

This is a measure of how fast a signal travels along a line. A radio signal travels in free space at the speed of light, approximately  $3 \times 10^8$  m/sec. A signal travels in a transmission line at much less than this. In twisted pair cable the velocity of propagation may be between 40% and 75% of the velocity in free space.

There is a direct relationship between Velocity of Propagation (V) and Wavelength,  $\lambda$ :

 $V = \lambda f$ 

At high frequencies, V can also be simplified as it becomes a constant for that line:

$$V = \frac{1}{\sqrt{\text{Dielectric constant}}}$$

Velocity of propagation is often stated either as a percentage of the speed of light or as time-todistance. When the time-to-distance figure is used, it mat be known as Propagation Delay, and will be expressed as ns/100m or ms/km.





Diagrams of cables are illustrative only and are not necessarily to scale.

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