

MITS Gradient

Medical Implant Test System for
LF Gradient EMC & Heating Tests



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Zurich MedTech AG

Zurich MedTech AG (ZMT) is an engineering and medical technology company dedicated to developing and manufacturing high-end electro-magnetic field (EMF) test systems for compliance testing of medical implants and the clinical diagnostic & therapeutic applications of EMF.

MITSGradient EMC System

The Medical Implant Test Systems (MITS) are designed to simulate high precision worst-case low frequency (LF) electromagnetic compatibility (EMC) and heating conditions for implants within commercial 1.5T and 3.0T machines to rigorously test the compatibility of medical implants with MRI gradient fields. The system has been designed to deliver performance exceeding the requirements of the ISO/IEC Joint Working Group (JWG) draft specification for Active Medical Implant Devices (AMID), thereby delivering exposure levels of > 200T/s peak.

MITS Gradient EMC will be compatible with EMC test sequences and provide excellent gradient field homogeneity of less than 1% within a cylindrical volume of 260mm by 100mm height. The rugged construction of Helmholtz coils allows vertical usage and access for evaluations. The test system is calibrated and fully characterized experimentally. The open user interface allows customized, automated EMC and heating evaluations.

Applications

- Testing compliance of active medical implantable devices with LF EMC and eddy current heating regulations
- Evaluations of new prototypes

Preliminary Specifications

Volume over which the coil will provide all points < 5 % variation	> 200 mm diameter by 100 mm high
Homogeneity for the location of the AMID during testing	± 1 %
Resistance	< 110 mΩ
Self inductance	300 μH
Cooling water	1 litre per min
Dimensions	480 mm diameter by 390 mm high
Max continuous current	100 A rms (250 A rms*)
Peak current	± 200 A (± 400 A*)
Field coil current calibration factor	101 μT/A
Peak to peak gradient field	> 40 mT (60 mT*)
Typical RMS dB/dt continuous	> 125 T/s ~2 kHz sinusoid (140 T/s*)
Peak d/dt	> 175 T/s (200 T/s*)

* high T/s MITS Gradient on request



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