PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

EPAS ID: PAT2655895

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
KISEON RYU	12/02/2013
SANGGOOK KIM	12/02/2013
KI-DONG LEE	12/02/2013

RECEIVING PARTY DATA

Name:	LG ELECTRONICS INC.		
Street Address: 20 YEOUIDO-DONG, YEONGDEUNGPO-GU			
City:	SEOUL		
State/Country:	KOREA, REPUBLIC OF		
Postal Code:	150-721		

PROPERTY NUMBERS Total: 1

Property Type	Number	
Application Number:	14132772	

CORRESPONDENCE DATA

Fax Number: (703)205-8050 Phone: (703) 205-8000

Email: mailroom@bskb.com, lboone@bskb.com

Correspondence will be sent via US Mail when the email attempt is unsuccessful.

Correspondent Name: BIRCH, STEWART, KOLASCH & BIRCH, LLP

Address Line 1: P.O. BOX 747

Address Line 4: FALLS CHURCH, VIRGINIA 22040-0747

ATTORNEY DOCKET NUMBER:	0465-4047PUS1
NAME OF SUBMITTER:	LA TESA BOONE
Signature:	/LA TESA BOONE/
Date:	12/19/2013 PATENT

502609463 REEL: 031823 FRAME: 0445

OP \$40.00 14132772

Total Attachments: 9 source=2013-12-19_Assignment_0465-4047PUS1#page1.tif source=2013-12-19_Assignment_0465-4047PUS1#page2.tif source=2013-12-19_Assignment_0465-4047PUS1#page3.tif source=2013-12-19_Assignment_0465-4047PUS1#page4.tif source=2013-12-19_Assignment_0465-4047PUS1#page5.tif source=2013-12-19_Assignment_0465-4047PUS1#page6.tif source=2013-12-19_Assignment_0465-4047PUS1#page7.tif source=2013-12-19_Assignment_0465-4047PUS1#page8.tif source=2013-12-19_Assignment_0465-4047PUS1#page8.tif

PATENT REEL: 031823 FRAME: 0446

Application No. 14/132,772 Filed Date: December 18, 2013 Execution Date: December 2, 2013 Attorney Docket No. 0465-4047PUS1

BIRCH, STEWART, KOLASCH & BIRCH, LLP

P.O. Box 747 • Falls Church, Virginia 22040-0747

Telephone: (703) 205-8000 • Facsimile: (703) 205-8050 • Email: mailroom@bskb.com

DECLARATION AND ASSIGNMENT FOR PATENT AND DESIGN APPLICATIONS

United States Patent Rights, or United States Plus all Foreign Patent Rights

As a below named inventor (hereinafter designated as the undersigned), I hereby declare that: This declaration is directed to the application attached hereto. Fig. If the application is not attached hereto, the application is as identified by the attorney docket number as Application not Attached set forth above and/or the following: Enter Applin No.

□ United States Application Number or PCT International Applin. No. Enter Filing Date ⇒ filed on The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I have reviewed and understand the contents of the above-identified application, including the claims. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56. WHEREAS, the undersigned has invented certain new and useful improvements described in the application identified. ⇒ WHEREAS, LG ELECTRONICS INC. Insert Name of Assignee of 20 Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721, Republic of Korea, Insert Address of Assignee 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 in any foreign countries. Appropriate NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned has sold, assigned and transferred, and by these presents does (do) 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.

BSKB-DECASSIGN(09-12)

The undersigned agrees 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 agrees 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 Letters 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 agrees 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 Property or similar agreements.

The undersigned agrees 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 authorizes and requests the Patent and Trademark Office Officials in the United States of America and in any foreign countries to issue any and all Letters Patent(s) 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 the full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreement in conflict herewith.

The undersigned hereby grants the law firm of Birch, Stewart, Kolasch & Birch, LLP the power to insert any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office.

The undersigned hereby covenants that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment:

The undersigned hereby arknowledges that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both.

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

LEGAL	NAME	OF IN	VENTOR
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Inventor's Name	□ Inventor:	Kiseon RYU	Date:	12-01-20/3
Inventor's Signature	⇔ Signature:	Ad		

An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use a separate form for each inventor; or check the box below and complete the attached page(s) to list additional inventors.

Additional inventors are being named on the 1 supplemental sheet(s) attached hereto.

Page 2

BSK8-DECASSIGN-SINGLE (09-12)

SUPPLEMENTAL SHEET FOR DECLARATION AND ASSIGNMENT

ADDITIONAL INVENTOR(S) Supplemental Sheet Page 1 of 1

LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name Sanggook KIM Inventor's Signature P Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name Sinventor: Ki-Dong LEE Inventor's Signature → Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name Date: ⇒Inventor: Inventor's Signature Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name Date: Inventor's Signature Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name [⇔]Inventor: Inventor's Signature ⇔Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name ⇔Inventor: Inventor's Signature ⇒Signature: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name ⇒Inventor: LEGAL NAME OF JOINT INVENTOR, IF ANY Inventor's Name ⇔Inventor:

Inventor's Signature ⇔Signature:

BSKB-DECASSIGN\(09-12)

PATENT REEL: 031823 FRAME: 0449

BIRCH, STEWART, KOLASCH & BIRCH, LLP

P.O. Box 747 • Falls Church, Virginia 22040-0747
Telephone: (703) 205-8000 • Facsimile: (703) 205-8050 • Email: mailroom@bskb.com

DECLARATION AND ASSIGNMENT FOR PATENT AND DESIGN APPLICATIONS

United States Patent Rights, or United States Plus all Foreign Patent Rights

Title of Invention -> METHOD AND APPARATUS OF PERFORMING A DISCOVERY PROCEDURE

As a below named inventor (hereinafter designated as the undersigned), I hereby declare that: This declaration is directed to the application attached hereto. Application not Attached 🖻 If the application is not attached hereto, the application is as identified by the attorney docket number as set forth above and/or the following: Enter Applin, No. Dunited States Application Number or PCT International Applin. No. The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I have reviewed and understand the contents of the above-identified application, including the claims. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56. WHEREAS, the undersigned has invented certain new and useful improvements described in the application identified. Insert Name ⇒ WHEREAS, LG ELECTRONICS INC. of Assignee Insert Address of 20 Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721, Republic of Korea, of Assignee 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 in any foreign countries. Appropriate NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned has sold, assigned and transferred, and by these presents does (do) 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.

> BANDQOOK.kim/KIM SANG GOOK/2013-12-02-08:03:03 BSKB-DECASSIGN(09-12)

The undersigned agrees 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 agrees 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 Letters 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 agrees 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 Property or similar agreements.

The undersigned agrees 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 authorizes and requests the Patent and Trademark Office Officials in the United States of America and in any foreign countries to issue any and all Letters Patent(s) 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 the full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreement in conflict herewith.

The undersigned hereby grants the law firm of Birch, Stewart, Kolasch & Birch, LLP the power to insert any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office.

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

The undersigned hereby acknowledges that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both.

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

LEGAL NAME OF INVENTOR

Inventor's Name	\$	Inventor:	Kiseon RYU	Date:
Inventor's Signature	⇔	Signature:		
An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use a separate form for each inventor; or check the box below and complete the attached page(s) to list additional inventors.				
Additional inventors are being named on the 1 supplemental sheet(s) attached hereto.				

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SUPPLEMENTAL SHEET FOR DECLARATION AND ASSIGNMENT

ADDITIONAL INVENTOR(S) Supplemental Sheet Page $\underline{1}$ of $\underline{1}$

	LEGAL N.	ame of joint inventor, if any	
Inventor's Name 😝	Inventor;	Sanggook KIM	Date: 12/02/20/3
Inventor's Signature ⇔	Signature:	song buck din	
	LEGAL N	AME OF JOINT INVENTOR, IF ANY	
Inventor's Name ⇒	Inventor:	Ki-Dong LEE	Date:
inventor's Signature ⇔	Signature:		
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Inventor's Signature	⇔Signature		
	LEGAL	NAME OF JOINT INVENTOR, IF ANY	
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PATENT REEL: 031823 FRAME: 0452

BIRCH, STEWART, KOLASCH & BIRCH, LLP

P.O. Box 747 • Falls Church, Virginia 22040-0747 Telephone: (703) 205-8000 • Facsimile: (703) 205-8050 • Email: mailroom@bskb.com

DECLARATION AND ASSIGNMENT FOR PATENT AND DESIGN APPLICATIONS

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

Title of Invention (**) METHOD AND APPARATUS OF PERFORMING A DISCOVERY PROCEDURE

		As a below named inventor (hereinafter designated as the undersigned), I hereby declare that:
		This declaration is directed to the application attached hereto.
Application not Attached	⇔	If the application is not attached hereto, the application is as identified by the attorney docket number as set forth above and/or the following:
Enter Appln, No.	₽	United States Application Number or PCT International Appln. No.
Enter Filing Date	₽	filed on
		The above-identified application was made or authorized to be made by me.
		I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.
		I have reviewed and understand the contents of the above-identified application, including the claims.
		I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 , Code of Federal Regulations $\$$ 1.56.
		WHEREAS, the undersigned has invented certain new and useful improvements described in the application identified.
Insert Name of Assignee	4	WHEREAS, LG ELECTRONICS INC.
Insert Address of Assignee	ď	of 20 Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721, Republic of Korca,
or rusignee		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, for good and valuable consideration, the receipt of which is hereby acknowledged the undersigned has sold, assigned and transferred, and by these presents does (do) 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 of terms for which the same may be granted.

BSKB-DECASSIGN(09-12)



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

		LEGAL NA	AME OF INVENTOR	•	
Inventor's Name	ŵ	Inventor:	Kiseon RYU	Date:	
Inventor's Signature	φ.	Signature:			
An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use a separate form for each inventor; or check the box below and complete the attached page(s) to list additional inventors.					
Additional inventors are being named on the 1 supplemental sheet(s) attached hereto.					

BSKB-DECASSIGN-SINGLE (09-12)

#3/3

SUPPLEMENTAL SHEET FOR DECLARATION AND ASSIGNMENT

ADDITIONAL INVENTOR(S) Supplemental Sheet Page $\underline{1}$ of $\underline{1}$

	LEGAL NAME OF JOINT INVENTOR, IF ANY	
Inventor's Name ⇔	Inventor: Sanggook KIM	Date:
Inventor's Signature 🗢	Signature:	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
inventor's Name □ □	Inventor: Ki-Dong LEE	Date: 12-2-2013
Inventor's Signature ⇔	Signature: KW Jugh	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
inventor's Name	[⇒] Inventor:	Date:
inventor's Signature	⇒Signature:	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
Inventor's Name	inventor:	Date:
Inventor's Signature	Signature:	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
Inventor's Name	⇔Inventor:	Date:
Inventor's Signature	⇔Signature:	
	legal name of joint inventor, if any	
Inventor's Name	⇒Inventor:	Date:
Inventor's Signature	⇔Signature:	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
Inventor's Name	◆Inventor:	Date:
Inventor's Signature	Signature:	
	LEGAL NAME OF JOINT INVENTOR, IF ANY	
Inventor's Name	₱Inventor:	Date:
Inventor's Signature	⇔Signature:	

BSKB-DECASSIGN\(09-12)

PATENT REEL: 031823 FRAME: 0455

RECORDED: 12/19/2013