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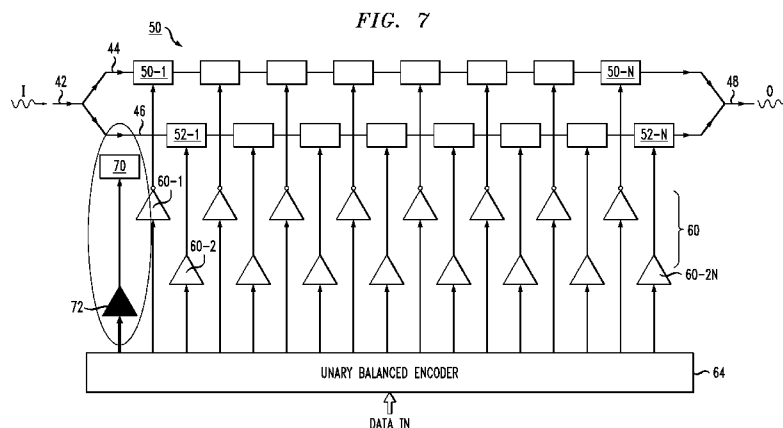
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(88) Date of publication of the international search report:
25 April 2013(54) Title: OPTICAL MODULATOR UTILIZING UNARY ENCODING AND AUXILIARY MODULATOR SECTION FOR
LOAD BALANCING

(57) Abstract: An optical modulator is configured to include multiple modulating sections formed along each arm and create a unary-encoded optical output signal by driving the number of sections required to represent the data value being transmitted (e.g., three sections driven to represent the data value "3", four sections driven to represent the data value "4"). An auxiliary modulating section, isolated from the optical signal path, is included for creating a path for current flow in situations where only an odd number of modulating sections are required to represent the data. The activation of the auxiliary modulation section minimizes the current imbalance that would otherwise be present along a common node of the arrangement.

A. CLASSIFICATION OF SUBJECT MATTER**G02B 6/122(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)

G02B 6/122; G02F 1/025; G02F 1/035; G02B 6/12

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: optical modulator, silicon, waveguiding, splitter, modulating sections, combiner, auxiliary modulating, unary-encoded

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 2011-0044573 A1 (WEBSTER, MARK et al.) 24 February 2011 See abstract, paragraphs [0008]-[0010] and claims 1-10.	1,4-6 2,3
Y A	US 2008-0095486 A1 (SHASTRI, KALPENDU et al.) 24 April 2008 See abstract and claim 1.	1,4-6 2,3
Y	US 2008-0089634 A1 (MOSINSKIS, PAULIUS et al.) 17 April 2008 See abstract, paragraph [0023] and claim 1.	4
A	US 2010-0316324 A1 (WEBSTER, MARK et al.) 16 December 2010 See abstract and claim 1.	1-6
PX PA	WO 2011-112360 A2 (LIGHTWIRE, INC.) 15 September 2011 See abstract, paragraphs [0017] and claims 1-8.	1 2-6



Further documents are listed in the continuation of Box C.



See patent family annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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