Name: APELUX205V01

Type: Earth station, Receiving and Transmitting

Description:

Earth station antenna pattern submitted by LUX for both uplinks and downlinks for analyses under Appendix 30B.

Required Input Parameters:

gain

Validation Warnings/Errors:

Type	Message
Error	Gmax () is less than G1 (). Square root of negative value.
Error	7 () is less than Phi r ().

Pattern Information:

BR software sets antenna efficiency to 0.7 for technical examination.

Co-Polar Component:

$G = G_{max} - 2.5 \times 10^{-3} (D/\lambda\ \varphi)^2$ for $0° \le \varphi < \varphi_m$

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

$G = 29 - 25 \log \varphi$ for $\varphi_r \le \varphi < 7°$

$G = 7.9$ for $7° \le \varphi \le 9°$

$G = 32 - 25 \log \varphi$ for $9° \le \varphi < \varphi_b$

$G = -10$ for $\varphi_b \le \varphi \le 180°$

where:

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

$G_1 = -1 + 15 \log (D/\lambda)$.

$\varphi_r = 1°$ for $D/\lambda \ge 100$,

$= 100\ \lambda/D$ for $D/\lambda < 100$.

$\varphi_m = 20\ \lambda/D \sqrt{G_{max} - G_1}$.

$\varphi_b = 48°$.