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Fiber Nonlinearity Compensation Methods

Optimum Baud Rate (Granularity) in nonlinear systems

- Digital SPM Pre-compensation (with and without filters)
- Pre-Post compensation, with receiver

US Patent 8,112,001

Transmitter DSP

Modulator

N Amplified Spans

- Mid-Span Spectral Inversion (HNLF)
- Mid-Span Spectral Inversion (PPLN)*

- MSSI for OFDM
- Analysis/Simulations/
- Experiment
- Splitting the nonlinear Element

One Amplified Span

(N-1) Amplified Spans

With TID

Pilot tone XPM Compensation after SPM comp.
- Digital SPM Post-compensation
- XPM compensation (TID)
- Filtered Digital Back Propagation

US Patent 9,236,951

Receiver DSP

Intensity Fluctuations Receiver

LF signal for XPM compensation based on TID and DSP

US Patent 9,002,210

Receiver

Receiver

Receiver

TID is Total Intensity Detection – detects all channels’ intensity and then phase modulates to undo XPM.

US Patent Accepted

TID

Receivers

Receiver

Receiver

Receiver

Receiver

TID

With TID

US Patent 9,294,216

US Patent 8,112,001