

## Prediction of MPE and ERP/ EIRP

As to the product AFIM5002 made by ZF Friedrichshafen AG, we declare that it complies with the Basic restrictions/Reference levels for electric, magnetic and electromagnetic fields as specified in the following standards:

Nr.	Standard
1	47CFR FCC Part 1 (10-1-13 Edition)
2	RSS-102 (Issue4, March 2010)

The compliance is demonstrated based on the following calculation model assessment:

1. The power density according to far-field model is:

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

where:

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)  
P = power input to the antenna (in appropriate units, e.g., mW)  
G = power gain of the antenna in the direction of interest relative to an isotropic radiator  
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2. For single or multiple RF sources, the calculated power density should comply with the following:

$$\sum_{i=1}^n \frac{S_{eqn}}{S_{limn}} = \frac{S_{eq1}}{S_{lim1}} + \frac{S_{eq2}}{S_{lim2}} + \dots + \frac{S_{eqn}}{S_{limn}} \leq 1$$

where:

$S_{eqn}$  = the power density when  $f$  is  $i$ .  
 $S_{limn}$  = the reference level requirement for power density when  $f$  is  $i$

3. The calculation of the power density or safe distance is:

- Note 1      The RF exposure is based on the far-field and the radiation exposure is over-estimated.
- Note 2      The maximum output power level is taken into account as a worst case for the purpose of the calculation of power density or safe distance.
- Note 3      The minimum antenna feed cable loss (assumed no cable loss) is taken into account as a worst case for the purpose of the calculation of power density or safe distance
- Note 4      The maximum antenna radiation exposure orientation and maximum antenna gain is taken into account as a worst case for the purpose of the calculation of power density and safe distance.

**Calculation 915 MHz transmitter:**

$$S \leq \frac{P \cdot G}{4 \cdot \pi \cdot R^2} = 0.005 \text{ W/m}^2$$
$$\frac{S}{S_{lim}} \leq 0.0005 \text{ (less than 1, complied)}$$

$P$  = 6 mW (7.6 dBm)  
 $G$  = -3.8 dBi  
 $EIRP (P \cdot G)$  = 2 mW (3.8 dBm)  
 $R$   $\geq$  0.20m  
 $S_{lim}$  = 10 W/m<sup>2</sup>

FCC ID: GDD AFIM-5002  
IC: 11057A-AFIM5002

**Declaration prepared by:**

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