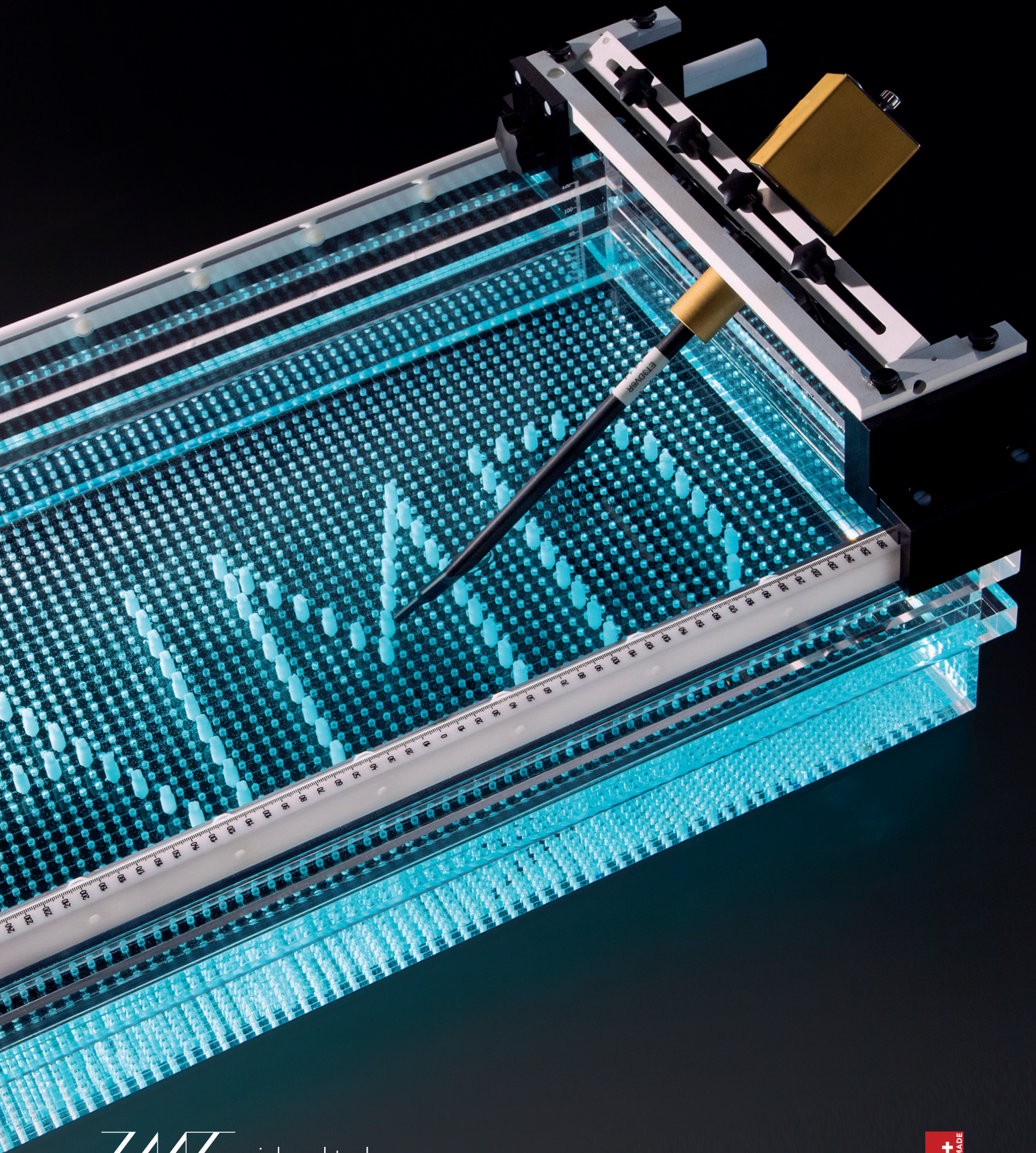


Phantoms & TSM

Phantoms and Tissue Simulating Media for
Medical Device RF Safety Evaluations

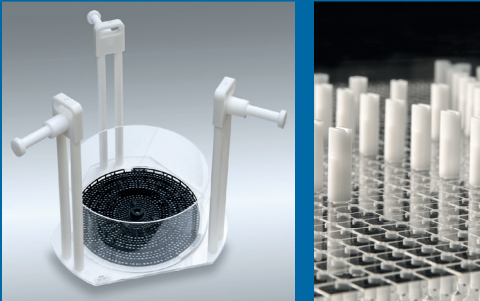


Phantoms & TSM

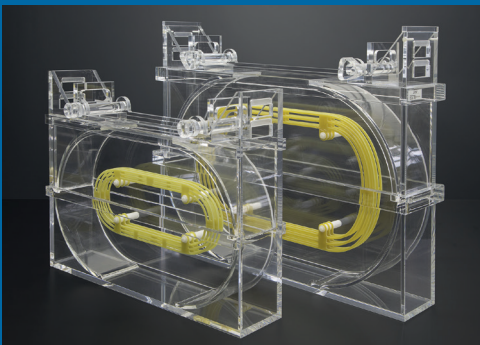
Phantoms and Tissue Simulating Media for Medical Device RF Safety Evaluations

Short Description

ZMT phantoms and Tissue Simulating Media (TSM) are products designed for compliance testing with radiofrequency heating and electromagnetic compatibility guidelines of active implanted medical devices (AIMD). Phantoms and TSM can be used with ZMT Medical Implant Test Systems (MITS) or in commercial Magnetic Resonance Imaging (MRI) scanners.



Left: Dual-Band Cylindrical Phase Phantom
Right: Lead Positioner Detail in an ASTM2009 Phantom



Elliptical Implant Test Phantoms ELIT1.5 & ELIT3.0

ASTM2002 & ASTM2009 Phantoms

- 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)
- Phantom material: transparent Plexiglass (PMMA)
- Equipped with pins for medical device fixation
- SPEAG probe positioner: bridge for up to 4 probes in parallel (option)

MITS Phantoms ELIT1.5, ELIT3.0, DUALCYL

- Optimized to generate uniform exposure for implants in the MITS 1.5T and 3.0T for RF safety evaluation
- According to ISO/IEC AIMD JWG TS10974 specifications
- Phantom material: transparent Plexiglass (PMMA)
- Equipped with racetracks for medical device fixation
- 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
- DUALCYL: up to 1 m lead length and fill volume of 25 liters

Tissue Simulating Media

The tissue simulating media (TSM) developed by ZMT for radiofrequency (RF) safety evaluations at magnetic resonance imaging (MRI) frequencies are easy to use, stable over time, and their dielectric parameters have a minimal temperature coefficient. TSM meet the specifications set by the ISO/IEC AIMD JWG TS10974 and are valid for 1.5 T and 3.0 T MRI commercial scanners. Two options of TSM are offered: liquids are optimal for use with dosimetric probes for specific absorption rate (SAR) evaluations, while gels are better suited for temperature evaluations.

TSM	Simulated Tissue Description	Relative Permittivity	Conductivity (S/m)	Frequency (MHz)	Viscosity
TLe78c0.47@64	averaged parameters	78	0.47	64 /128	liquid
TGe78c0.47@64	averaged parameters	78	0.47	64 /128	HVL*
TLe78c0.65@64	muscle/liver/kidney/brain	78	0.65	64 /128	liquid
TGe78c0.65@64	muscle/liver/kidney/brain	78	0.65	64 /128	HVL
TLe78c0.78@64	blood/muscle	78	0.78	64 /128	liquid
TGe78c0.78@64	blood/muscle	78	0.78	64 /128	HVL
TLe78c1.20@64	blood	78	1.2	64 /128	liquid
TGe78c1.20@64	blood	78	1.2	64 /128	HVL
TLe78c2.20@64	cerebrospinal fluid	78	2.2	64 /128	liquid
TGe78c2.20@64	cerebrospinal fluid	78	2.2	64 /128	HVL
TLe11.5c.045@64	fat/bone	11.5	0.045	64	liquid
TLe11.5c.045@128	fat/bone	11.5	0.045	128	liquid
TLe5c.24@2450	fat/bone	5	0.24	2450	liquid

*HVL: High Viscosity Liquid