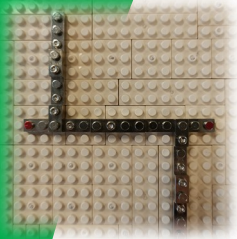


# NEWSLETTER 1.3

May 2021

## The 3rd Anten'it Newsletter



### Anten'it Microwave Training and Design Kit is coming soon!

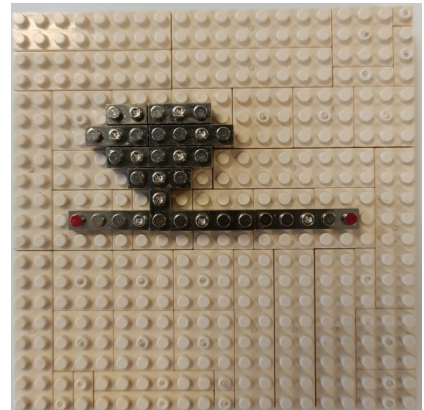
**Brick-based antenna design methodology is applied to microstrip and waveguide passive components.**

Anten'it Microwave Training Kit is in R&D phase. There are some components already designed with the new methodology.

A waveguide directional coupler with one hole between two waveguides is called Bethe Hole Coupler. It is shown on the right side. The multi-hole directional couplers are in the design process.

Students will be able to design waveguide couplers, power dividers and filters during the microwave laboratory lectures.

The same concept is also applied to microstrip passive components. The radial stub microstrip filter and 2nd order rectangular stub photos are shown on the two sides of this text. The modular structure will let the students to design microwave components during the time-limited microwave laboratory classes.



### Summary of Content

- **Anten'it Microwave Training and Design Kit is coming soon!**
- **Waveguide 50 ohm Termination Load Absorber**
- **Monopole Yagi Antenna Design Experiment**
- **Simuserv Germany prepared a CST Studio simulation tutorial**
- **European Union COST presentation**



### Waveguide 50 ohm Termination Load Absorber

#### Absorber Cells with a new special material

Anten'it Antenna Research Kit and the upcoming Microwave Research Kit both have carbon loaded new brick cells.

These cells are appropriate for 50 ohm termination load absorber design. Depending on the waveguide dimensions, different load absorbers at different impedances can be built. The brick-based modular design methodology makes it flexible to change the load impedance. The number of cells and the shape of the load absorber changes the performance of the waveguide component.

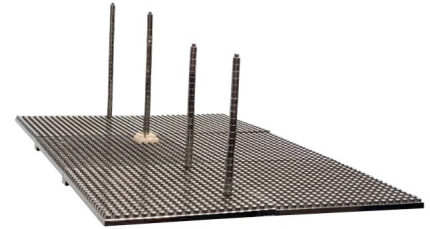


### Monopole Yagi Antenna Design Experiment for Czech Technical University

A Monopole Yagi Antenna Experiment is designed with the request of Czech Technical University. After reading the related academic papers, both parties studied for the design of this experiment.

The new experiment starts with a standard monopole antenna design. Adding directors and reflectors turn it into a Yagi antenna. The students can see the difference in the antenna radiation pattern or signal level during antenna laboratory classes.

The experiment proceeds with a capacitive loaded version of the monopole Yagi antenna. The students can observe the effect of the capacitance in the frequency range of the antenna.



### Simuserv GmbH Germany prepared a CST Studio simulation tutorial for Anten'it

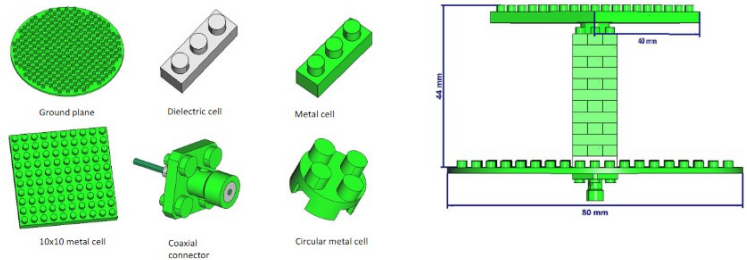
#### Capacitive Loaded Monopole Antenna



### Brick-based Capacitive Loaded Monopole Antenna Design via CST Studio

Simuserv GmbH Germany modelled the bricks and connector of the Anten'it Antenna Design and Training Hardware. CST Studio model preparation of the capacitive loaded monopole antenna is explained step by step in a tutorial. The simulation results are compared with the measurement results of the hardware.

#### Dimensions and basic components

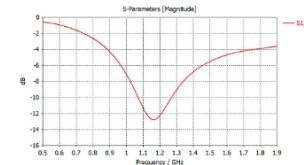
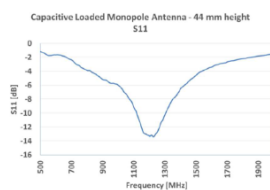
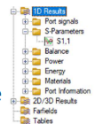


Our customers can ask for the CST files for the simulation model or 3D STEP files for the related design. We share these files with our customers for free of charge.

#### Results(1D): S parameter



- Open "1D Results" in menu, the reflection s11 is saved in the subfolder "S-Parameters"
- Comparing with the measurement results (left below), s11 from the simulation (right below) shows good agreement.



### European Union COST Presentation of the Brick-Based Antenna Design Methodology

We had a presentation about "The brick-based antenna design methodology" in the online meeting of COST Action Symat, supported by COST (European Cooperation in Science and Technology).

**Patch Antenna Design**

Patch Antenna Design at 1.9 GHz

$\epsilon_r = 2.6$   
 $\lambda/2 = 48.96 \text{ mm at } 1.9 \text{ GHz}$

**Anten'it Limitations**  
 Length must be a multiple of 4 mm.  
 Width must be an odd multiple of 4 mm.

We start our design with 48 mm length X 44 mm width (12 X 11 bricks)

**Measured Center Frequency: 1969 MHz**

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