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9806032-0 1POS
WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ :

H04B

A2

(11) International Publication Number:

WO 98/44649

(43) International Publication Date:

8 October 1998 (08.10.98)

(21) International Application Number:

PCT/FI98/00294

(22) International Filing Date:

1 April 1998 (01.04.98)

(30) Priority Data:

① 971381

3 April 1997 (03.04.97)

FI

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BE, BG, BR,
BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE,
GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW,
MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO
patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR,
IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published

Without international search report and to be republished
upon receipt of that report.

1 PD

IPC : H04G7/32

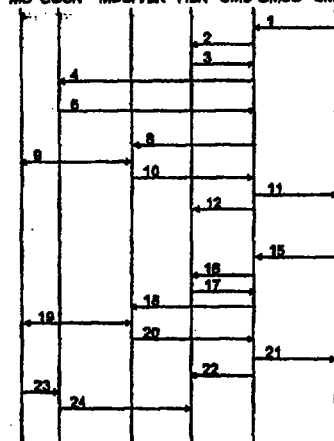
1 app/4

2 INVS.

5 PAs

(54) Title: DELIVERY OF SHORT MESSAGES IN A PACKET RADIO NETWORK

MS SGSN MSC/VLR HLR SMS-GMSC SM-SC



1. Message Transfer
2. Send Routing Info For Short Message
3. Send Routing Info For Short Message Ack (SSGN, MSC/VLR)
4. Forward Short Message
5. SGSN: MS = GPRS detach
6. Failure Report
7. SGSN: MSNRF on
8. Forward Short Message
9. Message Transfer
10. Delivery Report
11. Delivery Report (..., MS not via GPRS)
12. Delivery Report (..., MS not via GPRS)
13. HLR: flag "MS not GPRS" on
14. New SM to MS
15. Message Transfer
16. Send Routing Info For Short Message
17. Send Routing Info For Short Message Ack (MSC/VLR)
18. Forward Short Message
19. Message Transfer
20. Delivery Report
21. Delivery Report
22. Attach Complete
23. Note MS present
24. HLR: flag "MS not GPRS" off
25. HLR: flag "MS not GPRS" off

(57) Abstract

The invention relates to delivery of short messages to mobile stations and particularly to delivery of short messages in mobility-supporting packet radio networks that use a mobile communications network as an access network, to a dual-mode mobile station in a situation where the mobile station is not reachable in the packet radio network. The object of the invention is to minimize unnecessary signalling. The invention is based on the fact that parameters controlling the network elements are inserted into the signalling messages and a flag indicating the state of the mobile station is inserted into the home location register. In the method and radio network of the invention, the signalling messages may contain parameters by means of which 1) delivery of a short message through the secondary network is prevented, 2) information on the fact that an attempt was made to reach the mobile station but the attempt was not successful is sent to the node of the secondary network, 3) the node of the secondary network is prevented from informing the home location register of the mobile station of the attach of the mobile station to the network, 4) information is sent to the home location register on the fact that the mobile station cannot be reached through the primary network, and 5) information is sent to the gateway mobile switching center for short message service on the fact that the mobile station can be reached through the primary network even though the short message was delivered through the secondary network.