



(51) International Patent Classification:
H04W 72/04 (2009.01)

(21) International Application Number:
PCT/US2014/038523

(22) International Filing Date:
17 May 2014 (17.05.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/897,387 18 May 2013 (18.05.2013) US

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

(72) Inventors: DHANDA, Mungal Singh; Spectrum Pointe,
279 Farnborough Road, Farnborough Hampshire
GU147LS (GB). YU, Zhi-Zhong; Spectrum Pointe, 279
Farnborough Road, Farnborough hampshire GU147LS
(GB). SIKRI, Divaydeep; Spectrum Point, 279 Farnbor-
ough Road, Farnborough Hampshire GU147LS (GB).

(74) Agents: HANSEN, Robert et al.; 11800 Sunrise Valley
Drive, 15th Floor, Reston, Virginia 20191 (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, IR, IS, JP, KE, KG, 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, SA,
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,
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,
KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SYSTEM AND METHODS FOR INCREASING NETWORK EFFICIENCY USING VAMOS CHANNELS ON A MULTI-SIM DEVICE

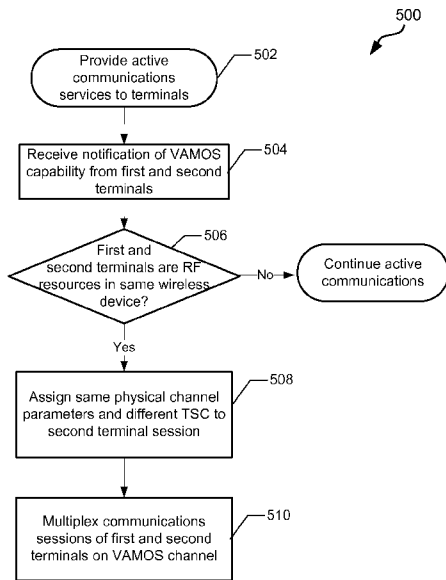


FIG. 5A

(57) Abstract: Methods are provided that optimize Voice over Adaptive Multi-user channels on One Slot (VAMOS) communications by recognizing that up to four independent communications are located on the same device, and assigning them to sub-channels of the same VAMOS channel. A VAMOS-capable multi-SIM wireless device such as a dual-SIM dual active (DSDA) device may have up to four simultaneous active calls on the same access network. When assigned to the same VAMOS channel, the up to four active calls may be merged to all use the same radio on the device.

WO 2014/189803 A3



Declarations under Rule 4.17:

- *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))*
- *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))*

(88) Date of publication of the international search report:
26 February 2015

Published:

- *with international search report (Art. 21(3))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/038523

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04W72/04
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)
H04W

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.
A	US 2010/081445 A1 (AGHILI BEHROUZ [US] ET AL) 1 April 2010 (2010-04-01) paragraphs [0023], [0025], [0027], [0030], [0044], [0052] -----	1-19, 25-43, 49-67, 73-91
A	US 2013/005394 A1 (GEARY STUART IAN [GB] ET AL) 3 January 2013 (2013-01-03) the whole document -----	1-19, 25-43, 49-67, 73-91
A	EP 2 498 567 A1 (ZTE CORP [CN]) 12 September 2012 (2012-09-12) the whole document -----	1-19, 25-43, 49-67, 73-91
-----		-/--

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 29 August 2014	Date of mailing of the international search report 12/01/2015
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 Saffell, Christine

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2014/038523

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2010/132398 A1 (QUALCOMM INC [US]; YU ZHI-ZONG [GB]; DHANDA MUNGAL SINGH [GB]) 18 November 2010 (2010-11-18) the whole document -----	1-19, 25-43, 49-67, 73-91

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/038523

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.:

1-19, 25-43, 49-67, 73-91

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-19, 25-43, 49-67, 73-91

directed to a base station assigning a VAMOS channel to two active non-VAMOS sessions on a dual-RF resource device.

2. claims: 20-24, 44-48, 68-72, 92-96

directed to a dual-SIM dual-RF resource device with ongoing sessions on both SIMs/RF resources, moving the sessions onto one RF resource from both RF resources.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2014/038523

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010081445	A1	01-04-2010	AR 073693 A1 24-11-2010
			CN 102165732 A 24-08-2011
			EP 2347539 A1 27-07-2011
			JP 5433699 B2 05-03-2014
			JP 2012503953 A 09-02-2012
			KR 20110063565 A 10-06-2011
			TW 201016062 A 16-04-2010
			US 2010081445 A1 01-04-2010
			WO 2010036782 A1 01-04-2010

US 2013005394	A1	03-01-2013	NONE

EP 2498567	A1	12-09-2012	CN 102598841 A 18-07-2012
			EP 2498567 A1 12-09-2012
			RU 2012122898 A 27-12-2013
			WO 2011060575 A1 26-05-2011

WO 2010132398	A1	18-11-2010	CA 2759207 A1 18-11-2010
			CN 102422697 A 18-04-2012
			DK 2430869 T3 13-01-2014
			EP 2430869 A1 21-03-2012
			EP 2611248 A1 03-07-2013
			EP 2663151 A1 13-11-2013
			ES 2439796 T3 24-01-2014
			JP 2012527174 A 01-11-2012
			JP 2014161073 A 04-09-2014
			KR 20120058466 A 07-06-2012
			PT 2430869 E 12-02-2014
			RU 2011150218 A 20-06-2013
			TW 201136223 A 16-10-2011
			US 2012113878 A1 10-05-2012
			US 2013281101 A1 24-10-2013
			WO 2010132398 A1 18-11-2010
