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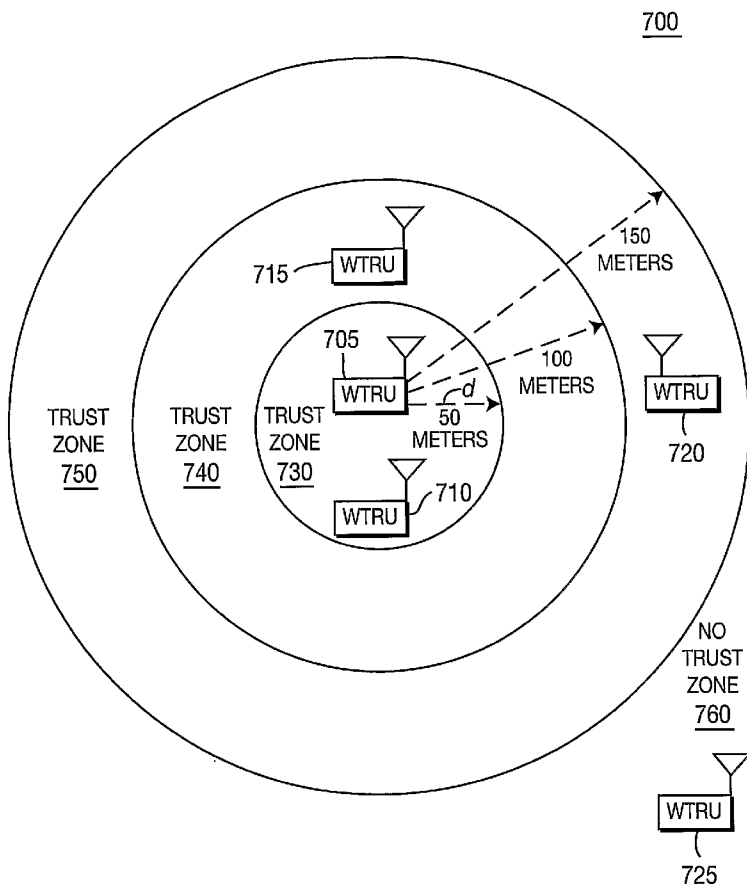
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[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR SECURING WIRELESS COMMUNICATIONS



(57) Abstract: A method and system for securing wireless communications is disclosed. In one embodiment, different security policies are used based on the distance between a receiver and a transmitter, whereby data in the wireless communications can only be demodulated if received in particular trust zones. In another embodiment, a plurality of bit stream fragments are transmitted by a plurality of transmitters to a receiver located in an area where transmission patterns radiated by the transmitters intersect. Alternatively, the receiver performs a function on packet data units (PDUs) transmitted by the transmitters. In yet another embodiment, primary modulation points of a modulation points which can be demodulated only by a receiver that is within range of the transmitter. In yet another embodiment, a main waveform is transmitted which overlays a QPSK signal with hierarchical modulation (HM) having encoded descrambling information.

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PCT/US05/41976

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04Q 07/24 (2007.01)

USPC - 370/338

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)

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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)

PatBase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2004/0166901 A1 (UMESH et al) 26 August 2004 (26.08.2004) entire document	1-4,6-15,17-31,33-50 ----- 5,16,32
X	US 2004/0114692 A1 (MATSUMOTO) 17 June 2004 (17.06.2004) entire document	51-79
Y	US 2004/0103275 A1 (JI et al) 27 May 2004 (27.05.2004) entire document	5,16,32
A	WO 2004/054137 A1 (KIM et al) 24 June 2004 (24.06.2004) entire document	1-79

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/41976

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-21 and 28-38, drawn to a method for securing wireless communications in a wireless communication system including a plurality of wireless transmit/receive units (WTRUs).

Group II, claims 22-27 and 39-50, drawn to a method for securing wireless communications in a wireless communication system including a plurality of access points (APs) and at least one wireless transmit/receive unit (WTRU).

Group III, claims 51-68, drawn to a method for securing wireless communication in a wireless communication system which includes a sequence of symbols represented by a plurality of primary modulation points of a modulation constellation.

Group IV, claims 69-74, drawn to a method and a wireless communication system for securing wireless communications in a wireless communication system.

Group V, claims 75-79, drawn to a wireless communication system for securing wireless communications.

The inventions listed as Groups I through V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention is transmitting a modulated wireless communication signal that can be demodulated if received in a first trust zone but cannot be demodulated if received in a second trust zone as claimed therein; the special technical feature of the Group II invention is each of the APs transmitting a fragment of a bit stream to the WTRU located in an area where a transmission pattern radiated from each of the APs intersect as claimed therein; the special technical feature of the Group III invention is replacing each primary modulation point with a cluster of secondary modulation points located in close proximity to one another as claimed therein; the special technical feature of the Group IV invention is transmitting a main waveform which overlays a quadrature phase shift keying (QPSK) signal with hierarchical modulation (HM) as claimed therein; and the special technical feature of the Group V invention is a multi-layer secure bit (MLSB) scrambler/descrambler for scrambling/descrambling channel symbols as claimed therein.

Since none of the special technical features of the Group I through V inventions is found in more than one of the inventions, unity of invention is lacking.