FCC ID TKY-TMS800 Exhibit 9. Compliance with the RF Exposure Requirements

#### Exhibit 9

#### Compliance with the RF Exposure Requirements

## **Table of Contents**

Table of Contents	. 1
1. MPE distance calculations	. 2
2. Antenna installation and device operating instructions for the installers	. 3
3. Caution statement(s)	. 3

### **1. MPE distance calculations**

The MPE distance was calculated based on the limits for a General Population/Uncontrolled Exposure, 900 MHz frequency band<sup>1</sup>. It was calculated for the worst case scenario - a 100% transmit duty cycle.

For an isotropic radiator the surface area of a sphere can be used to determine the area over which the transceiver's energy is radiated.

Surface Area Of A Sphere =  $4 * \pi * radius^2$ 

In the case where there is an antenna gain, the worst case energy density is increased by the antenna gain factor. In this case the exposure level for an uncontrolled environment can be calculated as follows:

 $MPE\_Distance = (OutputPower * DutyCycleFactor * 10 * (AntennaGain / 10)) / (4 * \pi *$  $* ExposureLimit))^{1/2}$ 

where	OutputPower	= 1000 mW (the worst case when antenna used with the transmitter has gain of 6 dBi $)^{2}$ ,
	DutyCycleFactor	= 1 (worst case scenario when transmitter's duty cycle is
	AntennaGain	100%), = 6 dBi (worst case for 1000 mW <i>OutputPower</i> at the antenna
	ExposureLimit	port), = $0.6 \text{ mW/cm}^2$ (from the §1.1310, Table 1) <sup>3</sup> .

After applying all of the number listed above we have:

MPE Distance =  $((1000 \text{ mW} * 1 * 3.98) / (4 * 3.14 * 0.6))^{1/2} = 22.98 \text{ cm}$ 

<sup>&</sup>lt;sup>1</sup> FCC Rules and Regulations, 47CFR §1.1310, Table 1, Limits for General Population/Uncontrolled Exposure.

<sup>&</sup>lt;sup>2</sup> FCC Rules and Regulation, 47CFR §15.247(b)(2).

<sup>&</sup>lt;sup>3</sup> FCC Rules and Regulations, 47CFR §1.1310, Table 1, Limits for General Population/Uncontrolled Exposure.

### 2. Antenna installation and device operating instructions for the installers

The antenna installations and transceiver operating instructions are included in the User Manual<sup>4</sup> and Installation Manual<sup>5</sup> provided with this submittal.

# 3. Caution statement(s)

The User Manual and the Installation Manual provided with this device have the following warning statement:

WARNING: The Tiamis-800 transceiver has the maximum transmitted output power of 1 Watt. It is required that the transmit antenna be kept at least 23 cm away from nearby persons to satisfy FCC RF exposure requirements.

<sup>&</sup>lt;sup>4</sup> The FCC submittal, FCC ID: TKY-TMS800, Exhibit 1.a, User Manual <sup>5</sup> The FCC submittal, FCC ID: TKY-TMS800, Exhibit 1.b, Installation Manual