

piX System

Piecewise Excitation System for
RF-Heating Evaluation of Medical Devices
in MRI Environments



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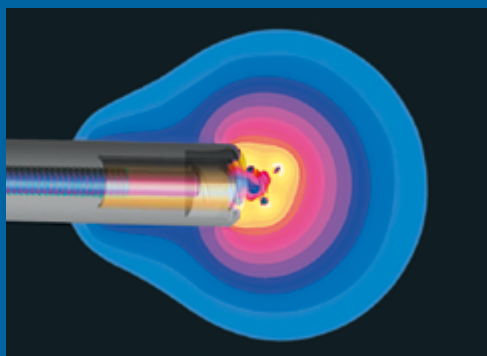
Piecewise Excitation System for RF-Heating Evaluation of Medical Devices in MRI Environments



Measurement setup with piX and TDS probe



Scanning in progress



RF-heating response at implant electrode

Application

Designed to assess patient safety during an MRI exam, the piX System allows modeling of RF response of implantable medical devices to MR exposure. The system is in compliance with the Tier 3 procedure of the IEC/ISO TS10974 guideline and can operate in the 28–150 MHz frequency range.

piX Specification

Excitor

| | | |
|---------------------------------|--------|------------------|
| Output power | 18 dBm | Typical |
| Forward and reverse power meter | 0.2 dB | Typical accuracy |
| Coupler directivity | 30 dB | Minimum |

Detector

| | | |
|-----------------------------|---------|---------|
| Noise floor | –78 dBm | Typical |
| Dynamic range | > 60 dB | |
| Linearity | 0.05 dB | Typical |
| Phase accuracy | 0.4 ° | Typical |
| Amplitude balance (I and Q) | 0.1 dB | |

piX Excitors and piX Probes

Various excitors are optimized for different frequencies and media, generating a local uniform tangential excitation of less than 10 mm.

The following piX Excitors and wideband probes are available:

- piXE51HPV1: for 51 MHz and high permittivity media
- piXE51LPV1: for 51 MHz and low permittivity media
- piXE64HPV1: for 64 MHz and high permittivity media
- piXE64LPV1: for 64 MHz and low permittivity media
- piXE128HPV1: for 128 MHz and high permittivity media
- piXE128LPV1: for 128 MHz and low permittivity media
- piXPV1: wideband ferrite-loaded coaxial receiving probe

piX Phantom

- Optimized to evaluate elongated implants and active implants with one or more leads
- Various probe mounting locations allow for characterization of the implant at different positions
- Size: 1200x240x240mm
- Materials: the phantom is composed of transparent acrylic glass; the race track is composed of FR4

Compatibility

- Smooth integration with SPEAG's DASY52NEO measurement system
- Compatible with SPEAG's photonic TDS probes for isolated measurements, eliminating any cross-talk to the excitor and implant under test warranting full traceability and reproducibility



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