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POLARIS POWERLED TECHNOLOGIES, LLC
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18 UNITED STATES DISTRICT COURT
19 FOR THE CENTRAL DISTRICT OF CALIFORNIA

20 POLARIS POWERLED
21 TECHNOLOGIES, LLC,

22 Plaintiff,
23 v.

24 TCL CORPORATION; TCL
25 ELECTRONICS HOLDINGS
26 LIMITED; AND TTE
TECHNOLOGY, INC., d/b/a TCL
NORTH AMERICA,

27 Defendants.
28

Case No. 8:20-cv-00127

**COMPLAINT FOR PATENT
INFRINGEMENT**

DEMAND FOR JURY TRIAL

1 Plaintiff Polaris PowerLED Technologies, LLC (“Polaris PowerLED”), by
2 and through its undersigned counsel, files this Complaint for Patent Infringement
3 relating to U.S. Patent No. 7,239,087 (the “’087 patent”) and alleges as follows:

4 **THE PARTIES**

5 1. Plaintiff Polaris PowerLED Technologies, LLC (“Polaris PowerLED”
6 or “Plaintiff”) is a Delaware limited liability company, with its address at 32932
7 Pacific Coast Highway #14-498, Dana Point, California, 92629.

8 2. Defendant TCL Corporation (“TCL Corp.”), is a corporation organized
9 under the laws of the People’s Republic of China with its principal place of
10 business at No. 26, the Third Road, Shongkai Avenue, Huizhou City, Guangdong,
11 P.R. China 516006.

12 3. Defendant TCL Electronics Holdings Limited (“TCL Electronics”) is a
13 limited liability company incorporated in the Cayman Islands. The registered
14 address of the company is P.O. Box 309, Ugland House, Grand Cayman, KY1-
15 1104, Cayman Islands. TCL Electronics’ principal place of business is at 7th Floor,
16 Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, New
17 Territories, Hong Kong.

18 4. Upon information and belief, Defendant TTE Technology, Inc. d/b/a/
19 TCL North America (“TTE”) is a wholly-owned subsidiary of TCL Electronics, and is
20 a corporation organized under the laws of Delaware. TTE is registered to do business
21 in California and has its principal place of business at 1860 Compton Avenue, Corona,
22 CA 92881, which is in this District (TCL Corp., TCL Electronics, and TTE are
23 collectively referred to as, “TCL” or “Defendants”).

24 **JURISDICTION AND VENUE**

25 5. Polaris PowerLED brings this civil action for patent infringement
26 pursuant to the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.* This Court
27 has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and
28 1338(a).

1 6. Upon information and belief, TCL transacts and conducts business in
2 this District and the State of California, and is subject to the personal jurisdiction of
3 this Court. Upon information and belief, TCL has minimum contacts within the
4 State of California and this District and has purposefully availed itself of the
5 privileges of conducting business in the State of California and in this District.
6 Polaris PowerLED's causes of action arise directly from TCL's business contacts
7 and other activities in the State of California and in this District.

8 7. Personal jurisdiction exists over each of the Defendants because each
9 Defendant, directly or through affiliates, subsidiaries, agents, or intermediaries, has
10 sufficient minimum contacts with this forum as a result of business conducted
11 within this State and this District, including having a regular and established place
12 of business at 1860 Compton Avenue, Corona, CA 92881, which is within this
13 District.

14 8. Upon information and belief, TCL has committed acts of infringement,
15 both directly and indirectly, within this District and the State of California by, *inter*
16 *alia*, using, selling, offering for sale, importing, advertising, and/or promoting
17 products that infringe the '087 Patent.

18 9. TCL, directly and/or through intermediaries, uses, sells, ships,
19 distributes, offers for sale, advertises, and otherwise promotes its products in the
20 United States, the State of California, and this District.

21 10. In addition, each of the Defendants, directly or through affiliates,
22 subsidiaries, agents, or intermediaries, places infringing televisions into the stream
23 of commerce knowing they will be sold and used in this State, and economically
24 benefits from the retail sale of infringing televisions in this State. For example,
25 Defendants' products have been sold and are available for sale in this District at
26 Best Buy, Target, and Walmart retail stores, and are also available for sale and
27 offered for sale in this District through online retailers such as Amazon, Best Buy,
28 Target, and Walmart. Defendants also advertise their infringing products to

1 consumers in this State and this District through the TCL USA website and TCL's
2 Amazon.com storefront. *See, e.g.*, <https://www.tclusa.com/products/home-theater>
3 and <https://www.amazon.com/stores/node/2530582011>.

4 11. Upon information and belief, TCL solicits customers in the State of
5 California and this District and has customers who are residents of the State of
6 California and this District and who use TCL's products in the State of California
7 and in this District.

8 12. To the extent any foreign Defendant is not subject to jurisdiction in
9 any state's court of general jurisdiction, exercising jurisdiction over the Defendant
10 in this State and this District would be consistent with due process and this State's
11 long-arm statute in light of facts alleged in this complaint.

12 13. Venue is proper in this district under 28 U.S.C. §§ 1391(b), (c) and
13 1400(b), based on TCL's business registration in this State and physical presence
14 and business addresses in this District.

15 **THE PATENT-IN-SUIT**

16 14. Polaris PowerLED owns the entire right, title, and interest in U.S.
17 Patent No. 7,239,087 titled "Method and Apparatus to Drive LED Arrays Using
18 Time Sharing Technique" (the "'087 Patent"). The '087 Patent issued on July 3,
19 2007 to inventor Newton E. Ball from the U.S. Patent Application No. 11/011,752,
20 filed on Dec. 14, 2004. A true and correct copy of the '087 Patent is attached as
21 **Exhibit A** to this Complaint.

22 **COUNT I**

23 **(INFRINGEMENT OF U.S. PATENT NO. 7,239,087)**

24 15. Polaris PowerLED incorporates by reference paragraphs 1-14 above.

25 16. Mr. Newton E. Ball invented a novel manner of arranging and
26 controlling light sources that was a significant advance in improving display quality
27 in electronics products such as televisions. Mr. Ball patented these innovations in
28 the '087 patent.

1 17. Claim 1 of the '087 Patent, for example, reads as follows:
2 1. A multi-load time sharing driver comprising:
3 a current source configured to provide a regulated current;
4 a network of semiconductor switches coupled in series; and
5 a plurality of light sources in a backlight system, each light source
6 associated with a semiconductor switch, wherein the semiconductor
7 switch selectively opens to allow the associated light source to conduct
8 the regulated current.

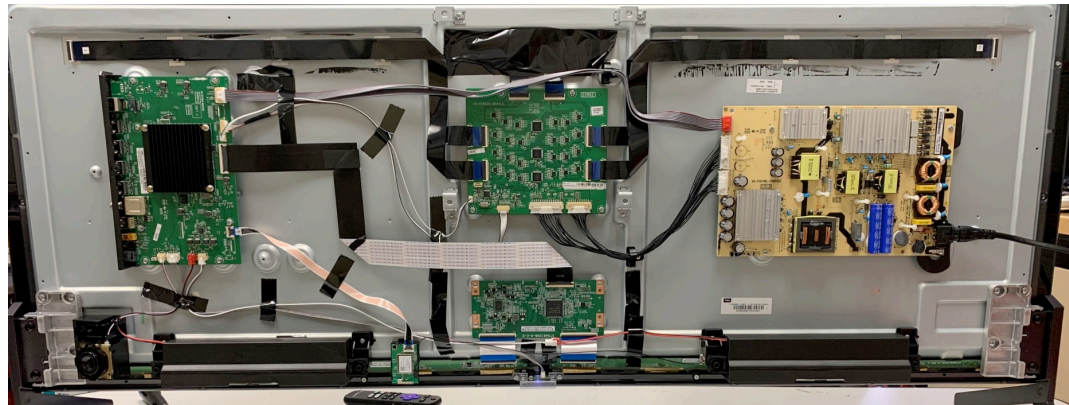
9 18. TCL has directly and indirectly infringed, and continues to directly and
10 indirectly infringe one or more claims of the '087 Patent, including at least claim 1
11 of the '087 Patent, literally and/or under the doctrine of equivalents, by or through
12 making, using, offering for sale, selling within the United States, and/or importing
13 into the United States televisions, including, for example, TCL's 55R625 TVs and
14 other products that contain local dimming, black frame insertion, or scanning
15 backlight features in violation of 35 U.S.C. § 271(a). The devices listed in this
16 paragraph are collectively referred to in this Count as the "Accused Products."

17 19. The Accused Products have "a multi-load time sharing driver
18 comprising: a current source configured to provide a regulated current." The
19 Accused Products include, for example, an LED control board, power supply, and
20 main board which includes components (such as multi-channel LED drivers and
21 transistors) for individually controlling strings of LEDs in the TV backlight.

22 20. The exemplary TCL 55R625 includes an LED control board, power
23 supply, and main board which includes components (such as multi-channel LED
24 drivers and transistors) for individually controlling strings of LEDs in the TV
25 backlight.

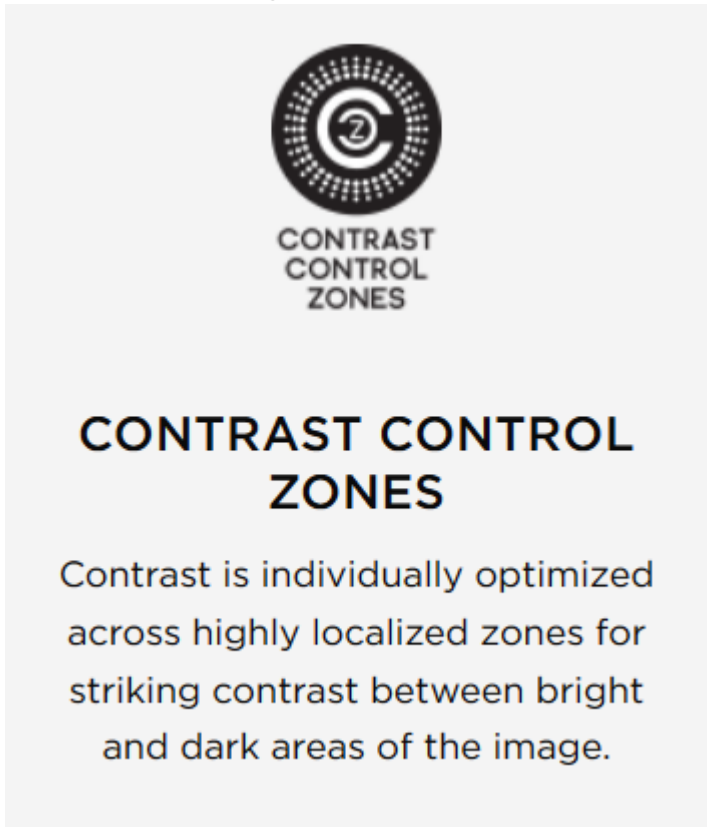
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[LED Control Board/Power Board for TCL 55R625]

21. The LED control board is coupled to several sections of LEDs. In the 55R625, for example, there are ten (10) different sections, each including twenty (20) LEDs. These sections are divided into groups of two (2) LEDs for a total of one hundred (100) zones. These one hundred (100) zones are consistent with TCL’s marketing of the product as featuring “Contrast Control Zones.”



[TCL 55R625 specifications at <https://www.tclusa.com/products/home-theater/6-series/tcl-55-class-6-series-4k-qled-hdr-roku-smart-tv-55r625>]

- Local contrast – *Only on select models:* Sets the amount of dimming multiple “local” areas of the screen’s backlight intensity. This setting can make dark areas darker without affecting the brightness of light areas. *This option is disabled when Game mode is enabled.*

[TCL 55R625 manual, https://www.tclusa.com/sites/default/files/2019-10/R62Xseries%20Roku%20User%20Guide_US.pdf]

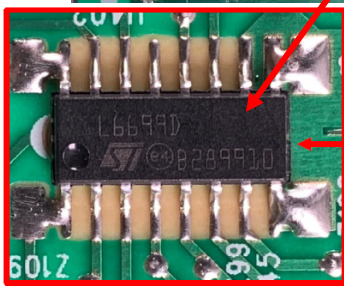
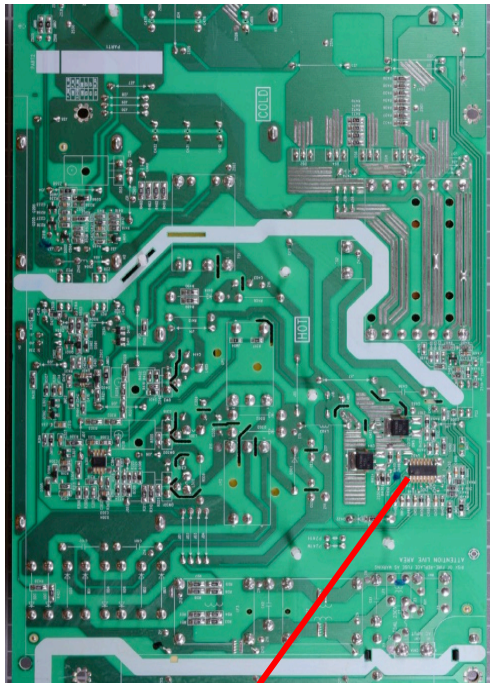
22. The Accused Products include a current source configured to provide a regulated current. The exemplary TCL 55R625 TVs include a power supply IC and associated circuitry that provide a resonant switch mode power supply.



[TCL 55R625 Power Supply Boards]

23. The switch mode power supply and associated circuitry provide a regulated current (through each of the respective LED strings). When the device is turned on, the power supply provides a regulated current that flows through each of the respective LED strings. The LED control board includes a ST L6699 Enhanced high voltage resonant controller and associated circuitry configured to provide a regulated current.

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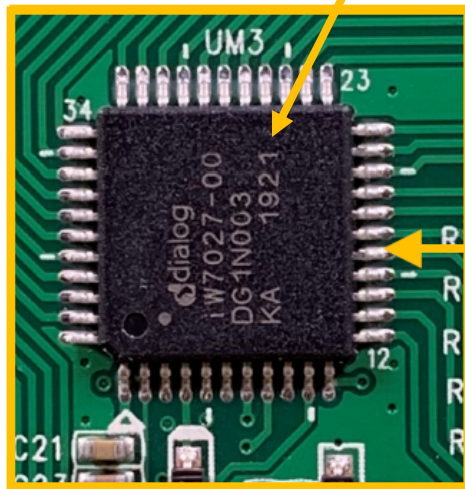
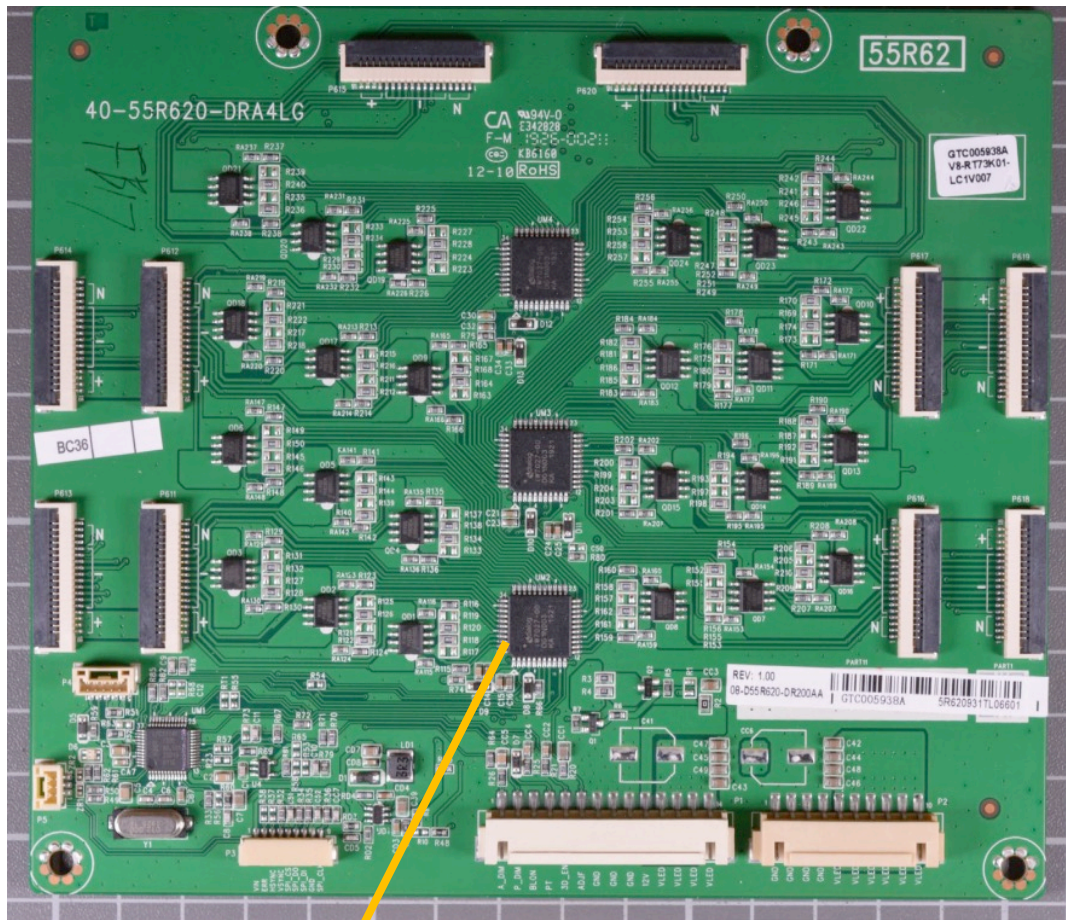


ST L6699 Enhanced high voltage resonant controller

[ST L6699 in TCL 55R625]

24. The LED control board in the TCL 55R625, for example, also includes components which provide a regulated current to the LEDs. For example, the LED control board in the TCL 55R625 contains a total of seven (7) Dialog iW7027 16-channel LED drivers. Each LED driver is capable of providing a regulated current to multiple strings of LEDs.

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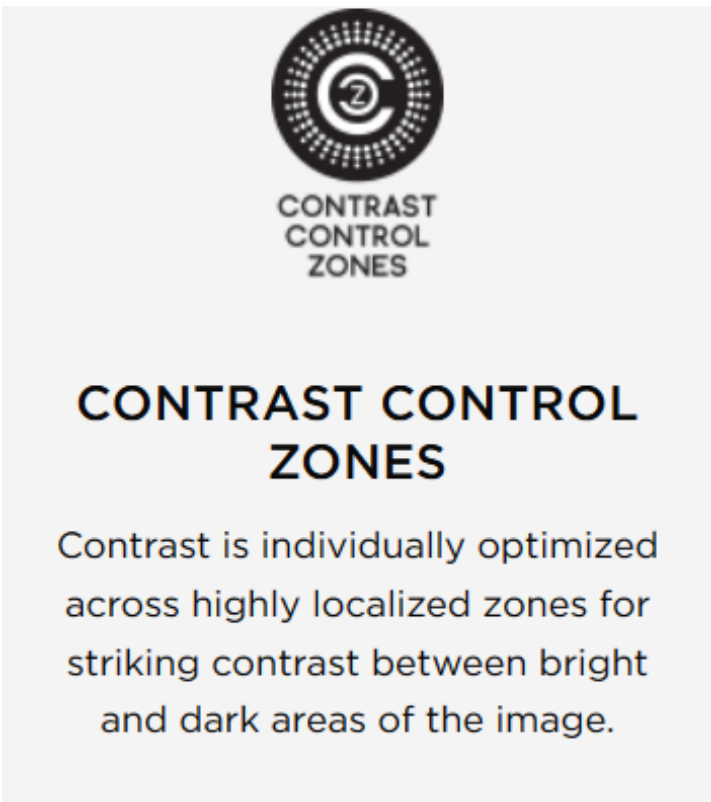


Dialog iW7027
16 Channel LED Driver

[Dialog iW7027 on LED Control Board in TCL 55R625]

25. TCL advertises various features and functionality evidencing that this claim is present in the Accused Products. For example, TCL advertises local dimming in the TCL 55R625 .

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[TCL 55R625 specifications at <https://www.tclusa.com/products/home-theater/6-series/tcl-55-class-6-series-4k-qled-hdr-roku-smart-tv-55r625>]

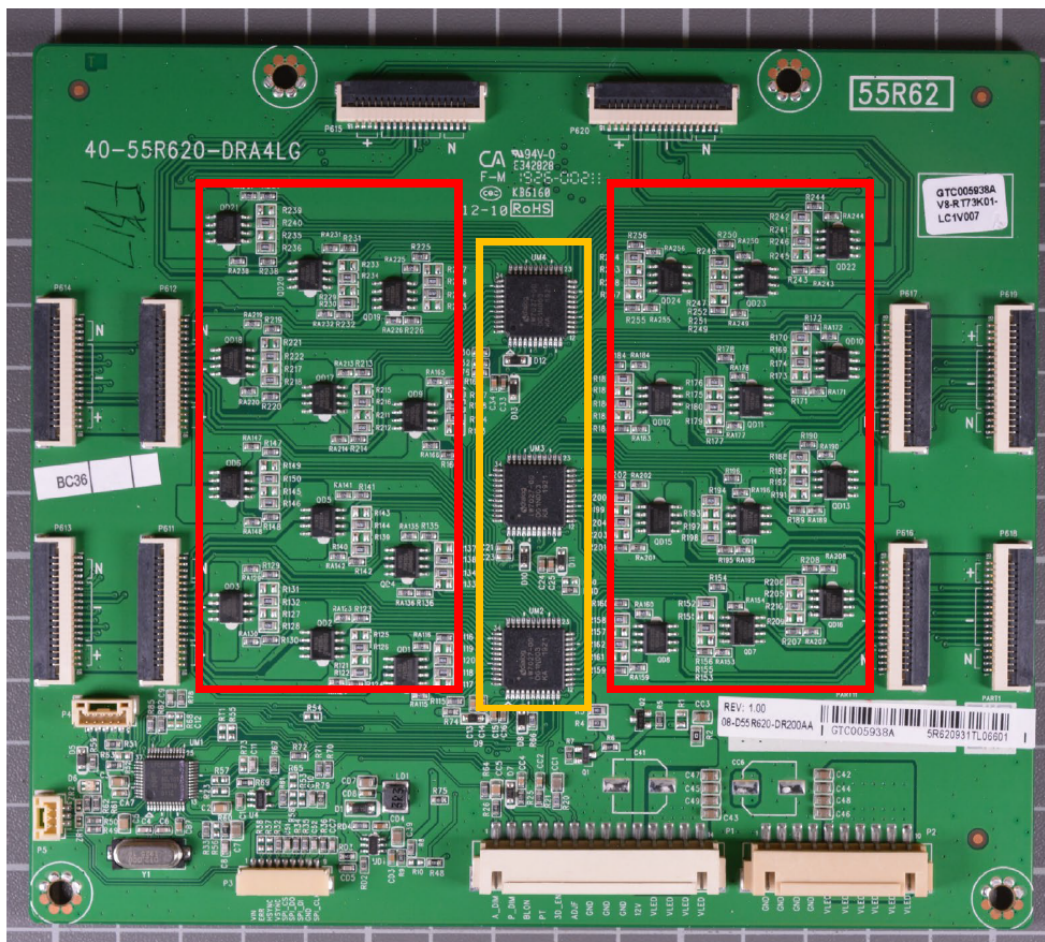
- Local contrast – *Only on select models*: Sets the amount of dimming multiple “local” areas of the screen’s backlight intensity. This setting can make dark areas darker without affecting the brightness of light areas. *This option is disabled when Game mode is enabled.*

[TCL 55R625 manual, https://www.tclusa.com/sites/default/files/2019-10/R62Xseries%20Roku%20User%20Guide_US.pdf]

26. The Accused Products have “a network of semiconductor switches coupled in series.” For instance, the Accused Products include an LED control board with LED drivers coupled to both a switch mode power supply and one or more semiconductor switches.

27. The exemplary TCL 55R625 TV includes a network of semiconductor switches coupled in series, including as follows: The LED control board includes seven (7) Dialog iW7027 LED driver chips across both sides of the board. The

1 iW7027 LED driver includes a switch for each section of LEDs. Each section
2 comprises two LEDs.



Dialog iW7027
16 Channel LED Driver

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PV628DA N-Channel MOSFETs

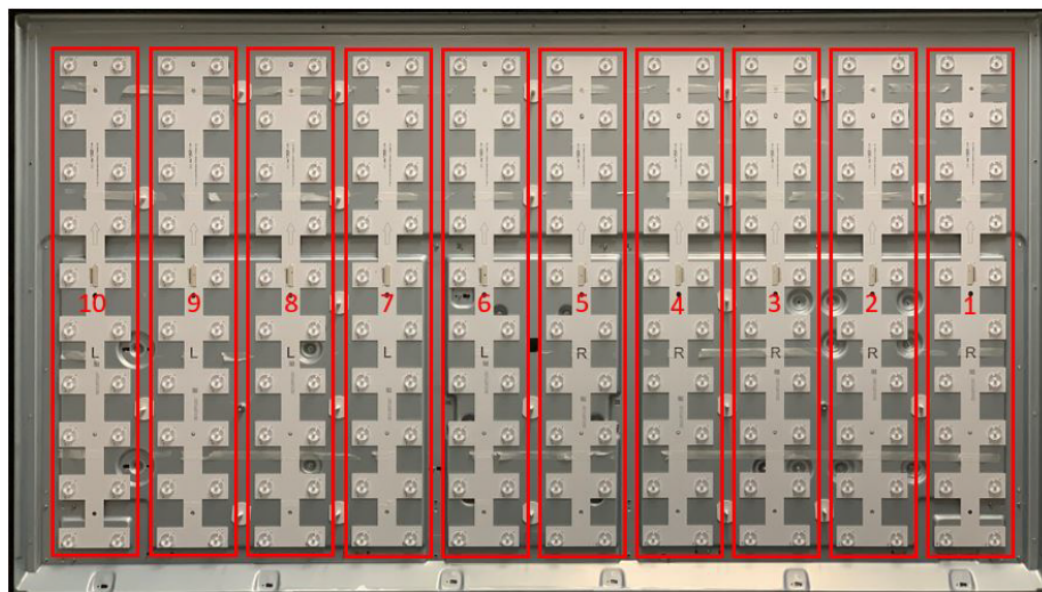
[PV628DA N-Channel MOSFET chips and Dialog iW7027 Chips on TCL 55R625 LED Control Board]

28. The Dialog iW7027 LED driver supports up to sixteen (16) sections of LEDs and is associated with semiconductor switches for each section, including up to eight (8) PV628DA N-Channel MOSFET chips. The PV628DA N-Channel MOSFET chips (“N-Channel MOSFET chips”) contain a pair of semiconductor switches. The iW7027 LED driver receives a regulated current from the resonant switch mode power supply. The resonant switch mode power supply comprises a power supply IC and associated circuitry, including a pair of semiconductor switches coupled in series. The iW7027 LED driver chip in the TCL 55R625 is coupled to the resonant switch mode power supply and its associated circuitry and the N-Channel MOSFET chips, such that the two semiconductor switches associated with the resonant switch mode power supply are coupled in series with each of the two switches in the N-Channel MOSFET chips (i.e., semiconductor switches).

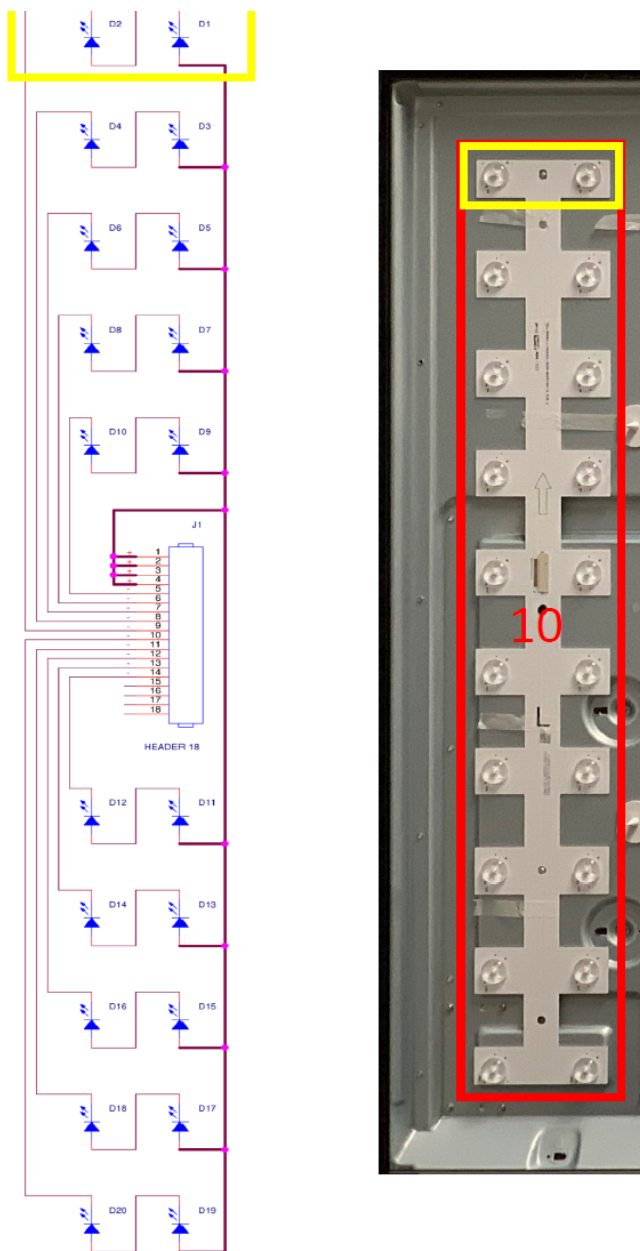
29. In addition, the N-Channel FET chips are a network of semiconductor switches coupled in series with the “current source configured to provide a regulated current” (as identified above) and the plurality of light sources (as identified below). There is thus a “a network of semiconductor switches coupled in series.”

1 30. The Accused Products have “a plurality of light sources in a backlight
2 system, each light source associated with a semiconductor switch, wherein the
3 semiconductor switch selectively opens to allow the associated light source to
4 conduct the regulated current.”

5 31. The TCL Accused Products include a plurality of light sources (LEDs)
6 in a backlight system, each light source associated with a semiconductor switch,
7 wherein the semiconductor switch selectively opens to allow the associated light
8 source to conduct the regulated current. Each of these semiconductor switches is
9 controlled by an associated LED driver. The control board is coupled to strings of
10 LEDs (e.g., light sources). In the TCL 55R625, for example, there are ten (10)
11 sections containing twenty (20) total LEDs with two LEDs per zone, comprising a
12 total of one hundred (100) zones.



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[LED Matrix and Individual LED zone in TCL 55R625]

32. The semiconductor switch selectively opens to allow the associated light source to conduct the regulated current. Each semiconductor switch (e.g., the two switches in each PV628DA MOSFET chip) is associated with an LED driver in the TCL Accused Products. The LED drivers (e.g., the iW7027 drivers) in the TCL Accused Products are configured to implement local dimming by selectively controlling these semiconductor switches.

1 33. TCL also has indirectly infringed and continues to indirectly infringe
2 the '087 Patent by inducing infringement by customers and third parties of the '087
3 Patent. TCL's users, customers, agents or other third parties who use those devices
4 in accordance with TCL's instructions infringe at least claim 1 of the '087 Patent, in
5 violation of 35 U.S.C. § 271(a). Because TCL intentionally instructs its customers
6 to infringe through training videos, demonstrations, brochures and user guides, such
7 as those located at <https://www.tclusa.com/products/home-theater> (advertising, for
8 example, that its TVs use "Quantum Contrast technology to deliver powerful,
9 precise illumination and optimize the image across highly localized zones," and
10 "Contrast Control Zone technology optimizes the image across individual zones"),
11 and [https://www.tclusa.com/sites/default/files/2019-](https://www.tclusa.com/sites/default/files/2019-10/S52Xseries%20Roku%20User%20Guide_US.pdf)
12 [10/S52Xseries%20Roku%20User%20Guide_US.pdf](https://www.tclusa.com/sites/default/files/2019-10/S52Xseries%20Roku%20User%20Guide_US.pdf) and
13 [https://www.tclusa.com/sites/default/files/2019-](https://www.tclusa.com/sites/default/files/2019-10/R62Xseries%20Roku%20User%20Guide_US.pdf)
14 [10/R62Xseries%20Roku%20User%20Guide_US.pdf](https://www.tclusa.com/sites/default/files/2019-10/R62Xseries%20Roku%20User%20Guide_US.pdf) (instructing users, for
15 example, regarding local contrast settings), TCL is liable for infringement of the
16 '087 Patent under 35 U.S.C. § 271(b).

17 34. TCL is on notice of its infringement of the '087 Patent by no later than
18 December 11, 2019 by virtue of a letter from counsel for Polaris PowerLED to the
19 Presidents of TCL Corporation, TCL Electronics Holdings, Ltd., TCL
20 Communication Ltd., TCL Corp., and TCL Communication Holdings, Ltd.

21 35. By the time of trial, TCL will have known and intended (since
22 receiving such notice) that its continued actions would actively induce the
23 infringement of at least claim 1 of the '087 Patent.

24 36. On information and belief, Defendants' past and continuing
25 infringement has been deliberate and willful, and this case is therefore an
26 exceptional case, which warrants an award of treble damages and attorneys' fees to
27 Plaintiff pursuant to 35 U.S.C. § 285.
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1 (D) An order and judgment permanently enjoining Hisense and its
2 officers, directors, agents, servants, employees, affiliates, attorneys, and all others
3 acting in privity or in concert with them, and their parents, subsidiaries, divisions,
4 successors and assigns from further acts of infringement of the Patents-in-Suit;

5 (E) A judgment that this is an exceptional case and awarding Polaris
6 PowerLED its costs and reasonable attorneys' fees incurred in this action as
7 provided by 35 U.S.C. § 285; and

8 (F) A judgment granting Polaris PowerLED such further relief as
9 the Court may deem just and proper.

10 **JURY TRIAL DEMAND**

11 40. Polaris PowerLED hereby demands trial by jury on all issues so triable
12 pursuant to Fed. R. Civ. P. 38.
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15 DATED: January 21, 2020

16 By: /s/ Robert F. Kramer
Robert F. Kramer

17 Attorneys for Plaintiff
18 POLARIS POWERLED TECHNOLOGIES,
19 LLC
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