

# MITs 1.5/3.0

System for Testing Medical Implants  
in Well-Defined MRI Fields

# MITS 1.5/3.0

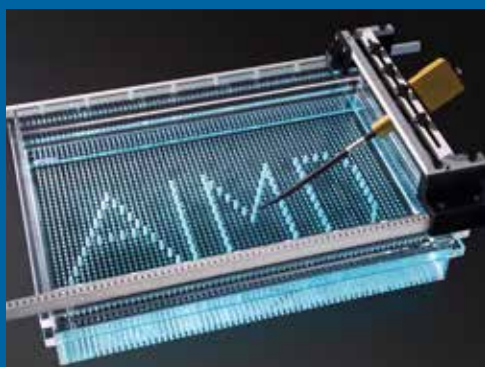
## Precise, Fast, Repeatable, Automated, MRI Compatibility & Safety Evaluations



MITS1.5 operated in vertical mode



MITS3.0 operated in horizontal mode



ASTM2009 phantom with engraved grid for lead holders and probe positioner

### MITS Applications

The Medical Implant Test System (MITS) is specifically designed to produce a well-defined and validated radiofrequency (RF) exposure that simulates the birdcage systems of 1.5T and 3.0T magnetic resonance imaging (MRI) scanners. MITS 1.5/3.0 are optimally suited for testing compliance of passive implants and active implantable medical devices (AIMD) with RF heating guidelines and electromagnetic compatibility (EMC) regulations. MITS 1.5/3.0 are in compliance with all MRI implant safety standards, such as ASTM F2182 and IEC/ISO TS10974. The systems combine cutting-edge measurement technology with accuracy, versatility, and user-friendliness, while the open user-interface facilitates customized and automated evaluations. MITS systems are validated and guarantee repeatability and maintain a well-controlled environment during evaluations.

### MITS Specifications

Operating Frequencies for MITS 1.5/3.0	64 MHz/128 MHz
Maximum B <sub>1</sub> -field strength	>> 30 μT
Maximum induced E-field strength	>> 500 V/m
Arbitrary pulse shapes	50M samples/sec 14 bit resolution 256k samples
Length of birdcage for MITS 1.5/3.0	650 mm/480 mm
Diameter of birdcage	700 mm
Weight of birdcage	60 kg (70 kg with horizontal table)

### MITS Phantoms

- Optimized to generate precise and well-defined exposures of passive implants and AIMDs in MITS 1.5/3.0 for RF safety evaluation
- Equipped with racetracks for mounting medical devices
- ELIT1.5: up to 1.5 m lead length and fill volume of 25 liters
- ELIT3.0: up to 1 m lead length and fill volume of 15 liters
- DUAL\_CYL v2: up to 1.3 m lead length and fill volume of 25 liters
- ASTM2002 and ASTM2009: dimensions according to ASTM F2182–11 (ASTM2002 with head and torso, fill volume of approximately 30 liters; ASTM2009 torso only, fill volume of approximately 25 liters)
- Phantoms composed of transparent plexiglas (polymethylmethacrylate, PMMA)
- Phantoms meet the specifications of the current ISO/TS 10974 guidelines

### Compatibility

Additional metrology instruments are available from ZMT's partner organization SPEAG ([www.speag.swiss](http://www.speag.swiss)):

- DASY6NEO scanner: supports MITS 1.5/3.0 for rapid and high-precision evaluation of specific absorption rate and temperature
- TDS B<sub>1</sub>-Field system: complements MITS 1.5/3.0 for test field diversity, allowing the B<sub>1</sub>-field to be monitored during shimming of the birdcage
- RFoF1P4MED: assesses the maximum induced voltages in implantable pulse generators during RF exposure with MITS 1.5/3.0