

PATENT ASSIGNMENT

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| SUBMISSION TYPE: | NEW ASSIGNMENT | | | | | | | | | | |
|--|---------------------------------|---------------|---------------------|---------------------|---------------------------------|----------------|------------|----------------|--------------------|--------------|---------|
| NATURE OF CONVEYANCE: | ASSIGNMENT | | | | | | | | | | |
| CONVEYING PARTY DATA | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Min Seok NOH</td> <td>01/16/2013</td> </tr> <tr> <td>Jae Hoon CHUNG</td> <td>01/16/2013</td> </tr> </tbody> </table> | | Name | Execution Date | Min Seok NOH | 01/16/2013 | Jae Hoon CHUNG | 01/16/2013 | | | | |
| Name | Execution Date | | | | | | | | | | |
| Min Seok NOH | 01/16/2013 | | | | | | | | | | |
| Jae Hoon CHUNG | 01/16/2013 | | | | | | | | | | |
| RECEIVING PARTY DATA | | | | | | | | | | | |
| <table border="1"> <tr> <td>Name:</td> <td>LG ELECTRONICS INC.</td> </tr> <tr> <td>Street Address:</td> <td>20 Yeouido-dong Yeongdeungpo-gu</td> </tr> <tr> <td>City:</td> <td>Seoul</td> </tr> <tr> <td>State/Country:</td> <td>KOREA, REPUBLIC OF</td> </tr> <tr> <td>Postal Code:</td> <td>150-721</td> </tr> </table> | | Name: | LG ELECTRONICS INC. | Street Address: | 20 Yeouido-dong Yeongdeungpo-gu | City: | Seoul | State/Country: | KOREA, REPUBLIC OF | Postal Code: | 150-721 |
| Name: | LG ELECTRONICS INC. | | | | | | | | | | |
| Street Address: | 20 Yeouido-dong Yeongdeungpo-gu | | | | | | | | | | |
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| Postal Code: | 150-721 | | | | | | | | | | |
| PROPERTY NUMBERS Total: 1 | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13810430</td> </tr> </tbody> </table> | | Property Type | Number | Application Number: | 13810430 | | | | | | |
| Property Type | Number | | | | | | | | | | |
| Application Number: | 13810430 | | | | | | | | | | |
| CORRESPONDENCE DATA | | | | | | | | | | | |
| <p>Fax Number: 7032058050 <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: (703) 205-8000 Email: mailroom@bskb.com, lboone@bskb.com Correspondent Name: Birch, Stewart, Kolasch & Birch, LLP Address Line 1: P.O. Box 747 Address Line 4: Falls Church, VIRGINIA 22040-0747</p> | | | | | | | | | | | |
| ATTORNEY DOCKET NUMBER: | 5438-0441PUS1 | | | | | | | | | | |
| NAME OF SUBMITTER: | la tesa boone | | | | | | | | | | |
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PATENT

BIRCH, STEWART, KOLASCH & BIRCH, LLP

UNITED STATES PATENT RIGHTS, OR
UNITED STATES PLUS ALL FOREIGN PATENT RIGHTS

ASSIGNMENTApplication No. 13/810,430Filed on January 15, 2013

Insert Name(s)
of Inventor(s)

*** (Given Name FAMILY NAME (ALL CAPS)) ***

WHEREAS, NOH, Min Seok and CHUNG, Jae Hoon (hereinafter designated as the undersigned)
has (have) invented certain new and useful improvements in:

Insert Title
of Invention

METHOD AND APPARATUS FOR TRANSMITTING APERIODIC SOUNDING
REFERENCE SIGNALS IN A WIRELESS COMMUNICATION SYSTEM

for which an application for Letters Patent of the United States of America has been executed by the
undersigned (except in the case of a provisional application)

Insert Date
of Signing of
Application

on January 16, 2013; and

Insert Name
of Assignee
Insert Address
of Assignee

WHEREAS, LG ELECTRONICS INC.

of 20 Yeouido-dong Yeongdeungpo-gu Seoul 150-721 Republic of Korea

its heirs, successors, legal representatives and assigns (hereinafter designated as the Assignee) is
desirous of acquiring the entire right, title and interest in and to said invention and in and to any Letters
Patent(s) that may be granted therefor in the United States of America and

CHECK BOX
IF APPROPRIATE

☒ in any foreign countries.

NOW, THEREFORE, in consideration of the sum of Ten Dollars (\$10.00) to the undersigned in hand
paid, the receipt of which is hereby acknowledged, and other good and valuable consideration, the
undersigned has (have) sold, assigned and transferred, and by these presents does sell, assign and
transfer unto said Assignee the full and exclusive right to the said invention in the United States of
America, its territories, dependencies and possessions and the entire right, title and interest in and to any
and all Letters Patent(s) which may be granted therefor in the United States of America, its territories,
dependencies and possessions, and if the box above is designated, in any and all foreign countries;

and to any and all divisions, reissues, continuations, conversions and extensions thereof for the full term
or terms for which the same may be granted.

The undersigned agree(s) to execute all papers necessary in connection with this application and any
continuing, divisional, conversion or reissue applications thereof and also to execute separate assignments in
connection with such applications as the Assignee may deem necessary or expedient.

The undersigned agree (s) to execute all papers necessary in connection with any interference which
may be declared concerning this application or continuation, division, conversion or reissue thereof or Letter
Patent(s) or reissue patent issued thereon and to cooperate with the Assignee in every way possible in obtaining
and producing evidence and proceeding with such interference.

The undersigned agree(s) to execute all papers and documents and to perform any act which may be
necessary in connection with claims or provisions of the International Convention for the Protection of Industrial
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The undersigned agree(s) to perform all affirmative acts which may be necessary to obtain a grant of a valid United States of America patent(s) or a grant of a valid United States of America and any foreign patent(s) to the Assignee and to vest all rights therein hereby conveyed to said Assignee as fully and entirely as the same would have been held by the undersigned if this Assignment and sale had not been made.

The undersigned hereby authorize(s) and request(s) the Patent and Trademark Office Officials in the United States of America and in any foreign countries to issue any and all Letters Patents resulting from said application or any continuing, divisional conversion or reissue applications thereof to the said Assignee, as Assignee of the entire interest, and hereby covenants that he has (they have) the full right to convey the entire interest herein assigned, and that he has (they have) not executed, and will not execute, any agreement in conflict herewith.

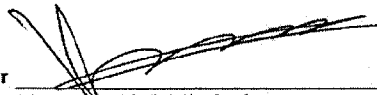
The undersigned hereby grant(s) the law firm of Birch, Stewart, Kolasch & Birch, LLP the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

The undersigned hereby covenant(s) that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date Jan. 16. 2013,

Name of Inventor


(signature) NOH, Min Seok

Date _____,

Name of Inventor

(signature) CHUNG, Jae Hoon

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(signature) NOH, Min Seok

Date 16 Jan., 2013,

Name of Inventor Jae Hoon Chung
(signature) CHUNG, Jae Hoon