

TMFS (Telephone Magnetic Field Simulator)

Introduction



The Telephone Magnetic Field Simulator (TMFS) is designed according to ANSI S3.22-2003. It is optimized for usage with the HAC Test Arch and generates a well-defined magnetic field for the reference check of the HAC T-Coil measurement setup according to ANSI C63.19-2007.

The input impedance of 600 Ohm and separate connectors for supplying and monitoring the audio signal minimize the uncertainty involved by connecting the instrumentation. It is delivered with the adapters for operation and with a calibration for 1 kHz for the axial and radial field maxima at 10mm scanning distance.

Technical Data

Dimensions	70 x 70 x 70 mm
Weight	255 g
Material	POM
Coil distance from surface	10.0 mm from contact surface with HAC Test Arch
Input impedance	600 Ohm
Connectors	BNC
Nominal operating voltage	500 mV RMS
Frequency range	100 Hz – 20 kHz
Accessories	Adapter for Dipole Holder 2 BNC cables for signal supply and voltage measurement Adapter BNC – XLR for connection to AMMI Transportation and storage case Calibration certificate
Calibration	Axial magnetic field maximum for 1 kHz at 10 mm Radial magnetic field maxima for 1 kHz at 10 mm Frequency response 100 Hz to 5 kHz

Operation



The TMFS is positioned with the adapter into the dipole holder below the HAC Test Arch. Rotation by $n \cdot 90^\circ$ can be selected between multiple measurements.

The IN signal can be supplied from an independent generator or from the “Audio Out” of the AMMI. For the validation, the level applied shall be monitored at the OUT connector using an independent, calibrated RMS voltmeter. After having performed a “calibration job” in a T-Coil procedure, the AMMI “Coil In” input can also be used for verifying the correct level at the TMFS, by using the XLR adapter provided with the TMFS.



The magnetic field is scanned with the AM1D probe over the TMFS, equivalently to a wireless device. The extracted axial maximum and the average of the radial maxima for each orientation are compared to the values provided with the calibration certificate and the numerical references. The balance of the radial maxima supports verification of the mechanical alignment of the probe sensor. Also the frequency response of the T-Coil measurement system can be verified.