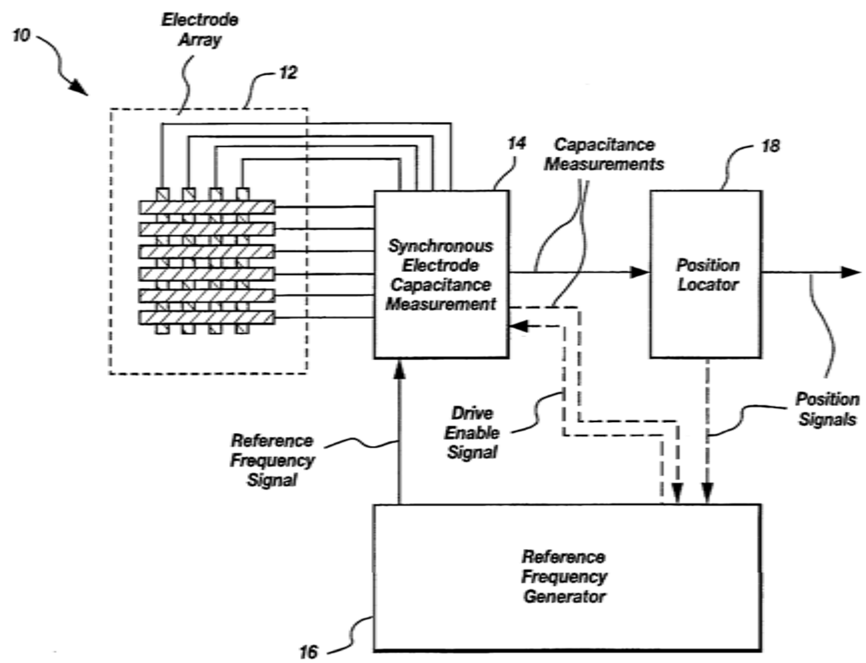
EXHIBIT 15

EXHIBIT R-2
SAMSUNG'S INVALIDITY CLAIM CHARTS FOR U.S. PATENT NO. 5,565,658 ("GERPHEIDE '658") AND U.S. PATENT NO. 5,305,017 ("GERPHEIDE '017")

U.S. Patent No. 7,663,607	Gerpheide '658 and Gerpheide '017
[1A] A touch panel comprising a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches,	Gerpheide '658 teaches a touch panel (e.g., position sensing system 10 of Figure 1) comprising a transparent capacitive sensing medium (e.g., electrode array 12) configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches.  Fig. 1

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	Gerpheide ’658 states: “The present invention employs a touch location device having true capacitance variation by using insulated electrode arrays to form virtual electrodes. The capacitance variation is measured by means independent of the resistance of the electrodes, so as to eliminate that parameter as a fabrication consideration. The electrical interference is eliminated regardless of frequency to provide a clear detection signal. An illustrative embodiment of the present invention includes an electrode array for developing capacitances which vary with movement of an object (such as finger, other body part, conductive stylus, etc.) near the array, a synchronous capacitance measurement element which measures variation in the capacitances, such measurements being synchronized with a reference frequency signal, and a reference frequency signal generator for generating a reference frequency signal which is not coherent with electrical interference which could otherwise interfere with capacitance measurements and thus position location.” Id. at 2:60-3:12. “FIG. 5 shows another embodiment of the synchronous electrode capacitance measurement unit 14. In this embodiment, each electrode in an electrode array 90 is connected to a dedicated capacitance measurement element 92, each of which is connected to a synchronous demodulator 94 and then to a low pass filter 96. This configuration has the advantage of continuously providing capacitance measurements for each electrode, whereas the prior preferred embodiment measures a single configuration of electrodes at any one time. The disadvantage of the embodiment of FIG. 5 is the greater expense which may be associated with the duplicated elements. This is a common tradeoff between providing multiple elements to process measurements at the same time versus multiplexing a single element to process measurements sequentially.” Id. at 7:26-41. “One skilled in the art will realize that a variety of techniques and materials can be used to form the electrode array. For example, FIG. 3A illustrates an alternative embodiment in which the electrode array includes an insulating overlay 40 as described above. Alternate layers of conductive ink 42 and insulating ink 43 are applied to the reverse surface by a silk screen process. The X electrodes 45 are positioned between the insulating overlay 40 and X

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	electrode conductive ink layer 42. Another insulating ink layer 43 is applied below layer 42. The Y electrodes 46 are positioned between insulating ink layer 43 and conductive ink layer 44. Another insulating ink layer 47 is applied below conductive ink layer 44, and ground plane 48 is affixed to Y electrode conductive ink layer 47. Each layer is approximately 0.01 millimeters thick.” Id. at 5:11-25. “It should be understood that other variations of the preferred embodiments described above fall within the scope of this invention. Such variations include different electrode array geometry, such as a grid of strips, a grid of diamonds, parallel strips and various other shapes. Also included are different variations of electrode array fabrication, such as printed circuit board (PCB), flex PCB, silk screen, sheet or foil metal stampings. Variations of the kinds of capacitance utilized are included, such as full balance (see Gerpheide '017), stray, mutual, half balance.” Id. at 9:65-11:7. To the extent Gerpheide ’658 does not expressly disclose a transparent capacitive sensing medium, Gerpheide '017 clearly contemplates a transparent sensing medium as well as touch sensitive display devices which necessarily include a transparent sensing medium over the display. For example, Gerpheide '017 states: “Display devices which are touch sensitive have also been utilized in the art. See U.S. Pat. No. 4,476,463, Ng et al. The Ng et al. patent discloses a display device which locates a touch anywhere on a conductive display faceplate by measuring plural electrical impedances of the faceplate's conductive coating. The impedances are at electrodes located on different edges of the faceplate. See column 2, lines 7 through 12. The touch sensitive devices disclosed in Ng et al. are generally designed to overlay a computer display and provide positioning information.” Id. at 2:61-3:3. Gerpheide '017 also states: “In other preferred embodiments, the electrodes and insulator might be constructed from transparent materials for attachment to the viewing surface of a computer display screen.” Id. at 5:64-67. It would have been obvious to one of ordinary skill in the art to make the capacitive sensing medium described in Gerpheide ’658 transparent, as taught by Gerpheide '017, at least because Gerpheide ’658 claims the benefit

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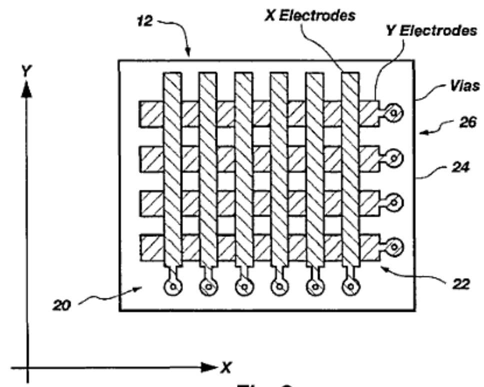
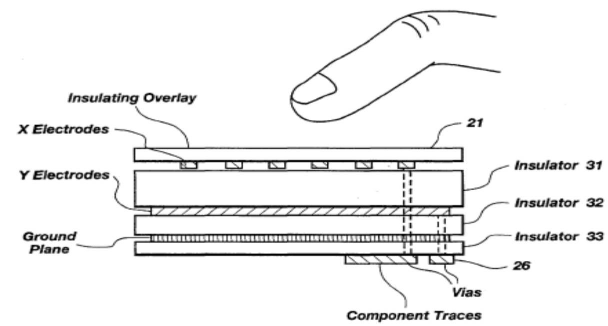
	of Gerpheide ’017 (i.e., they are related applications[1]), both are by the same inventor, both are related to systems and methods for data input using a capacitive touch sensing medium, and Gerpheide '017 is expressly referenced within the specification of Gerpheide '658.
[1B] wherein the transparent capacitive sensing medium comprises: a first layer having a plurality of transparent first conductive lines that are electrically isolated from one another; and	Gerpheide ’658 teaches a transparent capacitive sensing medium comprising a first layer (e.g., X electrodes of Figure 2a) having a plurality of transparent first conductive lines that are electrically isolated from one another.  Fig. 2a  Fig. 2b Gerpheide ’658 states: “FIG. 2A illustrates the electrodes in a preferred electrode array 12, together with a coordinate axes defining X and Y directions. One embodiment includes sixteen X electrodes and twelve Y electrodes, but for clarity of illustration, only six X electrodes 20 and four Y electrodes 22 are shown. It is apparent to one skilled in the art how to extend the number of electrodes. The array is preferably fabricated as a multilayer printed circuit board 24. The electrodes are etched electrically conductive strips, connected to vias 26 which in turn connect them to other layers in the array. Illustratively, the array 12 is approximately 65 millimeters in the X direction and 49 millimeters in the Y direction. The X

1 Upon information and belief, Gerpheide ’658 is a continuation-in-part of Gerpheide ’017, which was expressly identified in the utility patent application transmittal and/or declaration documents of Gerpheide ’658. As such, the disclosure of Gerpheide ’017 may be considered to be incorporated by reference into Gerpheide ’658, making the two Gerpheide references a single invalidating reference under § 102.

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	electrodes are approximately 0.7 millimeters wide on 3.3 millimeter centers. The Y electrodes are approximately three millimeters wide on 3.3 millimeter centers.” Id. at 4:40-55. “FIG. 2b illustrates the electrode array 12 from a side, cross-sectional view. An insulating overlay 21 is an approximately 0.2 millimeters thick clear polycarbonate sheet with a texture on the top side which is comfortable to touch. Wear resistance may be enhanced by adding a textured clear hard coating over the top surface. The overlay bottom surface may be silk-screened with ink to provide graphics designs and colors.” Id. at 4:55-63. “The X electrodes 20, Y electrodes 22, ground plane 25 and component traces 27 are etched copper traces within a multilayer printed circuit board. The ground plane 25 covers the entire array area and shields the electrodes from electrical interference which may be generated by the parts of the circuitry. The component traces 27 connect the vias 26 and hence the electrodes 20, 22, to other circuit components of FIG. 1. Insulator 31, insulator 32 and insulator 33 are fiberglass-epoxy layers within the printed circuit board 24. They have respective thicknesses of approximately 1.0 millimeter, 0.2 millimeters and 0.1 millimeters. Dimensions may be varied considerably as long as consistency is maintained. However, all X electrodes 20 must be the same size, as must all Y electrodes 22.” Id. at 4:63-5:10.
[1C] a second layer spatially separated from the first layer and having a plurality of transparent second conductive lines that are electrically isolated from one another,	Gerpheide ’658 teaches a second layer spatially separated from the first layer and having a plurality of transparent second conductive lines (e.g., Y electrodes of Figure 2a) that are electrically isolated from one another. See **[1A]** and **[1B]**.

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[1D] the second conductive lines being positioned transverse to the first conductive lines,	Gerpheide ’658 teaches the second conductive lines being positioned transverse to the first conductive lines. See **[1A]** and **[1B]**.
[1E] the intersection of transverse lines being positioned at different locations in the plane of the touch panel, each of the second conductive lines being operatively coupled to capacitive monitoring circuitry;	Gerpheide ’658 teaches the intersection of transverse lines being positioned at different locations in the plane of the touch panel, each of the second conductive lines being operatively coupled to capacitive monitoring circuitry. See **[1A]** and **[1B]**. Gerpheide ’658 states: “FIG. 4 shows one embodiment of the synchronous electrode capacitance measurement unit 14 in more detail. The key elements of the synchronous electrode capacitance measurement unit 14 are (a) an element for producing a voltage change in the electrode array synchronously with a reference signal, (b) an element producing a signal indicative of the displacement charge thereby coupled between electrodes of the electrode array, (c) an element for demodulating this signal synchronously with the reference signal, and (d) an element for low pass filtering the demodulated signal. Unit 14 is coupled to the electrode array, preferably through a multiplexor or switches. The capacitances to be measured in this embodiment are mutual capacitances between electrodes but could be stray capacitances of electrodes to ground or algebraic sums (that is sums and differences) of such mutual or stray capacitances.” Id. at 5:51-67.
[1F] wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines.	Gerpheide ’658 teaches the claimed touch panel wherein capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines. See **[1E]**. Gerpheide ’658 states: “FIG. 1 shows the essential elements of a capacitance variation finger (or other conductive body or non-body part) position sensing system 10, made in accordance with the invention. An electrode array 12 includes a plurality of layers of conductive

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	electrode strips. The electrodes and the wiring connecting them to the device may have substantial resistance, which permits a variety of materials and processes to be used for fabricating them. The electrodes are electrically insulated from one another. Mutual capacitance exists between each two of the electrodes, and stray capacitance exists between each of the electrodes and ground. A finger positioned in proximity to the array alters these mutual and stray capacitance values. The degree of alteration depends on the position of the finger with respect to electrodes. In general, the alteration is greater when the finger is closer to the electrode in question.” Id. at 3:51-67 “A synchronous electrode capacitance measurement unit 14 is connected to the electrode array 12 and determines selected mutual and/or stray capacitance values associated with the electrodes. To minimize interference, a number of measurements are performed by unit 14 with timing synchronized to a reference frequency signal provided by reference frequency generator 16. The desired capacitance value is determined by integrating, averaging, or in more general terms, by filtering the individual measurements made by unit 14. In this way, interference in the measurement is substantially rejected except for spurious signals having strong frequency spectra near the reference frequency.” Id. at 4:1-13.
[2] The touch panel as recited in claim 1 wherein the conductive lines on each of the layers are substantially parallel to one another.	Gerpheide ’658 teaches the touch panel as recited in claim 1 wherein the conductive lines on each of the layers are substantially parallel to one another. See **[1A]** and **[1B]**.
[3] The touch panel as recited in claim 2 wherein the conductive lines on different layers are substantially perpendicular to one another.	Gerpheide ’658 teaches the touch panel as recited in claim 2 wherein the conductive lines on different layers are substantially perpendicular to one another. See **[1A]** and **[1B]**.

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[6] The touch panel as recited in claim 1 wherein the conductive lines are formed from indium tin oxide (ITO).	Gerpheide ’658 teaches the touch panel as recited in claim 1 wherein the conductive lines are formed from indium tin oxide (ITO). Gerpheide ’658 states: “The electrodes and the wiring connecting them to the device may have substantial resistance, which permits a variety of materials and processes to be used for fabricating them.” Id. at 3:56-59. Gerpheide ’658 further states: “One skilled in the art will realize that a variety of techniques and materials can be used to form the electrode array. For example, FIG. 3A illustrates an alternative embodiment in which the electrode array includes an insulating overlay 40 as described above. Alternate layers of conductive ink 42 and insulating ink 43 are applied to the reverse surface by a silk screen process. The X electrodes 45 are positioned between the insulating overlay 40 and X electrode conductive ink layer 42. Another insulating ink layer 43 is applied below layer 42. The Y electrodes 46 are positioned between insulating ink layer 43 and conductive ink layer 44. Another insulating ink layer 47 is applied below conductive ink layer 44, and ground plane 48 is affixed to Y electrode conductive ink layer 47. Each layer is approximately 0.01 millimeters thick. The resulting array is thin and flexible, which allows it to be formed into curved surfaces. In use it would be laid over a strong, solid support. In other examples, the electrode array may utilize a flexible printed circuit board, such as a flex circuit, or stampings of sheet metal or metal foil.” Id. at 5:11-31. One of ordinary skill in the art would recognize that ITO could be used as one of the “variety of materials” to form the conductive lines. Moreover, Gerpheide '017 states: “In other preferred embodiments, the electrodes and insulator might be constructed from transparent materials for attachment to the viewing surface of a computer display screen.” Id. at 5:64-67. ITO was a common transparent conductive material used in touch screens. See, e.g., **Exhibit P-1, [6]**. Moreover, Gerpheide ’658 expressly references U.S. Patent No. 4,698,461 to Meadows et al. (“Meadows ’461”). Meadows ’461 states: “One example of such a touch responsive

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	terminal is manufactured by RGB Dynamics of Salt Lake City, Utah. In the RGB device, a touch sensitive surface comprises indium tin oxide which is applied to a glass base plate.” Meadows ’461 at 1:36-40. Meadows ’461 states: “As previously mentioned, the touch panel 16 includes a base plate coated on a surface 18 with an electrically conductive film. One suitable example of such a film is indium tin oxide (10% indium, 90% tin oxide) having a sheet resistivity of 200 ohms per square and a transmission of 85% for light at 520 nanometers. Such plates are commercially available, such as from Optical Coating Laboratory (OCLI) of Santa Rosa, Calif.” Id. at 14:3-14. It would have obvious to use ITO for the conductive lines, as taught by Meadows ’461, at least because Meadows ’461 was expressly referenced within the specification of Gerpheide ’658 and both references describe very similar touch screens in a wide variety of applications.
[7] The touch panel as recited in claim 1, wherein the capacitive sensing medium is a mutual capacitance sensing medium.	Gerpheide ’658 teaches the touch panel as recited in claim 1, wherein the capacitive sensing medium is a mutual capacitance sensing medium. See **[1F]** and **[1E]**.
[8] The touch panel as recited in claim 7, further comprising a virtual ground charge amplifier coupled to the touch panel for detecting the touches on the touch panel.	Gerpheide ’658 teaches the touch panel as recited in claim 7, further comprising a virtual ground charge amplifier (e.g., within capacitive measurement element 78 and/or differential charge transfer circuit 80) coupled to the touch panel for detecting the touches on the touch panel.

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	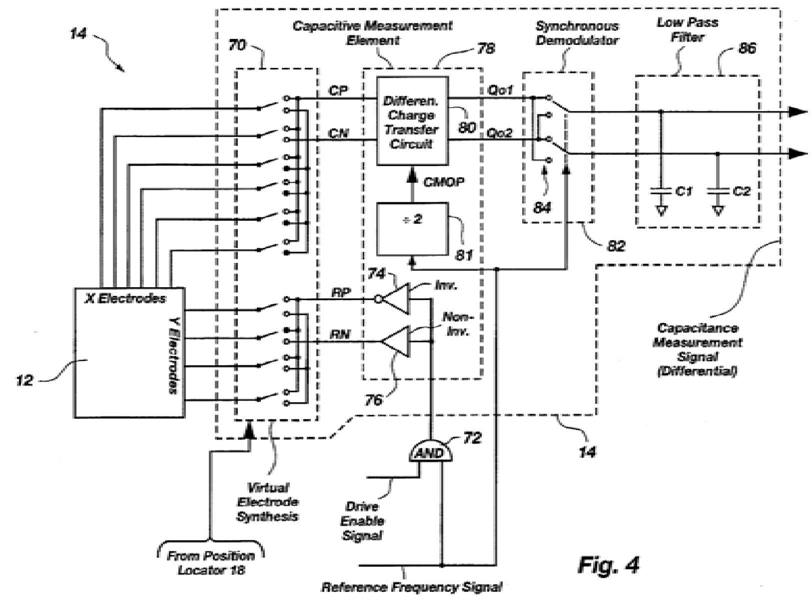 Fig. 4 “FIG. 4 shows one embodiment of the synchronous electrode capacitance measurement unit 14 in more detail. The key elements of the synchronous electrode capacitance measurement unit 14 are (a) an element for producing a voltage change in the electrode array synchronously with a reference signal, (b) an element producing a signal indicative of the displacement charge thereby coupled between electrodes of the electrode array, (c) an element for demodulating this signal synchronously with the reference signal, and (d) an element for low pass filtering the demodulated signal. Unit 14 is coupled to the electrode array, preferably through a multiplexor or switches. The capacitances to be measured in this embodiment are mutual capacitances between electrodes but could be stray capacitances of electrodes to ground or algebraic sums (that is sums and differences) of such mutual or stray capacitances.” Id. at 5:51-67. “The capacitance measurement element 78 contains a differential charge transfer circuit 80 as illustrated in FIG. 4 of Gerpheide, U.S. Pat. 5,349,303, incorporated herein by reference.

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	Capacitors Cs1 and Cs2 of FIG. 4 of that patent correspond to the stray capacitances of the positive and negative virtual electrodes to ground. The CHOP signal of that FIG. 4 is conveniently supplied in the present invention as a square wave signal having half the frequency of the reference frequency signal, as generated by the divide-by-2 circuit 81 shown herein. As described in the Gerpheide '303 patent, the circuit maintains CP and CN (lines 68 and 72 therein) at a constant virtual ground voltage.” Id. at 6:35-47
[10A] A display arrangement comprising: a display having a screen for displaying a graphical user interface; and	Gerpheide ’658 teaches a display arrangement comprising a display (e.g., “display device”) having a screen for displaying a graphical user interface. “Numerous prior art devices and systems exist by which tactile sensing is used to provide data input to a data processor. Such devices are used in place of common pointing devices (such as a "mouse" or stylus) to provide data input by finger positioning on a pad or display device. These devices sense finger position by a capacitive touch pad wherein scanning signals are applied to the pad and variations in capacitance caused by a finger touching or approaching the pad are detected. By sensing the finger position at successive times, the motion of the finger can be detected. This sensing apparatus has application for controlling a computer screen cursor. More generally it can provide a variety of electrical equipment with information corresponding to finger movements, gestures, positions, writing, signatures and drawing motions.” Id. at 1:17-31.
[10B] a transparent touch panel allowing the screen to be viewed therethrough and capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time and to output this information to a host device to form a pixilated image;	Gerpheide ’658 teaches a transparent touch panel allowing the screen to be viewed therethrough and capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time and to output this information to a host device to form a pixilated image. See **[1A]** and **[1B]**.
[10C] wherein the touch panel includes a multipoint sensing	Gerpheide ’658 teaches the claimed touch panel including a multipoint sensing arrangement configured to simultaneously detect and monitor the touch events and a change in capacitive

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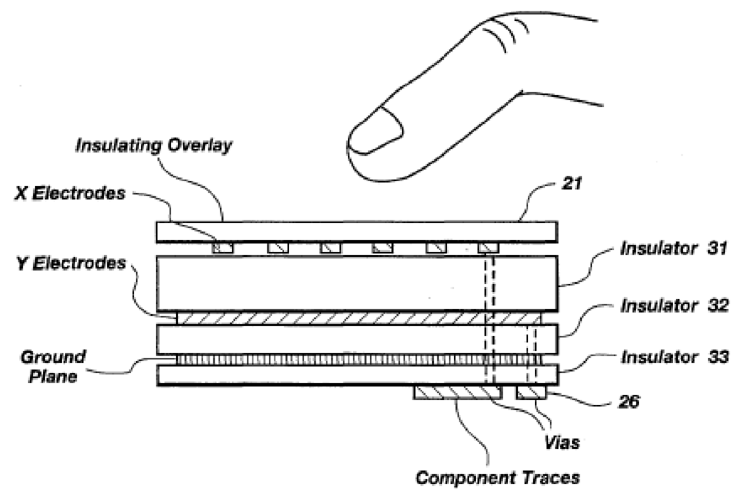
arrangement configured to simultaneously detect and monitor the touch events and a change in capacitive coupling associated with those touch events at distinct points across the touch panel; and	coupling associated with those touch events at distinct points across the touch panel. See **[1A]** and **[1B]**.
[10D] wherein the touch panel comprises: a first glass member disposed over the screen of the display;	Gerpheide ’658 teaches the claimed touch panel comprising a first glass member (e.g., isolator 32) disposed over the screen of the display.  *Fig. 2b* See **[1A]** and **[1B]**.
[10E] a first transparent conductive layer disposed over the first glass member,	Gerpheide ’658 teaches a first transparent conductive layer disposed over the first glass member.

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	See **[1A]** and **[1B]**.
[10F] the first transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths;	Gerpheide ’658 teaches the first transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths. See **[1A]** and **[1B]**.
[10G] a second glass member disposed over the first transparent conductive layer;	Gerpheide ’658 teaches a second glass member (e.g., insulator 31) disposed over the first transparent conductive layer. See **[1A]** and **[1B]**.
[10H] a second transparent conductive layer disposed over the second glass member,	Gerpheide ’658 teaches a second transparent conductive layer disposed over the second glass member. See **[1A]** and **[1B]**.
[10I] the second transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths,	Gerpheide ’658 teaches the second transparent conductive layer comprising a plurality of spaced apart parallel lines having the same pitch and linewidths. See **[1A]** and **[1B]**.
[10J] the parallel lines of the second transparent conductive layer being substantially perpendicular to the parallel lines of the first transparent conductive layer;	Gerpheide ’658 teaches the parallel lines of the second transparent conductive layer being substantially perpendicular to the parallel lines of the first transparent conductive layer. See **[1A]** and **[1B]**.

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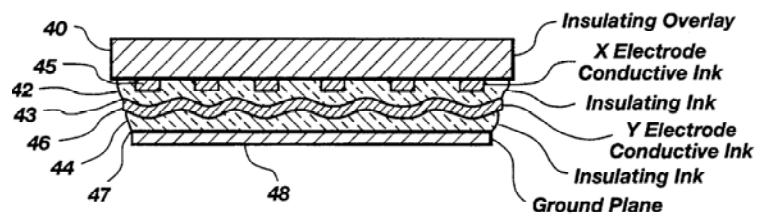
[10K] a third glass member disposed over the second transparent conductive layer; and	Gerpheide ’658 teaches a third glass member (e.g., insulating overlay 21) disposed over the second transparent conductive layer. See **[1A]** and **[1B]**.
[10L] one or more sensor integrated circuits operatively coupled to the lines.	Gerpheide ’658 teaches one or more sensor integrated circuits operatively coupled to the lines. See **[1E]** and **[1F]**.
[11] The display arrangement as recited in claim 10 further including dummy features disposed in the space between the parallel lines, the dummy features optically improving the visual appearance of the touch screen by more closely matching the optical index of the lines.	Gerpheide ’658 teaches the display arrangement as recited in claim 10 further including dummy features (e.g., insulating ink layer 47) disposed in the space between the parallel lines, the dummy features optically improving the visual appearance of the touch screen by more closely matching the optical index of the lines.  Fig. 3a Gerpheide ’658 states: “One skilled in the art will realize that a variety of techniques and materials can be used to form the electrode array. For example, FIG. 3A illustrates an alternative embodiment in which the electrode array includes an insulating overlay 40 as

U.S. Patent No. 7,663,607	Gerpheide ’658 and Gerpheide ’017
	described above. Alternate layers of conductive ink 42 and insulating ink 43 are applied to the reverse surface by a silk screen process. The X electrodes 45 are positioned between the insulating overlay 40 and X electrode conductive ink layer 42. Another insulating ink layer 43 is applied below layer 42. The Y electrodes 46 are positioned between insulating ink layer 43 and conductive ink layer 44. Another insulating ink layer 47 is applied below conductive ink layer 44, and ground plane 48 is affixed to Y electrode conductive ink layer 47. Each layer is approximately 0.01 millimeters thick.” Id. at 5:11-25. To the extent Gerpheide ’658 does not disclose this claim element, the use of “dummy features” disposed in the space between the parallel lines would have been a simple design choice representing a trivial and predictable variation. Since Gerpheide ’658 clearly contemplates a touch sensor used with a display, it would have been obvious to one of ordinary skill in the art to incorporate dummy features that optically improve the visual appearance of the touchscreen by more closely matching the optical index of the lines, as taught by Perski ’455, Morag ’229 (Col. 12:64-13:32), or Mackey ’935 (Col. 8:17-39), in order to reduce the visual differences between the conducting and non-conducting areas. See **Exhibit P-1, [11]**.