

Name: APERR_006V01**Description:**

Appendix 30 reference receiving earth station antenna pattern for Regions 1 and 3 for individual reception (1977 BSS Plan).

Type: Earth station, Receiving**Region(s):** 13**Required Input Parameters:**

gain,bmwidth

Validation Warnings/Errors:

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

Pattern Information:

Used in the original 1977 Conference BSS Plan and for the assignments notified and brought into use before 27 October 1997.

In the original 1977 BSS Plan the minimum antenna diameter was such that the half-power beamwidth was 2 degrees for individual reception.

The pattern requires input parameter beamwidth.

Co-Polar Component:

$$\begin{aligned}
 G &= G_{\max} & \text{for } 0 \leq (\varphi/\varphi_0) \leq 0.25 \\
 G &= G_{\max} - 12 (\varphi/\varphi_0)^2 & \text{for } 0.25 < (\varphi/\varphi_0) \leq 0.707 \\
 G &= G_{\max} - 9 - 20 \log (\varphi/\varphi_0) & \text{for } 0.707 < (\varphi/\varphi_0) \leq 1.26 \\
 G &= G_{\max} - 8.5 - 25 \log (\varphi/\varphi_0) & \text{for } 1.26 < (\varphi/\varphi_0) \leq 9.55 \\
 G &= G_{\max} - 33 & \text{for } 9.55 < (\varphi/\varphi_0)
 \end{aligned}$$

Cross-Polar Component:

$$\begin{aligned}
 G_x &= G_{\max} - 25 & \text{for } 0 \leq (\varphi/\varphi_0) \leq 0.25 \\
 G_x &= G_{\max} - 30 - 40 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| & \text{for } 0.25 < (\varphi/\varphi_0) \leq 0.44 \\
 G_x &= G_{\max} - 20 & \text{for } 0.44 < (\varphi/\varphi_0) \leq 1.4 \\
 G_x &= G_{\max} - 30 - 25 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| & \text{for } 1.4 < (\varphi/\varphi_0) \leq 2 \\
 G_x &= G_{\max} - 30 & \text{for } 2 < (\varphi/\varphi_0) \\
 \text{If } G_x > G: G_x &= G
 \end{aligned}$$