Test report

Number:	**T251-0061/25 A1**	Project file:	C20242272
		Date:	2025-07-21
		Pages:	6

Product: **3,3 kW Wireless Charger**

Type reference: **EOE16010870, EOE16010952, EOE16010953, EOE16011067, EOE16011066, EOE16010871**

Ratings: Input: 200 – 240 V a.c.; 16 A; 50 / 60 Hz

Trademark:

Applicant: **Delta Energy Systems**
Tscheulinstrasse 21, 79331 Teningen, Germany

Manufacturer: Delta Energy Systems
Tscheulinstrasse 21, 79331 Teningen, Germany

Place of manufacture: Delta Slovakia s.r.o.
Priemyselná 4600/1, 01841 Dubnica nad Váhom, Slovakia

Summary of testing

Testing method: 47 CFR FCC Part 1.1307(clause (b)(1)(i)(B) and (b)(3)(ii)(B)),
KDB 447498 D01 General RF Exposure Guidance v06
KDB 680106 D01 RF Exposure Wireless Charging App v04r01

Testing location: SIQ Ljubljana
Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia

Remarks: Date of receipt of test items: 2024-12-18
Number of items tested: 2
Date of performance of tests: 2025-01-22 – 2025-01-23
The test results presented in this report relate only to the items tested.
The test items were tested in the condition as received.
The product complies with the requirements of the testing methods.

Tested by: Nik Vončina

Approved by: Luka Tosetto

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1 GENERAL

History sheet			
Date	Report No.	Change	Revision
2025-03-10	T251-0061/25	Initial Test Report issued.	--
2025-07-21	T251-0061/25 A1	This test report substitutes previously issued test report T251-0061/25, dated 2025-03-10, due to amendment of the test report. Added reference to the user manual to determine system part description on page 4, added reference to the clause of the standard on page 5 and all photos are moved to separate files.	1.0

1.1 Equipment under test

3,3 kW Wireless Charger
Type: **EOE16010870, EOE16010952, EOE16010953, EOE16011067**

Environment: Controlled / Workplace area
Assessment distance: see below table with results

FCC ID:
- for WPU: **2AVWKWPU3300W**
- for WSU: **2AVWKWSU3300W**

Device is a wireless charger for charging of batteries with BMS.

Device consists of 4 parts:
- Wireless Primary Box (EOE16010870) as listed in user manual clause 1.3, table item 1:
In short marked as »WPB«

- Wireless Primary Pad (EOE16010952) as listed in user manual clause 1.3, table item 2:
In short marked as »WPP«

- Wireless Secondary Unit (EOE16010953) as listed in user manual clause 1.3, table item 3:
In short marked as »WSP«

- Wireless Secondary Box as listed in user manual clause 1.3, table item 4, that can be one of the following:
  - 24 Vdc output (EOE16011067) in short marked as »WSB 24V«
  - 36 Vdc output (EOE16011066) in short marked as »WSB 36V«
  - 48 Vdc output (EOE16010871) in short marked as »WSB 48V«

NOTE: only tested WSB in this test report was EOE16011067 with the lowest voltage and highest current and thus chosen by applicant as the worst case after preliminary calculations. Other two types (WSB 36V and WSB 48V) are also covered with his test report due to electrical similarity.

Wireless charging is being transmitted at frequency of 84 kHz.
Primary and secondary pad are communicating at frequency of 13,56 MHz.

NOTE: The information in this section has been provided by the applicant.

2 ASSESSMENT PROCEDURE

RF EXPOSURE REQUIREMENTS according 680106 D01 RF Exposure Wireless Charging App v04r01

RF exposure must be evaluated with the client device(s) being charged by the primary at maximum output power. The RF exposure requirements must be determined in conjunction with the device operating characteristics, according to the mobile and portable exposure requirements in Sections 2.1091 and 2.1093 of the rules.

RF exposure compliance is determined with respect to Sections 1.1307 (c) and (d) of the FCC rules.

Evaluation is based on following conditions of the KDB 680106 D01, clause 3.2:

Field strengths do not exceed the following reference levels:

- 83 V/m for the electric field

and

- 90 A/m for the magnetic field.

Sample has been turned on with maximum power transferred between pads. While working, communication was active. Measurement distances were set as in table below under clause 3 of this report.

Radiofrequency radiation exposure according 47 CFR 1.1307 clause (b)(1)(i)(B):
With respect to the limits on human exposure to RF provided in § 1.1310 of this chapter, applicants to the Commission for the grant or modification of construction permits, licenses or renewals thereof, temporary authorities, equipment authorizations, or any other authorizations for radiofrequency sources must prepare an evaluation of the human exposure to RF radiation pursuant to § 1.1310 and include in the application a statement confirming compliance with the limits in § 1.1310.

Limits:

TABLE 1 - LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

Measurement was done on WPP and WSP separately to show radiation exposure of both devices. Both were programmed to continuously work in communication mode only. Power transfer function has been disabled for this measurements, only 13.56 MHz communication was working and evaluated.
Sample has been turned on with maximum power transferred between pads. While working, communication was active.
Measurement distances were set as in table below under clause 3 of this report. Marking of positions is as per below pictures.

3 MEASUREMENTS / CALCULATIONS

Values for each configuration are listed in the following table:

RF EXPOSURE REQUIREMENTS according 680106 D01 RF Exposure Wireless Charging App v04r01:

View Direction	Distance (cm)	E-field [V/m]	B-field [uT]	Limit E [V/m]	Limit B [uT]	Comment
Left[1)]	15.00	73.2	13.7	83	113,04	/
Right[1)]	5.50	64.6	32.1	83	113,04	/
Back side of WSP [1)]	18.50	59.3	34.7	83	113,04	/
Below [1)]	21.00	78.7	11.9	83	113,04	/
Above [1)]	21.00	76.7	13	83	113,04	/
Back side of WPP [1)]	6.50	37.4	9.8	83	113,04	/

NOTE: operating frequency is 84 kHz. Distances given in the table are measured from magnetic center of the WPP.
[1)] entire side length was scanned
Measurements presented are worst cases

Radiofrequency radiation exposure according 47 CFR 1.1307 clause (b)(1)(i)(B):

Frequency (MHz)	Side of the EUT and its distance to the measuring probe	Maximum obtained value		Limit	
		E-field (V/m)	H-field (A/m)	E-field (V/m)	H-field (A/m)
13.56	Right of WPP at 200 mm distance [1)]	0.85	0.006	135.84	0.36
13.56	Above of WPP at 200 mm distance [1)]	1.17	0.005	135.84	0.36
13.56	Below of WPP at 200 mm distance [1)]	0.82	0.006	135.84	0.36
13.56	Left of WPP at 200 mm distance [1)]	0.90	0.007	135.84	0.36
13.56	Top of WPP at 200 mm distance [1)]	0.35	0.02	135.84	0.36
13.56	Back of WPP at 200 mm distance [1)]	1.62	0.005	135.84	0.36
13.56	Right of WSP at 200 mm distance [1)]	0.48	0.005	135.84	0.36
13.56	Above of WSP at 200 mm distance [1)]	0.48	0.007	135.84	0.36
13.56	Below of WSP at 200 mm distance [1)]	0.49	0.003	135.84	0.36
13.56	Left of WSP at 200 mm distance [1)]	0.8	0.005	135.84	0.36
13.56	Top of WSP at 200 mm distance [1)]	1.11	0.01	135.84	0.36
13.56	Back of WSP at 200 mm distance [1)]	0.12	0.005	135.84	0.36

[1)] entire height was scanned
Measurements presented are worst cases

Maximum simultaneous transmission contribution according 47 CFR FCC Part 1.1307(clause (b)(3)(ii)(B)):

Mode	WPT	RFID	Total	Limit
Contribution (E-Field)	0.948	0.011	0.959	1
Contribution (H-Field)	0.307	0.056	0.251	1

4 EQUIPMENT LIST

Equipment	Manufacturer	Type	SIQ Number	Last calibration date	Last due date
CISPR 25	Comtest Engineering	SAC 3m	109072	N/A	N/A
EMF meter	Wavecontrol	SMP3	/	With measuring probe	With measuring probe
Electric / Magnetic field probe	Wavecontrol	WP10M	/	2024-01-23	2025-07-23
Electric field probe	Wavecontrol	WPF18	/	2024-01-24	2025-07-24
Magnetic field probe	Wavecontrol	WPH60	/	2024-01-18	2025-07-18

----------END OF TEST REPORT----------