

06/25/2021

HID Global Corporation  
611 Center Ridge Drive  
Austin, Texas 78753

Dear Robert Cresswell,

Enclosed is the EMC Wireless test report for compliance testing of the HID Global Corporation, ELEMENT Card Marking System SRD Model: X002600 as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 15 Subpart C for Intentional Radiators.

Thank you for using the services of Eurofins Electrical and Electronic Testing NA, Inc. If you have any questions regarding these results or if Eurofins Electrical and Electronic Testing NA, Inc. can be of further service to you, please feel free to contact me.

Sincerely yours,  
EUROFINS ELECTRICAL AND ELECTRONIC TESTING NA, INC.



Joel Huna  
Documentation Department

Reference: (\\HID Global Corporation\\WIRA112652B-FCC209 LF)



Certificates and reports shall not be reproduced except in full, without the written permission of Eurofins Electrical and Electronic Testing NA, Inc. While use of the A2LA logo in this report reflects Eurofins Electrical and Electronic Testing NA, Inc. accreditation under these programs, the report must not be used by the client to claim product certification, approval, or endorsement by A2LA, or any agency of the Federal Government. This letter of transmittal is not a part of the attached report.

Eurofins Electrical and Electronic Testing NA, Inc. is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

## **Electromagnetic Compatibility Criteria Test Report**

for the

**HID Global Corporation  
ELEMENT Card Marking System  
SRD Model: X002600**

**Tested under**  
the FCC Certification Rules  
contained in  
15.209 Subpart C for Intentional Radiators

**Eurofins Electrical and Electronic Testing NA, Inc. Report:  
WIRA112652B-FCC209**

06/25/2021

**Prepared For:**

**HID Global Corporation  
611 Center Ridge Drive  
Austin, Texas 78753**

**Prepared By:**  
**Eurofins Electrical and Electronic Testing NA, Inc.**  
13501 McCallen Pass, Austin, TX 78753

**Electromagnetic Compatibility Criteria  
Test Report**

for the

**HID Global Corporation  
ELEMENT Card Marking System  
SRD Model: X002600****Tested under**  
the FCC Certification Rules  
contained in  
15.209 Subpart C for Intentional RadiatorsAdan Arab, Project Engineer  
Electromagnetic Compatibility Lab

**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. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.209 under normal use and maintenance.

Jonathan Tavira,  
Manager, Electromagnetic Compatibility Lab

## Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	06/25/2021	Initial Issue.

## Table of Contents

<b>I.</b>	<b>Executive Summary .....</b>	<b>1</b>
	A. Purpose of Test .....	1
	B. Executive Summary .....	1
<b>II.</b>	<b>Equipment Configuration .....</b>	<b>2</b>
	A. Overview .....	2
	B. References.....	3
	C. Test Site .....	3
	D. Measurement Uncertainty .....	3
	E. Description of Test Sample.....	3
	F. Equipment Configuration.....	6
	G. Support Equipment .....	6
	H. Ports and Cabling Information.....	6
	I. Mode of Operation.....	7
	J. Method of Monitoring EUT Operation .....	7
	K. Modifications .....	7
	a) Modifications to EUT.....	7
	b) Modifications to Test Standard.....	7
	L. Disposition of EUT.....	7
<b>III.</b>	<b>Electromagnetic Compatibility Criteria for Intentional Radiators .....</b>	<b>8</b>
	§ 15.203 Antenna Requirement .....	8
	§ 15.207(a) Conducted Emissions Limits.....	9
	§ 15.209(d) Radiated Spurious Emissions Requirements and Band Edge.....	12
<b>IV.</b>	<b>Test Equipment .....</b>	<b>14</b>

## List of Tables

Table 1. Executive Summary of EMC Part 15 Subpart C Compliance Testing .....	1
Table 2. EUT Summary Table .....	2
Table 3. References .....	3
Table 4. Uncertainty Calculations Summary .....	3
Table 5. Equipment Overview and Test Configuration Information .....	5
Table 6. Equipment Configuration .....	6
Table 7. Support Equipment .....	6
Table 8. Ports and Cabling Information .....	6
Table 9. EUT (s) Antenna Description .....	8
Table 10. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a) .....	9
Table 11. Conducted Emissions, OK 5127SI LF, Test Results .....	11
Table 12. Conducted Emissions, Test Equipment .....	11
Table 13. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a) .....	12
Table 14. Spurious Emissions, OK 5127SI, 0.009-30 MHz Test Results .....	13
Table 15. Test Equipment List .....	14

## List of Figures

Figure 1. Block Diagram of Test Configuration .....	3
Figure 2. CEV Test Setup .....	10
Figure 3: Radiated Emissions, Test Setup .....	12

## Executive Summary

### A. Purpose of Test

An EMC evaluation was performed to determine compliance of the HID Global Corporation ELEMENT Card Marking System SRD Model:X002600, with the requirements of Part 15, §15.209. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the ELEMENT Card Marking System SRD Model: X002600. HID Global Corporation should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the ELEMENT Card Marking System SRD Model: X002600, 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, §15.209, in accordance with HID Global Corporation, purchase order number HID008315 R2. All tests were conducted using measurement procedure ANSI C63.10-2013.

FCC Reference 47 CFR Part 15 Subpart C	Description	Compliance
Part 15 §15.203	Antenna Requirement	Compliant
Part 15 §15.207(a)	Conducted Emission Limits	Compliant
Title 47 of the CFR, Part 15 §15.209	Radiated Spurious Emissions Requirements	Compliant

**Table 1. Executive Summary of EMC Part 15 Subpart C Compliance Testing**

## Equipment Configuration

### A. Overview

Eurofins Electrical and Electronic Testing NA, Inc. was contracted by HID Global Corporation to perform testing on the ELEMENT Card Marking System SRD Model: X002600, under HID Global Corporation's purchase order number HID008315 R2.

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, ELEMENT Card Marking System SRD Model: X002600.

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

<b>Model(s) Tested:</b>	X002600	
<b>Model(s) Covered:</b>	X002600, X002500	
<b>EUT Specifications:</b>	Primary Power: 100V - 240V AC	
	FCC ID: JQ6-X002600	
	<b>Type of Modulations:</b>	FSK
	<b>Equipment Code:</b>	DCD
	<b>Operating Frequency</b>	125 kHz
	<b>Antenna Type:</b>	Inductive Coil
	<b>Antenna Gain:</b>	1 dBi
	<b>Firmware Version:</b>	1.0.0.1031
	<b>Power Setting:</b>	Factory Default
<b>Analysis:</b>	The results obtained relate to all model(s) covered.	
<b>Environmental Test Conditions:</b>	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
<b>Evaluated by:</b>	Adan Arab	
<b>Report Date(s):</b>	06/25/2021	

**Table 2. EUT Summary Table**



## B. References

<b>CFR 47, Part 15, Subpart C</b>	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
<b>ANSI C63.4:2014</b>	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
<b>ISO/IEC 17025:2017</b>	General Requirements for the Competence of Testing and Calibration Laboratories
<b>ANSI C63.10:2013</b>	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

## C. Test Site

All testing was performed at Eurofins Electrical and Electronic Testing NA, Inc., 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.

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 Eurofins Electrical and Electronic Testing NA, Inc.

## D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
<b>Conducted Emission Voltage</b>	$\pm 2.97$	2	95%
<b>RF Frequencies</b>	$\pm 4.52$ Hz	2	95%
<b>RF Power Conducted Emissions</b>	$\pm 2.32$ dB	2	95%
<b>RF Power Radiated Emissions</b>	$\pm 3.01$ dB	2	95%

Table 4. Uncertainty Calculations Summary

## E. Description of Test Sample

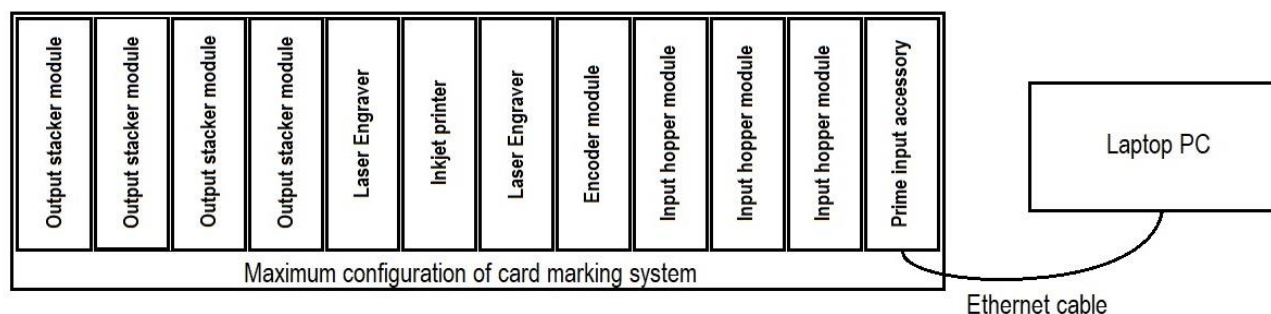


Figure 1. Block Diagram of Test Configuration

<b>Name of EUT/Model:</b>	<b>Element Card Marking System SRD Model: X002600/X002500</b>
<b>Description of EUT and its intended use:</b>	The HID ELEMENT card marking system is an industrial card printer/encoder/laser engraver used for high-volume ID and financial card issuance. It is modular and scalable with high-resolution, UV inkjet printing, optional laser engraving and an array of encoding options. It is suited for the high-cycle requirements of large government ID card programs, financial institutions, service bureaus and large enterprises.
<b>Selected Operation Mode(s):</b>	The system has been configured to simulate normal print processes that involves the Prime input accessory with display, 4 input card hoppers, 3W laser engraver, 8W laser engraver, inkjet Printer, and 4 output card stackers. No actual cards are used in the operation.
<b>Rationale for the selection of the Operation Mode(s):</b>	Flashing blue LEDs indicate normal operation of the entire system, RIFD encoding devices (5127 CK Mini, 5127CK SI, SmartWare) and contact encoder OK 5122. HID printer user interface has been designed to simulate normal and flag any erroneous behavior throughout the entire printing process.
<b>Monitoring Method(s):</b>	Monitor Flashing blue LEDS lights during normal operation on 3W and 8W laser engraving units. Monitor ethernet connection with support laptop that is running HID Printer user interface. Ensure there are no errors flagged to the user, during testing.
<b>Emissions Class Declaration:</b>	Class A
<b>Configuration(s):</b>	Representative of the maximum number of optional modules: one (1) non-optional Prime Input accessory with display; four (4) input hopper modules which may contain either OmniKey 5127 CK SI (125 KHz and 13.56MHz) or OmniKey 5127 CK Mini (125kHz and 13.56MHz), three (3) of which are optional; one (1) optional encoder module containing a SmartWare USN1se-1M coupler and matched external antenna board (13.56MHz); one (1) optional UV inkjet printer; one (1) optional 3 watt laser engraver module; one (1) optional 8 watt laser engraver module; and four (4) output stacker modules, all of which are optional.
<b>EUT Power Requirement</b>	
<b>Voltage:</b>	100V - 240V
<b>AC or DC:</b>	AC
<b>Voltage Frequency:</b>	60Hz
<b>Number of Phases:</b>	1
<b>Current:</b>	5.75A maximum
<b>Physical Description</b>	
<b>EUT Arrangement:</b>	Table Top
<b>System with Multiple Chassis?</b>	True

Size (HxWxD - inches):	20x110x25
Weight (lbs):	450
Highest Internal Frequency (MHz):	2400
Other Info	
EUT Software (internal to EUT):	--
Support Software (used by support PC to exercise EUT):	CardBuilder Printing Emulator Reader Utility Version 5.0.0.4 (B002) For OK 5127SI Radio SmartCfg Version V4r22i For Smartware Radio
Firmware:	--
Contains Modular Transmitter:	HID OMNIKEY 5127CK MINI (FCC ID: JQ6-OK5127CKMINI)
Transmitter Parameters	
Description of your unit:	RFID
Modulation Type:	Carrier: ASK, FSK
Number of Channels:	1
Frequency range (MHz):	0.125, 13.56
Antenna Type:	Loop
Antenna Gain (db):	Approx. 1
PMN:	HID FARGO ELEMENT Card Marking System
HVIN:	X002600 with additional n
FVIN:	--
HMN:	--
Data Rates:	--
Expected Power Level:	--
Number of Antenna:	3
Number of Intentional Transmitters:	3
Number of Certified Intentional Transmitter Modules:	1 (OK 5127CK Mini; FCC ID: JQ6-OK5127CKMINI)

**Table 5. Equipment Overview and Test Configuration Information**

## F. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Ref. ID	Slot #	Name / Description	Model Number	Part Number	Serial Number	Rev. #
--	--	Card Marking System	X002600	--	--	--

**Table 6. Equipment Configuration**

## G. Support Equipment

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

Ref. ID	Name / Description	Manufacturer	Model Number
--	Laptop PC	Dell	Inspiron

**Table 7. Support Equipment**

## 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
--	Ethernet	Ethernet	1	<3m	--	N	PC/Ethernet

**Table 8. Ports and Cabling Information**

**I. Mode of Operation**

The system has been configured to simulate normal print processes that involves the Prime input accessory with display, 4 input card hoppers, 3W laser engraver, 8W laser engraver, inkjet Printer, and 4 output card stackers. No actual cards are used in the operation.

**J. Method of Monitoring EUT Operation**

Monitor Flashing blue LEDS lights during normal operation on 3W and 8W laser engraving units. Monitor ethernet connection with support laptop that is running HID Printer user interface. Ensure there are no errors flagged to the user, during testing.

**K. 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.

**L. 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 upon completion of testing.

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 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 OK 5127SI as evaluated was compliant as they meet criteria A of §15.203. 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) The antenna must be permanently attached to the unit.

Results: The EUT as tested is compliant to 15.203. The antenna is integrated into the EUT (permanently attached) and is unable to be modified by the end-user.

**Test Engineer(s):** Adan Arab

**Test Date(s):** 04/29/2021

Name/Description	Type	Manufacturer	Model	Gain (dBi)	Impedance ( $\Omega$ )
OK 5127 SI	Inductive	HID	--	1 dBi	--

**Table 9. EUT (s) Antenna Description**

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 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  $\mu$ H/50  $\Omega$  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 $\mu$ V)	
	Quasi-Peak	Average
* 0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

**Table 10. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)**

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  $\Omega$ /50  $\mu$ 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  $\Omega$ /50  $\mu$ H LISN as the input transducer to an EMI receiver. For the purpose of this testing, the transmitter were turned on at full power during the scans.

**Test Results:** The OK 5127SI, as evaluated, were compliant with this requirement. See appendices for plots and photos of test setups.

**Test Engineer(s):** Adan Arab

**Test Date(s):** 05/03/2021

## Conducted Emissions Voltage Test Setup

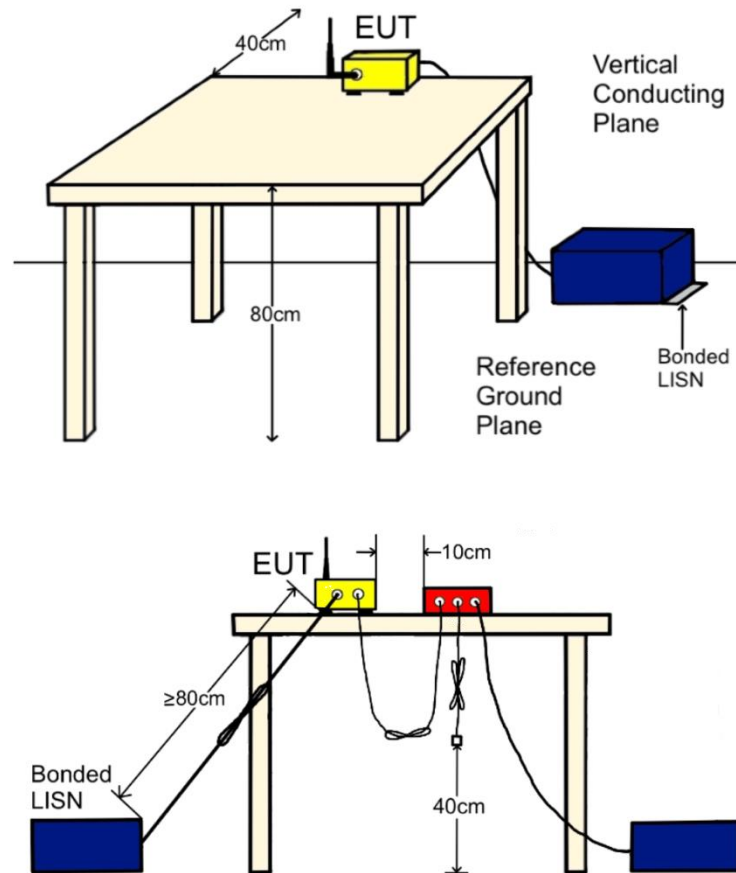


Figure 2. CEV Test Setup



Measurement Location	Measurement	Limit	Result
Bonding measurement from LISN ground to ground plane	0.9 mΩ	< 2.5 mΩ	Pass

Line Name	Freq (MHz)	QP Amplitude (dBμV)	QP Limit (dBμV)	Margin (dB)	Result	Average Amplitude (dBμV)	Average Limit (dBμV)	Margin (dB)	Result
Line 120VAC 60Hz	0.166	52.300	65.160	-12.860	Pass	39.100	55.160	-16.060	Pass
Line 120VAC 60Hz	0.298	53.300	60.314	-7.014	Pass	44.500	50.314	-5.814	Pass
Line 120VAC 60Hz	3.882	52.600	56.000	-3.400	Pass	43.200	46.000	-2.800	Pass
Line 120VAC 60Hz	4.470	54.300	56.000	-1.700	Pass	43.800	46.000	-2.200	Pass
Line 120VAC 60Hz	4.702	52.800	56.000	-3.200	Pass	43.100	46.000	-2.900	Pass
Line 120VAC 60Hz	5.210	52.300	60.000	-7.700	Pass	43.300	50.000	-6.700	Pass
Neutral 120VAC 60Hz	0.170	53.100	64.963	-11.863	Pass	41.600	54.963	-13.363	Pass
Neutral 120VAC 60Hz	0.274	58.500	61.009	-2.509	Pass	47.900	51.009	-3.109	Pass
Neutral 120VAC 60Hz	0.282	58.100	60.771	-2.671	Pass	49.100	50.771	-1.671	Pass
Neutral 120VAC 60Hz	0.298	57.700	60.314	-2.614	Pass	48.500	50.314	-1.814	Pass
Neutral 120VAC 60Hz	0.422	52.000	57.432	-5.432	Pass	40.100	47.432	-7.332	Pass
Neutral 120VAC 60Hz	4.214	53.000	56.000	-3.000	Pass	43.400	46.000	-2.600	Pass

Table 11. Conducted Emissions, OK 5127SI LF, Test Results

Test Name: CEV			Test Date(s): 05/03/2021		
MET Asset #	Nomenclature	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1065	EMI Test Receiver	Rohde & Schwarz	ESCI	06/22/2020	06/22/2021
1A1177	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	06/10/2020	06/10/2021
1A1122	LISN	TESEQ	NNB 51	08/21/2020	08/21/2021
1A1227	True RMS Meter	Fluke	114	10/16/2020	10/16/2021
1A1119	Conducted Emissions Ground Plane	N/A	N/A	06/10/2020	06/10/2021
1A1149	DC Milliohm Meter	GW Instek	GOM-802	06/10/2020	06/10/2021
1A1169	Temperature, Humidity and Pressure Recorder	Omega	OM-CP-PRHTEMP2000	02/19/2021	02/19/2022

Table 12. Conducted Emissions, Test Equipment

## § 15.209(a) Radiated Spurious Emissions 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 Table 13.

Frequency (MHz)	§ 15.209(a), Radiated Emission Limits (µV/m)	Measurement Distance (meters)
0.009 – 0.490	2400/F [kHz]	300
0.490 – 1.705	24000/F [kHz]	30
1.705 – 30	30	30

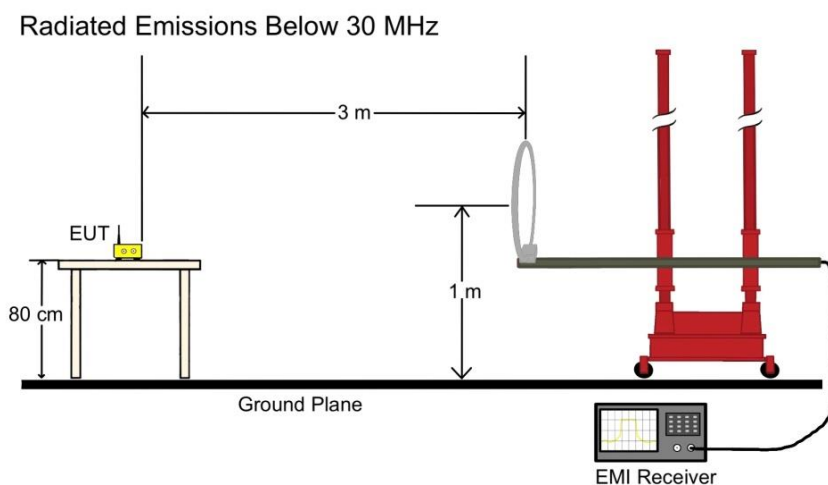
**Table 13. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)**

**Test Procedures:** The EUT was set to transmit and placed on a 0.8m-high non-conductive table inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.10: 2013 were used. For measurements below 1.705 MHz a loop antenna placed 3m away from the unit and 1m above the ground plane was used. Plots were corrected for both antenna correction factor and distance and compared to the appropriate limit line defined in the above table. A peak detector was used to perform a pre-scan from 9 kHz to 30 MHz. Spurious emissions within 20 dB of the applicable limit were measured using a quasi-peak detector and recorded in the subsequent section

The measurements made at 3m with the loop antenna were then extrapolated to 30m or 300 m using the following correction factors.

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

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



**Figure 3: Radiated Emissions, Test Setup**

**Test Results:**

The EUT was compliant with the Radiated Spurious Emission limits of § 15.209. The plots and points recorded are of the noise floor. According to § 15.201 (a), devices below 490 kHz and which all emissions are at least 40 dB below the § 15.209 limits shall be verified pursuant.

The transmitting frequency was verified by placing the EUT next to the measuring antenna to confirm it was constantly transmitting during testing. See appendices for plots and photos of test setups.

**Test Engineer(s):**

Adan Arab

**Test Date(s):**

04/29/2021

Frequency (MHz)	Uncorrected Amplitude (dBμV @ 3m)	Loop Antenna Orientation (Degree)	Azimuth (Degrees)	Distance Correction Factor (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Amplitude (dBμV/m @ 30m)	Limit, FCC 15.225, 30m (dBμV/m)	Margin (dB)
0.1235	61.14	0	0.60	-80.00	11.28	0.00	-7.58	25.77	-33.35
0.1210	60.05	90	0.60	-80.00	11.28	0.00	-8.67	25.94	-34.61
0.3706	47.66	0	1.70	-80.00	11.03	0.00	-21.31	16.22	-37.53
0.3712	44.55	90	1.70	-80.00	11.03	0.00	-24.42	16.21	-40.63
0.5845	37.59	0	0.30	-40.00	11.20	0.00	8.79	32.27	-23.48
13.5425	38.06	90	0.00	-40.00	10.65	0.18	8.70	29.54	-20.65

**Table 14. Spurious Emissions, OK 5127SI, 0.009-30 MHz Test Results**

## 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 #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1169	Temp, Humidity, and Pressure Recorder	Omega	OM-CP-PRHTemp2000	02/19/2021	02/19/2022
1A1184	Spectrum analyzer	Agilent technologies	E4407B	08/24/2020	08/24/2021
1A1083	Emi test receiver	Rohde & schwarz	ESU40	10/16/2020	10/16/2021
1A1176	Active Loop Antenna (9khz-30mhz)	ETS-Lindgren	6502	06/02/2020	06/02/2021
3A3009	Programable power supply	Kikusui	PCR2000L	SEE NOTE	
1A1050	Bilog Antenna (30-1000 mhz)	Sunol Sciences Corp	JB3	12/01/2020	12/01/2022
1A1116	Mulitmeter	Fluke	179	02/13/2021	02/13/2022
1A1044	Generator	COM-Power Corp	CG-520	SEE NOTE	
1A1088	PRE-AMP	ROHDE & SCHWARZ	TS-PR1	SEE NOTE	
1A1080	MULTI-DEVICE CONTROLLER	ETS-EMCO	2090	SEE NOTE	
1A1073	MULTI-DEVICE CONTROLLER	ETS-EMCO	2090	SEE NOTE	
1A1106	10M SEMI-ANECHOIC CHAMBER	LINDGREN	N/A	SEE NOTE	
NOTE	FUNCTIONALITY OF EQUIPMENT IS VERIFIED USING THE CALIBRATED INSTRUMENTS LISTED ABOVE AT THE TIME OF TESTING				

**Table 15. Test Equipment List**

# End of Report