



## Dear Z43 Partners, Friends, and Followers

*Our projects and products moved ahead apace over the summer, so let's get right to it! We became CO<sub>2</sub>-free, launched our first product below 4 MHz, achieved a breakthrough in vector-based array measurement system technology, and released the new mmW half-head phantom for compact antenna test ranges (CATR) as well as the first high-resolution rhesus macaque anatomical model ever. Enjoy the update!*

### Z43 CORPORATE

## Z43 Goes Carbon Dioxide-Free

As part of our effort to help create a sustainable and healthier future, energy at Z43 is now 100% renewable! We have invested heavily in a newly installed 500 kW heat pump that now heats and cools the Z43 headquarters and adjacent buildings by exchanging heat with the groundwater stream that runs 30 m below our premises. We have also covered the roof with photovoltaic cells. Curious how it looks? Check out our CO<sub>2</sub>-free energy production by clicking on the leaf.



### INTERNATIONAL PROJECTS

## o<sup>2</sup>S<sup>2</sup>PARC Enters Fourth Year & NeuHeart on the Innovation Radar

The o<sup>2</sup>S<sup>2</sup>PARC project continues to remain top priority at IT<sup>US</sup>. Building on the achievements of the first three years, major releases of the platform will be realized in the fourth year for broad usage for wide-ranging complex neuro-stimulation research and applications. There's more good news, as the NeuHeart project has been included in the European Commission Innovation Radar, an initiative that identifies innovations and innovators with a high level of potential in EU-funded research and innovation framework programs!

### MEASUREMENT

## Publications Confirm: DASY6 is the Most Accurate SAR System



The DASY6 probe-scanning system has a high SAR measurement accuracy for any field distribution, and the standard IEC 62209-2 AMD1 is robust – these are the conclusions in three recent publications in which the sources of error in SAR measurements were analyzed using time-domain array and probe-scanning systems. The scientific debate corroborates that DASY is the gold standard for SAR compliance testing. Read more [here](#).

### MEASUREMENT

## New mmW-1/2SAMR/L-V11 Phantom Packages

Over-the-air testing at frequencies from 6 to >100 GHz. Check out our new mmW-1/2SAMR/L-V11 phantom packages that enable testing of 5G NR FR2 mobile phones and other mmWave devices in talk mode and meet the quiet zone and weight restrictions of mmWave CATR and OTA chambers. New mmW-phantoms will continuously be added that will comply with the requirements of the corresponding CTIA and 3GPP working groups.



Testing for Talking From 6 to >100 GHz

MEASUREMENT

## DASY6 and cSAR3D: Ready for Routine 5G NR FR1 Testing

To unify 5G testing, two new Application Notes provide detailed user guidance for testing any 5G NR FR1 transmitter with DASY6 and cSAR3D. In addition, we are pleased to announce that SPEAG has received ISO/IEC 17025 accreditation to calibrate dosimetric probes up to 10 GHz.

MEASUREMENT

## MAGPy Technology for DASY6: cDASY6 Module WPT

This is for you: the first system for demonstrating compliance for sources below 4 MHz that does not require overestimation of the basic restriction limits. It is the first smooth integration of measurement and simulations. How does it work? The [video](#) shows a first glimpse into the concept and implementation of cDASY6 Module WPT. The system will be commercially released by SPEAG in October 2020!

MEASUREMENT

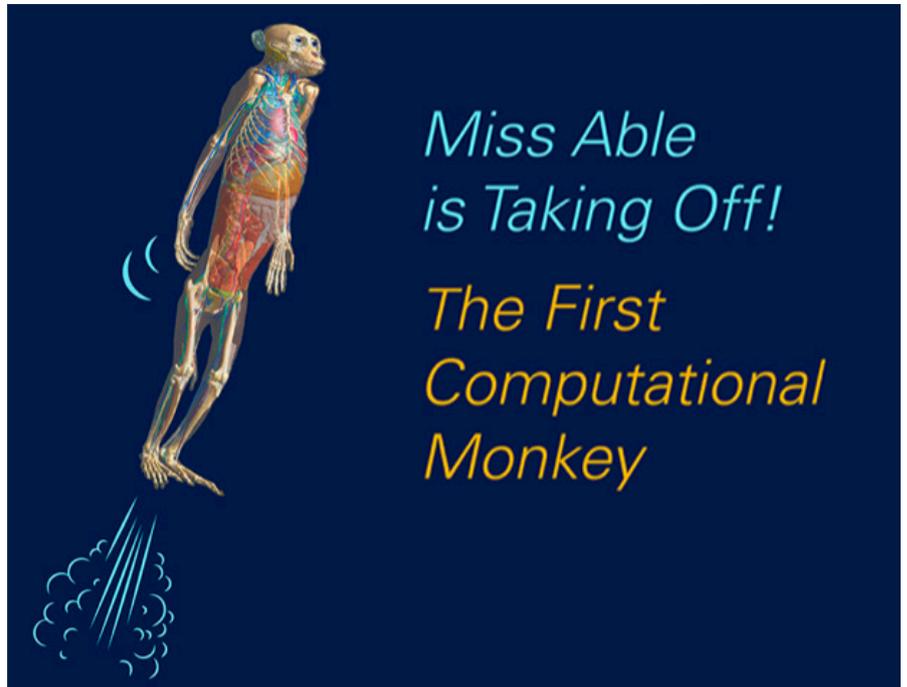
## cSAR3D V4.0: A Breakthrough in Array System Technology



cSAR3D V4.0 marks another milestone for vector measurement-based systems. The new X10 Combiner eliminates the limitations previously posed by the fixed array and enables the frequency extension to 10 GHz. At the same time, it reduces the maximum deviations to less than 30%, even for very sharp SAR distributions. The new X10 Combiner is really simple to use, and no additional hardware is required. More detailed information, including a user video, can be found on our [website](#).

VIRTUAL POPULATION

## Miss Able V3.0 is taking off!



Big news from the IT'IS Foundation: after a year of intensive segmentation work, IT'IS has released [Miss Able V3.0](#), the first-ever female monkey computational anatomical model! Miss Able, named after one of the two famous monkeys that were launched into space in 1959 and safely returned from their mission, contains more than 300 tissues and joins our existing Virtual Zoo (ViZoo) library that already contains various types of high-resolution rodent models as well as a male pig model for *in silico* research. Like her ViZoo companions, *Miss Able V3.0* is fully compatible with Sim4Life.

RESEARCH

### PUBLICATIONS

*Forward Transformation from Reactive Near-Field to Near and Far-Field at Millimeter-Wave Frequencies*

S. Pfeifer et al., 2020, *Applied Sciences*, 10(14), 4780, doi: 10.3390/app10144780 (online 11 July 2020)

*Comment on Liu et al. "Discrepancies of Measured SAR between Traditional and Fast Measuring Systems."* *Int. J. Environ. Res. Public Health*, 2020, 17(6), 2111

M. Douglas and N. Kuster, 2020, *International Journal of Environmental Research and Public Health*, 17(14), 5045, doi: 10.3390/ijerph17145045 (online 24 July 2020)

*Effects of Pulse-Modulated Radiofrequency Magnetic Field (RF-EMF) Exposure on Apoptosis, Autophagy, Oxidative Stress and Electron Chain Transport Function in Human Neuroblastoma and Murine Microglial Cells*

J. Zielinski et al., 2020, *Toxicology in Vitro*, 68 (2020), doi: 10.1016/j.tiv.2020.104963 (online 8 August 2020)

*Response to Professor Enders' Comment on "Discussion on Spatial and Time Averaging Restrictions Within the Electromagnetic Exposure Safety Framework in the Frequency Range Above 6 GHz for Pulsed and Localized Exposures"*

T. Samaras et al., 2020, *Bioelectromagnetics*, 41(6):483–484, doi: 10.1002/bem.22279 (online 18 August 2020)

*Total Local Dose in Hypothetical 5G Mobile Networks for Varied Topologies and User Scenarios*

S. Kühn, *Applied Sciences*, 10(17), 5971, doi: 10.3390/app10175971 (online 28 August 2020)

*Bioelectronic Medicine Translational Development – Quantification of Stimulation Parameters for Precision Near-Organ Neuromodulation of Human Splenic Nerves*

I. Gupta, et al., 2020, *Nature Communications Biology*, in press