

A new software tool is developed to evaluate the measured/simulated transmission characteristics of optical multiplexers/demultiplexers

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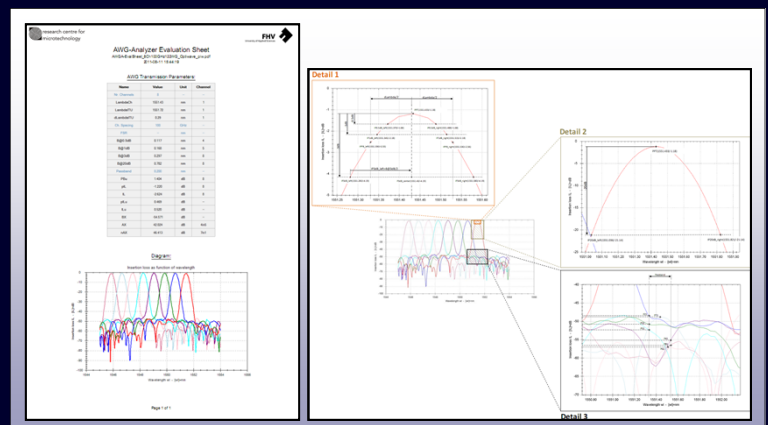
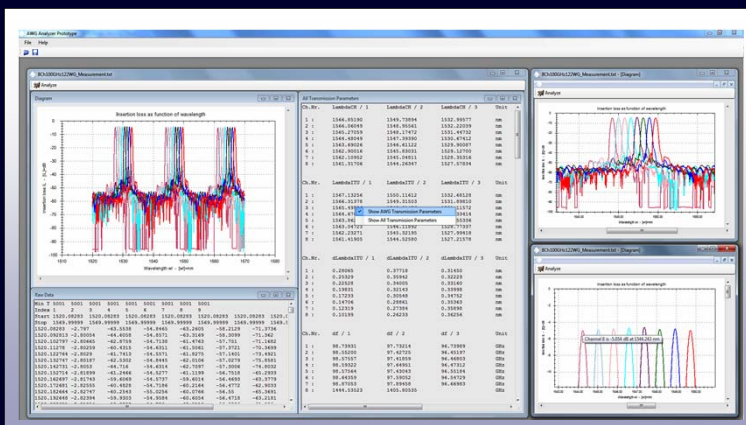
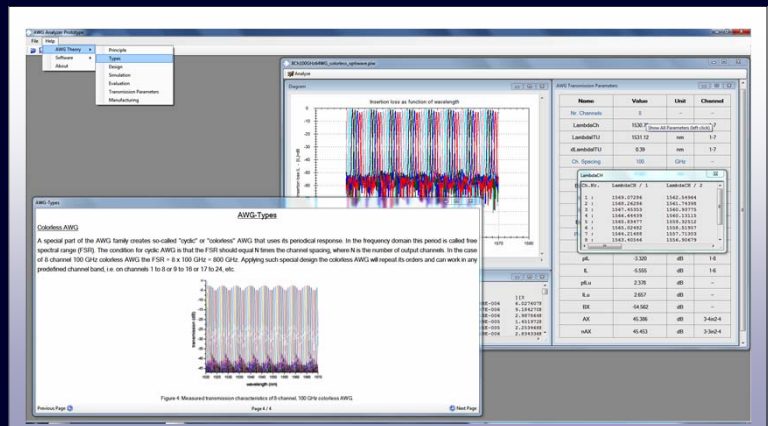
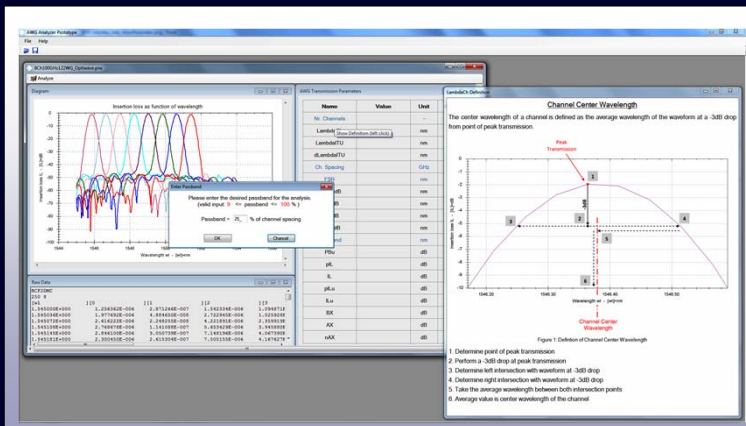


Motivation

Arrayed waveguide grating (AWG) is a key component in the dense wavelength division multiplexing (DWDM) technique. When defining its performance or determining its suitability for a particular application, a set of transmission parameters must be considered. These parameters are extracted by analyzing AWG transmission characteristics - the simulated/measured AWG spectral response for both the transverse electric (TE) and the transverse magnetic (TM) polarization states. While the measurement method adhered by most AWG vendors is the deployment of Mueller Matrix method the way that vendors specify the performance of a device from the measured curves differs widely. Also the output from the commercially available AWG design tools is the simulated transmission characteristics only and none of them supports (or supports only partially) the software-aided evaluation of AWG parameter calculation. Beside this a further problem is that the evaluation of AWGs is not underlying a uniform standard, i.e. the definitions of the AWG transmission parameters by now are not standardized.

Solution

AWG-Analyzer is a fast and comprehensible software tool to calculate transmission parameters from simulated/measured transmission characteristics. The implemented evaluation algorithm is capable of calculating the AWG transmission parameters from transmission characteristics containing single, multiple or colorless spectrum. The parameters can be calculated for each channel separately. The worst case value of each parameter over all output channels respectively orders of the channels presents the final set of AWG transmission parameters. The provided transmission parameter definitions enable the user to be informed about the implemented evaluation algorithm and how finally the AWG transmission parameters were calculated.



Conclusion

The developed AWG-Analyzer software tool solves the 2 main problems in current AWG evaluation. It replaces the inconvenient, time intensive, and error prone manual evaluation and provides textual and graphical definitions of 21 computable transmission parameters. AWG-Analyzer is intended to bridge the gap between AWG design, simulation and manufacturing by offering performances to provide powerful support in every stage of the AWG life cycle. Moreover the implemented help system enables the usage also for educational and training purposes. AWG-Analyzer offers everything needed for performing sustainable AWG evaluations.