Name: APEREC026V01

Description:

Recommendation ITU-R S.465-6 RECEIVING reference Earth station antenna pattern for earth stations in FSS in the frequency range from 2 to 31 GHz coordinated after 1993.

Type: Earth station, Receiving

Region(s): 123

Required Input Parameters:

gain

Validation Warnings/Errors: None

Pattern Information:

For use in coordination and interference assessment.
Note 5 of the recommendation is applied.
Pattern is extended in the main-lobe range as described in Rep. ITU-R S.2196.
BR software sets antenna efficiency to 0.7 for technical examination.

Co-Polar Component:

If $\varphi_{min} = 2.5$ $(D/\lambda < 33.3)$:

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

$G = \max(32 - 25 \log \varphi, -10)$ for $\varphi_{min} < \varphi \le 180°$

If $D/\lambda \le 54.5$:

$G = G_{max} - 2.5 \times 10^{-3} ((D/\lambda)\,\varphi)^2$ for $0° \le \varphi < \varphi_1$

$G = \max(G_{max} - 2.5 \times 10^{-3}((D/\lambda)\,\varphi)^2, 32 - 25 \log \varphi)$ for $\varphi_1 \le \varphi < \varphi_{min}$

$G = \max(32 - 25 \log \varphi, -10)$ for $\varphi_{min} < \varphi \le 180°$

If $D/\lambda > 54.5$:

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

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

$G = \max(32 - 25 \log \varphi, -10)$ for $\varphi_r < \varphi \le 180°$

where:

$(D/\lambda) = \sqrt{\dfrac{10^{\left(\frac{G_{max}}{10}\right)}}{\eta \pi^2}}$; $\varphi_r = 15.85(D/\lambda)^{-0.6}$; $G_1 = 32 - 25 \log \varphi_r$

$\varphi_m = 20\,(\lambda/D)\sqrt{G_{max} - G_1}$; $\varphi_1 = 0.9 \times 114\,(D/\lambda)^{-1.09}$

$\varphi_{min} = \max(1, 100\,\lambda/D)$ for $D/\lambda \ge 50$

$\varphi_{min} = \max(2, 114\,(D/\lambda)^{-1.09})$; if $\varphi_{min} > 2.5$: $\varphi_{min} = 2.5$ for $D/\lambda < 50$

$\varphi_b = 10^{\left(\frac{42}{25}\right)}$