

## AT A GLANCE

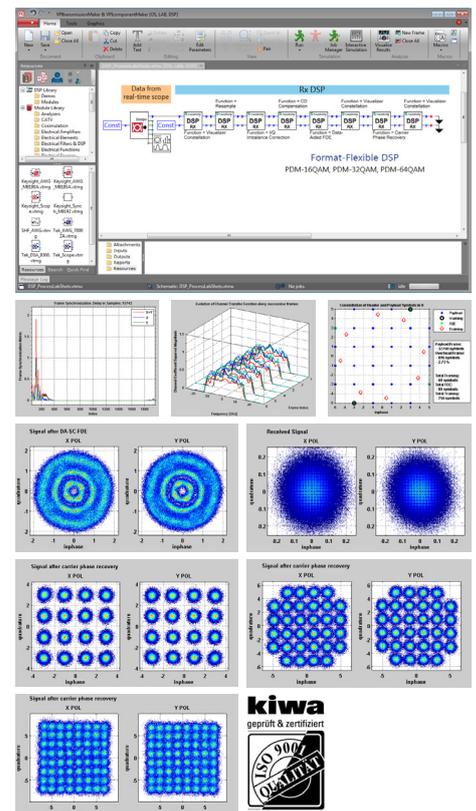
Fraunhofer HHI provides a comprehensive set of digital signal processing algorithms for optical coherent systems and nonlinear system simulation, analysis and pre-distortion.

### VPItoolkit™ DSP Library

- Fraunhofer HHI DSP algorithms in partnership with VPIphotonics™
- Comprehensive suite of algorithms for coherent and self-coherent (Kramers-Kronig) systems
- Validated in lab and field trials of metro, long-haul and submarine links

### Nonlinear System Software Suite

- Analysis and simulation of nonlinear systems
- Accurate identification and modeling of nonlinear systems by Volterra series
- Fast numerical simulation of nonlinear systems
- Synthesis of digital nonlinear predistortion filters

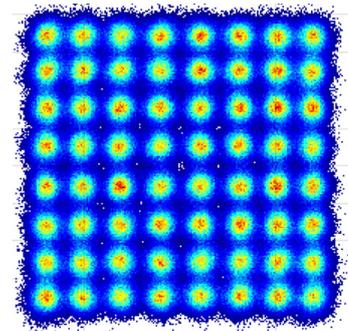


### VPItoolkit™ DSP Library

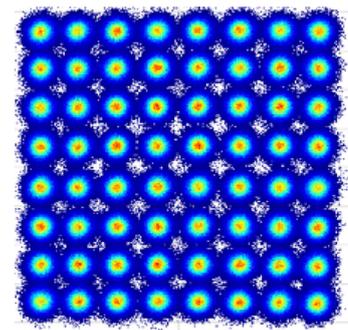
- Pluggable toolkit for VPItransmissionMaker™ Optical Systems and VPIlabExpert™
- More information also at: [www.vpiphotonics.com/Tools/DSPLibrary/](http://www.vpiphotonics.com/Tools/DSPLibrary/)

### Nonlinear System Software Suite

- Detailed analysis of linear and nonlinear characteristics
- Analysis of memory effects and reflections
- System-level simulations of linear and nonlinear devices such as:
  - DAC/ADC, RF amplifiers, external modulated lasers (EML) and many more ...
- High-fidelity signal generation by digital nonlinear pre-distortion
- Customers include Cisco, Inphi and others
- Matlab® based
- Compatible to VPItoolkit™ DSP Library
- For VPItransmission-Maker™ Optical Systems
- Flexible licensing schemes available



64-GBd 64QAM linear pre-distortion



64-GBd 64QAM nonlinear pre-distortion

Benefit of digital nonlinear pre-distortion generated with Nonlinear System Software Suite applied to 64-GBd (768-Gb/s) PDM-64QAM signals.

### Applications

- Benchmark DSP algorithms
- Design next-generation transceivers
- Nonlinear component modeling and pre-distortion filter synthesis
- Address trade-off between DSP complexity and its performance
- Compare modulation formats
- System performance analysis
- Define component requirements

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