

lac-MRA



Report No.: SZEM190101078102

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### **Human Exposure Report**

Application No.: SZEM1901010781CR

Applicant: acv GmbH

Address of Applicant: Strassburger Allee 10-12, Erkelenz, Germany 41812

Manufacturer: acv GmbH

Address of Manufacturer: Strassburger Allee 10-12, Erkelenz, Germany 41812

Factory: DeSun / NERA TECH (HK) LIMITED

Address of Factory: Huameiju Business Centre, xinhu Road, Bao'an District, Floor 7, Zone A,

Shenzhen, China

**Equipment Under Test (EUT):** 

**EUT Name:** Wireless Charging System

Model No.: 241170-53-1, 241170-53-5, 240000-01-033, 240000-01-035 ♣

Please refer to section 2.1 of this report which indicates which model was

actually tested and which were electrically identical.

Trade mark: Inbay 2.0

**FCC ID:** 2AQWT24000001030

**Standards:** 47 CFR PART 1, Subpart I, Section 1.1310

**Date of Receipt:** 2019-01-28

**Date of Test**: 2019-01-30 to 2019-02-15

**Date of Issue:** 2019-02-20

Test Result : Pass\*

Keny Xu EMC Laboratory Manager

Ceny. Ku



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above



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	Revision Record						
Version	Version Chapter Date Modifier						
01		2019-02-20		Original			

Authorized for issue by:		
	Vincent Chen	
	Vincent Chen /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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#### 2 General Information

#### 2.1 Details of E.U.T.

Power supply: Input: DC 12V

Cable: DC power cable: 60cm
Antenna Type: Inductive Loop Coil Antenna

Modulation Type: Load Modulation

Operation Frequency: 113.08kHz to 204.04kHz

Remark: Tests were conducted in three load modes (5W/7.5W/10W) and the worst

case (10W) is reported only.

#### **Declaration of EUT Family Grouping:**

Model No.: 241170-53-1, 241170-53-5, 240000-01-033, 240000-01-035

All models had been tested, only show the worst model 241170-53-5 in this report, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models.

240000-01-030 and 240000-01-031 are the same PCBs(same BOM), just different on software in regards of illumination of the status LED and beep signal.

240000-01-033 (with aluminum housing) and 240000-01-035 (with plastic housing) are the subsystems based on the PCB 240000-01-030 or 240000-01-031.

241170-53-1 (with plastic house subsystem 240000-01-035) and 241170-53-5 (with aluminum housed subsystem 240000-01-033) are the application specific solutions.



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#### 2.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power	ZHAOXIN	RXN-305D	REF. No.SEA2700
Load receiver	SUPPLIED BY CLIENT	10W	NA
Mobile Phone SAMSUNG		SM-G9500	R28J9140LPB



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#### 2.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

#### 2.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### • CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

#### VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

#### • FCC -Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

#### · Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

#### 2.5 Deviation from Standards

None

#### 2.6 Abnormalities from Standard Conditions

None.



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### 3 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Due date
1	Shielding Room	SAEMC	MSR733	SEM001-09	2020-05-09
2	Electric and Magnetic Field Analyzer	Narda	EHP-50F	EMC092	2020-02-07



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#### 4 Test Results

#### 4.1 RF Exposure test

Test Requirement: 47 CFR PART 1, Subpart I, Section 1.1310

Measurement Distance: 0/2/4/6/8/10/15cm

Limit:

Frequency range (MHz)			Power density (mW/cm²)	Averaging time (minutes)
	(A) Limits for Occ	cupational/Controlled Ex	posures	
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
	(B) Limits for Genera	l Population/Uncontrolle	d Exposure	
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz

RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

#### 4.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 52 % RH Atmospheric Pressure: 1015 mbar

**EUT Operation:** 

This device has been tested the worst status of full load and the device has been tested with load at zero charge, intermediate charge, and full charge. Test distance 0/2/4/6/8/10/15cm had been tested, Only show worst distance 0cm and best distance 15cm in this report.



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<sup>\*=</sup>Plane-wave equivalent power density



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#### 4.1.2 Measurement Data

0CM

#### Output Voltage=DC 9V; The max output power =10W;

#### **Electric Field Emissions**

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (V/m)	50% Limit (V/m)
		Side 1	10.02	307
	0	Side 2	9.43	307
134.4 kHz		Side 3	11.18	307
		Side 4	9.14	307
		Тор	10.27	307

#### **Magnetic Field Emissions**

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (A/m)	50% Limit (A/m)
		Side 1	0.438	0.815
134.4kHz	0	Side 2	0.336	0.815
		Side 3	0.530	0.815
		Side 4	0.322	0.815
		Тор	0.454	0.815



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#### Mobile phone has been charge at zero charge, intermediate charge, and full charge.

#### **Electric Field Emissions**

Operation	Test	lest		Measure Resul	50%Limit	
frequency	Distance (cm)	Position	zero charge	intermediate charge	full charge	(V/m)
	, ,	Side 1	10.15	9.71	9.33	307
		Side 2	9.32	8.92	8.48	307
192.5 kHz	0	Side 3	11.01	10.82	10.24	307
		Side 4	9.26	8.68	8.39	307
		Тор	10.14	9.57	9.21	307

#### **Magnetic Field Emissions**

Operation	Test	lest		Measure Resul	50%Limit	
frequency	equency Distance (cm)		zero charge	intermediate charge	full charge	(A/m)
	0	Side 1	0.425	0.382	0.347	0.815
		Side 2	0.342	0.296	0.268	0.815
195.2 kHz		Side 3	0.549	0.492	0.441	0.815
		Side 4	0.310	0.286	0.240	0.815
		Тор	0.442	0.404	0.365	0.815



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15CM

#### Output Voltage=DC 9V; The max output power =10W;

#### **Electric Field Emissions**

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (V/m)	50% Limit (V/m)
		Side 1	2.15	307
	15	Side 2	2.01	307
138.6 kHz		Side 3	3.26	307
		Side 4	1.94	307
		Тор	2.77	307

#### **Magnetic Field Emissions**

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (A/m)	50% Limit (A/m)
		Side 1	0.0332	0.815
	15	Side 2	0.0310	0.815
138.6 kHz		Side 3	0.0835	0.815
		Side 4	0.0326	0.815
		Тор	0.0739	0.815



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#### Mobile phone has been charge at zero charge, intermediate charge, and full charge.

#### **Electric Field Emissions**

Operation	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50%Limit
frequency			zero charge	intermediate charge	full charge	(V/m)
138.6 kHz	15	Side 1	2.24	1.94	1.68	307
		Side 2	2.12	1.91	1.75	307
		Side 3	3.11	2.82	2.52	307
		Side 4	1.86	1.68	1.49	307
		Тор	2.85	2.37	2.01	307

#### **Magnetic Field Emissions**

Operation frequency	Test	Test	Probe Measure Result(A/m)			50%Limit
	Distance (cm)	Position	zero charge	intermediate charge	full charge	(A/m)
138.6 kHz	15	Side 1	0.0345	0.0281	0.0257	0.815
		Side 2	0.0327	0.0297	0.0266	0.815
		Side 3	0.0822	0.0790	0.0757	0.815
		Side 4	0.0313	0.0288	0.0249	0.815
		Тор	0.0725	0.0683	0.0661	0.815



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### 5 Photographs- RF exposure Setup photos

Refer to RF Exposure Setup Photos.

- End of the Report -



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