

September 10, 2025

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

Dear Richard Georgerian,

Enclosed is the EMC test report for compliance testing of HID Global Corporation (US), OMNIKEY SE Plug (OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552), tested to the requirements of:

- Title 47 of the CFR, Part 15.225, Subpart C for Certification as an Intentional Radiator.
- RSS-210: Issue 11, License-Exempt Radio Apparatus: Category 1 Equipment

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,

A handwritten signature in blue ink that reads "Nancy LaBrecque".

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

Reference: WIRA135777 – FCC-IC-HF – R1

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



**13.56MHz RFID
Test Report**

for the

**HID Global Corporation (US)
OMNIKEY SE Plug (OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552)**

Tested under
the FCC Certification Rules
contained in
15.225 Subpart C and
RSS-210: Issue 11
for Intentional Radiators



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
Ø	September 2, 2025	Initial Issue.
1	September 10, 2025	TCB Review Comments

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Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the HID Global Corporation (US) OMNIKEY SE Plug (OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552), with the requirements of Part 15, §15.225 and RSS-210 Issue 11, Annex B, B.6. All references are to the most current version of Title 47 of the Code of Federal Regulations and RSS-210 in effect. The following data is presented in support of the Certification of the OMNIKEY SE Plug (OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552). 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 OMNIKEY SE Plug (OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552), 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 15, §15.225 and RSS-210, in accordance with HID Global Corporation (US), under purchase order number 1110995287. 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 §15.225(a)	RSS-210 (B.6.a.i)	Field Strength emissions within the band 13.553 – 13.567 MHz	Compliant
Part 15 §15.225(b)	RSS-210 (B.6.a.ii)	Field Strength emissions within the band 13.410 – 13.553 MHz and 13.567 – 13.710 MHz	Compliant
Part 15 §15.225(c)	RSS-210 (B.6.a.iii)	Field Strength emissions within the band 13.110 – 13.410 MHz and 13.710 – 14.010 MHz	Compliant
Part 15 §15.225(d)	RSS-210 (B.6.a.iv)	Outside-Band Field Strength emissions per 15.209 - 13.110 – 14.010 MHz	Compliant
Part 15 §15.225(e)	RSS-210 (B.6.b)	Frequency Tolerance of the Carrier	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 OMNIKEY SE Plug.

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) OMNIKEY SE Plug.

The Model name, OMNIKEY SE Plug, used in the following test report pages will also represent the Model names, OMNIKEY Plug, Crescendo NFC Reader, and SRD Model: RDU552.

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

Product Name:	OMNIKEY SE Plug	
Sample Number:	25512-1	
FCCID:	JQ6-RDU552	
ICID:	2236B-RDU552	
	Primary Power:	4.75 – 5.5VDC (USB)
	Type of Modulation(s):	ASK
	Equipment Code:	DXX
	Maximum field Strength:	65.43dBuV/m (3 meter measurement distance)
	Antenna Type:	loop
	EUT Frequency Ranges:	13.56MHz
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	
Report Date:	September 2, 2025	

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
RSS-210 Issue 11	Licence-Exempt Radio Apparatus: Category I Equipment
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

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
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.97 dB	2	95%
RF Power Radiated Emissions	±2.95 dB	2	95%
Radiated Emissions, (30 MHz – 1 GHz)	±2.95	2	95%
Radiated Emissions, (1 GHz – 18 GHz)	±3.54	2	95%
Conducted Emission Voltage	±2.97	2	95%

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

The OMNIKEY SE Plug is the next generation of a USB RFID reader from HID Global supporting a full range of HF RFID contactless card technologies and NFC applications. OMNIKEY SE Plug is the ultimate compact RFID reader for mobile use cases. Its small and lightweight design makes it ideal for mobile professionals.

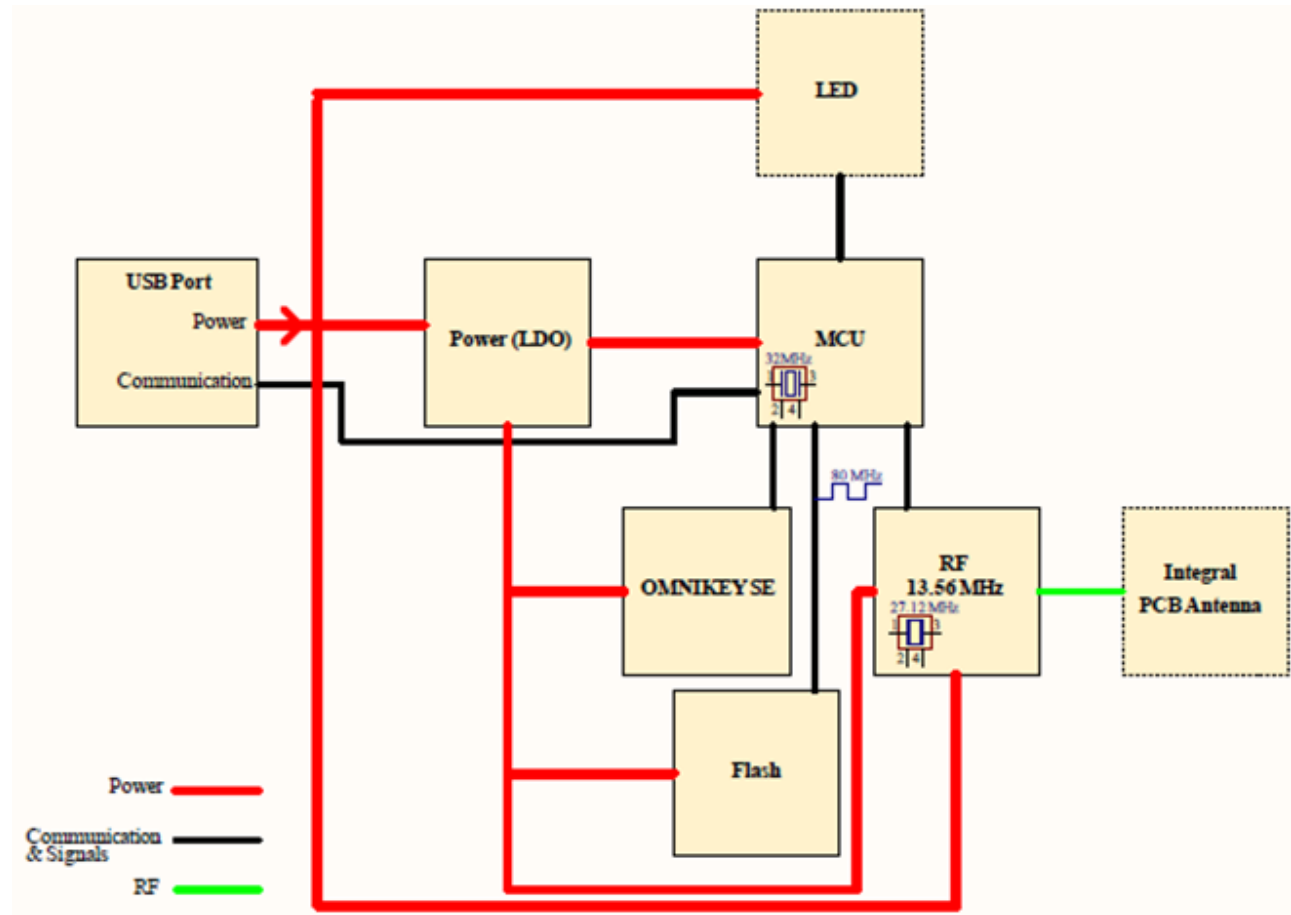


Figure 1. Block Diagram of Test Configuration

F. Equipment Configuration

The EUT was set up as outlined in Figure 1 above. During the testing an RFID credential was placed near the test sample and used to trigger the normal RFID reading transmission from the test sample at 13.56MHz.

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	*Customer Supplied Calibration Data
Support Laptop	Dell	Latitude 7490	N.A.
RFID Credential	HID	iCLASS Seos 8k	N.A.

Table 5. Support Equipment

Ports and Cabling Information

Port Name on EUT	Cable Desc. or reason for none	Length as tested (m)	Max Length (m)	Shielded?	Termination Box ID & Port Name
USB-A	USB-A to USB-C	0.15 m	0.15 m	Yes	Laptop

Table 6. Ports and Cabling Information

H. Mode of Operation

An RFID credential was placed near the test sample in order to trigger the normal RFID reading operation throughout the testing. Pretesting was performed with the test sample connected directly to the laptop as well as at the end of a 0.15m long USB-A to USB-C cable. It was determined that the operating mode with the test sample connected at the end of the 0.15m USB cable represented worst case.

A 2 cm spacer between the EUT and the credential was used to simulate real-life conditions.

The host device was powered an external AC/DC power supply. The AC input voltage was set at 120V/60Hz.

Transmitter	Channel Frequencies Tested	Exercising Method
RFID	13.56MHz	Placing an RFID credential near the reader

Table 7. Transmitters Onboard

I. 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.

J. 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.

Results: The OMNIKEY SE Plug as evaluated, was compliant as the antennas were permanently attached.

Test Engineer(s): Bryan Taylor

Test Date(s): 5/12/2025

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 μ H/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 (dB μ V)	
	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 μ H / 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 (dB μ V)	
	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 μ H 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 μ H LISN as the input transducer to an EMI receiver.

Test Results: The OMNIKEY SE Plug was compliant with this requirement. Testing was performed on the AC input to an AC to DC power supply that was feeding the 12VDC to the OMNIKEY SE Plug.

Test Engineer(s): Frank Hernandez

Test Date(s): 5/9/2025

Conducted Emissions Voltage Test Setup

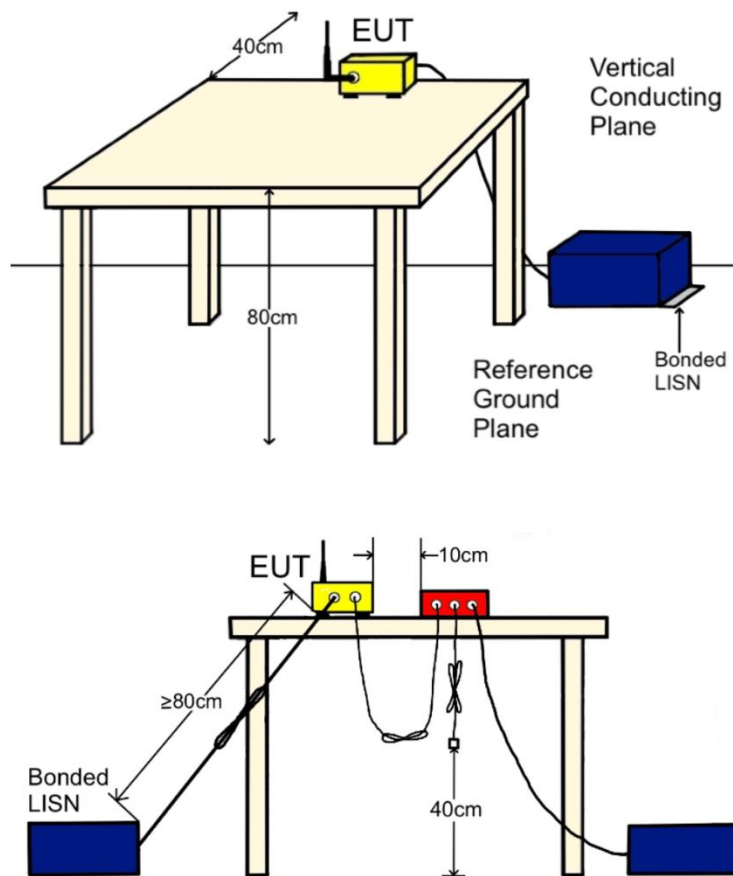
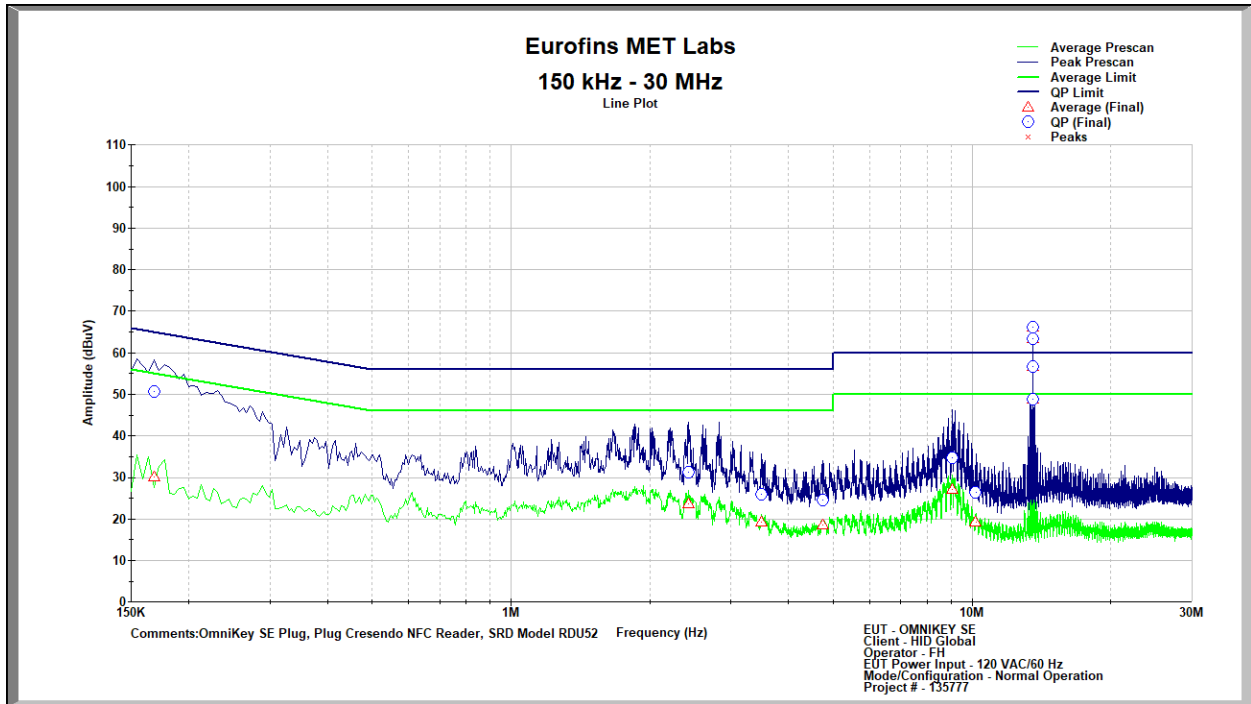


Figure 2. CEV Test Setup

15.207(a) Conducted Emissions Test Results

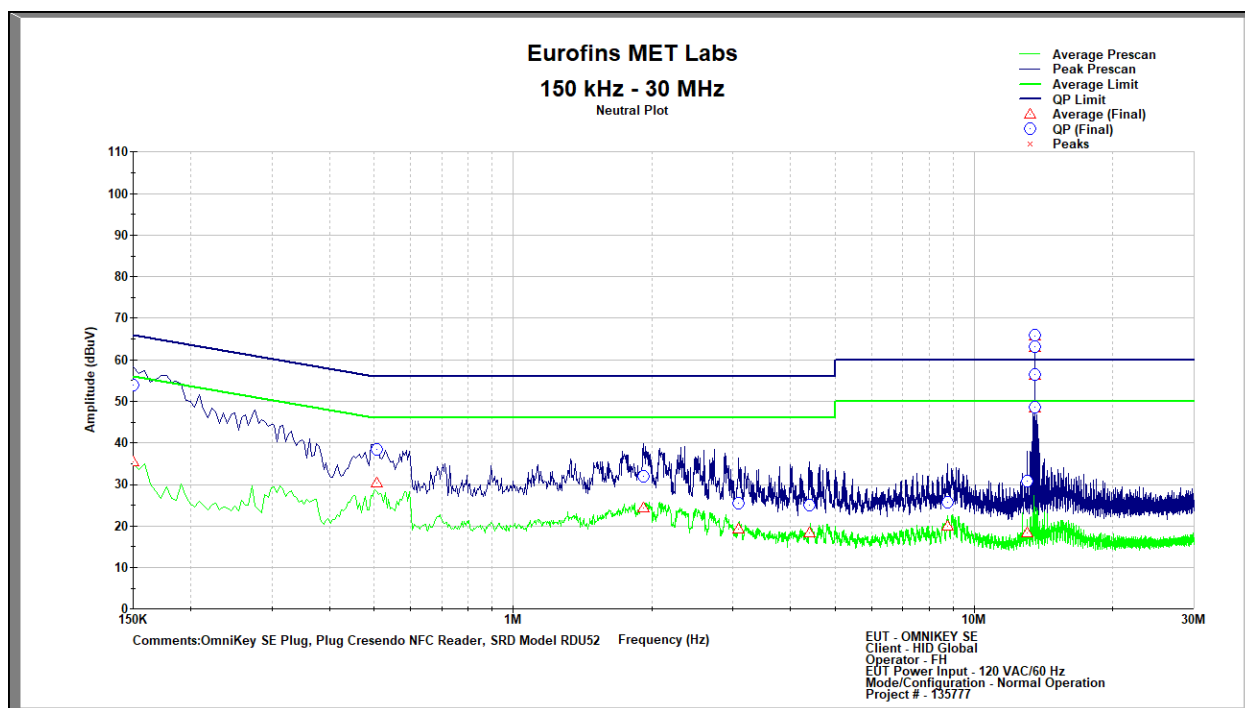


Conducted Emissions, 15.207(a), Phase¹

Frequency (MHz)	Quasi-Peak (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Quasi-Peak Margin (dB)	Average (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)
0.168	50.572	65.486	14.913	30.169	55.486	25.317
2.432	31.327	56.000	24.673	23.634	46.000	22.366
3.495	25.832	56.000	30.168	19.314	46.000	26.686
4.755	24.589	56.000	31.411	18.519	46.000	27.481
9.076	34.757	60.000	25.243	27.117	50.000	22.883
10.185	26.467	60.000	33.533	19.285	50.000	30.715
13.553	48.916	60.000	11.084	48.775	50.000	1.225

Table 10. Conducted Emissions, 15.207(a), Phase, Test Results

¹ The frequency over the limit originates from the 13.56MHz RFID reader onboard



Conducted Emissions, 15.207(a), Neutral²

Frequency (MHz)	Quasi-Peak (dBμV)	Quasi-Peak Limit (dBμV)	Quasi-Peak Margin (dB)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)
0.150	53.810	66.000	12.190	35.440	56.000	20.560
0.505	38.373	56.000	17.627	30.340	46.000	15.660
1.914	31.995	56.000	24.005	24.230	46.000	21.770
3.079	25.584	56.000	30.416	19.226	46.000	26.774
4.391	25.120	56.000	30.880	18.209	46.000	27.791
8.752	25.621	60.000	34.379	19.938	50.000	30.062
13.030	30.879	60.000	29.121	18.285	50.000	31.715
13.553	48.529	60.000	11.471	48.396	50.000	1.604

Table 11. Conducted Emissions, 15.207(a), Neutral, Test Results

² The frequency over the limit originates from the 13.56MHz RFID reader onboard

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. Due to the fundamental emission being similar to a CW it was not possible to adjust the RBW to be between 1 and 5% of the occupied bandwidth. Therefore the 20dB bandwidth was measured with a 1kHz bandwidth and it was ensured that it lied entirely within the allocated band.
Test Results:	The OMNIKEY SE Plug was compliant with this requirement. The 20dB Bandwidth is shown on the plots on the following pages.
Test Engineer(s):	Bryan Taylor
Test Date(s):	5/13/2025

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 Results The OMNIKEY SE Plug was compliant with this requirement. The 99% Bandwidth is shown on the plots on the following pages.

Test Engineer(s): Bryan Taylor

Test Date(s): 5/13/2025

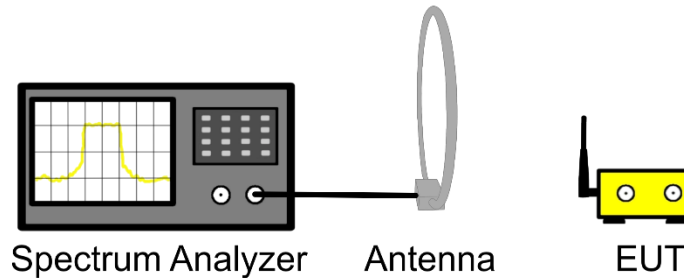
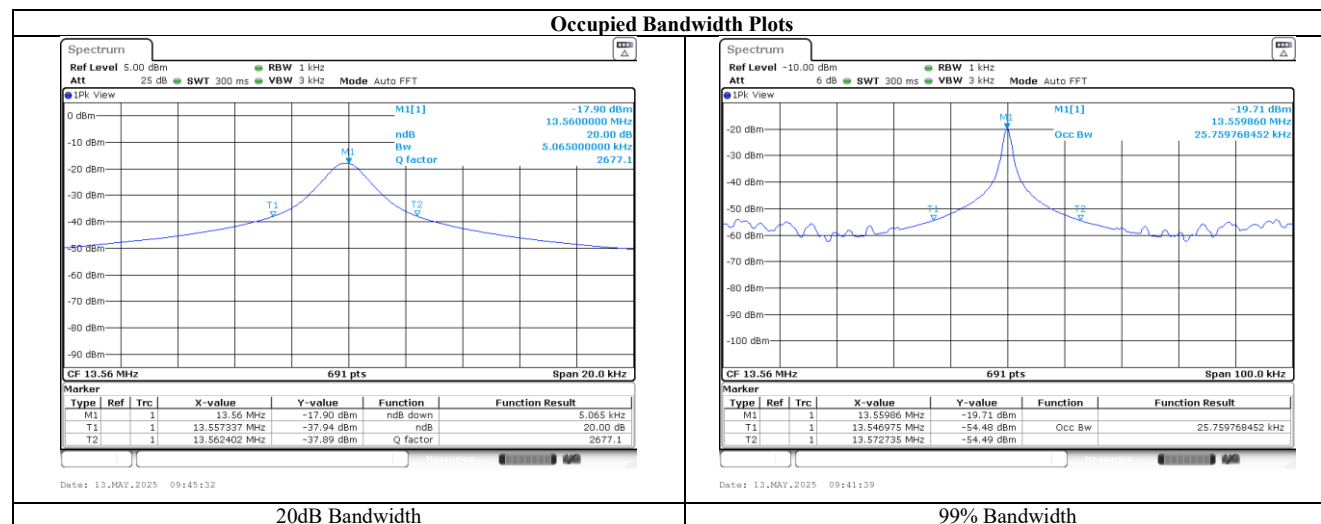


Figure 3. 20 dB Bandwidth and 99% Bandwidth Test Setup

Transmitter Under Test	Center Frequency (MHz)	20 dB Bandwidth	99% Bandwidth
RFID	13.56MHz	5.06kHz	25.76kHz

Table 12. Occupied Bandwidth Test Results



Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.225(a-d) Field Strength of Radiated Emissions

- Test Requirement(s):** **15.225 (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.
- 15.225 (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.
- 15.225 (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.
- 15.225 (d)** The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

RSS-210 (B.6.a(ii - iv)) Field Strength of Radiated Emissions

- Test Requirement(s):** **RSS-210 (B.6.a(i))** The field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 15.848 mV/m (84 dBμV/m) at 30 meters.
- RSS-210 (B.6.a(ii))** Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 μV/m (50.5 dBμV/m) at 30 meters.
- RSS-210 (B.6.a(iii))** Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 μV/m (40.5 dBμV/m) at 30 meters.
- RSS-210 (B.6.a(iv))** The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in RSS-GEN Section 8.9.

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

$$40\log(30/3) = 40 \text{ dB}$$
$$40\log(300/3) = 80 \text{ dB}$$

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

$$20\log(10/3) = +10.46 \text{ dB}$$

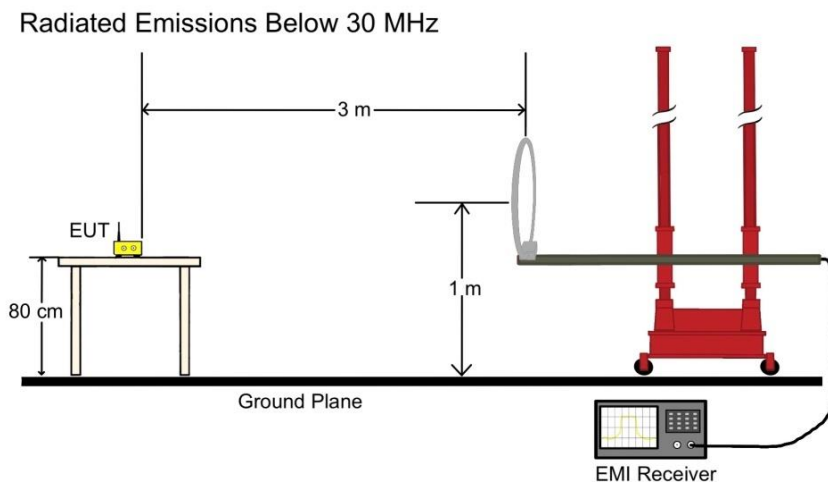


Figure 4: Radiated Emissions (Below 30MHz), Test Setup

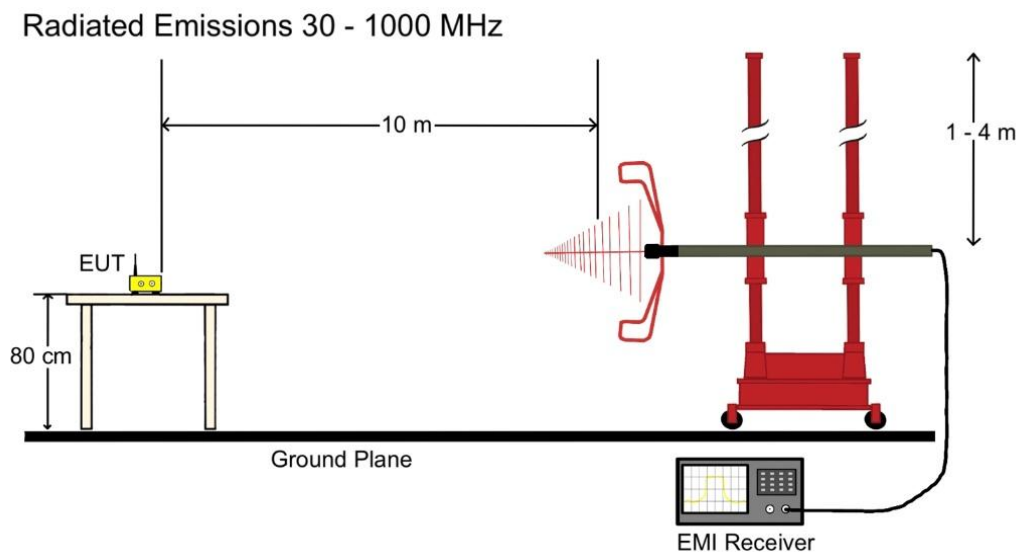


Figure 5. Radiated Emissions (Above 30MHz), Test Setup

Test Results: The OMNIKEY SE Plug was compliant with the requirements of §15.225(a - d) and RSS-210 RSS-210 (B.6.a(i, ii, iii, and iv)).

Test Engineer(s): An Dang

Test Date(s): 5/9/2025 - 5/12/2025

Radiated Field Strength Test Results

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
13.241	28.69	80.50	51.81	10.62	V	105	1	9.000	Pass
13.317	11.06	80.50	69.44	10.62	H	281.8	1	9.000	Pass
13.349	43.10	80.50	37.40	10.62	V	195.1	1	9.000	Pass
13.358	13.69	80.50	66.81	10.62	H	338.8	1	9.000	Pass
13.560	61.12	124.00	62.88	10.61	H	168	1	9.000	Pass
13.560	65.43	124.00	58.57	10.61	V	249.5	1	9.000	Pass
13.718	19.09	80.50	61.41	10.60	H	300.6	1	9.000	Pass
13.772	42.36	80.50	38.14	10.60	V	120.5	1	9.000	Pass
13.776	33.12	80.50	47.38	10.60	H	126.2	1	9.000	Pass
13.875	28.73	80.50	51.77	10.59	V	195.1	1	9.000	Pass
13.938	11.12	80.50	69.38	10.59	H	135	1	9.000	Pass
13.983	27.67	80.50	52.83	10.59	V	137.5	1	9.000	Pass

Figure 6. Worst Case In-Band Field Strength

Frequency [MHz]	Peak Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.708	48.29	70.60	22.31	11.47	H	226.1	1	9.000	Pass
0.708	46.89	70.60	23.71	11.47	V	277.2	1	9.000	Pass
1.086	38.17	66.88	28.71	11.77	H	214.9	1	9.000	Pass
1.455	45.80	64.34	18.54	11.70	H	208.9	1	9.000	Pass
1.460	40.78	64.31	23.53	11.70	V	76	1	9.000	Pass
13.560	62.32	69.50	7.18	10.61	H	179.9	1	9.000	Pass
13.560	65.49	69.50	4.01	10.61	V	259	1	9.000	Pass
17.786	20.22	69.50	49.28	10.40	H	130.9	1	9.000	Pass

Figure 7. Worst Case Field Strength Below 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]	Result
32.160	17.15	29.55	12.40	-1.76	H	140.2	1.6	120.000	Pass
149.160	22.95	33.07	10.12	-7.61	H	351.5	3.99	120.000	Pass
149.160	21.41	33.07	11.66	-7.71	V	77.2	1.5	120.000	Pass
160.890	20.69	33.07	12.38	-7.76	V	75.9	1.36	120.000	Pass
166.080	21.12	33.07	11.95	-8.26	V	85.1	1.16	120.000	Pass
176.280	26.17	33.07	6.90	-8.43	H	31.5	3.35	120.000	Pass
189.840	22.43	33.07	10.64	-8.46	H	202.8	3.63	120.000	Pass
203.400	25.77	33.07	7.30	-7.74	H	185	3.88	120.000	Pass
216.960	24.31	35.57	11.26	-8.79	H	346.1	4	120.000	Pass
230.520	25.61	35.57	9.96	-8.17	H	343.4	3.44	120.000	Pass
325.440	30.10	35.57	5.47	-4.76	H	223.4	2.61	120.000	Pass

Figure 8. Worst Case Field Strength Above 30MHz

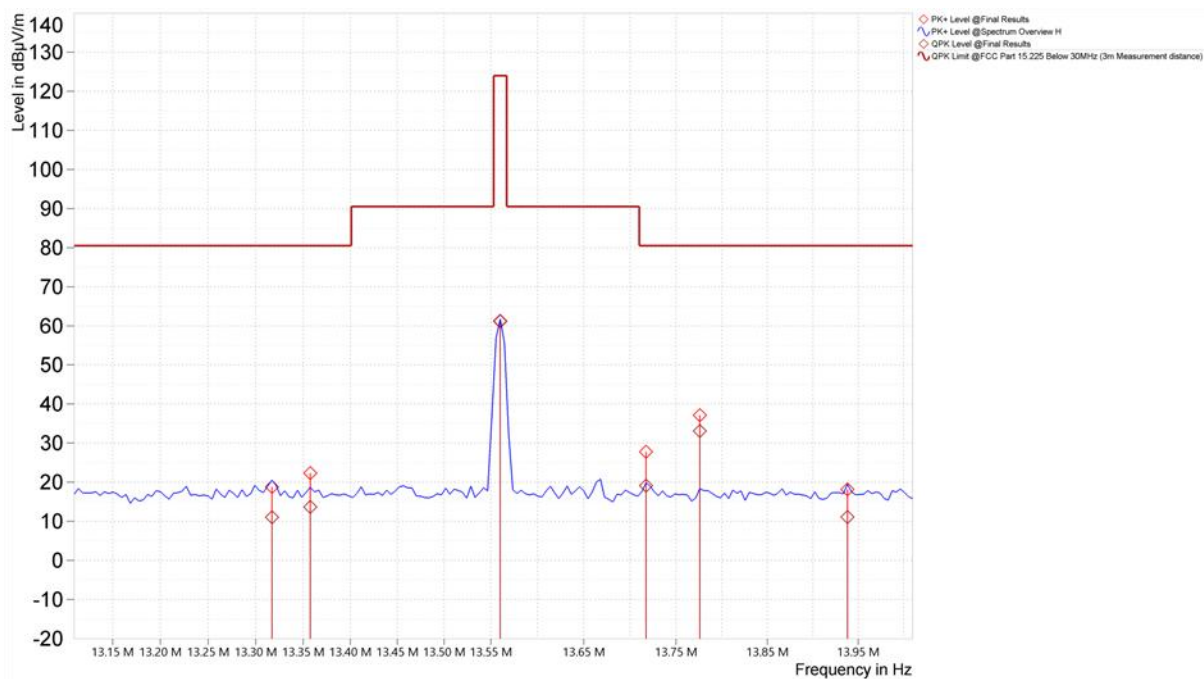


Figure 9. In-Band Emission Mask (Coplanar Loop)

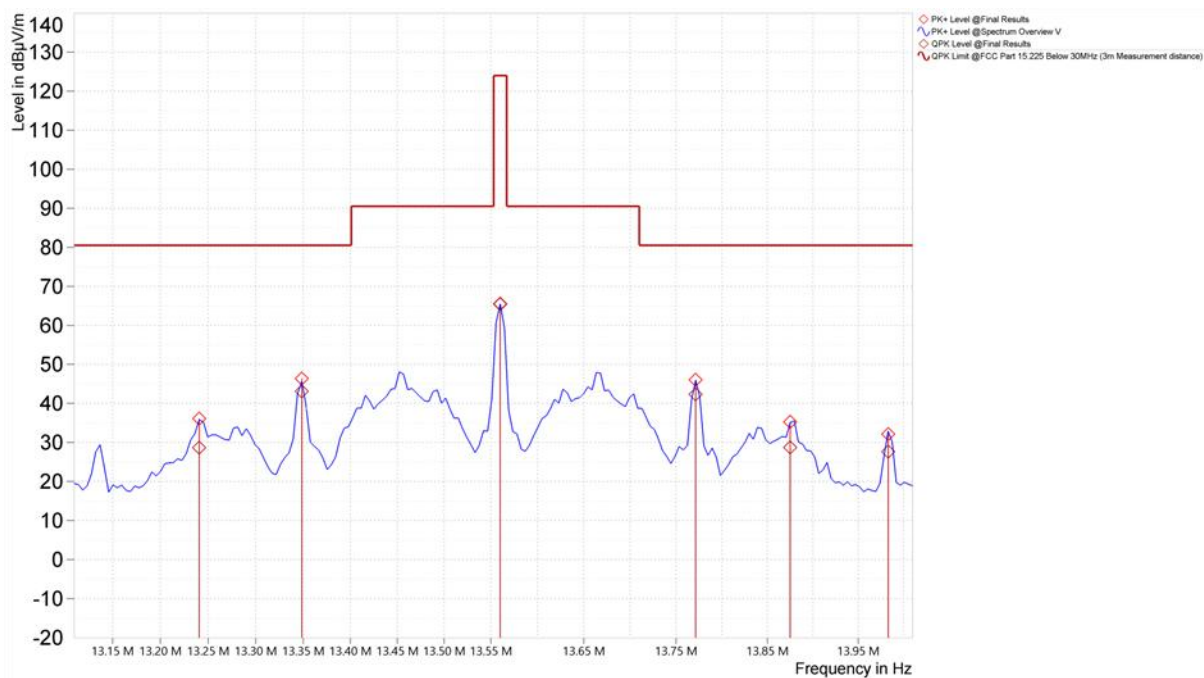


Figure 10. In-Band Emission Mask (Coaxial Loop)

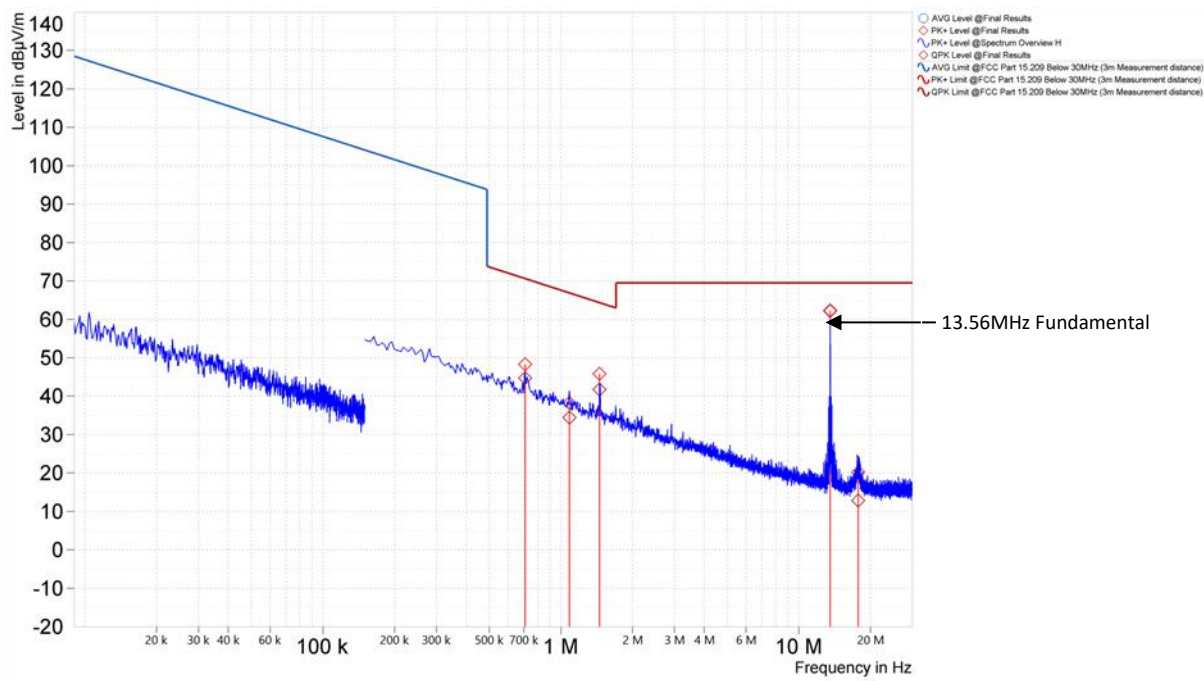


Figure 11. Out of Band Emissions Below 30MHz (Coplanar Loop)

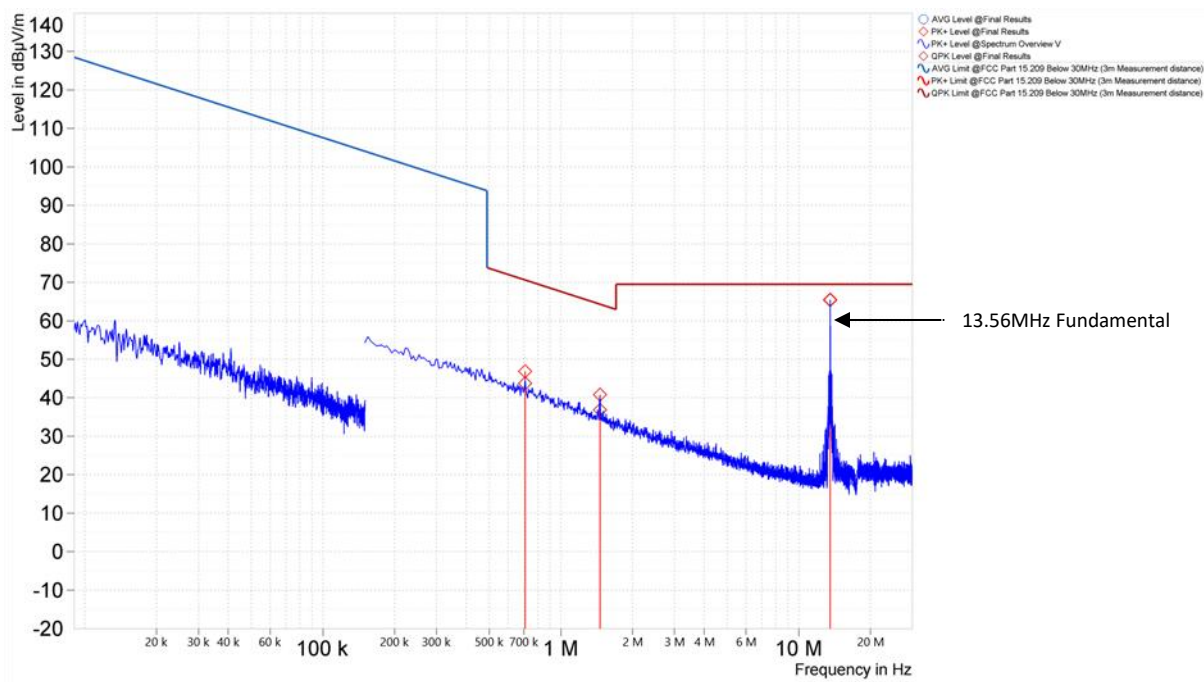


Figure 12. Out of Band Emissions Below 30MHz (Coaxial Loop)

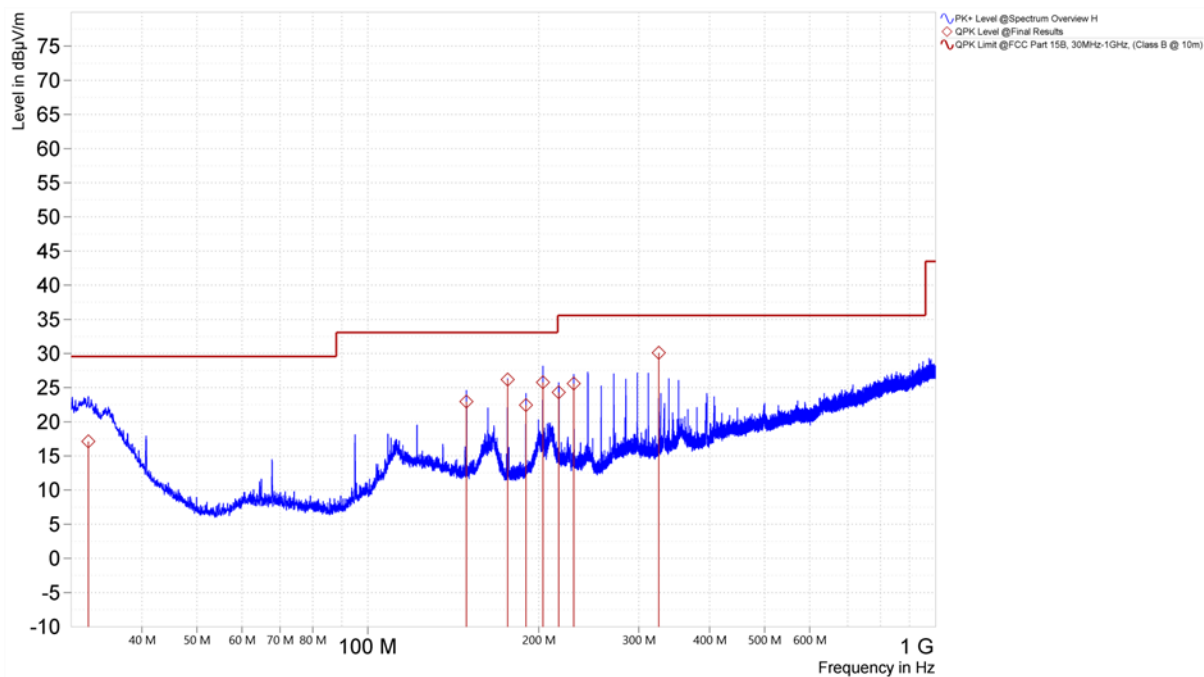


Figure 13. Out of Band Emissions Above 30MHz (Vertical Polarity)

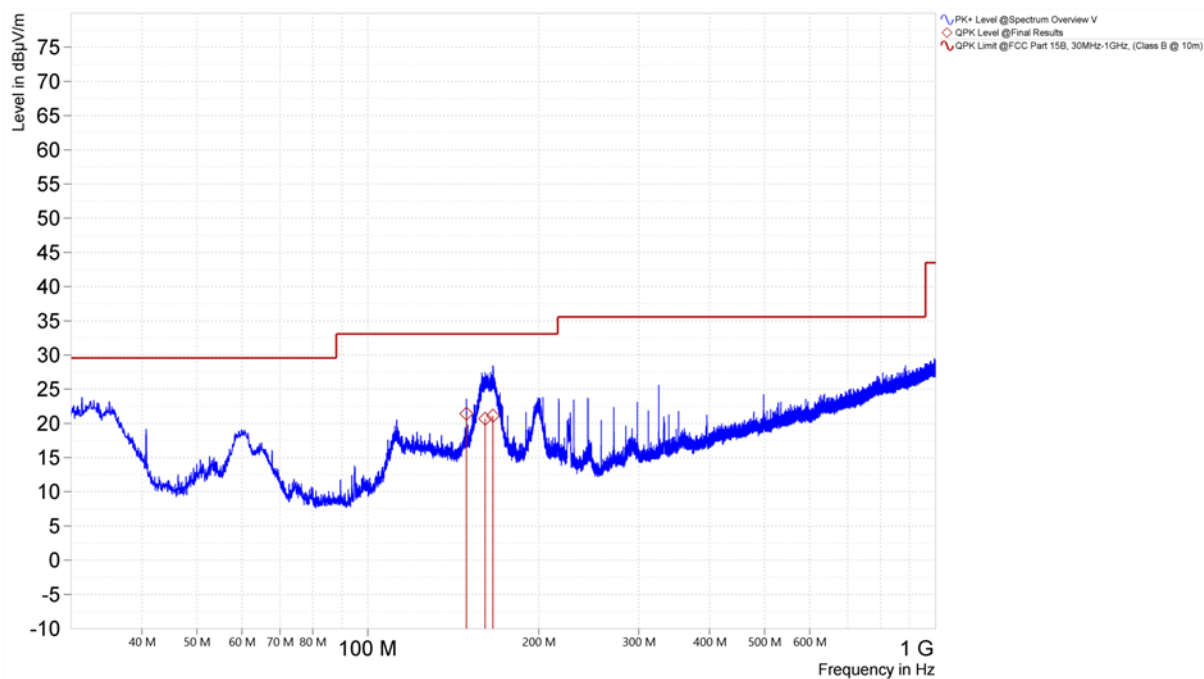


Figure 14. Out of Band Emissions Above 30MHz (Horizontal Polarity)

Electromagnetic Compatibility Criteria for Intentional Radiators

Frequency Stability

Test Requirement(s): **15.225(e)** The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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.

RSS-210 (B.6.b) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ (± 100 ppm) 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.

Test Procedure: Measurements are in accordance with section 6.8 of ANSI C63.10. The EUT was placed in the Environmental Chamber and allowed to reach desired temperature. A spectrum analyzer was connected to a magnetic field loop antenna and used to measure the frequency drift via a radiated path measurement. The EUT was set to transmit in the operating frequency range. Frequency drift was investigated for the extreme temperatures and nominal temperature, until the unit is stabilized then recorded the reading in tabular format with the temperature range of -20° to 50°C. The frequency stability tests were performed with the use of a DC power supply powering the product.

Test Results: The OMNIKEY SE Plug was compliant with Part 15.225 (e) and RSS-210 (B.6.b) requirement(s) of this section.

Test Engineer(s): Bryan Taylor

Test Date(s): 5/13/2025

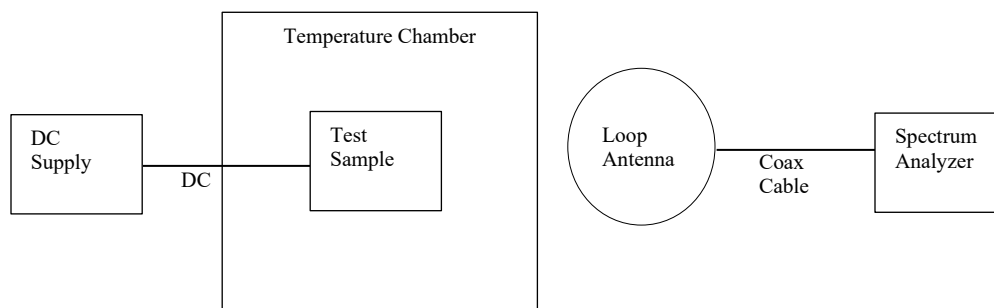


Figure 15. Temperature Stability Test Setup

Operating Frequency:		13,560,000	Hz			
Reference Voltage:		120	VAC			
Deviation Limit:		0.01	%			
Voltage %	Voltage (VAC)	Temp (°C)	Measured Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	Limit (%)
100%	120	-30	13,559,881	-119	-0.0009	0.01
100%	120	-20	13,559,906	-94	-0.0007	0.01
100%	120	-10	13,559,902	-98	-0.0007	0.01
100%	120	0	13,559,910	-90	-0.0007	0.01
100%	120	10	13,559,903	-97	-0.0007	0.01
100%	120	20	13,559,848	-152	-0.0011	0.01
100%	120	30	13,559,891	-109	-0.0008	0.01
100%	120	40	13,559,908	-92	-0.0007	0.01
100%	120	50	13,559,913	-87	-0.0006	0.01
115%	138	20	13,559,910	-90	-0.0007	0.01
85%	102	20	13,559,895	-105	-0.0008	0.01

Figure 16. Frequency Stability Test Results³

³ The +/- 15% voltage variation was applied to the AC input of the laptop computer since that is how this device is normally powered (via a USB port on a laptop).

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	FSV Signal Analyzer	Rohde & Schwarz	FSV 40	03/13/2025	03/13/2026
1A1250	EMI Test Receiver	Rohde & Schwarz	ESW44	03/28/2025	03/28/2026
1A1176	Active Loop Antenna (9KHz-30MHz)	ETS-Lindgren	6502	08/22/2024	08/22/2026
1A1050	Bi-Log Antenna	Schaffner	CBL-6112D	03/05/2024	03/05/2026
1A1065	EMI Test Receiver	Rohde & Schwarz	ESCI	08/20/2024	08/20/2025
1A1177	Pulse Limiter	Rohde & Schwarz	ESH3Z2	12/11/2024	12/11/2025
1A1257	True-RMS Multimeter	Fluke	179	02/07/2025	02/07/2026
3A3215	ATC Digital Ohmmeter	Valhalla Scientific	4150	05/24/2024	05/24/2025
3A3399	Environmental Chamber	Thermotron	SM-32-8200	05/14/2024	05/14/2025
1A1099	Generator	Com-Power	CGO-51000	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	
3A3219	DC Power Supply	Topward	6303A	See Note	

Table 13. Test Equipment List

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

End of Report