



EXHIBIT 2

GPS SIGNAL LEVEL CALCULATIONS

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SYSTEM 8
USAF PLANT 42 SITE 2
BUILDING 214
U-2 FUEL BARN
IDENTIFIERS: 214T1

The following calculations are for System 8 transmit identifier 214T1. Calculations are based upon an average re-transmitted receive power for L1 and L2 of -130 dBm at the unit under test.

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

$$\text{FSL} = K1 + 20 \cdot \text{LOG}(D) + 20 \cdot \text{LOG}(F)$$

Where:

K1 = the constant factor (-37.87) for the desired units (feet),

F = the frequency in MHz; and

D = the slant range distance from the transmitter antenna to 100 feet beyond the nearest exterior wall in feet.

The GPS Re-radiation device transmits at two frequencies: 1575.42 MHz for L1 and 1227.6 MHz for L2.

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

1. For L1: $\text{FSL} = -37.87 + 20 \cdot \text{LOG}(146.2) + 20 \cdot \text{LOG}(1575.42) = 69.4 \text{ dB}$

2. For L2: $\text{FSL} = -37.87 + 20 \cdot \text{LOG}(146.2) + 20 \cdot \text{LOG}(1227.6) = 67.2 \text{ dB}$

The calculated signal at 100 feet beyond the nearest exterior wall from the transmit antenna is as follows:

1. L1 Transmitted Power = 14.5 picowatts EIRP = -78.4 dBm/24 MHz

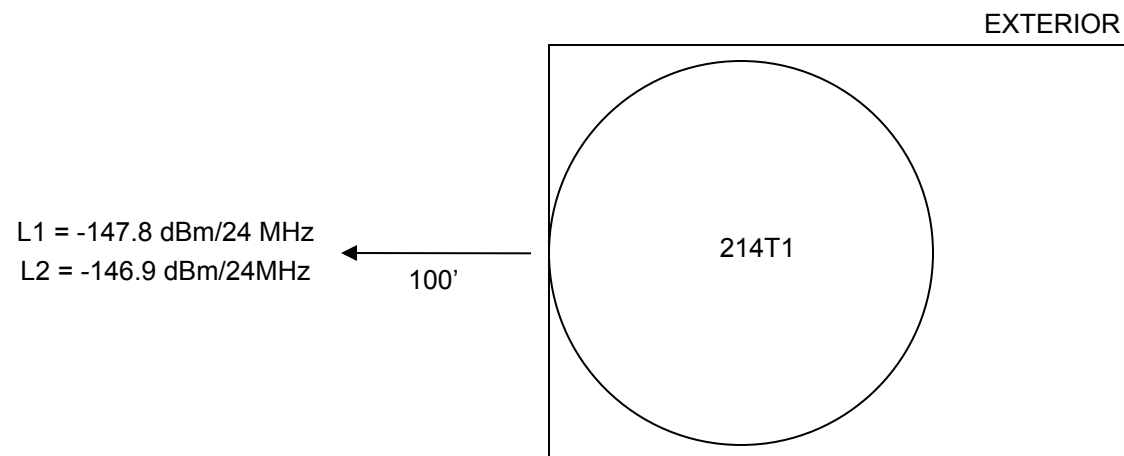
At 100 feet = $-78.4 - 69.4 = \mathbf{-147.8 \text{ dBm/24 MHz}}$

2. L2 Transmitted Power = 10.7 picowatts EIRP = -79.7 dBm/24 MHz

At 100 feet = $-79.7 - 67.2 = \mathbf{-146.9 \text{ dBm/24 MHz}}$



SYSTEM 8
USAF PLANT 42 SITE 2
BUILDING 214
U-2 "FUEL BARN"
IDENTIFIERS: 214T1
BUILDING DIMENSION: 123' X 80'



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System 8