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August 8, 2005

Mr. John Kennedy
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Subject: FCC File # 0181-EX-PL-2005, Reference Number 3746

Per your request below is the calculated emissions showing that the maximum equivalent isotropically radiated power (EIRP) is no greater than -140 dBm/24 MHz at a distance of 100 feet (33 meters) from the building where the test is being conducted. The calculations showing compliance with this requirement are based on free space propagation with no allowance for building attenuation. However, it should be noted that the location of the transmitters will be inside the building, greater than 100 feet (33 meters) from the outer walls.

The attenuation of the GPS signal while traveling through free space is calculated with the following formula:

Free space loss or PL = $32.4 + 20 \times \log F(\text{MHz}) + 20 \times \log R(\text{km})$

Where:

F = the frequency in MHz; and

R = the distance in kilometers (km). At 100 ft or 33 meters, R = 0.033 km.

The GPS Re-radiation device transmits at two frequencies: 1227.6 MHz and 1575.42 MHz

Therefore, the Free Space Path Loss (PL) equals:

1. For 1227.6 MHz: $PL = 32.45 + 20 \times \log(1227) + 20 \times \log(0.033) =$

$PL = 32.45 + 61.78 - 29.62$

$PL = 64.6 \text{ dB}$

2. For 1575.42 MHz: $PL = 32.45 + 20 \times \log(1575) + 20 \times \log(0.033) =$

$PL = 32.45 + 63.95 - 29.63$

$PL = 66.76 \text{ dB}$

Therefore, the EIRP at 100 ft from the transmitting antenna will equal:

Transmitted Power = 12 picowatts EIRP.

$$10 * \text{Log}(12 \times 10^{-12} \text{W} / 1 \text{mW}) = -79.2 \text{ dBm} = 12 \text{ picowatts}$$

1. For 1227.6 MHz, the EIRP at 100 feet = -79.2 dBm – 64.6 dB = **-143.8 dBm**
2. For 1575.42 MHz, the EIRP at 100 feet = -79.2 dBm – 66.76 dB = **-145.9 dBm**

In addition, you requested that the name and cell phone number of a person who will be available to stop transmissions at all times during GPS re-radiation operations be provided. We have confirmed that the Point of Contact (POC) will be Mr. Gail Buerkle. His phone number is: 817-763-3991. Mr. Buerkle is the flight-line supervisor and has immediate access to the cutoff switch. If the POC information changes, Lockheed Martin will immediately notify the FCC, FAA, DoD and any other interested agency.

Sincerely,

Joseph Cramer