

A SELECTIVE CALL RECEIVER AND METHOD FOR LOCATION
IDENTIFICATION OF A RECEIVED MESSAGE

FIELD OF THE INVENTION

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This invention relates to a roaming selective call receiver and method for automatically determining and displaying a location where a paged message was received.

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BACKGROUND ART

Paged information transmitted from a central information station to a selective call receiver, often referred to as a pager, has become a well known and used
15 form of communication. Such selective call receivers are usually carried by users for receiving paged messages when they are away from their office or home telephone.

In general a selective call receiver has an alert
20 mechanism for generating an audible signal that announces reception of a received paged message. Upon receiving the paged message the user may view the message content that can be displayed upon a liquid crystal display associated with the selective call receiver. However,
25 messages received by selective call receivers may be transmitted from different locations or transmission sources as described, for example, in US Patent No. 4,891,638. Accordingly, the user of a pager may not know from which transmission source location a paged
30 message was received.

In US Patent No. 4,891,638 there is disclosed a selective call receiver for receiving and displaying information from a number of transmission sources. The
35 selective call receiver includes decoding circuitry and processing circuitry for identifying information associated with each transmission source. The selective

call receiver allows the user to request information regarding the location of the transmission source to thereby confirm proper operation of the selective call receiver at an expected location.

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The selective call receiver as described in US Patent No. 4,891,638 allows for frequency switching and providing information regarding an expected transmission source location. Unfortunately, the selective call receiver described in US Patent No. 4,891,638 does not automatically provide information associated with a transmission source location and the user must request such information to be displayed.

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SUMMARY OF THE INVENTION

It is an aim of the invention to overcome or alleviate at least one of the problems associated with prior art selective call receivers and methods associated with displaying a transmission source location of a message.

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

receiver means for receiving coded transmitted messages from a transmission source location;

processing means, in communication with said receiver means, for processing and storing one or more of said transmitted messages; and

a display for displaying at least part of a message content of said messages, said display being in communication with said processing means,

wherein said processing means is adapted to determine from at least one of said transmitted messages, information associated with said transmission source location to thereby automatically provide information
5 associated with said transmission source location to said display when said display is displaying at least part of said message content associated with one of said messages.

10 Preferably, said processing means may determine said information associated with said transmission source location from information transmitted in one or more of said messages.

15 Alternatively, said processing means may determine said information associated with said transmission source location from transmission characteristics of one or more of said messages. Suitably, said a transmission characteristics may be a transmission frequency of said
20 messages.

According to another aspect of this invention, there is provided a method for displaying, upon a display of a selective call receiver, information associated with a
25 transmission source location, the method comprising the steps of:

(i) receiving one or more messages transmitted to a selective call receiver from a transmission source;
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(ii) processing and storing at least one of said messages, said processing determining information associated with said transmission source information;
and
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(iii) automatically displaying said information associated with transmission source location when at

least part of a message content of one of said messages is being displayed.

Suitably, said step of (ii) processing may determine
5 said transmission source location from information transmitted in one or more of said messages.

Alternatively, said step of (ii) processing may determine said transmission source location from
10 transmission characteristics of said messages. Suitably, said transmission characteristics may be a transmission frequency of said messages.

Preferably, there may be a step of alerting
15 preceding said step of (iii) displaying, said step of alerting providing an alert signal indicating that a message has been received by said selective call receiver.

20 Preferably, said transmission source location may be indicative of a region such as a suburb, city, state or country.

25 BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be readily understood and put into practical effect, reference will now be made to a preferred embodiment as illustrated with
30 reference to the accompanying drawings in which:

FIG. 1 is a block diagram illustrating an embodiment of a selective call receiver in accordance with the invention; and

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FIG. 2 is flow diagram of the operation the selective call receiver of FIG. 1.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE
INVENTION

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With reference to Fig. 1 there is illustrated a selective call receiver 1 commonly known as a pager. Selective call receiver 1 comprises a receiver means 2 coupled to be in communication with a processing means 3. 10 Processing means 3 includes a frequency synthesizer 4 coupled to be controllable by a micro-processor 13. Further, an alert generating means 17 is coupled to be controllable by micro-processor 13 and a display means in the form of a Liquid crystal display (LCD) 5 and user 15 actuatable switches 6 are coupled to be in communication with micro-processor 13.

In this preferred embodiment receiver means 2 includes a receiver 8 coupled to an antenna 7 by a radio 20 frequency amplifier 9.

The processing means 3 also includes a demodulator 10 coupled to both receiver 8 and a decoder 11. The decoder 11 is coupled to micro-processor 13 and has an 25 associated Read Only Memory (ROM) 12 that stores data for decoding received messages. Micro-processor 13 is also coupled a Random Access Memory (RAM) 14 and a Read Only Memory (ROM) 15. Further, liquid crystal display 5 has an associated slave driver 16 controllable by micro-processor 13. 30

As will be apparent to a person skilled in the art, alert generating means 17 comprises an addressable tone generator addressable by micro-processor 13. Outputs of 35 tone generator 17 are coupled to drive either or both a speaker and a transducer in the form of a vibrator motor for vibrating a casing of selective call receiver 1.

The Read Only Memory 15 stores data for converting decoded received binary messages into characters for displaying on liquid crystal display 5. In this embodiment Read Only Memory 14 also stores operating code for micro-processor 13. In contrast, Random Access Memory 15 is for storing received decoded paged messages and is also used for storing temporary data as will be apparent to a person skilled in the art.

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Referring to Fig. 2 there is illustrated a flow diagram of the operation of selective call receiver 1. As illustrated, at step 100 a transmitted message, transmitted from a transmission source, is received by antenna 7 and then amplified by amplifier 9, filtered by receiver 8 and demodulated by demodulator 10. At test step 101 decoder 11 in combination with associated Read Only Memory 12 determines if the transmitted message is addressing selective call receiver 1. If selective call receiver 1 is not being addressed then selective call receiver 1 returns to step 100.

When test step 101 determines a received message is addressing selective call receiver 1 then a processing step 102 is effected by micro-processor 13 Random Access memory 14 and Read Only Memory 15. During processing step 102 a message content part of said message is stored in Random Access Memory 14. Furthermore, associated with the message is information associated and identifying the transmission source. This information is unique to a specific transmission area that may comprise one or more transmitters. Further, if the transmitted message is coded in a FLEXTM protocol, then this information can be transmitted in either a field known as the Simulcast System Identifier (SSID) or the Network Identifier field (NID).

After step 102 micro-processor activates alert generating means 17 at step 103. This therefore alerts a user that a message has been received by selective call receiver 1. At a displaying step 104 the user has the option of displaying and reading the message on Liquid Crystal Display 5 by operation of one of switches 6. Alternatively, as will be apparent to a person skilled in the art, the user may defer displaying the message until a later time. When the message is displayed on Liquid Crystal Display 5, the information associated with the transmission source (e.g. Seoul, Singapore, Beijing, Taipei) is automatically displayed with the contents of the message being displayed. Accordingly, the user will know where the message was transmitted from (e.g. regions such as a suburb, city, state or country).

The present invention allows for selective call receiver to roam over a broad coverage area, wherein receiver means 2 receives signals that are processed by processing means 3 to determine the operating frequency of the local transmission source. Such techniques are described in US patent Nos. 4,644,347 and 4,891,638 and are incorporated into this specification by reference. When an operating frequency is determined, micro-processor 3 controls frequency synthesizer 4 to supply both receiver 8 and demodulator 10 with a reference frequency for processing received transmitted messages. The information associated with the transmission source location can then be automatically displayed on Liquid Crystal display along with the message content. This therefore has the advantage of automatically providing information associated with the transmission source location to the user.

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Although the invention has been described with reference to a preferred embodiment it is to be

understood that the invention is not restricted to the particular embodiment described herein. For example, the transmission source location may be determined from analysis of transmission characteristics of the transmitted message. The transmission characteristics could be a transmission carrier frequency. This carrier frequency can be measured and compared with a list of frequencies and associated source locations stored in Read Only Memory 15. The micro-processor 13 may then compare the carrier frequency with the list of frequencies stored in Read Only Memory to determine the source location. In one alternative form the information associated with the transmission source location can be sent in a System Message protocol instead of the FLEX™ SSID or NID fields. Accordingly, the transmission source location can be identified and stored in Random Access Memory 14 and displayed with message contents of further messages, therefore the transmission source location will only be updated when the System Message indicates a different transmission source location.

WE CLAIM:

1. A selective call receiver comprising:

5 receiver means for receiving coded transmitted messages from a transmission source location;

processing means, in communication with said receiver means, for processing and storing one or more of
10 said transmitted messages; and

a display for displaying at least part of a message content of said messages, said display being in communication with said processing means,
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wherein said processing means is adapted to determine from at least one of said transmitted messages, information associated with said transmission source location to thereby automatically provide information
20 associated with said transmission source location to said display when said display is displaying at least part of said message content associated with one of said messages.

25 2. A selective call receiver as claimed in claim 1, wherein said processing means is adapted to determine said information associated with said transmission source location from information transmitted in one or more of said messages.

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3. A selective call receiver as claimed in claim 1, wherein said processing means is adapted to determine said information associated with said transmission source location from transmission characteristics of one or
35 more of said messages.



4. A selective call receiver as claimed in claim 3, wherein said a transmission characteristics are a transmission frequency of said messages.

5 5. A method for displaying, upon a display of a selective call receiver, information associated with a transmission source location, the method comprising the steps of:

10 (i) receiving one or more messages transmitted to a selective call receiver from a transmission source;

(ii) processing and storing at least one of said messages, said processing determining information
15 associated with said transmission source information; and

(iii) automatically displaying said information associated with transmission source location when at
20 least part of a message content of one of said messages is being displayed.

6. A method as claimed in claim 5, wherein said step of
25 (ii) processing determines said transmission source location from information transmitted in one or more of said messages.

7. A method as claimed in claim 5, wherein said step of
30 (ii) processing determines said transmission source location from transmission characteristics of said messages.

8. A method as claimed in claim 7, wherein said
35 transmission characteristics are a transmission frequency of said messages.



9. A method as claimed in any one of claims 5 to 8,
wherein there is a step of alerting preceding said step
of (iii) displaying, said step of alerting providing an
alert signal indicating that a message has been received
5 by said selective call receiver.

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

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11. A method substantially as described herein with
reference to and as illustrated by the accompanying
drawings.

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