Teison Energy Technology Co., Ltd.

MPE ASSESSMENT REPORT

REPORT TYPE:
FCC MPE Assessment Report

MODEL:
TS-EDC60, TS-EDC80, TS-EDC90,
TS-EDC120, TS-EDC150, TS-EDC160,
TS-EDC180, TS-EDC200, TS-EDC240

REPORT NUMBER:
2406B0433SHA-002

ISSUE DATE:
November 11, 2024

DOCUMENT CONTROL NUMBER:
TTRFFCCMPE-01_V1

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TEST REPORT

Report no.: 2406B0433SHA-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-TSEDC240

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 Part1.1307(b)

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

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Revision History

Report No.	Version	Description	Issued Date
2406B0433SHA-002	Rev. 01	Initial issue of report	November 11, 2024

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	EV Charger
Type/Model:	TS-EDC60, TS-EDC80, TS-EDC90, TS-EDC120, TS-EDC150, TS-EDC160, TS-EDC180, TS-EDC200, TS-EDC240
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 9 models, the electrical circuit design of them is identical, only the output rating is different. Model TS-EDC240 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: 2AL6KBL-M8723DS1 For the LTE module: FCC ID: XMR201903EG25G
Rating:	TS-EDC60: Input 480V 3*76A, Output 150-1000V, 200A, 60kW TS-EDC80: Input 480V 3*102A, Output 150-1000V, 266A, 80kW TS-EDC90: Input 480V 3*115A, Output 150-1000V, 300A, 90kW TS-EDC120: Input 480V 3*152A, Output 150-1000V, 400A, 120kW TS-EDC150: Input 480V 3*190A, Output 150-1000V, 500A, 150kW TS-EDC160: Input 480V 3*203A, Output 150-1000V, 532A, 160kW TS-EDC180: Input 480V 3*228A, Output 150-1000V, 600A, 180kW TS-EDC200: Input 480V 3*255A, Output 150-1000V, 665A, 200kW TS-EDC240: Input 480V 3*305A, Output 150-1000V, 798A, 240kW
EUT type:	☐ Tabletop ☒ Floor standing
Software Version:	/
Hardware Version:	/
Serial numbers:	A240606-57-002
Sample received date:	June 06, 2024
Date of test:	June 06, 2024, to November 11, 2024

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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 2406B0433SHA-001: 71.70 dBuV/m at 3m
@20cm = @3m + 40 × log (3/0.2) = 118.74 dBuV/m = 0.865 V/m < 60.77 V/m

The power for WIFI/Bluetooth/BLE module refers to certificate of FCC ID: 2AL6KBL-M8723DS1
The power for LTE module refers to certificate of FCC ID: XMR201903EG25G

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	P		G	R	S	Limits
	MHz	dBm	mW	dBi	cm	mW/cm^2	mW/cm^2
GFSK	2400-2483.5	5.00	3.1623	2.00	20	**0.0010**	1.0000
π/4DQPSK	2400-2483.5	2.00	1.5849	2.00	20	0.0005	1.0000
8DPSK	2400-2483.5	2.00	1.5849	2.00	20	0.0005	1.0000
GFSK (BT LE)	2400-2483.5	4.00	2.5119	2.00	20	0.0008	1.0000
802.11b	2400-2483.5	17.00	50.1187	2.00	20	0.0158	1.0000
802.11g	2400-2483.5	18.00	63.0957	2.00	20	**0.0199**	1.0000
802.11n(HT20)	2400-2483.5	17.00	50.1187	2.00	20	0.0158	1.0000
802.11n(HT40)	2400-2483.5	16.00	39.8107	2.00	20	0.0126	1.0000

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

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Radio	Frequency	P		G	R	S	Limits
	MHz	dBm	mW	dBi	cm	mW/cm^2	mW/cm^2
GSM850	824.20	25.81	381.0658	2.29	20	0.1284	0.5495
GSM1900	1850.20	22.81	190.9853	1.59	20	0.0548	1.0000
WCDMA B2	1852.40	25.00	316.2278	1.59	20	0.0907	1.0000
WCDMA B4	1712.40	25.00	316.2278	2.00	20	0.0997	1.0000
WCDMA B5	826.40	25.00	316.2278	2.29	20	0.1066	0.5509
LTE B2	1850.70	25.00	316.2278	1.59	20	0.0907	1.0000
LTE B4	1710.70	25.00	316.2278	2.00	20	0.0997	1.0000
LTE B5	824.70	25.00	316.2278	2.29	20	0.1066	0.5498
LTE B7	2502.50	25.00	316.2278	3.00	20	0.1255	1.0000
LTE B12	699.70	25.00	316.2278	3.26	20	0.1333	0.4665
LTE B13	779.50	25.00	316.2278	4.45	20	**0.1753**	0.5197
LTE B25	1850.70	25.00	316.2278	1.59	20	0.0907	1.0000
LTE B26(814-825)	814.70	25.00	316.2278	2.53	20	0.1126	0.5431
LTE B26(826-849)	824.70	25.00	316.2278	2.53	20	0.1126	0.5498
LTE B38	2572.50	25.00	316.2278	2.06	20	0.1011	1.0000
LTE B41	2498.50	25.00	316.2278	3.00	20	0.1255	1.0000

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

RFID, Wi-Fi 2.4G, BT, LTE module transmit simultaneously, so the maximum rate of MPE is:
0.865/60.77 + 0.0199/1 + 0.0010/1 + 0.1753/0.5197 = 0.372 < 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**********