

FCC MPE REPORT

Certification

Applicant Name:
WISOL CO., LTD

Address:
531-7, Gajang-ro, Osan-si Gyeonggi-do, 18103, Korea

Date of Issue:
December 08, 2017

Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-R-1712-E008

FCC ID: 2ABA2SFM60R2

APPLICANT: WISOL CO., LTD

Model(s): SFM60R2

EUT Type: Sigfox/BLE/GPS module

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)



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Version

| TEST REPORT NO. | DATE | DESCRIPTION |
|-----------------|-------------------|-------------------------|
| HCT-R-1712-E008 | December 08, 2017 | - First Approval Report |
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RF Exposure Statement

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

| Frequency range (MHz) | Electric field Strength (V/m) | Magnetic field Strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|-----------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| 0.3 - 1.34..... | 614 | 1.63 | *(100) | 30 |
| 1.34 - 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

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

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

3.RESULTS

3-1. Sigfox Mode

| | | |
|---|----------|--------------------|
| Max Peak output Power at antenna input terminal | 23.500 | dBm |
| Max Peak output Power at antenna input terminal | 223.872 | mW |
| Prediction distance | 20.000 | cm |
| Prediction frequency | 920.1375 | MHz |
| Antenna Gain(typical) | 2.010 | dBi |
| Antenna Gain(numeric) | 1.589 | - |
| Power density at prediction frequency(S) | 0.0708 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.6134 | mW/cm ² |

3-2. Bluetooth LE Mode

| | | |
|---|----------|--------------------|
| Max Peak output Power at antenna input terminal | 6.000 | dBm |
| Max Peak output Power at antenna input terminal | 3.981 | mW |
| Prediction distance | 20.000 | cm |
| Prediction frequency | 2480.000 | MHz |
| Antenna Gain(typical) | 4.440 | dBi |
| Antenna Gain(numeric) | 2.780 | - |
| Power density at prediction frequency(S) | 0.0022 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000 | mW/cm ² |

Simultaneous transmission operations

1. The power density level at 20 cm is **0.0708 mW/cm²**, which is below the uncontrolled exposure limit of **0.6134 mW/cm²** at **Sigfox**.
2. The power density level at 20 cm is **0.0022 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm²** at **Bluetooth LE**.

->Simultaneous MPE 20cm is Sigfox(0.0708/1.0) + Bluetooth LE(0.0022/1.0) = 0.0730 < 0.6134