

Ex. 22: Claim Chart for U.S. Patent No. 9,629,287
Samsung OH46 / OH55

Infringement Claim Chart for Samsung OH-Series Outdoor Display Products

Claim Chart for U.S. Patent No. 9,629,287
Samsung OH46 / OH55

Samsung Products directly and/or indirectly infringe at least claims 1, 4, 8, 9, 10, 11, 12, 15, 21, 22, 23 (“Asserted Claims”) of U.S. Patent No. 9,629,287 (“the ’287 Patent”). The Samsung Products that infringe the ’287 Patent include at least the Samsung 46- and 55-inch OH series displays (collectively, the “Samsung OH46/OH55 Products”).

The Samsung OH46/OH55 Products infringe the ’287 Patent because they practice at least one claim of the ’287 Patent. The Samsung OH46F product is representative of the Samsung OH46/OH55 Products at least because the other Samsung OH46/OH55 Products function in the same or substantially similar manner to the OH46F product. Samsung’s marketing, customer support, and other technical information describe the relevant aspects of the Samsung OH46/OH55 Products in the same or substantially similar manner for the Samsung OH46/OH55 Products. *See* Samsung Outdoor Installation Guide, Ex. 87, p. 4 (depicting airflow direction for Samsung OH46F/OH55A/OH55F models). Thus, on information and belief, the Samsung OH46/OH55 Products implement cooling systems in the same or substantially similar way as the OH46F product.

Each of the following limitations is met literally, and, to the extent a limitation is not met literally, it is met under the doctrine of equivalents.

References:

- Samsung OH46F product webpage: <https://displaysolutions.samsung.com/digital-signage/detail/1049/OH46F> (Ex. 58)
- Samsung OH46B product webpage: <https://www.samsung.com/us/business/displays/outdoor-and-window/oh-series/ohb-series-46-lh46ohbebgbxgo/> (Ex. 96)
- Samsung OH55F product webpage: <https://displaysolutions.samsung.com/digital-signage/detail/1050/OH55F> (Ex. 93)
- Samsung Outdoor Installation Guide for OH46F OH55A OH55F OH75A OH75F OH85F (Ex. 87)
- Product teardown images for Samsung OH46F (Ex. 91)
- Samsung SMART Signage Outdoor OHF Series Datasheet (Ex. 101)
- Samsung OH46F / OH55F user manual (Ex. 99)

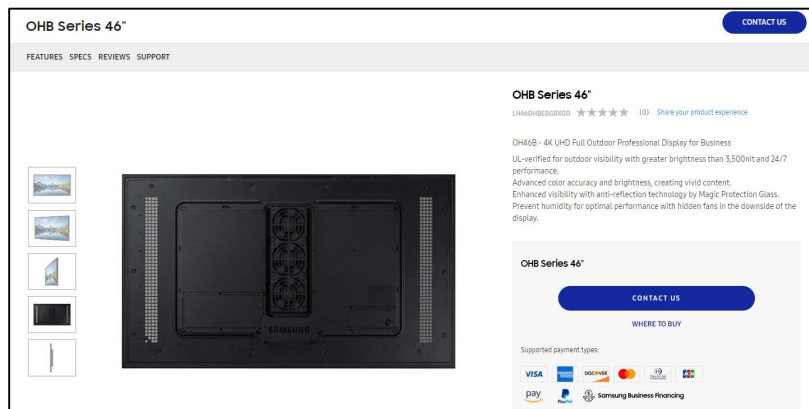
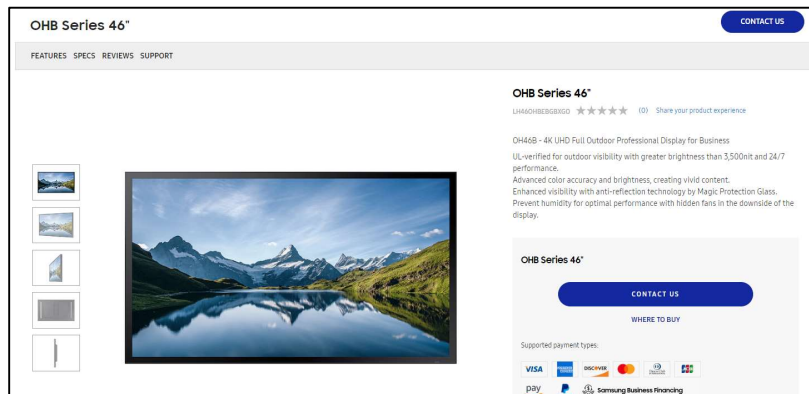
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The Samsung OH46F is shown in the following images:



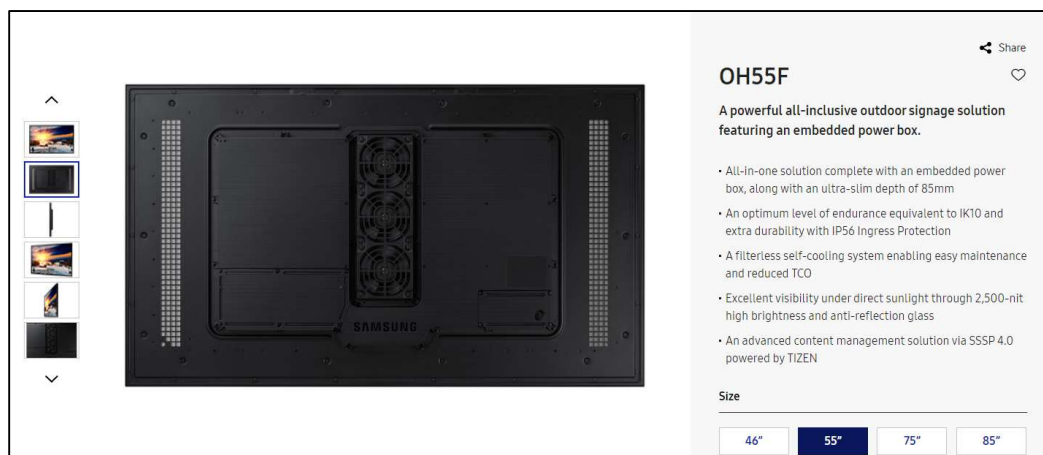
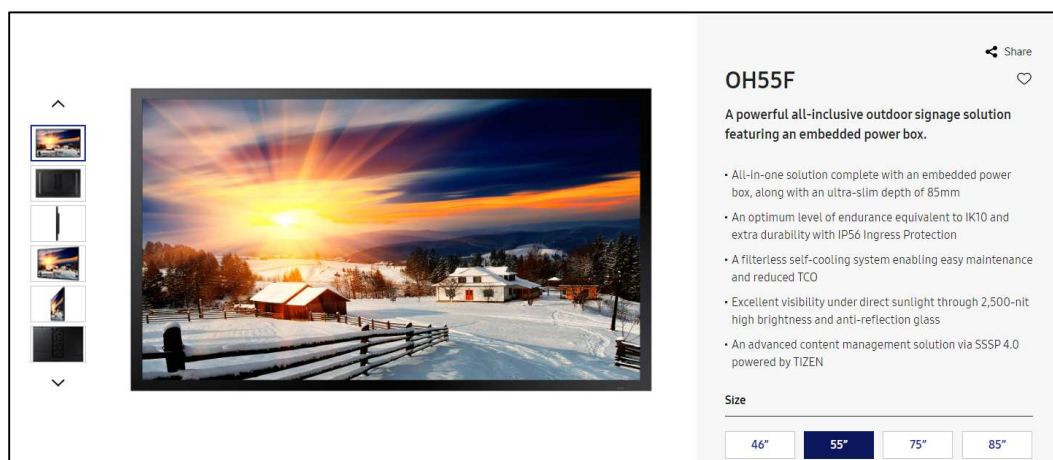
See Samsung OH46F product webpage: <https://displaysolutions.samsung.com/digital-signage/detail/1049/OH46F> (Ex. 58).

Samsung provides similar images on its website for other 46-inch and 55-inch OH series displays, including, for example, the Samsung OH46B and OH55F outdoor displays.



See Samsung OH46B product webpage: <https://www.samsung.com/us/business/displays/outdoor-and-window/oh-series/ohb-series-46-lh46ohbebgbxgo/> (Ex. 96).

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See Samsung OH55F product webpage: <https://displaysolutions.samsung.com/digital-signage/detail/1050/OH55F> (Ex. 93).

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Images from a teardown of an OH46F product show further detail:

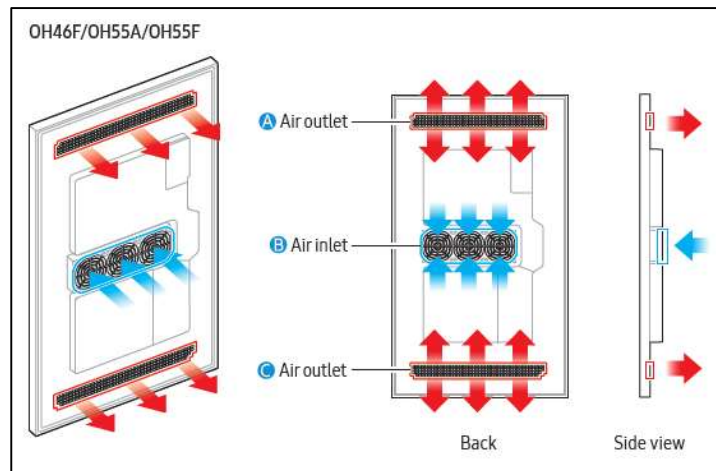


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See Ex. 91.

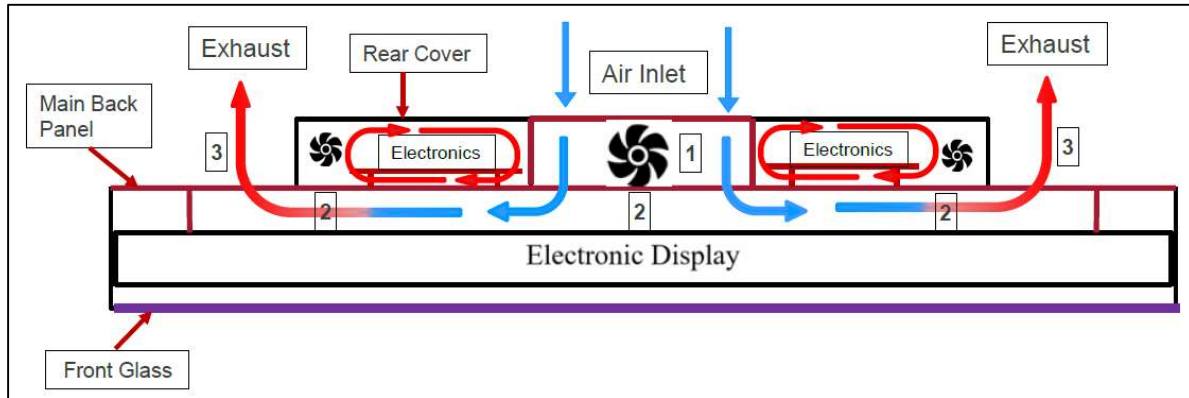
The Samsung Outdoor Installation Guide (Ex. 87) shows air flow through the Samsung OH46F / OH55A / OH55F products:



See Ex. 87, p. 4.

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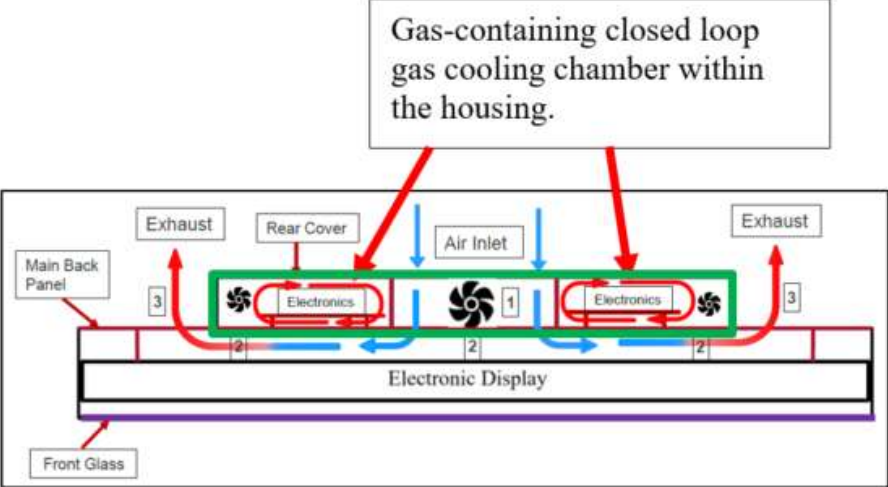
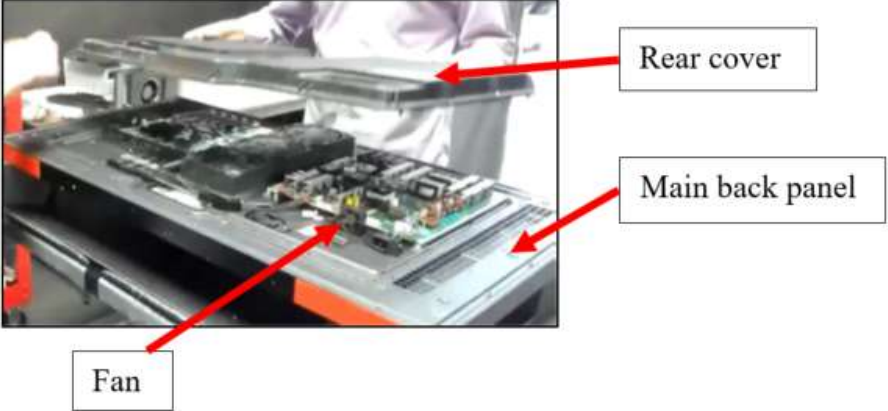
On information and belief, the following schematic illustrates aspects of the configuration and cooling operation of the Samsung OH46/OH55 Products based on a teardown of the OH46F product and Samsung materials cited above.



Ex. 22: Claim Chart for U.S. Patent No. 9,629,287
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'287 patent, claim:	Accused Products
1. An electronic display assembly comprising: [1a.] an electronic display housing;	The Samsung OH46 comprises an electronic display assembly with an electronic display housing. The front surface of the of the electronic display assembly is depicted below:  The rear side of the electronic display housing is depicted below. 

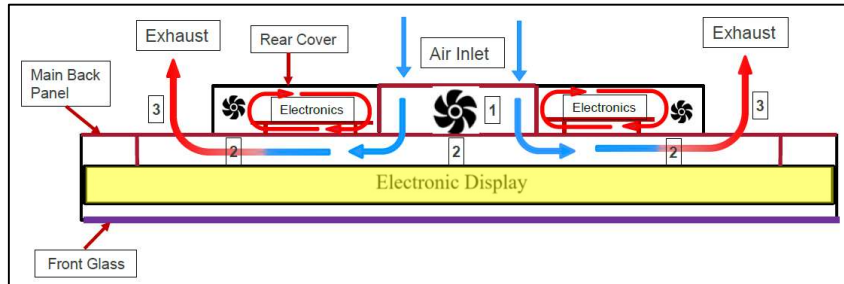
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'287 patent, claim:	Accused Products
[1b.] a gas-containing closed loop gas cooling chamber located within the electronic display housing;	The Samsung OH46 comprises a gas-containing closed loop gas cooling chamber located within the electronic display housing. The schematic of the Samsung OH46 illustrates the closed loop gas cooling chamber below:  A fan is connected to the housing assembly that is adapted to circulate gas in a closed loop within an interior of the housing formed between the rear cover and the main back panel of the Samsung OH46. 

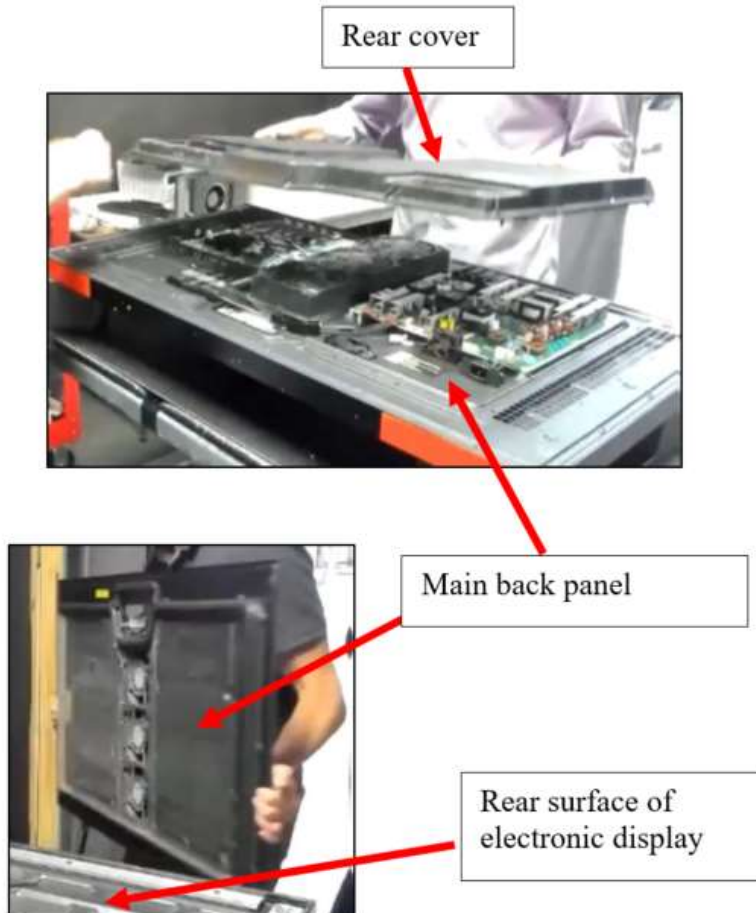
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[1c.] an electronic display positioned within the electronic display housing but outside of the closed loop gas cooling chamber; and

The Samsung OH46 comprises an electronic display positioned within the electronic display housing but outside of the closed loop gas cooling chamber. The schematic of the Samsung OH46 illustrates the electronic display that is outside of the closed loop gas cooling chamber (with the electronic display highlighted in yellow):



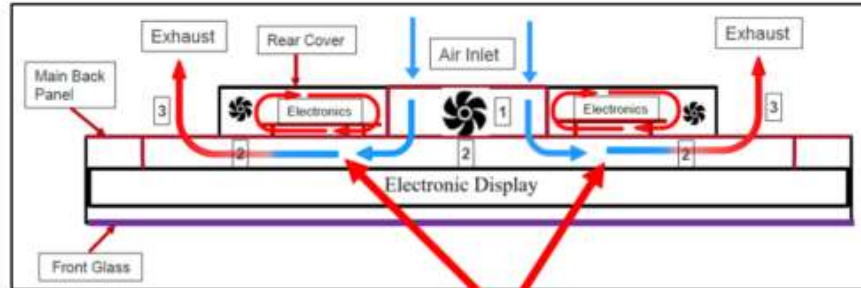
The pictures below show removal of the rear cover (first picture), and then removal of the main back panel (second picture) to expose the rear surface of the electronic display (third picture).



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[1d.] an open loop ambient air pathway through the electronic display housing;

The Samsung OH46 comprises an open loop ambient air pathway through the electronic display housing. The schematic of the Samsung OH46 illustrates the open loop ambient air pathway below:



Open loop ambient air pathway

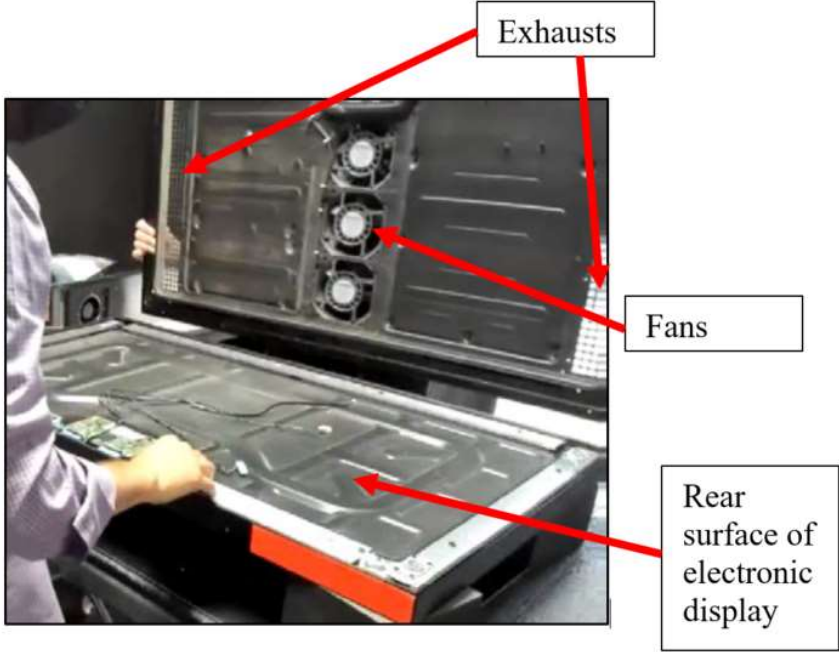
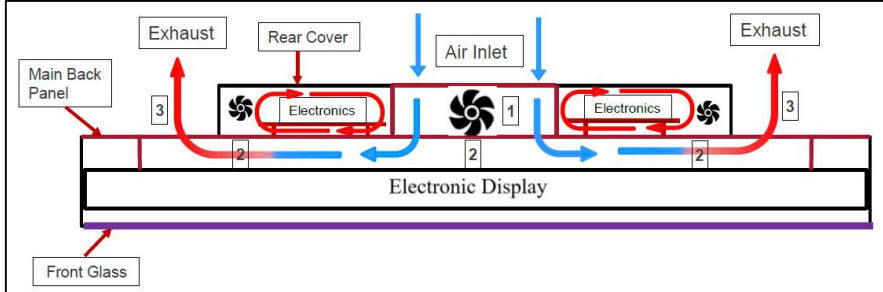


Air inlet with fans for pushing ambient air through ambient air pathway

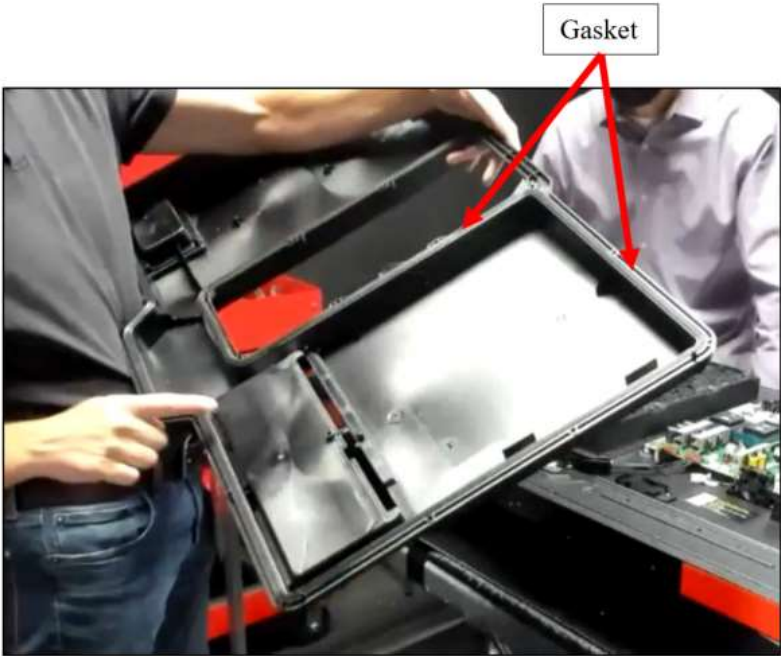
Exhaust for ambient air exiting ambient air pathway



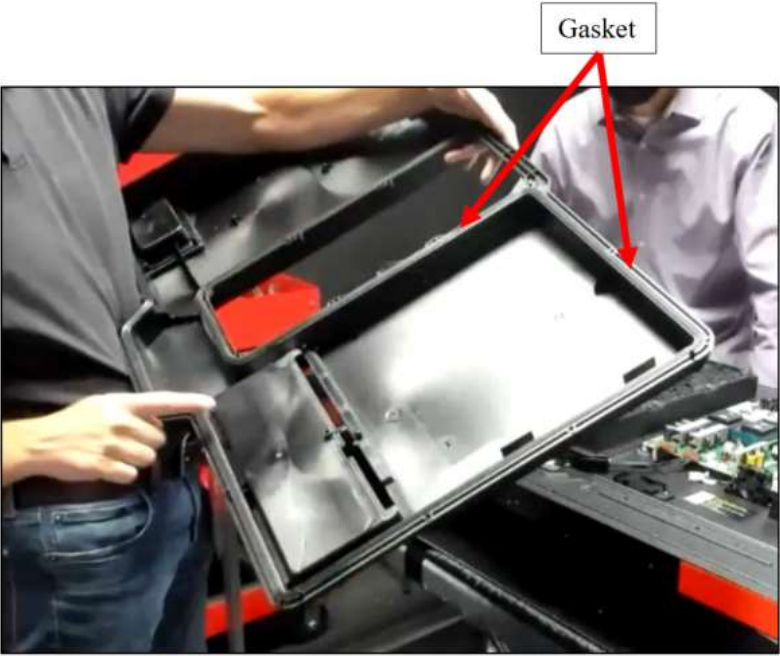
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'287 patent, claim:	Accused Products
	As shown in the image below (with main back panel removed to expose rear of electronic display), ambient air pushed through the fans in the rear cover's port flows through the ambient air pathway, through the gap formed between the main rear panel and rear surface of the electronic display and exits through the exhausts. 
[1e.] wherein the electronic display is coolable by a combination of gas circulation within the closed loop gas cooling chamber and ambient air flow through the open loop ambient air pathway in the electronic display housing.	The electronic display of the Samsung OH46 is coolable by a combination of gas circulation within the closed loop gas cooling chamber and ambient air flow through the open loop ambient air pathway in the electronic display housing. The schematic of the Samsung OH46 illustrates the cooling of the unit cause by a combination of gas circulation within the closed loop gas cooling chamber and ambient airflow through the open loop ambient air pathway:  See also [1c] and [1d] above.

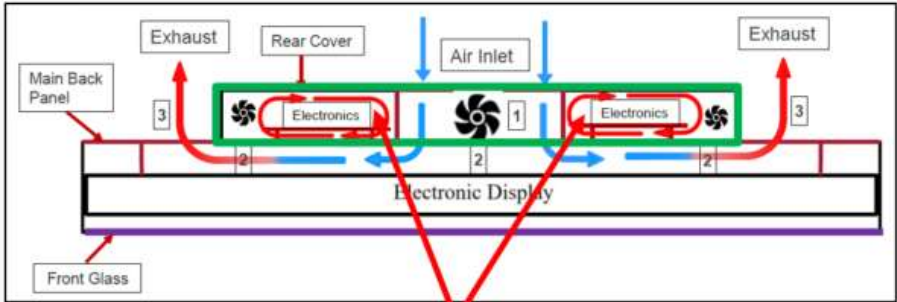
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'287 patent, claim:	Accused Products
4. The electronic display assembly of claim 1 wherein: the gas within the closed loop gas cooling chamber is isolated from the open loop of ambient air.	The gas within the closed loop gas cooling chamber of the Samsung OH46 is isolated from the open loop of ambient air. The rear cover contains a gasket that runs along its perimeter that prevents ambient air from entering the rear plenum. 

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'287 patent, claim:	Accused Products
8. The electronic display assembly of claim 1 wherein: the closed loop gas cooling chamber is partially defined by a sealed rear plenum that prevents ambient air from entering the plenum.	The closed loop gas cooling chamber of the Samsung OH46 is partially defined by a sealed rear plenum that prevents ambient air from entering the plenum. The rear cover contains a gasket that runs along its perimeter that prevents ambient air from entering the rear plenum. 

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'287 patent, claim:	Accused Products
9. The electronic display assembly of claim 8 further comprising: one or more electronic devices for operating the electronic display positioned within the sealed plenum.	The Samsung OH46 comprises one or more electronic devices for operating the electronic display positioned within the sealed rear plenum.  Samsung OH46F Electronics (including power supply, microprocessors for operating the electronic display) The schematic of the Samsung OH46 illustrates the units electronics that are positioned within the sealed rear plenum.  Sealed rear plenum

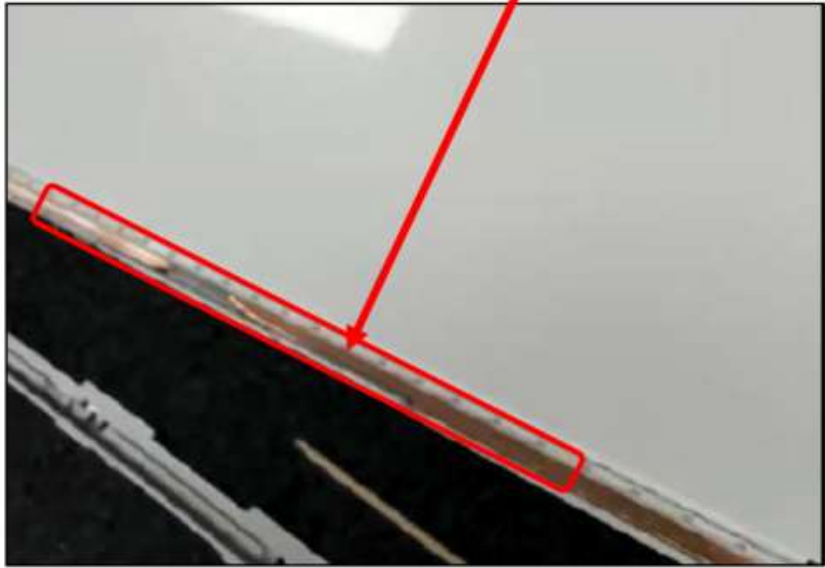
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'287 patent, claim:	Accused Products
10. The electronic display assembly of claim 1 wherein: the electronic display is selected from the group consisting of a liquid crystal display, a light emitting diode display, an organic light emitting diode display, a field emitting display, a cathode ray tube display, and a plasma display.	The electronic display of the Samsung OH46 consists of a liquid crystal display (LCD) with an LED backlight. Samsung marketing materials highlight the use of Samsung's "Magic Glass" to protect the "LCD panel" used in the Samsung OH46: ROBUST IK10* LEVEL OF ENDURANCE AGAINST EXTERNAL IMPACTS Advanced display protection is provided through the 5 mm (0.19 in.) tempered Magic Glass featuring durability that is IK10-certified (European strength test), further referencing its robust level of strength that can endure external impacts. In addition, a gap between the Magic Glass and the LCD panel prevents LCD breakage when the protection glass is broken. See Ex. 101 (Samsung SMART Signage Outdoor OHF Series Datasheet, p. 2).

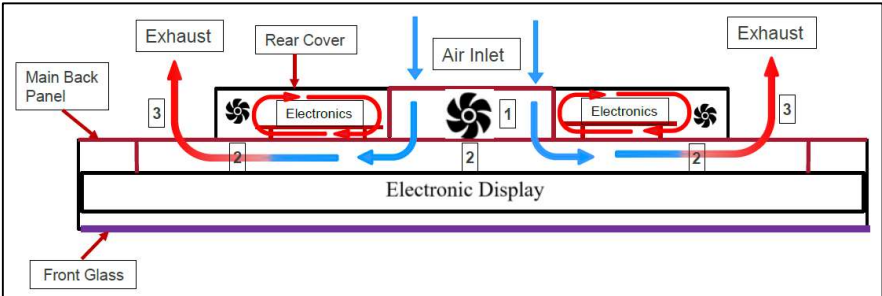
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'287 patent, claim:	Accused Products
11. The electronic display assembly of claim 1 further comprising: a gas-circulating fan for circulating the gas within the closed loop gas cooling chamber, and a fan for producing a flow of ambient air through the open loop ambient air pathway in the electronic display housing.	The Samsung OH46 comprises a gas-circulating fan for circulating the gas within the closed loop gas cooling chamber, and a fan for producing a flow of ambient air through the open loop ambient air pathway in the electronic display housing.  Gas-circulating fan for circulating gas within the closed loop gas cooling chamber  Fan for producing a flow of ambient air through the open loop ambient air pathway

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'287 patent, claim:	Accused Products
[12a] 12. An electronic display assembly comprising: a housing;	<i>See</i> [1a] above. The Samsung OH46 comprises an electronic display assembly with a housing.
[12b] a liquid crystal display (LCD) positioned within the housing and having a backlight;	The Samsung OH46 comprises a liquid crystal display (LCD) with an LED backlight. <i>See</i> [1c] and [10] above. The image below shows the electronic display with rear surface removed to expose LEDs used as a backlight for the display.  LEDs within electronic display

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'287 patent, claim:	Accused Products
[12c] wherein the electronic display is coolable by a combination of a closed loop of isolated gas which circulates within the housing and an open loop of ambient air which passes through the housing and along the backlight.	See [1c], [1d], [1e], and [12b] above. The electronic display of the Samsung OH46 is coolable by a combination of a closed loop of isolated gas which circulates within the housing and an open loop of ambient air which passes through the housing and along the backlight. The schematic of the Samsung OH46 illustrates the cooling of the unit cause by a combination of gas circulation within the closed loop gas cooling chamber and ambient airflow through the open loop ambient air pathway. 
15. The electronic display assembly of claim 12 further comprising: one or more electronic components for driving the LCD positioned within the rear cooling chamber.	See [9] above. The Samsung OH46 comprises one or more electronic components for driving the LCD positioned within the rear cooling chamber.  Electronics for the Samsung OH46 (including power supply, microprocessors for driving the electronic display) within rear cooling chamber.

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'287 patent, claim:	Accused Products
[21a] 21. An electronic display assembly comprising: an electronic display housing;	<i>See [1a] above.</i> The Samsung OH46 comprises an electronic display assembly with an electronic display housing.
[21b] a closed loop of cooling gas adapted for circulation within the electronic display housing;	<i>See [1b] above.</i> The Samsung OH46 comprises a closed loop of cooling gas adapted for circulation within the electronic display housing.
[21c] an open loop ambient air pathway through the electronic display housing; and	<i>See [1d] above.</i> The Samsung OH46 comprises an open loop ambient air pathway through the electronic display housing.
[21d] an electronic display positioned within the electronic display housing such that the electronic display is isolated from the closed loop of cooling gas but contactable by ambient air flowing through the open loop ambient air pathway;	<i>See [1c] above.</i> The Samsung OH46 comprises an electronic display positioned within the electronic display housing such that the electronic display is isolated from the closed loop of cooling gas but contactable by ambient air flowing through the open loop ambient air pathway.

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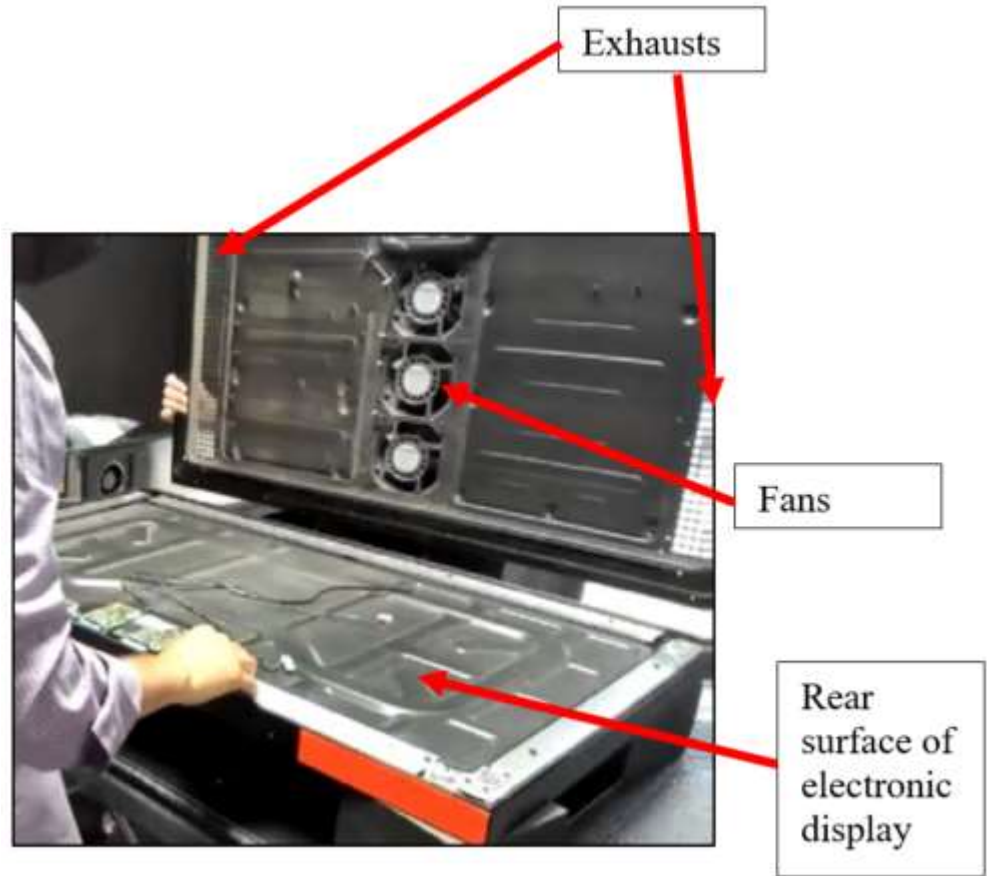
'287 patent, claim:	Accused Products
[21e] wherein the electronic display is coolable by a combination of closed loop cooling gas circulation within the electronic display housing, and ambient air flow through the open loop ambient air pathway in the electronic display housing.	<i>See [1e] above.</i> The electronic display of the Samsung OH46 is coolable by a combination of closed loop cooling gas circulation within the electronic display housing, and ambient air flow through the open loop ambient air pathway in the electronic display housing.

22. The electronic display assembly of claim 21 wherein: the closed loop of cooling gas is isolated within a continuous loop gas cooling chamber, and the open loop ambient air pathway is configured to direct the ambient air over an exterior surface of the gas cooling chamber when it flows through the electronic display housing.

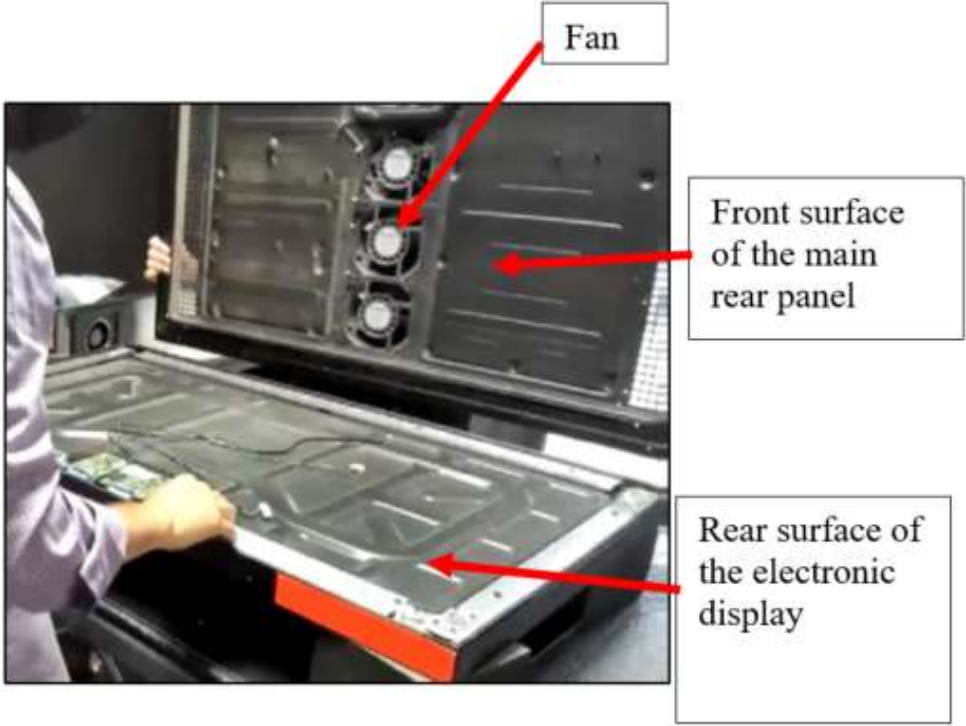
See [1b] and [4] above. The closed loop of cooling gas in the Samsung OH46 is isolated within a continuous loop gas cooling chamber, and the open loop ambient air pathway is configured to direct the ambient air over an exterior surface of the gas cooling chamber when it flows through the electronic display housing.

The rear cover contains a gasket that runs along its perimeter that isolates the closed loop of cooling gas within a continuous loop gas cooling chamber. *See [4] above.*

As shown in the image below (with main back panel removed to expose rear of electronic display), ambient air pushed through the fans in the rear cover's port flows through the ambient air pathway, through the gap formed between the main rear panel and rear surface of the electronic display and exits through the exhausts. Accordingly, the open loop ambient air pathway is configured to direct the ambient over an exterior surface of the gas cooling chamber (i.e., the front surface of the main rear panel) when it flows through the electronic display housing.



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'287 patent, claim:	Accused Products
23. The electronic display assembly of claim 22 further comprising: a fan located within the electronic display housing, the fan configured and oriented to move air located within the housing between a surface of the continuous loop gas cooling chamber and a rear surface of the electronic display.	See [1b], [4] and [22] above. The Samsung OH46 comprises the fan identified below, which is located within the electronic display housing. The fan is configured and oriented to move air located within the housing between a surface of the continuous loop gas cooling chamber (i.e., the front surface of the rear main panel) and a rear surface of the electronic display.  The photograph shows the internal components of the Samsung OH46. A person's hands are visible on the left, holding the rear panel. Three red arrows point from text labels to specific parts: one points to a fan at the top, another points to the front surface of the main rear panel in the middle, and a third points to the rear surface of the electronic display at the bottom. The labels are in white boxes with black text.