

## Ultrawideband Splitter/Combiner

The objective of the competition is to design and realize an efficient ultra-wideband two way planar power splitter/combiner which will be tested at EuMW2014. The device must demonstrate equal power splitting capabilities in a frequency band with lower frequency not less than 500 MHz and central frequency not higher than 10 GHz, relative bandwidth of 100% with respect to the central frequency.

The design must satisfy the following specification in the bandwidth chosen by the applicant:

**Ports reflection loss  $RL_{11}, RL_{22}, RL_{33} > 15$  dB**

**Coupled ports Isolation  $Is_{23} > 20$  dB**

**Phase difference  $\text{phase}(S_{12}) - \text{phase}(S_{13}) < 3^\circ$**

**Insertion loss from input port to coupled ports  $TL_{12}, TL_{13} < 4$  dB**

The Figure of merit (FOM) of the project will be calculated as follows.

- In case of specifications given in a design bandwidth, for each given specification a figure 1 will be assigned if it is valid for all the design bandwidth. In case of design not satisfying specifications in the entire bandwidth a weighting factor equal to the percentage bandwidth for each satisfied specification will be measured. The FOM of the design will be calculated as the sum of the weighting factor for all the specifications.
- In case of single value specification the weighting factor will be assigned as the square of the ratio between specification and achieved result.

Needed test equipment and computer-aided design software will be provided to the participants. All doctoral, master and bachelor students registered in any one of the EuMW2014 Conferences are welcome to participate. The competition is open to all students and young engineers. The designers must be present to assist with the evaluation.

Awards: The winner, as judged by the technical committee (based on the figure of merit), will be recognized during the closing session and will receive the EuMW2014 Student Design Prize with a value of €1500. In addition, students with the winning designs will be given the opportunity to submit an article to the EuMA International Journal of Microwave and Wireless Technologies.