

DCM CATS-3000

Shielding Effectiveness Test System for Shielded/Screened Twisted-Pair Cables

Features and Benefits

- Automatic measurement of shielded twisted-pair cables:
 - Coupling Attenuation
 - Screening Attenuation
 - Transfer Impedance
- Lower Total Cost – One fixture provides flexibility for multiple types of cable tests
- Ease of Use – Fixturing provides consistent connections and robust mechanical and electrical construction
- Fast, simple, and easy – software provides complete VNA automation and automated test reporting
- Full compliance with critical testing standards – ANSI/TIA-568-C.2 for shielded/screened cables, IEC-61156-5 (2009), and most other International and U.S. screening efficiency specifications including IEC62153.4.3, IEC 60096-1, IEC 61196-1, and SCTE

Complete Automated Cable Testing Solution for Today's Compliance-Driven World

The DCM CATS-3000 provides cable producers and test laboratories with a test solution for the automatic measurement of Coupling Attenuation, Screening Attenuation, and Transfer Impedance. The system enables quick and easy configuration of components to meet testing needs. The CATS-3000 provides full compliance to TIA-568-C.2 and IEC requirements for the testing of shielded/screened twisted-pair Category data cables. The test software enables complete test automation, is simple to use, and provides complete test reporting and data storage.



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DCM Cable Testing Solutions

Quick, Easy Test Configuration

Testing Coupling Attenuation



CATS-3000 coupling attenuation test configuration. 5m test fixture with shielded test box shown.

Coupling Attenuation (CA) is a measure of the combined effects of the shield performance of a twisted-pair cable and the effects of common/differential mode conversion (i.e., pair balance and other factors) within the twisted pairs under the shield. Coupling attenuation may be measured on shielded category cables from Cat 5e to Cat 7a.

The CATS-3000 uses the Tri-axial method referenced in IEC 62153-4-9 to test over the frequency range from 30 MHz to 1 GHz. The result is expressed as the ratio in dB, of the transmitted power of the differential signal on the twisted pair, and the maximum radiated peak power of the voltage induced on the cable shield due to common mode shield currents.

The CATS-3000 includes a screened cable test fixture (5m), shielded box, and balun for performing the coupling attenuation measurements of the cable under test. Test automation software is provided for automatically controlling the external vector network analyzer (VNA) and producing pass/fail test reports complete with detailed measurement data.

Testing Transfer Impedance and Screening Attenuation

Transfer Impedance and Screening Attenuation are tests that more directly measure the effectiveness of the cable shield. The performance of the screen (shield) is an important measure of the quality of the cable and the effectiveness of reducing EMI in cable applications.

Transfer Impedance (TI) is measured using a subset of the supplied test apparatus components. Since transfer impedance is a direct measure of the shield effectiveness, both coaxial and twisted-pair type cables may be tested. TI is tested in the frequency range up to 100 MHz and per IEC, ISO, and TIA requirements. TI is tested up to 1 GHz per SCTE requirements.

Screening Attenuation (SA) is measured using a subset of the supplied test apparatus components and is also more direct measure of the performance of a cable shield. Both coaxial and shielded twisted-pair cables may be tested.

Screening effectiveness of radio frequency (RF), local area networks (LAN), and other shielded cables is determined by measuring Transfer Impedance (TI) and Screening Attenuation (SA). SA is used for frequencies > 100 MHz.

How the CATS-3000 Works

The CATS-3000 is ideal for CA, TI, and SA measurements of a wide variety of shielded cables. The CATS-3000 includes a 50 cm section and a 1 m section for testing Transfer Impedance and Screening Attenuation according to different standards' requirements. Once the cable is prepared and inserted into the test fixture, the software automatically controls the vector network analyzer and produces detailed test reports. Test reports provide a comparison of the measured data to specification limits with an automatic pass/fail indication.

The CATS-3000 TI/SA test feature complies with IEC62153.4.3, IEC 60096-1, IEC 61196-1, TIA-568-C.2, SCTE, and most other International and U.S. screening efficiency specifications.

System Details and Options

System Configuration

CATS-3000 test system includes:

- One (1) Tri-axial test fixture (~5m) inclusive of 50 cm and 1m sections. The 5m fixture is utilized for CA testing; the fixture is shortened to 50 cm or 1m for TI and SA testing functions.
- One (1) CA shielded test box and balun
- One (1) CATS-3000 test automation software
- One (1) connecting hardware to interface the tri-axial chamber to the VNA
- Instruction manual

CATS-3000 system software includes:

- One CA software module and one TI/SA software module
- Graphical User Interface (GUI) to enter the information of the sample under test
- Specification program to enter the pass/fail limits – includes CA TIA-568-C.2 pre-programmed formulas
- Separate CA and TI/SA graphic and discrete values test reports
- Database to store and retrieve historical measurement results
- All functions required for automatic control of the Vector Network Analyzer (VNA)

Optional items:

- National Instruments GPIB controller
- VNA Adaptors - VNA dependent

Minimum System Requirements:

- 200 MHz processor with minimum 256 MB RAM, 10 GB hard disk drive, CD ROM drive, Windows® XP/ Windows® 7, monitor and printer
- National Instruments GPIB controller PCA or USB style
- Suitable Vector Network Analyzer (VNA). Recommended Agilent Models 8753D/E/ES or ENA Series (E5061, E5062, E5071). Please consult your Beta LaserMike cable testing solutions representative.

Specifications and configurations are subject to change without notice.

Installation, Training and Technical Support

Beta LaserMike offers on-site installation, training, and commissioning of all DCM automatic test systems. The Beta LaserMike team provides worldwide support to answer all technical needs and to ensure that maximum test system efficiency is achieved.



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**For additional information or a quotation,
please contact Beta LaserMike today.**

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