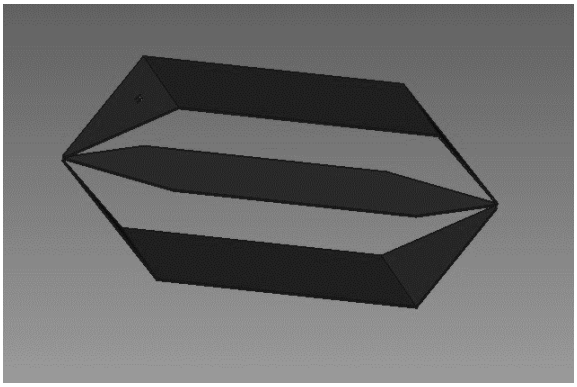
OPEN TEM CELL



Specifications:

- Dimension 300mm x 350mm

Features and Benefits:

- Radiated emission tests
- Debugging of EMC issues
- Extreme Low cost

VERSION HISTORY

VERSION	NOTE	DATA
1.0	*First Release*	*15/09/2025*
1.2	*Minor changes*	*28/09/2025*
1.3	*Typo error*	*23/05/2026*

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1 OVERVIEW

1.1 PRODUCT OVERVIEW

The diagram-block of TEM is shown in the following picture.

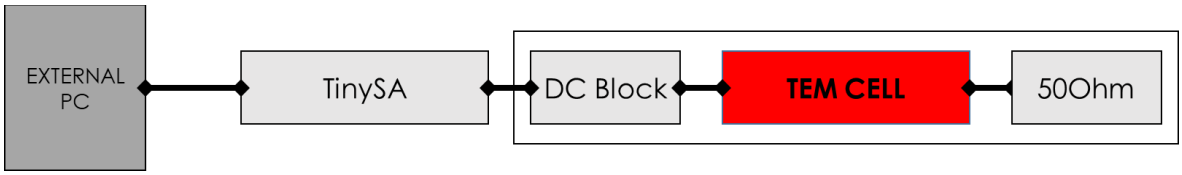


Figure 1

A Transverse Electromagnetic (TEM) cell is a specialized test fixture designed to create a controlled electromagnetic environment for evaluating electromagnetic compatibility (EMC) and electromagnetic interference (EMI). It provides a well-defined propagation mode (the TEM mode), in which the electric and magnetic fields are perpendicular to each other and to the direction of propagation, closely replicating free-space conditions.

TEM cells are typically used in pre-compliance testing to expose a device under test (DUT) to known electromagnetic fields or to capture emissions radiated by the DUT. Unlike full anechoic chambers, TEM cells are compact, cost-effective, and suitable for benchtop applications, although they operate over a limited frequency range compared to large-scale facilities.

The TinySA, a compact spectrum analyzer, can be integrated with a TEM cell to form a practical and affordable setup for EMC/EMI investigations. In this configuration:

- The DUT is placed inside the TEM cell, where it either emits unintentional RF signals.

The TinySA is connected to the TEM cell's output port to measure the frequency spectrum of the emissions generated by the DUT. This setup enables engineers and technicians to:

- Characterize radiated emissions from electronic circuits and identify harmonics, spurious signals, or unwanted RF noise.
- Perform pre-compliance EMC testing before submitting products to certified test laboratories, thereby reducing development costs and avoiding late-stage design modifications.
- Investigate EMI sources during prototyping, assisting in PCB layout optimization, shielding design, and filter implementation.
- Although a TEM cell combined with a TinySA does not replace full compliance testing in accredited facilities, it provides a highly effective and economical tool for early-

stage EMC/EMI design validation and troubleshooting. This approach allows rapid iteration and higher confidence in passing formal certification tests

1.1.1 TINYSA

Visit the official website for more information.

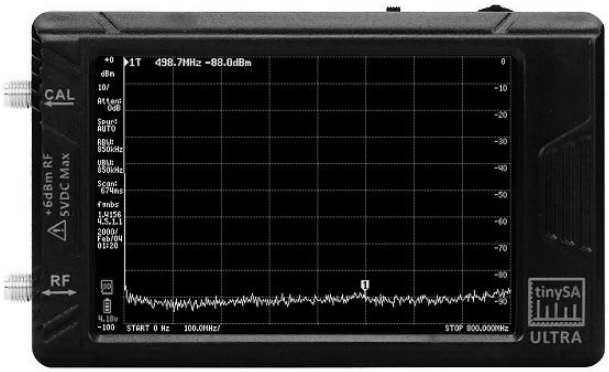


Figure 2

- Screen size 4 inch
- Spectrum Analyzer for 0.1-800MHz or, with Ultra mode enabled up to 5.3 GHz, level calibrated up to 6GHz. Can observe signals up to 12GHz
- Signal Generator with sine wave output between 0.1-800MHz or square wave up to 4.4GHz or rf test signal output up to 5.3GHz when not used as Spectrum Analyzer.
- Switchable resolution bandpass filters from 200Hz to 850kHz
- Built-in 20dB optional LNA
- Color display showing max 450 points providing gapless covering up to the full frequency range.
- MicroSD card slot for storing measurements, settings and screen captures.

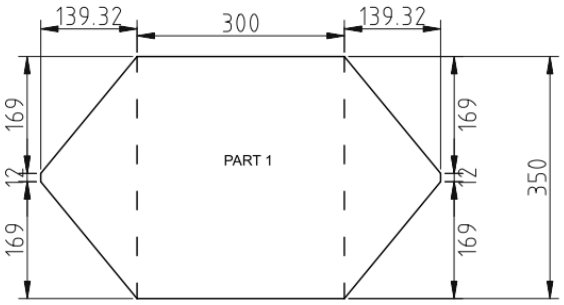
2 MECHANICAL

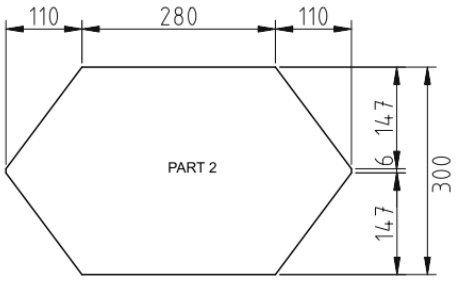
2.1 DIMENSIONS

Below are the dimensions of the TEM.

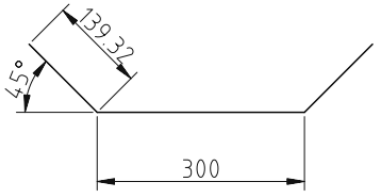
Spessore Alluminio: 1.5mm

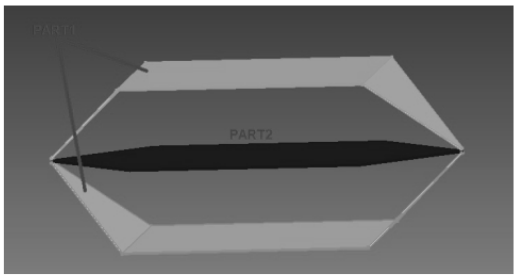
Quantità:
- PART1 x2
- PART2 x1





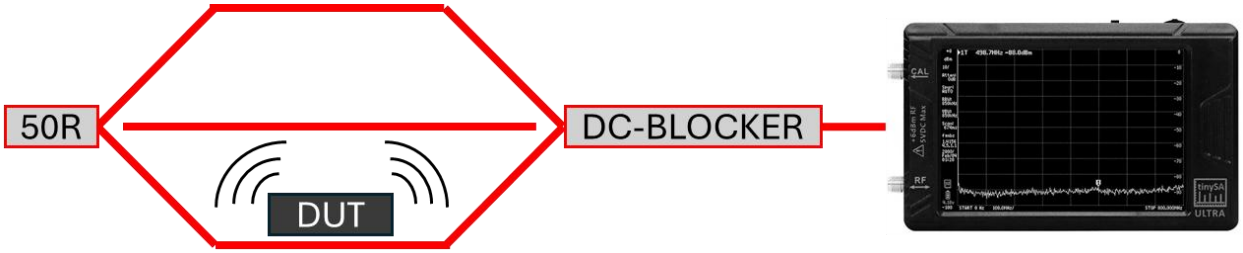
Piegare a 45°





3 SETUP

3.1 SETUP-TEM



- **Insertion of the DUT (Device Under Test):** The device is placed inside the TEM cell, typically centered and positioned close to the septum plane.
- **The DUT is powered and operates normally:** During normal operation, the DUT generates electromagnetic emissions.
- **Emission detection:** The electromagnetic waves radiated by the DUT are coupled to the central conductor (septum). These waves are converted into electrical signals, which are then sent to a measurement receiver or spectrum analyzer.
- **Data analysis:** The receiver analyzes the signals to verify whether the emissions comply with the specified limits.