

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 March 2003 (06.03.2003)

PCT

(10) International Publication Number
WO 03/019806 A1

(51) International Patent Classification⁷: H04B 1/40

(21) International Application Number: PCT/KR01/01437

(22) International Filing Date: 24 August 2001 (24.08.2001)

(25) Filing Language: Korean

(26) Publication Language: English

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LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, 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, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

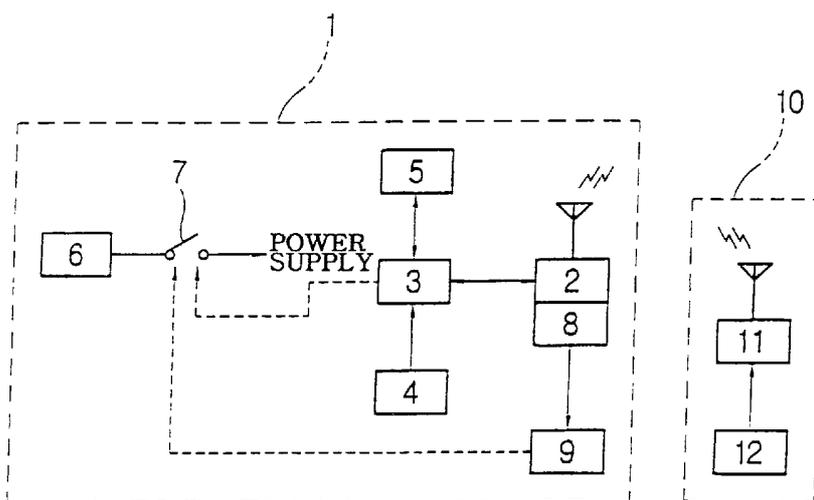
Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK,

(54) Title: AN AUTOMATIC SWITCHING OFF DEVICE FOR A MOBILE PHONE



(57) Abstract: If a mobile phone is used in a place where devices demanding high precision are located such as an intensive care unit or a control tower, the electric wave from the phone exerts a bad influence on the devices and may cause malfunction. The present invention comprises a transmission device transmitting a power switching off signal for a mobile phone and installed at the entrance of a place where devices demanding high precision are located such as an intensive care unit or a research lab, and a device which is installed on the phone, receives the switching off signal and cuts off battery voltage of a mobile phone. Malfunctioning of high tech devices resulting from high frequency band wave transmitted and received by the phone can be prevented by an automatic switching off device for the phone activated when its user enters a medical clinic or a research lab.



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AN AUTOMATIC SWITCHING OFF DEVICE FOR A MOBILE PHONE

TECHNICAL FIELD

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The present invention relates to an automatic switching off device for a mobile phone, especially to an automatic switching off device for a mobile phone which can prevent malfunctioning of high tech devices resulting from high frequency band wave transmitted and received by a mobile phone by automatically turning off a mobile phone when a user with the mobile phone enters a mobile phone restricted area such as an intensive care unit or a control tower.

BACKGROUND ART

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Currently, use of a mobile phone is increasing rapidly due to the merit that communication using it is possible irrespective of user's location.

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A mobile phone user can communicate with others through base stations installed in various places. Recently, according to the development of communication technology, data downloading or playing game is possible by connecting to wireless internet using a mobile phone.

However, the mobile phone employs high frequency signal for conversation, and if it is used in a place where devices demanding high precision are located such as an intensive care unit or a control tower, the electric wave from a mobile phone exerts a bad influence on the devices and may cause malfunctioning of the devices.

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For example, when the use of a mobile phone affects a bad effect on a life sustaining device installed in an intensive unit, a patient being treated by the life sustaining device can have a critical injury by malfunction of the device. Furthermore, when a mobile phone is used in a research lab, the electric wave from a mobile phone may cause malfunctioning of installed devices, resulting in output of inaccurate experimental data.

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DISCLOSURE OF THE INVENTION

The purpose of the present invention is to provide an automatic switching off device for a mobile phone in order to prevent malfunctioning of high tech devices

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resulting from high frequency band wave transmitted and received by a mobile phone by automatically turning off the mobile phone when a user with the mobile phone enters a restricted area by installing a transmission device which transmits a power switching off signal for a mobile phone at the entrance of a place where devices
5 demanding high precision are located such as an intensive care unit or a research lab, and also by constructing a device which is installed on a mobile phone, receives the switching off signal and cuts off battery voltage of a mobile phone.

BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 is a block diagram of an automatic switching off device for a mobile phone according to the present invention.

Figure 2 is a diagram showing operation state according to the present invention.

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Figure 3 is a block diagram according to another example of the present invention.

Figure 4 is a diagram to illustrate operation of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

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A preferred embodiment of the present invention will be described with reference to the accompanying drawings of Fig. 1 through Fig. 4.

Fig. 1 and Fig. 2 are drawings of automatic switching off device for a mobile phone according to the present invention. The automatic switching off device for a
25 mobile phone of the present invention comprises: a transmission device 10 which comprises a switching off signal output unit 12 generating a switching control signal to turn off a power switch 7 of a mobile phone 1 and a transmission unit 11 which wirelessly transmits the switching control signal transmitted from the switching off
30 signal output unit 12 as a signal with low electric field intensity in the low frequency band, and is installed in an appropriate location 13 of a place where instruments demanding high precision are located such as an intensive care unit or a research lab; a receiving device 8 which receives the low frequency band switching control signal transmitted from the transmission device 10 through the antenna of the mobile phone; and a switching control device 9 which automatically turns off a power switch by the
35 switching control signal received by the receiving device 8 and cuts off battery power

supply to an internal circuit, wherein the mobile phone 1 comprises a transmitter-receiver device 2 which transmits and receives data through an antenna, a control device 3 which controls each component for wireless communication, a key unit 4 to input phone numbers and various control commands, a handset device 5 for conversation, and a power switch 7 which makes switching operation to selectively supply battery 6 power to each component.

The operation of the present invention can be explained as follows.

First of all, a user inputs other person's phone number by operating the key unit 4, and a dial tone corresponding to the phone number inputted by the key unit 4 is generated by the control device 3 and is transmitted to a base station through the handset device 5, resulting in connection to other person.

Then, conversation between said two parties are made by transmitting the voice of other person to the user through the handset device 5, and also by delivering the voice of the user to the other person through the handset device 5.

A separate transmission device 10 is installed in an appropriate location 13 of a place where instruments demanding high precision are located such as an intensive care unit or a research lab.

The transmission device 10 comprises the transmission unit 11 and the switching off signal output unit 12. The switching off signal output unit 12 generates a switching control signal to turn off the power switch 7 of the mobile phone 1 and the transmission unit 11 wirelessly transmits the switching control signal as a signal with low electric field intensity in the low frequency band.

The transmission device 10 may be installed on the top, side or any place of the appropriate location 13, but the switching control signal transmitted by the transmission device 10 is maintained at low electric field intensity in the low frequency band, so that it does not exert bad influence on instruments demanding high precision installed in intensive care unit or a research lab.

Accordingly, when a user with the mobile phone 1 enters the appropriate location 13, the switching control signal transmitted by the transmission device 10 is delivered to the receiving device 8 through the antenna of the mobile phone 1, and the receiving device 8 delivers the inputted switching control signal to the switching control device 9.

The switching control device 9 automatically turns off the power switch 7 of the mobile phone 1 according to the inputted switching control signal which results in automatically turning off a mobile phone when a user's mobile phone enters a medical

clinic or a research lab.

Therefore, when a user with the mobile phone 1 enters a medical clinic or a research lab, the mobile phone 1 is automatically turned off by the switching control signal transmitted by the transmission device 10 installed in the appropriate location
5 13 and any malfunctioning of high precision device installed in the medical clinic or a research lab due to high frequency electric wave from the mobile phone is prevented.

Fig. 3 and Fig. 4 are drawings of an automatic switching off device for a mobile phone according to another example of the present invention. The automatic switching off device for a mobile phone 1 comprises: multiple base stations which are
10 installed in various places and connect a mobile phone to a switching station 21 by exchanging communication signals with the mobile phone 1 while maintaining its own field of operation; a switching station 21 which connects a mobile phone user to other user through public switched telephone network (PSTN) according to dial information of the mobile phone 1 inputted to the base station 20; and a switching off signal
15 transmission device 30 which stores position information of a restricted area B such as an intensive care unit or a research lab where an instrument which demands high precision and is subject to malfunction by mobile phone frequency is installed, and comprises a comparison unit 32 which determines if the mobile phone 1 intrudes the restricted area B by the position information of the mobile phone received from the
20 base station 20, and an switching off signal transmission unit 31 which transmits a switching control signal through the base station to automatically turn off a power switch 7 of the mobile phone 1 when the comparison unit 32 decides that the mobile phone 1 intrudes the restricted area B, wherein the mobile phone 1 comprises a transmitter-receiver device 2 which transmits and receives data through an antenna, a
25 control device 3 which controls each component for wireless communication, a key unit 4 to input phone numbers and various control commands, a handset device 5 for conversation, and a power switch 7 which makes switching operation to selectively supply battery 6 power to each component.

The operation of the present invention can be explained as follows.

30 The example illustrates that three base stations 20a – 20c maintain their own field of operation, and there is the restricted area B inside the second base station 20b as shown in Fig. 4.

When a user moves with the mobile phone 1, the mobile phone 1 notifies the position of the user and current standby state to the base station 20b by communicating
35 with the base station 20b every designated period.

The base station 20b transmits the current position of the mobile phone 1 to the comparison unit 32 of the switching off signal transmission device 30 through the switching station 21, and the comparison unit 32 decides if the user intrudes the restricted area.

5 If mobile phone 1 comes close the restricted area B, the comparison unit 32 decides that the mobile phone 1 enters the restricted area B such as a medical clinic or a research lab, and the switching off signal transmission unit 31 transmits a switching control signal to turn off the mobile phone 1 to the mobile phone 1 through the corresponding base station 20b according to the decision of the comparison unit 32.

10 The switching control signal is received by the transmitter-receiver device 2 of the mobile phone 1 and is delivered to the control device 3. The control device automatically turns off the power switch 7 formed at the output terminal of the battery 6 according to the inputted switching control signal, and therefore automatically turns off the mobile phone 1 when the mobile phone enters the restricted area B.

15 The switching control signal transmitted from the switching off signal transmission unit 31 is set to function identically to the internal switching control signal of the mobile phone 1 generated when a user presses a power off key installed in the key unit 4.

As illustrated above according to another example of the present invention, 20 therefore, when a user with the mobile phone 1 enters a medical clinic or a research lab, the mobile phone 1 is automatically turned off by the switching control signal transmitted by the switching off signal transmission device 30 and any malfunctioning of high precision device installed in the medical clinic or a research lab due to high frequency electric wave from the mobile phone 1 is prevented.

25 Furthermore, according to another example of the present invention, an extra device need not be installed inside a mobile phone 1, and the production cost can be greatly lowered.

INDUSTRIAL APPLICABILITY

30 The present invention provides an automatic switching off device for a mobile phone in order to prevent malfunctioning of high tech devices resulting from high frequency band wave transmitted and received by a mobile phone by automatically turning off the mobile phone when a user with the mobile phone enters a 35 restricted area by installing a transmission device which transmits a power switching

off signal for a mobile phone at the entrance of a place where devices demanding high precision are located such as an intensive care unit or a research lab, and also by constructing a device which is installed on a mobile phone, receives the switching off signal and cuts off battery voltage of a mobile phone.

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CLAIMS:

1. An automatic switching off device for a mobile phone 1 comprising:
a transmission device 10 which comprises a switching off signal output unit 12
generating a switching control signal to turn off a power switch 7 of a mobile phone 1
5 and a transmission unit 11 which wirelessly transmits the switching control signal
transmitted from the switching off signal output unit 12 as a signal with low electric
field intensity in the low frequency band, and is installed in an appropriate location 13
of a place where instruments demanding high precision are located such as an
intensive care unit or a research lab;
10 a receiving device 8 which receives the low frequency band switching control signal
transmitted from the transmission device 10 through the antenna of the mobile phone;
and a switching control device 9 which automatically turns off a power switch by the
switching control signal received by the receiving device 8 and cuts off battery power
supply to an internal circuit,
15 wherein the mobile phone 1 comprises a transmitter-receiver device 2 which transmits
and receives data through an antenna, a control device 3 which controls each
component for wireless communication, a key unit 4 to input phone numbers and
various control commands, a handset device 5 for conversation, and a power switch 7
which makes switching operation to selectively supply battery 6 power to each
20 component.

2. An automatic switching off device for a mobile phone 1 comprising:
multiple base stations which are installed in various places and connect a mobile
phone to a switching station 21 by exchanging communication signals with the mobile
25 phone 1 while maintaining its own field of operation;
a switching station 21 which connects a mobile phone user to other user through
public switched telephone network (PSTN) according to dial information of the
mobile phone 1 inputted to the base station 20; and
a switching off signal transmission device 30 which stores position information of a
30 restricted area B such as an intensive care unit or a research lab where an instrument
which demands high precision and is subject to malfunction by mobile phone
frequency is installed, and comprises a comparison unit 32 which determines if the
mobile phone 1 intrudes the restricted area B by the position information of a mobile
phone received from the base station 20, and an switching off signal transmission unit
35 31 which transmits a switching control signal through the base station to automatically

turn off a power switch 7 of the mobile phone 1 when the comparison unit 32 decides that the mobile phone 1 intrudes the restricted area B,
wherein the mobile phone 1 comprises a transmitter-receiver device 2 which transmits and receives data through an antenna, a control device 3 which controls each
5 component for wireless communication, a key unit 4 to input phone numbers and various control commands, a handset device 5 for conversation, and a power switch 7 which makes switching operation to selectively supply battery 6 power to each component.

FIG.1

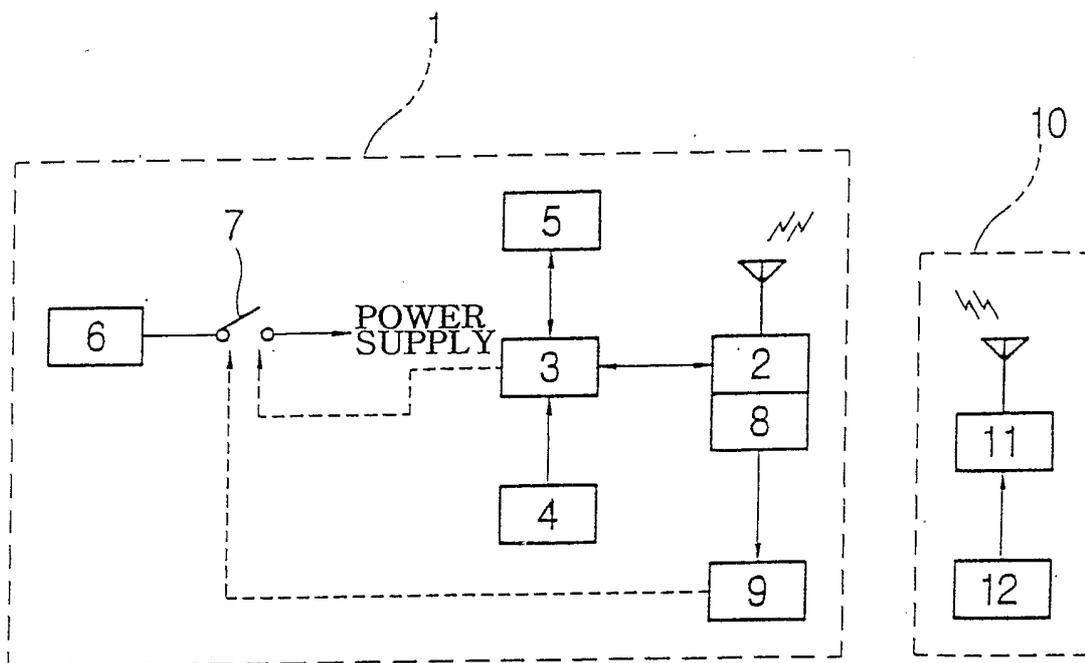


FIG.2

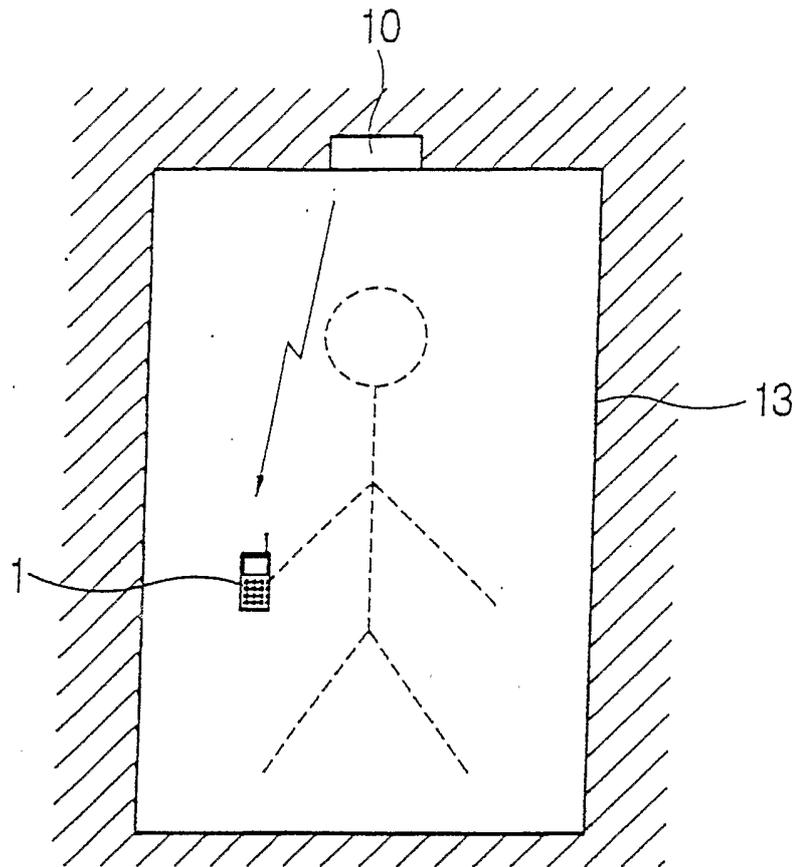


FIG.3

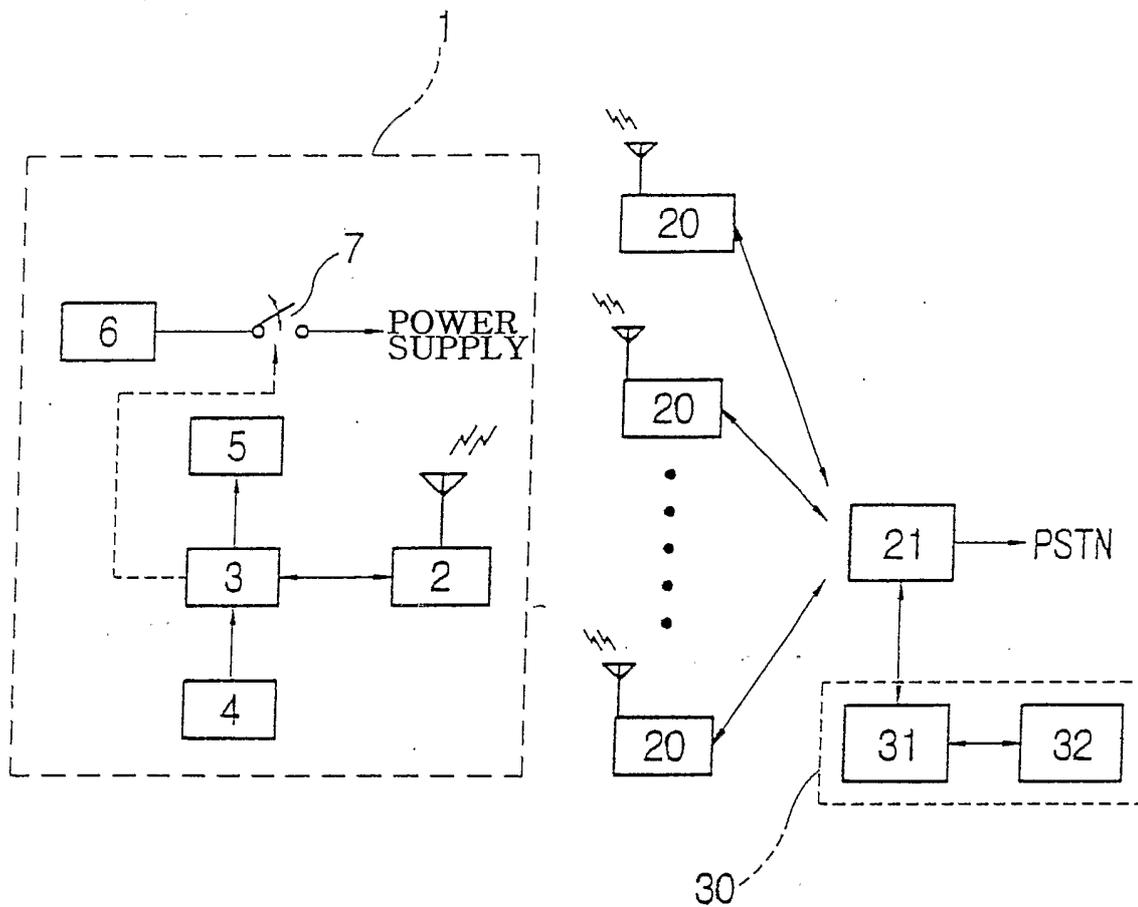
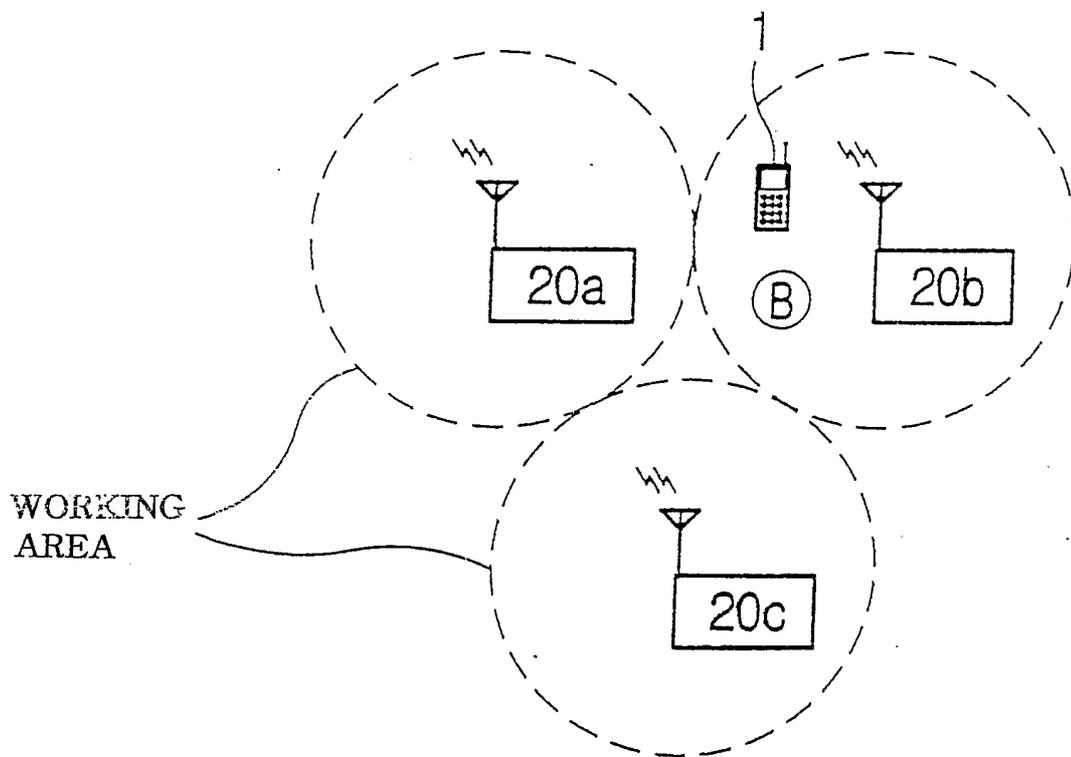


FIG.4



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR01/01437

A. CLASSIFICATION OF SUBJECT MATTER		
IPC7 H04B 1/40		
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 H04B1/40, H04B1/38, H04M 3/42 , H04M 3/50 , H04Q 7/22 , H04Q 7/28 , H04Q 7/38		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched KR, JP IPC as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) "POWER", "CONTROL", "PORTABLE", "MOBILE", "INHIBIT", "RESTRICT", "CALL"		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP11-213488(KYOCERA. CORP) 28.JULY.1999 See the whole document	1,2
Y	US 6246696B1(Kabushiki Kaisha Toshiba, Kawasaki) 12..JUNE. 2001 See the whole document	1
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Y	JP09-321944(MATSUSHITA ELECTRIC IND CO LTD)10. NOVEMBER.1997 See the whole document	1
Y	US6085096(NEC CORP)4.JULY1997 See the whole document	1,2
Y	JP09-227020(NEC CORP)11.AUGUST.1997 See the whole document	1,2
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 07 FEBRUARY 2002 (07.02.2002)		Date of mailing of the international search report 08 FEBRUARY 2002 (08.02.2002)
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 920 Dunsan-dong, Seo-gu, Daejeon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer SEO, Jin Won Telephone No. 82-42-481-5706



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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