

Test Equipment



Cable Testing Tutorial



Cable Testing Explained

Cable testing and cable ratings are often not fully understood by those that purchase network grade patch cords and equipment. The type of testing performed and the frequency of that testing is the greatest factor in determining the cost of a cable that you purchase. Sometimes, patch cords that seem to be a good value may not be, due to the usage of low quality components and minimally compliant cable. An explanation of the four most common forms of testing conducted on patch cords can be found in the illustrations below. Each is explained so you can decide what best fits your application and budget. L-com strives to provide a full selection of cable assemblies for all our customers. To make selection simple, we group our cables into one of three different categories to identify the type of testing done. Certified cables require a test report produced for each assembly. Qualified cables are controlled on a lot basis and do not feature an individualized test report. Rated cables feature all category rated components but only a continuity test is performed. If you need help with your project just contact one of our experts today.

Cable Testing Terms

NEXT: Near End Cross Talk. A signal that crosses between twisted pairs or between conductors. NEXT is measured at the transmission end (near end). Measured in dB, failures for this measurement are often caused by termination problems.

FEXT: Far End Cross Talk. Crosstalk that is measured on the conductors that are not being used for transmission at the receiver or far end of the transmission. Measured in dB, failures for this measurement are often caused by termination problems.

Propagation Delay Skew: Used to define the difference in signal speed between the fastest and slowest pair within a cable. It can also define the delay within an individual pair. Must be <45ns for a 4-pair horizontal cable.

Impedance: Measure of the total opposition a circuit offers to the flow of alternating current. Target impedance for UTP and STP cable is 100 Ohms. This can be affected by the twist of the conductors along with the thickness of the insulation around the conductors. Return loss failures are often caused by cable impedance problems.

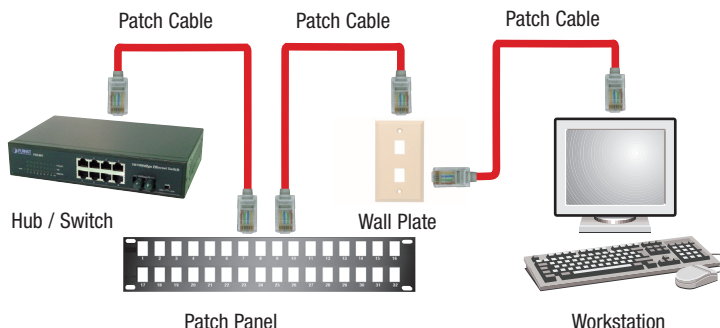
Return Loss: The ratio of reflected power to inserted power. It is the measure of the signal reflections occurring along a network cable system. It is often caused by imperfections in the cable conductors, impedance mismatches or bad contacts in a plug or jack.

Network Channel Testing

Network Channel Testing is a method used to verify performance from the workstation to the hub/switch including patch cords. Channel Testing is not accurate for individual patch cords. Both installers and IT professionals conduct this type of testing to insure that the entire cable system is capable of handling network traffic. Channel Testing differs from Permanent Link Testing in that it includes the patch cords on both ends of the installation. Often, patch cords are overlooked as the cause of network failures.

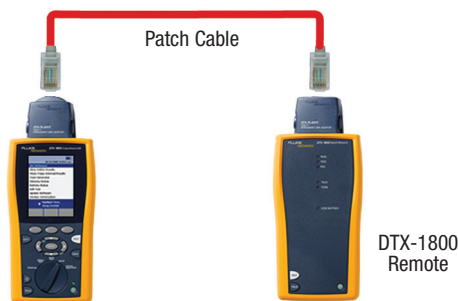
Link Testing Permanent

Permanent Link Testing is the preferred method used by installers to certify a cable installation at a customer site. This type of testing verifies the installation by measuring many factors such as cable lengths, NEXT, FEXT and Return Loss. Several certification testers exist on the market including Fluke Networks DTX-1800 Series products. This type of tester features a Permanent Link adapter that connects from a workstation outlet to the telecom closet outlet.



Patch Cord Certification Testing

Patch Cord Certification Testing is the best method to insure that the cables will meet all of TIA/EIA-568-B.2_ Standards for data transmission for Ethernet. The TIA/EIA-568-B.2_ Standard covers many details and requirements for cable quality and performance. This test involves the direct connection of patch cords to a certification tester such as the Fluke Networks DTX-1800 Series. The tester will check many aspects of cable performance such as continuity, NEXT, FEXT, and Return Loss. This type of tester along with software provided by Fluke Networks can produce excellent reports for those requiring certification of their cable installation.



Continuity Testing

Continuity Testing is the most basic form of testing conducted on cables. These types of testers look for opens, shorts or crossed connections. For Ethernet, this type of testing does not confirm network transmission capability. The most common mistake in cable pin-out is an EIA568 A to B cross. A simple continuity tester such as L-com's DXB64A can easily find this error without the expense of a certification tester.

