



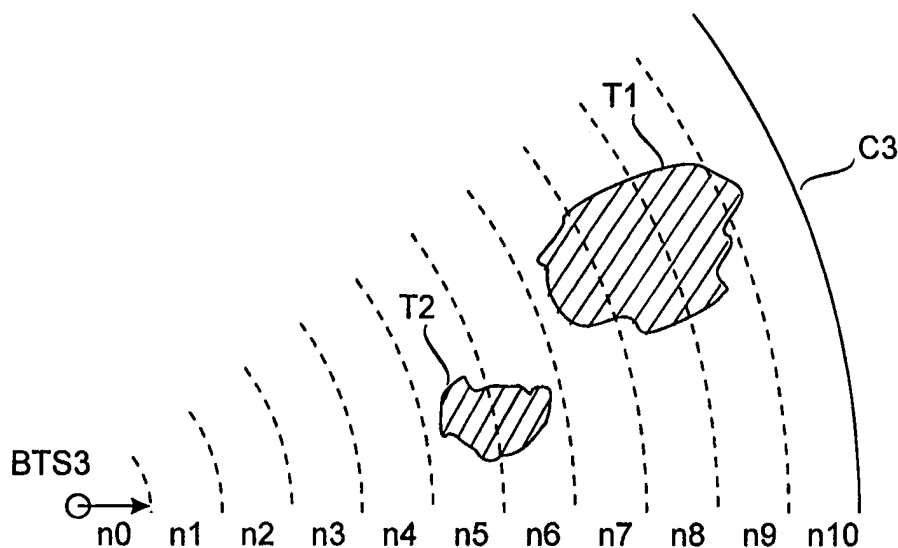
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(21) International Application Number: PCT/FI97/00607 (22) International Filing Date: 7 October 1997 (07.10.97) (30) Priority Data: 964066 10 October 1996 (10.10.96) FI (71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATIONS OY [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI). (72) Inventors; and (75) Inventors/Applicants (for US only): VAARA, Tomi [FI/FI]; Lansantie 18 A 2, FIN-02630 Espoo (FI). AALTO, Risto [FI/FI]; Hämeenkatu 58 A 6, FIN-11100 Riihimäki (FI). (74) Agent: KOLSTER OY AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, 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, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, 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 <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 16 July 1998 (16.07.98)

(54) Title: TRAFFIC HOT SPOT LOCATING METHOD

(57) Abstract

The present invention relates to a method and an arrangement for determining a hot spot of telephone traffic in a cell. The invention uses simultaneously two basic measurements of digital radio systems: timing advance and adjacent cell measurement. Timing advance informs the distance (n_0 - n_{10}) of the mobile station from the base station (BTS3) but not the direction. On the basis of the measured signal strengths of adjacent cells it is possible to determine a set of possible locations (T1, T2) of the mobile station when there is information about the coverage area of individual adjacent cells. When these measurements are used simultaneously, they exclude the inaccuracies of each other and enable very accurate location determination for monitoring traffic distribution. Timing advance is utilized to determine a set of circular, base-station-centric areas (n_0 - n_{10}) and adjacent cell measurements are utilized to determine the direction of the mobile station to the base station (BTS3).



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 97/00607

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/38, H04Q 7/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIL, EDOC, JAPIO, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0431956 A2 (MOTOROLA, INC.), 12 June 1991 (12.06.91), see whole document --	1-10
Y	WO 9406222 A1 (TELEVERKET), 17 March 1994 (17.03.94), page 2, line 13 - page 3, line 18; page 4, line 24 - page 5, line 24, figure 3, claims 1-5 --	1-10
Y	EP 0631453 A2 (TELIA AB), 28 December 1994 (28.12.94), see whole document --	1-10

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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PCT/FI 97/00607

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

29/04/98

International application No.

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