

## **MPE TEST REPORT**

**Applicant** Spireon Inc

FCC ID O9YFLF3M

**Product** GPS tracker

**Model** Flex2-M

**Report No.** R2109A0847-M1

**Issue Date** October 19, 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.

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Approved by: Guangchang Fan

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## 1 Test Laboratory

### 1.1 Notes of the Test Report

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## 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.

## 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

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

City: Shanghai

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## 1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C		
Relative humidity	Min. = 30%, Max. = 70%		
Ground system resistance	< 0.5 Ω		

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	Spireon Inc		
Applicant address	9724 Kingston Pike, Suite 800 Knoxville		
Manufacturer	Asiatelco Technologies Co		
Manufacturer address	#289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park,		
Manufacturer address	Pudong, Shanghai 201204, China		

### **General Technologies**

Model	Flex2-M		
SN	864919057421931		
HW Version	P3.0.0		
SW Version	B1		
Date of Testing:	October 12, 2021		
Received:	September 23, 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.



## 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		cted Output Power Bm)	Antenna Gain	Numeric gain
	(dBm)	(mW)	(dBi)	
LTE Band 2	23.000	199.526	1.000	1.259
LTE Band 4	22.000	158.489	2.000	1.585
LTE Band 12	23.000	199.526	1.300	1.349
LTE Band 13	23.500	223.872	-1.000	0.794
LTE Band 25	22.000	158.489	0.800	1.202



### 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						
	(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.

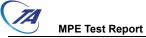
<sup>\* =</sup> Plane-wave equivalent power density



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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	0.466
LTE Band 13	0.518
LTE Band 25	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 Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	PG (mW)	Test Result (mW/cm <sup>2</sup> )	Limit Value (mW/cm²)
LTE Band 2	1.000	23.000	24.000	251.189	0.050	1.000
LTE Band 4	2.000	22.000	24.000	251.189	0.050	1.000
LTE Band 12	1.300	23.000	24.300	269.153	0.054	0.466
LTE Band 13	-1.000	23.500	22.500	177.828	0.035	0.518
LTE Band 25	0.800	22.000	22.800	190.546	0.038	1.000

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

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

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



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

The EUT Appearance are submitted separately.

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