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PT02397Y

ALERT MODE FOR A SELECTIVE CALL RECEIVER

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Field of the Invention

This invention relates to an alert mode for a selective call receiver. This invention is particularly useful for, but not necessary limited to, an alert mode for a selective call receiver and a method for providing such an alert mode.

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Background of the Invention

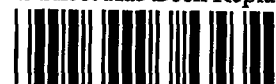
15 Selective call receivers are known in the art to provide alerts to users upon receiving messages. These alerts can be, for example, audible or silent alerts. Silent alerts are typically tactile alerts such as, for example, vibrations produced by a vibrator. Alternatively, silent alerts can be visual alerts such as, for example, a lit or blinking light emitting diode.

20 Conventionally, a user can select different modes for a selective call receiver to provide alerts that are appropriate for different situations. For example, in a noisy environment or when audible alerts are disruptive in a quiet environment, the user can select a silent alert mode to provide silent alerts. However, the user has to be within tactile or visual proximity to such

25 a selective call receiver to sense these silent alerts. When audible alerts are desired, the user can select an audible alert mode. However, the user has to be within audible proximity to the selective call receiver to hear the audible alerts.

30 Unfortunately, a user may be unable to sense alerts from a selective call receiver in certain situations despite having selected a desired alert mode. For example, the user may be unable to sense alerts from a selective call receiver when it is placed in a handbag or a briefcase. Providing an audible alert in addition to a silent alert is ineffective when the

35 volume of the audible alert or the vibrations from the silent alert is insufficient to alert the user through the handbag or the briefcase. Furthermore, reminder alerts that periodically prompts the user about



unread messages are unlikely to help and this can be a problem when such unread messages are important.

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Summary of the Invention

It is an object of this invention to overcome or at least alleviate at least one of the problems associated with subsequent alerts provided by selective call receivers for unread messages.

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According to one aspect of the invention, there is provided a selective call receiver comprising:

a receiver for receiving a message;

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at least one signal generator for generating an initial alert indicative of reception of said message; and

a controller, coupled to said receiver and said signal generator, for controlling said signal generator to generate one or more subsequent alerts associated with said message,

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wherein said selective call receiver is characterized by varying magnitudes of at least some of said subsequent alerts relative to said initial alert.

Preferably, said magnitudes can be varied relative to each other.

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Suitably, said magnitudes can be increased relative to said initial alert.

Preferably, magnitude during each of said at least some of said subsequent alerts may be constant.

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Alternatively, magnitude during each of said at least some of said subsequent alerts may change.

Preferably, said selective call receiver can be further characterized by reducing time intervals associated with said subsequent alerts.

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Suitably, said time intervals can be reduced in response to a comparison of an alert count, associated with said subsequent alerts, with an alert limit stored in a memory within said selective call receiver.

- 5 Preferably, said alert count can be associated with at least one duplicate of said message.

According to another aspect of the invention, there is provided a method for providing alerts by a selective call receiver, said method
10 comprising the steps of:

directing at least one signal generator to generate an initial alert indicative of reception of a message;

controlling said signal generator to generate one or more subsequent alerts associated with said message; and

- 15 varying magnitudes of at least some of said subsequent alerts relative to said initial alert.

Preferably, said step of varying can include the step of varying said magnitudes relative to each other.

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Suitably, said step of varying can include the step of increasing said magnitudes relative to said initial alert.

- Preferably, said step of varying can include the step of maintaining said
25 magnitudes during each of said at least some of said subsequent alerts constant.

Alternatively, said step of varying can include the step of changing said magnitudes during each of said at least some of said subsequent alerts.

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Preferably, said step of controlling can comprise the step of reducing time intervals associated with said subsequent alerts.

- Suitably, said step of reducing said time intervals can comprise the
35 step of comparing an alert count, associated with said subsequent alerts, with an alert limit stored in a memory within said selective call receiver.

Brief Description of the Drawings

5 In order to describe the invention and to put it into practical effect, reference will now be made to a preferred embodiment as illustrated with reference to the accompanying drawings in which:

10 FIG. 1 shows a block diagram of a selective call receiver in accordance with a preferred embodiment of the invention; and

FIG. 2 is a flow diagram of a method for providing alerts by the selective call receiver of FIG. 1.

15 Detailed Description of the Invention

In accordance with a preferred embodiment of the invention, FIG. 1 shows a block diagram of a selective call receiver 1. Selective call receiver 1 comprises a receiver 2, a decoder 3, a controller 4, an audible alert signal generator 5 and a silent alert signal generator 6. Silent alert signal generator 6 can be, for example, a light emitting diode or a vibrator. Receiver 2 couples to an antenna 7 for receiving messages within a communication environment. Receiver 2 also couples to decoder 3 for subsequent processing of the messages. In response to the subsequent processing, controller 4 controls alert signal generators 5,6 to generate initial alerts indicative of reception of the messages. Following these initial alerts, controller 4 controls alert signal generators 5,6 to generate subsequent alerts associated with the messages. These subsequent alerts are provided upon expiration of time intervals and remind or additionally alert the user of a message that is unread. Such a message is termed an unread message in this specification. Controller 4 couples to a memory 8 for storing information on the messages, the initial alerts and the subsequent alerts. Controller 4 includes a clock 9 for providing time information.

35 In operation, a user of selective call receiver 1 can set selective call receiver 1 to operate in a dynamic mode to provide alerts in accordance

with the invention. In this dynamic mode, selective call receiver 1 is characterized by varying magnitudes of subsequent alerts for an unread message relative to each other or to an initial alert for this unread message. Such varying in this invention can be effected by controlling alert signal generators 5,6 to increase the magnitudes for consecutive ones of the subsequent alerts or by changing the magnitudes during each of the subsequent alerts. Changing the magnitudes during each of the subsequent alerts can be by increasing these magnitudes. However, such magnitudes can remain constant. In addition to varying the magnitudes of the subsequent alerts, selective call receiver 1 in the dynamic mode of this invention also reduces the time intervals to thereby provide the subsequent alerts more frequently.

Varying the subsequent alerts provided by selective call receiver 1 when operating in the dynamic mode depends on comparison of an alert count, associated with the subsequent alerts, with an alert limit. This alert count accounts for the number of time intervals which have expired for an unread message and for which subsequent alerts have been provided. In addition the alert count also accounts for duplicates of the unread message when such duplicates are received by receiver 2. Such a comparison enables controller 4 to control alert signal generators 5,6 to generate the subsequent alerts accordingly. The alert count and the alert limit are stored within memory 8. The alert limit can be predetermined for selective call receiver 1 or variably selected by the user.

Advantageously, the invention enables selective call receiver 1 to provide subsequent alerts which are more effective in alerting a user to unread or duplicate messages than subsequent alerts provided by conventional selective call receivers. This is because the likelihood of the user being alerted to an unread or duplicate message is improved by varying the magnitudes of or reducing the time intervals associated with the subsequent alerts.

A method 10 for providing alerts by selective call receiver 1 is shown in FIG. 2. Starting from step 11, method 10 proceeds to step 12 in which controller 4 receives an alert request. An alert request is received, for example, from decoder 3 when a message has been processed and an

initial alert for the message is required. Such a message can be a duplicate of an unread message. Alternatively, an alert request can be from controller 4 when a subsequent alert is required for an unread message. Before the initial alert or the subsequent alert is provided from either audible alert

5 signal generator 5 or silent alert signal generator 6, controller 4 checks at decision step 13 whether a dynamic mode for selective call receiver 1 has been set. For a "No" to decision step 13, method 10 proceeds to step 14. At step 14, controller 4 directs either audible alert signal generator 5 or silent alert signal generator 6 to provide the initial alert or the subsequent alert for

10 the alert request according to normal alert selection of prior art alert modes. These prior art alert modes such as the silent alert mode or the audible alert mode are described in the background to this application. However, with a "Yes" at decision step 13, method 10 proceeds to decision step 15.

15 At decision step 15, controller 4 determines two conditions. First, controller 4 checks whether a time interval for a subsequent alert has expired. Second, controller 4 checks whether the alert request is for a message that is a duplicate of an unread message.

20 When the time interval has not expired and the alert request is not for such a duplicate, method 10 proceeds to step 16. At step 16, controller 4 directs either audible alert signal generator 5 or silent alert signal generator 6 to provide an initial alert indicative of reception of the message.

25 When the time interval has expired or the alert request is for such a duplicate, method 10 proceeds to decision step 17 in which controller 4 checks whether selective call receiver 1 is currently set to operate in the silent alert mode. With a "Yes" from decision step 17, controller 4 then sets selective call receiver 1 to operate in the audible alert mode at step 18.

30 Otherwise, with a "No" from decision step 17, controller 4 maintains selective call receiver 1 in operating in the audible alert mode. It is to be noted that in the preferred embodiment of this invention, the audible alert mode is selected over the silent alert mode. However, the silent alert mode can also be selected over the audible alert mode. Method 10 then

35 proceeds to decision step 19 from step 18 or with the "No" from decision step 17.

Decision step 19 is where controller 4 compares an alert count with an alert limit. This alert count provides an indication to controller 4 as to how many subsequent alerts has been provided for the message. For an alert count of zero, this audible subsequent alert is a first subsequent alert. For an alert count of one or more, this audible alert will be an additional subsequent alert. When the alert count is less than the alert limit, method 10 proceeds with a "No" from decision step 19 to step 20. At step 20, controller 4 controls audible alert signal generator 5 to emit an audible subsequent alert. When the alert count is equal to or more than the alert limit, method 10 proceeds with a "Yes" from decision step 19 to step 21. At step 21, controller 4 controls both audible alert signal generator 5 and silent alert signal generator 6 to emit an audible alert and a silent alert simultaneously.

Method 10 continues from either step 20 or step 21 to step 22 in which the time interval to a next subsequent alert is reduced by controller 4. In addition, controller 4 increases magnitude of the next subsequent alert for the message or for a duplicate of such a message. For example, when the next subsequent alert is an audible alert, volume for such an alert is increased. For the next subsequent alert as provided in step 21, then volume and intensity of the audible and silent alerts are increased respectively. Controller 4 also increases the alert count by one in step 22. The interval count is increased as the time interval has expired or when

It is to be noted that controller 4 can increase the magnitude of the audible alert at step 22 in different ways. For example, one way is to increase the magnitude for consecutive ones of the subsequent alerts but each of the consecutive ones has a magnitude that is constant for its duration. Another way is to increase the magnitude for consecutive ones of the subsequent alerts but each of the consecutive ones also increases in magnitude for its duration.

Advantageously, the invention enables selective call receiver 1 to provide subsequent alerts more effectively to alert a user when a message is received and remains unread. As the subsequent alerts are, for example, louder and recur more frequently, the user is more likely to sense such alerts even when selective call receiver 1 is placed in a handbag or a

briefcase. Thus, the dynamic mode of the invention is likely to be more effective in alerting the user to important messages which can otherwise remain unread in conventional selective call receivers for a long time.

Claims

We claim:



- 5 1. A selective call receiver comprising:
 a receiver for receiving a message;
 at least one signal generator for generating an initial alert
indicative of reception of said message; and
 a controller, coupled to said receiver and said signal generator, for
10 controlling said signal generator to generate one or more subsequent
alerts associated with said message,
 wherein said selective call receiver is characterized by varying
magnitudes of at least some of said subsequent alerts relative to said initial
alert.
- 15 2. The selective call receiver as claimed in Claim 1 wherein said
magnitudes are varied relative to each other.
3. The selective call receiver as claimed in Claim 1 wherein said
20 magnitudes are increased relative to said initial alert.
4. The selective call receiver as claimed in Claim 1 wherein
magnitude during each of said at least some of said subsequent alerts is
constant.
- 25 5. The selective call receiver as claimed in Claim 1 wherein
magnitude during each of said at least some of said subsequent alerts
changes.
- 30 6. The selective call receiver as claimed in Claim 1 wherein said
selective call receiver is further characterized by reducing time intervals
associated with said subsequent alerts.
- 35 7. The selective call receiver as claimed in Claim 6 wherein said time
intervals are reduced in response to a comparison of an alert count,
associated with said subsequent alerts, with an alert limit stored in a
memory within said selective call receiver.

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8. The selective call receiver as claimed in Claim 7 wherein said alert count is associated with at least one duplicate of said message.

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9. A method for providing alerts by a selective call receiver, said method comprising the steps of:

directing at least one signal generator to generate an initial alert indicative of reception of a message;

10 controlling said signal generator to generate one or more subsequent alerts associated with said message; and

varying magnitudes of at least some of said subsequent alerts relative to said initial alert.

15 10. The method as claimed in Claim 9 wherein said step of varying includes the step of varying said magnitudes relative to each other.

11. The method as claimed in Claim 9 wherein said step of varying includes the step of increasing said magnitudes relative to said initial alert.

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12. The method as claimed in Claim 9 wherein said step of varying includes the step of maintaining magnitude during each of said at least some of said subsequent alerts constant.

25 13. The method as claimed in Claim 9 wherein said step of varying includes the step of changing magnitude during each of said at least some of said subsequent alerts.

30 14. The method as claimed in Claim 9 wherein said step of controlling comprises the step of reducing time intervals associated with said subsequent alerts.

35 15. The method as claimed in Claim 14 wherein said step of reducing said time intervals comprises the step of comparing an alert count, associated with said subsequent alerts, with an alert limit stored in a memory within said selective call receiver.

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16. A selective call receiver substantially as described herein with reference to and as illustrated by the accompanying drawings.

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17. A method for providing alerts by a selective call receiver substantially as described herein with reference to and as illustrated by the accompanying drawings.

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