

Maximum Permissible Exposure Report

1. Product Information

EUT : Real-time temperature logger

Model Number : B9Z(2G-60), V5L(2G-60), V5L(2G-120), V5D(2G-60), V5D(2G-120),
V5A(2G-60), V5A(2G-120), V5H(2G-60), V5H(2G-120)

Test Model : V5H(2G-60)

Power Supply : 1,DC 3.7V by battery
2,DC 5.0V charged by adapter

Hardware version : V50MR41C

Software version : V5A_GD_L07

Sample ID : TZ220603348-1# & TZ220603348-2#

GSM

GSM FCC Operation Frequency : GSM850(UL: 824 – 849 MHz/DL: 869 – 894 MHz)
GSM1900(UL: 1850 –1910 MHz/DL: 1930 – 1990 MHz)

Channel Separation : 0.2MHz

Modulation Technology : GMSK

Antenna Type And Gain : Internal Antenna
GSM850: -0.9 dBi
PCS1900: -0.8 dBi

Note: Antenna position refer to EUT Photos.

2. Refer evaluation method

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06](#): Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

3. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 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

*=Plane-wave equivalent power density

4. MPE Calculation Method

Predication of MPE limit at a given distance

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 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

5. Antenna Information

This Product can only use antennas certificated as follows provided by manufacturer;

Note: The Antenna gain shows in section 1 of this file

6. Max Conducted Power

According to test report: TZ220603348-E.

7. Manufacturing Tolerance

<GPRS>

Band	Mode	The Tune-up Maximum Power (Customer Declared)(dBm)
GSM 850	GPRS(GMSK, 1 Tx slot)	31.5+/-1
	GPRS(GMSK, 2 Tx slot)	30.0+/-1
	GPRS(GMSK, 3 Tx slot)	29.0+/-1
	GPRS(GMSK, 4 Tx slot)	27.0+/-1
GSM 1900	GPRS(GMSK, 1 Tx slot)	29.5+/-1
	GPRS(GMSK, 2 Tx slot)	27.5+/-1
	GPRS(GMSK, 3 Tx slot)	26.5+/-1
	GPRS(GMSK, 4 Tx slot)	25.5+/-1

8. Measurement Results

8.1 Standalone MPE

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r=20\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

GSM850:

Frequency(MHz)	Max Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
824.2	32.5	1778.2794	-0.9	0.8128	100%	0.3540	0.5495
836.6	32.5	1778.2794	-0.9	0.8128	100%	0.3540	0.5577
848.8	32.5	1778.2794	-0.9	0.8128	100%	0.3540	0.5659

GSM1900:

Frequency(MHz)	Max Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
1850.2	30.5	1122.0185	-0.8	0.8318	100%	0.2233	1.0000
1880	30.5	1122.0185	-0.8	0.8318	100%	0.2233	1.0000
1909.8	30.5	1122.0185	-0.8	0.8318	100%	0.2233	1.0000

Remark:

1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

8.2 Simultaneous Transmission MPE

N/A

9. Conclusion

Compliance

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