



MPE TEST REPORT

Applicant	Positioning Universal Inc
FCC ID	2AHRH-FT4000LFA
Product	Vehicle Telematics Gateway
Brand	PUI
Model	FT4000LFA
Report No.	R2208A0779-M1
Issue Date	October 8, 2022

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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Table of Contents

1	Test Laboratory.....	3
1.1	Notes of the Test Report	3
1.2	Test facility	3
1.3	Testing Location.....	3
1.4	Laboratory Environment.....	4
2	Description of Equipment under Test.....	5
3	Maximum Tune up and Antenna Gain	6
4	Test Result	7
	ANNEX A: The EUT Appearance.....	10



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 **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)

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:	Building 3, 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	Positioning Universal Inc
Applicant address	4660 La Jolla Village Drive, Suite 1100, San Diego , CA92122, United States
Manufacturer	Positioning Universal Inc
Manufacturer address	4660 La Jolla Village Drive, Suite 1100, San Diego , CA92122, United States

General Technologies

Model	FT4000LFA
SN	MP822DS03015489
Hardware Version	P3
Software Version	1
Date of Testing	September 1, 2022 ~ September 23, 2022
Date of Sample Received	August 23, 2022

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 Tune up and Antenna Gain

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

$$\text{Numeric gain (G)} = 10^{(\text{antenna gain}/10)}$$

Band	Maximum Tune up Power		Antenna Gain (dBi)	Numeric gain
	(dBm)	(mW)		
WCDMA Band II	25.00	316.228	1.1	1.288
WCDMA Band IV	25.00	316.228	1.2	1.318
WCDMA Band V	25.00	316.228	-3.5	0.447
LTE Band 2	25.00	316.228	1.1	1.288
LTE Band 4	25.00	316.228	1.2	1.318
LTE Band 5	25.00	316.228	-3.5	0.447
LTE Band 12	25.00	316.228	0.2	1.047
LTE Band 13	25.00	316.228	0.4	1.096
LTE Band 14	25.00	316.228	0.4	1.096
LTE Band 66	25.00	316.228	1.2	1.318
Wi-Fi 2.4G	16.50	44.668	-5.0	0.316
Bluetooth (Low Energy)	9.50	8.913	-7.0	0.200

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 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (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 ²)	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 ²)	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 ²)
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 5	0.549
LTE Band 12	0.466
LTE Band 13	0.518
LTE Band 14	0.525
LTE Band 66	1.000
Wi-Fi 2.4GHz	1.000
Bluetooth (Low Energy)	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/cm²)

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)	Test Result (mW/cm ²)	Limit Value (mW/cm ²)	The MPE ratio
WCDMA Band II	25.00	1.1	26.100	407.380	0.081	1.000	0.081
WCDMA Band IV	25.00	1.2	26.200	416.869	0.083	1.000	0.083
WCDMA Band V	25.00	-3.5	21.500	141.254	0.028	0.549	0.051
LTE Band 2	25.00	1.1	26.100	407.380	0.081	1.000	0.081
LTE Band 4	25.00	1.2	26.200	416.869	0.083	1.000	0.083
LTE Band 5	25.00	-3.5	21.500	141.254	0.028	0.549	0.051
LTE Band 12	25.00	0.2	25.200	331.131	0.066	0.466	0.141
LTE Band 13	25.00	0.4	25.400	346.737	0.069	0.518	0.133
LTE Band 14	25.00	0.4	25.400	346.737	0.069	0.525	0.131
LTE Band 66	25.00	1.2	26.200	416.869	0.083	1.000	0.083
Wi-Fi 2.4GHz	16.50	-5.0	11.500	14.125	0.003	1.000	0.003
Bluetooth (Low Energy)	9.50	-7.0	2.500	1.778	0.000	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:

$\sum$ of MPE ratios = Main Antenna + Wi-Fi Antenna + Bluetooth = 0.141 + 0.003 + 0.000 = 0.144 < 1

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.