

April 27, 2026

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), Color Card Printer, DTC4500e tested to the requirements of FCC Part 2.1091, RSS-102 Issue 6, 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: WIRA139159-MPE Rev 1



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

for the

**HID Global Corporation (US)
Color Card Printer, DTC4500e (Model: DTC4500e)**

Tested under

FCC Part 2.1091, RSS-102 Issue 6, and IEC62311 Issue 2

Report: WIRA139159-MPE

02/05/2026



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	02/05/2026	Initial Issue.
1	April 27, 2026	Customer Requested Changes.

List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dBμA	Decibels above one microamp
dBμV	Decibels above one microvolt
dBμA/m	Decibels above one microamp per meter
dBμV/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
CISPR	Comite International Special des Perturbations Radioelectriques (International Special Committee on Radio Interference)
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kiloHertz
kPa	kiloPascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	MegaHertz
μH	microHenry
μF	microFarad
μs	microseconds
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
V/m	Volts per meter
VCP	Vertical Coupling Plane

1.0 Requirements Summary

Page Number	Test Name	Result
11	RSS-102 Issue 6 MPE Limits (For General Public Exposure)	Compliant
11	FCC Part 2.1091 MPE Limits (For General Public Exposure)	Compliant
11	IEC62311: 2019 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 Color Card Printer, DTC4500e, under HID Global Corporation (US)'s purchase order number HID028120.

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) Color Card Printer, DTC4500e.

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

Product Name:	Color Card Printer, DTC4500e	
Model(s) Tested:	DTC4500e	
Test Sample Number:	25939-35, 25939-36, 25939-37	
Equipment Specifications:	Primary Power:	24VDC via AC/DC Power Adapter
	EUT Frequency Ranges:	HF RFID: 13.56MHz LF RFID: 125kHz
	Peak RF Output Power Including Tune-Up Tolerance:	See Table Below
	Antenna Gain ¹ :	HF RFID: 1dB LF RFID: 1dB
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	
Report Date(s):	April 27, 2026	

Table 2. EUT Summary Table

¹ The antenna gain information was provided by HID Global Corporation (US) and may affect compliance.

Transmitter	Frequency	Measured Field Strength (dBuV/m)	Field Strength (uV/m)	Field Strength Plus 5% Tolerance (uV/m)	Field Strength with 5% Tolerance (dBuV/m)	Field Strength Meas. Distance (m)	EIRP (dBm)
Ribbon	13.56MHz	62.68	1361.4447	1429.5169	63.10379	3	-32.05
5122	13.56MHz	65.45	1872.8371	1966.4789	65.87379	3	-29.28
5127SI	13.56MHz	58.29	821.29655	862.36138	58.71379	3	-36.44
5127 CK MINI	13.56MHz	62.66	1358.3134	1426.2291	63.08379	3	-32.07
Laminator Upper	13.56MHz	65.13	1805.0947	1895.3495	65.55379	3	-29.60
Laminator Lower	13.56MHz	65.61	1907.6557	2003.0385	66.03379	3	-29.12
5125SI	125kHz	72.02	3990.249	4189.7615	72.44379	3	-22.71
5127 CK MINI	125kHz	72.5	4216.965	4427.8133	72.92379	3	-22.23

Table 3. Peak RF Output Power Including Tune-Up Tolerance

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

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 4. References

2.4 Description of Test Sample

The Color Card Printer, DTC4500e is a modular, direct-to-card printer system designed to print, laminate, and encode ID cards. Three systems were tested to cover all optional modules as follows:

Configuration 0 (Base Model Without OMNIKEY):

Input Hopper, Printer, Flipper, Mag Encoder, Contact Encoder, Laminator Upper RFID, Laminator Lower RFID, Ribbon RFID

Configuration 1 (SN C5140451):

Input Hopper, Printer, Flipper, Laminator Upper RFID, Laminator Lower RFID, Mag Encoder, Contact Encoder, OMNIKEY 5122

Configuration 2 (SN C5140450):

Input Hopper, Printer, Flipper, Laminator Upper RFID, Laminator Lower RFID, Mag Encoder, Contact Encoder, OMNIKEY 5127SI

Configuration 3 (SN C5140431):

Input Hopper, Printer, Flipper, Laminator Upper RFID, Laminator Lower RFID, Mag Encoder, Contact Encoder, OMNIKEY 5127CK MINI

Each of the three configurations above are identical with the exception of the OMNIKEY encoder installed into each. Each version includes an identical "ribbon" radio operating at 13.56MHz and identical "Laminator" radios (upper and lower) operating at 13.56MHz. The table below indicates the radios onboard each OMNIKEY encoder option:

Test Configuration	Model Number	OMNIKEY Encoder Installed	Transmitters Onboard
Configuration 0	DTC4500e	None	Ribbon (13.56MHz) Laminator Upper RFID (13.56MHz) Laminator Lower RFID (13.56MHz)
Configuration 1	DTC4500e-1	OMNIKEY 5122	Ribbon (13.56MHz) Laminator Upper RFID (13.56MHz) Laminator Lower RFID (13.56MHz) OMNIKEY 5122 (13.56MHz)
Configuration 2	DTC4500e-2	OMNIKEY 5127SI	Ribbon (13.56MHz) Laminator Upper RFID (13.56MHz) Laminator Lower RFID (13.56MHz) OMNIKEY 5127SI (125kHz, 13.56MHz)
Configuration 3	DTC4500e-3	OMNIKEY 5127CK MINI	Ribbon (13.56MHz) Laminator Upper RFID (13.56MHz) Laminator Lower RFID (13.56MHz) OMNIKEY 5127CK MINI (125kHz, 13.56MHz) BLE (See Note)

Note that the BLE radio onboard the OMNIKEY 5127 CK MINI encoder is not used and is disabled within the DTC4500e.

2.5 Modifications

2.5.1 Modifications to EUT

No modifications were made to the EUT.

2.5.2 Modifications to Test Standard

No modifications were made to the test standard.

2.6 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 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/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/f ^{1.2}
Note: f is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

3.2 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.				

3.3 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 be 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.

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:

$$\text{ConductedPower}_{mW} = 10^{\text{ConductedPower(dBm)}/10}$$

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

For transmitters where field strength was measured at a specific distance, the radiated power was calculated via the formula from ANSI C63.10 shown below:

$$\text{EIRP} = E_{M_{431}} + 20 \log(d_{M_{431}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm
 $E_{M_{431}}$ is the field strength of the emission at the measurement distance, in dBuV/m
 $d_{M_{431}}$ is the measurement distance, in m

The EIRP was then used in the numerator in the power density equation above in place of the conducted power and antenna gain.

Test Results:

The Color Card Printer, DTC4500e was **compliant** with FCC Part 2.1091, RSS-102 Issue 6, 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, and IEC62311 Issue 2.

For ISED, the 125kHz transmitter is subject to the Nerve Stimulation requirements from RSS-102 and that is addressed in a separate report.

125kHz EIRP Calculation:

The Field strength at 3m was measured (72.5 dBuV/m) and according to the manufacturer has a 5% tune up tolerance from the measured value which equates to 72.92dBuV/m. 72.92dBuV/m was converted to EIRP using the equations from ANSI C63.10 Section 9.5:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm
 E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
 d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

$$EIRP = 72.92\text{dBuV/m} + 20\log(3\text{m}) - 104.7 = -22.23\text{dBm}$$

13.56MHz Power EIRP Calculation:

The 13.56MHz Transmitter had a measured field strength of 65.61dBuV/m. The manufacturer has a 5% tune-up tolerance from the measured value which equates to 66.03dBuV/m. The 66.03dBuV/m field strength was converted to ERP using the equations from ANSI C63.10 Section 9.5:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm
 E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
 d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

$$EIRP = 66.03\text{dBuV/m} + 20\log(3\text{m}) - 104.7 = -29.12\text{dBm}$$

FCC Power Density Calculations:

Duty Cycle	100 (%)					
Separation Dist.	20 (cm)					
Operating Mode	Frequency (MHz)	Max EIRP Power (Inc. Tolerance) (dBm)	Max EIRP Power (Inc. Tolerance) (mW)	MPE Value (mW/cm ²)	MPE Limit (mW/cm ²)	Margin to Limit (mW/cm ²)
Ribbon	13.56	-32.05378892	0.0006231909	0.0000001240	0.978933	0.9789332302
5122	13.56	-29.28378892	0.0011792913	0.0000002346	0.978933	0.9789331196
5127SI	13.56	-36.44378892	0.0002267885	0.0000000451	0.978933	0.9789333091
5127 CK MINI	13.56	-32.07378892	0.0006203276	0.0000001234	0.978933	0.9789332308
Laminator Upper	13.56	-29.60378892	0.0010955220	0.0000002179	0.978933	0.9789331363
Laminator Lower	13.56	-29.12378892	0.0012235483	0.0000002434	0.978933	0.9789331108

Test Engineer(s): Bryan Taylor

Test Date(s): 10/20/2025 - 11/20/2025

ISED / ICNIRP Power Density Calculations:

For ISED, the 125kHz transmitter is subject to the Nerve Stimulation requirements from RSS-102 and that is addressed in a separate report.

Duty Cycle	100 (%)					
Separation Dist.	20 (cm)					
Operating Mode	Frequency (MHz)	Max EIRP Power (Inc. Tolerance) (dBm)	Max EIRP Power (Inc. Tolerance) (W)	MPE Value (W/m ²)	MPE Limit (W/m ²)	Margin to Limit (W/m ²)
Ribbon	13.56	-32.05378892	0.0000006232	0.0000012398	2.0000	1.9999987602
5122	13.56	-29.28378892	0.0000011793	0.0000023461	2.0000	1.9999976539
5127SI	13.56	-36.44378892	0.0000002268	0.0000004512	2.0000	1.9999995488
5127 CK MINI	13.56	-32.07378892	0.0000006203	0.0000012341	2.0000	1.9999987659
Laminator Upper	13.56	-29.60378892	0.0000010955	0.0000021795	2.0000	1.9999978205
Laminator Lower	13.56	-29.12378892	0.0000012235	0.0000024342	2.0000	1.9999975658

Test Engineer(s): Bryan Taylor

Test Date(s): 10/20/2025 - 11/20/2025