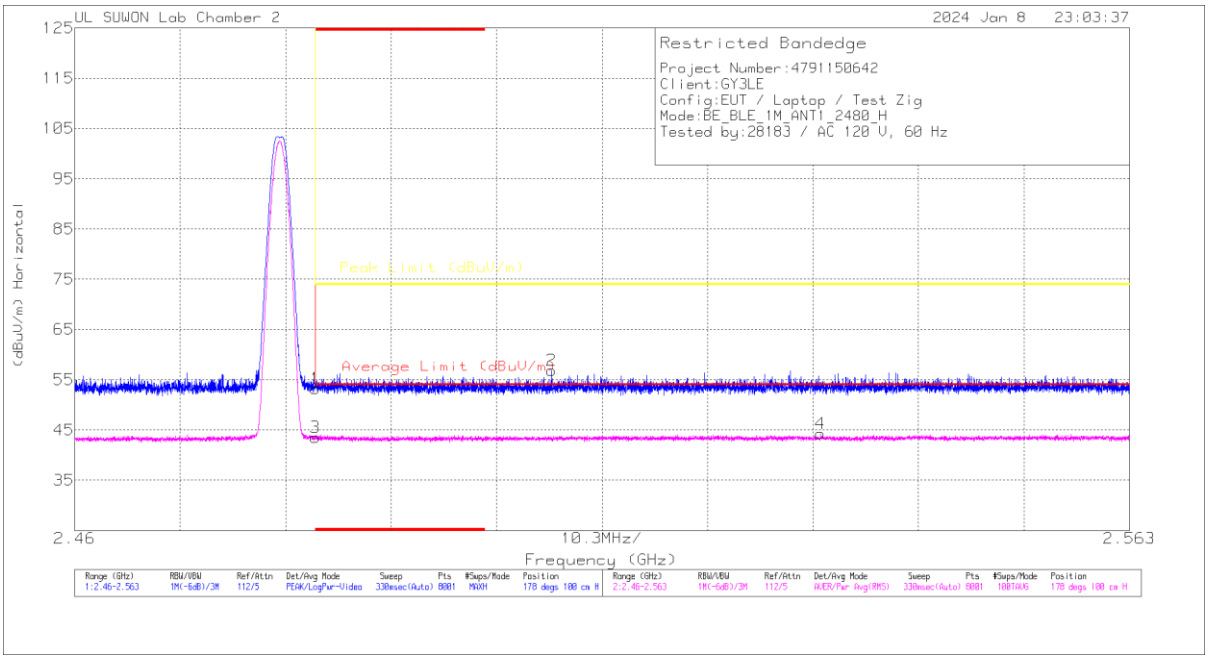
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.51	Pk	31.7	-19.6	0	53.61	-	-	74	-20.39	0	306	V
2	* 2.36885	43.94	Pk	31.7	-19.6	0	56.04	-	-	74	-17.96	0	306	V
3	* 2.39	30.67	RMS	31.7	-19.6	0	42.77	54	-11.23	-	-	0	306	V
4	* 2.38263	31.53	RMS	31.7	-19.6	0	43.63	54	-10.37	-	-	0	306	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

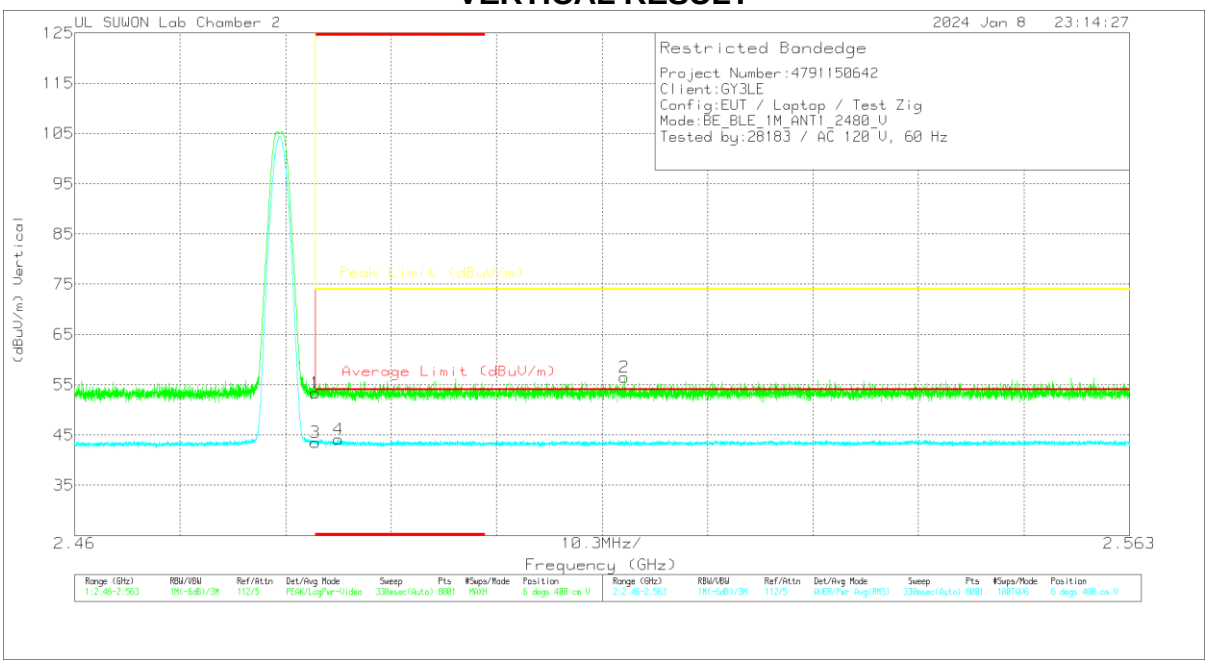


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.61	Pk	31.9	-19.3	0	53.21	-	-	74	-20.79	178	100	H
2	2.50659	44.28	Pk	31.9	-19.3	0	56.88	-	-	74	-17.12	178	100	H
3	* 2.48351	30.88	RMS	31.9	-19.3	0	43.48	54	-10.52	-	-	178	100	H
4	2.53282	31.62	RMS	31.9	-19.3	0	44.22	54	-9.78	-	-	178	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



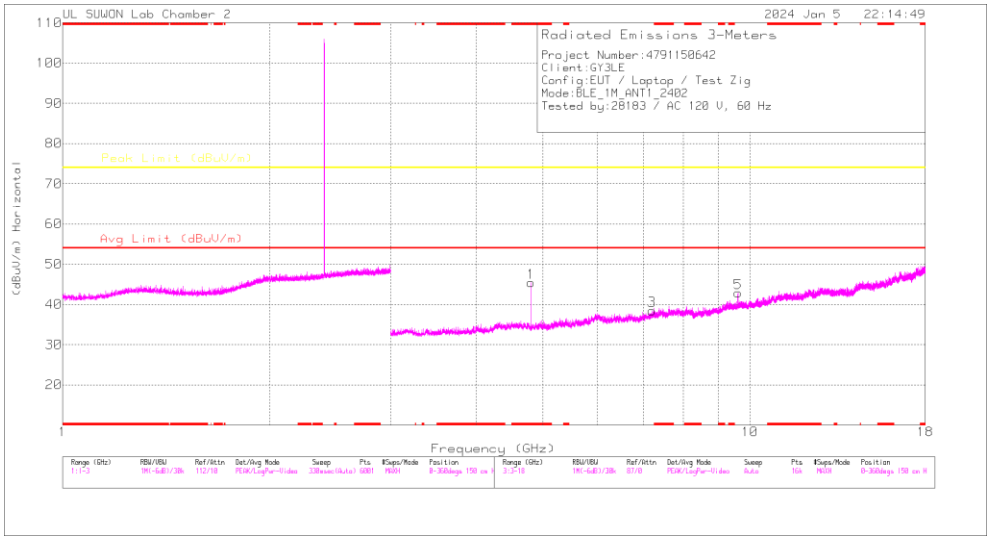
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.76	Pk	31.9	-19.3	0	53.36	-	-	74	-20.64	6	400	V
2	2.51368	43.88	Pk	31.9	-19.3	0	56.48	-	-	74	-17.52	6	400	V
3	* 2.48351	30.93	RMS	31.9	-19.3	0	43.53	54	-10.47	-	-	6	400	V
4	* 2.48575	31.51	RMS	31.9	-19.3	0	44.11	54	-9.89	-	-	6	400	V

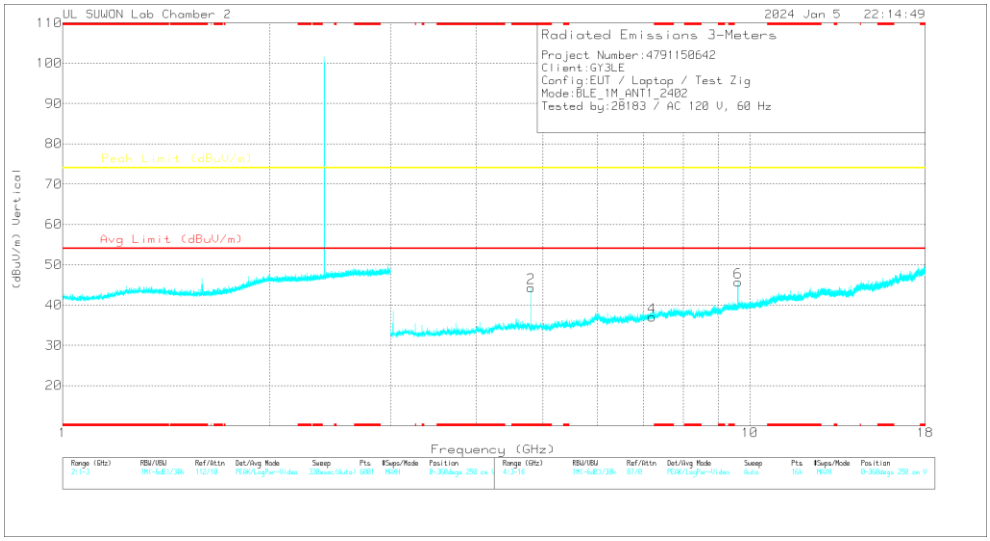
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

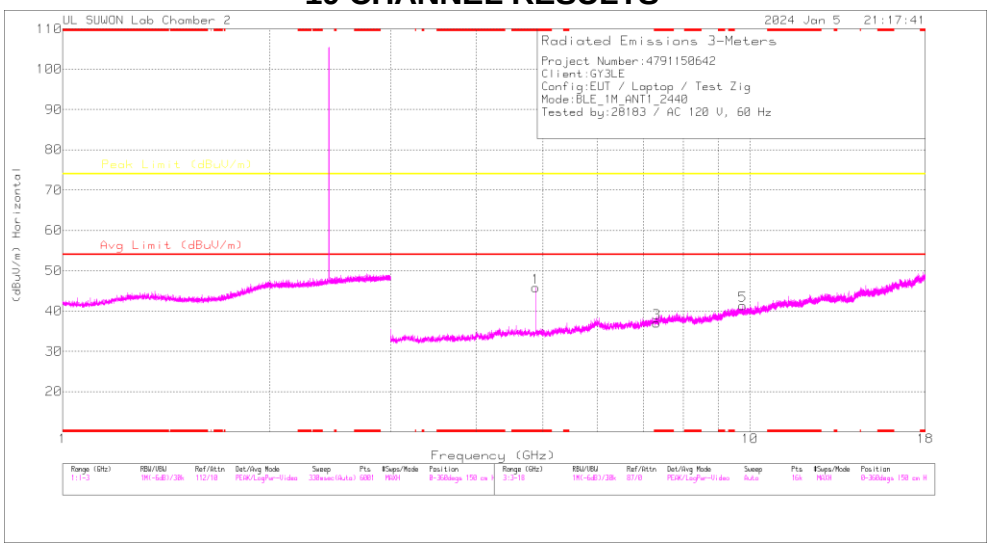
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

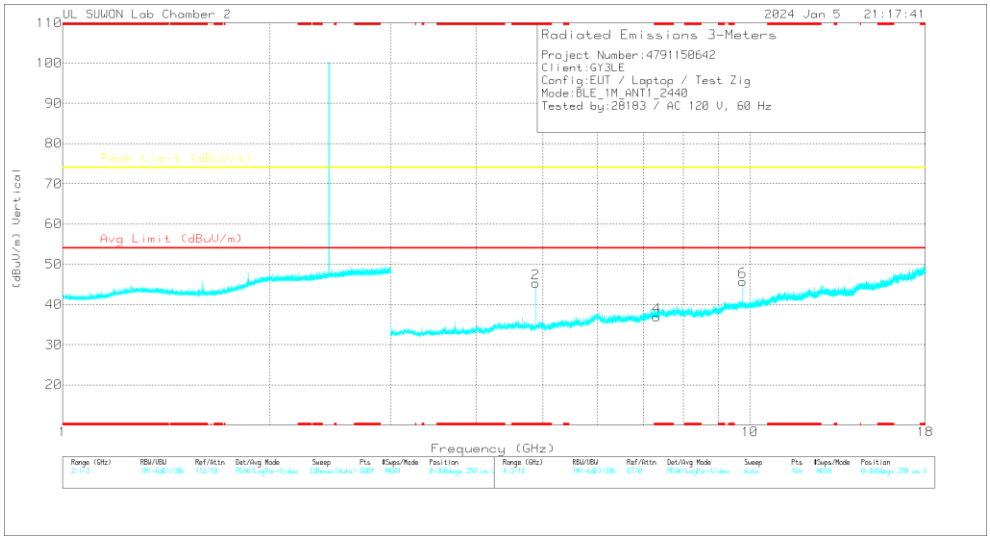
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80356	44.24	PK2	34	-26.8	0	51.44	-	-	74	-22.56	346	111	H
* 4.80379	37.03	MAv1	34	-26.8	0	44.23	54	-9.77	-	-	346	111	H
* 4.80348	43.55	PK2	34	-26.8	0	50.75	-	-	74	-23.25	347	103	V
* 4.80387	37.01	MAv1	34	-26.8	0	44.21	54	-9.79	-	-	347	103	V
7.20623	34.97	PK2	35.7	-24.2	0	46.47	-	-	74	-27.53	360	100	H
7.20481	23.44	MAv1	35.7	-24.2	0	34.94	-	-	-	-	360	100	H
7.20717	34.89	PK2	35.7	-24.2	0	46.39	-	-	74	-27.61	360	100	V
7.20777	23.41	MAv1	35.7	-24.2	0	34.91	-	-	-	-	360	100	V
9.60722	36.66	PK2	36.9	-21	0	52.56	-	-	74	-21.44	203	344	H
9.60706	26.98	MAv1	36.9	-21	0	42.88	-	-	-	-	203	344	H
9.60904	37.11	PK2	36.9	-21	0	53.01	-	-	74	-20.99	90	100	V
9.60889	27.71	MAv1	36.9	-21	0	43.61	-	-	-	-	90	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

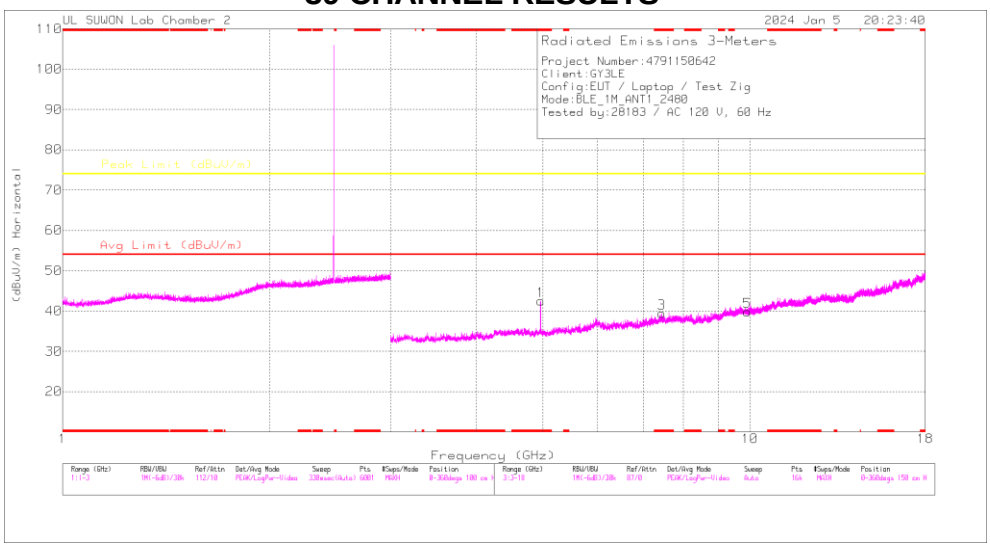
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

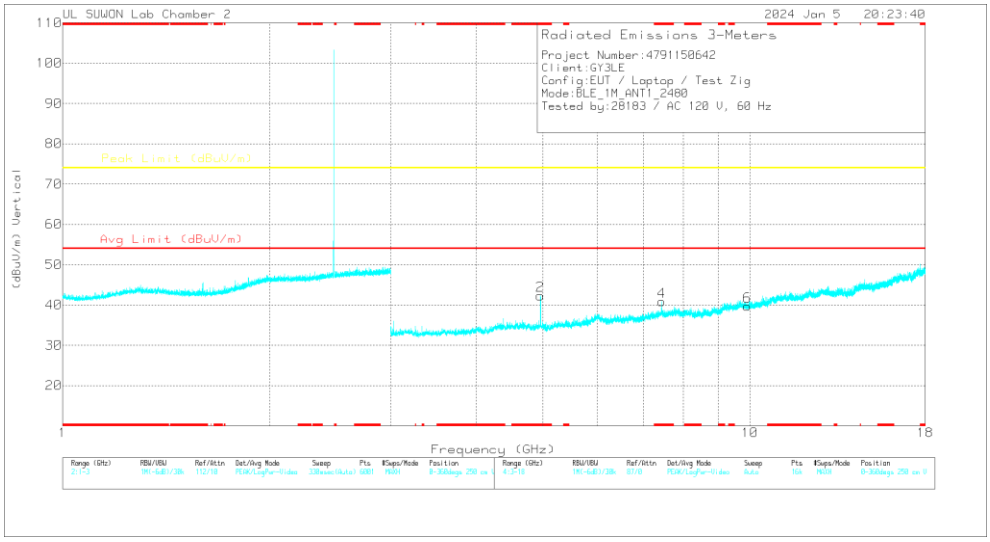
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87945	43.57	PK2	34	-26.7	0	50.87	-	-	74	-23.13	15	126	H
* 4.8797	37.2	MAv1	34	-26.7	0	44.5	54	-9.5	-	-	15	126	H
* 4.87951	44.79	PK2	34	-26.7	0	52.09	-	-	74	-21.91	13	100	V
* 4.87975	38.83	MAv1	34	-26.7	0	46.13	54	-7.87	-	-	13	100	V
* 7.3215	34.42	PK2	35.7	-23.7	0	46.42	-	-	74	-27.58	0	100	H
* 7.31936	23.34	MAv1	35.7	-23.7	0	35.34	54	-18.66	-	-	0	100	H
* 7.32219	35.16	PK2	35.7	-23.6	0	47.26	-	-	74	-26.74	0	100	V
* 7.31913	23.29	MAv1	35.7	-23.7	0	35.29	54	-18.71	-	-	0	100	V
9.75934	35.95	PK2	37.1	-20.7	0	52.35	-	-	74	-21.65	206	375	H
9.76081	25.89	MAv1	37.1	-20.8	0	42.19	-	-	-	-	206	375	H
9.76099	35.98	PK2	37.1	-20.8	0	52.28	-	-	74	-21.72	210	235	V
9.76088	26.11	MAv1	37.1	-20.8	0	42.41	-	-	-	-	210	235	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

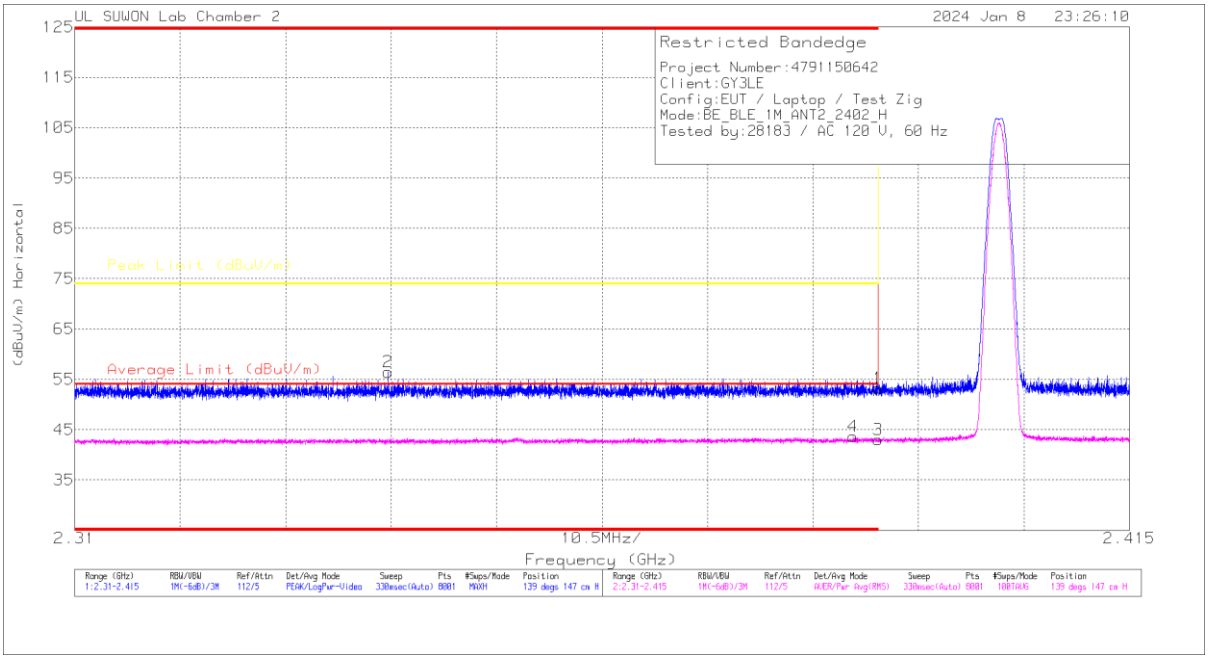
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96038	41.39	PK2	34	-25.9	0	49.49	-	-	74	-24.51	297	100	H
* 4.95973	33.83	MAv1	34	-26	0	41.83	54	-12.17	-	-	297	100	H
* 4.96061	41.62	PK2	34	-26	0	49.62	-	-	74	-24.38	17	114	V
* 4.95999	33.86	MAv1	34	-25.9	0	41.96	54	-12.04	-	-	17	114	V
* 7.44057	36.36	PK2	35.7	-22.9	0	49.16	-	-	74	-24.84	333	109	H
* 7.43932	25.69	MAv1	35.7	-23	0	38.39	54	-15.61	-	-	333	109	H
* 7.4393	37.04	PK2	35.7	-23	0	49.74	-	-	74	-24.26	338	100	V
* 7.43935	26.58	MAv1	35.7	-23	0	39.28	54	-14.72	-	-	338	100	V
9.91922	32.48	PK2	37.3	-20.6	0	49.18	-	-	74	-24.82	360	100	H
9.91919	20.96	MAv1	37.3	-20.6	0	37.66	-	-	-	-	360	100	H
9.91834	32.53	PK2	37.3	-20.6	0	49.23	-	-	74	-24.77	360	100	V
9.91928	20.58	MAv1	37.3	-20.6	0	37.28	-	-	-	-	360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

10.2.2. 1 Mbps ANT2

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

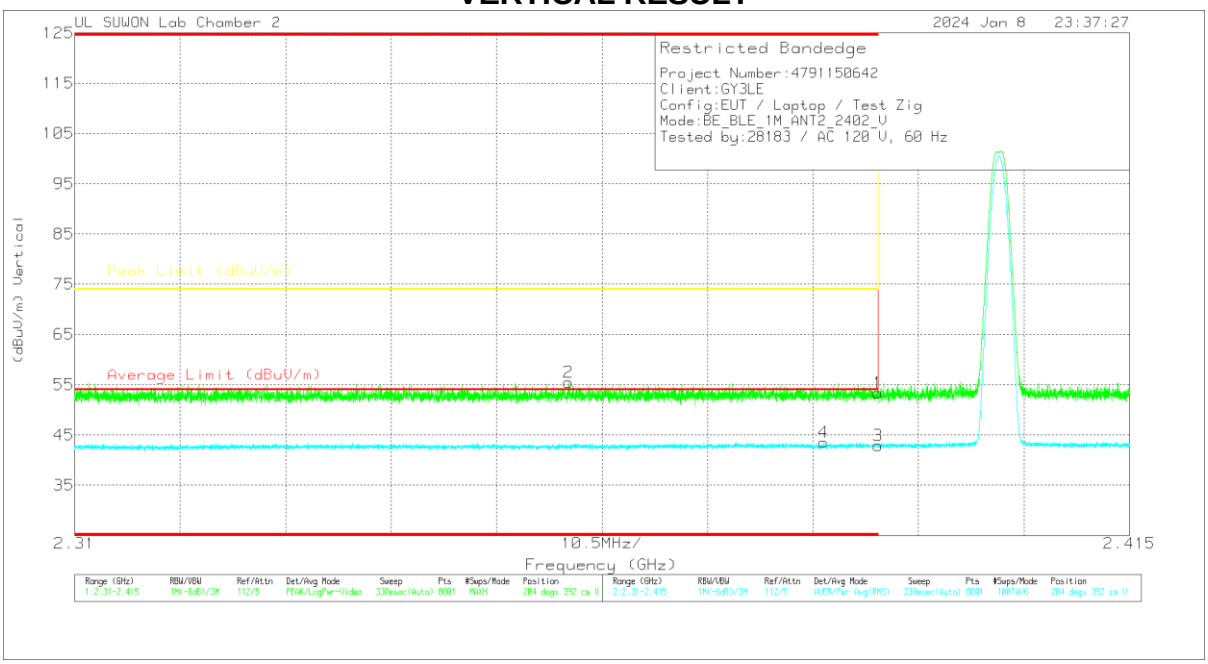


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.1	Pk	31.7	-19.6	0	53.2	-	-	74	-20.8	139	147	H
2	* 2.34119	44.53	Pk	31.6	-19.7	0	56.43	-	-	74	-17.57	139	147	H
3	* 2.39	30.93	RMS	31.7	-19.6	0	43.03	54	-10.97	-	-	139	147	H
4	* 2.3875	31.43	RMS	31.7	-19.5	0	43.63	54	-10.37	-	-	139	147	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



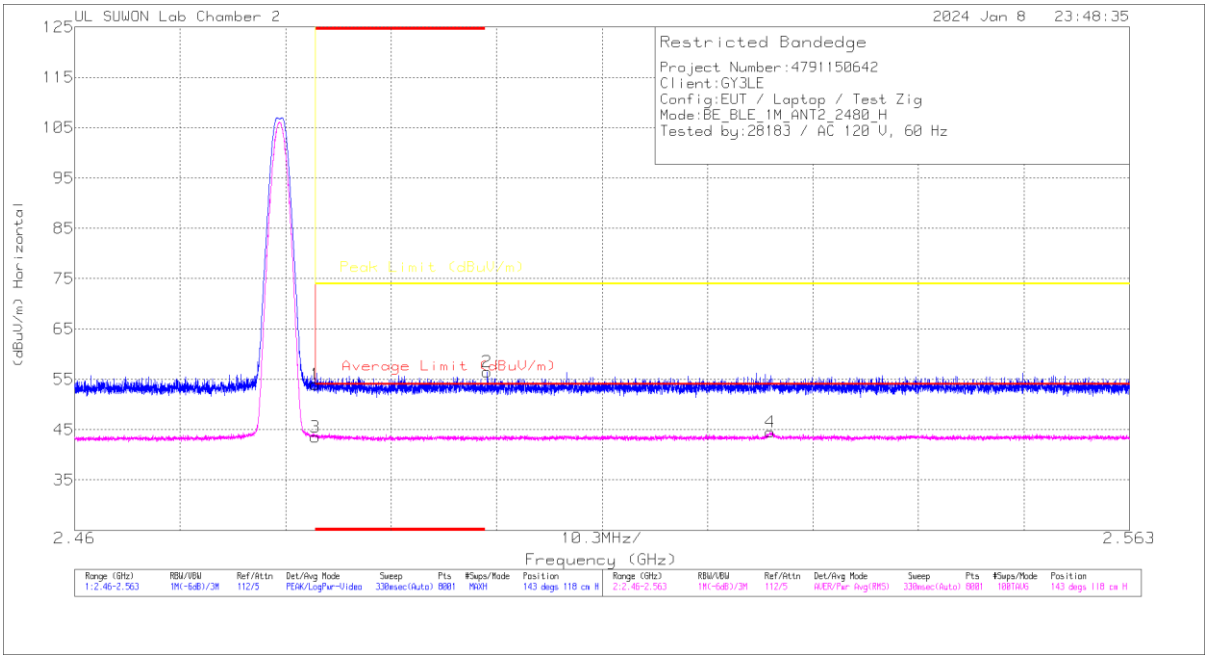
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.29	Pk	31.7	-19.6	0	53.39	-	-	74	-20.61	204	392	V
2	* 2.35918	43.48	Pk	31.6	-19.6	0	55.48	-	-	74	-18.52	204	392	V
3	* 2.39	30.77	RMS	31.7	-19.6	0	42.87	54	-11.13	-	-	204	392	V
4	* 2.38455	31.52	RMS	31.7	-19.7	0	43.52	54	-10.48	-	-	204	392	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

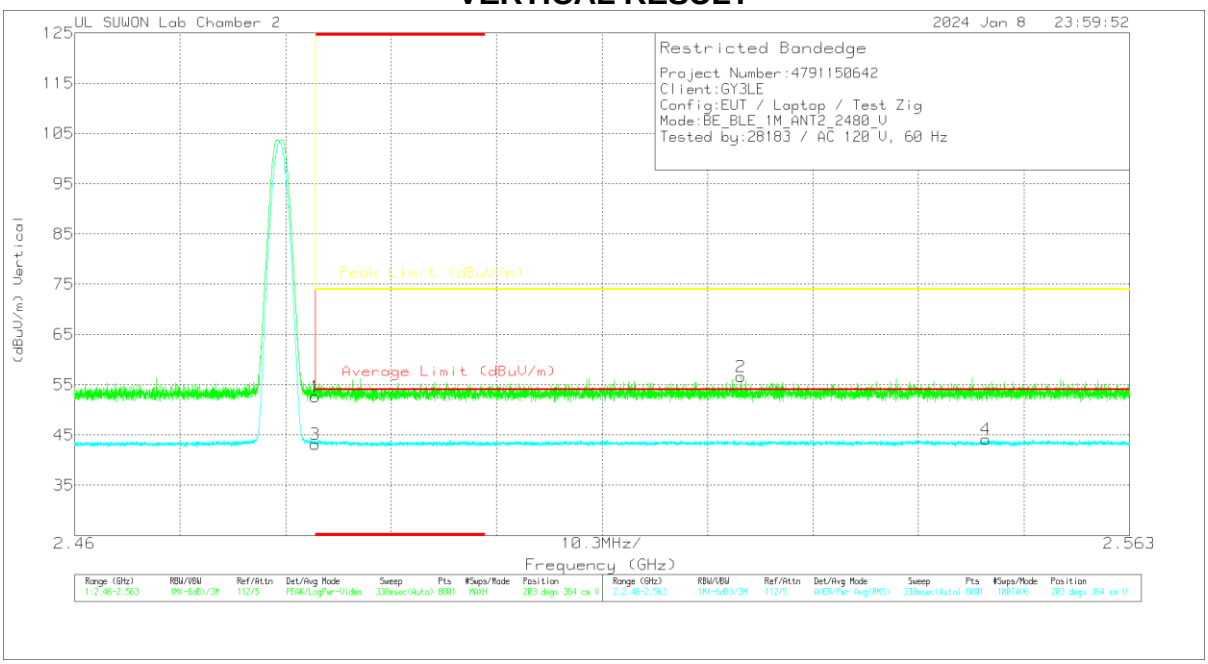


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.44	Pk	31.9	-19.3	0	54.04	-	-	74	-19.96	143	118	H
2	2.50029	43.95	Pk	31.9	-19.4	0	56.45	-	-	74	-17.55	143	118	H
3	* 2.48351	30.9	RMS	31.9	-19.3	0	43.5	54	-10.5	-	-	143	118	H
4	2.52792	31.92	RMS	31.9	-19.3	0	44.52	54	-9.48	-	-	143	118	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



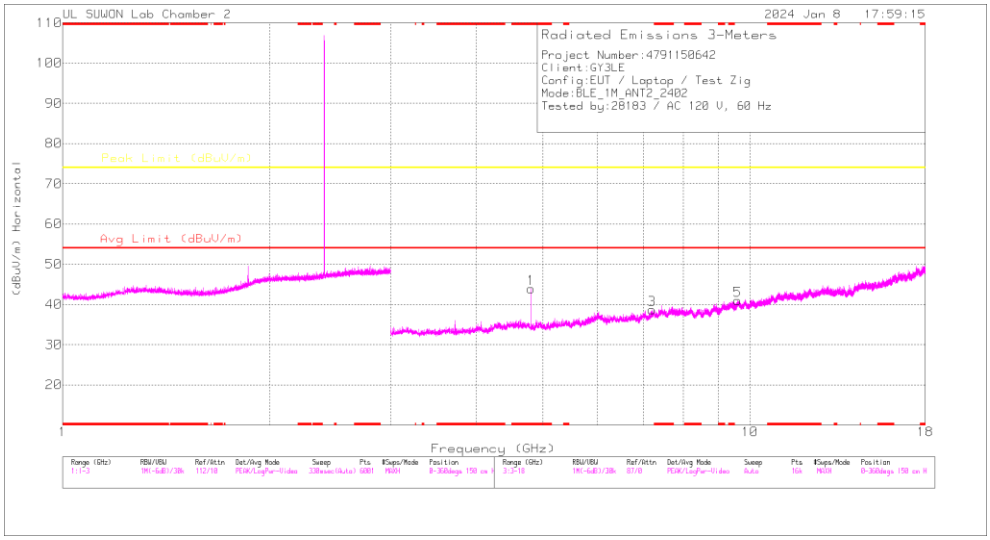
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	39.99	Pk	31.9	-19.3	0	52.59	-	-	74	-21.41	203	364	V
2	2.52503	44.04	Pk	31.9	-19.3	0	56.64	-	-	74	-17.36	203	364	V
3	* 2.48351	30.57	RMS	31.9	-19.3	0	43.17	54	-10.83	-	-	203	364	V
4	2.54895	31.49	RMS	32	-19.3	0	44.19	54	-9.81	-	-	203	364	V

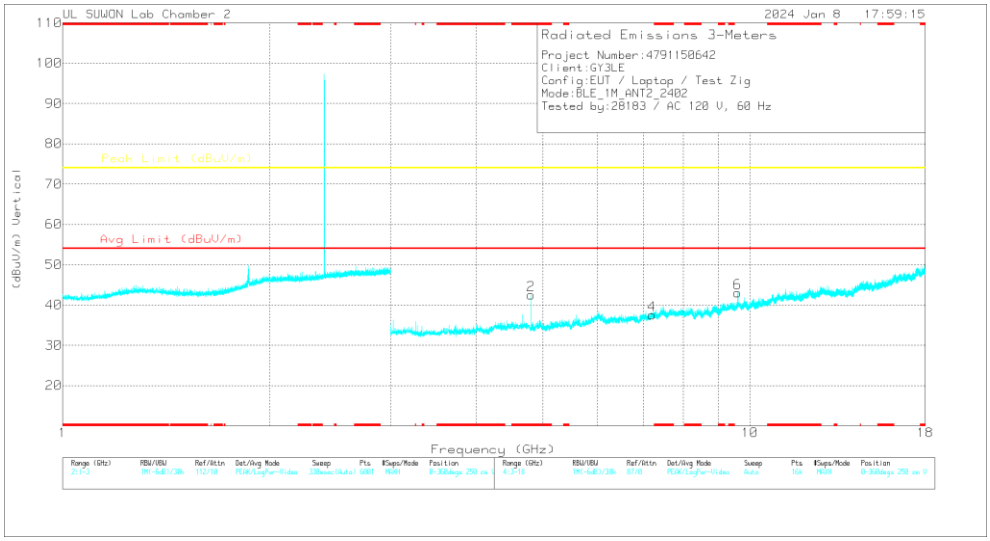
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

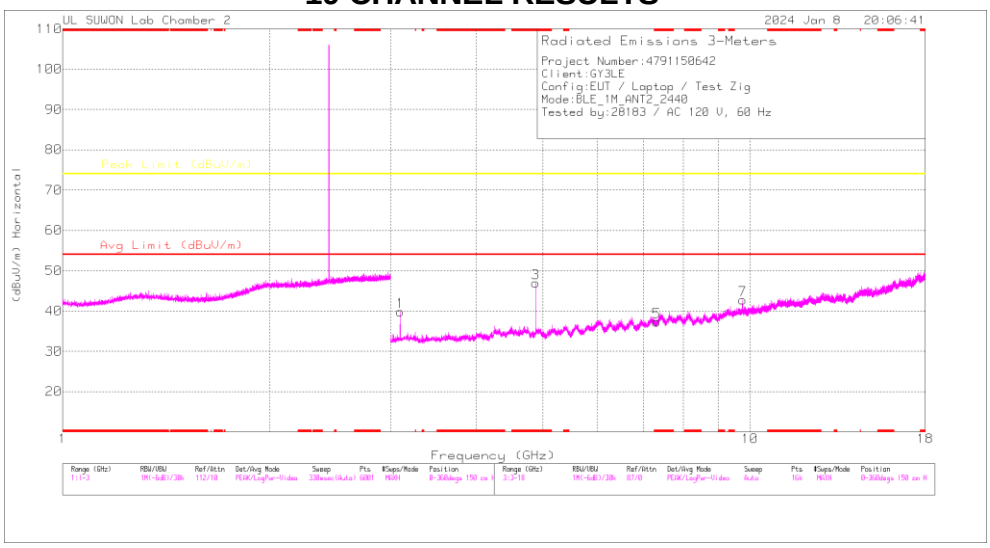
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

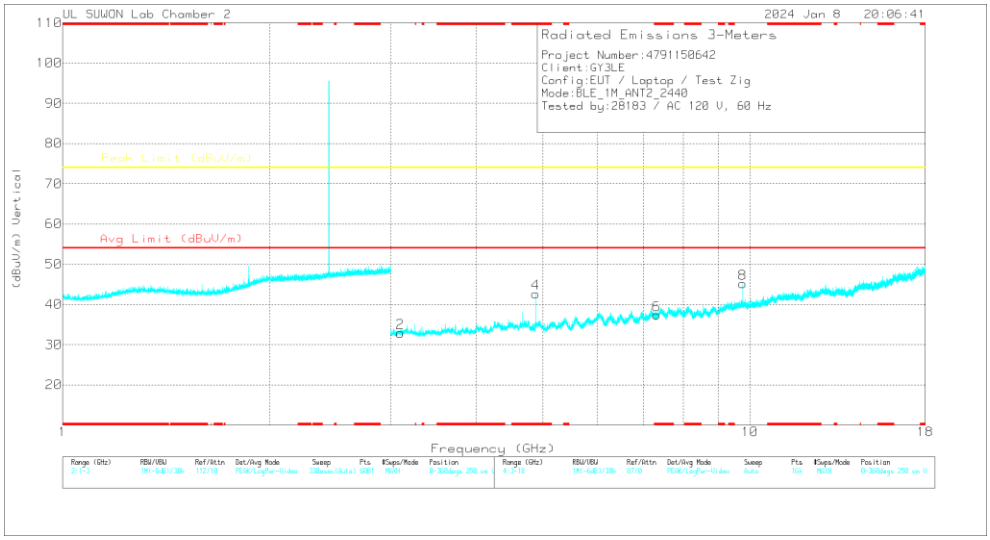
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.8044	43.88	PK2	34	-26.8	0	51.08	-	-	74	-22.92	267	354	H
* 4.80414	37.5	MAv1	34	-26.8	0	44.7	54	-9.3	-	-	267	354	H
* 4.80457	42.99	PK2	34	-26.8	0	50.19	-	-	74	-23.81	239	104	V
* 4.80379	36.19	MAv1	34	-26.8	0	43.39	54	-10.61	-	-	239	104	V
7.20678	37.75	PK2	35.7	-24.2	0	49.25	-	-	74	-24.75	15	393	H
7.20529	25.09	MAv1	35.7	-24.2	0	36.59	-	-	-	-	15	393	H
7.20543	36.56	PK2	35.7	-24.2	0	48.06	-	-	74	-25.94	198	150	V
7.20528	24.6	MAv1	35.7	-24.2	0	36.1	-	-	-	-	198	150	V
9.60689	36.12	PK2	36.9	-21	0	52.02	-	-	74	-21.98	200	293	H
9.60887	26.48	MAv1	36.9	-21	0	42.38	-	-	-	-	200	293	H
9.60899	37.13	PK2	36.9	-21	0	53.03	-	-	74	-20.97	85	100	V
9.60881	27.95	MAv1	36.9	-21	0	43.85	-	-	-	-	85	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

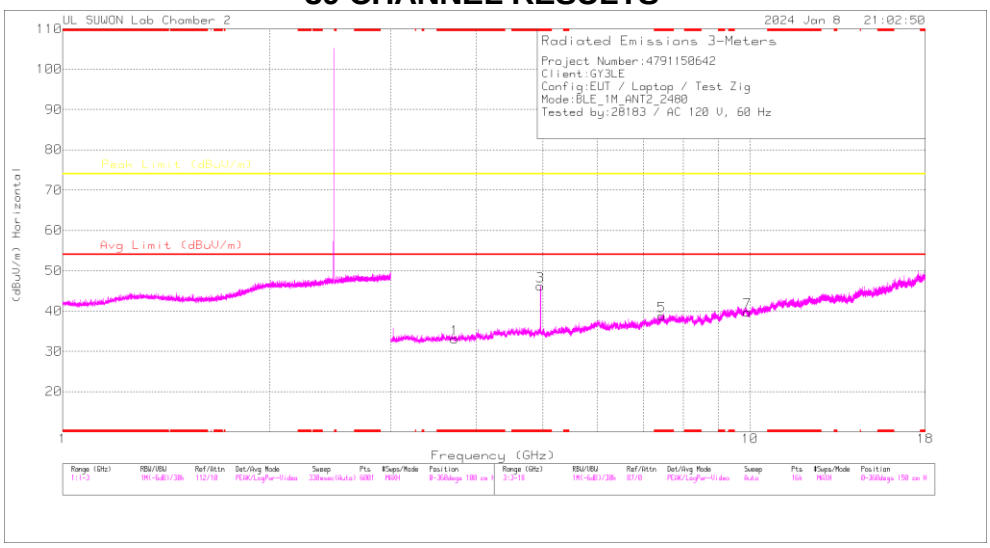
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

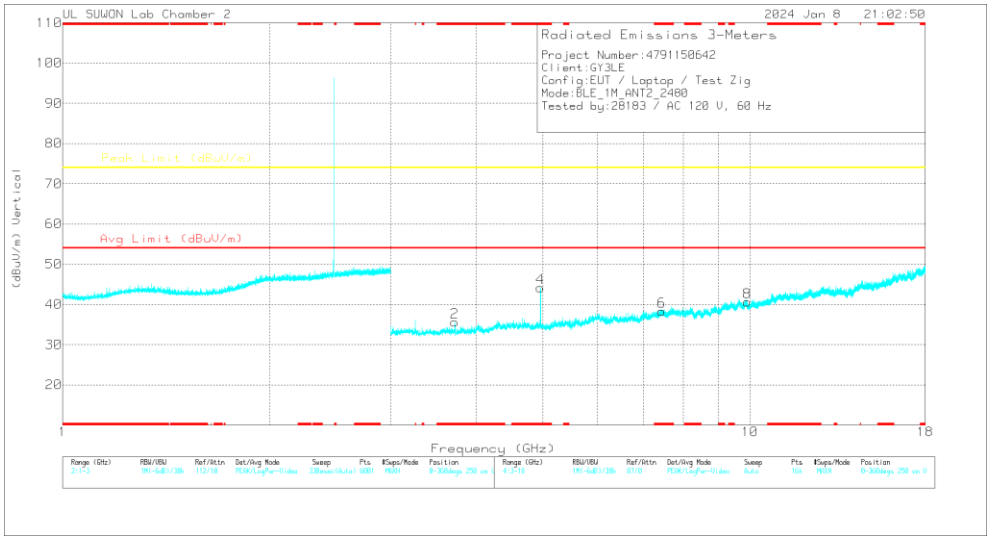
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87949	45.66	PK2	34	-26.7	0	52.96	-	-	74	-21.04	265	348	H
* 4.87984	39.82	MAv1	34	-26.7	0	47.12	54	-6.88	-	-	265	348	H
* 4.88051	44.73	PK2	34	-26.7	0	52.03	-	-	74	-21.97	239	101	V
* 4.88007	38.5	MAv1	34	-26.7	0	45.8	54	-8.2	-	-	239	101	V
* 7.32102	34.92	PK2	35.7	-23.7	0	46.92	-	-	74	-27.08	360	100	H
* 7.32064	23.7	MAv1	35.7	-23.7	0	35.7	54	-18.3	-	-	360	100	H
* 7.32041	36.23	PK2	35.7	-23.7	0	48.23	-	-	74	-25.77	189	104	V
* 7.31929	24.59	MAv1	35.7	-23.7	0	36.59	54	-17.41	-	-	189	104	V
9.75914	35.62	PK2	37.1	-20.7	0	52.02	-	-	74	-21.98	204	359	H
9.75917	26.18	MAv1	37.1	-20.7	0	42.58	-	-	-	-	204	359	H
9.76094	36.44	PK2	37.1	-20.8	0	52.74	-	-	74	-21.26	207	104	V
9.76094	26.68	MAv1	37.1	-20.8	0	42.98	-	-	-	-	207	104	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

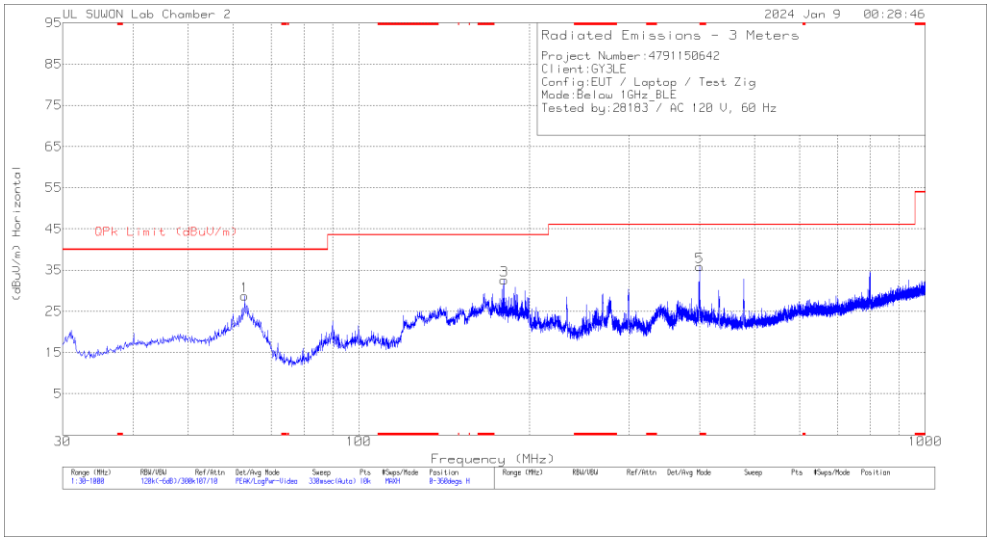
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.72258	36.34	PK2	32.9	-27.4	0	41.84	-	-	74	-32.16	360	100	H
* 3.72265	24.98	MAv1	32.9	-27.4	0	30.48	54	-23.52	-	-	360	100	H
* 3.72502	39.86	PK2	32.9	-27.4	0	45.36	-	-	74	-28.64	201	133	V
* 3.72254	24.75	MAv1	32.9	-27.4	0	30.25	54	-23.75	-	-	201	133	V
* 4.95952	44.13	PK2	34	-26	0	52.13	-	-	74	-21.87	47	100	H
* 4.95999	38.41	MAv1	34	-25.9	0	46.51	54	-7.49	-	-	47	100	H
* 4.96043	42.2	PK2	34	-25.9	0	50.3	-	-	74	-23.7	248	104	V
* 4.95984	35.21	MAv1	34	-26	0	43.21	54	-10.79	-	-	248	104	V
* 7.43994	35.23	PK2	35.7	-22.9	0	48.03	-	-	74	-25.97	0	100	H
* 7.43959	23.12	MAv1	35.7	-22.9	0	35.92	54	-18.08	-	-	0	100	H
* 7.44082	34.85	PK2	35.7	-22.9	0	47.65	-	-	74	-26.35	360	100	V
* 7.44034	23.39	MAv1	35.7	-22.9	0	36.19	54	-17.81	-	-	360	100	V
9.92038	32.57	PK2	37.3	-20.6	0	49.27	-	-	74	-24.73	0	100	H
9.92086	20.5	MAv1	37.3	-20.5	0	37.3	-	-	-	-	0	100	H
9.92068	32.31	PK2	37.3	-20.5	0	49.11	-	-	74	-24.89	360	100	V
9.92082	20.98	MAv1	37.3	-20.5	0	37.78	-	-	-	-	360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



HORIZONTAL

VERTICAL

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Loss(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	62.883	42.33	Pk	17.9	-31.5	28.73	40	-11.27	0-360	300	H
2	41.349	40.63	Pk	19.1	-31.8	27.93	40	-12.07	0-360	100	V
3	180.544	47.95	Pk	15.5	-30.8	32.65	43.52	-10.87	0-360	100	H
4	152.22	47.63	Pk	14.1	-30.9	30.83	43.52	-12.69	0-360	100	V
5	399.473	44.32	Pk	21.2	-29.7	35.82	46.02	-10.2	0-360	100	H
6	515.097	35.45	Pk	23	-29.5	28.95	46.02	-17.07	0-360	100	V

Pk - Peak detector

END OF TEST REPORT