

TRIPLATE01



The triplate is an OPEN TEM cell of widespread use by the automotive community. The reference specification, SAE J1113-25 of September 1995, revised in March 1999, gives the instructions on how to build and test the device.

The scope of the triplate is to radiate for a susceptibility test at high field levels a device over a broad frequency band with a power budget much smaller than that required by transmitting antennas in the anechoic chamber.

The TEM propagation is well known and controllable. The open structure of the cell avoids the reflections of the wall typical of the standard (closed) TEM cell. The size of the triplate is such that a pure TEM propagation mode cannot be extended as such at high frequencies. However with a careful initial calibration the cell can be used up to 1 GHz.

The usual rule of a DUT not higher than one third of the distance between the driven element and the outer ground planes of the triplate applies.

Therefore large objects with limited height can be accommodated, typically car on-board controllers with connecting cables. The lack of sides facilitates the access of the cables that would be difficult in a standard cell and also their routing.

Caution: the cell is of the open type and with high field levels, the field propagates also outside the cell. The cell must be used in a Faraday cage and, to prevent the field from resonating in the enclosure, the most suitable test set-up is with the triplate in a shielded room lined with absorbing material.

The high voltages and field generated in and by the triplate may be dangerous to the personnel and for safety reasons nobody should be allowed to stay in the chamber during the performance of the tests.

TRIPLATE01

TRIPLATE01 is the TESEO implementation of the requirements laid down in the mentioned SAE specification. TESEO has collected in the past a fair experience with design, fabrication and test of TEM cells and striplines. TRIPLATE01 is the complement to the ISO compliant OTEM and STRIPLINE TESEO products already in use by many customers in the car industry.

HOW TO USE TRIPLATE01

The cell must be connected to the output of the RF amplifier on one side and to an RF load on the other. The field level generated in the cell is determined by the formula "field" versus "power" contained in the SAE specification. The characteristic effective impedance parameter included in the formula is calculated from data collected in the calibration phase

CALIBRATION

Calibration is to provide at each frequency point the value of the effective impedance. This parameter is calculated from the measurements of forward, reverse and output power as well as the electric field level in 5 points on the central axis of the triplate. A three channel RF power meter and an isotropic probe are utilized in the applicable frequency bandwidth.

SYSTEM CONFIGURATION

The TRIPLATE01 is only one item.
The code to order is: **TRIPLATE01**

Documentation:

The product is delivered with the user's guide that includes calibration data.

TECHNICAL SPECIFICATIONS

Frequency range	10 KHz to 1000 MHz
Nominal impedance	50 Ohm
RF connectors	N type, female
Dimensions	620 x 620 x 3030 mm (closed) 1240 x 620 x 3030 mm (open)
Weight	150 Kg

OPTIONS

The available options are:

- Wooden table
- Radiated immunity software
- RF loads for various power levels
- SOPM 3-channel fiber optic RF power meter
- Isotropic electric field probe
- RF dual directional coupler
- RF power amplifier