Federal Communication Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Attention: Reviewing Engineer

RE: RF exposure information for the equipment GM862-QUAD, GM862-QUAD-PY (FCC ID: RI7GM862L)

RF exposure information

The devices GM862-QUAD, GM862-QUAD-PY (FCC ID: RI7GM862L) is designed as module in other to be installed in other devices. This device is to be used only for fixed and mobile applications.
If the final product after integration is intended for portable use, a new application and FCC is required.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power Density (mW/cm^2)	Averaging Time (minutes)
300 – 1500	f/1500	30
1500 – 100.000	1.0	30

The equipment GM862-QUAD, GM862-QUAD-PY transmits in the following frequency ranges so that the applicable limits are:

Frequency range   **Limit**
1850.2 - 1909.8 MHz   1 mW/cm^2
824.2 - 848.8 MHz   0.54 mW/cm^2

The equipment is a GPRS Class 10, so that the maximum duty cicle is 2/8 = 1/4

Under conditions stated above MPE limits can be guaranteed as the calculation below shows:

850 MHz frequency band

Maximum conducted output power: 2.06 W
Duty cicle: 1/4
Equivalente conducted output power = Maximum conducted output power x Duty cicle = 2.06 W x 1/4 = 0.515 W = 515 mW
Maximum antenna gain (as stated in the User's guide) = 3 dBi (numerical gain)

Using the eqution:

$$S = P \cdot G / 4 \cdot pi \cdot R^2$$

Where,

S = power density in mW/cm^2
P = power input to the antenna in mW
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna in cm (20 cm Prediction distance)

$$S = 515 \text{ mW} \cdot 2 / 4 \cdot pi \cdot (20 \text{ cm})^2 = 0.21 \text{ mW/cm}^2 < 0.54 \text{ mW/cm}^2 \text{ (limit)}$$

1900 MHz frequency band

Maximum conducted output power: 0.90 W
Duty cicle: 1/4
Equivalente conducted output power = Maximum conducted output power x Duty cicle = 0.90 W x 1/4 = 0.225 W = 225 mW
Maximum antenna gain (as stated in the User's guide) = 3 dBi (numerical gain)

Using the eqution:

$$S = P \cdot G / 4 \cdot pi \cdot R^2$$

Where,

S = power density in mW/cm^2
P = power input to the antenna in mW
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna in cm (20 cm Prediction distance)

$$S = 225 \text{ mW} \cdot 2 / 4 \cdot pi \cdot (20 \text{ cm})^2 = 0.089 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2 \text{ (limit)}$$

These predictions demonstrate that:

The power density levels at a distance of 20 cm with typical antennas of a gain of less than 3 dBi are below the maximum levels allowed by the FCC rules.

Conclusion:

The equipment GM862-QUAD, GM862-QUAD-PY complies with the MPE limits if used with antennas with a gain of less than 3 dBi and this antenna is installed to provide a separation distance of at least 20 cm from all the persons.

Warning:

To ensure the compliance with the MPE limits the antenna gain has been limited and a warning statement has been included in page 69.

Signed on behalf of Telit Communications S.p.A. by

P.A.

Mr. Sandro Spanghero
Technical Director
Telit Communications S.p.A.
Via Stazione di Prosecco 5/B, I-34010 Trieste, Italy
Phone: +39 040 4192111
E-mail: sandro.spanghero@telit.net
Date: 2006-11-16