

RF Exposure Evaluation Report

APPLICANT : Positioning Universal Inc
EQUIPMENT : GPS TRACK
BRAND NAME : Positioning Universal
MODEL NAME : FT2200MA
FCC ID : 2AHRH-FT2200MA
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Nick Hu / Supervisor



Approved by: Kat Yin / Manager



Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA171213	Rev. 01	Initial issue of report.	Aug. 30, 2021



1. Administration Data

1.1. Testing Laboratory

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Positioning Universal Inc
Address	4660 La Jolla Village Drive, Suite 1100, SanDiego, CA92122

Manufacturer	
Company Name	Positioning Universal Inc
Address	4660 La Jolla Village Drive, Suite 1100, SanDiego, CA92122

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	GPS TRACK
Brand Name	Positioning Universal
Model Name	FT2200MA
FCC ID	2AHRH-FT2200MA
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 85: 698 MHz ~ 716 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GPRS/EGPRS LTE Cat M1: QPSK, 16QAM Bluetooth LE
Antenna Gain	GSM850 : -3.0 dBi GSM1900 : -2.5 dBi LTE Band 2 : -2.5 dBi LTE Band 4 : -2.5 dBi LTE Band 5 : -3.0 dBi LTE Band 12 : -3.0 dBi LTE Band 13 : -3.0 dBi LTE Band 25 : -2.5 dBi LTE Band 26 : -3.0 dBi LTE Band 66: -2.5 dBi LTE Band 85: -3.0 dBi Bluetooth: -1.0 dBi
Antenna Type	WWAN: PIFA Antenna Bluetooth: PCB Antenna
HW Version	P2.1
SW Version	A0.13.8
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Comments and Explanations:

1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

**3. Maximum RF average output tune up power among production units****<GSM>**

Mode		Maximum Average power(dBm)
GSM	GSM850	34.00
	GSM1900	32.00

<LTE>

Mode		Maximum Average power(dBm)
LTE	Band 2	25.00
	Band 4	25.00
	Band 5	25.00
	Band 12	25.00
	Band 13	25.00
	Band 25	25.00
	Band 26	25.00
	Band 66	25.00
	Band 85	25.00

<Bluetooth>

Mode		Maximum Average power(dBm)
Bluetooth	LE	9.00



4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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
3.0-30	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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
GPRS 850 (1 Tx slot)	824.2	-3.00	34.00	31.000	158.489	0.032	0.549	0.057
GPRS 850 (2 Tx slots)	824.2	-3.00	34.00	31.000	316.228	0.063	0.549	0.115
GPRS 850 (3 Tx slots)	824.2	-3.00	34.00	31.000	472.063	0.094	0.549	0.171
GPRS 850 (4 Tx slots)	824.2	-3.00	34.00	31.000	630.957	0.126	0.549	0.229
EGPRS 850 (1 Tx slot)	824.2	-3.00	34.00	31.000	158.489	0.032	0.549	0.057
EGPRS 850 (2 Tx slots)	824.2	-3.00	34.00	31.000	316.228	0.063	0.549	0.115
EGPRS 850 (3 Tx slots)	824.2	-3.00	34.00	31.000	472.063	0.094	0.549	0.171
EGPRS 850 (4 Tx slots)	824.2	-3.00	34.00	31.000	630.957	0.126	0.549	0.229
GPRS 1900 (1 Tx slot)	1850.2	-2.50	32.00	29.500	112.202	0.022	1.000	0.022
GPRS 1900 (2 Tx slots)	1850.2	-2.50	32.00	29.500	223.872	0.045	1.000	0.045
GPRS 1900 (3 Tx slots)	1850.2	-2.50	32.00	29.500	334.195	0.067	1.000	0.067
GPRS 1900 (4 Tx slots)	1850.2	-2.50	32.00	29.500	446.684	0.089	1.000	0.089
EGPRS 1900 (1 Tx slot)	1850.2	-2.50	32.00	29.500	112.202	0.022	1.000	0.022
EGPRS 1900 (2 Tx slots)	1850.2	-2.50	32.00	29.500	223.872	0.045	1.000	0.045
EGPRS 1900 (3 Tx slots)	1850.2	-2.50	32.00	29.500	334.195	0.067	1.000	0.067
EGPRS 1900 (4 Tx slots)	1850.2	-2.50	32.00	29.500	446.684	0.089	1.000	0.089
LTE Band 2	1850.7	-2.50	25.00	22.500	177.828	0.035	1.000	0.035
LTE Band 4	1710.7	-2.50	25.00	22.500	177.828	0.035	1.000	0.035
LTE Band 5	824.7	-3.00	25.00	22.000	158.489	0.032	0.550	0.057
LTE Band 12	699.7	-3.00	25.00	22.000	158.489	0.032	0.466	0.068
LTE Band 13	779.5	-3.00	25.00	22.000	158.489	0.032	0.520	0.061
LTE Band 26	814.7	-3.00	25.00	22.000	158.489	0.032	0.543	0.058
LTE Band 25	1850.7	-2.50	25.00	22.500	177.828	0.035	1.000	0.035
LTE Band 66	1710.7	-2.50	25.00	22.500	177.828	0.035	1.000	0.035
LTE Band 85	700.5	-3.00	25.00	22.000	158.489	0.032	0.467	0.068
Bluetooth	2402.0	-1.00	9.00	8.000	6.310	0.001	1.000	0.001

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.

**5.2. Collocated Power Density Calculation**

WWAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WWAN + Bluetooth
0.229	0.001	0.230

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + Bluetooth.
2. Considering the WWAN module collocation with the Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----