

## Engineering Analysis

Of

IEEE Standard for Safety Levels with Respect to Human Exposure to  
Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz  
(IEEE C95.1-1991)

GE Marquette Medical Systems

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### Product Data.

Model No.: 418500  
FCC ID: OU5418500-APRO  
Equipment Type: Telemetry Transmitter (Frequency Division Multiplex)  
RF Frequency: 608.025-613.975  
Max. RF Power : 0.0012W  
Max Tx Duty Cycle: 100%

Model No.: 418500

### Power Density:

Ref: Reference Data for Radio Engineers, Fifth Ed., p. 25-7

$$P = P_t / 4\pi R^2 \quad \text{where}$$

P = Power Density (in watts/square meter) at a distance R

$P_t$  = Power radiated by an isotropic radiator (watts)

R = Distance of measurement from source

Assume: R = 0.01 m (0.4 inches)

Justification: Transmitter distance during normal use.

For the 418500:

$$P_t = (0.0012 \text{ watts}) * (1 \text{ duty cycle factor}) \\ = 0.0012$$

Therefore,

$$P = 0.0012 / 4 (0.01)^2 \text{ watts/meter}^2 = 0.955 \text{ w/m}^2$$

$$P = 0.0955 \text{ mw/cm}^2$$

(at 0.01m from the 418500)

**Maximum Permissible Exposure (MPE):**

Ref: IEEE C95.1 – 1991, §4.1

The uncontrolled environment represents the most restrictive limits.

From Table 2, Part A,

MPE:  $f/1500\text{mw/cm}^2 = 600/1500$  (where f is expressed in MHz)

$\boxed{\text{MPE} = 0.4 \text{ mw/cm}^2}$  (with an averaging time of 30 minutes)

**Conclusions:**

In an uncontrolled environment, the maximum permissible exposure from a radio device operating at 600 MHz is 0.4  $\text{mw/cm}^2$  averaged over 30-minute period

The Transmitter operates at 600 MHz with an average calculated power density of  $0.0955 \text{ mw/cm}^2$  at a distance of 0.01 meter, from its transmitting antenna.

The analysis indicates that power density is within the limits of IEEE C95.1-1991, and a margin-of-compliance factor of 25.

Since the analysis is favorable in the Uncontrolled Environment, it is unnecessary to analyze for controlled environments or partial body exposures since these are less restrictive conditions.

The ApexPro Transmitter here by conforms to the Radiofrequency radiation exposure limits as per IEEE C95.1-1992

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