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**Declarations under Rule 4.17:**

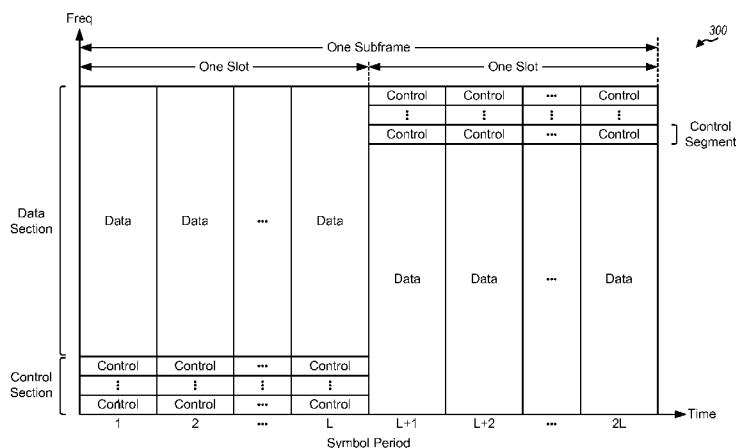
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**Published:**

- with international search report

[Continued on next page]

(54) Title: VARIABLE CONTROL CHANNEL FOR A WIRELESS COMMUNICATION SYSTEM



(57) Abstract: Techniques for sending control information on a variable control channel are described. Different structures for mapping control information to control channel resources may be used depending on various factors such as operating configuration, the available resources for the control channel, the type(s) of control information being sent, the amount of control information being sent for each type, whether or not data is being sent, etc. In one design, at least one type of control information being sent may be determined and may comprise channel quality indicator (CQI) information, acknowledgement (ACK) information, and/or other types of control information. A structure of the control channel may be determined based on operating configuration (e.g., system configuration such as asymmetry of downlink and uplink allocations) and/or other factors. The at least one type of control information may be mapped to the resources for the control channel based on the structure.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. H04Q7/38

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)  
H04Q

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 practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 605 726 A (NTT DOCOMO INC [JP]) 14 December 2005 (2005-12-14)	1-12, 20-22, 25-28, 31-36, 39-43
A	paragraphs [0034], [0036], [0050], [0061] figures 4,6,9	13-19, 23,24, 29,30, 37,38
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Further documents are listed in the continuation of Box C.

See patent family annex.

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- \*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

- \*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
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- \* & \* document member of the same patent family

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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.
X	EP 0 888 021 A (MOTOROLA INC [US]) 30 December 1998 (1998-12-30)	1-12, 20-22, 25-28, 31-36, 39-43
A	column 4, line 33 - line 39 column 5, line 2 - line 15 figures 2,5	13-19, 23,24, 29,30, 37,38
A	----- US 5 732 353 A (HAARTSEN JACOBUS CORNELIS [SE]) 24 March 1998 (1998-03-24)	1,20,26, 32,34, 40,42
	column 2, line 40 - line 43 column 5, line 42 - line 57 column 6, line 20 - line 27 column 6, line 47 - line 49 column 8, line 21 - line 23 -----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/074246
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1605726	A	14-12-2005	CN 1707986 A 14-12-2005
			JP 2005354537 A 22-12-2005
			US 2006009230 A1 12-01-2006
EP 0888021	A	30-12-1998	AU 8440298 A 04-01-1999
			WO 9859440 A1 30-12-1998
US 5732353	A	24-03-1998	AU 708294 B2 29-07-1999
			AU 5326696 A 23-10-1996
			BR 9604905 A 21-07-1998
			CA 2217060 A1 10-10-1996
			CN 1185888 A 24-06-1998
			DE 69634380 D1 31-03-2005
			DE 69634380 T2 04-05-2006
			EP 0819363 A1 21-01-1998
			NZ 305291 A 29-04-1999
			RU 2197791 C2 27-01-2003
			WO 9631991 A1 10-10-1996