Unbalanced attenuation measurements

Manual test setup to measure TCL, TCTL and ELTCTL

Fixture for U/UTP, F/UTP and SF/UTP cables

Fixture for U/FTP, F/FTP and S/FTP cables

Test setup for: TCL, TCTL, ELTCTL, LCL, LCTL and ELLCTL

DESCRIPTION

Transverse **C**onversion **L**oss (TCL) is the ratio (in dB) of a common-mode returned voltage measured on a wire pair relative to a differential-mode voltage applied to the same end of the pair. The TCL value shows how well the impedance of the pair's conductors is balanced.

This parameter and its derivatives, also called Unbalanced Attenuation measurements, are required by all major standardisation bodies like ANSI/TIA, IEC or YD/T. AESA provides corresponding test fixtures for 4 or 25 pairs.

To measure unbalanced parameters, 2 coaxial 50 Ohm ports are required. Our software option will guide you through the calibration and measurement procedure which is semi-automatic. For measurements, any mid- to high-end VNA can be used. Please check with AESA if a driver is already available.

The test frame consists either of 2 baluns including common mode ports or a balunless solution to measure unbalance parameters. If requested, also differential transmission and reflection parameters can be measured.

In case of shielded cables, the screen has to be well connected to the ground. Specific precautions common to high frequency measurements must be taken.

KEY FEATURES

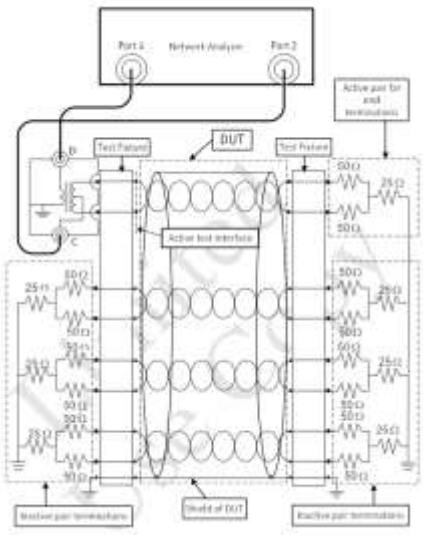
- Semi-automatic measurements
- Used with 50 Ohm ports of AESA ATE’s or with an additional VNA
- Simple and easy software-guided calibration and measurement procedures
- Cost effective solution for sporadic measurements of unbalanced attenuation

AESA Cortaillod

TECHNICAL SPECIFICATIONS

Sweep type	Linear or logarithmic (2 separate calibrations needed)			
Frequency Range	Depending on balun frequency range. 4 versions available: a. From 100kHz to 100MHz b. From 1MHz to 650MHz c. From 1MHz to 1.2GHz d. Balunless from 1MHz to 2.0GHz			
Calibration	3 steps, simple and easy software guided			
Components	This option consists of: • Fixture for 4 or 25 pairs with 2 baluns or balunless • Mechanical adapter for calibration • Connecting cables • AESA measurement software			
Standards	Performs unbalanced attenuation measurements on cables according to: • ANSI/TIA-568.2-D • IEC 61156 series for Category 5e, 6, 6A, 7, 7A, 8.1, 8.2 and 1200MHz • YD/T 1019-2023			
Baluns versions	U/UTP, F/UTP and SF/UTP cables		U/FTP, F/FTP and S/FTP cables	
	4 pairs setup 650MHz	25 pairs setup 650MHz	4 pairs setup 1.2GHz	25 pairs setup 1.2GHz
Article Nb.	51.0001.0024.0	51.0001.0032.0	51.0001.0089.0	On request
Balunless version	4 pairs balunless setup 2.0GHz			
Article Nb.	51.0001.0104.0			

MEASUREMENT PRINCIPLE (shows TCL)



REQUIRED COMPONENTS

The system must be completed with:

- Vector Network Analyzer (VNA), which can be provided by AESA or by customer;
  or
- AESA's Scorpius 1 DT, fully integrated system with embedded VNA, PC and software;
  or
- Use it as optional device on an existing AESA automated test equipment (ATE).

© 2024 AESA SA. All rights reserved