

A Truth about Coaxial Cable for Digital Video

Precision of impedance is important but an imperfect way to tell cable performance. One of the most important parameters for any cable transmission system is Return Loss (RL). For High Definition Television (HDTV) cables a bandwidth of 750 MHz (3rd harmonic frequency is 2.25 GHz) is required with a recommended RL limit of >15 dB from SMPTE.

For this reason, Belden coaxes:

- 1855A (0.6/2.6 O.D. 4.03 mm)
- YR46865 (0.6/2.8 O.D. 4.5 mm)
- 1505A (0.8/3.7 O.D. 5.97 mm)
- 1694A (1.0/4.6 O.D. 6.99 mm)
- 7731A (1.6/7.2 O.D. 10.3 mm)

which are intended for HDTV applications are currently 100% sweep tested up to 3 GHz. With a Belden guaranteed RL specification limit:

> 23dB (5 – 850 MHz)

> 21dB (850 MHz – 3 GHz)

Using Belden coaxial cable will result in a **minimum 6 dB of Headroom**. For example the actual RL data of Belden 1505A is typically – 30 dB with **another 9 dB of Headroom** to allow for losses introduced by connectors, transition devices, patch panels and improper cable installation or handling in the transmitted signal.