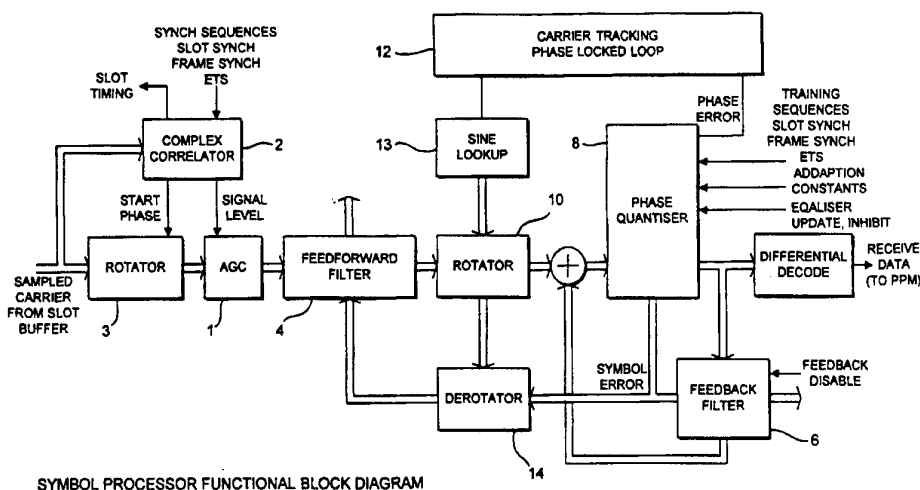




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>H04L 25/03, 27/233</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 96/34481</b> (43) International Publication Date: 31 October 1996 (31.10.96)</p>
<p>(21) International Application Number: PCT/GB96/00947 (22) International Filing Date: 19 April 1996 (19.04.96) (30) Priority Data: 9508661.7 28 April 1995 (28.04.95) GB (71) Applicant (for all designated States except US): IONICA INTERNATIONAL LIMITED [GB/GB]; Cowley Road, Cambridge CB4 4AS (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): RUDKIN, Paul, William [GB/GB]; 12 Tamarin Gardens, Cherry Hinton, Cambridge CB1 4BH (GB). (74) Agent: SARUP, David, Alexander; Withers &amp; Rogers, 4 Dyer's Buildings, Holborn, London EC1N 2JT (GB).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 28 November 1996 (28.11.96)</p>	

(54) Title: ADAPTIVE FILTER FOR USE IN A TDM/TDMA RECEIVER



SYMBOL PROCESSOR FUNCTIONAL BLOCK DIAGRAM

(57) Abstract

A demodulator for a receiver of digital data messages sent in predetermined time slots within fixed length time frames includes an adaptive filter operative on each received data packet to determine digital bit values and to adapt filter coefficients. Filter coefficient values upon filtering a data packet in a time slot are used as initial values in adaptive filtering the next received data packet in the corresponding time slot of the next frame.

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## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/GB 96/00947

 A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 6 H04L25/03 H04L27/233

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 6 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)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 014, no. 455 (E-0985), 28 September 1990 & JP,A,02 183614 (MATSUSHITA), 18 July 1990, see abstract	1,2,6-12
Y	---	3-5
X	EP,A,0 106 136 (COMMUNICATIONS SATELLITE CORP.) 25 April 1984 see page 7, line 5 - page 8, line 2	1,2,6-12
Y	see page 10, line 35 - page 11, line 7 ---	3-5
X	EP,A,0 639 914 (MARTIN MARIETTA CORP.) 22 February 1995 see page 4, line 31 - line 33 see page 5, line 29 - page 7, line 1	13-19
Y	see figures 2,3 ---	3-5
	-/--	

 Further documents are listed in the continuation of box C.

 Patent family members are listed in annex.

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- \*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

11 October 1996

Date of mailing of the international search report

18.10.96

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

Ghigliotti, L

INTERNATIONAL SEARCH REPORT

Inter. onal Application No

PCT/GB 96/00947

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,4 583 048 (GUMACOS CONSTANTINE ET AL.) 15 April 1986 see column 6, line 9 - column 8, line 57	13-19
Y	see figure 3 ---	3-5
X	US,A,4 238 739 (ANDREN CARL F. ET AL.) 9 December 1980 see column 4, line 47 - column 6, line 40	13,14, 17,18
Y	see figure ---	3-5
X	WO,A,85 04999 (HARRIS CORP.) 7 November 1985 see page 8, line 2 - page 10, line 4	13,14, 17,18
Y	see figure 2 -----	3-5

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB96/00947

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

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

see continuation 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

Group I: Claims 1-12;  
Group II: Claims 13-19.

Group I: Adaptive filter means (filtering step), whose coefficients in a time slot are used as initial values in adaptive filtering the data received in the corresponding time slot of the next frame.

Group II: Correlation means, for determining the carrier phase at a predetermined symbol in a received data packet.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. Appl. No.

PCT/GB 96/00947

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US-A-4238739	09-12-80	NONE	
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