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21 TriQuint Semiconductor, Inc.

22 **UNITED STATES DISTRICT COURT**
23 **DISTRICT OF ARIZONA**

24 TriQuint Semiconductor, Inc., a Delaware
25 corporation,

26 Plaintiff/Counterdefendant,

v.

Avago Technologies Limited, a Singapore
corporation; Avago Technologies U.S., Inc.,
a Delaware corporation, Avago Technologies
Wireless IP (Singapore) Pte., Ltd., a Singapore
corporation,

Defendants/Counterclaimants.

No. 09-01531-PHX-JAT

FIRST AMENDED COMPLAINT

(Demand for Jury Trial)

Plaintiff TriQuint Semiconductor, Inc. ("TriQuint"), through its undersigned attorneys, by and for its first amended complaint, upon personal knowledge as to its own acts and on information and belief as to all others, alleges as follows:

THE PARTIES AND NATURE OF THE CLAIMS

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2 1. TriQuint is a Delaware corporation with its principal place of business at
3 2300 NE Brookwood Parkway, Hillsboro, Oregon 97124. Among other products,
4 TriQuint designs, manufactures and sells Bulk Acoustic Wave ("BAW") duplexers which
5 are used in wireless communication products, such as mobile telephone handsets. BAW
6 duplexers are comprised of at least two radio frequency ("RF") filter dies that are based on
7 BAW technology ("BAW filter dies").

8 2. Defendant Avago Technologies Limited is a Singapore corporation, having
9 places of business at 1 Yishun Avenue 7, Singapore 768923 and 350 W. Trimble Road,
10 San Jose, California 95131.

11 3. Defendant Avago Technologies U.S., Inc., is a Delaware corporation,
12 having a place of business at 350 W. Trimble Road, San Jose, California 95131.

13 4. Defendant Avago Technologies Wireless IP (Singapore) Pte., Ltd., is a
14 Singapore corporation, having a place of business at 1 Yishun Avenue 7, Singapore
15 768923.

16 5. Defendants Avago Technologies Limited and Avago Technologies U.S.,
17 Inc. make, use, sell, offer to sell, and/or import Avago products that are the subject of this
18 action.

19 6. Defendant Avago Technologies Wireless IP (Singapore) Pte., Ltd., is the
20 owner of the Avago patents that are the subject of this action.

21 7. On information and belief, Avago Technologies Limited, Avago
22 Technologies U.S., Inc. and Avago Technologies Wireless IP (Singapore) Pte., Ltd., are
23 affiliated entities operating under common ownership and control and will be collectively
24 referred to herein as "Avago."
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1 8. Among other products, Avago designs, manufactures and sells BAW
2 duplexers which are used in wireless communications products, such as mobile handsets.
3 Avago's BAW technology is referred to as FBAR (Film Bulk Acoustic Resonator).

4 9. TriQuint's antitrust claims arise from Avago's illegal, predatory and
5 anticompetitive conduct in the BAW Technology Market and in the product markets for
6 BAW Filter Die and separately for PCS CDMA Duplexers and includes and relates to, but
7 is not limited to: a) Avago's simultaneous acquisition and discontinuance of the Infineon
8 Technologies, Inc. ("Infineon") BAW products line; b) Avago's acquisition of the related
9 Infineon intellectual property rights including six of the ten patents asserted in this action;
10 and c) the acquisition of other BAW intellectual property rights originally obtained by
11 others such as Nokia Corporation ("Nokia"), including two of the ten patents asserted in
12 this action (collectively, the "Acquired BAW Patents"). Through its anticompetitive
13 conduct, Avago has engaged in a scheme to acquire and maintain an illegal monopoly in
14 these markets and has used its dominant market power to exclude competitors and
15 foreclose potential competition to the detriment of handset manufacturers, purchasers,
16 consumers—and TriQuint.

17 10. On information and belief, Avago presently has more than 90% share of the
18 relevant market for PCS CDMA Duplexers. BAW technology and filters are a critical
19 component of a PCS CDMA Duplexer. In about 2006, TriQuint entered the PCS CDMA
20 Duplexer Market by purchasing BAW filter die from Infineon, packaging the Infineon
21 BAW filter die into BAW Duplexers and selling its BAW Duplexers in competition with
22 Avago.¹ Other than Avago, Infineon was the only then viable producer of commercial
23 BAW filters for the PCS CDMA Duplexer Market and the only commercial provider of
24 BAW filter dies.

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¹ In order to form a discrete BAW duplexer, BAW filter die are packaged (or encapsulated) together to form a single "chip."

1 11. Shortly after TriQuint's entry into the PCS CDMA Duplexer Market, Avago
2 began a campaign to acquire BAW technology patent rights commencing in 2006 with an
3 acquisition of BAW patent rights from Infineon's technology partner, Nokia, and
4 separately from Northrop Grumman Corporation ("Northrop Grumman").

5 12. Later, in or about September 2008, Avago consolidated its monopoly
6 position further by acquiring the Infineon BAW product line and all of Infineon's BAW-
7 related patents. As a result of this acquisition, Avago became the only commercial
8 provider of BAW filter dies, and obtained 100% of the commercial BAW Filter Die
9 Market. Avago immediately began to use its market position to exclude competitors and
10 foreclose competition and in the very press release announcing its acquisition of the
11 Infineon BAW product line and patents, Avago gave notice that it was discontinuing the
12 Infineon BAW product line—thereby cutting off TriQuint's only possible source of BAW
13 filter dies. On information and belief, Avago's primary, if not sole, reason for acquiring
14 the Infineon BAW product line and patents was so that it could: a) shut down the product
15 line and eliminate the only potential supplier of BAW filter dies to TriQuint and any other
16 company that wanted to compete with Avago, and b) acquire and use the Infineon patents
17 (as well as the other Acquired BAW Patents) to prevent competition.

18 13. Faced with the loss of its only supplier (and the only viable supplier) for
19 BAW filter dies, TriQuint proceeded with its efforts to develop its own BAW filter die so
20 that it could continue to compete with Avago in the PCS CDMA Duplexer Market.
21 TriQuint successfully developed its own BAW filter die and began shipment of its BAW
22 PCS CDMA Duplexer modules (containing its own BAW filters) in the third quarter of
23 2009.

24 14. In an effort to quash TriQuint's efforts to compete, Avago cast a broad net,
25 striking hard and fast. Soon after the Infineon acquisition in December 2008 and
26 February 2009, Avago's Chief Executive Officer, Hock Tan caused an investment banker

1 to reach out to TriQuint to discuss a potential acquisition by Avago of TriQuint. Soon
2 thereafter Avago executives authorized and directed the issuance of thinly veiled threats to
3 the industry, including TriQuint's customers and potential customers. These
4 communications advised recipients that only Avago had the patent rights necessary to
5 make BAW filter dies and Duplexers, that Avago had not licensed its patent rights and
6 that any customer who purchased BAW products from any provider other than Avago was
7 at risk of patent infringement. Avago's letters to TriQuint's customers advised them that
8 Avago owns over 200 patents relating to RF products and that these patents "not only
9 cover important features of these products, but they also cover necessary elements."
10 Having set the field of intimidation, Avago then threatened TriQuint and other actual and
11 potential BAW producers with patent infringement and TriQuint with trade secret
12 litigation. And, as the price for peace, Avago refused to license its patents absent an
13 express agreement that TriQuint agree not to compete in Avago's monopolistic sweet spot:
14 the PCS CDMA Duplexer Market.

15 15. Faced with Avago's threats to itself and to its customers and potential
16 customers, on July 23, 2009, TriQuint filed its Original Complaint in this Court seeking a
17 declaratory judgment that its new PCS CDMA Duplexer module products did not infringe
18 four of the patents that Avago had been asserting to the industry that TriQuint's products
19 infringed: U.S. Patent Nos. 6,879,224; 6,472,954; 6,384,697; and 6,262,637.

20 16. In its Original Complaint, TriQuint also asserted that Avago's products
21 infringe three TriQuint patents: United States Patent Nos. 6,114,635 ("the '635 patent");
22 5,231,327 ("the '327 patent"); and 5,894,647 ("the '647 patent").

23 17. On September 17, 2009, Avago responded to TriQuint's complaint with a
24 counterclaim asserting that TriQuint's new PCS CDMA Duplexer products infringe ten
25 Avago patents—eight of which were acquired from Infineon and Nokia as part of Avago's
26 illegal acquisition efforts. The patents asserted by Avago in its Counterclaim are:

1 7,365,619, 7,268,436, 6,933,807, 6,909,340, 6,864,619, 6,841,922, 6,812,619, 6,377,137,
2 6,262,637, and 6,051,907.

3 18. On October 16, 2009, TriQuint responded to Avago's counterclaim, by (1)
4 denying that its products infringe the ten asserted Avago patents, (2) asserting that each of
5 the Avago patents was invalid; and (3) asserting that Avago has violated and is violating
6 U.S. antitrust laws, i.e., Section 7 of the Clayton Act and Section 2 of the Sherman Act.

7 19. In this Amended Complaint, TriQuint now again 1) asserts that Avago has
8 and is violating the Clayton and Sherman Acts, 2) that Avago's products infringe
9 TriQuint's '635, '327 and '647 patents, and 3) seeks a declaratory judgment that TriQuint
10 does not infringe the ten patents Avago has asserted and that those asserted Avago patents
11 are invalid.

12 **JURISDICTION, VENUE AND INTERSTATE COMMERCE**

13 20. This Court has jurisdiction over TriQuint's antitrust claims pursuant to
14 Sections 4 and 15 of the Sherman Act, 15 U.S.C. §§ 4, 15. This Court has jurisdiction
15 over TriQuint's declaratory judgment action under the Federal Declaratory Judgment Act,
16 28 U.S.C. §§ 2201 and 2202, and because there is an actual and justiciable controversy
17 between TriQuint and Avago regarding the patents asserted by Avago. In addition, this
18 Court has jurisdiction over TriQuint's claims for patent infringement, treble damages,
19 attorneys' fees and costs, permanent injunctive relief, and punitive damages against
20 Avago pursuant to the patent laws of the United States, Title 35 of the United States Code,
21 28 U.S.C. §§ 1391(b) and 1400(b). This Court has subject matter jurisdiction pursuant to
22 28 U.S.C. §§ 1331, 1337, 1367.

23 21. This Court has personal jurisdiction over Avago because Avago has
24 consented to jurisdiction in this District.

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1 only one-fourth as wide as W-CDMA (1.25MHz vs. 5MHz); an impediment that does not
2 allow standard filter technologies to achieve acceptable performance over all operating
3 conditions in the PCS Band.

4 26. Single duplexers that do not have any added functionality are referred to as
5 "discrettes." Discrettes may be packaged as multiples or integrated with other components
6 to provide a higher level of integration, referred to as modules. Examples include a
7 quinta-plexer (combination of a duplexer and a triplexer which allows for GPS to work
8 simultaneously with voice transmission), duplexers with power amplifiers and multi-mode
9 modules capable of transmitting over more than one standard (i.e. W-CDMA and
10 CDMA). As used herein, "Duplexers" include discrettes, multiples, and modules.

11 27. Because of its superior performance and its ability to meet stringent
12 technology standards, BAW Duplexers are the technology of choice in high performance,
13 high frequency band applications. Due to the even higher technical requirements of the
14 PCS CDMA Band, BAW Duplexers are the only technology generally used in duplexer
15 applications within the PCS CDMA Band.

16 28. BAW filters can have a solidly mounted resonator ("SMR") or a suspended
17 resonator. Avago's suspended BAW filter technology is referred to as FBAR. Infineon's
18 BAW filters and TriQuint's newly introduced BAW filters are SMRs.

19 **The Parties' BAW Technology and Products**

20 29. In or about 2001, Avago's predecessor, Agilent Technologies, Inc.
21 ("Agilent") introduced its new FBAR technology for commercial handset applications. In
22 2005, Agilent spun off its semiconductor business, including its FBAR products, into a
23 new company—Avago. Avago is the successor to Agilent with respect to this business
24 and is now the exclusive provider of FBAR filters and Duplexers.

25 30. In 2002, in the first year after the introduction of FBAR, Agilent announced
26 that its FBAR Duplexer had already acquired more than 25% of the United States PCS

1 Band market. The company further announced its intentions to increase production to
2 meet 100% of worldwide market demand.

3 31. A few years later, in late 2004, an Avago press release announced that it had
4 achieved an 80% market share in the United States PCS market:

5 [Agilent's FBAR] devices have been designed into nine of the
6 top 10 CDMA (code division multiple access) phone
7 manufacturers handsets for the U.S. PCS market.

8 "The tremendous acceptance of our FBAR filter components
9 has fueled a new generation of thinner, smaller CDMA flip
10 phones," said Bryan Ingram, vice president and general
11 manager of the Wireless Semiconductor Division in Agilent's
12 Semiconductor Products Group. "The significant size and
performance advantage has made these components an
industry standard *with more than 80-percent share of the U.S.
PCS handset market.*

13 (Emphasis supplied) (12/15/2004).

14 32. In or around 2001, Nokia began working with Infineon to develop BAW
15 filters for Nokia's mobile handset applications. On information and belief, the joint
16 collaboration agreements between Nokia and Infineon prevented Infineon from selling
17 BAW filters to the general market until expiration of an exclusivity provision in 2004.

18 33. In 2004, Infineon began selling BAW filter dies to other companies,
19 including TriQuint, and later introduced and sought to sell BAW Duplexers. On
20 information and belief, TriQuint was the only company other than Infineon itself to
21 develop a Duplexer using the Infineon BAW filter dies.

22 34. TriQuint introduced its first BAW Duplexer using the Infineon BAW filter
23 dies in 2006, and soon became Infineon's largest customer accounting for the substantial
24 majority of Infineon's BAW sales.

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1 **Avago's Illegal Acquisition Activity and Anticompetitive Scheme**

2 35. Shortly after TriQuint introduced its competing BAW Duplexer, Avago
3 acquired several BAW-related patents from Nokia and Northrop Grumman.

4 36. In or about September 2008, Avago purchased Infineon's BAW product line,
5 including its patent portfolio and other intellectual property rights relating to BAW
6 technology. The effect of the acquisition was to consolidate the only significant BAW
7 manufacturers and to provide Avago with even greater and more dominant market power
8 which it has used to exclude and foreclose competitors. Because of the size of the
9 transaction, the acquisition was not subject to pre-merger review by the Department of
10 Justice and Federal Trade Commission.

11 37. On information and belief, the acquisition price paid by Avago for the
12 Infineon BAW line was significantly higher than that offered by other bidders, including
13 TriQuint, and well above market price. The price paid by Avago reflected the premium
14 that Avago placed on its ability to buy and preserve its market power so as to engage in
15 monopolistic pricing and exclusionary conduct, e.g. to foreclose competitors' or potential
16 competitors' access to BAW filter die supply and to amass a purported blocking portfolio
17 comprised of necessary blocking and substitutable BAW patents which could be used to
18 foreclose and prevent competition. Other potential purchasers of the Infineon BAW line
19 existed who would and could have acquired the assets with less anticompetitive effect.
20 However, Avago precluded such a purchase by its supracompetitive price and structured
21 the transaction specifically to ensure that it had the maximum anticompetitive effect.
22 Specifically, Infineon did not offer to sell the BAW patents to potential purchasers,
23 including TriQuint, but rather sought only to license those patents on a nonexclusive
24 basis. On information and belief, in order to ensure its continued monopoly and allow it
25 to exercise the patents so as to exclude and prevent competition, Avago pressured
26

1 Infineon to sell the BAW patents and ultimately offered a price that significantly exceeded
2 the fair market value.

3 38. In discussing the Infineon acquisition with its customers, Avago touted its
4 resulting dominance:

5 As you know, Avago Technologies has a history of shipping
6 FBAR (sometimes referred to as BAW) filters into all major
7 OEMs and has now shipped more than 1 billion devices over
8 the past 7+ years which *makes Avago Technologies easily the*
9 *#1 supplier of these types of devices.Additionally, we have*
10 *recently acquired the BAW group from Infineon technologies*
(sic) who was the #2 supplier of these types of devices and was
a pioneer in the BAW field.

11 (Emphasis supplied).

12 39. Immediately upon acquiring the Infineon BAW line, Avago began to use its
13 market position and leverage its newly acquired patent position to exclude competitors
14 and foreclose competition. Specifically, on or about September 30, 2008, Avago publicly
15 announced that it had just completed the purchase of the Infineon BAW line and that it
16 was simultaneously discontinuing the Infineon BAW product line. Avago's press release
17 announcing the acquisition and the related obsolescence of the BAW line stated:

18 This acquisition provides Avago with several strategic assets,
19 including a strong IP portfolio and highly experienced R&D
20 team. . . . This development team will focus on building upon
21 the existing FBAR filter product....*The BAW products will be*
22 *discontinued and obsolescence notices have been sent to*
affected customers.

23 9/30/08 Press Release (emphasis supplied).

24 40. Avago's decision to shut down the Infineon line terminated the only
25 commercial provider of BAW filter dies leaving TriQuint with no ongoing source of
26 supply and the announcement --- made only after the acquisition was finalized --- was

1 directly contrary to statements made prior to closing of the acquisition. Specifically, in
2 communications Avago caused to be sent to Infineon customers, TriQuint was assured of
3 Avago's intention to continue the Infineon BAW business. Thus, in a letter to TriQuint
4 dated August 1, 2008, announcing Avago's acquisition of the Infineon BAW business,
5 TriQuint was advised that: "Avago will be a very reliable partner for TriQuint and will
6 offer the BAW Business a long term perspective by developing it to its fullest potential."
7 On information and belief, Avago sought to mislead Infineon, TriQuint and others until
8 after the acquisition closed so as to ensure that it was the successful purchaser and to
9 avoid any potential challenge.

10 41. As part of Avago's obsolescence announcement, TriQuint was offered a
11 "last time buy." The "last time buy" period was insufficient for TriQuint to determine its
12 obligations to current customers as the life of a handset model extends over several years
13 and TriQuint's customers were unable to provide accurate demand forecasts due to the
14 rapidly expanding market for Smartphones which used the Infineon BAW filter die.
15 Avago's "life time buy" period was also insufficient to allow TriQuint to compete
16 effectively in several pending and future competitions. Changing out parts generally
17 requires FCC authorization and thus customers require and expect a long term source of
18 supply -- something that TriQuint was unable to provide.

19 42. In order to meet its obligations to current customers, TriQuint approached
20 Avago to request additional flexibility. Avago refused. Ultimately, Avago advised that it
21 had excess supply and, due to its own desire to offload supply and complaints from the
22 parties' mutual customers, Avago ultimately offered TriQuint additional volume. BAW
23 filter dies are customized and Avago's most recent offer to provide BAW filter die that
24 TriQuint needed for its customers was conditioned upon TriQuint's agreement to accept
25 BAW filter die which it neither wanted nor could use. Both the original and modified
26

1 "life time buy" was insufficient to meet TriQuint's (and its customers') requirements and
2 significantly impacted TriQuint's ability to compete.

3 43. Shortly after the acquisition, Avago began to issue customer
4 communications warning buyers that, because of its newly acquired patent portfolio,
5 Avago was the only safe choice for BAW filters and that purchasing BAW filters from
6 competitors would leave the purchaser unprotected from the exclusive effect of Avago's
7 patent portfolio, which it claimed covered necessary elements of BAW filters. As Avago
8 stated: "[W]e have not licensed these patents to any competitors who may be
9 manufacturing FBAR or BAW devices." The "competitors" to which Avago's letter was
10 referring was, in fact, one competitor and its only competitor—TriQuint. Avago sent
11 these communications to all of the customers to which TriQuint sold BAW Duplexers for
12 the PCS CDMA market. In view of the recent decision in Broadcom's patent infringement
13 case against Qualcomm in which handset makers who used in their phones the Qualcomm
14 chips found to infringe Broadcom's patents were barred from importation and sale in the
15 United States, TriQuint's handset customers were particularly concerned about these
16 statements. A number of these customers contacted TriQuint about Avago's assertions
17 and requested that TriQuint provide them with assurances that TriQuint's products do not
18 infringe Avago's patents and that their supply of products from TriQuint was not at risk of
19 being interrupted.

20 44. Faced with a loss of supply from Infineon, TriQuint reallocated resources
21 and quickly accelerated efforts to develop its own BAW technology based in part on
22 technology earlier developed by its subsidiary, TFR Technologies, Inc. (in Bend, Oregon),
23 for military applications. TriQuint's efforts were eventually successful, and it is now
24 producing BAW Duplexers for the PCS CDMA Duplexer Market incorporating its own
25 BAW technology and BAW filter die.

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1 45. Avago's threats were not limited to customers, and Avago sought to enforce
2 its illegally acquired patent portfolio against actual or potential competitors, including
3 TriQuint so as to obtain a complete monopoly within the BAW Filter Die and PCS
4 CDMA Duplexer Markets. Avago's threats included, but were not limited to, threats of
5 patent infringement and trade secret litigation. In a February 10, 2009 meeting between
6 Bryan Ingram, Vice President and General Manager of Avago's Wireless division, and
7 Bruce Fournier of TriQuint, Mr. Ingram stated that he had drafted and directed that the
8 threatening letters be distributed to customers and that the letters and threats had already
9 been successful in pushing some Asian suppliers out of the market who were
10 manufacturing BAW and at risk of entering the PCS CDMA Duplexer Market.

11 46. As part of any agreement to license its patents, Avago insisted that TriQuint
12 agree not to compete in the PCS CDMA Duplexer Market. This demand was not limited
13 to existing devices nor was it limited to devices which allegedly infringed Avago's patents
14 (including its illegally acquired patents). Rather, Avago stated that it was seeking to
15 "protect" its monopoly and that it wanted to "wall off" the PCS CDMA Duplexer Market
16 segment for itself. This demand was first stated in the February 10, 2009 conversation
17 between Bruce Fournier of TriQuint and Bryan Ingram of Avago and reiterated on
18 multiple occasions thereafter to Mr. Fournier, Mr. Ralph Quinsey and Tim Dunn of
19 TriQuint by Mr. Ingram and Hock Tan, Chief Executive Officer of Avago. With respect
20 to BAW filter die, as stated by Mr. Ingram to Mr. Dunn at Avago's facilities on June 22,
21 2009, Avago demanded that TriQuint agree not to sell BAW filter die into either the W-
22 CDMA or narrowband CDMA market for a period of 2-3 years.

23 47. In an effort to resolve intellectual property disputes, TriQuint agreed to enter
24 into discussions with Avago that would be covered by an agreement, titled Mutual
25 Confidential Disclosure Agreement dated April 17, 2009. What TriQuint did not then
26 realize was that Avago was planning to use these discussions to pursue its demand to

1 divide up the market and to coerce TriQuint into an illegal agreement to restrain trade—
2 and to use the nondisclosure agreement to cover up and immunize its illegal activity from
3 judicial scrutiny.

4 48. In a final conversation between Mr. Quinsey and Mr. Tan on or about July
5 6, 2009, Mr. Tan indicated that a necessary condition to providing TriQuint with a
6 worldwide license would be TriQuint's agreement not to compete in the narrowband
7 CDMA market for some period of time or, as a possible alternative, to not compete for
8 new narrowband CDMA handset models or customers and agree to cease selling to certain
9 of TriQuint's major handset customers.

10 49. Ultimately, Avago refused to modify or drop its request for an agreement
11 not to compete as a condition of its license or "patent peace" with Mr. Ingram explaining
12 that he was "greedy" and that Avago wanted the entire narrowband CDMA market to
13 itself. This litigation followed.

14 50. During this litigation, Avago sought to dismiss the claims in part alleging
15 that TriQuint had provided insufficient detail regarding the non-compete conversations.
16 When TriQuint amended the Complaint to narrow the issues in dispute, Avago then
17 sought to use the nondisclosure agreement to shield its anticompetitive conduct from
18 judicial review and threatened TriQuint with breach of contract if TriQuint revealed
19 Avago's illegal demands to divide the market and restrain trade, even if the allegations
20 were disclosed only to the Court under seal. On information and belief, TriQuint asserts
21 that Avago made similar requests not to compete and entered into similar nondisclosure
22 agreements with Skyworks, EPCOS and other actual or potential entrants. Independently
23 and through its aggressive interpretation and litigation tactics with TriQuint, Avago is
24 effectively seeking to gag the industry and avoid judicial review.

25 51. On information and belief, Skyworks Solutions, Inc. ("Skyworks") had
26 developed its own BAW technology, was an actual competitor in the W-CDMA PCS

1 Duplexer Market, and was an actual or potential entrant into the BAW Filter Die Market
2 and the PCS CDMA Duplexer Market. Avago approached Skyworks alleging patent
3 infringement and shortly thereafter, in February 2009, Skyworks announced that it would
4 no longer be producing BAW filters. Then, on September 10, 2009, Avago acquired from
5 Skyworks five patents and six pending published patent applications, all related to BAW
6 technology. On information and belief, Skyworks exited the market in whole or in part
7 because of Avago's threats.

8 52. Similarly, on information and belief, EPCOS developed its own BAW
9 technology, was an actual entrant into the W-CDMA PCS Duplexer Market, and was an
10 actual or potential entrant into the BAW Filter Die Market and the PCS CDMA Duplexer
11 Market. Avago asserted potential patent infringement claims against EPCOS.

12 53. The BAW related intellectual property and patent rights, including the
13 future patents issued from these families and acquired from Northrop Grumman, Nokia,
14 Infineon, Skyworks and perhaps others are collectively referred to as the "Acquired BAW
15 Patents." Avago's acquisition of these patents has been part of a monopolistic scheme
16 aimed at preserving its market power, excluding competitors and foreclosing new market
17 entry.

18 **The Relevant Market and Market Share**

19 54. The relevant market of commerce in which to analyze the effects of Avago's
20 BAW-related acquisitions and anticompetitive scheme conduct is: a) the technology
21 market for BAW filters, consisting of that technology or collection of technologies
22 claimed in those patents that are needed for the design, manufacture and use of BAW
23 filters (the "BAW Technology Market"); b) the product market for BAW filter die (the
24 "BAW Filter Die Market"); and c) the product market for Duplexers that are designed for
25 and meet the stringent technical and operational requirements of CDMA PCS Band
26

1 applications (the "PCS CDMA Duplexer Market"). Avago has the power to raise prices,
2 reduce or eliminate supply and exclude competition in these Markets.

3 55. The PCS CDMA Duplexer Market is an accepted, defined market within the
4 industry and by Avago, as reflected in the press release and other communications set
5 forth above. Avago most recently acknowledged this market in its Form S-1: "In
6 addition, we were the first to deliver commercial film bulk acoustic resonator, or FBAR,
7 filters for code division multiple access, or CDMA, technology and we believe we
8 maintain a significant market share of PCS duplexers within the CDMA market."

9 56. RF filters are designed specifically for a particular frequency and wireless
10 air interface. Although both CDMA and W-CDMA-based handsets operate within the
11 PCS Band, they have fundamentally different bandwidths. CDMA requires a wider
12 overall bandwidth within the PCS Band compared to W-CDMA. However, the channel
13 bandwidth for CDMA handsets is narrower than that for W-CDMA handsets, requiring a
14 steeper filter that has low insertion loss. These differences result in much more stringent
15 technical requirements for Duplexers and BAW Filter die used in PCS CDMA
16 applications than in W-CDMA applications. Duplexers and BAW filter die used in PCS
17 CDMA applications must have a wide overall bandwidth, be steeper, have lower insertion
18 loss and reduced temperature shift. BAW Duplexers satisfy these requirements.

19 57. Unlike other filter applications, Duplexers are required to simultaneously
20 send and transmit signals and, in the channel bandwidth constrained PCS CDMA Band,
21 insertion loss is critical. (Insertion loss is the loss of signal strength as it passes through
22 the filter.) Duplexers must also be able to handle higher power levels than other filter
23 applications. As such, filters (i.e. BAW filter die) used for the duplexer function in a
24 Duplexer have different technical requirements than those used in other applications.
25 Filters used in non-duplexer applications (including PCS CDMA) may have different
26 technical requirements and may be met by other technologies such as SAW.

1 58. BAW filters are currently the only filters that can meet the stringent
2 technical and size requirements for current duplexer requirements in PCS CDMA
3 Duplexer applications and manufacturers and purchasers of Duplexers within this market
4 do not have other available substitutes.

5 59. Until the introduction of BAW filters, ceramic monoblock filters were the
6 only products able to meet the stringent technical requirements of PCS CDMA Duplexer
7 applications. Ceramic monoblock filters are significantly larger and taller than BAW
8 filters and do not meet the requirements of today's smaller and thinner handset
9 specifications. In its early press releases, Avago pointed to the 50-80% size advantage of
10 FBAR over ceramic monoblock as the leading factor in its market success and the
11 resulting evolution of smaller handsets. This evolution has resulted in the complete
12 obsolescence of ceramic monoblock as a viable substitute.

13 60. Other filters, such as Surface Acoustic Wave ("SAW") filters, can meet the
14 technical requirements in other applications, at other frequencies and for other air
15 interface standards. In those markets, consumers have a broader array of choices. The
16 cost of SAW is significantly lower than that for BAW and the average selling price for a
17 BAW duplexer is roughly 2-3 times the price for a SAW duplexer. As such, purchasers
18 will generally choose a SAW duplexer where the SAW technology is capable of meeting
19 the stated technical requirements.

20 61. SAW is not an available option within the PCS CDMA Duplexer Market
21 because it does not have high enough Q ("Quality" factor relating to a filter's steepness, or
22 shape factor, and insertion loss), it is subject to significant temperature drift, and it has
23 historically been unable to handle the higher power demands. While SAW technology has
24 improved, it is not a viable alternative for PCS CDMA Duplexers (and BAW filter dies
25 used in such applications) and is not projected to be a viable alternative for many years, if
26 at all. As SAW's limitations relate in part to inherent physical properties, it is uncertain

1 whether SAW will ever become a viable alternative in anything other than marginal
2 applications that permit lower technical and quality requirements.

3 62. Due to increased competition, the price for SAW Duplexers and component
4 parts has declined at a greater rate than that for BAW Duplexers and component parts. On
5 information and belief, since acquiring the Infineon BAW line, Avago has announced
6 price increases for BAW and FBAR products.

7 63. Prior to the Infineon acquisition, Avago stated that it was the largest
8 provider of PCS CDMA Duplexers with at least an 80% share of the market. On
9 information and belief, Avago's post-consummation market share is at least 90% of the
10 PCS CDMA Duplexer Market.

11 64. Avago has stated that it holds those patents necessary and essential to the
12 manufacture and sale of BAW filters and thus has control of the BAW Technology
13 Market.

14 65. On information and belief, Avago was the only commercial provider of BAW
15 filter dies after its acquisition of the Infineon BAW line and, as discussed above, has
16 obsoleted that product. While BAW filter dies may compete with other filters such as
17 SAW filters in a variety of applications, as discussed above there are no substitutes for
18 BAW filter dies in the PCS CDMA Duplexer Market. Regardless, as a result of Avago's
19 acquisition and its decision to obsolete the Infineon BAW line, purchasers have no source
20 of BAW filter die supply regardless of their intended use unless they have the ability and
21 resources to develop their own BAW filter dies. And, as a result of Avago's purchase of
22 virtually all of the BAW patents, Avago has created an insurmountable barrier to entry
23 such that those who seek to use BAW filter die within their products, including TriQuint,
24 other actual or potential BAW duplexer manufacturers, handset manufacturers and
25 telephony companies, have no alternative to Avago.

26

1 66. The geographic market for PCS CDMA Duplexers is worldwide. PCS
2 CDMA Duplexers are small and easily shipped and sold on a worldwide basis, including
3 to customers located in Taiwan, Korea, Canada and the United States with the handsets
4 then sold primarily in the Americas.

5 67. The geographic market for BAW filter dies is worldwide. BAW filter dies are
6 small and easily shipped and can be sold on a worldwide basis.

7 68. The geographic market for BAW Technology is worldwide but limited by
8 the United States patent laws which restrict a competitor's ability to make, use, sell, offer
9 for sale and/or import into the United States.

10 **Anticompetitive Effect and Injury**

11 69. Avago has significant market power in the PCS CDMA Duplexer Market, as
12 evidenced by its high market share, its ability to resist declining price trends within the
13 industry as compared to other technologies (such as SAW in cellular and W-CDMA) and
14 its ability to exclude competitors and prevent new entry, including through use of its
15 illegally acquired patent portfolio to exclude competition and as a barrier to entry for new
16 competition.

17 70. Avago has significant market power in the BAW Filter Die Market as
18 evidenced by its high market share, its ability to restrain supply and its ability to exclude
19 competitors and prevent new entry, including through use of its illegally acquired patent
20 portfolio to exclude competition and as a barrier to entry for new competition.

21 71. Direct evidence of Avago's unconstrained exercise of monopoly power in
22 the BAW Technology, BAW Filter Die and PCS CDMA Duplexer Markets and its
23 anticompetitive effects includes, but is not limited to, its ability to eliminate supply, its
24 ability to demand premium prices as compared to related technologies (SAW in cellular
25 and W-CDMA) and its ability to foreclose current and potential competition as part of its
26 predatory and anticompetitive campaign.

1 72. The actionable and anticompetitive effects of Avago's unlawful acquisition
2 of the BAW patents and other anticompetitive scheme conduct include, but are not limited
3 to, the following: a) Avago's discontinuance of the Infineon BAW line has reduced output
4 and left customers with no competitive options for BAW filter dies and fewer competitive
5 options for PCS CDMA Duplexers, particularly for newly introduced handsets and has
6 increased barriers to entry to duplexer competitors such as TriQuint who have no source
7 of supply for BAW die and must develop their own BAW die at increased cost;
8 b) Avago's acquisition and abuse of its market power allows it to charge higher prices than
9 would prevail in a competitive market; c) Avago's customer communications leveraging
10 its unlawfully obtained Acquired BAW Patent portfolio chill the marketplace and
11 innovation and cause consumers to have fewer real choices in their source of supply;
12 d) through Avago's refusal to license its illegally obtained Acquired BAW Patents except
13 on anticompetitive terms has or may result in fewer competitive options for customers and
14 less innovation in the industry; e) by its threatened and actual patent and trade secret
15 litigation seeking to enforce its unlawfully obtained Acquired BAW Patents, Avago has
16 sought to, and on information and belief, has eliminated competitors, prevented new entry
17 and threatened to shut down other actual or potential competitors in the BAW Technology
18 Market, the BAW Filter Die Market and the PCS CDMA Duplexer Market; and
19 f) Avago's illegal acquisitions and patent enforcement efforts, if successful, would result
20 in an insurmountable barrier to entry in both markets and has raised its rivals costs.

21 73. Avago's acquisition of the Acquired BAW Patents is an anticompetitive act
22 that discards previous constraints operating on the patents. The acquisitions substantially
23 lessened competition, as they resulted in Avago obtaining a complete monopoly in the
24 BAW Technology Market and the BAW Filter Die Market and securing its dominant
25 position in the PCS CDMA Duplexer Market. The acquisitions involved substitutable
26 technology to Avago's existing patent portfolio and were acquired solely for the purpose

1 of exclusion. Avago then leveraged its monopoly power to bar competition and prevent
2 new entry in all of the Markets. Its monopoly power also served as a disincentive for
3 Avago to license intellectual property rights to or collaborate with other companies on fair
4 and reasonable terms.

5 74. By unlawfully acquiring Infineon's BAW line and thereafter obsoleting and
6 refusing to license the Infineon and other Acquired BAW Patents (or offering to do so
7 only on anticompetitive terms including a requested non-compete that extended beyond
8 the scope of any of its patents), Avago has unlawfully maintained its monopoly and
9 unlawfully profited from its ability to extract monopoly prices.

10 75. TriQuint has incurred a separate antitrust injury from the violations of law
11 alleged and would not have incurred such injury in the absence of Avago's illegal
12 acquisition activity and anticompetitive actions.

13 76. In TriQuint's position as a customer of Infineon, Avago's purchase and
14 discontinuance of the Infineon BAW line left TriQuint without any supplier of BAW filter
15 dies and without a previously certified BAW filter die product. Through Avago's
16 significant market power and its anticompetitive and predatory conduct, Avago was able
17 to disrupt TriQuint's source of supply. Due to its ongoing research and development
18 efforts, TriQuint was able to develop its own BAW filter die. Despite this success,
19 TriQuint has suffered both a short-term and long-term effect from Avago's conduct.
20 Despite its investment and reallocation of resources to accelerate the development of a
21 BAW filter die supply, TriQuint's new BAW PCS CDMA Duplexers were not available in
22 time for the launch of several new handsets. In addition, its new BAW PCS CDMA
23 Duplexer had not yet been certified by the FCC (a requirement for handsets sold in the
24 United States), and it did not have a third-party source of supply to assuage customer
25 concerns during the transition and to act as a secondary supply source in the event of a
26 disruption in its own ability to supply BAW filter dies. As a result, TriQuint was unable

1 to compete against Avago in several competitions for new handsets using PCS CDMA
2 Duplexers. TriQuint lost customer sales to the only remaining supplier of BAW PCS
3 CDMA Duplexers—Avago.

4 77. TriQuint has been further injured by Avago's efforts to leverage its illegally
5 obtained Acquired BAW Patent portfolio to chill the marketplace. Not only has Avago
6 threatened and brought actual litigation aimed at excluding TriQuint from the market,
7 which includes both patent infringement and trade secret litigation, it has also threatened
8 TriQuint's customers and other potential suppliers of BAW filter die and PCS CDMA
9 Duplexers. Avago's illegal acquisition and anticompetitive conduct has resulted in
10 TriQuint's loss of past, present and future profits, the loss of customers and potential
11 customers, and the loss of goodwill and product image.

12 78. It is not the patents themselves that have injured TriQuint, but the effect the
13 acquisitions have had in providing Avago with additional leverage to increase its rivals'
14 costs and exclude competition. The acquisitions have substantially heightened barriers to
15 entry into the BAW Technology Market, the BAW Filter Die Market and the PCS CDMA
16 Duplexer Market and Avago has used that power to exclude competitors and foreclose
17 entry. Whereas the holder or acquirer of the patents without significant market power
18 would have an incentive to license the patents or collaborate with other market
19 participants, Avago's dominant market power provides it with no such restraint. In the
20 absence of the Infineon acquisition, TriQuint had a source of BAW filter die and an
21 understanding that, if necessary, the Infineon patents would be licensed by Infineon to
22 TriQuint. Indeed, prior to Avago's acquisition of Infineon's patents, Infineon had offered
23 to license its patents to TriQuint for which TriQuint had submitted a bid. And, absent
24 Avago, TriQuint would have been the likely purchaser of the Infineon BAW line.
25 Furthermore, TriQuint had countervailing technology that could have been asserted
26 against Infineon or others, thereby further securing TriQuint's ability to license the

1 Infineon BAW technology. As a result, the injuries incurred by TriQuint flow directly
2 from Avago's unlawful acquisitions and anticompetitive conduct.

3 79. The effects of Avago's acquisition and anticompetitive conduct harm
4 TriQuint and competition. In general, the harm to TriQuint and the harm to competition
5 are the types that antitrust laws were designed to prevent and those harms flow directly
6 from that which makes Avago's conduct unlawful.

7 **COUNT I**
8 **UNLAWFUL ACQUISITION: CLAYTON ACT SECTION 7**

9 80. TriQuint repeats and realleges each of the allegations above as if fully set
10 forth herein.

11 81. Avago's unlawful acquisition of Infineon's BAW line and the other
12 Acquired BAW Patents is an asset acquisition within the meaning of Section 7 of the
13 Clayton Act, 15 U.S.C. § 18.

14 82. The effect of this acquisition has been to lessen competition and/or acquire
15 and/or maintain a monopoly in the BAW Technology Market, the BAW Filter Die Market
16 and the PCS CDMA Duplexer Market in violation of Section 7 of the Clayton Act, 15
17 U.S.C. § 18.

18 **COUNT II**
19 **MONOPOLIZATION: SHERMAN ACT SECTION 2**

20 83. TriQuint repeats and realleges each of the allegations above as if fully set
21 forth herein.

22 84. Avago engaged in a monopolistic scheme to foreclose competition and
23 maintain its unlawful monopolies. Avago's anticompetitive scheme to monopolize
24 includes, but is not limited to, the following conduct. By unlawfully acquiring Infineon's
25 BAW line and the other Acquired BAW Patents, refusing to license its patents except on
26 anticompetitive terms and exercising its monopoly power to foreclose all competition and

1 prevent new entry, Avago has gained or increased its monopoly in the BAW Technology
2 Market, the BAW Filter Die Market and the PCS CDMA Duplexer Market.

3 85. By such acts, practices, and conduct, Avago has engaged in a course of
4 conduct that amounts to monopolization and unlawful exercise of its monopoly power.

5 86. Avago's conduct has had a direct adverse effect on competition, as
6 evidenced by the exclusion of actual and potential competitors in the BAW Technology
7 Market, the BAW Filter Die Market and the PCS CDMA Duplexer Market and Avago's
8 ability to obtain supracompetitive prices for its PCS CDMA Duplexers.

9 87. Avago's exclusionary conduct has no legitimate business justification but,
10 instead, was undertaken in order to establish and maintain monopoly power.

11 88. Avago's conduct constitutes monopolization in violation of Section 2 of the
12 Sherman Act, 15 U.S.C. § 2.

13 89. By reason of Avago's violations of Section 2 of the Sherman Act, TriQuint
14 has been injured in its business or property through the loss of past, present and future
15 profits, by the loss of customers and potential customers, and by the loss of goodwill and
16 product image.

17 **COUNT III**
18 **ATTEMPTED MONOPOLIZATION: SHERMAN ACT SECTION 2**

19 90. TriQuint repeats and realleges each of the allegations above as if fully set
20 forth herein.

21 91. Avago engaged in a monopolistic scheme to foreclose competition and
22 obtain unlawful monopolies. Avago's anticompetitive scheme to monopolize includes,
23 but is not limited to, the following conduct. By unlawfully acquiring Infineon's BAW line
24 and the Acquired BAW Patents, discontinuing the Infineon BAW line, refusing to license
25 its patents except on anticompetitive terms (e.g., an agreement not to compete in the PCS
26 CDMA Market), and asserting its monopoly power to foreclose all competition and

1 prevent new entry, Avago specifically intended to monopolize the BAW Technology
2 Market, the BAW Filter Die Market and the PCS CDMA Duplexer Market.

3 92. Avago has undertaken this course of conduct with the specific intent of
4 monopolizing the BAW Technology Market, the BAW Filter Die Market and the PCS
5 CDMA Duplexer Market. Avago's conduct presents, at minimum, a dangerous probability
6 of success.

7 93. Avago's conduct has had a direct adverse effect on competition, as
8 evidenced by the exclusion of actual and potential competitors in the BAW Technology
9 Market, the BAW Filter Die Market and the PCS CDMA Duplexer Market and Avago's
10 ability to obtain supracompetitive prices for its PCS CDMA Duplexers.

11 94. Avago's conduct constitutes attempted monopolization in violation of
12 Section 2 of the Sherman Act, 15 U.S.C. § 2.

13 95. By reason of Avago's violations of Section 2 of the Sherman Act, TriQuint
14 has been injured in its business or property including through the loss of past, present and
15 future profits, by the loss of customers and potential customers, and by the loss of
16 goodwill and product image.

17 **COUNT IV**
18 **INFRINGEMENT OF U.S. PATENT NO. 6,114,635**

19 96. TriQuint repeats and realleges each of the allegations above as if fully set
20 forth herein.

21 97. TriQuint is the assignee and owner of all right, title and interest to United
22 States Patent No. 6,114,635 (“the ’635 patent”), a true and correct copy of which is
23 attached hereto as Exhibit A, is entitled “Chip-Scale Electronic Component Package.” On
24 September 5, 2000, the ’635 patent was duly and legally issued to TFR Technologies, Inc.
25 (“TFR”). In January 2005, TriQuint acquired TFR and acquired the ’635 patent as part of
26 that acquisition.

1 for sale and/or importing RF components for mobile products, including, without
2 limitation, the Avago products identified in TriQuint's Preliminary Infringement
3 Contentions to Avago, dated March 5, 2010. On information and belief, Avago will
4 continue to do so unless enjoined by this Court.

5 112. On information and belief, Avago's infringement of the '647 patent has
6 been and is willful.

7 113. Avago's infringement is irreparably injuring and damaging TriQuint, and
8 such injury and damage will continue unless Avago is permanently enjoined by this Court.

9 **COUNT VII**
10 **DECLARATORY JUDGMENT OF NONINFRINGEMENT AND INVALIDITY**
11 **OF AVAGO'S ASSERTED PATENTS**

12 114. TriQuint repeats and realleges each of the allegations above as if fully set
13 forth herein.

14 115. On September 17, 2009, Avago filed its Answer, Affirmative Defenses and
15 Counterclaims for Patent Infringement, in which it asserted that TriQuint infringes U.S.
16 Patent Nos. 7,365,619; 7,268,436; 6,933,807; 6,909,340; 6,864,619; 6,841,922;
17 6,812,619; 6,377,137; 6,262,637; and 6,051,907 ("Avago's Asserted Patents");

18 116. On March 5, 2010, Avago served infringement contentions on TriQuint
19 alleging that certain TriQuint products infringe Avago's Asserted Patents.

20 117. A valid and justiciable controversy exists between TriQuint and Avago
21 regarding, *inter alia*, infringement of Avago's Asserted Patents.

22 118. TriQuint has not and does not infringe, directly or indirectly, by inducement
23 and/or contributorily, any claim of Avago's Asserted Patents.

24 119. TriQuint has been injured by Avago filing a Counterclaim asserting patents
25 that TriQuint does not infringe.

26 120. TriQuint is entitled to a declaratory judgment that it has not infringed and is
not infringing any claim of Avago's Asserted Patents.

1 Dated: August 4, 2010

Respectfully submitted,

3 /s/ David J. Palmer

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