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Testing
NVLAP LAB CODE 600222-0

RF Exposure Evaluation Declaration

Report No.: S202105198538E04
Issue Date: 07-23-2021

Applicant:	Shanghai Ortek Electronics Co., Ltd.
Address:	No.1 Jiefangdao Road, Bridge 16 Southern, Caoan Road, Jiading District, Shanghai, China
FCC ID:	2AT62TD-68
Application Type:	Certification
Product:	Car Audio
Model No.:	TD-68
Trade Mark:	N/A
FCC Classification:	Digital Transmission System (DTS) Spread Spectrum Transmitter (DSS)

Reviewed By: (Amos Xia), Senior Test Engineer

Approved By: (Kerry Zhou), Engineer Manager

Revision History

Report No.	Version	Description	Issue Date
S202105198538E04	Rev. 01	/	07-23-2021

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	Car Audio
Model Name:	TD-68
Additional Model:	N/A
Input Voltage Range:	12V-24V⎓2A Max
Bluetooth Version:	3.0+4.0
Antenna Type:	PCB Antenna
Antenna Gain:	2.81dBi

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: 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 1.1307(b)

TABLE 1 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
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
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) 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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

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

Calculation Formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

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 is the limit of MPE, $1mW/cm^2$. 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.

2.2. Test Result of RF Exposure Evaluation

Product	Car Audio
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum PK Output Power (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
BLE	2402 ~ 2480	-0.78	0.000404	1
BT	2402 ~ 2480	2.01	0.000959	1
Note: /				

CONCULISON:

The Max Power Density at R (20 cm) = 0.000959mW/cm^2 < 1mW/cm^2.

So the EUT complies with the requirement.

The End