

Structured Electronic Design

Shannon (1948) Channel Capacity

The amount of information that can be handled by a system

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The number of information processing errors can be kept arbitrarily low if the amount of information transported over a channel is equal or less than the channel capacity C :

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$$C = B \log_2 \frac{S+N}{N} \text{ [bit/s]}$$

Channel signal power limit in [W]

Channel (white) noise power in [W]

Channel bandwidth in [Hz]

The diagram shows the equation $C = B \log_2 \frac{S+N}{N}$ with three annotations and arrows: an arrow points from 'Channel signal power limit in [W]' to the 'S' in the numerator; an arrow points from 'Channel (white) noise power in [W]' to the 'N' in the denominator; and an arrow points from 'Channel bandwidth in [Hz]' to the 'B'.

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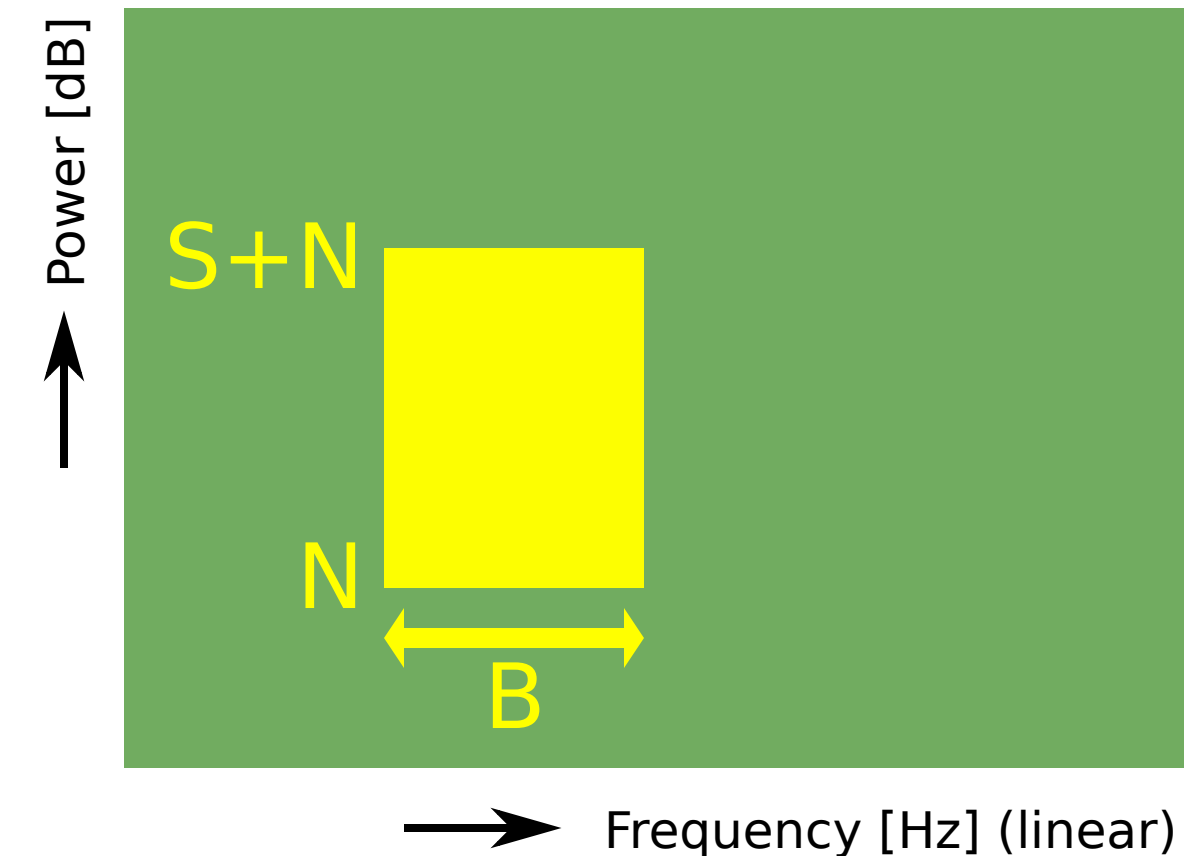
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Spectrum analyser



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Area => dB/s

