

# MPE TEST REPORT

**Applicant** Phillips Connect Technologies, LLC  
**FCC ID** 2ASKH-DL02  
**Product** AssetTrac-LA  
**Brand** Phillips Connect  
**Model** 77-6400  
**Report No.** R2404A0350-M1V1  
**Issue Date** May 21, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

*Prepared by: Wei Fangying*

*Approved by: Fan Guangchang*

**Eurofins TA Technology (Shanghai) Co., Ltd.**

*Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China*

*TEL: +86-021-50791141/2/3*

*FAX: +86-021-50791141/2/3-8000*

## Table of Contents

|     |   |    |
|-----|---|----|
| 1   | Test Laboratory .....                     | 4  |
| 1.1 | Notes of the Test Report.....             | 4  |
| 1.2 | Test Facility.....                        | 4  |
| 1.3 | Testing Location.....                     | 4  |
| 1.4 | Laboratory Environment .....              | 4  |
| 2   | Description of Equipment Under Test ..... | 5  |
| 3   | Maximum Tune up and Antenna Gain .....    | 6  |
| 4   | MPE Limit.....                            | 7  |
| 5   | RF Exposure Evaluation Result.....        | 9  |
|     | ANNEX A: The EUT Appearance .....         | 10 |

| Version | Revision Description     | Issue Date   |
|---------|--------------------------|--------------|
| Rev.0   | Initial issue of report. | May 16, 2024 |
| Rev.1   | Update data.             | May 21, 2024 |

Note: This revised report (Report No.: R2404A0350-M1V1) supersedes and replaces the previously issued report (Report No.: R2404A0350-M1). Please discard or destroy the previously issued report and dispose of it accordingly.

## 1 Test Laboratory

### 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

### 1.2 Test Facility

#### FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

### 1.3 Testing Location

Company: Eurofins TA Technology (Shanghai) Co., Ltd.  
Address: Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
Contact: Fan Guangchang  
Telephone: +86-021-50791141/2/3  
Fax: +86-021-50791141/2/3-8000  
Website: <https://www.eurofins.com/electrical-and-electronics>  
E-mail: Jack.Fan@cpt.eurofinscn.com

### 1.4 Laboratory Environment

|   |                          |
|---|--------------------------|
| Temperature   | Min. = 18°C, Max. = 25°C |
| Relative humidity   | Min. = 20%, Max. = 80%   |
| Ground system resistance  | < 0.5 $\Omega$           |
| Ambient noise is checked and found very low and in compliance with requirement of standards.<br>Reflection of surrounding objects is minimized and in compliance with requirement of standards. |                          |

## 2 Description of Equipment Under Test

### Client Information

|                             |  |
|-----------------------------|--|
| <b>Applicant</b>            | Phillips Connect Technologies, LLC                       |
| <b>Applicant address</b>    | 5231 California Avenue, Suite 110, Irvine, CA 92617, USA |
| <b>Manufacturer</b>         | Phillips Connect Technologies, LLC                       |
| <b>Manufacturer address</b> | 5231 California Avenue, Suite 110, Irvine, CA 92617, USA |

### General Technologies

| EUT Description   |                                 |               |               |
|---|---------------------------------|---------------|---------------|
| Model   | 77-6400                         |               |               |
| Lab internal SN   | R2404A0350/S01                  |               |               |
| Hardware Version  | Freight-LA P3                   |               |               |
| Software Version  | Freight-LA V1                   |               |               |
| Frequency   | Band                            | TX (MHz)      | RX (MHz)      |
|   | WCDMA Band II                   | 1850 ~ 1910   | 1930 ~ 1990   |
|   | WCDMA Band IV                   | 1710 ~ 1755   | 2110 ~ 2155   |
|   | WCDMA Band V                    | 824 ~ 849     | 869 ~ 894     |
|   | LTE Band 2                      | 1850 ~ 1910   | 1930 ~ 1990   |
|   | LTE Band 4                      | 1710 ~ 1755   | 2110 ~ 2155   |
|   | LTE Band 12                     | 699 ~ 716     | 729 ~ 746     |
|   | Bluetooth                       | 2400 ~ 2483.5 | 2400 ~ 2483.5 |
| Date of Testing   | April 11, 2024 ~ April 18, 2024 |               |               |
| Date of Sample Received   | April 10, 2024                  |               |               |
| <p>Note:</p> <ol style="list-style-type: none"> <li>The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.</li> <li>All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.</li> </ol> |                                 |               |               |

### 3 Maximum Tune up and Antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by

Numeric gain (G)=10^(antenna gain/10)

| Band                   | Maximum Tune up Power |         | Antenna Gain (dBi) | Numeric Gain |
|------------------------|-----------------------|---------|--------------------|--------------|
|                        | (dBm)                 | (mW)    |                    |              |
| WCDMA Band II          | 25.700                | 371.535 | 1.000              | 1.259        |
| WCDMA Band IV          | 25.700                | 371.535 | 1.000              | 1.259        |
| WCDMA Band V           | 25.700                | 371.535 | 0.000              | 1.000        |
| LTE Band 2             | 25.700                | 371.535 | 1.000              | 1.259        |
| LTE Band 4             | 25.700                | 371.535 | 1.000              | 1.259        |
| LTE Band 12            | 25.700                | 371.535 | 0.000              | 1.000        |
| Bluetooth (Low Energy) | 5.000                 | 3.162   | 4.030              | 2.529        |

## 4 MPE Limit

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following.

TABLE 1 – LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range<br>(MHz)                                | Electric Field<br>Strength<br>(V/m) | Magnetic Field<br>Strength<br>(A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | Averaging Time<br>(minutes) |
|---|-------------------------------------|-------------------------------------|--|-----------------------------|
| (A) Limits for Occupational/Controlled Exposures        |                                     |                                     |  |                             |
| 0.3-3.0 .....   | 614                                 | 1.63                                | *(100)                                 | 6                           |
| 3-30 .....  | 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                           |
| (B) Limits for General Population/Uncontrolled Exposure |                                     |                                     |  |                             |
| 0.3-1.34 .....  | 614                                 | 1.63                                | *(100)                                 | 30                          |
| 1.34-30 .....   | 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

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

The maximum permissible exposure for 300~1500 MHz is  $f/1500$ , for 1500~100,000MHz is 1.0. So

| Band                   | The Maximum Permissible Exposure (mW/cm <sup>2</sup> ) |
|------------------------|--|
| WCDMA Band II          | 1.000  |
| WCDMA Band IV          | 1.000  |
| WCDMA Band V           | 0.549  |
| LTE Band 2             | 1.000  |
| LTE Band 4             | 1.000  |
| LTE Band 12            | 0.466  |
| Bluetooth (Low Energy) | 1.000  |

## 5 RF Exposure Evaluation Result

RF exposure evaluation method is based on KDB 447498 D01, this calculation is based on the conducted power, maximum power and antenna gain with provides the minimum separation distance. The formula shown below is from OET Bulletin 65 Edition 97-01 Per KDB 447498 D01:

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

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

| Band   | Maximum Tune up (dBm) | Antenna Gain (dBi) | Maximum EIRP (dBm) | PG (mW) | Result (mW/cm <sup>2</sup> ) | Limit Value (mW/cm <sup>2</sup> ) | The MPE Ratio |
|--|-----------------------|--------------------|--------------------|---------|------------------------------|-----------------------------------|---------------|
| WCDMA Band II  | 25.700                | 1.000              | 26.700             | 467.735 | 0.093                        | 1.000                             | 0.093         |
| WCDMA Band IV  | 25.700                | 1.000              | 26.700             | 467.735 | 0.093                        | 1.000                             | 0.093         |
| WCDMA Band V   | 25.700                | 0.000              | 25.700             | 371.535 | 0.074                        | 0.549                             | 0.135         |
| LTE Band 2   | 25.700                | 1.000              | 26.700             | 467.735 | 0.093                        | 1.000                             | 0.093         |
| LTE Band 4   | 25.700                | 1.000              | 26.700             | 467.735 | 0.093                        | 1.000                             | 0.093         |
| LTE Band 12  | 25.700                | 0.000              | 25.700             | 371.535 | 0.074                        | 0.466                             | <b>0.159</b>  |
| Bluetooth (Low Energy)   | 5.000                 | 4.030              | 7.810              | 7.998   | 0.002                        | 1.000                             | <b>0.002</b>  |
| Note: R = 20cm<br>$\pi = 3.1416$<br>The MPE Ratio = Mac Result ÷ Limit Value |                       |                    |                    |         |                              |                                   |               |

So the simultaneous transmitting antenna pairs as below:

$$\sum \text{of MPE ratios} = \text{Main Antenna} + \text{Bluetooth} = 0.159 + 0.002 = 0.161 < 1$$

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

## **ANNEX A: The EUT Appearance**

The EUT Appearance are submitted separately.

**\*\*\*\*\*END OF REPORT \*\*\*\*\***