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(71) Applicant (for all designated States except US): TELEFONAKTIEBOLAGET L M ERICSSON (PUBL) [SE/SE]; S-164 83 Stockholm (SE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): LARSSON, Peter [SE/SE]; Ballongatan 2, 1TR, S-169 71 Solna (SE).

(74) Agent: NILSSON, Charlotte; Ericsson AB, Patent Unit 3G, S-164 80 Stockholm (SE).

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

[Continued on next page]

(54) Title: MULTIPLICATIVE NETWORK CODING

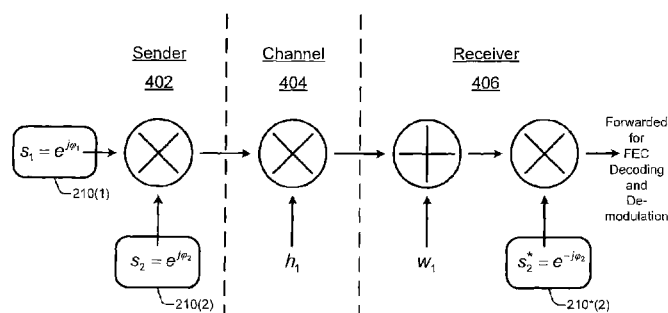


FIG. 4

(57) Abstract: Network coding may be performed with encoding and/or decoding that involves a multiplication operation. In an example embodiment, a communication node is adapted to perform multiplicative network coding. The communication node includes an encoder and a decoder. The encoder is arranged to perform an encoding operation by multiplying two or more signals that bear information to form a composite signal. The decoder is arranged to perform a decoding operation by multiplying a received composite signal with one or more complex-conjugated signals, with the decoder yielding a decoded signal that bears information. With the encoding operation, the communication node is adapted to at least partially perform multiplicative-network-coding encoding for a sending communication mode. With the decoding operation, the communication node is adapted to at least partially perform multiplicative-network-coding decoding for a receiving communication mode.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: H04B, H04W, H04L

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SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA, PAJ, INSPEC, INTERNET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	Riis, S., "Reversible and Irreversible Information Networks," Information Theory, IEEE Transactions on, vol.53, no.11, pp.4339-4349, Nov. 2007, page 4339, right paragraph, line 35 - 49, abstract	1-14,16-22
P,A	--	15
A	Dougherty, R.; Freiling, C.; Zeger, K., "Insufficiency of linear coding in network information flow," Information Theory, IEEE Transactions on, vol.51, no.8, pp. 2745-2759, page 2746, left paragraph, line 22 - 33, abstract	1-22
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☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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Name and mailing address of the ISA/

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Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Omar Al-Askary / MRO

Telephone No. +46 8 782 25 00

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	Larsson, P., "A Multiplicative and Constant Modulus Signal Based Network Coding Method Applied to CB-Relaying," Vehicular Technology Conference, 2008. VTC Spring 2008. IEEE , vol., no., pp.61-65, 11-14 May 2008, the whole document --	1-22
T	Tao Cui; Feifei Gao; Tellambura, C., "Physical Layer Differential Network Coding for Two-Way Relay Channels," Global Telecommunications Conference, 2008. IEEE GLOBECOM 2008. IEEE , vol., no., pp.1-5, Nov. 30 2008-Dec. 4 2008, page 3, right paragraph, line 37 - page 4 left paragraph, line 13, abstract, section I, section II.A -- -----	1-22

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