

# **MPE TEST REPORT**

**Applicant** Asiatelco Technologies Co.

FCC ID XYO-AS31-2

**Product** GPS tracker

Model AS31-2

**Report No.** R2108A0670-M1V1

Issue Date September 15, 2021

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.

Turus Zhao

Prepared by: Yurui Zhao

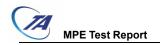
Approved by: Guangchang Fan

Guangchang Fan

TA Technology (Shanghai) Co., Ltd.

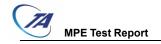
No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China TEL: +86-021-50791141/2/3

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VersionRevision descriptionIssue DateRev.0Initial issue of report.August 30, 2021Rev.1Update data.September 15, 2021

Note: This revised report (Report No. R2108A0670-M1V1) supersedes and replaces the previously issued report (Report No. R2108A0670-M1). Please discard or destroy the previously issued report and dispose of it accordingly.



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**Test Laboratory** 

**Notes of the Test Report** 

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(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)

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

**Testing Location** 

Company:

TA Technology (Shanghai) Co., Ltd.

Address:

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

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**Laboratory Environment** 

Temperature Min. = 18°C, Max. = 25 °C



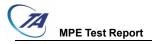
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Relative humidity

Min. = 30%, Max. = 70%

Ground system resistance  $< 0.5 \Omega$ 

Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.



### 2 Description of Equipment under Test

#### **Client Information**

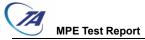
| Applicant            | Asiatelco Technologies Co.   |  |  |  |
|----------------------|--|--|--|--|
| Applicant address    | 289 Bisheng Road, Building 8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai 201204, China |  |  |  |
| Manufacturer         | Asiatelco Technologies Co.   |  |  |  |
| Manufacturer address | 289 Bisheng Road, Building 8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai 201204, China |  |  |  |

#### **General Technologies**

| Model            | AS31-2                           |
|------------------|----------------------------------|
| SN               | R2108A0670/S01                   |
| HW Version       | AS31_P1                          |
| SW Version       | BG95M6LAR02A02_BETA0628A         |
| Date of Testing: | August 6, 2021 ~ August 13, 2021 |
| Received:        | August 4, 2021                   |

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. All indications of Pass/Fail in this report are opinions expressed by 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.

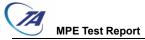


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### 3 Maximum conducted output power (measured) and antenna Gain

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 Conducted Output Power (dBm) |         |  |  |
|--------------|--------------------------------------|---------|--|--|
|              | (dBm)                                | (mW)    |  |  |
| LTE Band 2   | 25.000                               | 316.228 |  |  |
| LTE Band 4   | 25.000                               | 316.228 |  |  |
| LTE Band 12  | 25.000                               | 316.228 |  |  |
| LTE Band 13  | 25.000                               | 316.228 |  |  |
| LTE Band 25  | 25.000                               | 316.228 |  |  |
| Bluetooth LE | 1.650                                | 1.462   |  |  |



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#### 4 Test Result

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

TABLE 1 – LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

| Frequency Range                                  | Electric Field     | Magnetic Field    | Power Density   | Averaging Time |  |  |
|--|--------------------|-------------------|-----------------|----------------|--|--|
| (MHz)  | Strength Strength  |                   |                 |                |  |  |
| 45000 V  | (V/m)              | (A/m)             | (mW/cm2)        | (minutes)      |  |  |
| (A) Limits for Occupational/Controlled Exposures |                    |                   |                 |                |  |  |
| 0.3-3.0  | 614                | 1.63              | *(100)          | 6              |  |  |
| 3-30   | 1842/f             | 4.89/f            | *(900/f2)       | 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/Uncont | rolled Exposure |                |  |  |
| 0.3-1.34   | 614                | 1.63              | *(100)          | 30             |  |  |
| 1.34-30  | 824/f              | 2.19/f            | *(180/f2)       | 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

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.

<sup>\* =</sup> Plane-wave equivalent power density



Report No.: R2108A0670-M1V1 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/cm²) |
|--------------|---|
| LTE Band 2   | 1.000                                     |
| LTE Band 4   | 1.000                                     |
| LTE Band 12  | 0.477                                     |
| LTE Band 13  | 0.525                                     |
| LTE Band 25  | 1.000                                     |
| Bluetooth LE | 1.000                                     |



#### **RF Exposure Calculations:**

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

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

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         | Antenna<br>Gain<br>(dBi) | Maximum<br>Power<br>(dBm) | Maximum<br>EIRP<br>(dBm) | PG<br>(mW) | Test<br>Result<br>(mW/cm <sup>2</sup> ) | Limit<br>Value<br>(mW/cm <sup>2</sup> ) | The MPE ratio |
|--------------|--------------------------|---------------------------|--------------------------|------------|---|---|---------------|
| LTE Band 2   | 1.100                    | 25.000                    | 26.100                   | 407.380    | 0.081                                   | 1.000                                   | 0.081         |
| LTE Band 4   | 1.200                    | 25.000                    | 26.200                   | 416.869    | 0.083                                   | 1.000                                   | 0.083         |
| LTE Band 12  | 0.200                    | 25.000                    | 25.200                   | 331.131    | 0.066                                   | 0.477                                   | 0.138         |
| LTE Band 13  | 0.400                    | 25.000                    | 25.400                   | 346.737    | 0.069                                   | 0.525                                   | 0.131         |
| LTE Band 25  | 1.000                    | 25.000                    | 26.000                   | 398.107    | 0.079                                   | 1.000                                   | 0.079         |
| Bluetooth LE | 1.000                    | 1.650                     | 2.650                    | 1.841      | 0.0004                                  | 1.000                                   | 0.000         |

Note: **R** = 20cm  $\pi$ = 3.1416

The MPE ratio = Mac Test Result ÷ Limit Value

So the simultaneous transmitting antenna pairs as below:

∑of MPE ratios=LTE Antenna + Bluetooth LE Antenna =0.138 + 0.000 = 0.138 <1

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



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

The EUT Appearance are submitted separately.