Teison Energy Technology Co., Ltd.

MPE ASSESSMENT REPORT

REPORT TYPE:
FCC MPE Assessment Report

MODEL:
TS-EVC50-001, TS-EVC48-001
TS-EVC40-001, TS-EVC32-001

REPORT NUMBER:
2406B0408SHA-002

ISSUE DATE:
August 13, 2024

DOCUMENT CONTROL NUMBER:
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Intertek Testing Services Shanghai
Building No.86, 1198 Qinzhou Road (North)
Caohejing Development Zone
Shanghai 200233, China

Telephone: 86 21 6127 8200
www.intertek.com

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TEST REPORT

Report no.: 2406B0408SHA-002

Applicant:	Teison Energy Technology Co., Ltd. Meihu Road, Xihu Town, Hanjiang District, Yangzhou City, Jiangsu Province, China, 225000
Manufacturer:	Teison Energy Technology Co., Ltd. Meihu Road, Xihu Town, Hanjiang District, Yangzhou City, Jiangsu Province, China, 225000
Factory:	Teison Energy Technology Co., Ltd. Meihu Road, Xihu Town, Hanjiang District, Yangzhou City, Jiangsu Province, China, 225000
FCC ID:	2BHT2-TSEVC50

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	**REVIEWED BY:**
Project Engineer Scout Gong	Reviewer Eric Li

TEST REPORT

Revision History

Report No.	Version	Description	Issued Date
2406B0408SHA-002	Rev. 01	Initial issue of report	August 13, 2024

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	EV Charger
Type/Model:	TS-EVC50-001, TS-EVC48-001 TS-EVC40-001, TS-EVC32-001
Description of EUT:	The EUT covered in the report is an EV charger. RFID card reader is incorporated in model for process control. There are 4 models, the electrical circuit design of them is identical, only the output rating is different. Model TS-EVC50-001 was tested as a representative. Here is the certificate information of the wireless modules which EUT equipped. For the WIFI/BT/BLE module: FCC ID: 2AC7Z-ESP32WROVERE and IC: 21098-ESPWROVERE
Rating:	TS-EVC50-001: 240V 50A 60Hz TS-EVC48-001: 240V 48A 60Hz TS-EVC40-001: 240V 40A 60Hz TS-EVC32-001: 240V 32A 60Hz
EUT type:	☒ Tabletop ☐ Floor standing
Software Version:	/
Hardware Version:	/
Serial numbers:	A240606-57-003
Sample received date:	June 06, 2024
Date of test:	June 06, 2024, to August 5, 2024

1.2 Technical Specification

Frequency Range:	13.56 MHz ~ 13.56 MHz
Modulation:	ASK
Antenna:	PCB antenna

1.3 Description of Test Facility

Name:	Intertek Testing Services (Shanghai FTZ) Co., Ltd.
Address:	Building 86, No. 1198 Qinzhou Road (North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L21189
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Member No: 3598 (Registration No.: R-14243, G-10845, C-14723, T-12252)
	A2LA Accreditation Lab Certificate Number: 3309.02

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2 MPE Assessment

Test result: **PASS**

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:
According to§1.1310, the limit for general population/uncontrolled exposures

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note: Limit for 13.56MHz is 60.77 V/m

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

2.2 Assessment Results

Power density (S) is calculated according to the formula:
$S = PG / (4\pi R^2)$
Where S = power density in mW/cm^2
P = Radiated transmit power in mW
G = numeric gain of transmit antenna
R = distance (cm)

As we can see from the test report 2406B0408SHA-001: 52.40 dBuV/m at 3m
@20cm = @3m + 40 × log (3/0.2) = 99.45 dBuV/m = 0.094 V/m < 60.77 V/m

The power for WIFI/Bluetooth/BLE module refers to certificate of FCC ID: 2AC7Z-ESP32WROVERE

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent the worst case in terms of the exposure levels. Here listed the maximum RF exposure according to the modules' certificated reports.

Radio	Frequency Range	P		G		R	S	Limits
	MHz	dBm	mW	dBi	Numeric	cm	mW/cm^2	mW/cm^2
802.11b	2412 – 2462	27.00	501.19	3.40	2.19	20	**0.2183**	1.0
802.11g	2412 – 2462	26.00	398.11	3.40	2.19	20	0.1734	1.0
802.11n-HT20	2412 – 2462	26.00	398.11	3.40	2.19	20	0.1734	1.0
802.11n-HT40	2422 – 2452	27.00	501.19	3.40	2.19	20	0.2183	1.0
BLE	2402 – 2480	7.00	5.01	3.40	2.19	20	0.0022	1.0
BT	2402 – 2480	9.00	7.94	3.40	2.19	20	**0.0035**	1.0

Note: 1 mW/cm^2 from 1.310 Table 1.

RFID, Wi-Fi 2.4G, Bluetooth transmit simultaneously, so the maximum rate of MPE is:
0.094/60.77 + 0.2183/1 + 0.0035/1 = 0.2233 < 1.000

Therefore, the MPE requirement is deemed to be satisfied without test.

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Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.

**********END**********