



(43) International Publication Date
31 October 2013 (31.10.2013)

(51) International Patent Classification:
H04M 1/60 (2006.01) *H04M 1/725* (2006.01)

(21) International Application Number:
PCT/US2013/036463

(22) International Filing Date:
12 April 2013 (12.04.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/457,003 26 April 2012 (26.04.2012) US

(71) Applicant: QUALCOMM INCORPORATED [US/US];
ATTN: International IP Administration, 5775 Morehouse
Drive, San Diego, CA 92121-1714 (US).

(72) Inventors: FORUTANPOUR, Babak; 5775 Morehouse
Drive, San Diego, CA 92121-1714 (US). SHEYNBLAT,
Leonid; 5775 Morehouse Drive, San Diego, CA 92121-
1714 (US). BEDNAR, David, L.; 5775 Morehouse Drive,
San Diego, CA 92121-1714 (US).

(74) Agents: SAAB, Karam et al.; Kilpatrick Townsend &
Stockton LLP, Two Embarcadero Center, 8th Floor, San
Francisco, CA 94111-3834 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,

[Continued on next page]

(54) Title: USE OF PROXIMITY SENSORS FOR INTERACTING WITH MOBILE DEVICES

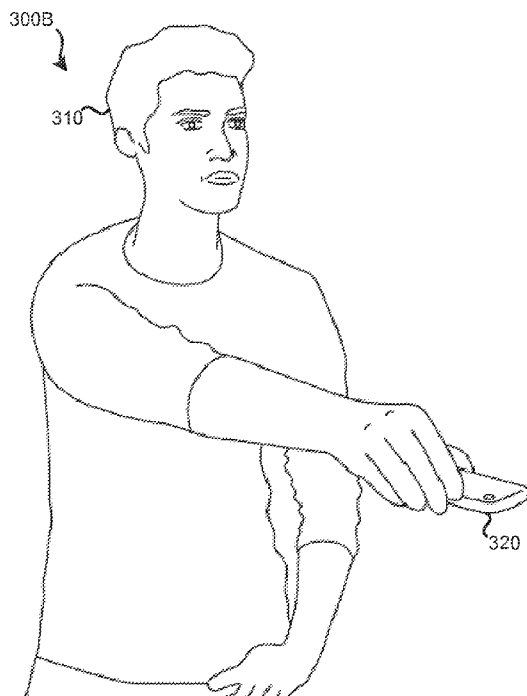


FIG. 3B

(57) Abstract: Various arrangements for handling a call by a mobile device and/or selecting a function for execution by the mobile device are presented. A phone call may be commenced by a mobile device (320). During the phone call, the mobile device may collect proximity data that indicates the mobile device is not proximate to an ear of a user (310). The microphone of the mobile device (320) may be muted in response to the proximity data that indicates the mobile device is not proximate to the ear of the user (310).



MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

(88) Date of publication of the international search report:

27 March 2014

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/036463

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H04M1/60 H04M1/725
 ADD.

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)
 H04M

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 practicable, 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.
X	US 2011/319128 A1 (MIWA TOMOAKI [JP]) 29 December 2011 (2011-12-29)	1-4,6-9, 11-13, 15-17
Y	paragraphs [0003], [0004] paragraph [0007] - paragraph [0009] paragraph [0034]; figure 1 paragraphs [0039], [0050]; figure 2 paragraph [0052] - paragraph [0063]; figure 3 paragraph [0074] - paragraph [0079]; figure 5 paragraphs [0104], [0105]; figure 9 ----- -/-	5,10,14, 18



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

19 June 2013

Date of mailing of the international search report

12/02/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040,
 Fax: (+31-70) 340-3016

Authorized officer

Pascual Vallés, E

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/036463

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011/086626 A1 (KERR JIM [US]) 14 April 2011 (2011-04-14) paragraph [0013] - paragraph [0017]; figure 1 paragraph [0024] - paragraph [0027]; figure 2 paragraph [0032] - paragraph [0033]; figure 3 -----	5,10,14, 18
A	US 2007/075965 A1 (HUPPI BRIAN [US] ET AL) 5 April 2007 (2007-04-05) abstract; figure 6 paragraph [0087] -----	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/036463

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011319128 A1	29-12-2011	JP 2012010183 A US 2011319128 A1	12-01-2012 29-12-2011
US 2011086626 A1	14-04-2011	NONE	
US 2007075965 A1	05-04-2007	AU 2009100352 A4 CA 2666438 A1 CA 2812011 A1 CN 101529878 A DE 212007000076 U1 EP 2095616 A1 EP 2637393 A1 JP 2010507870 A JP 2013201761 A KR 20090083394 A US 2007075965 A1 US 2010048256 A1 WO 2008051472 A1	28-05-2009 02-05-2008 02-05-2008 09-09-2009 02-07-2009 02-09-2009 11-09-2013 11-03-2010 03-10-2013 03-08-2009 05-04-2007 25-02-2010 02-05-2008

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-18

Collecting proximity data that indicates that a mobile device is not proximate to an ear of a user during a phone call in order to mute a microphone of the mobile device.

2. claims: 19-33

Collecting proximity data and acceleration data by a mobile device so as to select a function for execution from a set of functions configured to be executed by the mobile device.

3. claims: 34-49

A mobile device receives an indication of a function being executed by a second mobile device and collects proximity data in order to select a function for execution.

4. claims: 50-63

Collecting proximity data by a mobile device so as to select a subset of functions from a set of functions and display indications of the subset of functions.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/036463

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-18

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.