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Vaisanen et al.

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(54) **ANTENNA SHARING SWITCHING CIRCUITRY FOR MULTI-TRANSCIEVER MOBILE TERMINAL AND METHOD THEREFOR**

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Primary Examiner—Charles N. Appiah

(74) *Attorney, Agent, or Firm*—Antonelli, Terry, Stout & Kraus, LLP

(75) Inventors: **Ari Vaisanen**, Ruutana (FI); **Pekko Orava**, Tampere (FI)

(73) Assignee: **Nokia Corporation**, Espoo (FI)

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(21) Appl. No.: **09/321,824**

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(51) **Int. Cl.**⁷ **H04B 1/38**

(52) **U.S. Cl.** **455/73; 455/82; 455/552**

(58) **Field of Search** 455/552, 553, 455/101, 103, 73, 129, 277.1, 289, 550, 78, 133, 82, 182; 375/220, 219

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(57) **ABSTRACT**

Antenna switching circuitry in a multi-transceiver mobile terminal **10**, which features a first switching unit (SW1) which controllably couples a first transceiver port (P₁) to either a first antenna port (P_{A1}) or a second antenna port (P_{A2}); and a second switching unit (SW2) which controllably couples the second antenna port (P_{A2}) to either the first transceiver port (P₁), through the first switching unit (SW1), or to an input/output port (P_{I/O}) of a second transceiver (**12**). According to this scheme, the second antenna port is coupled to the input/output port of the second transceiver (**12**) in a mode in which the second transceiver (**12**) is operational, the first transceiver port (P₁) being decoupled from the second antenna port at this time, wherein the first transceiver port is coupled to the first antenna port and the input/output port of the second transceiver (**12**) is decoupled from the second antenna port, when the first transceiver is in a transmit mode, and wherein the first transceiver port is coupled to either of the first and second antenna ports, when the first transceiver (**11**) is in a receiving mode and the input/output port of the second transceiver (**12**) is decoupled from the second antenna port.

42 Claims, 4 Drawing Sheets

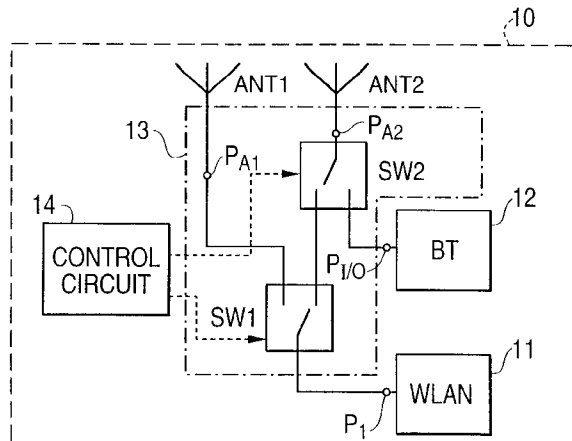


FIG. 1

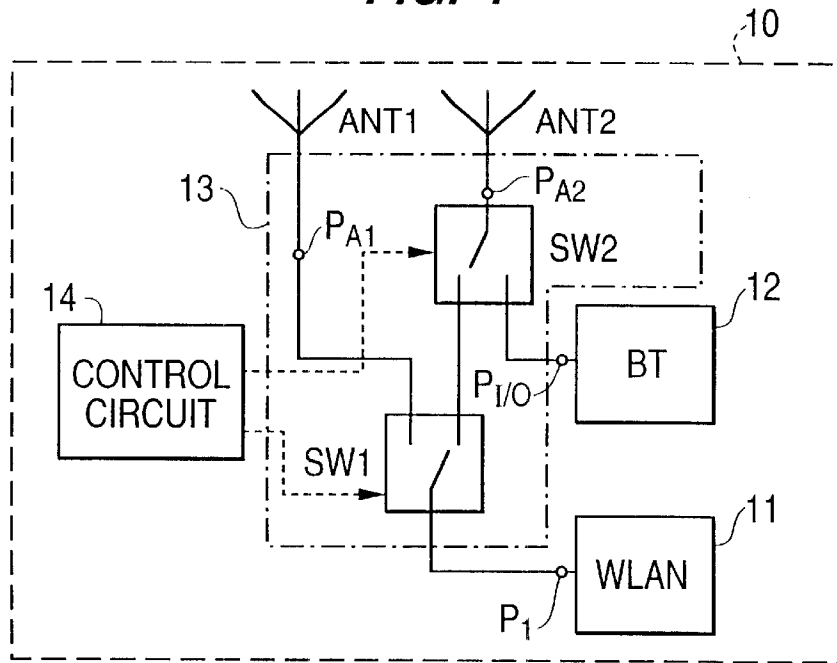
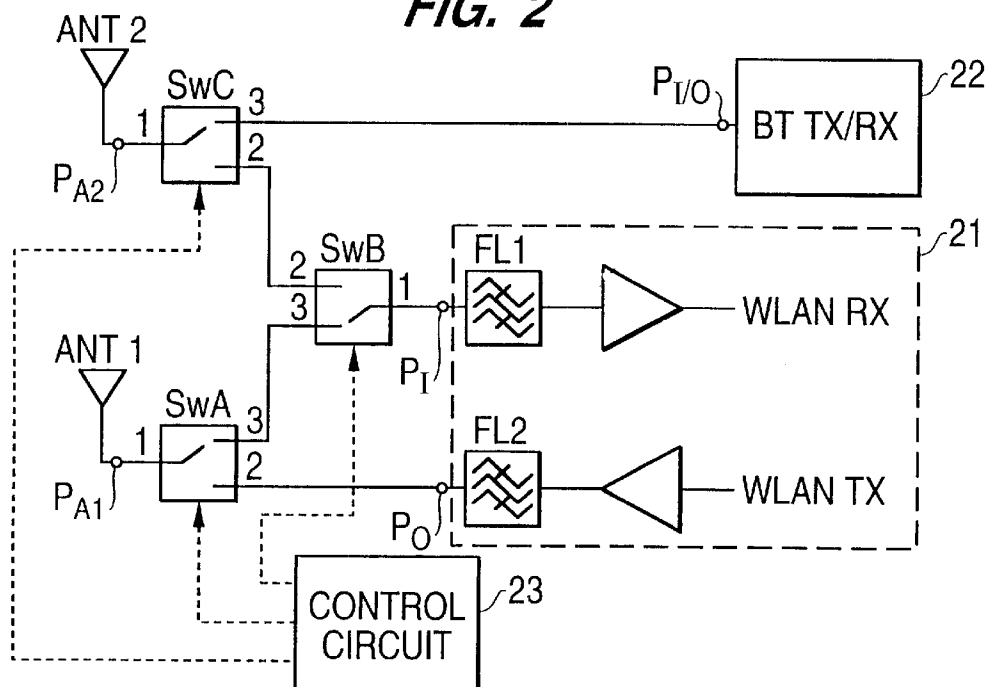


FIG. 2



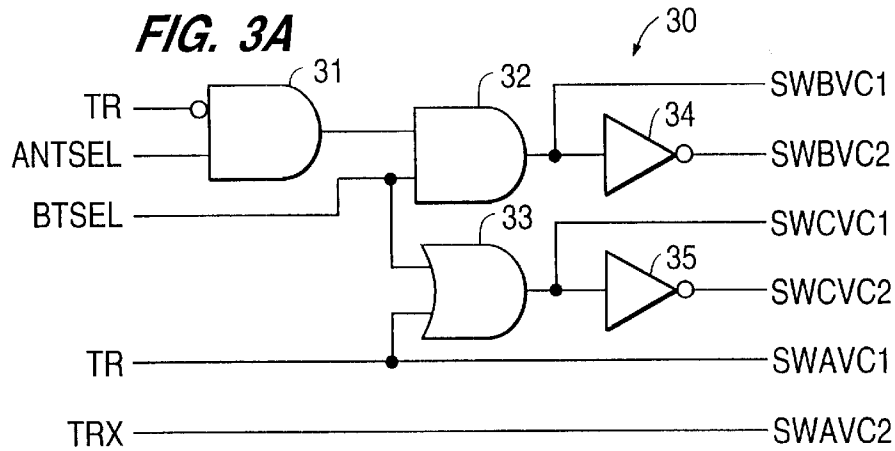


FIG. 3B

| SIGNAL | FUNCTION |
|--------|---|
| ANTSEL | SELECT ANT1 IF ANTSEL = 0 (ANTSEL OVERRIDDEN WHEN TR=1) |
| BTSEL | BLUETOOTH ACTIVE IF BTSEL = 0 |
| TR | TRANSMITTER ACTIVE IF TR = 1 |
| TRX | INVERSE OF TR |

FIG. 3C

| VC1 | VC2 | CONNECTIONS |
|-----|-----|--------------------------------|
| 0 | 0 | PORTS 1, 2 AND 3 ISOLATED |
| 0 | 1 | PORT 1-PORT 3, PORT 2 ISOLATED |
| 1 | 0 | PORT 1-PORT2, PORT 3 ISOLATED |
| 1 | 1 | PORTS 1, 2 AND 3 ISOLATED |

FIG. 4

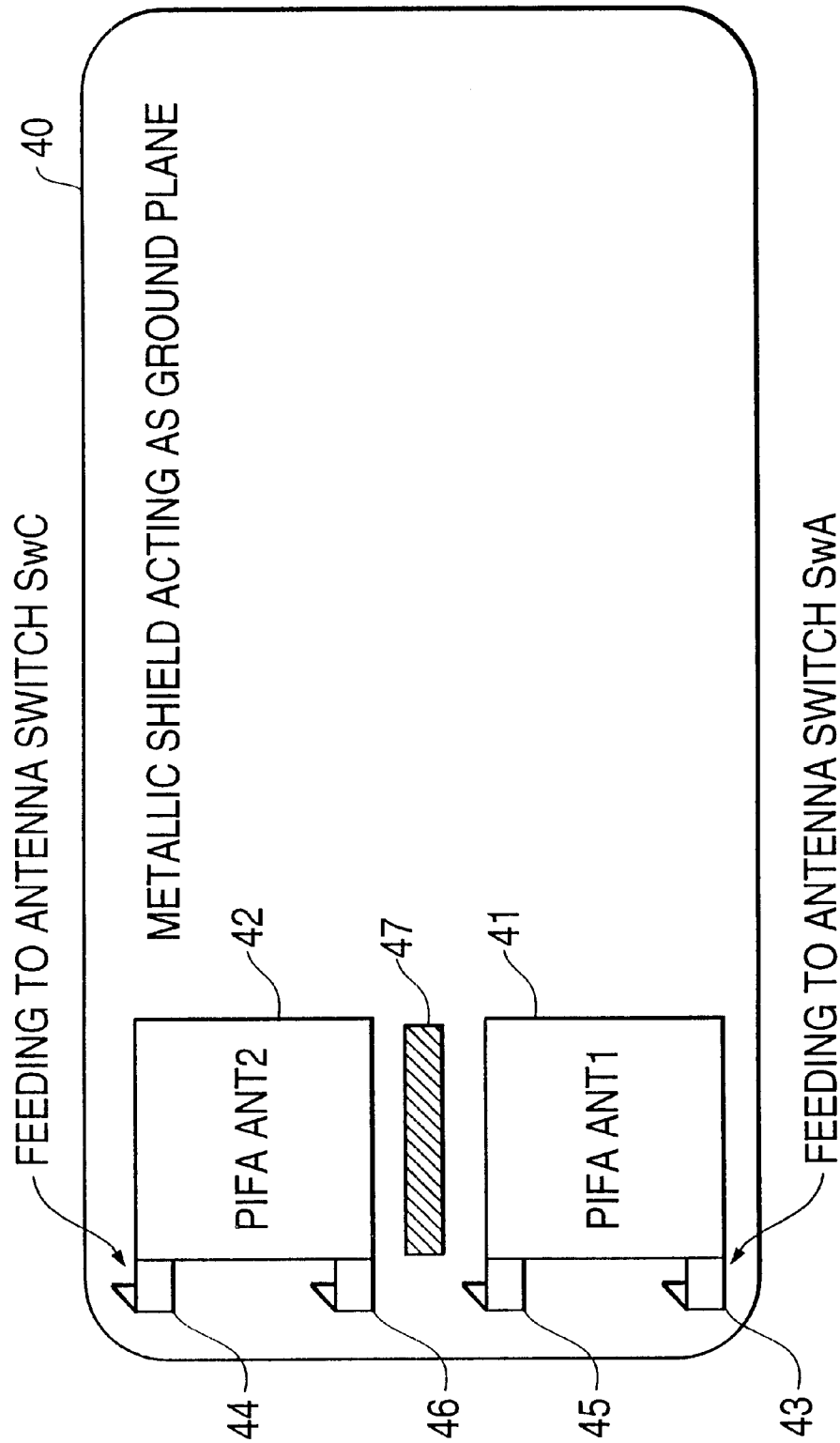
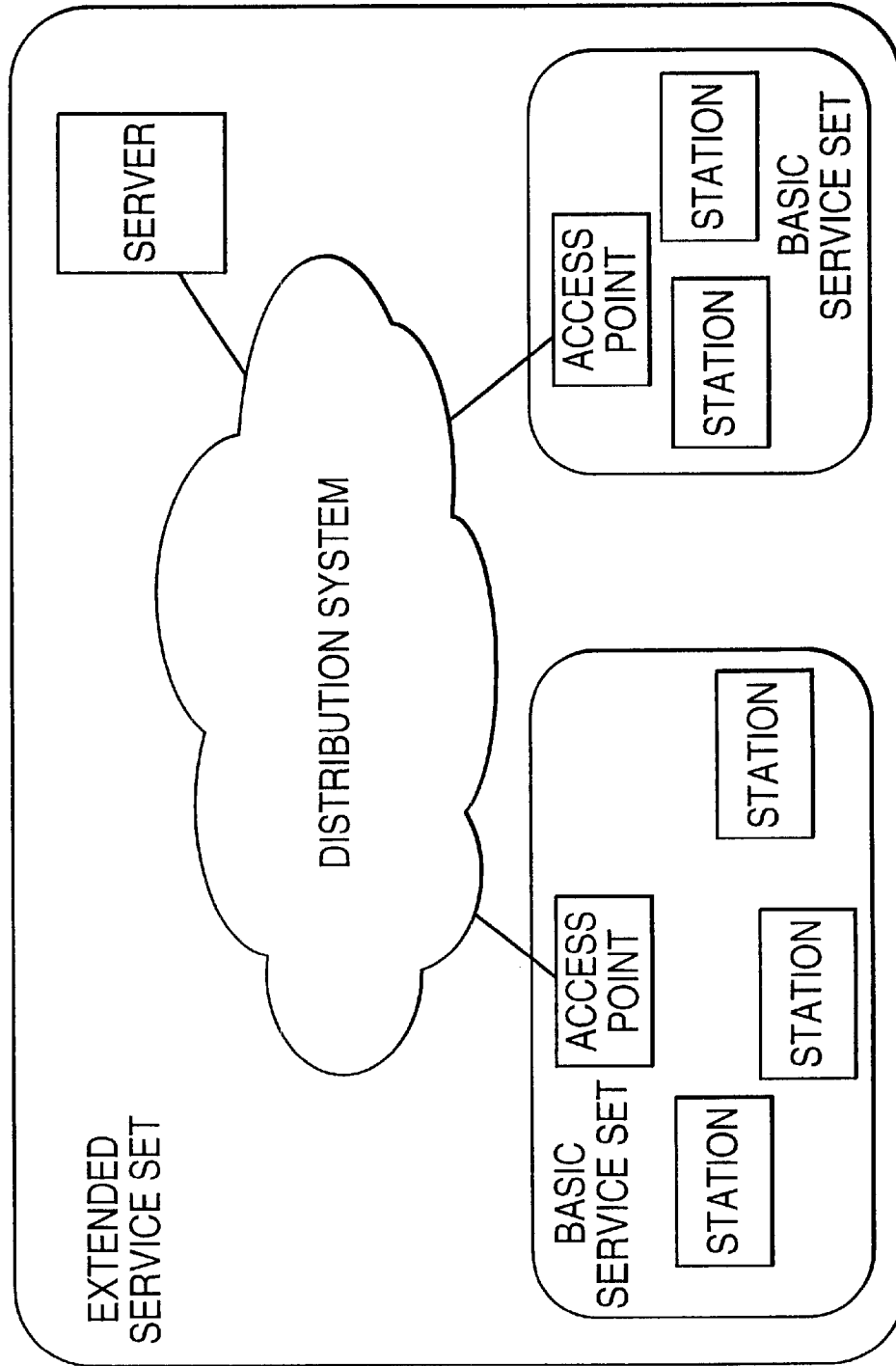


FIG. 5



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