



Maximum Permissible Exposure Evaluation

FCC ID: 2BBDK-G28S

1. Client Information

Applicant	:	Shenzhen Xinyuanrun Product Information Technology Co., Ltd.
Address	:	2nd Floor, Building 5, Yantian Xifa Yongqi Science Park, No.54 Tiezai Road, Xixiang Street, Bao 'an District, Shenzhen.China
Manufacturer	:	Shenzhen Xinyuanrun Product Information Technology Co., Ltd.
Address	:	2nd Floor, Building 5, Yantian Xifa Yongqi Science Park, No.54 Tiezai Road, Xixiang Street, Bao 'an District, Shenzhen.China

2. General Description of EUT

EUT Name	:	GPS Tracker G28
Models No.	:	G28S, G28, G28L, G01, G02, G03, G04, G05, G06, G07, G08, G09, G10, G11, G12, G13, G14, G15, G16, G17, G18, G19, G20, G21, G22, G23, G24, G25, G26, G27, G28, G29, G30, G31, G32, G33, G34, G35, G36, G37, G38, G39, G40, G41, G42, G43, G44, G45, G46, G47, G48, G49, G50, G51, G52, G53, G54, G55, G56, G57, G58, G59, G60, G61, G62, G63, G64, G65, G66, G67, G68, G69, G70, G71, G72, G73, G74, G75, G76, G77, G78, G79, G80, G81, G82, G83, G84, G85, G86, G87, G88, G89, G90, G91, G92, G93, G94, G95, G96, G97, G98, G99, G100
Model Different	:	All these models are identical in the same PCB. The difference is that the G28(4 wires), G28S(8 wires), and G28L(2 wires) are different in the pins, different sales areas of different models.
Product Description	:	GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz LTE Band 2:TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz LTE Band 4:TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz LTE Band 5:TX: 824MHz-849MHz, RX: 869MHz-894MHz LTE Band 7:TX: 2500MHz -2570MHz, RX: 2620MHz-2690MHz LTE Band 41:TX: 2496MHz-2690MHz, RX: 2496MHz-2690MHz LTE Band 66: TX: 1710MHz -1780MHz, RX: 2110MHz-2200MHz
Power Rating	:	Input: DC 9V~90V DC 3.7V by 250mAh Rechargeable Li-ion battery
Software Version	:	GW08L_G28S_V01_Feb 17 2023_11:50:41 N58-R08-STD-OE_V30_XYR-003
Hardware Version	:	GW08-MB-V1.4

TB-RF-075-1.0

MPE Calculations

1. Antenna Gain:

GSM

Band	Antenna Type	Antenna Gain
GSM 850	FPC	1.48dBi
PCS 1900		0.53dBi

LTE

Band	Antenna Type	Antenna Gain
LTE Band 2	FPC	-1.62dBi
LTE Band 4		-0.22dBi
LTE Band 5		1.48dBi
LTE Band 7		1.07dBi
LTE Band 41		1.78dBi
LTE Band 66		-0.22 dBi

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}	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
LTE Band 2	Ant1	21.75	22±1	23	-1.62	20	0.0273
LTE Band 4	Ant1	24.14	24±1	25	-0.22	20	0.0598
LTE Band 5	Ant1	24.05	24±1	25	1.48	20	0.0885
LTE Band 7	Ant1	23.16	23±1	24	1.07	20	0.0639
LTE Band 41	Ant1	22.59	23±1	24	1.78	20	0.0753
LTE Band 66	Ant1	24.22	24±1	25	-0.22	20	0.0598
GSM 850	Ant1	32.12	32±1	33	1.48	20	0.4485
GSM 1900	Ant1	28.18	28±1	29	0.53	20	0.1785

Note:

NTX= Number of Transmit Antennas

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

300-1500MHz:

The worst MPE is calculated as $0.4485 \text{ mW} / \text{cm}^2 < \text{limit } 824/1500 = 0.5493 \text{ mW/cm}^2$. So, RF exposure limit warning or SAR test are not required.

1500-100000MHz:

The worst MPE is calculated as $0.0885 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{ mW/cm}^2$. 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.

-----END OF THE REPORT-----

