

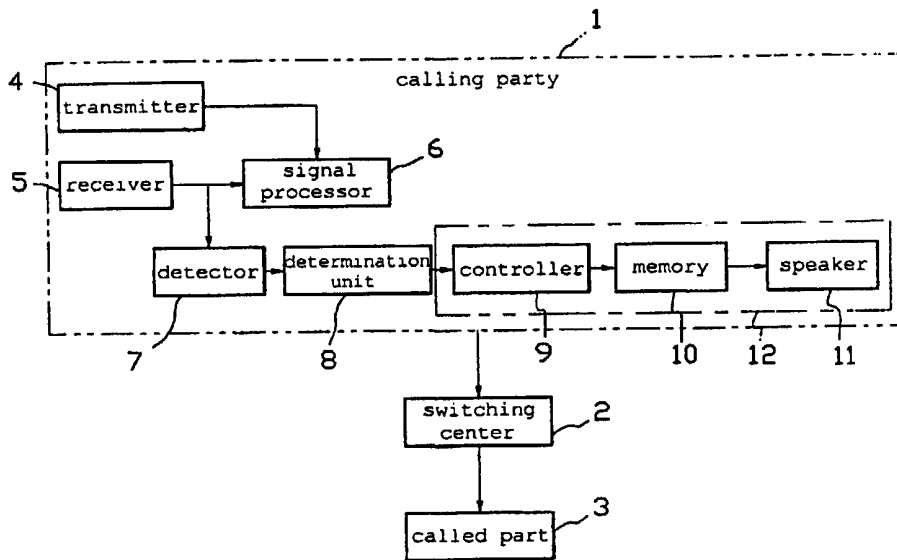


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(54) Title: RING BACK TONE/BUSY TONE SELECTION-TYPE MOBILE TELEPHONE



(57) Abstract

A ring back tone/busy tone selection-type communication terminal, comprising a transmitter (4) for transmitting a call originating signal, a receiver (5) for receiving any one of a busy tone signal and ring back tone signal from a switching center and a signalprocessor (6) for processing the call originating signal and the busy tone signal or ring back tone signal, a detector (7) for detecting any one of the busy tone signal and ring back tone signal from the receiver and outputting an associated detection signal, a determination unit (8) for determining in response to the detection signal from the detector which one of the busy tone signal and ring back tone signal is received by the receiver, and an audio output unit (12) for outputting any one of a music signal and information voice signal to the user in accordance with the result determined by the determination unit.

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RING BACK TONE/BUSY TONE SELECTION-TYPE MOBILE TELEPHONE

Technical Field

5 The present invention relates in general to a ring back tone/busy tone selection-type mobile telephone, and more particularly to a technique for, when a calling mobile communication terminal or wired or wireless communication terminal attempts a call connection to a called communication
10 terminal, outputting music or advertisement information voices to the calling communication terminal for a period of waiting time until the call connection is established.

Background Art

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As well known to those skilled in the art, communication terminals can be classified into mobile telephones based on a radio mobile telecommunication system and wired and wireless telephones based on a general wired communication system. It
20 is the current reality that wired or wireless telephones are installed one by one in every home and the number of mobile telephones being used are on a so explosively increasing trend that the demand for them cannot be foreseen.

When such a mobile telephone or wired or wireless
25 telephone attempts a call connection to a subscriber number

(i.e., a telephone number) of a desired communication terminal, it is common that a given period of waiting time is present from a point of call connection attempt time until a point of call termination time the call connection is
5 established. For such a period of waiting time, a switching center checks whether a called subscriber line is in use and then sends a busy tone signal to the calling party if the called subscriber line is in use. In the case where the called subscriber line is available empty, the switching
10 center sends a calling tone signal to the called party and, at the same time, a ring back tone signal to the calling party. Generally, the busy tone signal has short sounds repeated (i.e., toot-toot-toot...) and the ring back tone signal has long sounds repeated (i.e., toot--toot--toot...). The calling tone
15 signal is generated to inform the user of the called communication terminal that an incoming call has terminated at the called terminal.

However, the user of the calling communication terminal may get irritated with a speech disable state while hearing
20 either the busy tone sounds or ring back tone sounds. Further, in the case where the period of waiting time for the call connection establishment is long, the user of the calling party may feel bored with the ring back tone sounds being repeatedly heard, which may lead to uneasiness in his emotion.

25

Disclosure of the Invention

Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a ring back tone/busy tone selection-type communication terminal which is capable of letting the user hear desired music or advertisement information voices instead of either a busy tone or ring back tone for a period of waiting time until a call connection is established.

10 In accordance with the present invention, the above and other objects can be accomplished by a provision of a ring back tone/busy tone selection-type communication terminal comprising a transmitter for transmitting a call originating signal at a predetermined transmission frequency to attempt a
15 call connection to a called party, a receiver for receiving any one of a busy tone signal and ring back tone signal from a switching center for a period of waiting time for the establishment of the call connection and a signal processor for processing the call originating signal transmitted from
20 the transmitter and the busy tone signal or ring back tone signal received by the receiver, wherein the communication terminal further comprises a detector for detecting any one of the busy tone signal and ring back tone signal from the receiver and outputting an associated detection signal; a
25 determination unit for determining in response to the

detection signal from the detector which one of the busy tone signal and ring back tone signal is received by the receiver; and audio output means for outputting any one of a music signal and information voice signal to the user in accordance
5 with the result determined by the determination unit.

Preferably, the audio output means may include a memory for storing the information voice signal and music signal; a controller connected between the determination unit and the memory for reading any one of the music signal and information
10 voice signal from the memory in response to an output signal from the determination unit; and a speaker for outputting the music signal or information voice signal read from the memory to the user so that it can be heard by the user.

15 Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in
20 conjunction with the accompanying drawings, in which:

Fig. 1 is a block diagram showing the construction of a ring back tone/busy tone selection-type communication terminal in accordance with the present invention.

Best Mode for Carrying Out the Invention

Fig. 1 is a block diagram showing the construction of a ring back tone/busy tone selection-type communication terminal in accordance with the present invention. As shown in this drawing, a communication system comprises a calling party 1, switching center 2 and called party 3. The calling party 1 and called party 3 may be the same or different communication terminals, which may be mobile communication terminals or wired or wireless communication terminals. The calling party 1 is provided with a transmitter 4, receiver 5, signal processor 6, detector 7, determination unit 8 and audio output unit 12.

The transmitter 4 transmits a call originating signal at a predetermined transmission frequency to attempt a call connection to a telephone number of the called party 3. The receiver 5 receives an appropriate one of a busy tone signal and ring back tone signal from the switching center 2 for a period of waiting time for the establishment of the call connection. The signal processor 6 processes the call originating signal transmitted from the transmitter 4 and the busy tone signal or ring back tone signal received by the receiver 5. The detector 7 detects any one of the busy tone signal and ring back tone signal from the receiver 5 and outputs an associated detection signal. The determination

unit 8 determines in response to the detection signal from the detector 7 which one of the busy tone signal and ring back tone signal is received by the receiver 5. The audio output unit 12 outputs any one of a music signal and information voice signal to the user in accordance with the result determined by the determination unit 8. Generally, the transmission frequency is on the order of several GHz when the calling party is a mobile communication terminal and on the order of several MHz when the calling party is a wired or wireless communication terminal.

The audio output unit 12 includes a memory 10, controller 9 and speaker 11. The memory 10 stores the information voice signal and music signal, the contents of which may be preset or selectively stored personally by the user according to his taste. The controller 9 is connected between the determination unit 8 and the memory 10 to read any one of the music signal and information voice signal from the memory 10 in response to an output signal from the determination unit 8. The speaker 11 outputs the music signal or information voice signal read from the memory 10 to the user so that it can be heard by the user. The switching center 2 checks whether a telephone line of the called party 3 is in use and then sends the busy tone signal to the calling party 1 if the telephone line of the called party 3 is in use. In the case where the telephone line of the called party 3 is available empty, the

switching center 2 sends a calling tone signal to the called party 3 at the same time as the ring back tone signal to the calling party 1. The called party 3 recognizes an incoming call termination upon receiving the calling tone signal from
5 the switching center 2.

In the present embodiment, music and information voices can be stored in the memory 10 in the following various manners. Firstly, predetermined sounds are stored during a manufacturing process of an associated communication terminal.
10 Secondly, the user downloads and stores desired sounds through computer communication. Thirdly, the user personally selects and stores desired sounds. Various sounds stored in the above manners may be continuously repeated for a predetermined period of time or sequentially outputted to the user. As a
15 result, the user can hear the stored sounds according to his taste. Alternatively, the switching center as well as the communication terminal may detect signals from the calling party and called party, determine which one of the ring back tone signal and busy tone signal corresponds to the current
20 line state and let the user hear desired ring back tone sounds or busy tone sounds in accordance with the determined result.

In the present embodiment, the communication terminal may be any one of a mobile telephone, wired telephone and wireless telephone. When the user attempts a call connection, the
25 communication terminal is capable of letting the user hear

desired music or information voices for a period of waiting time until the call connection is established. Therefore, the user can relieve boredom for the period of waiting time for the establishment of the call connection. Moreover, each
5 company or individual may store and use company precepts or personal faith as ring back tone sounds and busy tone sounds. In this case, each user can inspire his spirit and cultivate his emotion while hearing the stored ring back tone sounds and busy tone sounds.

10 As mentioned above, the communication terminal of the present invention can let the user hear desired music or information voices for a period of waiting time until a call connection is established. Therefore, the user can relieve boredom for the period of waiting time for the establishment
15 of the call connection. Further, the user need not hear uniform busy tone sounds and ring back tone sounds because he can selectively store music or information voices suiting his taste. Therefore, the user can be prevented from getting irritated with a speech disable state and thus feeling uneasy
20 in his emotion.

Industrial Applicability

As apparent from the above description, the present
25 invention provides a ring back tone/busy tone selection-type

communication terminal which is capable of letting the user hear desired music or information voices for a period of waiting time until a call connection is established. Therefore, the user can relieve boredom for the period of
5 waiting time for the establishment of the call connection. Moreover, the user need not hear uniform busy tone sounds and ring back tone sounds because he is able to selectively store music or information voices suiting his taste. Therefore, the user can be prevented from getting irritated with a speech
10 disable state and thus feeling uneasy in his emotion.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing
15 from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims:

1. A ring back tone/busy tone selection-type communication terminal comprising a transmitter for transmitting a call
5 originating signal at a predetermined transmission frequency to attempt a call connection to a called party, a receiver for receiving any one of a busy tone signal and ring back tone signal from a switching center for a period of waiting time for the establishment of the call connection and a signal
10 processor for processing the call originating signal transmitted from said transmitter and the busy tone signal or ring back tone signal received by said receiver, wherein said communication terminal further comprises:

a detector for detecting any one of said busy tone signal
15 and ring back tone signal from said receiver and outputting an associated detection signal;

a determination unit for determining in response to said detection signal from said detector which one of said busy tone signal and ring back tone signal is received by said
20 receiver; and

audio output means for outputting any one of a music signal and information voice signal to the user in accordance with the result determined by said determination unit.

25 2. The communication terminal as set forth in Claim 1,

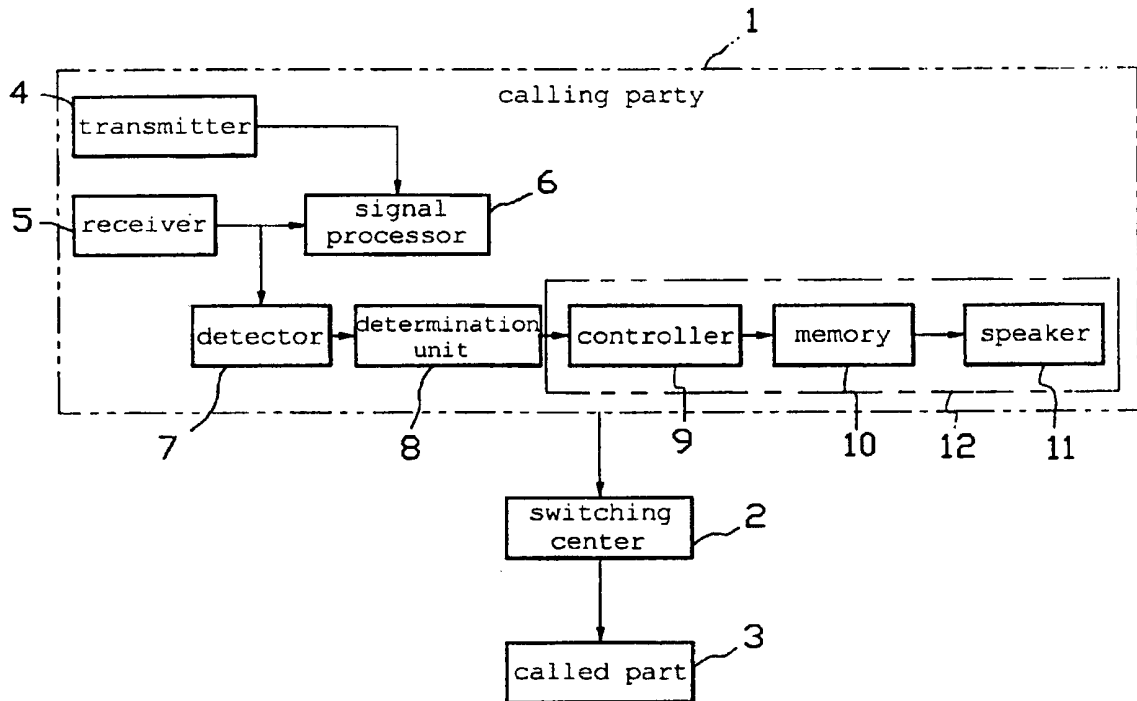
wherein said audio output means includes:

a memory for storing said information voice signal and music signal;

a controller connected between said determination unit
5 and said memory for reading any one of said music signal and information voice signal from said memory in response to an output signal from said determination unit; and

a speaker for outputting said music signal or information voice signal read from said memory to the user so that it can
10 be heard by the user.

1/1
FIG.1



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR00/00338**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 H04M 19/02**

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)

IPC7 H04M 19/02

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

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

Patrom

FPD, PAJ, WPI (telephone, busy, tone, signal, music, choice etc.)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 99-46679 A (Venture try CORP.) 05 July 1999 See the whole document	1, 2
A	JP 4-352554 A (Fujitsu LTD.) 07 DECEMBER 1992 See the abstracts and detail constitution of the invention	1, 2
A	KR 88-7136 U (Samsung CORP.) 31 MAY 1988 See the claim 1	1

 Further documents are listed in the continuation of Box C. See patent family annex.

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