

5 μ H Line Impedance Stabilisation Network

1 Introduction

The TBL0550-1C is an affordable 5 μ H LISN designed for conducted emission measurements / line termination in the frequency range of 10 kHz to 400 MHz. It complies with RTCA DO-160 and DEF-STAN-59.

LISNs are inserted into the supply lines of the EUT (Equipment Under Test). Conducted noise which is present at the supply terminals of the EUT can be measured at the N connector using a spectrum analyzer or a measurement receiver. The source (supply) terminal and the EUT terminal are decoupled by a 5 μ H inductor.

Two TBL0550-1C in combination with the Tekbox LISN Mate enable separate measurement of common mode and differential mode noise.



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2 Specification

Topology:	single path 50 Ω // 5 μ H with the 10 μ H internal capacitor
Supported standards:	RTCA DO-160, DEF-STAN-59
Characterized frequency range:	10 kHz – 400 MHz
DC Resistance:	< 5 m Ω Source+ to EUT+; < 5 m Ω Source- to EUT-
Maximum current:	50A continuous; see heat up characteristics, chapter 1.8
Maximum operating voltage range:	max. 480 V AC @ 50/60 Hz, 360 V AC @ 400 Hz, 230 V AC @ 800 Hz, 1200 V DC
EUT connector:	M8 screw terminal with protection cap
SOURCE connector:	M8 screw terminal with protection cap
EARTH:	8 mm Earth stud with wing-nut, exposed stainless steel bottom panel with mounting slots and countersunk hole for 4 mm screw
RF connector :	N-Female
Dimensions:	125 mm x 125 mm x 275 mm
Weight:	1.75 kg

3 Safety

Electrical Shock Hazard

Because of the RTCA DO-160 design requirements, the LISNs does not comply with the maximum permissible leakage current as specified in EN61010-1. Furthermore, LISNs do not fulfil the isolation requirements of CAT II.

The LISN housing is connected to the SOURCE - ground and EUT - ground terminals and to ground of the RF connector. Inadvertently connecting the positive voltage or line voltage to the ground terminals puts you at risk of a lethal electric shock. The TBL0550-1C is exclusively for use in laboratories and must be operated by qualified personnel. There is a risk of death or serious injury, as the equipment may be part of a setup operated with AC or DC supply voltages >60 V.

Always establish Earth connection first and disconnect Earth connection last. Ensure that the setup is physically and electrically separated from any supply voltage, before connecting the cables. After connecting the wires, attach the supplied protection covers.

Unless you are absolutely certain that no supply voltage is supplied, do not touch the LISN terminals.

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 	Warning: Electrical Shock Hazard • The LISN must be used by trained laboratory technicians (electricians) only. There is a risk of death or serious injury, as the LISN may be part of a setup operated with AC or DC supply voltages >60 V. • Always establish Earth connection first and disconnect Earth connection last. Ensure that the setup is physically and electrically separated from any supply voltage, before connecting or disconnecting the SOURCE and EUT terminals. After connecting the wires to the terminals, attach the supplied protection covers. • Unless you are absolutely certain that no supply voltage is supplied, do not touch the LISN terminals. • Do not use the test equipment if you have an electronic medical device such as a pacemaker, and do not enter the test area while the test equipment is operating. Electronic medical devices may malfunction or fail, potentially resulting in death or serious injury.
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Figure 1: protection cover attached to the LINE terminal

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4 Principle schematic

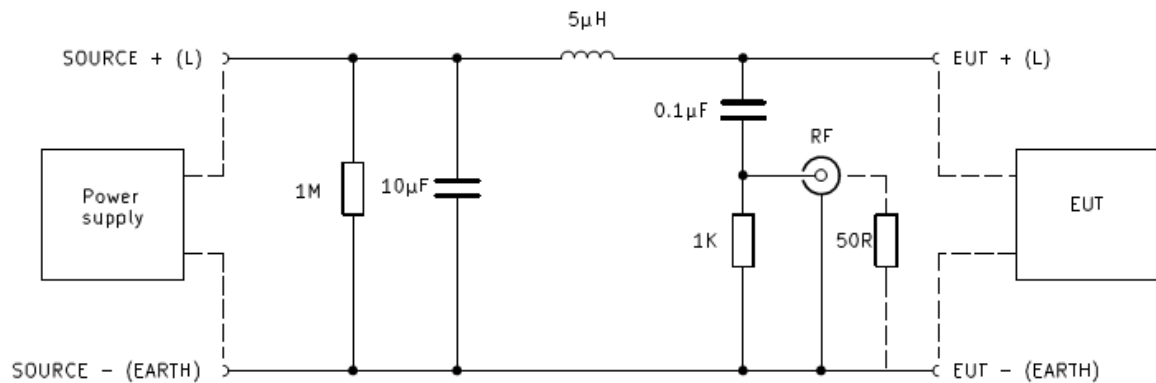


Figure 2: principle schematic

RTCA / DO-160 conducted emissions limits are specified in terms of current. The measurement is carried out with a current probe across the EUT supply lines. The RF output connector is terminated with a 50 Ω load. A 50 Ω termination, model TBTER-2W-6GHz-50-N is supplied together with the LISN.

5 Impedance

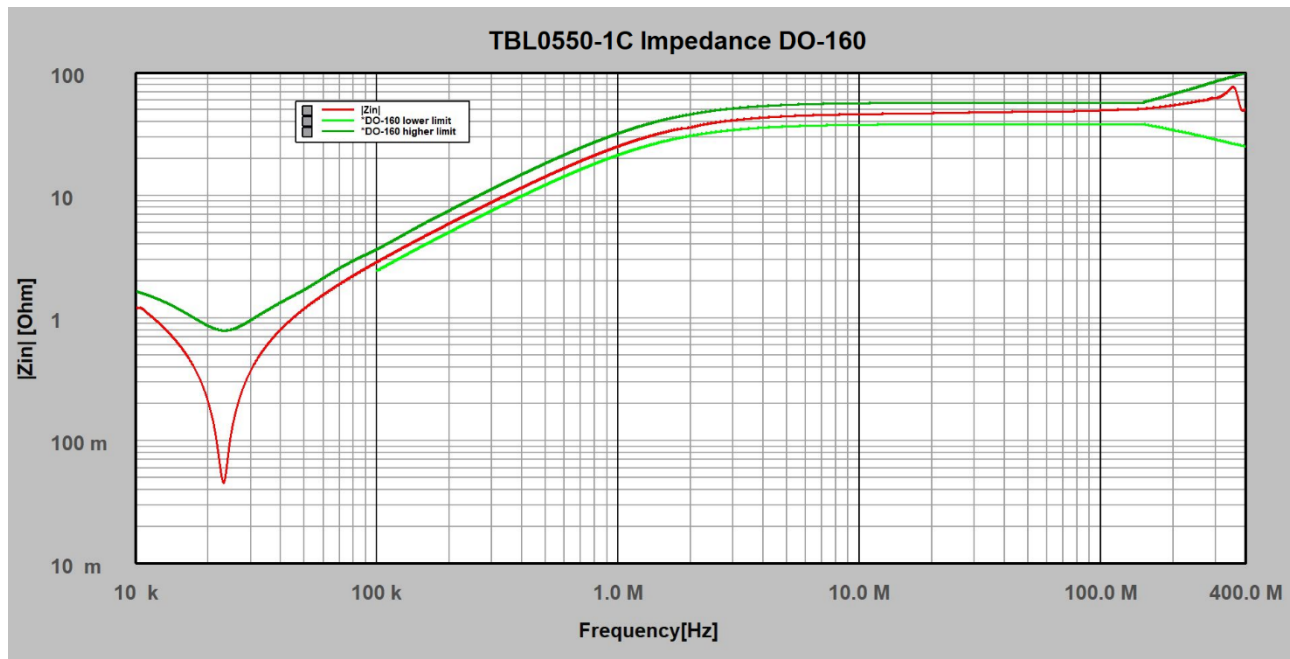


Figure 3: 10 kHz – 400 MHz, impedance of the TBL0550-1C

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6 Heat up characteristics

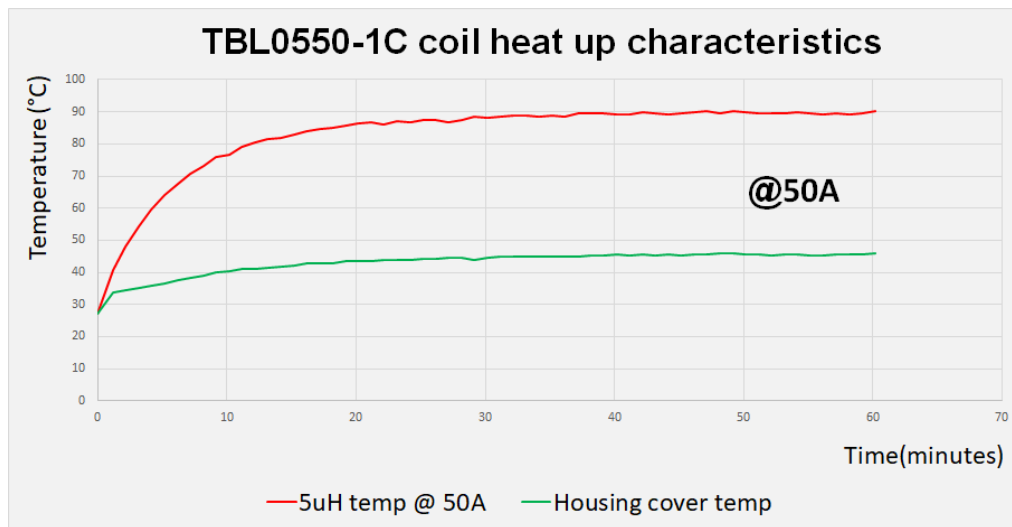


Figure 4: Heat up characteristics of LISN housing and 5 μ H inductor

The LISN can be continuously loaded with 50A supply current.

7 Ordering Information

Part Number	Description
TBL0550-1C	5 μ H LISN; 1 pc. 75 cm N-male to N-male RG223 cable; 1 pc. 50 Ω termination TBTER-2W-6GHz-50-N; Factory calibration certificate and data

Table 1 – Ordering information

Accessories

Part Number	Description
TBL0550-1C-CAL	Calibration kit; calibration adapter BNC-female; OSL calibration box

Table 2 – Accessories ordering information

8 History

Version	Date	Author	Changes
V1.0	09.09.2026	Van Tieu	Creation of the document

Table 3 – History

TekBox Digital Solutions Vietnam Pte. Ltd.

www.tekbox.com

Factory 4, F4, Lot I-3B-1, Saigon Hi-Tech Park, Tan Phu Ward, Thu Duc, Ho Chi Minh City, Vietnam