$P_r = P_t G_t G_r \left(\frac{\lambda}{4\pi R}\right)^2$ Date. /

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1.1

$G_r = G_t = 16.3dB = 42.66$, $\lambda = c/f = 3\times10^{-2}m$

$P_r = P_t G_t G_r \left(\frac{\lambda}{4\pi R}\right)^2$

a) $R=5m$, $P_r = 0.083mW = -10.81dBm$

b) $R=50m$, $P_r = -30.81dBm$

c) $R=500m$, $P_r = -50.81dBm$

1.2

$G_t = 20dB = 100$, $G_r = 15dB = 31.62$, $\lambda = c/f = 0.3m$

$P_r = P_t G_t G_r \left(\frac{\lambda}{4\pi R}\right)^2 \cdot (1-\Gamma)$ Γ 为圆极化发送，线极化接收损耗 $= \frac{1}{2}$

$\therefore P_r = 0.135mW = -8.69dBm$

2.1

$\sigma = \pi a^2 = 25\pi\lambda^2$, $G = 42.66$, $\lambda = c/f = 3\times10^{-2}m$

$P_r = P_t G^2 \sigma \cdot \frac{1}{4\pi}\left(\frac{\lambda}{4\pi R^2}\right)^2$

a) $R = 200\lambda$, $P_r = -50.46dBm$

b) $R = 500\lambda$, $P_r = -66.37dBm$

2.2

$G = 15dB = 31.62$, $\lambda = c/f = 0.1m$, $PLF = -1dB = 0.794$, $\sigma = 0.86\lambda^2$

$P_r = P_t G^2 \sigma \cdot \frac{1}{4\pi}\left(\frac{\lambda}{4\pi R^2}\right)^2 \cdot PLF = 3.44\times10^{-11}W$

deli得力

扫码使用 夸克扫描王