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03/26/2025

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

Dear Erik Ray,

Enclosed is the EMC test report for testing of the HID Global Corporation (US), HDP5000e tested to the requirements of FCC Part 2.1091, RSS-102 Issue 6, AS/NZS 2772: 2016, and IEC62311 Issue 2

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

Sincerely,

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

Reference: WIRA134308 – MPE_LAM_R1

A2LA ACCREDITED TESTING CERT #0591.06

RF Exposure Criteria
Test Report
Using Maximum Permissible Exposure (MPE) Calculations

for the

HID Global Corporation (US)
HDP5000e (Model: X002700LAM)

Tested under

FCC Part 2.1091, RSS-102 Issue 6, AS/NZS 2772: 2016, and IEC62311 Issue 2

Report: WIRA134308 – MPE_LAM_R1

03/26/2025

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
0	03/06/2025	Initial Issue.
1	03/26/2025	Reviewer Comments

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List of Tables

List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
CISPR	**C**omite **I**nternational **S**pecial des **P**erturbations **R**adioelectriques (International Special Committee on Radio Interference)
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**er**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**H**er**z**
kPa	**k**ilo**Pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**H**ertz
µ**H**	**micro**H**enry**
µ**F**	**micro**F**arad**
µ**s**	**micros**econds
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

1.0 Requirements Summary

Page Number	Test Name	Result
12	IEC62311: 2019 MPE Limits (For General Public Exposure)	**Compliant**
13	RSS-102 Issue 6 MPE Limits (For General Public Exposure)	**Compliant**
13	FCC Part 2.1091 MPE Limits (For General Public Exposure)	**Compliant**

Table 1. Summary of Test Results

2.0 Equipment Configuration

2.1 Overview

Eurofins MET Labs was contracted by HID Global Corporation (US) to perform testing on the HDP5000e, under HID Global Corporation (US)'s purchase order number HID023839.

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) HDP5000e.

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

Product Name:	HDP5000e	
Model(s) Tested:	X002700LAM	
Model(s) Covered:	X002700LAM	
FCCID:	JQ6-X002700LAM	
ICID:	2236B-X002700LAM	
EUT Specifications:	Primary Power: 100 – 240VAC	
	Antenna Gain[1]:	1dB
	EUT Frequency Ranges:	13.56MHz (HF RFID)
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	
Type of Filing:	Original	
Evaluated by:	Bryan Taylor	
Report Date(s):	03/26/2025	

Table 2. EUT Summary Table

[1] The antenna gain information was provided by HID Global Corporation (US) at the time of testing.

2.2 Test Site

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

2.3 References

IEC62311 Edition 2.0 (2019-04)	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)
RSS-102: Issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
FCC Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.

Table 3. References

2.4 Description of Test Sample

The HDP5000e, Model X002700 is a modular, high definition printer system designed to print, laminate, and encode ID cards. The Laminator device (model: X002700LAM) contains two 13.56MHz transmitters (upper and lower). The transmitters onboard the Laminator are covered by this report.

2.5 Mode of Operation

A laptop computer with a specific utility that allowed for controlling of each transmitter on board the HDP5000e was used during the testing. The following transmitters were tested:

Transmitter	Channel Frequencies Tested	Exercising Method
Laminator Upper RFID	13.56MHz	Test commands via laptop computer
Laminator Lower RFID	13.56MHz	Test commands via laptop computer

Table 4. Transmitters Onboard

2.6 Modifications

2.6.1 Modifications to EUT

No modifications were made to the EUT.

2.6.2 Modifications to Test Standard

No modifications were made to the test standard.

2.7 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.

3.0 Maximum Permissible Exposure Results

3.1 IEC62311 (ICNIRP) RF Exposure Limits

Table 7. Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed rms values).[a]

Frequency range	E-field strength ($V\ m^{-1}$)	H-field strength ($A\ m^{-1}$)	B-field (μT)	Equivalent plane wave power density S_{eq} ($W\ m^{-2}$)
up to 1 Hz	—	3.2×10^4	4×10^4	—
1–8 Hz	10,000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8–25 Hz	10,000	$4{,}000/f$	$5{,}000/f$	—
0.025–0.8 kHz	$250/f$	$4/f$	$5/f$	—
0.8–3 kHz	$250/f$	5	6.25	—
3–150 kHz	87	5	6.25	—
0.15–1 MHz	87	$0.73/f$	$0.92/f$	—
1–10 MHz	$87/f^{1/2}$	$0.73/f$	$0.92/f$	—
10–400 MHz	28	0.073	0.092	2
400–2,000 MHz	$1.375f^{1/2}$	$0.0037f^{1/2}$	$0.0046f^{1/2}$	$f/200$
2–300 GHz	61	0.16	0.20	10

[a] Note:
1. f as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq}, E^2, H^2, and B^2 are to averaged over any 6-min period.
4. For peak values at frequencies up to 100 kHz see Table 4, note 3.
5. For peak values at frequencies exceeding 100 kHz see Figs. 1 and 2. Between 100 kHz and 10 MHz, peak values for the field strengths are obtained by interpolation from the 1.5-fold peak at 100 kHz to the 32-fold peak at 10 MHz. For frequencies exceeding 10 MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width does not exceed 1,000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq}, E^2, H^2, and B^2 are to be averaged over any $68/f^{1.05}$-min period (f in GHz).
7. No E-field value is provided for frequencies <1 Hz, which are effectively static electric fields. perception of surface electric charges will not occur at field strengths less than 25 kVm^{-1}. Spark discharges causing stress or annoyance should be avoided.

3.2 RSS-102 RF Exposure Limits

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
0.003-10[21]	83	90	-	Instantaneous*
0.1-10	-	0.73/ ƒ	-	6**
1.1-10	87/ $ƒ^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ $ƒ^{0.25}$	0.1540/ $ƒ^{0.25}$	8.944/ $ƒ^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $ƒ^{0.3417}$	0.008335 $ƒ^{0.3417}$	0.02619 $ƒ^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $ƒ^{1.2}$
150000-300000	0.158 $ƒ^{0.5}$	4.21 x 10^{-4} $ƒ^{0.5}$	6.67 x 10^{-5} ƒ	616000/$ƒ^{1.2}$

Note: ƒ is frequency in MHz.
* Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

3.3 FCC Exposure Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f^2)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f^2)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

Test Procedure:

An MPE evaluation for was performed in order to show that the device was compliant with the general population exposure limits. The maximum power density was calculated for each transmitter band at a separation distance of 20cm using the maximum declared output power including tune up tolerance.

For each transmitter the maximum RF exposure at a 20 cm distance using the formula:

$$ConductedPower_{mW} = 10^{ConductedBwer(dBm)/10}$$

$$PowerDensity = \frac{ConductedPower_{mW} \times Ant.Gain}{4\pi \times (20_{cm})^2}$$

For transmitters that could operate simultaneously, the MPE to limit ratio for each was calculated and then summed. If the sum of the MPE to limit ratios was less than 1, that specific combination of transmitters was deemed to comply.

Test Results:

The HDP5000e was **compliant** with FCC Part 2.1091, RSS-102 Issue 6, AS/NZS 2772: 2016, and IEC62311 Issue 2. The calculated maximum power density at 20cm distance was equal to or less than the required limits for general population exposure for FCC Part 2.1091, RSS-102 Issue 6, AS/NZS 2772: 2016, and IEC62311 Issue 2.

None of the transmitters onboard transmit simultaneously so there is no calculation for simultaneous transmission included.

Note: The conducted powers shown in the data tables were calculated from the worst-case field strengths for each transmitter measured during testing. These field strengths (in dBuV/m, measured at 3m) were then converted to radiated power in dBm using the procedures in ANSI C63.10. The conducted power was then calculated by subtracting the antenna gain of 1dB to arrive at the conducted power in dBm. This was converted to mW and used in the MPE calculations.

Test Data:

Operating Mode	Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (Meters)	Radiated Power (dBm)	Antenna Gain (dB)	Conducted Power (dBm)	Conducted Power (mW)
Laminator Upper RFID	13.56	57.90000	3	-37.35757	1	-38.35757	0.00015
Laminator Lower RFID	13.56	57.34000	3	-37.91757	1	-38.91757	0.00013

Table 5. Conducted Power Calculations

Duty Cycle	100 (%)					
Separation Dist.	20 (cm)					
Operating Mode	Frequency (MHz)	Maximum Conducted Output Power (mW)	Antenna Gain (dB)	MPE Value (mW/cm^2)	MPE Limit (mW/cm^2)	Margin to Limit (mW/cm^2)
Laminator Upper RFID	13.56	0.00015	1	0.00000004	0.97893335	0.97893332
Laminator Lower RFID	13.56	0.00013	1	0.00000003	0.97893335	0.97893332

Table 6. FCC MPE Data

Duty Cycle	100 (%)					
Separation Dist.	20 (cm)					
Operating Mode	Frequency (MHz)	Maximum Conducted Output Power (mW)	Antenna Gain (dB)	MPE Value (W/m^2)	MPE Limit (W/m^2)	Margin to Limit (W/m^2)
Laminator Upper RFID	13.56	0.00015	1	0.00000037	2.00000000	1.99999963
Laminator Lower RFID	13.56	0.00013	1	0.00000032	2.00000000	1.99999968

Table 7. ISED MPE Data

Duty Cycle	100 (%)					
Separation Dist.	20 (cm)					
Operating Mode	Frequency (MHz)	Maximum Conducted Output Power (mW)	Antenna Gain (dB)	MPE Value (W/m^2)	MPE Limit (W/m^2)	Margin to Limit (W/m^2)
Laminator Upper RFID	13.56	0.00015	1	0.00000037	2.00000000	1.99999963
Laminator Lower RFID	13.56	0.00013	1	0.00000032	2.00000000	1.99999968

Table 8. IEC62311 AS/NZS 2772 MPE Data

Test Engineer(s): Bryan Taylor

Test Date(s): 11/8/2024 - 12/8/2024