

Maximum Permissible Exposure Evaluation

FCC ID: 2AF8C-T373B

1. Client Information

Applicant : Ulbo Tech Co., Limited
Address : Room 601, Building 3 Zone2 No.11 Kuiqi First Road Chan Cheng District Foshan, Guangdong China
Manufacturer : Ulbo Tech Co., Limited
Address : Room 601, Building 3 Zone2 No.11 Kuiqi First Road Chan Cheng District Foshan, Guangdong China

2. General Description of EUT

EUT Name	:	OBDII GPS Tracker	
Models No.	:	T360, T361, T363A, T363B, T370, T371, T373A, T373B	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
Product Description	:	Operation Frequency: Bluetooth 4.0 (BLE): 2402MHz~2480MHz GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz UMTS Band II: 1852.40MHz-1907.60MHz UMTS Band V: 826.40MHz-846.60MHz	
		Output Power:	BLE: -1.586 dBm GSM 850: Cond:32.35 dBm ERP:31.54 dBm PCS 1900: Cond:29.42 dBm EIRP:25.89 dBm UMTS Band II: Cond:22.35 dBm EIRP:18.05 dBm UMTS Band V: Cond:23.15 dBm ERP:18.57 dBm
		Antenna Gain:	See the page of 3
		Modulation Type:	BLE: GFSK GSM/GPRS:GMSK EDGE: 8PSK UMTS:QPSK

Power Supply	:	DC power by Li-ion battery.
Power Rating	:	DC 3.7V by Li-ion Battery. DC 12V/2A by DC Battery.
Connecting I/O Port(S)	:	Please refer to the User's Manual
Note: More detail information about Equipment, please refer to User's manual, more information about the RF, please refer to test report.		

MPE Calculations for WIFI

1. Antenna Gain:

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	N/A	N/A	PCB Ant.	2.4G 0.46
2	N/A	N/A	FPC Ant.	GSM 850 -1.2
				DCS 1900 0.72
				WCDMA Band V -1.2
				WCDMA Band II 0.72

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]	ANT Gain (dBi) [G]	Turn-up Power Tolerance (dB)	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
BLE	1	-2	0.46	±1	20	0.000175
GSM 850	1	32	-1.2	±1	20	0.301122
PCS 1900	1	29	0.72	±1	20	0.234824
UMTS Band II	1	23	0.72	±1	20	0.058985
UMTS Band V	1	22	-1.2	±1	20	0.030112
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 : Bluetooth 4.0 (BLE): 2402MHz~2480MHz

PCS1900: 1850.20MHz-1909.80MHz

UMTS Band II: 1852.40MHz-1907.60MHz

MPE limit S: 1 mW/ cm²

The MPE is calculated as 0.234824mW / cm² < limit 1 mW / cm².

For : GSM 850: 824.20MHz-848.80MHz

UMTS Band V:826.40MHz-846.60MHz

MPE limit S: 0.55 mW/ cm²

The MPE is calculated as 0.301122mW / cm² < limit 0.55 mW / cm².

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.