RF EXPOSURE REPORT

FOR

Wireless Charger

MODEL NUMBER: BEX4814-XX

REPORT NUMBER: 11436518C

ISSUE DATE: November 18, 2016

Prepared for
Byrne Electrical Specialists Inc.
320 Byrne Industrial Dr.
Rockford, MI 49341
USA

Prepared by
UL LLC
333 Pfingsten Rd.
Northbrook, IL 60062
TEL: (847) 272-8800

NVLAP Lab code: 100414-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--		Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Byrne Electrical Specialists Inc. 320 Byrne Industrial Dr. Rockford, MI 49341 USA
EUT DESCRIPTION:	Wireless Charger
MODEL:	BEX4814-XX
SERIAL NUMBER:	non-serialized
DATE TESTED:	September 26, 2016 – November 16, 2016

UL Verification Services Inc. measured the RF Exposure of the above equipment in accordance with the requirements set forth in the above standards, using test results reported in the test report documents referenced below and/or documentation furnished by the applicant. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations of these calculations. The results show that the equipment is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL LLC By:

Bob DeLisi
WiSE Principal Engineer
UL LLC

Tested By:

Bart Mucha
Staff Engineer
UL LLC

2. TEST METHODOLOGY

All measurements were mad in accordance to par. 3 of KDB 680106 D01 v02 RF Exposure Wireless Charging Applications.

3. REFERENCES

All measurements were made as documented in this test report UL Verification Services Inc.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at http://ts.nist.gov/

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test	Uncertainty k=2
Magnetic Field	+/- 0.89dB
Electric Field	+/- 1.00dB

Uncertainty figures are valid to a confidence level of 95%.

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List					
Description	Manufacturer	Model	Eqp. No.	Cal Date	Cal Due
RF Field Probe	Holiday	HI-4422	EMC4289	20151203	20161230
Exposure Level Meter	Narda	ELT400	EMC4268	20160510	20170531

7. EQUIPMENT UNDER TEST

7.1. DESCRIPTION OF EUT

The EUT is a Wireless Qi Charger with three separate charging coils and two USB 5V outputs (maximum 1A each).

GENERAL INFORMATION

Power Requirements	120V/60Hz
Frequency Range used for Charging	0.110MHz – 0.205MHz

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Qi Loads	Byrne Electrical Specialists.	None	none	none
Resistive Loads - 5OHm resistor	-	-	-	-

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC Input	1	-	3-wire	1.5m	none
2	AC Outputs	3	-	-	-	none
3	USB Outputs	2	SUB	USB	-	none, not used

7.2. TEST CONFIGURATION AND MODE

E AND H Field measurements were performed at a distance of 10cm laterally from the edges of the EUT. Testing was performed with two configurations: EUT charging with maximum output and verification measurements with EUT powered but without load (not charging).

7.3. SOFTWARE AND FIRMWARE

none

7.4. WORST-CASE CONFIGURATION AND MODE

EUT was tested with receiving coil terminated into resistors providing maximum load.

7.5. MODIFICATIONS

No modifications were made during testing.

8. MAXIMUM PERMISSIBLE RF EXPOSURE

8.1. FCC RULES

§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.

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)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30

f = frequency in MHz

* = Plane-wave equivalent power density

9. RF EXPOSURE RESULTS

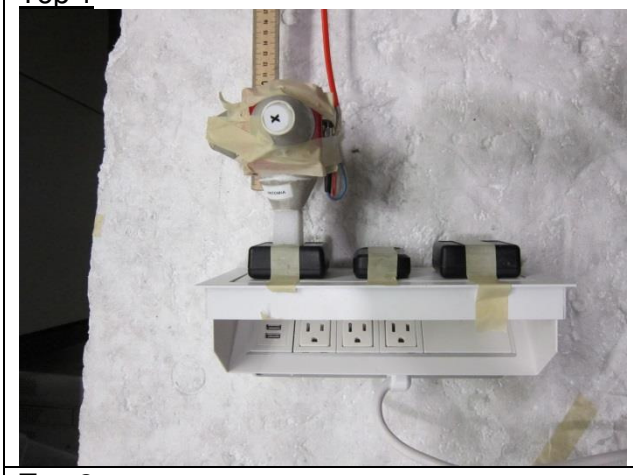
Electric Field Strength and Magnetic Field Strength

Exposure under full load						
Position	**Lateral Distance from EUT (cm)**	**Electric Field Strength (V/m)**	**FCC Limit (V/m)**	**Magnetic Field Strength (uT)**	**Magnetic Field Strength (A/m)**	**FCC Limit (A/m)**
Top 1	10	7.2	614	0.121	0.10	1.63
Top 2	10	10.8	614	0.117	0.09	1.63
Top 3	10	9.8	614	0.138	0.11	1.63
Left	10	2.1	614	0.057	0.05	1.63
Right	10	2.6	614	0.049	0.04	1.63
Front	10	1.7	614	0.054	0.04	1.63
Back	10	3.5	614	0.061	0.05	1.63
Bottom	10	2.1	614	0.078	0.06	1.63
Exposure no load						
Position	**Lateral Distance from EUT (cm)**	**Electric Field Strength (V/m)**	**FCC Limit (V/m)**	**Magnetic Field Strength (uT)**	**Magnetic Field Strength (A/m)**	**FCC Limit (A/m)**
Top	10	3.5	614	0.205	0.16	1.63
Left	10	1.7	614	0.056	0.04	1.63
Right	10	0.9	614	0.041	0.03	1.63
Front	10	0.5	614	0.054	0.04	1.63
Back	10	1.4	614	0.045	0.04	1.63
Bottom	10	1.3	614	0.052	0.04	1.63

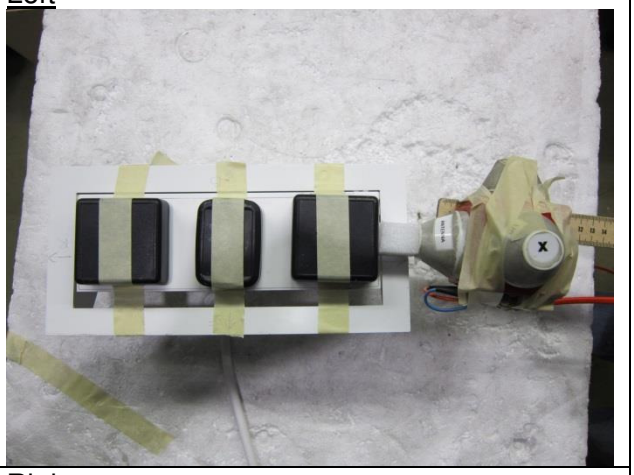
10. Test Setup Photos

Electric Field Measurements

Top 1



Left



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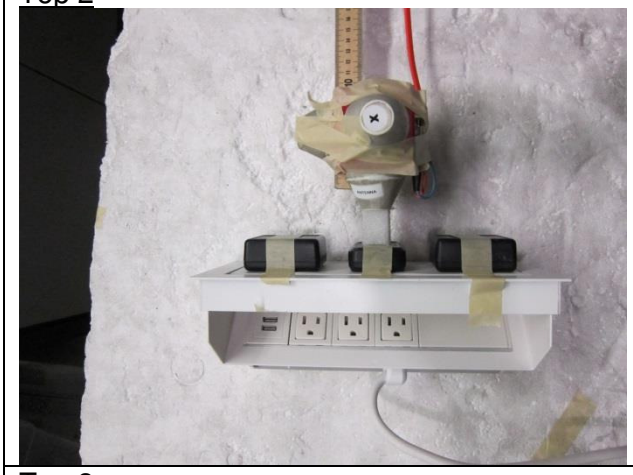

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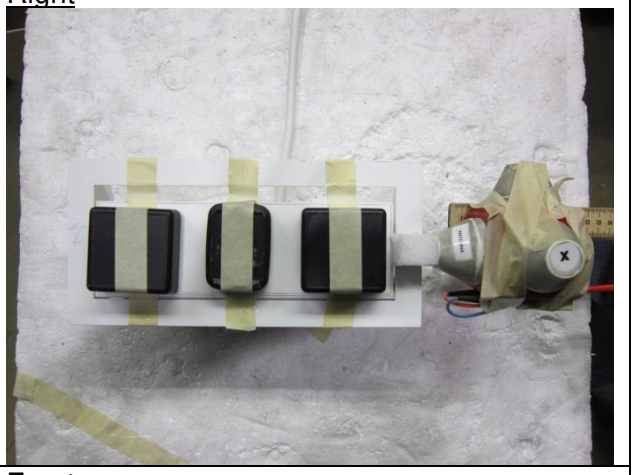

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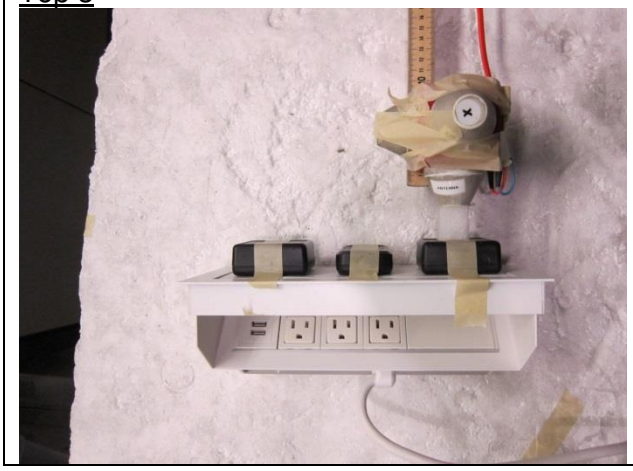
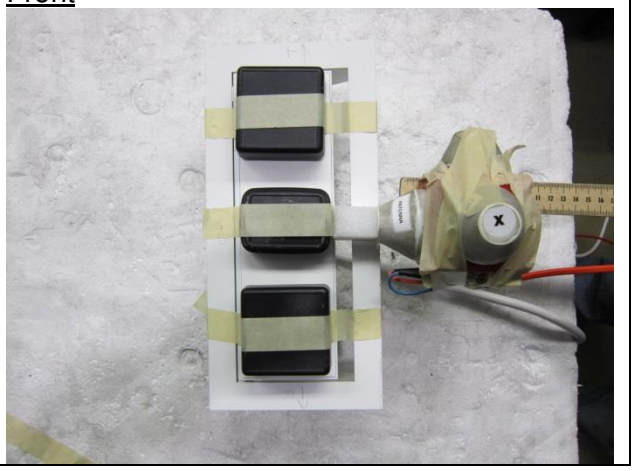
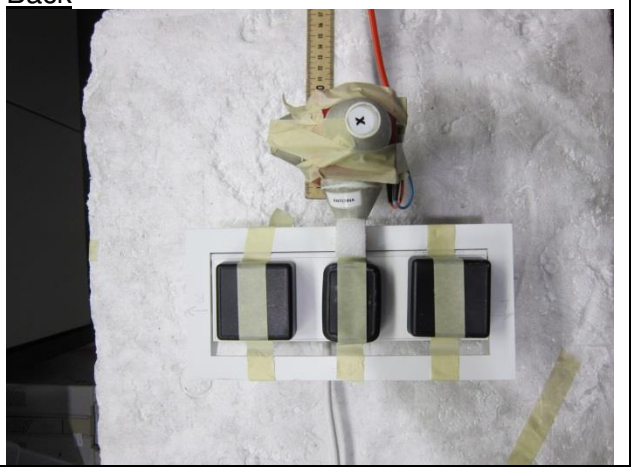


Front



Bottom

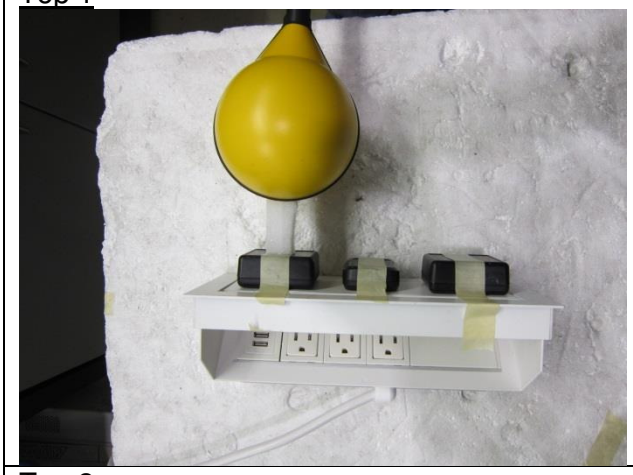
Back



* Foam spacer was added to probe edge. The distance between the reference of the probe and edge of the spacer is equal to 10cm. In photos above the ruler was used as non-conductive means to support the probe.

Magnetic Field Measurements

Top 1



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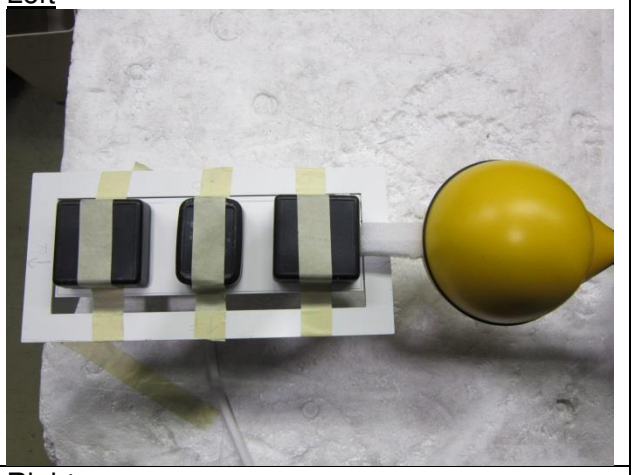

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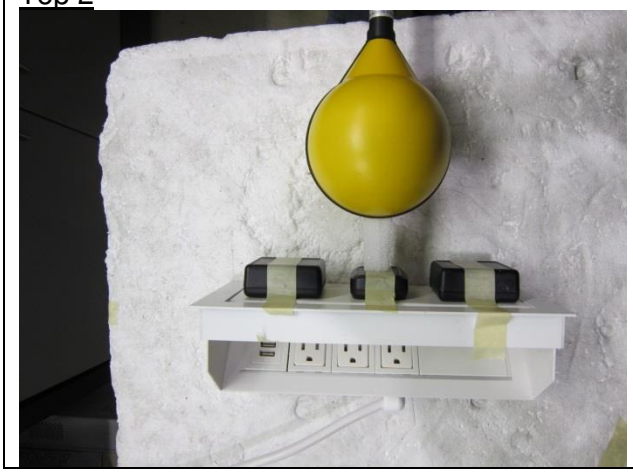

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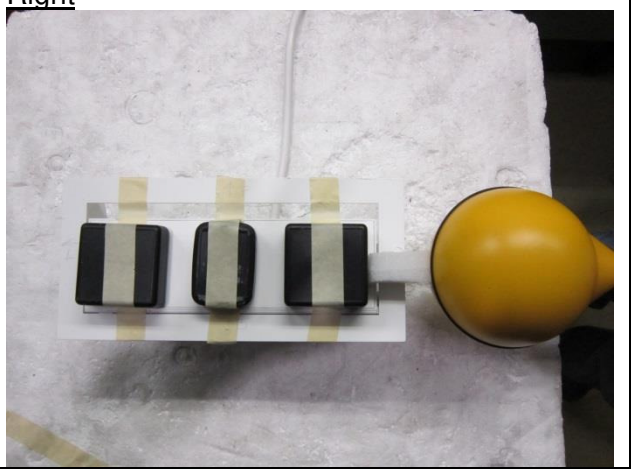

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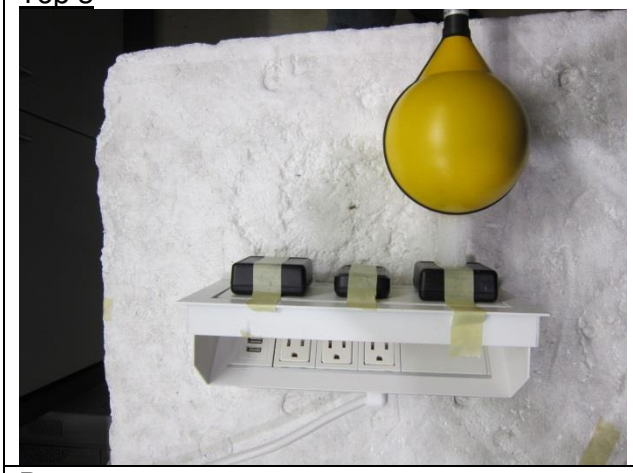

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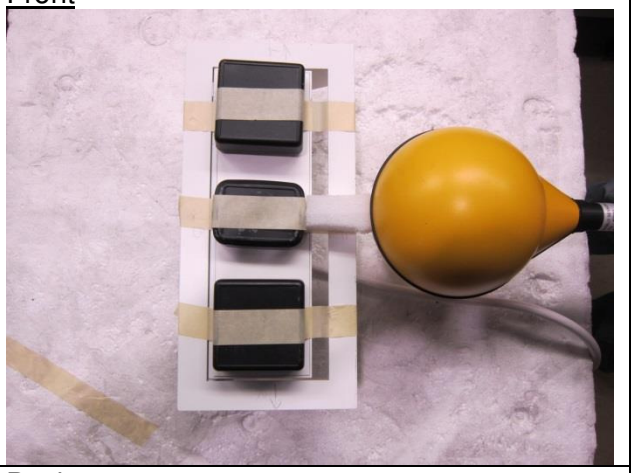

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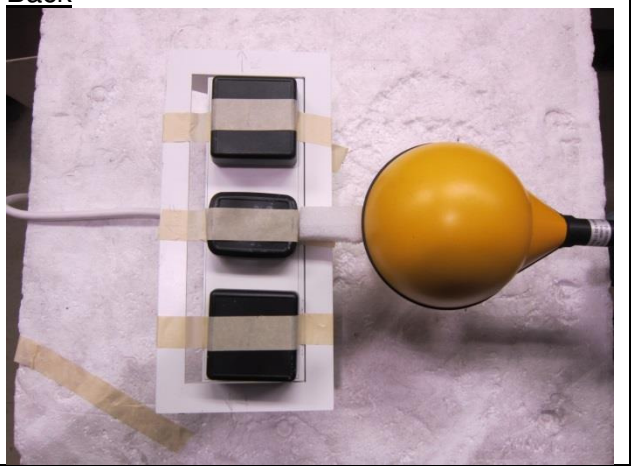

END OF REPORT