



US005594737A

United States Patent [19]

[11] **Patent Number:** 5,594,737

Pillekamp

[45] **Date of Patent:** Jan. 14, 1997

[54] **ARRANGEMENT FOR CONTROLLING A TRANSMITTING/RECEIVING DEVICE OF BASE STATIONS AND/OR MOBILE UNITS, IN PARTICULAR OF A CORDLESS TELEPHONE SYSTEM**

5,251,325	10/1993	Davis et al.	455/38.3
5,260,944	11/1993	Tomabechi	370/95.1
5,278,832	1/1994	Binzel et al.	370/95.3
5,493,705	2/1996	Tanemura	455/127
5,509,015	4/1996	Tiedemann	370/95.3
5,517,679	3/1996	Yahagi	455/38.3

[75] **Inventor:** Klaus-Dieter Pillekamp, Erkrath, Germany

FOREIGN PATENT DOCUMENTS

[73] **Assignee:** Siemens Aktiengesellschaft, Munich, Germany

2670968	6/1992	France
2249922	5/1992	United Kingdom
WO9213395	8/1992	WIPO

[21] **Appl. No.:** 424,275

OTHER PUBLICATIONS

[22] **PCT Filed:** Nov. 2, 1993

"Auch ohne Schnur auf Draht", Wolf, Telcom report 10 (1987), Heft 2, pp. 130-137. German.

[86] **PCT No.:** PCT/DE93/01045

"Digital European Cordless Telecommunications System" (DECT) Standard (draft prETS 300 175-3) (1991), pp. 1-177.

§ 371 Date: Apr. 28, 1995

§ 102(e) Date: Apr. 28, 1995

"Digital European Cordless Telecommunications System" (DECT) Standard (draft prETS 300 175-2) (1991), pp. 1-36.

[87] **PCT Pub. No.:** WO94/10812

PCT Pub. Date: May 11, 1994

Primary Examiner—Douglas W. Olms
Assistant Examiner—Matthew C. Phillips
Attorney, Agent, or Firm—Hill, Steadman & Simpson

[30] Foreign Application Priority Data

Nov. 2, 1992 [DE] Germany 9214886 U

[57] ABSTRACT

[51] **Int. Cl.⁶** H04J 3/16; H04M 11/00

To be able to operate base stations (FT) and mobile units (PT) of a cordless telephone system with the lowest possible use of energy, a processor (M-CT) of the base station (FT) and of the mobile unit (PT) contains a controlling program (CP) which is designed in such a way that the transmitting device (RE-T) of a transmitting unit (FT, PT) is activated essentially only at transmission times (SZ) and the receiving device (RE-R) of a receiving unit (PT, FT) is activated essentially only at reception times (EZ).

[52] **U.S. Cl.** 370/278; 370/280; 370/337; 379/61; 455/38.3

[58] **Field of Search** 455/38.3, 127, 455/343; 370/95.3, 80, 29, 95.1, 32, 85.8, 95.2; 379/61

[56] References Cited

U.S. PATENT DOCUMENTS

5,196,806 3/1993 Ichihara 330/137

8 Claims, 3 Drawing Sheets

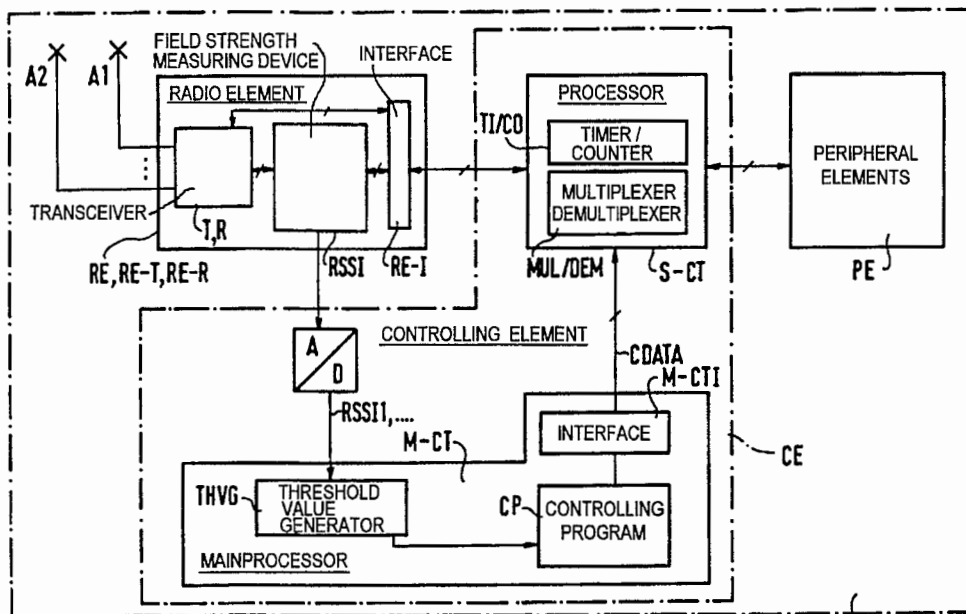
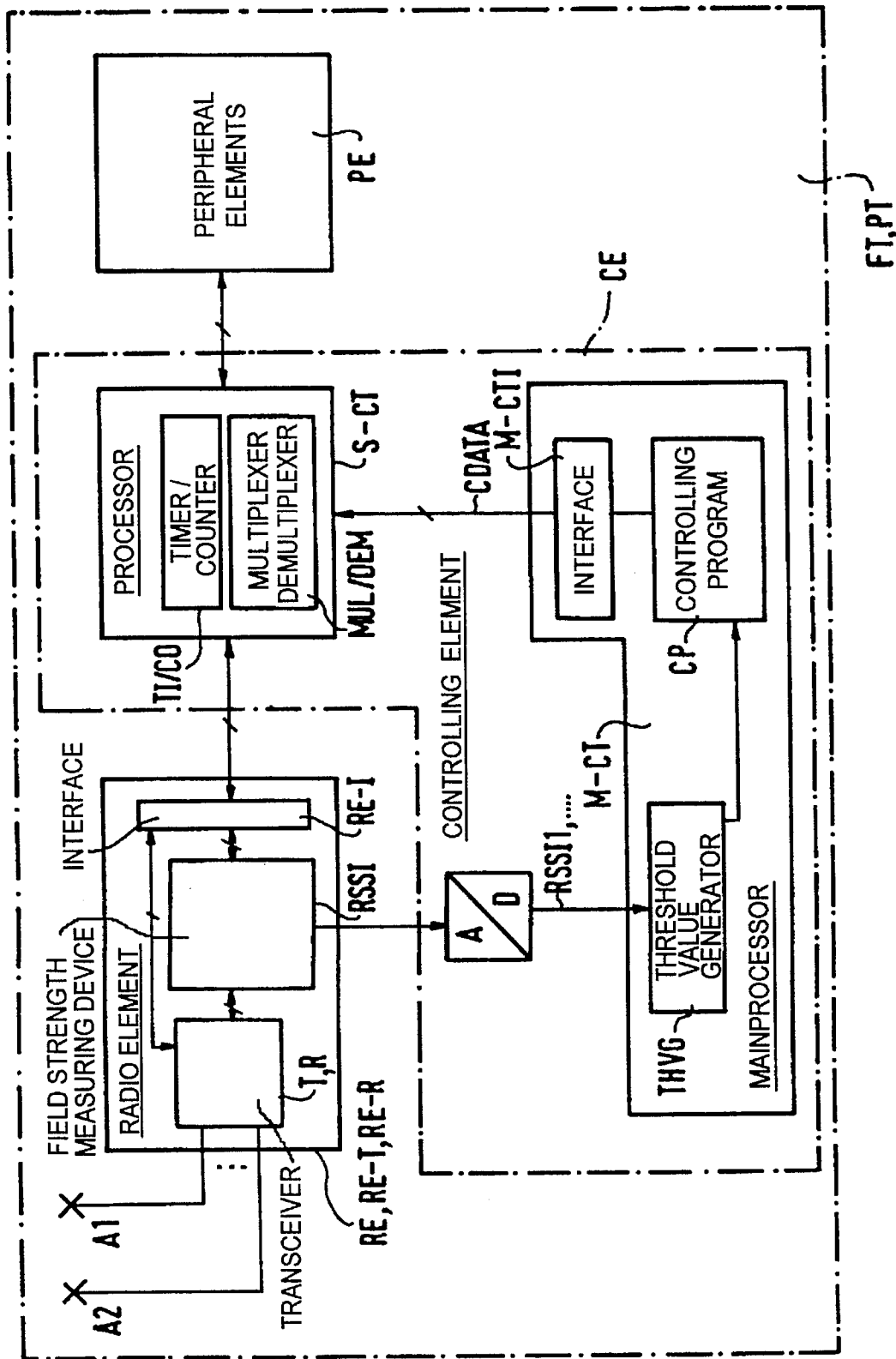


FIG 1



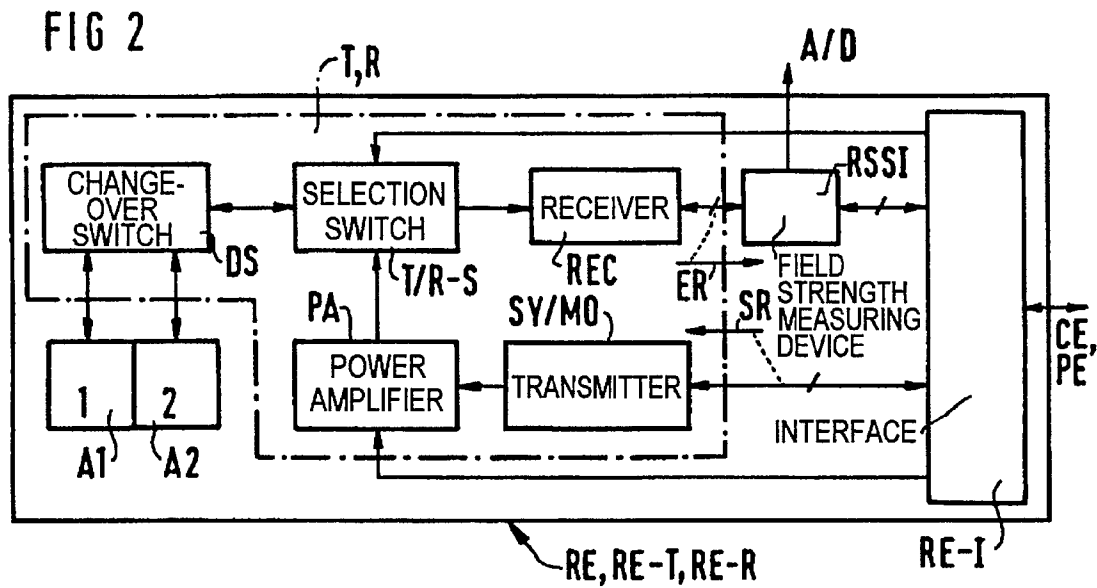


FIG 3

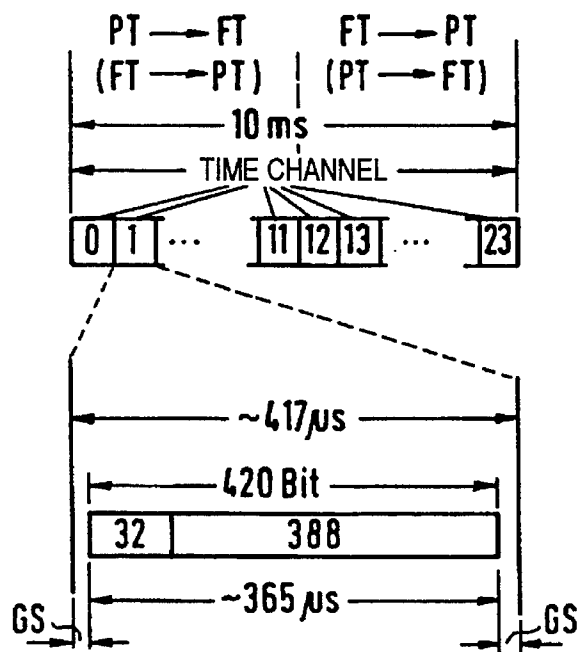
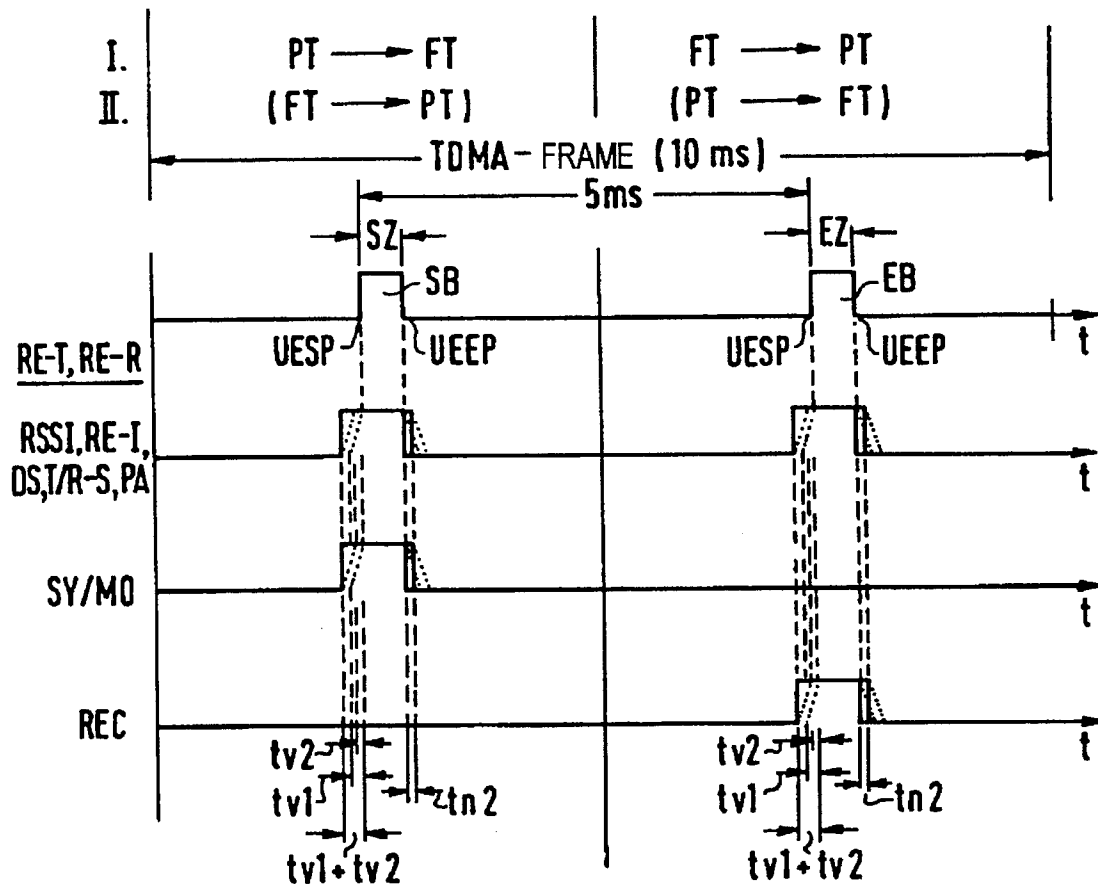


FIG 4



1

**ARRANGEMENT FOR CONTROLLING A
TRANSMITTING/RECEIVING DEVICE OF
BASE STATIONS AND/OR MOBILE UNITS,
IN PARTICULAR OF A CORDLESS
TELEPHONE SYSTEM**

BACKGROUND OF THE INVENTION

The invention relates to an arrangement for controlling a transmitting/receiving device of base stations and/or mobile units in particular of a cordless telephone system.

Cordless telephone systems, for example systems based on the TDMA principle (Time Division Multiple Access) (for example DECT cordless system, CT2 cordless system etc.) and systems based on the CDMA principle (Code Division Multiple Access), may be designed in such a way that voice to be transmitted is compressed on the transmission side, is transmitted by the transmitting device of the transmitting unit (base station, mobile unit) within a radio link, is received by the receiving device of the receiving unit (mobile unit, base station) and is expanded (burst technique).

Great Britain reference GB-A-2 249 922 (corresponding to U.S. Pat. No. 5,260,944) discloses, for example, a mobile TDMA radio telecommunication system which has the characteristics mentioned above.

SUMMARY OF THE INVENTION

The object on which the invention is based consists in operating base stations and/or mobile units, in particular of a cordless telephone system, with the lowest possible use of energy.

The present invention is an arrangement for controlling a transmitting/receiving device of base stations and/or mobile units, in particular of a cordless telephone system, comprising: each of the base stations and the mobile units having a processor, to which a controlling program is assigned and voice to be transmitted being compressed on a transmission side, transmitted by a transmitting device of a first transmitting/receiving device within a radio link and received by a receiving device of a second transmitting/receiving device and expanded; the controlling program effecting actuation of the transmitting device of the transmitting unit substantially only during fixed, predetermined transmission times within a transmission time frame and effecting actuation of the receiving device of the receiving unit substantially only during fixed, predetermined reception times within the transmission time frame; modules for monitoring that determines the transmission time frame, the modules being excepted from the time-related activation.

In the case of base stations and/or mobile units, in particular a cordless telephone system, in order to reduce the use of energy required for the operation of the base station and/or of the mobile unit with the exception of the modules necessary for frame-clock monitoring (e.g. in a transmitting/receiving device of the base station and/or of the mobile unit)—in particular whenever the devices are supplied stationarily, for example via a battery, the transmitting/receiving device is switched on with a certain time lead with respect to the transmission/reception burst (FIG. 4) occurring at periodic time intervals in the transmission technique (for example TDMA or CDMA methods). The lead time may in this case comprise a first part-lead time and a second part-lead time, the first part-lead time being understood as

2

switching-on instant to the beginning of the transmission/reception burst and the second part-lead time being understood as meaning the time which ensures that the transmitting/receiving device is activated during the transmission/reception burst. In order that the transmitting/receiving device is also switched on over the entire duration of the transmission/reception burst, the transmitting/receiving device is switched off with the end of the transmission/reception burst. In this case, as with the switching on of the transmitting/receiving device—in analogy with the second part-lead time provided there—it is also possible to provide a corresponding part-lag time for the switching off of the transmitting/receiving device, in order to ensure that the transmitting/receiving device is also switched on during the entire duration of the transmission/reception burst.

Advantageous further developments of the invention are specified in the subclaims.

In further embodiments of the present invention, the transmitting/receiving device contains on the one hand a plurality of subdevices (central functions), such as for example switching devices, an amplifier and an interface, and on the other hand a transmitter and receiver, which are switched on and off simultaneously in one embodiment and at different times in another embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

The features of the present invention which are believed to be novel, are set forth with particularity in the appended claims. The invention, together with further objects and advantages, may best be understood by reference to the following description taken in conjunction with the accompanying drawings, in the several Figures of which like reference numerals identify like elements, and in which:

FIG. 1 shows an arrangement for controlling a transmitting/receiving device in a base station or a mobile unit of a cordless telephone system,

FIG. 2 shows the basic construction of the transmitting/receiving device according to FIG. 1,

FIG. 3 shows a TDMA time frame in a cordless telephone system in accordance with the DECT standard,

FIG. 4 shows the time relationship between transmission and reception burst and the activation of the transmitting/receiving device according to FIGS. 1 and 2.

**DESCRIPTION OF THE PREFERRED
EMBODIMENTS**

FIG. 1 shows the basic circuitry of a base station FT or of a mobile unit PT of a cordless telephone system. Both the base station FT and the mobile unit PT contain a radio element RE - in the following also referred to as transmitting/receiving device RE-T, RE-R —, a controlling element CE and peripheral elements PE, which are combined in the “peripheral elements” functional block. In the following description, it is assumed that for the cordless telephone system the DECT standard (Digital European Cordless Telecommunication) is implemented. However, the invention is not restricted to this. For instance, the invention can also be readily used for comparable standards, such as for example the CT2 or GSM standard.

While base station FT and mobile unit PT do not differ with respect to the controlling element CE and the radio

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.