

RF-EXPOSURE REPORT

FCC 1.1307, 1.1310

RF-Exposure evaluation for wireless power transfer applications

Report Reference No	G0M-1908-8402-TFCWPTEX-V01
Testing Laboratory	Eurofins Product Service GmbH
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Accreditation	  DAkkS - Registration number : D-PL-12092-01-04 FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	eResearchTechnology GmbH
Address	Sieboldstrasse 3 97230 Estenfeld GERMANY
Standard	FCC 47 CFR 1.1307(b), 1.1310
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Electrical System (Charging Station)
Model(s)	WSCS
Additional Model(s)	None
Brand Name(s)	MasterScope
Hardware Version(s)	WSCS 0101
Software Version(s)	N/A
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	15 - 35 °C	
Test Lab Humidity	30 - 50 %	
Date of receipt of test item	2020-01-10 (Test Sample ID 27397)	
Report:		
Compiled by	Abdullah Al Jamal	
Tested by (+ signature) (Responsible for Test)	Abdullah Al Jamal	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2020-02-07	
Total number of pages	11	
General Remarks:		
<p>The test results presented in this report relate only to the object tested.</p> <p>The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.</p> <p>This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.</p>		
Additional Comments:		
None.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2020-02-07	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
MPE	Maximum Permissible Exposure
WPT	Wireless Power Transfer

REPORT INDEX

1	Equipment (Test Item) Under Test.....	6
1.1	Reference Documents.....	7
2	Result Summary.....	8
3	RF-Exposure Classification.....	9
4	RF-Exposure Limits.....	9
5	RF-Exposure Evaluation	9
6	Evaluation Results.....	10
6.1	Test Conditions and Results – Electric and magnetic field strength.....	10

1 Equipment (Test Item) Under Test

Description	Electrical System (Charging Station)
Model	WSCS
Additional Model(s)	None
Brand Name(s)	MasterScope
Serial Number(s)	51TEST03 (Test Sample ID 27397)
Hardware Version(s)	WSCS 0101
Software Version(s)	N/A
Equipment type	End Product
Environment	Uncontrolled / General Public
Operating frequency range [kHz]	176

1.1 Reference Documents

Document Type	Document No.	Issued by	Date
FCC Knowledge Database Publication	KDB 680106 D01 v03	FCC	2013-05-31

2 Result Summary

FCC 1.1307(b), 1.1310				
Product Standard Reference	Requirement	Reference Method	Frequency	Verdict
FCC 1.1307(b)	Maximum permissible exposure	KDB 680106 D01 v03	176 kHz	PASS
Comment: None.				

3 RF-Exposure Classification

RF-Exposure Categories	
Occupational	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 an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
General public	Exposures apply in situations in which the general public may be exposed, or in which persons that 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.

4 RF-Exposure Limits

Limits				
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

5 RF-Exposure Evaluation

MPE Evaluation Procedure
The evaluation is performed according KDB 680106 D01 v02 Section 3.
The magnetic and electric field strength is measured using magnetic and electric isotropic probes at the given separation distance. If possible all six positions (left, right, front, rear, top and bottom) with respect to the combination of transmitter with client device are measured. If one or multiple locations are not accessible, the positions are marked as N/A (not applicable).
The measured field strength are compared to the MPE field strength limits given in FCC 1.1310.

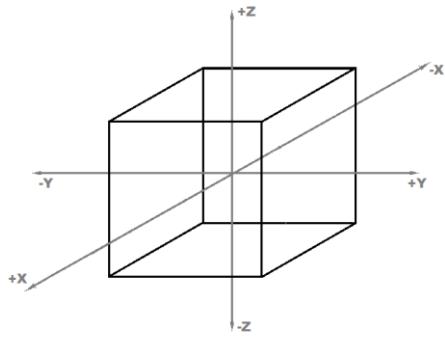
6 Evaluation Results

6.1 Test Conditions and Results – Electric and magnetic field strength

6.1.1 Information

Test Information	
Measurement Method	Radiated only
Operator	Abdullah Al Jamal
Date	2020-01-20

6.1.2 Setup

Exposition of measurements along six planes in 3D space
 <p>All shown planes in 3D space represent the dimensions of the Equipment Under Test. The point of origin is equal to the location of the RFID system respectively the centre of the antenna in the Equipment Under Test. The Y/Z-plane (+x) is shown as the front of the Equipment Under Test (status LED, blue).</p>

6.1.3 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC2	EF00196	–	–
Exposure Level Tester	Narda Safety Test Solutions	ELT-400	EF00605	2019-11	2020-11
Magnetic field probe 100 cm ²	Narda Safety Test Solutions	2300/90.10	EF00606	2019-11	2020-11
EM Radiation Monitor	Narda Safety Test Solutions	EMR-02	EF00058	2019-10	2020-10

6.1.4 Procedure

Test Procedure
1. EUT transmitter is activated in test mode under normal conditions.
2. The perimeter of the EUT is scanned with an electric and magnetic field probe at a fixed distance.
3. The electric and magnetic field strength is measured.
4. The maximum field strength values are recorded.

6.1.5 Results

Test Results					
Measurement position	Distance x or y or z [m]	Max. electric field strength [V/m]	Limit [V/m]	30 % Limit [V/m]	Verdict
Y/Z plane +x	0.15	0.22	614	184.2	PASS
Y/Z plane -x	0.15	1.20			
X/Z plane +y	0.15	0.14			
X/Z plane -y	0.15	0.10			
X/Y plane +z	0.15	0.26			
X/Y plane -z	0.15	0.23			

Test Results					
Measurement position	Distance x or y or z [m]	Max. magnetic field strength [A/m]	Limit [A/m]	30 % Limit [A/m]	Verdict
Y/Z plane +x	0.15	0.05	1.63	0.489	PASS
Y/Z plane -x	0.15	0.04			
X/Z plane +y	0.15	0.05			
X/Z plane -y	0.15	0.05			
X/Y plane +z	0.15	0.05			
X/Y plane -z	0.15	0.05			