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(71) Applicant: QUALCOMM, INCORPORATED [US/US]; 5775 Morehouse Drive, San Diego, CA 92121 (US).

(72) Inventors: LEE, Wayne, A.; 675 Blinn Court, Los Altos, CA 94024 (US). PATTABIRAMAN, Ganesh; 119 Quillen Court, Apt 6H, Stanford, CA 94305 (US). WENDOLL, Thomas, E.; 2265 S. Bascom Avenue, #32, Campbell, CA 95008 (US).

(74) Agents: WADSWORTH, Philip, R. et al.; 5775 Morehouse Drive, San Diego, CA 92121 (US).

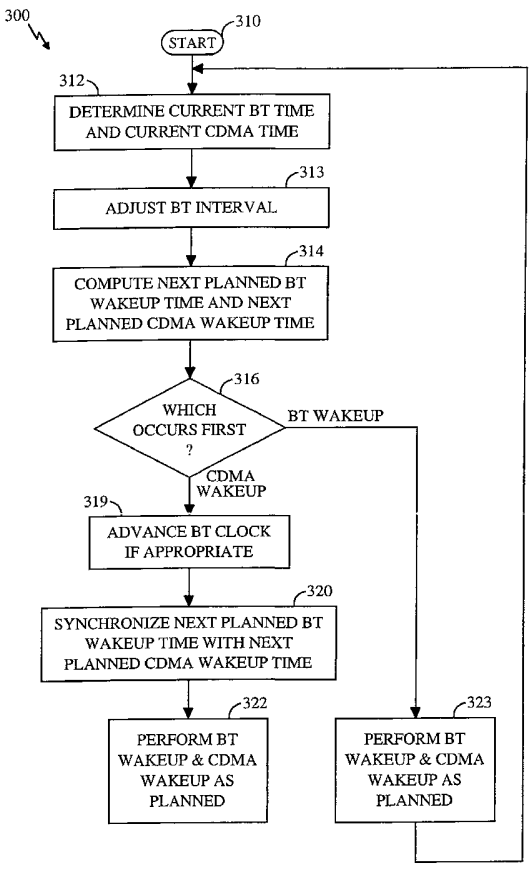
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(54) Title: DUAL MODE BLUETOOTH/WIRELESS DEVICE WITH WAKE-UP TIMES OPTIMIZED FOR POWER CONTROL



(57) Abstract: In a dual mode Bluetooth/wireless mobile unit, the next sleep mode Bluetooth wakeup time is rescheduled to synchronize with any upcoming idle mode wireless wakeup time that will otherwise precede the Bluetooth wakeup time. The Bluetooth clock is advanced, or other reconfiguration made to the Bluetooth module, as appropriate to prevent the scanning frequency from changing during a sleep mode Bluetooth wakeup/scanning interval commencing at the resynchronized Bluetooth wakeup time.

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A. CLASSIFICATION OF SUBJECT MATTER
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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)
IPC 7 H04B H04Q H04L

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 089 578 A (TOKYO SHIBAURA ELECTRIC CO) 4 April 2001 (2001-04-04) column 2, line 18-58 -column 3, line 38-42 column 9, line 15-58 -column 10, line 1-12; figures 8-10	1-27
Y	US 5 940 431 A (HAARTSEN JACOBUS C ET AL) 17 August 1999 (1999-08-17) column 1, line 45-52 -column 2, line 20-56; figure 4 column 5, line 35-50	1-27

-/--

[X] Further documents are listed in the continuation of box C.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	"BLUETOOTH SPECIFICATION VERSION 1.0 B, CORE" BLUETOOTH SPECIFICATION VERSION, XX, XX, vol. 1, 1 December 1999 (1999-12-01), pages 95-126, XP002174708 page 95, paragraph 10.3 -page 96; figure 10.1 page 99, paragraph 10.6.2 -page 100 page 109, paragraph 10.7.2 page 113, paragraph 10.8.1 ---	7,14,21, 24,27
A	BAATZ S ET AL: "Handoff support for mobility with IP over bluetooth" IEEE CONFERENCE PROCEEDING ARTICLE, 8 November 2000 (2000-11-08), pages 143-154, XP010527428 page 144-145, paragraph 2.1 ---	7,14,21, 24,27
A	MATTISSON S: "Low-power considerations in the design of bluetooth" ISLPED CONFERENCE PROCEEDING ARTICLE, 26 July 2000 (2000-07-26), pages 151-154, XP010517320 page 152, paragraph 3.1 ---	1-27
A	WO 99 52319 A (ERICSSON TELEFON AB L M) 14 October 1999 (1999-10-14) page 1, line 1 page 3, line 1-3 page 4, line 1-6 page 6, line 5-22 page 7, line 10-15; figure 2 ---	1,8,15, 22,23, 25,26
A	EP 1 113 690 A (TOKYO SHIBAURA ELECTRIC CO) 4 July 2001 (2001-07-04) column 8, line 56 -column 9, line 3 column 9, line 15-35 column 10, line 2-10 -----	5,12,19

INTERNATIONAL SEARCH REPORT

Inter ıal Application No
PCT/US 02/25751

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 1089578	A	04-04-2001	JP	3406867 B2	19-05-2003
			JP	2001102997 A	13-04-2001
			EP	1089578 A2	04-04-2001
US 5940431	A	17-08-1999	AU	732197 B2	12-04-2001
			AU	5581598 A	17-07-1998
			BR	9713622 A	11-04-2000
			CN	1247654 A	15-03-2000
			EE	9900314 A	15-02-2000
			EP	0947060 A2	06-10-1999
			JP	2001507191 T	29-05-2001
			PL	334240 A1	14-02-2000
			WO	9828926 A2	02-07-1998
			US	6389057 B1	14-05-2002
WO 9952319	A	14-10-1999	US	6473412 B1	29-10-2002
			AU	751892 B2	29-08-2002
			AU	3857099 A	25-10-1999
			BR	9909397 A	05-12-2000
			CA	2327084 A1	14-10-1999
			CN	1296717 T	23-05-2001
			EE	200000548 A	15-02-2002
			EP	1068761 A1	17-01-2001
			JP	2002511680 T	16-04-2002
			NO	20004986 A	03-10-2000
			WO	9952319 A1	14-10-1999
EP 1113690	A	04-07-2001	JP	2001189689 A	10-07-2001
			EP	1113690 A2	04-07-2001
			US	2001019956 A1	06-09-2001