

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

HANWHA Q CELLS & ADVANCED
MATERIALS CORPORATION,

Plaintiff,

v.

LONGI GREEN ENERGY TECHNOLOGY CO.,
LTD.,
LONGI SOLAR TECHNOLOGY CO., LTD.,
LONGI (H.K.) TRADING LTD.,
LONGI (KUCHING) SDN. BHD.,
TAIZHOU LONGI SOLAR TECHNOLOGY
LTD.,
ZHEJIANG LONGI SOLAR TECHNOLOGY
LTD.,
HEFEI LONGI SOLAR TECHNOLOGY LTD.,
AND
LONGI SOLAR TECHNOLOGY (U.S.) INC.

Defendants.

Civil Action No. _____

DEMAND FOR JURY TRIAL

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Hanwha Q CELLS & Advanced Materials Corporation (“Hanwha Q CELLS” or “Plaintiff”) files this Complaint for patent infringement against Defendants LONGi Green Energy Technology Co., Ltd., LONGi Solar Technology Co., Ltd., LONGi (H.K.) Trading Ltd., LONGi (Kuching) Sdn. Bhd., Taizhou LONGi Solar Technology Ltd., Zhejiang LONGi Solar Technology Ltd., Hefei LONGi Solar Technology Ltd., and LONGi Solar Technology (U.S.) Inc. (collectively, “LONGi,” “LONGi Defendants,” or “Defendants”), and alleges as follows:

NATURE OF THE ACTION

1. This action is brought against LONGi Defendants for infringement of U.S. Patent No. 9,893,215 (the “215 Patent”), which is directed to solar cells. Hanwha Q CELLS is the sole

owner by assignment of all right, title, and interest in and to the '215 Patent, including the right to recover damages for past infringement.

2. A true and correct copy of the '215 Patent is attached as Exhibit 1.

THE PARTIES

3. Plaintiff Hanwha Q CELLS & Advanced Materials Corporation is a corporation organized under the laws of the Republic of Korea with an address at 86 Cheonggyecheon-ro, Jung-gu, Seoul, Republic of Korea 04541.

4. Hanwha Q CELLS is one of the largest photovoltaic solar cell and solar module manufacturers in the world. Through its research and development facility, Hanwha Q CELLS has pioneered applications of solar cell technology that achieves higher energy conversion efficiency than traditional solar cells.

5. Defendant LONGi Green Energy Technology (“LONGi Green Energy”) is a Chinese corporation listed on the Shanghai stock exchange under ticker 601012 and with a registered address at 388 Hangtian Middle Road, Chang’An District, Xi’an, 710100, China, and a place of business at Block B, Innovation & Incubation Center, Xi’an Service Outsourcing Industrial Park, No. 8989 Shangji Road, Economic and Technological Development Zone, Xi’an, 710018, China.

6. Defendant LONGi Solar Technology Co., Ltd. (“LONGi Technology”) is a Chinese corporation with a registered address at No. 8369 Shangyuan Road, Caotan Shengtai Industrial Park, Xi’an Economic and Technological Development Zone, China, and with a place of business located at Block B, Innovation Incubation Center, Xi’an Service Outsourcing Industrial Park, No. 8989 Shangji Road, Xi’an Economic and Technological Development Zone, 710018, China. LONGi Technology is a wholly-owned subsidiary of LONGi Green Energy. LONGi Technology has subsidiary and/or affiliate corporations in locations including Weifang,

China; Shenzhen, China; Beijing, China; Hong Kong; South Korea; Taiwan; and the United States.

7. Defendant LONGi (H.K.) Trading Ltd. (“LONGi Trading”) is a Hong Kong corporation with a registered address at 11/F, Capital Centre, 151 Gloucester Road, Wanchai, Hong Kong. LONGi Trading, on information and belief, imports infringing solar modules into the U.S. LONGi Trading is a wholly-owned subsidiary of LONGi Green Energy.

8. Defendant LONGi (Kuching) Sdn. Bhd. (“LONGi Malaysia”) is a Malaysian corporation with a registered address at Lot 2118 Jalan Usaha Jaya, Sama Jaya Free Industrial Zone, Kuching, Sarawak, 93350, Malaysia. LONGi Malaysia is a wholly-owned subsidiary of LONGi Trading. On information and belief, LONGi Malaysia manufactures and sells mono ingots, wafers, solar cells, and solar modules. On information and belief, LONGi Malaysia imports infringing solar cells and modules into the United States or sells infringing solar cells and modules for importation into the United States.

9. Defendant Taizhou LONGi Solar Technology Ltd. (“Taizhou LONGi”) is a Chinese corporation with a registered address at No. 268, Xingtai South Road, Taizhou, Jiangsu, 225300, China. Taizhou LONGi is a wholly-owned subsidiary of LONGi Green Energy.¹ On information and belief, Taizhou LONGi manufactures and sells infringing solar cells and solar modules for importation into the United States.

10. Defendant Zhejiang LONGi Solar Technology Ltd. (“Zhejiang LONGi”) is a Chinese corporation with a registered address at No. 2, Bailing Middle Road, Donggang Industrial Function Area, Economic Development Zone, Quzhou, Zhejiang, 324000, China.

¹ Upon information and belief, Taizhou LONGi was also known as Taizhou LERRI Solar Technology Ltd.

Zhejiang LONGi is a wholly-owned subsidiary of LONGi Green Energy.² On information and belief, Zhejiang LONGi manufactures and sells infringing solar modules for importation into the United States.

11. Defendant Hefei LONGi Solar Technology Ltd. (“Hefei LONGi”) is a Chinese corporation with a registered address at S1 Workshop, No. 888, Changning Avenue, High-Tech Zone, Hefei, Anhui, 230088, China. Hefei LONGi is a wholly-owned subsidiary of LONGi Green Energy.³ On information and belief, Hefei LONGi manufactures and sells infringing solar cells that are incorporated in solar modules for importation into the United States.

12. Defendant LONGi Solar Technology (U.S.) Inc. (“LONGi US”) is a Delaware corporation that is a wholly-owned subsidiary of LONGi Green Energy.⁴ Upon information and belief, LONGi US has an address at 2603 Camino Ramon, Suite 423, San Ramon, CA 94583. Upon information and belief, LONGi US imports infringing solar modules into the U.S. and/or sells infringing solar modules after importation into the United States.

JURISDICTION AND VENUE

13. This is an action for patent infringement under the patent laws of the United States of America, 35 U.S.C. §§ 1, *et seq.*, including 35 U.S.C. §§ 271 and 281–85. This Court therefore has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338.

14. This Court has personal jurisdiction over each of the Defendants.

² Upon information and belief, Zhejiang LONGi was also known as Zhejiang LERRI Solar Technology Ltd.

³ Upon information and belief, Hefei LONGi was also known as Hefei LERRI Solar Technology Ltd.

⁴ Upon information and belief, LONGi US was also known as LERRI Solar Technology (U.S.) Inc.

15. Defendant LONGi US is a Delaware corporation. Thus, LONGi US resides within, and has consented to, personal jurisdiction within the District of Delaware.

16. Defendant LONGi Green Energy has conducted and continues to conduct business in the State of Delaware and in the District of Delaware. LONGi Green Energy, upon information and belief, directly and/or through its subsidiaries, makes or assembles products that are covered by the subject matter of the '215 Patent and that are and have been imported, offered for sale, sold, purchased, and used within the District of Delaware. LONGi Green Energy, upon information and belief, directly or through intermediaries (including subsidiaries, distributors, retailers, contractors, and others), purposefully and voluntarily ships, distributes, offers for sale, sells, installs, uses, and advertises infringing products to consumers in the District of Delaware. Additionally, LONGi Green Energy, directly and/or through distribution networks, regularly places infringing products within the stream of commerce, with the knowledge and/or understanding that such products will be sold in the District of Delaware. Upon information and belief, LONGi Green Energy has committed acts of patent infringement within the State of Delaware and in the District of Delaware. LONGi Green Energy has purposefully availed themselves of the benefits of the State of Delaware and the exercise of jurisdiction over these Defendants would not offend traditional notions of fair play and substantial justice.

17. LONGi Trading, upon information and belief, imports LONGi-branded products that are covered by the subject matter of the '215 Patent and that are and have been offered for sale, sold, purchased, and used within the District of Delaware. LONGi Trading, upon information and belief, directly or through intermediaries (including subsidiaries, distributors, retailers, contractors, and others), purposefully and voluntarily ships, distributes, offers for sale, and sells infringing products to consumers in the District of Delaware. Additionally, LONGi

Trading, directly and/or through distribution networks, regularly places infringing products within the stream of commerce, with the knowledge and/or understanding that such products will be sold in the District of Delaware. Upon information and belief, LONGi Trading has committed acts of patent infringement within the State of Delaware and in the District of Delaware. LONGi Trading has purposefully availed itself of the benefits of the State of Delaware and the exercise of jurisdiction over LONGi Trading would not offend traditional notions of fair play and substantial justice.

18. Defendants LONGi Technology, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi, upon information and belief, directly and/or through their subsidiaries or affiliates, make or assemble products that are covered by the subject matter of the '215 Patent and that are and have been imported, offered for sale, sold, purchased, and used within the District of Delaware. LONGi Technology, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi, upon information and belief, directly and/or through intermediaries (including subsidiaries, affiliates, distributors, retailers, contractors, and others), including distribution networks controlled by affiliated entities, regularly place infringing products within the stream of commerce, with the knowledge and/or understanding that such products are shipped, distributed, offered for sale, sold, installed, used, and advertised to consumers within the District of Delaware. LONGi Technology, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi have committed acts of patent infringement within the State of Delaware and in the District of Delaware. LONGi Technology, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi have purposefully availed themselves of the benefits of the State of Delaware and the exercise of jurisdiction over those Defendants would not offend traditional notions of fair play and substantial justice.

19. In the event that this Court does not have personal jurisdiction over Defendants LONGi Technology, LONGi Green Energy, LONGi Trading, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi by virtue of the above, this Court nonetheless has personal jurisdiction over those Defendants pursuant to Federal Rule of Civil Procedure 4(k)(2) because this case arises under federal law, LONGi Technology, LONGi Green Energy, LONGi Trading, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi are not subject to jurisdiction in any state's courts of general jurisdiction, and LONGi Technology, LONGi Green Energy, LONGi Trading, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi have purposefully availed themselves of the privilege of conducting business in the United States by making, using, offering to sell, or selling infringing products within the United States, or importing infringing products into the United States.

20. Venue is proper in this District for Defendant LONGi US under 28 U.S.C. §§ 1391(b) and (c) and 28 U.S.C. § 1400 because, among other reasons, LONGi US subject to personal jurisdiction in the District of Delaware and resides in the District of Delaware.

21. Venue is proper in this District for Defendants LONGi Technology, LONGi Green Energy, LONGi Trading, LONGi Malaysia, Taizhou LONGi, Zhejiang LONGi, and Hefei LONGi under 28 U.S.C. § 1391(c) because, among other reasons, those Defendants are subject to personal jurisdiction and are not resident in the United States.

THE PATENTED INVENTION

22. Hanwha Q CELLS incorporates the allegations of the preceding paragraphs as if fully set forth herein.

23. The '215 Patent is entitled "Method for Manufacturing a Solar Cell with a Surface-Passivating Dielectric Double Layer, and Corresponding Solar Cell." The '215 Patent issued from U.S. Patent Application Serial No. 12/742,818 (the "'818 Application"). The '818

Application is a national stage application of PCT/EP2008/065067, with a 35 U.S.C. § 371(c) date of July 2, 2010 and claims the benefit of German Patent Application Serial No. 10 2007 054 384.2, filed on November 14, 2007. The '215 Patent identifies Jan Schmidt and Bram Hoex as the inventors.

24. The technology claimed in the '215 Patent concerns solar cells, which are semiconductor devices that utilize the photovoltaic effect to convert sunlight (i.e., photons) into electricity. '215 Patent, col. 3:7–20, Ex. 1. The photovoltaic effect refers to the generation of energy-containing charge carriers when a material, such as silicon, is exposed to sunlight. Sunlight exposure creates negative and positive charge carriers within a silicon substrate. *See id.*, col. 1:16–22. The energy contained in these charge carriers must be extracted and utilized externally without the charge carriers recombining at the boundary surface of the silicon substrate and neutralize each other, a process known as recombination. *See id.*, col. 1:14–22

25. The '215 Patent discloses a structure of solar cells with certain efficiency advantages versus other types of solar cells. *See id.*, col. 6:8–34. The solar cell structure of the '215 Patent includes a silicon substrate, a first dielectric layer comprising aluminum oxide on a surface of the silicon substrate, and a second dielectric layer on the first dielectric layer of different materials and with hydrogen being embedded into the second dielectric layer. *Id.*, col. 5:58–64.

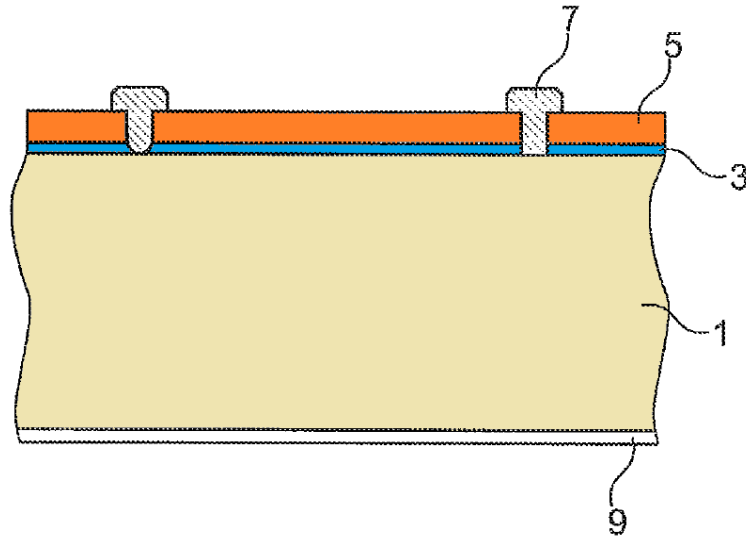


Figure 1

26. Figure 1 (above and colored) from the '215 Patent shows an exemplary illustration depicting the first and second dielectric layers on a silicon substrate (1). The first dielectric layer comprising aluminum oxide (3) is deposited on a surface of the silicon substrate, and the second dielectric layer (5) is deposited on top of the first dielectric layer. *Id.*, col. 7:30–35. The second dielectric layer has hydrogen embedded within the layer. *Id.*, col. 7:65–8:3.

27. The use of these surface-passivating dielectric layers reduces surface recombination of charge carriers, allowing greater extraction of energy-containing charge carriers for external utilization. *Id.*, col. 2:58–60, 3:1–4. The use of the surface-passivating dielectric layers may increase light absorption in the substrate, and increase the efficiency of light conversion into electricity. *Id.*, col. 3:7–20. Further, the solar cells with the disclosed structure maintain their stable passivation properties while withstanding the high temperatures used in today's industrial manufacturing processes. *Id.*, col. 3:4–7. As a result, the invention of the '215 Patent allows more energy to be extracted from the solar cell, while remaining durable through the manufacturing process. *Id.*, col. 3:4–27.

CLAIMS FOR PATENT INFRINGEMENT

Count I: Infringement of U.S. Patent No. 9,893,215

28. Hanwha Q CELLS incorporates the allegations of the preceding paragraphs as if fully set forth herein.

29. LONGi Defendants are in the business of designing, manufacturing, using, offering to sell, selling, and importing products, including solar cells and modules, both under the LONGi brand and, upon information and belief, as a contract manufacturer for other companies.

30. Hanwha Q CELLS is informed and believes, and thereon alleges, that LONGi has infringed, is currently infringing, or will infringe the '215 Patent in violation of 35 U.S.C. § 271 by, among other things, making, using, offering to sell, or selling, within the United States, or importing into the United States, without license or authority, products—including solar cells and solar modules—that infringe the '215 Patent (the “Accused Products”), literally or under the doctrine of equivalents.

31. LONGi states that it manufactures its solar cells in factories in the cities of Taizhou, Quzhou, Hefei in China or in Kuching, Malaysia. Upon information and belief, those factories are operated by Taizhou LONGi, Zhejiang LONGi, Hefei LONGi, and LONGi Malaysia, respectively. Upon information and belief, those solar cells are then incorporated into LONGi-branded solar modules at one of LONGi’s factories in China or Malaysia. LONGi also manufactures LONGi-branded solar modules at its factories in China or Malaysia. Upon information and belief, LONGi Technology manages the business outside of China including in the United States.

32. Upon information and belief, LONGi, directly or through its intermediaries (including subsidiaries, affiliates, distributors, and others), import LONGi solar cells and/or

modules into the United States. LONGi, directly or through its intermediaries (including subsidiaries, affiliates, distributors, retailers, contractors, and others) offers for sale and sells the its solar modules to customers within the United States. Upon information and belief, LONGi's net revenue in the America region was about 946 million RMB in 2017.

33. Upon information and belief, LONGi has entered into a number of business agreements that depend on its importation of infringing solar cells and/or modules. LONGi has entered into an agreement with a company in the United States for sale of high-efficiency monocrystalline solar modules. Upon information and belief, the agreement will require importation of the accused and infringing LONGi solar modules manufactured outside of the U.S. in facilities, located in China or Malaysia, owned by LONGi Green Energy or its subsidiaries in order to fulfill the supply obligations under the agreement.

34. Based on the information presently available to it, Hanwha Q CELLS alleges that LONGi's Accused Products include, but are not limited to, the following solar modules: LR6-60PD-295M; LR6-60PD-300M; LR6-60PD-305M; LR6-60PD-310M; LR6-60PD-315M; LR6-72PD-355M; LR6-72PD-360M; LR6-72PD-365M; LR6-72PD-370M; LR6-72PD-375M; LR6-72MPH-360M; LR6-72MPH-365M; LR6-72MPH-370M; LR6-72MPH-375M; LR6-72MPH-380M; LR6-60PE-300M; LR6-60PE-305M; LR6-60PE-310M; LR6-60PE-315M; LR6-60PE-320M; LR6-60PB-295M; LR6-60PB-300M; LR6-60PB-305M; LR6-60PB-310M; LR6-60PB-315M; LR6-72PE-360M; LR6-72PE-365M; LR6-72PE-370M; LR6-72PE-375M; LR6-72PE-380M; LR6-72PH-360M; LR6-72PH-365M; LR6-72PH-370M; LR6-72PH-375M; LR6-72PH-380M. Hanwha Q CELLS further alleges that the Accused Products are manufactured in LONGi's factories operated by Taizhou LONGi, Zhejiang LONGi, Hefei LONGi, and LONGi Malaysia.

35. As an exemplary infringing product, LONGi LR6-60PE-305M can be purchased within the United States and contains sixty individual solar cells. Upon information and belief, the LONGi LR6-60PE-305M solar module includes solar cells that infringe at least claims 12–14 of the '215 Patent. For example, LONGi LR6-60PE-305M contains each element of and infringes at least claim 12 of the '215 Patent, which recites the following:

12. A solar cell comprising:

a silicon substrate;

a first dielectric layer comprising aluminium oxide on a surface of the silicon substrate; and

a second dielectric layer directly on a surface of the first dielectric layer, materials of the first dielectric layer and the second dielectric layer differing and hydrogen being embedded into the second dielectric layer;

wherein the first dielectric layer has a thickness of less than 50 nm and is interposed between the surface of the silicon substrate and the second dielectric layer.

36. Specifically, the LONGi LR6-60PE-305M solar module is comprised of a silicon substrate and a stack of layers, including a first dielectric layer, and a second dielectric layer. The materials of the first and second dielectric layers differ. The first dielectric layer comprises aluminum oxide, and the second dielectric layer includes the elements silicon and nitrogen. The first dielectric layer is less than 50 nanometers thick. The second dielectric layer contains hydrogen. The first dielectric layer is interposed between the second dielectric layer and the surface of the silicon substrate.

37. A cross-sectional measurement mapping of the backside edge of a sample piece extracted from a representative solar cell in a LONGi LR6-60PE-305M module indicates that the solar cell comprises a silicon substrate, followed by a first dielectric layer including the elements of aluminum and oxygen, which is followed by a second dielectric layer of different materials than the layer including aluminum and oxygen.

38. A depth profile measurement on a sample prepared from a representative solar cell contained in a LONGi LR6-60PE-305M module shows that elements of aluminum and oxygen are present inside a 50-nanometer band, indicating a first dielectric layer comprising aluminum oxide of a thickness less than 50 nanometers.

39. A depth profile measurement on a sample prepared from a representative solar cell contained in a LONGi LR6-60PE-305M module also shows the presence of hydrogen in the second dielectric layer, indicating that hydrogen is embedded into the second dielectric layer.

40. Upon information and belief, the exemplary LONGi LR6-60PE-305M solar module is representative of many other products that are made, used, offered for sale, or sold, within the United States, or imported into the United States, by or on behalf of LONGi, and that present the same or substantially similar features as the exemplary LONGi LR6-60PE-305M solar module. Accordingly, on information and belief, Hanwha Q CELLS alleges that numerous LONGi products including the exemplary LONGi LR6-60PE-305M infringe at least claims 12–14 of the '215 Patent and have been made, used, offered for sale, or sold within the United States, or imported into the United States, by or on behalf of LONGi.

41. Hanwha Q CELLS anticipates that discovery will further confirm the full scope of infringing products that are made, used, offered for sale, or sold, within the United States, or imported into the United States, by or on behalf of LONGi. Hanwha Q CELLS makes the preliminary identification of the Accused Products without the benefit of discovery or claim construction in this action, and expressly reserves the right to augment, supplement, and revise its identifications based on additional information obtained through discovery or otherwise.

42. LONGi has had knowledge of the '215 Patent since before this Complaint was filed, or at a minimum will receive notice of the '215 Patent upon filing of this Complaint.

43. LONGi's acts of infringement have caused damage to Hanwha Q CELLS in an amount yet to be determined and subject to proof at trial.

PRAYER FOR RELIEF

WHEREFORE, Hanwha Q CELLS prays for relief as follows:

- A. Judgment that LONGi Defendants have directly infringed the '215 Patent, both literally and under the doctrine of equivalents;
- B. LONGi Defendants be ordered to account for and compensate Plaintiff Hanwha Q CELLS for LONGi Defendants' infringing activities, including supplemental damages for any post-verdict infringement up until entry of the final judgment with an accounting as needed, together with pre-judgment and post-judgment interest on the damages awarded;
- C. An award of enhanced damages under 35 U.S.C. § 284 to the extent that the Court deems appropriate;
- D. An award of reasonable attorney fees pursuant to 35 U.S.C. § 285 to the extent that the Court deems this case is an exceptional case;
- E. Injunctive relief in that LONGi Defendants, their affiliates, subsidiaries, officers, agents, servants, employees, and successors and assigns, and other persons who are in active concert or participation with anyone in the foregoing, be preliminarily and permanently enjoined from infringement of the '215 Patent, including but not limited to an injunction against making, using, offering to sell, selling within the United States, and importing into the United States, products that infringe the '215 Patent;
- F. Costs of suit incurred herein; and
- G. Any and all other relief that the Court deems just and equitable.

DEMAND FOR JURY TRIAL

Hanwha Q CELLS hereby demands a trial by jury on all issues.

Dated: March 5, 2019

Respectfully submitted,

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