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9
10 **IN THE UNITED STATES DISTRICT COURT**
11 **FOR THE CENTRAL DISTRICT OF CALIFORNIA**

12 BELL SEMICONDUCTOR, LLC

13 Plaintiff,

14 v.

15 NXP USA, INC; ADVANTECH
16 CO., LTD.; ADVANTECH
17 CORPORATION; ARROW
18 ELECTRONICS, INC; AND
19 AVNET, INC.

20 Defendants.

21 **Case No. 8:22-cv-2133**

22 **COMPLAINT**

23 **JURY TRIAL DEMANDED**

1 Plaintiff Bell Semiconductor, LLC (“Bell Semiconductor” or “Plaintiff”) brings
2 this Complaint against Defendant NXP USA, Inc. (“NXP”) for infringement of U.S.
3 Patent Nos. 7,345,245;¹ 7,535,330;² and 7,646,091³ (collectively, the “Asserted
4 Patents”). Plaintiff also brings this Complaint against the remaining Defendants, who
5 are customers of NXP and/or retailers of the products of NXP and/or its customers,
6 for infringement of one or more of the Asserted Patents. Plaintiff, on personal
7 knowledge of its own acts, and on information and belief as to all others based on
8 investigation, alleges as follows:

9 **SUMMARY OF THE ACTION**

10 1. This is a patent infringement suit relating to NXP’s unauthorized and
11 unlicensed use of the Asserted Patents. The semiconductor packaging technology
12 claimed in the Asserted Patents is used by NXP in the production of one or more of its
13 semiconductor chips and packages, including but not limited to the
14 MIMX8QP6AVUFFAB Microprocessor, 9SR100 SoC, R10B1AA UWB Transceiver,
15 and LX2160XN72029B Processor (each an “NXP Accused Product”) used in, among
16 other things, computers, boards, networking equipment, and/or cards incorporating
17 such chips and packages manufactured, sold, used, and/or offered for sale by NXP’s
18 downstream customers, including the other Defendants.

19 2. Bell Semiconductor brings this action to put a stop to the Defendants’
20 unauthorized and unlicensed use of the inventions claimed in the Asserted Patents.

21 **THE PARTIES**

22 3. Plaintiff Bell Semiconductor is a limited liability company organized
23 under the laws of the State of Delaware with a place of business at One West Broad
24 Street, Suite 901, Bethlehem, PA 18018.

25
26
27 ¹ “‘245 patent”.

² “‘330 patent”.

28 ³ “‘091 patent”.

1 4. Bell Semiconductor stems from a long pedigree that began at Bell Labs.
2 Bell Labs sprung out of the Bell System as a research and development laboratory,
3 and eventually became known as one of America’s greatest technology incubators.
4 Bell Labs employees invented the transistor in 1947 in Murray Hill, New Jersey. It
5 was widely considered one of the most important technological breakthroughs of the
6 time, earning the inventors the Nobel Prize in Physics. Bell Labs made the first
7 commercial transistors at a plant in Allentown, Pennsylvania. For decades, Bell Labs
8 licensed its transistor patents to companies throughout the world, creating a
9 technological boom that led to the use of transistors in the semiconductor devices
10 prevalent in most electronic devices today.

11 5. Bell Semiconductor, a successor to Bell Labs’ pioneering efforts, owns
12 over 1,900 worldwide patents and applications, approximately 1,500 of which are
13 active United States patents. This patent portfolio of semiconductor–related
14 inventions was developed over many years by some of the world’s leading
15 semiconductor companies, including Bell Labs, Lucent Technologies, Agere Systems,
16 and LSI Logic and LSI Corporation (“LSI”). This portfolio reflects technology that
17 underlies many important innovations in the development of semiconductors and
18 integrated circuits for high–tech products, including smartphones, computers,
19 wearables, digital signal processors, IoT devices, automobiles, broadband carrier
20 access, switches, network processors, and wireless connectors.

21 6. The principals of Bell Semiconductor all worked at Bell Labs’ Allentown
22 facility, and have continued the rich tradition of innovating, licensing, and helping the
23 industry at large since those early days at Bell Labs. For example, Bell
24 Semiconductor’s CTO was an LSI Fellow and Broadcom Fellow. He is known
25 throughout the world as an innovator with more than 300 patents to his name, and he
26 has a sterling reputation for helping semiconductor fabs improve their efficiency. Bell
27 Semiconductor’s CEO took a brief hiatus from the semiconductor world to work with
28 Nortel Networks in the telecom industry during its bankruptcy. His efforts saved the

1 pensions of tens of thousands of Nortel retirees and employees. In addition, several
2 Bell Semiconductor executives previously served as engineers at many of these
3 companies and were personally involved in creating the ideas claimed throughout Bell
4 Semiconductor’s extensive patent portfolio.

5 7. On information and belief, NXP is a corporation organized and existing
6 under the laws of Delaware with its principal place of business and headquarters at
7 6501 William Cannon Drive West, Austin, TX 78735. NXP has a registered agent for
8 service of process at Corporation Service Company 251 Little Falls Drive
9 Wilmington, DE 19808.

10 8. On information and belief, Defendant Advantech Co., Ltd. (“Advantech
11 Taiwan”) is a corporation organized and existing under the laws of Taiwan with its
12 principal place of business and headquarters at No. 1, Alley 20, Lane 26, Rueiguang
13 Road, Neihu District, Taipei City, Taiwan, R.O.C. On information and belief,
14 Defendant Advantech Corporation (“Advantech USA” and, collectively with
15 Advantech Taiwan, “Advantech”) is a corporation organized and existing under the
16 laws of California with its principal place of business and headquarters at 380
17 Fairview Way, Milpitas, CA 95035. Advantech USA has a registered agent for
18 service of process at that address. On information and belief, Advantech USA is
19 wholly owned, directly or indirectly, by Advantech Taiwan. Advantech Taiwan has
20 failed to register an agent for service of process in the State of California as required
21 by Cal. Corp. Code § 2105 and may be served with process pursuant to the provisions
22 of the Hague Convention or pursuant to Cal. Corp. Code § 2110 *et seq.*—including by
23 service upon the Secretary of State of California or its domestic subsidiary,
24 Advantech USA.

25 9. On information and belief, Defendant Arrow Electronics, Inc. (“Arrow”)
26 is a corporation organized and existing under the laws of New York with its principal
27 place of business and headquarters at 9201 East Dry Creek Road, Centennial, CO
28

1 80112. Arrow has a registered agent for service of process at Corporation Service
2 Company 251 Little Falls Drive Wilmington, DE 19808.

3 10. On information and belief, Defendant Avnet, Inc. (“Avnet”) is a
4 corporation organized and existing under the laws of New York with its principal
5 place of business and headquarters at 2211 South 47th Street, Phoenix, AZ 85034.
6 Avnet has an agent for service of process at Corporation Service Company 80 State
7 Street Albany, NY 12207.

8 11. On information and belief, Defendant NXP, develops, designs, and/or
9 manufactures products in the United States, including in this District, that use the
10 structures and/or methods of the Asserted Patents; and/or use structures and/or
11 methods of the Asserted Patents in the United States, including in this District, to
12 make products; and/or distribute, market, sell, or offer to sell in the United States
13 and/or import products into the United States, including in this District, that were
14 manufactured using the patented methods or include the patented structures.

15 Additionally, NXP introduces those products into the stream of commerce knowing
16 that they will be sold and/or used in this District and elsewhere in the United States.

17 12. On information and belief, each of Defendants Advantech, Arrow, and
18 Avnet (collectively, “Downstream Defendants”) makes, uses, sells, offers for sale,
19 and/or imports into the United States and this District products that incorporate at
20 least one of the respective NXP Accused Products (“Downstream Accused Products”)
21 and thereby infringes at least one of the Asserted Patents.⁴ Each Downstream
22 Defendant knows that by doing so, it introduces its Downstream Accused Products
23 and the NXP Accused Products incorporated therein into the stream of commerce and
24 that those products will be used and sold in this District and elsewhere throughout the
25 United States. On information and belief, the primary (but not exclusive) methods by
26 which Downstream Defendants infringe the Asserted Patents are by (1) incorporating

27 _____
28 ⁴ As detailed further below, Advantech, Arrow, and Avnet each infringe the ’245
patent; Advantech also infringes the ’091 patent.

1 at least one of the NXP Accused Products into one or more of the branded products of
2 each Downstream Defendant, which each Downstream Defendant then offers for sale
3 and sells both directly and indirectly; and/or (2) directly selling or reselling NXP
4 Accused Products and products of third parties that incorporate one or more of the
5 NXP Accused Products.

6 **JURISDICTION AND VENUE**

7 13. This is an action for patent infringement arising under the patent laws of
8 the United States, Title 35 of the United States Code. Accordingly, this Court has
9 subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

10 14. This Court has personal jurisdiction over Defendants under the laws of
11 the State of California, due at least to their substantial business in California and in
12 this District. Defendants have purposefully and voluntarily availed themselves of the
13 privileges of conducting business in the United States, in the State of California, and
14 in this District by continuously and systematically placing goods into the stream of
15 commerce through an established distribution channel with the expectation that they
16 will be purchased by consumers in this District. In the State of California and in this
17 District, Defendants each, directly and/or through intermediaries: (i) perform at least a
18 portion of the infringements alleged herein; (ii) develop, design, and/or manufacture
19 products according to claims of each Asserted Patent; (iii) distribute, market, sell, or
20 offer to sell products that embody the Asserted Patents; and/or (iv) import products
21 formed according to the '269 patented processes/methodologies and/or the structures
22 of the other Asserted Patents.

23 15. On information and belief, venue is proper in this Court pursuant to 28
24 U.S.C. §§ 1391 and 1400 with respect to NXP because NXP has committed, and
25 continues to commit, acts of infringement in this District (including, but not limited
26 to, offers for sale and, on information and belief, sales of NXP Accused Products and
27 NXP-branded products containing or incorporating NXP Accused Products) and has a
28 regular and established place of business in this District. For example, NXP has an

1 office in Irvine, California, which is located within this District. *See* NXP in the
2 United States, [https://www.nxp.com/company/about-nxp/worldwide-locations/united-](https://www.nxp.com/company/about-nxp/worldwide-locations/united-states:USA)
3 [states:USA](https://www.nxp.com/company/about-nxp/worldwide-locations/united-states:USA) (last accessed Nov. 19, 2022) (listing Irvine, California location). NXP
4 currently advertises more than 60 job openings in the State of California, including
5 engineering positions in this District of potential relevance to the claims in this suit.
6 *See* [NXP Job Listings search results](#) (last accessed Nov. 19, 2022).

7 16. On information and belief, venue is proper in this Court pursuant to 28
8 U.S.C. §§ 1391 and 1400 with respect to Advantech because Advantech has
9 committed, and continues to commit, acts of infringement in this District (including,
10 but not limited to, offers for sale and, on information and belief, sales of NXP
11 Accused Products and Downstream Accused Products) and has a regular and
12 established place of business in this District. For example, Advantech has a
13 “Customer Service Center” in Irvine, CA and a “Southern California (Irvine) Office”
14 at 13 Whatney, Irvine, CA 92618. *See* Company Location,
15 <https://www.advantech.com/zh-tw/contact> (last accessed Nov. 19, 2022). On
16 information and belief, Advantech employs at least 150 people, including at least 50
17 engineers, in this District. *See* [LinkedIn Search Results](#) (last accessed Nov. 19, 2022).

18 17. On information and belief, venue is proper in this Court pursuant to 28
19 U.S.C. §§ 1391 and 1400 with respect to Arrow because Arrow has committed, and
20 continues to commit, acts of infringement in this District (including, but not limited
21 to, offers for sale and, on information and belief, sales of NXP Accused Products and
22 Downstream Accused Products) and has a regular and established place of business in
23 this District. For example, Arrow has offices in Foothill Ranch and Woodland Hills,
24 which are located within this District. *See* Contact & Support,
25 [https://www.arrow.com/en/support/contact-support/find-an-arrow-](https://www.arrow.com/en/support/contact-support/find-an-arrow-office?country=US_Offices)
26 [office?country=US_Offices](https://www.arrow.com/en/support/contact-support/find-an-arrow-office?country=US_Offices) (last accessed Nov. 19, 2022).

27 18. On information and belief, venue is proper in this Court pursuant to 28
28 U.S.C. §§ 1391 and 1400 with respect to Avnet because Avnet has committed, and

1 continues to commit, acts of infringement in this District (including, but not limited
2 to, offers for sale and, on information and belief, sales of NXP Accused Products and
3 Downstream Accused Products) and has a regular and established place of business in
4 this District. For example, Avnet maintains corporate offices in this District,
5 including at 20951 Burbank Blvd, Woodland Hills, CA 91367, and 220 Commerce
6 #100, Irvine, CA 92602.

7 19. Venue is also convenient for all parties in this District. This is at least
8 true because of this District's close ties to this case—including the technology,
9 relevant witnesses, and sources of proof noted above—and its ability to quickly and
10 efficiently move this case to resolution.

11 **U.S. PATENT NO. 7,345,245**

12 20. Bell Semiconductor owns by assignment the entire right, title, and
13 interest in the '245 patent, entitled "Robust High Density Substrate Design for
14 Thermal Cycling Reliability," which issued on March 18, 2008.

15 21. The '245 patent issued to inventors Anand Govind, Zafer Kutlu, and
16 Farshad Ghahghahi from United States Patent Application No. 10/681,554, filed
17 October 8, 2003. A true and correct copy of the '245 patent is attached as Exhibit A.

18 22. Recent silicon technology advances have placed increased demand for
19 high density signal routing on organic BGA substrates. Increased signal routing
20 density in the substrate is obtained by using fine pitch vias through the core so that
21 routing layers below the core can be efficiently utilized. The via pitch reduction
22 requires the use of thin core substrates which are susceptible to warpage during
23 thermal excursions. Typically, the regions under the die corner are regions of
24 stress concentration. Under cycled thermal excursions, cracks can initiate from the
25 ball pad edges and spread into the layers above the ball pad layer.

26 23. The '245 patent is generally related to a semiconductor package for a die
27 with improved thermal cycling reliability. To eliminate package failures and
28

1 occurrences cracks in signal traces, the '245 patent teaches routing of signals away
2 from the high stress area associated with the ball pads and the corner of the die.

3 24. The '245 patent contains 2 independent claims and 12 total claims,
4 covering an integrated circuit substrate. Claim 1 of the '245 patent reads:

5 1. A semi-conductor package comprising:

6 a top layer having a die mounted thereon, said die having a
7 corner; and

8 a plurality of layers under the top layer, said plurality of layers
9 comprising a bottom routing layer having signal traces
10 thereon, and a ball pad layer under the bottom routing layer,
11 said ball pad layer having a plurality of ball pads, wherein
12 none of the signal traces of the bottom routing layer are
located over ball pads of the ball pad layer which are disposed
in an area within two ball pad pitches of the corner of the die.

13 25. This claim, as a whole, provides significant benefits and improvements
14 to the function of the semiconductor device, e.g., improving system reliability by
15 avoiding functional failures from cracks in the signal traces caused by thermal cycling
16 stresses under the die corner.

17 **U.S. PATENT NO. 7,535,330**

18 26. Bell Semiconductor owns by assignment the entire right, title, and
19 interest in the '330 patent, entitled "Low Mutual Inductance Matched Inductors,"
20 which issued on May 19, 2009.

21 27. The '330 patent issued to inventors Sean Christopher Erickson, Jason
22 Dee Hudson, and Michael J. Saunders from United States Patent Application No.
23 11/534,330, filed September 22, 2006. A true and correct copy of the '330 patent is
24 attached as Exhibit B.

25 28. Modern semiconductor manufacturing and electronic circuit design
26 demand high levels of component density to ensure the efficient use of silicon and
27 reduce the cost of production. But as component density increases, electrical cross-
28 coupling degrades circuit performance—particularly with respect to high-frequency or

1 high-speed circuits—and increases electromagnetic emission and interference, which
2 must be addressed to comply with electromagnetic compatibility standards and
3 regulations governing many applications. This is a serious problem with respect to
4 the placement of multiple inductors, which may reduce each other’s performance due
5 to parasitic mutual inductance. Prior to the ’330 patent, this interference forced
6 circuit designers to space inductors farther apart, decreasing component density and
7 depriving the producer of the related efficiency and cost gains.

8 29. In order to eliminate those problems, the ’330 patent teaches, among
9 other things, positioning two inductors in a multi-inductor array such that both are
10 coupled to a common node and the polarities of the magnetic fields produced by each
11 are opposite to each other, causing net reduction in parasitic mutual inductance
12 because the magnetic field produced by each inductor is at least partially canceled out
13 when it interferes with the field produced by the other.

14 30. The ’330 patent contains 3 independent claims and 20 total claims,
15 covering the placement of inductors in electrical circuits. Claim 1 of the ’330 patent
16 reads:

17 1. A multiple inductor array comprising:

- 18 a first node that receives a first current and a second current;
19 a first inductor coil, coupled to the first node and to a second
20 node, that communicates the first current in a clockwise
21 direction and generates a first magnetic field;
22 a second inductor coil, coupled to the first node and to a third
23 node, that communicates the second current in a counter
24 clockwise direction and generates a second magnetic field
25 having an opposing orientation to the first magnetic field; and
26 wherein the first magnetic field and the second magnetic field
27 at least partially cancel at an interference point.

28 31. This claim, as a whole, provides significant benefits and improvements
to the function of the semiconductor device, including, e.g., meeting electromagnetic

1 compatibility requirements, improving system performance by reducing crosstalk, and
2 improving efficiency and reducing production cost by increasing component density.

3 **U.S. PATENT NO. 7,646,091**

4 32. Bell Semiconductor owns by assignment the entire right, title, and
5 interest in the '091 patent, entitled "Semiconductor Package and Method Using
6 Isolated Vss Plane to Accommodate High Speed Circuitry Ground Isolation," which
7 issued on January 12, 2010.

8 33. The '091 patent issued to inventors Maurice Othieno, Chok Chia, and
9 Amar Amin from United States Patent Application No. 11/399,723, filed April 6,
10 2006. A true and correct copy of the '091 patent is attached as Exhibit C.

11 34. Modern integrated circuits require both low-speed and high-speed
12 circuitry. Excessive noise generated by the high-speed circuitry interferes with the
13 operation of the low-speed circuitry sharing the same ground plane. At high data rates
14 this is a serious problem. Additionally, at high system performance the problem of
15 ground bounce is magnified.

16 35. In order to eliminate those problems, the '091 patent teaches the use of a
17 dedicated high-speed ground plane that is electrically isolated from the ground plane
18 used to ground the low-speed circuitry. As described in the '091 patent, a
19 semiconductor integrated circuit package includes a substrate which can have an
20 integrated circuit die attached to it. The package may include a dedicated high-speed
21 ground plane that is electrically isolated from the ground plane used to ground the
22 low-speed circuitry of the package.

23 36. The '091 patent contains 1 independent claim and 14 total claims,
24 covering an integrated circuit substrate. Claim 1 of the '091 patent reads:

- 25 1. A semiconductor integrated circuit (IC) package which comprises:
26 a substrate having a first surface and a second surface
27 wherein;
28 a first layer of the substrate includes,

1 a first ground plane enabling electrical connection with low
2 speed electronic circuitry, and

3 a second ground plane that is spatially separated and
4 electrically isolated from the first ground plane, the second
5 ground plane enabling electrical connection with high speed
6 electronic circuitry;

7 a second layer of the substrate includes,

8 a third ground plane configured for electrical connection with
9 low speed electronic circuitry, and

10 a fourth ground plane that is spatially separated and
11 electrically isolated from the third ground plane, the third
12 ground plane configured for electrical connection with high
13 speed electronic circuitry;

14 a plurality of electrical connections that electrically connect
15 the first ground plane with solder balls mounted on the second
16 surface of the substrate;

17 a plurality of additional electrical connections that electrically
18 connect the second ground plane with solder balls mounted
19 on the second surface of the substrate; and

20 peripheral electrical contacts arranged on the substrate and
21 configured for connection with electronic circuitry external to
22 the package; and

23 at least one reference plane associated with each layer of the
24 substrate and the ground planes included thereon.

25 37. This claim, as a whole, provides significant benefits and improvements
26 to the function of the semiconductor device, e.g., improving system performance by
27 reducing cross-talk and ground-bounce.

28 **COUNT I – INFRINGEMENT OF U.S. PATENT NO. 7,345,245 (NXP)**

38. Bell Semiconductor re-alleges and incorporates by reference the
allegations of the foregoing paragraphs as if fully set forth herein.

39. The '245 patent is valid and enforceable under the United States patent
Laws.

1 40. Bell Semiconductor owns, by assignment, all right, title, and interest in
2 and to the '245 patent, including the right to collect for past damages.

3 41. On information and belief, NXP has infringed and continues to directly
4 infringe, either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. §
5 271(a), one or more claims of the '245 patent by making, using, offering to sell, or
6 selling within the United States, or importing into the United States, one or more
7 semiconductor devices, including as one example the MIMX8QP6AVUFFAB
8 Microprocessor and other devices in the i.MX 8M product family.

9 42. A claim chart demonstrating NXP's infringement of the '245 patent is
10 attached hereto as Exhibit D.

11 43. NXP's Accused Products infringe and continue to infringe one or more
12 claims of the '245 patent during the pendency of the '245 patent.

13 44. NXP's infringement of the '245 patent was, and continues to be, done
14 with knowledge of the '245 patent and with knowledge of Bell Semiconductor's
15 contention that NXP is infringing the '245 patent. On January 30, 2022, a
16 representative of Bell Semiconductor provided actual notice to NXP of the '245
17 patent. NXP's infringement of the '245 patent is thus willful and deliberate, entitling
18 Bell Semiconductor to enhanced damages and attorneys' fees.

19 45. NXP's infringement of the '245 patent is exceptional and entitles Bell
20 Semiconductor to attorneys' fees and costs incurred in prosecuting this action under
21 35 U.S.C. § 285.

22 46. Bell Semiconductor has been damaged by NXP's infringement of the
23 '245 patent and will continue to be damaged unless NXP is enjoined by this Court.
24 Bell Semiconductor has suffered and continues to suffer irreparable injury for which
25 there is no adequate remedy at law. The balance of hardships favors Bell
26 Semiconductor, and public interest is not disserved by an injunction.

1 47. Bell Semiconductor is entitled to recover from NXP all damages that
2 Bell Semiconductor has sustained as a result of NXP's infringement of the '245
3 patent, including without limitation and/or not less than a reasonable royalty.
4

5 **COUNT II – INFRINGEMENT OF U.S. PATENT NO. 7,535,330 (NXP)**

6 48. Bell Semiconductor re-alleges and incorporates by reference the
7 allegations of the foregoing paragraphs as if fully set forth herein.

8 49. The '330 patent is valid and enforceable under the United States patent
9 laws.

10 50. Bell Semiconductor owns, by assignment, all right, title, and interest in
11 and to the '330 patent, including the right to collect for past damages.

12 51. On information and belief, NXP has infringed and continues to directly
13 infringe, either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. §
14 271(a), one or more claims of the '330 patent by making, using, offering to sell,
15 and/or selling within the United States, or importing into the United States, one or
16 more semiconductor devices, including as one example the 9SR100 SoC, and
17 products containing the 9SR100 SoC, including but not limited to the R10B1AA
18 UWB Transceiver.

19 52. A claim chart demonstrating NXP's infringement of the '330 patent is
20 attached hereto as Exhibit E.

21 53. NXP's Accused Products infringed and continue to infringe one or more
22 claims of the '330 patent during the pendency of the '330 patent.

23 54. NXP's infringement of the '330 patent was, and continues to be, done
24 with knowledge of the '330 patent and with knowledge of Bell Semiconductor's
25 contention that NXP is infringing the '330 patent. On January 30, 2022, a
26 representative of Bell Semiconductor provided actual notice to NXP of the '330
27 patent. NXP's infringement of the '330 patent is thus willful and deliberate, entitling
28 Bell Semiconductor to enhanced damages and attorneys' fees.

1 55. NXP's infringement of the '330 patent is exceptional and entitles Bell
2 Semiconductor to attorneys' fees and costs incurred in prosecuting this action under
3 35 U.S.C. § 285.

4 56. Bell Semiconductor has been damaged by NXP's infringement of the
5 '330 patent and will continue to be damaged unless NXP is enjoined by this Court.
6 Bell Semiconductor has suffered and continues to suffer irreparable injury for which
7 there is no adequate remedy at law. The balance of hardships favors Bell
8 Semiconductor, and public interest is not disserved by an injunction.

9 57. Bell Semiconductor is entitled to recover from NXP all damages that
10 Bell Semiconductor has sustained as a result of NXP's infringement of the '330
11 patent, including without limitation and/or not less than a reasonable royalty.

12 **COUNT III – INFRINGEMENT OF U.S. PATENT NO. 7,646,091 (NXP)**

13 58. Bell Semiconductor re-alleges and incorporates by reference the
14 allegations of the foregoing paragraphs as if fully set forth herein.

15 59. The '091 patent is valid and enforceable under the United States patent
16 laws.

17 60. Bell Semiconductor owns, by assignment, all right, title, and interest in
18 and to the '091 patent, including the right to collect for past damages.

19 61. On information and belief, NXP has infringed and continues to directly
20 infringe, either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. §
21 271(a), one or more claims of the '091 patent by making, using, offering to sell,
22 and/or selling within the United States, or importing into the United States, one or
23 more semiconductor devices, including as one example the LX2160XN72029B.

24 62. A claim chart demonstrating NXP's infringement of the '091 patent is
25 attached hereto as Exhibit F.

26 63. NXP's Accused Products infringe and continue to infringe one or more
27 claims of the '091 patent during the pendency of the '091 patent.
28

1 64. NXP's infringement of the '091 patent was, and continues to be, done
2 with knowledge of the '091 patent and with knowledge of Bell Semiconductor's
3 contention that NXP is infringing the '091 patent. On or about January 30, 2022, a
4 representative of Bell Semiconductor provided actual notice to NXP of the '091
5 patent. NXP's infringement of the '091 patent is thus willful and deliberate, entitling
6 Bell Semiconductor to enhanced damages and attorneys' fees.

7 65. NXP's infringement of the '091 patent is exceptional and entitles Bell
8 Semiconductor to attorneys' fees and costs incurred in prosecuting this action under
9 35 U.S.C. § 285.

10 66. Bell Semiconductor has been damaged by NXP's infringement of the
11 '091 patent and will continue to be damaged unless NXP is enjoined by this Court.
12 Bell Semiconductor has suffered and continues to suffer irreparable injury for which
13 there is no adequate remedy at law. The balance of hardships favors Bell
14 Semiconductor, and public interest is not disserved by an injunction.

15 67. Bell Semiconductor is entitled to recover from NXP all damages that
16 Bell Semiconductor has sustained as a result of NXP's infringement of the '091
17 patent, including without limitation and/or not less than a reasonable royalty.

18 **COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 7,345,245 (ARROW)**

19 68. Bell Semiconductor re-alleges and incorporates by reference the
20 allegations of the foregoing paragraphs as if fully set forth herein.

21 69. On information and belief, Arrow has and continues to directly infringe,
22 either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. § 271(a) one
23 or more claims of the '245 patent by making, using, offering to sell, and/or selling
24 within the United States, or importing into the United States, one or more
25 semiconductor devices. By way of example and not limitation, the products giving
26 rise to claims of infringement include products incorporating the i.MX 8 family of
27 NXP products, including but not limited to the Thor96 Board.

28

1 70. At least as of the date of the Complaint in this action, Arrow's
2 infringement of the '245 patent is and continues to be done with knowledge of the
3 '245 patent and with knowledge of Bell Semiconductor's contention that Arrow is
4 infringing the '245 patent. Arrow's infringement of the '245 patent is thus willful and
5 deliberate, entitling Bell Semiconductor to enhanced damages and attorneys' fees
6 incurred in prosecuting this action under 35 U.S.C. § 285.

7 71. Bell Semiconductor has been damaged by Arrow's infringement of the
8 '245 patent and will continue to be damaged unless Arrow is enjoined by this Court.
9 Bell Semiconductor has suffered and continues to suffer irreparable injury for which
10 there is no adequate remedy at law. The balance of hardships favors Bell
11 Semiconductor, and public interest is not disserved by an injunction.

12 72. Bell Semiconductor is entitled to recover from Arrow all damages that
13 Bell Semiconductor has sustained as a result of Arrow's infringement of the '245
14 patent, including without limitation and/or not less than a reasonable royalty.

15 **COUNT V – INFRINGEMENT OF U.S. PATENT NO. 7,345,245 (AVNET)**

16 73. Bell Semiconductor re-alleges and incorporates by reference the
17 allegations of the foregoing paragraphs as if fully set forth herein.

18 74. On information and belief, Avnet has and continues to directly infringe,
19 either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. § 271(a) one
20 or more claims of the '245 patent by making, using, offering to sell, and/or selling
21 within the United States, or importing into the United States, one or more
22 semiconductor devices. By way of example and not limitation, the products giving
23 rise to claims of infringement include products incorporating the i.MX 8 family of
24 NXP products, including but not limited to the MSC SM2S-IMX8 SMARC module.

25 75. At least as of the date of the Complaint in this action, Avnet's
26 infringement of the '245 patent is and continues to be done with knowledge of the
27 '245 patent and with knowledge of Bell Semiconductor's contention that Avnet is
28 infringing the '245 patent. Avnet's infringement of the '245 patent is thus willful and

1 deliberate, entitling Bell Semiconductor to enhanced damages and attorneys' fees
2 incurred in prosecuting this action under 35 U.S.C. § 285.

3 76. Bell Semiconductor has been damaged by Avnet's infringement of the
4 '245 patent and will continue to be damaged unless Avnet is enjoined by this Court.
5 Bell Semiconductor has suffered and continues to suffer irreparable injury for which
6 there is no adequate remedy at law. The balance of hardships favors Bell
7 Semiconductor, and public interest is not disserved by an injunction.

8 77. Bell Semiconductor is entitled to recover from Avnet all damages that
9 Bell Semiconductor has sustained as a result of Avnet's infringement of the '245
10 patent, including without limitation and/or not less than a reasonable royalty.

11 **COUNT VI – INFRINGEMENT OF U.S. PATENT NO. 7,345,245**

12 **(ADVANTECH)**

13 78. Bell Semiconductor re-alleges and incorporates by reference the
14 allegations of the foregoing paragraphs as if fully set forth herein.

15 79. On information and belief, Advantech has and continues to directly
16 infringe, either literally or under the doctrine of equivalents, pursuant to 35 U.S.C. §
17 271(a) one or more claims of the '245 patent by making, using, offering to sell, and/or
18 selling within the United States, or importing into the United States, one or more
19 semiconductor devices. By way of example and not limitation, the products giving
20 rise to claims of infringement include products incorporating the i.MX 8 family of
21 NXP products, including but not limited to the ROM-7720 QSeven module.

22 80. At least as of the date of the Complaint in this action, Advantech's
23 infringement of the '245 patent is and continues to be done with knowledge of the
24 '245 patent and with knowledge of Bell Semiconductor's contention that Advantech
25 is infringing the '245 patent. Advantech's infringement of the '245 patent is thus
26 willful and deliberate, entitling Bell Semiconductor to enhanced damages and
27 attorneys' fees incurred in prosecuting this action under 35 U.S.C. § 285.
28

1 81. Bell Semiconductor has been damaged by Advantech's infringement of
2 the '245 patent and will continue to be damaged unless Advantech is enjoined by this
3 Court. Bell Semiconductor has suffered and continues to suffer irreparable injury for
4 which there is no adequate remedy at law. The balance of hardships favors Bell
5 Semiconductor, and public interest is not disserved by an injunction.

6 82. Bell Semiconductor is entitled to recover from Advantech all damages
7 that Bell Semiconductor has sustained as a result of Advantech's infringement of the
8 '245 patent, including without limitation and/or not less than a reasonable royalty.

9 **COUNT VII – INFRINGEMENT OF U.S. PATENT NO. 7,646,091**

10 **(ADVANTECH)**

11 83. Bell Semiconductor re-alleges and incorporates by reference the
12 allegations of the foregoing paragraphs as if fully set forth herein.

13 84. On information and belief, Advantech has infringed and continues to
14 directly infringe, either literally or under the doctrine of equivalents, pursuant to 35
15 U.S.C. § 271(a) one or more claims of the '091 patent by making, using, offering to
16 sell, and/or selling within the United States, or importing into the United States one or
17 more semiconductor devices. By way of example, the products giving rise to claims
18 of infringement include the LX2160XN72029B microprocessor and products
19 incorporating the same family of NXP products, including but not limited to the ESP-
20 2160 SmartNIC.

21 85. At least as of the date of the Complaint in this action, Advantech's
22 infringement of the '091 patent has been and continues to be done with knowledge of
23 the '091 patent and with knowledge of Bell Semiconductor's contention that
24 Advantech is infringing the '091 patent. Advantech's infringement of the '091 patent
25 is thus willful and deliberate, entitling Bell Semiconductor to enhanced damages and
26 attorneys' fees incurred in prosecuting this action under 35 U.S.C. § 285.

27 86. Bell Semiconductor has been damaged by Advantech's infringement of
28 the '091 patent and will continue to be damaged unless Advantech is enjoined by this

1 Court. Bell Semiconductor has suffered and continues to suffer irreparable injury for
2 which there is no adequate remedy at law. The balance of hardships favors Bell
3 Semiconductor, and public interest is not disserved by an injunction.

4 87. Bell Semiconductor is entitled to recover from Advantech all damages
5 that Bell Semiconductor has sustained as a result of Advantech's infringement of the
6 '091 patent, including without limitation and/or not less than a reasonable royalty.

7 **PRAYER FOR RELIEF**

8 WHEREFORE, Bell Semiconductor respectfully requests that this Court enter
9 judgment in its favor as follows and award Bell Semiconductor the following relief:

10 (a) a judgment declaring that each Defendant has, respectively,
11 infringed one or more claims of the Asserted Patents in this litigation
12 pursuant to 35 U.S.C. § 271, *et seq.*;

13 (b) an award of damages adequate to compensate Bell Semiconductor
14 for infringement of the Asserted Patents by each Defendant, respectively,
15 in an amount to be proven at trial, including supplemental post-verdict
16 damages until such time as each Defendant ceases its infringing conduct;

17 (c) a permanent injunction, pursuant to 35 U.S.C. § 283, prohibiting
18 each Defendant and its officers, directors, employees, agents, consultants,
19 contractors, suppliers, distributors, all affiliated entities, and all others
20 acting in privity with each Defendant, from committing further acts of
21 infringement;

22 (d) a judgment requiring each Defendant to make an accounting of
23 damages resulting from its infringement of the respective Asserted
24 Patents;

25 (e) enhanced damages for willful infringement;

26 (f) the costs of this action, as well as attorneys' fees as provided by 35
27 U.S.C. § 285;
28

1 (g) pre-judgment and post-judgment interest at the maximum amount
2 permitted by law;

3 (h) all other relief, in law or equity, to which Bell Semiconductor is
4 entitled.

5 **DEMAND FOR JURY TRIAL**

6 Plaintiff hereby demands a jury trial for all issues so triable.

7
8 Dated: November 23, 2022

By: /s/Alex Chan
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15 *Attorney for Plaintiff Bell Semiconductor,
LLC*

16
17 **Exhibits:**

- 18
- 19 • Ex. A – '245 patent
 - 20 • Ex. B – '330 patent
 - 21 • Ex. C – '091 patent
 - 22 • Ex. D – '245 Claim Chart
 - 23 • Ex. E – '330 Claim Chart
 - 24 • Ex. F – '091 Claim Chart
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