

## Maximum Permissible Exposure Report

### 1. Product Information

EUT : Wireless data logger  
Model Number : FlashLink RTL  
Model Difference Declaration : N/A  
Test Model : FlashLink RTL  
Power Supply : DC 3.70V by Battery  
Hardware version : A80MR41C  
Software version : A90\_DeltaTrak\_L02

#### GSM

BAND : ☒ GSM 850  
☒ PCS 1900  
☒ GSM 900  
☒ DCS 1800

GSM FCC Operation Frequency : US-Bands:  
GSM 850(UL: 824 – 848 MHz/DL: 869 – 894 MHz)  
GSM 1900(UL: 1850 – 1910 MHz/DL: 1930 – 1990 MHz)  
NON US-bands:  
GSM 900(UL: 880 – 915 MHz/DL: 925 – 960 MHz)  
GSM 1800(UL: 1710 – 1785 MHz/DL: 1805 – 1880 MHz)

Channel Separation : 0.2MHz

Modulation Technology : GMSK, 8PSK

Antenna Type And Gain : Internal Antenna  
GSM900: -0.05dBi  
DCS1800: -0.14dBi  
GSM850: -0.53dBi  
PCS1900: -0.8dBi

*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 <sup>2</sup> ) | 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 <sup>2</sup> )*              | 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 <sup>2</sup> ) | 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 <sup>2</sup> )*              | 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

|          | Max. Peak Conducted Power (dBm) | Max. Average Burst Power (dBm) |
|----------|---------------------------------|--------------------------------|
| GSM 850  | 32.89                           | 31.70                          |
| PCS 1900 | 29.12                           | 27.70                          |

## 7. Manufacturing Tolerance

### GSM850

| Maximum Output Power(Average) |       |       |       |
|-------------------------------|-------|-------|-------|
| Frequency (MHz)               | 824.2 | 836.6 | 848.8 |
| Target (dBm)                  | 31.0  | 31.0  | 31.0  |
| Tolerance $\pm$ (dB)          | 1.0   | 1.0   | 1.0   |

### PCS1900

| Maximum Output Power(Average) |        |      |        |
|-------------------------------|--------|------|--------|
| Frequency (MHz)               | 1850.2 | 1880 | 1909.8 |
| Target (dBm)                  | 27.5   | 27.5 | 27.5   |
| Tolerance $\pm$ (dB)          | 1.0    | 1.0  | 1.0    |

## 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) | Output power |           | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm <sup>2</sup> ) | MPE Limits (mW/cm <sup>2</sup> ) |
|----------------|--------------|-----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
|                | dBm          | mW        |                    |                       |            |                           |                                  |
| 824.2          | 32.00        | 1584.8932 | -0.53              | 0.8851                | 100%       | 0.2792                    | 0.5495                           |
| 836.6          | 32.00        | 1584.8932 | -0.53              | 0.8851                | 100%       | 0.2792                    | 0.5577                           |
| 848.8          | 32.00        | 1584.8932 | -0.53              | 0.8851                | 200%       | 0.2792                    | 0.5659                           |

PCS1900:

| Frequency(MHz) | Output power |          | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm <sup>2</sup> ) | MPE Limits (mW/cm <sup>2</sup> ) |
|----------------|--------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
|                | dBm          | mW       |                    |                       |            |                           |                                  |
| 1850.2         | 28.50        | 707.9458 | -0.80              | 0.8318                | 100%       | 0.1172                    | 1.0000                           |
| 1880           | 28.50        | 707.9458 | -0.80              | 0.8318                | 100%       | 0.1172                    | 1.0000                           |
| 1909.8         | 28.50        | 707.9458 | -0.80              | 0.8318                | 200%       | 0.1172                    | 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-----