RF Exposure Evaluation Report

Report Reference No....................... :	**MTEB24110233-H**
FCC ID... :	**2A6G9-ACEVC48DW**
Compiled by (position+printed name+signature)..:	File administrators Alisa Luo
Supervised by (position+printed name+signature)..:	Test Engineer Sunny Deng
Approved by (position+printed name+signature)..:	Manager Yvette Zhou
Date of issue..:	**Nov.22,2024**
Representative Laboratory Name. :	**Shenzhen Most Technology Service Co., Ltd.**
Address.. :	No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.
Applicant's name................................:	**powerflex systems inc**
Address.. :	392 1st street los altos, CA 94022 United States
Test specification/ Standard............**:**	**47 CFR Part 1.1307;47 CFR Part 1.1310** **KDB447498D01 General RF Exposure Guidance v06**
TRF Originator.....................................:	Shenzhen Most Technology Service Co., Ltd.

Test item description........................ :	Electric Vehicle AC Charger
Trade Mark...:	Powerflex System Inc
Model/Type reference.........................:	PF-96D
Listed Models ....:	N/A
Modulation Type..................................:	ASK
Operation Frequency.........................:	13.56MHz
Hardware Version................................	V1.0
Software Version.................................:	V00.01.01
Rating...:	AC 240V/60Hz
Result...:	**PASS**

T E S T   R E P O R T

Equipment under Test	:	Electric Vehicle AC Charger
Model /Type	:	PF-96D
Listed Models		N/A
Remark		N/A
Applicant	:	**powerflex systems inc**
Address	:	392 1st street los altos, CA 94022 United States
Manufacturer	:	**Xiamen Joint Tech. Co., Ltd**
Address	:	Building #1,No.268 HouXiang Rd,Xinyang,Industrial Park,Haicang District,XIAMEN,Fujian,China.

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2024.11.22	Initial Issue	Alisa Luo

2．SAR Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06
4.3.1. Standalone SAR test exclusion considerations
Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

2.1.2 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	$1842/f$	$4.89/f$	*$(900/f^2)$	6
30–300	61.4	0.163	1.0	6
300–1500			$f/300$	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

F= Frequency in MHz
Friis Formula
Friis transmission formula: $Pd = (Pout*G)/(4* Pi * R 2)$ Where
Pd = power density in mW/cm2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
Pi = 3.1416

R = distance between observation point and center of the radiator in cm
Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.1.3 EUT RF Exposure

For   13.56MHz wireless:
Field strength=78.3dBuV/m
EIRP =78.3dBuV/m-95.2+6= -10.9dBm

Channel	EIRP	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Power Density at R = 20 cm (mW/cm2)	Limit	Result
13.56 MHz	-10.9dBm	±1	-9.9	0.102	0.00002	0.9789	Pass

Note: 1) Refer to report   MTEB24050211-R for EUT test Max Conducted   average Output Power value.
Note: 2) Pd = (EIRP)/(4* Pi * R^2)=(0.102)/(4*3.1416*20^2)=0.00002

Contains FCCID: XMR202203FC80A

5.3 RF Exposure Evaluation Result

Evolution mode	Maximum Conducted power (dBm)	Antenna Gain (typical) (dBi):	Total Power (mw)	Distance (cm)	Power Density (mW/cm²)	Limit of Power Density (mW/cm²)	Power Density / Limit	Verdict
Bluetooth	8.00	1.00	7.943	20	1.00	0.002	0.002	Pass
2.4G WIFI	19.00	1.00	100.000	20	1.00	0.020	0.020	Pass
5.2G WIFI	16.00	1.00	50.119	20	1.00	0.010	0.010	Pass
5.3G WIFI	16.00	1.00	50.119	20	1.00	0.010	0.010	Pass
5.6G WIFI	16.00	1.00	50.119	20	1.00	0.010	0.010	Pass
5.8G WIFI	16.00	1.00	50.119	20	1.00	0.010	0.010	Pass

5.4 Collocated Power Density Calculation

Evolution mode	Frequency(MHz)	Power Density/Limit	Σ(Power Density / Limit) of Bluetooth + 2.4G WIFI + 5G WIFI	Verdict
Bluetooth	2400 MHz ~ 2483.5 MHz	0.002		
2.4G WIFI	2400 MHz ~ 2483.5 MHz	0.020	0.032	Pass
5.8G WIFI	5725 MHz ~ 5850 MHz	0.010		

Note:

1. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WLAN + Bluetooth.

2. The worst-case situation is 0.032, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

3. The DUT work frequency range used is 2400 MHz ~ 2483.5 MHz and 5725 MHz ~ 5850 MHz the result close to the limit by the above formula, so we select worst case power to calculate the exclusion power threshold.

4. More power list please refer to RF test report.

Simultaneous TX（NFC+2.4G+BT+5G）

Mode	Power Density(mW/m²)		Conclusion
	Reaults	Limit	
Simultaneous TX	0.032	1.0	PASS

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Reaults（NFC+2.4G+BT+5G）=0.00002/0.9789+0.002/1+0.020/1+0.010/1=0.032

.......................THE END OF REPORT.........................