



## Signal to Noise Ratio

The signal to noise ratio gives an indication of the television signal quality. This is defined as the difference, measured in dB, between useful signal and interference or noise.

The noise figure of any equipment illustrates the degradation of signal/ noise ratio produced by it.

The noise generated by a 75Ω load at 25°C for a television signal (5MHz wide band) is calculated as follows:

**Noise level :  $K \cdot T \cdot B = 2 \text{ dB}\mu\text{V}$**

where : K= Boltzmann's constant  
 T = Absolute temperature (Kelvin)  
 B = Bandwidth of the signal.

When these measurements are taken using television signals, the signal to noise ratio may occasionally be given weighted. This method gives less importance to the noise experienced at high frequencies since they are not so easily observed by the human eye.

Weighted signal to noise ratios are higher than non-weighted ratios.

The output signal to noise ratio at the output of any active equipment connected directly to an antenna is calculated as follows:

**Output signal to noise ratio = Input signal strength – equipment noise figure - 2 dBμV.**

This signal to noise graph allows an estimation of the output signal quality of an amplifier as a function of the input signal strength and its noise figure.

Eg: When an amplifier with a 10dB noise figure is connected to an antenna, where the signal strength is of 60dBμV, the output signal has an excellent quality.

