1.2.8 Desensitisation

Desensitisation (D) of the receiver in the presence of an interfering signal, given in dB, corresponds to the ‘noise rise’ or ‘noise augmentation’ due to the interfering signal and is derived by the following equation in dB:

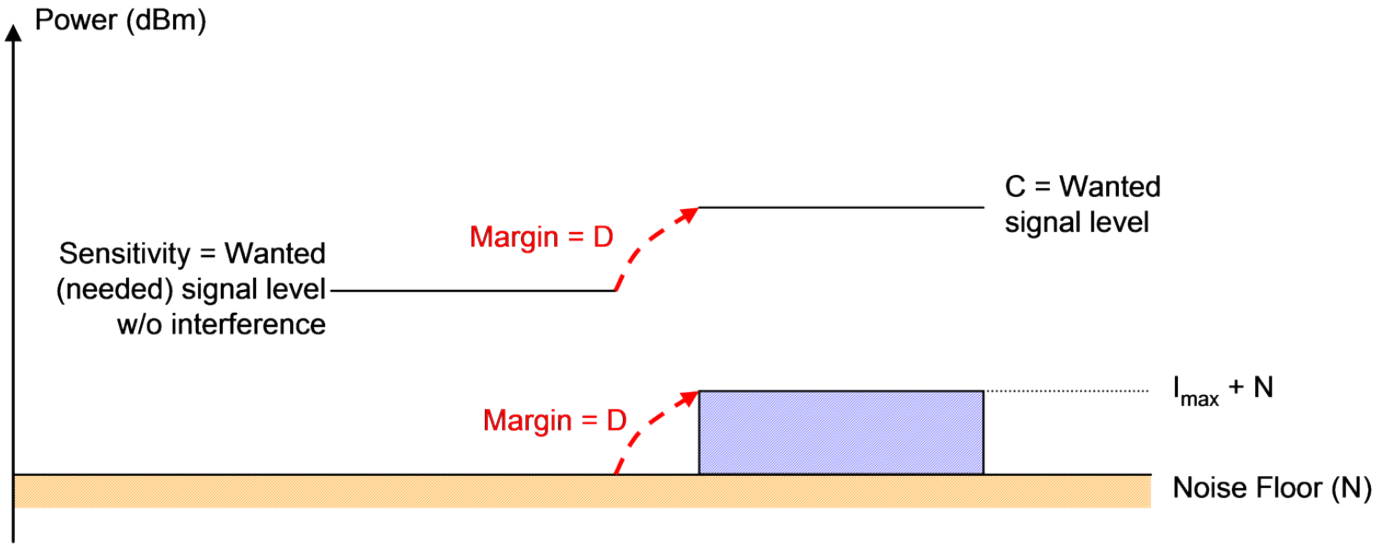
$$D = 10.\log10[(i+n)/n] \quad \textit{(Eq. 8)}$$

and is equivalent in the linear domain to:

$$D = 10.\log10[(10(N/10)+10(I/10))]-N \quad \textit{(Eq. 9)}$$

To ensure proper operation, the receiver is designed to include a margin equal or lower than D which allows it to tolerate a certain level of interference (I) in the listened channel. This can be caused by co-channel and/or non-co-channel interference sources.

When running a radio network or a radio link, the objective is to maintain the signal to interference and noise ratio SINR equal to the sensitivity to noise ratio. This is illustrated in the following figure.



An equivalent expression of the desensitisation, (N+I)/N, is expressed as follows in terms of interference to noise ratio I/N in dB.

$$I/N = 10.\log10(10D/10 - 1)$$ *(Eq. 10)*

noting that in linear domain it is equivalent to:

$$I/N = 10.\log10(10D/10 - 1)$$ *(Eq. 11)*

Revision #1
Created 2026-04-14 07:42:01 UTC by ECO TECH
Updated 2026-04-14 07:44:59 UTC by ECO TECH