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# MPE REPORT

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|---|---|
| **Product Name** | GPS Tracker |
| **Model Name** | FJ110C |
| **Brand Name** | FJ110C |
| **FCC ID** | 2AHRH-FJ110C |
| **Applicant** | Positioning Universal Inc |
| **Manufacture** | Fujiao Communications |
| **Date of issue** | April 7, 2016 |

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# Maximum Permissible Exposure

Product Name: GPS Tracker

FCC ID: 2AHRH-FJ110C

Manufacturer: Fujiao Communications

Model: FJ110C

Maximum conducted output power (measured) and antenna Gain:

| Band | Time-average maximum tune up procedure (dBm) | Antenna Gain (dBi) |
|---|---|---|
| CDMA Cellular | 25dBm | 2 |
| CDMA PCS | 24dBm | 2 |

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 (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm2) | 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/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/Uncontrolled 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
\*    = 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 300~1500MHz is f/1500, 1500~100,000MHz is 1.So

| Band | The maximum permissible exposure |
|------|----------------------------------|
| CDMA Cellular | 0.56 |
| CDMA PCS | 1.00 |

**IMPORTANT NOTE:** To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

## 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 865664 D01 is used in the calculation.

Equation from KDB 865664 D01, Edition 97-01 is:

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

where:   S = power density (in appropriate units, e.g. mW/cm$^2$)

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)

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

Numeric gain (G)=10^(antenna gain/10)=10^(2/10)=1.58 dB

CDMA Cellular:     PG = 25dBm+ (1.58dB) =26.58dBm=455mW
CDMA PCS:          PG = 24dBm+ (1.58dB) =25.58dBm=361.41mW

**R** =20 cm

∏**=** 3.1416

Solving for S, the power density at 20 cm is

| Band | Test Result (mW/cm$^2$) | Limit Value (mW/cm$^2$) |
|---|---|---|
| CDMA Cellular | 0.09 | 0.56 mW/cm² |
| CDMA PCS | 0.07 | 1 mW/cm² |

Note: For mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations

indicate MPE distance is less.