TEST REPORT

Report Number: R15541444-E2

Applicant	:	HID Global Corporation 611 Center Ridge Dr Austin, TX USA
Model	:	30
FCC ID	:	JQ6-SIGNO30
IC	:	2236B-SIGNO30
EUT Description	:	Signo Décor Reader
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C: 2024 RSS-210 ISSUE 11:2024 RSS-GEN ISSUE 5 + A1 + A2: 2021

Date Of Issue:
2025-02-03

Prepared by:
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ACCREDITED
CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
v1	2025-02-03	Initial Issue	Noah Bennett

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Signo Décor Reader

MODEL: 30

SERIAL NUMBER: Non-Serialized

SAMPLE RECEIPT DATE: 2024-11-19

DATE TESTED: 2024-11-20 to 2024-12-09

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C: 2024	
ISED RSS-210 Issue 11:2024	Refer to Section 3
ISED RSS-GEN Issue 5 + A1 + A2: 2021	

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:

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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 correctly integrating customer-provided data with measurements performed by UL LLC. Below is a list of the data provided by the customer:

1) Cable loss (section 9)
2) Supported Data-Rates and Power Settings. Orientation of Operation (Section 6.4)
3) Software, Firmware and Hardware Versions of EUT (section 6.3)

Requirement Description	Requirement Clause Number	Result	Remarks
Occupied Bandwidth	FCC §15.215 (c) RSS-Gen 6.7	Compliant	None
Fundamental Measurements.	FCC §15.225 (a-d) FCC §15.209 (d) IC RSS-210, Annex B.6 IC RSS-GEN, Section 8.9 (Transmitter)		
Tx Spurious Emissions			
Frequency Stability	FCC §15.225 (e) RSS-210, Annex B.6		
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: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

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 reader module that can be used for flush-mounted or inset reader designed to meet the security needs of an organization, while providing a sleek new design for various architectural and style requirements.

The EUT supports the following technologies:

Wireless technologies	Frequency Band(s)	Operating mode(s)
NFC	High Frequency (HF) 13.56MHz	Type A 106, 212, 424, 848 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 of NFC/HF tag.

This report covers the full testing of the NFC/HF radio.

6.2. MAXIMUM ELECTRIC FIELD STRENGTH

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

Fundamental Frequency (MHz)	E-Field (dBuV/m)	Mode
13.56	37.19	Tag Off

6.3. SOFTWARE AND FIRMWARE

EUT FW Version: R10.0.0.22

EUT HW Version: B.1

EUT Control SW Version: V1.3

6.4. WORST-CASE CONFIGURATION AND MODE

The EUT is only meant to be installed in one orientation during normal operation. Therefore, radiated tested was done in that orientation only.

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 106 Kbps.

The EUT is meant to be powered via an auxiliary device that does not come with the product. Therefore, for AC Lines, the scan was run using a DC power supply as representative. A terminated sample was used for AC Lines.

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Tag	Hicarer	NTAG 215	-	-

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.

SETUP DIAGRAM

Please refer to R15541444-EP1 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				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-08-29	2025-08-29
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
76021	DC Power Supply	Circuit Specialist	CSI3005X5	-	-

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	2025-04-04
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
PS216	AC Power Source	Elgar	CW2501M	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	2024-01-12	2025-01-12
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
76022	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA

8. 20dB and 99% BANDWIDTH

LIMITS

§15.215 (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.

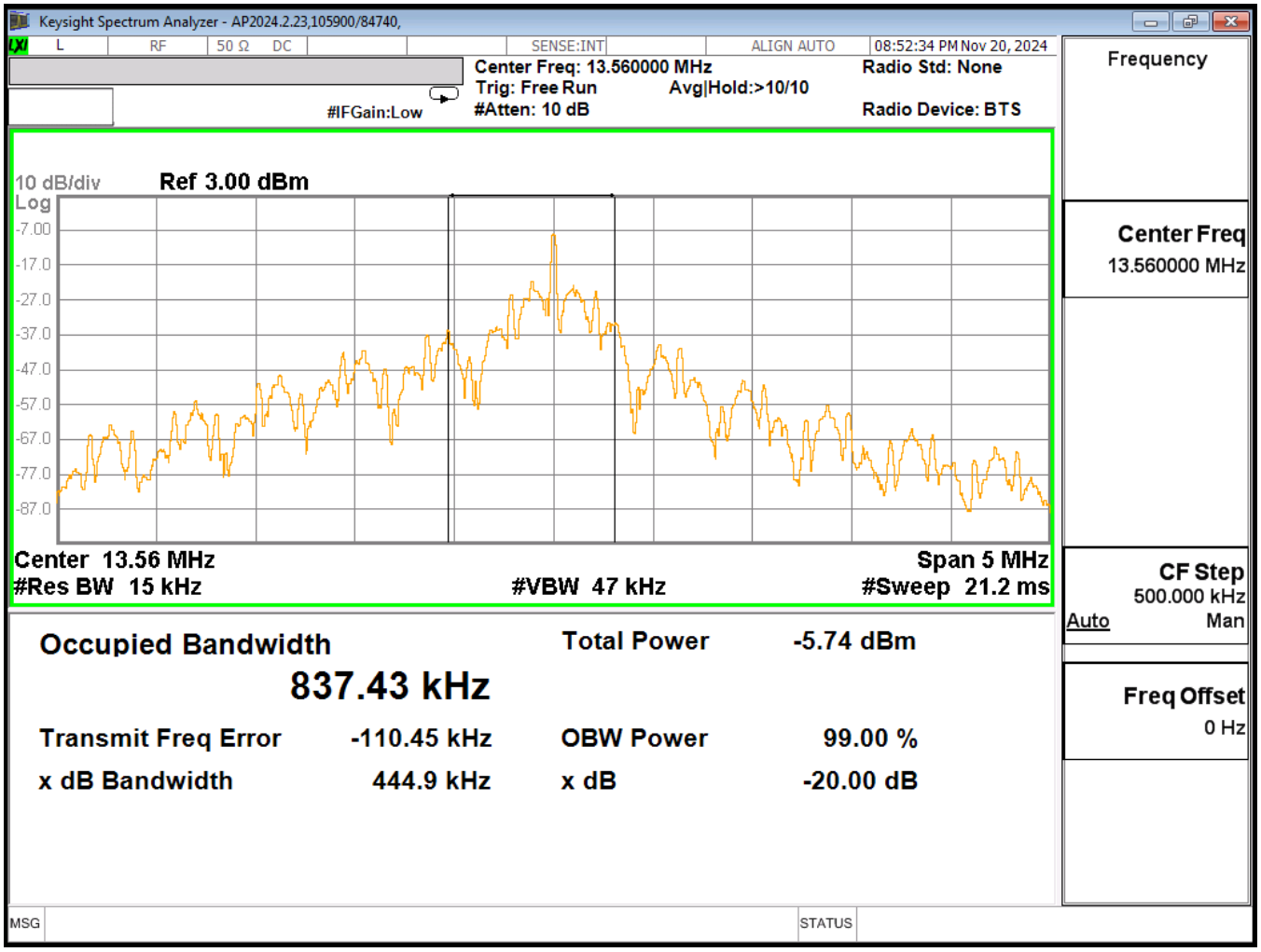
TEST PROCEDURE

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.

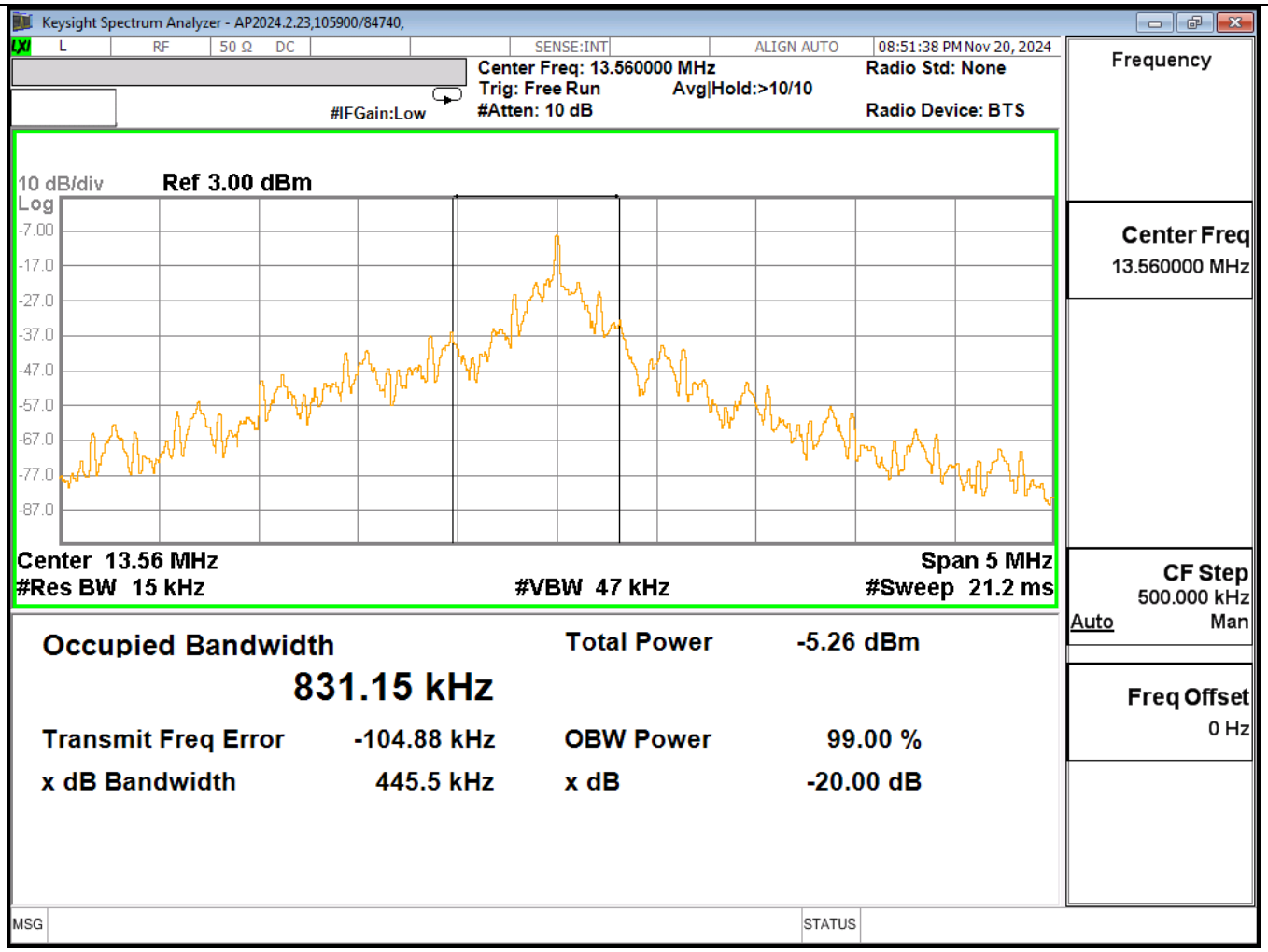
RESULTS

Mode	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
Type A (Tag On)	13.56	444.9	837.43
Type A (Tag off)	13.56	445.5	831.15

8.1. Type A



Tag On



Tag Off

9. RADIATED EMISSION TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMIT

FCC §15.225
IC RSS-210, Annex B.6
IC RSS-GEN, Section 8.9 (Transmitter)

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:
§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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.
§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

In addition:
§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (e) The provisions in §§ 15.31, 15.33, and 15.35, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

TEST PROCEDURE

ANSI C63.10 - 2020

The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 9kHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

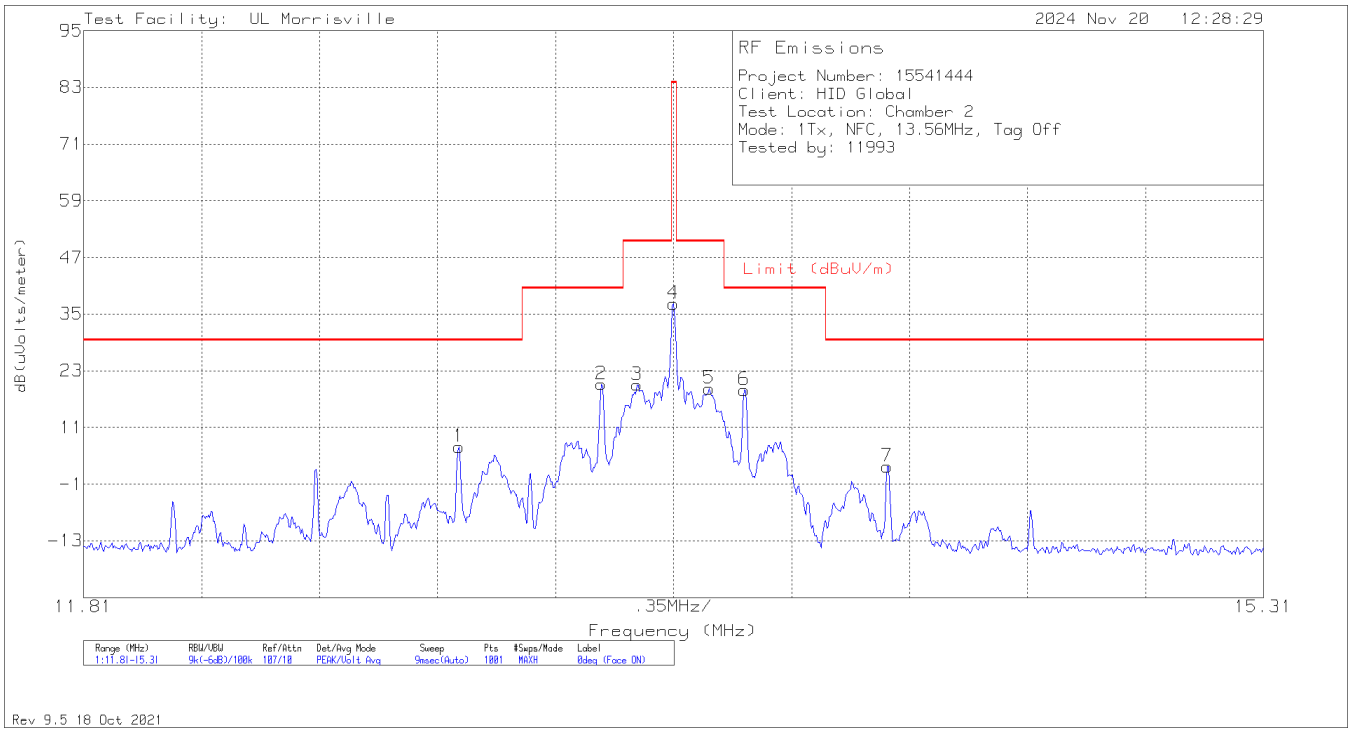
Note: For all Below 30MHz test data, all measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious 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)

RESULTS

9.2. FUNDAMENTAL AND SPURIOUS EMISSIONS (<30MHz)

9.2.1. TYPE A, TAG OFF

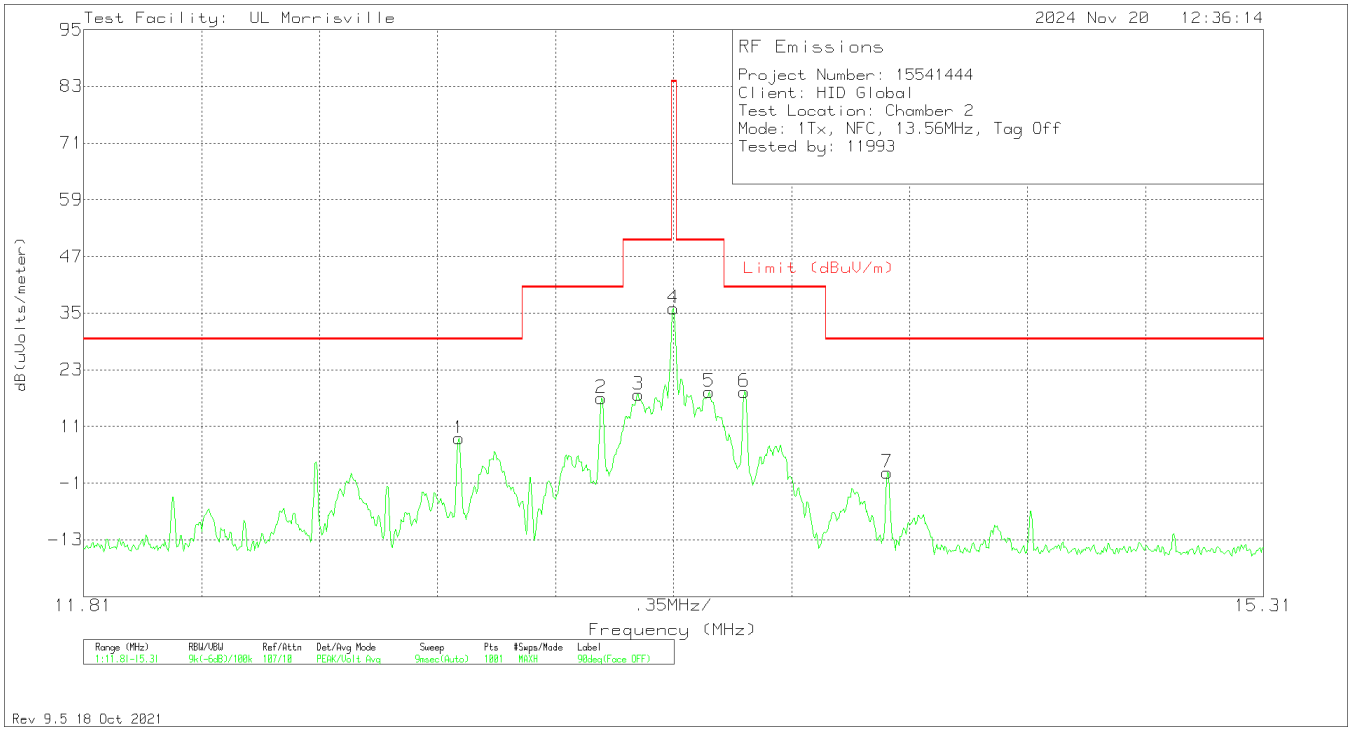
FUNDAMENTAL



ANTENNA FACE ON

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	12.923	36.55	Pk	9.8	.6	-40	6.95	29.5	-22.55	169	0 degs
2	13.3465	49.79	Pk	9.8	.6	-40	20.19	40.5	-20.31	169	0 degs
3	13.4515	49.64	Pk	9.8	.6	-40	20.04	50.5	-30.46	169	0 degs
4	13.56	66.79	Pk	9.8	.6	-40	37.19	84	-46.81	169	0 degs
5	13.665	48.83	Pk	9.8	.6	-40	19.23	50.5	-31.27	169	0 degs
6	13.77	48.66	Pk	9.7	.6	-40	18.96	40.5	-21.54	169	0 degs
7	14.1935	32.5	Pk	9.7	.6	-40	2.8	29.5	-26.7	169	0 degs

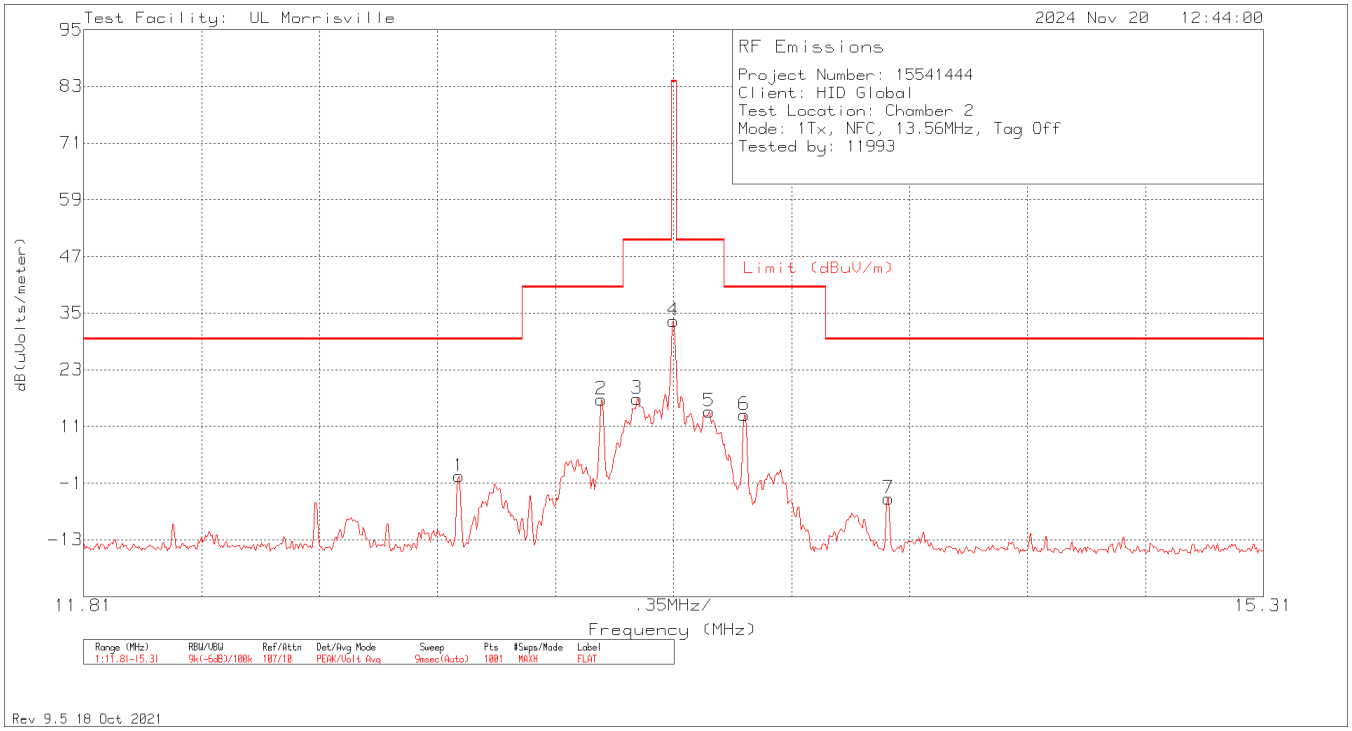
Pk - Peak detector



ANTENNA FACE OFF

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	12.923	38.07	Pk	9.8	.6	-40	8.47	29.5	-21.03	94	90 degs
2	13.3465	46.64	Pk	9.8	.6	-40	17.04	40.5	-23.46	94	90 degs
3	13.455	47.39	Pk	9.8	.6	-40	17.79	50.5	-32.71	94	90 degs
4	13.56	65.65	Pk	9.8	.6	-40	36.05	84	-47.95	94	90 degs
5	13.665	47.9	Pk	9.8	.6	-40	18.3	50.5	-32.2	94	90 degs
6	13.77	48.07	Pk	9.7	.6	-40	18.37	40.5	-22.13	94	90 degs
7	14.1935	31.01	Pk	9.7	.6	-40	1.31	29.5	-28.19	94	90 degs

Pk - Peak detector

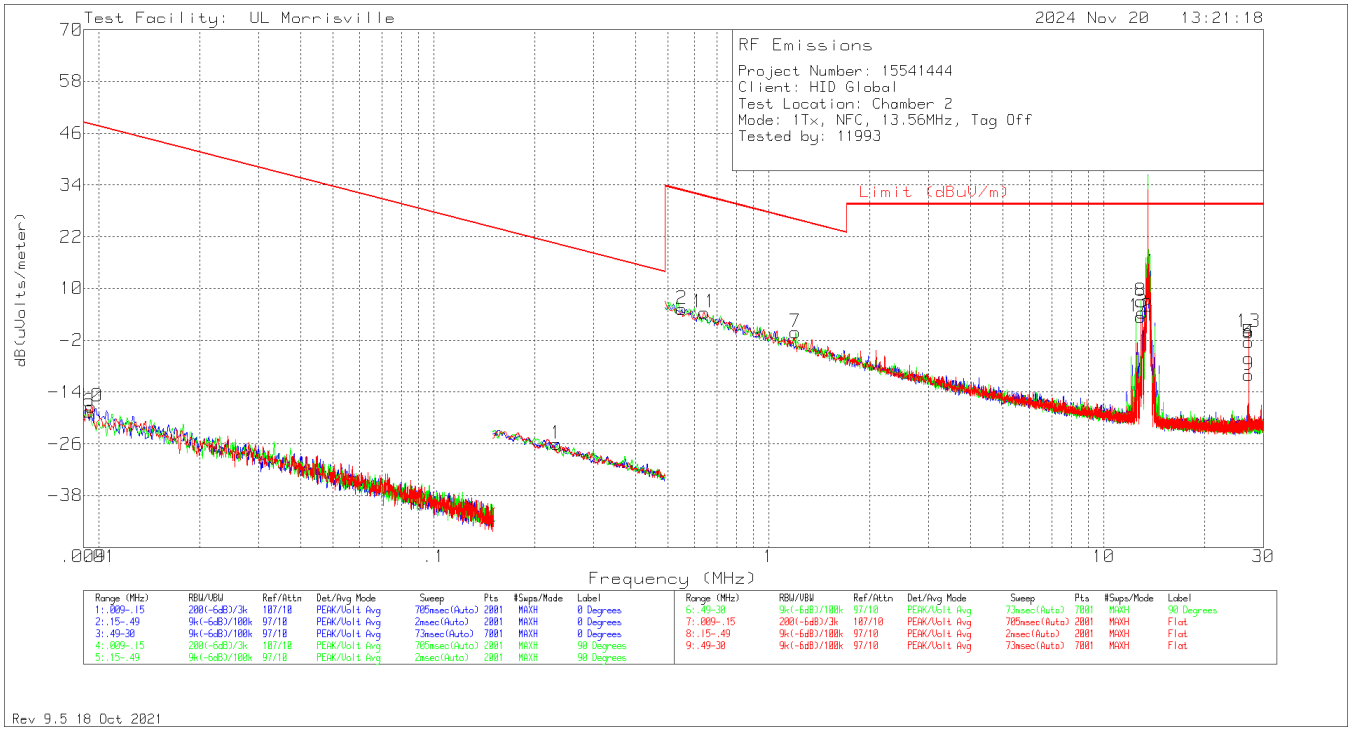


ANTENNA FACE FLAT

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Loop Angle
1	12.923	30.05	Pk	9.8	.6	-40	.45	29.5	-29.05	152	100	Flat
2	13.3465	46.3	Pk	9.8	.6	-40	16.7	40.5	-23.8	152	100	Flat
3	13.4515	46.41	Pk	9.8	.6	-40	16.81	50.5	-33.69	152	100	Flat
4	13.56	62.89	Pk	9.8	.6	-40	33.29	84	-50.71	152	100	Flat
5	13.665	43.82	Pk	9.8	.6	-40	14.22	50.5	-36.28	152	100	Flat
6	13.77	43.12	Pk	9.7	.6	-40	13.42	40.5	-27.08	152	100	Flat
7	14.197	25.47	Pk	9.7	.6	-40	-4.23	29.5	-33.73	152	100	Flat

Pk - Peak detector

SPURIOUS EMISSION – E FIELD (Worst Case Configuration)

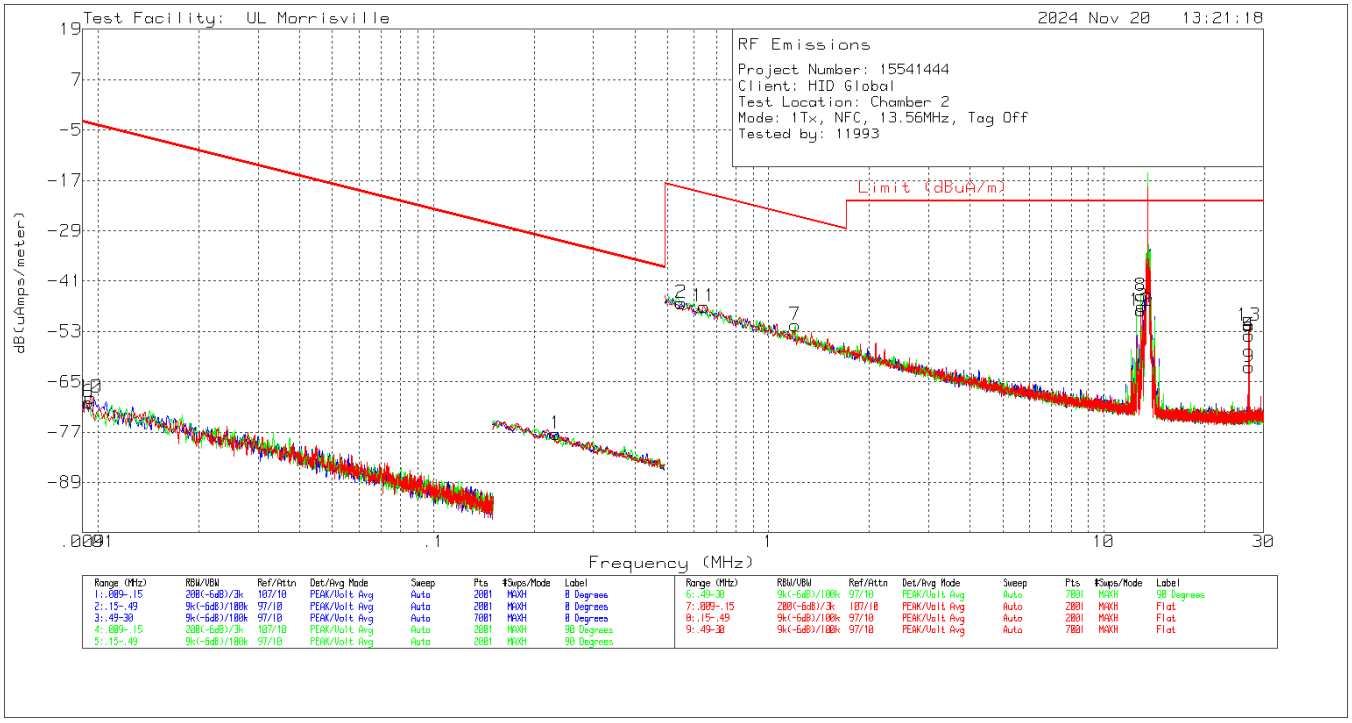


<30MHz SPURIOUS EMISSIONS

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
6	.00936	42.66	Pk	18.8	.1	-80	-18.44	48.18	68.18	-66.62	0-360	90 degs
10	.0095	43.9	Pk	18.7	.1	-80	-17.3	48.05	68.05	-65.35	0-360	Flat
1	.23177	43.08	Pk	10.9	.1	-80	-25.92	20.3	40.3	-46.22	0-360	0 degs
2	.54902	34.2	Pk	11	.1	-40	5.3	32.81	-	-27.51	0-360	0 degs
11	.64178	33.36	Pk	11	.1	-40	4.46	31.46	-	-27	0-360	Flat
7	1.2025	28.76	Pk	11	.2	-40	-.04	26	-	-26.04	0-360	90 degs
8	12.92298	36.59	Pk	9.8	.6	-40	6.99	29.54	-	-22.55	0-360	90 degs
12	12.92298	33.08	Pk	9.8	.6	-40	3.48	29.54	-	-26.06	0-360	Flat
3	13.02838	34.09	Pk	9.8	.6	-40	4.49	29.54	-	-25.05	0-360	0 degs
4	27.12247	29.04	Pk	7.7	.8	-40	-2.46	29.54	-	-32	0-360	0 degs
5	27.12247	29.04	Pk	7.7	.8	-40	-2.46	29.54	-	-32	0-360	0 degs
9	27.12247	21.49	Pk	7.7	.8	-40	-10.01	29.54	-	-39.55	0-360	90 degs
13	27.12247	31.38	Pk	7.7	.8	-40	-.12	29.54	-	-29.66	0-360	Flat

Pk - Peak detector

SPURIOUS EMISSION – H FIELD (Worst-Case Configuration)



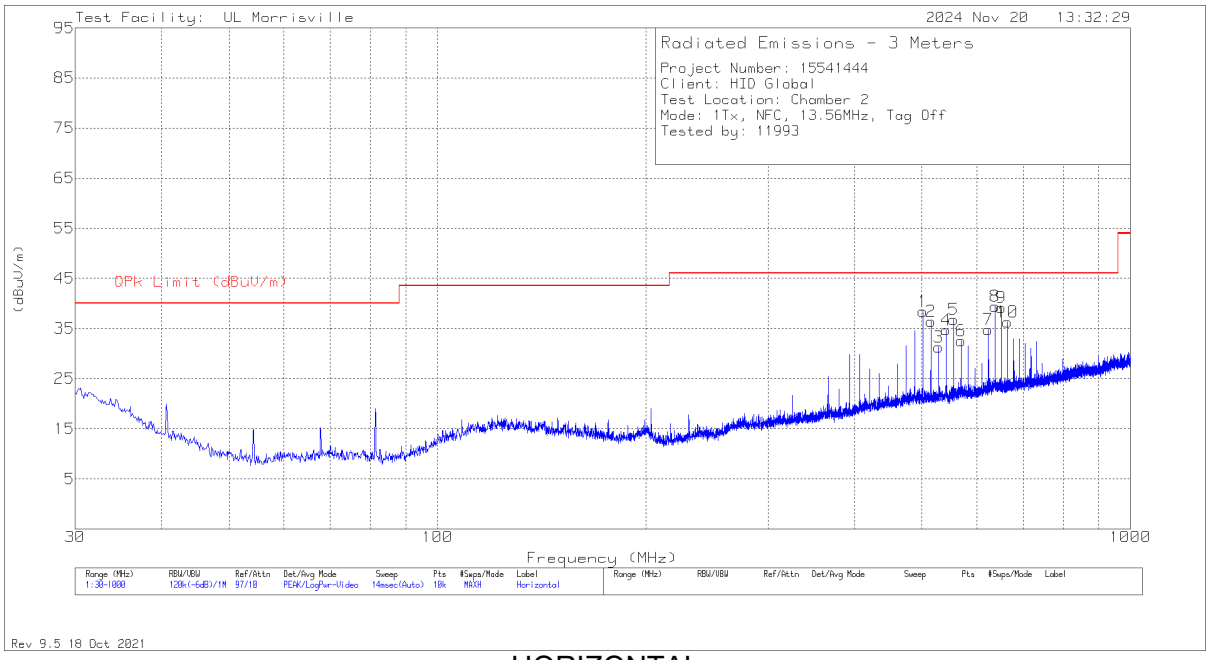
<30MHz SPURIOUS EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuA)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uA/m)	QP/AV Limit (dBuA/m)	Pk Limit (dBuA/m)	Margin	Azimuth	Loop
6	0.00936	42.66	Pk	-32.7	0.1	-80	-69.94	-3.32	16.68	-66.62	0-360	90 degs
10	0.0095	43.9	Pk	-32.8	0.1	-80	-68.8	-3.45	16.55	-65.35	0-360	Flat
1	0.23177	43.08	Pk	-40.6	0.1	-80	-77.42	-31.2	-11.2	-46.22	0-360	0 degs
2	0.54902	34.2	Pk	-40.5	0.1	-40	-46.2	-18.69	-	-27.51	0-360	0 degs
11	0.64178	33.36	Pk	-40.5	0.1	-40	-47.04	-20.04	-	-27	0-360	Flat
7	1.2025	28.76	Pk	-40.5	0.2	-40	-51.54	-25.5	-	-26.04	0-360	90 degs
8	12.92298	36.59	Pk	-41.7	0.6	-40	-44.51	-21.96	-	-22.55	0-360	90 degs
12	12.92298	33.08	Pk	-41.7	0.6	-40	-48.02	-21.96	-	-26.06	0-360	Flat
3	13.02838	34.09	Pk	-41.7	0.6	-40	-47.01	-21.96	-	-25.05	0-360	0 degs
4	27.12247	29.04	Pk	-43.8	0.8	-40	-53.96	-21.96	-	-32	0-360	0 degs
5	27.12247	29.04	Pk	-43.8	0.8	-40	-53.96	-21.96	-	-32	0-360	0 degs
9	27.12247	21.49	Pk	-43.8	0.8	-40	-61.51	-21.96	-	-39.55	0-360	90 degs
13	27.12247	31.38	Pk	-43.8	0.8	-40	-51.62	-21.96	-	-29.66	0-360	Flat

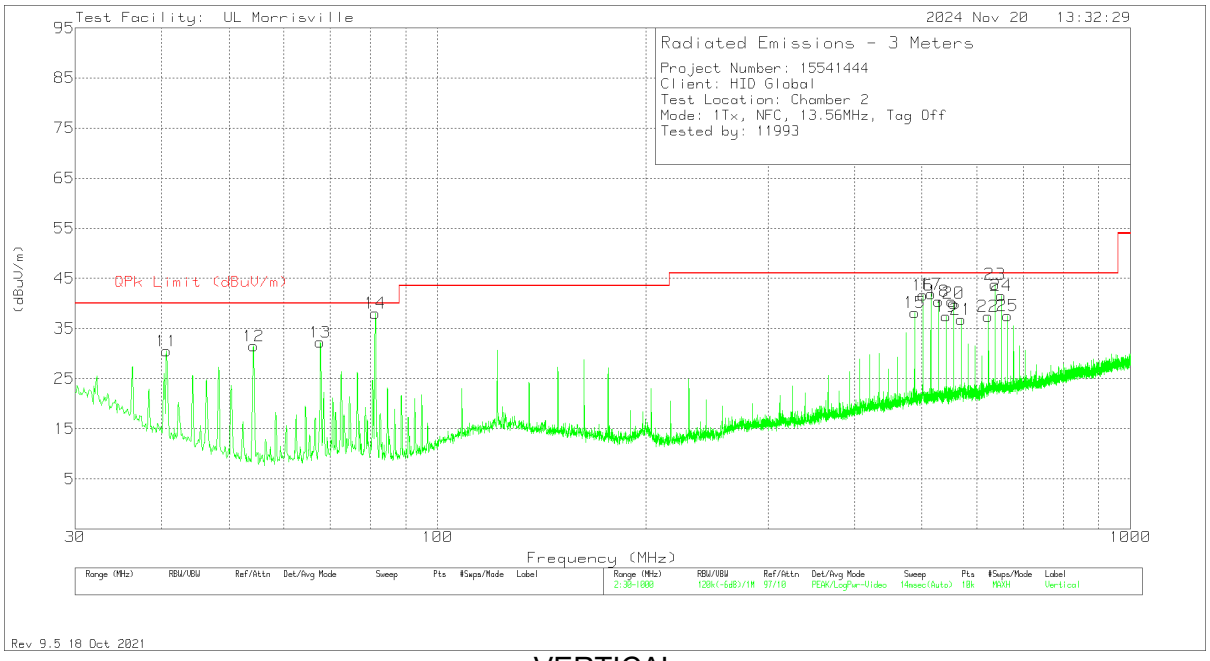
Pk - Peak detector

9.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

9.3.1. TYPE A, TAG OFF



HORIZONTAL



VERTICAL

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
11	40.67	42.19	Pk	19.8	-31.5	30.49	40	-9.51	0-360	101	V
12	54.25	49.19	Pk	13.7	-31.4	31.49	40	-8.51	0-360	101	V
13	67.733	48.84	Pk	14.6	-31.2	32.24	40	-7.76	0-360	101	V
14	81.361	52.98	Qp	14	-31	35.98	40	-4.02	78	119	V
15	488.131	42.43	Pk	24.3	-28.5	38.23	46.02	-7.79	0-360	101	V
1	501.711	42.59	Pk	24.2	-28.4	38.39	46.02	-7.63	0-360	199	H
16	501.7067	42.57	Qp	24.2	-28.4	38.37	46.02	-7.65	81	108	V
2	515.291	40.53	Pk	24.3	-28.4	36.43	46.02	-9.59	0-360	199	H
17	515.2814	44.96	Qp	24.3	-28.4	40.86	46.02	-5.16	9	114	V
3	528.871	35.02	Pk	24.6	-28.3	31.32	46.02	-14.7	0-360	199	H
18	528.8437	42.62	Qp	24.6	-28.3	38.92	46.02	-7.1	13	114	V
4	542.451	38.13	Pk	24.8	-28.2	34.73	46.02	-11.29	0-360	199	H
19	542.451	40.88	Pk	24.8	-28.2	37.48	46.02	-8.54	0-360	101	V
5	555.934	40	Pk	25	-28.2	36.8	46.02	-9.22	0-360	199	H
20	555.9551	42.69	Qp	25	-28.2	39.49	46.02	-6.53	105	107	V
6	569.514	35.4	Pk	25.2	-28.1	32.5	46.02	-13.52	0-360	199	H
21	569.514	39.74	Pk	25.2	-28.1	36.84	46.02	-9.18	0-360	101	V
7	623.737	36.74	Pk	26	-27.9	34.84	46.02	-11.18	0-360	299	H
22	623.737	39.37	Pk	26	-27.9	37.47	46.02	-8.55	0-360	101	V
8	637.317	40.92	Pk	26.4	-27.9	39.42	46.02	-6.6	0-360	299	H
23	637.3132	38.66	Qp	26.4	-27.9	37.16	46.02	-8.86	306	106	V
9	650.8	40.83	Pk	26.3	-27.9	39.23	46.02	-6.79	0-360	299	H
24	650.8715	40.37	Qp	26.3	-27.9	38.77	46.02	-7.25	209	102	V
10	664.477	37.94	Pk	26.2	-27.8	36.34	46.02	-9.68	0-360	299	H
25	664.477	39.13	Pk	26.2	-27.8	37.53	46.02	-8.49	0-360	101	V

Pk - Peak detector

10. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

IC RSS-210, Annex B.6
Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

TEST PROCEDURE

ANSI C63.10-2020 Clause 6.8

RESULTS

No non-compliance noted.

10.1. TYPE A, WITH NO TAG

Reference Frequency: EUT Channel 13.56 MHz @ 20ºC Limit: ± 100 ppm = 1.356 kHz									
Power Supply	Envir. Temp	Frequency Deviation Measureed with Time Elapse							
(Vdc)	(ºC)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)
12.00	50	13.5598096	2.014	13.5598042	2.409	13.5598037	2.447	13.5598033	2.480
12.00	40	13.5598273	0.707	13.5598213	1.152	13.5598161	1.535	13.5598131	1.753
12.00	30	13.5598365	0.030	13.5598363	0.046	13.5598363	0.047	13.5598360	0.064
12.00	***20***	***13.5598369***	***0.000***	***13.5598356***	***0.093***	***13.5598348***	***0.156***	***13.5598339***	***0.219***
12.00	10	13.5598027	2.520	13.5598017	2.594	13.5598025	***2.534***	13.5598037	2.446
12.00	0	13.5598515	-1.080	13.5598544	-1.294	13.5598567	-1.459	13.5598583	-1.577
12.00	-10	13.5598659	-2.136	13.5598677	-2.270	13.5598690	-2.369	13.5598694	-2.396
12.00	-20	13.5598898	-3.905	13.5599111	-5.472	13.5599109	-5.454	13.5599104	-5.421
10.20	20	13.5598746	-2.780	13.5598647	-2.047	13.5598557	-1.389	13.5598465	-0.709
13.80	20	13.5598393	-0.180	13.5598376	-0.052	13.5598365	0.027	13.5598354	0.107

Tested by: 105900; 84740
Test date: 2024-11-20; 2024-12-02

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

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.

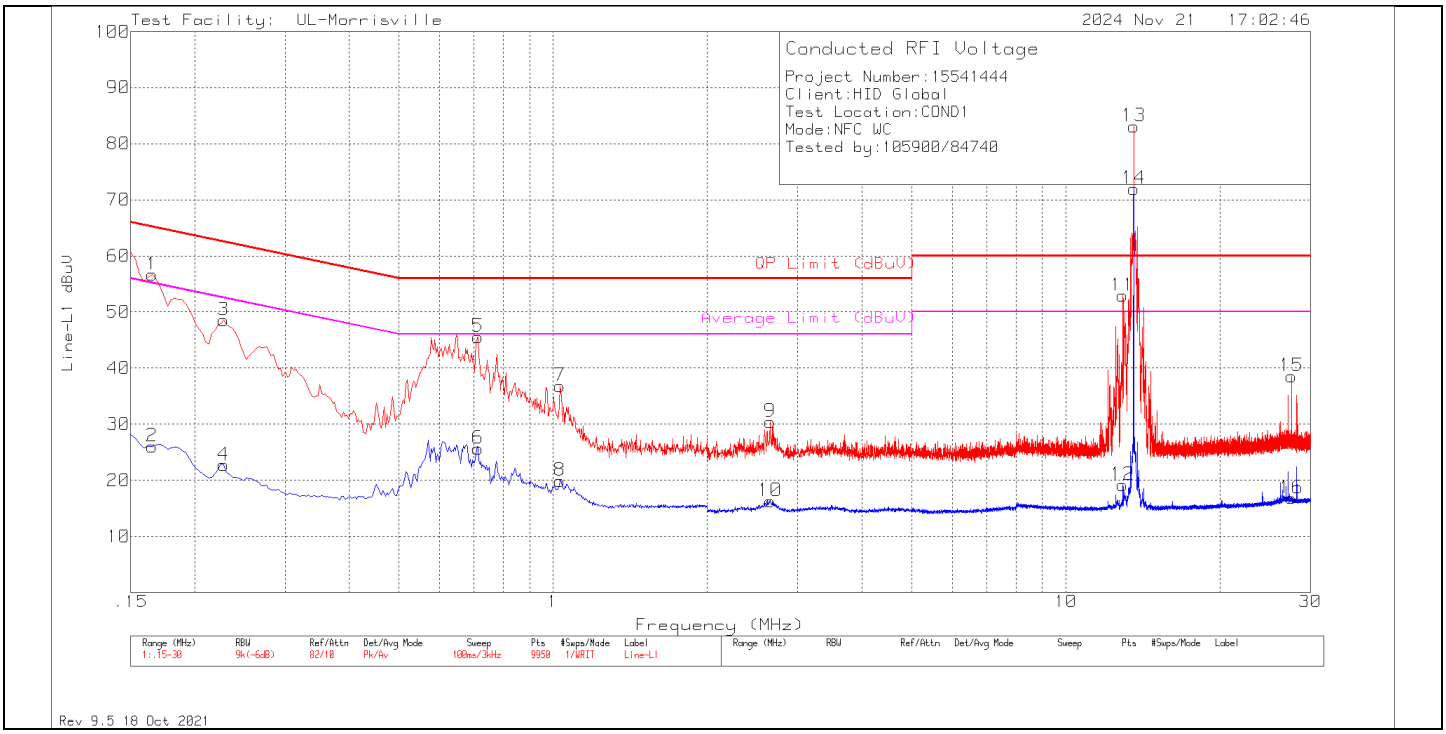
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both lines.

RESULTS

11.1. AC Mains Norm

LINE 1 RESULTS

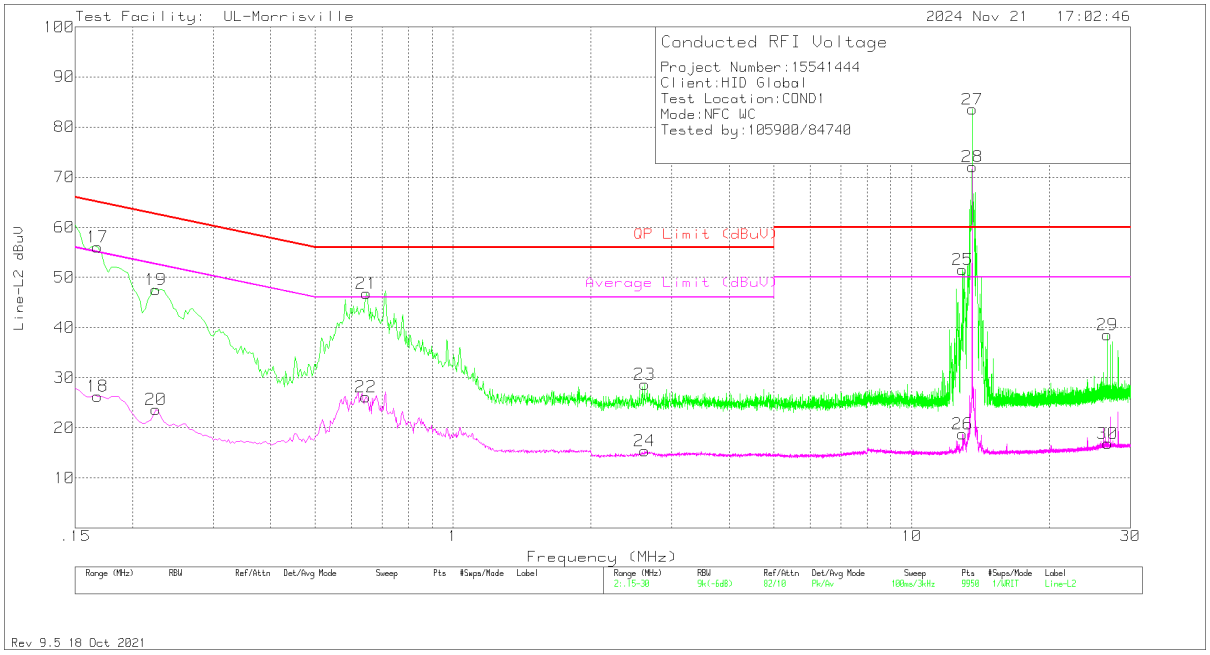


Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	Cbl/Limiter (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.165	36.74	Pk	.2	9.8	9.9	56.64	65.21	-8.57	-	-
2	.165	6.13	Av	.2	9.8	9.9	26.03	-	-	55.21	-29.18
3	.228	28.71	Pk	.1	9.8	9.9	48.51	62.52	-14.01	-	-
4	.228	2.91	Av	.1	9.8	9.9	22.71	-	-	52.52	-29.81
5	.714	25.86	Pk	0	9.8	9.9	45.56	56	-10.44	-	-
6	.714	5.92	Av	0	9.8	9.9	25.62	-	-	46	-20.38
7	1.032	17.1	Pk	0	9.8	9.9	36.8	56	-19.2	-	-
8	1.032	.2	Av	0	9.8	9.9	19.9	-	-	46	-26.1
9	2.652	10.69	Pk	0	9.8	9.9	30.39	56	-25.61	-	-
10	2.652	-3.42	Av	0	9.8	9.9	16.28	-	-	46	-29.72
11	12.924	32.89	Pk	.1	10	9.9	52.89	60	-7.11	-	-
12	12.924	-.85	Av	.1	10	9.9	19.15	-	-	50	-30.85
13*	13.56036	61.44	Qp	.1	10	9.9	81.44	**60**	**21.44**	-	-
14*	13.56036	52.89	Ca	.1	10	9.9	72.89	-	-	**50**	**22.89**
15	27.552	18.04	Pk	.4	10.2	9.9	38.54	60	-21.46	-	-
16	27.552	-3.68	Av	.4	10.2	9.9	16.82	-	-	50	-33.18

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

*Note: Markers 13 and 14 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



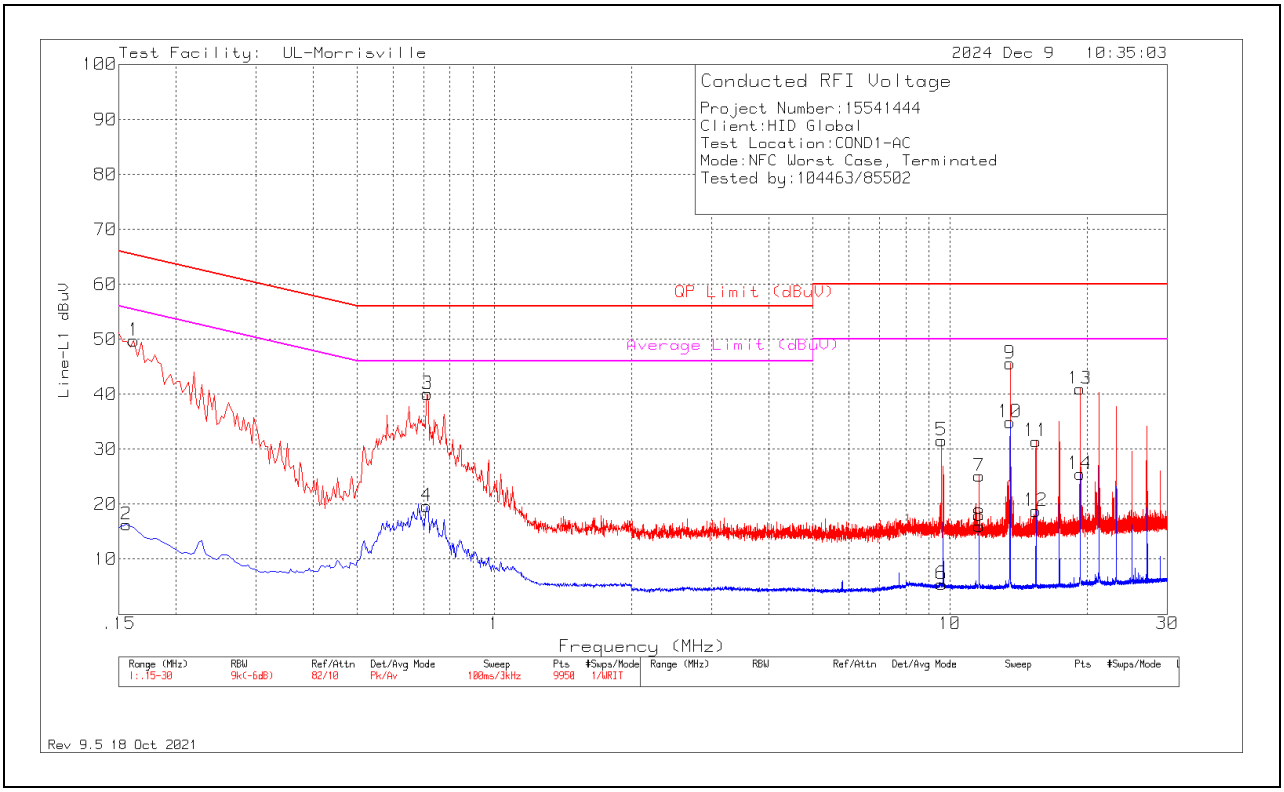
Range 2: Line-L2 .15 - 30MHz											
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Atten (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
17	.168	36.19	Pk	.2	9.8	9.9	56.09	65.06	-8.97	-	-
18	.168	6.39	Av	.2	9.8	9.9	26.29	-	-	55.06	-28.77
19	.225	27.75	Pk	.1	9.8	9.9	47.55	62.63	-15.08	-	-
20	.225	3.84	Av	.1	9.8	9.9	23.64	-	-	52.63	-28.99
22	.645	6.49	Av	0	9.8	9.9	26.19	-	-	46	-19.81
21	.648	27.08	Pk	0	9.8	9.9	46.78	56	-9.22	-	-
23	2.619	8.95	Pk	0	9.8	9.9	28.65	56	-27.35	-	-
24	2.619	-4.29	Av	0	9.8	9.9	15.41	-	-	46	-30.59
25	12.924	31.6	Pk	.1	10	9.9	51.6	60	-8.4	-	-
26	12.924	-1.21	Av	.1	10	9.9	18.79	-	-	50	-31.21
27*	13.5604	61.6	Qp	.1	10	9.9	81.6	**60**	**21.6**	-	-
28*	13.5604	53.47	Ca	.1	10	9.9	73.47	-	-	**50**	**23.47**
29	26.736	18.07	Pk	.4	10.2	9.9	38.57	60	-21.43	-	-
30	26.745	-3.66	Av	.4	10.2	9.9	16.84	-	-	50	-33.16

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

*Note: Markers 27 and 28 are the fundamentals of the device, and not spurious emissions. Section 11.1.1 shows compliance with an NFC/HF terminated sample.

11.1.1. NFC/HF Terminated Sample

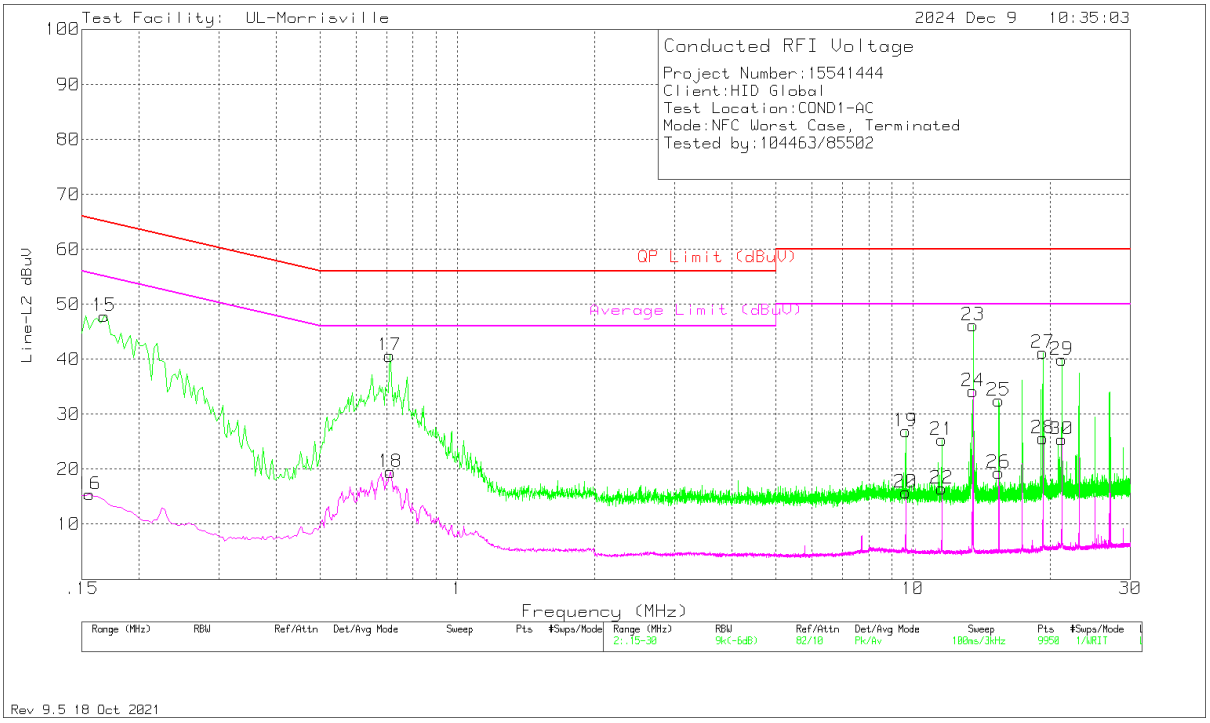
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
2	.156	6.28	Av	.2	9.8	16.28	-	-	55.67	-39.39
1	.162	39.72	Pk	.2	9.8	49.72	65.36	-15.64	-	-
4	.711	9.89	Av	0	9.8	19.69	-	-	46	-26.31
3	.714	30.21	Pk	0	9.8	40.01	56	-15.99	-	-
5	9.594	21.47	Pk	.1	10	31.57	60	-28.43	-	-
6	9.594	-4.64	Av	.1	10	5.46	-	-	50	-44.54
7	11.589	15.04	Pk	.1	10	25.14	60	-34.86	-	-
8	11.592	5.92	Av	.1	10	16.02	-	-	50	-33.98
9	13.56	35.48	Pk	.1	10	45.58	60	-14.42	-	-
10	13.56	24.77	Av	.1	10	34.87	-	-	50	-15.13
11	15.453	21.13	Pk	.2	10.1	31.43	60	-28.57	-	-
12	15.453	8.47	Av	.2	10.1	18.77	-	-	50	-31.23
14	19.308	15.17	Av	.2	10.1	25.47	-	-	50	-24.53
13	19.3095	30.67	Pk	.2	10.1	40.97	60	-19.03	-	-

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

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
16	.156	5.44	Av	.2	9.8	15.44	-	-	55.67	-40.23
15	.168	37.84	Pk	.2	9.8	47.84	65.06	-17.22	-	-
17	.711	30.88	Pk	0	9.8	40.68	56	-15.32	-	-
18	.714	9.65	Av	0	9.8	19.45	-	-	46	-26.55
20	9.648	5.7	Av	.1	10	15.8	-	-	50	-34.2
19	9.651	16.85	Pk	.1	10	26.95	60	-33.05	-	-
22	11.574	6.43	Av	.1	10	16.53	-	-	50	-33.47
21	11.58	15.24	Pk	.1	10	25.34	60	-34.66	-	-
23	13.56	36.05	Pk	.1	10	46.15	60	-13.85	-	-
24	13.56	24.11	Av	.1	10	34.21	-	-	50	-15.79
25	15.435	22.17	Pk	.2	10.1	32.47	60	-27.53	-	-
26	15.435	9.08	Av	.2	10.1	19.38	-	-	50	-30.62
27	19.29	30.92	Pk	.2	10.1	41.22	60	-18.78	-	-
28	19.299	15.37	Av	.2	10.1	25.67	-	-	50	-24.33
30	21.225	14.93	Av	.3	10.2	25.43	-	-	50	-24.57
29	21.228	29.39	Pk	.3	10.2	39.89	60	-20.11	-	-

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

12. SETUP PHOTOS

Please refer to R15541444-EP1 for setup photos

END OF TEST REPORT