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December 18, 2024

HID Global Corporation (US)
611 Center Ridge Dr.
Austin, TX 78753
USA

Dear Nic Holmes,

Enclosed is the EMC test report for compliance testing of HID Global Corporation (US), HID Signo PIV Contact Reader, tested to the requirements of:

- FCC Part 15C and RSS-210 Issue 11

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if we can be of further service to you, please feel free to contact me.

Sincerely,

Nancy LaBrecque
Documentation Department
Eurofins Electrical and Electronic Testing NA, Inc.

Reference: WIRA133283_FCC_IC_LF RFID Rev 2

125kHz RFID
Test Report

for the

HID Global Corporation (US)
HID Signo PIV Contact Reader (Model: 40TC)

Tested under the FCC and ISED Certification Rules for
FCC Part 15C and RSS-210 Issue 11

Bryan Taylor, Wireless Team Lead
Electromagnetic Compatibility Lab

Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	12/18/2024	Initial Issue.
1	11/07/2024	Customer Requested Changes.
2	12/18/2024	Reviewer Requested Changes.

Table of Contents

Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the HID Global Corporation (US) HID Signo PIV Contact Reader, with the requirements of FCC Part 15C and RSS-210 Issue 11. In accordance with FCC Part 15C and RSS-210 Issue 11, the following data is presented in support of the Certification of the HID Signo PIV Contact Reader. HID Global Corporation (US) should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the HID Signo PIV Contact Reader, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15C and RSS-210, in accordance with HID Global Corporation (US), under purchase order number HID022810. All tests were conducted using measurement procedures ANSI C63.4-2014 and C63.10-2013.

FCC Reference	ISED Reference	Description	Compliance
Part 15 §15.203	---	Antenna Requirement	Compliant
Part 15 §15.207(a)	RSS-Gen (8.8)	Conducted Emission Limits	Compliant
Part 15 §15.215	---	20dB Occupied Bandwidth	Compliant
---	RSS-Gen (6.7)	99% Occupied Bandwidth	Compliant
Part 15 §15.209	RSS-210 (7.2) RSS-Gen (8.9)	General Field Strength Limitations	Compliant

Table 1. Executive Summary

Equipment Configuration

A. Overview

Eurofins E&E North America was contracted by HID Global Corporation (US) to perform testing on the HID Signo PIV Contact Reader.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the HID Global Corporation (US) HID Signo PIV Contact Reader.

The results obtained relate only to the item(s) tested.

Product Name:	HID Signo PIV Contact Reader	
Model(s) Tested:	40TC	
FCCID:	JQ6-SIGNO40TC	
ICID:	2236B-SIGNO40TC	
Sample Number:	24775-17	
Equipment Specifications:	Primary Power:	12VDC
	Type of Modulation(s):	ASK
	Equipment Code:	DCD
	Maximum field Strength:	67.43 dBuV/m
	Antenna Type:	loop
	EUT Frequency Ranges:	125kHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor and Sergio Gutierrez	
Test Date(s):	8/26/2024 to 8/31/2024	

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
ANSI C63.4:2014	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
RSS-210 Issue 11: December 2019	Licence-Exempt Radio Apparatus: Category I Equipment
RSS-Gen Issue 5: April 2018	General Requirements for Compliance of Radio Apparatus

Table 3. References

C. Test Site

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

All testing was performed at Eurofins E&E North America, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

ISED Lab Info:
CAB Identifier: US0004
Company Number: 2043D

FCC Lab Info:
Designation Number: US1127

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

Correlation between semi-anechoic chamber and OATS:

Two calibrated Loop antennas were used on an OATS. One antenna was driven by a signal generator with a known power. The receive antenna was initially placed 1m away from the transmit antenna. The two antennas were placed parallel to each other. The receive antenna was in turn connected to a calibrated spectrum analyzer. The emissions were swept from 9 kHz to 30 MHz. The receive antenna was then rotated 90 degrees and measurements re-taken. Additional measurements were taken when the receive antenna was placed at 3meters. This same setup was taken to inside the semi-anechoic chamber and the measurements repeated.

The data was used to correlate the semi-anechoic chamber and OATS.

D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
Occupied Bandwidth Measurements	±4.52 Hz	2	95%
Conducted Power Measurements	±2.74 dB	2	95%
Power Spectral Density Measurements	±2.74 dB	2	95%
Conducted Spurious Emissions	±2.80 dB	2	95%
Conducted Emissions (Mains)	±2.97 dB	2	95%
Radiated Spurious Emissions (9kHz – 1GHz)	±2.95 dB	2	95%
Radiated Spurious Emissions (1GHz - 40GHz)	±3.54 dB	2	95%

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

HID Signo PIV Contact Reader is a Access Control credential reader that is equipped with LF, HF, BLE and Contact card read ability.

The intended use of the product is for gaining secure access into building, sites or places via the use of a secure credential in the form of a LF credential card, HF credential card, NFC enabled smart phone, BLE Mobile credential or Contact chip credential.

Figure 1. Block Diagram of Test Configuration

F. Equipment Configuration

A 13.56MHz credential was placed in the field in front of the HID Signo PIV Contact Reader which was configured to allow continuous reading whilst the credential was present.

G. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Name/Description	Manufacturer	Model Number	Serial Number	*Customer Supplied Calibration Data
None	Laptop Computer	Lenovo	ThinkPad	None

Table 5. Support Equipment

The RFID credential used during the testing is shown below:

Figure 2: Front / Back Photo of the 125kHz RFID Credential

H. Ports and Cabling Information

Ref. Id	Port Name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
---	DC Input	DC Input	1	1m	---	No	12V DC Power Source

Table 6. Ports and Cabling Information

I. Mode of Operation

The RF credential was placed in the field in front of the HID Signo PIV Contact Reader which was configured to allow continuous reading whilst the credential was present.

Transmit Band	Modulation	Channel Frequencies Tested	Exercising Method
125kHz	ASK	125kHz	125kHz RFID Credential

Table 7. Test Channels Utilized

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to HID Global Corporation (US) upon completion of testing.

Antenna Requirements

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Test Results: The HID Signo PIV Contact Reader was compliant with this requirement. The antenna is permanently attached to the unit.

Test Engineer(s): Bryan Taylor

Test Date(s): 8/26/2024

Conducted Emissions

§ 15.207(a) Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** 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 30MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 Ω 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 boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dBμV)	
	Quasi-Peak	Average
* 0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

Table 8. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Note: *Decreases with the logarithm of the frequency.

RSS-GEN (8.8) AC Power-Line Conducted Emissions Limits

Test Requirement(s): **RSS-GEN (8.8):** Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in the below figure, as measured using a 50 µH / 50 Ω line impedance stabilization network (LISN). This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in the below figure shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Frequency (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
* 0.15-0.5	66 to 56	56 to 46[1]
0.5-5	56	46
5-30	60	50

Table 9. AC Power Line Conducted Emissions Limits

Note: *Decreases with the logarithm of the frequency.

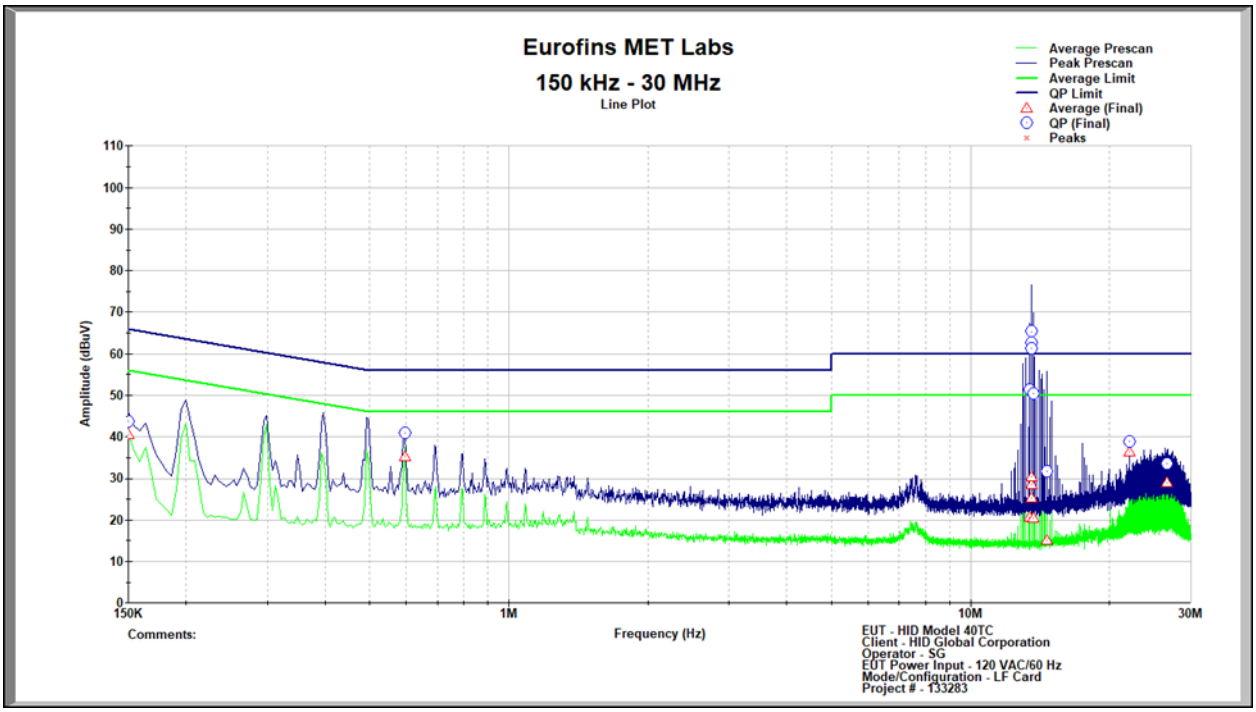
Test Procedure: The EUT was placed on a 0.8 m-high non-conducting table above a ground plane. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω/50 µH Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.10-2013 "Procedures for Compliance Testing of Unlicensed Wireless Devices"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 µH LISN as the input transducer to an EMI receiver.

Test Results: The HID Signo PIV Contact Reader was compliant with this requirement.

Test Engineer(s): Sergio Gutierrez

Test Date(s): 8/28/2024

Conducted Emissions Test Results



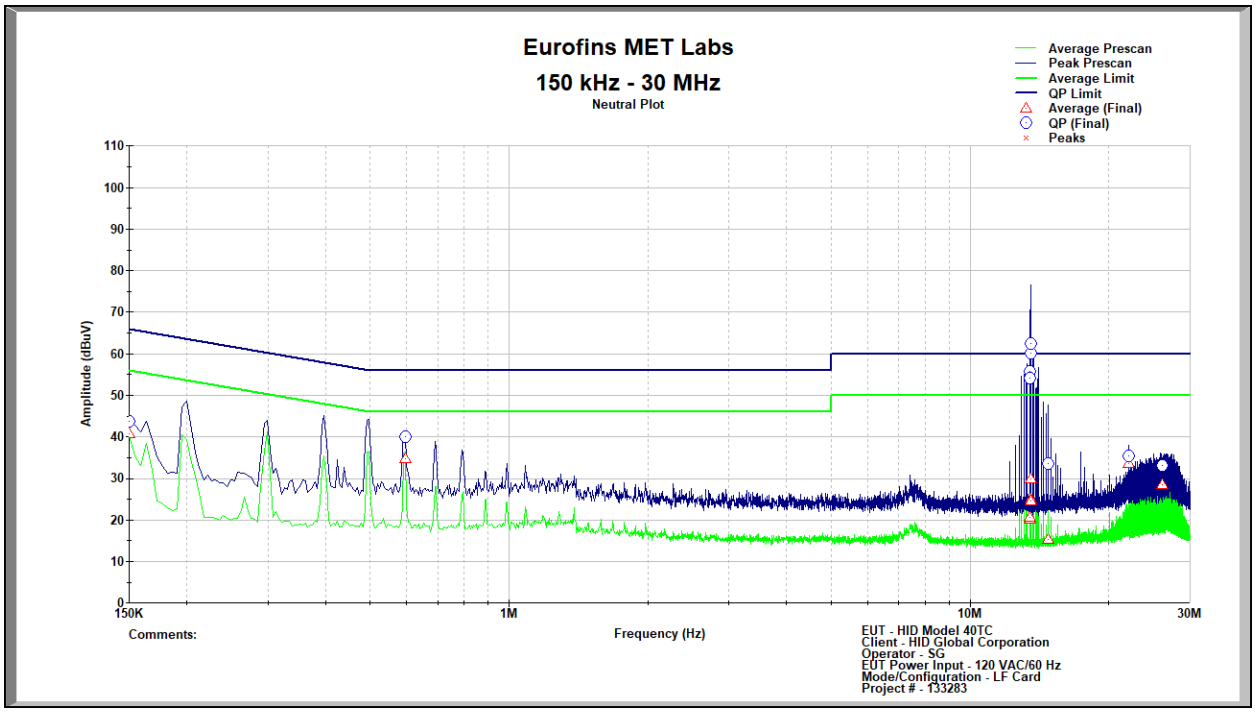
Conducted Emissions, Phase Test Results[1]

Frequency (MHz)	Quasi-Peak (dBµV)	Quasi-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average (dBµV)	Average Limit (dBµV)	Average Margin (dB)
0.150	43.694	66.000	22.306	40.505	56.000	15.495
0.596	40.863	56.000	15.137	35.238	46.000	10.762
13.399	51.427	60.000	8.573	20.508	50.000	29.492
13.706	50.420	60.000	9.580	20.281	50.000	29.719
14.614	31.688	60.000	28.312	15.125	50.000	34.875
22.125	38.807	60.000	21.193	36.299	50.000	13.701
26.676	33.508	60.000	26.492	28.855	50.000	21.145

Table 10. Conducted Emissions Phase, Test Results

[1]The large signal at 13.56MHz is from the RFID reader onboard that operates at that frequency.

Conducted Emissions Test Results



Conducted Emissions, Neutral, Test Results[2]

Frequency (MHz)	Quasi-Peak (dBµV)	Quasi-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average (dBµV)	Average Limit (dBµV)	Average Margin (dB)
0.150	43.775	66.000	22.225	40.647	56.000	15.353
0.596	40.110	56.000	15.890	34.764	46.000	11.236
13.480	55.696	60.000	4.304	20.147	50.000	29.853
13.489	54.137	60.000	5.863	20.551	50.000	29.449
14.781	33.581	60.000	26.419	15.261	50.000	34.739
22.130	35.515	60.000	24.485	33.643	50.000	16.357
26.163	33.084	60.000	26.916	28.375	50.000	21.625

Table 11. Conducted Emissions, Neutral, Test Results

[2]The large signal at 13.56MHz is from the RFID reader onboard that operates at that frequency.

Occupied Bandwidth Measurements

§ 15.215(c) 20 dB Occupied Bandwidth

Test Requirement(s): **§ 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 was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer. Per ANSI C63.10: 2020 the RBW should be between 1% and 5% of the occupied bandwidth.

Test Results: The HID Signo PIV Contact Reader was compliant with this requirement.

RSS-GEN (6.7) 99% Occupied Bandwidth

Test Requirements: The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

Test Procedure: The EUT was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer. Per ANSI C63.10: 2020 the RBW should be between 1% and 5% of the occupied bandwidth.

Test Engineer(s): Bryan Taylor

Test Date(s): 8/27/2024

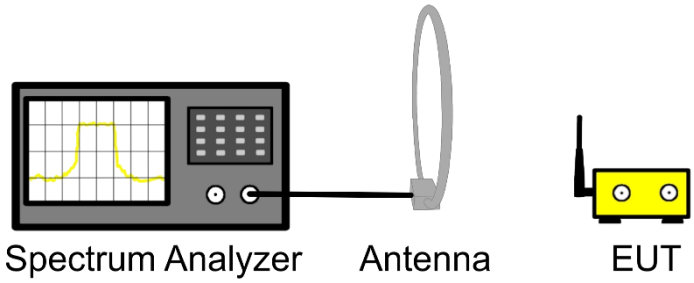
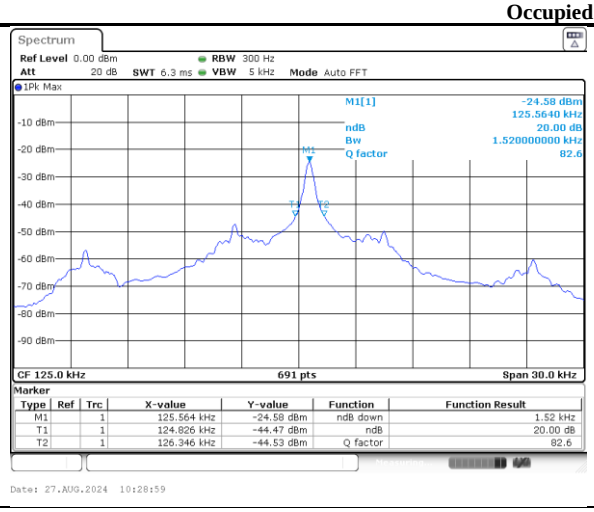


Figure 3. 20 dB Bandwidth and 99% Bandwidth Test Setup

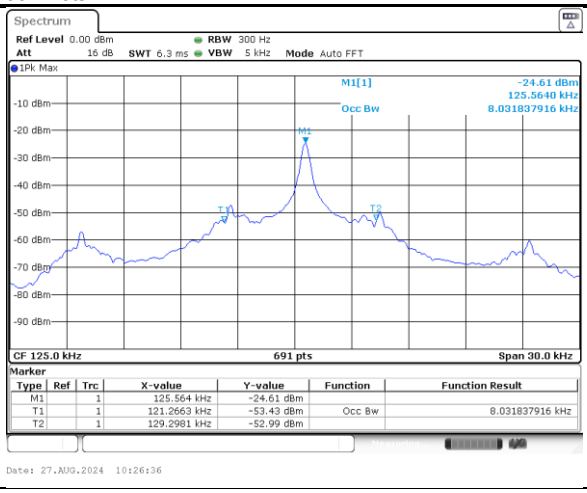
Center Frequency (kHz)	20 dB Bandwidth	99% Bandwidth
125kHz	1.52kHz	8.03kHz

Table 12. Occupied Bandwidth Test Results

Occupied Bandwidth Plots



20dB Bandwidth



99% Bandwidth

Electromagnetic Compatibility Criteria for Intentional Radiators

Radiated Emissions Limits; General Requirements

Test Requirement(s):

§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:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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 (40dBuV/m) **	3
88-216	150 (43.5dBuV/m)**	3
216-960	200 (46.0dBuV/m)**	3
Above 960	500 (54.0dBuV/m)	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.		

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

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

(d) The emission limits shown in 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 emission limits in these three bands are based on measurements employing an average detector.

(e) The provisions in §§ 15.31, 15.33, and 15.35 for 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.

(f) In accordance with § 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in § 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in § 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in § 15.109 that are applicable to the incorporated digital device.

(g) Perimeter protection systems may operate in the 54–72 MHz and 76–88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

RSS-210 (7.2) General Field Strength Limits

Test Requirement(s): RSS-Gen includes the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this standard.

Unless otherwise indicated, unwanted emissions of transmitters and receivers are permitted to fall within the restricted frequency bands listed in RSS-Gen and the TV bands 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-602 MHz; however, fundamental emissions are prohibited in these bands, except where equipment operation is permitted in the applicable RSS.

RSS-Gen (8.9) Transmitter Emission Limits

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength (µV/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
9 - 490 kHz[Note 1]	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Test Procedure:

The EUT was set to transmit and placed on a 0.8 m-high wooden stand inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.10: 2013 were used. For measurements below 30 MHz a loop antenna placed 3m away from the unit was used. For measurements above 30 MHz a biconalog antenna placed 10 m away from the unit was used. Measurements below 30 MHz were conducted with the loop antenna at coaxial (parallel) and planar (perpendicular) orientations. Measurements above 30 MHz were conducted with the biconalog antenna in the vertical and horizontal polarizations. A peak detector was used to perform a pre-scan from 9 kHz to 10 times the fundamental frequency. Spurious emissions within 20 dB of the applicable limit were measured using a quasi-peak detector and recorded in the subsequent section. Peak emissions that were observed over the appliable limit were determined to be digital emissions subject to the requirements of FCC Part 15 Subpart B and ICES-003 subsection 6.2 for Class A devices.

The measurements made at 3 m with the loop antenna (below 30MHz) were then extrapolated to 30m or 300 m using the following correction factors which were applied to the limit.

40log (30/3) = 40 dB
40log (300/3) = 80 dB

The measurements made at 10 m with the biconilog antenna (above 30MHz) were then extrapolated to the 3m using the following correction factor which were applied to the limit.

20log (10/3) = 10.46 dB

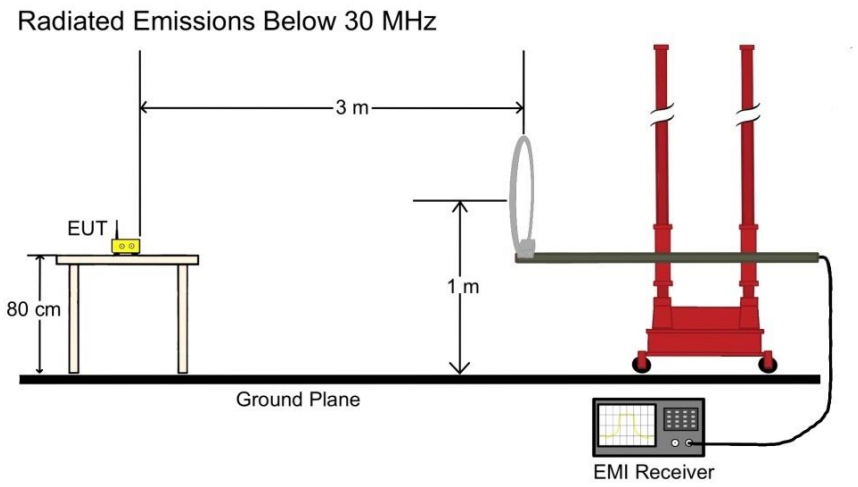


Figure 4: Radiated Emissions (Below 30MHz), Test Setup

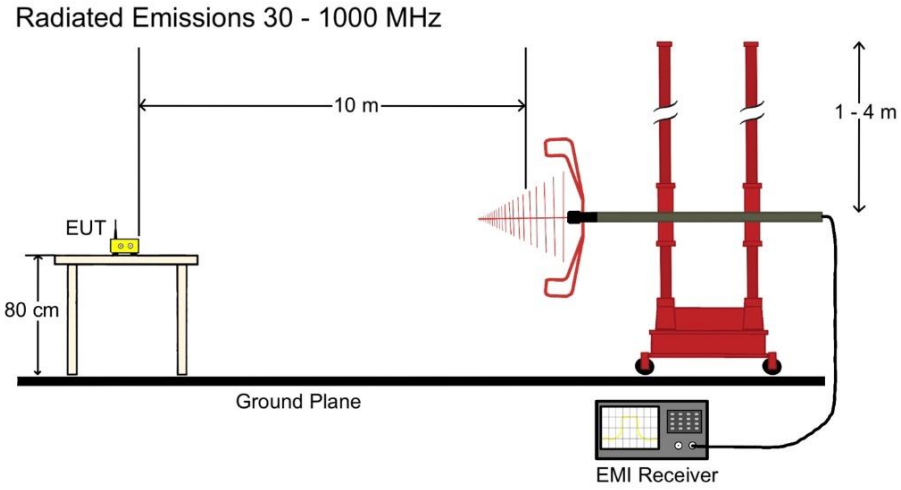


Figure 5. Radiated Emissions (Above 30MHz), Test Setup

Test Results: The HID Signo PIV Contact Reader was compliant with the general radiated emission limits.

Test Engineer(s): Sergio Gutierrez

Test Date(s): 8/30/2024

Frequency [MHz]	Peak Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.099	83.20	107.67	24.46	11.31	H	257.9	1	0.200	Pass
0.099	86.51	107.67	21.16	11.31	V	320.5	1	0.200	Pass
0.126	67.43	105.62	38.19	11.31	H	289.2	1	0.200	Pass
0.490	65.57	73.80	8.23	11.32	H	342.2	1	9.000	Pass
0.497	69.25	73.69	4.44	11.28	V	347.9	1	9.000	Pass
0.771	42.52	69.86	27.33	11.46	H	231	1	9.000	Pass
0.978	40.65	67.79	27.14	11.67	H	263	1	9.000	Pass
1.050	39.46	67.17	27.71	11.77	H	189.1	1	9.000	Pass

Table 13. Radiated Spurious Emissions 9kHz – 30MHz

Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Comment
52.230	31.87	39.55	7.68	-13.65	V	81.6	1.18	120.000	Pass
52.380	30.14	39.55	9.41	-13.58	H	360.5	2.77	120.000	Pass
54.240	31.08	39.55	8.47	-13.77	H	197	3.93	120.000	Pass
54.240	34.14	39.55	5.41	-13.94	V	76.4	1.24	120.000	Pass
63.960	25.03	39.55	14.52	-13.04	H	289.6	3.75	120.000	Pass
64.710	29.93	39.55	9.62	-12.88	V	218.7	1.07	120.000	Pass
66.360	32.78	39.55	6.77	-12.79	H	271.7	2.86	120.000	Pass
66.390	38.41	39.55	1.14	-12.86	V	333.4	1.02	120.000	Pass
128.010	29.21	43.07	13.86	-6.75	V	278.7	1.55	120.000	Pass
149.160	37.68	43.07	5.39	-7.61	H	137.8	2.01	120.000	Pass
162.720	37.24	43.07	5.83	-7.77	H	156.8	1.85	120.000	Pass
162.720	36.08	43.07	6.99	-7.87	V	223.6	1.09	120.000	Pass
176.280	35.11	43.07	7.96	-8.33	V	155.5	1.11	120.000	Pass
255.990	39.51	45.57	6.06	-7.67	H	304.6	0.99	120.000	Pass
384.000	38.35	45.57	7.22	-3.59	H	340.1	1.78	120.000	Pass
384.000	41.19	45.57	4.38	-3.49	V	334.2	1.08	120.000	Pass
768.000	37.90	45.57	7.67	4.40	V	295.2	1.92	120.000	Pass

Table 14. Radiated Spurious Emissions Above 30MHz

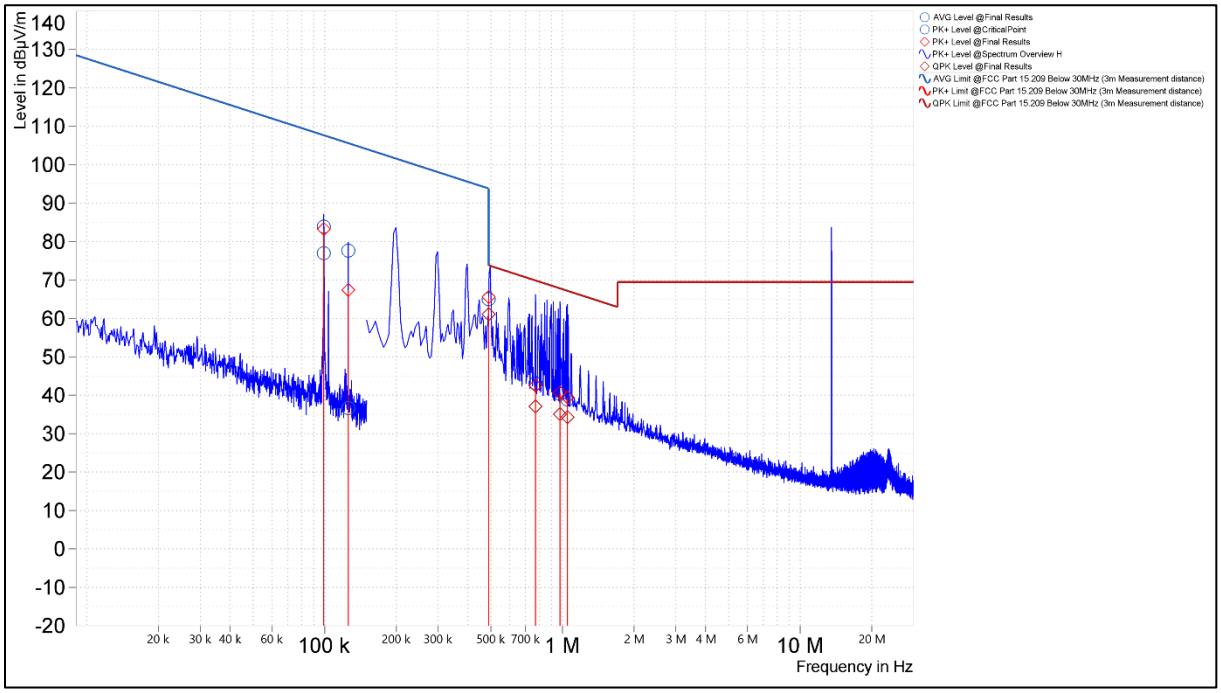


Figure 6. Spurious Emissions Below 30MHz, (Coplanar Loop[3])

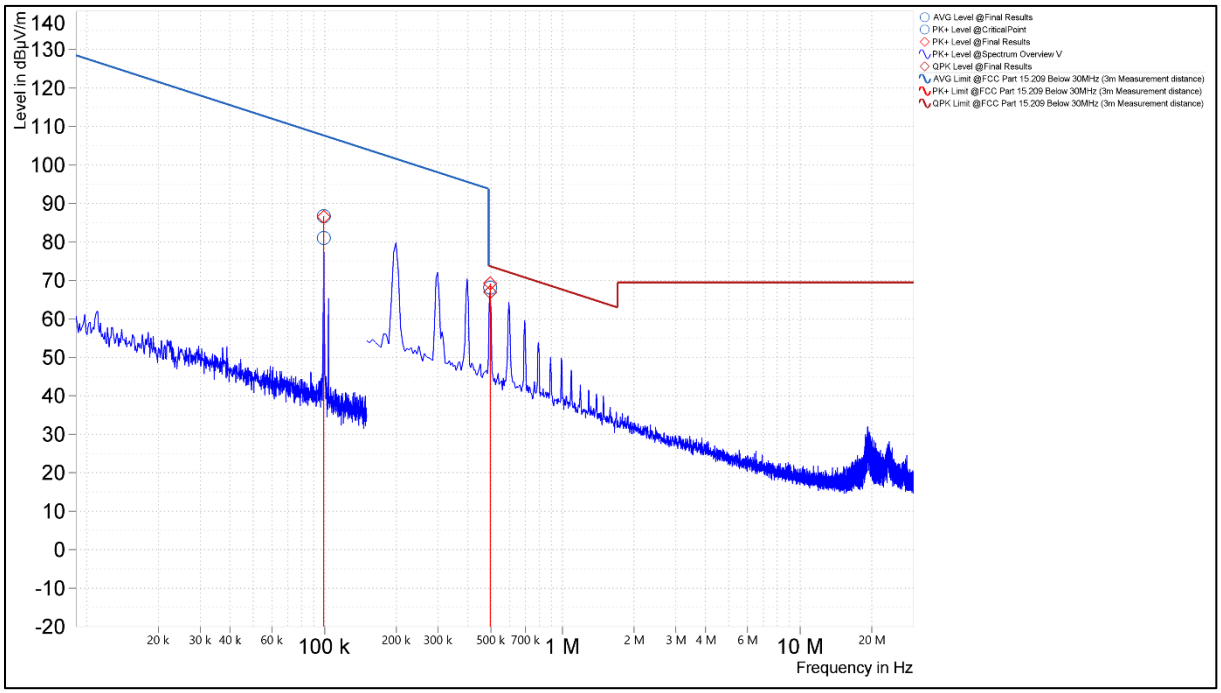


Figure 7. Spurious Emissions Below 30MHz, (Coaxial Loop[3])

[3] Note, the HID Signo PIV Contact Reader also includes a 13.56MHz RFID reader onboard. This signal shows up on the plots but does not indicate a failing result. The 13.56MHz fundamental was subjected to a different limit with results in a separate report.

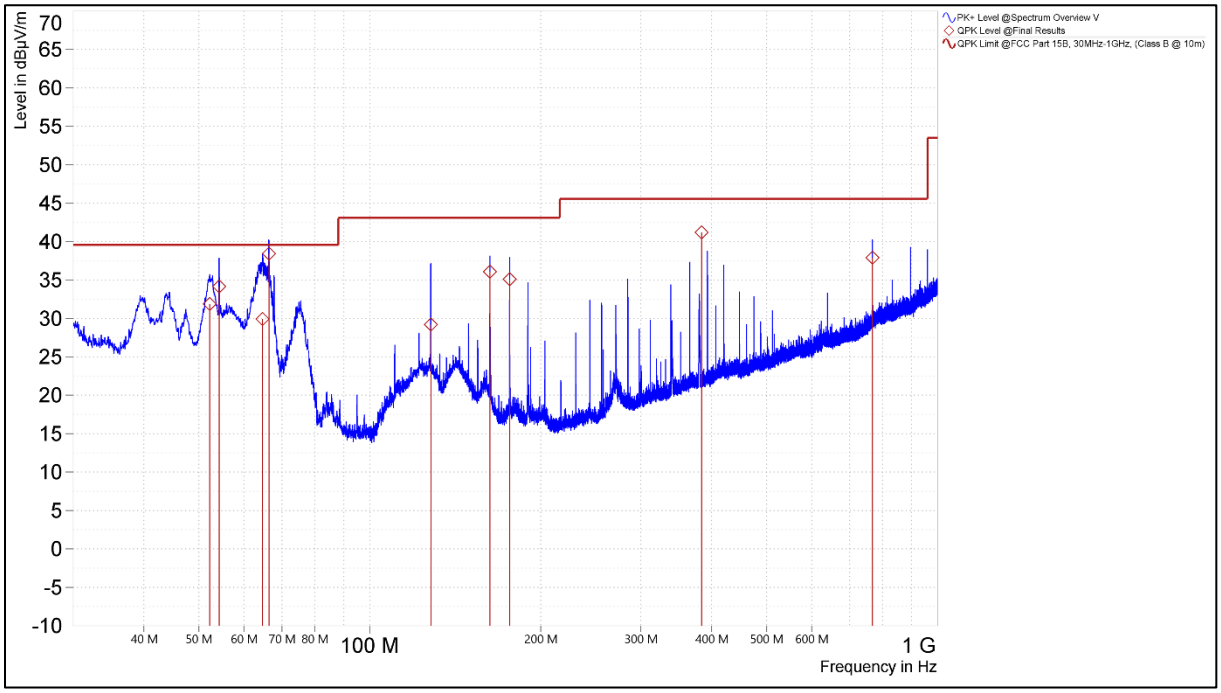


Figure 8. Spurious Emissions 30MHz – 1GHz, (Vertical Polarity)

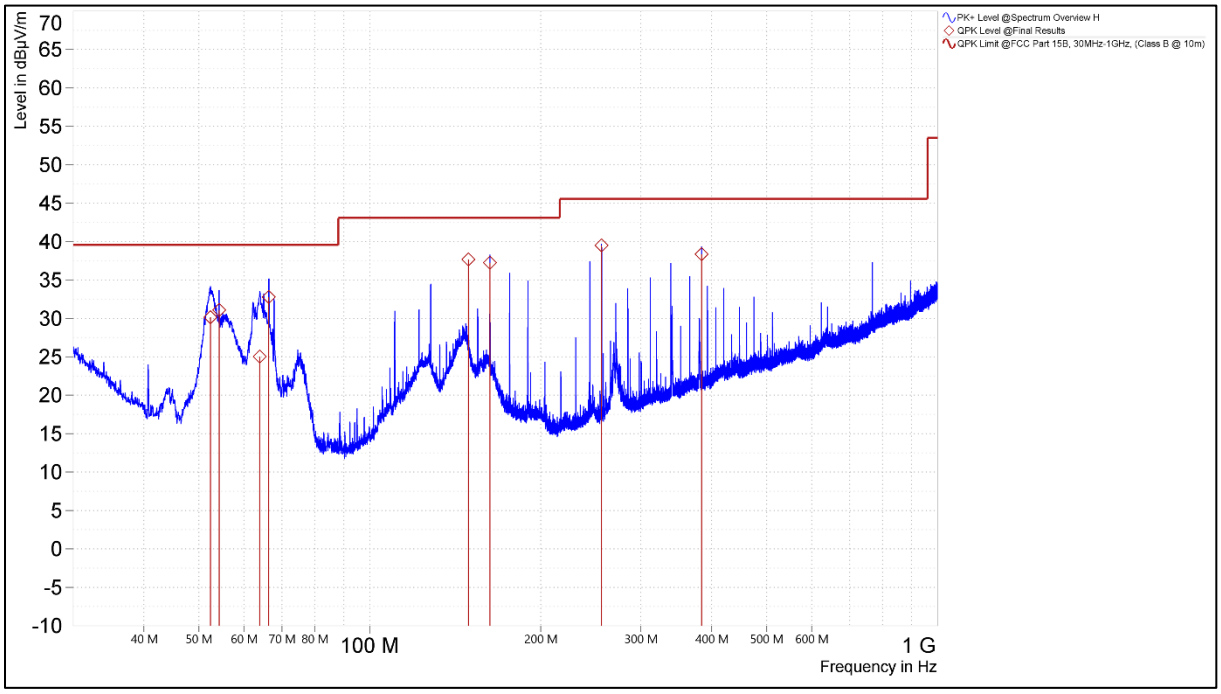


Figure 9. Spurious Emissions 30MHz – 1GHz, (Horizontal Polarity)

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

MET Asset #	Description	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1234	Signal Analyzer	Rohde & Schwarz	FSV40	01/23/2023	01/23/2025
1A1250	Receiver	Rohde & Schwarz	ESW44	04/08/2024	04/08/2025
1A1176	Active Loop Antenna (9KHz-30MHz)	ETS-Lindgren	6502	8/22/2024	08/22/2026
1A1147	Bi-Log Antenna	Suno Sciences Corp	JB3	04/06/2023	04/06/2025
1A1047	Horn Antenna (1GHz – 18GHz)	ETS - Lindgren	3117	06/26/2024	06/26/2025
1A1161	Horn Antenna (18GHz – 40GHz)	ETS Lindgren	3116C	08/01/2024	08/01/2026
1A1065	EMI Receiver	Rohde & Schwarz	ESCI	08/20/2024	08/20/2025
1A1177	Pulse Limiter	Rohde & Schwarz	ESH3Z2	12/14/2023	12/14/2024
1A1122	LISN	TESEQ	NNB 51	09/21/2023	09/21/2024
1A1149	DC Milliohm Meter	GW Instek	GOM-802	09/20/2023	09/20/2024
1A1117	Digital Multimeter	Fluke	87 III	11/6/2023	11/06/2024
1A1225	Environmental Chamber	Espec	EXP-2H/New	5/15/2024	05/15/2025
1A1099	Generator	Com-Power	CGO-51000	See Note	
1A1088	Preamplifier	Rohde & Schwarz	TS-PR1	See Note	
1A1044	Generator	Com-Power	CG-520	See Note	
1A1073	Multi Device Controller	ETS	2090	See Note	
1A1074	System Controller	Panasonic	WV-CU101	See Note	
1A1080	Multi-Device	ETS	2090	See Note	
1A1180	Preamplifier	Miteq	AMF-7D-01001800-22-10P	See Note	

Table 15. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

End of Report