(12) UK Patent Application (19) GB (11) 2 366 684 (13) A

(43) Date of A Publication 13.03.2002

(21) Application No 0021510.3

(22) Date of Filing 01.09.2000

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(51) INT CL[7]
H04M 15/00

(52) UK CL (Edition T)
H4K KED
H4L LRCMC

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WO 98/21907 A2
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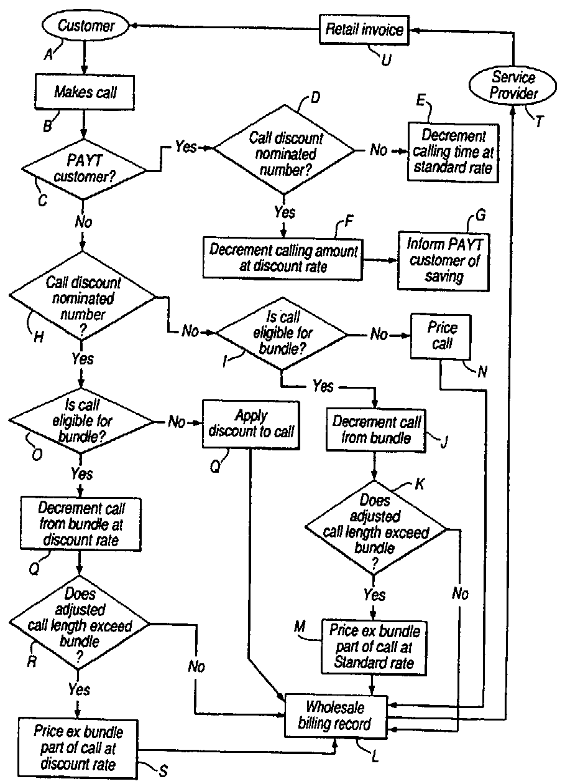
(58) Field of Search
UK CL (Edition S) H4K KED KER KEX , H4L LRCMC
INT CL[7] H04M 15/00
Online:WPI,EPODOC,JAPIO

(54) Abstract Title
Telecomms tariff system

(57) A telephone network has both contract and pre-paid customers and several different loyalty schemes (e.g. a scheme providing contract customers with bundles of call time for which separate call charges are not made, roll-over of unused bundled call time into the next charging period, reduced charging rates for calls to particular pre-selected numbers etc). In response to an incoming call, step C first determines whether the customer is a contract or a pre-paid customer. If a pre-paid customer, step D determines whether or not the call is to one of the pre-selected numbers in a nominated-number group. If so, the customer's pre-paid credit is decremented at a reduced rate; if not, it is decremented at a standard rate. If a contract customer, step H determines whether the call is to one of the pre-selected numbers. If not, step I determines whether the call can be decremented to a bundle or not. If so, it is decremented to the bundle (step J) and a charge is only applied if its length exceeds the remaining bundle time. If it is not eligible to be charged against the bundle, it is charged at a standard rate (step N). If the call is determined to be to one of the pre-selected numbers, again (step O) a determination is made whether the call can or cannot be charged to a bundle. If it can be charged to a bundle (step Q) it is charged at a reduced rate.



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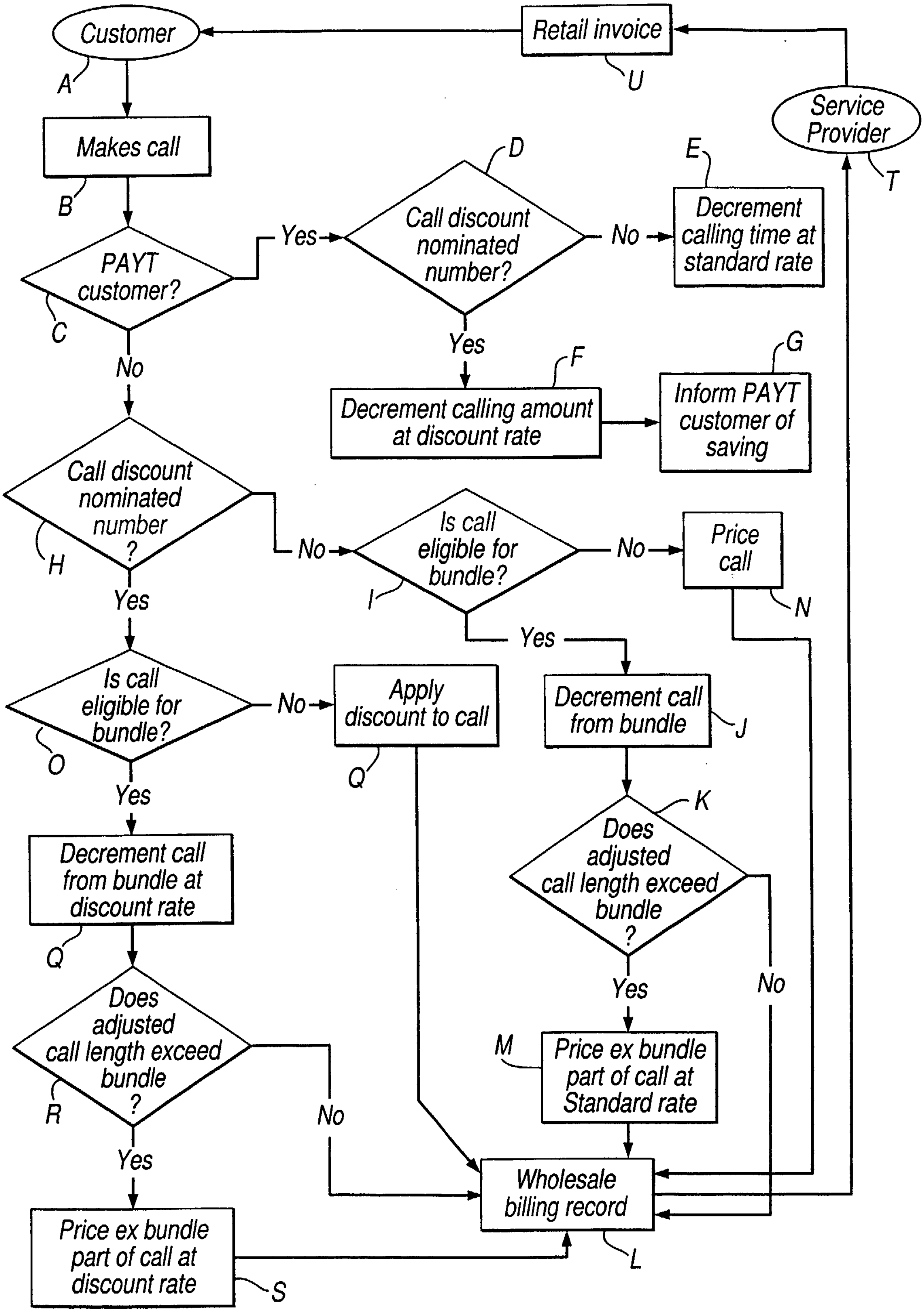
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.



Customer
A
Makes call
B
PAYT customer?
C
Yes
Call discount nominated number?
D
No
Decrement calling time at standard rate
E
Yes
Decrement calling amount at discount rate
F
Inform PAYT customer of saving
G
No
Call discount nominated number ?
H
No
Is call eligible for bundle?
I
No
Price call
N
Yes
Is call eligible for bundle?
O
No
Apply discount to call
Q
Yes
Decrement call from bundle
J
Does adjusted call length exceed bundle ?
K
Yes
Decrement call from bundle at discount rate
Q
Does adjusted call length exceed bundle ?
R
No
Yes
Price ex bundle part of call at Standard rate
M
No
Wholesale billing record
L
Yes
Price ex bundle part of call at discount rate
S
Retail invoice
U
Service Provider
T

TELECOMMUNICATION SYSTEMS

The invention relates to telecommunication systems. Telecommunication systems according to the invention, and to be described below in more detail by way of example only, incorporate billing arrangements for generating billing data for customers of the systems.

According to the invention, there is provided a telecommunication system having a plurality of different tariff schemes applicable to calls made by a customer, each customer being pre-allocated to a selected one or ones of the tariff schemes, including tariff selecting means responsive to a call made by a particular customer to the system to determine the tariff scheme or schemes applicable to the call in dependence on the identity of the customer and on the call.

According to the invention, there is further provided a telecommunication system having a plurality of customers of at least two different types and having a plurality of different tariff schemes applicable to respective types of call made by the customer and allocated to at least some of the customers, at least one of the tariff schemes being allocated to customers of each of the different types, comprising tariff means responsive to a call made by a customer for firstly determining the type of the customer and secondly determining which (if any) of the different tariff schemes is applicable in dependence on the type of call and the identity of the customer and applying a charging rate to the call in accordance with the allocated tariff scheme or schemes.

Telecommunication systems according to the invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawing which is a flow chart of one of the systems.

There can be at least two types of customers for a telecommunication system. For example, one type of customer can be a "contract" customer: such customers normally enter into an agreement with a particular telecommunication operator to take service from the system for a future period of time which may be indeterminate, and are billed periodically in arrears (e.g. after the end of each month) for calls made during the respective period. Another type of customer is a "pre-paid" customer ("PAY AS YOU TALK" or PAYT customer - "PAY AS YOU TALK" is a trade mark): here customers pay in advance, normally for a fixed period of service from the system and a fixed amount in respect of future calls. At the end of the service period for which they have paid in advance and/or when all their calling credit has been used, they cannot use the telecommunication system any more (until they have made a further pre-payment).

Various "loyalty" schemes are known which are intended to retain customers in a particular system, to increase usage of the system, and generally to improve the system's competitiveness. Examples of such loyalty schemes are:-

(a) Pre-allocated "bundles" of call time. Such an arrangement normally applies to contract customers. Under this arrangement, the customer is allocated a fixed amount of "free" calls in return for a fixed "service" charge for each charge period (e.g. month). A charge in respect of each call made by the customer thus only arises when either (i) the customer's total call usage exceeds the amount in the bundle for the current period or (ii) the call is not one which is permitted to be included in the bundle (e.g. it is a call made while the customer is roaming in another network).

(b) Bundle rollover. Here, a contract customer is permitted to roll-over any unused part of a bundle in a particular period into a succeeding period - so that the total amount of bundle call usage available in the succeeding period comprises the bundle allocated to that period plus the unused previous bundle part which has been rolled over.

(c) Call discount. Here, a group (a nominated-number group) is defined of specific telephone numbers which may have been determined either by the customer or by the network. These would normally be numbers which are frequently called by the particular customer. Calls to the numbers in this defined group are charged at a preferential rate, as compared with calls to numbers not in the defined group.

(d) Stepped tariff. Here, for example, the charge for a call can be altered preferentially with increasing time spent on the call. This scheme can of course be applied in conjunction with other loyalty schemes. For example a call to one of the special numbers in the nominated-number group (see sub-paragraph (c) above), which is charged at a preferential rate, can have that rate changed preferentially as the time spent on the call increases.

According to the invention, the telecommunication system responds on-line to each call from a customer by assessing the type of customer (e.g. contract or pre-paid) and determining which one or ones (if any) of the loyalty schemes available in the telecommunication system is or are applicable to that customer and that call, so as to charge the call accordingly.

The customer is shown at A in the Figure. At step B, the customer makes a call. At step C, the system first determines whether the customer is a contract customer or a pre-paid customer.

If the customer is deemed to be a pre-paid customer, then at step D the system checks whether the called number is one of the numbers in the nominated-number group. If the called number is not in this group, then at step E the system decrements the customer's pre-paid calling time at a standard rate.

However, if the called number is one of the nominated numbers in the nominated-number group, then at step F the customer's pre-paid calling time is decremented at a reduced rate. At step G, the customer may be informed of the saving - such as by a text message sent to his handset.

Other loyalty schemes may also be applicable to pre-paid customers. Bundles of call time and bundled roll-over (see sub-paragraphs (a) and (b) above) are not normally applicable to calls made by pre-paid customers.

However the stepped tariff scheme (sub-paragraph (d) above) may be applicable, and would be automatically implemented in step E or step F as the call progresses. For example, the first two minutes of a call could be charged at a "basic" rate (which would of course be lower for a call made to a number in the nominated-number group). The basic rate could be reduced by 5% for that part of the call duration exceeding two minutes - and could be reduced by 10% for that part of the call duration after five minutes. These discounts can be implemented by a clock which measures the call duration and by a look-up table.

If the system determines at step C that the customer is not a pre-paid customer, and is therefore a contract customer, it checks at step H whether the called number is one of the special numbers in the nominated-number group. If the number is not one of the numbers in the nominated-number group, at step I the network checks whether the call is eligible for inclusion as part of a bundle of call usage permitted to the customer. If the call is eligible for inclusion in the bundle, the system decrements the length of the call from the bundle (step J). At step K, an assessment is made whether the whole of the call can be charged to the bundle. If the length of the call does not exceed the available bundle usage remaining, at step L the system generates a wholesale billing record for the call - which, in this example, would not involve any charge for the call (because the call wholly falls within the bundle of call usage allocated to the customer for the current charging period).

However, if step K determines that all the bundle of available call usage has been used before the end of the call, the excess amount of call usage will be charged at a standard rate (step M), and a wholesale billing record will be generated accordingly at step L.

If step I determines that the call is not a call eligible for inclusion in the bundle, the network applies the appropriate rate to the whole of the call (step N). This may be the standard rate or it could be some other rate according to the type of call: for example, a special (increased) rate may be applicable if the customer is roaming out of his home network. The relevant charge then generates a wholesale billing record (step L).

If step H determines that the call is a call to one of the numbers in the nominated-number group, the network then checks (step O) whether the call is eligible as a bundle call. If the call is not eligible as a bundle call, step P charges it at the discounted rate applicable to calls made to numbers in the nominated-number group. Step L generates a wholesale billing record accordingly. If the length of the call is sufficient, then the appropriate stepped call discount (see sub-paragraph (d) above) can be applied.

If step O determines that the call is eligible as a bundle call, then at step Q the call time is decremented from the bundle at a special discount rate (because the call is to a number in the nominated-number group). Thus, for example, each actual minute of call time could be decremented from the bundle as half a minute of call time.

At step R, the network checks whether the total call time (at the adjusted, reduced, rate) exceeds the available amount of the bundle. If it does not, then the whole of the call is chargeable to the bundle. At step L, therefore, a wholesale call billing record is generated which will show a “nil” charge.

However, if the length of the call is such that, when assessed at the adjusted rate, all remaining call usage in the bundle is used before the end of the call, the extra amount of call time is charged but at the discount rate applicable to numbers in the nominated-number group (step S). If the length of the call is sufficient, then the appropriate stepped call discount (see sub-paragraph (d) above) can be applied. At step L, a corresponding wholesale billing record is therefore generated.

The billing records are passed to the customer’s service provider (step T), and a retail invoice is then generated (step U) and send to the customer.

Roll-over of unused bundle call time is carried out off-line.

For any particular customer, some or all of the possible loyalty schemes may not be applicable. In some cases, a customer might be entitled one loyalty scheme but not to another. For example in a case where a call is to a number in a nominated-number group the stepped-tariff discount may not be applicable.

The flow chart shown can be expanded to include other possible loyalty schemes.

Telecommunication networks to which the invention may be applied can be wholly or partly wired or wire-less (including cellular wire-less networks).

The charging rate applicable to calls, whether they are charging rates expressed in money terms or charging rates which are expressed in terms of time (equal to or as a proportion of the actual length of a call), may also be subject to other adjustments - for example, according to time of day or day of week.

CLAIMS

1. A telecommunication system having a plurality of different tariff schemes applicable to calls made by customer, each customer being pre-allocated to a selected one or ones of the tariff schemes, including tariff selecting means responsive to a call made by a particular customer to the system to determine the tariff scheme or schemes applicable to the call in dependence on the identity of the customer and on the call.

2. A system according to claim 1, in which each customer is a selected one of a plurality of different types of customer and the tariff selecting means also determines the type of customer.

3. A system according to claim 2, in which one type of customer is a contract customer paying for calls in arrears and another type of customer is a customer who has pre-paid for calls.

4. A system according to any preceding claim, in which one of the tariff schemes defines for each customer allocated to that scheme a fixed amount of call usage for a respective charging period for calls satisfying predetermined criteria, each call made by the customer and which satisfies the predetermined criteria being charged at a preferential rate until the total amount of call usage contributed by the calls of that customer satisfying the predetermined criteria during a particular one of the charging periods

reaches the fixed amount of call usage for that period whereafter calls satisfying the predetermined criteria are charged at a rate greater than the preferential rate.

5. A system according to claim 4, in which the preferential rate is such that no extra charge is made to the customer for the call.

6. A system according to claim 4 or 5, in which any part of the fixed amount of call usage for a particular customer which remains unused by that customer at the end of a particular charging period forms part of the fixed amount of call usage for that customer for a succeeding charging period.

7. A system according to any preceding claim, in which one of the tariff schemes defines for each customer allocated to that scheme a plurality of predetermined called destinations whereby a call made by that customer to any one of those called destination is charged at a preferential rate compared with calls made by that customer to other called destinations.

8. A system according to any preceding claim, in which one of the tariff schemes defines for each customer allocated to that scheme a charging rate for calls satisfying predetermined criteria which for each such call becomes more preferential according to the length of the call.

9. A system according to claim 8, in which the charging rate becomes more preferential in steps each of which corresponds to a call duration exceeding a respective threshold duration.

10. A system according to any one of claims 4 to 9, in which the charging rate for a particular call is applied in terms of a money value.

11. A system according to any one of claims 4 to 9, in which the charging rate applied to a particular call is applied in terms of the duration of the call.

12. A system according to any one of claims 1 to 3, in which a first one of the tariff schemes defines for each customer allocated to that scheme a fixed amount of call usage for a respective charging period for calls satisfying predetermined criteria, each call made by the customer and which satisfies the predetermined criteria being charged at a preferential rate during its usage time until the total amount of call usage contributed by the calls of that customer satisfying the predetermined criteria during a particular one of the charging periods reaches the fixed amount of call usage for that period whereafter calls satisfying the predetermined criteria are charged at a rate greater than the preferential rate; and in which a second one of the tariff schemes defines for each customer allocated to that scheme a plurality of predetermined called destinations whereby a call made by that customer to any one of those called destinations is charged at a preferential rate compared with calls made by that customer to other called

destinations; including means operative if both of the tariff schemes are allocated to a particular customer and a particular call made by the customer satisfies the predetermined criteria of the first tariff scheme and is a call to one of the predetermined called destinations of the second tariff scheme to reduce that call's contribution of call usage by a predetermined amount which constitutes the preferential rate of the second tariff scheme.

13. A scheme according to claim 12, in which the preferential rate of the first scheme is such that no extra charge is made for the call.

14. A telecommunication system having a plurality of customers of at least two different types and having a plurality of different tariff schemes applicable to respective types of call made by the customer and allocated to at least some of the customers, at least one of the tariff schemes being allocated to customers of each of the different types, comprising tariff means responsive to a call made by a customer for firstly determining the type of the customer and secondly determining which (if any) of the different tariff schemes is applicable in dependence on the type of call and the identity of the customer and applying a charging rate to the call in accordance with the allocated tariff scheme or schemes.

15. A system according to claim 14, in which one type of customer is a contract customer paying for calls in arrears and another type of customer is a customer who has

pre-paid for calls.

16. A system according to claim 14 or 15, in which one of the tariff schemes defines for each customer allocated to that scheme a plurality of predetermined called destinations whereby a call made by that customer to any one of those called destination is charged at a preferential rate compared with calls made by that customer to other called destinations.

17. A system according to any one of claims 14 to 16, in which one of the tariff schemes defines for each customer allocated to that scheme a charging rate for calls satisfying predetermined criteria which for each such call becomes more preferential according to the length of the call.

18. A system according to claim 14 or 15, in which a first one of the tariff schemes defines for each customer allocated to that scheme a fixed amount of call usage for a respective charging period for calls satisfying predetermined criteria, each call made by the customer and which satisfies the predetermined criteria being charged at a preferential rate during its usage time until the total amount of call usage contributed by the calls of that customer satisfying the predetermined criteria during a particular one of the charging periods reaches the fixed amount of call usage for that period whereafter calls satisfying the predetermined criteria are charged at a rate greater than the preferential rate; and in which a second one of the tariff schemes defines for each customer allocated to that

scheme a plurality of predetermined called destinations whereby a call made by that customer to any one of those called destinations is charged at a preferential rate compared with calls made by that customer to other called destinations; including means operative if both of the tariff schemes are allocated to a particular customer and a particular call made by the customer satisfies the predetermined criteria of the first tariff scheme and is a call to one of the predetermined called destinations of the second tariff scheme to reduce that call's contribution of call usage by a predetermined amount which constitutes the preferential rate of the second tariff scheme.

19. A scheme according to claim 18, in which the preferential rate of the first scheme is such that no extra charge is made for the call.

20. A telecommunication system, substantially as described with reference to the accompanying drawing.

The Patent Office

INVESTOR IN PEOPLE

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Application No: GB 0021510.3
Claims searched: 1-20

Examiner: B.J.SPEAR
Date of search: 25 April 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4K(KER,KED,KEX), H4L(LRCMC)

Int Cl (Ed.7): H04M15/00

Other: Online:WPI,EPODOC,JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
XE	GB2353674A	(Samsung) Whole document, eg abstract and p 4 l 36-p 5 l 9.	1 at least
XE	GB2352935A	(Ericsson) Whole document, eg abstract and p 1 l1-p 5 l	1-3,14 at least
X	EP0809410A2	(AT&T) Whole document, eg abstract, col. 2 l 40-col. 3 l 21	1,2 at least
X	EP0809387A2	(AT&T) Whole document, eg abstract, col. 2 l 4-55.	1,2 at least
XE	WO00/74365A2	(Philips) Whole document, eg abstract, col. 3 l 25-col. 4 l 26.	1,2,14 at least
X	WO98/21907A2	(Ericsson) Whole document, eg abstract and p 8 l 20-p 22 l 30	1,2,8,10, 14 at least
X	WO98/07270A1	(Nokia) Whole document, eg abstract, p 1 l 5-p 4 l 31.	1-3,14 at least

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Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.