

Name: APSREC412V01**Type:** Space station, Receiving**Region(s):** 123**Required Input Parameters:**

gain

Validation Warnings/Errors: None**Description:**

Recommendation ITU-R RS.1813-1 space station antenna pattern for satellites operating in EESS (passive) between 1.4 and 100 GHz. Recommends 1.

Co-Polar Component:

$$G = G_{\max} - 1.8 \times 10^{-3} (D/\lambda \varphi)^2 \quad \text{for } 0^\circ \leq \varphi \leq \varphi_m$$

$$G = \text{Max}(G_{\max} - 1.8 \times 10^{-3} (D/\lambda \varphi)^2, \quad \text{for } \varphi_m < \varphi \leq 69^\circ$$

$$33 - 5 \log(D/\lambda) - 25 \log \varphi)$$

$$G = -13 - 5 \log(D/\lambda) \quad \text{for } 69^\circ < \varphi \leq 180^\circ$$

$$\text{If } G < -23: G = -23$$

where:

$$D/\lambda = \sqrt{\frac{10 \left(\frac{G_{\max}}{10} \right)}{\eta \pi^2}}$$

$$\varphi_m = \frac{22\lambda}{D} \sqrt{5.5 + 5 \log\left(\frac{D}{\lambda} \eta^2\right)}$$

$\eta = 0.6$ - antenna efficiency