

# Shenzhen HB Electronic Co Ltd

## MPE ASSESSMENT REPORT

**Report Type:**  
FCC MPE assessment report

**MODEL:**  
HBE-AC32A02ST-U, HBE-AC40A02ST-U,  
HBE-AC48A02ST-U

**REPORT NUMBER:**  
2307A0345SHA-003

**ISSUE DATE:**  
June 24, 2024

**DOCUMENT CONTROL NUMBER:**  
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**FCC ID:** 2BF82-HBE02ST

### 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
2307A0345SHA-003	Rev. 01	Initial issue of report	June 24, 2024

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Product name:	Electric Vehicle AC Charger
Type/Model:	HBE-AC32A02ST-U, HBE-AC40A02ST-U, HBE-AC48A02ST-U
Description of EUT:	The EUT is an electric vehicle AC charger. All models are electrically identical except the rated power. EUT contains a certified wireless module, the FCC ID is 2AC7Z-ESP32WROOM32E, the IC is 21098-ESPWROOM32E.
Rating:	HBE-AC32A02ST-U: 200-240VAC, 50/60Hz, 32A Max HBE-AC40A02ST-U: 200-240VAC, 50/60Hz, 40A Max HBE-AC48A02ST-U: 200-240VAC, 50/60Hz, 48A Max
Category of EUT:	Class A
EUT type:	<input type="checkbox"/> Table top <input checked="" type="checkbox"/> Floor standing
Software Version:	-
Hardware Version:	-
Serial numbers:	A240424-36
Sample received date:	April 24, 2024
Date of test:	May 8, 2024 ~ May 14, 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
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 L0139
	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 <sup>2</sup> )	Averaging time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note: f = frequency in MHz. \* = Plane-wave equivalent power density.

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<sup>2</sup>

P = Power in mW

G = numeric gain of transmit antenna

R = distance (cm)

Limit for 13.56MHz is 60.77 V/m

As we can see from the test report 2307A0345SHA-002:

$$67.1\text{dBuV/m}@3\text{m}, @20\text{cm}=@3\text{m}+40\log(3/0.2)=114.14\text{dBuV/m}=0.509\text{V/m}<60.77.$$

The power for WIFI/Bluetooth module refers to certificate of FCC ID: 2AC7Z-ESP32WROOM32E

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.

Module	Frequency Range	P		G		R	S	Limits
	(MHz)	(dBm)	(mW)	(dBi)	(numeric)	(cm)	(mW/cm <sup>2</sup> )	(mW/cm <sup>2</sup> )
2AC7Z-ESP32WROOM32E	BLE	8	6.31	3.4	2.19	20	0.0027	1
	BT	10	10.00	3.4	2.19	20	0.0044	1
	WIFI 2.4G	26	398.11	3.4	2.19	20	0.1735	1

Note: 1 mW/cm<sup>2</sup> from 1.310 Table 1.

RFID and WIFI/Bluetooth module can transmit simultaneously, so the maximum rate of MPE is,  $0.509/60.77+0.1735/1=0.1819 < 1.0$ .

**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\*\*\*\*\*