TEST REPORT

Report Number: R15701621-E4b

Applicant	:	HID Global Corporation 611 Center Ridge Dr Austin, TX 78753 USA
Model	:	20KV2
FCC ID	:	JQ6-SIGNO20KV2
IC	:	2236B-SIGNO20KV2
EUT Description	:	Smartcard Reader
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C: 2025 RSS-210 ISSUE 11:2024 RSS-GEN ISSUE 5 + A1 + A2: 2021

Date Of Issue:
2025-06-24

Prepared by:
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ACCREDITED
CERT #0751.06

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-06-01	Initial Issue	Noah Bennett
V2	2025-06-24	Revised Worst-Case Statement, Removed Pigtail AC Lines	Charles Moody

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Smartcard Reader

MODEL: 20KV2

SERIAL NUMBER: FL0P0U00N0WO20KTKF8087

SAMPLE RECEIPT DATE: 2025-03-10

DATE TESTED: 2025-03-11 thru 2025-05-01

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C: 2025	Complies
ISED RSS-210 Issue 11: 2024	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:

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Project Engineer
Consumer, Medical and IT Segment
UL LLC

Prepared By:

Noah Bennett
Engineer Project Associate
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
- FCC 47 CFR Part 2
- FCC 47 CFR Part 15C
- RSS-GEN Issue 5 + A1 + A2: 2021
- RSS-210 Issue 11: 2024

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.
Fundamental Measurements.	FCC §15.209 (d) IC RSS-210, Section 8.2 IC RSS-GEN, Section 8.9 (Transmitter)		
Tx Spurious Emissions			
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

Signo Reader is a smartcard reader typically installed near doorway as part of physical access system, to control access to that door. A user will approach the door and present a BLE or RFID credentials to the reader with intention of entering the door. The reader will read the credential and send its data to a connected access control panel, which determine whether or not grant the user access to the door.

The EUT supports the following technologies:

Wireless technologies	Frequency Band(s)	Operating mode(s)
NFC	13.56MHz	Type A 106, 212, 424 & 848 Kbps
	125KHz	4 Kbps
Bluetooth	2.4 GHz	LE 1 & 2 Mbps
Notes: 1) The EUT operated in a 1x1 SISO mode. 2) The EUT only supports 1 type(s) of NFC tag.		

This report covers the full testing of the 125kHz NFC radio.

6.2. MAXIMUM ELECTRIC FIELD STRENGTH

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

Fundamental Frequency (kHz)	E-Field (dBuV/m)	Mode
125	-3.90	Tag Off

6.3. SOFTWARE AND FIRMWARE

EUT FW Version: 10.1

EUT HW Version: Rev H

6.4. WORST-CASE CONFIGURATION AND MODE

The EUT is only meant to be installed in one orientation during normal operation. Therefore, radiated tests were done in that orientation only. Additionally, 2 Configurations of power cables, (1) “Pigtail” and (2) “Terminal” were investigated. It was found that (2) “Terminal” was worst-case. Therefore, testing was done using that cable.

The worst-case between Tag On configuration and Tag Off configuration was found by measuring the highest fundamental E-Field during pre-testing. It was found that Tag Off was worst-case configuration. Therefore, radiated testing was done in Tag Off orientation only. The worst-case data rate as provided by the manufacturer as tested was 4 Kbps.

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.

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Lenovo	Yoga 7 16IAP7	PF49WDF9	-
Laptop	Lenovo	T14 Gen3	PF4FKW01	-
Laptop Charger	Lenovo	ADLX65YLC2D	8ssa10R16920L1CZ35T1VXJ	-
USB to Type C cable	ANKER	-	-	-
Data Module	HID	-	PCB-00476	-
Laptop	Lenovo	IdeaPad Flex 5 14IAU7	PW0DWR8R	TX2-RTL8852BE

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC	1	Barrel	Unshielded	<3m	Used to connect EUT to DC Power Supply.
2	1	1	Type C	Unshielded	<6m	Programing cable

SETUP DIAGRAM

Please refer to R15701621-EP1b for setup diagrams

TEST SETUP

The EUT is connected to a DC power supply during the tests. The EUT was set to continuously be reading for a tag. The Tag was placed on the EUT for Tag On, and removed for Tag Off.

7. TEST AND MEASUREMENT EQUIPMENT

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

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
	30-1000 MHz				
159203	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-03-05	2026-03-05
	Gain-Loss Chains				
91975	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-10	2025-05-10
91978	Gain-loss string: 25-1000MHz	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

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	2025-04-17	2026-04-17
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
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2025-04-17	2026-04-17
236852	CW-AC Power Source	Ametek	CW2501	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

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
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
-	DC Power Supply	Keysight Technologies	E3633A	-	-
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23	NA	NA

8. OCCUPIED BANDWIDTH

LIMITS

FCC § 15.215 Additional provisions to the general radiated emission limitations.

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

TEST PROCEDURE

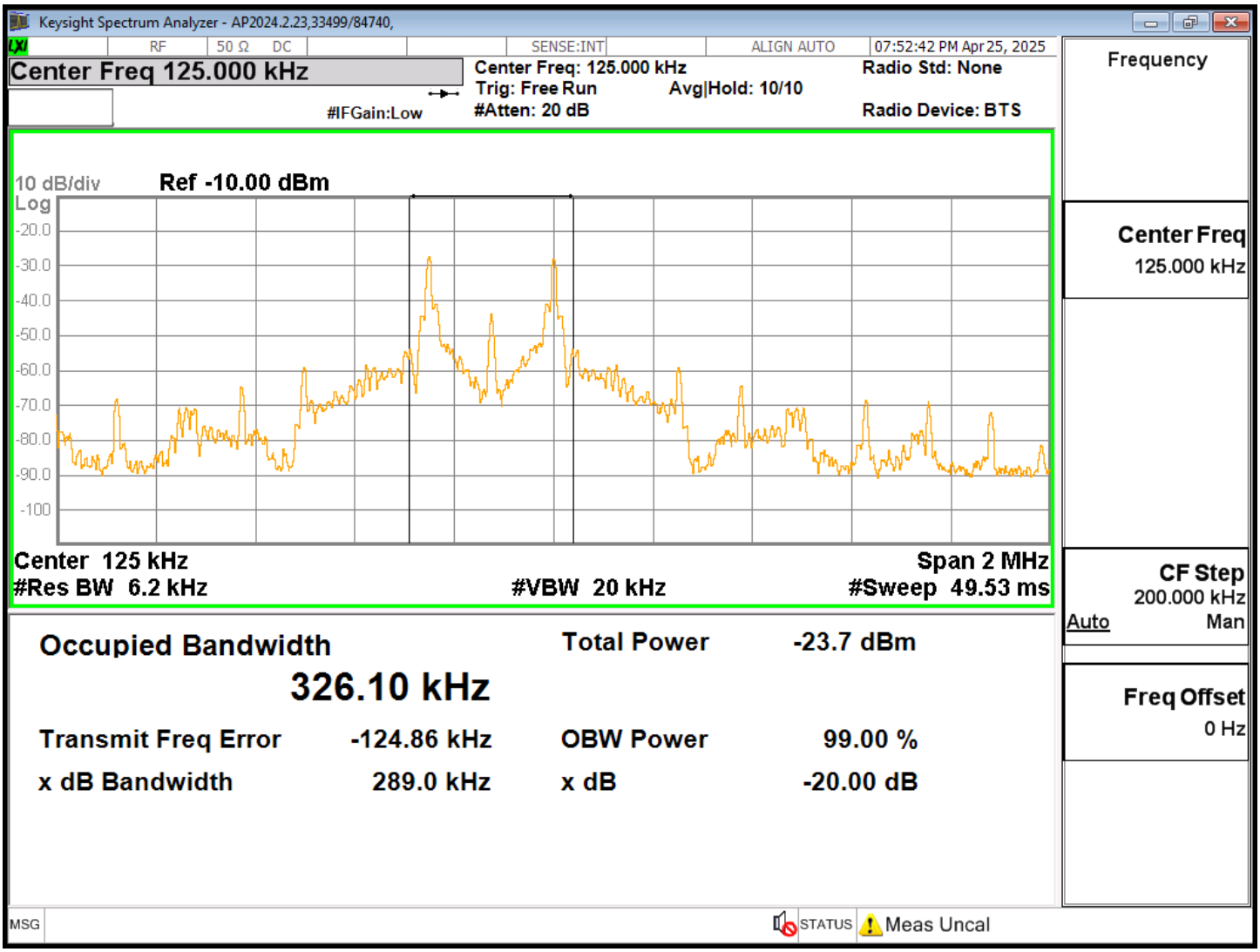
C63.10 6.9.2 and 6.9.3

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

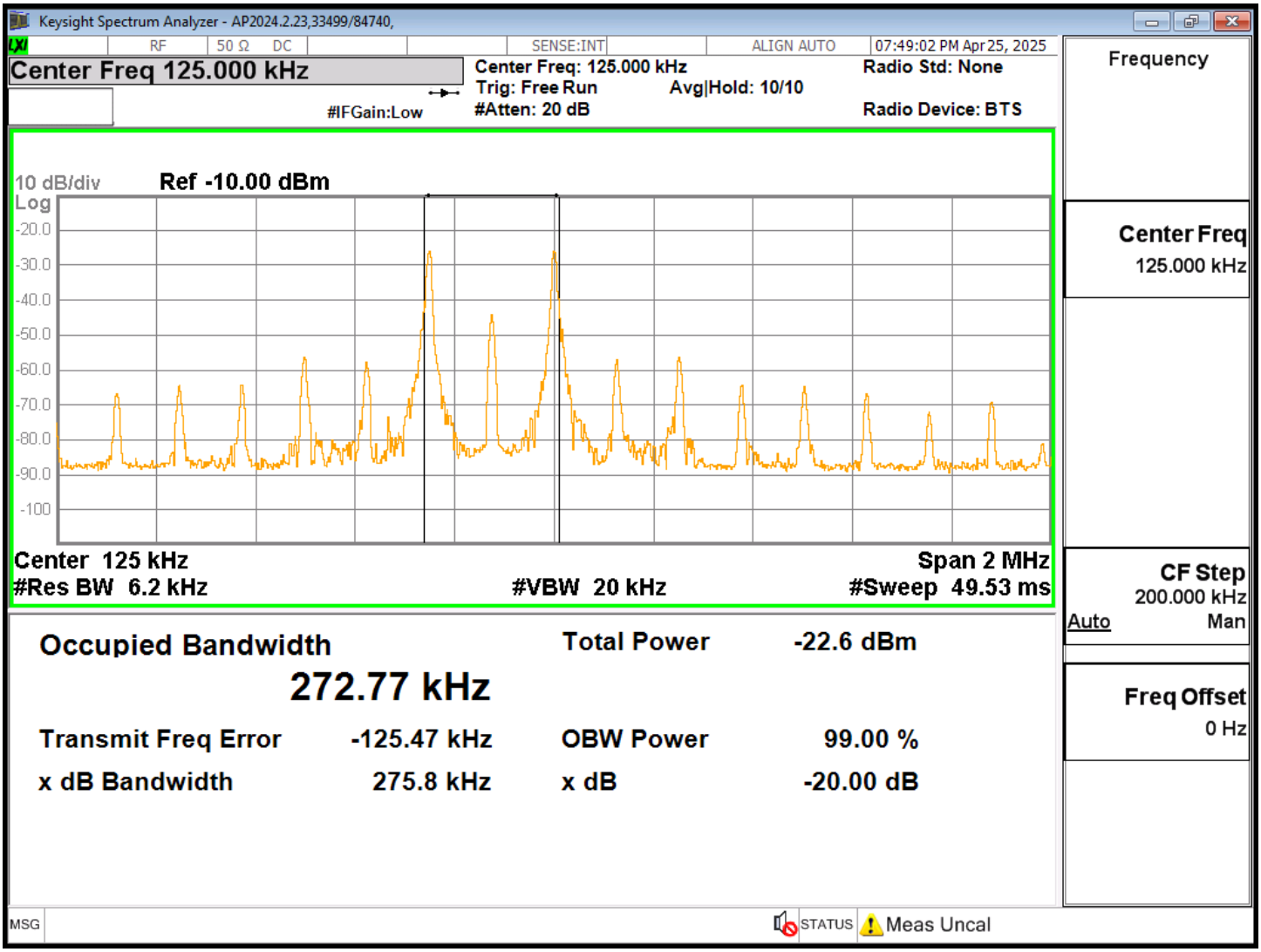
8.1. TAG ON

Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
0.125	289.0	326.10



8.2. TAG OFF

Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
0.125	275.8	272.77



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.		

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.

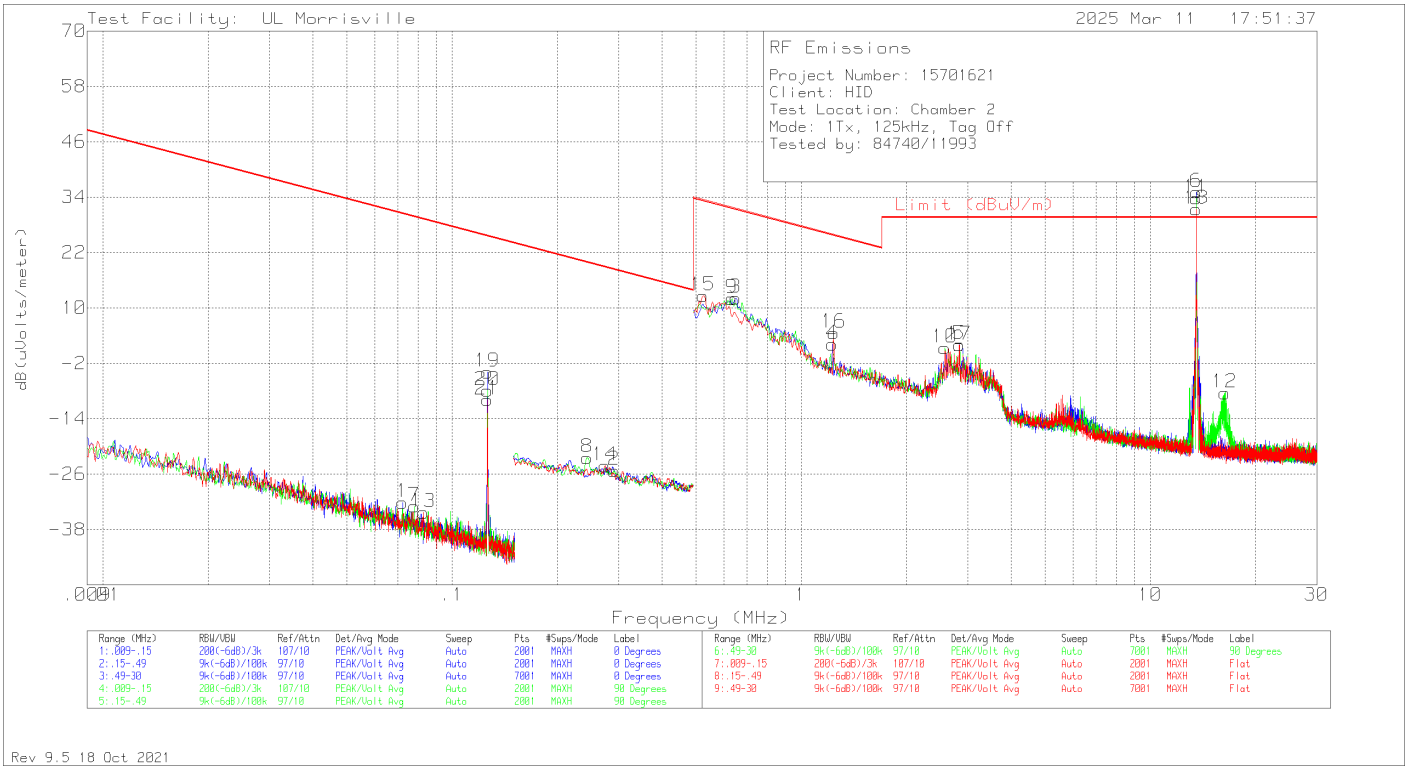
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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 OFF

SPURIOUS EMISSION – E FIELD

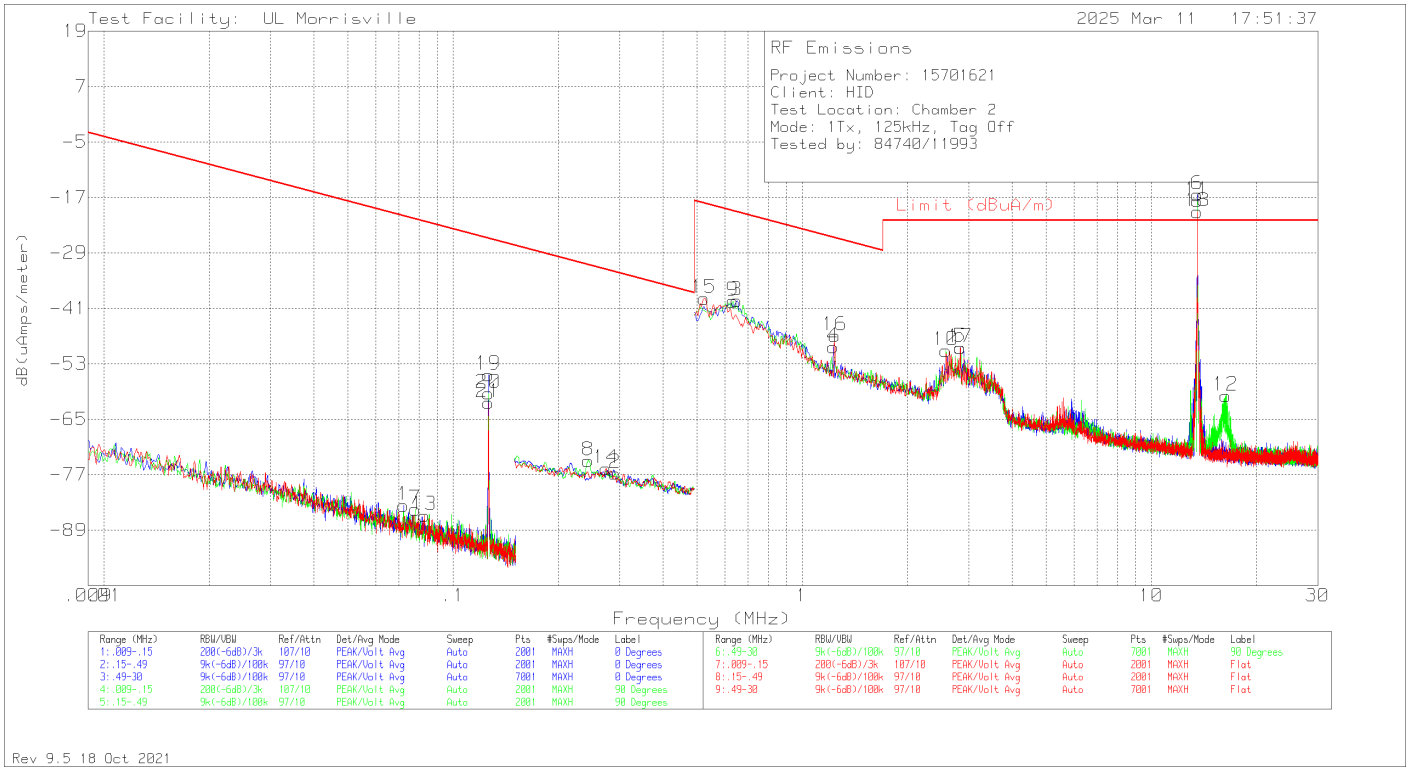


BL30MHz SPURIOUS EMISSIONS

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
1	.07219	36.56	Pk	11.2	.1	-80	-32.14	30.43	50.43	-62.57	0-360	0 degs
7	.07801	35.77	Pk	11.2	.1	-80	-32.93	29.76	49.76	-62.69	0-360	90 degs
13	.08284	34.41	Pk	11.2	.1	-80	-34.29	29.24	49.24	-63.53	0-360	Flat
19	.12636	65	Pk	11	.1	-80	-3.9	25.57	45.57	-29.47	0-360	0 degs
20	.12636	61.03	Pk	11	.1	-80	-7.87	25.57	45.57	-33.44	0-360	90 degs
21	.12636	59.03	Pk	11	.1	-80	-9.87	25.57	45.57	-35.44	0-360	Flat
8	.24384	46.56	Pk	10.9	.1	-80	-22.44	19.86	39.86	-42.3	0-360	90 degs
14	.27427	44.82	Pk	10.9	.1	-80	-24.18	18.84	38.84	-43.02	0-360	Flat
2	.29093	43.83	Pk	10.9	.1	-80	-25.17	18.33	38.33	-43.5	0-360	0 degs
15	.52373	41.54	Pk	11	.1	-40	12.64	33.22	-	-20.58	0-360	Flat
9	.63334	40.92	Pk	11	.1	-40	12.02	31.57	-	-19.55	0-360	90 degs
3	.65021	41.05	Pk	11	.1	-40	12.15	31.34	-	-19.19	0-360	0 degs
4	1.2278	30.95	Pk	11	.2	-40	2.15	25.82	-	-23.67	0-360	0 degs
16	1.24045	33.42	Pk	11	.2	-40	4.62	25.73	-	-21.11	0-360	Flat
10	2.58114	30.06	Pk	11.1	.2	-40	1.36	29.54	-	-28.18	0-360	90 degs
17	2.83831	30.69	Pk	11.1	.2	-40	1.99	29.54	-	-27.55	0-360	Flat
5	2.84253	30.74	Pk	11.1	.2	-40	2.04	29.54	-	-27.5	0-360	0 degs
6*	13.5596	64.7	Pk	9.8	.6	-40	35.1	-	-	-	0-360	0 degs
11*	13.5596	63.4	Pk	9.8	.6	-40	33.8	-	-	-	0-360	90 degs
18*	13.5596	61	Pk	9.8	.6	-40	31.4	-	-	-	0-360	Flat
12	16.35059	21.58	Pk	9.4	.6	-40	-8.42	29.54	-	-37.96	0-360	90 degs

Pk - Peak detector
* - Indicates 13.56MHz NFC Transmitter not subject to test in this report.

SPURIOUS EMISSION – H FIELD



BL30MHz SPURIOUS EMISSIONS

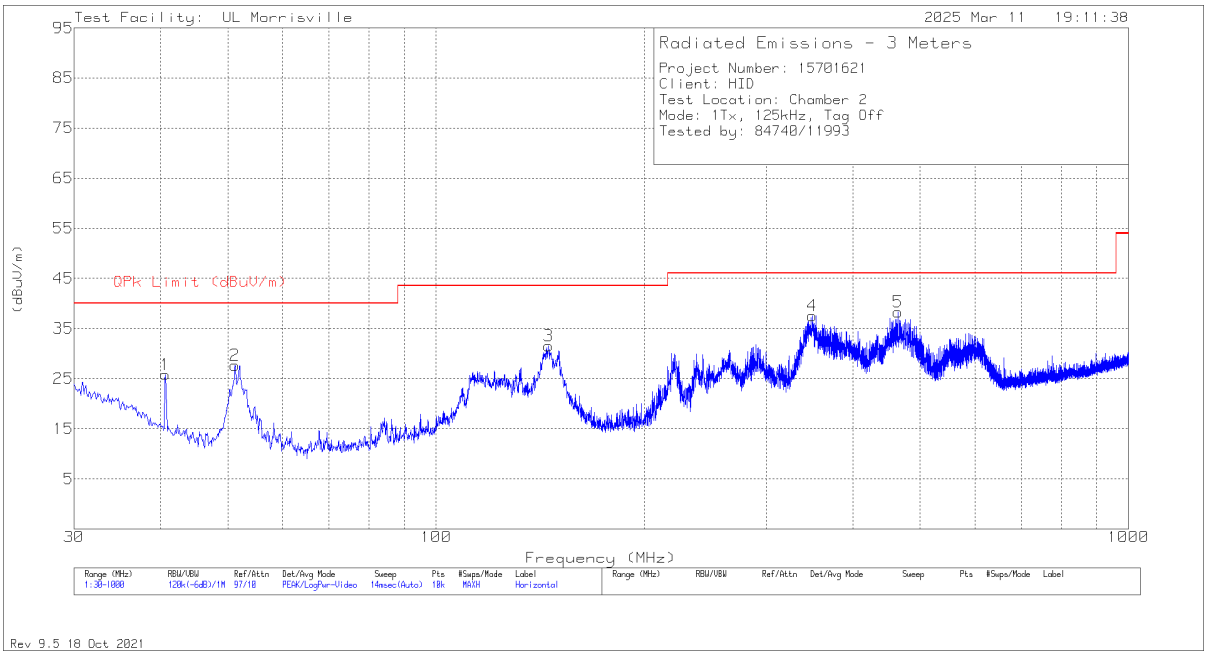
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.07219	36.56	Pk	-40.3	.1	-80	-83.64	-21.07	-1.07	-62.57	0-360	0 degs
7	.07801	35.77	Pk	-40.3	.1	-80	-84.43	-21.74	-1.47	-62.69	0-360	90 degs
13	.08284	34.41	Pk	-40.3	.1	-80	-85.79	-22.26	-2.26	-63.53	0-360	Flat
19	.12636	65	Pk	-40.5	.1	-80	-55.4	-25.93	-5.93	-29.47	0-360	0 degs
20	.12636	61.03	Pk	-40.5	.1	-80	-59.37	-25.93	-5.93	-33.44	0-360	90 degs
21	.12636	59.03	Pk	-40.5	.1	-80	-61.37	-25.93	-5.93	-35.44	0-360	Flat
8	.24384	46.56	Pk	-40.6	.1	-80	-73.94	-31.64	-11.64	-42.3	0-360	90 degs
14	.27427	44.82	Pk	-40.6	.1	-80	-75.68	-32.66	-12.66	-43.02	0-360	Flat
2	.29093	43.83	Pk	-40.6	.1	-80	-76.67	-33.17	-13.17	-43.5	0-360	0 degs
15	.52373	41.54	Pk	-40.5	.1	-40	-38.86	-18.28	-	-20.58	0-360	Flat
9	.63334	40.92	Pk	-40.5	.1	-40	-39.48	-19.93	-	-19.55	0-360	90 degs
3	.65021	41.05	Pk	-40.5	.1	-40	-39.35	-20.16	-	-19.19	0-360	0 degs
4	1.2278	30.95	Pk	-40.5	.2	-40	-49.35	-25.68	-	-23.67	0-360	0 degs
16	1.24045	33.42	Pk	-40.5	.2	-40	-46.88	-25.77	-	-21.11	0-360	Flat
10	2.58114	30.06	Pk	-40.4	.2	-40	-50.14	-21.96	-	-28.18	0-360	90 degs
17	2.83831	30.69	Pk	-40.4	.2	-40	-49.51	-21.96	-	-27.55	0-360	Flat
5	2.84253	30.74	Pk	-40.4	.2	-40	-49.46	-21.96	-	-27.5	0-360	0 degs
6*	13.5596	64.7	Pk	-41.7	.6	-40	-16.4	-	-	-	0-360	0 degs
11*	13.5596	63.4	Pk	-41.7	.6	-40	-17.7	-	-	-	0-360	90 degs
18*	13.5596	61	Pk	-41.7	.6	-40	-20.1	-	-	-	0-360	Flat
12	16.35059	21.58	Pk	-42.1	.6	-40	-59.92	-21.96	-	-37.96	0-360	90 degs

Pk - Peak detector
* - Indicates 13.56MHz NFC Transmitter not subject to test in this report.

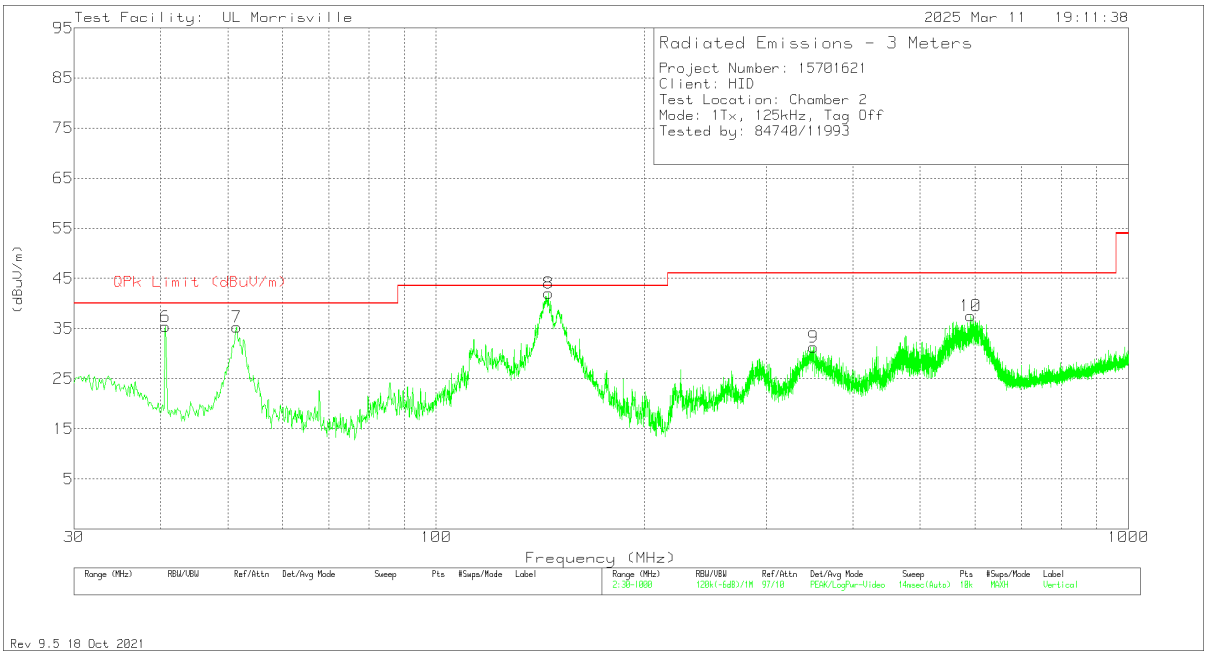
9.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

9.3.1. TAG OFF

SPURIOUS EMISSION



HORIZONTAL



VERTICAL

DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	159203 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.67	37.54	Pk	19.8	-31.5	25.84	40	-14.16	0-360	399	H
6	40.6777	46.44	Qp	19.8	-31.5	34.74	40	-5.26	166	104	V
2	51.243	44.88	Pk	14.1	-31.3	27.68	40	-12.32	0-360	399	H
7	51.757	49.11	Qp	13.9	-31.3	31.71	40	-8.29	247	109	V
8	145.1191	49.32	Qp	19.1	-30.4	38.02	43.52	-5.5	36	114	V
3	145.43	42.89	Pk	19.1	-30.4	31.59	43.52	-11.93	0-360	199	H
4	349.13	45.73	Pk	20.9	-29.1	37.53	46.02	-8.49	0-360	101	H
9	351.07	39.38	Pk	21	-29.1	31.28	46.02	-14.74	0-360	199	V
5	464.269	42.91	Pk	23.9	-28.5	38.31	46.02	-7.71	0-360	101	H
10	591.145	40.95	Pk	24.9	-28.3	37.55	46.02	-8.47	0-360	101	V

Pk - 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.

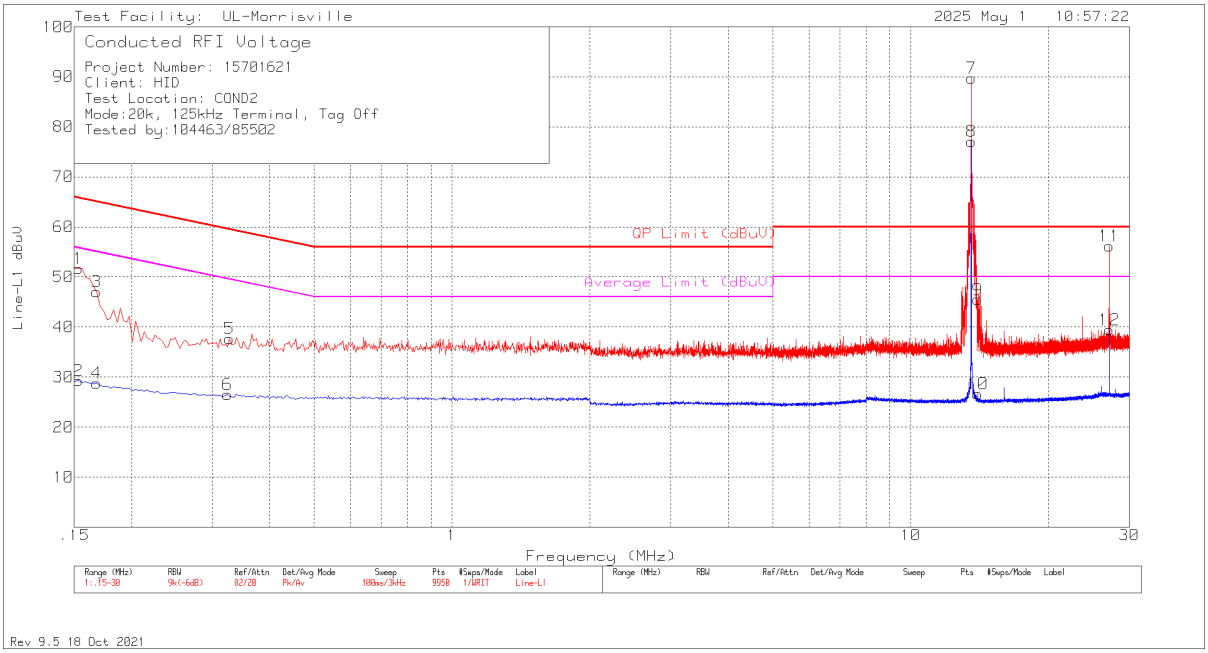
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

10.1. AC Mains Tag Off

LINE 1 RESULTS

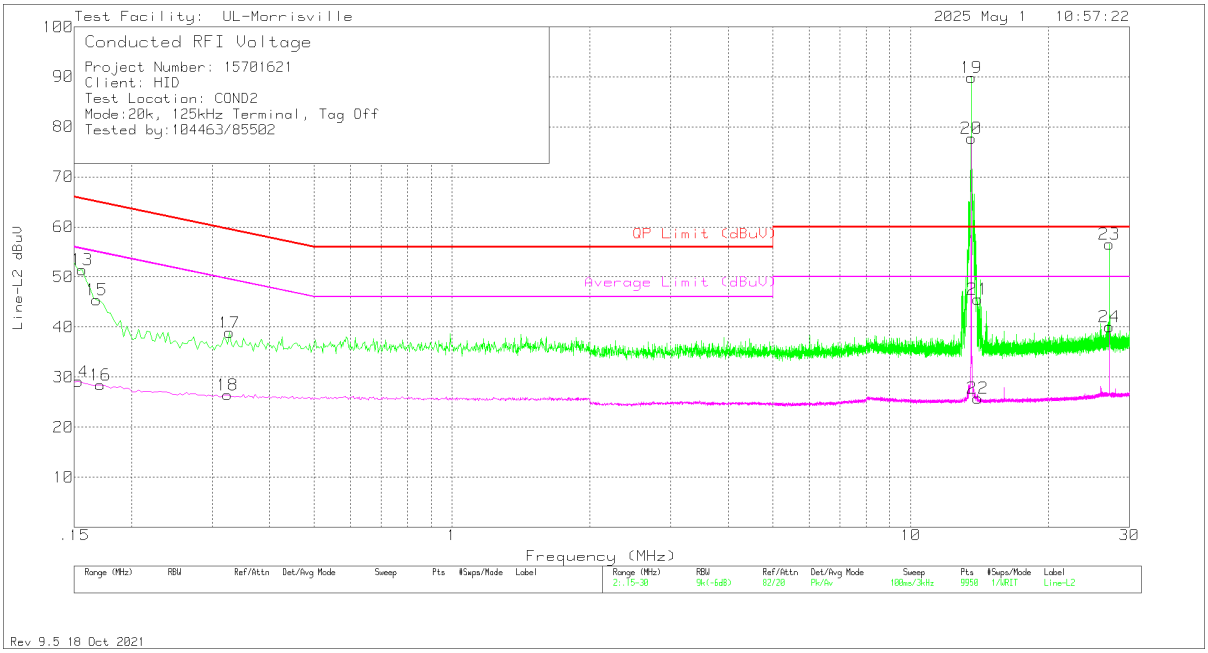


Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.153	31.54	Pk	.2	0	20	51.74	65.84	-14.1	-	-
2	.153	9.09	Av	.2	0	20	29.29	-	-	55.84	-26.55
3	.168	26.89	Pk	.2	0	20	47.09	65.06	-17.97	-	-
4	.168	8.55	Av	.2	0	20	28.75	-	-	55.06	-26.31
6	.324	6.4	Av	.1	0	20	26.5	-	-	49.6	-23.1
5	.327	17.56	Pk	.1	0	20	37.66	59.53	-21.87	-	-
7*	13.5605	67.62	Qp	.1	.3	20	88.02	**60**	**28.02**	-	-
8*	13.5605	57.47	Ca	.1	.3	20	77.87	-	-	**50**	**27.87**
10	14.001	6.23	Av	.1	.3	20	26.63	-	-	50	-23.37
9	14.01	25.09	Pk	.1	.3	20	45.49	60	-14.51	-	-
11	27.1215	32	Qp	.4	.4	20	52.8	60	-7.2	-	-
12	27.1215	17.74	Ca	.4	.4	20	38.54	-	-	50	-11.46

Pk - Peak detector; Av - Average detection;
Qp - Quasi-Peak detector; Ca - CISPR average detection

*Note: Markers 7 and 8 are the fundamentals of the device, and not spurious emissions. Section 11.1.1 shows compliance with an NFC/HF terminated sample.

LINE 2 RESULTS



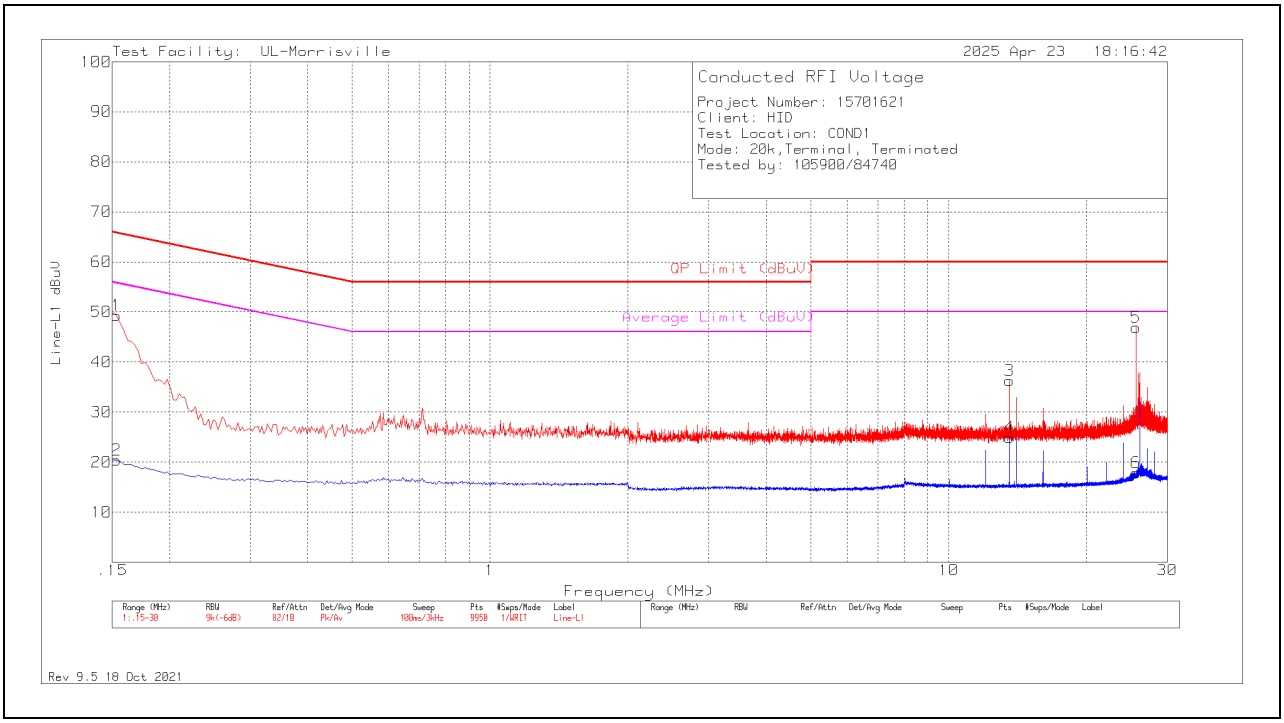
Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
14	.153	8.9	Av	.2	0	20	29.1	-	-	55.84	-26.74
13	.156	31.25	Pk	.2	0	20	51.45	65.67	-14.22	-	-
15	.168	25.23	Pk	.2	0	20	45.43	65.06	-19.63	-	-
16	.171	8.26	Av	.2	0	20	28.46	-	-	54.91	-26.45
18	.324	6.36	Av	.1	0	20	26.46	-	-	49.6	-23.14
17	.327	18.76	Pk	.1	0	20	38.86	59.53	-20.67	-	-
19*	13.5605	67.89	Qp	.1	.3	20	88.29	**60**	**28.29**	-	-
20*	13.5605	57.37	Ca	.1	.3	20	77.77	-	-	**50**	**27.77**
22	14.004	5.41	Av	.1	.3	20	25.81	-	-	50	-24.19
21	14.01	25.19	Pk	.1	.3	20	45.59	60	-14.41	-	-
23	27.1218	32.12	Qp	.4	.4	20	52.92	60	-7.08	-	-
24	27.12	19.26	Av	.4	.4	20	40.06	-	-	50	-9.94

Pk - Peak detector; Av - Average detection;
Qp - Quasi-Peak detector; Ca - CISPR average detection

*Note: Markers 19 and 20 are the fundamentals of the device, and not spurious emissions. Section 11.1.1 shows compliance with an NFC/HF terminated sample.

10.2. Terminated Sample

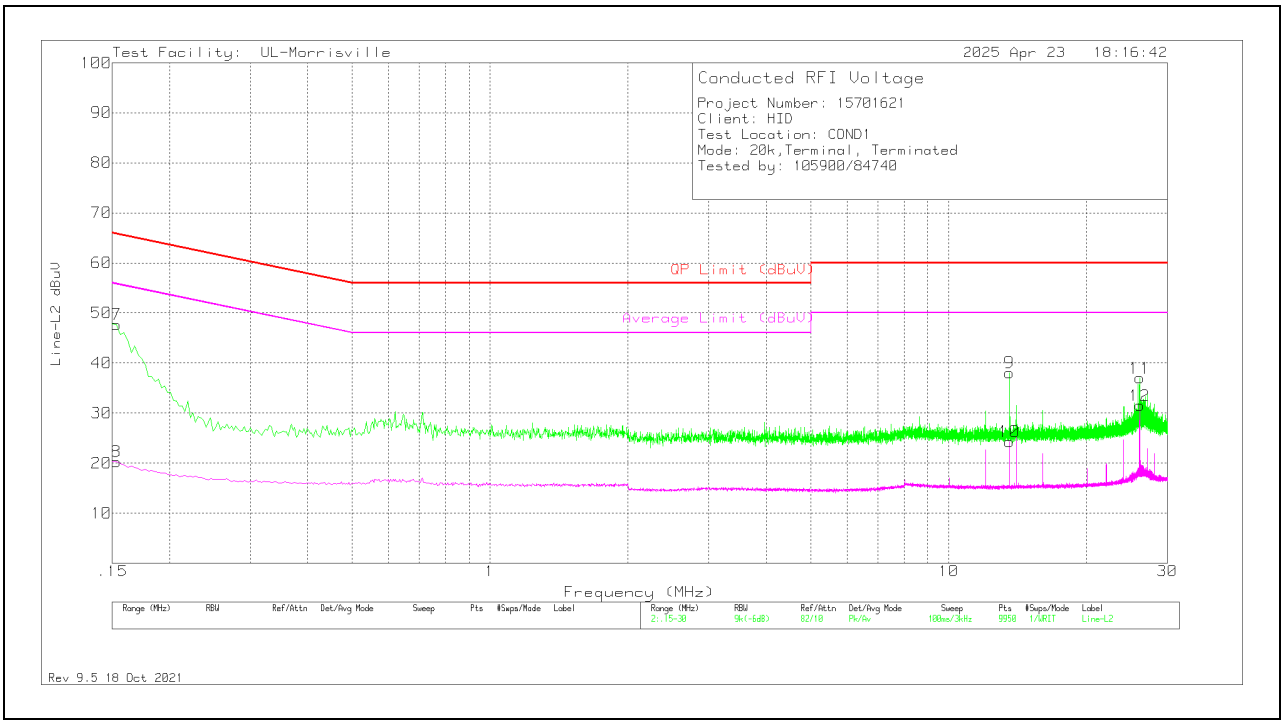
LINE 1 RESULTS



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	29.09	Pk	.2	0	20	49.29	65.84	-16.55	-	-
2	.153	.19	Av	.2	0	20	20.39	-	-	55.84	-35.45
3	13.56	15.9	Pk	.1	.3	20	36.3	60	-23.7	-	-
4	13.56	4.53	Av	.1	.3	20	24.93	-	-	50	-25.07
6	25.596	-2.95	Av	.4	.4	20	17.85	-	-	50	-32.15
5	25.626	26.18	Pk	.4	.4	20	46.98	60	-13.02	-	-

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	27.46	Pk	.2	0	20	47.66	65.84	-18.18	-	-
8	.153	.12	Av	.2	0	20	20.32	-	-	55.84	-35.52
9	13.56	17.61	Pk	.1	.3	20	38.01	60	-21.99	-	-
10	13.56	3.88	Av	.1	.3	20	24.28	-	-	50	-25.72
12	26.079	10.68	Av	.4	.4	20	31.48	-	-	50	-18.52
11	26.0805	16.18	Pk	.4	.4	20	36.98	60	-23.02	-	-

Pk - Peak detector; Av - Average detection;

11. SETUP PHOTOS

Please refer to R15701621-EP1b for setup diagrams

END OF TEST REPORT