



A Test Lab Techno Corp.

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MPE Report



| | |
|--------------------|--|
| Test Report No. | : SZ2011FS11 |
| Applicant | : Manford Development Limited |
| Product Type | : Intelligent Range Extender |
| Trade Name | : ECTHERM |
| Model Number | : SR200 |
| Received Date | : Sep. 23, 2020 |
| Test Period | : Sep. 28 ~ Oct. 28, 2020 |
| Issue Date | : Nov. 11, 2020 |
| Test Specification | : ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013 47 CFR § 2.1091 47 CFR § 1.1310 |

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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Approved By : *Louis Shen*
(Louis Shen)

Tested By : *Joyce Feng*
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1. Description of Equipment under Test (EUT)

| | | | |
|---------------------|---|-----------------|-----------------------|
| Applicant | Manford Development Limited Unit 12, Factory A, 2/F, Gee Fat Factory Building, No.78-80 FukTsun Street, Tai Kok Tsui, Kowloon, Hong Kong | | |
| Manufacturer | Manford Development Limited Unit 12, Factory A, 2/F, Gee Fat Factory Building, No.78-80 FukTsun Street, Tai Kok Tsui, Kowloon, Hong Kong | | |
| Factory | ATR (DONG GUAN) ELECTRONICS MANUFACTORY CO., LTD. 38, XIAN FENG ROAD, PING SHAN, TANGXIA TOWN, DONGGUAN CITY, GUANG DONG PROVINCE | | |
| Product Type | Intelligent Range Extender | | |
| Trade Name | ECTHERM | | |
| Model Number | SR200 | | |
| FCC ID | 2ARFX-SR200 | | |
| Frequency Range | Operate Band | | Frequency Range (MHz) |
| | Bluetooth LE | | 2402 - 2480 |
| Antenna Information | Type | Max. Gain (dBi) | |
| | Chip Antenna | Bluetooth LE | 0.5 |
| Antenna Delivery | 1TX | | |
| RF Evaluation | 0.0006 mW/cm ² | | |
| Operate Temp. Range | 0~45 °C | | |

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons." This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation

$$S = \frac{PG}{4\pi R^2}$$

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.



3. RF Output Power

| Operate Band | Frequency (MHz) | Packet Type | Conducted power (dBm) |
|----------------------|-----------------|-------------|-----------------------|
| Bluetooth LE GFSK | 2402 | --- | 3.16 |
| | 2440 | | 3.15 |
| | 2480 | | 3.29 |

4. Test Result

| Antenna | Band | Test mode/ RB/Data rate | Frequency (MHz) | Limit (mw) ₂ /cm | Distance [R] (cm) | max tune-up Power [P] (dBm) | ANT Gain (dBi) | Numeric Gain [G] | Duty Cycle | Power with Duty cycle [TP] (mW) | Power Density [S] (mw) ₂ /cm |
|-------------------|--------------|----------------------------|-----------------|-----------------------------|-------------------|-----------------------------|----------------|------------------|------------|---------------------------------|---|
| Bluetooth Antenna | Bluetooth LE | 1M | 2402.0 | 1 | 20 | 4.00 | 0.5 | 1.12 | 1 | 2.813 | 0.0006 |
| | | | 2440.0 | 1 | 20 | 4.00 | 0.5 | 1.12 | 1 | 2.813 | 0.0006 |
| | | | 2480.0 | 1 | 20 | 4.00 | 0.5 | 1.12 | 1 | 2.813 | 0.0006 |

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less.
2. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
3. Each band max power which perform MPE of any configurations.