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

Attention: Reviewing Engineer

The **CrossCheck®GSM** radio is a regular GSM product exclusively designed for mainly mobile and some fewer fixed-mount applications (Please refer to CrossCheck GSM 1900 data sheet) for Asset management applications like fleet management etc.

Included in the users manual (page 56) are definitions for fixed and mobile applications and limitations of the antenna gain as appropriate for each application to ensure that the end user have been provided with the right information to permit them to avoid exceeding RF exposure guidelines as provided in the Commission's rule.
This information includes the following*: A minimum separation distance of 20 cm must be maintained between the antenna and the person for this device to satisfy the RF exposure requirements of the FCC. For fixed mount operation, the antenna co-location requirements of Section 1.1307 (b) (3) of the FCC rules must be satisfied.*
For fixed mount operation, the maximum gain of the antenna must not exceed 7 dBi. For mobile operation the maximum gain of the antenna must not exceed 3 dBi.
WARNING! Use of this unit in portable operations is not permitted.

The maximum output power allowed for the GSM 1900 radio is 1W, and the maximum gain of the antennas to be used is 7dBi (for fixed installation). The worst-case EIRP is when the highest gain antenna is used:

Maximum EIRP = 30 + 7 = 37 dBm (5 W); equivalent to 61.31V/m in 20 cm distance

Regarding MPE limits, GPUC environment limits maximum exposure to 1 $mW/cm^{2.}$

The power density at 0.2 meters from an antenna is:

$S = E^2/3770 = -37.7H^2 = 0.997\ mW/cm^2 < 1\ mW/cm^2$
Where: S = Power density ($mW/cm^{2)}$
E = electrical field strength (V/m)

Calculations are based on standard formula for calculating field strength at a distance and converting power density using free space impedance. Further the device uses the GSM protocol which TDD format ratio of 1/8 the 0.997 is further reduced by this ratio or it is equivalent to **0.124 mW/cm^2**.
Since compliance is shown for the worst-case condition for the fixed installation, compliance for the mobile application with an antenna gain of maximum of 3 dBi is assured.

If you should have any questions regarding this submission, please feel free to contact the undersigned.
CrossCheck®GSM

Yours truly,

Jorge Herauld
Design engineer
Trimble Navigation