

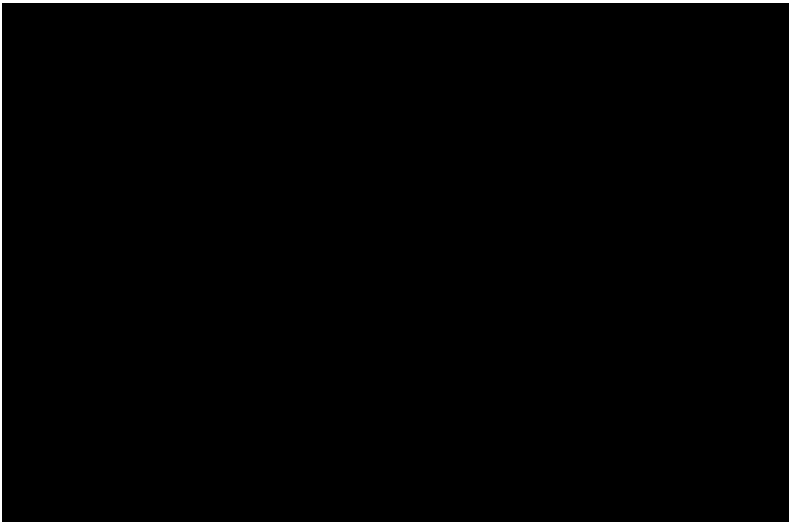


**EXHIBIT 2057**

**CLAIM CHART: AMOLED DISPLAY IN SAMSUNG GALAXY S22 ULTRA**



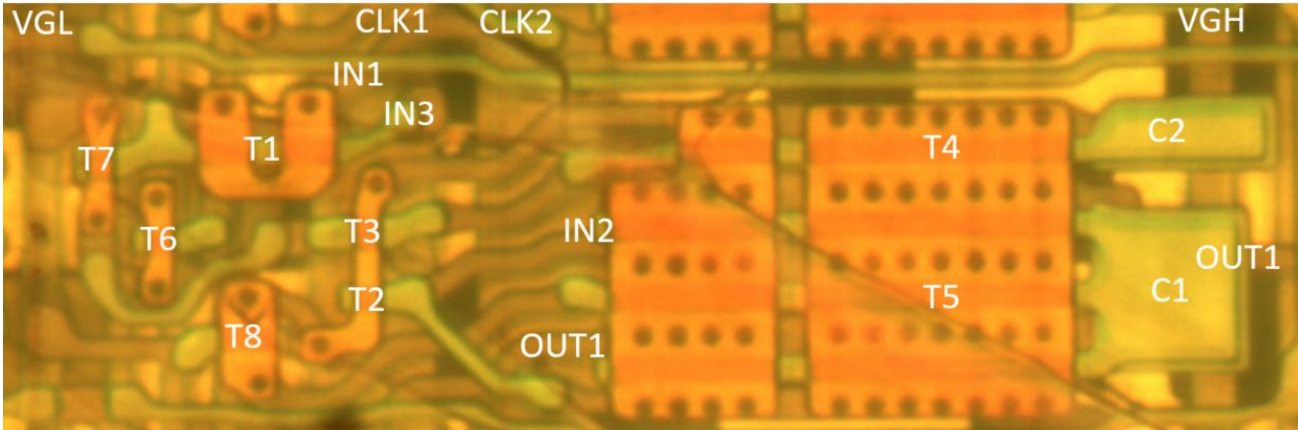
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                       | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1[preamble]</b> A stage circuit having a first input terminal, a second input terminal, a third input terminal, and an output terminal, the stage circuit comprising:</p> | <div data-bbox="583 272 1864 430" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="865 474 1648 993" data-label="Image"></div> <p data-bbox="583 1036 829 1068">Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                                        | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1[a] an outputting unit having a first node and a second node, the outputting unit to supply a voltage of a first power supply to the output terminal according to a voltage applied to the first node and a signal of the third input terminal to the output terminal according to a voltage applied to the second node;</p> | <div data-bbox="583 272 1885 539">[REDACTED]</div> <div data-bbox="583 548 1864 776">[REDACTED]</div> <div data-bbox="844 776 1654 1344">[REDACTED]</div> <p>Exhibit 2058 at 55 (yellow, blue, and green highlighting added).</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                                                                   | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1[a]</b> an outputting unit having a first node and a second node, the outputting unit to supply a voltage of a first power supply to the output terminal according to a voltage applied to the first node and a signal of the third input terminal to the output terminal according to a voltage applied to the second node;<br/>(<i>cont’d</i>)</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>This is further shown in teardown images of the Samsung Galaxy S22 Ultra:</p>  <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

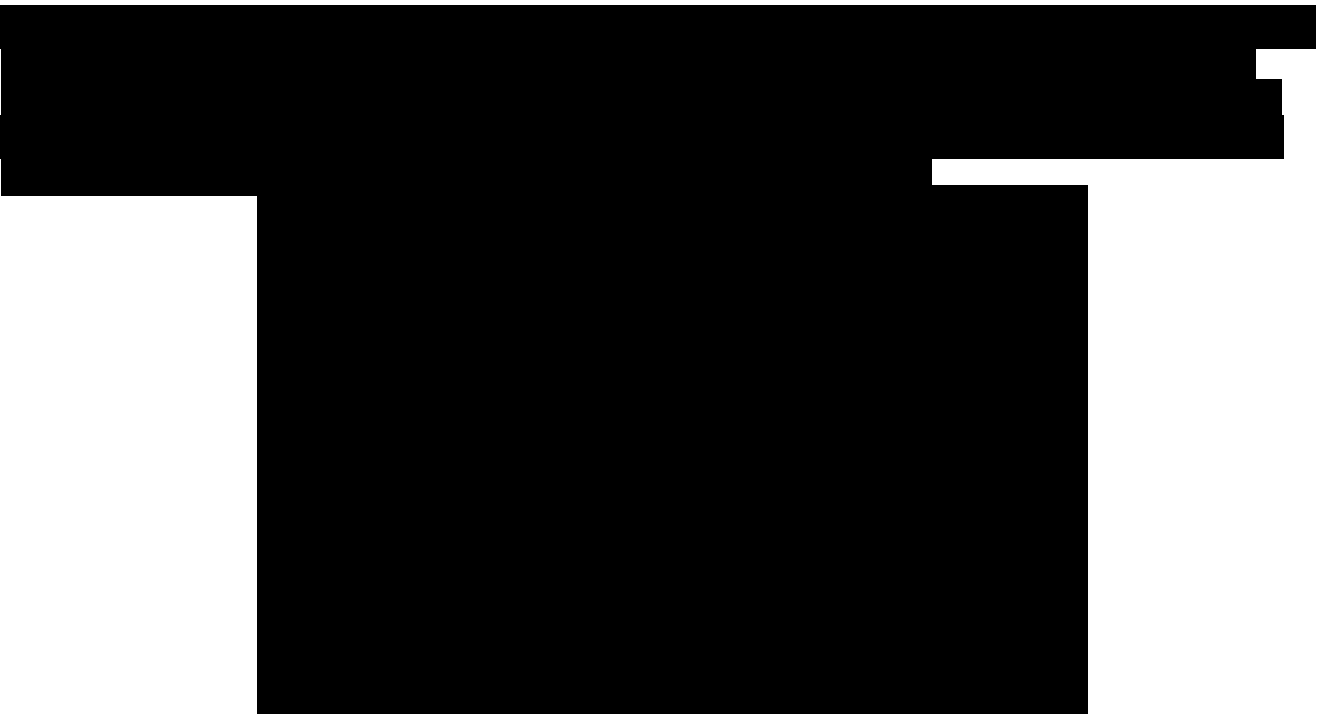
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                       |
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| <p>1[b] a first driver to control the voltage of the second node in accordance with signals of the first input terminal, the second input terminal, and the third input terminal; and</p> | <div data-bbox="583 272 1885 613" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="850 613 1663 1117" data-label="Text"><p>[REDACTED]</p></div> <p data-bbox="583 1166 829 1198">Exhibit 2058 at 55.</p> <div data-bbox="583 1214 1873 1409" data-label="Text"><p>[REDACTED]</p></div> |

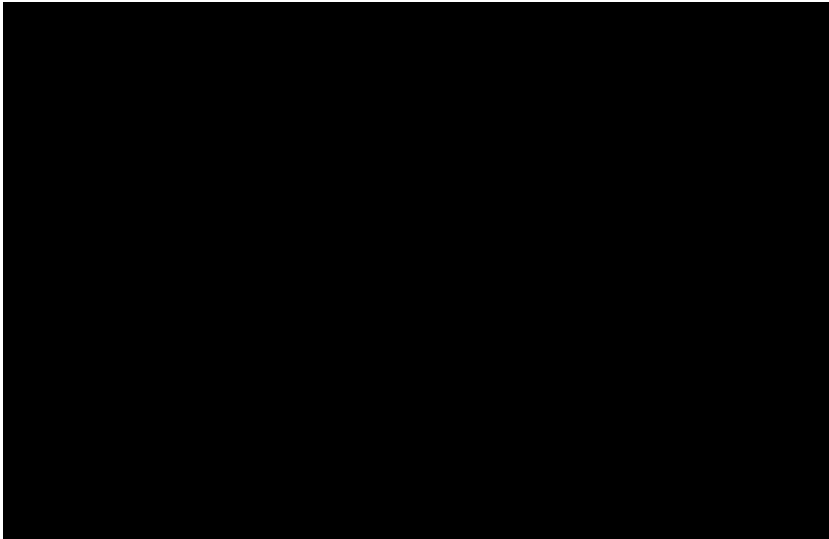
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1[c] a second driver to control the voltage of the first node in accordance with the signal of the second input terminal and the voltage of the second node,</p> | <div data-bbox="583 272 1885 539" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="856 560 1633 1084" data-label="Image"></div> <p data-bbox="583 1109 829 1141">Exhibit 2058 at 55.</p> <div data-bbox="583 1157 1873 1424" data-label="Text"><p>[REDACTED]</p></div> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                             |
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| <p>1[d] wherein the signal of the third input terminal directly controls an on/off operation of a transistor, the transistor included in the first driver.</p> | <div data-bbox="583 272 1892 982"></div> <p>Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                        |
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| <p>2[a] The stage circuit as claimed in claim 1,<br/>wherein the first input terminal receives an output signal of a previous stage circuit or a start signal,</p> | <div data-bbox="583 272 1873 354" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="583 363 1822 444" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="844 477 1667 1013" data-label="Image"></div> <p data-bbox="583 1052 829 1084">Exhibit 2058 at 55.</p> |

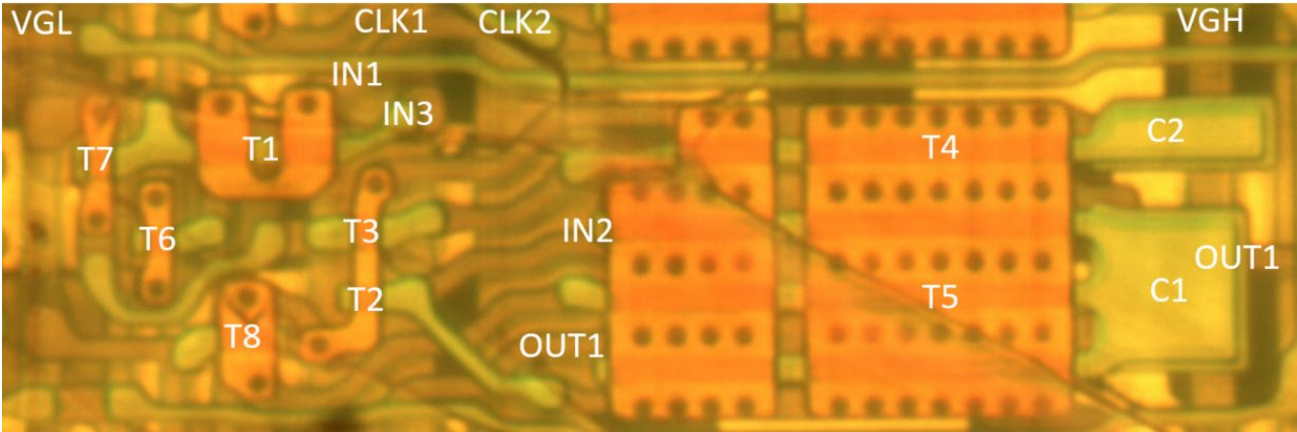
[REDACTED]

| U.S. Patent No. 9,330,593 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <div data-bbox="583 272 1814 321">[REDACTED]</div> <div data-bbox="982 326 1570 1078">[REDACTED]</div> <div data-bbox="583 1089 827 1133">[REDACTED]</div> <div data-bbox="583 1143 1822 1260">[REDACTED]</div> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2[a] The stage circuit as claimed in claim 1,<br/>wherein the first input terminal receives an output signal of a previous stage circuit or a start signal,</p> | <div data-bbox="630 454 756 495">Stage n</div> <div data-bbox="630 738 756 779">Stage n + 1</div> <div data-bbox="840 300 1827 917"><p>The micrograph shows a repeating pattern of two circuit stages, Stage n and Stage n+1, on a yellowish substrate. Stage n (top) and Stage n+1 (bottom) are vertically aligned. Each stage contains several transistors: T1, T4, T5, T6, T7, and T8. There are also capacitors labeled C1 and C2. Various signal lines are visible, including VGL, VGH, CLK1, CLK2, IN1, IN2, IN3, and OUT1. The transistors are represented by dark, rectangular structures with grid-like patterns. The capacitors are smaller, more rounded structures. The signal lines are thin, winding paths connecting the various components.</p></div> <p>Annotated Exhibit 2024 at 8.</p> <div data-bbox="583 1015 1822 1096">[REDACTED]</div> |

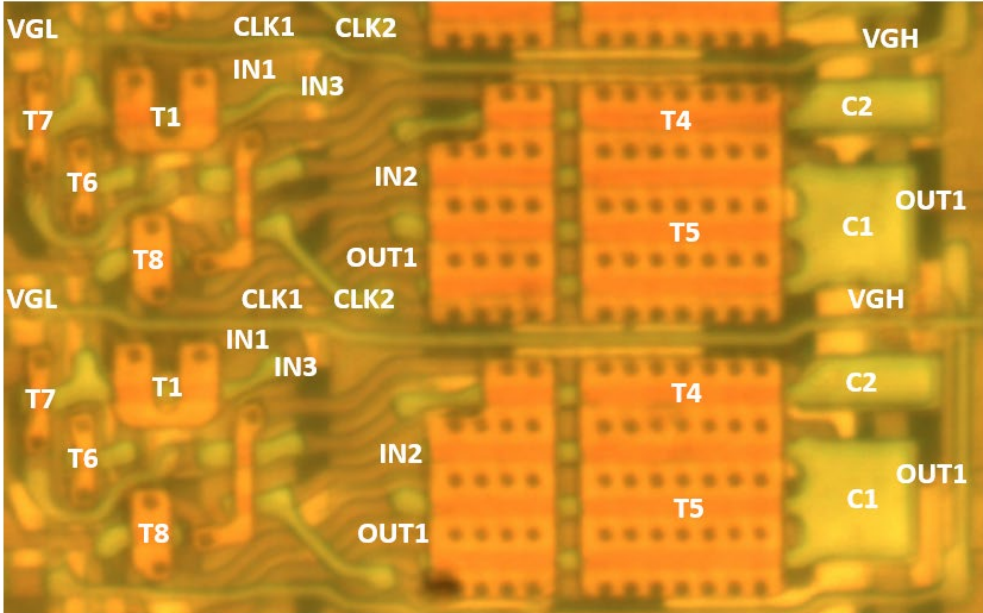
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                             | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                         |
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| <p><b>2[a]</b> The stage circuit as claimed in claim 1, wherein the first input terminal receives an output signal of a previous stage circuit or a start signal, (<i>cont’d</i>)</p> | <p>This is further shown in teardown images of the Samsung Galaxy S22 Ultra:</p>  <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

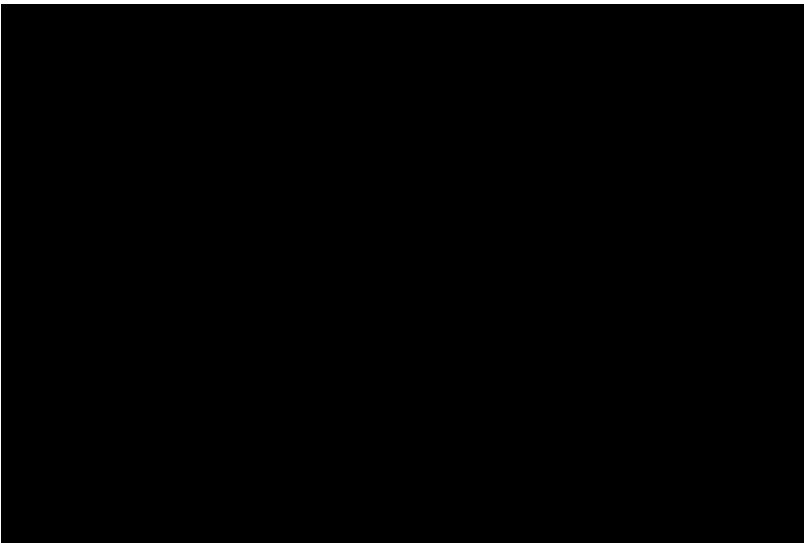
[REDACTED]

| U.S. Patent No. 9,330,593                                                        | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                   |
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| <p>2[b] wherein the second input terminal receives a first clock signal, and</p> | <div data-bbox="583 272 1829 391" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="842 386 1675 899" data-label="Image"></div> <p data-bbox="583 948 831 977">Exhibit 2058 at 55.</p> <div data-bbox="583 997 1843 1073" data-label="Text"><p>[REDACTED]</p></div> |

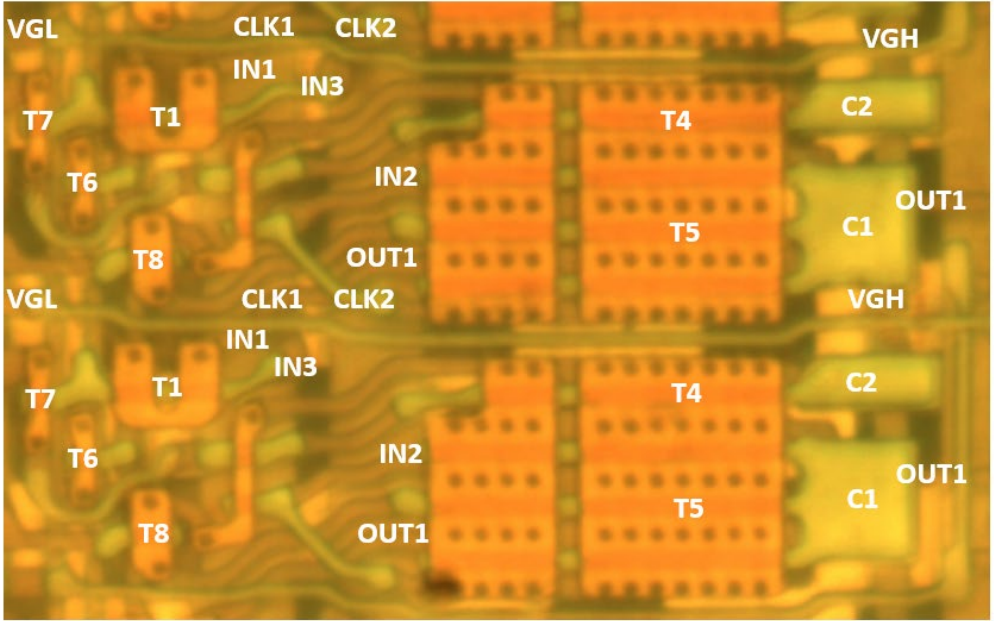
[REDACTED]

| U.S. Patent No. 9,330,593                                                                            | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2[b] wherein the second input terminal receives a first clock signal, and<br/>(<i>cont’d</i>)</p> | <p>This is further reflected in the annotated teardown images below:</p> <div data-bbox="630 349 1827 974"><p>Stage n</p><p>Stage n + 1</p></div> <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                    | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                     |
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| <p>2[c] wherein the third input terminal receives a second clock signal.</p> | <div data-bbox="583 272 1837 393" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="861 386 1659 925" data-label="Image"></div> <p data-bbox="583 945 829 977">Exhibit 2058 at 55.</p> <div data-bbox="583 993 1816 1075" data-label="Text"><p>[REDACTED]</p></div> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                               |
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| 2[c] wherein the third input terminal receives a second clock signal. (cont'd) | <p>This is further reflected in the annotated teardown images below:</p> <div><div>Stage n</div><div></div><div>Stage n + 1</div></div> <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                    | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[3] The stage circuit as claimed in claim 2,<br/>wherein the first clock signal and the second clock signal have the same period and have phases that do not overlap.</p> | <div data-bbox="583 272 1822 354" style="background-color: black; height: 50px; margin-bottom: 10px;"></div> <div data-bbox="583 362 1864 483" style="background-color: black; height: 75px; margin-bottom: 10px;"></div> <div data-bbox="630 568 1827 1185"><div>Stage n</div><div>Stage n + 1</div><p>The micrograph shows two identical stages of an AMOLED display circuit, labeled 'Stage n' and 'Stage n + 1'. Each stage contains a network of transistors (T1, T4, T5, T6, T7, T8), capacitors (C1, C2), and various signal lines (VGL, VGH, CLK1, CLK2, IN1, IN2, IN3, OUT1). The circuit is laid out in a symmetrical, repeating pattern across the two stages.</p></div> <div data-bbox="583 1234 1564 1274">Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</div> <div data-bbox="583 1282 1837 1364" style="background-color: black; height: 50px; margin-top: 10px;"></div> |

[REDACTED]

| U.S. Patent No. 9,330,593 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)           |
|---------------------------|-----------------------------------------------------------------------------------------------------|
|                           | <div data-bbox="583 487 703 527">Exhibit 2</div> <div data-bbox="709 256 1696 511">[REDACTED]</div> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                        | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                      |
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| <p>[4] The stage circuit as claimed in claim 3, wherein the first clock signal and the second clock signal have a period equal to two horizontal periods 2H and are supplied in different horizontal periods as low signals.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 63; <i>see also id.</i> at 64-65.</p> |

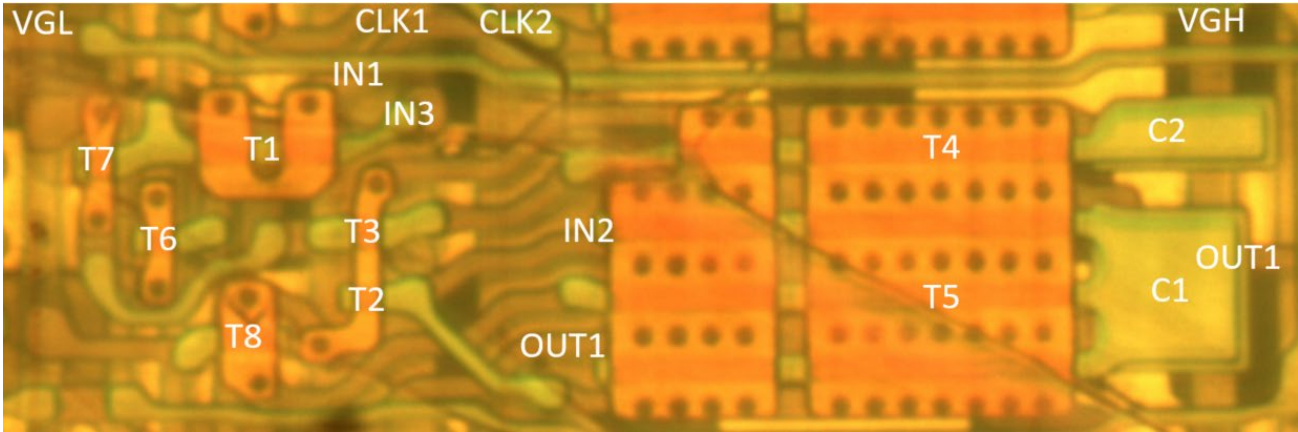
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                   | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[5] The stage circuit as claimed in claim 2, wherein the start signal is supplied to overlap the first clock signal.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p>                                                       |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)          |
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| <p>[6a] The stage circuit as claimed in claim 2, wherein the first driver includes:</p> <p>a first transistor between the first input terminal and the second node, the first transistor having a gate electrode coupled to the second input terminal; and</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[6a] The stage circuit as claimed in claim 2, wherein the first driver includes:</p> <p>a first transistor between the first input terminal and the second node, the first transistor having a gate electrode coupled to the second input terminal; and<br/>(<i>cont’d</i>)</p> | <p>This is further reflected in the annotated teardown image of the Galaxy S22 Ultra below:</p>  <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p>[6b] a second transistor and a third transistor serially positioned between the second node and the first power supply,</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[6c] wherein a gate electrode of the second transistor is coupled to the third input terminal, and</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                  | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[6d] wherein a gate electrode of the third transistor is coupled to the first node.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                              | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                          |
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| <p>[7a] The stage circuit as claimed in claim 2, wherein the outputting unit includes:</p> <p>a fourth transistor between the first power supply and the output terminal, the fourth transistor having a gate electrode coupled to the first node;</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p> <p><i>See also, e.g.,</i> Exhibit 2058 at 39.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                         | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[7b] a fifth transistor between the output terminal and the third input terminal, the fifth transistor having a gate electrode coupled to the second node;</p> | <div data-bbox="583 272 1871 391">[REDACTED]</div> <div data-bbox="583 451 1871 607">[REDACTED]</div> <div data-bbox="823 654 1709 1161">[REDACTED]</div> <p data-bbox="583 1214 831 1247">Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[7c] a first capacitor between the second node and the output terminal; and</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

| U.S. Patent No. 9,330,593                                                         | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                          |
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| <p>[7d] a second capacitor between the first node and the first power supply.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p> <p><i>See also, e.g.,</i> Exhibit 2058 at 39.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                            | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p data-bbox="199 280 541 418"><b>[8a]</b> The stage circuit as claimed in claim 2, wherein the second driver includes:</p> <p data-bbox="199 443 541 654">a sixth transistor between the first node and the second input terminal, the sixth transistor having a gate electrode coupled to the second node; and</p> | <div data-bbox="583 272 1864 394" style="background-color: black; height: 75px; width: 100%;"></div> <div data-bbox="583 451 1885 605" style="background-color: black; height: 95px; width: 100%;"></div> <div data-bbox="835 589 1701 1133" style="background-color: black; height: 335px; width: 412px; margin-left: 100px;"></div> <p data-bbox="583 1166 829 1190">Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[8b] a seventh transistor between the first node and a second power supply, the second power supply having a lower voltage than the first power supply, the seventh transistor having a gate electrode coupled to the second input terminal.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p>[8b] a seventh transistor between the first node and a second power supply, the second power supply having a lower voltage than the first power supply, the seventh transistor having a gate electrode coupled to the second input terminal (<i>cont’d</i>).</p> | <p>[REDACTED]</p> <p>Exhibit 2058 at 39.</p>                                              |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>[14] The stage circuit as claimed in claim 1, wherein the transistor controls the voltage of the second node according to the on/off operation thereof.</p> | <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Exhibit 2058 at 55.</p>          |

[REDACTED]

**15[preamble]** An organic light emitting display, comprising:

[REDACTED]

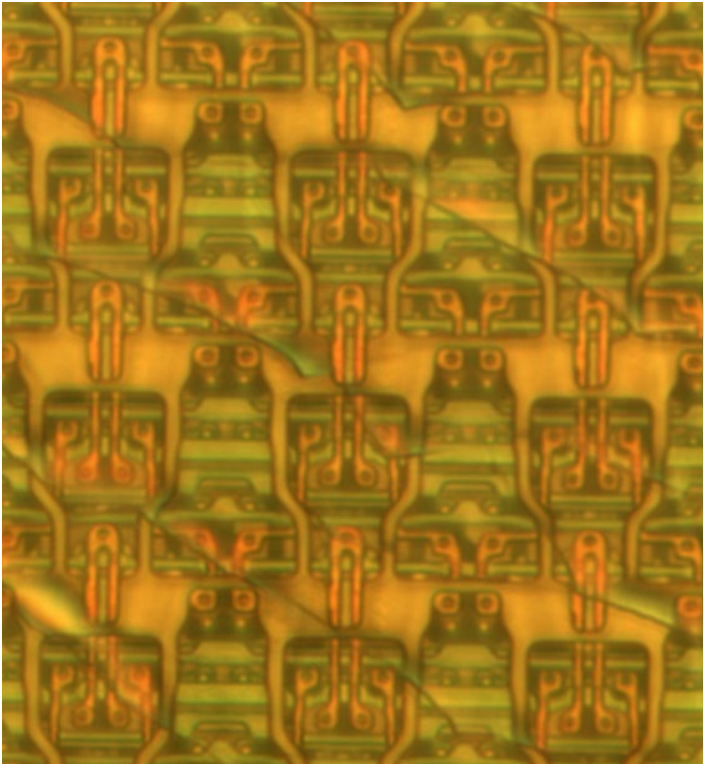
[REDACTED]

Exhibit 2058 at 40.

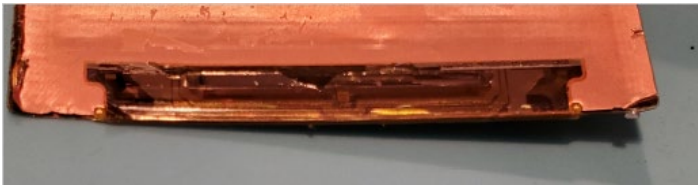
[REDACTED]

| U.S. Patent No. 9,330,593 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <div data-bbox="831 261 1646 789" data-label="Image">The image displays three distinct components of a Samsung Galaxy S22 Ultra display assembly, arranged vertically. The leftmost component is a dark, rectangular metal frame or bezel, showing internal structural details and a central cutout for the camera. The middle component is a thin, rectangular protective film with a metallic, iridescent sheen that reflects light in various colors. The rightmost component is a rectangular AMOLED display panel, also with a metallic finish, showing a dark screen area and a central cutout for the camera.</div> <p data-bbox="583 808 814 841">Exhibit 2024 at 6.</p> |

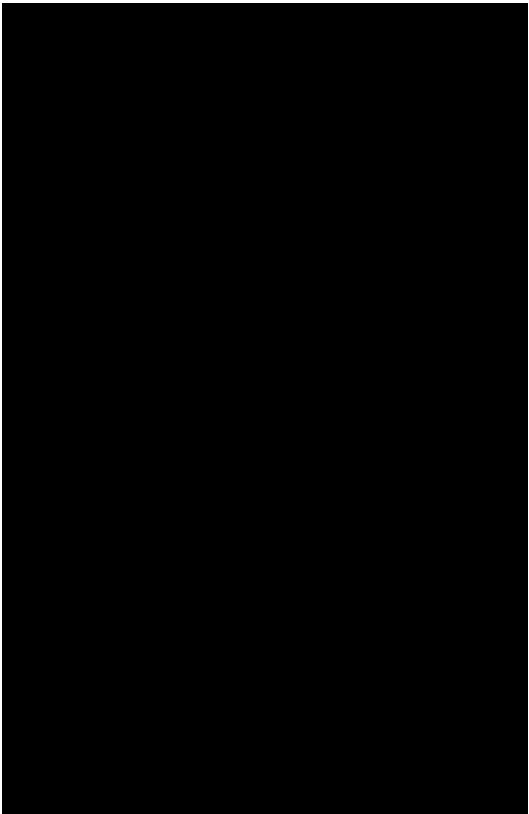
[REDACTED]

| U.S. Patent No. 9,330,593                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>15[a] pixels positioned in regions partitioned by scan lines and data lines;</p> | <div data-bbox="583 272 1837 357" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="890 417 1589 1177" data-label="Image">A scanning electron micrograph (SEM) of an AMOLED display structure. The image shows a grid of pixels, each containing a subpixel structure. The pixels are arranged in a regular pattern, with scan lines and data lines visible between them. The color of the image is a mix of orange, yellow, and green, typical of SEM images of organic materials.</div> <div data-bbox="583 1198 1864 1266" data-label="Caption"><p>Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images). <i>See also, e.g.,</i> Exhibit 2058 at 38, 41, 50, 54.</p></div> |

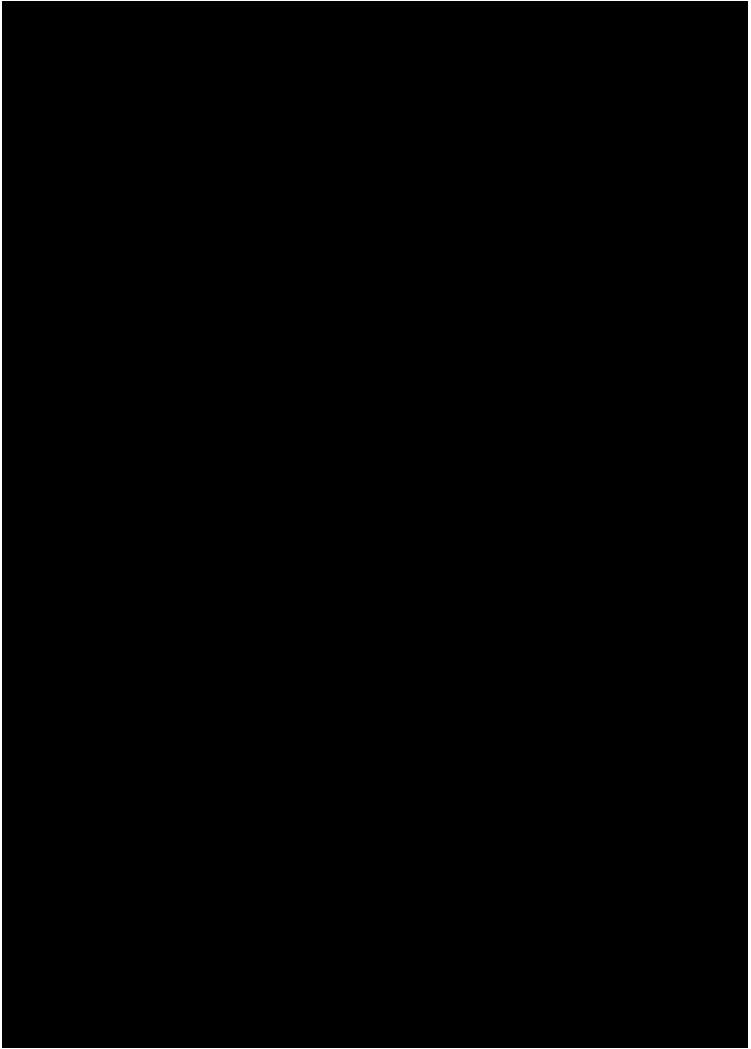
[REDACTED]

| U.S. Patent No. 9,330,593                                                                       | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>15[b] a data driver for supplying data signals to the pixels through the data lines; and</p> | <div data-bbox="583 272 1873 354" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="892 365 1585 548" data-label="Image"></div> <p data-bbox="583 565 1864 638">Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images); <i>See also, e.g.</i>, Exhibit 2058 at 38, 41, 50, 54.</p> |

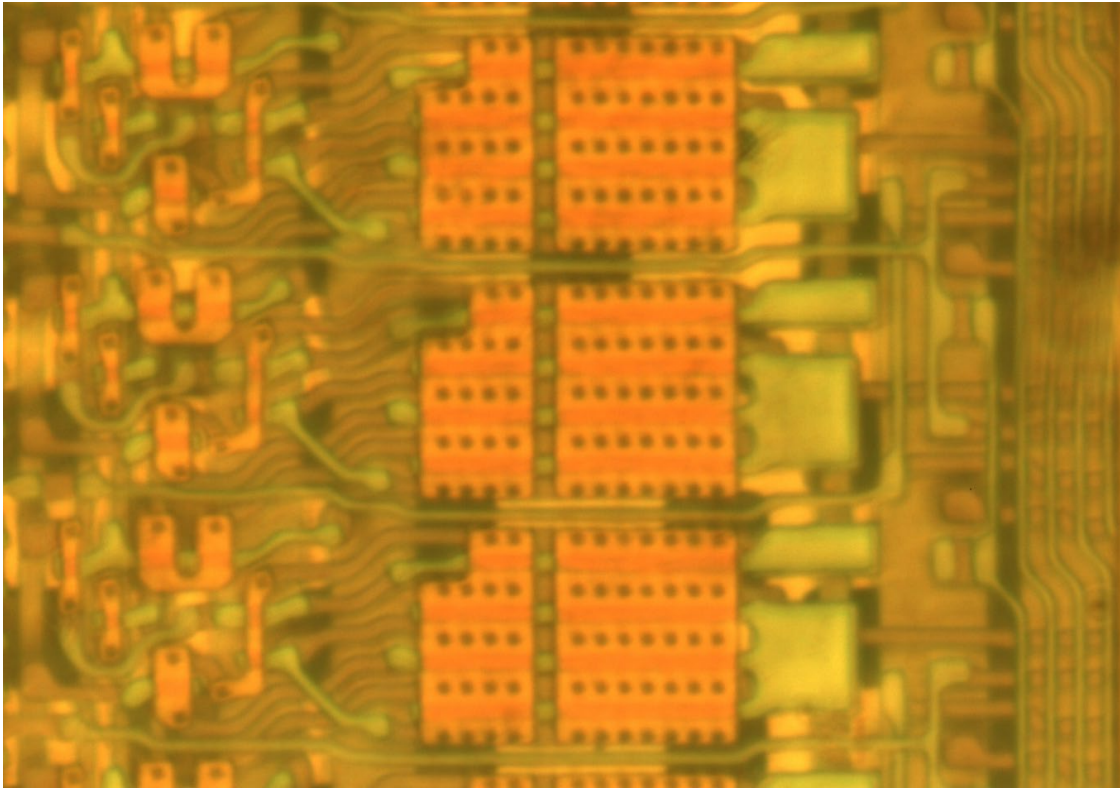
[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                                                                                                                      | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                 |
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| <p>15[c] a scan driver for supplying scan signals to the pixels through the scan lines, the scan driver including stage circuits coupled to the scan lines, each of the stage circuits generating a corresponding scan signal of the scan signals and having a first input terminal, a second input terminal, a third input terminal, and an output terminal, wherein each of the stage circuits includes:</p> | <div data-bbox="583 272 1885 430" data-label="Text"><p>[REDACTED]</p></div> <p data-bbox="583 495 703 527"><i>See, e.g.,</i></p> <div data-bbox="993 522 1518 1331" data-label="Image"></div> <p data-bbox="583 1315 829 1347">Exhibit 2058 at 54.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                |
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|                           | <div data-bbox="861 272 1606 1315" data-label="Image"></div> <p data-bbox="583 1328 829 1364">Exhibit 2058 at 55.</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                                                                                                                                                 | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                         |
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| <p><b>15[c]</b> a scan driver for supplying scan signals to the pixels through the scan lines, the scan driver including stage circuits coupled to the scan lines, each of the stage circuits generating a corresponding scan signal of the scan signals and having a first input terminal, a second input terminal, a third input terminal, and an output terminal, wherein each of the stage circuits includes:<br/>(<i>cont’d</i>)</p> | <p>This is further shown by teardown images of the Galaxy S22 Ultra:</p>  <p>Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)<br/>See also, element <b>1[preamble]</b>, above.</p> |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                                                                | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p><b>15[d]</b> an outputting unit having a first node and a second node, the outputting unit to supply a voltage of a first power supply to the output terminal according to a voltage applied to the first node and a signal of the third input terminal to the output terminal according to a voltage applied to the second node,</p> | <p><i>See element 1[a], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                                                                                                         | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p><b>15[e]</b> a first driver to control the voltage of the second node in accordance with signals of the first input terminal, the second input terminal, and the third input terminal, and</p> | <p><i>See element 1[b], above.</i></p>                                                    |



| U.S. Patent No. 9,330,593                                                                                                                                                   | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p><b>15[f]</b> a second driver to control the voltage of the first node in accordance with the signal of the second input terminal and the voltage of the second node,</p> | <p><i>See element 1[c], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                                                                              | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p><b>15[g]</b> wherein the signal of the third input terminal directly controls an on/off operation of a transistor, the transistor included in the first driver.</p> | <p><i>See element 1[d], above.</i></p>                                                                                                                              |

U.S. Patent No. 9,330,593

## Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“XXXX Display”)

**[16]** The organic light emitting display as claimed in claim 15, wherein a clock signal supplied to the third input terminal is used as the scan signal.

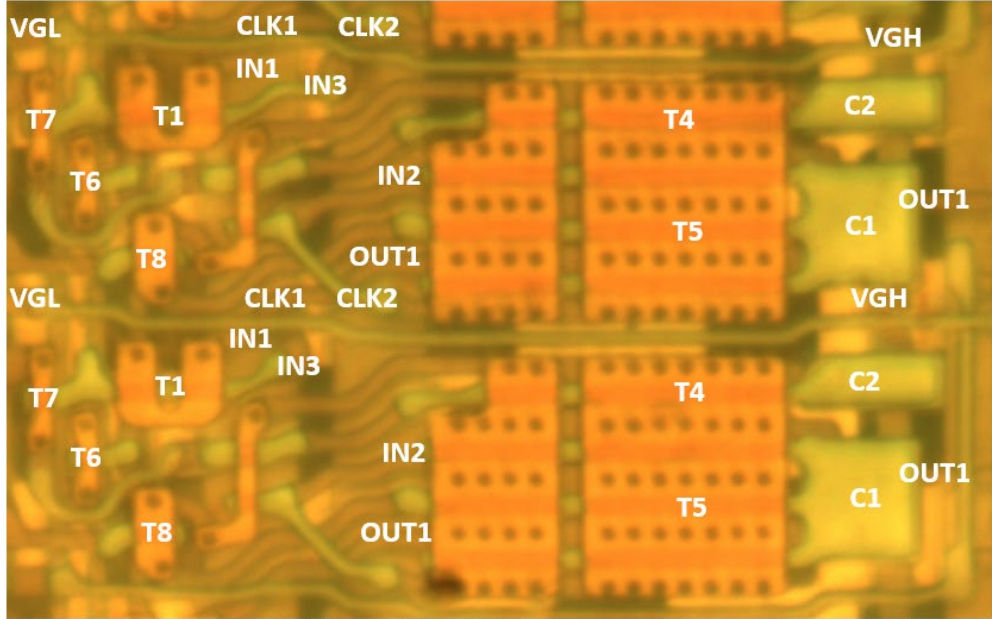

Exhibit 2058 at 55.



| U.S. Patent No. 9,330,593                                                                                                                                                     | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[17] The organic light emitting display as claimed in claim 15, wherein the first input terminal receives a scan signal of a previous stage circuit or a start signal.</p> | <p><i>See element 2[a], above.</i></p>                                                                                                                              |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                                                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p>[18a] The organic light emitting display as claimed in claim 17,</p> <p>wherein second input terminals of odd stage circuits receive a first clock signal and third input terminals of odd stage circuits receive a second clock signal, and</p> | <p>[REDACTED]</p> <p>[REDACTED]</p>  <p>The micrograph shows two stages of an AMOLED display circuit, labeled 'Stage n' and 'Stage n + 1'. Each stage contains several transistors (T1, T4, T5, T6, T7, T8) and other components (C1, C2, IN1, IN2, IN3, OUT1, OUT2, VGL, VGH, CLK1, CLK2). The components are arranged in a repeating pattern across the two stages.</p> <p>Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |

[REDACTED]

| U.S. Patent No. 9,330,593                                                                                                                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <p>[18b] wherein second input terminals of even stage circuits receive the second clock signal and third input terminals of even stage circuits receive the first clock signal.</p> | <div data-bbox="583 272 1858 393" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="583 397 1890 518" data-label="Text"><p>[REDACTED]</p></div> <div data-bbox="630 552 1822 1172" data-label="Diagram"><p>The diagram is a micrograph of an AMOLED display circuit, showing two identical stages labeled 'Stage n' and 'Stage n + 1'. Each stage contains a grid of transistors and capacitors. Labels for 'Stage n' include VGL, CLK1, CLK2, IN1, IN3, T1, T4, T5, T6, T7, T8, C1, C2, OUT1, and VGH. The same labels are present for 'Stage n + 1'. The circuitry is shown in a yellowish-orange color scheme.</p></div> <p data-bbox="583 1221 1558 1253">Annotated Exhibit 2024 at 8 (Samsung Galaxy S22 Ultra Teardown Images)</p> |



| U.S. Patent No. 9,330,593                                                                                                                                                                   | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[19] The organic light emitting display as claimed in claim 18, wherein the first clock signal and the second clock signal have the same period and have phases that do not overlap.</p> | <p><i>See element 4, above.</i></p>                                                                                                                                 |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                                | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p><b>[20a]</b> The organic light emitting display as claimed in claim 18, wherein the first driver includes:</p> <p>a first transistor between the first input terminal and the second node, the first transistor having a gate electrode coupled to the second input terminal; and</p> | <p><i>See element 6[a], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                                       | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[20b] a second transistor and a third transistor serially positioned between the second node and the first power supply,</p> | <p><i>See element 6[b], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                  | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[20c] wherein a gate electrode of the second transistor is coupled to the third input terminal, and</p> | <p><i>See element 6[c], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                   | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[20d] wherein a gate electrode of the third transistor is coupled to the first node.</p> | <p><i>See element 6[d], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                        | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p><b>[21a]</b> The organic light emitting display as claimed in claim 18, wherein the outputting unit includes:</p> <p>a fourth transistor between the first power supply and the output terminal, the fourth transistor having a gate electrode coupled to the first node;</p> | <p><i>See element 7[a], above.</i></p>                                                    |



| U.S. Patent No. 9,330,593                                                                                                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[21b] a fifth transistor between the output terminal and the third input terminal, the fifth transistor having a gate electrode coupled to the second node;</p> | <p><i>See element 7[b], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                           | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[21c] a first capacitor between the second node and the output terminal; and</p> | <p><i>See element 7[c], above.</i></p>                                                                                                                              |

[REDACTED]

| U.S. Patent No. 9,330,593                                                          | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p>[21d] a second capacitor between the first node and the first power supply.</p> | <p>See element 7[d], above.</p>                                                           |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                                                       | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p><b>[22a]</b> The organic light emitting display as claimed in claim 18, wherein the second driver includes:</p> <p>a sixth transistor between the first node and the second input terminal, the sixth transistor having a gate electrode coupled to the second node; and</p> | <p><i>See element 8[a], above.</i></p>                                                                                                                              |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                            | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“[REDACTED] Display”) |
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| <p>[22b] a seventh transistor between the first node and a second power supply, the second power supply having a lower voltage than the first power supply, the seventh transistor having a gate electrode coupled to the second input terminal.</p> | <p>See element 8[b], above.</p>                                                           |



| U.S. Patent No. 9,330,593                                                                                                                                                                                                                              | Samsung Display AMOLED Display in Samsung Galaxy S22 Ultra Product (“  Display”) |
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| <p>[25] The organic light emitting display as claimed in claim 18, wherein the scan signal of the previous stage circuit or the start signal supplied to the first input terminal overlaps the clock signal supplied to the second input terminal.</p> | <p><i>See element 5, above.</i></p>                                                                                                                                 |