NVLAP LAB CODE 600341-0

MAXIMUM PERMISSIBLE EXPOSURE EVALUATION REPORT

Applicant:	**AKUVOX (XIAMEN) NETWORKS CO., LTD.**
Address:	**10/F, No.56 Guanri Road, Software Park II , Xiamen 361009, China**
Product Name:	**Door Phone**
FCC ID:	**2AHCR-R28AV2**
Standard(s):	**47 CFR §1.1310, 47 CFR §2.1091**
Report Number:	**2402Z104911E-RF-00D**
Report Date:	**2025/1/7**

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

Reviewed By: Pedro Yun	**Approved By:** Gavin Xu
Title: Project Engineer	Title: RF Supervisor

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402Z104911E-RF-00D	Original Report	2025/1/7

1. GENERAL INFORMATION

1.1 General Description Of Equipment under Test

EUT Name:	Door Phone
EUT Model:	R28A
Rated Input Voltage:	DC 12V From Adapter DC 48V From POE
Serial Number:	2UPJ-2
EUT Received Date:	2024/11/21
EUT Received Status:	Good

2. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1 Applicable Standard

According to 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for Maximum Permissible Exposure (MPE)

(B) Limits for General Population/Uncontrolled Exposure				
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

f = frequency in MHz;
* = Plane-wave equivalent power density;

According with KDB 680106 D01 Wireless Power Transfer v04 clause 3.2

The RF exposure limits, as set forth in § 1.1310, do not cover the frequency range below 100 kHz for Specific Absorption Rate (SAR) and below 300 kHz for Maximum Permitted Exposure (MPE). In addition, present limitations of RF exposure evaluation systems prevent an accurate evaluation of SAR below 4 MHz. For these reasons, a specific MPE-based RF Exposure compliance procedure for devices operating in the aforementioned low-frequency ranges has been set in place. This procedure is applicable to Equipment Authorization of all RF devices, thus including, but not limited to, Part 18 and WPT devices.

Accordingly, for § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-Portable devices below 4 MHz and down to 100 kHz, the MPE limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.

2.2 Calculation For Test Exclusion:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.3 MPE Test Procedure

1) Perform H-field and E-field measurements for each all sides of the EUT at 20cm, along all the principal axes defined with respect to the orientation of the transmitting element(e.g., coil or antenna).
2) The highest emission level was recorded and compared with limit.
3) The EUT was measured according to KDB 680106 D01 Wireless Power Transfer v04.

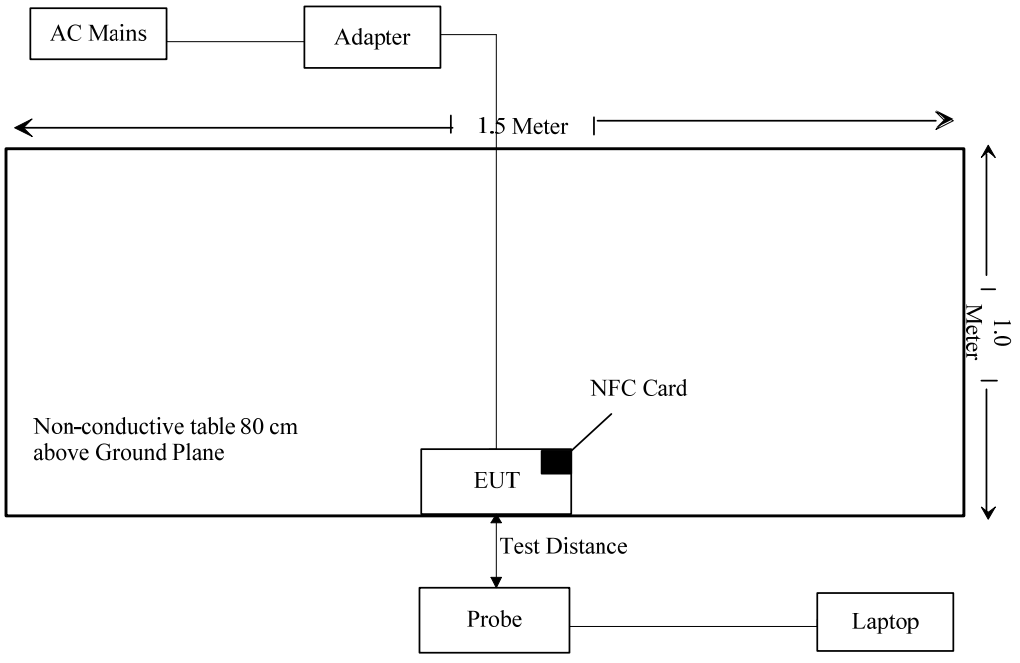
2.4 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HEWEISHUN	Adapter	BN073-A12012E	220617-27055ERFS1
Unknown	NFC Card	EINOLDA	EMZBNC21103001
Lenovo	Laptop	G510	CB30920865

2.5 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	No	No	1.3	Adapter(DC 12V)	EUT
Signal Cable	No	No	3	Probe	Laptop

2.6 Block Diagram of Test Setup



2.7 Test Data:

Serial Number:	2UPJ-2	Test Date:	2024/12/13
Test Site:	Chamber 10m	Test Mode:	Transmitting
Tester:	Leesin Xiang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	22.9	Relative Humidity: (%)	51	ATM Pressure: (kPa)	102.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Narda	Electric and Magnetic Field Probe-Analyzer	EHP-200AC	180ZX10204	2023/9/1	2026/8/31

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

H-Field Strength

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
130	0.1629	0.1645	0.1801	0.1759	0.5072	0.815	1.63

Note: Test with 20cm distance from the center of the probe(s) to the edge of the device.

E-Field Strength

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
130	0.9665	0.9393	0.9194	0.9888	3.8247	307	614

Note: Test with 20cm distance from the center of the probe(s) to the edge of the device.

For NFC(13.56MHz):

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
NFC(13.56MHz)	13.56	/	/	-18.07	0.02	20.00	<<0.0001	0.98
Note: NFC field strength is 77.13dBμV/m @ 3m = -18.07 dBm(0.02mW) EIRP. That equal to antenna gain is 0dBi and used the EIRP value as conducted power.								

Note:
The Conducted output power including Tune-up Tolerance provided by manufacturer.
For Simultaneous transmission, the result of NFC and 130kHz too low to calculated the Simultaneous transmission result.

Result: The device meet FCC MPE at 20 cm distance.

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2402Z104911E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402Z104911E-RF-INP EUT INTERNAL PHOTOGRAPHS

EXHIBIT B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2402Z104911E-RF-00D-TSP TEST SETUP PHOTOGRAPHS.

******* END OF REPORT *******