TEST REPORT

Report Number: R15701621-E9c

Applicant	:	HID Global Corp 611 Center Ridge Dr. Austin, TX 78753, USA
Model	:	40V2
FCC ID	:	JQ6-SIGNO40V2
IC	:	2236B-SIGNO40V2
EUT Description	:	Signo V2 Reader
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C: 2025 RSS-GEN ISSUE 5 + A1 + A2: 2021

Date Of Issue:
2025-07-03

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ACCREDITED
CERT #0751.06

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-06-12	Initial Issue	Chandler Stanley
V2	2025-07-03	Revised Worst-Case Declaration Statement	Chandler Stanley

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HID Global Corp
611 Center Ridge Dr.
Austin, TX 78753, USA

EUT DESCRIPTION: Signo V2 Reader

MODEL: 40V2

SERIAL NUMBER: FL0P0U00V2WO40TKF8087 / FL0P0U00WOWO40TKF8087

SAMPLE RECEIPT DATE: 2025-03-10, 2025-04-01, 2025-04-10

DATE TESTED: 2025-03-18 TO 2025-04-29

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C: 2025	Complies
ISED RSS-GEN Issue 5 + A1 + A2: 2021	Complies

UL LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC. By:

Michael Antola
Sr. Staff Engineer
Consumer, Medical and IT Segment.
UL LLC.

Prepared By:

Chandler Stanley
Engineer
Consumer, Medical and IT Segment.
UL LLC.

2. TEST METHODOLOGY

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

- ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024
- FCC 47 CFR Part 2
- FCC 47 CFR Part 15C
- RSS-GEN Issue 5 + A1 + A2: 2021

3. SUMMARY OF TEST RESULTS

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer. Below is a list of the data provided by the customer:

Requirement Description	Requirement Clause Number	Result	Remarks
Occupied Bandwidth	For Reporting Purposes Only	Passed	None.
Tx Spurious Emissions	FCC §15.209 (d) IC RSS-GEN, Section 8.9 (Transmitter)		
AC Mains Line Conducted Emissions	FCC §15.207 IC RSS-GEN, Section 8.8		

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, Certificate Number #0751.06, 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 2800 Suite Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

5. DECISION RULES AND MEASUREMENT 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}
Radio Frequency (Spectrum Analyzer)	419.38 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

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)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a smartcard reader typically installed near doorway as part of physical access system, to control access to that door, and it contains BLE, 13.56 MHz RFID, and 125 kHz RFID radios. This report covers full testing of the 125kHz RFID radio.

6.2. MAXIMUM ELECTRIC FIELD STRENGTH

The transmitter has a maximum peak radiated electric field strength as follows:

Fundamental Frequency (kHz)	E-Field at 300-Meters (dBuV/m)
125 kHz	1.13

6.3. SOFTWARE AND FIRMWARE

Firmware Version: 10.1
Hardware Version: Rev H

6.4. WORST-CASE CONFIGURATION AND MODE

The EUT is meant to be installed and operated in one orientation; therefore, all testing was performed with the EUT in its intended orientation. The EUT is meant to be powered via an auxiliary device (access controller) that does not come with the product. Therefore, for AC Lines, the scan was run using a DC power supply as representative

The 125 kHz RFID signal only supports a 4-kbps data-rate. A terminal cable and pigtail cable were investigated, and it was found that the terminal cable is worst-case; therefore, all testing was performed with the terminal cable. All testing was performed for tag on and tag off modes.

The distance between the EUT and tag was also investigated, and the worst-case condition occurs when the tag and EUT are separated by 2.5 cm; therefore, all final radiated testing was performed with the EUT and tag separated by 2.5 cm.

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Badge 125 kHz	HID	NA	NA	NA

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Power	1	Terminal	Unshielded	<3m	Supplies Power

SETUP DIAGRAM

Please refer to R15701621-EP6c for setup diagrams

7. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted Room 1					
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2024-08-01	2025-08-01
207726	Temp/Humid Chamber	Thermotron	SM-32-8200	2025-01-15	2026-01-15
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
76022	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23	NA	NA
CBL091	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2025-03-07	2026-03-07
NA	NFC Probe Kit	EMCO	7405-9911-4442	NA	NA

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-10-02	2025-10-02
Gain-Loss Chains					
91975	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-10	2025-05-10
Receiver & Software					
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-03-05	2025-03-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
200540	Environmental Meter	Fisher Scientific	15-077-963	2023-07-19	2025-07-19

Note*: All equipment was in calibration at the time of use.

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
30-1000 MHz					
90628	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-02	2026-01-02
Gain-Loss Chains					
207639	Gain-loss string: 25-1000MHz	Various	Various	2024-05-22	2025-05-22
Receiver & Software					
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-04-16	2025-04-30
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
241204	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
70374	EMI Test Receiver	ROHDE & SCHWARZ	ESCI7	2024-07-30	2025-07-30
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2024-04-04	2025-04-30
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2024-08-01	2025-08-01
236852	CW-AC Power Source	Ametek	CW2501	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

8. OCCUPIED BANDWIDTH

LIMITS

Reporting Purposes Only

TEST PROCEDURE

C63.10 6.9.2 and 6.9.3

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1-5% of the 20dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

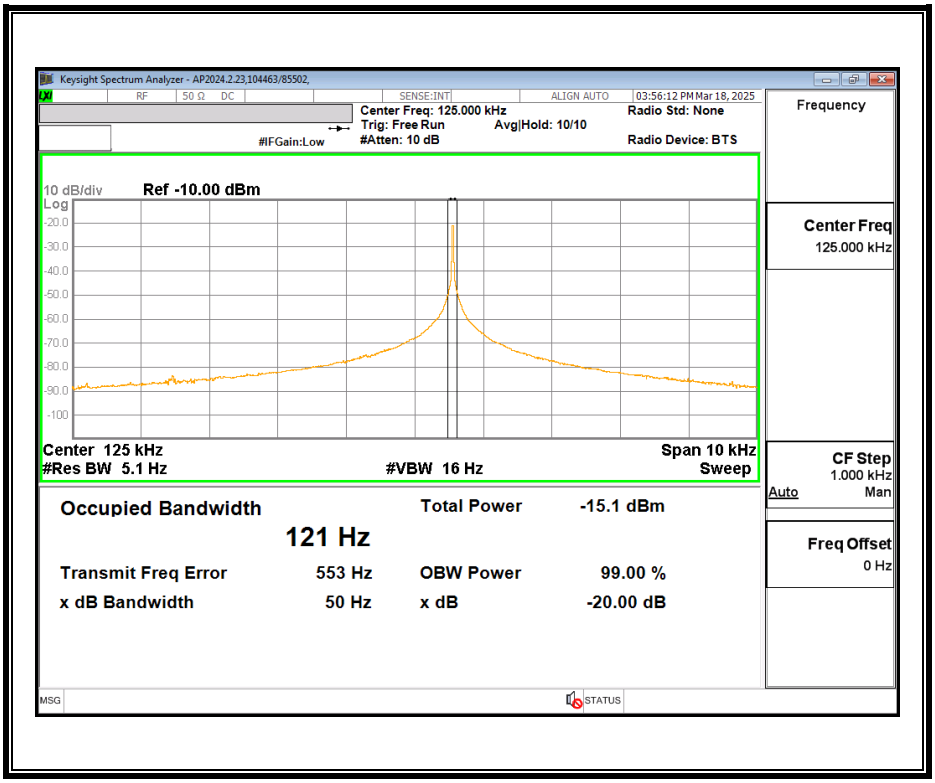
RESULTS

Note*: Because the measured signal is CW or CW-like, adjusting the RBW per C63.10 would not be practical since the measured bandwidth will always follow the RBW.

8.1. TAG ON

RESULTS

Frequency (MHz)	20dB Bandwidth (Hz)	99% Bandwidth (Hz)
0.125	50.000	121.000

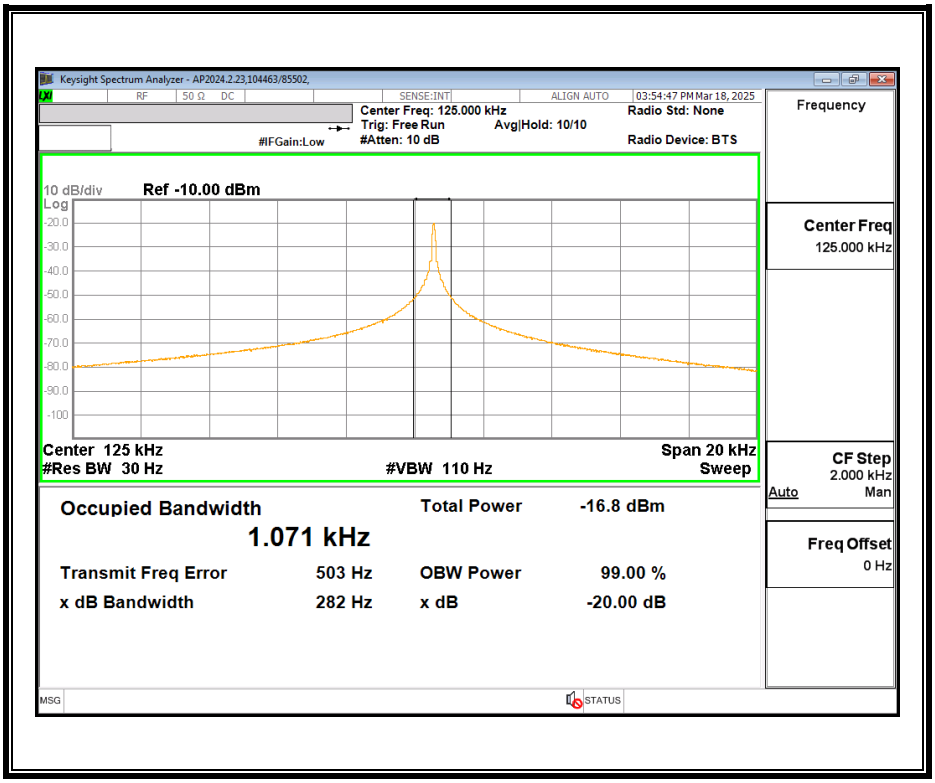


Test Information
Date: 2025-03-18
Project: 15701621
Tested By: 104463/85502

8.2. TAG OFF

RESULTS

Frequency (MHz)	20dB Bandwidth (Hz)	99% Bandwidth (kHz)
0.125	282.000	1.071



Test Information
Date: 2025-03-18
Project: 15701621
Tested By: 104463/85502

9. RADIATED EMISSION TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMIT

FCC §15.209 (a)

IC RSS-GEN, Section 8.9 (Transmitter)

Frequency (MHz)	Field Strength (microvolts/meter)	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 to 216	150	3
216 to 960	200	3
Above 960 MHz	500	3
Note: The lower limit shall apply at the transition frequency.		

Frequency Range (MHz)	Field Strength Limit (uA/m) at 3 m	Field Strength Limit (dBuA/m) at 3 m
0.009-0.490	6.37/F(kHz) @ 300 m	-
0.490-1.705	63.7/F(kHz) @ 30 m	-
1.705 - 30	0.08 @ 30m	-

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz measurements. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. Peak detection is used unless otherwise noted as quasi-peak.

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.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

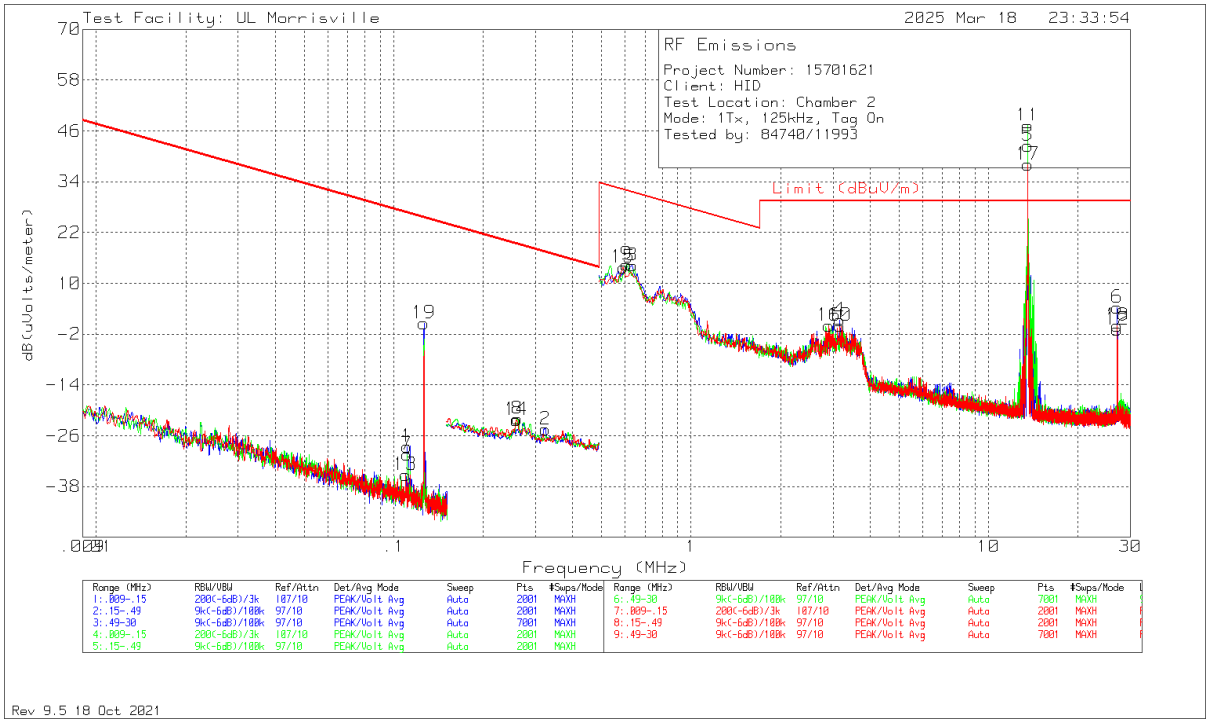
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

9.2. SPURIOUS EMISSIONS (Below 30MHz)

Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).

9.2.1. TAG ON

SPURIOUS EMISSION – E FIELD



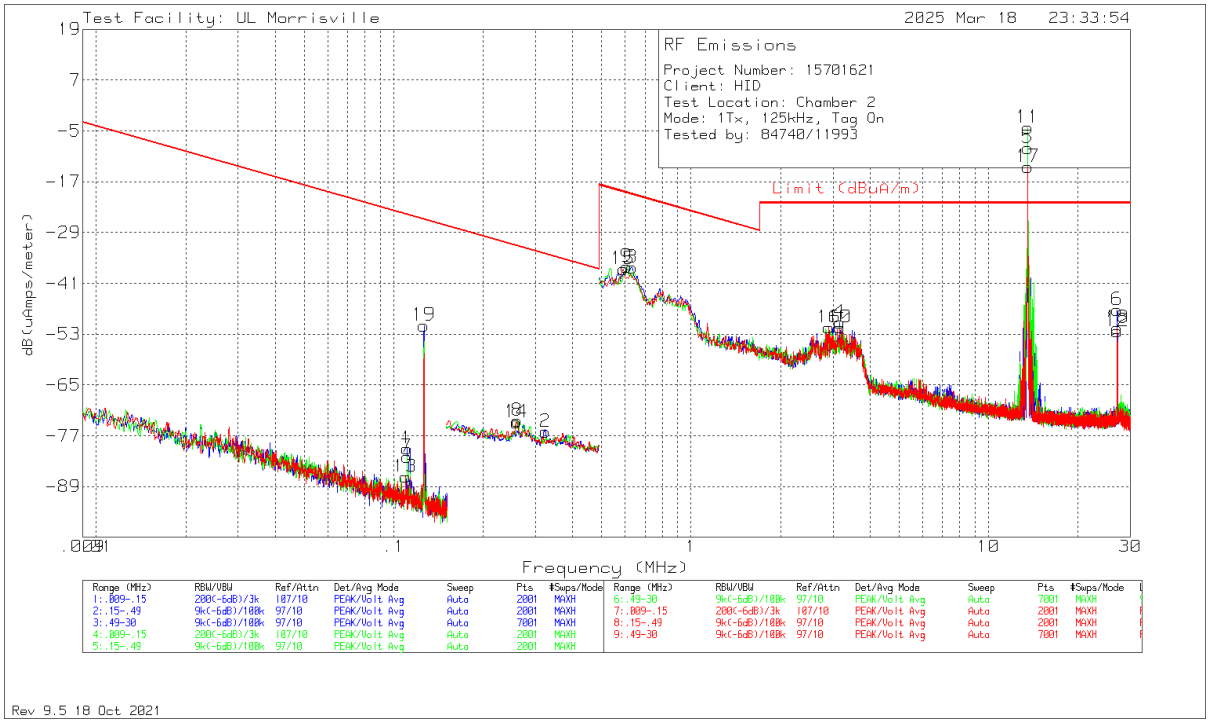
BL30MHz SPURIOUS EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
13	.10961	33.61	Pk	11.1	.1	-80	-35.19	26.81	-	-62	0-360	Flat
1	.11089	40.27	Pk	11.1	.1	-80	-28.53	26.71	46.71	-55.24	0-360	0 degs
7	.11089	38.36	Pk	11.1	.1	-80	-30.44	26.71	46.71	-57.15	0-360	90 degs
19	.12636	69.49	Pk	11	.1	-80	.59	25.57	45.57	-24.98	0-360	0 degs
14	.25872	46.69	Pk	10.9	.1	-80	-22.31	19.35	39.35	-41.66	0-360	Flat
8	.26042	47.03	Pk	10.9	.1	-80	-21.97	19.29	39.29	-41.26	0-360	90 degs
2	.32408	44.5	Pk	10.9	.1	-80	-24.5	17.39	37.39	-41.89	0-360	0 degs
15	.59118	42.72	Pk	11	.1	-40	13.82	32.17	-	-18.35	0-360	Flat
9	.60805	43.33	Pk	11	.1	-40	14.43	31.93	-	-17.5	0-360	90 degs
3	.63334	43.12	Pk	11	.1	-40	14.22	31.57	-	-17.35	0-360	0 degs
16	2.90577	28.76	Pk	11.1	.2	-40	.06	29.54	-	-29.48	0-360	Flat
10	3.16294	28.65	Pk	11.1	.3	-40	.05	29.54	-	-29.49	0-360	90 degs
4	3.16716	29.93	Pk	11.1	.3	-40	1.33	29.54	-	-28.21	0-360	0 degs
5	13.5596	72.07	Pk	9.8	.6	-40	42.47	-	-	-	0-360	0 degs
11	13.5596	76.86	Pk	9.8	.6	-40	47.26	-	-	-	0-360	90 degs
17	13.5596	67.62	Pk	9.8	.6	-40	38.02	-	-	-	0-360	Flat
6	27.12247	35.75	Pk	7.7	.8	-40	4.25	29.54	-	-25.29	0-360	0 degs
12	27.12247	30.66	Pk	7.7	.8	-40	-.84	29.54	-	-30.38	0-360	90 degs
18	27.12247	31.47	Pk	7.7	.8	-40	-.03	29.54	-	-29.57	0-360	Flat

Pk - Peak detector

Note*: 13.56 MHz signal is a fundamental of the EUT; therefore, it has been excluded from the limit.

SPURIOUS EMISSION – H FIELD



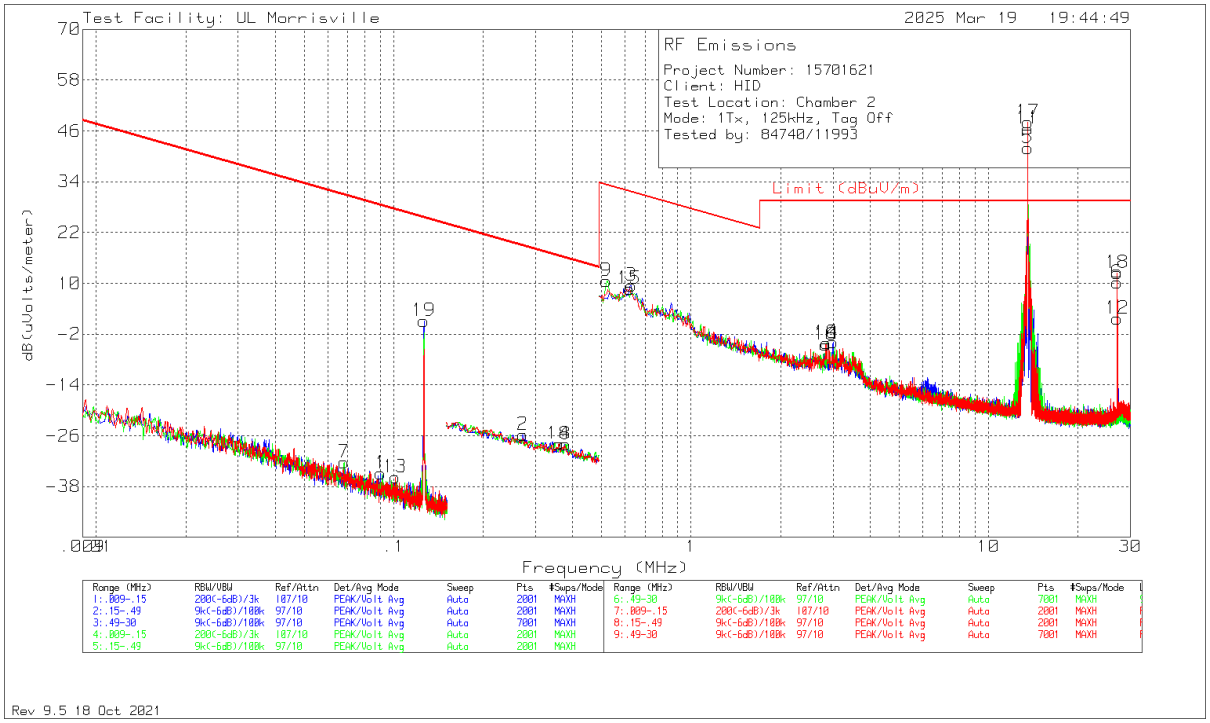
BL30MHz SPURIOUS EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
13	.10961	33.61	Pk	-40.4	.1	-80	-86.69	-24.69	-	-62	0-360	Flat
1	.11089	40.27	Pk	-40.4	.1	-80	-80.03	-24.79	-4.79	-55.24	0-360	0 degs
7	.11089	38.36	Pk	-40.4	.1	-80	-81.94	-24.79	-4.79	-57.15	0-360	90 degs
19	.12636	69.49	Pk	-40.5	.1	-80	-50.91	-25.93	-5.93	-24.98	0-360	0 degs
14	.25872	46.69	Pk	-40.6	.1	-80	-73.81	-32.15	-12.15	-41.66	0-360	Flat
8	.26042	47.03	Pk	-40.6	.1	-80	-73.47	-32.21	-12.21	-41.26	0-360	90 degs
2	.32408	44.5	Pk	-40.6	.1	-80	-76	-34.11	-14.11	-41.89	0-360	0 degs
15	.59118	42.72	Pk	-40.5	.1	-40	-37.68	-19.33	-	-18.35	0-360	Flat
9	.60805	43.33	Pk	-40.5	.1	-40	-37.07	-19.57	-	-17.5	0-360	90 degs
3	.63334	43.12	Pk	-40.5	.1	-40	-37.28	-19.93	-	-17.35	0-360	0 degs
16	2.90577	28.76	Pk	-40.4	.2	-40	-51.44	-21.96	-	-29.48	0-360	Flat
10	3.16294	28.65	Pk	-40.4	.3	-40	-51.45	-21.96	-	-29.49	0-360	90 degs
4	3.16716	29.93	Pk	-40.4	.3	-40	-50.17	-21.96	-	-28.21	0-360	0 degs
5	13.5596	72.07	Pk	-41.7	.6	-40	-9.03	-	-	-	0-360	0 degs
11	13.5596	76.86	Pk	-41.7	.6	-40	-4.24	-	-	-	0-360	90 degs
17	13.5596	67.62	Pk	-41.7	.6	-40	-13.48	-	-	-	0-360	Flat
6	27.12247	35.75	Pk	-43.8	.8	-40	-47.25	-21.96	-	-25.29	0-360	0 degs
12	27.12247	30.66	Pk	-43.8	.8	-40	-52.34	-21.96	-	-30.38	0-360	90 degs
18	27.12247	31.47	Pk	-43.8	.8	-40	-51.53	-21.96	-	-29.57	0-360	Flat

Pk - Peak detector
Note*: 13.56 MHz signal is a fundamental of the EUT; therefore, it has been excluded from the limit.

9.2.2. TAG OFF

SPURIOUS EMISSION – E FIELD

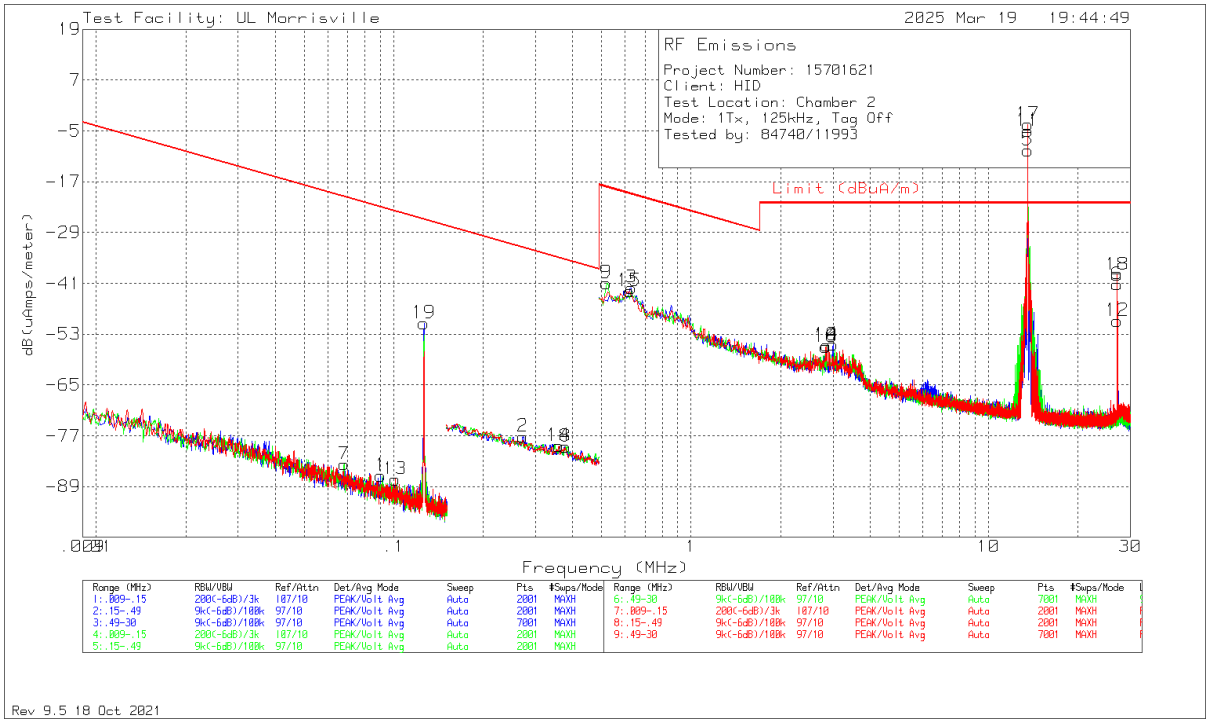


BL30MHz SPURIOUS EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.06807	36.36	Pk	11.3	.1	-80	-32.24	30.95	50.95	-63.19	0-360	90 degs
1	.09044	33.93	Pk	11.1	.1	-80	-34.87	28.48	-	-63.35	0-360	0 degs
13	.10123	33.03	Pk	11.1	.1	-80	-35.77	27.5	-	-63.27	0-360	Flat
19	.12636	70.03	Pk	11	.1	-80	1.13	25.57	45.57	-24.44	0-360	0 degs
2	.27206	43.29	Pk	10.9	.1	-80	-25.71	18.91	38.91	-44.62	0-360	0 degs
14	.35927	41.1	Pk	10.9	.1	-80	-27.9	16.5	36.5	-44.4	0-360	Flat
8	.3784	40.87	Pk	11	.1	-80	-28.03	16.04	36.04	-44.07	0-360	90 degs
9	.51951	39.51	Pk	11	.1	-40	10.61	33.29	-	-22.68	0-360	90 degs
15	.6207	37.59	Pk	11	.1	-40	8.69	31.75	-	-23.06	0-360	Flat
3	.62913	38.4	Pk	11	.1	-40	9.5	31.63	-	-22.13	0-360	0 degs
16	2.83831	24.18	Pk	11.1	.2	-40	-4.52	29.54	-	-34.06	0-360	Flat
10	2.84674	24.63	Pk	11.1	.2	-40	-4.07	29.54	-	-33.61	0-360	90 degs
4	3.00274	24.67	Pk	11.1	.3	-40	-3.93	29.54	-	-33.47	0-360	0 degs
5	13.5596	71.54	Pk	9.8	.6	-40	41.94	-	-	-	0-360	0 degs
11	13.5596	76.12	Pk	9.8	.6	-40	46.52	-	-	-	0-360	90 degs
17	13.5596	77.7	Pk	9.8	.6	-40	48.1	-	-	-	0-360	Flat
6	27.12247	41.77	Pk	7.7	.8	-40	10.27	29.54	-	-19.27	0-360	0 degs
12	27.12247	33.14	Pk	7.7	.8	-40	1.64	29.54	-	-27.9	0-360	90 degs
18	27.12247	43.98	Pk	7.7	.8	-40	12.48	29.54	-	-17.06	0-360	Flat

Pk - Peak detector
Note*: 13.56 MHz signal is a fundamental of the EUT; therefore, it has been excluded from the limit.

SPURIOUS EMISSION – H FIELD



BL30MHz SPURIOUS EMISSIONS

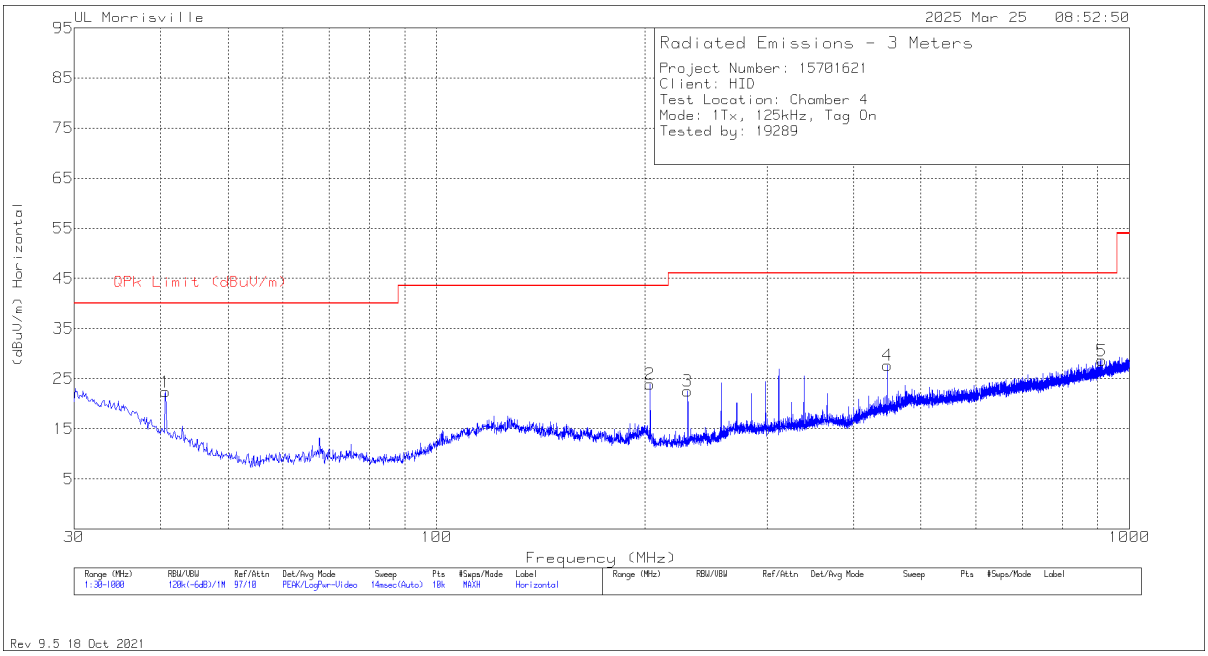
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.06807	36.36	Pk	-40.2	.1	-80	-83.74	-20.55	-20.55	-63.19	0-360	90 degs
1	.09044	33.93	Pk	-40.4	.1	-80	-86.37	-23.02	-	-63.35	0-360	0 degs
13	.10123	33.03	Pk	-40.4	.1	-80	-87.27	-24	-	-63.27	0-360	Flat
19	.12636	70.03	Pk	-40.5	.1	-80	-50.37	-25.93	-25.93	-24.44	0-360	0 degs
2	.27206	43.29	Pk	-40.6	.1	-80	-77.21	-32.59	-32.59	-44.62	0-360	0 degs
14	.35927	41.1	Pk	-40.6	.1	-80	-79.4	-35	-35	-44.4	0-360	Flat
8	.3784	40.87	Pk	-40.5	.1	-80	-79.53	-35.46	-35.46	-44.07	0-360	90 degs
9	.51951	39.51	Pk	-40.5	.1	-40	-40.89	-18.21	-	-22.68	0-360	90 degs
15	.6207	37.59	Pk	-40.5	.1	-40	-42.81	-19.75	-	-23.06	0-360	Flat
3	.62913	38.4	Pk	-40.5	.1	-40	-42	-19.87	-	-22.13	0-360	0 degs
16	2.83831	24.18	Pk	-40.4	.2	-40	-56.02	-21.96	-	-34.06	0-360	Flat
10	2.84674	24.63	Pk	-40.4	.2	-40	-55.57	-21.96	-	-33.61	0-360	90 degs
4	3.00274	24.67	Pk	-40.4	.3	-40	-55.43	-21.96	-	-33.47	0-360	0 degs
5	13.5596	71.54	Pk	-41.7	.6	-40	-9.56	-	-	-	0-360	0 degs
11	13.5596	76.12	Pk	-41.7	.6	-40	-4.98	-	-	-	0-360	90 degs
17	13.5596	77.7	Pk	-41.7	.6	-40	-3.4	-	-	-	0-360	Flat
6	27.12247	41.77	Pk	-43.8	.8	-40	-41.23	-21.96	-	-19.27	0-360	0 degs
12	27.12247	33.14	Pk	-43.8	.8	-40	-49.86	-21.96	-	-27.9	0-360	90 degs
18	27.12247	43.98	Pk	-43.8	.8	-40	-39.02	-21.96	-	-17.06	0-360	Flat

Pk - Peak detector
Note*: 13.56 MHz signal is a fundamental of the EUT; therefore, it has been excluded from the limit.

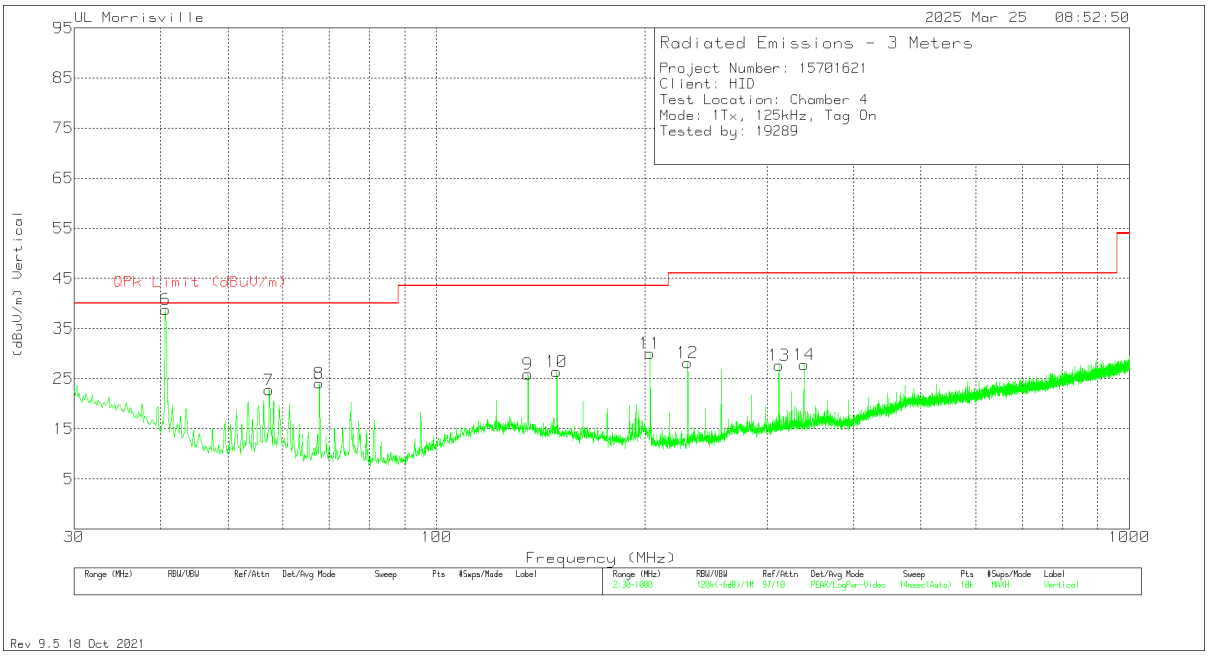
9.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

9.3.1. TAG ON

SPURIOUS EMISSION



HORIZONTAL



VERTICAL

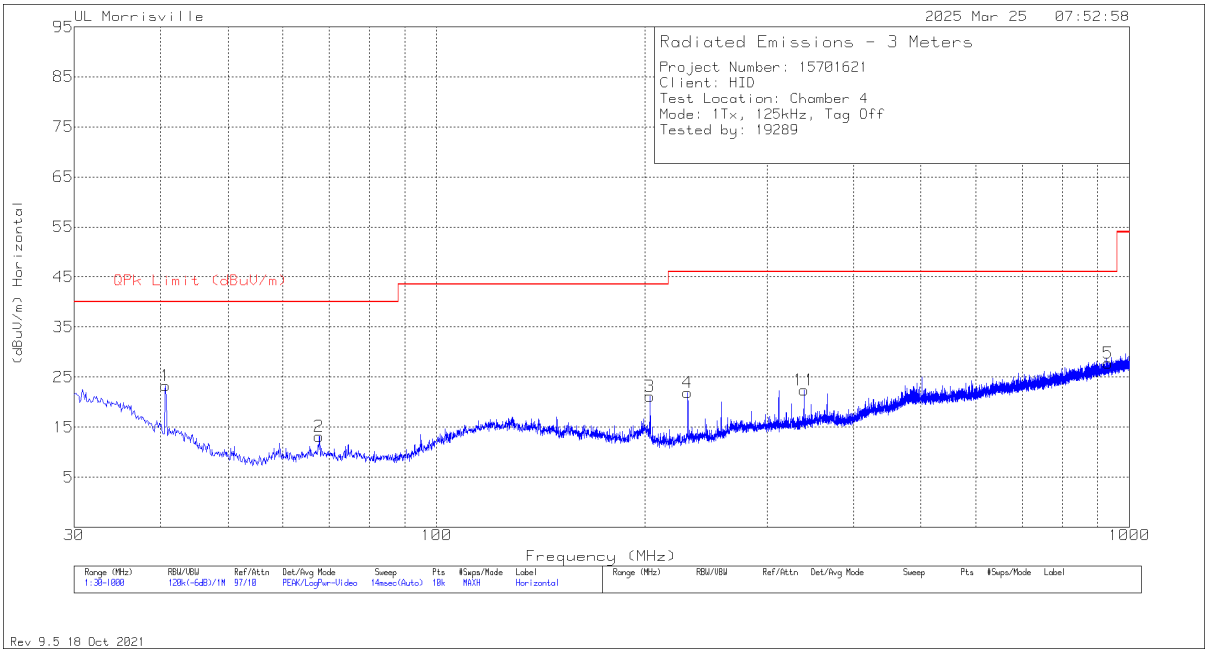
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90628 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.67	34.84	Pk	19.5	-32	22.34	40	-17.66	0-360	100	H
6	40.67767	48.78	Qp	19.5	-32	36.28	40	-3.72	174	105	V
7	57.354	40.82	Pk	13.6	-31.7	22.72	40	-17.28	0-360	100	V
8	67.733	41.49	Pk	14.3	-31.7	24.09	40	-15.91	0-360	100	V
9	135.536	37.51	Pk	19.6	-31.2	25.91	43.52	-17.61	0-360	100	V
10	149.116	38.71	Pk	18.7	-31	26.41	43.52	-17.11	0-360	100	V
2	203.339	37.07	Pk	17.6	-30.8	23.87	43.52	-19.65	0-360	100	H
11	203.339	43.24	Pk	17.6	-30.8	30.04	43.52	-13.48	0-360	100	V
3	230.499	36.06	Pk	17.1	-30.6	22.56	46.02	-23.46	0-360	100	H
12	230.499	41.64	Pk	17.1	-30.6	28.14	46.02	-17.88	0-360	100	V
13	311.882	37.92	Pk	19.9	-30.2	27.62	46.02	-18.4	0-360	100	V
14	339.042	37.78	Pk	20.1	-30.1	27.78	46.02	-18.24	0-360	100	V
4	447.488	34.55	Pk	22.8	-29.7	27.65	46.02	-18.37	0-360	100	H
5	912.409	27.3	Pk	28.4	-27.1	28.6	46.02	-17.42	0-360	100	H

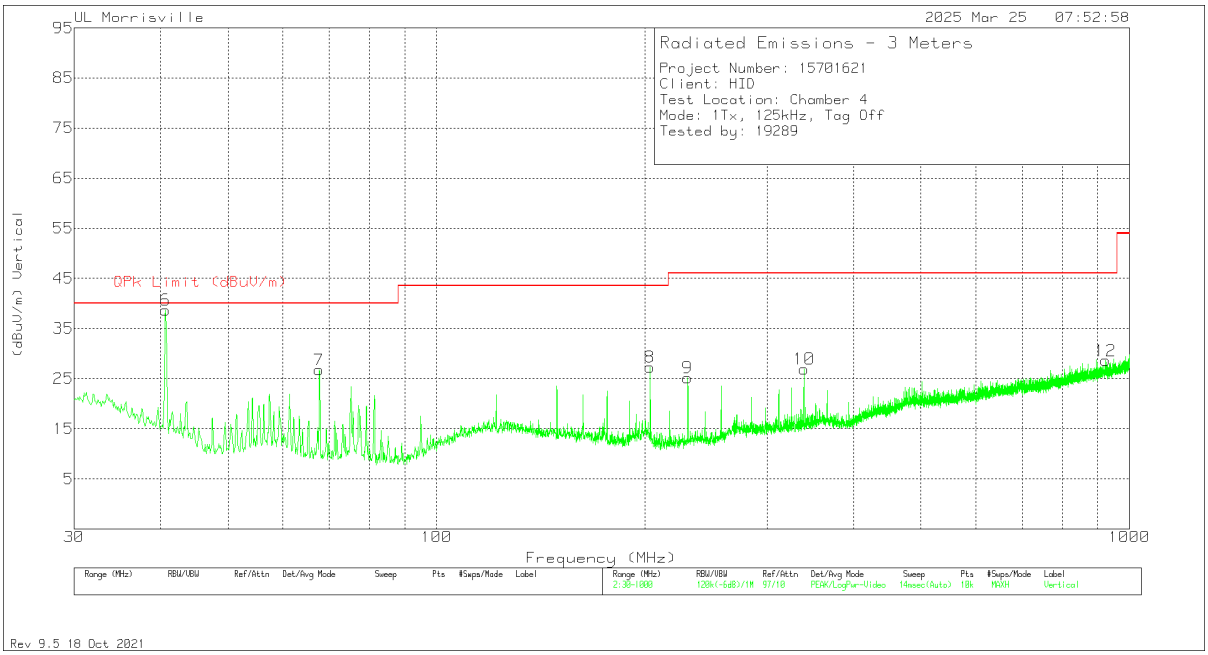
Pk - Peak detector
Qp - Quasi-Peak detector

9.3.2. TAG OFF

SPURIOUS EMISSION



HORIZONTAL



VERTICAL

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90628 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.67	35.79	Pk	19.5	-32	23.29	40	-16.71	0-360	300	H
6	40.69446	50.22	Qp	19.5	-32	37.72	40	-2.28	230	100	V
2	67.733	30.59	Pk	14.3	-31.7	13.19	40	-26.81	0-360	100	H
7	67.733	44.13	Pk	14.3	-31.7	26.73	40	-13.27	0-360	100	V
3	203.339	34.34	Pk	17.6	-30.8	21.14	43.52	-22.38	0-360	100	H
8	203.339	40.54	Pk	17.6	-30.8	27.34	43.52	-16.18	0-360	100	V
4	230.499	35.37	Pk	17.1	-30.6	21.87	46.02	-24.15	0-360	100	H
9	230.499	38.62	Pk	17.1	-30.6	25.12	46.02	-20.9	0-360	100	V
11	339.042	32.37	Pk	20.1	-30.1	22.37	46.02	-23.65	0-360	100	H
10	339.042	36.94	Pk	20.1	-30.1	26.94	46.02	-19.08	0-360	100	V
12	924.146	27.1	Pk	28.5	-27	28.6	46.02	-17.42	0-360	100	V
5	931.906	26.17	Pk	28.5	-26.9	27.77	46.02	-18.25	0-360	300	H

Pk - Peak detector
Qp - Quasi-Peak detector

10. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207
IC RSS-GEN, Section 8.8

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

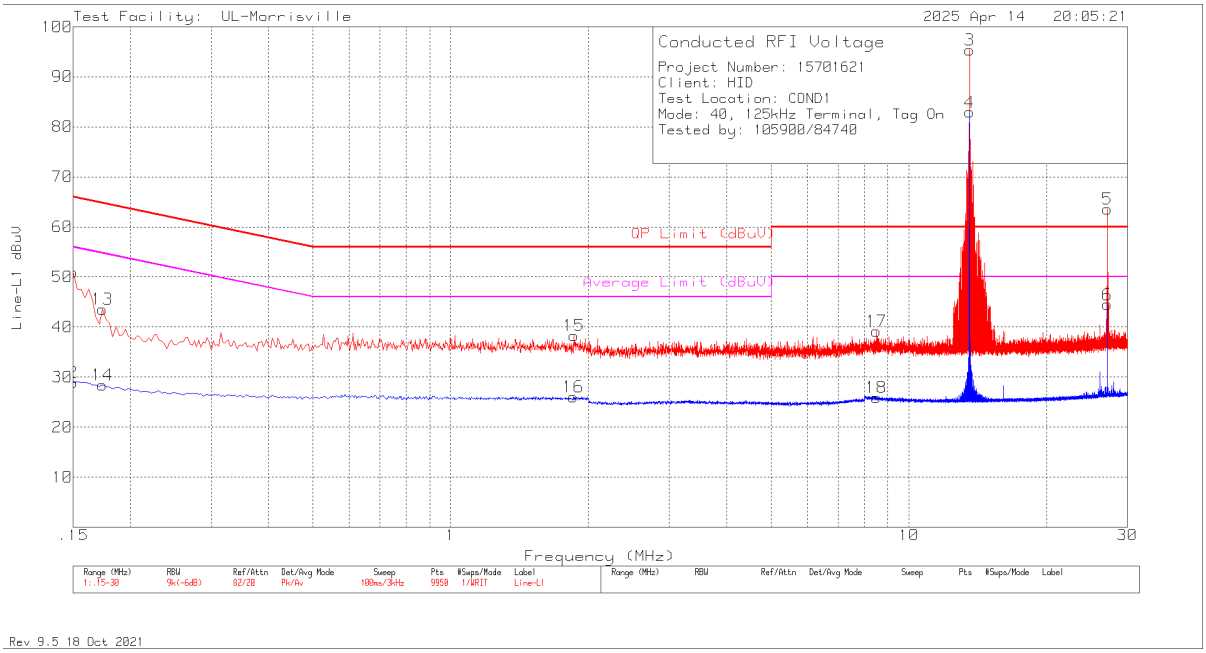
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

10.1. TAG ON

LINE 1 RESULTS

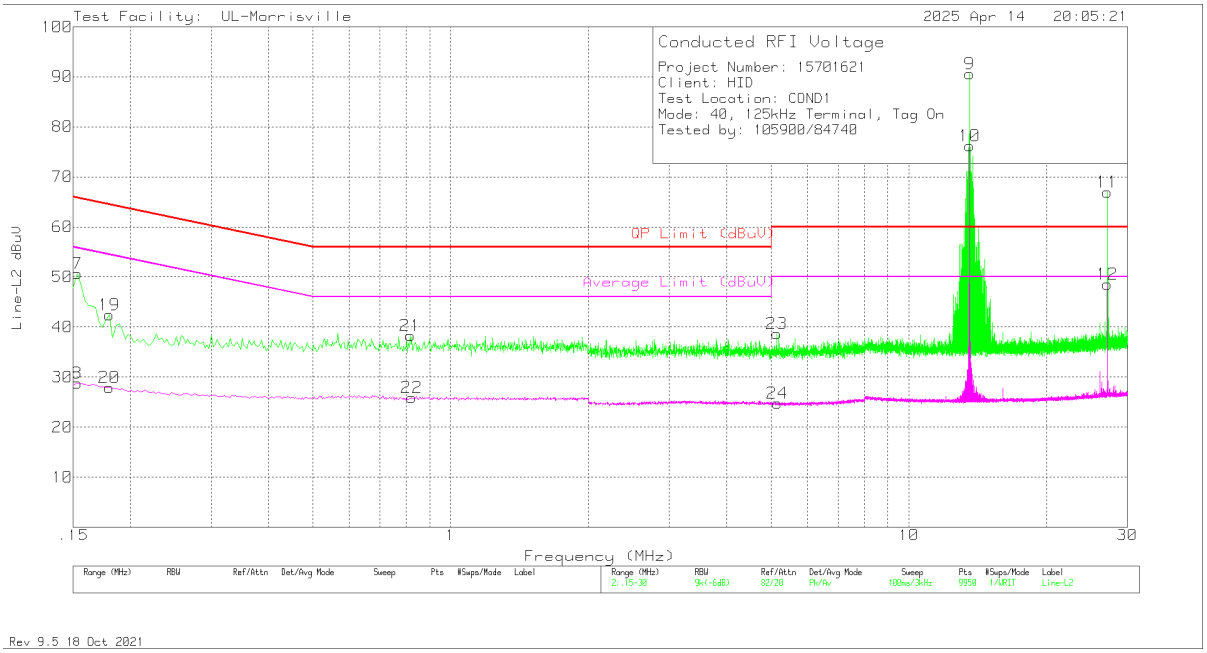


Emissions

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.15	30.6	Pk	.3	0	20	50.9	66	-15.1	-	-
2	.15	8.61	Av	.3	0	20	28.91	-	-	56	-27.09
13	.174	23.36	Pk	.2	0	20	43.56	64.77	-21.21	-	-
14	.174	8.16	Av	.2	0	20	28.36	-	-	54.77	-26.41
16	1.854	5.94	Av	0	.1	20	26.04	-	-	46	-19.96
15	1.86	18.24	Pk	0	.1	20	38.34	56	-17.66	-	-
18	8.502	5.57	Av	.1	.2	20	25.87	-	-	50	-24.13
17	8.505	18.89	Pk	.1	.2	20	39.19	60	-20.81	-	-
3	13.56052	69.8	Qp	.1	.3	20	90.2	**60**	**30.2**	-	-
4	13.56052	63.44	Ca	.1	.3	20	83.84	-	-	**50**	**33.84**
5	27.12082	37.91	Qp	.4	.4	20	58.71	60	-1.29	-	-
6	27.12082	27.45	Ca	.4	.4	20	48.25	-	-	50	-1.75

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 10.3.

LINE 2 RESULTS



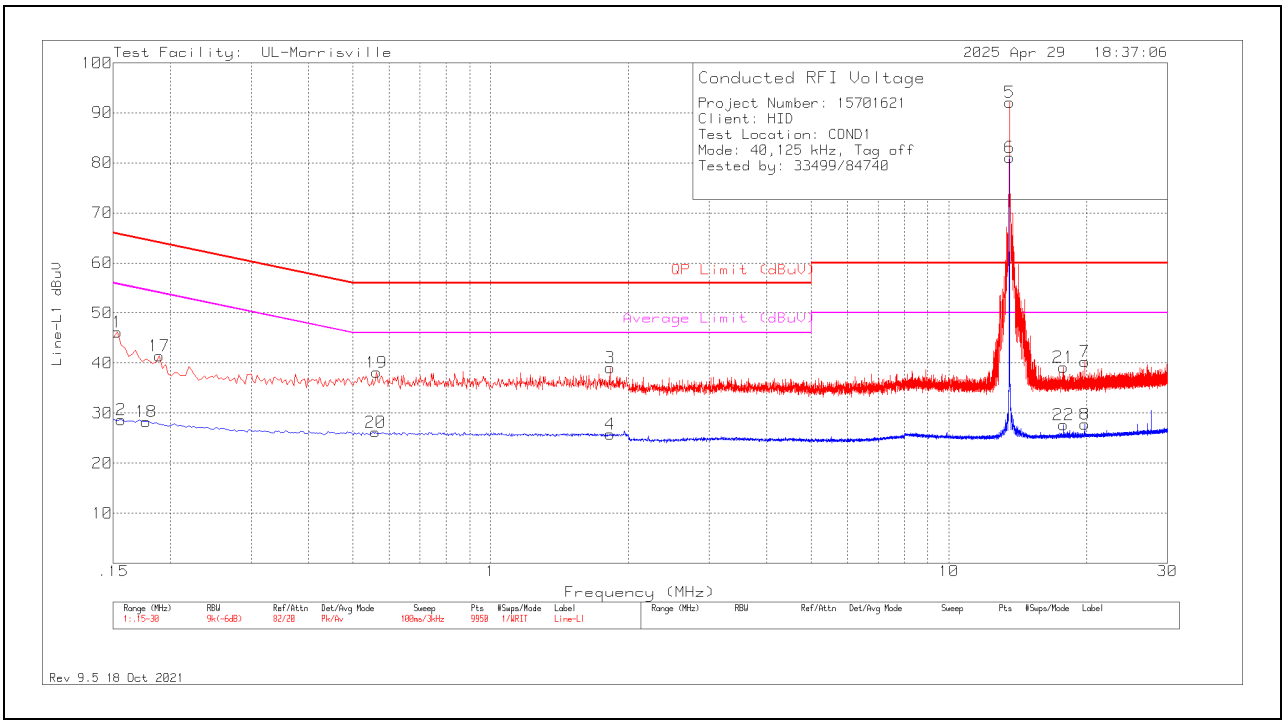
Emissions

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
7	.153	30.44	Pk	.2	0	20	50.64	65.84	-15.2	-	-
8	.153	8.6	Av	.2	0	20	28.8	-	-	55.84	-27.04
19	.18	22.24	Pk	.2	0	20	42.44	64.49	-22.05	-	-
20	.18	7.73	Av	.2	0	20	27.93	-	-	54.49	-26.56
21	.816	18.21	Pk	0	.1	20	38.31	56	-17.69	-	-
22	.822	5.82	Av	0	.1	20	25.92	-	-	46	-20.08
23	5.145	18.33	Pk	.1	.2	20	38.63	60	-21.37	-	-
24	5.166	4.51	Av	.1	.2	20	24.81	-	-	50	-25.19
9	13.56017	70.06	Qp	.1	.3	20	90.46	**60**	**30.46**	-	-
10	13.56017	64.77	Ca	.1	.3	20	85.17	-	-	**50**	**35.17**
11	27.12054	38.2	Qp	.4	.4	20	59	60	-1	-	-
12	27.12054	27.7	Ca	.4	.4	20	48.5	-	-	50	-1.5

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 10.3.

10.2. TAG OFF

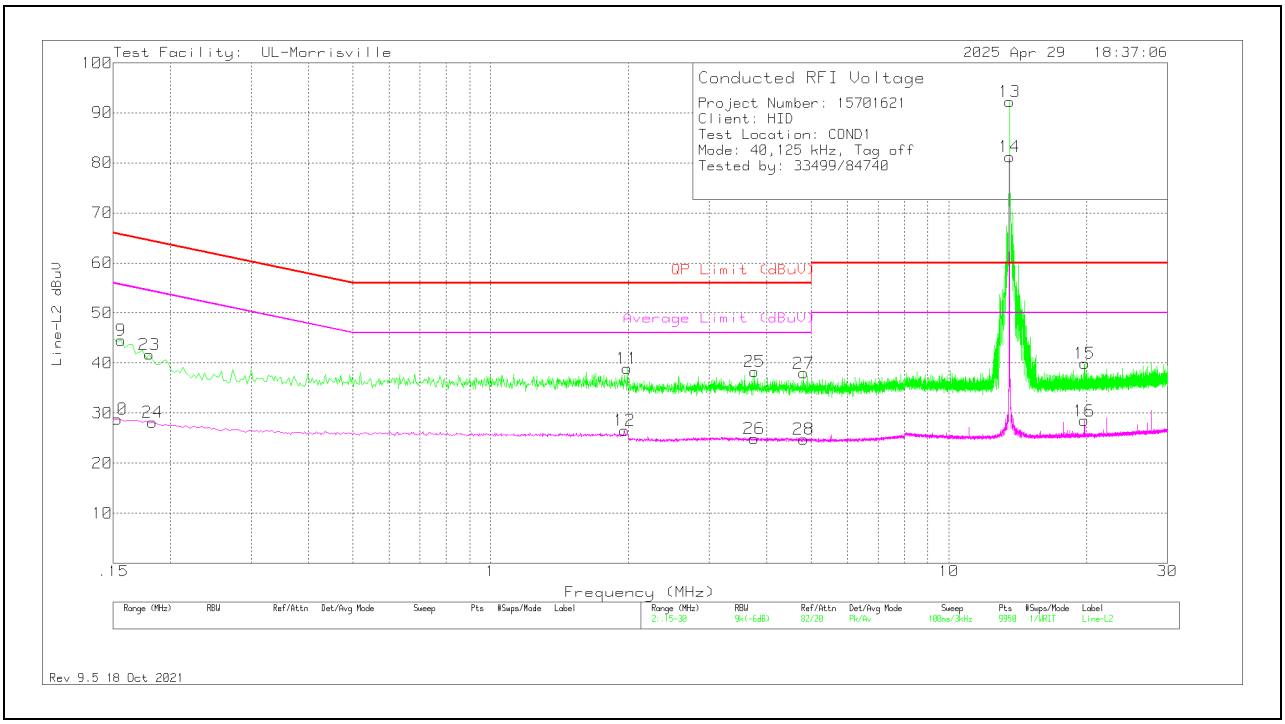
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.153	25.96	Pk	.2	0	20	46.16	65.84	-19.68	-	-
2	.156	8.47	Av	.2	0	20	28.67	-	-	55.67	-27
18	.177	8.13	Av	.2	0	20	28.33	-	-	54.63	-26.3
17	.189	21.26	Pk	.2	0	20	41.46	64.08	-22.62	-	-
20	.561	6.11	Av	0	.1	20	26.21	-	-	46	-19.79
19	.564	18.01	Pk	0	.1	20	38.11	56	-17.89	-	-
3	1.821	18.9	Pk	0	.1	20	39	56	-17	-	-
4	1.824	5.68	Av	0	.1	20	25.78	-	-	46	-20.22
5	13.5604	70.69	Qp	.1	.3	20	91.09	**60**	**31.09**	-	-
6	13.5604	61.52	Ca	.1	.3	20	81.92	-	-	**50**	**31.92**
21	17.802	18.66	Pk	.2	.3	20	39.16	60	-20.84	-	-
22	17.802	7.15	Av	.2	.3	20	27.65	-	-	50	-22.35
8	19.773	7.13	Av	.2	.4	20	27.73	-	-	50	-22.27
7	19.779	19.67	Pk	.2	.4	20	40.27	60	-19.73	-	-

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 10.3.

LINE 2 RESULTS

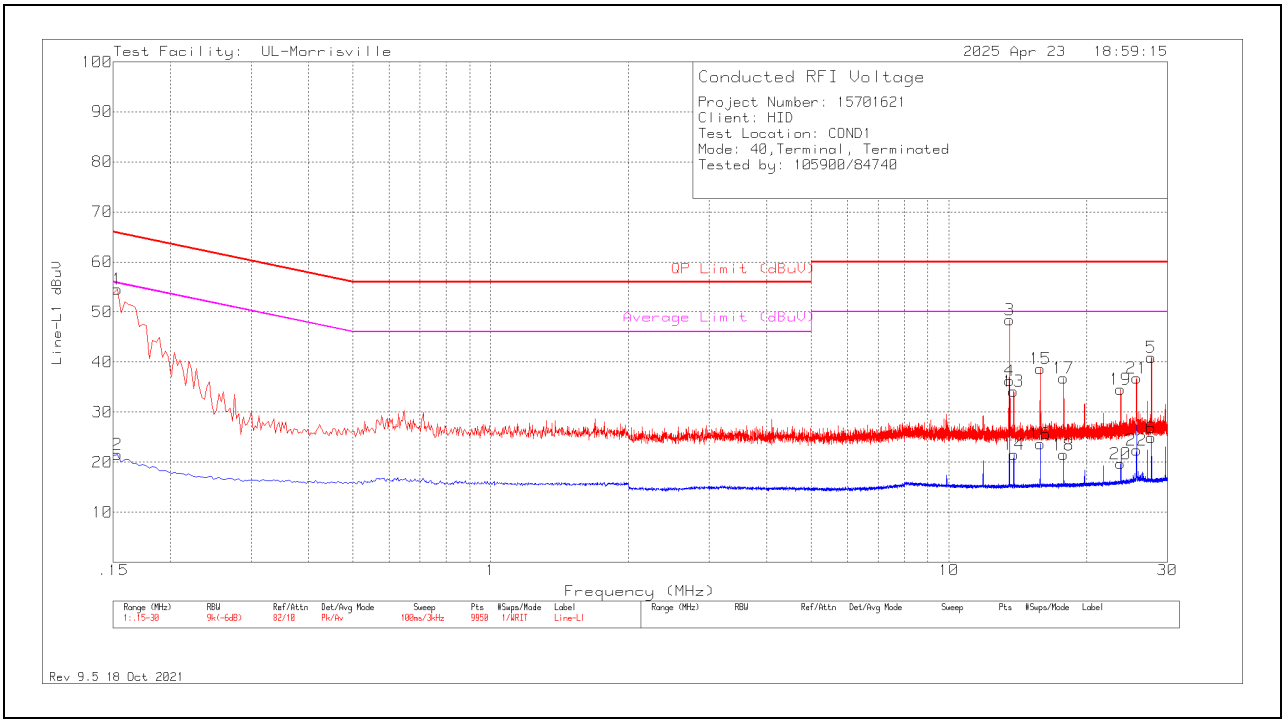


Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
9	.156	24.37	Pk	.2	0	20	44.57	65.67	-21.1	-	-
10	.153	8.54	Av	.2	0	20	28.74	-	-	55.84	-27.1
23	.18	21.53	Pk	.2	0	20	41.73	64.49	-22.76	-	-
24	.183	7.93	Av	.2	0	20	28.13	-	-	54.35	-26.22
12	1.959	6.46	Av	0	.1	20	26.56	-	-	46	-19.44
11	1.986	18.85	Pk	0	.1	20	38.95	56	-17.05	-	-
26	3.762	4.81	Av	0	.1	20	24.91	-	-	46	-21.09
25	3.765	18.18	Pk	0	.1	20	38.28	56	-17.72	-	-
27	4.815	17.68	Pk	.1	.2	20	37.98	56	-18.02	-	-
28	4.815	4.52	Av	.1	.2	20	24.82	-	-	46	-21.18
13	13.5603	70.63	Qp	.1	.3	20	91.03	**60**	**31.03**	-	-
14	13.5603	61.19	Ca	.1	.3	20	81.59	-	-	**50**	**31.59**
16	19.764	7.87	Av	.2	.4	20	28.47	-	-	50	-21.53
15	19.77	19.3	Pk	.2	.4	20	39.9	60	-20.1	-	-

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection
NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 10.3.

10.3. TERMINATED SAMPLE

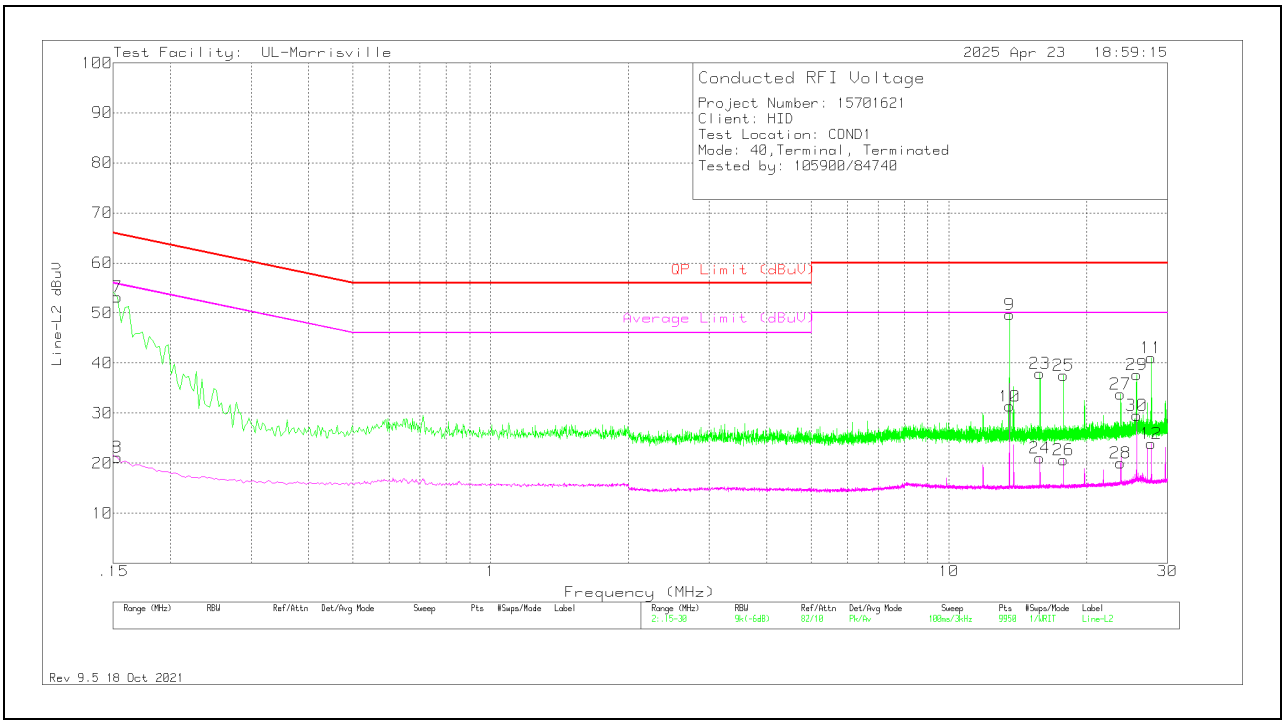
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.153	34.41	Pk	.2	0	20	54.61	65.84	-11.23	-	-
2	.153	1.3	Av	.2	0	20	21.5	-	-	55.84	-34.34
3	13.563	28.02	Pk	.1	.3	20	48.42	60	-11.58	-	-
4	13.563	15.84	Av	.1	.3	20	36.24	-	-	50	-13.76
13	13.851	13.74	Pk	.1	.3	20	34.14	60	-25.86	-	-
14	13.86	1.08	Av	.1	.3	20	21.48	-	-	50	-28.52
15	15.825	18.14	Pk	.2	.3	20	38.64	60	-21.36	-	-
16	15.825	3.13	Av	.2	.3	20	23.63	-	-	50	-26.37
17	17.802	16.31	Pk	.2	.3	20	36.81	60	-23.19	-	-
18	17.805	.96	Av	.2	.3	20	21.46	-	-	50	-28.54
20	23.715	-1	Av	.3	.4	20	19.7	-	-	50	-30.3
19	23.718	13.84	Pk	.3	.4	20	34.54	60	-25.46	-	-
22	25.671	1.55	Av	.4	.4	20	22.35	-	-	50	-27.65
21	25.686	16.02	Pk	.4	.4	20	36.82	60	-23.18	-	-
5	27.666	20.11	Pk	.4	.4	20	40.91	60	-19.09	-	-
6	27.672	4.05	Av	.4	.4	20	24.85	-	-	50	-25.15

Pk - Peak detector
Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
7	.153	32.98	Pk	.2	0	20	53.18	65.84	-12.66	-	-
8	.153	.97	Av	.2	0	20	21.17	-	-	55.84	-34.67
9	13.56	29.28	Pk	.1	.3	20	49.68	60	-10.32	-	-
10	13.56	10.95	Av	.1	.3	20	31.35	-	-	50	-18.65
23	15.807	17.45	Pk	.2	.3	20	37.95	60	-22.05	-	-
24	15.807	.52	Av	.2	.3	20	21.02	-	-	50	-28.98
25	17.775	17.08	Pk	.2	.3	20	37.58	60	-22.42	-	-
26	17.775	.15	Av	.2	.3	20	20.65	-	-	50	-29.35
27	23.679	13.09	Pk	.3	.4	20	33.79	60	-26.21	-	-
28	23.682	-.7	Av	.3	.4	20	20	-	-	50	-30
30	25.707	8.7	Av	.4	.4	20	29.5	-	-	50	-20.5
29	25.716	16.84	Pk	.4	.4	20	37.64	60	-22.36	-	-
11	27.654	20.3	Pk	.4	.4	20	41.1	60	-18.9	-	-
12	27.654	3.09	Av	.4	.4	20	23.89	-	-	50	-26.11

Pk - Peak detector
Av - Average detection

11. SETUP PHOTOS

Please refer to R15701621-EP6c for setup photos.

END OF TEST REPORT