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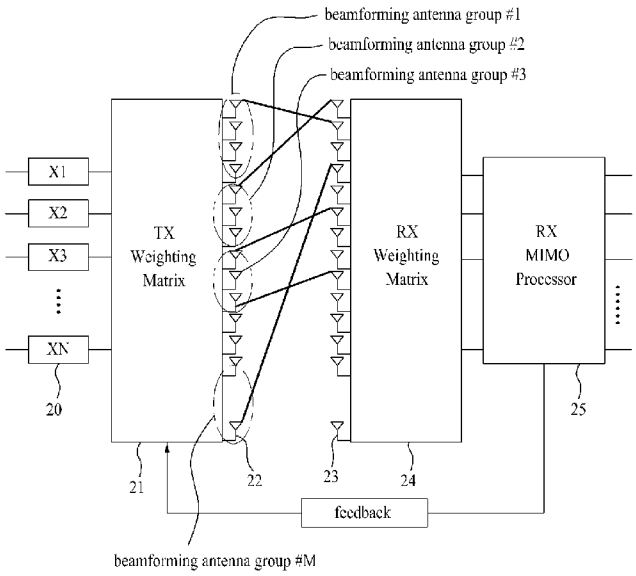
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(54) Title: A METHOD FOR TRANSMITTING A SIGNAL IN A MULTIPLE INPUT MULTIPLE OUTPUT SYSTEM, AND AN APPARATUS FOR THE SAME

[Fig. 2]



(57) Abstract: A method for transmitting a signal in a MBVD system is disclosed. A method for transmitting a signal in Multiple Input Multiple Output (MIMO) system includes, transmitting a training signal based on a predetermined sequence via at least one beamforming antenna group, the beamforming antenna group including a plurality of antennas, receiving first information in¬ dicating at least one available beamforming antenna group from among the beamforming antenna groups, and transmitting second information and antenna weight information, the second information indicating beamforming antenna group being determined on the basis of the first in¬ formation, the antenna weight information being associated with a signal transmitted from the antenna group indicated by the second information.

WO 2009/093870 A3

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC[8]: ***H04B 7/04*** (2006.01); ***H04W 24/02*** (2009.01)

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)

IPC[8]: H04W, H04B

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

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

WPI, PAJ, IEEE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/012520 A1 (TSAI et al.) 19 January 2006 (19.01.2006) *Paragraphs [0020, 0036-0043].*	1, 11
	--	
A	US 6765969 B1 (VOOK et al.) 20 July 2004 (20.07.2004) *Column 24, line 33 - column 26, line 25.*	1, 11
	--	
A	US 2007/076805 A1 (KALLURI et al.) 5 April 2007 (05.04.2007) *Claims 12-15, 19-22.*	1, 11
	--	
A	US 2005/094741 A1 (KURODA) 5 May 2005 (05.05.2005) *Claims 1, 7, 14, 20, 21.*	1, 11
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Date of the actual completion of the international search	Date of mailing of the international search report
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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.
A	US 2007/178862 A1 (WINTERS et al.) 2 August 2007 (02.08.2007) *Paragraphs [0041-0043]* ---	1, 11

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
US A 2006012520		US A1 2006012520	2006-01-19
		TW B 241790B	2005-10-11
US A 6765969		US B1 6765969	2004-07-20
US A 2007076805		US A1 2007076805	2007-04-05
US A 2005094741		US A1 2009059880	2009-03-05
		CN A 101267282	2008-09-17
		CN A 1614905	2005-05-11
		US A1 2005094741	2005-05-05
		JP A 2005142715	2005-06-02
US A 2007178862		US A1 2007178862	2007-08-02