Artel, Inc.
Honolulu, Hawaii
Hickam, AFB Earth Station

Calculation of Interference Level into FCC Monitoring Station at Waipahu, Hawaii

The earth station transmit levels will not exceed the maximum allowed field strength at the Waipahu, Hawaii monitoring station. The monitoring site is 6.7 kilometers from the earth station at an azimuth of 314.97 degrees. The earth station horizon gain toward 314.97 degrees is –10 dBi. The RF power of the earth station is 5 watts or 7 dBW, resulting in a maximum EIRP in the direction toward the monitoring station at Waipahu of –3.0 dBW. The power flux density of the earth station at the monitoring station can be calculated using the following formula:

Power Flux Density = EIRP – $10*\log(4\pi R^2)$ where

$$EIRP = \text{-10.0 dBI} + \text{7 dBW} = \text{-3 dBW}$$

$$R = \text{distance to the monitoring station} = 6700 \text{ m}$$

$$PFD = \text{-3} - 87.51 = \text{-90.51 dBW/m}^2$$

This is well below the maximum level of –65.8 dBW/m^2 as specified in §25.203(g). It should be noted that this calculation does not consider any close-in or path terrain and above-terrain blockage, which will further reduce the earth station's power flux density levels.