SAMPLE CALCULATIONS

Antenna Gain

Antenna	mV/m @ 1 mile/1 Watt
ISOTROPIC	3.402
½λ Vertical Ground Plane	7.471
Field gain over Isotropic	2.196

Numerical Power Gain = ((7.471) ÷ (3.402))²

= (2.196)²

= 4.8227

= 6.8329 dB

Po (at ant. Term.) = 0.1995 Watts

EIRP = Po x Ant. Gain = 0.1995 x 4.8227

EIRP = 0.9621 Watts

References:

See 25-7 of ITT Reference Data for RF Engineers
For Isotropic Radiator

$$E = \frac{\sqrt{(30 \times Pt)}}{R}$$

Pt = transmitted power in Watts
R = distance in meters
E = Volts per meter

Also see Directional Antennas by Carl E. Smith page 2-1-17 and ITT page 25-44 Table 4

Com Dev Ant. Gain calc.