

DESCRIPTION	SG
☒ Description : paged ...3... to paged ...5.....	
☒ Claim(s) : paged ...13... to paged ...14.....	
☐ Drawing(s) : paged to paged	
☒ Abstract : paged ...17... to paged-	
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PT02130Y

A SELECTIVE CALL RECEIVER AND METHOD FOR ALLOWING SERVICE PROVIDER FLEXIBILITY

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FIELD OF THE INVENTION

This invention relates to a selective call receiver and method for allowing a service provider flexibility to transmit paged messages at a desired pre-determined time.

10 The invention is particularly useful for, but not necessarily limited to, allowing paged advertising messages to be transmitted at pre-determined off peak times and reported to a pager user at a later time.

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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
20 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
25 mechanism for generating an audible signal which announces reception of a received paged message. Upon receiving the paged message the user may view the message content which can be displayed upon a liquid crystal display associated with the selective call receiver.

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Selective call receivers have become a common form of communication that has lead to difficulties in sending messages during high transmission traffic time periods ("Peak Hours"). Accordingly, sending general messages
35 such as advertisements, weather or financial reports during Peak Hours may unnecessarily increase the

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transmission traffic and may be unacceptable to users of selective call receivers.

5 Some selective call receivers allow for received messages to be signaled to a user at a future time. Therefore it is possible to transmit a general message to selective call receivers at low transmission traffic time periods and the message will be signaled to respective users at a later time. Unfortunately, there is no
10 flexibility in such receivers or service provider systems to allow for fluctuations in Peak Hour.

SUMMARY OF THE INVENTION

15 It is an aim of the invention to overcome or alleviate at least one of the problems associated with prior art selective call receivers or associated communication methods.

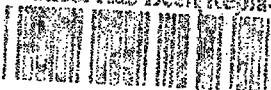
20 According to one aspect of the invention there is provided a selective call receiver comprising:

receiver means for receiving a transmitted message;

25 processing means for processing and storing activation timing information received in an initial transmitted message, said processing means being operatively coupled to said receiver means; and

30 timing means for providing one or more time dependent signals, said timing means being operatively coupled to said processing means,

35 wherein said processing means is adapted to activate said selective call receiver to receive and store at least one further message when said one or more time dependent



signals correspond to a time associated with said activation timing information.

Preferably, said processing means may automatically de-activate said selective call receiver at a pre-determined time period after receiving said initial transmitted message.

Suitably, said processing means may automatically deactivate said selective receiver if activation thereof is in response to said time dependent signals corresponding to said activation timing information.

Preferably, said processing means may be adapted to process and store said at least one further message having alert timing information associated therewith,

wherein said processing means is adapted to activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

Alternatively, said processing means may be adapted to process and store alert timing information associated with said initial message,

wherein said processing means is adapted to activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

Suitably, said selective call receiver may be adapted to be automatically activated at one or more pre-determined times to thereby allow receipt of said initial transmitted message.



Suitably, said pre-determined times are pre-set before said selective call receiver is distributed to a user thereof.

- 5 Preferably, said processing means may be adapted to distinguish between a said initial transmitted message and a normal paged message.

10 Suitably, said processing means may be adapted to distinguish between a said further message and a normal paged message.

15 According to another aspect of this invention, there is provided a method for allowing a service provider flexibility to transmit paged messages at a desired pre-determined time, the method comprising the steps of:

20 processing and storing activation timing information in an initial transmitted message, said processing and storing being effected by a selective call receiver that receives said initial transmitted message; and

25 activating said selective call receiver to receive at least one further message at a time associated with said activation timing information.

30 Preferably, the method may include a further step of automatically de-activating said selective call receiver at a pre-determined time period after receiving said further message, wherein said automatically de-activating will occur if activation of said selective call receiver was in response to said time dependent signals corresponding to said activation timing information.

35 Preferably, the method may include a further step of further processing and storing said at least one further message having alert timing information associated



therewith to thereby activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

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Alternatively, the processing step may include processing and storing alert timing information associated with said initial transmitted message to thereby activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

Preferably, said selective call receiver may be automatically activated at one or more pre-determined times to thereby allow receipt of said initial transmitted message.

BRIEF DESCRIPTION OF THE DRAWINGS

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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 reference to the accompanying drawings in which:

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

FIG. 2 illustrates a message format common to an initial transmitted message and a further message for processing by the selective call receiver of FIG. 1;

FIG. 3 is part of a flow diagram illustrating the method of operation of the selective call receiver of FIG. 1; and



FIG. 4 is part of a flow diagram illustrating the method of operation of the selective call receiver of FIG. 1.

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DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE
INVENTION

10 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. A timing means 4 is coupled to be controllable by
15 processing means 3 and a Liquid crystal display (LCD) 5 and control buttons 6 are coupled to be in communication with processing means 3.

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

The processing means 3 includes a demodulator 10 coupled to both receiver 8 and a decoder 11 having an
25 associated Read Only Memory (ROM) 12 storing data for decoding received messages.

The processing means 3 also includes a micro-processor 13 coupled to decoder 11. Micro-processor 13 is
30 also coupled to control buttons 6, liquid crystal display 5, 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.

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Timing means 4 comprises a clock 17 for providing digital output time dependent signal values corresponding to the date and time of day. The time dependent signal

values are provided at an output of clock 17 which is coupled to both micro-processor 13 and an input of a combinational logic decoding circuit 18 having an output coupled to micro-processor 13. Decoding circuit 18 can be
5 either hardwired or programmable to provide dormant, activation and de-activation signals to micro-processor 13 in response to the digital output time dependent signal values.

10 Micro-processor 13 is also coupled to an alert generating means 19 comprising a speaker and an optional vibrator motor 19 for vibrating a casing of selective call receiver 1.

15 As will be apparent to a person skilled in the art, Read only memory 15 stores data for converting decoded received binary messages into alpha-numeric data. In this embodiment Read Only Memory 15 also stores operating code
20 for micro-processor 13. In contrast, Random Access Memory 14 allows for storage of received decoded paged messages and temporary storage of data associated with operation of micro-processor 13.

25 Referring to Fig. 2 there is illustrated a message format 30 common to both an initial transmitted message and a further transmitted message. Message format 30 comprises an Ad-identifier delimiter field 31, Ad-identifier field 32, an activation timing information
30 field 33 and a variable length message field 38. Activation timing information field 32 comprises an hour field 34, a minute field 35, a day field 36 and a month field 37.

35 As illustrated with reference to FIGs 3 and 4, processing means 3 determines at a test step 100 if a time dependent signal generated from timing means 4 equals a pre-set switch on time. When the time dependent signal

generated from timing means 4 equals a pre-set switch on time a test step 101 is effected to determine if selective call receiver 1 is already active (switched on to receive messages) by checking an Active Flag. If the Active Flag is not ON then step 102 will switch on receiver means 2 and set the Active Flag to an Auto status (automatically activated). Alternatively, if at step 101 the Active Flag is ON then there is no need to switch on receiver means and step 102 will be bypassed.

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At a test step 105 a test is conducted to determine if antenna 7 has received a modulated coded message addressing selective call receiver 1. In order to determine if a message received at antenna 7 is addressing selective call receiver 1, the message is amplified by amplifier 9, filtered by receiver 8 and demodulated by demodulator 10. Processing means 3 then determines if this message is addressing selective call receiver 1. If no message is detected then a test 106 results to determine if the time dependent signal generated from timing means 4 is greater or equal to a pre-set Off time.

If test step 106 results in a No then test step 105 is repeated. However, if at test step 106 the time dependent signal generated from timing means 4 is greater or equal to the pre-set Off time, then a test step 107 is conducted to determine if the Active Flag is set to Auto therefore indicating that selective call receiver 1 was automatically activated at step 102. A de-activating step 108 switches Off receiver means 2 and selective call receiver 1 returns to step 100. Alternatively, if the Active Flag is set to On then step 100 will result directly after test step 107 without switching Off receiver means 2.

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If selective call receiver 1 was automatically activated and a user attempts to switch it off after step

101, then the Active Flag will be set to Auto but selective call receiver 1 will only be switched off after completion of step 108. However, this will be hidden to the user.

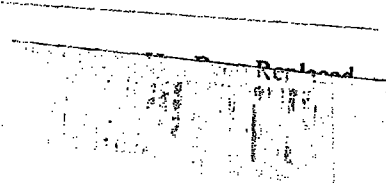
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Referring back to step 105, if it is determined that antenna 7 has received a modulated coded message addressing selective call receiver 1, then a test step 109 is conducted whereby processing means 3 checks the message
10 format 30 to determine if the ad-delimiter field 31 is present. If the ad-delimiter field 31 is absent then a test step 110 will determine if the active flag is ON. If the Active Flag is ON then the received message will be processed conventionally at a processing step 111 and the
15 user will be alerted that the message has been received. Alternatively, if at step 110 it is determined that the Active Flag is set to Auto then the received message is ignored at step 112 and not processed. After either of steps 111 or 112 have been effected, selective call
20 receiver 1 returns to step 105.

If at test step 109 it is determined that the ad-delimiter field 31 is present then a test step 113 will determine if the Ad-identifier field 32 is set to a
25 "process later" status. If the Ad-identifier field 32 is set to a "process later" status then a test step 114 will check for a valid time, day and date in the activation timing information field 33. If the time, day and date are valid then they are stored at step 115 in a variable
30 length data structure called "On Time". If at test step 114 it is determined that the time, day and date are not valid, or alternatively after completion of step 115, selective call receiver 1 goes to test step 107 to determine if the Active Flag is set to Auto.

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Referring back to test step 113, if the Ad-identifier field 33 is not set to a process later status then a test



step 116 will determine if Ad-identifier field 32 is valid. If valid, then a test step 117 will check for a valid time, day and date in the activation timing information field 32. If the time, day and date are valid then it is presumed that there is a message in message field 38, the message and activation timing information are processed and stored at step 118 and the activation timing information is stored in a variable length data structure called "Alert Time" at step 119.

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After step 119 selective call receiver 1 goes to test step 105. However, if at test step 117 it is determined the time, day and date are not valid, then selective call receiver 1 goes to test step 107 to determine if the Active Flag is set to Auto.

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In use, selective call receiver 1 is programmed to be automatically activated to switch on receiver means 2 (for a short period) at a pre-set time every 24 hours. When automatically switched on selective call receiver 1 automatically goes to step 100. If selective call receiver 1 is already activated when the pre-set time occurs then the Active Flag will be set to On therefore identifying that the selective call receiver 1 should not be de-activated automatically. Any messages received at step 105 can be either: a) a conventional message; b) an initial message with activation timing information; or c) a further message with alert timing information and a message content 38.

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If a conventional message is received at step 105 then no Ad-delimiter 31 will be present in the message and step 110 will then determine if the message should be processed or ignored. Step 105 then determines if another message is being received.

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If an initial message is received at step 105 then an Ad-delimiter 31 will be present and Ad-identifier 32 will be set to a Process Later status. Accordingly, step 113 will result in a Yes and if the activation timing information in the activation timing information field 33 is valid then it is stored in data structure "On Time".

When the current time dependent signal provided by timing means 4 equals a pre-set Off Time selective call receiver 1 will Switch Off provided that it was only switched on automatically. When the current time dependent signal equals timing information stored in the data structure "On Time" then selective call receiver 1 will automatically switch on and go to step 100. If at step 105 a further message is received then Ad-delimiter 31 will be present and Ad-identifier 32 will be set to a Process Now status. Accordingly, if Ad-identifier 32 and activation timing information in the activation timing information field 33 are valid the message content 38 is stored at step 118 and the activation timing information is stored at step 119 in the data structure called "Alert Time".

When selective call receiver 1 is activated by a user and the current time dependent signal equals or exceeds an "Alert Time", the user will be alerted and the message content can then be displayed upon Liquid Crystal Display 5. Further, when activated by a user and the current time dependent signal does not equal the Pre-set On Time, the selective call receiver will process messages in a conventional manner.

The present invention allows flexibility for a service provider to send messages to a selective call receiver during low transmission traffic time periods (generally called "Off Peak" hours). This is achieved by the selective call receiver automatically switching on

each night to receive the initial message consisting of activation timing information without any message content. If required, the activation timing information can be varied each night to suit varying transmission traffic
5 time periods.

The activation timing information is used to activate the selective call receiver during low transmission traffic time periods and a service provider can therefore
10 send a further message comprising activation timing information and a message content that can include one or more advertisements. Notification of the message content is signaled to the user during high transmission traffic time periods. Advantageously, the present invention
15 therefore provides a service provider with scheduling flexibility for sending paged advertisements to numerous selective call receivers during low transmission traffic time periods. Further, the user is notified of the advertisements only when the selective call receiver is
20 manually switched on, this advantageously removes any nuisance factor that could result if the advertisements were notified to the user when the selective call receiver is switched off.

25 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.

WE CLAIM:

1. A selective call receiver comprising:

5 receiver means for receiving a transmitted message;

processing means for processing and storing
activation timing information received in an initial
transmitted message, said processing means being
10 operatively coupled to said receiver means; and

timing means for providing one or more time dependent
signals, said timing means being operatively coupled to
said processing means,

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wherein said processing means is adapted to activate
said selective call receiver to receive and store at least
one further message when said one or more time dependent
signals correspond to a time associated with said
20 activation timing information.

2. A selective call receiver as claimed in claim 1,
wherein said processing means can automatically de-
activate said selective call receiver at a pre-determined
25 time period after receiving said initial transmitted
message.

3. A selective call receiver as claimed in claim 1 or
claim 2, wherein said processing means is adapted to
30 process and store said at least one further message having
alert timing information associated therewith,

wherein said processing means is adapted to activate
an alert means of said selective call receiver when said
35 one or more time dependent signals corresponds to a time
associated with said alert timing information.

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4. A selective call receiver as claimed in claim 1 or claim 2, wherein said processing means is adapted to process and store alert timing information associated with said initial transmitted message,

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wherein said processing means is adapted to activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

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5. A selective call receiver as claimed in any preceding claim, wherein said selective call receiver is adapted to be automatically activated at one or more pre-determined times to thereby allow receipt of said initial transmitted message.

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6. A selective call receiver as claimed in any preceding claim, wherein said processing means is adapted to distinguish between a said initial transmitted message and a normal paged message.

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7. A selective call receiver as claimed in any preceding claim, said processing means is adapted to distinguish between a said further message and a normal paged message.

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8. A method for allowing a service provider flexibility to transmit paged messages at a desired pre-determined time, the method comprising the steps of:

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processing and storing activation timing information in an initial transmitted message, said processing and storing being effected by a selective call receiver that receives said initial transmitted message; and

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activating said selective call receiver to receive at least one further message at a time associated with said activation timing information.





9. A method as claimed in claim 8 comprising a further step of automatically de-activating said selective call receiver at a pre-determined time period after receiving said further message, wherein said automatically de-activating will occur if activation of said selective call receiver was in response to said time dependent signals corresponding to said activation timing information.

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10. A method as claimed in claim 8 or claim 9, the method comprising a further step of further processing and storing said at least one further message having alert timing information associated therewith to thereby activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

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11. A method as claimed in claim 8 or claim 9, wherein the processing step may include processing and storing alert timing information associated with said initial transmitted message to thereby activate an alert means of said selective call receiver when said one or more time dependent signals corresponds to a time associated with said alert timing information.

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12. A method as claimed in any one of claims 8 to 11, wherein said selective call receiver is automatically activated at one or more pre-determined times to thereby allow receipt of said initial transmitted message.

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

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

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