

Powercore Technology Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:
FCC MPE assessment report

MODEL:
ADC002ABCD-E

REPORT NUMBER:
2407B2028SHA-002

ISSUE DATE:
October 14, 2024

DOCUMENT CONTROL NUMBER:
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P.R. China

FCC ID: 2A98K-ADC002V2

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
Sky Yang

Reviewer
Eric Li

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Revision History

Report No.	Version	Description	Issued Date
2407B2028SHA-002	Rev. 01	Initial issue of report	October 14, 2024

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	DC Electric Vehicle Charging Station
Type/Model:	<p>ADC002<u>A</u><u>B</u><u>C</u><u>D</u>-<u>E</u></p> <p><u>A</u> may be C1 or NACS, denotes to one of the output connector interface type, C1:CCS1</p> <p><u>B</u> may be 30, 60 or 90, denotes to one of the output power, 30:30kW, 60:60kW, 90:90kW</p> <p><u>C</u> may be C1 or NACS, denotes to the other of the output connector interface type, C1:CCS1</p> <p><u>D</u> may be 30, 60 or 90, denotes to one of the output rating, 30:30kW, 60:60kW, 90:90kW</p> <p><u>E</u> may be 200, 250 or 300, denotes to the max charging current</p> <p>ADC002C130C130-200, ADC002C130NACS30-200, ADC002NACS30NACS30-200, ADC002C160C130-200, ADC002C160NACS30-200, ADC002NACS60NACS30-200, ADC002C160C160-200, ADC002C160NACS60-200, ADC002NACS60NACS60-200, ADC002C190C160-200, ADC002C190NACS60-200, ADC002NACS90NACS60-200, ADC002C190C190-200, ADC002C190NACS90-200, ADC002NACS90NACS90-200, ADC002C160C130-250, ADC002C160NACS30-250, ADC002NACS60NACS30-250, ADC002C160C160-250, ADC002C160NACS60-250, ADC002NACS60NACS60-250, ADC002C190C160-250, ADC002C190NACS60-250, ADC002NACS90NACS60-250, ADC002C190C190-250, ADC002C190NACS90-250, ADC002NACS90NACS90-250, ADC002C160C130-300, ADC002C160NACS30-300, ADC002NACS60NACS30-300, ADC002C160C160-300, ADC002C160NACS60-300, ADC002NACS60NACS60-300, ADC002C190C160-300, ADC002C190NACS60-300, ADC002NACS90NACS60-300, ADC002C190C190-300, ADC002C190NACS90-300, ADC002NACS90NACS90-300,</p>
Description of EUT:	The EUT is electric vehicle DC charger. It contains two certified modules, the WIFI/Bluetooth module FCC ID is 2AL6KBL-M8821CS1, the LTE module FCC ID is XMR201903EG25G.
Rating:	<p>ADC002<u>A</u>30<u>C</u>30-200: Input: 480VAC\pm10%, 50/60Hz, 76A Max Output: 150-1000VDC, 200A Max, 60kW Max</p> <p>ADC002<u>A</u>60<u>C</u>30-200: Input: 480VAC\pm10%, 50/60Hz, 114A Max Output: 150-1000VDC, 200A Max, 90kW Max</p> <p>ADC002<u>A</u>60<u>C</u>60-200: Input: 480VAC\pm10%, 50/60Hz, 152A Max Output: 150-1000VDC, 200A Max, 120kW Max</p> <p>ADC002<u>A</u>90<u>C</u>60-200: Input: 480VAC\pm10%, 50/60Hz, 190A Max Output: 150-1000VDC, 200A Max, 150kW Max</p> <p>ADC002<u>A</u>90<u>C</u>90-200: Input: 480VAC\pm10%, 50/60Hz, 228A Max Output: 150-1000VDC, 200A Max, 180kW Max</p> <p>ADC002<u>A</u>60<u>C</u>30-250: Input: 480VAC\pm10%, 50/60Hz, 114A Max Output: 150-1000VDC, 250A Max, 90kW Max</p> <p>ADC002<u>A</u>60<u>C</u>60-250: Input: 480VAC\pm10%, 50/60Hz, 152A Max Output: 150-1000VDC, 250A Max, 120kW Max</p>

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	<p>ADC002A90C60-250: Input: 480VAC\pm10%, 50/60Hz, 190A Max Output: 150-1000VDC, 250A Max, 150kW Max</p> <p>ADC002A90C90-250: Input: 480VAC\pm10%, 50/60Hz, 228A Max Output: 150-1000VDC, 250A Max, 180kW Max</p> <p>ADC002A60C30-300: Input: 480VAC\pm10%, 50/60Hz, 114A Max Output: 150-1000VDC, 300A Max, 90kW Max</p> <p>ADC002A60C60-300: Input: 480VAC\pm10%, 50/60Hz, 152A Max Output: 150-1000VDC, 300A Max, 120kW Max</p> <p>ADC002A90C60-300: Input: 480VAC\pm10%, 50/60Hz, 190A Max Output: 150-1000VDC, 300A Max, 150kW Max</p> <p>ADC002A90C90-300: Input: 480VAC\pm10%, 50/60Hz, 228A Max Output: 150-1000VDC, 300A Max, 180kW Max</p>
Category of EUT:	Class A
EUT type:	<input type="checkbox"/> Table top <input checked="" type="checkbox"/> Floor standing
Software Version:	-
Hardware Version:	-
Serial numbers:	A240724-40
Sample received date:	July 24, 2024
Date of test:	August 16, 2024 ~ September 6, 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/f ²)	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**

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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/cm²

P = Transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 2407B2028SHA-001:

$$61.7\text{dBuV/m}@3\text{m}, @20\text{cm}=@3\text{m}+40\log(3/0.2)=108.74\text{dBuV/m}=0.274\text{V/m}<60.77.$$

The power for WIFI module refers to certificate of FCC ID: 2AL6KBL-M8821CS1

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 worst case in terms of the exposure levels.

Frequency Range (MHz)	P		G		R (cm)	S (mW/cm ²)	Limits (mW/cm ²)
	(dBm)	(mW)	(dBi)	(numeric)			
2.4G WLAN	13.00	19.95	2.00	1.58	20	0.0063	1.0000
5.2G WLAN	12.00	15.85	2.00	1.58	20	0.0050	1.0000
5.8G WLAN	10.00	10.00	2.00	1.58	20	0.0032	1.0000
BT	5.00	3.16	2.00	1.58	20	0.0010	1.0000
BLE	4.00	2.51	2.00	1.58	20	0.0008	1.0000
GSM850	25.81	381.07	2.29	1.69	20	0.1284	0.5495
GSM1900	22.81	190.99	1.59	1.44	20	0.0548	1.0000
WCDMA Band II	25.00	316.23	1.59	1.44	20	0.0907	1.0000
WCDMA Band IV	25.00	316.23	2.00	1.58	20	0.0997	1.0000
WCDMA Band V	25.00	316.23	2.29	1.69	20	0.1066	0.5509
LTE Band 2	25.00	316.23	1.59	1.44	20	0.0907	1.0000
LTE Band 4	25.00	316.23	2.00	1.58	20	0.0997	1.0000
LTE Band 5	25.00	316.23	2.29	1.69	20	0.1066	0.5498
LTE Band 7	25.00	316.23	3.00	2.00	20	0.1255	1.0000
LTE Band 12	25.00	316.23	3.26	2.12	20	0.1333	0.4665
LTE Band 13	25.00	316.23	4.45	2.79	20	0.1753	0.5197
LTE Band 25	25.00	316.23	1.59	1.44	20	0.0907	1.0000
LTE Band 26(814-824)	25.00	316.23	2.53	1.79	20	0.1126	0.5431
LTE Band 26(824-849)	25.00	316.23	2.53	1.79	20	0.1126	0.5498
LTE Band 38	25.00	316.23	2.06	1.61	20	0.1011	1.0000
LTE Band 41	25.00	316.23	3.00	2.00	20	0.1255	1.0000

Note: 1 mW/cm² from 1.310 Table 1.

RFID, LTE and WIFI/Bluetooth can transmit simultaneously, so the maximum rate of MPE is,
 $0.274/60.77+0.0063/1+0.1753/0.5197=0.348 < 1.0$.

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*****