

Datasheet: DSX Coax Cable Adapter

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Coaxial cabling has long been used for distribution of data and video signals. The physical construction of coaxial cable, with a center conductor surrounded by one or more shields, makes it highly resistant to electromagnetic interference. This allows coaxial cable to carry high frequency signals over long distances while maintaining a high Signal-to-Noise ratio. Coaxial cable was one of the first media to support Ethernet with IEEE802.3 standardizing 10BASE2 and 10BASE5, enabling Ethernet transmission up to 185 meters or 500 meters, respectively. Coax is also widely used to distribute broadband video signals in residential and business applications.



For any coaxial cable, a successful installation is dependent on the use of high quality components and proper installation techniques, especially installation of connectors. When used with the **DSX-5000 CableAnalyzer™**, the DSX-CHA003 Coax Adapter provides you with the capability to characterize the transmission performance of the installed **coaxial cabling** to assure that it meets the performance expectations for its intended applications. The DSX-CHA003 Coax Adapter supports testing of 50 ohm, 75 ohm, and 93 ohm coaxial cable.

ANSI/TIA-568-C.4 specifies requirements for 75 ohm broadband **coaxial cabling** to support CATV television, and other applications supported by the star topology defined by ANSI/TIA-568-C.0. In this topology, the cabling segment between the Equipment Outlet and the first Distributor (typically, a splitter) is referred to as Cabling Subsystem 1. Cabling segments between Distributors are referred to as Cabling Subsystem 2 or 3. Both Series 6 (RG6) and Series 11 (RG11) cabling is supported. The length limit for RG6 cabling is 46m (150 feet) for all three Cabling Subsystem. The length limit for RG11 cabling is 90m (285 feet) for Cabling Subsystem 1, and 100m (328 feet) for cabling Subsystem 2 or 3. For each Cabling Series and length limit, TIA-568-C.4 provides limits for Insertion Loss over the frequency range of 5 to 1002 MHz which can be tested using the DSX-CHA003 Coax Adapter. Actual Insertion Loss performance is strongly influenced by the length of the installed **coaxial cabling** segment. A segment much shorter than 90 meters may meet the limit for a 90m link even though its performance has been significantly degraded by damage to the cable or poorly installed connectors. For this reason, DSX-5000 also provides Length-Scaled test limits which automatically adjust the Insertion Loss limit across the specified frequency range based on the actual measured length of the cabling segment. These Length-Scaled test limits can be recognized by the "LS" at the end of the test limit name.

In telecommunications applications, Digital Signal Level 3 (DS-3) formats are often used to carry traffic in Central Offices on 75 ohm coaxial cable. Type 735 cable can be used to cover distances up to 225 feet (69m), while Type 734 cable can be used up to 450 feet (137m). RG6 cable may also be used to carry DS-3 signals over shorter distances. DSX-5000 provides Length-Scaled DS-3 test limits for all three cable types. Figure 1 provides an example Insertion Loss test result from a 100 foot (30m) segment of Type 734 coaxial cabling using a Length-Scaled test limit. Figure 2 shows the result from testing a 450 foot (137m) segment of Type 734 coaxial cabling using the same Length-Scaled test limit. In each example, the limit value at each frequency is adjusted based on the expected Insertion Loss for the measured length of Type 734 cable. Any flaws in the cable or connectors affecting their communications transmissions performance would be readily identified in either case, even though the cable in Figure 2 is more than 4 times as long with 4 times the expected cable Insertion Loss.

For data applications, IEEE Std 802.3-2012 defines requirements for 50 ohm coaxial cabling to support Ethernet using 10BASE2 or 10BASE5 Physical Layer devices (PHY). These were some of the earliest PHYs defined by IEEE 802.3 and they still find application today in places where distances greater than 100 meters are required. 10BASE2 can operate up to 185 meters and 10BASE5 can operate up to 500 meters on cabling that meets the Insertion Loss requirements of Clauses 10.5.1.2 and 8.4.1.2, respectively. DSX-5000 provides Test Limits based on these requirements.

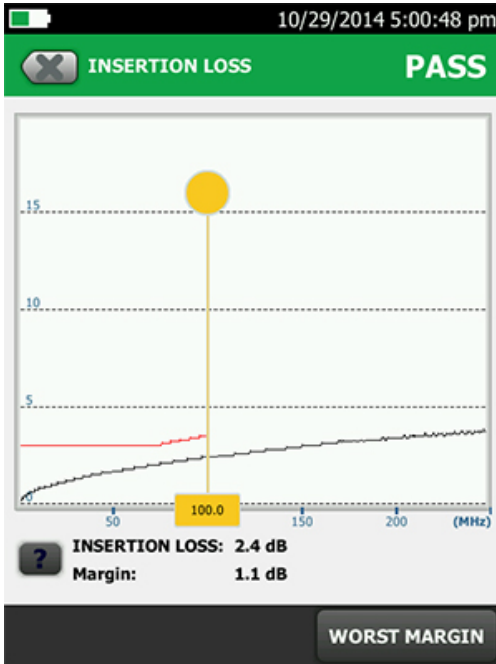


Figure 1. Measured Insertion Loss and limit for 100 foot Type 734 cable.

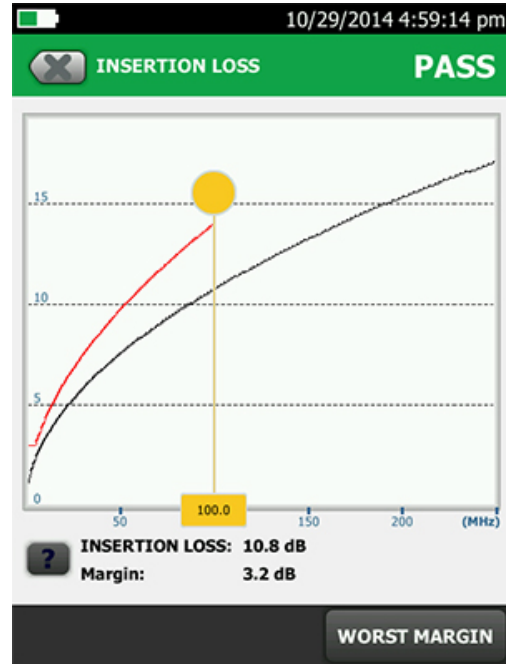


Figure 2. Measured Insertion Loss and limit for 450 foot Type 734 cable.

Ordering information

| Model Number | Name | Description |
|--------------|-------------------------|---|
| DSX-COAX | DSX Coaxial Adapter Set | Set of (2) Coax Adapters for DSX-5000 CableAnalyzer, with (2) F-to-BNC connector adapters, (2) F-to-F connector adapters, and 12-inch RG59 cable for Set Reference. |
| DSX-CHA003 | DSX Coaxial Adapter | Single Coax Adapter for DSX-5000 CableAnalyzer |

