



# Radio Frequency Exposure Evaluation Report

**FOR:**  
Globe Tracker ApS

**Model Number:**  
CM2.75-1113120

**Product Description:**  
Asset Tracking Device / Data Modem

**FCC ID:** 2ASJR-CM275-1113120  
**IC:** 25752-CM275111312

**Per:**  
CFR Part Part1 (1.1307 & 1.1310), Part 2 (2.1091),  
FCC KDB 447498 D01 General RF Exposure Guidance v06  
ISED RSS-102 Issue 5

**Report number:** EMC\_GLOBE\_004-22001\_FCC\_ISED\_MPE\_Rev1

**DATE:** 2022-10-31



**CETECOM Inc.**

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: [Contact@cetecom.com](mailto:Contact@cetecom.com) • <http://www.cetecom.com>  
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

## 1 Assessment

This RF Exposure evaluation report provides evidence for compliance of the below identified device with the RF Exposure limits for mobile devices as defined in FCC CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091) and IC standard RSS-102 issue 5 under worst case conditions (measured or rated RF output power, antenna gain, distance towards human body, multiple transmitter information as presented by the applicant). In addition, maximum antenna gain or minimum distance towards the human body is calculated respectively, where relevant.

The device meets the limits as stipulated by the above given FCC and IC rule parts based on available specifications for worst case conditions at 20cm distance to the body.

| Company           | Description                        | Model #        |
|-------------------|------------------------------------|----------------|
| Globe Tracker ApS | Asset Tracking Device / Data Modem | CM2.75-1113120 |

### Report reviewed by: TCB Evaluator

2022-10-31    Compliance    Arndt Stoecker  
 (Director of Regulatory Services)

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

### Responsible for the Report:

2022-10-31    Compliance    Cheng Song  
 (EMC Engineer)

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the Test Report

|                                    |                        |
|------------------------------------|------------------------|
| <b>Company Name:</b>               | CETECOM Inc.           |
| <b>Department:</b>                 | Compliance             |
| <b>Street Address:</b>             | 411 Dixon Landing Road |
| <b>City/Zip Code</b>               | Milpitas, CA 95035     |
| <b>Country</b>                     | USA                    |
| <b>Telephone:</b>                  | +1 (408) 586 6200      |
| <b>Fax:</b>                        | +1 (408) 586 6299      |
| <b>Lab Manager:</b>                | Arndt Stoecker         |
| <b>Responsible Project Leader:</b> | Akanksha Baskaran      |

### 2.2 Identification of the Client / Manufacturer

|                        |                          |
|------------------------|--------------------------|
| <b>Client's Name:</b>  | Globe Tracker ApS        |
| <b>Street Address:</b> | Strandgade 91, 4th floor |
| <b>City/Zip Code</b>   | DK-1401 Copenhagen K     |
| <b>Country</b>         | Denmark                  |

### Identification of the Manufacturer

|                               |                |
|-------------------------------|----------------|
| <b>Manufacturer's Name:</b>   | Same as Client |
| <b>Manufacturers Address:</b> |                |
| <b>City/Zip Code</b>          |                |
| <b>Country</b>                |                |

### 3 Equipment under Assessment

|   |   |
|---|---|
| <b>Model No:</b>                                    | CM2.75-1113120  |
| <b>HW Version :</b>                                 | Rev 5   |
| <b>SW Version :</b>                                 | 10.10   |
| <b>FCC-ID :</b>                                     | 2ASJR-CM275-1113120   |
| <b>IC:</b>  | 25752-CM275111312   |
| <b>PMN:</b>   | GEN 2.75 Asset Tracker  |
| <b>Product Description:</b>                         | Asset Tracking Device / Data Modem  |
| <b>Radio Information:</b>                           | <p><b><u>Cellular &amp; GPS:</u></b></p> <ul style="list-style-type: none"> <li>• Quectel EG25-G(D)</li> <li>• FCC ID: XMR201903EG25G; IC ID: 10224A-201903EG25G</li> </ul> <p><b><u>LoRa:</u></b></p> <ul style="list-style-type: none"> <li>• Semtech SX1262</li> <li>• Frequency of Operation: 433 MHz, 863-870 MHz (EU), 902-928 MHz (NA)</li> </ul>                                  |
| <b>Antenna Information as declared:</b>             | <p><b><u>Cellular:</u></b></p> <ul style="list-style-type: none"> <li>• Model: JCB046L</li> <li>• Manufacturer: JIAXING JINCHANG ELECTRONIC TECHNOLOGY CO.;TD</li> <li>• Peak Gain: 0.5 dBi</li> </ul> <p><b><u>LoRa:</u></b></p> <ul style="list-style-type: none"> <li>• Type: Chip w/ PCB Trace</li> <li>• Manufacturer: Johanson Technology</li> <li>• Peak Gain: -0.5 dBi</li> </ul> |
| <b>Power Supply/ Rated Operating Voltage Range:</b> | AC Input: Voltage Range: 12-36 VAC, Frequency: 50/60 Hz<br>DC Input: Voltage Range: 9-18 VDC<br>Lithium Ion Battery   |
| <b>Operating Temperature Range</b>                  | Tmin: -25 °C / Tmax: +70 °C, Tnom: +25 °C   |
| <b>Sample Revision</b>                              | <input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production   |

#### 4 RF Exposure Limits and FCC and IC Basic Rules

For the specific described radio apparatus the following basic limits and rules apply for both, FCC and IC where not indicated differently.

##### 4.1 Power Density Limits acc. to FCC 1.1310(e) / RSS-102 i5, cl. 4:

FCC

| Frequency Range (MHz) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|-----------------------|-------------------------------------|--------------------------|
| 300 – 1500            | f (MHz) /1500                       | 30                       |
| 1500 – 100000         | 1.0                                 | 30                       |

IC

| Frequency Range (MHz) | Power density (W/m <sup>2</sup> )   | Averaging time (minutes) |
|-----------------------|-------------------------------------|--------------------------|
| 300 – 6000            | 0.02619 x f (MHz) <sup>0.6834</sup> | 6                        |

##### 4.2 Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c) / RSS-102, cl. 2.5 (rounded to 1 decimal point):

FCC

operating frequency < 1.5GHz: excluded if ERP < 1.5W / 31.8dBm (EIRP: 33.9 dBm);  
 operating frequency > 1.5GHz: excluded if ERP < 3.0W / 34.8dBm (EIRP: 36.9 dBm);

IC

300MHz <= operating frequency < 6 GHz: excluded if EIRP < 0.0131 x f (MHz)<sup>0.6834</sup> W

##### 4.3 RF Exposure Estimation (MPE Estimation)

Having available the source based average output power and peak antenna gain or the ERP/EIRP of the specified device and for a known minimum distance of its radiating structures from the body of persons according to its use cases (at least 20cm) the power density at that distance can be estimated by the following formula for plane-wave equivalent conditions (far-field conditions), when ground reflection is neglected.

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

where: S = power density (mW/cm<sup>2</sup> or W/m<sup>2</sup>)  
 P = power input to the antenna (mW or W)  
 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 (cm or m)

## 5 Evaluations

### 5.1 Analysis of RF Exposure for simultaneous transmission

- Evaluations are based on worst case power density limits for US and Canada.
- Calculations are made for 20cm.
- Evaluations are based on ERP/EIRP measured or calculated from known gain and conducted output power.

#### **FCC:**

Operating frequency < 1.5GHz  
 $ERP_{20cm} = 2040 \times 0.907 = 1850.28mW = 1.85W$   
Actual ERP=0.0006W<1.85W; Excluded

#### **IC:**

$EIRP = 0.0131 \times f \text{ (MHz)}^{0.6834} = 1.38W$   
Actual EIRP=0.001W<1.38W; Excluded

### 5.2 Conclusion:

The equipment is passing RF exposure requirements for 20cm distance.

## 6 Revision History

| Date       | Report Name                           | Changes to report  | Prepared by |
|------------|---------------------------------------|--|-------------|
| 2022-09-30 | EMC_GLOBE_004-22001_FCC_ISED_MPE      | Initial Release  | Cheng Song  |
| 2022-10-25 | EMC_GLOBE_004-22001_FCC_ISED_MPE_Rev1 | Updated LoRa Antenna Peak Gain<br>from -2dBi to -0.5dBi<br>Updated RF Exposure Calculation | Cheng Song  |

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