Name: APELUX202V01

Type: Earth station, Receiving

Description:
Receiving earth station antenna pattern submitted by LUX for community reception for analyses under Appendix 30.

Required Input Parameters: None

Validation Warnings/Errors: None

Pattern Information:
D/lambda = 96.942890, a fixed value for this pattern. A fixed value of maximum gain of 47 dB is used.
The diameter is assumed to be 2.4 m.

Co-Polar Component:

$G = G_{max} - 2.95 \times 10^{-3} (D/\lambda \ \varphi)^2$ for $0° \leq \varphi < \varphi_m$

$G = G_1$ for $\varphi_m \leq \varphi < \varphi_r$

$G = 29 - 25 \log \varphi$ for $\varphi_r \leq \varphi < \varphi_b$

$G = -5$ for $\varphi_b \leq \varphi \leq 70°$

$G = 0$ for $70° \leq \varphi \leq 180°$

where:

$D/\lambda = 96.942890$ is a fixed value.

G_{max} is a fixed value of 47 dB.

$\varphi_r = 85 \ \lambda/D$.

$G_1 = 29 - 25 \log \varphi_r$.

$\varphi_m = \lambda/D \sqrt{\dfrac{G_{max} - G_1}{0.00295}}$.

$\varphi_b = 10^{\left(\frac{34}{25}\right)}$.

Cross-Polar Component:

$G_x = G_{max} - 25$ for $0° \leq \varphi < \varphi_1$

$G_x = G_{max} - 25 + 5 \left(\dfrac{\varphi - 0.25\varphi_0}{0.19\varphi_0} \right)$ for $\varphi_1 \leq \varphi < \varphi_2$

$G_x = G_{max} - 20$ for $\varphi_2 \leq \varphi < \varphi_o$

$G_x = G_{max} - 20 - 40 \left(\dfrac{\varphi}{\varphi_0} - 1 \right)$ for $\varphi_o \leq \varphi < \varphi_3$

$G_x = G_{max} - 30$ for $\varphi_3 \leq \varphi < \varphi_x$

$G_x = G$ for $\varphi_x \leq \varphi < 180°$

where:

$\varphi_0 = 2 \ \lambda/D \sqrt{\dfrac{3.0}{0.00295}}$.

$\varphi_1 = 0.25 \ \varphi_0$.

$\varphi_2 = 0.44 \ \varphi_0$.

$\varphi_3 = 1.25 \ \varphi_0$.

$\varphi_x = 10^{\left(\frac{59 - G_{max}}{25}\right)}$.