

## PATENT ASSIGNMENT COVER SHEET

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 Stylesheet Version v1.2

EPAS ID: PAT4180965

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JARI ARKKO	08/18/2014
ARI KERANEN	07/07/2014
TUOMAS TIRRONEN	07/04/2014
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	OY L M ERICSSON AB
<b>Street Address:</b>	HIRSALANTIE 11
<b>City:</b>	JORVAS
<b>State/Country:</b>	FINLAND
<b>Postal Code:</b>	02420
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15318231
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	919-854-1400
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<b>Correspondent Name:</b>	SUSAN E. FREEDMAN
<b>Address Line 1:</b>	MYERS BIGEL, P.A.
<b>Address Line 2:</b>	PO BOX 37428
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<b>ATTORNEY DOCKET NUMBER:</b>	9900-43477US1
<b>NAME OF SUBMITTER:</b>	SUSAN E. FREEDMAN
<b>SIGNATURE:</b>	/Susan E. Freedman/
<b>DATE SIGNED:</b>	12/12/2016
<b>Total Attachments: 6</b>	
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# ASSIGNMENT

This Assignment is made by:

**ARKKO, Jari**

**Välitie 1B  
FI-02700 Kauniainen  
Finland**

**KERÄNEN, Ari**

**Fredrikinkatu 36 B 26  
FI-00100 Helsinki  
Finland**

**TIRRONEN, Tuomas**

**Savitaipaleentie 9B  
00950 Helsinki  
Finland**

(hereinafter referred to as "Assignor(s)") in favor, and for the benefit and behoof of, Oy L M Ericsson Ab, a corporation duly organized under and pursuant to the laws of Finland and having its principal place of business at Hirsalantie 11, 02420 Jorvas, Finland (hereinafter referred to as "Assignee").

For good, sufficient and adequate consideration, the receipt of which is hereby acknowledged, the Assignor(s) have, as of the Effective Date, sold, assigned, transferred, and set over, and by these presents, and to the extent any transferable or assignable rights still remain with the inventor, do hereby sell, assign, transfer, and set over, unto the Assignee, its successors, legal representatives, and assigns the entire right, title, and interest in and to the following inventions, application(s) for Letters Patent, and any and all Letters Patent or Patents in all countries and pursuant to all multilateral treaty organizations, including Finland, the United States of America, the Patent Cooperation Treaty and European Patent Convention, that may be granted therefor and thereon, and in and to any and all divisions, continuations, continuations-in-part, conversions and utility models of said application(s), and reissues and extensions of said Letters Patent or Patents, the same to be held and enjoyed by the Assignee, for its use and behoof and the use and the behoof of its successors, legal representatives, and assigns, to the full end of the term or terms for which Letters Patent, Patents and Utility Models may be granted as fully and entirely as the same would have been held and enjoyed by the Assignor(s) had this sale and assignment not been made:

## DISCOVERY IN A WIRELESS COMMUNICATIONS SYSTEM

Including, but not limited to, the application(s) for Letters Patent and Utility Model filed in:

Country Code	Priority Application(s)	Filing Date(s)
WO	PCT/SE2014/050776	2014-06-24
US	15/318,231	

The Effective date is the earliest date of the above listed Filing Date(s).

Assignor(s) hereby authorize and request Assignee's Attorneys to insert the serial number and filing date of said application(s) for Letter Patent or Utility Model, when known. The assignment of the above mentioned rights includes a transfer of the whole right to use a priority (including priority according to any convention, multilateral agreement, bilateral agreement and national law) of the above mentioned application(s) for Letter Patent and Utility Model in all countries and multilateral treaty organizations wherein no residual rights shall remain with the Assignor(s). Assignor(s) hereby request

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that said Letters Patent, Patent or Utility Model be issued to Assignee as the Assignee of said inventions, the Letters Patent, Patent or Utility Model to be issued for the sole use and behoof of the Assignee, its successors, legal representatives, and assigns. Assignee alone hereinafter has the entire disposal of the invention and possesses entire ownership to any domestic and foreign patents or utility models granted thereafter. The rights granted hereunder shall include all rights to institute legal actions, obtain remedies and recover and retain damages in respect to said Letters Patent, Patent or Utility Model.

The Assignor(s) and Assignee hereby understand and agree that with the execution of this Assignment, to the extent necessary or appropriate, national and/or regional applications may be filed by the Assignee as the applicant and on behalf of the assignor.

To the extent Assignee is entitled to receive the rights hereunder pursuant to this Assignment, each of the Assignor(s) hereby covenants and agrees to and with the Assignee, its successors, legal representatives, and assigns, that, at the time of the Effective Date, the Assignor(s) were the sole and lawful owners of the entire right, title, and interest in and to the inventions and application(s) for Letters Patent or Utility Models above-mentioned, and that the same are unencumbered, and that the Assignor(s) have good and full right and lawful authority to sell and convey the same in the manner herein set forth.

Further, and for the same consideration, the Assignor(s) hereby covenant(s) and agree(s) to and with the Assignee, its successors, legal representatives, and assigns that the Assignor(s) will, whenever counsel of the Assignee, or the counsel of its successors, legal representatives, and assigns, shall advise that any proceeding in connection with said inventions or said application(s) for Letters Patent, or any proceeding in connection with Letters Patent or Utility Model for said inventions, in any country and any multilateral treaty organization, including interference proceedings, is lawful and desirable, or that any division, continuation, continuation-in-part, conversion or Utility Model of any application(s) for Letters Patent or Utility Model, or any reissue or extension of any Letters Patent to be obtained thereon, is lawful and desirable, sign all papers and documents, take all lawful oaths, and do all acts necessary or required to be done for the procurement, maintenance, enforcement, and defense of Letters Patent or Utility Model for said inventions, without charge to Assignee, its successors, legal representatives, and assigns, but at the cost and expense of the Assignee, its successors, legal representatives, and assigns. If any of the Assignor(s) is prevented by any obstacles from signing said documents in person, this Assignment shall be valid as a Power of Attorney for the Assignee to sign these documents on behalf of any such Assignor(s) or, in the event of the death of the latter, the estate thereof.

This Assignment shall be governed by and construed under, and any dispute, controversy or claim related hereto shall be decided in accordance with, the laws of:

**Sweden**

without regard to the conflicts of laws provisions thereof. Any dispute, controversy or claim arising under, out of or relating to this Assignment and any subsequent amendments of this Assignment, including, without limitation, its formation, validity, binding effect, interpretation, performance, breach or termination, as well as non-contractual claims, shall be referred to and finally determined by arbitration in accordance with the WIPO Arbitration Rules. The arbitral tribunal shall consist of a sole arbitrator. The place of

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arbitration shall be in the country of the inventor's residence. The language to be used in the arbitral proceedings shall be English.


No modifications shall be made to this Assignment unless in writing and signed by each of the Assignor(s) and Assignee. If any of the provisions of this Assignment shall be deemed invalid or unenforceable, then the entire Assignment shall be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligations of Assignee and Assignor(s) shall be construed and enforced accordingly. Assignee's failure to exercise any option made available as a result hereof, shall not be construed as a waiver of such provisions, rights, or options, or affect the validity of this Assignment. Assignor covenants and agrees that it will not take any actions in violation of this Assignment.

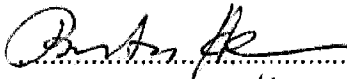
Subsequent assignment from any of the assignors to the assignee purporting to convey the subject matter specified herein for a particular country, patent office, or jurisdiction shall not invalidate any provision of this assignment and any such subsequent assignment shall act as a further confirmation of the assignment herein.


Date.....2014-09-01..... Signature on behalf of .....  
Assignee ..... Hannu Ahonen .....  
Senior Group Legal Counsel

## ASSIGNMENT

Title: DISCOVERY IN A WIRELESS COMMUNICATIONS SYSTEM


Date 18/8/2014 Signature of Assignor   
ARKKIO, Jari

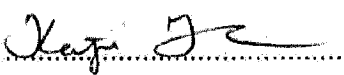
Date 18.8.2014 Witnessed by   
Name: Benita Heiskanen  
Address: Lumikinkuja 8  
02400 Kirkkonummi  
FINLAND

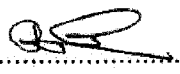
Date 18.8.2014 Witnessed by   
Name: Rose-Marie Gunell  
Address: Emännenkja 3A3  
01670 VANTAA  
FINLAND

## ASSIGNMENT

Title: DISCOVERY IN A WIRELESS COMMUNICATIONS SYSTEM

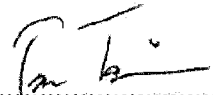
Date 7.7.2019 Signature of Assignor   
 KERÄNEN, Ari

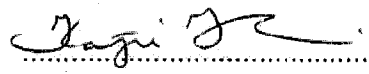
Date 7.7.2019 Witnessed by   
 Name: Katja Helminen  
 Address: Ida Aalbergin k. 5 E 63  
00400 Helsinki  
FINLAND

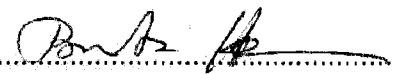
Date 7.7.2019 Witnessed by   
 Name: Rose-Marie Gurnell  
 Address: Emännäkujä 3A3  
01670 VANTAA  
Finland

## ASSIGNMENT

Title: DISCOVERY IN A WIRELESS COMMUNICATIONS SYSTEM

Date 4.7.2014 Signature of Assignor   
 TIRONEN, Tuomas

Date 4.7.2014 Witnessed by   
 Name: Karja Iteinen  
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Date 4.7.2014 Witnessed by   
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