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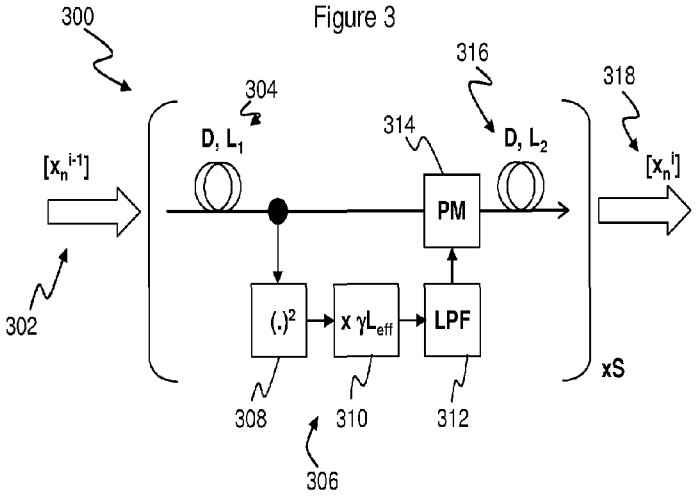
(54) Title: METHOD AND SYSTEM FOR NON-LINEARITY COMPENSATION IN OPTICAL TRANSMISSION SYSTEMS

Figure 3



(57) Abstract: An equaliser (200) for equalisation of a signal transmitted via an optical fibre link from a transmitter to a corresponding receiver employs a backpropagation model (300) which comprises one or more sequential segments collectively representing an inverse fibre link. Each sequential segment comprises a linear backpropagation element (304), and a non-linear backpropagation element (306) having an associated compensation bandwidth (312). The equaliser (200) generates a distortion-mitigated signal by computing, for each sequential segment in turn, a first linear compensated signal from a signal input to the segment in accordance with the linear backpropagation element (304), and a non-linear compensated signal from the first linear compensated signal in accordance with the non-linear backpropagation element (306). Computation of the non-linear compensation signal comprises limiting a bandwidth of a compensation signal derived from the first linear compensated signal in accordance with the associated compensation bandwidth (312).

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INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

H04B 10/18(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04B 10/18; H04B 1/16

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: back propagation, equalizer, non-linear, compensation, filter

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0293372 A1 (PRINCIPE JOSE C. et al.) 27 November 2008 See abstract, Fig.4	1-16
A	Ezra Ip et al.,Compensation of Dispersion and Nonlinear Impairments Using Digital Backpropagation, JOURNAL OF LIGHTWAVE TECHNOLOGY, VOL. 26, NO. 20, pp. 3416-3425, OCT. 15, 2008 See abstract, Fig.3	1-16
A	S. Oda, et al., 12Gb/s DP-QPSK transmission using a novel nonlinear compensator in digital coherent receiver, OFC`09, paper OThR6, 2009 See page 1, Fig.1	1-16
A	T. Tanimura et al, Systematic Analysis on Multi-Segment Dual-Polarisation Nonlinear Compensation in 112 Gb/s DP-QPSK Coherent Receiver, ECOC 2009, 20-24 September, 2009, Vienna, Austria See page 1, Fig.1	1-16
PX	L.B. Du et al., Improved single channel backpropagation for intra-channel fiber nonlinearity compensation in long-haul optical communication systems, Optics Express, Vol. 18, Issue 16, pp. 17075-17088 (2010) See whole text	1-16

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0293372 A1	27.11.2008	WO 2007-053831 A2	10.05.2007
		WO 2007-053831 A3	10.05.2007
		WO 2007-053831 A3	15.05.2008