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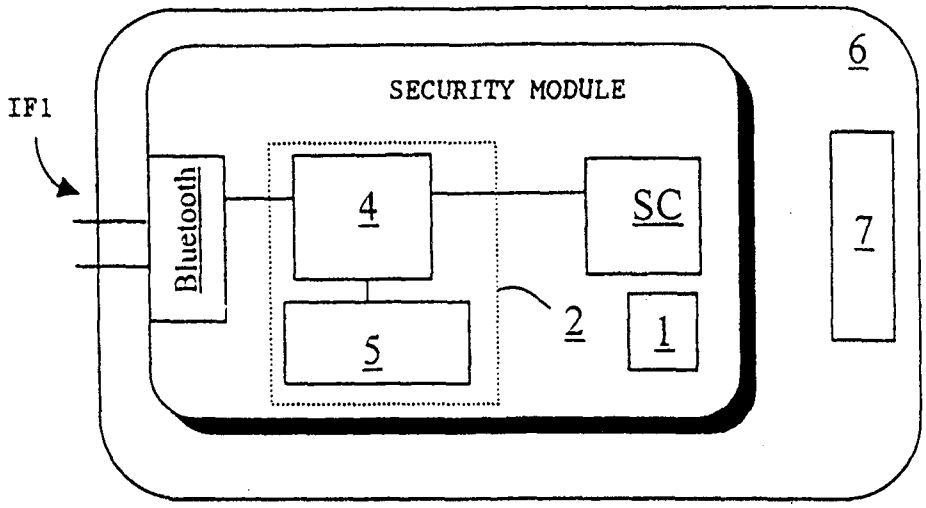

(57) Abstract

The present invention relates to implementing services and devices affording a high level of data security. In particular, the present invention relates to a security module, a security system and a mobile station for using these. The invention makes it possible to use standard devices easily and without any modifications to implement banking services and other services requiring a high level of data security. In the invention, a security module is formed which uses a standardized local interface for the transmission of the messages to be transmitted. Messages can be transmitted in real time without any delay caused by the telecommunication network.

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SECURITY MODULE, SECURITY SYSTEM AND MOBILE STATION

FIELD OF THE INVENTION

The present invention relates to a security module. In particular, the invention concerns a new and improved security module and a security system for processing and transmitting various messages requiring a high degree of data security. The invention also concerns a mobile station utilizing the security module.

BACKGROUND OF THE INVENTION

In mobile communication networks, e. g. GSM networks (GSM, Global System for Mobile communications), heavy encryption is used in conjunction with the transmission of speech over the radio link between the mobile station and the base station. Besides speech communication, communication using text or data messages has increased. With a rising service level, services relying on text or data communication have gained ground. Text communication can be utilized in various service functions, in paying for services, etc.

At present, a source of difficulties in encrypting messages is the fact that, in mobile telephones consistent with the current standard concerning mobile communication, it is not possible to make any changes to facilitate encryption because the user interfaces used in the telephones are manufacturer-specific. The only component that is sufficiently standardized and sufficiently open in respect of encryption is the subscriber identity module (SIM).

Mobile telephones consistent with a current mobile communication standard, such as the GSM standard, do not directly provide a possibility of en-

crypting text communication via mobile stations. Text communication can be used to implement services, such as bank services, which require a high level of data security. However, services requiring a high level of data security cannot become popular before sufficient encryption of message communication is possible.

A further problem with the use of a mobile communication network is that the message transmission services implemented in it are not necessarily real-time services and the transmission of messages may take time. This may be a problem e.g. when a user wants to pay for his/her shopping at the cash register of a store. In this situation, even a slight delay in message transmission will significantly retard the execution of the payment transaction. At present, no part of the mobile communication standard supports local communication between a mobile station and a cash register terminal.

A group of the world's leading enterprises in telecommunication and information technology has developed a technology that makes it possible to establish a wireless connection between a mobile telephone and e.g. a portable computer. This technology is designated as "Bluetooth" and it is based on short-range radio technology, which can be used to interconnect many types of terminals. A more detailed description of this technology can be found e.g. on the WWW page www.bluetooth.com.

The Bluetooth technology enables devices to be interconnected via a short-range radio link. By using the Bluetooth technology, it is possible to establish a connection e.g. between a mobile station and a portable computer without cumbersome cabling. Printers, work stations, telefax devices, keyboards and virtually any digital apparatus may be parts of a Bluetooth system or network. The technology forms a universal bridge to existing data networks and peripher-

als and provides means for forming small private groups via interconnected devices without a fixed network infrastructure. In addition, encryption and authentication can be used in the communication between the devices, e.g. so that only a given user's mobile telephone may be used in connection with a given portable computer.

Previously known is also a smart card that enables reliable personal authentication and genuine signature. Its sphere of application is unlimited. Examples of possible applications are a national electronic identity card (EID), encryption of files, telecommunication and electronic mail, a means for signing documents, an electronic currency, driver's license, ballot, and so on.

Although the smart card can be used in the ways described above, the problem remains that the smart card still requires a separate reading device for communicating with the smart card. Moreover, the smart card alone is incapable of communicating over any telecommunication network, which means that updating information e.g. using short messages is impossible.

In addition, even if it were possible to connect a mobile station locally to a cash register terminal using Bluetooth technology and thus utilize the mobile station as a payment instrument, there is still the problem of encrypted and secure data communication needed for payment transactions.

In prior art, no general-purpose security module is known which could be connected to different cash register and automated systems, mobile stations or other portable devices and which would be able to safely communicate e.g. with a host device on the one hand and a service provider's device on the other hand utilizing e.g. the Bluetooth technology using encryp-

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