

1.4.4 Interference criteria relationship

C/I may vary typically from 9 dB (e.g. for QPSK) to 26 dB or higher (e.g. for 64QAM...). By introducing artificial noise iRSS on top of the noise floor (I/N), C/I is then desensitised by (N+I)/N resulting in C/(N+I). Note that the desensitisation is exactly the factor (N+I)/N (also = 1+I/N).

Further details of the relationship are given in [ANNEX 3](#).

Considering that

$$\left[\frac{C}{N+I} \right]_{dB} = \left[\frac{C}{I} \right]_{dB} - \left[\frac{N+I}{I} \right]_{dB} \text{ and } \left[\frac{N+I}{I} \right]_{dB} = \left[\frac{N+I}{N} \right]_{dB} - \left[\frac{I}{N} \right]_{dB} \quad (\text{Eq. 12})$$

and assuming a C/I of 19 dB, the following examples may be considered:

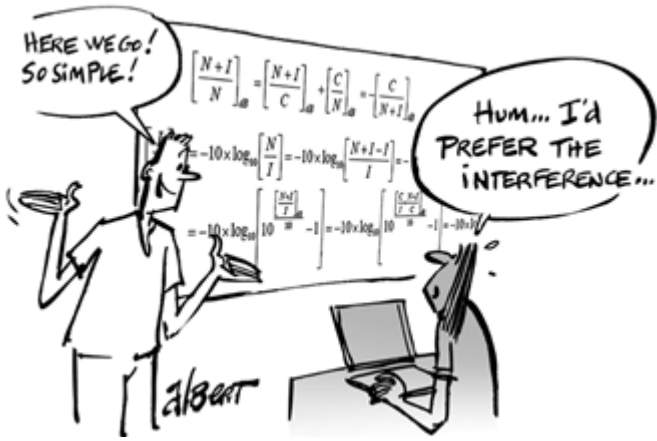
- I/N = 0 dB, results in (N+I)/N = 3 dB and considering C/I = 19 dB, then C/(N+I) = C/I - 3 dB = 16 dB
- I/N = -6 dB, results in (N+I)/N » 1 dB and considering C/I = 19 dB, then C/(N+I) = C/I - 7 dB = 12 dB
- I/N = -10 dB, results in (N+I)/N » 0.4 dB and considering C/I = 19 dB, then C/(N+I) = C/I - 10 dB = 9 dB
- I/N = -20 dB, results in (N+I)/N = 0.04 » 0.1 dB and C/I = 19 dB, then C/(N+I) = C/I - 20 dB = -1 dB

Note:

In case C/(I+N) is chosen as the protection criterion:

if I/N ≤ -20 dB, the impact of the interferer is negligible compared to the noise floor (i.e. C/(I+N) ≈ C/N);

if I/N > 10 dB, then C/(I+N) ≈ C/I (i.e. the interferer is more dominant than the noise).



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