Reference No: C3881

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14th May 2018:

Dear Mr Bryant,

This report contains calculation of maximum Possible Exposure for the nanoFixGEO+RF Tag.

Part number: #17246

FCC ID: 2APEJ-NFGEORFHRC

Mobile devices are defined by the FCC as transmitters designed to be used in other than fixed locations and generally to be used in such a way that a separation distance of 20cm is normally maintained between radiating structures and the body of the user or nearby persons. These devices are normally evaluated for exposure potential with relation to the MPE limit. As the 20cm separation may not be achievable under normal operating conditions, an RF exposure calculation is used to demonstrate the minimum distance required to be less than the power density limit, as required under FCC rules.

FCC rule part:47CFR2.1091(3)

Power density (S) relates to Equivalent Isotropic Radiated power (EIRP) according to the following:

$$S = \frac{EIRP}{4\pi R}$$

Where,
R is the distance to the centre of radiation of the antenna (cm)
EIRP is in mW

Rearranging,

$$R = \sqrt{\frac{EIRP}{S4\pi}}$$

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MPE Calculation for Pathtrack Ltd

The output power of the transmitter was:

Bottom channel 924.1MHz: 0.0007W = 0.7mW

Top channel 927.1MHz = 0.0006W = 0.6mW

Calculated from field strength.

Using the value for *S* from 47CFR1.1310 Table 1 and the measured EIRP the distance *R* from the apparatus to a person where *S* is at the defined limit is calculated.

From 47CFR1.1310 Table 1 Part (B) limits limits for general population /uncontrolled exposures:

Between 300MHz and 1500MHz the limit is :

Power density (mW/cm^2) = frequency (MHz)/1500

At 924.1MHz limit is: 924.1/1500 = 0.62$mWcm^2$

At 927.1MHz limit is 927.1/1500 = 0.62$mWcm^2$

The distance R is calculated as:

Frequency (MHz)	**Maximum EIRP (mW)**	**Power density limit (S) (mW/cm^2) 47CFR1.1310 Table 1**	**Distance (R) cm required to be less than 0.62 (mW/cm^2)**
924.1	0.7	0.62	$9.4x10^{-3}$
927.1	0.6	0.62	$8.7x10^{-3}$

In conclusion the distance from the apparatus at which the power density limit from 47CFR1.1310 Table 1 Part (B) is met is less than 20cm.

Yours sincerely

Mark Render
Senior Engineer
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