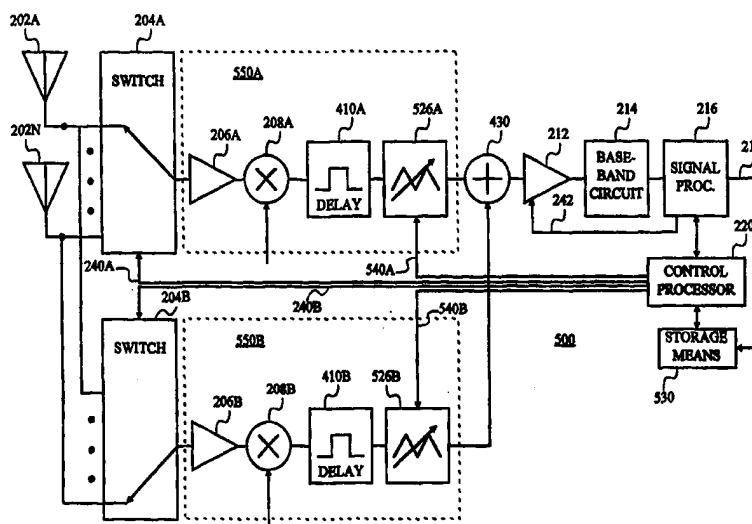


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(21) International Application Number: PCT/US98/09613</p> <p>(22) International Filing Date: 13 May 1998 (13.05.98)</p> <p>(30) Priority Data: 08/855,242 13 May 1997 (13.05.97) US</p> <p>(71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US).</p> <p>(72) Inventors: GRANATA, Gary; 10626 Aderman Avenue #10, San Diego, CA 92126 (US). THOMPSON, James, H.; 7523 Brava Street, Carlsbad, CA 92009 (US).</p> <p>(74) Agents: MILLER, Russell, B. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).</p> | | <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, 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>Published</p> <p><i>With international search report.</i></p> <p><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: 22 April 1999 (22.04.99)</p> |

(54) Title: SYSTEM AND METHOD FOR DETECTION AND SELECTION OF MULTIPLE ANTENNA



(57) Abstract

A system and method for selecting and combining satellite communication signals from multiple antennas. The system includes at least two signal paths (550A, 550B), each coupled to a separate antenna (202A–202N), and a combiner (430) for combining signals from the two paths for processing by a signal processor (216). At least one of the two paths (550A, 550B), includes a signal delay unit (410A–410B). The signal processor (216) can distinguish a signal received from a source on one of the antennas (202A–202N) from that signal received from the source on the other antenna based on a signal delay produced by the signal delay unit (410A, 410B). Each signal path (550) includes a variable attenuator (526) for selectively coupling each signal path (550) to the signal processor (216). The signal processor (216) determines the quality of the signals received along the signal paths (550), and provides data regarding signal quality to a control processor (220), which manipulates the attenuators to couple the signal path (550) having the highest quality signal to the signal processor (216).

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INTERNATIONAL SEARCH REPORT

International Application No

PCT, 98/09613

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04B7/08

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 H04B

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

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| X | US 4 218 654 A (OGAWA AKIRA ET AL) 19 August 1980 | 1 |
| Y | * abstract * see column 2, line 23 - column 3, line 5 see column 3, line 31 - line 68 see column 5, line 37 - column 6, line 20 see column 7, line 14 - line 43 see column 7, line 65 - column 8, line 35 see figure 2 | 2-5 |
| Y | --- GB 2 272 604 A (MOTOROLA INC) 18 May 1994 * abstract * see page 2, line 11 - line 37 see page 7, line 11 - page 8, line 4 see figures 1,2,5 see column 2, line 50 - column 3, line 28 --- -/-- | 2-5 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

1 October 1998

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/ 98/09613

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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| A | EP 0 624 006 A (SUMITOMO ELECTRIC INDUSTRIES) 9 November 1994 * abstract * see column 2, line 14 - line 55 see column 3, line 31 - column 4, line 37 see column 5, line 20 - line 47 see column 6, line 25 - column 7, line 3 see column 7, line 29 - column 8, line 5 see claim 1; figures 1,4,6 ----- | 1 |

INTERNATIONAL SEARCH REPORT

Int. tional application No.
PCT/US 98/09613

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 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.:

1-9

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

1. Claims: 1-9

A diversity system for satellite communications with antennas selection and comprising signal processor and first and second signal paths the second including a delay unit.

2. Claims: 10-20

A diversity method and system for satellite communications with antennas selection and comprising two signals paths. The quality of the received signals are compared and a maximum attenuation level is applied to the not selected signal path.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/ 98/09613

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