(a): $\frac{P_r}{P_t} = kd^{-\alpha}$. $\alpha = 3.5$.

the worst-case DL

$$\frac{C}{I} = \frac{P_t L r^{-\alpha}}{\sum_{j=1}^{6} P_t L d^{-\alpha}} = \frac{1}{6}\left(\frac{r}{d}\right)^{-\alpha}. \qquad d = r\sqrt{3k}$$

$$= \frac{1}{6}\left(\frac{1}{\sqrt{3k}}\right)^{-\alpha}. \qquad \alpha = 3.5.$$

$k = 3$ $\quad \frac{C}{I} = 7.7942$

$k = 4$ $\quad \frac{C}{I} = 12.8948$

$k = 7$ $\quad \frac{C}{I} = 34.3346$

(b) $\frac{C}{I}\,db = 17.6 + 5\alpha \log_{10} K.$

$\frac{C}{I}\,db = 5dB \Rightarrow K = 2$

$10.5dB \Rightarrow K = 4$