Maximum Permissible Exposure Evaluation
FCC ID: 2ARPN-3210A

1. Client Information

Applicant	:	AUTOPHIX TECH CO.,LTD
Address	:	Room 406, 403 and 402, XiangRong Road No.8, Bujiuwo, Longping Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China
Manufacturer	:	AUTOPHIX TECH CO.,LTD
Address	:	Room 406, 403 and 402, XiangRong Road No.8, Bujiuwo, Longping Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China

2. General Description of EUT

EUT Name	:	Autophix Bluetooth Scan Tool	
Model(s) No.	:	3210, 3000, 3310, 3710, 3700, 3800, 3810, 3900, 3910, 3610, 3110, 5000, 6000, 7000, 8000, 9000, OBD MATE	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance.	
Sample ID	:	TBBJ-20201124-05-1#& TBBJ-20201124-05-2#	
Product Description	:	Operation Frequency:	Bluetooth 5.0(BLE): 2402MHz~2480MHz
		Number of Channel:	Bluetooth 5.0(BLE): 40 channels
		RF Output Power:	2.218 dBm (Max)
		Antenna Gain:	1.74dBi PCB Antenna
		Modulation Type:	GFSK
		Bit Rate of Transmitter:	1&2Mbps
Power Supply	:	Input: DC12V	
Software Version	:	V1.0	
Hardware Version	:	V1.0	
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.			

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MPE Calculations for BLE

1. Antenna Gain:

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	N/A	N/A	PCB Ant.	1.74

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density
P: power input to the antenna
G: power gain of the antenna in the direction of interest relative to an isotropic radiator.
R: distance to the center of radiation of the antenna

4. Test Result:

Worst Maximum MPE Result							
Mode	N_{TX}	Power(max) (dBm) [P]	Turn-up Power Tolerance (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
GFSK(1Mbps)	1	2.218	2±1	3	1.74	20	0.00059
GFSK(2Mbps)	1	2.214	2±1	3	1.74	20	0.00059

Note:
(1) N_{TX}= Number of Transmit Antennas
(2) RF Output power specifies that Maximum Conducted Peak Output Power.

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/cm^2)
300-1,500	F/1500
1,500-100,000	1.0

For : 2402MHz~2480MHz
MPE limit S: 1 mW/cm^2
The MPE is calculated as 0.00059mW/cm^2 < limit 1 mW/cm^2.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

Note

For a more detailed features description, please refer to the RF Test Report.

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