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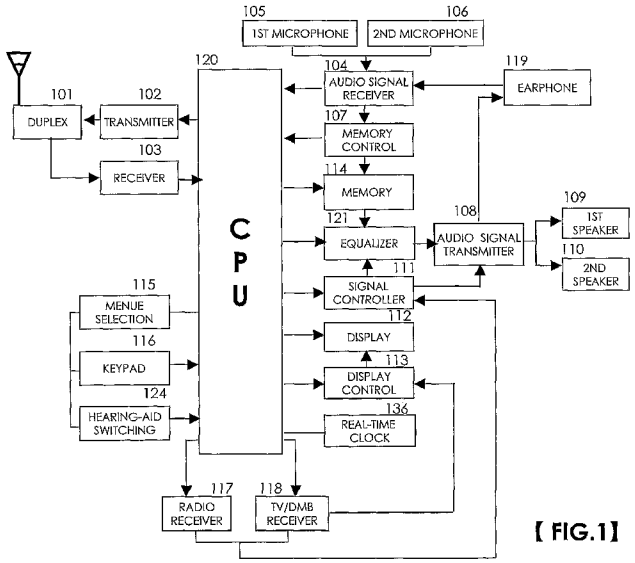
(54) **Title:** MULTI-FUNCTIONAL MOBILEPHONE TERMINAL SYSTEM.



[FIG.1]

(57) **Abstract:** The present invention relates to provide a mobile communication terminal such as s mobile-phone, a PDA or MP-3 or MP-4 player to execute a multi-functional capabilities by customizing settings of the terminal to fit user's hearing ability, display characters suitable to user's eyesight, and searching their conversation which being recorded and erased automatically under the control of the CPU. Also, it provides functions to create a multi-phone system that operate a plurality of telephone numbers with a single mobile phone, and functions of bank's credit/cash card with the mobile terminal that is only activating with subscriber's security ID matching that of registered by the subscriber to realize the upmost security and convenience. Furthermore, this invention provides useful technology for customizing any of mobile terminal such as s mobile phone, a PDA or MP-3/4 player to be a hearing-aid according to each user's hearing ability in addition to it's own terminal functions.

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【DESCRIPTION】

[Title of the invention]

MULTI-FUNCTIONAL MOBILEPHONE TERMINAL SYSTEM

[Technical field]

The present invention relates to a mobile communication terminal such as a mobile phone, a PDA, or MP-3 or MP-4 player to execute a multi-functional capabilities for customizing the settings of the terminal to fit the user's hearing ability, displaying characters suitable to user's eyesight and having the function for changing the terminal into a credit or cash card capability with user's security ID, a function for setting multiple telephone numbers in one mobile phone, and a function for self-searching the contents of communications. The present invention is also directed to implementing a technology for reliably providing a function of a hearing aid for each user with said terminal in addition to its own communication function.

[Background art]

Cross References of Related Application

The present invention is a continuation-in-part of application of the Korean utility patent numbers 20-0228319, 20-02325767, 20-0362547, and the Korean patent registration numbers 10-0672990, 10-0672991, the Korean patent application numbers 10-2007-0067482, 10-2007-0138945, 10-2008-0002442 filed concurrently herewith.

[Detailed descriptions of the invention]

[Object of the Invention]

The general object of the present invention is to provide a mobile communication terminal system such as a mobile phone, a PDA, a MP-3 or 4 player or a military wire or wireless communication terminal which may be readily constructed and proportioned to customize settings of the terminal suitable to user's ability of hearing and eyesight.

Another object of this invention is to provide the most economical and convenient hearing aid system for the user utilizing the mobile terminal such as mobile phone, MP-3 or MP-4 player that customized settings of audio output as of equalized bandwidth according to the hearing ability of the user.

The other object of the invention is to provide an automatic conversation recording system of the terminal which detects audio signal during communication, memorizes with caller's ID or phone number and erasing automatically from the oldest recorded signal and always keeping the latest calls under the memory capacity for searching.

A still another significant object of this invention is to provide the terminal such as a mobile phone, MP-3 or MP-4 player to be used as a credit/cash card functions with user's security ID code registered by the user. It provides a simple solution to switch over the conventional credit/cash card system just by memorizing the code data of the card instead of carrying the card itself, and the maximum security by adding various users' security ID code according to the maximum settlement amount of each usage.

Still another object of the invention is an idea to operate a plurality of phone numbers with a single mobile phone terminal so that it eliminates the inconveniences especially for businessman who is carrying a plurality of phones.

Additionally, this invention provides a technology to customize settings of the terminal function to block an unwanted call or mail by adding the user's code on mail or registering phone numbers of normal receiving or blocking separately on the memory means.

[Background of the Invention]

As a human being grows older problems such as eyesight and hearing ability along with amnesia are happened. In more detail, a conventional mobile phone is equipped with a function for amplifying a receiving call tone in connection with a hearing ability problem of a human body, but it is impossible to amplify the receiving tone by its' frequency bandwidth. Accordingly, it is disadvantageous that

an effective solution cannot be sought and provided to a hearing disabled person with different hearing problems occurring depending on the different frequency bandwidths.

When a hearing disabled person wants to use a mobile phone, an expensive hearing aid is additionally needed in addition to the price of a mobile phone.

The conventional mobile phone is generally provided with a certain font and size that are determined mainly depending on the eyesight of young peoples. Thus, it is so disadvantageous that an old person should check and read the contents of a message with a reading glass (magnifier).

The conventional mobile phone provides only fixed colors and fonts of message information to be displayed on a maker's system. Thus it is impossible for a user to change the colors and fonts of a character or a number, a colorblind user may feel inconvenience, and it is impossible to display with a user's preferred color and font.

Moreover, the user of the conventional mobile phone cannot trace their conversation. When it is needed to make a memo while talking with others in the conventional mobile communication terminal it is needed to make a memo by writing down the point such as a telephone number or an address or a bank account number with a pen, it leads to many inconveniences, in worse case it is impossible to make a memo while driving a vehicle. Further more, when communication contents cannot be reliably recognized due to amnesia or a hearing ability problem, it was impossible to playback or to search the contents of convention, since the conventional mobile phone is just designed to automatically record an opponent's mobile phone number, but not recording the conversation automatically even when an opponent lies. Only limited models of the mobile phone are equipped with a recording function, but it is needed to switch to a recording mode when needed. When a user wants to record during the conversation, it may be too late to record since a content to be recorded is gone away.

In a conventional military wireless communication terminal, it is impossible to check the contents of a communication due to firing sounds, noise or something. In particular, there is not a proper method for checking the contents of a communication when it is needed to fire cannon balls on a target or to memorize a coordinate of a target or a password.

In the conventional mobile phone, there is not equipped with a function for determining whether an incoming call is received by the telephone numbers or is

rejected by means of its own function set in the mobile phone, so that it is impossible to effectively cope with an incoming Spam call or mail.

Further, the conventional mobile phone has only one subscriber's ID and if it is needed to at least two telephone numbers for the purpose of business, multiple mobile phones should be purchased and carried.

Moreover, the conventional way for converting the mobile phone to a credit or cash card function is just adding such a credit or cash module on the terminal and it has a serious problem when it is being lost. It is surely disadvantageous that a person is separately carrying a cash card or a credit card even carrying a digital mobile phone which capable storing digital data. Thus this invention provides an enhanced credit/cash card system utilizing a mobile phone, or MP-3 or MP-4 player in compliance with user's security ID code registration system.

[Advantageous effects]

The present invention is basically constructed to obtain the following advantageous effects in such a manner that a user of a mobile phone is able to set up a desired function by changing and setting up a certain function in the mobile phone depending on a user's hearing ability, eyesight and health state.

(1) The hearing ability problem occurs as a person growing old and differs depending on the frequency bandwidth of an audio signal. So, when such a problem occurs, a hearing aid, which is specially designed to output different amplification levels by the frequency bandwidth, is developed and used.

So, the hearing aid should be used even when a user uses a mobile phone, which leads to some inconveniences when in use. The present invention provides a user's customized mobile phone depending on his hearing ability, which is constructed as a user changes a volume by the frequency bandwidth, and a display unit of a mobile terminal displays the levels by the frequency bandwidth with a customized graphic or numbers so that the user can use a mobile phone without a hearing aid.

The method for setting volumes by the frequency bandwidth depending on a user's hearing ability can be implemented as a user sets up by himself, or a computer of a service provider measures the user's hearing ability depending on the signal by the frequency bandwidth (like downloading a tone sound in a mobile phone), and

remotely sets up the same or a user can directly sets up the same with a hearing ability test data measured in a hospital or by an expert of a hearing aid. Whenever a hearing ability is changed, the set data can be changed. Thus, it is possible to prevent a hearing ability problem when using the mobile phone. In the present invention, it is not use a hearing aid when communicating on a mobile phone.

(2) The present invention provides a system technology for implementing the functions of a hearing aid separately from an inherent function of a mobile phone or a MP-3 or MP-4 player by using a hearing aid function set up in the terminal depending on a user's hearing ability.

Since the hearing ability differs depending on the frequency bandwidth, thus, the conventional hearing aid is designed and constructed as a doctor or a hearing aid expert measures a user's hearing ability based on the frequency bandwidth. The present invention provides a technology to change the function of a mobile phone, or MP-3 or MP-4 player to a hearing aid in addition to its' own hearing capability settings based on the frequency bandwidth by using an equalization unit disposed in a terminal. Once the hearing ability level is set, the user can hear based on the set level until it is changed again.

(3) In the present invention, the eyesight (presbyopia) problem that a person suffers as growing old can be overcome in such a manner that the sizes, colors (for colorblind persons) and fonts of the characters or numbers displayed on a terminal monitor can be changed depending the eyesight and preference of the user by using a keypad of the terminal, and are sequentially displayed on the display panel by strolling on the display panel, so that the user can conveniently read and check the message without using a reading glass. The user can easily customize his own mobile phone based on his eyesight and preference.

In the above display method, it is possible to display a relatively longer message of an e-mail in a stroll type in a connected form without the page breaks in the mobile phone, and the user can control the strolling speed or direction, so that a disabled person (presbyopia or colorblind) or a non-disabled person can commonly use the present invention implemented along with an advanced display technology.

(4) When a transmission and receipt device of a mobile communication terminal such as a mobile phone a PDA, or a military wire or wireless

communication terminal activated, the signal is automatically detected, and the corresponding data is stored in a memory means of the terminal, and the latest communication data are always stored while deleting the old data exceeding the memory capacity automatically. The above recording and deletion operations are repeatedly performed so that a certain amount of communication contents is always hold. With the above configuration, the users can efficiently search the contents of their communication for thereby preventing amnesia problem that everyone faces as growing old and it is possible to overcome the inconveniences found in the conventional art in which desired communication content should be written with a certain writing tool.

(5) Since a user can check the communication contents, the disputes that may happen due to lie can be surely minimized. In addition, the communication contents can be automatically recorded like a caller's number of confirmation function, so that it enables to prevent various crimes that may occur along with a lie.

(6) Since it is possible to provide a function of a common recorder, a function for transmitting the recorded audio data to a designated phone number can be provided. So, when an emergency situation like a weak person or an older person suddenly falls down due to a worsened health occurs, the recorded audio message can be transmitted to multiple telephone numbers by one click operation. Since the position of the patient can be detected by means of a GPS function initially built in the mobile phone in a 911 system. So, a weak person or an old person can be easily rescued only with a mobile phone provided by the present invention.

(7) The present invention is also providing a technology for equalizing output signal of MP-3 or MP-4 player suitable to the hearing ability of user and the functions of a common hearing aid for the user that can be obtained along with the above functions.

(8) The present invention includes a function that makes it possible for a user to determine and set a mobile phone whether normally receives an incoming call or rejects the incoming call by the telephone numbers. Accordingly a Spam call can be prevented, and inconveniences occurring due to a repeating incoming call tone can be effectively blocked.

(9) Since multiple SIM cards can be provided in the mobile phone, it is possible to manage multiple telephone numbers with one mobile phones, it provides the convenient solution for businessman who is carrying multiple phones.

(10) A significant advantage of this invention is to provide a mobile terminal such as a mobile phone, MP-3 or MP-4 player having a credit card or a cash card capability with user's security ID code system for controlling security, the maximum settlement of each card payment, and emergency rescue activity for the user.

[Brief descriptions of the drawings]

Figure 1 is a schematic block diagram illustrating a typical system according to the present invention.

Figure 2 is a schematic block diagram of hearing aid process according to the present invention.

Figure 3 is a detailed schematic view illustrating a character information display process according to the present invention.

Figure 4 is a flow chart of an audio signal automatic recording/deletion function according to the present invention.

Figure 5 is a schematic block diagram illustrating a system which implements the function of a credit/cash card with a terminal such as a mobile phone, or MP-3 or MP-4 player according to the present invention.

Figure 6 is a schematic block diagram illustrating a function for setting up multiple mobile phone functions in a single phone according to the present invention.

[Detailed Description of the Preferred Embodiment]

Overcoming the limitations faced from the previous technology, and based on the full comprehension and expectation of the current situations and to clarify the possible barriers faced in the future, the present invention provides technologies, methods and manufacturing techniques and related apparatus that is able to fuse the functions such as a hearing aid, a credit or cash card into a mobile terminal.

In the following description of the preferred embodiment, reference is made

to the accompanying drawings, which form a part hereof, and which show, by way of illustration, the specific embodiment in which the invention may be practiced. It is to be understood that other embodiment may be utilized, and structural changes may be made without departing from the scope of the present invention.

Referring to the attached illustrations, the configuration of the preferred embodiment, and the operation and the functions thereof are as follow;

As shown in Figure 1(detailed on Figure2, 3 and 4) the mobile communication terminal such as a mobile phone or a PDA according to the present invention comprises a transmission unit 102 for transmitting an audio and data signal, a receiving unit 103 for externally receiving an audio signal and a data signal, a detection unit 123 for detecting audio signal that transmitted and received by the terminal, a memory control unit 107 for controlling the storing and deletion function of the memory unit 114 along with a caller's telephone number and communications starting time and date by memorizing a certain amount of a latest audio signal (latest communication data) while deleting the old stored data exceeding memory capacity as programmed, a display control unit 113 having a character generator means for changing the size, color or font of the characters and a driving unit 122 for strolling the characters on the display unit 112 with changed fonts, sizes and colors, an audio signal control unit 111 for equalizing the quality or volume of the received audio by its' frequency bandwidth depending on the hearing ability of the user of the terminal and setting up outputting in the set quality as equalized hereinafter, a key input unit 116 which includes means for menu selection for displaying and searching the communication contents stored in the memory unit 114 along with an opponent's telephone number and communication date and time, a hearing-aid switching means 124 for switching the function of terminal to a hearing-aid that receiving the signal from the earphone system 119 and transmitting the signal to the earphone system 119 after equalizing with the audio signal control unit 111, and a CPU 120 for centrally controlling the functions of each said technical unit.

The memory control unit 107, the display control unit 113 and the audio signal control unit 111 may be selectively built in the circuit of the CPU 120 along with a software program.

In the above configuration, a second microphone unit 106 and a second speaker unit 110 may be provided in a high performance microphone or speaker separately from the microphone 105 and the speaker 109, and the CPU 120 is properly programmed for performing the functions of the speaker phone in accordance with a control of the key input unit 116.

In the above configuration, a wired or wireless earphone 119 is constructed along with the microphone unit and the speaker unit, and the CPU 120 can be programmed so that the function of the hearing aid can be performed with the equalizing unit 121 separately from the inherent functions of the terminal along with a control signal of the hearing aid switching means 124 and the menu setting of the menu selecting means 115, so the audio signal can be adjusted based on the frequency bandwidth by means of the equalization of the terminal, and the audio can be received through the earphone 119. Accordingly, the common hearing aid function can be integrated.

The CPU can be programmed so that the second microphone unit 106 records an external audio signal, and the second speaker unit 110 plays back the recorded audio signal. When the recording/playback menu is set up in the menu unit 115, the function of the common recorder can be obtained by means of a button control of the key input unit 116, and the user can hear the recorded audio signal based on the equalization in the equalization unit 121.

When it is needed to add a FM or AM radio function with the first speaker unit and the second speaker unit, a radio receiving unit 117 is further provided. When it is needed to provide a TV or DMB (Digital Multimedia Broadcasting) receiving function by adapting the display panel as a monitor, a TV or DMB receiving means 118 is further provided. In this case, the audio signal from the radio, TV or DMB can be heard in the audio signal quality set in the equalization means 121 of the terminal without a hearing aid.

In the system with which the present invention is used, the method for setting up an audio automatic recording function and its operation and effect will be described.

As shown in Figures 1 and 4, an audio signal received from a mobile communication network is separated from a duplex 101, and is filtered and amplified through the receiving unit 103.

When the audio signal detection means 123 of the terminal recognizes the audio signal, the audio signal is automatically recorded into the memory unit 114 in

accordance with a control of the memory control means 107 based on a software programmed in the CPU 120 deleting sequentially the audio signal memorized exceeding the pre-programmed memory capacity from the oldest recorded signal and always keeping the latest signal under the memory capacity.

A certain amount of the latest communication data is automatically stored while sequentially deleting the oldest recorded communication data depending on the program set in the CPU. It may be possible to store all the transmission and receipt audio data or to store only a receipt audio signal based on the program set in the CPU. The detection means 123 for detecting the audio signal transmitted or received can be built in the CPU, not separating the same. It can be set based on the software programmed, which can obtain the same effects.

In the above construction, the memory unit 114 can be shared along with an inherent memory unit built in the terminal or the memory control means 107 may be implemented with the software program in the terminal CPU, which can obtain the same effects.

When the CPU stores the audio data in the memory unit 114, the communication serial number and the opponent's telephone number are stored along with the data on the communication date and the time data of the real time clock 136.

When it is needed to search the stored communication content, when a search signal is inputted by using a keypad means 114, the CPU displays a recorded list along with the opponent's telephone (serial number when there is no telephone number information) by the communication date and time, and the CPU is programmed so that the communication contents can be checked upon clicking the list. The recorded contents are played back with the quality set in the equalization unit 121. So, the user can check the communication content without extra hearing aid. When a user uses the mobile phone, it is possible to prevent a certain accident, which may occur when the user misses the communication content and to prevent a person, who suffers from amnesia, from forgetting the communication content. In the present invention, it is not needed to record a certain important message such as a telephone number or an address with a pen.

When the user changes the menu means 115 of the key pad and the button of the key input means 116 into a recorder mode, the audio signal received from the first microphone 105 of the terminal and the external second microphone 106 can be stored in the memory means 114 through the audio input means 104 in accordance with a control of the CPU 106 for thereby obtaining the functions of the recorder.

The audio signal can be recorded only when the audio signal is detected as the CPU 120 controls the memory control unit 107, and the time data when the signal is stored are specified and stored along with the audio data to be recorded.

In the above configuration, the second microphone unit 106 and the second speaker unit 110 can be built in the terminal along with a high performance feature or can be externally constructed using a connection jack. At this time, the function is changed to the speakerphone function with the button of the key input unit, so the speakerphone can be used for a communication among multiple users in the terminal such as a mobile phone.

The method for setting the mobile communication terminal such as a mobile phone, a PDA or MP-3 or MP-4 player depending on the user's hearing ability and its operation and effects will be described,

Referring Figure 2, a mobile communication terminal system such as a mobile phone, a PDA or a MP-3 or 4 player having multi-functional capability for customizing setting of the terminal to fit user's hearing ability and switching the terminal's function to a hearing-aid system for the user, which comprising, an audio signal control means 111 for detecting the receiving signal, equalizing the signal level of volume and quality by the its' signal frequency bandwidth suitable to the hearing power of the user and setting up the terminal's audio signal output as equalized hereinafter, an earphone system 119 having a microphone and speaker connected by wire or wireless means to the terminal's earphone system, a means 124 for switching the function of the terminal system to a hearing-aid system that receiving the audio signal with the earphone's microphone and transmitting the signal by the earphone's speaker system after equalizing the receiving signal according to the established level of each frequency bandwidth by the audio signal control means, and, a CPU(Central Processing Unit) 120 for controlling the above means with its' software programmed and customizing settings of audio output of the terminal system suitable to user's hearing ability.

With the prior mentioned system wherein said means 111 such as the audio control means 124 or the means for switching the function of the terminal system can be further configured as a part of the CPU 120.

As shown in Figure 1 and 2, the CPU 120 is provided with an equalization unit 121 which performs a function for adjusting the quality or volume of the receiving audio by the frequency bandwidth so as to overcome the hearing problem, and the CPU can be programmed so that the quality or volume of the same can be displayed in a graphic form or number for showing their levels on the display panel 112, and the quality and volume of the same can be set up by adjusting according to its' frequency bandwidth by the audio control unit 111. So, the user can hear the receiving sound with the set quality and volume without using a hearing aid as the user customizes based on user's hearing ability.

In the present invention, the user of the customized mobile phone can always receive the audio signal with the set quality and audio level that are equalized by the frequency bandwidth until the set content is changed.

At this time, the audio control unit 111 adjusts the receiving audio signal by its' frequency bandwidth through the equalization unit 121 that adjusts the receiving audio by its frequency bandwidth. It can be adjusted and set up by using the button belonging to the key input unit 116, and it can be adjusted or set based on the touch method on the display panel 112, which leads to the same effects.

The method for implementing the functions of the hearing aid with the functions of the terminals will be described. In this case, the switching means 124, which is configured to turn on the function of the hearing aid from the mobile phone's inherent communication function, can be independently installed in the CPU 120 or can be constructed in the menu 115 associated with the button of the key input unit 116 coupled to the CPU 120.

When it is to be used as a hearing-aid by the operation of the switching means, the communication received through the second microphone unit 106 or the microphone means of the earphone 119 are equalized to the set quality and volume in accordance with the control of the CPU 120, and are outputted to the speaker unit of the earphone 119. The transmission and receiving functions can be implemented in the wired or wireless earphone system of terminal.

The system of the present invention as prior described the earphone system 119, may be comprising a means for wireless transmitting and receiving circuit coupled to the CPU for communicating with a module of wireless earphone system having a microphone and a speaker together so that receiving the audio signal with

the module, equalizing by the terminal and transmitting the equalized signal to the module for the hearing-aid of the user.

In the present invention, when the user sets up a desired quality and volume of the receiving audio by the frequency bandwidth depending on user's hearing ability by using the equalization unit through the key input unit, the CPU is programmed, so that the set quality and volume can be outputted. It is needed to set up only one time when purchasing the terminal such as a mobile phone, which gives the user many conveniences when in use.

When the hearing ability of the mobile phone is checked and set, the user can directly adjust the quality and volume by the frequency bandwidth with the keypad 116 connected to the equalization unit 121. In addition to that method, in another preferred method, the hearing ability of the user of the mobile phone can be tested by a service provider's computer in such a manner that the computer of the service provider transmits a hearing ability test signal sound of each frequency bandwidth, and the user responds a response signal with respect to the receiving state of each frequency bandwidth through the keypad 116 as the user of the mobile phone requests the check service. The hearing ability can be set by the CPU 120 that adjusts the equalization unit 121 by the instruction signal from the service provider's computer when the check data is transmitted to the CPU 120 of the mobile phone.

At this time, the above hearing ability tests are performed multiple times, and the service provider's computer computes its' average value, and controls CPU 120 and sets up the equalization unit 121 of the mobile phone by online, so the mobile phone to be suitable to the hearing ability of the user.

The equalization unit of the terminal sets the quality and volume by the frequency bandwidth depending on the hearing ability of the user as the computer of the service provider controls the CPU of the terminal which having a software programmed for the above operation.

The technology that the audio signal is equalized depending on the hearing ability of the user of the mobile phone can be directly adapted in the terminal which is designed for storing or playing back the music files such as a MP-3 or MP-4 player. In this case, the hearing ability check of the user of the player can be performed as

the computer of the service provider that transmits the test signal by using the Internet connection unit of the terminal (player), return signal by the common wired or wireless telephone network and setting up the terminal by Internet.

Accordingly, the terminal system of music player such as MP-3 or MP-4 having function for setting the level of output signal frequency bandwidth suitable to the user's hearing ability and taste, and having a switching capability of the function to be an user's hearing-aid, which comprising, (a) a means 111 for equalizing the level of the output frequency bandwidth of the terminal suitable to the hearing ability and taste of user and setting up the terminal's audio output as equalized hereinafter, (b) an earphone system 119 having a microphone and a speaker together connected by wire or wireless to the terminal's communication system which having a circuit of receiver and transmitter together, (c) a means 124 for switching the function of terminal to the hearing-aid that receiving the signal from the earphone system and transmitting the signal after equalizing, (d) and a CPU 120 for controlling the terminal system and having a software programmed to customize settings of the level of output signal of terminal as of equalized level hereinafter.

The above system may further comprise a means for switching function to a recording/playing machine system utilizing the memory means 114 of the terminal and the CPU 120 having software programmed for operating the said function. Also, it can comprise a radio signal receiving circuit coupled to the CPU 120 for transmitting the radio signal with the earphone system as of the equalized level of the sound

According to the present invention as described, a new online business model may be developed, in which the service for testing the hearing ability of user by sending a test signal, receiving a response signal, calculating the average hearing ability of user and setting the equalizing means of the terminal by Internet. This kind of the services will be the same as the tone sound downloading service of the mobile phone by making the hearing ability check service more precise and reliable, for customizing and the terminal depending on the hearing ability of the user.

Accordingly, the system configuration for customizing user's terminal such as a mobile-phone, a PDA or a MP-3 or MP-4 player to set of the level of receiving signal suitable to the user's hearing ability of each receiving frequency band width,

which comprising, a mobile communication terminal system of user having a means for equalizing the level of the receiving signal frequency band width of the terminal suitable to the hearing ability of user, a computer system of a service provider that transmitting test signals to the terminal to check the hearing ability of each receiving signal frequency band width of the user and setting the equalizer system of the user's terminal with the test result of each frequency band width by an instruction signal, and a CPU of the terminal for controlling the means for equalizing and having a software programmed to set the terminal's output signal according to the instruction signal from the computer system of the service provider.

In the method for setting the equalization unit of the terminal such as a mobile phone or a MP-3, 4 player each having an equalization unit, the user of the terminal can obtain the data of the hearing ability by the frequency bandwidth measured in a hospital or the authorized hearing ability check facility and directly operates the terminal and sets the data, which leads to the same effects.

The method for setting the functions depending on eyesight of the user in the mobile communication terminal such as a mobile phone or MP-3, 4 player and its operation and effect will be described.

As shown in Figures 1 and 3, in the message display operation of the mobile communication terminal in relation with an eyesight problem that a person generally faces as getting old, the user changes and sets the sizes, colors and fonts of the messages displayed on the display unit 112 while simply handling the buttons of the key input unit 116. The enlarged or colored texts or numbers are displayed on the display control unit 113 in a strolling format in accordance with a button control of the key input unit.

The character generator means 135 for generating the fonts and the driving means 122 for controlling the display are provided in the display control unit 113 and are controlled by means of a control program of the CPU 120 or the above functions can be inherently built in the CPU 120.

The CPU 120 controls each function in accordance with a button operation signal of the key input unit 116 set in the menu unit 115 while the user selects the sizes, colors (in case of colorblind), strolling speed and direction (function like rewinding for receiving again) of the character messages displayed on the display panel, and it is not needed to use a reading glass when reading the character messages.

Thus, the users can customize their preferred symbols and fonts, sizes and colors. Once those contents are set up, since the characters of the set fonts, sizes and colors are displayed until the set contents are changed, it is possible to obtain a customized mobile phone having differently set contents depending on the preferences and eyesight of the owner of the mobile phone.

The method for setting an emergency rescue transmission function in the mobile communication terminal such as a mobile phone and its operation and effects according to the present invention will be described.

As shown in Figure 1, in the emergency rescue function, a user makes a character emergency message using the key input unit 116 and stores in the memory unit 114, or an audio emergency rescue message is stored in the memory unit 114, and a plurality of telephone numbers are set using the menu unit 115 for transmissions. In an emergency situation, the user is needed to press a specific key designated in the key input unit 116, so that the emergency rescue character or message or emergency rescue audio message stored in the memory unit is sent to the outside. The above functions can be implemented by means of a program set in the CPU 120.

It is differently constructed whether the emergency rescue message is determined in a character message form or in an audio message form by a system expert or both the methods can be combined and used.

At this time, the telephone number of the receiver who is to receive the emergency rescue signal is set by means of the menu unit 115 and the key input unit 116, and the telephone numbers are including a rescue telephone number like 911, the relatives' telephone numbers or the friend's telephone numbers. When a user activates an emergency rescue signal transmission by one click on the key input unit 116, the CPU 120 transmits a rescue signal to all the telephone numbers in a sequence of the top priority set by the menu unit.

Even when the calls are sequentially performed in the above manner, and no one responds, a programmed signal tone is transmitted, and the next receiver is automatically called based on the program of the CPU 120. After the emergency rescue signals are sequentially transmitted, the 911 station keeps an audio communication network of the mobile phone turned on for a certain time such as 10 minutes or 20 minutes (after emergency rescue signal is transmitted), and the 911 station listens to the signal surround and records the same for thereby fast

recognizing the emergency situation with the actual sound of the accident site even when the user loses consciousness or is being threatened by a thief. The above functions can be implemented based on a built-in program of the CPU.

When the emergency rescue signal is outputted, the position information of the terminal user is outputted through the GPS built in the mobile phone, so the receiver can check the position of the transmitter through the GPS. Even when a weak person does not have a signal transmitter for an emergency rescue, he can transmit a rescue signal by using the mobile phone.

The method for setting a Spam telephone call or a Spam e-mail receipt blocking capability that the user does not want to receive in the mobile communication terminal such as a mobile phone, and its operation and effects will be described.

The system according to the present invention provides a function for blocking a Spam call. In details, it is possible to overcome the problems that a user of a terminal feels uneasiness due to a Spam call signal or an unnecessary signal sound by storing only the telephone numbers that the user wants to receive, in the memory 114 by using the menu unit 115 and the key input unit 116.

The above method for customizing settings the function of a mobile phone to control a receiving call, comprising the step of, registering a plurality of phone numbers by mode such as normal receiving permit or refusal in a memory means 114 of the phone with a keypad 116 coupled to CPU 120 of the phone, switching automatically the phone call to a memory mode coupled to the CPU when refusal number identified if refusal phone numbers are registered, and switching automatically all of the phone call for refusing mode coupled to the CPU of the phone except the normal phone numbers if normal phone numbers are registered.

At this time, the telephone numbers that the user wants to receive are listed and stored, so the terminal normally receives only the stored telephone numbers. The other telephone numbers that user does not want to receive are stored in the memory 114, so that the user of the terminal can search the stored numbers even it is unnecessary numbers of Spam.

On the contrary, only the telephone numbers to be rejected for receiving can

be set and stored when constructing the menu in the CPU 120. When a telephone call is received, it can be recorded or automatically transferred to the busy signal mode according to software programmed in the CPU 120 for thereby more effectively control the telephone calls that the user does not want to receive.

The present invention also provides additional function for effectively blocking a Spam mail. The method for customizing settings of a mobile phone to block any of unwanted mail, comprising, the step of, registering a code to add on a mail in the memory means 114 coupled to the CPU 120 of the phone, transmitting the code to a plurality of mobile phones to communicate each other, and blocking receiving mails coupled to the CPU 120 when the code of the mail is not matched as the registered code in the memory means of the phone.

The above method can be modified by registering said code by group coupled to the CPU for controlling with a certain group basis.

According to the above method, the recognition code setting step in which in order to block the receipt of the Spam mail or the character message that the user does not want to receive, a certain code is set in the preface of the character message to be received through the keypad 116 of the receiver's terminal for blocking the receipt of the character message that the user does not want to receive and is stored in the memory unit 114 of the terminal based on the software program installed in the CPU 120 of the terminal;

The other steps are including a step for informing the recognition code to a plurality of opponent's terminals for the approvals to add the recognition code when transmit mail into the preface of the character message, and a step for blocking in which the CPU of the receiver's terminal recognizes a recognition code set in the received message and compares with the recognition code data stored in the memory unit and receives and memories when the codes are matched, and blocks the receipt when the codes are not matched, so that it is possible to receive only the code-set message based on the recognition code set by the receiver.

When the receiver's terminal sets a plurality of recognition codes, and sets different message arrival receiving sounds to each recognition code, different signal sounds are outputted depending on the recognition codes when the message arrives,

so that the user can know a specific recognition code with the signal output sounds and can recognize where the message comes (it is possible to recognize which groups transmits the message when grouping the messages by family, alumni association, company, government or military, etc.)

The negative method that only the message having a specific word is blocked in the conventional art may be changed by this invention to the positive method that only the message having a specific word can be received, so it is possible to substantially block the Spam e-mail or the e-mail that the user does not want to receive.

The other significant feature of the present invention is a function of a credit card or a cash card capability with a mobile phone terminal.

The method for setting the mobile communication terminal such as a mobile phone, a PDA or MP-3, 4 players to have the functions of a credit card or a cash card, and its operation and effects will be described.

As shown in Figure 5, the mobile communication terminal can be changed to perform the functions of a credit card or a cash card.

Referring Figure 5, there are provided a computer 201 of a card operator in which the terminal 203 is connected with an inherent call number of the mobile terminal in order to implement the functions of a credit card or a cash card by using the mobile communication terminal such as a mobile phone, a MP-3 or MP-4 player, or a PDA, and a code data of a credit card or a cash card into the memory unit 206 of the terminal 203 which stores a code data of the card that the computer of the card operator transmitted. An user's security ID code set by the user, coupled with a CPU of the terminal 203 in which the user's security ID code inputted by the keypad unit 202 of the terminal is compared with the security ID code data stored in the memory unit 206, and when they are matched with each other, the code data of the card stored in the memory unit 206, is changed to the ON-mode by a software programmed on the CPU 204 of the terminal. When the card is used or the card is not used within the time interval set in the CPU, the code data output of the card is changed to the OFF-mode depending on the control of the program installed in the CPU, and communication between the terminal and a card reader system of ATM or a card machine will be done by RF as of the conventional method. Therefore, with the above configuration, the terminal is changed to the unit that is equipped with the credit or cash card function or the cash card function.

In another embodiment of the present invention is configuring the memory unit for inputting a code data of the card may be added to the CPU separately from the inherent memory unit of the terminal which performs the functions of the credit/cash card by a separate IC chip, RFID chip or IC module such as SIM (Subscriber Identification Module), UIM (Used Information Module) or UICC (Universal IC Card), associated with the CPU of the terminal, instead of the memory means 206.

With such a IC chip or IC module configured in the terminal, the method for implementing the functions of the credit card or the cash card by using the mobile communication terminal such as a mobile phone, a PDA or a MP-3 or MP-4 player which comprising, a step in which the terminal is connected with an inherent call number of the subscriber mobile communication terminal from the host computer of the card operator and the code data of the credit card or the cash card are transmitted, a step in which the card data transferred from the computer of the card company is stored in the IC chip RFID chip or IC module which configured of the terminal in compliance with the program set in the CPU of the subscriber terminal, a step in which a user's security ID code is set and memorized in the CPU by user, which will be used as a security approval means of the credit/cash card data stored in the terminal in a combination with a number, a character and an image by using the keypad of the terminal(images by a digital camera of the terminal), a step in which a user security ID code set by the user is inputted into the terminal keypad or the camera, and when it is matched with the user ID code previously stored in the terminal based on the program installed in the CPU of the terminal and the terminal is allowed the system on-mode to be used as the credit/cash card, and a step in which the CPU allows the function of the card to be changed to the OFF mode based on the set program after a specific use number of the card or specific time set in the CPU has passed.

In the above step in which the host computer of the card company calls a subscriber mobile terminal and transmits a plurality of card data according to the card company, the security ID code data of the user that the user registered can be registered along with the inherent card code data of each card and is stored in the memory unit 206 with the keypad 202 of the terminal 203, so that users may hold a plurality of the card with a single terminal of the user.

For the more enhanced security purpose, the user's security ID code may be configured with a user's biometric ID such as a fingerprint or a finger-vein, an iris of eye, or an image data of user if the terminal equipped with the related biometric input means, it leads to a reliable security system.

The technology for memorizing the biometric ID and authorizing the same can be implemented along with various known arts, and communication system between card-code of the terminal and a ATM or a card machine is done by RF as of the conventional system.

When the terminal is changed to the function of the card, by the user's security ID inputted by the keypad or the biometric ID input means and the terminal is changed to the card-mode and the terminal can be used as a card for a certain time period, and the function of the card-mode can be automatically turned off-mode depending on the program set in the CPU of the terminal. Accordingly, it is possible to limit the time for performing the function of the card with the terminal. If the terminal is lost, it is possible to prevent from others for using the terminal as a card.

In addition, a card payment limitation according to a plurality of the user's security ID can be differently set, so that the maximum of payment can be limited and reliably controlled by means of the security ID setting, which leads to the most reliable security system for a credit or cash card system utilizing mobile phone.

When others forcibly change the function of the terminal to the card mode, an emergency rescue ID instead of security ID is inputted, so that an emergency signal is transmitted to the computer of the card company separately from the payment. When the emergency signal is transmitted, various rescue measurements can be provided based on the protocol set with the program in the computer system of the card company. Namely, when a user is kidnapped an emergency ID code, which informs am emergency request of the user, is set and registered. When an emergency ID code is inputted from the terminal, the emergency rescue signal can be transmitted by a communication unit of the terminal to the computer of the security department through the card payment computer network.

In addition, this system may be programmed, when the emergency ID is inputted, a small amount of payment is performed, and at the same time, the emergency rescue signal is outputted.

An IC chip or a RFID chip may be further installed in the terminal for the purpose of a credit card or a cash card, so that the card code data or the user ID data can be separately stored. In this case, the IC chip, the RFID chip or the IC module like a SIM in which the host computer of the card operator stores a code data of the card and such a chip or a module can be installed in the terminal such as a mobile phone, a PDA or a MP3 player for thereby obtaining the same effects as the above.

In the above-described technology, the user inputs a user's security ID code in the terminal, and the terminal is changed to the card function on-mode only when the security ID code is matching. The payment is performed in the same manner as the payment procedure of the conventional card which having a password.

When the user's security ID is formed of a biometric ID such as an image or a finger vein, since the authorization of the user is sure, the password input procedure might be omitted.

The SIM type of card module instead of the IC chip or the RFID chip may be made and inserted into the mobile communication terminal such as a mobile phone, a PDA or MP-3 or MP-4 player, which leads to the same effects.

The computer 201 of the card company transmits a card data of the subscriber to the terminal of the mobile phone and can be set in the memory means of the terminal CPU 204. The card with an IC chip having a card data can be provided in a SIM card type and can be installed in the terminal, so the code data of the credit card or cash card are set in the terminal.

The user sets the card-based user's security ID code with the keypad unit 202 of the terminal, so that the above security ID codes are set in the CPU 204 of the terminal in compliance with software programmed on the CPU 204 of the terminal.

When the function of the card is needed by using the terminal, the user's security ID is inputted using the keypad 202 of the terminal, and when the inputted data is matched with the stored data, the CPU 204 controls the data of the card to be ON mode for use.

Even when the user's security code data of the card is set in the mobile communication terminal such as a mobile phone or a MP-3 or MP-4 player, the terminal may be used as card only when user's security ID code is surely authorized for a reliable security and the terminal cannot be used as a card even when the terminal is lost. When the unit for inputting a biometric ID such as a fingerprint, a vein, an iris, or image is set in the terminal, the user's security ID may be set with a biometric ID.

The security IDs may be differently set to limit the amount of each payments for further enhancing a security of the card (When the fingerprint is registered as a biometric ID, each finger may be used for setting different payment limits). As the user freely sets the payment limits of the terminal with a program set in the CPU 204, it is possible to minimize financial damages even when the user's terminal is robbed or lost.

Also, when the user's security ID is set, an emergency rescue signal code can be set in the security ID. When the security ID of rescue is inputted by the user, the computer of the card company recognizes the rescue signal from the user's terminal and the company's computer automatically transmit the rescue signal to a police station (like 911) for an immediate rescue action by the police.

The other significant function of the present invention is expanding and setting multiple phone numbers with a mobile phone (with one terminal).

Figure 6 is a block diagram of a system that implements the multiple mobile phones with one mobile phone that has a subscriber ID authorization card module such as a SIM card or a USIM card like.

Referring Figure 6 the present invention comprises a communication means 301 for performing a transmission and receiving function of a mobile terminal, a plurality of subscriber ID authorization card modules 302 for setting a subscriber ID authorization code of a mobile phone and a telephone number code, a keypad unit 306 for setting the incoming tones differently depending on the telephone number codes set by each subscriber ID authorization card module, an incoming generation means 303 for outputting a plurality of incoming tones according to the each card module, and a CPU 300 which includes a software program for implementing the functions of multiple mobile phones with one phone by controlling each means.

In the above construction, when each different telephone number code is set with a SIM card, it should be configured with a plurality of SIM cards, and when it is needed to set a plurality of telephone number codes in single SIM card, a plurality of telephone number codes and subscriber's ID code will be configured in the single SIM card.

In case of the mobile phone which does not use the SIM card, a plurality of mobile phone telephone number codes can be set and memorized in the telephone number code setting unit of the mobile phone by the computer of the mobile communication service company which operates the mobile phone system for

thereby obtaining the same effects.

After configuring multiple phones ID in a single mobile phone, the owners can set different incoming tones according to the telephone numbers with a keypad unit 306 of the terminal. Here, the incoming tone setting method is the same as the conventional setting method.

The present invention provides a very useful technology that can be well applied to all kinds of the mobile communication terminals such as a mobile phone as well as a PDA.

When the European CEPT made a GSM single standard in 1982, the SIM (Subscriber Identification Module) made up of EEPROM of about 4KB was developed for the user's authorization. So, the CDMA field adapted the same as a SIM card standard, and standardized that the UIM (User Information Module) including the SIM module for a loaming service with the GSM. The standard of the smart card for a third generation mobile communication (IMT-2000) is classified into two parts of which one adapts the smart card platform UICC (Universal IC Card) and the other adapts its application irrespective of the technological method. The UICC is basically designed to accommodate the smart card applications of other industrial fields including a communication field as well as financial field. When the WCDMA terminal is adapted, it is possible to provide one USIM card's EEPROM with a plurality of user ID authorization codes. In this case, it is possible to implement a plurality of mobile terminals with one USIM card.

In recent years, 1GB S-SIM card is developed in view of the capacity of SIM card. When it is actually adapted in the industry, a plurality of user ID authorization codes can be memorized in one SIM card in the conventional SIM card type terminal, so that it is possible to provide one SIM card with a plurality of mobile phone numbers.

Since the memory capacity is significantly increased, even when a plurality of telephone numbers are set in one terminal with one SIM card, the communication contents can be memorized by each telephone number, and the text message can be stored, and the opponent's telephone numbers can be memorized. With one SIM card, all the above functions can be implemented.

As described above, in the system according to the present invention, all the communication contents can be automatically recorded and deleted, and the users can freely search their communication contents, which may lead to a prevention of amnesia.

The present invention can be widely applied to various communication terminals including a mobile phone as well as a MP-3 or MP-4 player and a military wired or wireless communication terminal or a commercial communication terminal. In this case, the transmission and receiving communication contents can be easily searched, and since an equalized audio signal is received, and a most reliable communication can be surely obtained.

In the present invention, the data of a credit card or a cash card are set in a mobile phone, and the user's security IDs are constructed by the users, which makes it possible to upgrade the functions of the mobile phone with a credit card or a cash card, respectively.

By further applying the present invention to another application, it is possible to set a function in the CPU for changing the operation mode of the mobile phone to a memory mode along with a certain audio comment that the user is currently driving, so it is possible to significantly prevent a traffic accident possibly occurring due to the use of a mobile phone during the driving.

A further substantial advantage the invention is providing a hearing-aid function with a mobile phone by using the above technology in which the audio quality or volume can be controlled and set by it's frequency bandwidth depending on the hearing ability of the receiver. It is possible to overcome the hearing problems of the users who use a separate hearing aid for conversation. The present invention further provides an efficient technology that is capable of implementing the functions of the common hearing aid as well with a mobile communication terminal such as a mobile phone, a PDA, or MP-3 or MP-4 player.

It should be appreciated that the present invention can be variously modified without departing from the major spirits and features of the present invention. So, all the examples disclosed are provided only for the illustrative purposes. The present invention can be applied to various wired or wireless communication terminals including a mobile phone as well as a wired or wireless telephone and a MP-3 or MP-4 player, and its application is not limited to the mobile phone. The scopes of the present invention are defined by means of the scope of the claims, not being limited by the descriptions of the specification, and any changes or modifications belonging to the equivalent scopes of the claims should be sought in the scope of the invention.

[Industrial applicability]

The present invention can be widely applied to a mobile phone, a MP-3 or MP-4 player, a military wired or wireless communication terminal or an industrial communication terminal. It enables to implement the transmission and receiving communication contents can be searched, and an equalized audio signal is received for the most reliable and precise communication. The user can freely adjust and set the functions of a mobile phone depending on a user's hearing ability, an eyesight or amnesia. The present invention is basically directed to a multifunctional mobile phone system.

A plurality of mobile phone functions can be obtained with only one mobile phone, and the functions of a credit card or a cash card can be obtained with a mobile phone or MP-3 or MP-4 player with user's security ID code system for the maximum card security and for setting up the security conditions such as amount of the maximum payment or an emergency rescue signal delivery simply by using the card function with the terminal. Another significant application of the present invention is providing the most convenient and economical solution of the hearing-aid system with a mobile phone, MP-3 or MP-4 player of each user in addition to the terminal's own particular functions.

What is claims:

[1] A mobile communication terminal system such as a mobile phone, a PDA or a MP-3 or 4 player having multi-functional capability for customizing setting of the terminal to fit user's hearing ability and switching the terminal's function to a hearing-aid system for the user, comprising,

(a) an audio signal control means for detecting the receiving signal, equalizing the signal level of volume and quality by the its' signal frequency bandwidth suitable to the hearing power of the user and setting up the terminal's audio signal output as equalized hereinafter,

(b) an earphone system having a microphone and speaker connected by wire or wireless means to the terminal's earphone system,

(c) a means for switching the function of the terminal system to a hearing-aid system that receiving the audio signal with the earphone's microphone and transmitting the signal by the earphone's speaker system after equalizing the receiving signal according to the established level of each frequency bandwidth by the audio signal control means, and,

(d) a CPU(Central Processing Unit) for controlling the above means with its software programmed and customizing settings of audio output of the terminal system suitable to user's hearing ability.

[2] The system of claim 1, wherein said means such as the audio control means or the means for switching the function of the terminal system is further configured as a part of the CPU.

[3] The system of claim 1 or 2, further comprising a character generator means for setting size, font, or color of character of the message suitable to the reading ability or taste of the user, and a display control means having a driving means for strolling said message on the display panel and a means for setting up the display as of said setting hereinafter.

[4] The system of claim 3, wherein the means such as the character generator means, the display control means or the means for setting up the display is further configured as a part of the CPU.

[5] The system of claim 1, wherein the audio signal control means is further designed to set up the level of audio frequency bandwidth by graphic figures or numeral letters on the display panel by controlling the keypad of the terminal.

[6] The system of claim 5, further comprising a means for setting up the level of audio frequency bandwidth by means of touching on the displaying panel.

[7] The system of claim 1, wherein the earphone system, further comprising a means for wireless transmitting and receiving circuit coupled to the CPU for communicating with a module of wireless earphone system having a microphone and a speaker together so that receiving the audio signal with the module, equalizing by the terminal and transmitting the equalized signal to the module for the hearing-aid function for the user.

[8] The system of claim 1, further comprising a means for detecting audio signal during communication, a means for memorizing the detected signal, a means for deleting sequentially the audio signal memorized exceeding the pre-programmed memory capacity from the oldest recorded signal and always keeping the latest signal under the memory capacity in compliance with the control of the CPU, and a means for searching the memorized signal with a keypad of the terminal on the display panel by the data such as communication time, caller's ID or caller's telephone number for hearing.

[9] A mobile communication terminal system such as a mobile-phone, a PDA or a MP-3 or MP-4 player characterized to customize settings of the level of receiving signal suitable to the user's hearing ability of each receiving frequency bandwidth, comprising

(a) a mobile communication terminal system of user having a means for equalizing the level of the receiving signal frequency bandwidth suitable to the hearing ability of user,

(b) a computer system of a service provider that transmitting test signals to the terminal to check the hearing ability of each receiving signal frequency bandwidth of the user and setting the equalizer system of the user's terminal with the test result of each frequency bandwidth by an instruction signal, and

(c) a CPU of the terminal for controlling the means for equalizing and having a

software programmed to set the terminal's output signal according to the instruction signal from the computer system of the service provider.

[10] A terminal system of music player such as MP-3 or MP-4 having function for setting the level of output signal frequency bandwidth suitable to the user's hearing ability and preference, and having a switching capability of the function to be an user's hearing-aid, comprising,

(a) a means for equalizing the level of the output frequency bandwidth of the terminal suitable to the hearing ability and preference of user and setting up the terminal's audio output as equalized hereinafter,

(b) an earphone system having a microphone and a speaker together connected by wire or wireless to the terminal's communication system which having a circuit of receiver and transmitter together,

(c) a means for switching the function of the terminal to a hearing-aid in addition to its own function of the player by receiving the signal from the earphone system and transmitting the signal after equalizing, and

(d) a CPU for controlling the terminal system and having a software programmed to customize settings of the level of output signal of terminal as of equalized level hereinafter.

[11] The system of claim 10, further comprising a means for switching function to a recording/playing machine system utilizing the memory means of the terminal and the CPU having a software programmed for operating the said function.

[12] The system of claim 10, further comprising a radio signal receiving circuit coupled to the CPU for transmitting the radio signal with the earphone system as of the equalized level of the sound

[13] A method for improving function of a mobile communication terminal such as a mobile phone, a PDA, or a military/commercial communication terminal to memorize the communicating signal automatically comprising the step of,

(a) detecting audio signal during communication by means for detecting audio signal coupled to a CPU of terminal,

(b) memorizing the detected audio signal in memory means of the terminal with a data such as communication time, caller's ID or caller's telephone number up to the

pre-arranged number of call under the control of the CPU,

(c) deleting sequentially the audio signal memorized exceeding the pre-programmed memory capacity from the oldest recorded signal and always keeping the latest signal under the memory capacity in compliance with the control of the CPU, and

(d) searching the memorized signal with a keypad of the terminal on the display panel by the data such as communication time, caller's ID or caller's telephone number for hearing.

[14] The method of claim 13, further comprising a step for changing the function of the terminal to a recording/playing machine capability utilizing the memory means and a microphone/speaker system of the terminal with the keypad coupled to the CPU.

[15] The method of claim 14, further comprising a step for designating a vehicle driving mode with the keypad coupled to the CPU so that any coming signal during said driving mode automatically being switched to the memory mode with a prerecorded announcement of message that user recorded.

[16] The method of claim 14, further comprising a step for recording the user's emergency rescue message and registering a plurality of phone numbers or ID to deliver the message, and a step for transmitting the recorded message to the terminal of the designated telephone number or ID set by the user in compliance with the keypad under the control of the CPU by activating an emergency key on the keypad.

[17] The method of claim 16, wherein the rescue message transmission is done in consecutive order of the pre-memorized telephone numbers or ID and keeps the communication on-mode at the last telephone number or ID for a certain time period programmed on the CPU for transmitting sound signal surround where the terminal is activated.

[18] The method of claim 16, wherein the emergency rescue message is comprising user's mail in stead of the recorded message under the control of the CPU.

[19] The method of claim 16, further configuring a switching means coupled to the emergency key for transmitting GPS location data signal of the terminal for

rescue during a certain time interval under the control of the CPU, after transmitting the rescue signal.

[20] A method for customizing settings of a mobile terminal such as a mobile phone, a PDA, or MP-3 or MP-4 player for operating a cash or credit card capability with the terminal, comprising,
(a) a step for configuring at least one or more of ID modules such as SIM (Subscriber Identification Module), USIM(Universal Subscriber Identification Module), UIM (User Information Module), an IC module, or a RFID module which having a code data of the credit or cash card issued by a service provider such as a bank or a card company, in the terminal in compliance with a CPU of the terminal system,
(b) a step for registering user's security ID code of each ID module to the memory means of terminal associated with the CPU, wherein the security ID code controls the function of the ID module to on-mode only when the security by ID code being matched with the registered the security ID code whenever using card function, and
(c) a step for turn the function of the ID module to off-mode after a certain time interval or a certain time usage according to a software programmed on the CPU for enhancing security.

[21] The method of claim 20, further comprising a step for transmitting card data to the terminal of the subscriber and changing the card data in the ID module by a service provider such as bank or credit card company associated with the CPU of the terminal.

[22] The method of claim 20, wherein the step for registering user's security ID code further registering a plurality of the security ID code according to the maximum settlement amount of each card module usage for enhancing security.

[23] The method of claim 20 or 21, further configuring a single ID module having a plurality of card data associated with software programmed on the CPU for operating the credit or cash card function with a single module in the terminal.

[24] The method of claim 20, 21 or 22, wherein the user's security ID code is further configuring with a biometric ID of user such as a fingerprint, a vein, an iris of eye or an image data of user according to the security ID code input means of the

terminal system.

[25] A mobile phone system having multi-phone capability for operating multiple phone numbers with a module such as SIM(Subscriber Identification Module), USIM(Universal Subscriber Identification Module) or UIM(User Information Module) comprising the step of,

(a) a plurality of modules such as SIM, UIM or SIM for designating telephone number and user's subscriber ID,

(b) a means for generating a plurality of different sounds according to each module,

(c) a display means for displaying the telephone number of each module when the matching phone number received, and

(d) a CPU for controlling the said means for carrying out multi-phone system with a single mobile phone by adding the ID module.

[26] The mobile phone system of claim 25, further comprising a single module having data of a plurality of telephone numbers with user's subscriber ID inserted instead of a plurality of said modules.

[27] A method for customizing settings of a mobile terminal such as a mobile phone, a PDA or MP-3 or MP-4 player to operate a credit or cash card with the mobile terminal, comprising the step for,

(a) transmitting data of one or more credit or cash card to the mobile terminal of subscriber by a computer system of a service provider such as a bank or a card company,

(b) storing the transmitted data of credit or cash card in memory means such as IC chip, RFID chip or IC module configured in the mobile terminal for carrying out the function of credit or cash card associated with CPU of the subscriber's terminal,

(c) registering subscriber's security ID code of each credit or cash card code in the memory means of the CPU with a keypad of the mobile terminal coupled to a CPU,

(d) verifying subscriber's security ID by inputting the ID code with the keypad for activating the CPU to change the credit or cash card function of the terminal to be on-mode when the ID code is matching with the registered subscriber's security ID code, and

(e) changing the credit or cash card mode of the terminal to be off-mode after a certain time interval programmed on the CPU or each usage of the terminal as the

credit or cash card for security purpose.

[28] The method of claim 27, further registering, coupled to the CPU, subscriber's biometric ID data such as a fingerprint, a vein or an iris of eye or an image data of the subscriber instead of subscriber's security ID code according to the security ID input means of the terminal system.

[29] The method of claim 27 or 28, further registering a plurality of subscriber's security ID code according to the maximum settlement amount of each card usage for enhancing card security.

[30] A method for customizing settings of a mobile phone to control a receiving call, comprising the step for,

(a) registering a plurality of phone numbers by mode such as normal receiving permit or refusal in a memory means of the phone with a keypad coupled to the CPU of the phone,

(b) switching automatically the phone call to a memory mode coupled to the CPU when refusal number identified if refusal phone numbers are registered, and

(c) switching automatically all of the phone call for refusing mode coupled to the CPU of the phone except the normal phone numbers if normal phone numbers are registered.

[31] A method for customizing settings of a mobile phone to block any of unwanted mail, comprising the step for,

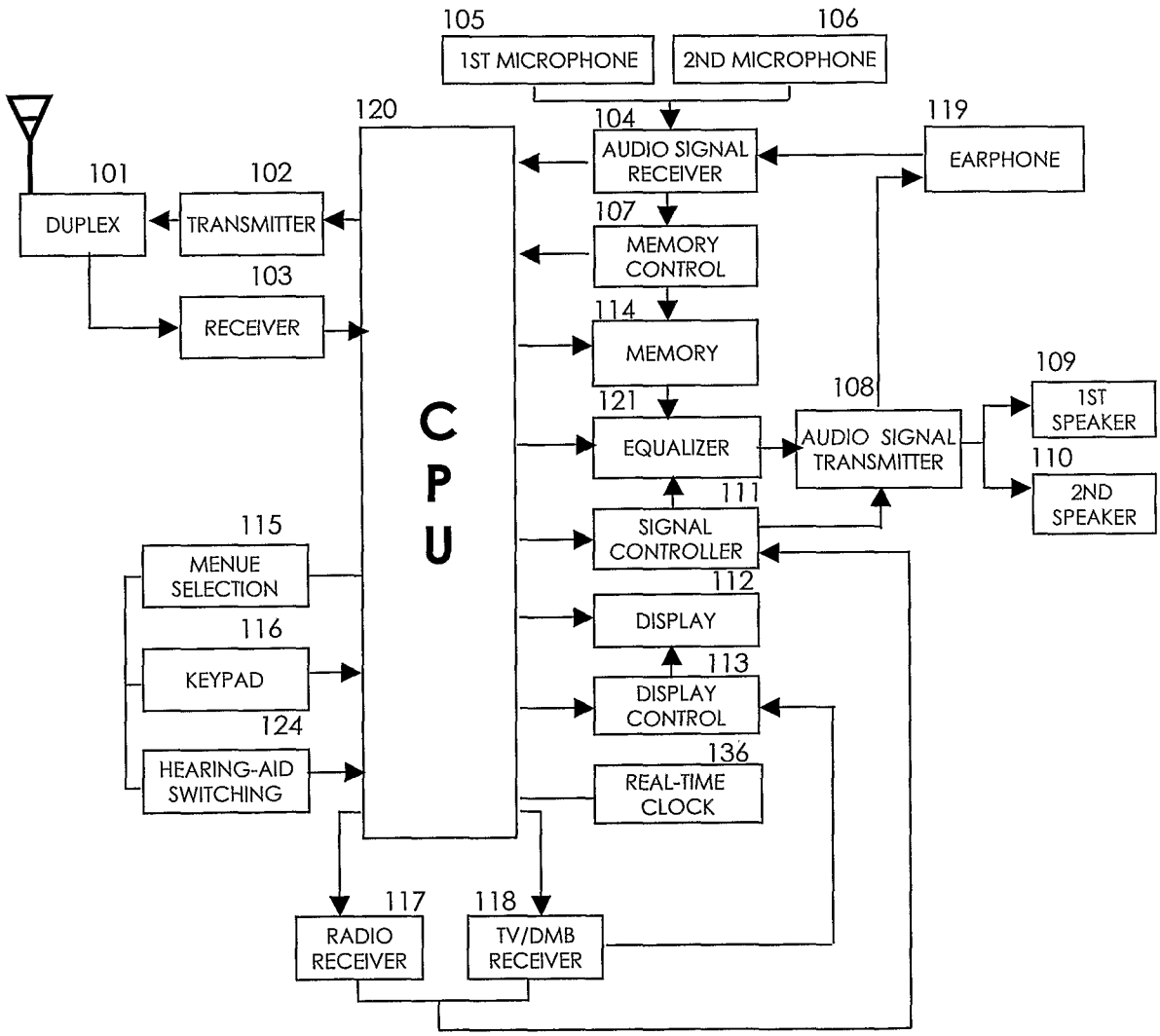
(a) registering a code to add on a mail in the memory means coupled to the CPU of the phone,

(b) transmitting the code to a plurality of mobile phones to communicate each other, and

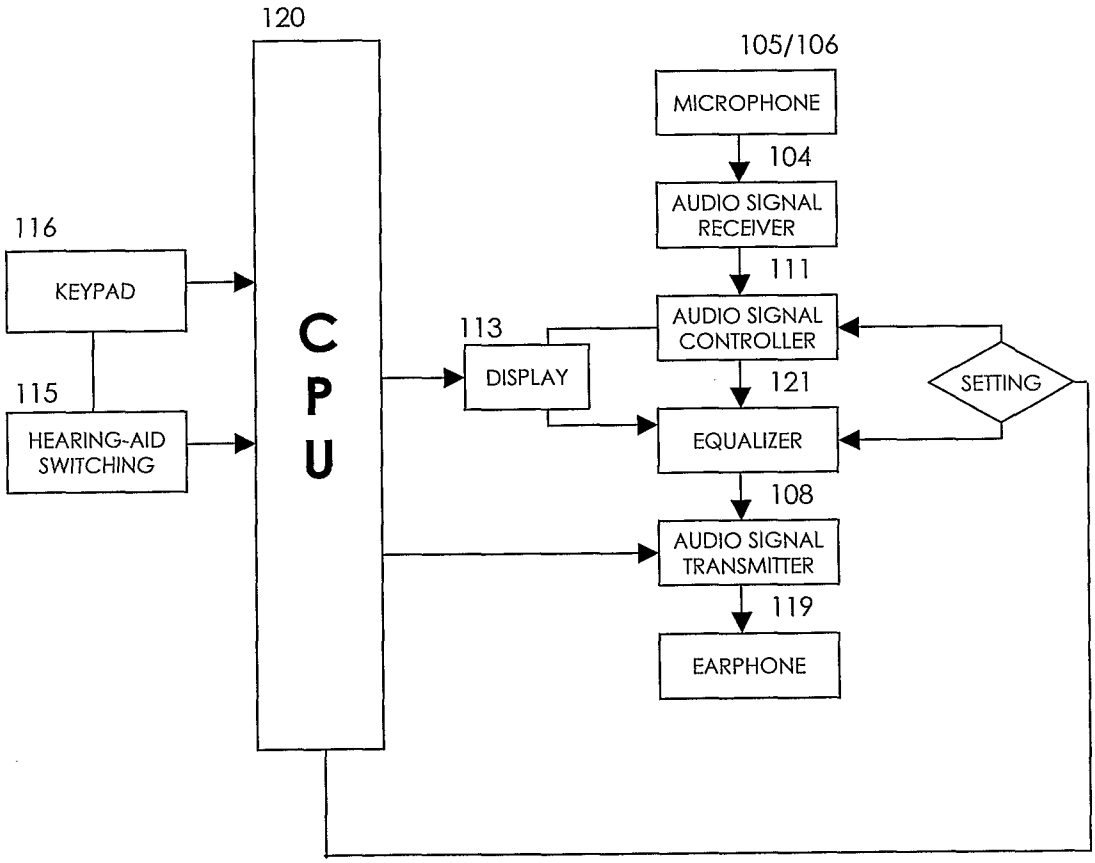
(c) blocking receiving mails coupled to the CPU when the code of the mail is not matched as the registered code in the memory means of the phone.

[32] The method of claim 31, further registering said code by group coupled to the CPU for communicating with a certain group basis.

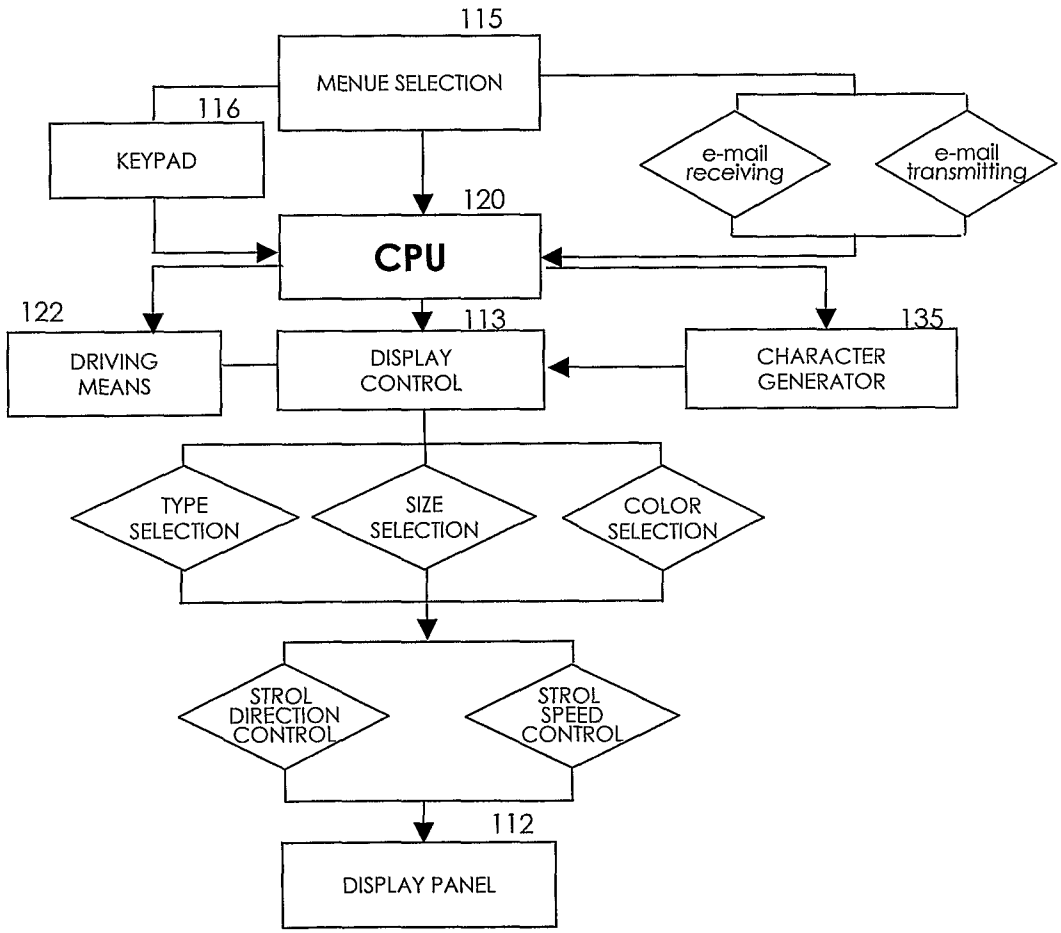
【 FIG.1】


105
1ST MICROPHONE
106
2ND MICROPHONE
120
104
AUDIO SIGNAL RECEIVER
119
EARPHONE
101
DUPLEX
102
TRANSMITTER
107
MEMORY CONTROL
103
RECEIVER
114
MEMORY
109
1ST SPEAKER
108
121
EQUALIZER
AUDIO SIGNAL TRANSMITTER
110
2ND SPEAKER
C
P
U
111
SIGNAL CONTROLLER
115
MENUE SELECTION
112
DISPLAY
116
KEYPAD
113
DISPLAY CONTROL
124
HEARING-AID SWITCHING
136
REAL-TIME CLOCK
117
118
RADIO RECEIVER
TV/DMB RECEIVER

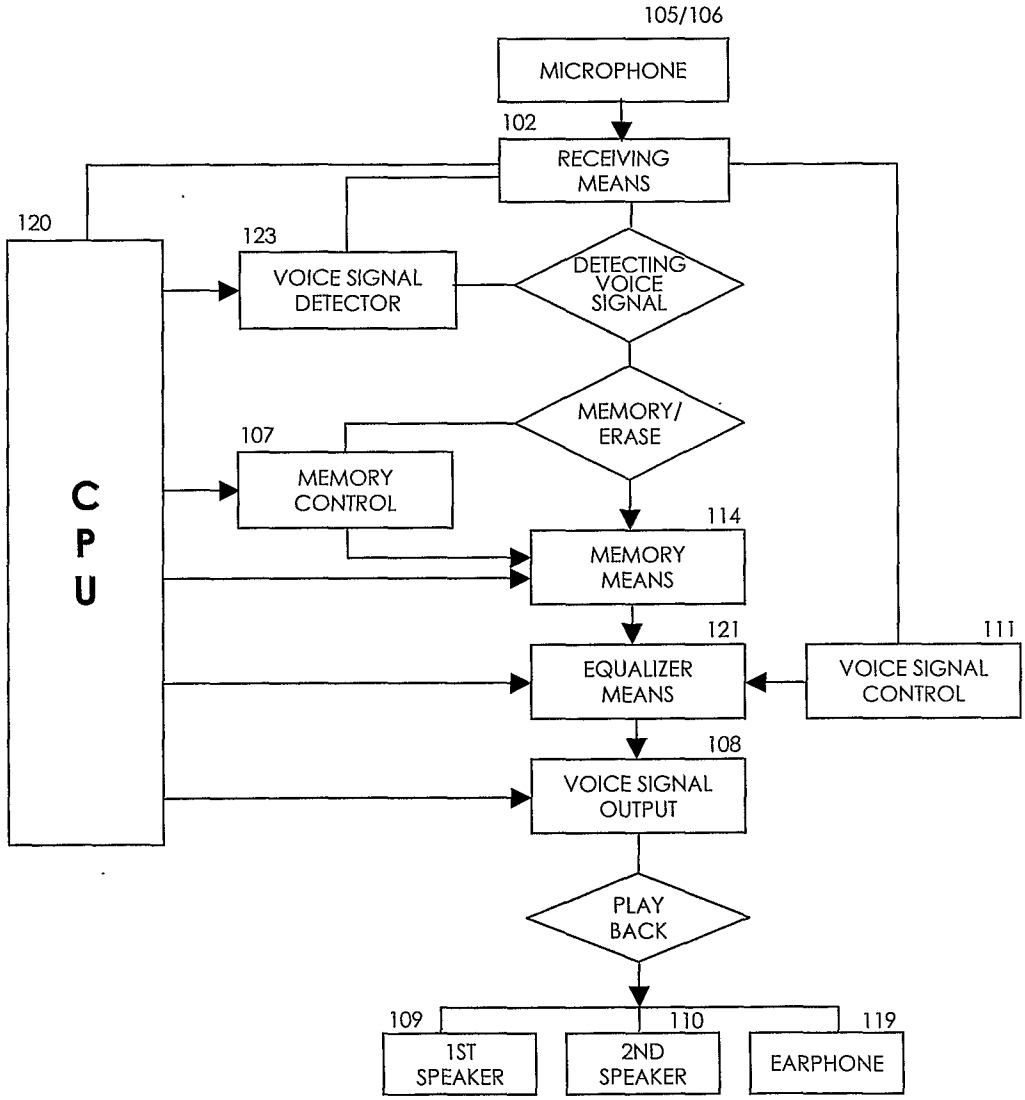
【FIG. 2】


120
105/106
MICROPHONE
104
AUDIO SIGNAL RECEIVER
111
116
KEYPAD
113
AUDIO SIGNAL CONTROLLER
C
P
U
DISPLAY
121
SETTING
115
HEARING-AID SWITCHING
EQUALIZER
108
AUDIO SIGNAL TRANSMITTER
119
EARPHONE

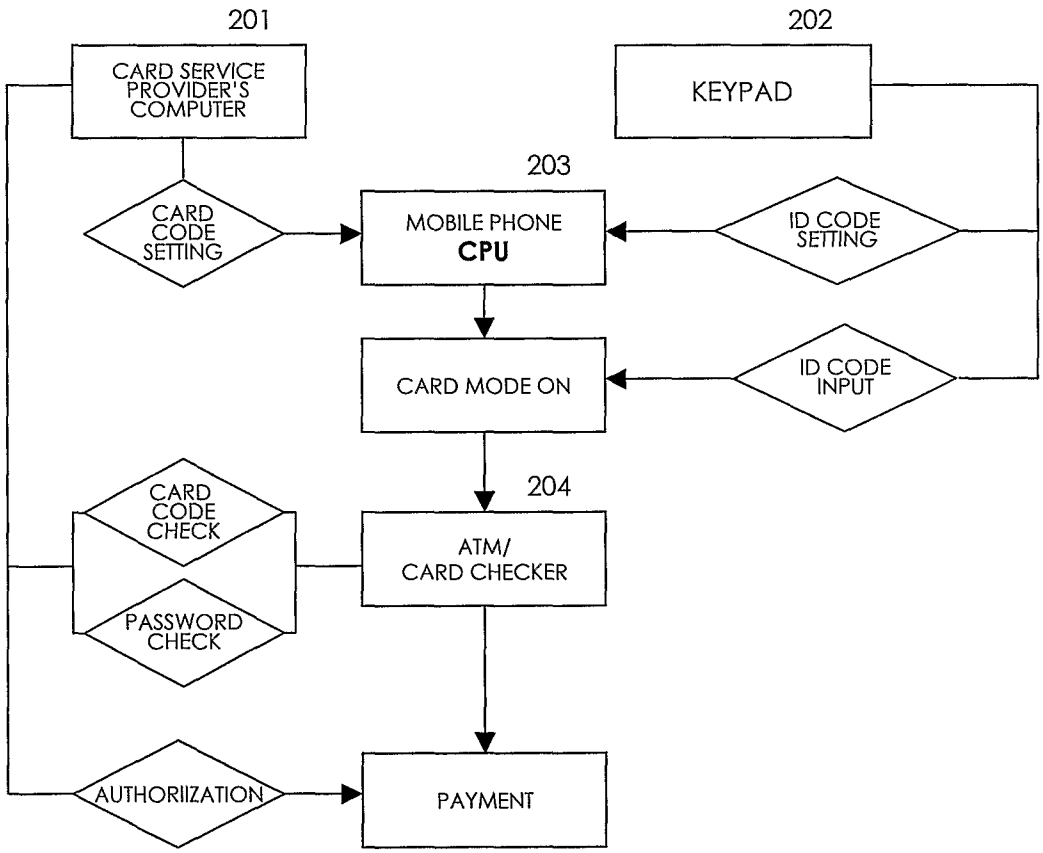
【FIG. 3】


115
MENUE SELECTION
116
KEYPAD
e-mail receiving
e-mail transmitting
120
CPU
122
DRIVING MEANS
113
DISPLAY CONTROL
135
CHARACTER GENERATOR
TYPE SELECTION
SIZE SELECTION
COLOR SELECTION
STROL DIRECTION CONTROL
STROL SPEED CONTROL
112
DISPLAY PANEL

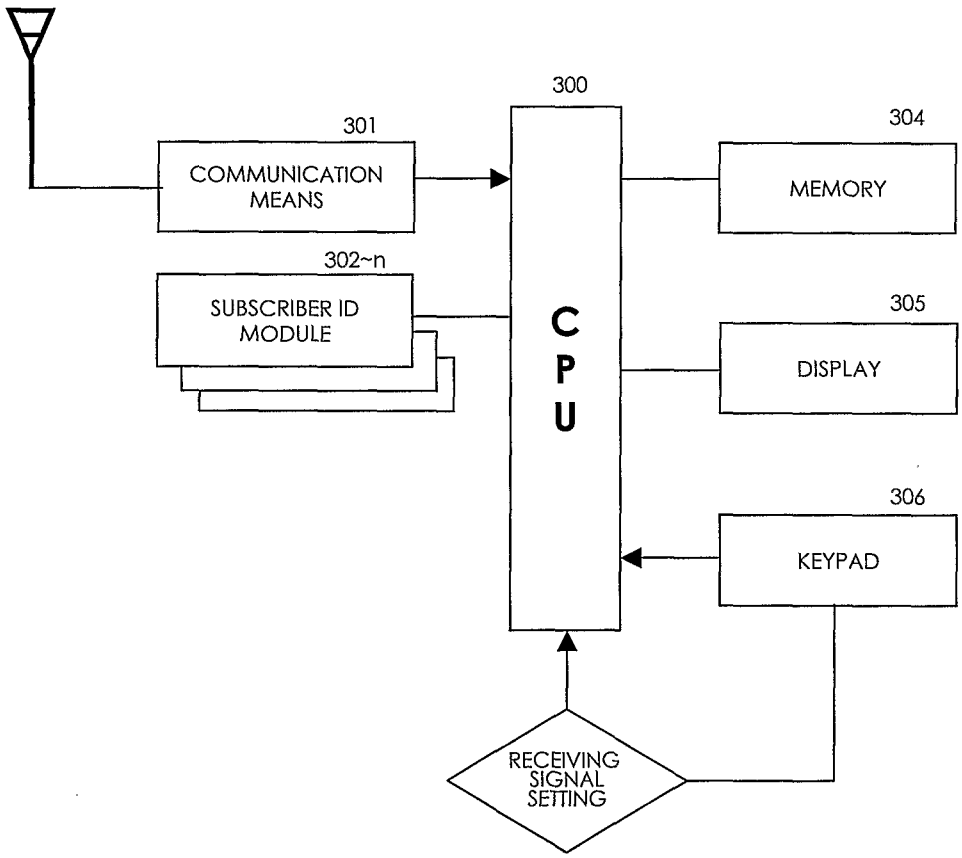
【 FIG.4】


105/106
MICROPHONE
102
RECEIVING MEANS
120
123
VOICE SIGNAL DETECTOR
DETECTING VOICE SIGNAL
MEMORY/ ERASE
107
MEMORY CONTROL
C P U
114
MEMORY MEANS
121
111
EQUALIZER MEANS
VOICE SIGNAL CONTROL
108
VOICE SIGNAL OUTPUT
PLAY BACK
109
110
119
1ST SPEAKER
2ND SPEAKER
EARPHONE

【 FIG.5】


201
202
CARD SERVICE PROVIDER'S COMPUTER
KEYPAD
203
CARD CODE SETTING
MOBILE PHONE CPU
ID CODE SETTING
CARD MODE ON
ID CODE INPUT
204
CARD CODE CHECK
ATM/ CARD CHECKER
PASSWORD CHECK
AUTHORIIZATION
PAYMENT

【 FIG.6】


300
301
COMMUNICATION MEANS
304
MEMORY
302~n
SUBSCRIBER ID MODULE
C P U
305
DISPLAY
306
KEYPAD
RECEIVING SIGNAL SETTING

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/001738

A. CLASSIFICATION OF SUBJECT MATTER

H04B 1/40(2006.01)i

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 8 H04B 1/00 B60R 11/02 H03G 5/00 H04M 1/60

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KOREAN UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975
JAPANESE UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "MOBILE""TERMINAL""CELLULAR""GRAPHIC""EQUALIZER"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0009156 A1 (HAYES et al.) 12 JANUARY 2006 See Fig 1 and Paragraph [0020]~[0024]	1
X	KR 10-2005-0073770 A (PANTECH & CURITEL COMMUNICATIONS, INC.) 18 JULY 2005 See Page 3 Line 3~Line 6	2
X	KR 10-2005-0022218 A (LG ELECTRONICS) 07 MARCH 2005 See the whole document	5
X	JP 60-240542 A (MITSUBISHI ELECTRIC CORP) 29 NOVEMBER 1985 See Fig 2(a)~2(c) Page 2 Right bottom paragraph ~ Page 4 Right side paragraph	6
X	WO 1998/005150 A1 (QUALCOMM) 05 FEBRUARY 1998 See Fig 4 and Page 5 Line 7 ~ Page 6 Line 37	7, 8

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 AUGUST 2008 (21.08.2008)	**21 AUGUST 2008 (21.08.2008)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

SUH, Hawthorne

Telephone No. 82-42-481-5670

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/001738

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See Extra Sheet

1. ☐ As all required addtional 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, 2, 5~8

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

From Box No. III

This Authority considers that there are 7 inventions covered by the claims indicated as follows:

I. Claim 1, 2, 5-8 relates to a mobile communication terminal comprising a graphic equalizer.

II. Claim 3 and claim 4 relate to a mobile communication terminal with a function to magnify characters, numbers, fonts and colors displayed according to the sight of a user.

III. Claim 9 and claim 10 relate to a mobile communication terminal comprising hearing capacity testing and hearing aid function.

IV. Claim 11 - claim 19 relate to a mobile communication terminal with recording voice and emergency signaling function.

V. Claim 20 ~ claim 29 relate to a mobile communication terminal with authentication, Multi-numbered telephone and credit card or cash card function.

VI. Claim 30 relates to a mobile communication terminal with receiving call control function.

VII. Claim 31 and claim 32 relate to a mobile communication terminal with function to block unwanted spam mails or text messages.

The groups of claims are not linked by common or corresponding special technical features and define 7 different inventions not linked by a single general inventive concept. The application hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT. The International search was carried partially over claim1, 2, 5-8.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/001738

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006-009156 A1	12.01.2006	CN 1989761 A	27.06.2007
		EP 1759520 A1	07.03.2007
		JP 2008-503983	07.02.2008
		WO 2006-009574 A1	26.01.2006
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		JP 60-240542	29.11.1985
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		CA 2261727 AA	05.02.1998
		CN 1227024	25.08.1999
		CN 1227024 A	25.08.1999
		EP 0916218 A1	19.05.1999
		HU 200000580 AB	28.06.2000
		IL 128063 A0	30.11.1999
		JP 2000-516413	05.12.2000
		JP 2000-516413 T2	05.12.2000
		KR 10-2000-0029682	25.05.2000