

Longhorn Intelligent Tech Co.,Ltd

MPE ASSESSMENT REPORT

Report Type:

FCC MPE assessment report

MODEL:

ECA-NC8002S-DG80, ECA-NC8002S-SG80,
ECA-NC8002S-DG40

REPORT NUMBER:

2411B0026SHA-002

ISSUE DATE:

December 19, 2024

DOCUMENT CONTROL NUMBER:

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FCC ID: 2APP2-ECA03

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
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Reviewer
Eric Li

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Revision History

Report No.	Version	Description	Issued Date
2411B0026SHA-002	Rev. 01	Initial issue of report	December 19, 2024

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	EV Charger
Type/Model:	ECA-NC8002S-DG80, ECA-NC8002S-SG80, ECA-NC8002S-DG40
Description of EUT:	The EUT is electric vehicle AC charger. EUT contains three wireless modules, the FCC ID is XMR202008EC25AFXD, 2AOXV-BR2602E-U2 and 2AFOS-WT32C3-SX. ECA-NC8002S-SG80 only has one output, ECA-NC8002S-DG80 and ECA-NC8002S-DG40 have two outputs. All models are electrically identical except the rated output power.
Rating:	ECA-NC8002S-DG80: 208/240VAC, 60Hz, 40A max for each EV connector or 80A max for one EV connector ECA-NC8002S-SG80: 208/240VAC, 60Hz, 80A max ECA-NC8002S-DG40: 208/240VAC, 60Hz, 40A max for each EV connector
Category of EUT:	Class A
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	-
Hardware Version:	-
Serial numbers:	A241028-55
Sample received date:	October 28, 2024
Date of test:	November 1, 2024 ~ November 15, 2024

1.2 Technical Specification

Frequency Range:	13.56 MHz ~ 13.56 MHz
Modulation:	ASK
Antenna gain:	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

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**

TEST REPORT

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 = Power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 2411B0026SHA-001:

$$56.0\text{dBuV/m}@3\text{m}, @20\text{cm}=@3\text{m}+40\log(3/0.2)=103.04\text{dBuV/m}=0.142\text{V/m}<60.77.$$

The power for Bluetooth module refers to certificate of FCC ID: 2AOXV-BR2602E-U2

The power for WIFI/Bluetooth module refers to certificate of FCC ID: 2AFOS-WT32C3-SX

The power for LTE module refers to certificate of FCC ID: XMR202008EC25AFXD

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.

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Module	Frequency Range	P		G		R	S	Limits
	(MHz)	(dBm)	(mW)	(dBi)	(numeric)	(cm)	(mW/cm ²)	(mW/cm ²)
2AOXV-BR2602E-U2	Bluetooth LE	1.5	1.413	0	1	20	0.000281	1
2AFOS-WT32C3-SX	Bluetooth LE	5	3.16	2	1.585	20	0.000996	1
	WIFI 2.4G	19	79.43	2	1.585	20	0.025	1
XMR202008E C25AFXD	WCDMA Band II	25	316.23	4	2.512	20	0.158	1
	WCDMA Band IV	25	316.23	4	2.512	20	0.158	1
	WCDMA Band V	25	316.23	4	2.512	20	0.158	0.549
	LTE Band 2	25	316.23	4	2.512	20	0.158	1
	LTE Band 4	25	316.23	4	2.512	20	0.158	1
	LTE Band 5	25	316.23	4	2.512	20	0.158	0.549
	LTE Band 12	25	316.23	4	2.512	20	0.158	0.466
	LTE Band 13	25	316.23	4	2.512	20	0.158	0.518
	LTE Band 14	25	316.23	4	2.512	20	0.158	0.525
	LTE Band 66	25	316.23	4	2.512	20	0.158	1
LTE Band 71	25	316.23	4	2.512	20	0.158	0.442	

Note: 1 mW/cm² from 1.310 Table 1.

RFID and all modules can transmit simultaneously, so the maximum rate of MPE is,
 $0.142/60.77+0.000281/1+0.025/1+0.158/0.442=0.385 < 1.0.$

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*****