RF Exposure Report

FCC ID	:	**UZ7CRD-TC-WCVC**
Equipment	:	**Wireless Charging Vehicle Cradle**
Model Name	:	**CRD-TC-WCVC**
Applicant	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**47 CFR PART 1.1307**

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 1.1307 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Cona Huang

Approved by: Cona Huang / Deputy Manager

ilac-MRA TAF Testing Laboratory 1190

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA212627-05	Rev. 01	Initial issue of report	Aug. 11, 2022

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Wireless Charging Vehicle Cradle
Model Name	CRD-TC-WCVC
FCC ID	UZ7CRD-TC-WCVC
Frequency Range	144 KHz ~ 145 KHz
Modulation Type	ASK
Antenna Type	Integral antenna
HW Version	DV
MFD	25MAY22
DUT Stage	Identical Prototype

2. RF Exposure Limit Introduction

§ 1.1310 The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency(RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) 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
(B) 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

(1) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase exercise control means that an exposed person is allowed to and knows how to reduce or avoid exposure by administrative or engineering controls and work practices, such as use of personal protective equipment or time averaging of exposure.

(2) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

3. KDB 680106 D01 SECTION 5b EQUIPMENT APPROVAL CONSIDERATIONS

Requirement	Devices
(1) Power transfer frequency is less than 1 MHz.	Yes. Operating Frequency is less than 1MHz
(2) Output power from each primary coil is less than or equal to 15 watts.	Yes. The maximum power is 10Watts
(3) The system may consist of more than one source primary coil, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	The system included one single parimary coil and the device is designed to chage a single client.
(4) Client device is placed directly in contact with the transmitter.	Yes. The client device is placed directly in contact with the transmitter.
(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes. It is a Moblie device.
(6) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	The measurement was taken based on KDB 680106 D01. The H-Field worst case leakage of mobile condition is 11.91%

Note:The inductive wireless power transfer device meets all of the above requirements.

4. Test Mode

This device has been tested in the following charging conditions as below:

Test Mode	Test Setup Configuration	Charging Current Condition
TM1	Test w/ Client Device installed	< 1% Battery status
TM2	Test w/ Client Device installed	50% Battery status
TM3	Test w/ Client Device installed	Near 100% Battery status

5. Measurement Equipment

Instrument	Manufacturer	Model No.	Serial No.	Freq. Range	Last Cal.	Due Date
Electric and Magnetic field Probe-Analyzer	Narda S.T.S / PMM	EHP 200AC	170WX80309	3KHz~30MHz	Oct. 26, 2021	Oct. 25, 2022

6. RF Exposure Evaluation

General Note:

1. The device power transfer frequency is less than 1MHz and the output power from each primary coil is less than or equal to 15 watts and the system just one source primary coil and the client device is placed directly in contact with the transmitter and the device is meet mobile exposure condution also the test result is compliance with applicable MPE limit.
2. The equipment under test was placed on a wooden desk inside of shield room. The isotropic field probe was used to measure the field strength for 6 EUT surfaces, the detail setup photo please refer to Appendix A.

3. Per KDB 680106 D01v03r01 , RF exposure evaluation at 15 cm surrounding the device and 20 cm above the top surface. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m.

Position	E-Field Measurement (V/m)						
	A (20cm)	B (15cm)	C (15cm)	D (15cm)	E (15cm)	F (15cm)	RF Exposure limit
TM1	0.3906	**0.3918**	0.3740	0.3651	0.3569	0.3654	614
TM2	0.3871	0.3905	0.3732	0.3648	0.3551	0.3650	614
TM3	0.3893	0.3901	0.3739	0.3635	0.3565	0.3647	614

E-Field Measurement		
Maximum Average (V/m)	Percentage (%)	RF Exposure limit (V/m)
0.3918	**0.064**	614

Position (Distance 10cm)	H-Field Measurement (A/m)						
	A (20cm)	B (15cm)	C (15cm)	D (15cm)	E (15cm)	F (15cm)	RF Exposure limit
TM1	0.1879	**0.1942**	0.1794	0.1701	0.1661	0.1726	1.63
TM2	0.1858	0.1934	0.1785	0.1693	0.1654	0.1725	1.63
TM3	0.1865	0.1921	0.1791	0.1688	0.1647	0.1712	1.63

H-Field Measurement		
Maximum Average (A/m)	Percentage (%)	RF Exposure limit (A/m)
0.1942	**11.91**	1.63

Conclusion:

The field strength limit refers to Part 1.1310 and the test result of exposure evaluation is compliant with 50% of the MPE limit then a PAG is not required.