

# RF Exposure Evaluation Report

Product Name	15W Qi EPP Automotive Wireless Charging System
Model No.	240000-01-043, 240000-01-101, IF 240000-01-036, IF 240000-01-037
FCC ID.	2AQWT24000001043

Applicant	acv GmbH
Address	Strassburger Allee 10-12, 41812 Erkelenz, Germany

Date of Receipt	Sep. 20, 2019
Date of Declaration	Jan. 20, 2020
Report No.	1990293R-RFUSP02V00
Report Version	V2.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Issued Date: Jan. 20, 2020  
 Report No.: 1990293R-RFUSP02V00



Product Name	15W Qi EPP Automotive Wireless Charging System
Applicant	acv GmbH
Address	Strassburger Allee 10-12, 41812 Erkelenz, Germany
Manufacturer	Santek Overseas Corp.
Model No.	240000-01-043, 240000-01-101, IF 240000-01-036, IF 240000-01-037
FCC ID.	2AQWT24000001043
EUT Rated Voltage	DC 9-16V
EUT Test Voltage	DC 12V
Trade Name	Inbay
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

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Tested By : Boris Hsu  
 ( Engineer / Boris Hsu )

Approved By : Vincent Lin  
 ( Director / Vincent Lin )

## 1. RF Exposure Evaluation

### 1.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X EM Field Meter	ENAC	SMP2 / 18SN0747	Apr., 2019

### 1.2. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.
1 Test Fixture	N/A	N/A

### 1.3. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
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	6
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/F	2.19/F	*(180/F <sup>2</sup> )	30
300-1500	27.5	0.073	0.2	30
300-1500	--	--	F/1500	30
1500-100,000	--	--	1	30

Note:

1. RF Exposure evaluation should be conducted assuming a separation distance of 10 cm
2. The EUT is including four models for different marketing requirement.

#### **1.4. Test Procedure**

The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils per the FCC 's request. (reference KDB 680106 D01 RF Exposure Wireless Charging Apps v03)

The temperature and related humidity: 18°C and 62% RH.

### 1.5. Test Result of RF Exposure Evaluation for WPT

Items to be covered	Answer from applicant
Power transfer frequency is less than 1 MHz.	Operation frequency range is 127.05 ~128.45kHz (127.75 ± 0.7 kHz)
Output power from each primary coil is less than or equal to 15 watts.	15W (Max)
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes, allow coupling only between individual pairs of coils.
Client device is placed directly in contact with the transmitter.	Yes, meet the requirements.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes, meet the requirements.
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	<p>*Electric Field Strength (V/m) @15cm = 2.78V/m (&lt; 307 V/m)</p> <p>Electric Field Strength (V/m) @20cm = 1.16V/m (&lt; 307 V/m)</p> <p>MPE Limit (614 V/m) *50% =307 V/m</p> <p>*Magnetic Field Strength (A/m) @15cm =0.48A/m (&lt; 0.815 A/m )</p> <p>*Magnetic Field Strength (A/m) @20cm =0.19A/m (&lt; 0.815 A/m )</p> <p>MPE Limit (1.63 A/m) *50%= 0.815 A/m</p>

Product : 15W Qi EPP Automotive Wireless Charging System  
 Test Item : RF Exposure Evaluation  
 Test Site : No.7 Chamber  
 Test Date : 2020/01/20

### For Wireless Charge-15cm:

#### E-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Side 1	0.12775	0.610	614.0	307.0	PASS
Side 2	0.12775	0.840	614.0	307.0	PASS
Side 3	0.12775	0.610	614.0	307.0	PASS
Side 4	0.12775	0.620	614.0	307.0	PASS

Test Position	Frequency (MHz)	Measurement Level @15cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Top	0.12775	2.780	614.0	307.0	PASS
Bottom	0.12775	0.510	614.0	307.0	PASS

#### H-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Side 1	0.12775	0.140	1.63	0.815	PASS
Side 2	0.12775	0.340	1.63	0.815	PASS
Side 3	0.12775	0.120	1.63	0.815	PASS
Side 4	0.12775	0.150	1.63	0.815	PASS

Test Position	Frequency (MHz)	Measurement Level @15cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Top	0.12775	0.480	1.63	0.815	PASS
Bottom	0.12775	0.130	1.63	0.815	PASS

Product : 15W Qi EPP Automotive Wireless Charging System  
 Test Item : RF Exposure Evaluation  
 Test Site : No.7 Chamber  
 Test Date : 2020/01/20

### For Wireless Charge-20cm:

#### E-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @20cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Side 1	0.12775	0.530	614.0	307.0	PASS
Side 2	0.12775	0.620	614.0	307.0	PASS
Side 3	0.12775	0.540	614.0	307.0	PASS
Side 4	0.12775	0.540	614.0	307.0	PASS

Test Position	Frequency (MHz)	Measurement Level @20cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Top	0.12775	1.160	614.0	307.0	PASS
Bottom	0.12775	0.480	614.0	307.0	PASS

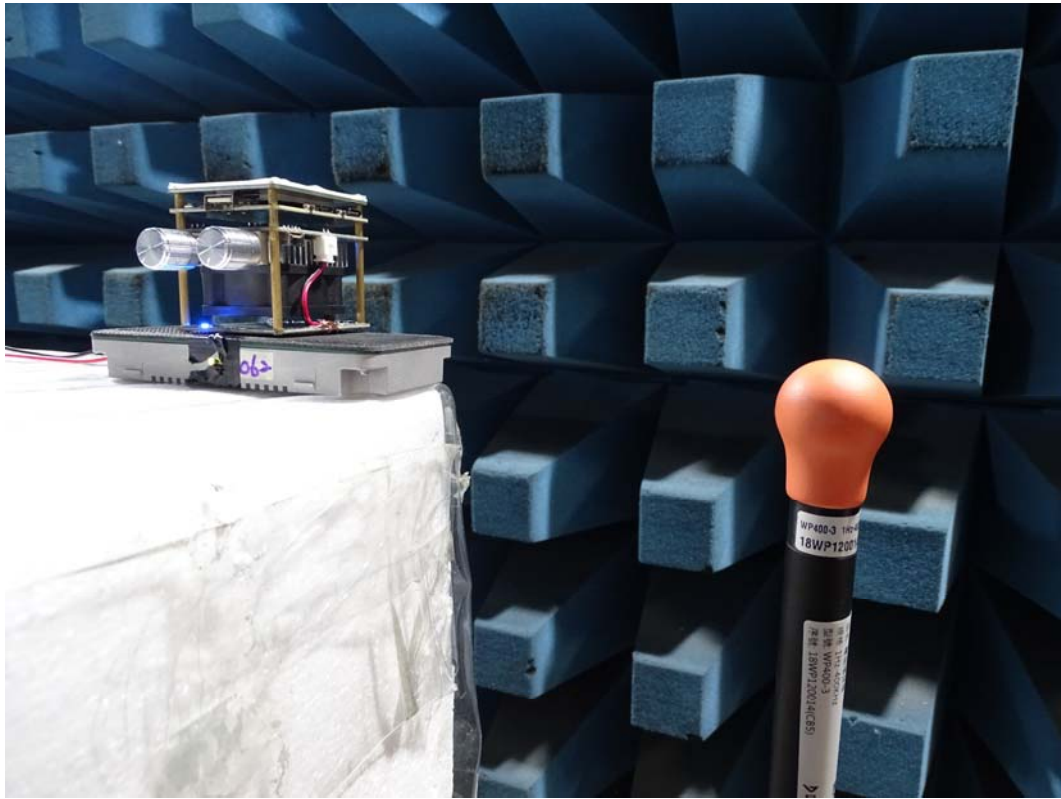
#### H-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @20cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Side 1	0.12775	0.070	1.63	0.815	PASS
Side 2	0.12775	0.150	1.63	0.815	PASS
Side 3	0.12775	0.060	1.63	0.815	PASS
Side 4	0.12775	0.070	1.63	0.815	PASS

Test Position	Frequency (MHz)	Measurement Level @20cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Top	0.12775	0.190	1.63	0.815	PASS
Bottom	0.12775	0.080	1.63	0.815	PASS

### 1.6. EUT Test Setup Photographs

Side 1-15cm



Side 1-20cm





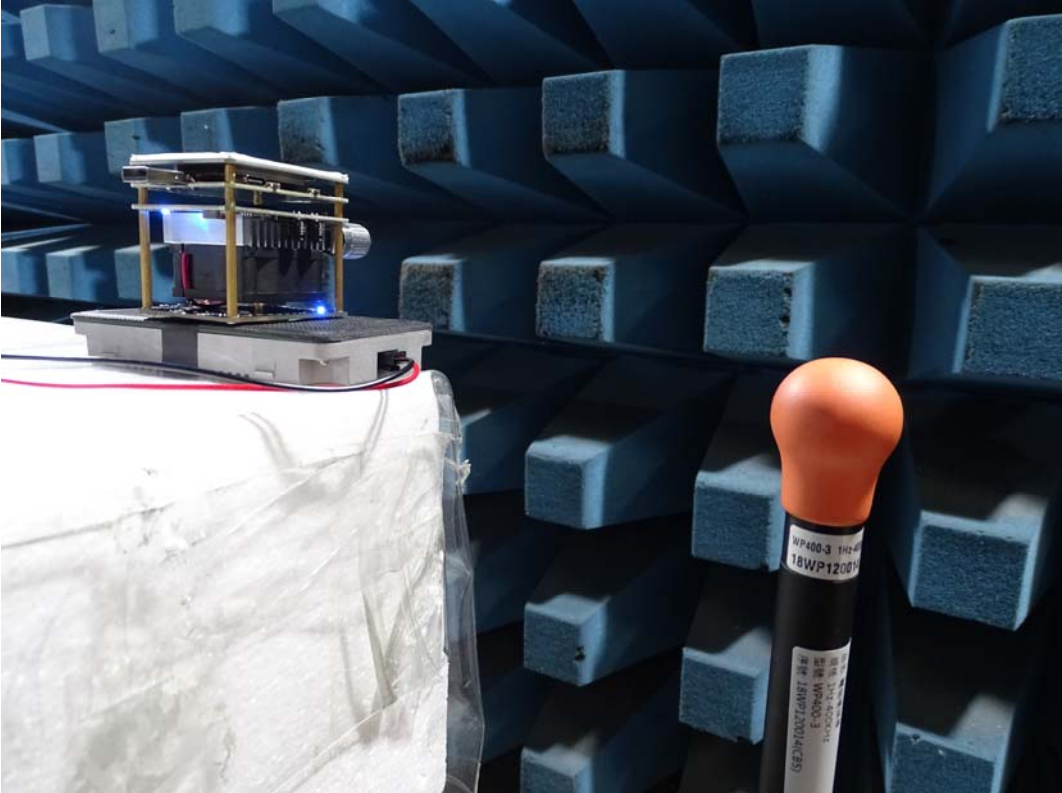
Side 2-15cm



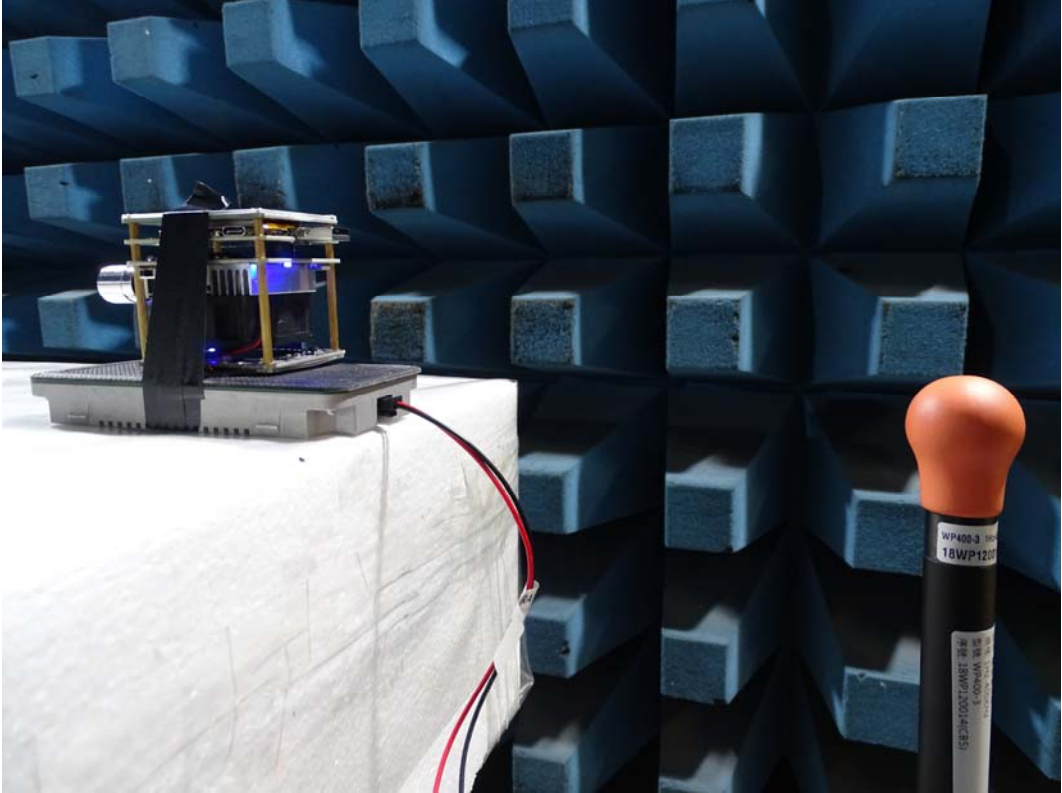
Side 2-20cm



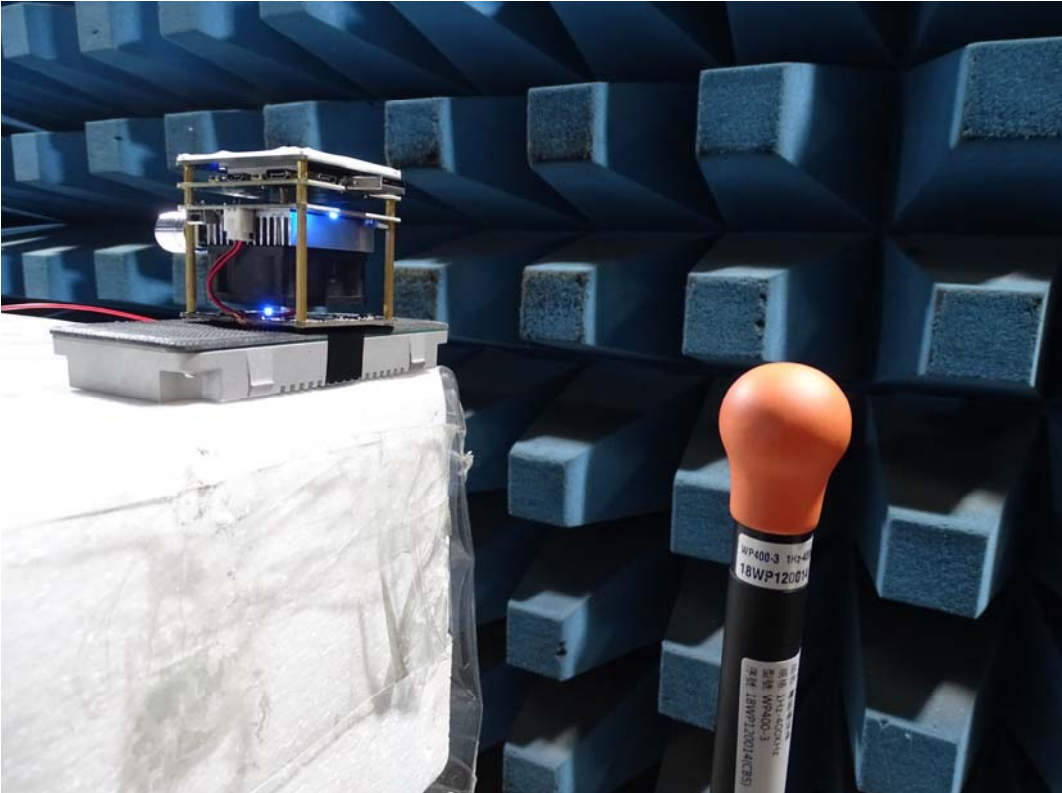
Side 3-15cm



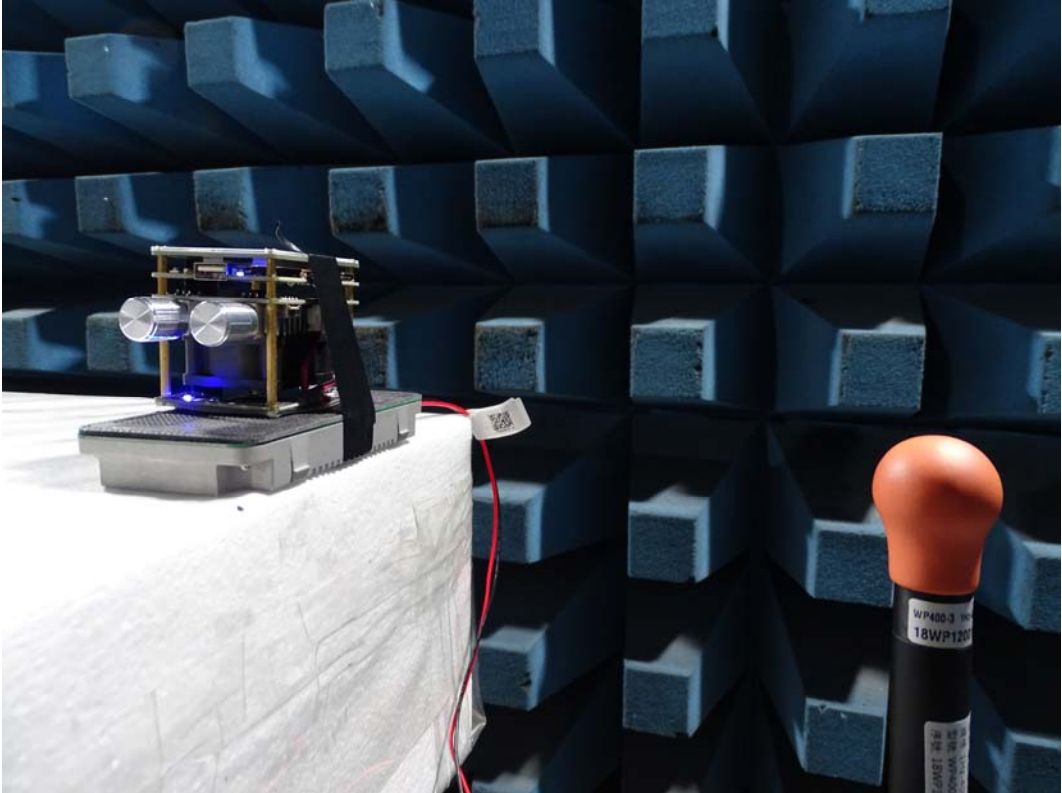
Side 3-20cm



Side 4-15cm



Side 4-20cm





Top-15cm



Top-20cm



**Bottom-15cm**



**Bottom-20cm**

