



TDS

Active Optical EM Near-Field Sensor System



What are TDS Systems ?

SPEAG takes another decisive technological leap forward with the introduction of our new time domain sensor (TDS) probes: miniaturized electrically fully isolated active optical magnetic or electric field sensors operating in the 10 MHz to 6 GHz frequency range. Our TDS technology facilitates measurements in both frequency, and time domains, while maintaining complete amplitude and phase information of the measured signal

with unparalleled sensitivity and spatial resolution. A TDS system consists of a TDS electric or magnetic field probe with a remote unit to provide the power-over-fiber source for the sensors in the forward link and convert the RF-over-fiber reverse link for direct connectivity to standard RF measurement equipment. All TDS systems are calibrated in SPEAG's calibration laboratory (ISO17025 for TDS pending).

TDS System The Latest Generation of EM Scanners



Applications

Antenna/Microwave

TDS probes are unique tools for the analysis of antenna problems and microwave components, such as near-field characterization of MIMO systems and phased-array structures, performing near-to-far-field transformations as well as reconstruction of complex EM sources.

EMC/EMI

TDS probes are the first probes capable of providing full electrical isolation of the sensor element while maintaining unparalleled sensitivity, making them perfect for module-, board-, and chip-level EMI/EMC scanning, sniffing, and analysis.

MRI

TDS probes are fully compatible with the MRI environment, allowing application, for example, for mapping complex vectorial B1-field distributions or phase and amplitude distributions along implants exposed to EM fields during MRI.

Features	Benefits
Full complex signal information	Frequency, amplitude, phase, time-domain waveform
Fully isolated sensor-head	Signal measurement w/o probe interference
Miniature size	Fine spatial resolution allows precise measurement in high-field gradients
High sensitivity	Detection of very small interference signals, e.g., on GPS receiver channels
Large dynamic range	Measures weak EMC/EMI to strong MRI signals
Wide bandwidth	Can be used from 10MHz to 6GHz
Standard 50 Ohm RF interface	Spectrum analyzers, network analyzers, or digital oscilloscopes
Active sensor design	Unparalleled sensitivity: 60 dB better than existing passive optical sensors
Software interface to DASY52 NEO	Specific scan routines integrated in DASY52 NEO and SEMCAD X: Interface to standard spectrum analyzers and a dedicated ultra-fast PXI vector signal analyzer
Fully characterized/calibrated sensor head and remote unit	Precise measurements in demanding environments

System Specifications

H1TDSx and H1TDSz	
Dynamic range	130 dB (@1Hz RBW), 0.3 μ A/m – 1 A/m @ 2 GHz
Frequency range (calibrated)	10 MHz to 6 GHz
E/H suppression at 2 GHz	-20 dB plane wave equivalent
Sensor loop size	4 mm ²
Remote unit	Stand-alone or PXI module
LASER classification	Class 1 (IEC60825-1 2007)

E1TDSx and E1TDSz	
Dynamic range	120 dB (@1Hz RBW), 0.15 mV/m – 150 V/m
Frequency range (calibrated)	10 MHz to 6 GHz
H/E suppression	-20 dB
Dipole size	2.8 mm
Remote unit	Stand-alone or PXI module
LASER classification	Class 1 (IEC60825-1 2007)

For further information and technical specifications, visit www.speag.swiss/products/tds/

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