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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unassigned
	Filing Date	Herewith
	First Named Inventor	Jong-Soo Kim
	Art Unit	Unassigned
(Multiple sheets used when necessary)	Examiner	Unassigned
SHEET 1 OF 2	Attorney Docket No.	SDCSHN.181C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2002/0171610 A1	11-21-2002	Siwinski et al.	
	2	2002/0186208 A1	12-12-2002	Feldman et al.	
	3	2004/0185301 A1	09-23-2004	Tsuchiya et al.	*Corresponds to Chinese Publication No. CN 1729719 A shown below*
	4	2005/0051829 A1	03-10-2005	Goto et al.	*Corresponds to Chinese Publication No. CN 1591876 A shown below*
	5	2005/0172722 A1	08-11-2005	Kobayashi et at.	
	6	2007/0242055 A1	10-18-2007	Lai, Yuang Wei	
	7	2008/0116795 A1	05-22-2008	Tsuchiya et al.	
	8	2010/0007616 A1	01-14-2010	Jang, Brent	*Corresponds to Chinese Publication No. CN 101626017 A shown below*
	9	2010/0033443 A1	02-11-2010	Hashimoto, Shinya	
	10	2010/0060601 A1	03-11-2010	Oohira, Eiji	
	11	2010/0108409 A1	05-06-2010	Tanaka et al.	
	12	2010/0214247 A1	08-26-2010	Tang et al.	
	13	2010/0309150 A1	12-09-2010	Lee et al.	
	14	2010/0244073 A1	09-30-2010	Ito et al.	*Corresponds to Chinese Publication No. CN 101766055 A shown below*
	15	2011/0012845 A1	01-20-2011	Rothkopf et al.	
	16	2011/0128240 A1	06-02-2011	Choi, Howon	
	17	6,885,157	04-26-2005	Cok et al.	
	18	8,330,734	12-11-2012	Oohira, Eiji	

Examiner Signature	Date Considered
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(Multiple sheets used when necessary)	Examiner	Unassigned
SHEET 2 OF 2	Attorney Docket No.	SDCSHN.181C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	19	CN 1591876 A	03-09-2005	Goto et al.	*Corresponds to U.S. Publication No. 2005/0051829 A1 shown above*	
	20	CN 1729719 A	02-01-2006	Tsuchiya et al.	*Corresponds to U.S. Publication No. 2004/0185301 A1 shown above*	
	21	CN 101626017 A	01-13-2010	Jang, Brent	*Corresponds to U.S. Publication No. 2010/0007616 A1 shown above*	
	22	CN 101766055 A	06-30-2010	Ito et al.	*Corresponds to U.S. Publication No. 2010/0244073 A1 shown above*	
	23	KR 10-0873080 (B1)	12-03-2008	Samsung SDI Co., Ltd.	*(Abstract of corresponding Korean Publication No. KR 10-2008-0099684 (A) Published 11-13-2008)*	Abstract
	24	KR 10-2010-0007717 (A)	01-22-2010	Samsung Mobile Display Co., Ltd.		Abstract

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	25	Chinese First Office Action dated July 2, 2015 for Chinese Patent Application No. CN 201110059238.8 which shares priority of Korean Patent Application No. KR 10-2010-0089955 with captioned U.S. Application No. 13/021,581, and cites the above-identified references numbered 6 and 19-22.	

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Application Number	Unassigned
Filing Date	Herewith
First Named Inventor	Jong-Soo Kim
Title	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	SDCSHN.181C1

SIGNATURE of Applicant or Patent Practitioner

Signature		Date (Optional)	4/20/16
Name	John M. Carson	Registration Number	34,303
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

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I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box).

Samsung Display Co., Ltd.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	8/14/2013
Name	Sang Cheol Shin		
Title	Principal Engineer/General Manager		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

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RESCISSION OF ANY PRIOR DISCLAIMERS AND REQUEST TO REVISIT ART

Inventor	:	Jong-Soo Kim
App. No	:	Unassigned
Filed	:	Herewith
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Art Unit	:	Unassigned
Conf #	:	Unassigned

Commissioner for Patents
P.O. Box 1450
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Dear Sir:

The claims of the present application are different and possibly broader in scope than the claims pursued in the parent application(s). To the extent any prior amendments or characterizations of the scope of any claim or referenced art could be construed as a disclaimer of any subject matter supported by the present disclosure, Applicant hereby rescinds and retracts such disclaimer. Accordingly, the references previously considered in the parent application(s) may need to be re-visited.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Knobbe, Martens, Olson & Bear, LLP

Respectfully submitted,

Dated: 4/20/16

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20995
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FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 13/021,581, filed on February 4, 2011, entitled "FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL," which claims priority to and the benefit of Korean Patent Application No. 10-2010-0089955, filed on September 14, 2010, each of which is incorporated herein by reference in its entirety.

BACKGROUND

Field

[0002] The disclosed technology relates to a flat panel display, and more particularly, to a flat panel display with an integrated touch screen panel.

Description of the Related Technology

[0003] A touch screen panel is an input device that allows a user's instruction to be inputted by selecting an instruction content displayed on a screen of a display or the like with a user's hand or an object.

[0004] To this end, the touch screen panel is formed on a front face of the display and is capable of converting a contact position into an electrical signal. The user's hand or object directly contacts the touch screen panel at the contact position. Accordingly, the instruction content selected at the contact position is inputted as an input signal to the display.

[0005] Since such a touch screen panel can be substituted for a separate input device connected to a display, such as a keyboard or mouse, its application fields have been gradually extended.

[0006] Touch screen panels may be categorized as a resistive overlay touch screen panel, a photosensitive touch screen panel, a capacitive touch screen panel, and the like. Among these touch screen panels, the capacitive touch screen panel converts a contact position into an electrical signal by sensing a change in capacitance formed between a

conductive sensing pattern and an adjacent sensing pattern, ground electrode or the like when a user's hand or object is in contact with the touch screen panel.

[0007] Such a touch screen panel is generally attached to an outer surface of a flat panel display such as a liquid crystal display or organic light emitting display. In a case where a separately manufactured touch screen panel is attached to a flat panel display, the entire thickness of a product is increased, and manufacturing cost is increased.

[0008] In this case, a driving IC for a flat panel display and a driving IC for a touch screen panel are separate from the flat panel display and the touch screen panel, and therefore, it is difficult to achieve compatibility between products. Since the driving ICs are necessarily connected to separate flexible printed circuit boards (FPCBs), respectively, a manufacturing process is complicated, and product cost is increased.

SUMMARY OF CERTAIN INVENTIVE ASPECTS

[0009] One aspect is a display. The display includes a substrate including a first area having a pixel area and a second area adjacent to the first area. The display further includes a plurality of pixels in the pixel area of the substrate. The display further includes an encapsulation layer on the first area of the substrate, the encapsulation layer including an inclined surface. The display further includes a plurality of sensing cells on the encapsulation layer. The display further includes a plurality of sensing lines on the encapsulation layer, the plurality of sensing lines connected to the sensing cells. The display further includes a driving circuit electrically connected to the sensing cells via the sensing lines. The sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate. The sensing lines are electrically connected to the driving circuit.

[0010] Another aspect is a display. The display includes a substrate including a first area having a pixel area and a second area adjacent to the first area. The display further includes a plurality of pixels in the pixel area of the substrate. The display further includes an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including and inclined surface. The display further includes a plurality of sensing cells on an outer surface of the encapsulation layer. The display further

includes a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells. The display further includes a driving circuit electrically connected to the sensing cells through the sensing lines. The sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate. The sensing lines are electrically connected to the driving circuit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The accompanying drawings, together with the specification, illustrate exemplary embodiments, and, together with the description, serve to explain various inventive aspects and principles.

[0012] FIG. 1 is a plan view of a flat panel display with an integrated touch screen panel according to an embodiment of the present invention.

[0013] FIG. 2 is an enlarged view showing an embodiment of sensing cells shown in FIG. 1.

[0014] FIG. 3 is a perspective view of a flat panel display with an integrated touch screen panel according to an embodiment of the present invention.

[0015] FIG. 4 is a schematic sectional view showing a region including specific portion A of FIG. 3.

[0016] FIG. 5 is a set of separate plan views showing a sealing thin film and a substrate shown in FIG. 3.

DETAILED DESCRIPTION OF CERTAIN INVENTIVE EMBODIMENTS

[0017] In the following detailed description, only certain exemplary embodiments have been shown and described. As those skilled in the art would realize, the described embodiments may be modified in various ways, without departing from the spirit or scope of the present invention. Accordingly, the drawings and description are to be regarded as illustrative in nature and not restrictive. In addition, when an element is referred to as being "on" another element, it can be directly on another element or be indirectly on another element with one or more intervening elements interposed therebetween. Also, when an element is referred to as being "connected to" another element, it can be directly connected to

another element or be indirectly connected to another element with one or more intervening elements interposed therebetween. Hereinafter, like reference numerals generally refer to like elements.

[0018] Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0019] FIG. 1 is a plan view of a flat panel display with an integrated touch screen panel according to an embodiment. FIG. 2 is an enlarged view showing an embodiment of sensing cells shown in FIG. 1.

[0020] For convenience of illustration, some of the sensing cells are shown in FIG. 2. However, the touch screen panel has a structure in which the sensing cells shown in FIG. 2 are repeatedly arranged.

[0021] Referring to FIGS. 1 and 2, in the flat panel display with the integrated touch screen panel according to this embodiment, sensing cells 220 and sensing lines 230 for implementing the touch screen panel are formed on a sealing thin film 200 for sealing a plurality of pixels formed on a substrate 100.

[0022] In this instance, the flat panel display according to this embodiment is implemented as an organic light emitting display in which an organic light emitting element, a thin film transistor, and a capacitor are provided to each of the pixels.

[0023] Conventionally, in the organic light emitting display, a glass substrate having a cavity or plate pattern is joined with the substrate 100 under a vacuum atmosphere so as to prevent the organic light emitting elements from being exposed to moisture and oxygen.

[0024] However, the thickness of the glass substrate as a sealing substrate is large. Therefore, where a touch screen panel is formed on the glass substrate, it is disadvantageous because of the large thickness.

[0025] Accordingly, in this embodiment, the sealing thin film 200 including a pixel area of the substrate 100 is formed rather than the conventional sealing substrate for the purpose of protecting the organic light emitting elements, thereby minimizing thickness.

[0026] The sensing cells 220 include a plurality of first sensing cells 220a formed to be connected for each row line along a first direction, e.g., a column direction, and a

plurality of second sensing cells 220b alternately arranged to not be overlapped with the first sensing cells 220a and formed to be connected for each column line along a second direction, e.g., a column direction, intersected with the first direction.

[0027] The sensing cells 220 are formed of a transparent electrode material such as indium tin oxide (ITO) so that light from a display panel disposed below the sensing cells 220 can be transmitted through the sensing cells 220.

[0028] As shown in FIG. 2, the first sensing cells 220a are connected to each other along each line in the first direction by a first connection pattern 220a1, and the second sensing cells 220b are connected to each other along each line in the second direction by a second connection pattern 220b1.

[0029] Here, the first connection pattern 220a1 and/or the second connection pattern 220b1 are patterned to have independent patterns, respectively. The first or second connection pattern 220a1 and 220b1 may be patterned to be directly/indirectly connected to the first or second sensing cells 220a or 220b, or to be integrally connected to the first or second sensing cells 220a or 220b from a process of patterning the first and second sensing cells 220a and 220b.

[0030] For example, the first connection patterns 220a1 are respectively patterned to have independent patterns in an upper or lower layer of the first sensing cells. The first connection patterns 220a1 connect the first sensing cells 220a to one another for each line along the first direction while being electrically connected to the first sensing cells 220a at an upper or lower portion of the first sensing cells 220a.

[0031] The first connection patterns 220a1 may be formed of a transparent electrode material such as ITO like the sensing cells 220, or may be formed of a low-resistance opaque metallic material like the sensing lines 230. The width of the first connection patterns 220a1 may be adjusted to prevent them from affecting the visual quality of the display.

[0032] The second connection patterns 220b1 may be integrally patterned with the second sensing cells 220b so as to connect the second sensing cells 220b to one another along each line in the second direction from a process of patterning the sensing cells 220.

[0033] In this instance, an insulating layer (not shown) for ensuring electrical isolation is interposed between the first connection patterns 220a1 and the second connection patterns 220b1.

[0034] The sensing lines 230 are used to connect the sensing cells 220 to a driving circuit for each line along the first or second direction. The sensing lines 230 are arranged in a non-touch active area formed at the outside of a touch active area. Here, the touch active area is an area corresponding to the pixel area of the display panel.

[0035] For example, the sensing lines 230 are electrically connected to row lines of the first sensing cells 220a and column lines of the second sensing cells 220b, respectively, so as to be connected to the driving circuit (not shown) of the touch panel, such as a position detecting circuit.

[0036] An edge pattern (not shown) such as a black matrix of a window (not shown) may be positioned on the sensing lines 230. Thus, it is possible to prevent the sensing lines 230 from being seen, so that the material of the sensing lines 230 is selected from a large variety of options. For example, the sensing lines 230 may be formed of not only a transparent electrode material used to form the sensing cells 220 but also a low-resistance metallic material such as molybdenum (Mo), silver (Ag), titanium (Ti), copper (Cu), aluminum (Al) or Mo/Al/Mo.

[0037] In this embodiment, as shown in FIG. 1, the sensing lines 230 extend to the substrate 100 of the display panel from an end of the sealing thin film 200 so as to be electrically connected to a flexible printed circuit board (FPCB) 300 attached to the substrate 100.

[0038] This can be implemented because the thickness of the sealing thin film 200 is sufficiently thin. Particularly, an end portion A of the sealing thin film 200 is formed to be inclined (see FIG. 3), so that it is possible to prevent the sensing lines passing over the end portion from being broken. Hereinafter, this will be described in detail with reference to FIG. 4.

[0039] In this instance, the FPCB 300 is electrically connected a driving IC 120 for driving a plurality of pixels (not shown) in the pixel area of the display panel. Accordingly, in this embodiment, the touch screen panel and the display panel use only one

FPCB. The driving circuit of the touch panel, which drives the touch screen panel, may be integrated on the driving IC 120.

[0040] The touch screen panel configured as described above is a capacitive touch screen panel. If a contact object such as a user's finger or stylus pen comes in contact with the touch screen panel, a change in capacitance caused by a contact position is transferred from the sensing cells 220 to the driving circuit (not shown) via the sensing lines 230. Then, the change in capacitance is converted into an electrical signal by X and Y input processing circuits (not shown), thereby detecting the contact position.

[0041] FIG. 3 is a perspective view of a flat panel display with an integrated touch screen panel according to an embodiment. FIG. 4 is a separate plan view showing a sealing thin film and a substrate shown in FIG. 3. FIG. 5 is a schematic sectional view showing a region including specific portion A of FIG. 3.

[0042] Referring to FIGS. 3 to 5, this embodiment is a flat panel display with an integrated touch screen panel, in which sensing cells 220 and sensing lines 230 for implementing the touch screen panel are formed on a sealing thin film 200 for sealing a plurality of pixels 112 formed on a substrate 100.

[0043] Here, the flat panel display according to this embodiment is implemented as an organic light emitting display in which an organic light emitting element (not shown), a thin film transistor (not shown) and a capacitor (not shown) are provided to each of the pixels 112.

[0044] That is, touch sensing patterns including the sensing cells 220 and the sensing lines 230 are formed on the top surface of the sealing thin film 200 formed on the substrate 100 including a pixel area 110 so as to seal the pixel area 110 in which the pixels 112 are formed.

[0045] In this instance, the sensing cells 220 are formed in an area overlapped with the pixel area 110, and the sensing lines 230 are formed in an area corresponding to the outside of the pixel area 110.

[0046] In this embodiment, the sensing lines 230 extend to the substrate 100 of the display panel via an end portion A of the sealing thin film 200, so as to be electrically connected to the FPCB 300 attached to one end of the substrate 100.

[0047] This can be implemented because the thickness of the sealing thin film 200 is sufficiently thin. Particularly, the end portion A of the sealing thin film 200 is formed to be inclined, so that it is possible to prevent the sensing lines passing through the end portion from being broken.

[0048] The sealing thin film 200 is formed to protect the organic light emitting element provided to each of the pixels 112, and may be implemented as a stacked structure of a plurality of organic and inorganic layers.

[0049] More specifically, referring to FIG. 4, the sealing thin film 200 may be formed as, for example, a structure in which a first organic layer 202, a first inorganic layer 204, a second organic layer 206 and a second inorganic layer 208 are alternately stacked so as to effectively block oxygen and moisture from the exterior.

[0050] The first and second organic films 202 and 206 of the sealing thin film 200 prevents nano-crack and micro-crack defects formed in the first and second inorganic layers 204 and 208 from being continuously formed, so that it is possible to decrease a moisture transmission rate by preventing an infiltration path of moisture and oxygen and to reduce stress left in the first and second organic layers 204 and 208.

[0051] In this instance, the first and second organic layers 202 and 206 may be formed of one selected from the group consisting of epoxy, acrylate and urethane acrylate. The first and second inorganic layers 204 and 208 may be formed of one selected from the group consisting of Al_xO_y and Si_xO_y.

[0052] Although the sealing thin film 200 is implemented as a stacked structure of four layers, the thickness of the sealing thin film 200 can be implemented to be considerably thinner than that of the conventional sealing substrate, i.e., the conventional glass substrate.

[0053] Thus, the sensing lines 230 formed on the sealing thin film 200 can be formed to run over the sealing thin film 200 and the substrate through a process such as the same photolithography process as shown in these figures.

[0054] However, a risk exists that the sensing lines 230 that pass through the end portion A of the sealing thin film 200 may be broken by the step difference of the end portion in the patterning process.

[0055] Accordingly, in this embodiment, an area 201 of the end portion of the sealing thin film 200 is formed to be inclined as shown in FIG. 4, thereby overcoming such a problem.

[0056] That is, the sensing lines 230 extend to the substrate 100 of the display panel via the end portion A of the sealing thin film 200, so as to be electrically connected to the FPCB 300 attached to the one end of the substrate 100.

[0057] In this instance, the sensing lines 230 may also be connected to a driving IC 120 of the display panel via the FPCB 300. The driving IC 120 may include a control circuit for driving the touch screen panel, a position detecting circuit, or the like as well as a control circuit for driving the display panel.

[0058] Accordingly, the touch screen panel and the display panel share only one FPCB 300 with each other. The FPCB 300 is connected to an end of the substrate 100 (an end at which a pad portion (not shown) is formed) so as to be electrically connected to driving lines (not shown) of the display panel. Thus, the FPCB 300 can supply a control signal for controlling the display panel. Further, the FPCB 300 can supply a control signal for controlling the touch screen panel via the sensing lines 230.

[0059] In this case, the FPCB 300 is implemented with a configuration in which an FPCB for driving the display panel and an FPCB for driving the touch screen panel are integrated with each other.

[0060] Thus, in this embodiment, the bonding and testing process of the FPCB 300 is simplified, so that it is possible to facilitate manufacturing processes and to decrease product cost, as compared with a case where FPCBs for respectively driving the touch screen panel and the display panel are individually provided.

[0061] While certain inventive aspects have been described in connection with certain exemplary embodiments, it is to be understood that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements.

WHAT IS CLAIMED IS:

1. A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate, the encapsulation layer including an inclined surface;

a plurality of sensing cells on the encapsulation layer;

a plurality of sensing lines on the encapsulation layer, the plurality of sensing lines connected to the sensing cells; and

a driving circuit electrically connected to the sensing cells via the sensing lines;

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, and wherein the sensing lines are electrically connected to the driving circuit.

2. The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. The display according to claim 1, wherein the first area has a greater area than the second area.

12. The display according to claim 1, wherein the encapsulation layer includes at least one organic layer and at least one inorganic layer.

13. The display according to claim 1, wherein the sensing cells include:

a plurality of first sensing cells connected along each line in a first direction; and

a plurality of second sensing cells alternately arranged not to be overlapped with the first sensing cells and connected along each line in a second direction.

14. The display according to claim 13, wherein the first sensing cells are connected along each line in the first direction by first connection patterns, and wherein the second sensing cells are connected along each line in the second direction by second connection patterns.

15. The display according to claim 14, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16. A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including and inclined surface;

a plurality of sensing cells on an outer surface of the encapsulation layer;

a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells; and

a driving circuit electrically connected to the sensing cells through the sensing lines;

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate and wherein the sensing lines are electrically connected to the driving circuit.

ABSTRACT OF THE DISCLOSURE

A flat panel display having an integrated touch screen panel directly formed on a sealing thin film is disclosed. In the display, sensing lines of the touch screen panel are formed to extend to a substrate of the display panel, on which organic light emitting elements are formed, so that the touch screen panel and the display panel are connected to a flexible printed circuit board, thereby simplifying manufacturing processes and decreasing product cost.

23152651
041916

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Filer:	John M Carson/Sharielle Gonzales
Attorney Docket Number:	SDCSHN.181C1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1600**

Electronic Acknowledgement Receipt

EFS ID:	25543111
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Kevin Kraus
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	20-APR-2016
Filing Date:	
Time Stamp:	14:20:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1600
RAM confirmation Number	656
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Drawings-only black and white line drawings	Drawings_SDCSHN181C.pdf	165143 56a1055d3b06943f22023a31be4ff2a73fea56f3	no	3
Warnings:					
Information:					
2	Application Data Sheet	ADS_SDCSHN181C1.pdf	935463 ee79fcf9c070b77d419755e9270f7fd4d6a8b91b	no	8
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Oath or Declaration filed	Declaration_SDCSHN181C1.PDF	261705 8a8ea98d4c4303d120de6e13dd372c2889a2a379	no	3
Warnings:					
Information:					
4		IDS_SDCSHN181C1.pdf	378756 cb06dc4b17d6ae592355d2e3ff1451bbdc6c5efa	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	4

Warnings:					
Information:					
5	Power of Attorney	POA_SDCSHN181C1.pdf	652142 16325ff4bc447c14fcb16f4cd3d76aa438ddba63	no	2
Warnings:					
Information:					
6	Miscellaneous Incoming Letter	Rescission_SDCSHN181C1.pdf	70023 f96632961f9046b24649735757ccc43c4a7519ce	no	1
Warnings:					

Information:					
7		Spec_181C1.pdf	62171 17bf6018309d5b91018b8063251925b224cbbc03	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	9
	Claims	10	12
	Abstract	13	13

Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	35106 a2f6cd6e1e6ff48edb290f73afa39e110d96a434	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	2560509	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

FIG. 1

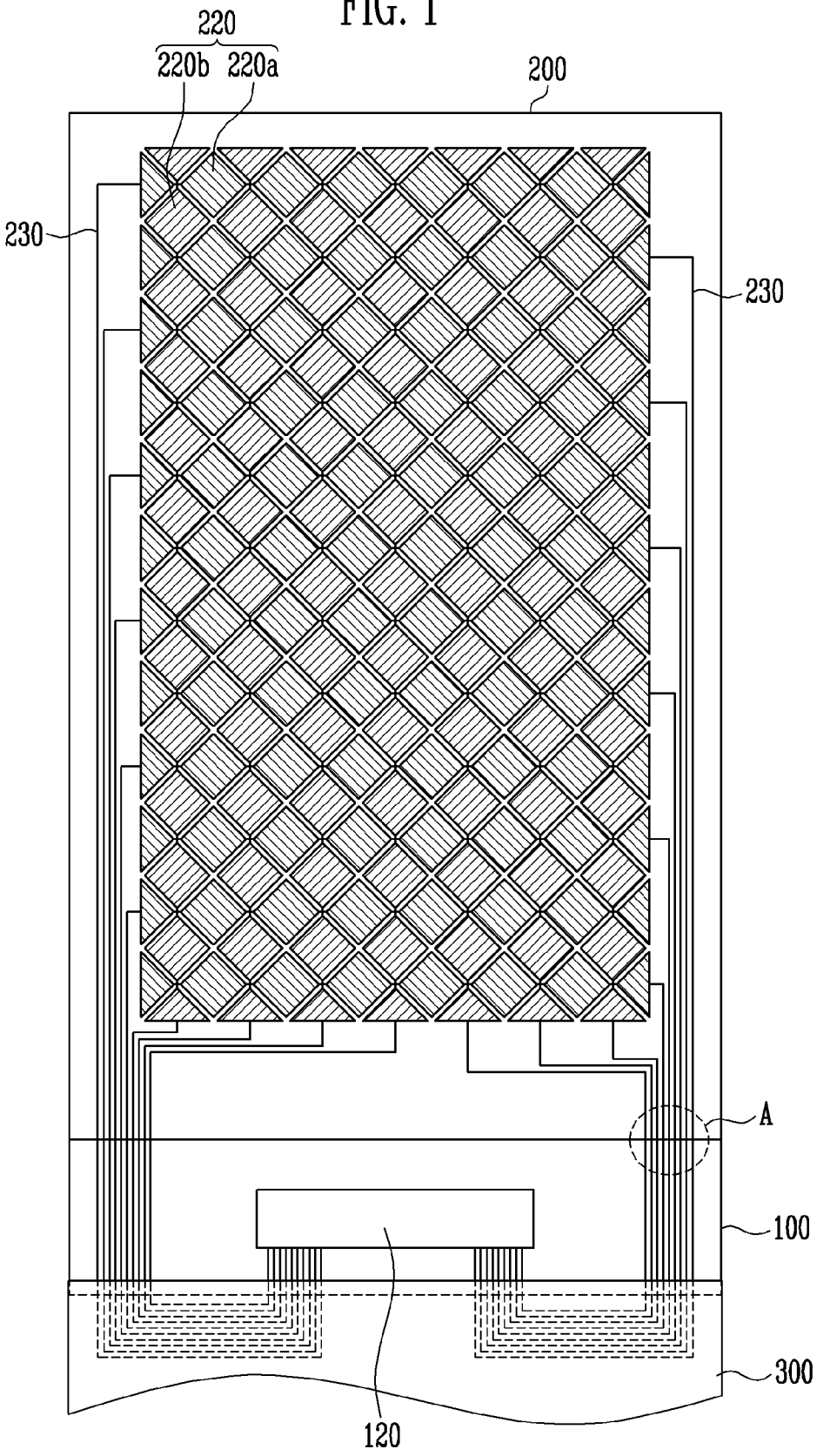


FIG. 2

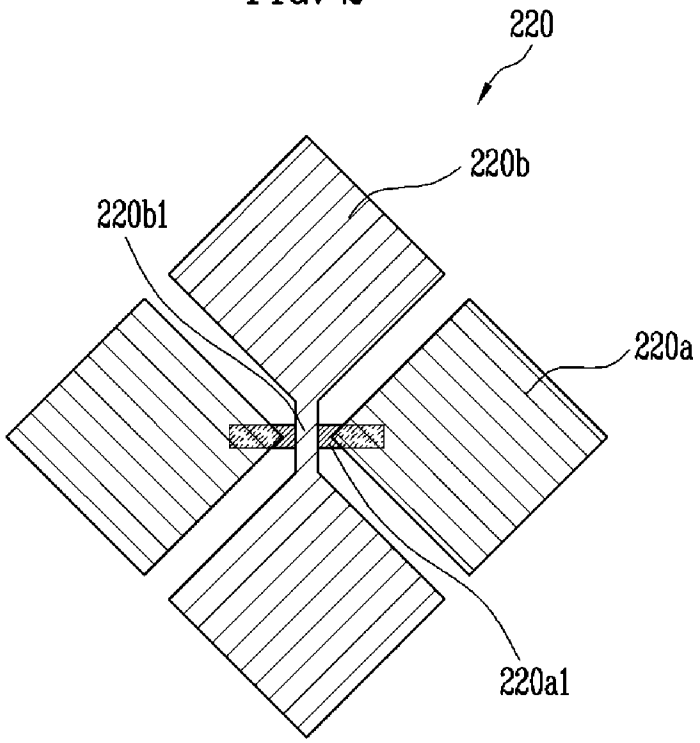

220
220b
220b1
220a
220a1

FIG. 3

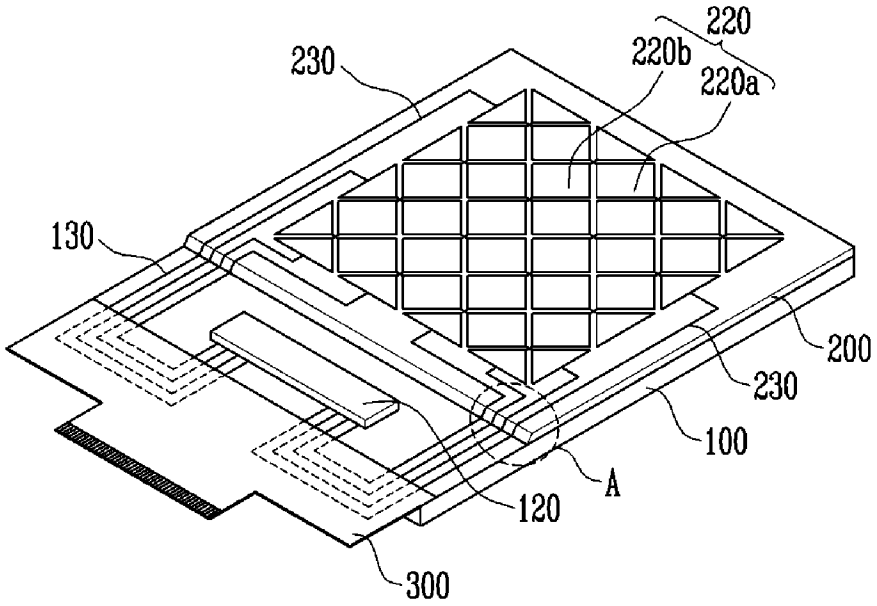

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220b
220a
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130
200
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100
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120
300

FIG. 4

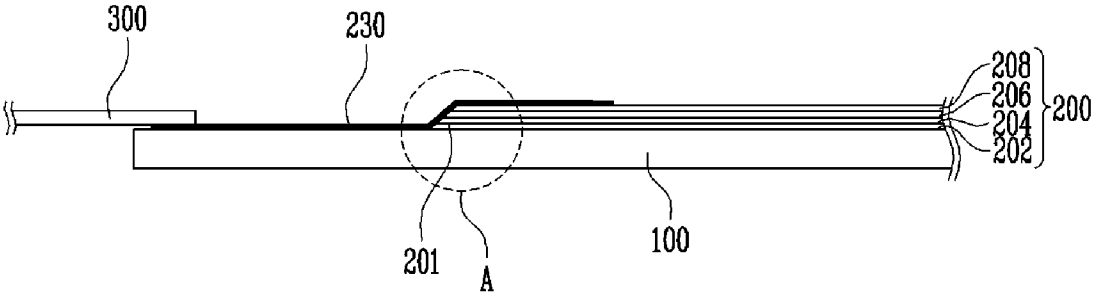
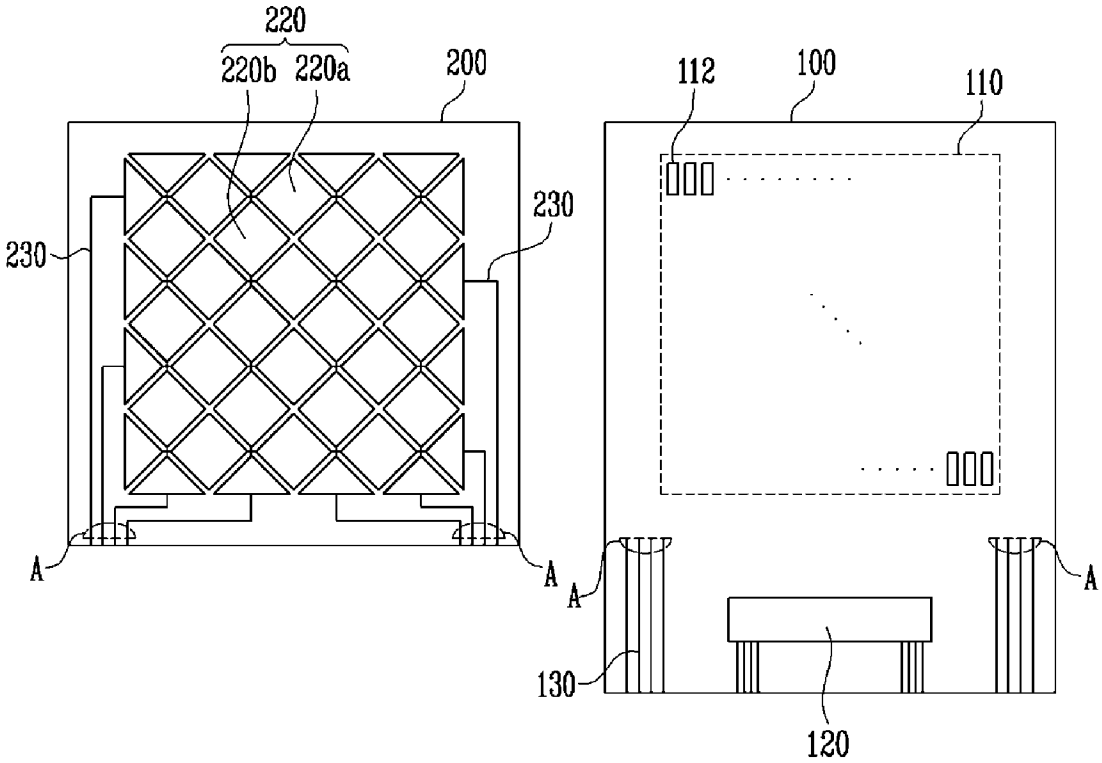

300
230
208
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FIG. 5


220
220b
220a
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110
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130
120

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jong-Soo		Kim	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Yongin-si, Gyeonggi-do	Country of Residence i	KR

Mailing Address of Inventor:

Address 1	1, Samsung-ro, Giheung-gu		
Address 2			
City	Yongin-si, Gyeonggi-do	State/Province	
Postal Code	17113	Country i	KR

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Do-Youb		Kim	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Yongin-si, Gyeonggi-do	Country of Residence i	KR

Mailing Address of Inventor:

Address 1	1, Samsung-ro, Giheung-gu		
Address 2			
City	Yongin-si, Gyeonggi-do	State/Province	
Postal Code	17113	Country i	KR

Inventor 3 Remove

Legal Name

PTO/AIA/14 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Prefix	Given Name	Middle Name	Family Name	Suffix
	Myoung-Seop		Song	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Yongin-si, Gyeonggi-do	Country of Residence [i]	KR

Mailing Address of Inventor:

Address 1	1, Samsung-ro, Giheung-gu		
Address 2			
City	Yongin-si, Gyeonggi-do	State/Province	
Postal Code	17113	Country [i]	KR

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Sang-Kyun		Cho	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Yongin-si, Gyeonggi-do	Country of Residence [i]	KR

Mailing Address of Inventor:

Address 1	1, Samsung-ro, Giheung-gu		
Address 2			
City	Yongin-si, Gyeonggi-do	State/Province	
Postal Code	17113	Country [i]	KR

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	20995		
Email Address	efiling@knobbe.com	Add Email	Remove Email

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Application Information:

Title of the Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL		
Attorney Docket Number	SDCSHN.181C1	**Small Entity Status Claimed** ☐	
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	3	**Suggested Figure for Publication (if any)**	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	20995		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	13021581	2011-02-04

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
10-2010-0089955	KR	2010-09-14	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Samsung Display Co., Ltd.		
Mailing Address Information For Applicant:			
Address 1	1, Samsung-ro, Giheung-gu		
Address 2			
City	Yongin-city, Gyunggi-do	**State/Province**	
Country	KR	Postal Code	17113
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country [i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature				Date (YYYY-MM-DD)	2016-04-20
First Name	John M.	Last Name	Carson	Registration Number	34,303

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SDCSHN.181C1
	Application Number	
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

DECLARATION AND POWER OF ATTORNEY - USA PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole (if one inventor is listed) or joint inventor (if more than one inventors are listed) of the subject matter which is claimed and for which a patent is sought on the invention entitled, **FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL**, the specification of which:

(a) ■ is attached hereto; or

(b) o was filed on _____ as Application No. 0 /_____ or Express Mail No., as Application No. not yet known _____ and was amended on _____ (if applicable); or

(c) o was described and claimed in PCT International Application No._____ filed on _____ and as amended under PCT Article 19 on _____ (if any) and/or under PCT Article 34 on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above;

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56;

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent, design or inventor's certificate or any PCT international application(s) listed below and have also identified below any foreign application(s) for patent, design or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed for the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN APPLICATION

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. § 119
KR	10-2010-0089955	09-14-2010	YES ■ NO o

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56, which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U.S.A. Application(s)

Application No.: _____ Filing Date: _____ Status: _____

POWER OF ATTORNEY: I hereby appoint the registrants of Knobbe, Martens, Olson & Bear, LLP, 2040 Main Street, Fourteenth Floor, Irvine, California 92614, Telephone (949) 760-0404, Customer No. 20,995.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge

that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of first inventor: KIM, Jong-Soo

Inventor's signature KIM, Jong-Soo Day 7 Month January Year 2011

Residence (city and country): Yongin-City, Gyunggi-do, Republic of Korea

Citizenship: KR

Post Office Address: c/o Samsung Mobile Display Co., Ltd., San #24 Nongseo-Dong, Giheung-Gu, Yongin-City, Gyunggi-Do, Republic of Korea

Full name of second inventor: KIM, Do-Youb

Inventor's signature KIM, Do-Youb Day 7 Month January Year 2011

Residence (city and country): Yongin-City, Gyunggi-do, Republic of Korea

Citizenship: KR

Post Office Address: c/o Samsung Mobile Display Co., Ltd., San #24 Nongseo-Dong, Giheung-Gu, Yongin-City, Gyunggi-Do, Republic of Korea

Full name of third inventor: SONG, Myoung-Seop

Inventor's signature SONG, Myoung-Seop Day 7 Month January Year 2011

Residence (city and country): Yongin-City, Gyunggi-do, Republic of Korea

Citizenship: KR

Post Office Address: c/o Samsung Mobile Display Co., Ltd., San #24 Nongseo-Dong, Giheung-Gu, Yongin-City, Gyunggi-Do, Republic of Korea

Full name of fourth inventor: CHO, Sang-Kyun

Inventor's signature CHO, Sang-Kyun Day 11 Month January Year 2011

Residence (city and country): Yongin-City, Gyunggi-do, Republic of Korea

Citizenship: KR

Post Office Address: c/o Samsung Mobile Display Co., Ltd., San #24 Nongseo-Dong, Giheung-Gu, Yongin-City, Gyunggi-Do, Republic of Korea

Send Correspondence To:
KNOBBE, MARTENS, OLSON & BEAR, LLP
Customer No. 20,995

9979396-akkr
110910

INFORMATION DISCLOSURE STATEMENT

First Inventor	:	Jong-Soo Kim
App. No.	:	Unassigned
Filed	:	Herewith
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Unassigned
Art Unit	:	Unassigned
Conf. No.	:	Unassigned

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Listed references are of record in U.S. patent application No. 13/021,581, filed February 4, 2011, which is the parent of this continuation application, and is relied upon for an earlier filing date under 35 USC 120. Copies of the references are not submitted pursuant to 37 CFR 1.98(d).

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, with an RCE or before receipt of a First Office Action after an RCE, and no fee is believed to be required.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 4/20/16

By: _____

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20995
(858) 707-4000

23154217
041916

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3844993

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	MERGER
EFFECTIVE DATE:	07/02/2012

CONVEYING PARTY DATA

Name	Execution Date
SAMSUNG MOBILE DISPLAY CO., LTD.	07/02/2012

RECEIVING PARTY DATA

Name:	SAMSUNG DISPLAY CO., LTD.
Street Address:	1, SAMSUNG-RO, GIHEUNG-GU
City:	YONGIN-SI, GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF
Postal Code:	17113

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15133605

CORRESPONDENCE DATA

Fax Number: (949)760-9502

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.

Phone: 9497600404
Email: efiling@knobbe.com
Correspondent Name: KNOBBE, MARTENS,OLSON & BEAR, LLP
Address Line 1: 2040 MAIN STREET
Address Line 2: 14TH FLOOR
Address Line 4: IRVINE, CALIFORNIA 92614

NAME OF SUBMITTER:	JOHN M. CARSON
SIGNATURE:	/John M. Carson/
DATE SIGNED:	04/25/2016
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 29
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CERTIFIED COPY OF REGISTER
(INCLUDED CANCELLED MATTERS)

No. of Registry: 018781
Registration No. 134511-0187812

Firm Name:

SAMSUNG DISPLAY CO., LTD.

Main Office:

95, Samsung 2 Ro, Giheung-Gu, Yongin-City, Gyeonggi-Do, Korea

Notification:

Reported in the Joongang Ilbo published daily in Seoul, Korea. If not possible due to unavoidable circumstances, reported in the Korea Economic Daily published in Seoul, Korea.

Par value of Stock Share:

5,000 won

Total of Stock Shares to be issued:

600,000,000 shares

Total of Issued Stock Shares, Types of Issued Stock Shares and Quantity of Each Type of Issued Stock Shares, and Total Capital

Total of Issued Stock Shares:	~~150,000,000 shares~~
Registered Common Stock Shares:	~~150,000,000 shares~~
Total Capital:	~~750,000,000,000 won~~

Total of Issued Stock Shares:	261,825,475 shares
Common Stock Shares:	261,825,475 shares
Total Capital:	,309,127,375,000 won

(amended on July 2 2012, and registered on July 2, 2012)

Purpose of Business

~~1. Manufacture, sale, collection services, lease and maintenance services of electronic and electrical machines and appliances, other related equipment and their components~~

1. Manufacture, sale, collection services, lease and maintenance services of electronic and electrical machines and appliances, other related equipment and their components and materials

(amended on July 2 2012, and registered on July 2, 2012)

1. Manufacture, sale, collection services, lease and maintenance services of communication machines and appliances, other related equipment and their components

1. Manufacture and sale of medical equipment

1. Manufacture, sale and maintenance services of optical disks, optical source-applied machines and appliances and their components

1. Manufacture, sale, lease and maintenance services of optical fibers, cables and other related equipment

1. Manufacture, sale, collection services, lease and maintenance services of electronic computer systems and other related products

1. Manufacture, sale and lease of copyright materials and computer programs, etc.

~~1. Sale and lease of know-how and technology~~

1. Plant exportation of electronic and electrical machine tools and facilities, and sale and lease of know-how and technology

(amended on July 2 2012, and registered on July 2, 2012)

1. Construction, operation, and engineering services of information telecommunication systems

1. Manufacture, sale, lease and maintenance services of automatic control systems and applied equipment

~~1. Manufacture, sale, lease and maintenance services of machine tools and their components~~

1. Manufacture, sale, lease, and maintenance services of machine tools, tools, molds, precision machines, and their components

(amended on July 2 2012, and registered on July 2, 2012)

1. Manufacture, sale, and test of gauge and measuring instruments, etc.

1. Manufacture and sale of displays and related products

1. Manufacture and sale of display manufacturing apparatuses

1. Manufacture and sale of raw and subsidiary materials for manufacturing displays

1. Technology services for the above items, construction of information telecommunication and electric connection systems

1. Manufacture and sale of other machines and appliances

1. Smelt and sale of metals excluding gold

1. Export, import, and corresponding agency business

1. Real estate business

1. Issuance of affirmation documents

1. Lease and sale of residential lots

1. Manufacture of electric motors, power generators and electric converter apparatuses

1. Manufacture, sale, and maintenance services of components, equipment, software related to Internet business and biotechnology business

1. Manufacture of electricity supply and control devices

1. Educational services and other services related to business

~~1. Business and investment incidental to any of the foregoing~~

1. Produce, manufacture, and sale of product design

(added on July 2, 2012, and registered on July 2, 2012)

1. Construction specialized in environment

(added on July 2, 2012, and registered on July 2, 2012)

1. Business and investment incidental to any of the foregoing

(amended on July 2 2012, and registered on July 2, 2012)

Data of Executives

~~Inside Director: Lee, Yoon-Tae 600719-1703317~~

Resigned on July 2, 2012 and registered on July 2, 2012

~~Inside Director: Kim, Hak-Woong 590821-1400414~~

Resigned on July 2, 2012 and registered on July 2, 2012

~~Inside Director: Park, Dong-Gun 590218-1053119~~

Resigned on July 2, 2012 and registered on July 2, 2012

~~Representative Director: Park, Dong-Gun 590218-1053119~~

~~101-802, 19 Dogokro 13-gil (Yeoksam-dong, Lotte Castel Noble), Kangnam-gu, Seoul~~

Resigned on July 2, 2012 and registered on July 2, 2012

~~Inspection Commissioner: Kang, Bong Yong 640104-1953411~~

Resigned on July 2, 2012 and registered on July 2, 2012

Inside Director: Kwon, Oh-Hyun 521015-1011638

Appointed on July 2, 2012 and registered on July 2, 2012

Inside Director: Cho, Soo-In 570113-1053111

Appointed on July 2, 2012 and registered on July 2, 2012

Inside Director: Park, Dong-Gun 590218-1053119

Appointed on July 2, 2012 and registered on July 2, 2012

Inside Director: Song, Baek-Gyu 580423-1140516

Appointed on July 2, 2012 and registered on July 2, 2012

Inside Director: Ji, Myung-Chan 600301-1721612

Appointed on July 2, 2012 and registered on July 2, 2012

Inspection Comissioner: Kim, Jong-Seong 640210-1058331

Appointed on July 2, 2012 and registered on July 2, 2012

Representative Director: Kwon, Oh-Hyun 521015-1011638

5003 G-dong, 26 Eonju-ro 30-gil (Tower Palace, Dogok-dong), Gangnam-gu, Seoul

Appointed on July 2, 2012 and registered on July 2, 2012

Other Matters

1. Split-off

Samsung Electronics Co., Ltd in 416 Maetan-dong, Yongtong-gu, Suwon-si was separated to establish Samsung Display Co., Ltd in 94 Samsung 2 Ro, Giheung-Gu, Yongin-

City, Gyeonggi-Do, Korea

1. Transfer of stock shares

A stockholder who wants to transfer stock shares shall file in advance an approval for transfer in writing about a party to receive stock shares, types and numbers of stock shares to be transferred, and other transfer conditions to the board of directors of the company according to regulations legislated in Article 335 to 355(7) of the commercial law.

1. Merger

The company was merged with Samsung Mobile Display Co., Ltd in San 24 Nongseo-Dong, Giheung-Gu, Yongin-City, Gyeonggi-Do, Korea and SLCD Co., Ltd in 201 Myungam-Ri, Tangjeong-Myun, Asan-City, Korea.

Registered on July 2, 2012

Date of Establishment of Company: April 3, 2012
Cause and Date of Registration: Establishment due to spilt-off

Registered on April 3, 2012

This is a certified copy of register (registered matters which are invalid and regarding managers (representatives) and branches are omitted if not requested).

July 5, 2012

Registration Information Management Center
Court Administration Office
Computer Operation Officer

등기사항전부증명서(말소사항포함)

등기번호	018781
등록번호	134511-0187812

상 호 삼성디스플레이 주식회사	
본 점 경기도 용인시 기흥구 삼성2로 95(농서동)	
공고방법 서울특별시 내에서 발행되는 일간 중앙일보에 게재한다. 다만, 일간 중앙일보에 게재 할 수 없는 부득이한 사유가 발생하였을 경우에는 서울특별시 내에서 발행되는 일간 한국경제신문에 게재한다.	
1주의 금액 금 5,000 원	
발행할 주식의 총수 600,000,000 주	

발행주식의 총수와 그 종류 및 각각의 수		자본의 총액	변경 연월일 등기 연월일
발행주식의 총수	~~150,000,000 주~~		
~~기명식 보통주식~~	~~150,000,000 주~~	~~금 750,000,000,000 원~~	
발행주식의 총수	261,825,475 주		2012.07.02 변경
보통주식	261,825,475 주	금 1,309,127,375,000 원	2012.07.02 등기

목 적

~~1.전자전기기계기구 및 관련기기와 그 부품의 제작,판매, 수금대행 및 임대, 서비스업~~
1.전자전기기계기구 및 관련기기와 그 부품 및 소재의 제작, 판매, 수금대행 및 임대, 서비스업
<2012.07.02 변경 2012.07.02 등기>
1.통신기계기구 및 관련기기와 그 부품의 제작,판매,수금대행 및 임대,서비스업
1.의료기기의 제작 및 판매업
1.광디스크 및 광원응용기계기구와 그 부품의 제작,판매,서비스업
1.광섬유,케이블 및 관련기기의 제조,판매,임대, 서비스업
1.전자계산조직 및 동 관련 제품의 제조,판매, 수금대행 및 임대, 서비스업
1.저작물, 컴퓨터프로그램 등의 제작,판매,임대업
~~1.노우하우 기술의 판매,임대업~~
1.전자전기 공작기계 및 설비 등의 PLANT 수출 및 노우하우 기술의 판매, 임대업
<2012.07.02 변경 2012.07.02 등기>
1.정보통신시스템에 관련된 구성 및 운영과 역무의 제공
1.자동제어기기 및 응용설비의 제작,판매,임대,서비스업
~~1.공작기계 및 부품의 제작,판매 임대 서비스업~~
1.공작기계, 공구, 금형과 정밀기계 및 부품의 제작, 판매, 임대, 서비스업
<2012.07.02 변경 2012.07.02 등기>
1.계량기,측정기 등의 교정검사업 및 제작, 판매업
1.디스플레이 및 관련제품의 제조,판매업
1.디스플레이 제조장치의 제조,판매업

문서 하단의 바코드를 스캐너로 확인하거나, 인터넷등기소(http://www.iros.go.kr)의 발급확인 메뉴에서 발급확인번호를 입력하여 위·변조 여부를 확인할 수 있습니다.
발급확인번호를 통한 확인은 발행일부터 3개월까지 5회에 한하여 가능합니다.
발급확인번호 7812-AQUK-EJCR

0000020061185708710021110824360 1B9E9BFEEBBEA 40 발행일:2012/07/05

등기번호	018781

1.디스플레이 제조를 위한 원부자재의 제조,판매업
1.전 각항의 기술용역,정보통신공사업 및 전기공사업
1.기타 기계기구의 제작 및 판매업
1.금을 제외한 금속의 제련가공 및 판매업
1.수출입업 및 동 대행업
1.부동산업
1.물품매도 확약서 발행업
1.주택사업 임대 및 분양
1.전동기,발전기 및 전기변환장치 제조업
1.Internet사업 및 Biotechnology사업관련 부품,기기,소프트웨어의 제조,판매업 및 서비스업
1.전기공급 및 제어장치 제조업
1.교육서비스업 및 사업관련 서비스업
~~1.전 각호에 부대되거나 관련되는 사업 일체 및 투자~~
1.제품 디자인 제작 및 제조, 판매업 <2012.07.02 추가 2012.07.02 등기>
1.환경전문공사업 <2012.07.02 추가 2012.07.02 등기>
1.전 각 호에 부대되거나 관련되는 사업 일체 및 투자
<2012.07.02 변경 2012.07.02 등기>

임원에 관한 사항

~~사내이사 이윤태 600719-1703317~~
2012 년 07 월 02 일 사임 2012 년 07 월 02 일 등기

~~사내이사 김학웅 590821-1400414~~
2012 년 07 월 02 일 사임 2012 년 07 월 02 일 등기

~~사내이사 박동권 590218-1053119~~
2012 년 07 월 02 일 사임 2012 년 07 월 02 일 등기

~~대표이사 박동권 590218-1053119 서울특별시 강남구 도곡로13길 19, 101동 802호(역삼동, 롯데캐슬 노블)~~
2012 년 07 월 02 일 사임 2012 년 07 월 02 일 등기

~~감사 장봉용 640104-1953411~~
2012 년 07 월 02 일 사임 2012 년 07 월 02 일 등기

사내이사 권오현 521015-1011638
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

사내이사 조수인 570113-1053111
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

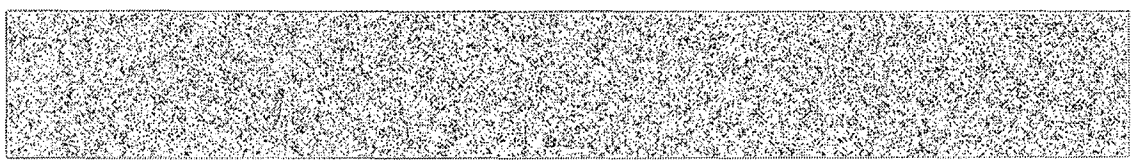
사내이사 박동권 590218-1053119
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

사내이사 송백규 580423-1140516
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

사내이사 지명찬 600301-1721612
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

감사 김종성 640210-1058331
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

대표이사 권오현 521015-1011638 서울특별시 강남구 언주로30길 26, 지동 5003호(도곡동, 타워팰리





등기번호	018781

스아파트)
2012 년 07 월 02 일 취임 2012 년 07 월 02 일 등기

기 타 사 항

1. 회사분할
수원시 영통구 매탄동 416번지 삼성전자 주식회사를 분할하여 경기도 용인시 기흥구 삼성2로 94(농서동)에 삼성디스플레이 주식회사를 설립함.
1. 주식의 양도
주식을 양도하고자하는 주주는 상법 제335조 내지 제355조의7 등의 관계법규에서 정하는 바에 따라 사전에 본 회사의 이사회에 대하여 주식양도의 상대방 및 양도하고자 하는 주식의 종류와 수, 기타 양도조건을 기재한 서면으로 양도의 승인을 청구하여야 한다.
1. 흡수합병
경기도 용인시 기흥구 농서동 산24 삼성모바일디스플레이 주식회사, 아산시 탕정면 명암리 201 에스엘시디 주식회사를 합병
2012 년 07 월 02 일 등기

회사성립연월일 2012 년 04 월 03 일

등기기록의 개설 사유 및 연월일
분할로 인한 설립
2012 년 04 월 03 일 등기

수수료 1,200원 영수함 --- 이 하 여 백 ---
관할등기소 : 수원지방법원 용인등기소 / 발행등기소 : 대전지방법원 천안지원 아산등기소

이 증명서는 등기기록의 내용과 틀림없음을 증명합니다. [다만, 신청이 없는 지점 · 지배인에 관한 사항의 기재를 생략하였습니다]

서기 2012년 07월 05일
법원행정처 등기정보중앙관리소 전산운영책임관

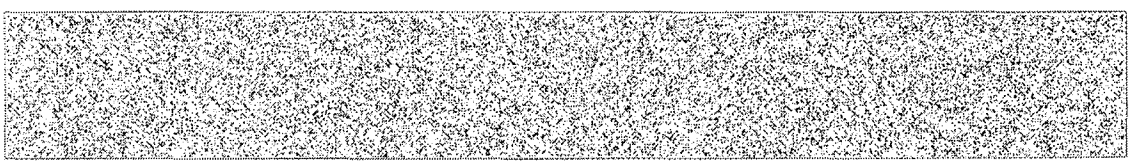


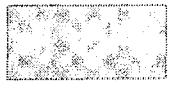
* 실선으로 그어진 부분은 말소(변경,경정)된 등기사항입니다. * 등기사항증명서는 컬러로 출력 가능함.

문서 하단의 바코드를 스캐너로 확인하거나, 인터넷등기소(http://www.iros.go.kr)의 발급확인 메뉴에서 발급확인번호를 입력하여 위 · 변조 여부를 확인할 수 있습니다.
발급확인번호를 통한 확인은 발행일부터 3개월까지 3회에 한하여 가능합니다.

발급확인번호 7812-AQUK-EJCR

0000020061185708710021110824360 1B9E9BFEEB8EA 40 발행일:2012/07/05





CERTIFICATION OF TRANSLATION

I, ***Soohyun Shin***, an employee of Y.P. LEE, MOCK & PARTNERS of 12F Daelim Acrotel, 13 Eonju-ro 30-gil (Dogok-dong), Gangnam-gu, Seoul, Republic of Korea, hereby declare that I understand the Korean language and the English language; that I am fully capable of translating from Korean to English and vice versa; and that, to the best of my knowledge and belief, the statement in the English language in the attached translation of ***Certified Copy of Register, Registration No. 134511-0187812*** has the same meanings as the statements in the Korean language in the original document, a copy of which I have examined.

Signed this 20th day of August 2012

Soohyun Shin

APPENDIX A

No.	U.S. Patent Application No.	U.S. Filing Date (mm/dd/yyyy)	U.S. Patent No.	Issue Date	Attorney Docket No.
1	13/208296	08/11/2011	N/A	N/A	SMDCEN.001AUS
2	13/473412	05/16/2012	N/A	N/A	SMDCEN.002AUS
3	13/325353	12/14/2011	N/A	N/A	SMDCEN.003AUS
4	13/312549	12/06/2011	N/A	N/A	SMDCEN.004AUS
5	13/292995	11/09/2011	N/A	N/A	SMDCEN.005AUS
6	13/325342	12/14/2011	N/A	N/A	SMDCEN.006AUS
7	13/415745	03/08/2012	N/A	N/A	SMDCEN.007AUS
8	13/554882	07/20/2012	N/A	N/A	SMDCEN.008AUS
9	13/492596	06/08/2012	N/A	N/A	SMDCEN.012AUS
10	13/541133	07/03/2012	N/A	N/A	SMDCEN.013AUS
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13	13/189451	07/22/2011	N/A	N/A	SMDKOR.003AUS
14	13/178424	07/07/2011	N/A	N/A	SMDKOR.004AUS
15	13/207043	08/10/2011	N/A	N/A	SMDKOR.006AUS
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17	13/244185	09/23/2011	N/A	N/A	SMDKOR.008AUS
18	13/449052	04/17/2012	N/A	N/A	SMDKOR.009AUS
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20	13/460404	04/30/2012	N/A	N/A	SMDKOR.012AUS
21	13/529952	06/21/2012	N/A	N/A	SMDKOR.013AUS
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28	13/398245	02/16/2012	N/A	N/A	SMDKS.005AUS
29	13/398532	02/16/2012	N/A	N/A	SMDKS.006AUS
30	13/349398	01/12/2012	N/A	N/A	SMDKS.007AUS

31	13/282347	10/26/2011	N/A	N/A	SMDKS.008AUS
32	13/371105	02/10/2012	N/A	N/A	SMDKS.009AUS
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35	13/449068	04/17/2012	N/A	N/A	SMDKS.012AUS
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38	13/337615	12/27/2011	N/A	N/A	SMDKS.015AUS
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40	13/283380	10/27/2011	N/A	N/A	SMDKS.017AUS
41	13/290919	11/07/2011	N/A	N/A	SMDKS.018AUS
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43	13/313510	12/07/2011	N/A	N/A	SMDKS.020AUS
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46	11/716805	03/12/2007	7893899	02/22/2011	SMDSA.001AUS
47	11/787630	04/17/2007	8054253	11/08/2011	SMDSA.002AUS
48	11/975037	10/16/2007	8035298	10/11/2011	SMDSA.003AUS
49	11/879312	07/16/2007	N/A	N/A	SMDSA.004AUS
50	11/986864	11/26/2007	N/A	N/A	SMDSA.005AUS
51	12/005699	12/27/2007	8232933	07/31/2012	SMDSA.006AUS
52	12/151075	05/02/2008	8049409	11/01/2011	SMDSA.007AUS
53	12/229395	08/21/2008	N/A	N/A	SMDSA.008AUS
54	11/743310	05/02/2007	7982818	07/19/2011	SMDSA.010AUS
55	11/227962	09/14/2005	8120554	02/21/2012	SMDSHN.002AUS
56	11/248022	10/11/2005	8004480	08/23/2011	SMDSHN.004AUS
57	11/280958	11/15/2005	7816687	10/19/2010	SMDSHN.005AUS
58	11/270051	11/09/2005	7514984	04/07/2009	SMDSHN.006AUS
59	11/283529	11/18/2005	7580012	08/25/2009	SMDSHN.007AUS
60	11/283543	11/18/2005	7362249	04/22/2008	SMDSHN.008AUS
61	11/390589	03/27/2006	7855700	12/21/2010	SMDSHN.010AUS
62	11/364590	02/28/2006	8125422	02/28/2012	SMDSHN.011AUS
63	11/430814	05/09/2006	7432598	10/07/2008	SMDSHN.012AUS
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66	11/364521	02/27/2006	7541100	06/02/2009	SMDSHN.015AUS
67	11/305890	12/16/2005	8035581	10/11/2011	SMDSHN.016AUS

68	11/390774	03/28/2006	7307455	12/11/2007	SMDSHN.017AUS
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70	12/423692	04/14/2009	N/A	N/A	SMDSHN.018DV1
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72	11/392067	03/29/2006	7847760	12/07/2010	SMDSHN.020AUS
73	11/377981	03/17/2006	7843442	11/30/2010	SMDSHN.021AUS
74	11/506698	08/18/2006	8120017	02/21/2012	SMDSHN.022AUS
75	11/489646	07/18/2006	7651079	01/26/2010	SMDSHN.025AUS
76	11/520068	09/12/2006	N/A	N/A	SMDSHN.026AUS
77	11/509975	08/25/2006	7605399	10/20/2009	SMDSHN.028AUS
78	11/506685	08/18/2006	7782276	08/24/2010	SMDSHN.030AUS
79	11/506433	08/18/2006	N/A	N/A	SMDSHN.031AUS
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86	11/514688	08/31/2006	7701136	04/20/2010	SMDSHN.039AUS
87	11/529913	09/29/2006	8128449	03/06/2012	SMDSHN.042AUS
88	11/512651	08/29/2006	7795803	09/14/2010	SMDSHN.043AUS
89	11/541139	09/29/2006	8063561	11/22/2011	SMDSHN.044AUS
90	11/540083	09/29/2006	N/A	N/A	SMDSHN.045AUS
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95	11/540151	09/29/2006	7944143	05/17/2011	SMDSHN.050AUS
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101	11/541048	09/29/2006	7821197	10/26/2010	SMDSHN.057AUS
102	11/540024	09/29/2006	7834550	11/16/2010	SMDSHN.059AUS
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104	12/636684	12/11/2009	N/A	N/A	SMDSHN.061DV1

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123	11/670356	02/01/2007	7923927	04/12/2011	SMDSHN.086AUS
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125	12/567687	09/25/2009	7901961	03/08/2011	SMDSHN.088DV1
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132	11/890050	08/03/2007	N/A	N/A	SMDSHN.098AUS
133	11/769392	06/27/2007	N/A	N/A	SMDSHN.099AUS
134	12/124022	05/20/2008	N/A	N/A	SMDSHN.100AUS
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136	12/036144	02/22/2008	7875880	01/25/2011	SMDSHN.112AUS
137	12/135951	06/09/2008	N/A	N/A	SMDSHN.114AUS
138	12/004283	12/19/2007	N/A	N/A	SMDSHN.115AUS
139	12/004282	12/19/2007	N/A	N/A	SMDSHN.116AUS
140	12/217817	07/08/2008	N/A	N/A	SMDSHN.118AUS
141	12/080956	04/08/2008	N/A	N/A	SMDSHN.119AUS

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143	12/082147	04/08/2008	N/A	N/A	SMDSHN.121AUS
144	12/077828	03/21/2008	N/A	N/A	SMDSHN.122AUS
145	12/217310	07/02/2008	N/A	N/A	SMDSHN.123AUS
146	12/080955	04/08/2008	N/A	N/A	SMDSHN.124AUS
147	12/117647	05/08/2008	7936121	05/03/2011	SMDSHN.126AUS
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149	12/607863	10/28/2009	N/A	N/A	SMDSHN.128CP1
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152	12/135920	06/09/2008	8016632	09/13/2011	SMDSHN.129AUS
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156	12/217720	07/07/2008	N/A	N/A	SMDSHN.133AUS
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158	12/228994	08/18/2008	7807009	10/05/2010	SMDSHN.135AUS
159	12/504896	07/17/2009	N/A	N/A	SMDSHN.136AUS
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163	12/571148	09/30/2009	N/A	N/A	SMDSHN.140AUS
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185	12/816947	06/16/2010	N/A	N/A	SMDSHN.163AUS
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187	12/964435	12/09/2010	N/A	N/A	SMDSHN.165AUS
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190	12/833807	07/09/2010	N/A	N/A	SMDSHN.168AUS
191	13/034611	02/24/2011	N/A	N/A	SMDSHN.170AUS
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197	13/069291	03/22/2011	N/A	N/A	SMDSHN.176AUS
198	13/095718	04/27/2011	N/A	N/A	SMDSHN.177AUS
199	13/011743	01/21/2011	N/A	N/A	SMDSHN.178AUS
200	13/013545	01/25/2011	N/A	N/A	SMDSHN.179AUS
201	13/103005	05/06/2011	N/A	N/A	SMDSHN.180AUS
202	13/021581	02/04/2011	N/A	N/A	SMDSHN.181AUS
203	13/010723	01/20/2011	N/A	N/A	SMDSHN.182AUS
204	13/030099	02/17/2011	N/A	N/A	SMDSHN.183AUS
205	13/079194	04/04/2011	N/A	N/A	SMDSHN.184AUS
206	13/228727	09/09/2011	N/A	N/A	SMDSHN.185AUS
207	13/177452	07/06/2011	N/A	N/A	SMDSHN.186AUS
208	13/115869	05/25/2011	N/A	N/A	SMDSHN.187AUS
209	13/233902	09/15/2011	N/A	N/A	SMDSHN.188AUS
210	11/851676	09/07/2007	N/A	N/A	SMDSHN.191AUS
211	11/858459	09/20/2007	7612858	11/3/2009	SMDSHN.192AUS
212	11/858423	09/20/2007	N/A	N/A	SMDSHN.193AUS
213	12/060330	04/01/2008	8115505	2/14/2012	SMDSHN.194AUS
214	12/060321	04/01/2008	7919975	4/5/2011	SMDSHN.195AUS
215	11/971408	01/09/2008	8154538	4/10/2012	SMDSHN.196AUS

216	11/972194	01/10/2008	N/A	N/A	SMDSHN.197AUS
217	12/981006	12/29/2010	N/A	N/A	SMDSHN.198AUS
218	12/950247	11/19/2010	N/A	N/A	SMDSHN.199AUS
219	12/968456	12/15/2010	N/A	N/A	SMDSHN.200AUS
220	12/856819	08/16/2010	N/A	N/A	SMDSHN.201AUS
221	12/980797	12/29/2010	N/A	N/A	SMDSHN.202AUS
222	13/005224	01/12/2011	N/A	N/A	SMDSHN.203AUS
223	13/413557	03/06/2012	N/A	N/A	SMDSHN.204AUS
224	13/252010	10/03/2011	N/A	N/A	SMDSHN.205AUS
225	13/419308	03/13/2012	N/A	N/A	SMDSHN.206AUS
226	13/250548	09/30/2011	N/A	N/A	SMDSHN.207AUS
227	13/243797	09/23/2011	N/A	N/A	SMDSHN.208AUS
228	13/420443	03/14/2012	N/A	N/A	SMDSHN.209AUS
229	13/250306	09/30/2011	N/A	N/A	SMDSHN.210AUS
230	13/240917	09/22/2011	N/A	N/A	SMDSHN.211AUS
231	13/242316	09/23/2011	N/A	N/A	SMDSHN.212AUS
232	13/454934	04/24/2012	N/A	N/A	SMDSHN.213AUS
233	13/250407	09/30/2011	N/A	N/A	SMDSHN.214AUS
234	13/249684	09/30/2011	N/A	N/A	SMDSHN.215AUS
235	13/444740	04/11/2012	N/A	N/A	SMDSHN.216AUS
236	12/319624	01/07/2009	N/A	N/A	SMDSHN.217AUS
237	12/380464	02/27/2009	N/A	N/A	SMDSHN.218AUS
238	12/384906	04/10/2009	N/A	N/A	SMDSHN.219AUS
239	12/381457	03/11/2009	N/A	N/A	SMDSHN.220AUS
240	12/319625	01/07/2009	N/A	N/A	SMDSHN.221AUS
241	13/460520	04/30/2012	N/A	N/A	SMDSHN.222AUS
242	13/536248	06/28/2012	N/A	N/A	SMDSHN.223AUS
243	13/536225	06/28/2012	N/A	N/A	SMDSHN.224AUS
244	13/541207	07/03/2012	N/A	N/A	SMDSHN.226AUS
245	13/251096	09/30/2011	N/A	N/A	SMDTRO.001AUS
246	13/355786	01/23/2012	N/A	N/A	SMDTRO.002AUS
247	13/443731	04/10/2012	N/A	N/A	SMDTRO.003AUS
248	13/347439	01/10/2012	N/A	N/A	SMDTRO.004AUS
249	13/479077	05/23/2012	N/A	N/A	SMDTRO.005AUS
250	13/458326	04/27/2012	N/A	N/A	SMDTRO.006AUS
251	11/205611	08/17/2005	N/A	N/A	SMDYOU.001AUS
252	11/385591	03/21/2006	7379081	5/27/2008	SMDYOU.002AUS

253	11/605745	11/29/2006	N/A	N/A	SMDYOU.004AUS
254	11/731966	04/02/2007	N/A	N/A	SMDYOU.005AUS
255	11/728628	03/26/2007	7982386	7/19/2011	SMDYOU.006AUS
256	11/650379	01/05/2007	7791267	9/7/2010	SMDYOU.007AUS
257	11/699787	01/30/2007	7656086	2/2/2010	SMDYOU.008AUS
258	11/811721	06/11/2007	8008857	8/30/2011	SMDYOU.010AUS
259	11/837304	08/10/2007	8004178	8/23/2011	SMDYOU.011AUS
260	12/021983	01/29/2008	7723134	5/25/2010	SMDYOU.012AUS
261	12/079008	03/24/2008	7737033	6/15/2010	SMDYOU.013AUS
262	12/196445	08/22/2008	N/A	N/A	SMDYOU.014AUS
263	12/508409	07/23/2009	8198802	6/12/2012	SMDYOU.015AUS
264	61/083863	07/25/2008	N/A	N/A	SMDYOU.015PRF
265	12/508426	07/23/2009	8058783	11/15/2011	SMDYOU.016AUS
266	61/083866	07/25/2008	N/A	N/A	SMDYOU.016PRF
267	12/508438	07/23/2009	8169386	5/1/2012	SMDYOU.017AUS
268	61/090158	08/19/2008	N/A	N/A	SMDYOU.017PRF
269	12/558311	09/11/2009	8084941	12/27/2011	SMDYOU.018AUS
270	12/606029	10/26/2009	N/A	N/A	SMDYOU.019AUS
271	12/607913	10/28/2009	8113902	2/14/2012	SMDYOU.020AUS
272	12/615984	11/10/2009	N/A	N/A	SMDYOU.021AUS
273	12/629576	12/02/2009	N/A	N/A	SMDYOU.022AUS
274	12/642645	12/18/2009	N/A	N/A	SMDYOU.024AUS
275	12/634467	12/9/2009	8247819	8/21/2012	SMDYOU.025AUS
276	12/702906	2/9/2010	N/A	N/A	SMDYOU.026AUS
277	12/702185	2/8/2010	N/A	N/A	SMDYOU.027AUS
278	12/702936	2/9/2010	N/A	N/A	SMDYOU.028AUS
279	12/536315	8/5/2009	8148894	4/3/2012	SMDYOU.029AUS
280	12/544531	8/20/2009	8242692	8/14/2012	SMDYOU.030AUS
281	12/511902	7/29/2009	8237354	8/7/2012	SMDYOU.031AUS
282	12/869961	8/27/2010	N/A	N/A	SMDYOU.032AUS
283	12/889290	9/23/2010	N/A	N/A	SMDYOU.034AUS
284	12/837176	7/15/2010	8174005	5/8/2012	SMDYOU.035AUS
285	12/859177	8/18/2010	N/A	N/A	SMDYOU.036AUS
286	12/786225	5/24/2010	N/A	N/A	SMDYOU.037AUS
287	12/946771	11/15/2010	N/A	N/A	SMDYOU.038AUS
288	12/881104	9/13/2010	N/A	N/A	SMDYOU.039AUS
289	12/946710	11/15/2010	N/A	N/A	SMDYOU.040AUS

290	12/885374	9/17/2010	N/A	N/A	SMDYOU.041AUS
291	12/859616	8/19/2010	N/A	N/A	SMDYOU.042AUS
292	12/846731	7/29/2010	N/A	N/A	SMDYOU.043AUS
293	12/958324	12/1/2010	N/A	N/A	SMDYOU.044AUS
294	12/958307	12/1/2010	N/A	N/A	SMDYOU.045AUS
295	12/904067	10/13/2010	N/A	N/A	SMDYOU.046AUS
296	12/961396	12/6/2010	N/A	N/A	SMDYOU.047AUS
297	12/964526	12/9/2010	N/A	N/A	SMDYOU.048AUS
298	12/966857	12/13/2010	N/A	N/A	SMDYOU.049AUS
299	12/966853	12/13/2010	N/A	N/A	SMDYOU.050AUS
300	12/984518	1/4/2011	N/A	N/A	SMDYOU.051AUS
301	12/895201	9/30/2010	N/A	N/A	SMDYOU.052AUS
302	11/232290	9/21/2005	7709840	5/4/2010	SMDYOU.053AUS
303	12/759576	4/13/2010	7923736	4/12/2011	SMDYOU.053DV1
304	11/247470	10/11/2005	7659578	2/9/2010	SMDYOU.054AUS
305	11/288571	11/29/2005	7701132	4/20/2010	SMDYOU.055AUS
306	11/247991	10/11/2005	8004176	8/23/2011	SMDYOU.056AUS
307	11/247398	10/11/2005	7915821	3/29/2011	SMDYOU.057AUS
308	11/273052	11/14/2005	7411572	8/12/2008	SMDYOU.058AUS
309	11/406802	4/19/2006	7855507	12/21/2010	SMDYOU.059AUS
310	11/485947	7/12/2006	7687328	3/30/2010	SMDYOU.060AUS
311	11/327141	1/6/2006	7692191	4/6/2010	SMDYOU.061AUS
312	11/432598	5/11/2006	N/A	N/A	SMDYOU.062AUS
313	13/007371	1/14/2011	N/A	N/A	SMDYOU.062D1
314	11/385097	3/20/2006	7692374	4/6/2010	SMDYOU.064AUS
315	11/489648	7/18/2006	7808463	10/5/2010	SMDYOU.066AUS
316	11/506628	8/18/2006	N/A	N/A	SMDYOU.067AUS
317	11/408544	4/21/2006	7537975	5/26/2009	SMDYOU.068AUS
318	11/529916	9/29/2006	8120249	2/21/2012	SMDYOU.069AUS
319	11/529891	9/29/2006	N/A	N/A	SMDYOU.070AUS
320	11/529912	9/29/2006	8026511	9/27/2011	SMDYOU.071AUS
321	11/540103	9/29/2006	8164257	4/24/2012	SMDYOU.072AUS
322	11/440500	5/24/2006	7834549	11/16/2010	SMDYOU.073AUS
323	11/473455	6/22/2006	7915102	3/29/2011	SMDYOU.074AUS
324	11/473581	6/22/2006	N/A	N/A	SMDYOU.075AUS
325	11/473830	6/22/2006	8044576	10/25/2011	SMDYOU.076AUS
326	11/486647	7/14/2006	7646011	1/12/2010	SMDYOU.077AUS

327	11/529884	9/29/2006	7999372	8/16/2011	SMDYOU.078AUS
328	11/509863	8/24/2006	7608869	10/27/2009	SMDYOU.079AUS
329	11/510432	8/24/2006	7862334	1/4/2011	SMDYOU.080AUS
330	11/521703	9/15/2006	7791266	9/7/2010	SMDYOU.082AUS
331	11/529948	9/29/2006	7545094	6/9/2009	SMDYOU.083AUS
332	12/465532	5/13/2009	7838314	11/23/2010	SMDYOU.083DV1
333	11/512638	8/30/2006	7839077	11/23/2010	SMDYOU.084AUS
334	11/522190	9/15/2006	7696976	4/13/2010	SMDYOU.085AUS
335	11/654276	1/16/2007	N/A	N/A	SMDYOU.087AUS
336	11/935943	11/6/2007	7863629	1/4/2011	SMDYOU.088AUS
337	12/950914	11/19/2010	N/A	N/A	SMDYOU.089C1
338	11/876681	10/22/2007	7893614	2/22/2011	SMDYOU.090AUS
339	12/006666	1/3/2008	7834547	11/16/2010	SMDYOU.091AUS
340	12/138313	6/12/2008	N/A	N/A	SMDYOU.092AUS
341	12/079720	3/28/2008	7642587	1/5/2010	SMDYOU.093AUS
342	12/137353	6/11/2008	7950567	5/31/2011	SMDYOU.096AUS
343	12/489167	6/22/2009	N/A	N/A	SMDYOU.097AUS
344	12/603415	10/21/2009	N/A	N/A	SMDYOU.098AUS
345	12/478523	6/4/2009	N/A	N/A	SMDYOU.099AUS
346	12/860096	8/20/2010	N/A	N/A	SMDYOU.100AUS
347	12/904102	10/13/2010	N/A	N/A	SMDYOU.101AUS
348	12/753732	4/2/2010	N/A	N/A	SMDYOU.102AUS
349	12/946715	11/15/2010	N/A	N/A	SMDYOU.103AUS
350	12/378433	2/13/2009	8110982	2/7/2012	SMDYOU.104AUS
351	13/004399	1/11/2011	N/A	N/A	SMDYOU.105AUS
352	12/904089	10/13/2010	N/A	N/A	SMDYOU.106AUS
353	12/944631	11/11/2010	N/A	N/A	SMDYOU.107AUS
354	13/021673	2/4/2011	N/A	N/A	SMDYOU.108AUS
355	12/904096	10/13/2010	N/A	N/A	SMDYOU.109AUS
356	12/982179	12/30/2010	N/A	N/A	SMDYOU.110AUS
357	12/982157	12/30/2010	N/A	N/A	SMDYOU.111AUS
358	13/029981	2/17/2011	N/A	N/A	SMDYOU.112AUS
359	12/831118	7/6/2010	8242490	8/14/2012	SMDYOU.113AUS
360	13/046641	3/11/2011	N/A	N/A	SMDYOU.114AUS
361	12/946789	11/15/2010	N/A	N/A	SMDYOU.115AUS
362	12/946773	11/15/2010	N/A	N/A	SMDYOU.116AUS
363	13/043415	3/8/2011	N/A	N/A	SMDYOU.117AUS

364	12/916393	10/29/2010	N/A	N/A	SMDYOU.118AUS
365	13/042314	3/7/2011	N/A	N/A	SMDYOU.119AUS
366	12/986014	1/6/2011	N/A	N/A	SMDYOU.120AUS
367	13/025097	2/10/2011	N/A	N/A	SMDYOU.121AUS
368	13/049740	3/16/2011	N/A	N/A	SMDYOU.122AUS
369	13/019245	2/1/2011	N/A	N/A	SMDYOU.124AUS
370	12/941930	11/8/2010	N/A	N/A	SMDYOU.125AUS
371	12/972369	12/17/2010	N/A	N/A	SMDYOU.126AUS
372	13/085389	4/12/2011	N/A	N/A	SMDYOU.127AUS
373	13/020687	2/3/2011	N/A	N/A	SMDYOU.128AUS
374	12/972327	12/17/2010	N/A	N/A	SMDYOU.129AUS
375	13/097886	4/29/2011	N/A	N/A	SMDYOU.130AUS
376	13/085364	4/12/2011	N/A	N/A	SMDYOU.131AUS
377	13/013719	1/25/2011	N/A	N/A	SMDYOU.132AUS
378	13/087288	4/14/2011	N/A	N/A	SMDYOU.133AUS
379	13/172746	6/29/2011	N/A	N/A	SMDYOU.134AUS
380	13/115883	5/25/2011	N/A	N/A	SMDYOU.135AUS
381	13/077045	3/31/2011	N/A	N/A	SMDYOU.136AUS
382	13/049795	3/16/2011	N/A	N/A	SMDYOU.137AUS
383	13/098104	4/29/2011	N/A	N/A	SMDYOU.138AUS
384	13/178047	7/7/2011	N/A	N/A	SMDYOU.139AUS
385	13/178326	7/7/2011	N/A	N/A	SMDYOU.140AUS
386	12/912628	10/26/2010	N/A	N/A	SMDYOU.141AUS
387	13/168760	6/24/2011	N/A	N/A	SMDYOU.142AUS
388	13/178440	7/7/2011	N/A	N/A	SMDYOU.143AUS
389	13/007396	1/14/2011	N/A	N/A	SMDYOU.144AUS
390	13/007327	1/14/2011	N/A	N/A	SMDYOU.145AUS
391	13/084422	4/11/2011	N/A	N/A	SMDYOU.146AUS
392	13/088939	4/18/2011	N/A	N/A	SMDYOU.147AUS
393	13/181449	7/12/2011	N/A	N/A	SMDYOU.148AUS
394	13/047639	3/14/2011	N/A	N/A	SMDYOU.149AUS
395	13/043375	3/8/2011	N/A	N/A	SMDYOU.150AUS
396	13/205532	8/8/2011	N/A	N/A	SMDYOU.151AUS
397	13/069920	3/23/2011	N/A	N/A	SMDYOU.152AUS
398	13/083380	4/8/2011	N/A	N/A	SMDYOU.153AUS
399	13/077100	3/31/2011	N/A	N/A	SMDYOU.154AUS
400	13/069254	3/22/2011	N/A	N/A	SMDYOU.155AUS

401	13/207379	8/10/2011	N/A	N/A	SMDYOU.156AUS
402	13/183325	7/14/2011	N/A	N/A	SMDYOU.157AUS
403	13/043406	3/8/2011	N/A	N/A	SMDYOU.158AUS
404	13/183264	7/14/2011	N/A	N/A	SMDYOU.159AUS
405	13/294127	11/10/2011	N/A	N/A	SMDYOU.160AUS
406	13/212943	8/18/2011	N/A	N/A	SMDYOU.161AUS
407	13/189974	7/25/2011	N/A	N/A	SMDYOU.162AUS
408	12/946176	11/15/2010	N/A	N/A	SMDYOU.164AUS
409	12/945966	11/15/2010	N/A	N/A	SMDYOU.165AUS
410	12/973176	12/20/2010	N/A	N/A	SMDYOU.167AUS
411	12/956377	11/30/2010	N/A	N/A	SMDYOU.168AUS
412	13/114918	5/24/2011	N/A	N/A	SMDYOU.169AUS
413	13/014094	1/26/2011	N/A	N/A	SMDYOU.170AUS
414	13/244112	9/23/2011	N/A	N/A	SMDYOU.171AUS
415	13/179401	7/8/2011	N/A	N/A	SMDYOU.172AUS
416	13/206419	8/9/2011	N/A	N/A	SMDYOU.173AUS
417	13/069284	3/22/2011	N/A	N/A	SMDYOU.174AUS
418	13/227248	9/7/2011	N/A	N/A	SMDYOU.175AUS
419	13/300504	11/18/2011	N/A	N/A	SMDYOU.176AUS
420	13/087312	4/14/2011	N/A	N/A	SMDYOU.177AUS
421	13/244077	9/23/2011	N/A	N/A	SMDYOU.178AUS
422	13/100996	5/4/2011	N/A	N/A	SMDYOU.179AUS
423	13/207369	8/10/2011	N/A	N/A	SMDYOU.180AUS
424	13/244215	9/23/2011	N/A	N/A	SMDYOU.181AUS
425	13/237836	9/20/2011	N/A	N/A	SMDYOU.182AUS
426	13/179423	7/8/2011	N/A	N/A	SMDYOU.183AUS
427	13/175268	7/1/2011	N/A	N/A	SMDYOU.184AUS
428	13/238572	9/21/2011	N/A	N/A	SMDYOU.185AUS
429	13/337624	12/27/2011	N/A	N/A	SMDYOU.186AUS
430	13/410825	3/2/2012	N/A	N/A	SMDYOU.187AUS
431	13/272043	10/12/2011	N/A	N/A	SMDYOU.188AUS
432	13/429783	3/26/2012	N/A	N/A	SMDYOU.189AUS
433	13/323682	12/12/2011	N/A	N/A	SMDYOU.190AUS
434	13/323705	12/12/2011	N/A	N/A	SMDYOU.191AUS
435	13/215102	8/22/2011	N/A	N/A	SMDYOU.192AUS
436	13/300176	11/18/2011	N/A	N/A	SMDYOU.193AUS
437	13/313499	12/7/2011	N/A	N/A	SMDYOU.194AUS

438	13/315062	12/8/2011	N/A	N/A	SMDYOU.195AUS
439	13/452539	4/20/2012	N/A	N/A	SMDYOU.196AUS
440	13/335691	12/22/2011	N/A	N/A	SMDYOU.197AUS
441	13/333873	12/21/2011	N/A	N/A	SMDYOU.198AUS
442	13/289164	11/4/2011	N/A	N/A	SMDYOU.199AUS
443	13/251994	10/3/2011	N/A	N/A	SMDYOU.200AUS
444	13/276218	10/18/2011	N/A	N/A	SMDYOU.201AUS
445	13/366685	2/6/2012	N/A	N/A	SMDYOU.202AUS
446	13/416448	3/9/2012	N/A	N/A	SMDYOU.203AUS
447	13/415759	3/8/2012	N/A	N/A	SMDYOU.204AUS
448	13/470078	5/11/2012	N/A	N/A	SMDYOU.205AUS
449	13/439673	4/4/2012	N/A	N/A	SMDYOU.206AUS
450	13/465794	5/7/2012	N/A	N/A	SMDYOU.207AUS
451	13/426478	3/21/2012	N/A	N/A	SMDYOU.208AUS
452	13/415714	3/8/2012	N/A	N/A	SMDYOU.209AUS
453	13/420500	3/14/2012	N/A	N/A	SMDYOU.210AUS
454	13/539993	7/2/2012	N/A	N/A	SMDYOU.211AUS
455	13/475757	5/18/2012	N/A	N/A	SMDYOU.214AUS
456	13/557032	7/24/2012	N/A	N/A	SMDYOU.216AUS
457	13/561548	7/30/2012	N/A	N/A	SMDYOU.219AUS
458	11/167436	6/27/2005	N/A	N/A	SMDYPL.001AUS
459	11/230293	9/19/2005	7288818	10/30/2007	SMDYPL.003AUS
460	11/249284	10/13/2005	7667385	2/23/2010	SMDYPL.004AUS
461	11/253198	10/18/2005	7655943	2/2/2010	SMDYPL.005AUS
462	11/181706	7/13/2005	7431997	10/7/2008	SMDYPL.006AUS
463	11/243127	10/4/2005	7473932	1/6/2009	SMDYPL.007AUS
464	11/267425	11/4/2005	8030642	10/4/2011	SMDYPL.008AUS
465	11/407018	4/19/2006	8030844	10/4/2011	SMDYPL.009AUS
466	11/280682	11/16/2005	7987812	8/2/2011	SMDYPL.010AUS
467	11/280542	11/15/2005	N/A	N/A	SMDYPL.011AUS
468	11/280480	11/15/2005	7341961	3/11/2008	SMDYPL.012AUS
469	12/641277	12/17/2009	8043887	10/25/2011	SMDYPL.013C1
470	11/263058	10/31/2005	7538017	5/26/2009	SMDYPL.014AUS
471	11/267740	11/4/2005	7800300	9/21/2010	SMDYPL.015AUS
472	12/841033	7/21/2010	8182304	5/22/2012	SMDYPL.015DV1
473	11/281826	11/17/2005	7572338	8/11/2009	SMDYPL.016AUS
474	11/280105	11/15/2005	7582894	9/1/2009	SMDYPL.017AUS

475	11/357004	2/16/2006	7504659	3/17/2009	SMDYPL.018AUS
476	12/365090	2/3/2009	N/A	N/A	SMDYPL.018C1
477	11/327708	1/6/2006	8188940	5/29/2012	SMDYPL.019AUS
478	11/281951	11/16/2005	7507990	3/24/2009	SMDYPL.020AUS
479	11/378011	3/17/2006	7714321	5/11/2010	SMDYPL.021AUS
480	11/373802	3/10/2006	7855503	12/21/2010	SMDYPL.022AUS
481	11/378557	3/16/2006	7572668	8/11/2009	SMDYPL.024AUS
482	12/504312	7/16/2009	7956354	6/7/2011	SMDYPL.024DV1
483	11/329865	1/9/2006	7671359	3/2/2010	SMDYPL.025AUS
484	11/280761	11/15/2005	7381984	6/3/2008	SMDYPL.027AUS
485	11/361481	2/24/2006	7683366	3/23/2010	SMDYPL.028AUS
486	12/700649	2/4/2010	8193527	6/5/2012	SMDYPL.028DV1
487	11/282210	11/18/2005	7431628	10/7/2008	SMDYPL.029AUS
488	11/297702	12/8/2005	7579775	8/25/2009	SMDYPL.031AUS
489	11/289076	11/29/2005	7595586	9/29/2009	SMDYPL.032AUS
490	11/488433	7/17/2006	7576482	8/18/2009	SMDYPL.035AUS
491	11/391122	3/28/2006	7868546	1/11/2011	SMDYPL.036AUS
492	11/514779	8/31/2006	7615790	11/10/2009	SMDYPL.039AUS
493	12/490066	6/23/2009	N/A	N/A	SMDYPL.039DV1
494	11/528022	9/26/2006	7696520	4/13/2010	SMDYPL.040AUS
495	11/510454	8/25/2006	7812342	10/12/2010	SMDYPL.041AUS
496	12/814414	6/11/2010	N/A	N/A	SMDYPL.041DV1
497	11/526945	9/25/2006	8076733	12/13/2011	SMDYPL.042AUS
498	11/485796	7/12/2006	7598671	10/6/2009	SMDYPL.043AUS
499	12/366488	2/5/2009	8187482	5/29/2012	SMDYPL.043DV1
500	11/499927	8/7/2006	N/A	N/A	SMDYPL.044AUS
501	11/527894	9/26/2006	7714324	5/11/2010	SMDYPL.045AUS
502	11/586167	10/24/2006	7510891	3/31/2009	SMDYPL.047AUS
503	12/404128	3/13/2009	N/A	N/A	SMDYPL.047DV1
504	11/590558	10/31/2006	7919918	4/5/2011	SMDYPL.048AUS
505	11/655590	1/18/2007	7868321	1/11/2011	SMDYPL.049AUS
506	11/599016	11/13/2006	N/A	N/A	SMDYPL.050AUS
507	11/646948	12/28/2006	8003999	8/23/2011	SMDYPL.051AUS
508	13/163631	6/17/2011	N/A	N/A	SMDYPL.051D1
509	11/599132	11/13/2006	N/A	N/A	SMDYPL.052AUS
510	11/732767	4/4/2007	7982398	7/19/2011	SMDYPL.054AUS
511	11/637997	12/12/2006	7601567	10/13/2009	SMDYPL.056AUS

512	11/714622	3/5/2007	N/A	N/A	SMDYPL.057AUS
513	11/754938	5/29/2007	7841919	11/30/2010	SMDYPL.058AUS
514	11/788587	4/19/2007	7780493	8/24/2010	SMDYPL.059AUS
515	11/742078	4/30/2007	7871949	1/18/2011	SMDYPL.060AUS
516	12/961404	12/6/2010	N/A	N/A	SMDYPL.060DV1
517	11/742436	4/30/2007	7969086	6/28/2011	SMDYPL.061AUS
518	11/780936	7/20/2007	7898175	3/1/2011	SMDYPL.062AUS
519	11/956163	12/13/2007	7993960	8/9/2011	SMDYPL.063AUS
520	13/176244	7/5/2011	N/A	N/A	SMDYPL.063D1
521	11/935304	11/5/2007	7928431	4/19/2011	SMDYPL.064AUS
522	12/220655	7/25/2008	N/A	N/A	SMDYPL.065AUS
523	12/185279	8/4/2008	8175124	5/8/2012	SMDYPL.066AUS
524	13/438622	4/3/2012	N/A	N/A	SMDYPL.067D1
525	12/463316	5/8/2009	8183755	5/22/2012	SMDYPL.068AUS
526	12/475136	5/29/2009	N/A	N/A	SMDYPL.069AUS
527	12/508492	7/23/2009	N/A	N/A	SMDYPL.070AUS
528	12/536287	8/5/2009	8247090	8/21/2012	SMDYPL.071AUS
529	12/406783	3/18/2009	N/A	N/A	SMDYPL.072AUS
530	12/634442	12/9/2009	N/A	N/A	SMDYPL.073AUS
531	12/512912	7/30/2009	N/A	N/A	SMDYPL.074AUS
532	12/512707	7/30/2009	8049245	11/1/2011	SMDYPL.075AUS
533	12/693218	1/25/2010	N/A	N/A	SMDYPL.076AUS
534	12/504283	7/16/2009	N/A	N/A	SMDYPL.077AUS
535	12/760325	4/14/2010	N/A	N/A	SMDYPL.078AUS
536	12/829139	7/1/2010	N/A	N/A	SMDYPL.080AUS
537	12/955753	11/29/2010	N/A	N/A	SMDYPL.081AUS
538	12/860840	8/20/2010	N/A	N/A	SMDYPL.082AUS
539	12/288938	10/23/2008	8030838	10/4/2011	SMDYPL.083AUS
540	12/378601	2/17/2009	8043726	10/25/2011	SMDYPL.084AUS
541	12/378463	2/13/2009	7942716	5/17/2011	SMDYPL.085AUS
542	12/378397	2/13/2009	8030841	10/4/2011	SMDYPL.086AUS
543	12/759500	4/13/2010	8169132	5/1/2012	SMDYPL.087AUS
544	12/752760	4/1/2010	N/A	N/A	SMDYPL.088AUS
545	12/964641	12/9/2010	N/A	N/A	SMDYPL.089AUS
546	12/858322	8/17/2010	N/A	N/A	SMDYPL.090AUS
547	12/764758	4/21/2010	N/A	N/A	SMDYPL.091AUS
548	12/856111	8/13/2010	N/A	N/A	SMDYPL.092AUS

549	12/322017	1/27/2009	N/A	N/A	SMDYPL.093AUS
550	12/876981	9/7/2010	N/A	N/A	SMDYPL.094AUS
551	12/982287	12/30/2010	N/A	N/A	SMDYPL.095AUS
552	12/912638	10/26/2010	N/A	N/A	SMDYPL.096AUS
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556	12/853224	8/9/2010	N/A	N/A	SMDYPL.100AUS
557	12/969365	12/15/2010	N/A	N/A	SMDYPL.101AUS
558	12/985935	1/6/2011	N/A	N/A	SMDYPL.102AUS
559	12/970580	12/16/2010	8227326	7/24/2012	SMDYPL.103AUS
560	13/015465	1/27/2011	N/A	N/A	SMDYPL.104AUS
561	12/973597	12/20/2010	N/A	N/A	SMDYPL.105AUS
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575	13/046573	3/11/2011	N/A	N/A	SMDYPL.120AUS
576	13/037245	2/28/2011	N/A	N/A	SMDYPL.121AUS
577	13/069277	3/22/2011	N/A	N/A	SMDYPL.122AUS
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580	13/040906	3/4/2011	8211725	7/3/2012	SMDYPL.125AUS
581	12/973700	12/20/2010	N/A	N/A	SMDYPL.126AUS
582	13/024229	2/9/2011	N/A	N/A	SMDYPL.127AUS
583	13/032567	2/22/2011	N/A	N/A	SMDYPL.128AUS
584	12/914828	10/28/2010	N/A	N/A	SMDYPL.129AUS
585	13/076160	3/30/2011	N/A	N/A	SMDYPL.130AUS

586	13/069039	3/22/2011	N/A	N/A	SMDYPL.131AUS
587	12/890165	9/24/2010	N/A	N/A	SMDYPL.132AUS
588	13/042986	3/8/2011	N/A	N/A	SMDYPL.133AUS
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594	13/046379	3/11/2011	8242688	8/14/2012	SMDYPL.139AUS
595	12/356453	1/20/2009	7922552	4/12/2011	SMDYPL.140AUS
596	13/043303	3/8/2011	8188652	5/29/2012	SMDYPL.140D1
597	12/881686	9/14/2010	N/A	N/A	SMDYPL.141AUS
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600	13/152838	6/3/2011	N/A	N/A	SMDYPL.144AUS
601	13/035780	2/25/2011	N/A	N/A	SMDYPL.145AUS
602	13/094187	4/26/2011	N/A	N/A	SMDYPL.146AUS
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605	13/157174	6/9/2011	N/A	N/A	SMDYPL.149AUS
606	13/164348	6/20/2011	N/A	N/A	SMDYPL.150AUS
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609	13/077436	3/31/2011	N/A	N/A	SMDYPL.153AUS
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612	13/155296	6/7/2011	N/A	N/A	SMDYPL.156AUS
613	13/179072	7/8/2011	N/A	N/A	SMDYPL.157AUS
614	13/040587	3/4/2011	N/A	N/A	SMDYPL.158AUS
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616	13/168159	6/24/2011	N/A	N/A	SMDYPL.160AUS
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618	13/043371	3/8/2011	N/A	N/A	SMDYPL.162AUS
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621	13/156169	6/8/2011	N/A	N/A	SMDYPL.165AUS
622	13/178394	7/7/2011	N/A	N/A	SMDYPL.166AUS

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624	13/176293	7/5/2011	N/A	N/A	SMDYPL.168AUS
625	13/207225	8/10/2011	N/A	N/A	SMDYPL.169AUS
626	13/223083	8/31/2011	N/A	N/A	SMDYPL.170AUS
627	13/103938	5/9/2011	N/A	N/A	SMDYPL.171AUS
628	13/204321	8/5/2011	N/A	N/A	SMDYPL.172AUS
629	13/103011	5/6/2011	N/A	N/A	SMDYPL.173AUS
630	13/174606	6/30/2011	N/A	N/A	SMDYPL.174AUS
631	13/243946	9/23/2011	N/A	N/A	SMDYPL.175AUS
632	13/078853	4/1/2011	N/A	N/A	SMDYPL.176AUS
633	13/211655	8/17/2011	N/A	N/A	SMDYPL.177AUS
634	13/278042	10/20/2011	N/A	N/A	SMDYPL.178AUS
635	13/070381	3/23/2011	N/A	N/A	SMDYPL.179AUS
636	13/240863	9/22/2011	N/A	N/A	SMDYPL.180AUS
637	13/157083	6/9/2011	N/A	N/A	SMDYPL.181AUS
638	13/272114	10/12/2011	N/A	N/A	SMDYPL.182AUS
639	13/238948	9/21/2011	N/A	N/A	SMDYPL.183AUS
640	13/177852	7/7/2011	N/A	N/A	SMDYPL.184AUS
641	13/237808	9/20/2011	N/A	N/A	SMDYPL.185AUS
642	13/209337	8/12/2011	N/A	N/A	SMDYPL.186AUS
643	13/206910	8/10/2011	N/A	N/A	SMDYPL.187AUS
644	13/294102	11/10/2011	N/A	N/A	SMDYPL.188AUS
645	13/079154	4/4/2011	N/A	N/A	SMDYPL.189AUS
646	10/448416	5/30/2003	6882382	4/19/2005	SMDYPL.192AUS
647	10/318102	12/13/2002	6972814	12/6/2005	SMDYPL.193AUS
648	11/081720	3/17/2005	7372526	5/13/2008	SMDYPL.193D1
649	11/736138	4/17/2007	7893918	2/22/2011	SMDYPL.194AUS
650	12/818373	6/18/2010	N/A	N/A	SMDYPL.195AUS
651	12/969851	12/16/2010	N/A	N/A	SMDYPL.196AUS
652	13/099274	5/2/2011	N/A	N/A	SMDYPL.197AUS
653	13/014125	1/26/2011	N/A	N/A	SMDYPL.198AUS
654	13/106414	5/12/2011	N/A	N/A	SMDYPL.199AUS
655	13/030591	2/18/2011	N/A	N/A	SMDYPL.200AUS
656	13/004561	1/11/2011	N/A	N/A	SMDYPL.201AUS
657	13/333769	12/21/2011	N/A	N/A	SMDYPL.202AUS
658	13/296902	11/15/2011	N/A	N/A	SMDYPL.203AUS
659	13/088912	4/18/2011	N/A	N/A	SMDYPL.204AUS

660	13/242211	9/23/2011	N/A	N/A	SMDYPL.205AUS
661	13/244100	9/23/2011	N/A	N/A	SMDYPL.206AUS
662	13/244132	9/23/2011	N/A	N/A	SMDYPL.207AUS
663	13/117067	5/26/2011	N/A	N/A	SMDYPL.208AUS
664	13/244148	9/23/2011	N/A	N/A	SMDYPL.209AUS
665	13/225992	9/6/2011	N/A	N/A	SMDYPL.210AUS
666	13/267275	10/6/2011	N/A	N/A	SMDYPL.211AUS
667	13/300488	11/18/2011	N/A	N/A	SMDYPL.212AUS
668	13/244168	9/23/2011	N/A	N/A	SMDYPL.213AUS
669	13/242521	9/23/2011	N/A	N/A	SMDYPL.214AUS
670	13/301461	11/21/2011	N/A	N/A	SMDYPL.215AUS
671	13/244205	9/23/2011	N/A	N/A	SMDYPL.216AUS
672	13/244158	9/23/2011	N/A	N/A	SMDYPL.217AUS
673	13/303618	11/23/2011	N/A	N/A	SMDYPL.218AUS
674	13/301486	11/21/2011	N/A	N/A	SMDYPL.219AUS
675	13/081442	4/6/2011	N/A	N/A	SMDYPL.220AUS
676	13/296683	11/15/2011	N/A	N/A	SMDYPL.221AUS
677	13/250903	9/30/2011	N/A	N/A	SMDYPL.222AUS
678	13/238595	9/21/2011	N/A	N/A	SMDYPL.223AUS
679	13/327465	12/15/2011	N/A	N/A	SMDYPL.224AUS
680	13/207147	8/10/2011	N/A	N/A	SMDYPL.225AUS
681	13/412477	3/5/2012	N/A	N/A	SMDYPL.226AUS
682	13/294079	11/10/2011	N/A	N/A	SMDYPL.227AUS
683	13/415776	3/8/2012	N/A	N/A	SMDYPL.228AUS
684	13/309486	12/1/2011	N/A	N/A	SMDYPL.229AUS
685	13/351474	1/17/2012	N/A	N/A	SMDYPL.230AUS
686	13/442682	4/9/2012	N/A	N/A	SMDYPL.231AUS
687	13/444680	4/11/2012	N/A	N/A	SMDYPL.232AUS
688	13/444736	4/11/2012	N/A	N/A	SMDYPL.233AUS
689	13/243954	9/23/2011	N/A	N/A	SMDYPL.234AUS
690	13/366645	2/6/2012	N/A	N/A	SMDYPL.235AUS
691	13/454965	4/24/2012	N/A	N/A	SMDYPL.236AUS
692	13/494414	6/12/2012	N/A	N/A	SMDYPL.237AUS
693	13/460354	4/30/2012	N/A	N/A	SMDYPL.238AUS
694	13/451285	4/19/2012	N/A	N/A	SMDYPL.239AUS
695	13/443767	4/10/2012	N/A	N/A	SMDYPL.240AUS
696	13/312629	12/6/2011	N/A	N/A	SMDYPL.241AUS

697	13/313596	12/7/2011	N/A	N/A	SMDYPL.242AUS
698	13/337569	12/27/2011	N/A	N/A	SMDYPL.243AUS
699	13/333846	12/21/2011	N/A	N/A	SMDYPL.244AUS
700	13/349440	1/12/2012	N/A	N/A	SMDYPL.245AUS
701	13/360497	1/27/2012	N/A	N/A	SMDYPL.246AUS
702	13/480167	5/24/2012	N/A	N/A	SMDYPL.247AUS
703	13/451980	4/20/2012	N/A	N/A	SMDYPL.249AUS
704	13/469933	5/11/2012	N/A	N/A	SMDYPL.250AUS
705	13/526257	6/18/2012	N/A	N/A	SMDYPL.251AUS
706	13/429846	3/26/2012	N/A	N/A	SMDYPL.252AUS
707	13/439653	4/4/2012	N/A	N/A	SMDYPL.253AUS
708	13/486964	6/1/2012	N/A	N/A	SMDYPL.254AUS
709	13/485684	5/31/2012	N/A	N/A	SMDYPL.255AUS
710	13/450363	4/18/2012	N/A	N/A	SMDYPL.256AUS
711	13/526379	6/18/2012	N/A	N/A	SMDYPL.257AUS

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IRVINE, CA 92614

OC000000082877594

Date Mailed: 05/05/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

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Myoung-Seop Song, Yongin-si, KOREA, REPUBLIC OF;
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Applicant(s)

Samsung Display Co., Ltd., Yongin-city, KOREA, REPUBLIC OF;

Power of Attorney: The patent practitioners associated with Customer Number 20995

Domestic Priority data as claimed by applicant

This application is a CON of 13/021,581 02/04/2011 PAT 9323400

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
REPUBLIC OF KOREA 10-2010-0089955 09/14/2010

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

Request to Retrieve - This application either claims priority to one or more applications filed in an intellectual property Office that participates in the Priority Document Exchange (PDX) program or contains a proper **Request to Retrieve Electronic Priority Application(s)** (PTO/SB/38 or its equivalent). Consequently, the USPTO will attempt to electronically retrieve these priority documents.

If Required, Foreign Filing License Granted: 05/04/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/133,605**

Projected Publication Date: 08/11/2016

Non-Publication Request: No

Early Publication Request: No

Title

FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

Preliminary Class

345

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/133,605

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1

CONFIRMATION NO. 2023

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

INFORMAL NOTICE



Date Mailed: 05/05/2016

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

A new inventor's oath or declaration that identifies this application (e.g., by Application Number and filing date) is required. The inventor's oath or declaration does not comply with 37 CFR 1.63 in that it:

- does not state that the above-identified application was made or authorized to be made by the person executing the oath or declaration.

Jong-Soo Kim
Do-Youb Kim
Myoung-Seop Song
Sang-Kyun Cho

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ttruong/



별첨 사본은 아래 출원의 원본과 동일함을 증명함.

This is to certify that the following application annexed hereto is a true copy from the records of the Korean Intellectual Property Office

출 원 번 호 : 10-2010-0089955
Application Number

출 원 년 월 일 : 2010년 09월 14일
Filing Date SEP. 14, 2010

출 원 인 : 삼성디스플레이 주식회사
Applicant(s) Samsung Display Co., Ltd.

2016년 06월 08일

특 허 청
COMMISSIONER

제출 일자 : 2010-09-14

【서지사항】

【서류명】 특허출원서

【참조번호】 0004

【출원구분】 특허출원

【출원인】

【명칭】 삼성모바일디스플레이주식회사

【출원인코드】 1-2008-040752-7

【대리인】

【성명】 신영무

【대리인코드】 9-1998-000265-6

【포괄위임등록번호】 2008-081335-9

【발명의 국문명칭】 터치 스크린 패널 일체형 평판표시장치

【발명의 영문명칭】 flat panel display integrated touch screen panel

【발명자】

【성명】 김종수

【성명의 영문표기】 JONGSOO KIM

【주민등록번호】 770101-1XXXXXX

【우편번호】 446-920

【주소】 경기도 용인시 기흥구 농서동 산24번지

【국적】 KR

【발명자】

【성명】 김도엽

【성명의 영문표기】 DOYOUB KIM

【주민등록번호】 790508-1XXXXXX

【우편번호】 446-920

【주소】 경기도 용인시 기흥구 농서동 산24번지

【국적】 KR

【발명자】

【성명】 송명섭

【성명의 영문표기】 MYOUNGSEOP SONG

【주민등록번호】 760626-1XXXXXX

【우편번호】 446-920

【주소】 경기도 용인시 기흥구 농서동 산24번지

【국적】 KR

【발명자】

【성명】 조상균

【성명의 영문표기】 SANGKYUN CHO

【주민등록번호】 790115-1XXXXXX

【우편번호】 446-920

【주소】 경기도 용인시 기흥구 농서동 산24번지

【국적】 KR

【취지】 위와 같이 특허청장에게 제출합니다.

대리인 신영무 (서명 또는 인)

【수수료】

【출원료】	0	면	38,000 원
【가산출원료】	19	면	0 원
【우선권주장료】	0	건	0 원
【심사청구료】	0	항	0 원

【합계】 38,000 원

제출 일자 : 2010-09-14

【명세서】

【발명의 명칭】

터치 스크린 패널 일체형 평판표시장치(flat panel display integrated touch screen panel)

【기술분야】

<1> 본 발명은 평판표시장치에 관한 것으로, 특히 터치 스크린 패널 일체형 평판표시장치에 관한 것이다.

【배경기술】

<2> 터치 스크린 패널은 영상표시장치 등의 화면에 나타난 지시 내용을 사람의 손 또는 물체로 선택하여 사용자의 명령을 입력할 수 있도록 한 입력장치이다.

<3> 이를 위해, 터치 스크린 패널은 영상표시장치의 전면(front face)에 구비되어 사람의 손 또는 물체에 직접 접촉된 접촉위치를 전기적 신호로 변환한다. 이에 따라, 접촉위치에서 선택된 지시 내용이 입력신호로 받아들여진다.

<4> 이와 같은 터치 스크린 패널은 키보드 및 마우스와 같이 영상표시장치에 연결되어 동작하는 별도의 입력장치를 대체할 수 있기 때문에 그 이용범위가 점차 확장되고 있는 추세이다.

<5> 터치 스크린 패널을 구현하는 방식으로는 저항막 방식, 광감지 방식 및 정전용량 방식 등이 알려져 있으며, 이 중 정전용량 방식의 터치 스크린 패널은, 사람의 손 또는 물체가 접촉될 때 도전성 감지패턴이 주변의 다른 감지패턴 또는 접지

전극 등과 형성하는 정전용량의 변화를 감지함으로써, 접촉위치를 전기적 신호로 변환한다.

<6> 이와 같은 터치 스크린 패널은 일반적으로 액정표시장치, 유기전계 발광 표시장치와 같은 평판표시장치의 외면에 부착되어 구성되는데, 별도로 제작된 터치 스크린 패널과 평판표시장치를 서로 부착하여 사용할 경우 제품의 전체적인 두께를 증가시키고, 제조 원가를 상승시킨다는 문제점이 있다.

<7> 또한, 이 경우 평판표시장치용 구동 IC와 터치 스크린 패널용 구동 IC가 별도로 구비되어야 하므로 제품간 호환이 용이하지 않고, 각각 별도의 연성 인쇄회로기판(FPCB)에 연결되어야 하므로 제조 공정이 복잡하고, 제품 단가가 증가하는 단점이 있다.

【발명의 내용】

【해결하려는 과제】

<8> 본 발명은 터치 스크린 패널을 유기 전계발광 표시패널의 봉지박막 상에 직접 형성하는 구조에 관한 것으로, 상기 터치 스크린 패널의 감지라인들을 유기발광소자가 형성된 상기 표시패널의 기판으로 연장하여 형성함으로써, 터치 스크린 패널과 표시패널이 하나의 연성 인쇄회로기판에 연결되도록 하여 제조 공정을 단순화하고 제품 단가를 저감한 터치 스크린 패널 일체형 평판표시장치를 제공함에 목적이 있다.

【과제의 해결 수단】

<9> 상기 목적을 달성하기 위하여 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치는, 복수의 화소들로 구성되는 화소영역을 구비한 기판과; 상기 화소영역을 포함하는 기판 상의 영역에 형성된 봉지박막과; 상기 봉지박막 상에 형성되어 터치 스크린 패널을 구현하는 감지셀들 및 감지라인과; 상기 기판의 일측 끝단에 부착되는 연성 인쇄회로기판이 포함되며, 상기 감지라인들은 상기 봉지박막의 끝단을 거쳐 상기 기판으로 연장되어 상기 연성 인쇄회로기판과 전기적으로 연결된다.

<10> 또한, 상기 화소영역 이외의 기판 상에 상기 화소들을 구동하는 구동 IC가 실장되며, 상기 구동 IC는 상기 연성 인쇄회로기판과 전기적으로 연결된다.

<11> 또한, 상기 구동 IC는 상기 터치 스크린 패널을 구동하기 위한 제어회로가 포함되어 구성될 수 있다.

<12> 또한, 상기 봉지박막은 복수의 유기막 및 무기막의 적층 구조로 구현되는 것으로, 상기 봉지박막은 제1 유기막, 제1 무기막, 제 2 유기막 및 제2 무기막이 교대로 적층되는 구조로 형성될 수 있다.

<13> 이 때, 상기 제1 및 제2 유기막은 에폭시, 아크릴레이트 및 우레탄아크릴레이트로 구성되는 군에서 선택되는 하나로 형성되고, 상기 제1 및 제2 무기막은 AlXOy 및 SiXOy로 구성되는 군에서 선택되는 것의 하나로 형성될 수 있다.

<14> 또한, 상기 봉지박막의 끝단은 경사진 형태로 구현된다.

<15> 또한, 상기 감지셀들은 제1 방향을 따라 라인 별로 연결되도록 형성된 다수의 제1 감지셀들 및 상기 제1 감지셀들과 중첩되지 않도록 교호적으로 배치되며, 상기 제1 방향과 교차하는 제2 방향을 따라 라인 별로 연결되도록 형성된 다수의 제2 감지셀들로 구성된다.

<16> 또한, 상기 제1 및 제2 감지셀들은 각각 제1 및 제2 연결패턴들에 의해 제1 및 제2 방향을 따른 라인 단위로 연결되며, 상기 제1 연결패턴들은 상기 제1 감지셀들의 상부 또는 하부 레이어에 각각이 독립된 패턴을 갖도록 패터닝되어 상기 제1 감지셀들의 상부 또는 하부에서 이들에 전기적으로 연결시킨다.

【발명의 효과】

<17> 이와 같은 본 발명에 의하면, 터치 스크린 패널을 유기 전계발광 표시패널의 봉지박막 상에 직접 형성하는 구조에 있어서, 상기 터치 스크린 패널의 감지라인들을 유기발광 소자가 형성된 상기 표시패널의 기판으로 연장 형성되어, 터치 스크린 패널과 표시패널이 하나의 연성 인쇄회로기판에 연결되도록 함을 통해, 모듈 구조 단순화 및 공정 tact time을 최소화하고, 이에 따른 생산 비용 절감 및 수율 향상을 달성하는 장점이 있다.

【도면의 간단한 설명】

<18> 도 1은 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치의 평면도.

도 2는 도 1에 도시된 감지셀들의 일 예를 도시한 확대도.

도 3은 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치를 도시한 사시도.

도 4는 도 3에 도시된 봉지박막 및 기판에 대한 분리 평면도.

도 5는 도 3의 특정 부분(A)을 포함한 영역에 대한 개략적인 단면도.

【발명을 실시하기 위한 구체적인 내용】

<19> 이하, 첨부된 도면을 참조하여 본 발명의 실시예를 보다 상세히 설명하도록 한다.

<20> 도 1은 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치의 평면도이고, 도 2는 도 1에 도시된 감지셀들의 일 예를 도시한 확대도이다.

<21> 편의상, 도 2에서는 감지셀들 중 일부만을 도시하였으나, 터치 스크린 패널은 도 2에 도시된 감지셀들이 반복적으로 배치되는 구조를 갖는다.

<22> 도 1 및 도 2를 참조하면, 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치는, 기판(100) 상에 형성된 복수의 화소들(미도시)에 대하여 상기 화소들을 밀봉하는 봉지 박막(200) 상에 터치 스크린 패널을 구현하는 감지셀들(220) 및 감지라인들(230)이 형성된다.

<23> 이 때, 본 발명의 실시예에 의한 평판표시장치는 상기 각 화소에 유기발광소자, 박막트랜지스터, 캐패시터가 구비된 유기전계 발광 표시장치를 그 대상으로 한다.

<24> 이와 같은 유기전계 발광 표시장치는, 유기 발광소자의 수분 및 산소 노출을

방지하기 위해 종래의 경우 상기 기판 상에 캐비티(Cavity) 또는 판형으로 구현된 유리 기판을 봉지 기판으로 하여 진공 분위기에서 합착하였다.

<25> 그러나, 이 경우 상기 봉지 기판으로서의 유리 기판은 그 두께가 두꺼워 상기 유리 기판 상에 터치 스크린 패널을 형성할 경우 두께 측면에서 큰 단점이 있다.

<26> 이에 본 발명의 실시예에서는 상기 유기 발광소자를 보호함에 있어서, 기존의 봉지 기판이 아닌 봉지 박막(200)을 상기 기판의 화소 영역을 포함하여 형성함으로써, 두께 증가를 최소화함을 그 특징으로 한다.

<27> 상기 감지셀들(220)은 제1 방향, 일 예로 행방향을 따라 각 행라인 별로 연결되도록 형성된 다수의 제1 감지셀들(220a)과, 상기 제1 감지셀들(220a)과 중첩되지 않도록 교호적으로 배치되되 제1 방향과 교차하는 제2 방향, 일 예로 열방향을 따라 각 열라인 별로 연결되도록 형성된 다수의 제2 감지셀들(220b)을 포함한다.

<28> 이러한 감지셀들(220)은 터치 스크린 패널의 하부에 배치되는 표시패널의 화소 영역 즉, 상기 화소들이 형성된 영역으로부터의 빛이 투과될 수 있도록 인듐??틴??옥사이드(이하, ITO)와 같은 투명전극물질로 형성된다.

<29> 이때, 제1 및 제2 감지셀들(220a, 220b)은 도 2에 도시된 바와 같이 각각 제1 및 제2 연결패턴들(220a1, 220b1)에 의해 제1 및 제2 방향을 따른 라인 단위로 연결된다.

<30> 여기서, 제1 및/또는 제2 연결패턴들(220a1, 220b1)은, 각각이 독립된 패턴

을 갖도록 패터닝되어 직, 간접적 연결에 의해 제1 또는 제2 감지셀들(220a, 220b)에 연결되거나, 혹은 제1 및 제2 감지셀들(220a, 220b)을 패터닝하는 단계에서부터 제1 또는 제2 감지셀들(220a, 220b)과 일체로 연결되도록 패터닝될 수 있다.

<31> 예컨대, 제1 연결패턴들(220a1)은 제1 감지셀들(220a)의 상부 또는 하부 레이어에 각각이 독립된 패턴을 갖도록 패터닝되어 상기 제1 감지셀들(220a)의 상부 또는 하부에서 이들에 전기적으로 연결되면서 상기 제1 감지셀들(220a)을 제1 방향을 따른 라인 단위로 연결할 수 있다.

<32> 이러한 제1 연결패턴들(220a1)은 감지셀들(220)과 같이 ITO 등의 투명전극물질을 이용하여 형성되거나, 혹은 감지라인들(230)과 같이 불투명한 저저항 물질을 이용하여 형성되되 패턴의 가시화가 방지되도록 그 폭 등이 조절되어 형성될 수 있다.

<33> 또한, 제2 연결패턴들(220b1)은 감지셀들(220)을 패터닝하는 단계에서부터 제2 감지셀들(220b)을 제2 방향을 따른 라인 단위로 연결하도록 상기 제2 감지셀들(220b)과 일체로 패터닝될 수 있다.

<34> 이때, 제1 연결패턴들(220a1)과 제2 연결패턴들(220b1)의 사이에는 안정성을 확보하기 위한 절연막(미도시)이 개재된다.

<35> 감지라인들(230)은 감지셀들(220)을 제1 방향 또는 제2 방향을 따른 라인 단위로 구동회로와 연결하기 위한 것으로, 터치활성영역 외곽의 터치비활성영역에 배치된다. 여기서, 터치활성영역은 상기 표시패널의 화소영역과 대응되는 영역이다.

<36> 예컨대, 감지라인들(230)은 각각 행라인 단위 및 열라인 단위의 제1 및 제2 감지셀들(220a, 220b)과 전기적으로 연결되어, 위치검출회로와 같은 터치패널 구동 회로(미도시)와 연결된다.

<37> 이러한 감지라인들(230)의 상부에는 일반적으로 윈도우(미도시)의 블랙 매트릭스와 같은 데두리패턴(미도시)이 위치되며, 따라서 감지라인들(230)은 가시화가 방지되므로 재료 선택의 폭이 넓어진다. 예컨대, 감지라인들(230)은 감지셀들(220)의 형성에 이용되는 투명전극물질 외에도 몰리브덴(Mo), 은(Ag), 티타늄(Ti), 구리(Cu), 알루미늄(Al), 몰리브덴/알루미늄/몰리브덴(Mo/Al/Mo) 등의 저저항 물질로 형성될 수 있다.

<38> 본 발명의 실시예의 경우 상기 감지라인들(230)은 도 1에 도시된 바와 같이 상기 봉지박막(200)의 끝단을 거쳐 상기 표시패널의 기판(100)으로 연장되어, 상기 기판(100)의 일측 끝단에 부착되는 연성 인쇄회로기판(FPCB)(300)과 전기적으로 연결됨을 특징으로 한다.

<39> 이는 상기 봉지박막(200)의 두께가 상당히 얇기 때문에 구현 가능한 것으로, 특히 상기 봉지박막(200)의 끝단부(A)가 경사지도록 형성됨을 통해 이를 경유하는 상기 감지라인들이 끊어짐을 방지할 수 있다. 이에 대해서는 이하 도 4를 통해 보다 상세히 설명하도록 한다.

<40> 이 때, 상기 연성 인쇄회로기판(300)은 상기 표시패널의 화소영역에 구비된 복수의 화소들(미도시)을 구동하는 구동 IC(120)와도 전기적으로 연결되며, 이를

통해 본 발명의 실시예는 터치 스크린 패널과 표시패널이 하나의 연성 인쇄회로기판을 사용함을 특징으로 한다. 또한, 상기 구동 IC(120)에는 상기 터치 스크린 패널을 구동시키는 터치패널 구동회로가 집적될 수도 있다.

<41> 전술한 바와 같은 터치 스크린 패널은 정전용량 방식으로 구동되는 것으로서, 사람의 손 또는 스타일러스 펜 등과 같은 접촉물체가 접촉되면, 감지셀들(220)로부터 감지라인들(230)을 경유하여 구동회로(미도시) 측으로 접촉위치에 따른 정전용량의 변화가 전달된다. 그러면, X 및 Y 입력처리회로(미도시) 등에 의해 정전용량의 변화가 전기적 신호로 변환됨에 의해 접촉위치가 파악된다.

<42> 도 3은 본 발명의 실시예에 의한 터치 스크린 패널 일체형 평판표시장치를 도시한 사시도이고, 도 4는 도 3에 도시된 봉지박막 및 기판에 대한 분리 평면도이며, 도 5는 도 3의 특정 부분(A)을 포함한 영역에 대한 개략적인 단면도이다.

<43> 단, 도 4에서는 영상을 표시하는 표시패널의 화소영역(110)에 구비되는 구성요소들에 대한 상세한 도시는 생략하기로 한다.

<44> 도 3 내지 도 5를 참조하면, 본 발명의 실시예는 기판(100) 상에 형성된 복수의 화소들(112)에 대하여 상기 화소들을 밀봉하는 봉지 박막(200) 상에 터치 스크린 패널을 구현하는 감지셀들(220) 및 감지라인들(230)이 형성된 터치 패널 일체형 평판표시장치이다.

<45> 여기서, 본 발명의 실시예에 의한 평판표시장치는 상기 각 화소(112)에 유기

발광 소자(미도시), 박막트랜지스터(미도시), 캐패시터(미도시)가 구비된 유기전계 발광 표시장치를 그 대상으로 한다.

<46> 즉, 상기 감지셀들(220) 및 감지라인들(230)을 포함한 터치 감지패턴들은 상기 화소들(112)이 형성된 화소영역(110)을 봉지하기 위해 상기 화소영역을 포함한 기판 상에 형성된 봉지박막(200)의 상면에 형성된다.

<47> 이 때, 상기 감지셀들(220)은 상기 화소영역(110)과 중첩되는 영역 상에 형성되고, 상기 감지라인들(230)은 상기 화소영역(110)의 외곽과 대응되는 영역에 형성된다.

<48> 또한, 본 발명의 실시예에서는 상기 감지라인들(230)이 상기 봉지박막(200)의 끝단(A)을 거쳐 상기 표시패널의 기판(100)으로 연장되어, 상기 기판(100)의 일측 끝단에 부착되는 연성 인쇄회로기판(FPCB)(300)과 전기적으로 연결됨을 특징으로 한다.

<49> 이는 상기 봉지박막(200)의 두께가 상당히 얇기 때문에 구현 가능한 것으로, 특히 상기 봉지박막(200)의 끝단부(A)가 경사지도록 형성됨을 통해 이를 경유하는 상기 감지라인들이 끊어짐을 방지할 수 있다.

<50> 상기 봉지박막(200)은 각 화소(112) 내에 구비된 유기발광 소자를 보호하기 위해 형성되는 것으로서, 이는 복수의 유기막 및 무기막의 적층 구조로 구현될 수 있다.

<51> 보다 구체적으로 도 5를 참조하면, 상기 봉지박막(200)은 외부로부터 침투될

수 있는 산소와 수분을 보다 효과적으로 차단하기 위하여, 일 예로 제1 유기막(202), 제1 무기막(204), 제 2 유기막(206) 및 제2 무기막(208)이 교대로 적층되는 구조로 형성될 수 있다.

<52> 또한, 봉지박막(200)의 제1 및 제2 유기막(202, 206)은 제1 및 제2 무기막(204, 208)에 형성된 나노크랙 및 마이크로 크랙의 결함(defect)이 계속적으로 형성되는 것을 방지함으로써, 수분과 산소의 침투 경로를 연장시켜 투습율을 낮추고, 제1 및 제2 무기막(204, 208)에 남아있는 스트레스(stress)를 감소시킬 수 있다.

<53> 이 때, 상기 제1 및 제2 유기막(202, 206)은 에폭시, 아크릴레이트 및 우레탄아크릴레이트로 구성되는 군에서 선택되는 하나로 형성될 수 있으며, 제1 및 제2 무기막(204, 208)은 AlXOy 및 SiXOy로 구성되는 군에서 선택되는 것의 하나로 형성될 수 있다.

<54> 이와 같은 봉지박막(200)이 4개 층의 적층 구조로 구현되더라도, 기존의 봉지 기판 즉, 일반적인 유리 기판에 비해서는 상당히 얇은 두께로 구현될 수 있다.

<55> 따라서, 상기 봉지박막(200) 상에 형성되는 감지라인들(230)은 동일한 포토리소그래피 공정을 통해 도시된 바와 같이 상기 봉지박막(200)과 기판(100)을 걸치는 형상으로 형성할 수 있는 것이다.

<56> 단, 상기 봉지박막(200)의 끝단부(A) 영역을 경유하는 감지라인들(230)은 상기 봉지박막(200) 끝단부의 단차에 의해 패터닝 공정시 끊어질 위험이 있을 수 있다.

<57> 이에 본 발명의 실시예에서는 도 4에 도시된 바와 같이 상기 봉지박막(200)의 끝단부 영역(201)을 경사지도록 형성함을 통해 위와 같은 문제를 극복함을 특징으로 한다.

<58> 즉, 상기 감지라인들(230)은 상기 봉지박막(200)의 끝단(A)을 거쳐 상기 표시패널의 기판(100)으로 연장되어, 상기 기판(100)의 일측 끝단에 부착되는 연성 인쇄회로기판(FPCB)(300)과 전기적으로 연결될 수 있는 것이다.

<59> 이때, 상기 감지라인들(230)은, 연성 인쇄회로기판(300)을 경유하여 표시패널의 구동 IC(120)에도 연결될 수 있는데, 이러한 구동 IC(120)는 표시패널을 구동하기 위한 제어회로 외에도 터치 스크린 패널을 구동하기 위한 제어회로나 위치검출회로 등을 포함하여 구성될 수 있다.

<60> 이에 의해, 터치 스크린 패널과 표시패널이 하나의 FPCB(300)를 공유할 수 있게 된다. FPCB(300)는 표시패널의 구동라인들(미도시)과 전기적으로 연결되도록 기판(100)의 일단(도시되지 않은 패드부가 형성된 일단)에 연결되어 표시패널을 제어하기 위한 제어신호를 공급함과 아울러, 감지라인들(130)을 경유하여 터치 스크린 패널을 제어하기 위한 제어신호를 공급할 수 있다.

<61> 이 경우, 상기 FPCB(300)는 표시 패널 구동용 FPCB와 터치 스크린 패널 구동용 FPCB가 통합된 형태로 구현된다.

<62> 따라서, 터치 스크린 패널 및 표시패널을 각각 구동하기 위한 FPCB를 따로 구비하는 경우에 비해 FPCB의 본딩 공정 및 검사 단계가 간소화되어 제조가 용이해

지고 제품 단가가 저감된다.

【부호의 설명】

<63>

100: 기판

120: 구동 IC

200: 봉지박막

220: 감지셀

230: 감지라인

300: 연성 인쇄회로기판

【특허청구범위】

【청구항 1】

복수의 화소들로 구성되는 화소영역을 구비한 기판과;

상기 화소영역을 포함하는 기판 상의 영역에 형성된 봉지박막과;

상기 봉지박막 상에 형성되어 터치 스크린 패널을 구현하는 감지셀들 및 감지라인과;

상기 기판의 일측 끝단에 부착되는 연성 인쇄회로기판이 포함되며,

상기 감지라인들은 상기 봉지박막의 끝단을 거쳐 상기 기판으로 연장되어 상기 연성 인쇄회로기판과 전기적으로 연결됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 2】

제 1항에 있어서,

상기 화소영역 이외의 기판 상에 상기 화소들을 구동하는 구동 IC가 실장됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 3】

제 2항에 있어서,

상기 구동 IC는 상기 연성 인쇄회로기판과 전기적으로 연결됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 4】

제 2항에 있어서,

상기 구동 IC는 상기 터치 스크린 패널을 구동하기 위한 제어회로가 포함되어 구성됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 5】

제 1항에 있어서,

상기 봉지박막은 복수의 유기막 및 무기막의 적층 구조로 구현됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 6】

제 5항에 있어서,

상기 봉지박막은 제1 유기막, 제1 무기막, 제 2 유기막 및 제2 무기막이 교대로 적층되는 구조로 형성됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 7】

제 6항에 있어서,

상기 제1 및 제2 유기막은 에폭시, 아크릴레이트 및 우레탄아크릴레이트로 구성되는 군에서 선택되는 하나로 형성됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 8】

제 6항에 있어서,

상기 제1 및 제2 무기막은 AlXOy 및 SiXOy로 구성되는 군에서 선택되는 것의 하나로 형성됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 9】

제 1항에 있어서,

상기 봉지박막의 끝단은 경사진 형태로 구현됨을 특징으로 하는 터치 스크린 패널 일체형 평판표시장치.

【청구항 10】

제 1항에 있어서,

상기 감지셀들은 제1 방향을 따라 라인 별로 연결되도록 형성된 다수의 제1 감지셀들 및 상기 제1 감지셀들과 중첩되지 않도록 교호적으로 배치되며, 상기 제1 방향과 교차하는 제2 방향을 따라 라인 별로 연결되도록 형성된 다수의 제2 감지셀들로 구성됨을 특징으로 하는 터치 스크린 일체형 평판표시장치.

【청구항 11】

제 10항에 있어서,

상기 제1 및 제2 감지셀들은 각각 제1 및 제2 연결패턴들에 의해 제1 및 제2 방향을 따른 라인 단위로 연결됨을 특징으로 하는 터치 스크린 일체형 평판표시장치.

【청구항 12】

제 11항에 있어서,

상기 제1 연결패턴들은 상기 제1 감지셀들의 상부 또는 하부 레이어에 각각이 독립된 패턴을 갖도록 패터닝되어 상기 제1 감지셀들의 상부 또는 하부에서 이들에 전기적으로 연결시킴을 특징으로 하는 터치 스크린 일체형 평판표시장치.

제출 일자 : 2010-09-14

【요약서】

【요약】

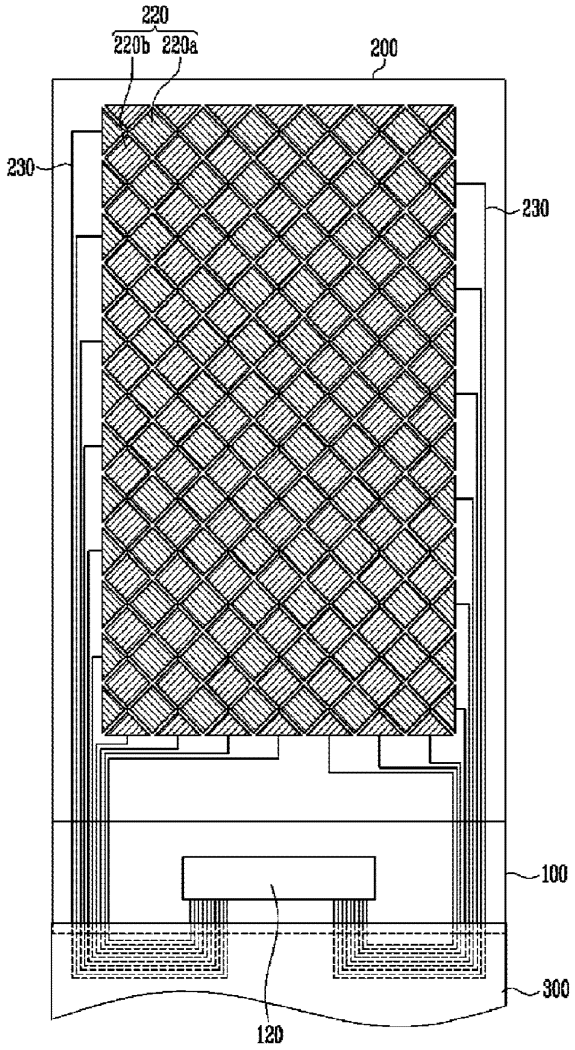
본 발명은 터치 스크린 패널을 유기 전계발광 표시패널의 봉지박막 상에 직접 형성하는 구조에 관한 것으로, 상기 터치 스크린 패널의 감지라인들을 유기발광소자가 형성된 상기 표시패널의 기판으로 연장하여 형성함으로써, 터치 스크린 패널과 표시패널이 하나의 연성 인쇄회로기판에 연결되도록 하여 제조 공정을 단순화하고 제품 단가를 저감한 터치 스크린 패널 일체형 평판표시장치를 제공한다.

【대표도】

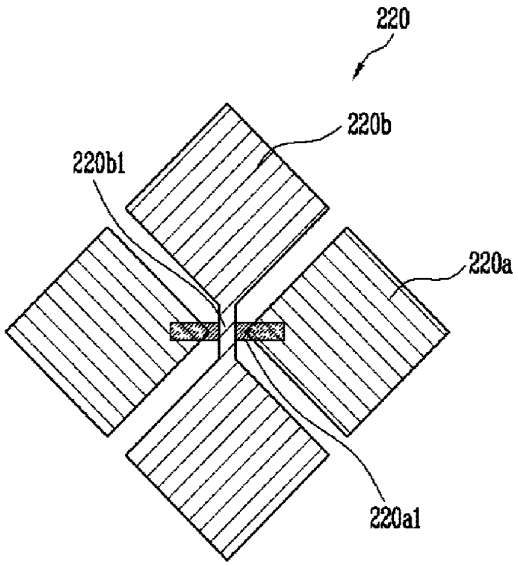
도 4

【도면】

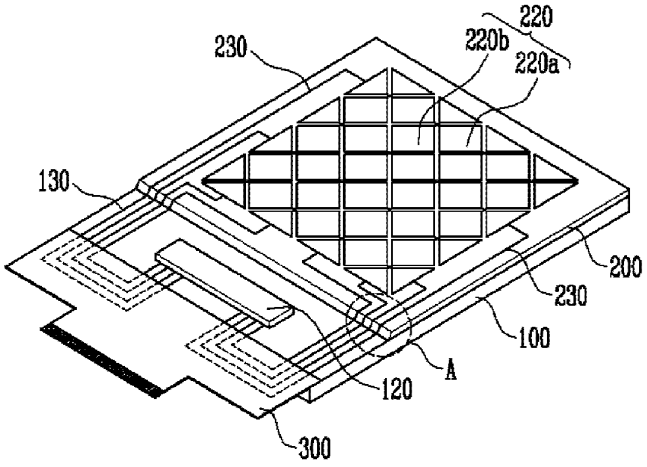
【도 1】



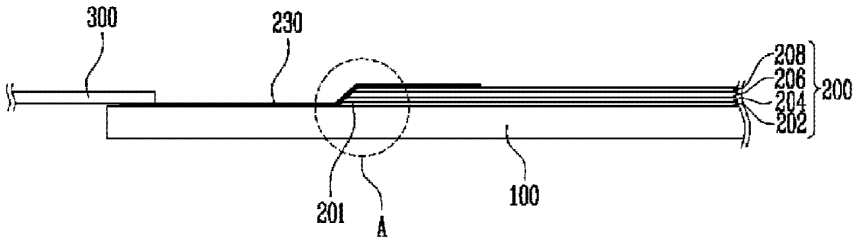
【도 2】


220
220b
220b1
220a
220a1

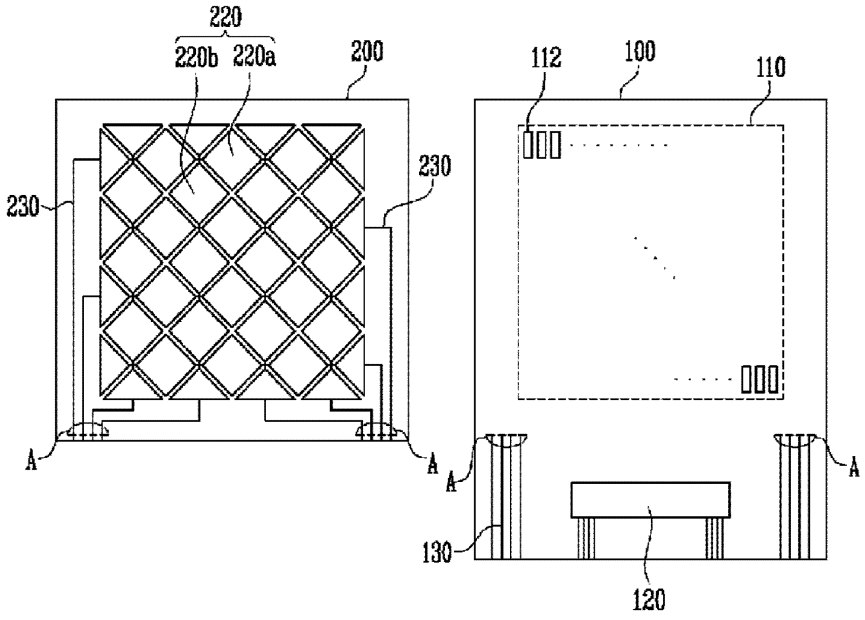
【도 3】


220
220b
220a
230
130
200
230
100
A
120
300

【도 4】


300
230
208
206
204
202
200
201
A
100

【도 5】


220
220b
220a
200
230
230
A
A
112
100
110
A
A
130
120

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitry
Art Unit	:	2623
Conf. No.	:	2023

REPLY TO INFORMATIONAL NOTICE TO APPLICANT

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In reply to the May 5, 2016 informational notice, Applicant encloses in compliance with 37 CFR 1.53(f) the following:

(X) Declarations for Jong-Soo Kim, Do-Youb Kim, Myoung-Seop Song, and Sang-Kyun Cho (37 CFR 1.63(e)).

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 6/19/16

By: _____

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20995
(858) 707-4000

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 15/133,605

filed on April 20, 2016.

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 hereby acknowledge 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.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Jong-Soo Kim Date (Optional): 2016.5.27

Signature: Jong-Soo Kim

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

■ United States application or PCT international application number 15/133,605 filed on April 20, 2016.

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LEGAL NAME OF INVENTOR

Inventor: Do-Youb Kim Date (Optional): June 8, 2016

Signature: Do-Youb Kim

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ■ United States application or PCT international application number 15/133,605 filed on April 20, 2016

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 hereby acknowledge 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.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Myoung-Seop Song Date (Optional): 2016.5.27

Signature: Myoung-Seop Song

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 15/133,605 filed on April 20, 2016.

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LEGAL NAME OF INVENTOR

Inventor: Sang-Kyun Cho Date (Optional): 2016. 5. 30.

Signature: [signature]

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt

EFS ID:	26098761
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Kealani Aguon
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	17-JUN-2016
Filing Date:	20-APR-2016
Time Stamp:	14:21:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		SDCSHN181C1replytoinformnotice.pdf	1615981 188c01b3b4056d02115fde68a88789e1d896eac5	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Response to Pre-Exam Formalities Notice	1	1
	Oath or Declaration filed	2	5
Warnings:			
Information:			
	Total Files Size (in bytes):	1615981	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 06/20/2016
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IRVINE, CA 92614

EXAMINER
BOLOTIN, DMITRIY

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
06/20/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *04/20/2016*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1 – 11 and 13 – 16** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4)

and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

Jang does not explicitly disclose that the encapsulation layer including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 2** (dependent on 1), Jang discloses the display, wherein each of the sensing lines (sensing lines 311c, 311d, 312c, 312d, 120 and 112 of fig. 4) includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c located over area 200 of fig.4) and a second portion located on the second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein first portions of the sensing lines are located on a same layer (first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]).

As to **claim 3** (dependent on 2), Jang discloses the display, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines (112 of fig. 5 located over substrate 100).

As to **claim 4** (dependent on 1), Jang discloses the display, wherein each of the sensing lines includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c, located over area 200 of fig.4) and a second portion located on the

second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate (as shown in fig. 4 and 5, the first portion is positioned over area 200 and the second portion is positioned over substrate 100, wherein the distance between 311c, 311d, 312c and substarte 100 is greater than the distance between 112 or 120 and substrate 100).

As to **claim 5** (dependent on 1), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through wiring lines (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

As to **claim 6** (dependent on 1), Jang discloses the display, wherein the sensing lines include a different material from the sensing cells (pattern layer 310, which includes 311, may be formed of suitable transparent materials such as ITO, IZO, ZnO, and/or In2O3 [0077] and silver paste may be used for the conductive member 120 [0085]).

As to **claim 7** (dependent on 1), Jang discloses the display, wherein the driving circuit is located on the second area of the substrate (113 is positioned outside of 200 of fig. 4).

As to **claim 8** (dependent on 7), Jang discloses the display, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate (130 of fig. 4).

As to **claim 9** (dependent on 8), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through the FPCB (connected to 113 on FPCB 130 of fig. 4 through data line 110 of fig. 4).

As to **claim 10** (dependent on 1), Jang discloses the display, wherein the sensing lines are arranged outside the pixel area (fig. 4, portions of 311c, 311d, 312c, 312d, 120 and 112 arranged outside of 200).

As to **claim 11** (dependent on 1), Jang discloses the display comprising a first area (display area 200 of fig. 4) and the second area (the perimeter area of 100 outside of 200 of fig. 4), but Jang in view of Tsuchiya and Goto does not explicitly disclose that the first area has a greater area than the second area.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combined teachings of Jang, Tsuchiya and Goto such that the display are was greater than the peripheral area with motivation to minimize the overall dimensions of the device without sacrificing the area of the screen, whereby such modification would have been nothing more than a simple design choice alternative and would have only required a routine skill.

As to **claim 13** (dependent on 1), Jang discloses the display, wherein the sensing cells include: a plurality of first sensing cells connected along each line in a first direction (312a of fig. 4); and a plurality of second sensing cells alternately arranged not

to be overlapped with the first sensing cells and connected along each line in a second direction (311a of fig. 4).

As to **claim 14** (dependent on 13), Jang discloses the display, wherein the first sensing cells (312a of fig. 3 and 4) are connected along each line in the first direction by first connection patterns (325 of fig. 3), and wherein the second sensing cells (311a of fig. 4) are connected along each line in the second direction by second connection patterns (311b of fig. 4).

As to **claim 15** (dependent on 14), Jang discloses the display, wherein the first connection patterns (325 of fig. 3) are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells (layer 320 of fig. 3) so that the first connection patterns (325 of fig. 3) are electrically connected to the first sensing cells (312a of fig. 3 and 4) at upper or lower portions of the first sensing cells (fig. 3).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer

surface of encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and including and inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

4. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang in view of Tsuchiya, Goto and Ito et al. (US 2010/0244073).

As to **claim 12** (dependent on 1), Jang discloses the flat panel display comprising organic light emitting device (ABSTRACT), but Jung in view of Tsuchiya and Goto fails to disclose that the encapsulation layer includes at least one organic layer and at least one inorganic layer.

In the same field of endeavor, Ito discloses a display panel comprising a sealing film (film 100 of fig. 3), the sealing thin film (100 of fig. 3) has a stacked structure (multilayer film [0115]) of a plurality of organic and inorganic layers (layers 101 – 111 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jung in view of Tsuchiya and Goto and teachings of Ito, such that the encapsulation layer of Jang would be formed using the multi-layer structure as disclosed by Ito, with motivation to obtain an organic EL device having excellent light resistance (Ito, [0008]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DMITRIY BOLOTIN whose telephone number is

(571)270-5873. The examiner can normally be reached on Monday-Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

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BIB DATA SHEET

CONFIRMATION NO. 2023

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/133,605	04/20/2016 RULE	345	2623	SDCSHN.181C1

APPLICANTS

Samsung Display Co., Ltd., Yongin-city, KOREA, REPUBLIC OF;

INVENTORS

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Do-Youb Kim, Yongin-si, KOREA, REPUBLIC OF;
Myoung-Seop Song, Yongin-si, KOREA, REPUBLIC OF;
Sang-Kyun Cho, Yongin-si, KOREA, REPUBLIC OF;

**** CONTINUING DATA ***************************

This application is a CON of 13/021,581 02/04/2011 PAT 9323400

**** FOREIGN APPLICATIONS ***************************

REPUBLIC OF KOREA 10-2010-0089955 09/14/2010

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

05/04/2016

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /DMITRIY BOLOTIN/ Examiner's Signature ☐ Met after Allowance Initials	KOREA, REPUBLIC OF	3	16	2

ADDRESS

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614
UNITED STATES

TITLE

FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

FILING FEE RECEIVED		
1600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unassigned
	Filing Date	Herewith
	First Named Inventor	Jong-Soo Kim
	Art Unit	Unassigned
(Multiple sheets used when necessary)	Examiner	Unassigned
SHEET 1 OF 2	Attorney Docket No.	SDCSHN.181C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2002/0171610 A1	11-21-2002	Siwinski et al.	
	2	2002/0186208 A1	12-12-2002	Feldman et al.	
	3	2004/0185301 A1	09-23-2004	Tsuchiya et al.	*Corresponds to Chinese Publication No. CN 1729719 A shown below*
	4	2005/0051829 A1	03-10-2005	Goto et al.	*Corresponds to Chinese Publication No. CN 1591876 A shown below*
	5	2005/0172722 A1	08-11-2005	Kobayashi et at.	
	6	2007/0242055 A1	10-18-2007	Lai, Yuang Wei	
	7	2008/0116795 A1	05-22-2008	Tsuchiya et al.	
	8	2010/0007616 A1	01-14-2010	Jang, Brent	*Corresponds to Chinese Publication No. CN 101626017 A shown below*
	9	2010/0033443 A1	02-11-2010	Hashimoto, Shinya	
	10	2010/0060601 A1	03-11-2010	Oohira, Eiji	
	11	2010/0108409 A1	05-06-2010	Tanaka et al.	
	12	2010/0214247 A1	08-26-2010	Tang et al.	
	13	2010/0309150 A1	12-09-2010	Lee et al.	
	14	2010/0244073 A1	09-30-2010	Ito et al.	*Corresponds to Chinese Publication No. CN 101766055 A shown below*
	15	2011/0012845 A1	01-20-2011	Rothkopf et al.	
	16	2011/0128240 A1	06-02-2011	Choi, Howon	
	17	6,885,157	04-26-2005	Cok et al.	
	18	8,330,734	12-11-2012	Oohira, Eiji	

Examiner Signature	/Dmitriy Bolotin/	Date Considered	06/11/2016

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.B./

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unassigned
	Filing Date	Herewith
	First Named Inventor	Jong-Soo Kim
	Art Unit	Unassigned
(Multiple sheets used when necessary)	Examiner	Unassigned
SHEET 2 OF 2	Attorney Docket No.	SDCSHN.181C1

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	19	CN 1591876 A	03-09-2005	Goto et al.	*Corresponds to U.S. Publication No. 2005/0051829 A1 shown above*	
	20	CN 1729719 A	02-01-2006	Tsuchiya et al.	*Corresponds to U.S. Publication No. 2004/0185301 A1 shown above*	
	21	CN 101626017 A	01-13-2010	Jang, Brent	*Corresponds to U.S. Publication No. 2010/0007616 A1 shown above*	
	22	CN 101766055 A	06-30-2010	Ito et al.	*Corresponds to U.S. Publication No. 2010/0244073 A1 shown above*	
	23	KR 10-0873080 (B1)	12-03-2008	Samsung SDI Co., Ltd.	*(Abstract of corresponding Korean Publication No. KR 10-2008-0099684 (A) Published 11-13-2008)*	Abstract
	24	KR 10-2010-0007717 (A)	01-22-2010	Samsung Mobile Display Co., Ltd.		Abstract

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	25	Chinese First Office Action dated July 2, 2015 for Chinese Patent Application No. CN 201110059238.8 which shares priority of Korean Patent Application No. KR 10-2010-0089955 with captioned U.S. Application No. 13/021,581, and cites the above-identified references numbered 6 and 19-22.	

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041916

Examiner Signature	/Dmitriy Bolotin/	Date Considered	06/11/2016

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.B./

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016								
	1	✓								
	2	✓								
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	14	✓								
	15	✓								
	16	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:00
S2	13346	345/173.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:08
S3	14640	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:09
S4	11724	S3 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:10
S5	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S6	205	S4 and S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S7	0	S6 and (substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S8	132	S6 and (substrate)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:12
S9	80	S6 and (substrate with film)	US-PGPUB; USPAT;	ADJ	ON	2013/03/10 23:12

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S10	74	(touch screen) and (driving near2 IC)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:48
S11	2	S10 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:49
S12	3211	(inorganic layer) with (organic layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:50
S13	0	S8 and S12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:50
S14	14640	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S15	11724	S14 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S16	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S17	205	S15 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S18	3211	(inorganic layer) with (organic layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S19	0	S17 and S18	US-PGPUB; USPAT;	ADJ	ON	2013/03/11 07:08

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S20	13	S15 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S21	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:12
S22	74	(touch screen) and (driving near2 IC)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S23	14	S21 and S22	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S24	2	S18 and S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S25	2	"SiXO.sub.y"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:17
S26	7	"Si.sub.x$4"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:18
S27	623	"Si.sub.x(O.sub.y)"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:19
S28	4705	345/76.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:51
S29	38	S14 and S28	US-PGPUB; USPAT;	ADJ	ON	2013/03/11 07:52

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S30	28	S29 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:52
S31	5	("6885157").URPN.	USPAT	ADJ	ON	2013/03/11 08:05
S32	1902	(substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S33	63	((incline$4 or slant$5) with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S34	17	S32 and S33	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S35	0	((sensing near2 line) with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:20
S36	2	((sensing near2 line) with (sealing near2 film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:20
S37	43	((touch near3 panel) with (sealing near2 film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:21
S38	17	S32 and S37	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:21
S39	784929	((sealing or insulating) near2 (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:10

S40	14887	((sealing or insulating) near2 (film or layer)) with (organic with inorganic)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:10
S41	622	S40 and (touch near2 panel) and display	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S42	236	((sealing or insulating) near2 (film or layer)) with (organic with (second inorganic))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S43	25	((sealing or insulating) near2 (film or layer)) with ((second organic) with (second inorganic))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S44	42	((JONG-SOO) near2 (KIM)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S45	40	((DO-YOUB) near2 (KIM)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S46	48	((MYOUNG-SEOP) near2 (SONG)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S47	4	((SANG-KYUN) near2 (CHO)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S48	31	((JONG-SOO) near2 (KIM)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:39
S49	11	((DO-YOUB) near2 (KIM)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:39
S50	41	((MYOUNG-SEOP) near2 (SONG)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:40
S51	6	((SANG-KYUN) near2 (CHO)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:40
S52	202	S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:40
S53	4	S52 and sealing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:41
S54	17513	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/07/23 16:05

			EPO; JPO; DERWENT; IBM_TDB			
S55	3	S54 and (sealing film)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:05
S56	0	"13021581"and oxigen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S57	0	"13021581"and oxygen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S58	0	"13021581"and moisture	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S59	1	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S60	1	"13021581" and sealing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S61	3684	sealing with oxygen with moisture	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:38
S62	1	"13021581" and oxygen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:39
S63	4	S54 and S61	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:39
S64	165	(second electrode) with (sealing film)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 16:11

			EPO; JPO; DERWENT; IBM_TDB			
S65	20411	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:11
S66	0	S64 and S65	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:11
S67	0	S64 and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:12
S68	646	(sealing film) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:13
S69	0	(electode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:14
S70	9	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:14
S71	10588	(second electrode) with (insulating layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:15
S72	95	S65 and S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:15
S73	45	S72 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:15
S74	17586	(second electrode) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 18:35

			EPO; JPO; DERWENT; IBM_TDB			
S75	117	S65 and S74	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S76	14224	S74 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S77	117	S75	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S78	56	S75 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S79	6290	g06f3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S80	138	S74 and S79	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S81	67	S80 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S82	767	g06f2203/04107.cpc. or g06f2203/04111.cpc. or g06f2203/04112.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:54
S83	49	S74 and S82	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:54
S84	27	S83 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 18:54

			EPO; JPO; DERWENT; IBM_TDB			
S85	67	S81 or S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S86	0	S85 and (slant$5 near5 angle)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S87	6	S85 and ((slant$5 near5 angle) or slop$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S88	19	S85 and (angle)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:56
S89	1	S85 and (incline$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:07
S90	0	(enad with incline$5) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:23
S91	389	(end with incline$5) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:23
S92	115	S91 with electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:24
S93	94	S92 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:41
S94	0	(end with incline$5) with ((insulating or sealing) near (film or layer)) with ((line or electrode)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 19:45

		near3 (break$5 or broke$5))	EPO; JPO; DERWENT; IBM_TDB			
S95	2237	((insulating or sealing) near (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:46
S96	9	inclin$5 with ((insulating or sealing) near (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:46
S97	37	(inclin$5 or angle) with ((insulating or sealing) near2 (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 21:51
S98	16855	G06F3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:09
S99	58253	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:09
S100	5	S99 and (substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:10
S101	2623	S99 and (substrate with (insulating))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:13
S102	298	S99 and (substrate with (insulating)) and (sensing electrodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:14
S103	83	S99 and (substrate with (insulating) with (sensing electrodes))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:14
S104	219	(incline$4 or slant$4 or angle$4) with (sensing electrodes)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/02/23 19:15

			EPO; JPO; DERWENT; IBM_TDB			
S105	0	S103 and S104	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S106	107982	(incline$4 or slant$4 or angle$4) with (electrodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S107	219	S104 and S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S108	0	S103 and S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S109	68984	(incline$4 or slant$4 or angle$4) with (insulat$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S110	0	S103 and S109	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S111	151	S99 and S109	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S112	107	S111 and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S113	64486	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:51
S114	6	G06F3/041-047.cpc. and (sealing film)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:52

			EPO; JPO; DERWENT; IBM_TDB			
S115	12498	G06F3/041.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S116	8393	G06F3/0412.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S117	4172	G06F3/0414.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S118	8806	G06F3/0416.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S119	4557	G06F3/0418.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S120	4500	G06F3/042.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S121	5469	G06F3/0421.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S122	671	G06F3/0423.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S123	2952	G06F3/0425.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S124	520	G06F3/0426.cpc.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:53

			EPO; JPO; DERWENT; IBM_TDB			
S125	2223	G06F3/0428.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S126	1586	G06F3/043.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S127	1135	G06F3/0433.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S128	1237	G06F3/0436.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S129	19136	G06F3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S130	7144	G06F3/045.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S131	3324	G06F3/046.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S132	995	G06F3/047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S133	64486	S115 or S116 or S117 or S118 or S119 or S120 or S121 or S122 or S123 or S124 or S125 or S126 or S127 or S128 or S129 or S130 or S131 or S132	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S134	1109	G06F3/041-047.cpc. and (seal)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:59

			EPO; JPO; DERWENT; IBM_TDB			
S135	0	G06F3/041-047.cpc. and (seal with incline)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:59
S136	5	G06F3/041-047.cpc. and (seal with inclin$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:59
S137	2	"8593409".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/29 10:53
S138	2	"20130207920"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:37
S139	71041	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:40
S140	71041	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S141	27964	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S142	84738	S140 or S141	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S149	30289	345/173.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/04/19 03:40
S150	20	"2009080242"	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2015/06/19 12:09

			EPO; JPO; DERWENT; IBM_TDB			
S151	101464	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S152	34772	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S153	116949	S151 or S152	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S154	24579	(seal with inclin$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S155	48514	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S156	21	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S157	13	("20040185301" | "20050051829" | "20070242055" | "20100007616" | "20100244073").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:28
S177	0	"15133605"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 14:58
S178	36076	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:53
S179	113061	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2016/06/11 16:53

			EPO; JPO; DERWENT; IBM_TDB			
S180	14	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:54
S181	66384	(G03C5/16 OR Y10S430/167 OR Y10S430/168 OR G06F3/041 OR G06F3/044 OR H02G3/128).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:54
S182	134399	S178 or S179 or S181	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S183	24	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S184	159	(electrode with ((sealing or encapsulat$4) near3 film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S185	28	S182 and S184	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S143	23365	G06F3/041-047.cpc.	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:40
S144	23365	G06F3/041-047.cpc.	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:41
S145	19896	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:41
S146	10343	S143 and S144 and S145	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:41
S147	23365	S143 or S144 and S145	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:41

S148	32918	S143 or S144 or S145	US-PGPUB; USPAT	ADJ	ON	2014/09/20 02:41
S158	23131	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT	ADJ	ON	2015/12/16 18:26
S159	32969	G06F3/041-047.cpc.	US-PGPUB; USPAT	ADJ	ON	2015/12/16 18:26
S160	43271	S158 or S159	US-PGPUB; USPAT	ADJ	ON	2015/12/16 18:27
S161	8704	(seal with inclin$4)	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:18
S162	25637	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:18
S163	21	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:18
S164	34353	S161 or S162 or S163	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:19
S165	0	S161 and S162 and S163	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:19
S166	5	S160 and S161	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:19
S167	1282	S160 and S162	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:19
S168	0	S160 and S163	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:19
S169	9	S161 and S162	US-PGPUB; USPAT	ADJ	ON	2015/12/16 19:21
S170	23131	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:10
S171	32969	G06F3/041-047.cpc.	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:10
S172	43271	S170 or S171	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:10
S173	36	(inclin$5 or angle) with ((insulating or sealing) near2 (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:26
S174	704	(sealing film) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:27
S175	0	S172 and S173	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:27

S176	3	S172 and S174	US-PGPUB; USPAT	ADJ	ON	2015/12/16 21:27
S186	37204	G06F3/041-047.cpc.	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:53
S187	21433	(G03C5/16 OR Y10S430/167 OR Y10S430/168 OR G06F3/041 OR G06F3/044 OR H02G3/128).CPC.	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:54
S188	24040	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:54
S189	48868	S186 or S187 or S188	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:54
S190	24	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:55
S191	150	(electrode with ((sealing or encapsulat$4) near3 film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:55
S192	22	S189 and S191	US-PGPUB; USPAT	ADJ	ON	2016/06/11 16:56

6/11/2016 9:34:15 PM
C:\Users\dbolotin\Documents\EAST\Workspaces\15133605.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

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15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1

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PUBLICATION NOTICE

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Title:FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

Publication No.US-2016-0231846-A1
Publication Date:08/11/2016

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitriy
Art Unit	:	2623
Conf. No.	:	2023

AMENDMENT AND REPLY TO NON-FINAL OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In reply to the June 20, 2016 non-final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels, the encapsulation layer including an inclined surface;

a plurality of sensing cells ~~on the encapsulation layer;~~ and a plurality of sensing lines on the encapsulation layer to sense a touch, the plurality of sensing lines connected to the sensing cells; and

a driving circuit electrically connected to the sensing cells via the sensing lines;

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, and wherein the sensing lines are electrically connected to the driving circuit.

2. (Original) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. (Original) The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. (Original) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. (Original) The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. (Original) The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. (Original) The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. (Original) The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. (Original) The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. (Original) The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. (Original) The display according to claim 1, wherein the first area has a greater area than the second area.

12. (Original) The display according to claim 1, wherein the encapsulation layer includes at least one organic layer and at least one inorganic layer.

13. (Original) The display according to claim 1, wherein the sensing cells include:

a plurality of first sensing cells connected along each line in a first direction; and

a plurality of second sensing cells alternately arranged not to be overlapped with the first sensing cells and connected along each line in a second direction.

14. (Original) The display according to claim 13, wherein the first sensing cells are connected along each line in the first direction by first connection patterns, and wherein the second sensing cells are connected along each line in the second direction by second connection patterns.

15. (Original) The display according to claim 14, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area only of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including ~~and~~ an inclined surface;

a plurality of sensing cells on an outer surface of the encapsulation layer;

a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells; and

a driving circuit electrically connected to the sensing cells through the sensing lines;

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate and wherein the sensing lines are electrically connected to the driving circuit.

17. (**New**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels;

a plurality of sensing cells on an outer surface of the encapsulation layer;

a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells; and

a driving circuit electrically connected to the sensing cells through the sensing lines;

wherein the sensing lines extend from the sensing cells along an end of the encapsulation layer to the second area of the substrate and wherein the sensing lines are electrically connected to the driving circuit.

REMARKS

Claims 1-17 are pending in this application. By this paper, Applicant amended Claims 1 and 16, and added Claim 17. Support for the amendments may be found in the claims as filed and in the application. See, for example Application as filed at paras. [0010], [0021], [0037], [0038], [0050], [0054] and [0055] and FIG. 3. No new matter has been added. Applicant requests reconsideration and allowance of the application in view of the amendments described above and the remarks set forth below.

Discussion of Claim Rejections under 35 U.S.C. § 103(a)

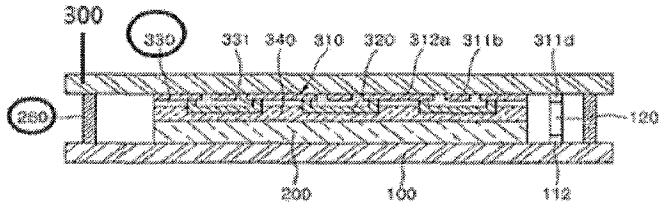
Claims 1-11 and 13-16 are rejected under pre-AIA 35 U.S.C. §103(a) as obvious over U.S. Patent Publication No. 2010/0007616 to Jang in view of U.S. Patent Publication No. 2008/0116795 to Tsuchiya and U.S. Patent Publication No. 2005/0051829 to Goto. Applicant respectfully traverses. For the reasons discussed below, Applicant respectfully submits that the rejections are overcome.

Claims 1-11 and 13-15

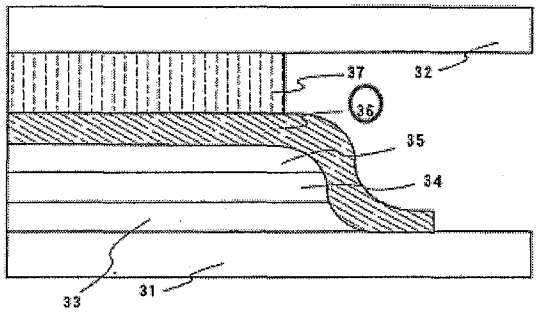
Applicant has amended Claim 1 to include "an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels, the encapsulation layer including an inclined surface; a plurality of sensing cells and a plurality of sensing lines on the encapsulation layer to sense a touch, the plurality of sensing lines connected to the sensing cells." In rejecting Claim 1, the Examiner relies on Jang to disclose "an encapsulation layer on the first area of the substrate." See Office Action at page 3, in which the Examiner refers to the first insulating layer 330 of FIG. 5, reproduced below, and para. [0078]. However, Jang discloses that the "first insulating layer 330 insulates the first pattern layer 310 from the second pattern layer 320." See Jang at para. [0074]. Applicant respectfully submits that the first insulating layer 330 does not "inhibit infiltration of oxygen and moisture into the pixels," as recited in amended Claim 1. Therefore, Applicant respectfully submits that Jang does not disclose "an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels."

Further, Applicant respectfully submits that the sealing film 36 of Tsuchiya has a different function of shape from the first insulating layer 330. Further, the encapsulation substrate 300 of Jang, having the same function as the sealing film 36 of Tsuchiya, is bonded to

the substrate 100 through the separate sealant 250. See Jang at FIG. 5, reproduced below Therefore, the encapsulation substrate 300 of Jang cannot have the shape as the sealing film 36 of Tsuchiya. See Tsuchiya at FIG. 3, reproduced below. For at least these reasons, Applicant respectfully submits that Tsuchiya does not cure the deficiencies of Jang.

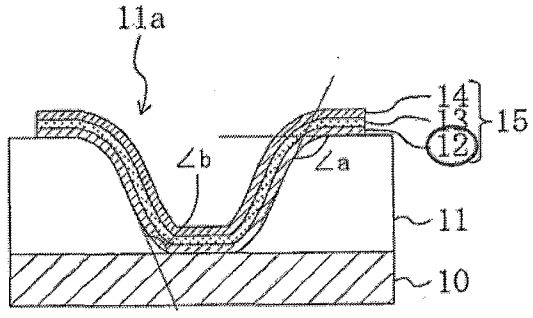


Jang, FIG. 5



Tsuchiya, FIG. 3

The Examiner states that "Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulating layer." See Office Action at page 4. The Examiner further states that Goto discloses "a device wherein an incline angle of insulating layer underlying the electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angle is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1, has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1)." See Office Action at pages 4-5. However, Applicant respectfully submits that the lower electrode 12 of Goto is the constituent element of the capacitor element 15, which is not relevant to touch sensing. See Goto, FIG. 5, reproduced below.



Goto, FIG. 1

Therefore, Applicant respectfully submits that Goto does not disclose that the sensing lines extend along the inclined surface of the encapsulation layer 200. Thus, Applicant respectfully submits that Goto does not disclose "sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate."

For at least these reasons, Applicant respectfully submits that Claim 1 is allowable.

Claims 2-11 and 13-15 each depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claims 2-11 and 13-15 are patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claims.

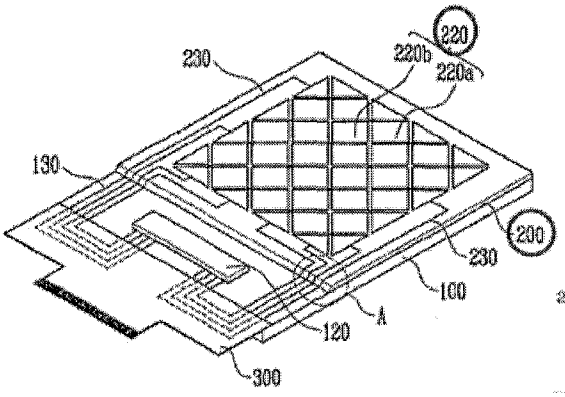
Claim 16

Claim 16 is rejected under pre-AIA 35 U.S.C. §103(a) as obvious over U.S. Patent Publication No. 2010/0007616 to Jang in view of U.S. Patent Publication No. 2008/0116795 to Tsuchiya and U.S. Patent Publication No. 2005/0051829 to Goto. Applicant respectfully traverses. For the reasons discussed below, Applicant respectfully submits that the rejection is overcome.

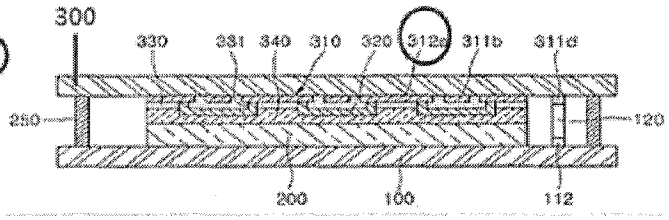
Applicant has amended Claim 16 to include "an encapsulation layer on the first area only of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface; a plurality of sensing cells on an outer surface of the encapsulation layer; a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells."

The Examiner relies on Jang to disclose "an encapsulation layer on the first area only of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface; a plurality of sensing cells on an outer surface of the encapsulation layer; a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells." See Office Action at pages 8 and 9. However, Applicant respectfully submits that the first insulating layer 330 of Jang does not correspond to the encapsulation layer 200 of the present invention, but the encapsulation substrate 300 of Jang corresponds to the encapsulation layer 200 of the present invention because both have the same function. See Jang, FIG. 5, reproduced below. Therefore, Applicant respectfully submits the present invention and

Jang are different from each other in that the sensing cells 220 and the sensing lines 230 of the present invention are formed on an **outer surface** of the encapsulation layer 200, but the body parts 312a and 311a of Jang are arranged on an **inner surface** of the encapsulation substrate 300. Therefore, Applicant respectfully submits that Jang does not disclose "an encapsulation layer on the first area only of the substrate to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface; a plurality of sensing cells on an outer surface of the encapsulation layer; a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells."



Application, FIG. 3



Jang, FIG. 5

Further, Applicant respectfully submits Jang discloses that encapsulation substrate 300 covers both display unit 200 and display drive integrated circuit 111. See Jang at FIGs 1 and 4, reproduced below. Applicant further submits that a person having ordinary skill in the art would not be motivated to modify Jang so that "the encapsulation layer including an inclined surface... wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate," as the encapsulation substrate 300 covers both display unit 200 and display drive integrated circuit 111.

For at least these reasons, and for the reasons discussed above with respect to Claim 1, Applicant respectfully submits that amended Claim 16 is allowable.

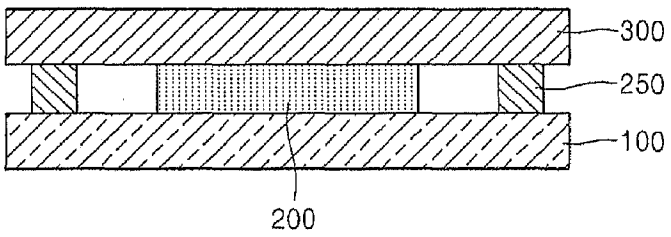


FIG. 1, Jang

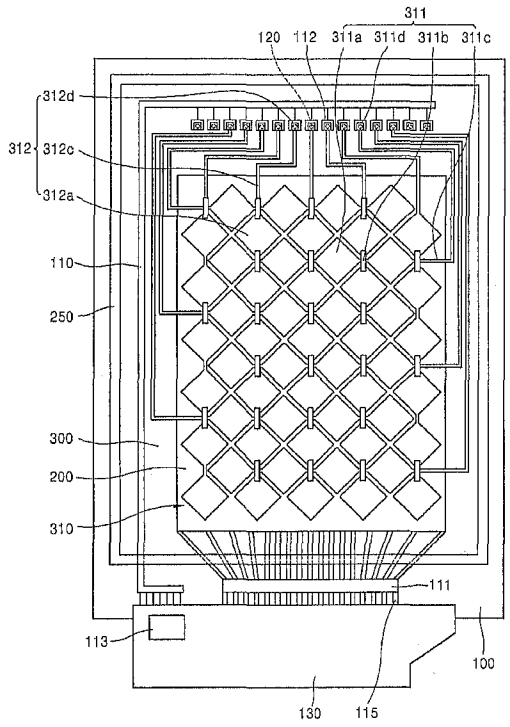


FIG. 4, Jang

Claim 12

Claim 12 is rejected under pre-AIA 35 U.S.C.103(a) as obvious over Jang in view of Tsuchiya, Goto and U.S. Patent Publication No. 2010/0244073 to Ito. Claim 12 depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claim 12 is patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claim.

Discussion of New Claim

Applicant has added new independent Claim 17, which recites in part "wherein the sensing lines extend from the sensing cells along an end of the encapsulation layer to the second area of the substrate." There is support for this feature in at least paras. [0037] and [0038] of the application. New Claim 17 also includes at least some of the patentable features of Claim 1. Applicant respectfully submits that new Claim 17 is allowable for at least some of the reasons discussed above with respect to Claim 1.

Conclusion

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance. Accordingly, reconsideration and allowance of this application are earnestly solicited.

Should any issues remain that are resolvable by a phone call, the Examiner is respectfully requested to telephone the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9/19/16

By: _____

Heungsoo Choi
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Attorney of Record
Customer No. 20995
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24234643
091616

Electronic Acknowledgement Receipt

EFS ID:	26967610
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	Heungsoo Choi/Daniela Lopez
Filer Authorized By:	Heungsoo Choi
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	19-SEP-2016
Filing Date:	20-APR-2016
Time Stamp:	17:37:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amendment_181C1.pdf	1192877 b68fead4f0849236afac15aae2651665bb5fde4e	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	10
Warnings:			
Information:			
	Total Files Size (in bytes):	1192877	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT

09/19/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 17	Minus	** 20	=	X $ =	
Independent (37 CFR 1.16(h))	* 3	Minus	***3	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
KATRINA . TURNER

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 01/03/2017
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IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
01/03/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/19/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-17* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-17* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1 – 11 and 13 – 17** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4)

and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

Jang does not explicitly disclose that the encapsulation layer is to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 2** (dependent on 1), Jang discloses the display, wherein each of the sensing lines (sensing lines 311c, 311d, 312c, 312d, 120 and 112 of fig. 4) includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c located over area 200 of fig.4) and a second portion located on the second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein first portions of the sensing lines are located on a same layer (first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]).

As to **claim 3** (dependent on 2), Jang discloses the display, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines (112 of fig. 5 located over substrate 100).

As to **claim 4** (dependent on 1), Jang discloses the display, wherein each of the sensing lines includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c, located over area 200 of fig.4) and a second portion located on the

second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate (as shown in fig. 4 and 5, the first portion is positioned over area 200 and the second portion is positioned over substrate 100, wherein the distance between 311c, 311d, 312c and substarte 100 is greater than the distance between 112 or 120 and substrate 100).

As to **claim 5** (dependent on 1), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through wiring lines (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

As to **claim 6** (dependent on 1), Jang discloses the display, wherein the sensing lines include a different material from the sensing cells (pattern layer 310, which includes 311, may be formed of suitable transparent materials such as ITO, IZO, ZnO, and/or In2O3 [0077] and silver paste may be used for the conductive member 120 [0085]).

As to **claim 7** (dependent on 1), Jang discloses the display, wherein the driving circuit is located on the second area of the substrate (113 is positioned outside of 200 of fig. 4).

As to **claim 8** (dependent on 7), Jang discloses the display, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate (130 of fig. 4).

As to **claim 9** (dependent on 8), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through the FPCB (connected to 113 on FPCB 130 of fig. 4 through data line 110 of fig. 4).

As to **claim 10** (dependent on 1), Jang discloses the display, wherein the sensing lines are arranged outside the pixel area (fig. 4, portions of 311c, 311d, 312c, 312d, 120 and 112 arranged outside of 200).

As to **claim 11** (dependent on 1), Jang discloses the display comprising a first area (display area 200 of fig. 4) and the second area (the perimeter area of 100 outside of 200 of fig. 4), but Jang in view of Tsuchiya and Goto does not explicitly disclose that the first area has a greater area than the second area.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combined teachings of Jang, Tsuchiya and Goto such that the display are was greater than the peripheral area with motivation to minimize the overall dimensions of the device without sacrificing the area of the screen, whereby such modification would have been nothing more than a simple design choice alternative and would have only required a routine skill.

As to **claim 13** (dependent on 1), Jang discloses the display, wherein the sensing cells include: a plurality of first sensing cells connected along each line in a first direction (312a of fig. 4); and a plurality of second sensing cells alternately arranged not

to be overlapped with the first sensing cells and connected along each line in a second direction (311a of fig. 4).

As to **claim 14** (dependent on 13), Jang discloses the display, wherein the first sensing cells (312a of fig. 3 and 4) are connected along each line in the first direction by first connection patterns (325 of fig. 3), and wherein the second sensing cells (311a of fig. 4) are connected along each line in the second direction by second connection patterns (311b of fig. 4).

As to **claim 15** (dependent on 14), Jang discloses the display, wherein the first connection patterns (325 of fig. 3) are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells (layer 320 of fig. 3) so that the first connection patterns (325 of fig. 3) are electrically connected to the first sensing cells (312a of fig. 3 and 4) at upper or lower portions of the first sensing cells (fig. 3).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area only of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer

surface of encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 17**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and that the sensing lines extend along an end of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the sensing lines extend along an end of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the

above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

4. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang in view of Tsuchiya, Goto and Ito et al. (US 2010/0244073).

As to **claim 12** (dependent on 1), Jang discloses the flat panel display comprising organic light emitting device (ABSTRACT), but Jung in view of Tsuchiya and Goto fails to disclose that the encapsulation layer includes at least one organic layer and at least one inorganic layer.

In the same field of endeavor, Ito discloses a display panel comprising a sealing film (film 100 of fig. 3), the sealing thin film (100 of fig. 3) has a stacked structure (multilayer film [0115]) of a plurality of organic and inorganic layers (layers 101 – 111 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jung in view of Tsuchiya

and Goto and teachings of Ito, such that the encapsulation layer of Jang would be formed using the multi-layer structure as disclosed by Ito, with motivation to obtain an organic EL device having excellent light resistance (Ito, [0008]).

Response to Arguments

5. Applicant's arguments filed 09/19/2016 have been fully considered but they are not persuasive.

6. As to Applicant's argument that: Jang does not disclose "an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen and moisture into the pixels," the Examiner respectfully disagrees. Jang is not cited to teach this limitation alone. Jang teaches an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078) and Tsuchiya discloses an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], and it is the combination of Jang and Tsuchiya that teaches this limitation.

7. As to Applicant's argument that: "the sealing film of Tsuchiya has a different function of shape from the insulating layer 330," the Examiner respectfully disagrees. Tsuchiya reference is only cited to teach extending encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels, and Jang and Tsuchiya could have been combined to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an

EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

8. As to Applicant's argument that: "the encapsulation substrate 300 of Jang cannot have the shape as the sealing film 36 of Tsuchiya," the Examiner respectfully disagrees. The encapsulation substrate 300 of Jang was not cited to teach the claimed encapsulation layer.

9. As to Applicant's argument that: "the lower electrode 12 of Goto is the constituent element of the capacitor element 15, which is not relevant to touch sensing," the Examiner respectfully disagrees. Goto is not cited to teach elements relevant to touch sensing. Goto is only cited to teach forming an insulating layer underlying an electrode under an incline angle to minimize breakage rate of the electrode, and forming the above electrodes to have a conforming incline.

10. As to Applicant's argument that: "the encapsulation layer 330 of Jang does not correspond to the encapsulation late 200 of present invention," the Examiner respectfully disagrees. The encapsulation layer 330 of Jang is cited to correspond to the encapsulation layer as claimed. Particularly, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]) and an encapsulation layer on the first area only of the substrate (first insulating layer 330 of fig. 5 [0078] only in the in display unit area 200, figs. 4 and 5).

11. As to Applicant's argument with respect to the encapsulation layer 300 of Jang, the Examiner respectfully disagrees. The encapsulation layer 300 of Jang is not cited to teach the encapsulation layer as claimed.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DMITRIY BOLOTIN whose telephone number is (571)270-5873. The examiner can normally be reached on Monday-Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB
Updated Search	12/23/2016	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB
	Updated Search	12/23/2016	DB

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB
Updated Search	12/23/2016	DB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016	12/23/2016							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
	12	✓	✓							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							
	17		✓							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitry
Art Unit	:	2623
Conf. No.	:	2023

AMENDMENT AND REPLY TO FINAL OFFICE ACTION WITH REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PROGRAM 2.0

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In reply to the January 3, 2017 final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
SDCSHN.181C1	15/133,605	April 20, 2016
First Named Inventor:	**Title:**	
Jong-Soo Kim	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL	

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
   - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
   - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
     - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
     - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
       - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
       - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
	3/3/17
Name (Print/Typed) John M. Carson	**Practitioner Registration No.** 34,303

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of _____ forms are submitted.

Electronic Acknowledgement Receipt

EFS ID:	28534225
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Chelsea Burdeno
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	03-MAR-2017
Filing Date:	20-APR-2016
Time Stamp:	19:18:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amendment_SDCSHN181C1.pdf	3333846 ae6d6a19116f9f879ce2322f1fc0db185d40c1c6	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Arguments/Remarks Made in an Amendment	6	9
	Claims	2	5
	Response After Final Action	1	1

Warnings:					
Information:					
2	After Final Consideration Program Request	AFCP_SDCSHN181C1.pdf	602809 9faf24c64daade83b329b305f80b109b759b1db0	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	3936655		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

By this paper, Applicant amended Claims 1 and 15-17, and canceled Claims 13 and 14. Claims 1-12 and 15-17 will be pending upon entry of the amendments. Support for the amendments is found in the claims as filed and in the application. See, for example, Application as filed at para. [0033] and Claims 13 and 14. No new matter has been added. Applicant requests reconsideration and allowance of the application in view of the amendments described above and the remarks set forth below.

Discussion of Claim Rejections under 35 U.S.C. § 103

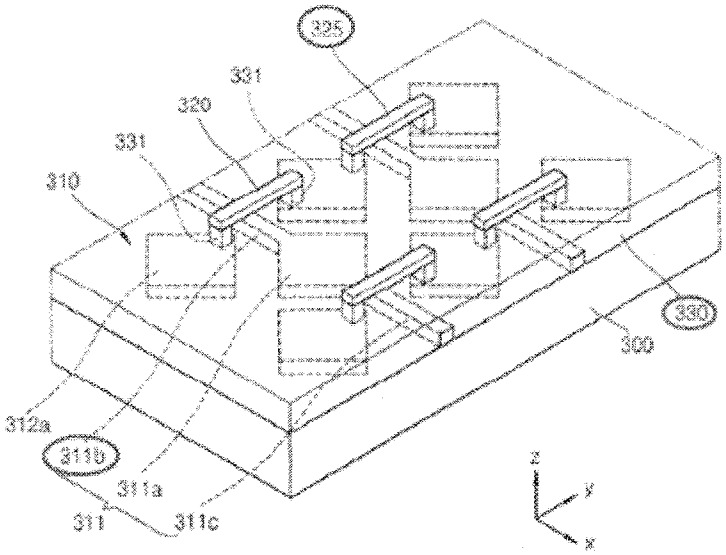
Claims 1-11 and 13-17

Claims 1-11 and 13-17 are rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over U.S. Patent Publication No. 2010/0007616 to Jang in view of U.S. Patent Publication No. 2008/0116795 to Tsuchiya and U.S. Patent Publication No. 2005/0051829 to Goto. For the reasons discussed below, Applicant respectfully submits that the rejections are overcome.

Applicant has amended Claim 1 to include "an encapsulating layer" and "an insulating layer, wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit, wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and wherein the insulating layer is interposed between the first connection patterns and the second connection patterns."

In rejecting Claim 14, the Examiner states that the third pattern units 325 and the connecting units 311b of Jang correspond to the first connection patterns and the second connection patterns of the claimed invention. See Office Action at page 8, Jang at para. [0073], and FIG. 3E of Jang, reproduced below. Applicant respectfully submits that the first insulating layer 330 of Jang corresponds to the insulating layer of the claimed invention, which is disposed between the third pattern units 325 and the connecting units 311b. In rejecting Claim 1, the Examiner associates the first insulating layer 330 of FIG. 3E with the encapsulation layer of the claimed invention. See Office Action at page 3. Therefore, Applicant respectfully submits that

the Examiner is associating the first insulating layer 330 of Jang with two different elements of amended Claim 1: the encapsulating layer and the insulating layer. Therefore, Applicant respectfully submits that Jang does not disclose distinct encapsulating and insulating layers.



Jang, FIG. 3E

For at least this reason, Applicant respectfully submits that Jang does not disclose "an encapsulating layer" and "an insulating layer, wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit, wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and wherein the insulating layer is interposed between the first connection patterns and the second connection patterns," and amended Claim 1 is allowable.

Applicant has amended Claims 16 and 17 to include at least some of the allowable features of Claim 1. Applicant respectfully submits that Claims 16 and 17 are allowable for at least the reasons discussed above with respect to Claim 1.

Claims 2-11 and 15 each depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claims 2-11 and 15 are patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claims.

Claim 12

Claim 12 is rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over Jang in view of Tsuchiya, Goto and U.S. Patent Publication No. 2010/0244073 to Ito.

As noted above, Applicant respectfully submits that Claim 1 is allowable.

Claim 12 depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claim 12 is patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claims.

Conclusion

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance. Accordingly, reconsideration and allowance of this application are earnestly solicited.

Should any issues remain that are resolvable by a phone call, the Examiner is respectfully requested to telephone the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 3/3/17

By: _____

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20995
(858) 707-4000

25388843
030217

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen ~~and~~ or moisture into the pixels, the encapsulation layer including an inclined surface;

a plurality of sensing cells and a plurality of sensing lines on the encapsulation layer to sense a touch, the plurality of sensing lines connected to the sensing cells; ~~and~~

a driving circuit electrically connected to the sensing cells via the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, ~~and~~ wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

2. (Original) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. (Original) The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. (Original) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the encapsulation layer and a second portion located on the second area of the substrate, and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. (Original) The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. (Original) The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. (Original) The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. (Original) The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. (Original) The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. (Original) The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. (Original) The display according to claim 1, wherein the first area has a greater area than the second area.

12. (Original) The display according to claim 1, wherein the encapsulation layer includes at least one organic layer and at least one inorganic layer.

13. **(Canceled)**

14. **(Canceled)**

15. **(Currently amended)** The display according to claim ~~14~~1, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16. **(Currently amended)** A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area only of the substrate to inhibit infiltration of oxygen ~~and~~ or moisture into the pixels and including an inclined surface;

a plurality of sensing cells on an outer surface of the encapsulation layer;

a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells; ~~and~~

a driving circuit electrically connected to the sensing cells through the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate, ~~and~~ wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

17. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

an encapsulation layer on the first area of the substrate to inhibit infiltration of oxygen ~~and~~ or moisture into the pixels;

a plurality of sensing cells on an outer surface of the encapsulation layer;

a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells; ~~and~~

a driving circuit electrically connected to the sensing cells through the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along an end of the encapsulation layer to the second area of the substrate, ~~and~~ wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **03/03/2017**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 14	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
BONNIE COLE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 03/20/2017

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
03/20/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 15/133,605	**Applicant(s)** KIM ET AL.	
	Examiner DMITRIY BOLOTIN	**Art Unit** 2623	**AIA (First Inventor to File) Status** No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 03 March 2017 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

   (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
    Newly amended claims require further consideration and search .

13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☒ Other: Attached PTO-2323 .

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 1-17.
    Claim(s) withdrawn from consideration: .

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Continuation of 3. NOTE: Newly amended claims require further consideration and search .

AFCP 2.0 Decision	Application No.	Applicant(s)
	15/133,605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

This is in response to the After Final Consideration Pilot request filed 03 March 2017.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.

   ☐ Other:

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☒ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other:

   Examiner Note: Please attach an interview summary when necessary as described above.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitry
Art Unit	:	2623
Conf. No.	:	2023

DO NOT ENTER: /D.B/

03/14/2017

AMENDMENT AND REPLY TO FINAL OFFICE ACTION WITH REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PROGRAM 2.0

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In reply to the January 3, 2017 final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15/133,605	Filing Date	2016-04-20	Docket Number (if applicable)	SDCSHN.181C1	Art Unit	2623
First Named Inventor	Jong-Soo Kim			Examiner Name	Bolotin, Dmitriy		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Amendment and reply to final Office Action with Request for Consideration under the After Final Consideration Program 2.0 filed March 3, 2017

☐ Enclosed

☐ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 111410

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	Paul C Steinhardt	Date (YYYY-MM-DD)	2017-05-31
Name	Paul C. Steinhardt	Registration Number	30806

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	15133605
Filing Date:	20-Apr-2016
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Filer:	Paul C. Steinhardt/Sharielle Gonzales
Attorney Docket Number:	SDCSHN.181C1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1st Request	1801	1	1200	1200
		Total in USD ($)		**1200**

Electronic Acknowledgement Receipt

EFS ID:	28804234
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	Paul C. Steinhardt/Imran Ahmed
Filer Authorized By:	Paul C. Steinhardt
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	31-MAR-2017
Filing Date:	20-APR-2016
Time Stamp:	17:07:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1200
RAM confirmation Number	040317INTEFSW17080600
Deposit Account	111410
Authorized User	Imran Ahmed

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE_SDCSHN181C1.pdf	158635 dc51333cf716d37c635e3b47c75f75b304f7c121	no	2
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30399 30a1a9c2f10047ae23371d1928a1818bbf501cae	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	189034		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	03/31/2017	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 14	Minus	** 20	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
JULIET MCMILLAN

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 04/21/2017

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
04/21/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/03/2017*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-12 and 15-17* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-12 and 15-17* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Status of Claims

1. **Claims 1 and 15 – 17** have been amended, **claims 13 and 14** have been canceled, and **claims 1 – 12 and 15 – 17** are now pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 16 and 17** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4)

and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078]); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3)

connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer is to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area only of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an

outer surface of the encapsulation layer (311 and 312 are position indirectly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 17**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of encapsulation layer (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig.

4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110) ; and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and that the sensing lines extend along an end of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of

oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the sensing lines extend along an end of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to

have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1 – 11 and 15 – 17** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (second insulating layer 340 of fig. 5 [0078]); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112

of figs 3, 4 and 5 [0085]) on the encapsulation layer (311 and 312 are position indirectly over second insulating layer 340 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned over layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer is to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 2** (dependent on 1), Jang discloses the display, wherein each of the sensing lines (sensing lines 311c, 311d, 312c, 312d, 120 and 112 of fig. 4) includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c located over area 200 of fig.4) and a second portion located on the second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein first portions of the sensing lines are located on a same layer (first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]).

As to **claim 3** (dependent on 2), Jang discloses the display, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines (112 of fig. 5 located over substrate 100).

As to **claim 4** (dependent on 1), Jang discloses the display, wherein each of the sensing lines includes a first portion located on the encapsulation layer (a portion of 311c, 311d, 312c, located over area 200 of fig.4) and a second portion located on the

second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate (as shown in fig. 4 and 5, the first portion is positioned over area 200 and the second portion is positioned over substrate 100, wherein the distance between 311c, 311d, 312c and substarte 100 is greater than the distance between 112 or 120 and substrate 100).

As to **claim 5** (dependent on 1), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through wiring lines (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

As to **claim 6** (dependent on 1), Jang discloses the display, wherein the sensing lines include a different material from the sensing cells (pattern layer 310, which includes 311, may be formed of suitable transparent materials such as ITO, IZO, ZnO, and/or In2O3 [0077] and silver paste may be used for the conductive member 120 [0085]).

As to **claim 7** (dependent on 1), Jang discloses the display, wherein the driving circuit is located on the second area of the substrate (113 is positioned outside of 200 of fig. 4).

As to **claim 8** (dependent on 7), Jang discloses the display, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate (130 of fig. 4).

As to **claim 9** (dependent on 8), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through the FPCB (connected to 113 on FPCB 130 of fig. 4 through data line 110 of fig. 4).

As to **claim 10** (dependent on 1), Jang discloses the display, wherein the sensing lines are arranged outside the pixel area (fig. 4, portions of 311c, 311d, 312c, 312d, 120 and 112 arranged outside of 200).

As to **claim 11** (dependent on 1), Jang discloses the display comprising a first area (display area 200 of fig. 4) and the second area (the perimeter area of 100 outside of 200 of fig. 4), but Jang in view of Tsuchiya and Goto does not explicitly disclose that the first area has a greater area than the second area.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combined teachings of Jang, Tsuchiya and Goto such that the display are was greater than the peripheral area with motivation to minimize the overall dimensions of the device without sacrificing the area of the screen, whereby such modification would have been nothing more than a simple design choice alternative and would have only required a routine skill.

As to **claim 15** (dependent on 1), Jang discloses the display, wherein the first connection patterns (325 of fig. 3) are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells (layer 320 of fig. 3) so that the

first connection patterns (325 of fig. 3) are electrically connected to the first sensing cells (312a of fig. 3 and 4) at upper or lower portions of the first sensing cells (fig. 3).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area only of the substrate (second insulating layer 340 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position indirectly on and over the outer surface of the second insulating layer 340 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of encapsulation layer (first pattern layer 310 is positioned indirectly on and over the outer surface of the second insulating layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100),

wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya

toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the encapsulation layer is formed to be inclined and the sensing lines extend along the inclined surface of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 17**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside

of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); an encapsulation layer on the first area of the substrate (second insulating layer 340 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the encapsulation layer (311 and 312 are position indirectly on and over the outer surface of the second insulating layer 340 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of encapsulation layer (first pattern layer 310 is positioned indirectly on and over the outer surface of the second insulating layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection

patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the encapsulation layer to inhibit infiltration of oxygen and moisture into the pixels and that the sensing lines extend along an end of the encapsulation layer.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and an encapsulation layer (a sealing thin film layer 36 of fig. 3), wherein the encapsulation layer is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the encapsulation layer (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form encapsulation layer including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the sensing lines extend along an end of the encapsulation layer.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the encapsulation layer, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

6. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang in view of Tsuchiya, Goto and Ito et al. (US 2010/0244073).

As to **claim 12** (dependent on 1), Jang discloses the flat panel display comprising organic light emitting device (ABSTRACT), but Jung in view of Tsuchiya and Goto fails to disclose that the encapsulation layer includes at least one organic layer and at least one inorganic layer.

In the same field of endeavor, Ito discloses a display panel comprising a sealing film (film 100 of fig. 3), the sealing thin film (100 of fig. 3) has a stacked structure (multilayer film [0115]) of a plurality of organic and inorganic layers (layers 101 – 111 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jung in view of Tsuchiya and Goto and teachings of Ito, such that the encapsulation layer of Jang would be formed using the multi-layer structure as disclosed by Ito, with motivation to obtain an organic EL device having excellent light resistance (Ito, [0008]).

Response to Arguments

7. Applicant's arguments filed 03/03/2017 have been fully considered but they are not persuasive.

8. As to Applicant's argument that: Jang does not disclose "distinct encapsulating and insulating layers," the Examiner respectfully disagrees.

9. **First**, no specific distinction between encapsulating and insulating layers was claimed. Since no specific distinction was claimed, the first insulating layer 330 of Jang may be interpreted as both as encapsulating and as insulating layer.

10. **Second,** Jang discloses two insulating layers 330 and 340 of fig.5. Wherein first insulating layer 330 may be interpreted as claimed insulating layer and second insulating layer 340 may be interpreted as claimed encapsulating layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DMITRIY BOLOTIN whose telephone number is (571)270-5873. The examiner can normally be reached on Monday-Friday, 7:30am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016	12/23/2016	04/15/2017						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	✓	✓						
	11	✓	✓	✓						
	12	✓	✓	✓						
	13	✓	✓	-						
	14	✓	✓	-						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17		✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB
	Updated Search	12/23/2016	DB
	Updated Search	04/15/2017	DB

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitriy
Art Unit	:	2623
Conf. No.	:	2023

AMENDMENT AND REPLY TO NON-FINAL OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In reply to the April 21, 2017 non-final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

~~an encapsulation layer~~ a sealing thin film on the first area of the substrate to inhibit infiltration of oxygen or moisture into the pixels, the ~~encapsulation layer~~ sealing thin film including an inclined surface;

a plurality of sensing cells and a plurality of sensing lines on the ~~encapsulation layer~~ sealing thin film to sense a touch, the plurality of sensing lines connected to the sensing cells;

a driving circuit electrically connected to the sensing cells via the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along the inclined surface of the ~~encapsulation layer~~ sealing thin film to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

2. (**Currently amended**) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the ~~encapsulation layer~~ sealing thin film and a

second portion located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. (Original) The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. (**Currently amended**) The display according to claim 1, wherein each of the sensing lines includes a first portion located on the ~~encapsulation layer~~ sealing thin film and a second portion located on the second area of the substrate, and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. (Original) The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. (Original) The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. (Original) The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. (Original) The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. (Original) The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. (Original) The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. (Original) The display according to claim 1, wherein the first area has a greater area than the second area.

12. (**Currently amended**) The display according to claim 1, wherein the ~~encapsulation layer~~ sealing thin film includes at least one organic layer and at least one inorganic layer.

13.-14. (Canceled)

15. (Previously presented) The display according to claim 1, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower

layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

~~an encapsulation layer~~ a sealing thin film on the first area only of the substrate to inhibit infiltration of oxygen or moisture into the pixels and including an inclined surface;

a plurality of sensing cells on an outer surface of the ~~encapsulation layer~~ sealing thin film;

a plurality of sensing lines on the outer surface of the ~~encapsulation layer~~ sealing thin film and connected to the sensing cells;

a driving circuit electrically connected to the sensing cells through the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along the inclined surface of the ~~encapsulation layer~~ sealing thin film to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing lines extend from the sensing cells along the inclined surface of the ~~encapsulation layer~~ sealing thin film to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

17. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

~~an encapsulation layer~~ a sealing thin film on the first area of the substrate to inhibit infiltration of oxygen or moisture into the pixels;

a plurality of sensing cells on an outer surface of the ~~encapsulation layer~~ sealing thin film;

a plurality of sensing lines on the outer surface of the ~~encapsulation layer~~ sealing thin film and connected to the sensing cells;

a driving circuit electrically connected to the sensing cells through the sensing lines; and

an insulating layer,

wherein the sensing lines extend from the sensing cells along an end of the ~~encapsulation layer~~ sealing thin film to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

REMARKS

By this paper, Applicant amended Claims 1, 2, 4, 12, 16 and 17. Upon entry of the amendments, Claims 1-12 and 15-17 will be pending and under examination. Support for the amendments is found in the claims as filed and in the application. See, for example, Application as filed at paras. [0021], [0025] and [0049]. No new matter has been added. Applicant requests reconsideration and allowance of the application in view of the amendments described above and the remarks set forth below.

Discussion of Claim Rejections under 35 U.S.C. § 103

Standard of Review for Obviousness

It is well settled that the Examiner "bears the initial burden of presenting a *prima facie* case of unpatentability..." *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) **must teach or suggest all of the claim limitations**: "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also M.P.E.P. § 2143.03*. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also M.P.E.P. § 2143.02*. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

> As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn,* 441 F.3d 977, 988 (C.A.Fed.2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

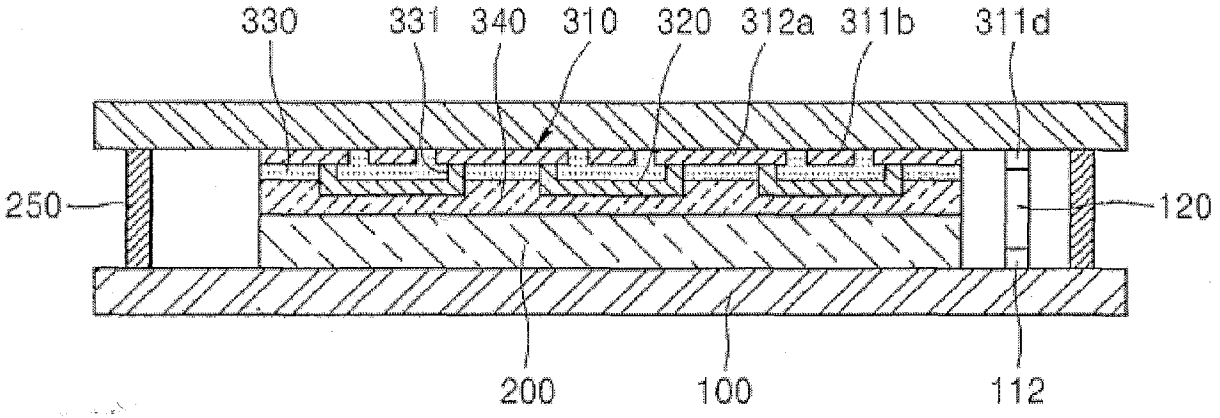
Claims 1-11 and 15-17

Claims 1-11 and 15-17 are rejected under pre-AIA 35 U.S.C. 103(a) as obvious over U.S. Patent Publication No. 2010/0007616 to Jang in view of U.S Patent Publication No. 2008/0116795 to Tsuchiya and U.S. Patent Publication No. 2005/0051829 to Goto. For the reasons discussed below, Applicant respectfully submits that the rejections are overcome.

Applicant has amended Claim 1 to include "a sealing thin film on the first area of the substrate to inhibit infiltration of oxygen or moisture into the pixels, the sealing thin film including an inclined surface; a plurality of sensing cells and a plurality of sensing lines on the sealing thin film to sense a touch, the plurality of sensing lines connected to the sensing cells." The Application as filed describes an advantage of the sealing thin film as follows.

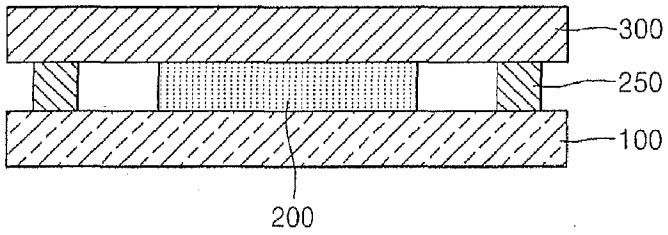
> Conventionally, in the organic light emitting display, a glass substrate having a cavity or plate pattern is joined with the substrate 100 under a vacuum atmosphere so as to prevent the organic light emitting elements from being exposed to moisture and oxygen.
>
> However, the thickness of the glass substrate as a sealing substrate is large. Therefore, where a touch screen panel is formed on the glass substrate, it is disadvantageous because of the large thickness.
>
> Accordingly, in this embodiment, the sealing thin film 200 including a pixel area of the substrate 100 is formed rather than the conventional sealing substrate for the purpose of protecting the organic light emitting elements, thereby minimizing thickness." See Application at paras. [0022]- [0025].

In rejecting Claim 1, the Examiner relies on Jang to disclose "a plurality of sensing cells and a plurality of sensing lines on encapsulation layer to sense a touch, the plurality of sensing lines connected to the sensing cells." See Office Action at page 3, in which the Examiner refers to FIG. 5, reproduced below.



Jang, FIG. 5

However, a careful review of Jang reveals "the OLED 230 formed on the substrate 100 is sealed by the encapsulation substrate 300 [which] may be formed of various suitable materials such as glass or plastic" and "substrate 100 and the encapsulation substrate 300 is attached to each other by using a sealant 250 [which] may be any suitable glass frit.' See Jang at [0102] and FIG. 1, reproduced below.



Jang, FIG. 1

Therefore, Applicant respectfully submits that Jang does not disclose "a sealing thin film on the first area of the substrate to inhibit infiltration of oxygen or moisture into the pixels, the sealing thin film including an inclined surface; a plurality of sensing cells and a plurality of sensing lines on the sealing thin film to sense a touch, the plurality of sensing lines connected to the sensing cells."

Applicant further submits that neither Tsuchiya nor Goto discloses "a plurality of sensing cells and a plurality of sensing lines on the sealing thin film to sense a touch." Therefore, Applicant respectfully submits that neither Tsuchiya nor Goto cure the deficiencies of Jang with respect to amended Claim 1.

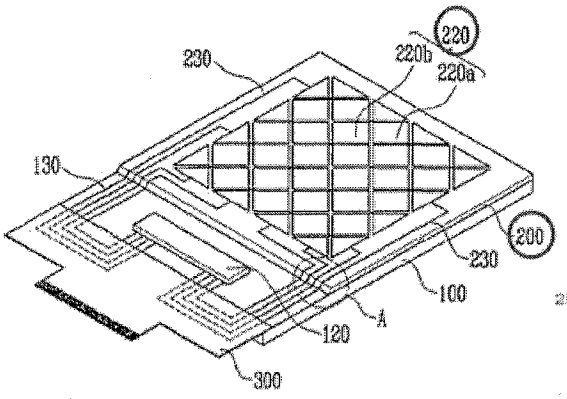
For at least these reasons, Applicant respectfully submits that amended Claim 1 is allowable.

Claims 2-11 and 15 each depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claims 2-11 and 15 are patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claims.

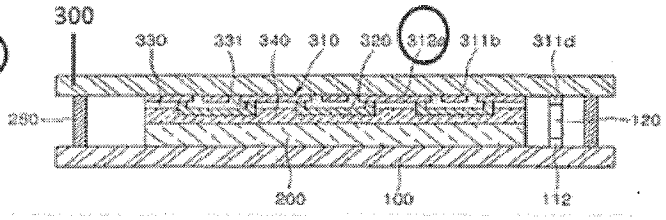
Applicant has amended Claim 16 to include "a sealing thin film on the first area only of the substrate to inhibit infiltration of oxygen or moisture into the pixels and including an inclined surface; a plurality of sensing cells on an outer surface of the sealing thin film; a plurality of sensing lines on the outer surface of the sealing thin film and connected to the sensing cells."

The Examiner relies on Jang to disclose an encapsulation layer "including an inclined surface; a plurality of sensing cells on an outer surface of the encapsulation layer; a plurality of sensing lines on the outer surface of the encapsulation layer and connected to the sensing cells." See Office Action at pages 5 and 6.

However, Applicant respectfully submits that the first insulating layer 330 of Jang does not correspond to the sealing thin film 200 of the claimed invention. Instead, Jang discloses that encapsulation substrate 300, "formed of glass or plastic" seals the display. See Jang at [0102] and FIG. 5, reproduced below. Therefore, Applicant respectfully submits the claimed invention and Jang are different from each other in that the sensing cells 220 and the sensing lines 230 of the claimed invention are formed on an **outer surface** of the sealing thin film 200, but the body parts 312a and 311a of Jang are arranged on an **inner surface** of the encapsulation substrate 300. Therefore, Applicant respectfully submits that Jang does not disclose "a sealing thin film on the first area only of the substrate to inhibit infiltration of oxygen or moisture into the pixels and including an inclined surface; a plurality of sensing cells on an outer surface of the sealing thin film; a plurality of sensing lines on the outer surface of the sealing thin film and connected to the sensing cells."

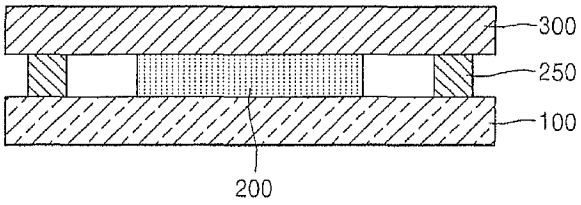


Application, FIG. 3

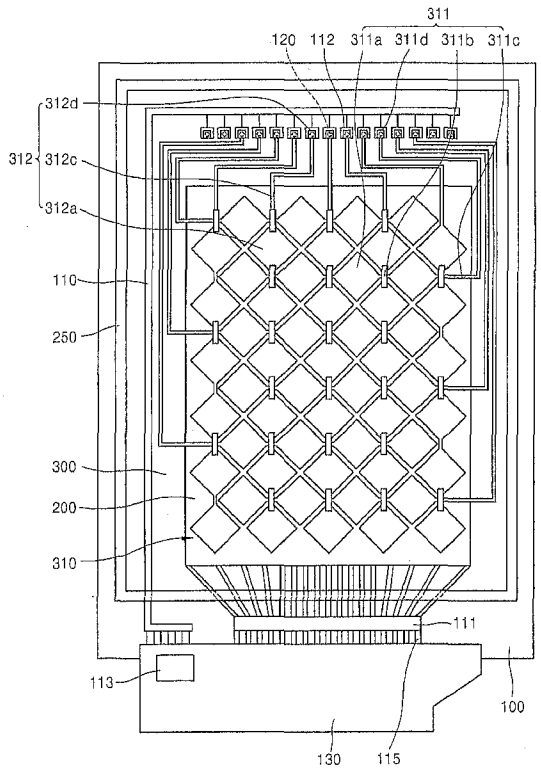


Jang, FIG. 5

Further, Applicant respectfully submits Jang discloses that encapsulation substrate 300 covers both display unit 200 and display drive integrated circuit 111. See Jang at FIGs 1 and 4, reproduced below.



Jang, FIG. 1



Jang, FIG. 4

Applicant further submits that a person having ordinary skill in the art would not be motivated to modify Jang so that "the encapsulation layer including an inclined surface... wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate," as the encapsulation substrate 300 covers

both display unit 200 and display drive integrated circuit 111. For at least these reasons, and for the reasons discussed above with respect to Claim 1, Applicant respectfully submits that amended Claim 16 is allowable.

Applicant has amended Claim 17 to include at least some of the allowable features of Claims 1 and 16. Therefore, Applicant respectfully submits that amended Claim 17 is allowable for at least the reasons discussed above with respect to Claims 1 and 16.

Claim 12

Claim 12 is rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over Jang in view of Tsuchiya, Goto and U.S. Patent Publication No. 2010/0244073 to Ito. For the reasons discussed below, Applicant respectfully submits that the rejections are overcome.

As noted above, Applicant respectfully submits that Claim 1 is allowable.

Claim 12 depends from base Claim 1 and further defines additional technical features. In view of the patentability of their base claims, and in further view of the additional technical features, Applicant respectfully submits that dependent Claim 12 is patentable over the prior art. Furthermore, Applicant does not necessarily agree with the characterizations of the prior art made by the Examiner in rejecting the dependent claims.

Conclusion

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance. Accordingly, reconsideration and allowance of this application are earnestly solicited.

Should any issues remain that are resolvable by a phone call, the Examiner is respectfully requested to telephone the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 7/20/17

By: _____

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20995
(858) 707-4000

25795412

Electronic Acknowledgement Receipt

EFS ID:	29835136
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Gustavo Lopez
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	20-JUL-2017
Filing Date:	20-APR-2016
Time Stamp:	12:59:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amendment_SDCSHN181C1.pdf	1247187 a62ead67e696a6407024f5fd0cbea052d45245b2	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	12
Warnings:			
Information:			
	Total Files Size (in bytes):	1247187	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT

07/20/2017	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
SHARON M. WEST

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 08/09/2017

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2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
08/09/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07/20/2017*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-12 and 15-17* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-12 and 15-17* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Status of Claims

1. **Claims 1, 2, 4, 12, and 16 – 17** have been amended, **claims 13 and 14** have been canceled, and **claims 1 – 12 and 15 – 17** are now pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 16 and 17** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4)

and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area of the substrate (first insulating layer 330 of fig. 5 [0078]); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the sealing thin film (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3)

connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film is to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area only of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an

outer surface of the sealing thin film (311 and 312 are position indirectly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of sealing thin film (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 17**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area of the substrate (first insulating layer 330 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the sealing thin film (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of sealing thin film (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4

[0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110) ; and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film to inhibit infiltration of oxygen and moisture into the pixels and that the sensing lines extend along an end of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit infiltration of oxygen

and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the sensing lines extend along an end of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to

have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1 – 11 and 15 – 17** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Jang (US 2010/0007616) in view of Tsuchiya et al. (US 2008/0116795) and Goto et al. (US 2005/0051829).

As to **claim 1**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area of the substrate (second insulating layer 340 of fig. 5 [0078]); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4

and 5 [0085]) on the sealing thin film (311 and 312 are position indirectly over second insulating layer 340 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned over layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells via the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), and wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film is to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when

underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 2** (dependent on 1), Jang discloses the display, wherein each of the sensing lines (sensing lines 311c, 311d, 312c, 312d, 120 and 112 of fig. 4) includes a first portion located on the sealing thin film (a portion of 311c, 311d, 312c located over area 200 of fig.4) and a second portion located on the second area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein first portions of the sensing lines are located on a same layer (first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]).

As to **claim 3** (dependent on 2), Jang discloses the display, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines (112 of fig. 5 located over substrate 100).

As to **claim 4** (dependent on 1), Jang discloses the display, wherein each of the sensing lines includes a first portion located on the sealing thin film (a portion of 311c, 311d, 312c, located over area 200 of fig.4) and a second portion located on the second

area of the substrate (a portion 120 and 112 not located over area 200 of fig.4), and wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate (as shown in fig. 4 and 5, the first portion is positioned over area 200 and the second portion is positioned over substrate 100, wherein the distance between 311c, 311d, 312c and substarte 100 is greater than the distance between 112 or 120 and substrate 100).

As to **claim 5** (dependent on 1), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through wiring lines (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110).

As to **claim 6** (dependent on 1), Jang discloses the display, wherein the sensing lines include a different material from the sensing cells (pattern layer 310, which includes 311, may be formed of suitable transparent materials such as ITO, IZO, ZnO, and/or In2O3 [0077] and silver paste may be used for the conductive member 120 [0085]).

As to **claim 7** (dependent on 1), Jang discloses the display, wherein the driving circuit is located on the second area of the substrate (113 is positioned outside of 200 of fig. 4).

As to **claim 8** (dependent on 7), Jang discloses the display, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate (130 of fig. 4).

As to **claim 9** (dependent on 8), Jang discloses the display, wherein the sensing lines are electrically connected to the driving circuit through the FPCB (connected to 113 on FPCB 130 of fig. 4 through data line 110 of fig. 4).

As to **claim 10** (dependent on 1), Jang discloses the display, wherein the sensing lines are arranged outside the pixel area (fig. 4, portions of 311c, 311d, 312c, 312d, 120 and 112 arranged outside of 200).

As to **claim 11** (dependent on 1), Jang discloses the display comprising a first area (display area 200 of fig. 4) and the second area (the perimeter area of 100 outside of 200 of fig. 4), but Jang in view of Tsuchiya and Goto does not explicitly disclose that the first area has a greater area than the second area.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combined teachings of Jang, Tsuchiya and Goto such that the display are was greater than the peripheral area with motivation to minimize the overall dimensions of the device without sacrificing the area of the screen, whereby such modification would have been nothing more than a simple design choice alternative and would have only required a routine skill.

As to **claim 15** (dependent on 1), Jang discloses the display, wherein the first connection patterns (325 of fig. 3) are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells (layer 320 of fig. 3) so that the

first connection patterns (325 of fig. 3) are electrically connected to the first sensing cells (312a of fig. 3 and 4) at upper or lower portions of the first sensing cells (fig. 3).

As to **claim 16**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area only of the substrate (second insulating layer 340 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the sealing thin film (311 and 312 are position indirectly on and over the outer surface of the second insulating layer 340 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of sealing thin film (first pattern layer 310 is positioned indirectly on and over the outer surface of the second insulating layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100),

wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film to inhibit infiltration of oxygen and moisture into the pixels and including an inclined surface and that the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward

the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

As to **claim 17**, Jang discloses a display (fig. 4) comprising: a substrate (substrate 100 of fig. 4) including a first area having a pixel area (area of display unit 200 of fig. 4) and a second area adjacent to the first area (area of substrate 100 outside

of display area 200 of fig. 4); a plurality of pixels in the pixel area of the substrate (OLEDs are formed in display unit area 200 on substrate 100 of fig. 4 and 6, [0091]); a sealing thin film on the first area of the substrate (second insulating layer 340 of fig. 5 [0078); a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) on an outer surface of the sealing thin film (311 and 312 are position indirectly on and over the outer surface of the second insulating layer 340 of fig. 5 and fig. 3E); a plurality of sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the outer surface of sealing thin film (first pattern layer 310 is positioned indirectly on and over the outer surface of the second insulating layer 340 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) and connected to the sensing cells (fig. 4 and 4); and a driving circuit (driver 113 of fig. 4 [0086]) electrically connected to the sensing cells through the sensing lines [0086]; wherein the sensing lines (sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 [0085]) extend from the sensing cells (sensing cells 312a and 311a of figs. 3 and 4) to the second area of the substrate (as shown in figs. 4 and 5, the sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 of figs 3, 4 and 5 extend from the sealing film formed directly over display region 200 to the substrate 100), wherein the sensing lines are electrically connected to the driving circuit (as shown in fig. 4, sensing lines portions 311c, 311d, 312c, 312d, 120 and 112 are electrically connected to the driving circuit 113 through data line 110); and an insulating layer (first insulating layer 330 of fig. 5 [0078]), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection

patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Jang does not explicitly disclose that the sealing thin film to inhibit infiltration of oxygen and moisture into the pixels and that the sensing lines extend along an end of the sealing thin film.

In the same field of endeavor, Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit infiltration of oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang and Tsuchiya, so as to form sealing thin film including an inclined surface as disclosed by Tsuchiya toward the substrate disclosed by Jang, with motivation to provide an EL display device of high reliability and its manufacturing method by preventing moisture and oxygen, the factors for degrading properties of an EL element, from entering without increasing the size of the EL display device (Tsuchiya, [0025]).

Jang in view of Tsuchiya does not explicitly disclose that the sensing lines extend along an end of the sealing thin film.

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jang in view of Tsuchiya and teachings of Goto, such that the end of the sealing thin film, above which the sensing lines pass over, is formed to be inclined and the sensing lines were formed to have a conforming incline, with motivation to minimize breakage rate of above passing electrodes (Goto, [0059]).

6. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jang in view of Tsuchiya, Goto and Ito et al. (US 2010/0244073).

As to **claim 12** (dependent on 1), Jang discloses the flat panel display comprising organic light emitting device (ABSTRACT), but Jung in view of Tsuchiya and Goto fails to disclose that the sealing thin film includes at least one organic layer and at least one inorganic layer.

In the same field of endeavor, Ito discloses a display panel comprising a sealing film (film 100 of fig. 3), the sealing thin film (100 of fig. 3) has a stacked structure (multilayer film [0115]) of a plurality of organic and inorganic layers (layers 101 – 111 of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Jung in view of Tsuchiya and Goto and teachings of Ito, such that the sealing thin film of Jang would be formed using the multi-layer structure as disclosed by Ito, with motivation to obtain an organic EL device having excellent light resistance (Ito, [0008]).

Response to Arguments

7. Applicant's arguments filed 03/03/2017 have been fully considered but they are not persuasive.

8. As to Applicant's argument that: Jang does not disclose "a sealing thin film on the first area of the substrate to inhibit infiltration of oxygen or moisture into the pixels, the sealing thin film including inclined surface, a plurality of sensing cells and a plurality of sensing lines on the sealing thin film to sense a touch, the plurality of sensing lines connected to the sensing cells," the Examiner respectfully disagrees.

Jung discloses a sealing thin film on the first area of the substrate (first insulating layer 330 of fig. 5 [0078]), a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4) and a plurality of sensing lines (sensing lines portions 311c, 311d, 312c,

312d, 120 and 112 of figs 3, 4 and 5 [0085]) on the sealing thin film (311 and 312 are position directly over first insulating layer 330 of fig. 5 and fig. 3E) and (first pattern layer 310 is positioned on layer 330 of fig. 3 and first pattern layer 310 includes a plurality of first direction pattern units 311 [0071]) to sense touch (touch panel related members formed on a surface of the encapsulation substrate 300 [0065]), the plurality of sensing lines connected to the sensing cells (fig. 4).

Tsuchiya discloses a display comprising organic light emitting device (EL layer, [0038]) and a sealing thin film (a sealing thin film layer 36 of fig. 3), wherein the sealing thin film is formed so as to inhibit oxygen and moisture from infiltrating into the pixels [0026], wherein the end of the sealing thin film (film 36 of fig. 3) is formed to be inclined (the end of 36 is inclined as shown in fig. 3) downwardly toward the substrate (substrate 31 of fig. 3).

In the same field of electrode fabrication, Goto discloses a device wherein an incline angle of insulating layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1).

It is the combination of Jang, Tsuchiya and Goto that teaches applicant's claimed invention.

9. As to Applicant's argument that: neither Tsuchiya nor Goto discloses "a plurality of sensing cells and a plurality of sensing lines on the sealing thin film to sense a touch,"

the Examiner respectfully disagrees. It is Jang and not Tsuchiya or Goto that is cited to teach said limitation.

10. As to Applicant's argument that: the body parts 312a and 311a of Jang are arranged on an inner surface of the encapsulation substrate 300 instead of on the outer surface of the sealing film, the Examiner respectfully disagrees. In Jang, first insulating layer 330 is interpreted to correspond to the claimed sealing film and not encapsulation substrate 300.

11. As to Applicant's argument that: a person having ordinary skill in the art would not be motivated to modify Jang so that "the encapsulation layer including an inclined surface... wherein the sensing lines extend from the sensing cells along the inclined surface of the encapsulation layer to the second area of the substrate," as the encapsulation substrate 300 covers both display unit 200 and display integrated circuit 111," the Examiner respectfully disagrees. In Jang, first insulating layer 330 is interpreted to correspond to the claimed sealing film and not encapsulation substrate 300.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DMITRIY BOLOTIN whose telephone number is (571)270-5873. The examiner can normally be reached on Monday-Friday, 7:30am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016	12/23/2016	04/15/2017	08/04/2017					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					
	6	✓	✓	✓	✓					
	7	✓	✓	✓	✓					
	8	✓	✓	✓	✓					
	9	✓	✓	✓	✓					
	10	✓	✓	✓	✓					
	11	✓	✓	✓	✓					
	12	✓	✓	✓	✓					
	13	✓	✓	-	-					
	14	✓	✓	-	-					
	15	✓	✓	✓	✓					
	16	✓	✓	✓	✓					
	17		✓	✓	✓					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB
	Updated Search	12/23/2016	DB
	Updated Search	04/15/2017	DB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB

INTERFERENCE SEARCH

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitriy
Art Unit	:	2623
Conf. No.	:	2023

AMENDMENT AND REPLY TO FINAL OFFICE ACTION

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In reply to the August 9, 2017 final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (**Currently amended**) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

a sealing thin film ~~on~~covering the first area of the substrate and including an inclined surface at an end of the sealing thin film to inhibit infiltration of oxygen or moisture into the pixels~~, the sealing thin film including an inclined surface~~;

a plurality of sensing cells ~~and~~formed over a top surface of the sealing thin film to sense a touch;

a plurality of sensing lines ~~on the sealing thin film to sense a touch, the plurality of sensing lines connected~~ coupled to the sensing cells, the sensing lines comprising a first portion and a second portion;

a driving circuit electrically connected to the sensing cells via the sensing lines; and

an insulating layer,

wherein the inclined surface of the sealing thin film is formed to be inclined downwardly toward the driving circuit,

wherein the sensing lines include inclined portion along the inclined surface of the sealing thin film,

wherein the sensing lines are formed over the top surface of the sealing thin film in the first portion and formed over the substrate in the second portion, and the sensing lines extend from the sensing cells along the inclined surface of the sealing thin film to the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

2. (**Currently Amended**) The display according to claim 1, wherein ~~each of the sensing lines includes a~~ the first portion is located on the sealing thin film and ~~a~~ the second portion is located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. (Original) The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. (**Currently Amended**) The display according to claim 1, ~~wherein each of the sensing lines includes a first portion located on the sealing thin film and a second portion located on the second area of the substrate, and~~ wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. (Original) The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. (Original) The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. (Original) The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. (Original) The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. (Original) The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. (Original) The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. (Original) The display according to claim 1, wherein the first area has a greater area than the second area.

12. (Previously presented) The display according to claim 1, wherein the sealing thin film includes at least one organic layer and at least one inorganic layer.

13.-14. (Canceled)

15. (Previously presented) The display according to claim 1, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16-17. (**Cancelled**)

REMARKS

By this paper, Applicant amended Claims 1, 2, and 4 and cancelled Claims 16 and 17 without prejudice or disclaimer. Upon entry of the amendments, Claims 1-12 and 15 will be pending and under examination. Support for the amendments is found in the claims as filed and in the application. See, for example, Application as filed at Claims 2 and 4; FIGs. 3 and 4 (and accompanying text; and paras. [0033], [0035], [0036], and [0042]. No new matter has been added. Applicant requests reconsideration and allowance of the application in view of the amendments described above and the remarks set forth below.

Discussion of Claim Rejections under 35 U.S.C. § 103

Claims 1, 16 and 17 are rejected under pre-AIA 35 U.S.C. 103(a) as obvious over U.S. Patent Publication No. 2010/0007616 ("Jang") in view of U.S Patent Publication No. 2008/0116795 (" Tsuchiya") and U.S. Patent Publication No. 2005/0051829 ("Goto"). Claims 1-11 and 15-17 are rejected under pre-AIA 35 U.S.C. 103(a) as obvious over Jang in view of Tsuchiya and Goto. Claim 12 is rejected under pre-AIA 35 U.S.C. 103(a) as obvious over Jang in view of Tsuchiya, Goto, and U.S. Patent Publication No. 2010/0244073 ("Ito"). Applicant respectfully disagrees and submits that, for at least the reasons set forth in this paper, the cited references do not teach or suggest each of the features recited in the claims, because the cited references do not teach or suggest each feature of Claim 1 as amended.

Standard of *Prima facie* Obviousness

The U.S. Patent and Trademark Office has the burden under Section 103 to establish a *prima facie* case of obviousness. The rationale to support a conclusion that the claim would have been obvious is that **all the claimed elements were known in the prior art** and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. It can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. *M.P.E.P. § 2143.*

Discussion of Patentability of Claims 1-11 and 15-17

In the interest of advancing prosecution and without acquiescing to the merits of the grounds of the Examiner's rejection, Applicant has amended Claim 1.

In rejecting Claim 1, the Examiner conceded that "Jang in view of Tsuchiya does not explicitly disclose that the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing film." *Office Action, pp. 5 and 13.* However, the Examiner posits that "Goto discloses a device wherein an incline angle of insulting layer underlying an electrode is provided to minimize breakage rate of the electrode (the breakage rate of the electrode is small when underlying layer's angel is set to between 93 and 110 degrees [0059], fig. 2) and the above electrodes are formed to have a conforming incline (electrode 12 of fig. 1 has a conforming incline corresponding to the underlying insulating layer 11 of fig. 1)." *Id. at p. 5.*

Even under the Examiner's characterization (a point that is not conceded), Applicant respectfully submits that the Jang in view of Tsuchiya and Goto does not teach or suggest at least the following features of amended Claim 1:

i. "a sealing thin film covering the first area of the substrate and including an inclined surface at an end of the sealing thin film to inhibit infiltration of oxygen or moisture into the pixels";
ii. "a plurality of sensing cells formed over a top surface of the sealing thin film to sense a touch";
iii. "wherein the inclined surface of the sealing thin film is formed to be inclined downwardly toward the driving circuit";
iv. "wherein the sensing lines include inclined portion along the inclined surface of the sealing thin film"; and
v. "wherein the sensing lines are formed over the top surface of the sealing thin film in the first portion and formed over the substrate in the second portion, and the sensing lines extend from the sensing cells along the inclined surface of the sealing thin film to the second area of the substrate".

As explained above, Applicant respectfully submits that Jang and Tsuchiya do not teach or suggest at least the "the end of the sealing thin film is formed to be inclined and the sensing lines extend along the inclined surface of the sealing film." Thus, Jang and Tsuchiya do not teach the above features.

Applicant respectfully submits that Goto merely discloses the electrodes arrangement structure in a semiconductor. For example, FIG. 1 of Goto "shows a so-called concave capacitor

element having a concave shape in section, which is a semiconductor device according to the first embodiment." *Goto, FIG. 1 and para. [0055].* Goto also describes that the underlying insulating layer 11 (e.g., the characterized including surface) has a concave portion 11a with electrode 12 formed thereon. *Id. at FIG. 11 and para. [0056].* However, Goto does not teach or suggest that the underlying insulating layer 11 is at an end of a sealing thin film that is covering an area comprising a pixel area; that the underlying insulating layer 11 is formed to be inclined downward toward a driving circuit; or that the underlying insulating layer 11 includes sensing lines formed along the inclined surface. Hence, Applicant respectfully submits that Goto has does not teach or suggest the above-identified features of amended Claim 1.

Applicant respectfully submits that Ito was cited merely to supposedly show certain features which are unrelated to the above-indicated feature, and these references, individually or in combination, do not appear to remedy the deficiencies of Jang in view of Tsuchiya and Goto. Furthermore, Applicant respectfully submits that Ito merely discloses an organic-inorganic multilayered sealing layer structure without content related to the arrangement of the sensing lines on the sealing layer. *See, e.g., Ito, FIGs. 1-3.* Therefore, the combination of the prior art references does not teach or suggest all of the features of Claim 1. Accordingly, not all of the claim elements were taught by the prior art. Furthermore, the Examiner did not identify a reason, with respect to at least the above added feature, that would have prompted a person of ordinary skill in the relevant field to combine or modify the elements in *the way the claimed new invention does.* In view of the above, Applicant respectfully submits that no *prima facie* case of obviousness exists with respect to Claim 1, and thus for at least these reasons, it is patentable over the prior art of record.

Dependent Claims 2-12 and 15 each incorporate all the features of amended Claim 1. In view of the features as recited in amended Claim 1, and in view of the additional features as recited in each of the dependent Claims 2-12 and 15, Applicant respectfully submits that dependent Claims 2-12 and 15 are allowable for at least the reasons discussed above, in addition to their further distinguishing additional features. Accordingly, not all of the elements were known or taught in the prior art and Applicant respectfully submits that Claims 2-12 and 15 are patentable for at least the reasons set forth in this paper.

Conclusion

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance. Accordingly, reconsideration and allowance of this application are earnestly solicited.

Should any issues remain that are resolvable by a phone call, the Examiner is respectfully requested to telephone the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9/29/17

By: _____

John M. Carson
Registration No. 34,303
Registered Practitioner
Customer No. 20995
(858) 707-4000

26799457

Electronic Acknowledgement Receipt

EFS ID:	30527218
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Tony Do
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	29-SEP-2017
Filing Date:	20-APR-2016
Time Stamp:	18:17:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amendment_After_Final_SDCSHN-181C1.pdf	424807 49cdd3f8cfa751d4012aa2f37611bd7379817583	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	8
Warnings:			
Information:			
	Total Files Size (in bytes):	424807	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **09/29/2017**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 13	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
ALLYSON PURNELL

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 10/17/2017
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
10/17/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 15/133,605	**Applicant(s)** KIM ET AL.	
	Examiner DMITRIY BOLOTIN	**Art Unit** 2623	**AIA (First Inventor to File) Status** No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 29 September 2017 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

   (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
    Newly amended claims require further search and consideration.

13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 1-12,15-17.
    Claim(s) withdrawn from consideration: .

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Continuation of 3. NOTE: Newly amended claims require further search and consideration .

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Jong-Soo Kim
App. No.	:	15/133605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitriy
Art Unit	:	2623
Conf. No.	:	2023

DO NOT ENTER: /D.B/

AMENDMENT AND REPLY TO FINAL OFFICE ACTION

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In reply to the August 9, 2017 final Office Action, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15133605	Filing Date	2016-04-20	Docket Number (if applicable)	SDCSHN.181C1	Art Unit	2623
First Named Inventor	Jong-Soo Kim			Examiner Name	Bolotin, Dmitriy		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Reply to Final Office Action previously submitted on September 29, 2017.

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 111410

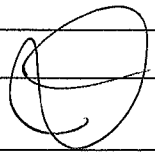
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature		Date (YYYY-MM-DD)	2017-11-07
Name	John M. Carson	Registration Number	34303

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

INFORMATION DISCLOSURE STATEMENT

First Inventor	:	Jong-Soo Kim, et al.
App. No.	:	15/133,605
Filed	:	April 20, 2016
For	:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Examiner	:	Bolotin, Dmitriy
Art Unit	:	2623
Conf. No.	:	2023

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, with an RCE or before receipt of a First Office Action after an RCE, and no fee is believed to be required.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 11/7/17

By: _____

John M. Carson
Registration No. 34,303
Registered Practitioner
Customer No. 20995
(858) 707-4000

IDS
27018902

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/133,605
	Filing Date	April 20, 2016
	First Named Inventor	Kim, Jong-Soo
	Art Unit	2623
(Multiple sheets used when necessary)	Examiner	Bolotin, Dmitriy
SHEET 1 OF 1	Attorney Docket No.	SDCSHN.181C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	1	KR 10-2010-0061121 (A)	06-07-2010	Samsung Electronics Co., Ltd.	*With English Translation of the Relevant Portion*	Abstract

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	2	Korean Office Action dated October 30, 2017 for Korean Patent Application No. KR 10-2010-0089955, which cites the above-identified reference numbered 1, and from which subject U.S. Application No. 15/133,605 claims priority.	✓

27018689

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

Espacenet

Bibliographic data: KR20100061121 (A) — 2010-06-07

TOUCH SENSIBLE ORGANIC LIGHT EMITTING DIODE DISPLAY

Inventor(s): LEE DONG KI [KR]; MIN HOON KEE [KR] ± (LEE, DONG KI, ; MIN, HOON KEE, ; 이동기, ; 민훈기)

Applicant(s): SAMSUNG ELECTRONICS CO LTD [KR] ± (SAMSUNG ELECTRONICS CO., LTD, ; 삼성디스플레이 주식회사)

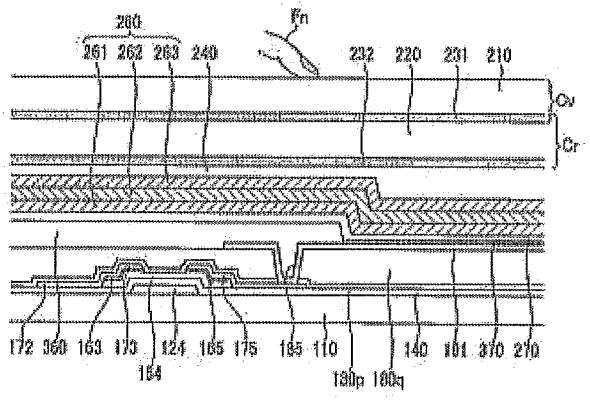
Classification: - international: *G06F3/041; H05B33/04*
- cooperative: G06F3/0412; G06F3/0416; G06F3/044; G06F3/045; G09G3/3225; G09G3/3258; G09G3/3266; G09G3/3275; H01B5/14; H01L27/323; H01L27/3244; H01L27/3248; H01L27/3276; H01L51/5253; H01L27/3244 more

Application number: KR20080120015 20081128 Global Dossier

Priority number(s): KR20080120015 20081128

Also published as: KR101634791 (B1) US2010134426 (A1) US2016195997 (A1) US2017207280 (A1) US2017317146 (A1) US9292118 (B2) US9690423 (B2) US9711570 (B1) less

Abstract of KR20100061121 (A)



PURPOSE: An organic light emitting diode is provided to improve a display property by encapsulating a glass light emitting device and a thin film transistor with an encapsulation thin film for protection. CONSTITUTION: A thin film transistor is formed on a substrate. An organic light emitting device is connected to the thin film transistor to receive a data voltage. A plurality of encapsulation films (261-263) is formed on the organic light emitting device to encapsulate the thin film transistor and the organic light emitting device. The plurality of encapsulation films includes an organic insulation material or

inorganic insulation materials. A planarization film(240) is formed on a plurality of encapsulation thin films. A contact sensor is formed on the planarization film.

English translation of the relevant portion of KR 10-2010-0061121 A

DESCRIPTION

[0076] An encapsulation thin film layer 260 including a first encapsulation thin film 261, a second encapsulation thin film 262 and a third encapsulation thin film 263 is formed on the common electrode 270.
The first, second, and third sealing films 261, 262, and 263 may be made of a bare insulator such as silicon oxide or silicon nitride, or an organic insulating material.
The sealing thin film layer 260 may encapsulate the organic light emitting member 370 and the common electrode 270 to prevent oxidation and to prevent moisture and / or oxygen from penetrating from the outside, and the thin film, That is, the third sealing film 263 covers the edge of the display panel 300 over the substrate 110 to completely seal the organic light emitting member 370, the common electrode 270, and the like.
By sealing and protecting the glass light emitting member 370 or the like using a plurality of thin films as described above, the thickness of the organic light emitting display device can be further reduced, and display characteristics such as transmittance and viewing angle can be improved.

[0077] According to another embodiment of the present invention, the sealing thin film layer 260 may be composed of a single layer, a double layer, or a plurality of four or more layers made of an inorganic insulating material or an organic insulating material.

[0089] 5, a gate conductor including a control electrode 124, a gate insulating film 140, a plurality of semiconductors 154, a plurality of pairs of resistive contact members 163 and 165, A plurality of pixel electrodes 191, a barrier rib 360, an organic light emitting member 370, a plurality of data conductors including a voltage line 172 and an output electrode 175, a lower protective film 180p and an upper protective film 180q, A sealing thin film layer 260 including a common electrode 270, a first encapsulating thin film 261, a second encapsulating thin film 262 and a third encapsulating thin film 263, a planarization film 240, 232a are formed.

(19) 대한민국특허청(KR)
(12) 공개특허공보(A)

(11) 공개번호 10-2010-0061121
(43) 공개일자 2010년06월07일

(51) Int. Cl.
H05B 33/04 (2006.01) *G06F 3/041* (2006.01)
(21) 출원번호 10-2008-0120015
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심사청구일자 없음

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민훈기
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(74) 대리인
팬코리아특허법인

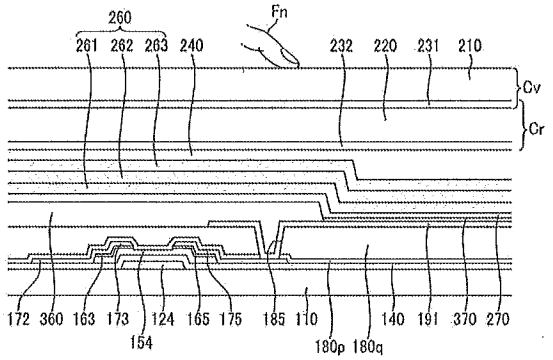
전체 청구항 수 : 총 19 항

(54) 접촉 감지 기능이 있는 유기 발광 표시 장치

(57) 요 약

본 발명은 접촉 감지 기능이 있는 유기 발광 표시 장치에 관한 것이다. 본 발명의 한 실시예에 따른 유기 발광 표시 장치는 기판, 상기 기판 위에 형성되어 있는 박막 트랜지스터, 상기 박막 트랜지스터와 연결되어 데이터 전압을 인가 받는 유기 발광 소자, 상기 유기 발광 소자 위에 형성되어 있으며 상기 박막 트랜지스터 및 상기 유기 발광 소자를 밀봉하는 복수의 봉지 박막, 상기 봉지 박막 위에 형성되어 있는 평탄화막, 그리고 상기 평탄화막 위에 형성되어 있는 접촉 감지부를 포함한다.

대 표 도 - 도3



특허청구의 범위

청구항 1

기판,

상기 기판 위에 형성되어 있는 박막 트랜지스터,

상기 박막 트랜지스터와 연결되어 데이터 전압을 인가 받는 유기 발광 소자,

상기 유기 발광 소자 위에 형성되어 있으며 상기 박막 트랜지스터 및 상기 유기 발광 소자를 밀봉하는 복수의 봉지 박막,

상기 봉지 박막 위에 형성되어 있는 평탄화막, 그리고

상기 평탄화막 위에 형성되어 있는 접촉 감지부

를 포함하는

유기 발광 표시 장치.

청구항 2

제1항에서,

상기 복수의 봉지 박막은 유기 절연물 또는 무기 절연물을 포함하는 유기 발광 표시 장치.

청구항 3

제2항에서,

상기 무기 절연물은 산화규소 또는 질화규소를 포함하는 유기 발광 표시 장치.

청구항 4

제1항에서,

상기 평탄화막은 유기물을 포함하며 그 표면이 평탄한 유기 발광 표시 장치.

청구항 5

제1항에서,

상기 접촉 감지부는 감지 신호를 전달하는 감지 신호선에 연결되어 있는 가변 축전기 및 상기 감지 신호선과 기준 전압 단자 사이에 연결되어 있는 기준 축전기를 포함하는 유기 발광 표시 장치.

청구항 6

제5항에서,

상기 가변 축전기의 정전 용량은 상기 가변 축전기의 한 단자에 가해지는 압력을 포함하는 외부 자극에 따라 변하는 유기 발광 표시 장치.

청구항 7

제1항에서,

상기 접촉 감지부는 제1 투명 도전막을 포함하는 유기 발광 표시 장치.

청구항 8

제7항에서,

상기 제1 투명 도전막은 ITO(indium tin oxide) 또는 IZO(indium zinc oxide)를 포함하는 유기 발광 표시 장치.

청구항 9

제7항에서,

상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 투명 도전막에 전압을 전달하는 복수의 섬형 전극부를 더 포함하는 유기 발광 표시 장치.

청구항 10

제9항에서,

상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고

상기 신호선 패턴과 연결되어 있으며 상기 제1 투명 도전막에 대한 접촉에 따라 변화된 전압을 전달 받아 디지털 감지 신호를 생성하는 감지 신호 처리부

를 더 포함하는 유기 발광 표시 장치.

청구항 11

제7항에서,

상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 투명 도전막에 고주파 신호를 전달하는 복수의 섬형 전극부,

상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고

상기 신호선 패턴과 연결되어 있으며 상기 제1 투명 도전막에 대한 접촉에 따라 변형된 고주파 신호를 전달 받아 감지 신호를 생성하는 감지 신호 처리부

를 더 포함하는 유기 발광 표시 장치.

청구항 12

제7항에서,

상기 접촉 감지부는 상기 제1 투명 도전막 위에 위치하는 제1 절연층, 그리고 상기 제1 절연층 위에 위치하는 제2 투명 도전막을 더 포함하는 유기 발광 표시 장치.

청구항 13

제12항에서,

상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 및 제2 투명 도전막에 전압을 전달하는 복수의 섬형 전극부,

상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고

상기 신호선 패턴과 연결되어 있으며 상기 제2 투명 도전막에 대한 접촉에 따라 변화된 전압을 전달 받아 감지 신호를 생성하는 감지 신호 처리부

를 더 포함하는 유기 발광 표시 장치.

청구항 14

제12항에서,

상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 및 제2 투명 도전막에 고주파 신호를 전달하는 복수의 섬형 전극부,

상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고

상기 신호선 패턴과 연결되어 있으며 상기 제2 투명 도전막에 대한 접촉에 따라 변형된 고주파 신호를 전달 받아 감지 신호를 생성하는 감지 신호 처리부

를 더 포함하는 유기 발광 표시 장치.

청구항 15

제12항에서,

상기 제2 투명 도전막 위에 위치하는 제2 절연층을 더 포함하는 유기 발광 표시 장치.

청구항 16

제15항에서,

상기 제1 투명 도전막은 기준 전압 단자와 연결되어 있고, 상기 제2투명 도전막은 기판 위에 형성되어 있는 감지 신호선과 연결되어 있는 유기 발광 표시 장치.

청구항 17

제16항에서,

상기 제2 절연층에 대한 접촉에 따라 변화된 상기 제2 투명 도전막의 전압을 전달 받아 감지 신호를 생성하는 감지 신호 처리부를 더 포함하는 유기 발광 표시 장치.

청구항 18

제1항에서,

상기 유기 발광 소자는,

상기 박막 트랜지스터와 연결되어 데이터 전압을 인가 받는 화소 전극,

상기 화소 전극 위에 형성되어 있는 유기 발광 부재, 그리고

상기 유기 발광 부재 위에 형성되어 있는 공통 전극

을 포함하는 유기 발광 표시 장치.

청구항 19

제1항에서,

상기 박막 트랜지스터는,

주사 신호에 의해 제어되는 스위칭 트랜지스터, 그리고

상기 스위칭 트랜지스터와 연결되어 있으며 상기 유기 발광 소자에 출력 전류를 흘리는 구동 트랜지스터

를 포함하는 유기 발광 표시 장치.

명 세 서

발명의 상세한 설명

기 술 분 야

[0001] 본 발명은 접촉 감지 기능이 있는 유기 발광 표시 장치에 관한 것이다.

배 경 기 술

[0002] 유기 발광 표시 장치는 두 개의 전극과 그 사이에 위치하는 발광층을 포함하며, 하나의 전극으로부터 주입된 전자(electron)와 다른 전극으로부터 주입된 정공(hole)이 발광층에서 결합하여 여기자(exciton)를 형성하고, 여기자가 에너지를 방출하면서 발광한다.

[0003] 이러한 유기 발광 표시 장치는 유기 발광 소자(organic light emitting element)와 이를 구동하기 위한 복수의 박막 트랜지스터를 포함한다. 이들은 복수의 박막으로 만들어지며 공정 상의 이유로 대개는 박막 트랜지스터는 아래 쪽에, 유기 발광 소자는 위쪽에 위치하며, 유기 발광 소자의 애노드(anode)는 아래 쪽에, 캐소드(cathod

e)는 위쪽에 위치한다.

[0004] 유기 발광 소자는 두 개의 전극으로서 애노드와 캐소드 및 그 사이의 발광층으로서 유기 발광 부재 등을 포함하는데, 유기 발광 부재는 적색, 녹색, 청색 등 삼원색의 빛을 내거나 백색의 빛을 낸다. 유기 발광 부재가 내는 색상에 따라서 재료가 달라지며, 백색광을 내는 경우에는 적색, 녹색, 청색의 빛을 내는 발광 재료들을 적층하여 합성광이 백색이 되도록 하는 방법을 주로 사용하고 있다. 또한, 유기 발광 부재가 백색광을 내는 경우에는 색필터를 부가하여 원하는 색상의 빛을 얻기도 한다.

[0005] 박막 트랜지스터는 각 화소에 인가되는 전압을 스위칭 하기 위한 스위칭 트랜지스터와 유기 발광 소자를 구동하기 위한 구동 트랜지스터 등을 포함한다.

[0006] 이와 같은 유기 발광 표시 장치는 빛을 위로 방출하는 상부 방출(top emission) 방식과 아래 쪽으로 방출하는 하부 방출(bottom emission) 방식으로 나눌 수 있다.

[0007] 한편 터치 스크린 패널(touch screen panel)은 화면 위에 손가락 또는 터치 펜(touch pen, stylus) 등을 접촉해 문자나 그림을 쓰고 그리거나, 아이콘을 실행시켜 컴퓨터 등의 기계에 원하는 명령을 수행시키는 장치를 말한다. 터치 스크린 패널이 부착된 표시 장치는 사용자의 손가락 또는 터치 펜 등이 화면에 접촉하였는지 여부 및 접촉 위치 정보를 알아낼 수 있다. 그런데, 이러한 표시 장치는 터치 스크린 패널로 인하여 원가 상승, 터치 스크린 패널을 표시판 위에 접착시키는 공정 추가로 인한 수율 감소, 유기 발광 표시 장치 등의 표시판의 휘도 및 시야각 저하, 제품 두께 증가 등의 문제가 있다.

발명의 내용

해결 하고자하는 과제

[0008] 본 발명이 해결하고자 하는 과제는 접촉 감지 기능이 있는 유기 발광 표시 장치의 두께를 얇게 하고 투과율 및 시야각 등의 표시 특성을 좋게 하는 것이다.

과제 해결수단

[0009] 본 발명의 한 실시예에 따른 유기 발광 표시 장치는 기판, 상기 기판 위에 형성되어 있는 박막 트랜지스터, 상기 박막 트랜지스터와 연결되어 데이터 전압을 인가 받는 유기 발광 소자, 상기 유기 발광 소자 위에 형성되어 있으며 상기 박막 트랜지스터 및 상기 유기 발광 소자를 밀봉하는 복수의 봉지 박막, 상기 봉지 박막 위에 형성되어 있는 평탄화막, 그리고 상기 평탄화막 위에 형성되어 있는 접촉 감지부를포함한다.

[0010] 상기 복수의 봉지 박막은 유기 절연물 또는 무기 절연물을 포함할.

[0011] 상기 무기 절연물은 산화규소 또는 질화규소를 포함할 수 있다.

[0012] 상기 평탄화막은 유기물을 포함하며 그 표면이 평탄할 수 있다.

[0013] 상기 접촉 감지부는 감지 신호를 전달하는 감지 신호선에 연결되어 있는 가변 축전기 및 상기 감지 신호선과 기준 전압 단자 사이에 연결되어 있는 기준 축전기를 포함할 수 있다.

[0014] 상기 가변 축전기의 정전 용량은 상기 가변 축전기의 한 단자에 가해지는 압력을 포함하는 외부 자극에 따라 변할 수 있다.

[0015] 상기 접촉 감지부는 제1 투명 도전막을 포함할 수 있다.

[0016] 상기 제1 투명 도전막은 ITO(indium tin oxide) 또는 IZO(indium zinc oxide)를 포함할 수 있다.

[0017] 상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 투명 도전막에 전압을 전달하는 복수의 섬형 전극부를 더 포함할 수 있다.

[0018] 상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고 상기 신호선 패턴과 연결되어 있으며 상기 제1 투명 도전막에 대한 접촉에 따라 변화된 전압을 전달 받아 디지털 감지 신호를 생성하는 감지 신호 처리부를 더 포함할 수 있다.

[0019] 상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 투명 도전막에 고주파 신호를 전달하는 복수의 섬형 전극부, 상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고 상기 신호선 패턴과 연결되어 있으며 상기 제1 투명 도전막에 대한 접촉에 따라 변형된 고주파 신호를 전달 받아 감지 신호를 생성하는 감지 신호 처리부

를 더 포함할 수 있다.

[0020] 상기 접촉 감지부는 상기 제1 투명 도전막 위에 위치하는 제1 절연층, 그리고 상기 제1 절연층 위에 위치하는 제2 투명 도전막을 더 포함할 수 있다.

[0021] 상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 및 제2 투명 도전막에 전압을 전달하는 복수의 섬형 전극부, 상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고 상기 신호선 패턴과 연결되어 있으며 상기 제2 투명 도전막에 대한 접촉에 따라 변화된 전압을 전달 받아 감지 신호를 생성하는 감지 신호 처리부를 더 포함할 수 있다.

[0022] 상기 기판의 모퉁이 위에 형성되어 있으며 상기 제1 및 제2 투명 도전막에 고주파 신호를 전달하는 복수의 섬형 전극부, 상기 복수의 섬형 전극부를 연결하는 신호선 패턴, 그리고 상기 신호선 패턴과 연결되어 있으며 상기 제2 투명 도전막에 대한 접촉에 따라 변형된 고주파 신호를 전달 받아 감지 신호를 생성하는 감지 신호 처리부를 더 포함할 수 있다.

[0023] 상기 제2 투명 도전막 위에 위치하는 제2 절연층을 더 포함할 수 있다.

[0024] 상기 제1 투명 도전막은 기준 전압 단자와 연결되어 있고, 상기 제2투명 도전막은 기판 위에 형성되어 있는 감지 신호선과 연결되어 있을 수 있다.

[0025] 상기 제2 절연층에 대한 접촉에 따라 변화된 상기 제2 투명 도전막의 전압을 전달 받아 감지 신호를 생성하는 감지 신호 처리부를 더 포함할 수 있다.

[0026] 상기 유기 발광 소자는 상기 박막 트랜지스터와 연결되어 데이터 전압을 인가 받는 화소 전극, 상기 화소 전극 위에 형성되어 있는 유기 발광 부재, 그리고 상기 유기 발광 부재 위에 형성되어 있는 공통 전극을 포함할 수 있다.

[0027] 상기 박막 트랜지스터는 주사 신호에 의해 제어되는 스위칭 트랜지스터, 그리고 상기 스위칭 트랜지스터와 연결되어 있으며 상기 유기 발광 소자에 출력 전류를 흘리는 구동 트랜지스터를 포함할 수 있다.

효 과

[0028] 유기 발광 표시 장치의 유기 발광 소자 및 박막 트랜지스터를 여러 봉지 박막을 이용해 밀봉하고 그 위에 두께가 얇은 접촉 감지부를 형성하여, 접촉 감지 기능이 있는 유기 발광 표시 장치의 두께를 줄일 수 있고 투과율 및 시야각 등의 표시 특성을 향상시킬 수 있다.

발명의 실시를 위한 구체적인 내용

[0029] 그러면 첨부한 도면을 참고로 하여 본 발명의 실시예에 대하여 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자가 용이하게 실시할 수 있도록 상세히 설명한다. 그러나 본 발명은 여러 가지 상이한 형태로 구현될 수 있으며 여기에서 설명하는 실시예에 한정되지 않는다.

[0030] 도면에서 여러 층 및 영역을 명확하게 표현하기 위하여 두께를 확대하여 나타내었다. 명세서 전체를 통하여 유사한 부분에 대해서는 동일한 도면 부호를 붙였다. 층, 막, 영역, 판 등의 부분이 다른 부분 "위에" 있다고 할 때, 이는 다른 부분 "바로 위에" 있는 경우 뿐만 아니라 그 중간에 또 다른 부분이 있는 경우도 포함한다. 반대로 어떤 부분이 다른 부분 "바로 위에" 있다고 할 때에는 중간에 다른 부분이 없는 것을 뜻한다.

[0031] 먼저 도 1 및 도 2를 참고하여 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치에 대하여 상세하게 설명한다.

[0032] 도 1은 본 발명의 한 실시예에 따른 유기 발광 표시 장치의 블록도이고, 도 2는 본 발명의 한 실시예에 따른 유기 발광 표시 장치에서 한 화소의 등가 회로도이다.

[0033] 도 1을 참고하면, 본 발명의 한 실시예에 따른 유기 발광 표시 장치는 접촉 감지부(도시하지 않음)를 포함하는 표시판(display panel)(300), 표시판(300)에 연결된 주사 구동부(400), 데이터 구동부(500) 및 감지 신호 처리부(800), 그리고 감지 신호 처리부(800)에 연결된 접촉 판단부(900)를 포함한다.

[0034] 도 1 및 도 2를 참고하면, 표시판(300)은 복수의 신호선(121, 171, 172)과 이들에 연결되어 대략 행렬의 형태로 배열된 복수의 화소(PX)를 포함한다.

[0035] 신호선은 게이트 신호(또는 주사 신호)를 전달하는 복수의 주사 신호선(scanning signal line)(121), 데이터 신호를 전달하는 복수의 데이터선(data line)(171), 구동 전압을 전달하는 복수의 구동 전압선(driving voltage line)(172) 등을 포함한다. 주사 신호선(121)은 대략 행 방향으로 뻗어 있으며 서로가 거의 평행하고 데이터선(171)은 대략 열 방향으로 뻗어 있으며 서로가 거의 평행하다. 구동 전압선(172)은 대략 열 방향으로 뻗어 있는 것으로 도시되어 있으나, 행 방향 또는 열 방향으로 뻗거나 그물 모양으로 형성될 수 있다. 또한 신호선은 접촉 감지부의 감지 신호를 전달하는 감지 신호선(도시하지 않음)을 더 포함할 수 있다.

[0036] 도 2에 도시한 바와 같이, 각 화소(PX)는 스위칭 트랜지스터(switching transistor)(Qs), 구동 트랜지스터(driving transistor)(Qd), 유지 축전기(storage capacitor)(Cst) 및 유기 발광 소자(organic light emitting element)(LD)를 포함한다.

[0037] 스위칭 트랜지스터(Qs)는 제어 단자(control terminal), 입력 단자(input terminal) 및 출력 단자(output terminal)를 가지는데, 제어 단자는 주사 신호선(121)에 연결되어 있고, 입력 단자는 데이터선(171)에 연결되어 있으며, 출력 단자는 구동 트랜지스터(Qd)에 연결되어 있다. 스위칭 트랜지스터(Qs)는 주사 신호선(121)으로부터 받은 주사 신호에 응답하여 데이터선(171)으로부터 받은 데이터 신호를 구동 트랜지스터(Qd)에 전달한다.

[0038] 구동 트랜지스터(Qd) 또한 제어 단자, 입력 단자 및 출력 단자를 가지는데, 제어 단자는 스위칭 트랜지스터(Qs)에 연결되어 있고, 입력 단자는 구동 전압선(172)에 연결되어 있으며, 출력 단자는 유기 발광 소자(LD)에 연결되어 있다. 구동 트랜지스터(Qd)는 제어 단자와 출력 단자 사이에 걸리는 전압에 따라 크기가 달라지는 출력 전류(ILD)를 흘린다.

[0039] 축전기(Cst)는 구동 트랜지스터(Qd)의 제어 단자와 입력 단자 사이에 연결되어 있다. 축전기(Cst)는 구동 트랜지스터(Qd)의 제어 단자에 인가되는 데이터 신호를 충전하고 스위칭 트랜지스터(Qs)가 턴 오프(turn-off)된 뒤에도 이를 유지한다.

[0040] 유기 발광 소자(LD)는 예를 들면 유기 발광 다이오드(organic light emitting diode, OLED)로서, 구동 트랜지스터(Qd)의 출력 단자에 연결되어 있는 애노드(anode)와 공통 전압(Vss)에 연결되어 있는 캐소드(cathode)를 가진다. 유기 발광 소자(LD)는 구동 트랜지스터(Qd)의 출력 전류(ILD)에 따라 세기를 달리하여 발광함으로써 영상을 표시한다. 유기 발광 소자(LD)는 적색, 녹색, 청색의 삼원색 등 기본색(primary color) 중 어느 하나 또는 하나 이상의 빛을 고유하게 내는 유기 물질을 포함하거나, 백색을 내는 유기 물질을 포함할 수 있으며, 유기 발광 표시 장치는 이들 색의 공간적인 합으로 원하는 영상을 표시한다.

[0041] 스위칭 트랜지스터(Qs) 및 구동 트랜지스터(Qd)는 n-채널 전계 효과 트랜지스터(field effect transistor, FET)이지만, 이들 중 적어도 하나는 p-채널 전계 효과 트랜지스터일 수 있다. 또한, 트랜지스터(Qs, Qd), 축전기(Cst) 및 유기 발광 소자(LD)의 연결 관계가 바뀔 수 있다.

[0042] 다시 도 1 및 도 2를 참조하면, 주사 구동부(400)는 주사 신호선(121)에 연결되어 스위칭 트랜지스터(Qs)를 턴 온시킬 수 있는 고전압(Von)과 턴 오프시킬 수 있는 저전압(Voff)의조합으로 이루어진 주사 신호를 주사 신호선(121)에 인가한다.

[0043] 데이터 구동부(500)는 데이터선(171)에 연결되어 있으며, 영상 신호를 나타내는 데이터 전압을 생성하고 이를 데이터선(171)에 인가한다.

[0044] 감지 신호 처리부(800)는 표시판(300)의 접촉 감지부(도시하지 않음)로부터 감지 신호를 입력 받아 증폭, 필터링 등의 신호 처리를 행한 후 아날로그-디지털 변환을 하여 디지털 감지 신호(DS)를 생성한다.

[0045] 접촉 판단부(900)는 감지 신호 처리부(800)로부터 디지털 감지 신호(DS)를 받아 소정 연산 처리를 하여 접촉 여부 및 접촉 위치를 판단한 후 접촉 정보(INF)를 외부 장치로 내보낸다. 외부 장치는 이에 기초한 영상 신호를 유기 발광 표시 장치에 전송할 수 있다. 이와 달리 외부 장치가 디지털 감지 신호(DS)를 직접 받아 접촉 위치를 알아내는 등 접촉 판단부(900)의 기능을 수행할 경우, 접촉 판단부(900)는 생략될 수도 있다.

[0046] 그러면 이러한 유기 발광 표시 장치의 표시 동작에 대하여 설명한다.

[0047] 데이터 구동부(500)는 각 행의 화소(PX)에 대한 디지털 출력 영상 신호를 수신하고, 이를 아날로그 데이터 전압으로 변환한 다음 데이터선(171)에 인가한다.

[0048] 주사 구동부(400)는 고전압(Von)을 주사 신호선(121)에 인가하여이 주사 신호선(121)에 연결된 스위칭 트랜지스터(Qs)를 턴 온시킨다. 그러면 데이터선(171)에 인가된 데이터 전압이 턴 온된 스위칭 트랜지스터(Qs)를 통하

여 해당 화소(PX)에 전달된다.

[0049] 구동 트랜지스터(Qd)는 턴 온된 스위칭 트랜지스터(Qs)를 통하여 데이터 전압을 받고 이에 해당하는 출력 전류(ILD)를 생성한다. 유기 발광 소자(LD)는 구동 트랜지스터(Qd)의 출력 전류(ILD)에 해당하는 세기의 빛을 발광한다.

[0050] 1 수평 주기(또는 "1H")를 단위로 하여 이러한 과정을 되풀이함으로써, 모든 주사 신호선(121)에 대하여 차례로 주사 신호를 인가하고 모든 화소(PX)에 데이터 전압을 인가하여 한 프레임(frame)의 영상을 표시한다.

[0051] 그러면 도 1 및 도 2에 도시한 유기 발광 표시 장치의 표시판의 상세 구조에 대해 도 3 및 도 4를 도 1 및 도 2와 함께 참고하여 설명한다.

[0052] 도 3은 본 발명의 한 실시예에 따른 유기 발광 표시 장치의 한 화소에 대한 구동 트랜지스터 및 유기 발광 소자의 단면도이고, 도 4는 본 발명의 한 실시예에 따른 유기 발광 표시 장치의 접촉 감지부에 대한 등가 회로도이다.

[0053] 먼저 도 4를 참고하면, 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 접촉 감지부는 감지 신호선(SL)에 연결되어 있는 가변 축전기(Cv)와 감지 신호선(SL)과 기준 전압(Vr) 단자 사이에 연결되어 있는 기준 축전기(Cr)를 포함한다.

[0054] 가변 축전기(Cv)의 정전 용량(capacitance)은 가변 축전기(Cv)의 상부 단자에 가해지는 사용자의 손가락(Fn)등의 접촉(touch) 등 외부 자극에 따라 값이 변화할 수 있다. 이러한 외부 자극으로는 압력을 예로 들 수 있다. 가변 축전기(Cv)의 정전 용량이 바뀌면 정전 용량의 크기에 의존하는, 기준 축전기(Cr)와 가변 축전기(Cv) 사이의 접점 전압(Vn)의 크기가 변한다. 접점 전압(Vn)은 감지 신호로서 감지 신호선(SL)을 통하여 흐르며, 이를 기초로 하여 접촉 여부 및 접촉 위치를 판단할 수 있다. 이때 기준 축전기(Cr)는 고정된 정전 용량을 가지며, 기준 축전기(Cr)에 인가되는 기준 전압(Vr)은 일정한 전압 값을 가지므로 접점 전압(Vn)은 일정한 범위에서 변동된다. 따라서 감지 신호가 항상 일정한 범위의 전압 레벨을 가질 수 있고 이에 따라 접촉 여부 및 접촉 위치를 용이하게 판단할 수 있다.

[0055] 이제 도 3을 도 1, 도 2 및 도 4와 함께 참고하여 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 구동 트랜지스터(Qd), 유기 발광 소자(LD) 및 접촉 감지부 등의 단면 구조에 대해 상세하게 설명한다.

[0056] 투명한 유리 또는 플라스틱 따위로 만들어진 절연 기판(110) 위에 제어 전극(control electrode)(124)을 포함하는 복수의 게이트 도전체(gate conductor)가 형성되어 있다.

[0057] 게이트 도전체 위에는 질화규소(SiNx) 또는 산화규소(SiOx) 따위로 만들어질 수 있는 게이트 절연막(gate insulating layer)(140)이 형성되어 있다.

[0058] 게이트 절연막(140) 위에는 복수의 반도체(154)가 형성되어 있다. 반도체(154)는 제어 전극(124)과 중첩한다.

[0059] 반도체(154) 위에는 복수 쌍의 저항성 접촉 부재(ohmic contact)(163, 165)가 쌍을 이루어 배치되어 있다.

[0060] 저항성 접촉 부재(163) 및 게이트 절연막(140) 위에는 복수의 구동 전압선(172), 그리고 복수의 출력 전극(output electrode)(175)을 포함하는 복수의 데이터 도전체(data conductor)가 형성되어 있다.

[0061] 구동 전압선(172)은 구동 전압을 전달하며 제어 전극(124)을 향하여 뻗은 입력 전극(173)을 포함한다.

[0062] 출력 전극(175)은 구동 전압선(172)과 분리되어 있다.

[0063] 입력 전극(173)과 출력 전극(175)은 반도체(154) 위에서 마주한다.

[0064] 제어 전극(124), 입력 전극(173) 및 출력 전극(175)은 반도체(154)와 함께 구동 트랜지스터(Qd)를 이루며, 구동 트랜지스터(Qd)의 채널은 입력 전극(173)과 출력 전극(175) 사이의 반도체(154)에 형성된다.

[0065] 저항성 접촉 부재(163, 165)는 그 아래의 반도체(154)와 그 위의 데이터 도전체 사이에만 존재하며 이들 사이의 접촉 저항을 낮추어 준다. 반도체(154)에는 입력 전극(173)과 출력 전극(175) 사이를 비롯하여 데이터 도전체로 가리지 않고 노출된 부분이 있다.

[0066] 게이트 절연막(140), 데이터 도전체 및 노출된 반도체(154) 부분 위에는 질화규소 또는 산화규소 따위의 무기 절연물로 만들어질 수 있는 하부 보호막(180p)이형성되어 있다.

[0067] 하부 보호막(180p) 위에는 상부 보호막(180q)이 형성되어 있다. 상부 보호막(180q)은 유기물로 만들어질 수 있으며 표면이 평탄할 수 있다.

[0068] 하부 보호막(180p) 및 상부 보호막(180q)에는 출력 전극(175)을 드러내는 접촉 구멍(185)이 형성되어 있다.

[0069] 상부 보호막(180q) 위에는 복수의 화소 전극(pixel electrode)(191)이 형성되어 있다. 화소 전극(191)은 알루미늄(Al), 은(Ag), 금(Au), 백금(Pt), 니켈(Ni), 구리(Cu), 텅스텐(W), 또는 이들의 합금 등의 반사성 금속으로 만들어질 수 있다. 화소 전극(191)은 이러한 반사성 금속으로 만들어진 층의 위 또는 아래에 위치하며 ITO(indium tin oxide) 또는 IZO(indium zinc oxide) 따위의 도전성 금속 산화물 등으로 만들어질 수 있는 투명 전극을 더 포함할 수 있다. 이러한 투명 전극은 반사성 금속으로 만들어진 층의 다른 층과의 접착성을 향상시키고 부식을 방지할 수 있다.

[0070] 화소 전극(191)은 접촉 구멍(185)을 통하여 출력 전극(175)과 물리적ㅇ전기적으로 연결되어 있다.

[0071] 상부 보호막(180q) 위에는 격벽(partition)(360)이 형성되어 있다. 격벽(360)은 화소 전극(191) 가장자리 주변을 둑(bank)처럼 둘러싸서 개구부(opening)를 정의하며, 유기 절연물 또는 무기 절연물로 만들어질 수 있다. 격벽(360)은 또한 검정색 안료를 포함하는 감광제로 만들어질 수 있는데, 이 경우 격벽(360)은 차광 부재의 역할을 할 수 있다.

[0072] 격벽(360)이 정의하는 화소 전극(191) 위의 개구부 내에는 유기 발광 부재(organic light emitting member)(370)가 형성되어 있다. 유기 발광 부재(370)는 적색, 녹색, 청색의 삼원색 등 기본색(primary color) 중 어느 하나의 빛을 고유하게 내는 유기 물질로 만들어진다. 유기 발광 표시 장치는 유기 발광 부재(370)들이 내는 기본색 색광의 공간적인 합으로 원하는 영상을 표시한다.

[0073] 유기 발광 부재(370)는 빛을 내는 발광층(emitting layer)(도시하지 않음) 외에 발광층의 발광 효율을 향상하기 위한 부대층(auxiliary layer)(도시하지 않음)을 포함하는 다층 구조를 가질 수 있다. 부대층에는 전자와 정공의 균형을 맞추기 위한 전자 수송층(electron transport layer)(도시하지 않음) 및 정공 수송층(hole transport layer)(도시하지 않음)과 전자와 정공의 주입을 강화하기 위한 전자 주입층(electron injecting layer)(도시하지 않음) 및 정공 주입층(hole injecting layer)(도시하지 않음) 등이 있다.

[0074] 유기 발광 부재(370) 위에는 공통 전극(common electrode)(270)이 전면에 형성되어 있다. 공통 전극(270)은 공통 전압(Vss)을 인가 받으며, ITO 또는 IZO 등의 투명한 도전성 물질로 만들어지거나 빛을 투과할 수 있는 얇은 금속층으로 이루어질 수도 있다.

[0075] 이러한 유기 발광 표시 장치에서, 화소 전극(191), 유기 발광 부재(370) 및 공통 전극(270)은 유기 발광 소자(LD)를 이루며, 화소 전극(191)이 애노드(anode), 공통 전극(270)이 캐소드(cathode)가 되거나 반대로 화소 전극(191)이 캐소드, 공통 전극(270)이 애노드가 된다. 본 실시예에 따른 유기 발광 표시 장치는 기판(110)의 위쪽으로 빛을 내보내어 영상을 표시한다.

[0076] 공통 전극(270) 위에는 제1 봉지 박막(261), 제2 봉지 박막(262) 및 제3 봉지 박막(263)을 포함하는 봉지 박막층(encapsulation thin film layer)(260)이 형성되어 있다. 제1, 제2 및 제3 봉지 박막(261, 262, 263)은 산화규소 또는 질화규소 따위의 무리 절연물 또는 유기 절연물 등으로 만들어질 수 있다. 봉지 박막층(260)은 유기 발광 부재(370) 및 공통 전극(270)을 밀봉(encapsulation)하여 산화를 방지하고 외부로부터 수분 및/또는 산소가 침투하는 것을 방지할 수 있으며, 가장 위에 위치하는 박막, 즉 제3 봉지 박막(263)은 표시판(300)의 가장자리 부분에서 기판(110) 위까지 덮으며 유기 발광 부재(370) 및 공통 전극(270) 등을 완전히 밀봉한다. 이와 같이 복수의 박막을 이용하여 유리 발광 부재(370) 등을 밀봉 및 보호함으로써 유기 발광 표시 장치의 두께를 더욱 얇게 할 수 있고 투과율 및 시야각 등의 표시 특성을 좋게 할 수 있다.

[0077] 본 발명의 다른 실시예에 따르면 봉지 박막층(260)은 무기 절연물 또는 유기 절연물로 이루어진 단일층, 이중층, 또는 네 개 이상의 복수의 층으로 이루어질 수도 있다.

[0078] 봉지 박막층(260) 위에는 평탄화막(240)이 형성되어 있다. 평탄화막(240)은 유기물 등으로 만들어질 수 있으며, 봉지 박막층(260) 위의 표면을 평탄하게 한다.

[0079] 평탄화막(240) 위의 전면에는 하부 투명 도전막(232), 절연층(220), 그리고 상부 투명 도전막(231)이 차례대로 형성되어 있다.

[0080] 하부 및 상부 투명 도전막(232, 231)은 ITO, ATO(antimony tin oxide), 또는 IZO 등의 투명한 도전성 물질로

만들어질 수 있다. 하부 투명 도전막(232)은 기준 전압(Vr) 따위의 정해진 전압을 인가 받을 수 있으며, 상부 투명 도전막(231)은 감지 신호선(SL)에 연결되어 있을 수 있다.

[0081] 절연층(220)은 산화규소 또는 질화규소 따위의 무기 절연물 또는 유기 절연물 등으로 만들어질 수 있으며 스핀 코팅 또는 프린팅 등의 방법으로 형성할 수 있다.

[0082] 하부 투명 도전막(232)과 상부 투명 도전막(231)은 절연층(220)과 함께 기준 축전기(Cr)를 이룬다.

[0083] 상부 투명 도전막(231) 위에는 산화규소 또는 질화규소 따위의 무기 절연물 또는 유기 절연물 등으로 만들어질 수 있는 표면 절연층(210)이 전면에 도포되어 있다. 표면 절연층(210)의 위쪽 면 또는 외부 접촉 물질은 상부 투명 도전막(231)과 함께 가변 축전기(Cv)를 이루며, 표면 절연층(210)의 위쪽 면 또는 외부 접촉 물질과 상부 투명 도전막(231) 사이에서 표면 절연층(210)은 유전체로서 기능한다.

[0084] 도 3 및 도 4를 참고하면, 표면 절연층(210) 위의 어느 부분에 손가락(Fn) 등에 의한 외부 접촉이 이루어지면 상부 투명 도전막(231)의 전압, 즉 기준 축전기(Cr)와 가변 축전기(Cv) 사이의 접점 전압(Vn)의 크기가 변한다. 또는 접촉 부분에서 가변 축전기(Cv)의 정전 용량이 변화하여 상부 투명 도전막(231)의 전압(Vn)이 변할 수도 있는데, 이 경우 접촉에 의해 표면 절연층(210)에 압력이 가해지면 표면 절연층(210)의 두께가 변화되어 가변 축전기(Cv)의 정전 용량이 바뀔 수 있다. 그러면 가변 축전기(Cv)의 정전 용량의 크기에 의존하는 상부 투명 도전막(231)의 전압(Vn)의 크기가 변한다. 변경된 상부 투명 도전막(231)의 전압(Vn)은 감지 신호로서 감지 신호선(SL)을 통하여 흐르며, 이를 기초로 하여 접촉 여부를 판단할 수 있다. 이러한 감지 동작은 앞서 설명한 표시 동작과 별도로 수행되며, 서로 영향을 받지 않는다.

[0085] 다른 실시예에 따르면 표면 절연층(210) 위에 도전막(도시하지 않음)이 더 형성되어 있을 수 있다. 또한 표면 절연층(210) 위에는 상부 투명 도전막(231)을 보호하고 노이즈를 줄일 수 있는 코팅막(도시하지 않음)이 더 형성되어 있을 수도 있다.

[0086] 다음 도 5 내지 도 7을 도 1 및 도 2와 함께 참고하여 본 발명의 다른 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치에 대해 설명한다.

[0087] 도 5 및 도 6은 각각 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 한 화소에 대한 단면도이고, 도 7은 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치에서 고주파센서의 연결 관계를 도시한 도면이다.

[0088] 도 5 및 도 6을 참고하면, 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치는 도 3에 도시한 유기 발광 표시 장치와 거의 동일한 단면 구조를 가진다. 앞선 실시예에서와 동일한 설명은 생략하고 동일한 구성 요소는 동일한 도면 부호를 부여한다.

[0089] 도 5를 참고하면, 절연 기판(110) 위에 제어 전극(124)을 포함하는 게이트 도전체, 게이트 절연막(140), 복수의 반도체(154), 복수 쌍의 저항성 접촉 부재(163, 165), 구동 전압선(172) 및 출력 전극(175)을 포함하는 복수의 데이터 도전체, 하부 보호막(180p) 및 상부 보호막(180q), 복수의 화소 전극(191), 격벽(360), 유기 발광 부재(370), 공통 전극(270), 제1 봉지 박막(261), 제2 봉지 박막(262) 및 제3 봉지 박막(263)을 포함하는 봉지 박막층(260), 평탄화막(240), 그리고 투명 도전막(232a)이 형성되어 있다.

[0090] 한편 도 1 및 도 7을 참고하면, 본 실시예에 따른 유기 발광 표시 장치의 표시판(300)의 네 귀퉁이에는 복수의 섬형 전극부(233)가 형성되어 있다. 섬형 전극부(233)는 투명 도전막(232a)의 네 모퉁이와 연결되어 있으며, 투명 도전막(232a)에고주파 신호 또는 일정 전압 등을 전달할 수 있는 섬형 전극(도시하지 않음)과 변형된 고주파 신호 또는 전압을 감지할 수 있는 신호 수신부(도시하지 않음)를 포함할 수 있다.

[0091] 표시판(300)의 가장자리 부근에는 은 또는 알루미늄 따위의 금속으로 만들어질 수 있는 선형의 신호선 패턴(80)이 형성되어 있다. 신호선 패턴(80)은 네 개의 섬형 전극부(233)를 연결하며 그 끝은 감지 신호 처리부(800)와 연결되어 있다. 신호선 패턴(80)은 투명 도전막(232a) 위에 형성되어 있을 수 있다.

[0092] 이러한 유기 발광 표시 장치는, 섬형 전극부(233)의 섬형 전극(도시하지 않음)을 통해 투명 도전막(232a) 전체에 고주파 신호 또는 전압 등을 인가한다. 투명 도전막(232a)에손가락(Fn) 등의 외부 물체가 접촉하면 고주파 신호가 변형되거나 인가된 전압이 변화되고, 변형된 고주파 신호 등의 신호는 섬형 전극부(233)의 신호 수신부(도시하지 않음)에 의해 감지된다. 감지된 신호는 신호선 패턴(80)을 통해 감지 신호 처리부(800) 및 접촉 판단부(900)에 입력되어 접촉 위치를 판단할 수 있다.

[0093] 이와 달리 도 6을 참고하면, 본 발명의 또 다른 실시예에 따른 접촉감지 기능이 있는 유기 발광 표시 장치는 도 5의 유기 발광 표시 장치의 투명 도전막(232a) 대신에 하부 투명 도전막(232)이 형성되어 있고, 하부 투명 도전막(232) 위에 절연층(220), 상부 투명 도전막(231), 그리고 코팅막(215)이 더 형성되어 있다. 코팅막(215)은 상부 투명 도전막(231)을 오염 및 외부 영향으로부터 보호할 수 있다.

[0094] 도 6 및 도 7을 참고하면, 하부 투명 도전막(232) 및 상부 투명 도전막(231)은 섬형 전극부(233)의 섬형 전극(도시하지 않음)과 연결되어 고주파 신호 또는 일정 전압 등을 인가 받으며, 접촉에 의해 변형된 고주파 신호 또는 전압은 섬형 전극부(233)의 신호 수신부(도시하지 않음)에 의해 감지된다. 이 밖에 도 5 및 도 7에 도시한 유기 발광 표시 장치의 특징들이 도 6 및 도 7에 도시한 유기 발과 표시 장치에도 적용될 수 있다.

[0095] 도 3에 도시한 접촉 감지 기능이 있는 유기 발광 표시 장치의 여러 특징들 역시 도 5 및 도 6에 도시한 유기 발광 표시 장치에도 적용될 수 있다.

[0096] 본 발명의 실시예에 따른 유기 발광 표시 장치의 감지 방식은 접촉 감지 방식의 일부 예이며, 정전 용량 방식 등의 여러 감지 방식의 접촉 감지부가 포함될 수도 있다.

[0097] 이와 같이 본 발명의 실시예에 따르면 유기 발광 표시 장치의 유기 발광 소자 및 박막 트랜지스터를 여러 봉지 박막을 이용해 밀봉(encapsulation)하고 그 위에 두께가 얇은 정전 용량 방식 등의 접촉 감지부를 형성하여 접촉 감지 기능이 있는 유기 발광 표시 장치의 두께를 줄일 수 있고 투과율 및 시야각 등의 표시 특성을 향상시킬 수 있다.

[0098] 본 발명은 여러 가지 다른 구조의 유기 발광 표시 장치에도 적용될 수 있다.

[0099] 이상에서 본 발명의 바람직한 실시예에 대하여 상세하게 설명하였지만 본 발명의 권리범위는 이에 한정되는 것은 아니고 다음의 청구범위에서 정의하고 있는 본 발명의 기본 개념을 이용한 당업자의 여러 변형 및 개량 형태 또한 본 발명의 권리범위에 속하는 것이다.

도면의 간단한 설명

[0100] 도 1은 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 블록도이고,

[0101] 도 2는 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 등가 회로도이고,

[0102] 도 3은 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 한 화소에 대한 단면도이고,

[0103] 도 4는 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 접촉 감지부에 대한 등가 회로도이고,

[0104] 도 5 및 도 6은 각각 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치의 한 화소에 대한 단면도이고,

[0105] 도 7은 본 발명의 한 실시예에 따른 접촉 감지 기능이 있는 유기 발광 표시 장치에서 고주파센서의 연결 관계를 도시한 도면이다.

[0106] <도면 부호의 설명>

[0107] 110: 절연 기판 121: 주사 신호선

[0108] 124: 제어 전극 140: 게이트 절연막

[0109] 154: 반도체 163, 165: 저항성 접촉 부재

[0110] 171: 데이터선

[0111] 172: 구동 전압선 173: 입력 전극

[0112] 175: 출력 전극 180p, 180q: 보호막

[0113] 185: 접촉 구멍 191: 화소 전극

[0114] 210, 220: 절연층 240: 평탄화막

[0115] 231, 232: 투명 도전막

[0116] 260, 261, 262, 263: 봉지 박막(층)

[0117] 270: 공통 전극 300: 표시판

[0118] 360: 격벽 370: 유기 발광 부재

[0119] 400: 주사 구동부 500: 데이터 구동부

[0120] 800: 감지 신호 처리부 900: 접촉 판단부

[0121] Fn: 손가락, 접촉 물체 Cv: 가변 축전기

[0122] Cr: 기준 축전기 Cst: 유지 축전기

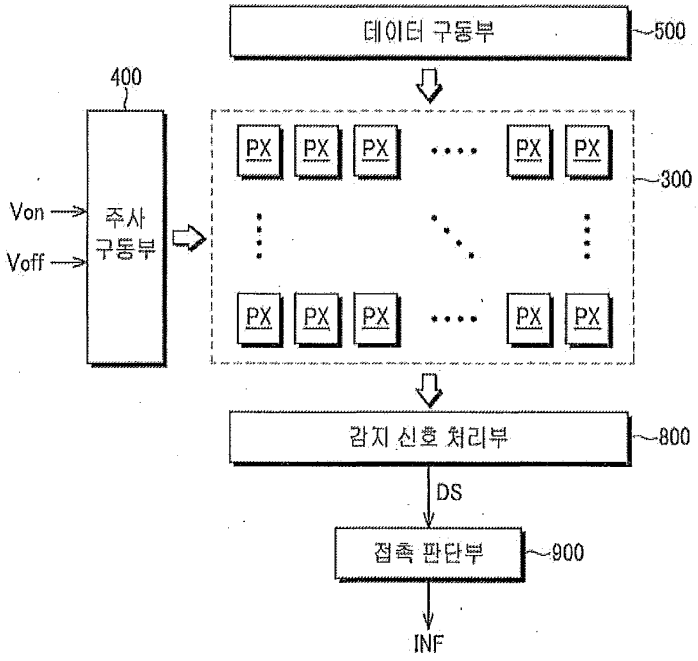
[0123] ILD: 출력 전류 LD: 유기 발광 소자

[0124] PX: 화소 Qs: 스위칭 트랜지스터

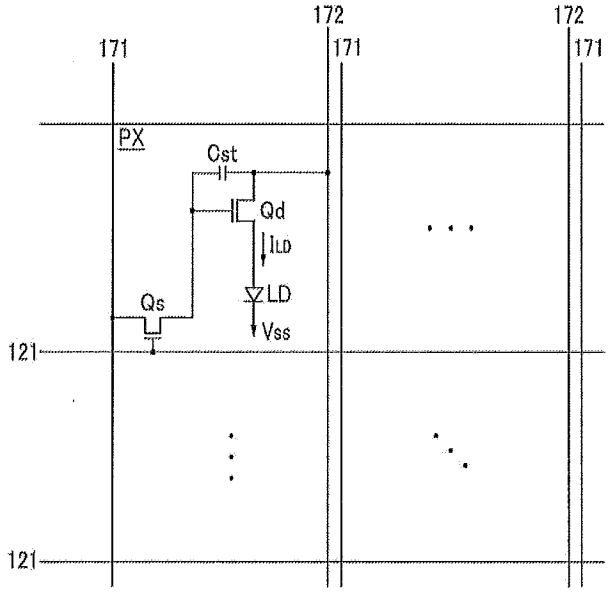
[0125] Qd: 구동 트랜지스터

도면

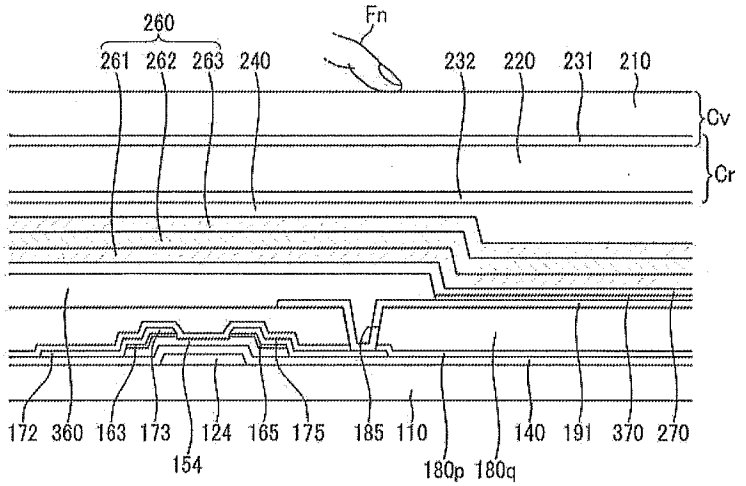
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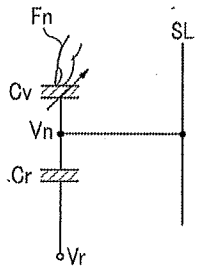
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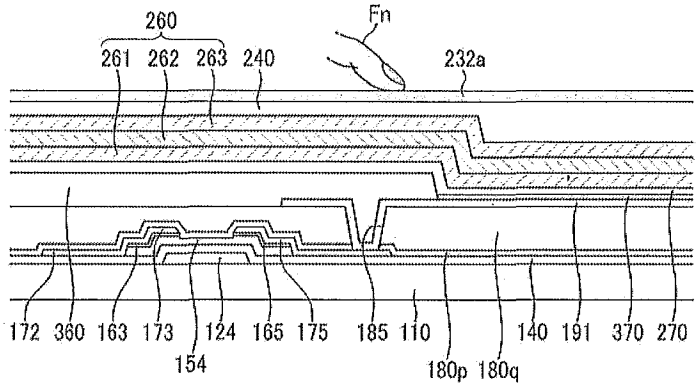
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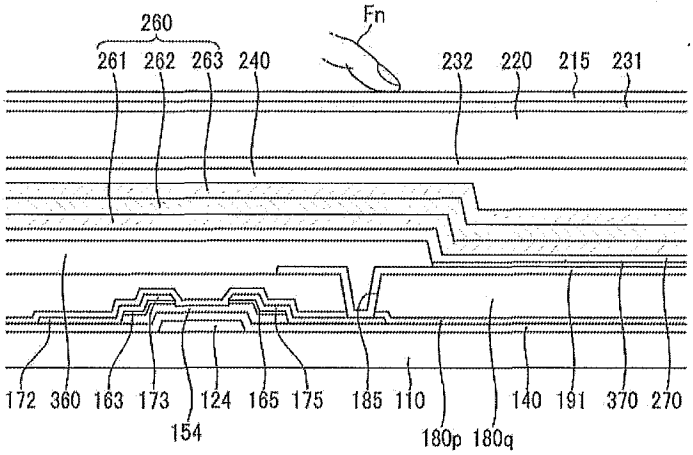
도면4


Fn
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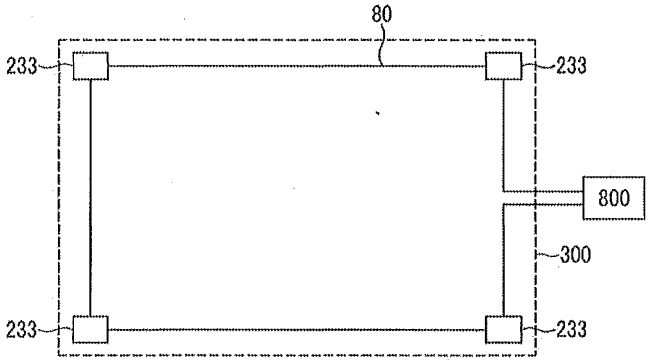
도면5


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도면6


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172 360 163 173 154 124 165 175 185 110 180p 180q 140 191 370 270

도면7



Electronic Patent Application Fee Transmittal

Application Number:	15133605
Filing Date:	20-Apr-2016
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Filer:	John M Carson/Karen Byrd
Attorney Docket Number:	SDCSHN.181C1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1700	1700
		Total in USD ($)		**1700**

Electronic Acknowledgement Receipt

EFS ID:	30876076
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	John M Carson/Anthony Bonilla
Filer Authorized By:	John M Carson
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	07-NOV-2017
Filing Date:	20-APR-2016
Time Stamp:	16:16:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1700
RAM confirmation Number	110817INTEFSW16174100
Deposit Account	111410
Authorized User	Anthony Bonilla

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	Request_for_Continued_Examination_SDCSHN-181C1.pdf	93823 92523762c6a0431a448e6a22dbaaecb0af07951b	no	2
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2	Transmittal Letter	IDS_Transmittal_SDCSHN-181C1.pdf	43967 44d98608d35854e636f0a3723dc97720b65f9b4a	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	IDS_List_Form_SDCSHN-181C1.pdf	50041 bb984ecce4d5538dc8d949b016d928361307fd4e	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	Ref1_KR1020100061121.pdf	868071 7c03358f61ae23a8eb94682b823f7b7d961a7779	no	18
Warnings:					
Information:					
5	Other Reference-Patent/App/Search documents	Ref2_KR_OA_KR1020100089955_10_30_2017.pdf	526631 c1045d9a063234bd52c1ea50e471beaf3716f7b8	no	6
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	30494 0caabe25958604a8ac4c17faa45675ce3ccf1b04	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	1613027

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **11/07/2017**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 13	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
ALLYSON PURNELL

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1	2023

20995 7590 11/16/2017

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
11/16/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/07/2017*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-12 and 15* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-12 and 15* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *11/07/2017*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/29/17 has been entered.

Status of Claims

2. **Claims 1, 2, 4** have been amended, **claims 13-14 and 16-17** have been canceled and **claims 1 – 12 and 15** are pending.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file

provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

4. **Claims 1 – 12 and 15** rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1 – 13 of U.S. Patent No. 9,323,400 in view of Jang (US 2010/0007616).

Claim 1 of Instant Application	Claim 1 of U.S. Patent No. 9,323,400
A display comprising: a substrate including a first area having a pixel area and a second area adjacent to the first area; a plurality of pixels in the pixel	**A** flat panel **display** with an integrated touch screen panel, **comprising**: **a substrate having a pixel area in which a plurality of pixels are formed and the substrate having an area greater than the pixel area;**

area of the substrate; a sealing thin film covering the first area of the substrate and including an inclined surface at an end of the sealing thin film to inhibit infiltration of oxygen or moisture into the pixels; a plurality of sensing cells formed over a top surface of the sealing thin film to sense a touch; a plurality of sensing lines coupled to the sensing cells, the sensing lines comprising a first portion and a second portion; a driving circuit electrically connected to the sensing cells via the sensing lines; and an insulating layer, wherein the inclined surface of the sealing thin film is formed to be inclined downwardly toward the	**a sealing thin film formed over the pixel area of the substrate so as to inhibit oxygen and moisture from infiltrating into the pixels** and the sealing thin film having an area greater than the pixel area; **a plurality of sensing cells, formed directly over a top surface of the sealing thin film to form a touch screen panel;** **a plurality of sensing lines** arranged outside the pixel area; **the sensing lines comprising a first portion and a second portion;** and **a flexible printed circuit board (FPCB)** attached to one end of the substrate, **wherein the sensing lines are formed directly over the top surface of the sealing thin film in the first portion**

driving circuit, **wherein the sensing lines include inclined portion along the inclined surface of the sealing thin film,** **wherein the sensing lines are formed over the top surface of the sealing thin film in the first portion and formed over the substrate in the second portion, and the sensing lines extend from the sensing cells along the inclined surface of the sealing thin film to the second area of the substrate,** **wherein the sensing lines are electrically connected to the driving circuit,** wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction	**and the sensing lines are formed directly over the substrate in the second portion and extend from an end of the sealing thin film directly to the substrate beyond an end of the sealing thin film and to the side of the pixel area so as to be electrically connected to the FPCB**, wherein the sealing thin film is interposed between the pixel area and the plurality of sensing cells, **wherein the end of the sealing thin film is formed to be inclined downwardly toward the FPCB** and the sensing lines are formed to have a conforming incline to prevent the sensing lines passing over the end of the sealing thin film from being broken, and **wherein each of the sensing lines extends from a sensing cell to the**

by second connection patterns, and wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.	**FPCB as a single connection**.

Claim 1 of U.S. Patent No. 9,323,400 does not explicitly disclose an insulating layer, wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plu'ality of second sensing cells connected along a second direction by second connection patterns, and wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

In the same field of endeavor, Jang discloses an insulating layer (first insulating layer 330 of fig. 5 [0078]), a plurality of sensing cells (sensing cells 312a and 311a of figs. 3 and 4), wherein the sensing cells include a plurality of first sensing cells (312a of fig. 3 and 3) connected along a first direction by first connection patterns (325 of fig. 3) and a plurality of second sensing cells (311a of fig. 3) connected along a second direction by second connection patterns (311b of fig. 3), and wherein the insulating layer (first insulating layer 330 of figs. 3 and 5 [0078]) is interposed between the first connection patterns (325 of fig. 3) and the second connection patterns (311b of fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Claim 1 of U.S. Patent No. 9,323,400 and Jang, and to provide the sensing cell connected with connection

patterns and insulation layer disposed between the connection patterns as disclosed by Jang, with motivation to allow a user to input a command via a finger or a pen-type pointer and providing a touch panel function without increasing the thickness of the display device (Jang [0006 – 0008]).

Claims 2 – 15 are similarly rejected over claims 1 – 13 of U.S. Patent No. 9,323,400 in view of Jang.

Response to Arguments

5. Applicant's arguments with respect to claim 1 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection to address newly added limitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DMITRIY BOLOTIN whose telephone number is (571)270-5873. The examiner can normally be reached on Monday-Friday, 7:30am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/133,605
	Filing Date	April 20, 2016
	First Named Inventor	Kim, Jong-Soo
	Art Unit	2623
(Multiple sheets used when necessary)	Examiner	Bolotin, Dmitriy
SHEET 1 OF 1	Attorney Docket No.	SDCSHN.181C1

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	1	KR 10-2010-0061121 (A)	06-07-2010	Samsung Electronics Co., Ltd.	*With English Translation of the Relevant Portion*	Abstract

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	2	Korean Office Action dated October 30, 2017 for Korean Patent Application No. KR 10-2010-0089955, which cites the above-identified reference numbered 1, and from which subject U.S. Application No. 15/133,605 claims priority.	✓

27018689

Examiner Signature	/DMITRIY BOLOTIN/	Date Considered	11/12/2017

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.B/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016	12/23/2016	04/15/2017	08/04/2017	11/12/2017				
	1	✓	✓	✓	✓	✓				
	2	✓	✓	✓	✓	✓				
	3	✓	✓	✓	✓	✓				
	4	✓	✓	✓	✓	✓				
	5	✓	✓	✓	✓	✓				
	6	✓	✓	✓	✓	✓				
	7	✓	✓	✓	✓	✓				
	8	✓	✓	✓	✓	✓				
	9	✓	✓	✓	✓	✓				
	10	✓	✓	✓	✓	✓				
	11	✓	✓	✓	✓	✓				
	12	✓	✓	✓	✓	✓				
	13	✓	✓	-	-	-				
	14	✓	✓	-	-	-				
	15	✓	✓	✓	✓	✓				
	16	✓	✓	✓	✓	-				
	17		✓	✓	✓	-				

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB
Updated Search	11/12/2017	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB
	Updated Search	12/23/2016	DB
	Updated Search	04/15/2017	DB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB
Updated Search	11/12/2017	DB

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

PTO/AIA/82 (07-17)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[X] Practitioners associated with Customer Number: 58027

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[X] The address associated with Customer Number: 58027

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: Samsung Display Co., Ltd.
1, Samsung-ro, Giheung-gu, Gyeonggi-do, Yongin-si, Republic of Korea

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature	Dong-Ho Lee	Date	September 26, 2017
Name	Dong-Ho Lee	Telephone	+82-31-209-3626
Title	Director of IP Prosecution Group, Samsung Display Co., Ltd.		

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Samsung Display Co., Ltd.

Application No./Patent No.: 15/133,605 Filed/Issue Date: 2016-04-20

Titled: FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

Samsung Display Co., Ltd., a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: JONG-SOO KIM et al. To: SAMSUNG MOBILE DISPLAY CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at

   Reel 038372, Frame 0859, or for which a copy thereof is attached.

2. From: SAMSUNG MOBILE DISPLAY CO., LTD. To: SAMSUNG DISPLAY CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at

   Reel 038516, Frame 0395, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/William L. Brooks/	2017-11-22
Signature	Date
William L. Brooks	Patent Attorney (Reg. No. 34,129)
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	31035173
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	20995
Filer:	Hae-Chan Park/Ellie Park
Filer Authorized By:	Hae-Chan Park
Attorney Docket Number:	SDCSHN.181C1
Receipt Date:	22-NOV-2017
Filing Date:	20-APR-2016
Time Stamp:	19:32:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	00602703.PDF	1392509 20daa313071cbdb4b97547dfa2c04c104a6f2e58	no	5

Warnings:

Information:	
Total Files Size (in bytes):	1392509

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1

CONFIRMATION NO. 2023

POWER OF ATTORNEY NOTICE

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

OC000000095686981

Date Mailed: 11/28/2017

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/22/2017.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mabebe/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/133,605	04/20/2016	Jong-Soo Kim	SDCSHN.181C1

CONFIRMATION NO. 2023

POA ACCEPTANCE LETTER

58027
H.C. PARK & ASSOCIATES, PLC
1894 PRESTON WHITE DRIVE
RESTON, VA 20191

OC000000095687189

Date Mailed: 11/28/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/22/2017.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mabebe/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	Docket No.: P7740USC1
Jong-Soo KIM, *et al.*	
Serial No.: 15/133,605	Group Art Unit: 2623
Confirmation No.: 2023	
Filed: April 20, 2016	Examiner: BOLOTIN, DMITRIY

For: **FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL**

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY UNDER 37 C.F.R. § 1.111

Dear Commissioner:

In response to the Non-Final Office Action mailed November 16, 2017 ("Office Action"), Applicants respectfully request reconsideration of the Application in view of the following Amendments and Remarks.

A **Claim List** begins on page 2.

Remarks begin on page 6.

No extensions of time are required at this time. If extensions of time are necessary to prevent abandonment of this Application, then they are petitioned for under 37 C.F.R. § 1.136(a). No fees for net addition of claims are required at this time. Any fees required for extensions of time or for the net addition of claims may be charged to Deposit Account No. 50-3698.

CLAIM LIST

This claim list replaces all prior claim lists in the Application.

1. (Previously Presented) A display comprising:

a substrate including a first area having a pixel area and a second area adjacent to the first area;

a plurality of pixels in the pixel area of the substrate;

a sealing thin film covering the first area of the substrate and including an inclined surface at an end of the sealing thin film to inhibit infiltration of oxygen or moisture into the pixels;

a plurality of sensing cells formed over a top surface of the sealing thin film to sense a touch;

a plurality of sensing lines coupled to the sensing cells, the sensing lines comprising a first portion and a second portion;

a driving circuit electrically connected to the sensing cells via the sensing lines; and

an insulating layer,

wherein the inclined surface of the sealing thin film is formed to be inclined downwardly toward the driving circuit,

wherein the sensing lines include inclined portion along the inclined surface of the sealing thin film,

wherein the sensing lines are formed over the top surface of the sealing thin film in the first portion and formed over the substrate in the second portion, and the sensing lines extend from the sensing cells along the inclined surface of the sealing thin film to

the second area of the substrate, wherein the sensing lines are electrically connected to the driving circuit,

wherein the sensing cells include a plurality of first sensing cells connected along a first direction by first connection patterns and a plurality of second sensing cells connected along a second direction by second connection patterns, and

wherein the insulating layer is interposed between the first connection patterns and the second connection patterns.

2. (Previously Presented) The display according to claim 1, wherein the first portion is located on the sealing thin film and the second portion is located on the second area of the substrate, and wherein first portions of the sensing lines are located on a same layer.

3. (Original) The display according to claim 2, wherein second portions of the sensing lines are located on a different layer from the first portions of the sensing lines.

4. (Previously Presented) The display according to claim 1, wherein a first distance between first portions of the sensing lines and the substrate is greater than a second distance between second portions of the sensing lines and the substrate.

5. (Original) The display according to claim 1, wherein the sensing lines are electrically connected to the driving circuit through wiring lines.

6. (Original) The display according to claim 1, wherein the sensing lines include a different material from the sensing cells.

7. (Original) The display according to claim 1, wherein the driving circuit is located on the second area of the substrate.

8. (Original) The display according to claim 7, further comprising a flexible printed circuit board (FPCB) attached to the second area of the substrate.

9. (Original) The display according to claim 8, wherein the sensing lines are electrically connected to the driving circuit through the FPCB.

10. (Original) The display according to claim 1, wherein the sensing lines are arranged outside the pixel area.

11. (Original) The display according to claim 1, wherein the first area has a greater area than the second area.

12. (Previously presented) The display according to claim 1, wherein the sealing thin film includes at least one organic layer and at least one inorganic layer.

13-14. (Canceled)

15. (Previously presented) The display according to claim 1, wherein the first connection patterns are respectively patterned to have independent patterns in upper or lower layers of the first sensing cells so that the first connection patterns are electrically connected to the first sensing cells at upper or lower portions of the first sensing cells.

16-17. (Cancelled)

REMARKS

The claims have not been amended. Accordingly, claims 1-12 and 15 are currently pending in the Application, of which claim 1 is independent.

In view of the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejection of Claims under Double Patenting

Claims 1-12 and 15 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 9,323,400, issued to Kim, *et al.* ("Kim") in view of U.S. Patent Application Publication No. 2010/0007616, applied for by Jang ("Jang").

Applicants have submitted a terminal disclaimer to overcome this rejection. Accordingly, Applicants respectfully request withdrawal of this double patenting rejection of claims 1-12 and 15.

Applicants note that "[t]he filing of a terminal disclaimer to obviate a rejection based on nonstatutory double patenting is not an admission of the propriety of the rejection [because] the filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting, and raises neither a presumption nor estoppel on the merits of the rejection" (MPEP § 804.02.II, citations omitted). Hence, the terminal disclaimer included with this reply simply serves the statutory function of removing the double patenting rejection without raising a presumption or estoppel on the merits of the rejection.

CONCLUSION

A full and complete response has been made to the pending Office Action, and all of the stated grounds for rejection have been overcome or rendered moot. Accordingly, all pending claims are allowable, and the Application is in condition for allowance.

The Examiner is invited to contact Applicants' undersigned representative at the number below if it would expedite prosecution. Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

/William L. Brooks/

William L. Brooks
Reg. No. 34,129

Date: February 13, 2018

CUSTOMER NUMBER: 58027
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Reston, VA 20191
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Electronic Acknowledgement Receipt

EFS ID:	31783183
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	58027
Filer:	Hae-Chan Park/Emmeline Park
Filer Authorized By:	Hae-Chan Park
Attorney Docket Number:	P7740USC1
Receipt Date:	13-FEB-2018
Filing Date:	20-APR-2016
Time Stamp:	18:37:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		P7740USC1-reply.pdf	113226 6b8321407e12442aa836d86529c44da30018bab0	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	7
Warnings:			
Information:			
	Total Files Size (in bytes):	113226	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/133,605	Filing Date 04/20/2016	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED		(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A		N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A		N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A		N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =		*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =		*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).					
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))						
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	02/13/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 13	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	JASON B EADDY
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	15133605
Filing Date	20-Apr-2016
First Named Inventor	Jong-Soo Kim
Attorney Docket Number	P7740USC1
Title of Invention	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Samsung Display Co., Ltd.	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

9323400

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○	I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicant claims the following fee status:

○ Small Entity

○ Micro Entity

◉ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 34129

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/William L. Brooks/
Name	William L. Brooks

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	15133605
Filing Date:	20-Apr-2016
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Filer:	Hae-Chan Park
Attorney Docket Number:	P7740USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 15133605

Filing Date: 20-Apr-2016

Applicant/Patent under Reexamination: Kim

Electronic Terminal Disclaimer filed on February 13, 2018

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	31758161
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	58027
Filer:	Hae-Chan Park
Filer Authorized By:	
Attorney Docket Number:	P7740USC1
Receipt Date:	13-FEB-2018
Filing Date:	20-APR-2016
Time Stamp:	18:33:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$160
RAM confirmation Number	021418INTEFSW18325900
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33514 c73888a8833f9a0202210b971dfe4683d1bbf641	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30421 58c805a479a2e1b1bd927acae47cce30836eb75c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63935		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

58027 7590 03/26/2018

H.C. PARK & ASSOCIATES, PLC
1894 PRESTON WHITE DRIVE
RESTON, VA 20191

EXAMINER
BOLOTIN, DMITRIY

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 03/26/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	P7740USC1	2023

TITLE OF INVENTION: FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0	$0	$1000	06/26/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

58027 7590 03/26/2018
H.C. PARK & ASSOCIATES, PLC
1894 PRESTON WHITE DRIVE
RESTON, VA 20191

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	P7740USC1	2023

TITLE OF INVENTION: FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0	$0	$1000	06/26/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
BOLOTIN, DMITRIY	2623	345-174000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	04/20/2016	Jong-Soo Kim	P7740USC1	2023

58027 7590 03/26/2018

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1894 PRESTON WHITE DRIVE
RESTON, VA 20191

EXAMINER	
BOLOTIN, DMITRIY	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 03/26/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/133,605	Applicant(s) KIM ET AL.	
	Examiner DMITRIY BOLOTIN	Art Unit 2623	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Remarks and TD filed on 02/13/2018*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-12 and 15*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☒ All b) ☐ Some *c) ☐ None of the:
   1. ☒ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/DMITRIY BOLOTIN/
Primary Examiner, Art Unit 2623

Bibliographic Data

Application No: 15133605

Foreign Priority claimed: ◉ Yes ○ No

35 USC 119 (a-d) conditions met: ☑ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: _____ _____

Examiner's Signature | Initials

Title: FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/20/2016	345	2623	P7740USC1
RULE			

APPLICANTS

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Do-Youb Kim, Yongin-si, KOREA, REPUBLIC OF

Myoung-Seop Song, Yongin-si, KOREA, REPUBLIC OF

Sang-Kyun Cho, Yongin-si, KOREA, REPUBLIC OF

CONTINUING DATA

This application is a CON of 13021581 02/04/2011 PAT 9323400

FOREIGN APPLICATIONS

KOREA, REPUBLIC OF 10-2010-0089955 09/14/2010

IF REQUIRED, FOREIGN LICENSE GRANTED**

05/04/2016

STATE OR COUNTRY

KOREA, REPUBLIC OF

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FILING FEE RECEIVED

$1,600

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

CPC- SEARCHED		
Symbol	Date	Examiner
G06F3/041-047	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB
Updated Search	11/12/2017	DB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	173	06/11/2016	DB
178	18.03,18.05,18.06	06/11/2016	DB
	Updated Search	12/23/2016	DB
	Updated Search	04/15/2017	DB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
Google	06/11/2016	DB
EAST	06/11/2016	DB
Inventor Search	06/11/2016	DB
Updated Search	12/23/2016	DB
Updated Search	04/15/2017	DB
Updated Search	08/04/2017	DB
Updated Search	11/12/2017	DB
Interference Search Printout	03/16/2018	DB

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
	PGPub Search, See Interference Search Printout	03/16/2018	DB
	Searched all class/subclass above	03/16/2018	DB

	/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/11/2016	12/23/2016	04/15/2017	08/04/2017	11/12/2017	03/16/2018			
1	1	✓	✓	✓	✓	✓	=			
2	2	✓	✓	✓	✓	✓	=			
3	3	✓	✓	✓	✓	✓	=			
4	4	✓	✓	✓	✓	✓	=			
5	5	✓	✓	✓	✓	✓	=			
6	6	✓	✓	✓	✓	✓	=			
7	7	✓	✓	✓	✓	✓	=			
8	8	✓	✓	✓	✓	✓	=			
9	9	✓	✓	✓	✓	✓	=			
10	10	✓	✓	✓	✓	✓	=			
11	11	✓	✓	✓	✓	✓	=			
12	12	✓	✓	✓	✓	✓	=			
-	13	✓	✓	-	-	-	-			
-	14	✓	✓	-	-	-	-			
13	15	✓	✓	✓	✓	✓	=			
-	16	✓	✓	✓	✓	-	-			
-	17		✓	✓	✓	-	-			

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"15133605"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2018/03/16 15:42
S1	1	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:00
S2	13346	345/173.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:08
S3	14640	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:09
S4	11724	S3 and @ad< "20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:10
S5	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S6	205	S4 and S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S7	0	S6 and (substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:11
S8	132	S6 and (substrate)	US-PGPUB; USPAT;	ADJ	ON	2013/03/10 23:12

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S9	80	S6 and (substrate with film)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:12
S10	74	(touch screen) and (driving near2 IC)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:48
S11	2	S10 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:49
S12	3211	(inorganic layer) with (organic layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:50
S13	0	S8 and S12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/10 23:50
S14	14640	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S15	11724	S14 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S16	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S17	205	S15 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S18	3211	(inorganic layer) with (organic layer)	US-PGPUB; USPAT;	ADJ	ON	2013/03/11 07:08

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S19	0	S17 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S20	13	S15 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:08
S21	30820	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:12
S22	74	(touch screen) and (driving near2 IC)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S23	14	S21 and S22	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S24	2	S18 and S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:13
S25	2	"SiXO.sub.y"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:17
S26	7	"Si.sub.x$4"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:18
S27	623	"Si.sub.x(O.sub.y)"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:19
S28	4705	345/76.ccls.	US-PGPUB; USPAT;	ADJ	ON	2013/03/11 07:51

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S29	38	S14 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:52
S30	28	S29 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 07:52
S31	5	("6885157").URPN.	USPAT	ADJ	ON	2013/03/11 08:05
S32	1902	(substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S33	63	((incline$4 or slant$5) with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S34	17	S32 and S33	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:15
S35	0	((sensing near2 line) with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:20
S36	2	((sensing near2 line) with (sealing near2 film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:20
S37	43	((touch near3 panel) with (sealing near2 film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:21
S38	17	S32 and S37	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 08:21

S39	784929	((sealing or insulating) near2 (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:10
S40	14887	((sealing or insulating) near2 (film or layer)) with (organic with inorganic)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:10
S41	622	S40 and (touch near2 panel) and display	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S42	236	((sealing or insulating) near2 (film or layer)) with (organic with (second inorganic))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S43	25	((sealing or insulating) near2 (film or layer)) with ((second organic) with (second inorganic))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:11
S44	42	((JONG-SOO) near2 (KIM)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S45	40	((DO-YOUB) near2 (KIM)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S46	48	((MYOUNG-SEOP) near2 (SONG)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S47	4	((SANG-KYUN) near2 (CHO)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2013/03/11 09:39
S48	31	((JONG-SOO) near2 (KIM)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:39
S49	11	((DO-YOUB) near2 (KIM)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:39
S50	41	((MYOUNG-SEOP) near2 (SONG)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:40
S51	6	((SANG-KYUN) near2 (CHO)).INV.	EPO; JPO; DERWENT	ADJ	ON	2013/03/11 09:40
S52	202	S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/03/11 09:40
S53	4	S52 and sealing	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/03/11 09:41

			EPO; JPO; DERWENT; IBM_TDB			
S54	17513	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:05
S55	3	S54 and (sealing film)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:05
S56	0	"13021581"and oxigen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S57	0	"13021581"and oxygen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S58	0	"13021581"and moisture	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S59	1	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S60	1	"13021581" and sealing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:35
S61	3684	sealing with oxygen with moisture	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:38
S62	1	"13021581" and oxygen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/07/23 16:39
S63	4	S54 and S61	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/07/23 16:39

			EPO; JPO; DERWENT; IBM_TDB			
S64	165	(second electrode) with (sealing film)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:11
S65	20411	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:11
S66	0	S64 and S65	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:11
S67	0	S64 and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:12
S68	646	(sealing film) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:13
S69	0	(electode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:14
S70	9	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:14
S71	10588	(second electrode) with (insulating layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:15
S72	95	S65 and S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 16:15
S73	45	S72 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 16:15

			EPO; JPO; DERWENT; IBM_TDB			
S74	17586	(second electrode) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:35
S75	117	S65 and S74	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S76	14224	S74 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S77	117	S75	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S78	56	S75 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:40
S79	6290	g06f3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S80	138	S74 and S79	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S81	67	S80 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:51
S82	767	g06f2203/04107.cpc. or g06f2203/04111.cpc. or g06f2203/04112.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:54
S83	49	S74 and S82	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 18:54

			EPO; JPO; DERWENT; IBM_TDB			
S84	27	S83 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:54
S85	67	S81 or S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S86	0	S85 and (slant$5 near5 angle)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S87	6	S85 and ((slant$5 near5 angle) or slop$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:55
S88	19	S85 and (angle)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 18:56
S89	1	S85 and (incline$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:07
S90	0	(enad with incline$5) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:23
S91	389	(end with incline$5) with ((insulating or sealing) near (film or layer))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:23
S92	115	S91 with electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:24
S93	94	S92 and @ad<"20100914"	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/10/31 19:41

			EPO; JPO; DERWENT; IBM_TDB			
S94	0	(end with incline$5) with ((insulating or sealing) near (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:45
S95	2237	((insulating or sealing) near (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:46
S96	9	inclin$5 with ((insulating or sealing) near (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 19:46
S97	37	(inclin$5 or angle) with ((insulating or sealing) near2 (film or layer)) with ((line or electrode) near3 (break$5 or broke$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/10/31 21:51
S98	16855	G06F3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:09
S99	58253	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:09
S100	5	S99 and (substrate with (sealing film))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:10
S101	2623	S99 and (substrate with (insulating))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:13
S102	298	S99 and (substrate with (insulating)) and (sensing electrodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:14
S103	83	S99 and (substrate with (insulating) with (sensing electrodes))	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/02/23 19:14

			EPO; JPO; DERWENT; IBM_TDB			
S104	219	(incline$4 or slant$4 or angle$4) with (sensing electrodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S105	0	S103 and S104	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S106	107982	(incline$4 or slant$4 or angle$4) with (electrodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S107	219	S104 and S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:15
S108	0	S103 and S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S109	68984	(incline$4 or slant$4 or angle$4) with (insulat$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S110	0	S103 and S109	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S111	151	S99 and S109	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S112	107	S111 and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/02/23 19:16
S113	64486	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:51

			EPO; JPO; DERWENT; IBM_TDB			
S114	6	G06F3/041-047.cpc. and (sealing film)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:52
S115	12498	G06F3/041.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S116	8393	G06F3/0412.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S117	4172	G06F3/0414.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S118	8806	G06F3/0416.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S119	4557	G06F3/0418.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S120	4500	G06F3/042.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S121	5469	G06F3/0421.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S122	671	G06F3/0423.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S123	2952	G06F3/0425.cpc.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:53

			EPO; JPO; DERWENT; IBM_TDB			
S124	520	G06F3/0426.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S125	2223	G06F3/0428.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S126	1586	G06F3/043.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S127	1135	G06F3/0433.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:53
S128	1237	G06F3/0436.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S129	19136	G06F3/044.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S130	7144	G06F3/045.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S131	3324	G06F3/046.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S132	995	G06F3/047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:54
S133	64486	S115 or S116 or S117 or S118 or S119 or S120 or S121 or S122 or S123 or S124 or S125 or S126 or	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/05/28 21:54

		S127 or S128 or S129 or S130 or S131 or S132	EPO; JPO; DERWENT; IBM_TDB			
S134	1109	G06F3/041-047.cpc. and (seal)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:59
S135	0	G06F3/041-047.cpc. and (seal with incline)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:59
S136	5	G06F3/041-047.cpc. and (seal with inclin$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/28 21:59
S137	2	"8593409".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/05/29 10:53
S138	2	"20130207920"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:37
S139	71041	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:40
S140	71041	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S141	27964	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S142	84738	S140 or S141	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/09/20 02:41
S149	30289	345/173.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2015/04/19 03:40

			EPO; JPO; DERWENT; IBM_TDB			
S150	20	"2009080242"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/06/19 12:09
S151	101464	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S152	34772	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S153	116949	S151 or S152	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 18:26
S154	24579	(seal with inclin$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S155	48514	flexible near2 printed near2 circuit near2 board	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S156	21	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:18
S157	13	("20040185301" | "20050051829" | "20070242055" | "20100007616" | "20100244073").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/12/16 19:28
S177	0	"15133605"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 14:58
S178	36076	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2016/06/11 16:53

			EPO; JPO; DERWENT; IBM_TDB			
S179	113061	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:53
S180	14	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:54
S181	66384	(G03C5/16 OR Y10S430/167 OR Y10S430/168 OR G06F3/041 OR G06F3/044 OR H02G3/128).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:54
S182	134399	S178 or S179 or S181	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S183	24	(electrode with (sealing film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S184	159	(electrode with ((sealing or encapsulat$4) near3 film)) and (touchpad or touchscreen or (touch pad) or (touch screen))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S185	28	S182 and S184	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/06/11 16:55
S193	78391	(G03C5/16 OR Y10S430/167 OR Y10S430/168 OR G06F3/041 OR G06F3/044 OR H02G3/128).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 01:59
S194	131023	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 01:59
S195	36990	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2016/12/24 01:59

			EPO; JPO; DERWENT; IBM_TDB			
S199	78471	(G03C5/16 OR Y10S430/167 OR Y10S430/168 OR G06F3/041 OR G06F3/044 OR H02G3/128).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 13:58
S200	131141	G06F3/041-047.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 13:58
S201	37012	345/173.ccls. or 178/18.03,18.05,18.06.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 13:58
S202	152666	S199 or S200 or S201	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/12/24 13:58
S207	39	(("ROSENBERG") near3 ("Ilya")).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/04/16 12:50
S208	15	"13021581"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2017/11/12 18:23

3/16/2018 3:51:51 PM
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	**Art Unit**
	DMITRIY BOLOTIN	2623

CPC								
Symbol							**Type**	**Version**
G06F		3	/	0412			F	2013-01-01
G06F		3	/	041			I	2013-01-01
G06F		3	/	044			I	2013-01-01
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CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623	03/16/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20180316

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	Art Unit
	DMITRIY BOLOTIN	2623

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
		G 0 6 F 3 / 041 (2006.01.01)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	13	
/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623	03/16/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20180316

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15133605	KIM ET AL.
	Examiner	**Art Unit**
	DMITRIY BOLOTIN	2623

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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-	14														
13	15														
-	16														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	13	
/DMITRIY BOLOTIN/ Primary Examiner.Art Unit 2623	03/16/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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H.C. Park & Associates, PLC
1894 Preston White Drive
Reston, VA 20191

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(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	2016-04-20	Jong-Soo KIM	P7740USC1	2023

TITLE OF INVENTION:

FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
NONPROVISIONAL	UNDISCOUNTED	$1000	$0	$0	$1000	2018-06-26

EXAMINER	ART UNIT	CLASS-SUBCLASS
BOLOTIN, DMITRIY	2623	345-174000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 H.C. Park & Associates, PLC
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Samsung Display Co., Ltd.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Yongin-si, Republic of Korea

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☑ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☑ Payment by credit card. Form PTO-2038 is attached.

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-3698 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /William L. Brooks/ Date 2018-05-31

Typed or printed name William L. Brooks Registration No. 34,129

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	15133605
Filing Date:	20-Apr-2016
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Filer:	Hae-Chan Park/Jee Won Lee
Attorney Docket Number:	P7740USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1000	1000

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt

EFS ID:	32764237
Application Number:	15133605
International Application Number:	
Confirmation Number:	2023
Title of Invention:	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
First Named Inventor/Applicant Name:	Jong-Soo Kim
Customer Number:	58027
Filer:	Hae-Chan Park/Jee Won Lee
Filer Authorized By:	Hae-Chan Park
Attorney Docket Number:	P7740USC1
Receipt Date:	31-MAY-2018
Filing Date:	20-APR-2016
Time Stamp:	00:44:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1000
RAM confirmation Number	053118INTEFSW00480000
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	00666621.PDF	138515 7c93fdc5fd75672f9f5599276e3321cb972cad4b	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30082 cd327d86c73c29d88669ad18452be0f8aef8e8e0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	168597		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/133,605	07/03/2018	10013088	P7740USC1	2023

58027 7590 06/13/2018

H.C. PARK & ASSOCIATES, PLC
1894 PRESTON WHITE DRIVE
RESTON, VA 20191

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Jong-Soo Kim, Yongin-si, KOREA, REPUBLIC OF;
Samsung Display Co., Ltd., Yongin-city, KOREA, REPUBLIC OF;
Do-Youb Kim, Yongin-si, KOREA, REPUBLIC OF;
Myoung-Seop Song, Yongin-si, KOREA, REPUBLIC OF;
Sang-Kyun Cho, Yongin-si, KOREA, REPUBLIC OF;

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P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
15/133,605	**03/07/2024 06:24:12 PM Z ET**	**P7740USC1**

Title of Invention

FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	10013088
CONFIRMATION #	2023	FILED BY	Nicole Jedrey
PATENT CENTER #	64598538	FILING DATE	04/20/2016
CUSTOMER #	58027	FIRST NAMED INVENTOR	Jong-Soo Kim
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Kyle Kellar

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15133605 - POA.pdf	2	Power of Attorney	920 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15133605 - POA.pdf	C9F55D1CDEEE62195071F2AB8B6AD0FF0D97531B2EF3FE40 7EF131CCC58EF2B452D90696B1321B08CAE478DC8E4E2F16 DF119DD07CB9BAFC0A03B0C39BB7DF25

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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/82A (07-13)
Approved for use through 09/30/2025. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	15/133,605
Filing Date	April 20, 2016
First Named Inventor	Jong-Soo Kim
Title	FLAT PANEL DISPLAY WITH INTEGRATED TOUCH SCREEN PANEL
Art Unit	2623
Examiner Name	DMITRIY BOLOTIN
Attorney Docket Number	411598-00003

SIGNATURE of Applicant or Patent Practitioner

Signature	/Kyle W. Kellar/	Date (Optional)	March 7, 2024
Name	Kyle W. Kellar	Registration Number	71165
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0035. Public burden for this form is estimated to average 3 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** If filing this completed form by mail, send to: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 09/30/2025. OMB 0651-0035
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 23363

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box).

SAMSUNG DISPLAY CO., LTD.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	12/12/2023
Name	Chang Sik Kim		
Title	Corporate EVP, Head of Team, IP Legal & Strategy Team		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0035. Public burden for this form is estimated to average 3 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. If filing this completed form by mail, send to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing this form, call 1-800-PTO-9199 and select option 2.

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/133,605	04/20/2016	Jong-Soo Kim	P7740USC1

CONFIRMATION NO. 2023

58027
H.C. PARK & ASSOCIATES, PLC
1894 PRESTON WHITE DRIVE
RESTON, VA 20191

POWER OF ATTORNEY NOTICE

OC000000069540091

Date Mailed: 03/12/2024

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/07/2024.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/sltorres/

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/133,605	04/20/2016	Jong-Soo Kim	P7740USC1

CONFIRMATION NO. 2023

23363
Lewis Roca Rothgerber Christie LLP
PO BOX 29001
Glendale, CA 91209-9001

POA ACCEPTANCE LETTER

OC000000069540117

Date Mailed: 03/12/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/07/2024.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/sltorres/