

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 December 2004 (29.12.2004)

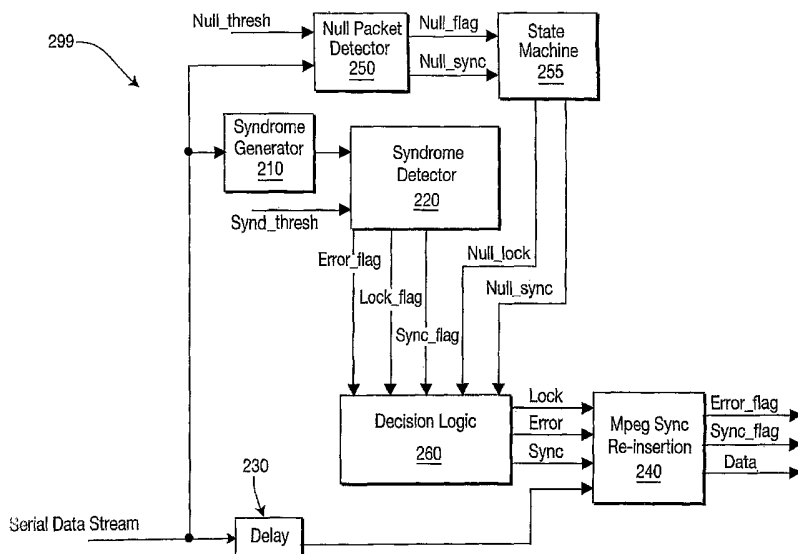
PCT

(10) International Publication Number
WO 2004/114676 A3

- (51) International Patent Classification⁷: **H04N 7/66**, Thomas [US/US]; 8262 Forest Lane, Indianapolis, IN 46240 (US).
H03M 13/15, H04L 7/04
- (21) International Application Number: PCT/US2004/019003
- (22) International Filing Date: 16 June 2004 (16.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/479,397 18 June 2003 (18.06.2003) US
- (71) Applicant (for all designated States except US): **THOMSON LICENSING S.A.** [FR/FR]; 46, Quai A. Le Gallo, F-92648 Boulogne (FR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LIU, Weixiao** [CN/US]; 9353 D College Drive, Indianapolis, IN 46240 (US). **MARKMAN, Ivonete** [BR/US]; 11388 Royal Court, Carmel, IN 46032 (US). **MAYER, Matthew**,
- (74) Agents: **TRIPOLI, Joseph, S.** et al.; c/o Thomson Licensing Inc., 2 Independence Way, Suite 200, Princeton, NJ 08540 (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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR PROCESSING NULL PACKETS IN A DIGITAL MEDIA RECEIVER



(57) Abstract: A method and apparatus (299) for reliably detecting MPEG-2 packet sync-byte positions received via a digital transmission system in the event of a packet stream containing a plurality of null packets or a plurality of packets containing a fixed repeating bit pattern and for reliably synchronizing and delivering the MPEG-2 stream broadcast to the receiver transport layer. A Null-Packet Detector (250) compares the content of the current packet with a fixed (or predetermined) bit pattern to detect a null packet to reliably identify the location of the sync-byte of the null packet. A sync-byte position is identified based upon the position of the predetermined fixed bit pattern in the header portion of a plurality of null-packets in the stream.

WO 2004/114676 A3



Published:

— *with international search report*

(88) Date of publication of the international search report:

14 April 2005

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/US2004/019003

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N7/66 H03M13/15 H04L7/04

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 7 H04N H03M H04L

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	YUJEN JUAN: "Erroneous Mpeg Packet Synchronization In Fec Decoder Of The Mcns/scte/ltu-t J.83 Annex B Standard" INTERNATIONAL CONFERENCE ON CONSUMER ELECTRONICS, 1998, 2 June 1998 (1998-06-02), pages 372-373, XP010282999 the whole document	1-12
X A	US 5 831 690 A (ACAMPORA ALFONSE ANTHONY ET AL) 3 November 1998 (1998-11-03) abstract page 1, line 7 - page 2, line 35 page 4, line 38 - page 5, line 17	1,2,4-12 3
X	EP 0 933 949 A (MATSUSHITA ELECTRIC IND CO LTD) 4 August 1999 (1999-08-04) page 1, paragraph 4 - page 1, paragraph 6	1-12

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

26 October 2004

Date of mailing of the international search report

20.01.2005

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

Schoeyer, M

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/019003

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.:
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:

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.:

1-12

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

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

1. claims: 1-12

The subject-matter of claims 1-12 relates to processing a stream of fixed length in which it is detected whether a received packet is a null packet and in which the location of a sync-byte is detected.

2. claims: 13-37

The subject-matter of claims 13-37 relates to the detection of a checksum-encoded byte and replacing this byte by a predetermined value.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/019003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5831690	A	03-11-1998	NONE	
EP 0933949	A	04-08-1999	JP 3045715 B2	29-05-2000
			JP 11317768 A	16-11-1999
			DE 69902194 D1	29-08-2002
			DE 69902194 T2	03-04-2003
			EP 0933949 A1	04-08-1999
			JP 2000187940 A	04-07-2000
			US 6577813 B1	10-06-2003