

Name: APERR_008V01**Description:****Type:** Earth station, Receiving

Appendix 30 reference receiving earth station antenna pattern for Region 2 for individual reception.

Region(s): 2**Required Input Parameters:**

gain,bmwidth

Validation Warnings/Errors:

Type	Message
Warning	Phi0 () is out of limits [0.1:10.0].

Pattern Information:

This pattern is used for planning the BSS in Region 2.

The minimum antenna diameter was such that the half-power beamwidth is 1.7 degrees.

The pattern requires input parameter beamwidth.

Co-Polar Component:

$$\begin{aligned}
 G &= G_{\max} & \text{for } 0 \leq (\varphi/\varphi_0) \leq 0.25 \\
 G &= G_{\max} - 12 (\varphi/\varphi_0)^2 & \text{for } 0.25 < (\varphi/\varphi_0) \leq 1.13 \\
 G &= G_{\max} - 14 - 25 \log (\varphi/\varphi_0) & \text{for } 1.13 < (\varphi/\varphi_0) \leq 14.7 \\
 G &= G_{\max} - 43.2 & \text{for } 14.7 < (\varphi/\varphi_0) \leq 35 \\
 G &= G_{\max} - 85.2 + 27.2 \log (\varphi/\varphi_0) & \text{for } 35 < (\varphi/\varphi_0) \leq 45.1 \\
 G &= G_{\max} - 40.2 & \text{for } 45.1 < (\varphi/\varphi_0) \leq 70 \\
 G &= G_{\max} + 55.2 - 51.7 \log (\varphi/\varphi_0) & \text{for } 70 < (\varphi/\varphi_0) \leq 80 \\
 G &= G_{\max} - 43.2 & \text{for } 80 < (\varphi/\varphi_0)
 \end{aligned}$$

Cross-Polar Component:

$$\begin{aligned}
 G_x &= G_{\max} - 25 & \text{for } 0 \leq (\varphi/\varphi_0) \leq 0.25 \\
 G_x &= G_{\max} - 30 - 40 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| & \text{for } 0.25 < (\varphi/\varphi_0) \leq 0.44 \\
 G_x &= G_{\max} - 20 & \text{for } 0.44 < (\varphi/\varphi_0) \leq 1.28 \\
 G_x &= G_{\max} - 17.3 - 25 \log \left| \frac{\varphi}{\varphi_0} \right| & \text{for } 1.28 < (\varphi/\varphi_0) \leq 3.22 \\
 G_x &= G_{\max} - 30 & \text{for } 3.22 < (\varphi/\varphi_0) \\
 \text{If } G_x > G: G_x &= G
 \end{aligned}$$