

Maximum Permissible Exposure Report

1. Product Information

| | |
|------------------|---|
| EUT | : Real-time temperature logger |
| Model Number | : FlashLink RTL, 22390, 22391, 22392, 22393, 22394 |
| Test Model | : FlashLink RTL |
| Power Supply | : 1,DC 3.7V by battrery : 2,DC 5.0V charged by adapter |
| Hardware version | : A01_MB_V1.0 |
| Software version | : A01_V1.0 |
| Sample ID | : TZ220202953-1# & TZ220202953-2# |

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, 8PSK |
| Antenna Type And Gain | : Internal Antenna : GSM850: 0.3 dBi : PCS1900: 0.12 dBi |

E-UTRA

| | |
|--------------------------------|--|
| E-UTRA FCC Operation Frequency | : FDD Band 2 (UL: 1850 – 1910 MHz/DL: 1930 – 1990 MHz) : FDD Band 4 (UL: 1710 – 1755 MHz/DL: 2110 – 2155 MHz) : FDD Band 5 (UL: 824 – 849 MHz/DL: 869 – 894 MHz) : FDD Band 7(UL: 2500 MHz - 2570 MHz/DL: 2620 - 2690 MHz) : FDD Band 66 (UL: 1710 – 1780 MHz/DL: 2110 – 2180 MHz) |
| Channel Separation | : 0.1 MHz |
| Modulation Technology | : OFDM (16QAM, QPSK) |
| Antenna Type And Gain | : Internal Antenna : FDD Band 2: -1.01 dBi, : FDD Band 4: -0.9 dBi, : FDD Band 5: -0.89 dBi, : FDD Band 7: 0.28 dBi, : FDD Band 66: 0.17 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: TZ220202953-E1 & TZ220202953-E2.

7. Manufacturing Tolerance

<GPRS/EGPRS >

| Band | Mode | The Tune-up Maximum Power (Customer Declared)(dBm) |
|----------|------------------------|--|
| GSM 850 | GPRS(GMSK, 1 Tx slot) | 31.0+/-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 |
| | EDGE (8PSK, 1 Tx slot) | 26.0+/-1 |
| | EDGE (8PSK, 2 Tx slot) | 25.0+/-1 |
| | EDGE (8PSK, 3 Tx slot) | 23.0+/-1 |
| | EDGE (8PSK, 4 Tx slot) | 21.5+/-1 |
| GSM 1900 | GPRS(GMSK, 1 Tx slot) | 29.5+/-1 |
| | GPRS(GMSK, 2 Tx slot) | 27.0+/-1 |
| | GPRS(GMSK, 3 Tx slot) | 26.5+/-1 |
| | GPRS(GMSK, 4 Tx slot) | 25.5+/-1 |
| | EDGE (8PSK, 1 Tx slot) | 25.0+/-1 |
| | EDGE (8PSK, 2 Tx slot) | 24.5+/-1 |
| | EDGE (8PSK, 3 Tx slot) | 23.5+/-1 |
| | EDGE (8PSK, 4 Tx slot) | 21.5+/-1 |

< LTE >

| Band | The Tune-up Maximum Power (Customer Declared)(dBm) | |
|-------------|--|----------|
| LTE Band 2 | QPSK | 21.5 ± 2 |
| | 16QAM | 21.5 ± 2 |
| LTE Band 4 | QPSK | 21.5 ± 2 |
| | 16QAM | 21.5 ± 2 |
| LTE Band 5 | QPSK | 21.5 ± 2 |
| | 16QAM | 21.5 ± 2 |
| LTE Band 7 | QPSK | 22.5 ± 2 |
| | 16QAM | 22.5 ± 2 |
| LTE Band 66 | QPSK | 21.5 ± 2 |
| | 16QAM | 21.5 ± 2 |

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 | 1584.8932 | 0.3 | 1.0715 | 100% | 0.0135 | 0.5495 |
| 836.6 | 32 | 1584.8932 | 0.3 | 1.0715 | 100% | 0.0135 | 0.5577 |
| 848.8 | 32 | 1584.8932 | 0.3 | 1.0715 | 100% | 0.0135 | 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 | 0.12 | 1.0280 | 100% | 0.2296 | 1.0000 |
| 1880 | 30.5 | 1122.0185 | 0.12 | 1.0280 | 100% | 0.2296 | 1.0000 |
| 1909.8 | 30.5 | 1122.0185 | 0.12 | 1.0280 | 100% | 0.2296 | 1.0000 |

LTE Band 2:

| Frequency(MHz) | Max Output power | | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm ²) | MPE Limits (mW/cm ²) |
|----------------|------------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
| | dBm | mW | | | | | |
| 1850.7 | 23.5 | 223.8721 | -1.01 | 0.7925 | 100% | 0.0353 | 1.0000 |
| 1880 | 23.5 | 223.8721 | -1.01 | 0.7925 | 100% | 0.0353 | 1.0000 |
| 1909.3 | 23.5 | 223.8721 | -1.01 | 0.7925 | 100% | 0.0353 | 1.0000 |

LTE Band 4:

| Frequency(MHz) | Max Output power | | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm ²) | MPE Limits (mW/cm ²) |
|----------------|------------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
| | dBm | mW | | | | | |
| 1710.7 | 23.5 | 223.8721 | -0.90 | 0.8128 | 100% | 0.0362 | 1.0000 |
| 1732.5 | 23.5 | 223.8721 | -0.90 | 0.8128 | 100% | 0.0362 | 1.0000 |
| 1754.3 | 23.5 | 223.8721 | -0.90 | 0.8128 | 100% | 0.0362 | 1.0000 |

LTE Band 5:

| Frequency(MHz) | Max Output power | | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm ²) | MPE Limits (mW/cm ²) |
|----------------|------------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
| | dBm | mW | | | | | |
| 824.7 | 23.5 | 223.8721 | -0.89 | 0.8147 | 100% | 0.0015 | 0.5498 |
| 836.5 | 23.5 | 223.8721 | -0.89 | 0.8147 | 100% | 0.0015 | 0.5577 |
| 848.3 | 23.5 | 223.8721 | -0.89 | 0.8147 | 100% | 0.0015 | 0.5655 |

LTE Band 7:

| Frequency(MHz) | Max Output power | | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm ²) | MPE Limits (mW/cm ²) |
|----------------|------------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
| | dBm | mW | | | | | |
| 2502.5 | 24.5 | 281.8383 | 0.28 | 1.0666 | 100% | 0.0598 | 1.0000 |
| 2535 | 24.5 | 281.8383 | 0.28 | 1.0666 | 100% | 0.0598 | 1.0000 |
| 2567.5 | 24.5 | 281.8383 | 0.28 | 1.0666 | 100% | 0.0598 | 1.0000 |

LTE Band 66:

| Frequency(MHz) | Max Output power | | Antenna Gain (dBi) | Antenna Gain (linear) | Duty Cycle | MPE (mW/cm ²) | MPE Limits (mW/cm ²) |
|----------------|------------------|----------|--------------------|-----------------------|------------|---------------------------|----------------------------------|
| | dBm | mW | | | | | |
| 1710.7 | 23.5 | 223.8721 | 0.17 | 1.0399 | 100% | 0.0463 | 1.0000 |
| 1745 | 23.5 | 223.8721 | 0.17 | 1.0399 | 100% | 0.0463 | 1.0000 |
| 1779.3 | 23.5 | 223.8721 | 0.17 | 1.0399 | 100% | 0.0463 | 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-----