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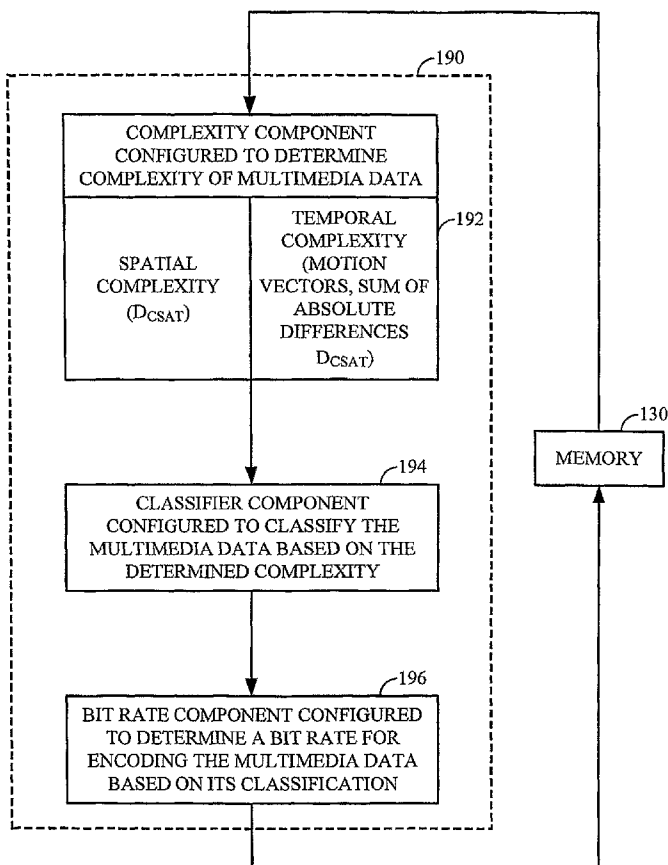
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- (71) Applicant (for all designated States except US): **QUALCOMM INCORPORATED** [US/US]; 5775 Morehouse Drive, San Diego, California 92121 (US).
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- (74) Agents: **WADSWORTH, Philip R.** et al.; 5775 Morehouse Drive, San Diego, California 92121 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
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[Continued on next page]

(54) Title: CONTENT ADAPTIVE MULTIMEDIA PROCESSING



(57) Abstract: An apparatus and method for processing multimedia data, such as, for example, video data, audio data, or both video and audio data for encoding utilizing a determined content classification is claimed. Processing the multimedia data includes determining complexity of multimedia data, classifying the multimedia data based on the determined complexity, and, determining a bit rate for encoding the multimedia data based on its classification. The complexity can include a spatial complexity component and a temporal complexity component of the multimedia data. The multimedia data is classified using content classifications, which are based on a visual quality value for viewing multimedia data, using the spatial complexity, the temporal complexity, or both the spatial complexity and temporal complexity.

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RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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

**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))*

**(88) Date of publication of the international search report:**  
20 September 2007

**Published:**

- *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2006/008484

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
INV. H04N7/26 H04N7/50		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) H04N		
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, INSPEC		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/169933 A1 (SONG BYUNG-CHEOL ET AL) 11 September 2003 (2003-09-11)  the whole document -----	1-52, 89-98, 101-156
A	US 5 699 119 A (CHUNG ET AL) 16 December 1997 (1997-12-16)  the whole document -----	1-52, 89-98, 101-156
A	WO 99/43157 A (MOTOROLA INC) 26 August 1999 (1999-08-26)  abstract page 5, paragraph II - page 7, paragraph B; claims; figures ----- -/--	1-52, 89-98, 101-156
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *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) *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 *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 *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. *&* document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report	
3 July 2007	17/07/2007	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  With, Francis	

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/008484

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 168 731 A (MITSUBISHI DENKI KABUSHIKI KAISHA) 2 January 2002 (2002-01-02)  abstract paragraph [0023] paragraph [0038] - paragraph [0048]; figure 5	1-52, 89-98, 101-156
X	US 2003/227977 A1 (HENOCCO XAVIER [FR]) 11 December 2003 (2003-12-11) paragraphs [0022] - [0024], [0258] - [0271]; figures 4a,5	157-186
X	WO 95/35628 A (SNELL & WILCOX LTD [GB]; KNEE MICHAEL JAMES [GB]; DEVLIN BRUCE FAIRBAI) 28 December 1995 (1995-12-28) from page 6, line 29 to page 7, line 31; page 9, lines 7 to 10	157-186
X	YONGQING LIANG ET AL: "A new content-based hybrid video transcoding method" PROCEEDINGS 2001 INTERNATIONAL CONFERENCE ON IMAGE PROCESSING. ICIP 2001. THESSALONIKI, GREECE, OCT. 7 - 10, 2001, INTERNATIONAL CONFERENCE ON IMAGE PROCESSING, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 3. CONF. 8, 7 October 2001 (2001-10-07), pages 429-432, XP010564888 ISBN: 0-7803-6725-1 the whole document	157-186
X	EP 1 209 624 A (SONY INT EUROP GMBH [DE]) 29 May 2002 (2002-05-29) abstract paragraphs [0010] - [0013], [0034] - [0036]	157-186
X	WO 2004/019273 A (THOMSON LICENSING SA [FR]; ZHANG JUNBIAO [US]; RAMASWAMY KUMAR [US]; L) 4 March 2004 (2004-03-04) page 4, lines 18-31; page 6, lines 8 to 20; figure 2	157-186
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X	WO 02/087255 A (FRONT PORCH DIGITAL INC [US]) 31 October 2002 (2002-10-31) claim 7	157,172
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/008484

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 505 488 A1 (SHARP KK [JP]) 9 February 2005 (2005-02-09) abstract; paragraphs 7 and 31 -----	157,172
P,X	EP 1 615 447 A (ST MICROELECTRONICS SRL [IT]) 11 January 2006 (2006-01-11) paragraphs [0081] - [0096] -----	157-186
P,X	US 6 909 745 B1 (PURI ATUL [US] ET AL) 21 June 2005 (2005-06-21) abstract -----	157-186

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/008484

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 53-88, 99, 100  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.2

Claims Nos.: 53-88, 99, 100

The present application contains 186 claims, of which 13 are independent. There is no clear distinction between the independent claims because of overlapping scope. There are so many claims, and they are drafted in such a way that the claims as a whole are not in compliance with the provisions of clarity and conciseness (Article 6 PCT), as it is particularly burdensome for a skilled person to establish the subject matter for which protection is sought. The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search (PCT Guidelines, 9.19 and 9.25). The search was based on the subject matter, as far as can be understood, that could reasonably be expected to be claimed later in the procedure (see description, paragraphs [0026]-[0037], [0040]-[0048], [0084]-[0100], fig. 1-9), and the corresponding claims (1-52, 89-98, 101-156). Briefly, the searched subject matter corresponds to a method of processing multimedia, e.g. video, data comprising: determining spatial and/or temporal complexity of said data, classifying the data according to such complexity, then encoding the data using encoding parameters, e.g. bitrate, determined according to said classification and to a desired viewing quality.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-52, 89-98, 101-156

A method of processing multimedia (e.g. video) data comprising: determining spatial and/or temporal complexity of said data, classifying the data according to such complexity, then encoding the data using encoding parameters, e.g. bitrate, determined according to said classification and to a desired viewing quality.

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2. claims: 157-186

A method of processing encoded multimedia (e.g. compressed video) data comprising: determining complexity of said data, then decoding the data by suitably selecting a set of decoding processes according to the complexity of the multimedia data.

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/008484

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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