

What is Unique

Concept

MAGPy Version 2 is a stand-alone system designed for easy-to-use *in situ* exposure evaluations of EM sources operating between 3 kHz and 10 MHz, in particular, for demonstrating compliance with national and international EM safety guidelines (e.g., for wireless power transfer systems). The system capitalizes on the premise that all strong sources lead to local exposures, i.e., body tissues close to the source are the highest exposed tissues. To simplify the evaluation, the standards were interpreted conservatively with a focus on local exposures (see Manual).

Unique Feature

MAGPy Version 2 is the only measurement system capable of estimating the induced fields, i.e., the basic restrictions. A probe consisting of eight fully isotropic magnetic (H-) field sensors with 1 cm² loops measures the H-field and its gradient in the time domain. One electric (E-) field sensor determines the E-field. The induced fields are estimated using the novel Generic Gradient Source Model (GGSM) method defined in the latest draft of IEC/IEEE 63184:2023 and compared with the basic restrictions of the selected safety standard.

What is New

- accurate extrapolation of the incident fields to the probe surface to meet the latest FCC & ISED requirements
- support of pulsed and multi-frequency signals
- estimation of new basic restriction quantities required by regulators

Compliance Testing

Compliance with Basic Restrictions

Compliance with the basic restrictions is demonstrated using the recommended simple nine-step procedure, while assuming the following:

- The probe scans the surface closest to the source at which a human body might be located, whereas, the body surface is always normal to the probe axis at the center (Setting: Center) or tip-surface (Setting: Tip) of the probe
- Compliance is successfully demonstrated if both the maximum induced field quantities are smaller than the basic restrictions AND the maximum incident E-field is smaller than the reference levels

Compliance with Reference Levels

Compliance with the reference levels can also be demonstrated at the probe center or probe tip-surface (Setting: Center or Tip)

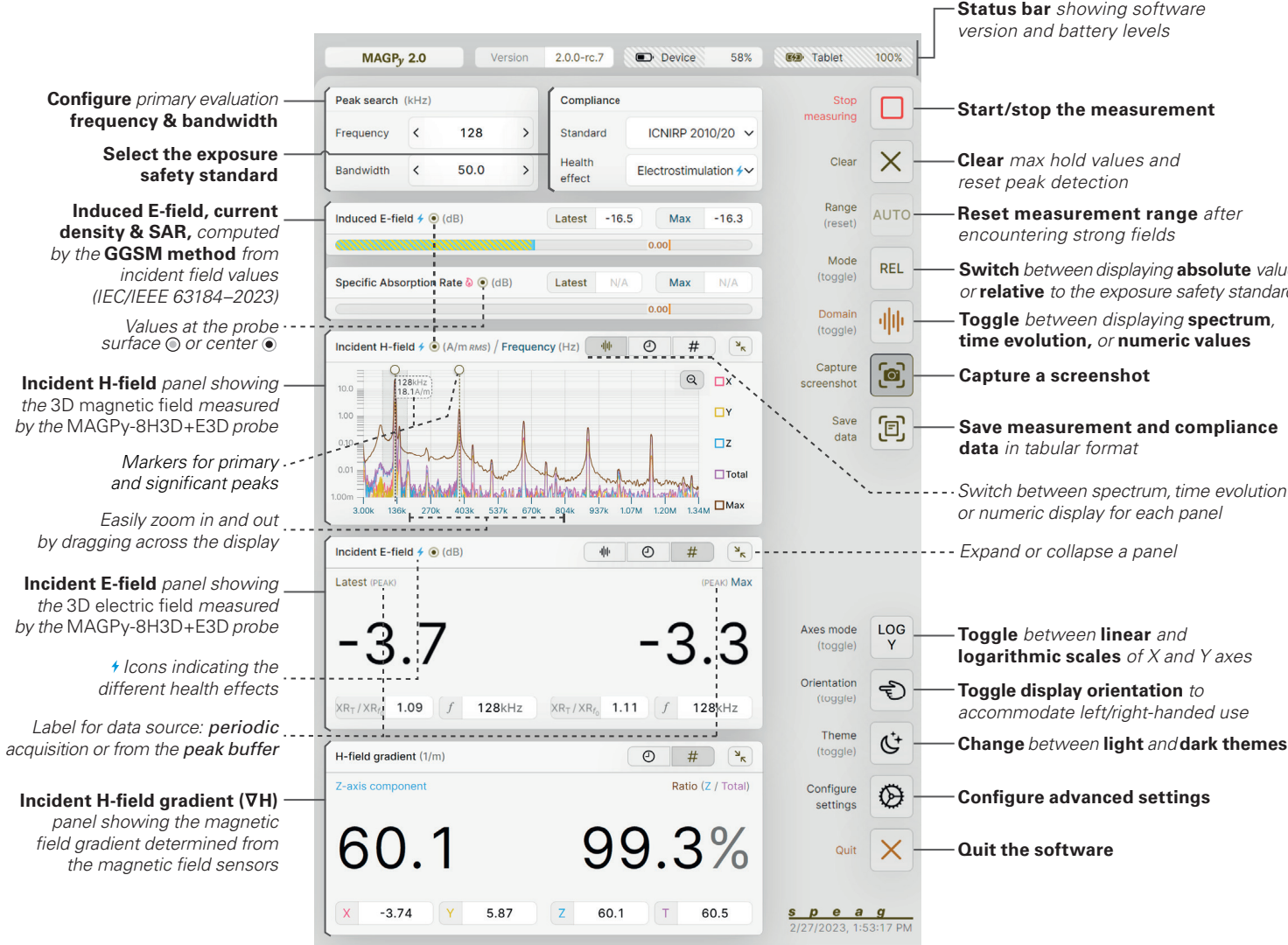
- Scan the volume of the exposure characterization and determine the maximum H-field and E-field. Compare these values with the reference levels that are directly provided in the REL mode

MAGPy at a Glance



MAGPy Version 2

User Interface

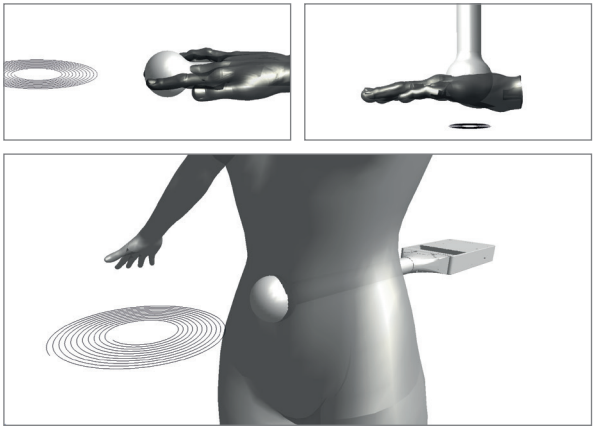


Measurement Procedure

- MAGPy Version 2 evaluates electromagnetic (EM) sources (3 kHz – 10 MHz) in nine simple steps:
- 1 Switch on the MAGPy Version 2 system (MAGPy-DAS and the Surface Tablet) and launch the MAGPy software
 - 2 Configure the system settings: safety standard, compliance location, language, etc.
 - 3 Scan the source and analyze the incident H-field spectrum at a location close to the EM source
 - 4 Set the analyzing center frequency and bandwidth
 - 5 Clear the max hold values
 - 6 Search for the maximum induced quantities of interest (e.g., E-field, J, SAR) while guiding the probe tip towards the EM source (see Figure below) for all body locations/distances to be assessed for compliance/exposure
 - 7 Compare the measured fields with the limits (ABSolute or RELative mode)
 - 8 Capture and save screenshots or measurements to files for later analysis and documentation
 - 9 Repeat steps 5 to 8 if needed

Troubleshooting Steps

- Hardware: Check all cable connections and the battery status of the Surface Tablet and MAGPy-DAS.
- Reset: Switch Off/On the Surface Tablet and MAGPy-DAS.
- Consult the manual for more detailed troubleshooting guidelines.



Top left: Exposure evaluation when a hand reaches close to the magnetic field source from the side; Top right: when a hand is placed on top of the magnetic field source (e.g., mobile charger); Bottom: when the body is in close proximity to the source.