

TEST REPORT

Report Number: R15701621-E9d

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

Model : 40KV2

FCC ID : JQ6-SIGNO40KV2

IC : 2236B-SIGNO40KV2

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:
2025-07-01

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-06-12	Initial Issue	Chandler Stanley
V2	2025-07-01	Revised Worst-Case Declaration Statement	Chandler Stanley

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ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Signo V2 Reader

MODEL: 40KV2

SERIAL NUMBER: FL0P0U013XWO40KTKF8087 / FL0P0U013NWO40KTKF8087

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

DATE TESTED: 2025-03-18 TO 2025-04-23

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:

Prepared By:



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



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

1. 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

2. 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		

3. 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

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. 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.

4.2. 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.)

4.3. 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%.

4.4. 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

5. EQUIPMENT UNDER TEST

5.1. 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.

5.2. 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	-0.74

5.3. SOFTWARE AND FIRMWARE

Firmware Version: 10.1
Hardware Version: Rev H

5.4. 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.

5.5. 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-EP6d for setup diagrams

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was 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.
Common Equipment					
Conducted Room 1					
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2024-08-01	2025-08-01
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
207726	Temp/Humid Chamber	Thermotron	SM-32-8200	2025-01-15	2026-01-15
91212	True RMS Multimeter	Agilent	U1232A	2024-08-01	2025-08-01
NA	DC Power Supply	Keysight Technologies	E3633A	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23	NA	NA
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 testing.

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)		

7. 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.

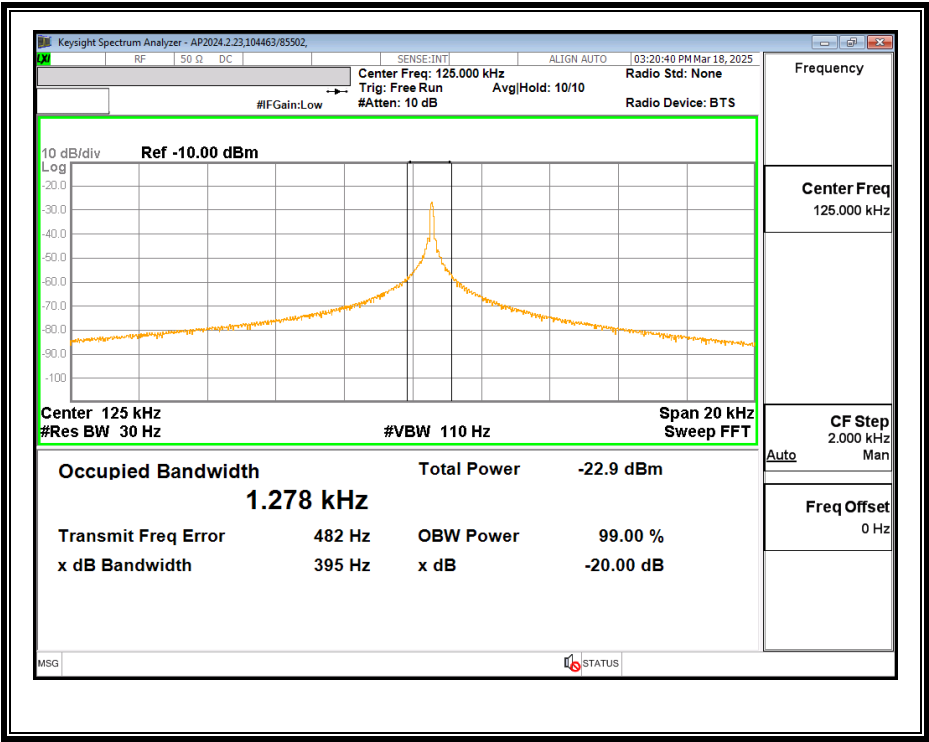
RESULTS

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.

7.2. TAG OFF

RESULTS

Frequency (MHz)	20dB Bandwidth (Hz)	99% Bandwidth (kHz)
0.125	395.000	1.278



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

8. RADIATED EMISSION TEST RESULTS

8.1. 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.

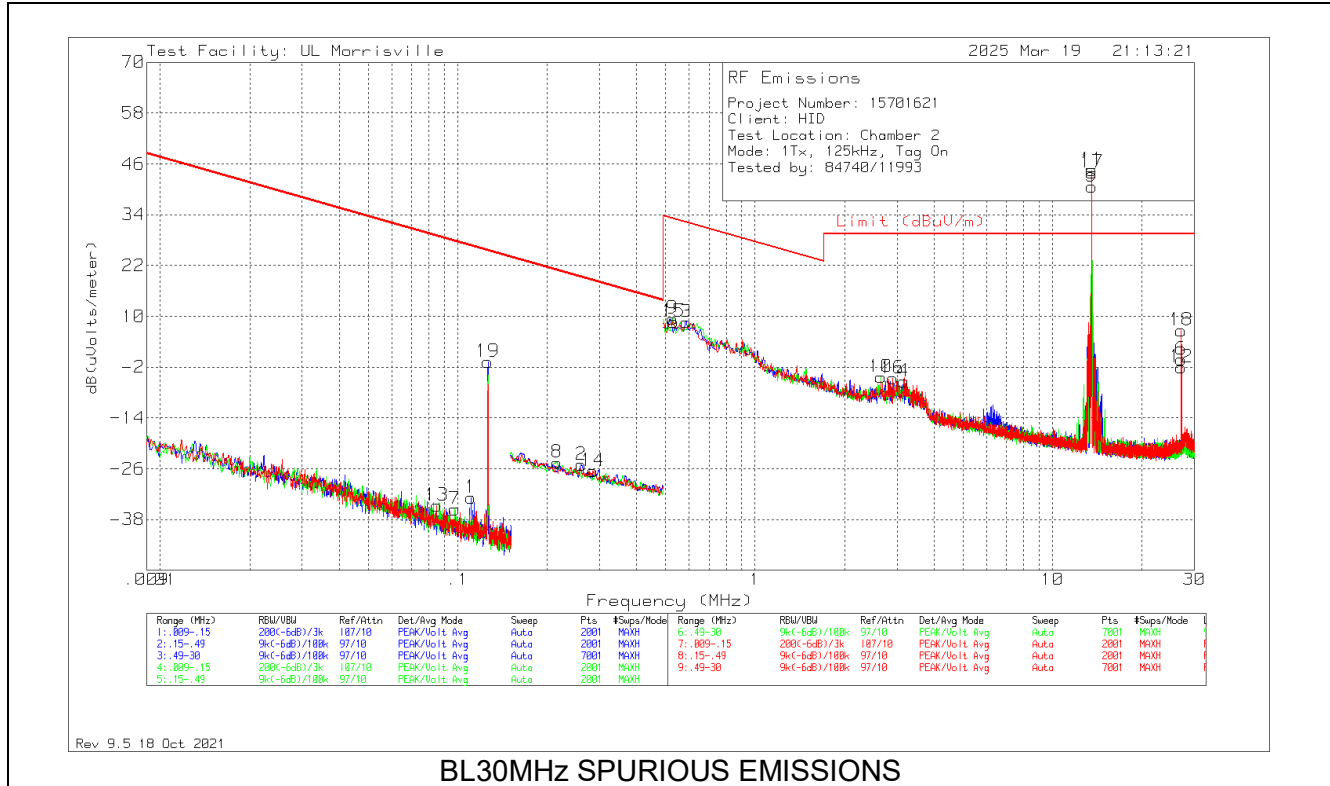
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

8.2. 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 $40 \cdot \log(\text{test distance} / \text{specification distance})$.

8.2.1. TAG ON

SPURIOUS EMISSION – E FIELD



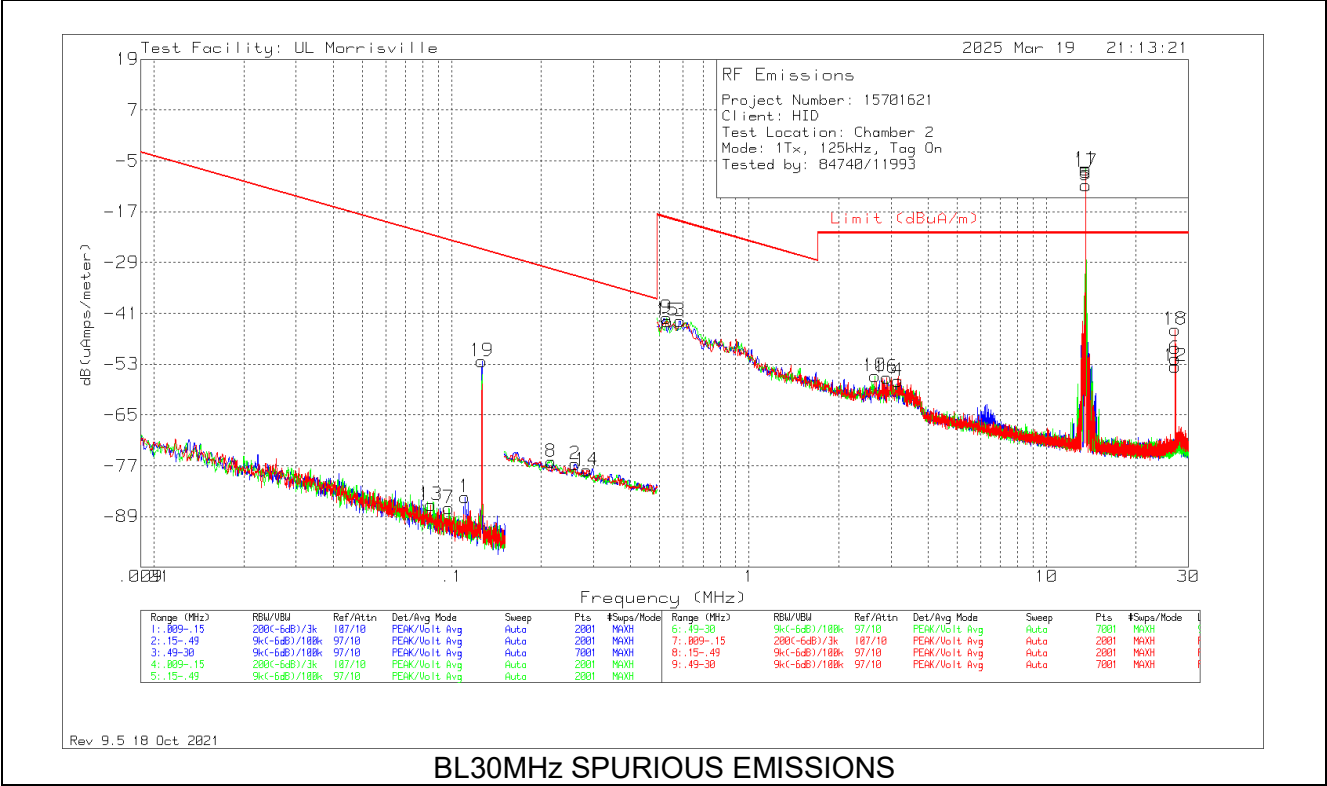
BL30MHz SPURIOUS EMISSIONS

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	.08511	33.98	Pk	11.2	.1	-80	-34.72	29	49	-63.72	0-360	Flat
7	.09789	33.27	Pk	11.1	.1	-80	-35.53	27.79	-	-63.32	0-360	90 degs
1	.11081	35.93	Pk	11.1	.1	-80	-32.87	26.71	46.71	-59.58	0-360	0 degs
19	.12636	68.16	Pk	11	.1	-80	-.74	25.57	45.57	-26.31	0-360	0 degs
8	.21613	44.46	Pk	10.9	.1	-80	-24.54	20.91	40.91	-45.45	0-360	90 degs
2	.26042	43.91	Pk	10.9	.1	-80	-25.09	19.29	39.29	-44.38	0-360	0 degs
14	.28524	42.44	Pk	10.9	.1	-80	-26.56	18.5	38.5	-45.06	0-360	Flat
9	.52794	38.31	Pk	11	.1	-40	9.41	33.15	-	-23.74	0-360	90 degs
15	.53216	37.66	Pk	11	.1	-40	8.76	33.08	-	-24.32	0-360	Flat
3	.58697	37.56	Pk	11	.1	-40	8.66	32.23	-	-23.57	0-360	0 degs
10	2.64859	24.36	Pk	11.1	.2	-40	-4.34	29.54	-	-33.88	0-360	90 degs
16	2.90155	24.03	Pk	11.1	.2	-40	-4.67	29.54	-	-34.21	0-360	Flat
4	3.16294	23.21	Pk	11.1	.3	-40	-5.39	29.54	-	-34.93	0-360	0 degs
5	13.5596	70.33	Pk	9.8	.6	-40	-	-	-	-	0-360	0 degs
11	13.5596	74.18	Pk	9.8	.6	-40	-	-	-	-	0-360	90 degs
17	13.5596	73.53	Pk	9.8	.6	-40	-	-	-	-	0-360	Flat
6	27.12247	31.28	Pk	7.7	.8	-40	-.22	29.54	-	-29.76	0-360	0 degs
12	27.12247	29.5	Pk	7.7	.8	-40	-2	29.54	-	-31.54	0-360	90 degs
18	27.12247	38.14	Pk	7.7	.8	-40	6.64	29.54	-	-22.9	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



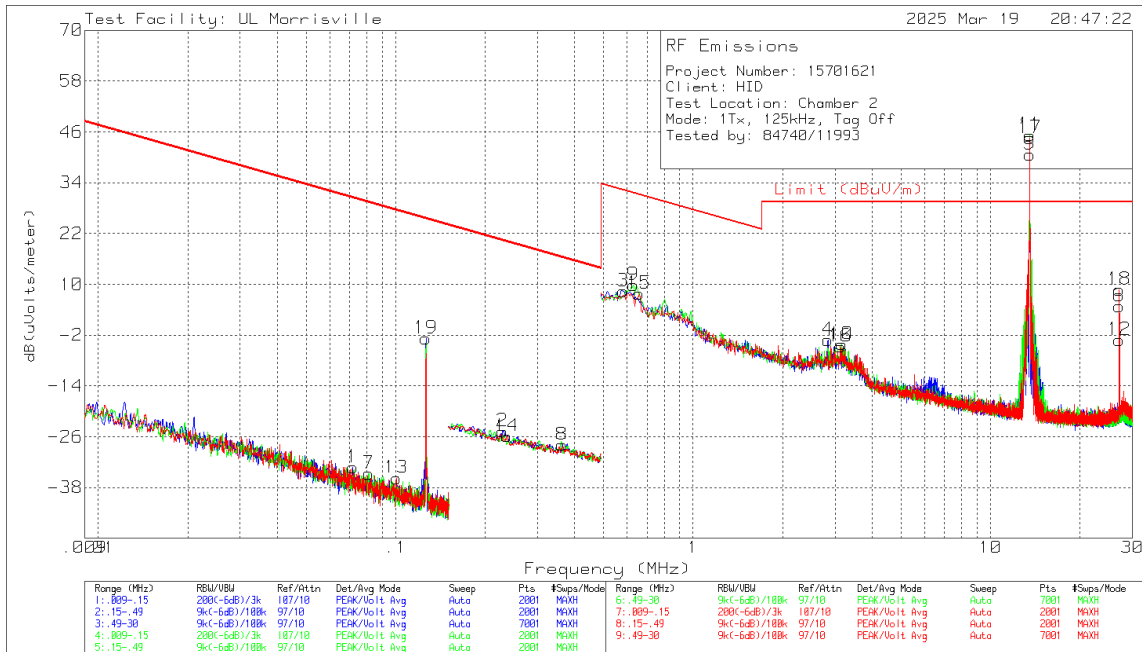
BL30MHz SPURIOUS EMISSIONS

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	.08511	33.98	Pk	-40.3	.1	-80	-86.22	-22.5	-2.5	-63.72	0-360	Flat
7	.09789	33.27	Pk	-40.4	.1	-80	-87.03	-23.71	-	-63.32	0-360	90 degs
1	.11081	35.93	Pk	-40.4	.1	-80	-84.37	-24.79	-4.79	-59.58	0-360	0 degs
19	.12636	68.16	Pk	-40.5	.1	-80	-52.24	-25.93	-5.93	-26.31	0-360	0 degs
8	.21613	44.46	Pk	-40.6	.1	-80	-76.04	-30.59	-10.59	-45.45	0-360	90 degs
2	.26042	43.91	Pk	-40.6	.1	-80	-76.59	-32.21	-12.21	-44.38	0-360	0 degs
14	.28524	42.44	Pk	-40.6	.1	-80	-78.06	-33	-13	-45.06	0-360	Flat
9	.52794	38.31	Pk	-40.5	.1	-40	-42.09	-18.35	-	-23.74	0-360	90 degs
15	.53216	37.66	Pk	-40.5	.1	-40	-42.74	-18.42	-	-24.32	0-360	Flat
3	.58697	37.56	Pk	-40.5	.1	-40	-42.84	-19.27	-	-23.57	0-360	0 degs
10	2.64859	24.36	Pk	-40.4	.2	-40	-55.84	-21.96	-	-33.88	0-360	90 degs
16	2.90155	24.03	Pk	-40.4	.2	-40	-56.17	-21.96	-	-34.21	0-360	Flat
4	3.16294	23.21	Pk	-40.4	.3	-40	-56.89	-21.96	-	-34.93	0-360	0 degs
5	13.5596	70.33	Pk	-41.7	.6	-40	-	-	-	-	0-360	0 degs
11	13.5596	74.18	Pk	-41.7	.6	-40	-	-	-	-	0-360	90 degs
17	13.5596	73.53	Pk	-41.7	.6	-40	-	-	-	-	0-360	Flat
6	27.12247	31.28	Pk	-43.8	.8	-40	-51.72	-21.96	-	-29.76	0-360	0 degs
12	27.12247	29.5	Pk	-43.8	.8	-40	-53.5	-21.96	-	-31.54	0-360	90 degs
18	27.12247	38.14	Pk	-43.8	.8	-40	-44.86	-21.96	-	-22.9	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.

8.2.2. TAG OFF

SPURIOUS EMISSION – E FIELD



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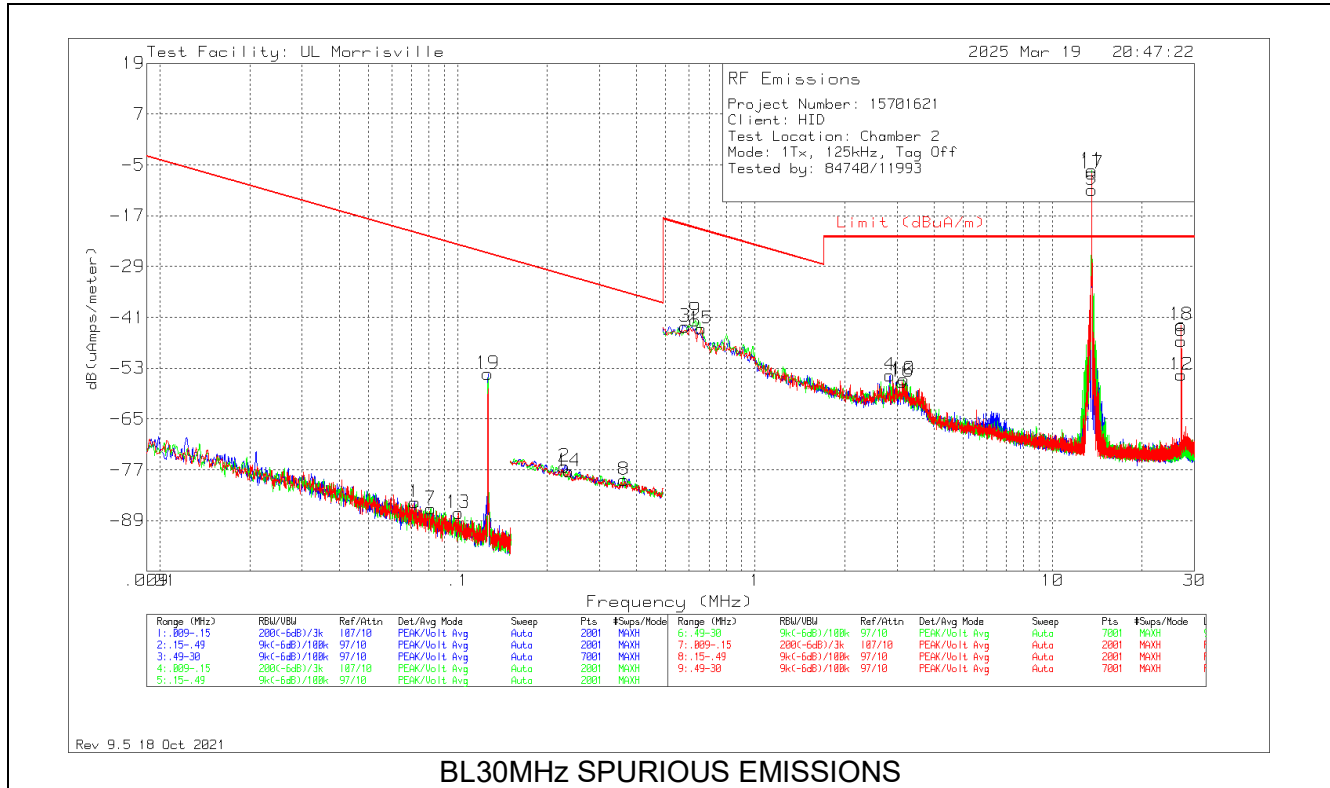
BL30MHz SPURIOUS EMISSIONS

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 hey Angle
1	.07176	35.54	Pk	11.2	.1	-80	-33.16	30.49	50.49	-63.65	0-360	0 degs
7	.08121	34.06	Pk	11.2	.1	-80	-34.64	29.41	49.41	-64.05	0-360	90 degs
13	.10059	33.08	Pk	11.1	.1	-80	-35.72	27.55	-	-63.27	0-360	Flat
19	.12636	66.13	Pk	11	.1	-80	-2.77	25.57	45.57	-28.34	0-360	0 degs
2	.22871	44.26	Pk	10.9	.1	-80	-24.74	20.42	40.42	-45.16	0-360	0 degs
14	.2367	43.14	Pk	10.9	.1	-80	-25.86	20.12	40.12	-45.98	0-360	Flat
8	.36284	41.09	Pk	10.9	.1	-80	-27.91	16.41	36.41	-44.32	0-360	90 degs
3	.58275	37.25	Pk	11	.1	-40	8.35	32.29	-	-23.94	0-360	0 degs
9	.62913	38.76	Pk	11	.1	-40	9.86	31.63	-	-21.77	0-360	90 degs
15	.65864	36.75	Pk	11	.1	-40	7.85	31.23	-	-23.38	0-360	Flat
4	2.84253	25.58	Pk	11.1	.2	-40	-3.12	29.54	-	-32.66	0-360	0 degs
16	3.12922	23.91	Pk	11.1	.3	-40	-4.69	29.54	-	-34.23	0-360	Flat
10	3.15873	24.45	Pk	11.1	.3	-40	-4.15	29.54	-	-33.69	0-360	90 degs
5	13.5596	70.23	Pk	9.8	.6	-40	-	-	-	-	0-360	0 degs
11	13.5596	74.83	Pk	9.8	.6	-40	-	-	-	-	0-360	90 degs
17	13.5596	74.14	Pk	9.8	.6	-40	-	-	-	-	0-360	Flat
6	27.12247	36.41	Pk	7.7	.8	-40	4.91	29.54	-	-24.63	0-360	0 degs
12	27.12247	28.41	Pk	7.7	.8	-40	-3.09	29.54	-	-32.63	0-360	90 degs
18	27.12247	40.24	Pk	7.7	.8	-40	8.74	29.54	-	-20.8	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



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
1	.07176	35.54	Pk	-40.3	.1	-80	-84.66	-21.01	-1.01	-63.65	0-360	0 degs
7	.08121	34.06	Pk	-40.3	.1	-80	-86.14	-22.09	-2.09	-64.05	0-360	90 degs
13	.10059	33.08	Pk	-40.4	.1	-80	-87.22	-23.95	-	-63.27	0-360	Flat
19	.12636	66.13	Pk	-40.5	.1	-80	-54.27	-25.93	-5.93	-28.34	0-360	0 degs
2	.22871	44.26	Pk	-40.6	.1	-80	-76.24	-31.08	-11.08	-45.16	0-360	0 degs
14	.2367	43.14	Pk	-40.6	.1	-80	-77.36	-31.38	-11.38	-45.98	0-360	Flat
8	.36284	41.09	Pk	-40.6	.1	-80	-79.41	-35.09	-15.09	-44.32	0-360	90 degs
3	.58275	37.25	Pk	-40.5	.1	-40	-43.15	-19.21	-	-23.94	0-360	0 degs
9	.62913	38.76	Pk	-40.5	.1	-40	-41.64	-19.87	-	-21.77	0-360	90 degs
15	.65864	36.75	Pk	-40.5	.1	-40	-43.65	-20.27	-	-23.38	0-360	Flat
4	2.84253	25.58	Pk	-40.4	.2	-40	-54.62	-21.96	-	-32.66	0-360	0 degs
16	3.12922	23.91	Pk	-40.4	.3	-40	-56.19	-21.96	-	-34.23	0-360	Flat
10	3.15873	24.45	Pk	-40.4	.3	-40	-55.65	-21.96	-	-33.69	0-360	90 degs
5	13.5596	70.23	Pk	-41.7	.6	-40	-	-	-	-	0-360	0 degs
11	13.5596	74.83	Pk	-41.7	.6	-40	-	-	-	-	0-360	90 degs
17	13.5596	74.14	Pk	-41.7	.6	-40	-	-	-	-	0-360	Flat
6	27.12247	36.41	Pk	-43.8	.8	-40	-46.59	-21.96	-	-24.63	0-360	0 degs
12	27.12247	28.41	Pk	-43.8	.8	-40	-54.59	-21.96	-	-32.63	0-360	90 degs
18	27.12247	40.24	Pk	-43.8	.8	-40	-42.76	-21.96	-	-20.8	0-360	Flat

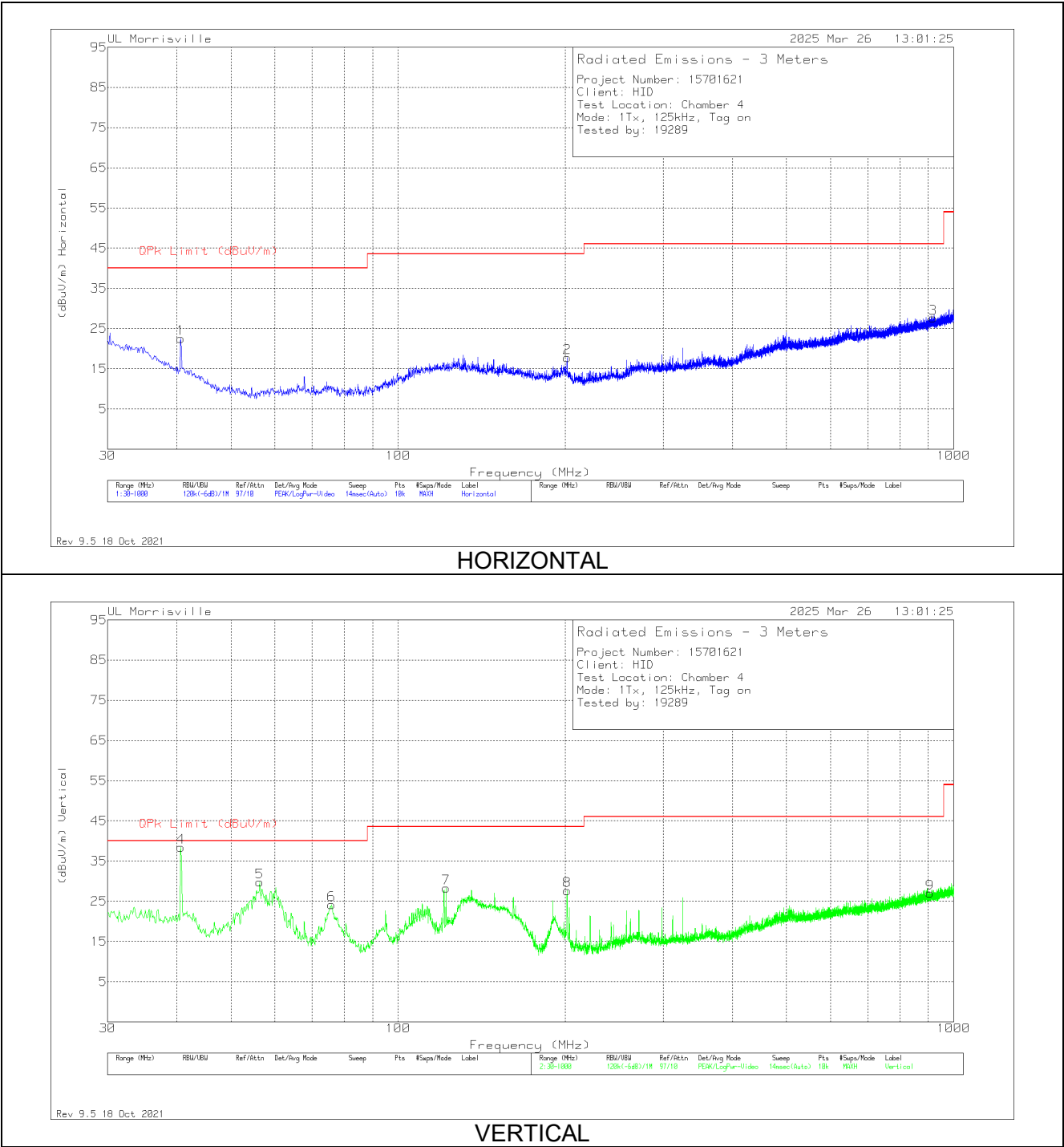
Pk - Peak detector

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

8.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

8.3.1. TAG ON

SPURIOUS EMISSION



DATA

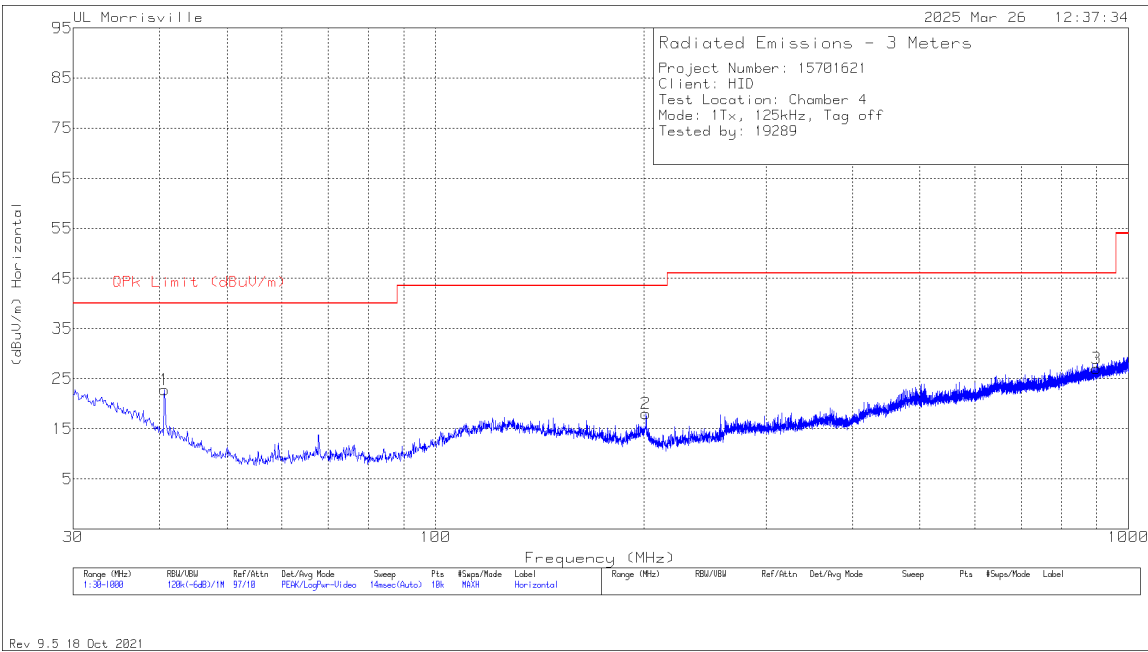
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90628 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.67	35.05	Pk	19.5	-32	22.55	40	-17.45	0-360	100	H
4	40.67959	48.78	Qp	19.5	-32	36.28	40	-3.72	183	103	V
5	56.384	48.16	Pk	13.5	-31.9	29.76	40	-10.24	0-360	100	V
6	75.881	41.63	Pk	14.1	-31.6	24.13	40	-15.87	0-360	100	V
7	122.053	39.38	Pk	20.1	-31.2	28.28	43.52	-15.24	0-360	100	V
8	201.399	39.94	Pk	18.5	-30.8	27.64	43.52	-15.88	0-360	100	V
2	201.496	30.11	Pk	18.5	-30.8	17.81	43.52	-25.71	0-360	100	H
9	907.268	25.88	Pk	28.3	-27.2	26.98	46.02	-19.04	0-360	200	V
3	917.744	26.3	Pk	28.4	-27.1	27.6	46.02	-18.42	0-360	100	H

Pk - Peak detector

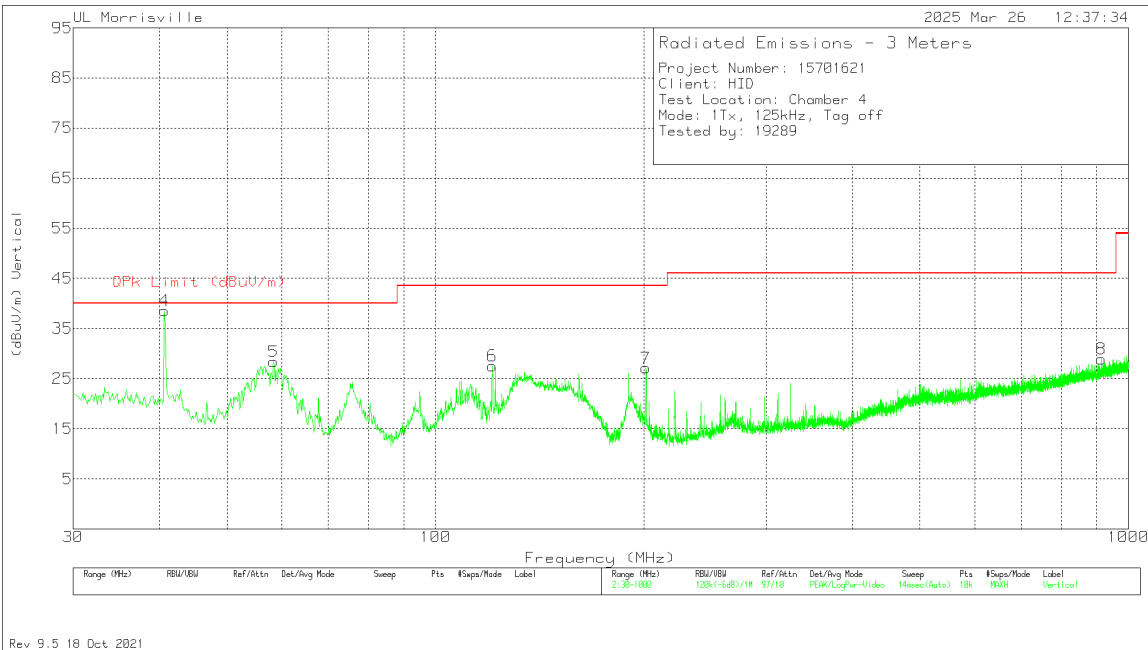
Qp - Quasi-Peak detector

8.3.2. 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	35.31	Pk	19.5	-32	22.81	40	-17.19	0-360	100	H
4	40.68822	49.53	Qp	19.5	-32	37.03	40	-2.97	201	125	V
5	58.421	46.46	Pk	13.7	-31.8	28.36	40	-11.64	0-360	100	V
6	120.695	38.67	Pk	20	-31.1	27.57	43.52	-15.95	0-360	100	V
7	201.205	39.3	Pk	18.6	-30.8	27.1	43.52	-16.42	0-360	100	V
2	201.302	30.2	Pk	18.6	-30.8	18	43.52	-25.52	0-360	100	H
3	899.12	26.18	Pk	28.1	-27.2	27.08	46.02	-18.94	0-360	200	H
8	914.446	27.6	Pk	28.4	-27.1	28.9	46.02	-17.12	0-360	100	V

Pk - Peak detector

Qp - Quasi-Peak detector

9. 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 50 μ H/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 (dB μ V)	
	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.

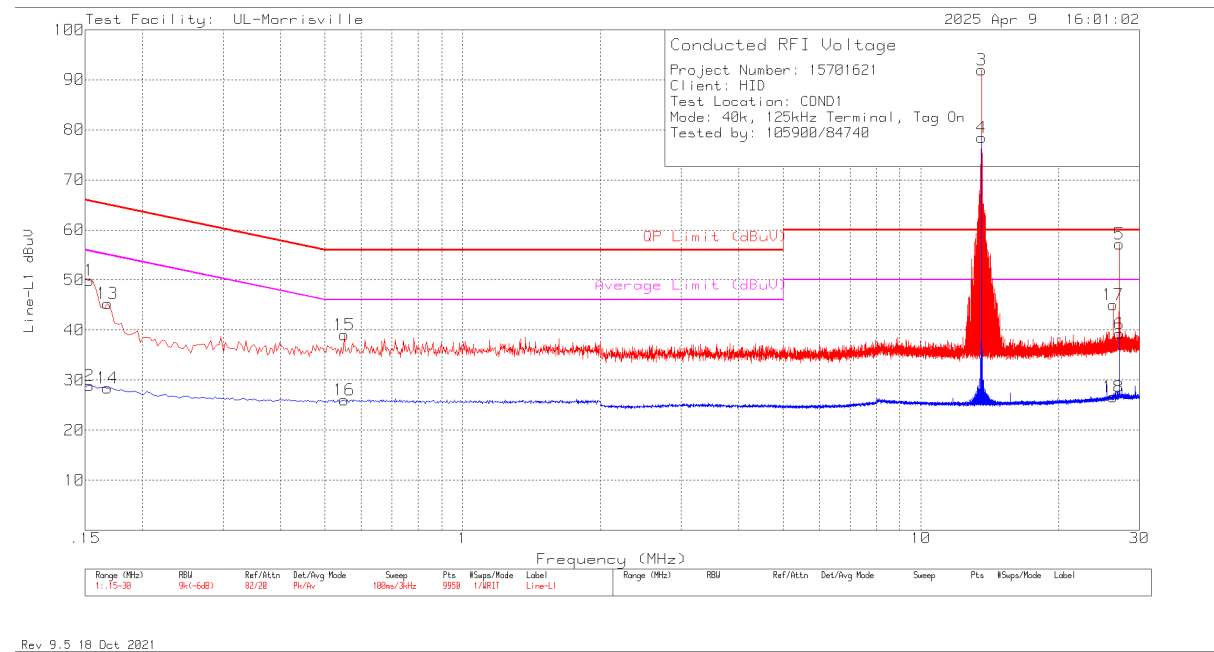
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

9.1. AC POWER LINE TAG ON (RADIATED SAMPLE)

LINE 1 RESULTS

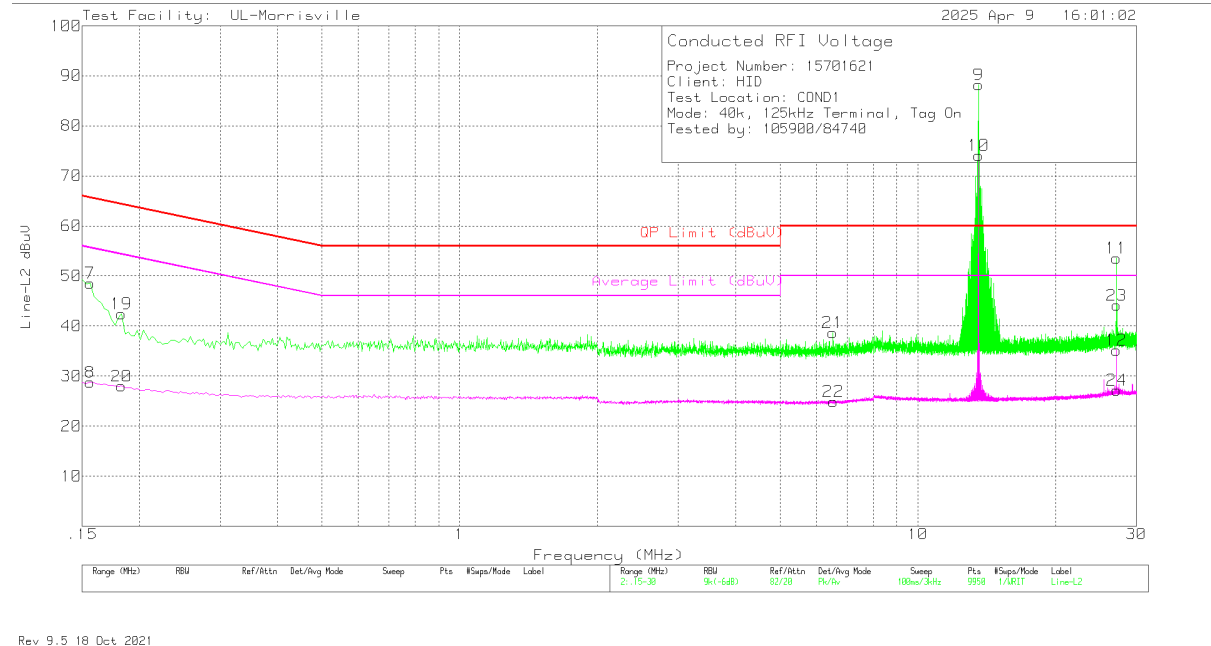


Emissions

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	.153	29.73	Pk	.2	0	20	49.93	65.84	-15.91	-	-
2	.153	8.67	Av	.2	0	20	28.87	-	-	55.84	-26.97
13	.168	25.13	Pk	.2	0	20	45.33	65.06	-19.73	-	-
14	.168	8.24	Av	.2	0	20	28.44	-	-	55.06	-26.62
15	.552	18.93	Pk	0	.1	20	39.03	56	-16.97	-	-
16	.552	5.95	Av	0	.1	20	26.05	-	-	46	-19.95
3	13.56049	70.22	Qp	.1	.3	20	90.62	60	30.62	-	-
4	13.56049	62.24	Ca	.1	.3	20	82.64	-	-	50	32.64
18	26.268	5.83	Av	.4	.4	20	26.63	-	-	50	-23.37
17	26.274	24.26	Pk	.4	.4	20	45.06	60	-14.94	-	-
5	27.12139	31.73	Qp	.4	.4	20	52.53	60	-7.47	-	-
6	27.117	18.44	Av	.4	.4	20	39.24	-	-	50	-10.76

Pk - Peak detector
Qp - Quasi-Peak detector
Av - Average detection
Ca - CISPR average detection
NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 9.3.

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	.156	28.39	Pk	.2	0	20	48.59	65.67	-17.08	-	-
8	.156	8.53	Av	.2	0	20	28.73	-	-	55.67	-26.94
19	.183	22.19	Pk	.2	0	20	42.39	64.35	-21.96	-	-
20	.183	7.77	Av	.2	0	20	27.97	-	-	54.35	-26.38
21	6.516	18.39	Pk	.1	.2	20	38.69	60	-21.31	-	-
22	6.537	4.64	Av	.1	.2	20	24.94	-	-	50	-25.06
9	13.55999	68.34	Qp	.1	.3	20	88.74	60	28.74	-	-
10	13.55999	62.39	Ca	.1	.3	20	82.79	-	-	50	32.79
11	27.11948	33.38	Qp	.4	.4	20	54.18	60	-5.82	-	-
12	27.126	14.35	Av	.4	.4	20	35.15	-	-	50	-14.85
23	27.165	23.32	Pk	.4	.4	20	44.12	60	-15.88	-	-
24	27.165	6.4	Av	.4	.4	20	27.2	-	-	50	-22.8

Pk - Peak detector

Qp - Quasi-Peak detector

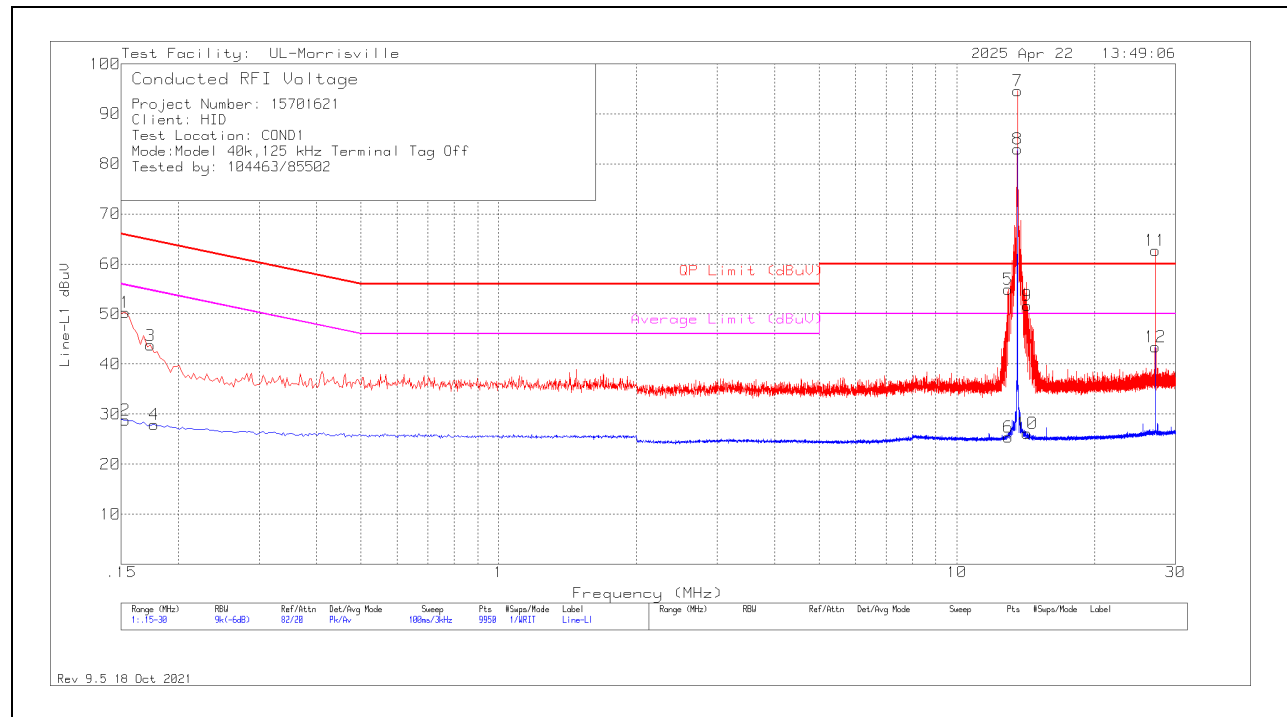
Av - Average detection

Ca - CISPR average detection

NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 9.3.

9.2. AC POWER LINE TAG OFF (RADIATED 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	30.16	Pk	.2	0	20	50.36	65.84	-15.48	-	-
2	.153	8.6	Av	.2	0	20	28.8	-	-	55.84	-27.04
3	.174	23.54	Pk	.2	0	20	43.74	64.77	-21.03	-	-
4	.177	7.66	Av	.2	0	20	27.86	-	-	54.63	-26.77
5	12.9251	17.59	Qp	.1	.3	20	37.99	60	-22.01	-	-
6	12.93	5.05	Av	.1	.3	20	25.45	-	-	50	-24.55
7	13.5607	72.31	Qp	.1	.3	20	92.71	60	32.71	-	-
8	13.5607	61.31	Ca	.1	.3	20	81.71	-	-	50	31.71
10	14.2455	5.71	Av	.1	.3	20	26.11	-	-	50	-23.89
9	14.25	31.24	Pk	.1	.3	20	51.64	60	-8.36	-	-
11	27.1194	36.72	Qp	.4	.4	20	57.52	60	-2.48	-	-
12	27.12	22.65	Av	.4	.4	20	43.45	-	-	50	-6.55

Pk - Peak detector

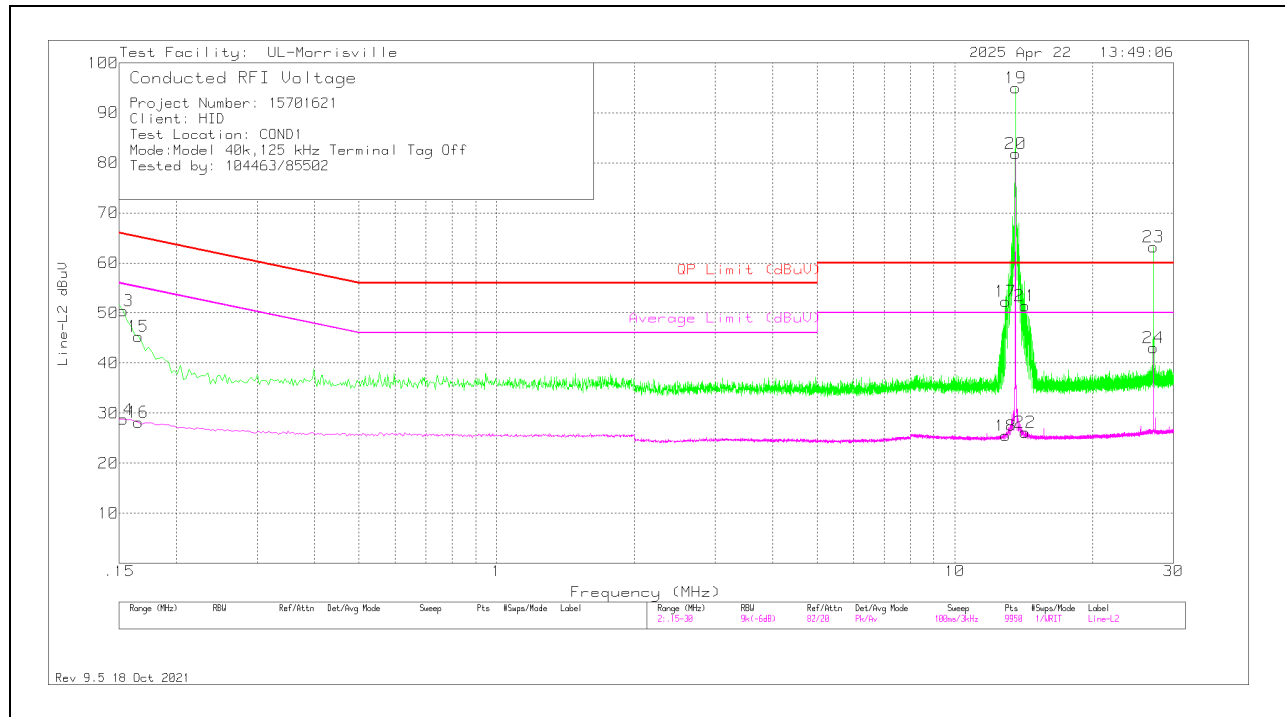
Av - Average detection

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 9.3.

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)
13	.153	30.2	Pk	.2	0	20	50.4	65.84	-15.44	-	-
14	.153	8.52	Av	.2	0	20	28.72	-	-	55.84	-27.12
15	.165	25.13	Pk	.2	0	20	45.33	65.21	-19.88	-	-
16	.165	7.99	Av	.2	0	20	28.19	-	-	55.21	-27.02
18	12.9	5.07	Av	.1	.3	20	25.47	-	-	50	-24.53
17	12.921	31.88	Pk	.1	.3	20	52.28	60	-7.72	-	-
19	13.5606	72.49	Qp	.1	.3	20	92.89	60	32.89	-	-
20	13.5606	61.8	Ca	.1	.3	20	82.2	-	-	50	32.2
22	14.238	5.79	Av	.1	.3	20	26.19	-	-	50	-23.81
21	14.247	31.03	Pk	.1	.3	20	51.43	60	-8.57	-	-
23	27.1221	37.61	Qp	.4	.4	20	58.41	60	-1.59	-	-
24	27.12	22.24	Av	.4	.4	20	43.04	-	-	50	-6.96

Pk - Peak detector

Av - Average detection

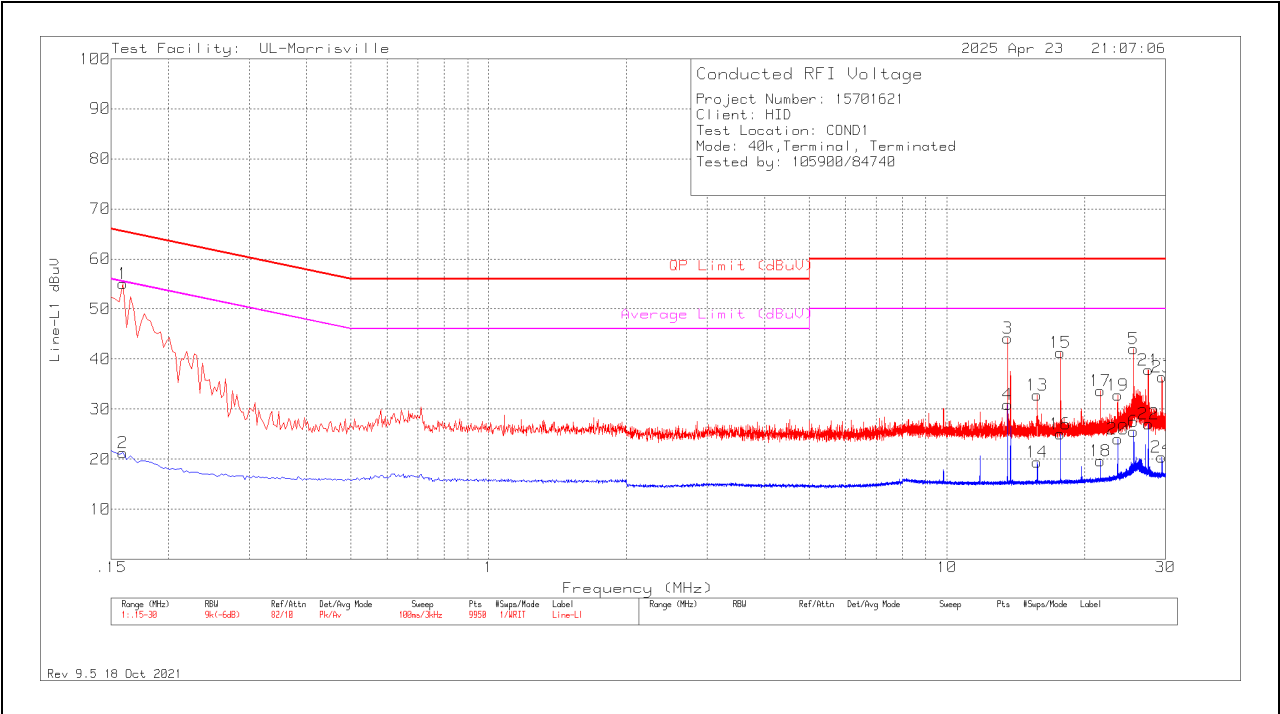
Qp - Quasi-Peak detector

Ca - CISPR average detection

NOTE* - Since the fundamental is over the limit, a terminated sample will be used to show compliance. Refer to section 9.3.

9.3. AC POWER LINE (TERMINATED SAMPLE)

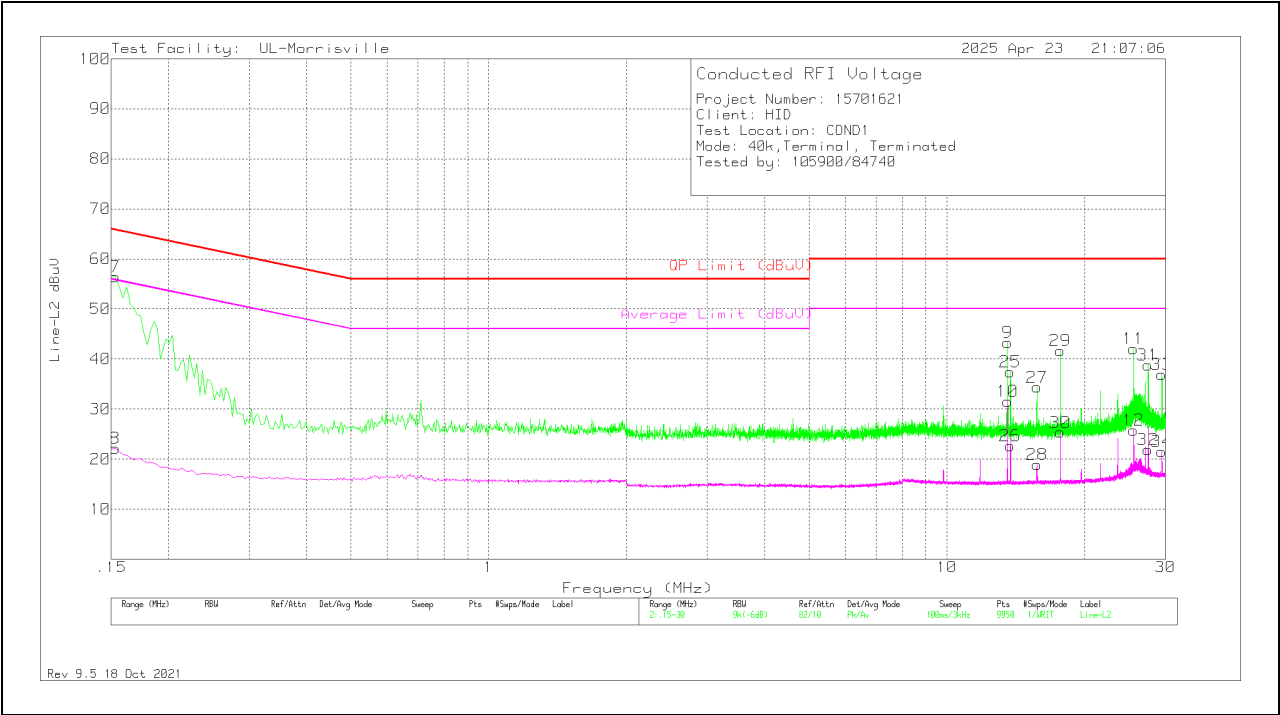
LINE 1 RESULTS



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	.159	34.87	Pk	.2	0	20	55.07	65.52	-10.45	-	-
2	.159	1.09	Av	.2	0	20	21.29	-	-	55.52	-34.23
3	13.56	23.82	Pk	.1	.3	20	44.22	60	-15.78	-	-
4	13.56	10.5	Av	.1	.3	20	30.9	-	-	50	-19.1
14	15.726	-1.11	Av	.2	.3	20	19.39	-	-	50	-30.61
13	15.729	12.26	Pk	.2	.3	20	32.76	60	-27.24	-	-
15	17.685	20.82	Pk	.2	.3	20	41.32	60	-18.68	-	-
16	17.685	4.51	Av	.2	.3	20	25.01	-	-	50	-24.99
17	21.615	12.92	Pk	.3	.4	20	33.62	60	-26.38	-	-
18	21.615	-1.03	Av	.3	.4	20	19.67	-	-	50	-30.33
19	23.625	12.08	Pk	.3	.4	20	32.78	60	-27.22	-	-
20	23.64	3.36	Av	.3	.4	20	24.06	-	-	50	-25.94
5	25.539	21.21	Pk	.4	.4	20	42.01	60	-17.99	-	-
6	25.542	4.71	Av	.4	.4	20	25.51	-	-	50	-24.49
21	27.525	17.05	Pk	.4	.4	20	37.85	60	-22.15	-	-
22	27.573	6.24	Av	.4	.4	20	27.04	-	-	50	-22.96
24	29.463	-.53	Av	.5	.4	20	20.37	-	-	50	-29.63
23	29.478	15.48	Pk	.5	.4	20	36.38	60	-23.62	-	-

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	36.22	Pk	.2	0	20	56.42	65.84	-9.42	-	-
8	.153	1.92	Av	.2	0	20	22.12	-	-	55.84	-33.72
9	13.56	22.95	Pk	.1	.3	20	43.35	60	-16.65	-	-
10	13.56	11.18	Av	.1	.3	20	31.58	-	-	50	-18.42
26	13.749	2.21	Av	.1	.3	20	22.61	-	-	50	-27.39
25	13.758	17.04	Pk	.1	.3	20	37.44	60	-22.56	-	-
27	15.729	13.85	Pk	.2	.3	20	34.35	60	-25.65	-	-
28	15.753	-1.61	Av	.2	.3	20	18.89	-	-	50	-31.11
29	17.676	21.2	Pk	.2	.3	20	41.7	60	-18.3	-	-
30	17.682	4.84	Av	.2	.3	20	25.34	-	-	50	-24.66
11	25.533	21.24	Pk	.4	.4	20	42.04	60	-17.96	-	-
12	25.539	4.93	Av	.4	.4	20	25.73	-	-	50	-24.27
31	27.501	17.96	Pk	.4	.4	20	38.76	60	-21.24	-	-
32	27.501	1.05	Av	.4	.4	20	21.85	-	-	50	-28.15
33	29.463	16	Pk	.5	.4	20	36.9	60	-23.1	-	-
34	29.469	.6	Av	.5	.4	20	21.5	-	-	50	-28.5

Pk - Peak detector
Av - Average detection

10. SETUP PHOTOS

Please refer to R15701621-EP6d for setup photos.

END OF TEST REPORT