

Exhibit 1



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Chen, Chien-Hao*

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

LIAN LI INDUSTRIAL CO., LTD. and
CHEN, CHIEN-HAO,

Plaintiffs,

v.

THERMALTAKE TECHNOLOGY
CO., LTD. and
THERMALTAKE INC. (a.k.a.
THERMALTAKE USA),

Defendants.

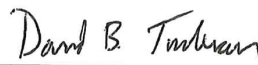
Case No.: 2:23-cv-07470 HDV
(MARx)

Action Filed: September 8, 2023

**EXPERT DECLARATION OF
DAVID B. TUCKERMAN, PH.D.
REGARDING CLAIM
CONSTRUCTION**

I declare under penalty of perjury under the laws of the United States of America that the statements contained in my declaration herein are true and correct to the best of my knowledge. Executed in Lake Stevens, WA on June 21, 2024.

By:



David B. Tuckerman, Ph.D.

1 I, David B. Tuckerman, hereby declare as follows:

2 1. I have been retained as an expert by Greenberg Traurig, LLP, counsel for
3 Plaintiffs Lian Li Industrial Co., Ltd. and Chen, Chien-Hao (collectively, "Plaintiffs") in
4 the above-captioned case. I offer this declaration in order to explain how a person of
5 ordinary skill in the art ("POSITA") would interpret the claim terms in dispute in this
6 litigation ("Declaration").

7 2. Specifically, I offer opinions with respect to the disputed claim terms in U.S.
8 Patent No. 10,690,336 B1 (the "'336 patent").

9 3. I reserve the right to submit additional materials related to my opinion about
10 the construction of claims in this case, including without limitation a declaration in support
11 of Plaintiffs' briefing on claim construction and/or a declaration responding to any expert
12 testimony set forth by Defendants. I also reserve the right to submit additional declarations
13 in this matter in accordance with the case schedule and other applicable rules for discovery.

14 4. If called as a witness, I could and would competently testify to all facts within
15 my personal knowledge and about the opinions I render in this Declaration.

16 **I. Background and Qualifications**

17 5. My qualifications and experiences are set forth in Exhibit A. Additionally, I
18 provide the following overview of my background as it pertains to my qualifications for
19 rendering expert opinions in this matter.

20 6. I have two B.S. degrees, one in Electrical Engineering and another in Physics,
21 and an M.S. in Electrical Engineering and Computer Science, all from Massachusetts
22 Institute of Technology, Cambridge, Massachusetts. I also have a Ph.D. in Electrical
23 Engineering and an M.B.A. from Stanford University, Stanford, CA. My Ph.D. thesis, titled
24 "Heat-Transfer Microstructures for Integrated Circuits," focused on developing new, high-
25 performance liquid-cooled heat sinks for thermal management of high-speed integrated
26 circuits, and received the Fannie and John Hertz Foundation Hertz Thesis Prize.¹ The key
27

28 ¹ <https://www.hertzfoundation.org/hertz-fellows/awards/hertz-doctoral-thesis-prize/>

1 results in my Ph.D. thesis were published in the peer-reviewed journal IEEE Electron
2 Device Letters with the title “High-Performance Heat Sinking for VLSI,” and this
3 publication has so far received over 6,300 citations in the professional literature, as reported
4 by Google Scholar. This paper was selected by the IEEE Electron Devices Society to
5 receive the first “Paul Rappaport Award,” although this new award series did not get
6 officially approved by IEEE until 1983.²

7 7. I am an experienced innovator and inventor with approximately 180 issued
8 U.S. patents, additional foreign patents, and numerous pending applications, spanning the
9 fields of thermal management systems, heat transfer, electronic packaging and interconnect
10 technologies, and superconducting devices and circuits, etc. More than 20 of my patents
11 specifically describe novel electronic interconnection technologies.

12 8. Upon completing my Ph.D. in Electrical Engineering at Stanford University, I
13 joined Lawrence Livermore National Laboratory (LLNL) as a physicist and later project
14 leader, supervising and managing advanced R&D programs in various fields including
15 electronic packaging and interconnect. At LLNL, I developed and published novel methods
16 for electrically connecting silicon chips to multichip module substrates.

17 9. I founded nCHIP, Inc. in 1989, focusing on advanced multi-chip module
18 technologies enabling ultracompact high-performance digital systems. After I served for 6
19 years as its Chief Technical Officer, nCHIP was acquired by Flextronics International Ltd.
20 in 1995. nCHIP’s technology employed novel methods for providing electrical connections
21 between semiconductor chips using new interconnection methods and substrates, which I
22 published and patented during my tenure.

23 10. I am an experienced entrepreneur, venture capitalist, and executive leader with
24 over 30 years of experience in founding, growing and/or advising technology companies.
25 While working as senior VP and CTO of Tessera Inc., I helped Tessera grow via various
26 acquisitions, one of which led to the development of a new technology for silent air cooling
27

28 ² <https://eds.ieee.org/awards/paul-rappaport-award>

1 of laptop computers as a replacement for fans. I also supervised the development of novel
2 chip packaging and interconnection methods, and was an inventor on numerous patents
3 related to electrical interconnections.

4 11. In 2001 I was elected by the Institute of Electrical and Electronic Engineers
5 (IEEE) to the grade of Fellow, which is the highest membership grade, and for which
6 selection is limited to less than 0.1% of the IEEE membership each year. I was specifically
7 cited by the IEEE Components, Packaging and Manufacturing Technology (CPMT) Society
8 (renamed in 2017 as the IEEE Electronics Packaging Society) “for contributions to high-
9 performance electronic packaging and interconnection technologies, including the
10 development of the microchannel heat sink.” In 2023 I became a “Life Fellow” of the IEEE
11 owing to my many years of active membership.

12 12. I am a licensed Professional Electrical Engineer in good standing in the State
13 of California.

14 13. I am currently an independent consultant through my own company
15 Tuckerman and Associates, Inc., working on various technical and intellectual property
16 matters in the high-tech industries. Some of my major clients have included CMEA Capital,
17 Tessera, Intellectual Ventures, and Microsoft. I consulted for Microsoft’s Quantum
18 Computing and “Cold Logic” programs for 9 years (2011-2020), including management of
19 a 6-year research contract with Auburn University to develop high-density flexible thin-
20 film cryogenic interconnect having optimal heat-transfer properties (i.e., minimal heat
21 leakage between temperature stages) while maintaining excellent electrical performance. A
22 major portion of this research involved developing novel methods for making electrical
23 connections in quantum computers and superconducting logic. I was also a consultant for
24 the first phase of Microsoft’s “Project Natick” (which implemented a demonstrative
25 underwater datacenter off the southern California coast in 2015), including the design of the
26 heat exchanger structures and the subsequent analysis of its actual undersea performance. I
27 have published papers in professional journals and conference proceedings as recently as
28 2022 specifically relating to novel electrical connectors and interconnection schemes, for

1 use with superconducting devices and flexible superconducting cables.

2 **II. Compensation**

3 14. I am being compensated at the rate of \$550.00 per hour for my work on this
4 matter. My compensation in no way depends on the outcome of this proceeding, the content
5 of my testimony, or any issues involved in or related to this proceeding.
6

7 **III. Materials Considered**

8 15. In forming my opinions, I have relied upon my knowledge of the state of the
9 art at the time of the invention at issue (e.g., around or before 2018). Additionally, I have
10 reviewed the '336 patent, its file history, the parties' Joint Claim Construction and
11 Prehearing Statement, as well as other relevant materials produced and/or served by the
12 parties in this case, and other publicly available information, as appropriate. A list of
13 materials I considered in connection with this Declaration is attached hereto as Exhibit B.

14 **IV. Legal Principles**

15 16. I understand that claim construction is an issue of law for the Court. I also
16 understand that before an infringement or validity determination can be made, the claims
17 must be construed by the Court.

18 17. I am informed that the words or phrases of a claim are generally given their
19 plain and ordinary meanings that they would have to a POSITA at the time of the invention.
20 To determine the meaning of a claim term, I am informed that the Court will look first to
21 the claims and specification, then to the file history, and only if necessary, to extrinsic
22 evidence such as dictionaries and treatises. I also understand that limitations generally may
23 not be imported from the specification or any embodiment(s) into the claims.

24 18. It is my further understanding that the same words and phrases within a claim
25 or claims are presumed to have the same meaning. It is also my understanding that different
26 words and phrases within a claim or claims are presumed to have different meanings.
27 Similarly, all words in a claim have meaning, and a word or phrase in a claim should not be
28

1 interpreted so as to render other words or phrases in the claim superfluous.

2 19. It is also my understanding that the POSITA is deemed to have read a disputed
3 claim term or phrase being construed not only in the context of the particular claim in which
4 the disputed term or phrase appears, but in the context of the entire patent, including the
5 other claims, the specification, and the prosecution history.

6 20. I am informed that claims may be drafted in “means-plus-function” form. I
7 understand that a “means-plus-function” claim limitation is one in which the claim recites
8 a specific function to be performed without reciting sufficient structure or material to
9 perform that function. When a claim term includes the word “means,” there is a
10 presumption it is a “means-plus-function” limitation. Alternatively, when a claim term
11 lacks the word “means,” there is a presumption that the term is not a “means-plus-function”
12 limitation, but that presumption is rebuttable.

13 21. I am informed that the essential inquiry is not merely the presence or absence
14 of the word “means,” but whether the words of the claim are understood by a POSITA to
15 have a sufficiently definite meaning as the name for a structure. I understand that a claim
16 term lacking the word “means” will be overcome, and the term will be found to be a “means-
17 plus-function” limitation, only if the claim term fails to recite a sufficiently definite structure
18 or else recites function without reciting a sufficient structure for performing that function.

19 22. I understand that construction of a term found to be a “means-plus-function”
20 limitation involves two steps. First, the Court must identify the claimed function. The Court
21 must construe the function of a “means-plus-function” limitation to include the limitations
22 contained in the claim language and only those limitations. It is improper to narrow the
23 scope of the function more than the claim language does, or to broaden the scope of the
24 claimed function by equally ignoring clear limitations in the claim language.

25 23. Second, the Court must determine what structure, if any, disclosed in the
26 specification corresponds to the claimed function. In order to be considered
27 “corresponding,” the structure must not only perform the claimed function, but the
28 specification must clearly associate such structure with the performance of that particular

1 function from the perspective of a POSITA.

2 24. It is my understanding that a “means-plus-function” limitation is then deemed
3 to cover the disclosed structure corresponding to the claimed function, as well as equivalents
4 of that disclosed structure.

5 **V. Level of Ordinary Skill in the Art**

6 25. I understand that, to determine the appropriate level of skill of a POSITA, the
7 following four factors may be considered: (a) the types of problems encountered by those
8 working in the field and prior art solutions thereto; (b) the sophistication of the technology
9 in question, and the speed with which innovations occur in the field; (c) the educational
10 level of active workers in the field; and (d) the educational level of the inventor. I have been
11 instructed that the level of ordinary skill in the art should be determined at the time of the
12 invention. I have been asked to presume that the relevant date for my evaluation is
13 December 26, 2018, based on Taiwan Application No. 107217659.

14 26. The field of the '336 patent relates to computer or electronic hardware
15 components and, specifically, a computer illumination fan connectable with at least one
16 other illumination fan. Based on my review and analysis of the '336 patent and applying
17 the considerations identified above as best they are known to me today, a POSITA in the
18 field of the '336 patent as of December 26, 2018 would have had (i) earned a bachelor's
19 degree in electrical engineering, mechanical engineering, or computer science, or a similar
20 engineering or science degree, and (ii) attained two or more years of experience in designing
21 and/or implementing hardware components for computers, servers, and/or other electronic
22 devices. Alternatively, a person with a more advanced degree in the above fields might have
23 had less practical experience and still be deemed a POSITA. Conversely, a person with a
24 general college background not necessarily in the above fields might also have become a
25 POSITA by acquiring more real-world experience in designing and/or implementing
26 hardware components for computers, servers, and/or other electronic devices.

27 27. Under any of the definitions, I believe that I have the relevant experience and
28

1 understanding of a POSITA qualified to opine on interpretation of the '336 patent.

2 **VI. Patent-In-Suit**

3
4 28. The '336 patent relates to an illumination fan connectable with at least one
5 other illumination fan for a computer. Computer fans are generally used for heat dissipation
6 inside the housings of computers. To effectively dispel heat accumulated inside a computer
7 housing, multiple fans are often needed. Traditionally, each computer fan had to be
8 connected to a power supply through an independent power cable, which creates a lot of
9 wiring inside the housing and makes cable routing and managing cumbersome.
10 Additionally, because of the need to connect to power supply with independent power
11 cables, the number of fans that can be assembled is limited by the finite number of
12 connections available on the power supply.

13 29. In addition, computers are increasingly used for entertainment and related
14 purposes, and hence more attention has been focused on the aesthetics of computer housing
15 in addition to heat dissipation, especially for gaming enthusiasts. This includes integrating
16 light sources with cooling fans such that the illuminated fans are visible from outside the
17 housing (*e.g.*, through transparent panels).

18 30. In order to serve the increasing demand for aesthetically pleasing computer
19 housings and improve the efficiency of heat dissipation for the computer at the same time,
20 the invention contemplated by the '336 patent provides an illumination fan connectable with
21 at least one other illumination fan for a computer.

22 31. In an embodiment of the invention, when the first illumination fan is supplied
23 with power, both its fan for cooling the computer and its illumination area including light
24 emitting components are activated simultaneously. Through the connectors, the first
25 illumination fan also supplies power to the fan and the illumination area of at least one other
26 connected illumination fan, forming possibly a continuous illumination area desired by
27 modern desktop users.
28

32. Specifically, as shown in Figure 2 of the '336 patent (which is only an embodiment of the invention), a first illumination fan on the left (labeled in yellow) is connectable to a second illumination fan on the right (labeled in blue) through an engaging block [8] and a grove [7]. When the first illumination fan is supplied with power, its fan [2] is driven into rotation and the illumination area [3] is illuminated; and if the second illumination fan is connected to the first illumination fan through joining the first connector [5] of the first illumination fan and the second connector [6] of the second illumination fan, the fan and illumination area of the second illumination fan is also driven into rotation and illumination.

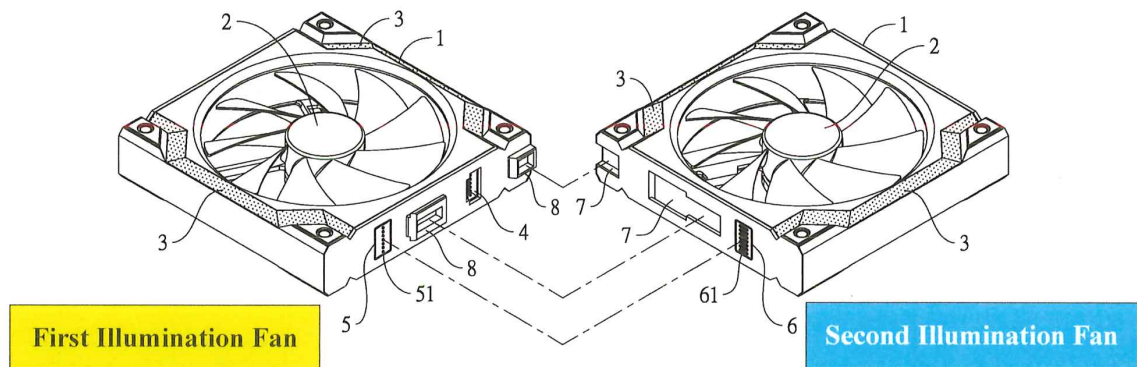


Fig. 2

33. As shown in Figure 3 of the '336 patent, a plurality of fans can be connected and assembled in accordance with an embodiment of the invention.

34. Claim 1 of the '336 patent is reproduced below:

1. An illumination fan connectable with at least one illumination fan for a computer, comprising:
 - a body, provided with a fan in center of the body,
 - an illumination area on at least two sides of the fan at top of the body,

1 a power socket and a first connector on one side of the body, and
2 a second connector on another side of the body,

3 wherein the power socket is electrically connected with
4 the first connector, the second connector, the fan and the
5 illumination area, such that when the power socket on the
6 one side of the body is supplied with power, the fan and
7 the illumination area of the body are respectively driven
8 into rotation and illumination, and when the first connector
9 of the body is connected with a second connector of a body
of another illumination fan, a fan and an illumination area
of the body of another illumination fan are respectively
driven into rotation and illumination.

10 **VII. Summary of My Opinions**

11 35. Based on my experience and knowledge of the art at the relevant time, and the
12 understanding a POSITA would have had of the claim terms in light of the specification, it
13 is my opinion that the preliminary claim constructions proposed by Thermaltake are not
14 consistent with how a POSITA would have understood them. In summary, it is my
15 opinion that:

- 16 • The term “illumination area” is not a means-plus-function term at least because
17 it does not include the word “means” and refers to a structural area located on
18 the fan’s body under the claim language.
- 19 • The term “connector” does not need any special construction and should be
20 given its plain and ordinary meanings. A POSITA would have understood a
21 connector in the context of the ’336 patent to simply be an electromechanical
22 device that provides a connection.
- 23 • The term “power socket” does not need any special construction and should be
24 given its plain and ordinary meaning. A POSITA would have understood a
25 power socket in the context of the ’336 patent to simply be a socket structure
26 supplied with power.
- 27 • Because both “power socket” and “connector” are easily understood and would
28

1 not bear any special definition from a POSITA's perspective, the phrase "a
2 power socket and a first connector on one side of the body" likewise does not
3 need any construction and should be given its plain and ordinary meaning.

- 4 • Because the phrase "power socket" is easily understood and would not bear
5 any special definition from a POSITA's perspective, the phrase "when the
6 power socket on the one side of the body is supplied with power" likewise does
7 not need any construction and should be given its plain and ordinary meaning.
- 8 • The phrases "electrically conductive terminal," "electrically conductive
9 contact surface," and "electrically connected" are all straightforward and easily
10 understood; none of these phrases would bear any special definition from a
11 POSITA's perspective. Therefore, the combination, likewise, can be easily
12 understood without the need for claim construction. Thus, the phrase "an
13 electrically conductive terminal is provided in the first connector, and an
14 electrically conductive contact surface is provided in the second connector for
15 being electrically connected with the electrically conductive terminal" does not
16 need any construction and should be given its plain and ordinary meaning.

17 **VIII. Construction of Disputed Claim Terms**

18 **A. "illumination area"**

19
20 36. I understand that the parties dispute the meaning of the term "illumination
21 area," which appears in claims 1 and 2 of the '336 patent.

22 37. Defendants Thermaltake Technology Co., Ltd. and Thermaltake Inc.
23 (collectively, "Thermaltake") have proposed "illumination area" be construed as a means-
24 plus-function term. I disagree that "illumination area" is a means-plus-function term. At a
25 minimum, the phrase does not include the word "means," which as noted above, raises a
26 presumption that the term does not qualify as a means-plus-function claim limitation. In my
27 opinion, that presumption has not been rebutted. The term "illumination area" refers to an
28 area on the illumination fan's body under the express claim language. '336 patent, claim 1

1 (“a body, provided with a fan in center of the body, an *illumination area* on at least two
2 sides of the fan *at top of the body*”) (emphasis added). And the words are not technical in
3 nature – their plain and ordinary meaning is simply a region on the top of the body that is
4 lit up. Accordingly, a POSITA in the art would have understood “illumination area” as used
5 in the claims of the ’336 patent to define a sufficiently definite structure. I also observe that
6 the “illumination area” limitation does not appear to follow the general form of a mean-
7 plus-function limitation, as the claim does not recite a term followed by a particular function
8 that it performs. The claim does not, for example, recite an illumination area “for”
9 performing a particular function. The scope of this term also should not be limited to the
10 structures (or their equivalents) as disclosed in the embodiments (that would be importing
11 limitations from the specification, which I understand is prohibited), but instead should be
12 given its plain and ordinary meaning.

13 **B. “connector”**

14 38. I understand that the parties dispute the meaning of the term “connector,”
15 which appears in claims 1 and 2 of the ’336 patent.

16 39. A POSITA would have understood the ’336 patent employs the connectors to
17 connect two or more illumination fans to avoid the need for “an independent power cable”
18 for each of the illumination fans, and to eliminate “the additional wire inside the housing
19 [that] makes cable routing and managing much more cumbersome.” ’336 patent, 1:34-40.
20 In addition, “two fans ... can be joined together [by the connectors to] eliminate[]
21 cumbersome routing due to large number of wires.” *Id.*, 3:29-39.

22 40. Thermaltake has proposed a cumbersome construction of “[a] *conductive*
23 *structure for making physical contact with another conductive structure to close an*
24 *electrical circuit*” for the term “connector.” In my opinion, this construction is not
25 consistent with how a POSITA would have understood this term in the context of the ’336
26 patent. It appears that Thermaltake attempts to base this proposed construction on a Wiley
27 reference book, but none of the various definitions in said reference appear to support
28

1 Thermaltake's proposal. For example, the phrase "conductive structure" is not mentioned
2 in the reference, nor is "physical contact" or "close an electrical circuit":

3 **connector** 1. That which serves to connect. 2. A device or
4 object which serves to join two or more conductors. Exam-
5 ples include terminals and binding posts. Also called elec-
6 tric connector (1). 3. A device or object which serves to
7 couple cables with other cables, equipment, or systems. Ex-
8 amples include plugs, jacks, and adapters. Also called elec-
tric connector (2). 4. A line which connects symbols in a
flow chart.

9 41. As shown, the top definition in Thermaltake's own dictionary merely defines
10 a connector as that which serves to connect. Although the later definitions in the Wiley
11 book provide more specific examples of connectors in different contexts, not one of these
12 definitions supports the various limitations that Thermaltake attempts to import into
13 its definition.

14 42. The lack of support from the Wiley reference Thermaltake cites is not
15 surprising, as Thermaltake's definition is not consistent with how a POSITA would have
16 interpreted "connector." Thermaltake's proposed definition appears to assume that a
17 connector must be made *entirely* of conductive material, as it begins by requiring the
18 "connector" to be "[a] *conductive structure*." By way of background, the term "conductive"
19 is generally used to describe the ability of materials to allow electrical current to easily flow
20 through them (*i.e.*, materials that can "conduct" electricity). Copper, gold, silver and other
21 metals are good examples of conductive materials. This property is distinguished from that
22 of *non-conductive* (or insulating) materials, such as plastic and rubber, through which
23 normal electrical current within the common operating ranges does not flow. Plastic and
24 rubber, for example, are often used as insulators that serve two important purposes: (a) they
25 allow a person to avoid making direct contact with the conductive materials and potentially
26 getting electrocuted, depending on the voltage, and (b) they avoid electrical shorts by
27 preventing the conductive material from unintentionally contacting other conductors.
28 Further, the non-conductive materials often provide structural support for handling and/or

1 installation of the connector as a whole.

2 43. Thus, a POSITA would have understood that connectors are almost never
3 made *entirely* out of conductive materials. The figures below, for example, shows a standard
4 telephone (RJ-11) connector (viewed from different angles) that was used for decades to
5 connect telephones in the United States. This well-known example of a connector typically
6 contains four conductive wires surrounded and supported by insulating clear plastic.



14 44. I note that this everyday example illustrates the fact that, as a practical matter,
15 a “connector” would have at least some non-conductive materials surrounding the
16 conductive materials to prevent them from shorting, and for handling and installation. The
17 non-conductive materials also fulfill other often required mechanical functions for a
18 connector, as discussed below.

19 45. I have reviewed the '336 patent, and I find nothing in the patent specification
20 to support the idea that a “connector” must itself be a “*conductive structure*,” to the extent
21 this construction suggests that the entire connector must be conductive. The '336 patent
22 makes clear that although a “connector” certainly *includes* some kind of conductive
23 structure, the connector can include more than just that conductive structure. For example,
24 the patent specification explains that in one implementation, “an electrically conductive
25 terminal is *provided in* the first connector, and an electrically conductive contact surface is
26 *provided in* the second connector for being electrically connected with the electrically
27 conductive terminal[.]” ('336 patent, 2:3-11 (emphasis added).) This language makes clear
28

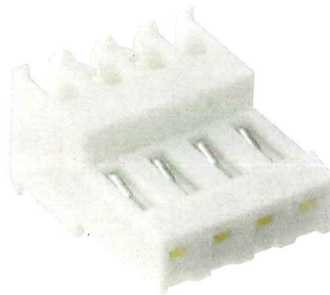
1 that the first and second connectors can include an electrically conductive terminal or
2 contact surface, but these are merely *subcomponents* of the disclosed connectors. This
3 configuration is entirely consistent with how the term “connector” is used in industry
4 parlance. Indeed, had the first and second connectors been made entirely of “conductive
5 structure[s]” as Thermaltake proposes, the electrically conductive terminals and surfaces
6 would have shorted out.

7 46. Nothing in the ’336 patent says that the connector cannot have additional
8 portions such as non-conductive or insulating portions. A POSITA would have understood
9 that the connectors used in the ’336 patent could have included insulation between the
10 various conductors – and in fact would likely have needed them to prevent shorting between
11 neighboring conductors or components. In addition to this need for electrical insulation
12 (also known as dielectric isolation), connectors fulfill multiple mechanical functions such
13 as maintaining a consistent contact pressure between connected conductors, providing
14 protection from the environment, providing locating surfaces, alignment mechanisms and
15 locking mechanisms, strain relieving features, and additional special features if needed for
16 a particular application (*e.g.*, hermeticity). Most of these functions require the use of non-
17 conductive materials, which also often provide structural support for installation
18 and/or handling.

19 47. A “connector,” broadly speaking, just connects two things together. In my
20 opinion, the term “connector” in the context of the ’336 patent does not refer to only a
21 conductive structure, but to an electromechanical device providing a connection. This
22 understanding is consistent with the plain and ordinary meaning of “connector” at the time
23 of the invention in the context of the ’336 patent, to a POSITA. Below are pictures of various
24 examples of connectors I was able to readily find on the Internet, which include both the
25 conductive materials inside and surrounding insulating plastic materials:
26
27
28



(<https://www.amazon.com/Rustark-Connector-Terminal-Barrier-Connecting/dp/B07283L2QS>)



(<https://www.digikey.com/en/products/detail/adam-tech/MTD-A-04-D-1/9831188>)



(<https://www.environmentallights.com/18026-phx4-pair.html>)

48. I also understand that Thermaltake has pointed to Lian Li's own fans (that were supposedly marked with the '336 patent number) to support its proposed construction. To the extent Lian Li's fans are relevant evidence for claim construction, they support my opinions. This is because, as my inspection of the Lian Li fans confirmed, the fans include

1 the presence of non-conductive materials and precision mechanisms in the connectors.

2 49. In sum, the word “connector” does not require a formal definition because the
3 ‘336 patent uses the term in its plain and ordinary sense. The patent certainly does not
4 contain any implied requirement that the connector in the claims be entirely “conductive,”
5 and while the claims obviously include electrical circuits, the patent does not define
6 “connector” in a way that requires “physical contact ... to close an electrical circuit.” The
7 word “connector” should be given its plain and ordinary meaning.

8 **C. “power socket”**

9 50. I understand that the parties dispute the meaning of the term “power socket”
10 which appears in claim 1 of the ‘336 patent.

11 51. Thermaltake proposes “[a]n *opening or hollow that forms a holder for a power*
12 *plug that connects directly to a power supply for convenient replacement*” as the
13 construction for the term. I disagree with this construction. There are several aspects of this
14 proposed construction that appear to have no support whatsoever. First, it introduces an
15 additional structural limitation, “a power plug,” which is nowhere to be found in the claim
16 language nor the specification. Secondly, it requires the plug to connect “*directly* to a power
17 supply,” which is a further limitation not found anywhere in the ‘336 patent. Thirdly, it is
18 also unclear what the word “directly” is intended to convey in this construction. To the
19 extent Thermaltake tries to use the word “directly” to suggest a lack of any intermediate
20 wires or structures between the power plug and the power supply, this suggestion is
21 practically impossible and entirely unsupported. The ‘336 patent merely states that in *an*
22 *embodiment*, the “power can be supplied by *connecting the power socket of one of the*
23 *[illumination fans] bodies with a power supply* of a computer to simultaneously drive the
24 fans of the two bodies into rotation and the illumination areas into illumination.” (‘336
25 patent, 3:29-34 (emphasis added).) That is, there is no requirement even in this embodiment
26 that the power socket of the first illumination fan be connected to the power supply because
27 the second illumination fan’s power socket can be the one that is connected to the power
28

52. Further, nothing in the specification nor the claim language prohibits the second connector from being connected to, thus receiving power from, the power supply to in turn supply power to the power socket. Indeed, the power socket is electrically connected to both the first and the second connectors, and there is no reason why the power socket cannot be supplied with power from either one of them, depending on configurations.

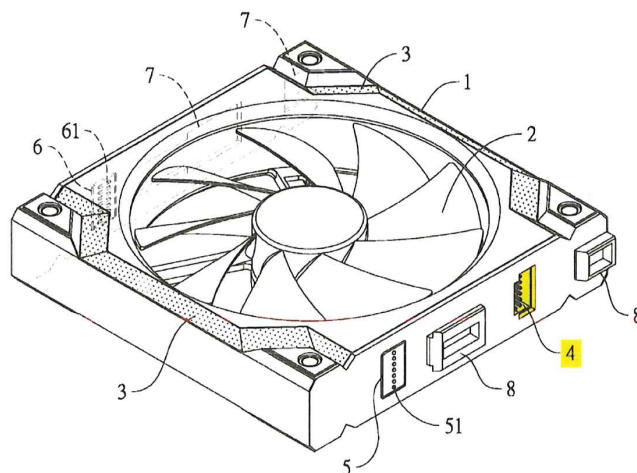


Fig. 1

54. There is simply nothing in the '336 patent suggesting that the claimed power socket must be connected “directly” to a power supply, in either direction of the power flow. Indeed, there is no requirement that a power socket can only be supplied with power through its front via a plug that is plugged into the socket, as Thermaltake incorrectly suggests in its proposal. Indeed, the dictionary definition that Thermaltake includes for support states that a “power socket” is the same as a “power outlet”:

power socket Same as power outlet.

1 55. But a power outlet usually *supplies* power in a direction opposite to that
2 suggested by Thermaltake's proposed construction, even under Thermaltake's own
3 dictionary definition:

4 **power outlet** A power line termination whose socket serves to
5 **supply** electric power to devices or equipment whose plug is
6 inserted into it. Power outlets are usually mounted in a wall,
7 although they may be found elsewhere, such as a floor, or in
8 the back of another electrical device, such as an amplifier.
9 Also called by various other names, including power-line
10 outlet, power receptacle, power socket, convenience out-
11 let, outlet, electrical outlet, or receptacle.

12 56. This goes to show that the claimed "power socket" may be *supplied with* power
13 from behind (perhaps through the electrical connection to the "second connector"), as I
14 explained above. That is, the power socket [4] in Figure 1 may be supplied with power
15 from the second connector [6], which may be connected to the power supply, for example.

16 57. Furthermore, there is no obvious reason to import the idea of "convenient
17 replacement" into a simple phrase like "power socket." It is not clear whose
18 "convenience" Thermaltake believes this language refers to, and a POSITA would not
19 have understood the claimed "power socket" be required to be "convenient," which is
20 another limitation that simply has no support whatsoever. Indeed, even in the purported
21 evidence provided by Thermaltake, the "convenient replacement" requirement is optional,
22 and therefore should not be a limitation:

23 **socket** A device that provides electric connections and
24 mechanical support for an electronic or electric compo-
25 **sodalite** A silicate mineral that
26 **might** require convenient replacement.

27 58. Finally but importantly, Thermaltake's sources for its extrinsic evidence are
28 dated (dictionaries from 2004 and even 1994). Computer technology is a rapidly evolving
field, and terminologies and meanings change over time, so a POSITA would have rarely if
ever needed to cite decades-old reference books to interpret simple words and phrases.

1 59. Indeed, a POSITA would have readily understood the meaning of “power
2 socket” without resorting to dictionaries at all. The claimed “power socket” in the ’336
3 patent is no more than a device that is supplied with power, as consistent with the claim
4 language. And thus it should be given its plain and ordinary meaning rather than the gloss
5 Thermaltake proposes.

6 **D. “a power socket and a first connector on one side of the body”**

7 60. I understand that the parties dispute the meaning of the phrase “a power socket
8 and a first connector on one side of the body” which appears in claim 1 of the ’336 patent.
9

10 61. Here, Thermaltake proposes that “[t]he *phrase ‘on one side of the body’ means*
11 *a power socket and a connector both directly accessible and placed on the same side of the*
12 *fan housing.*” By this proposed construction, Thermaltake effectively adds the words “both
13 directly accessible” into the claim language. There is no support for making this
14 modification in my reading of the ’336 patent (nor any written references to the term in the
15 “extrinsic evidence”), and in any case its meaning is ambiguous and hence open to differing
16 interpretations, so only serves to muddy the waters. If “directly accessible” was a
17 requirement, the inventor would have included it as a claim limitation, but he did not.

18 62. Thermaltake’s construction also excludes the preferred embodiment as
19 depicted in Figures 2 and 3. Indeed, when the first illumination fan is connected with the
20 second illumination fan, both the first connector and the power socket will be hidden
21 between the two fans and are not “directly accessible.” Structurally, there is also no
22 prohibition for the first connector to be inserted into the power socket for the first connector
23 to receive power from the power socket. In such a configuration, the power socket and the
24 first connector, now inserted into the power socket, remain on the same side, electrically
25 connected, as the claim language recited.

26 63. Thermaltake also substitutes “fan housing” for “body,” which is again
27 unnecessary because a POSITA would have understood what the claim means by “body”
28 under its plain and ordinary meaning. The term “fan housing” is also too restrictive because

1 it implies the “body” can only include the external structures of the fan housing other
2 components, when the patent does not limit the “body” to be only the “housing.”

3 64. Because both “power socket” and “connector” are easily understood and would
4 not bear any special definition from a POSITA’s perspective, the phrase “a power socket
5 and a first connector on one side of the body” likewise does not need any construction. The
6 phrase means exactly what it says: the power socket and the first connector are located on
7 the same side of the body. That is it.

8 65. Therefore, I conclude that this phrase does not require construction and should
9 be given its plain and ordinary meaning.

10 **E. “when the power socket on the one side of the body is supplied with power”**

11 66. I understand that the parties dispute the meaning of the phrase “when the power
12 socket on the one side of the body is supplied with power” which appears in claim 1 of the
13 ’336 patent.

14 67. Here Thermaltake proposes for Claim 1, “[t]he instance of directly connecting
15 the power socket on the one side of the body to a power supply.” As explained above,
16 Thermaltake is attempting to insert a baseless and confusing word, “directly”, that simply
17 has no support and that has an ambiguous meaning—so creating opportunities for debate
18 that are unnecessary. And as also explained above, even in the embodiment Thermaltake
19 appears to import this limitation from, there is no requirement that the power socket of the
20 first illumination fan be connected to the power supply via a power plug, let alone “directly.”
21 Thermaltake’s proposal thus runs counter to the objective of bringing clarity to the meaning
22 of claim terms. Once more, it should be noted that the words “direct” and “directly” do not
23 appear anywhere in the ’336 patent (nor does it appear in Plaintiff’s reference to the 2004
24 Wiley dictionary), and so there is no justification for adding “directly” in any
25 claim construction.

26 68. Because the phrase “power socket” is easily understood and would not bear
27 any special definition from a POSITA’s perspective, the phrase “when the power socket on
28

1 the one side of the body is supplied with power” likewise does not need any construction
2 and should be given its plain and ordinary meaning. Therefore, I conclude that this phrase
3 should be given its plain and ordinary meaning.

4 **F. “an electrically conductive terminal is provided in the first connector, and an**
5 **electrically conductive contact surface is provided in the second connector**
6 **for being electrically connected with the electrically conductive terminal”**

7 69. I understand that the parties dispute the meaning of the phrase “an electrically
8 conductive terminal is provided in the first connector, and an electrically conductive contact
9 surface is provided in the second connector for being electrically connected with the
10 electrically conductive terminal” which appears in claim 2 of the ’336 patent.

11 70. Here Thermaltake proposes for Claim 2, “[a]n *electrically conductive post or*
12 *strand of metal of the first connector for connecting to an electrically conductive surface of*
13 *the second connector*”. Their citation to the obsolete 2004 Wiley dictionary has 5 different
14 definitions for “terminal,” from which they have cherry-picked the 3rd definition, from
15 which they extracted the phrase “post or strand of metal.” Again, this appears to be an
16 attempt to add claim limitations for which there is no support in the ’336 patent. A POSITA
17 would have understood that an electronic terminal is not limited to being a “post” or a
18 “strand of metal.” A terminal can be any end (terminus) of an electrical circuit or conductor
19 (hence the name “terminal,” as it is the point where an electrical conductor terminates). In
20 fact, the 5th definition of “terminal” in the same Wiley dictionary cited by Thermaltake is
21 “[t]hat which is at an end, or consists of the end of something, such as that of a series, or
22 of a transmission line.”

23 71. The phrases “electrically conductive terminal,” “electrically conductive
24 contact surface,” and “electrically connected” are all straightforward and easily understood;
25 none of these phrases would bear any special definition from a POSITA’s perspective.
26 Therefore, the combination, likewise, can be easily understood without the need for special
27 claim construction.

28 72. Thus, I conclude that the phrase “an electrically conductive terminal is

1 provided in the first connector, and an electrically conductive contact surface is provided in
2 the second connector for being electrically connected with the electrically conductive
3 terminal” does not need any construction and should be given its plain and ordinary meaning
4 in the context of the '336 patent.

5 **IX. Conclusion**

6 73. In summation, all disputed terms should have their plain and ordinary
7 meanings in my opinion.
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Exhibit A

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EXPERIENCE:

Tuckerman and Associates, Inc., 2009-present: Independent consultant on a variety of technical and IP matters in high-tech industries. Major clients have included CMEA Capital, Tessera, Intellectual Ventures, and Microsoft. Consultant to Microsoft from 2011 through 2020 in the fields of quantum computing and superconducting devices, including management of a 6-year research contract with Auburn University to develop high-density flexible thin-film superconducting interconnection technologies for quantum computing applications.

Tessera Inc., 2003-2009: Senior Vice President and Chief Technical Officer. Member of the executive team that executed a successful IPO in November 2003, with a market capitalization that later exceeded \$1 billion. Responsible for managing R&D activities and generating intellectual property in electronic packaging and related technologies, and for formulating a strategy for growth by acquisition. Identified numerous targets that were successfully acquired (North, Shellcase, Digital Optics, Eyesquad, Viewmagic, DBLur, Kronos); these acquisitions established Tessera in two new lines of business: “Imaging and Optics” (ultraminiature camera modules incorporating extended-depth-of-field wafer-scale optics; this ‘OptiML WLC’ technology was winner of an R&D 100 Award) and “Silent Air Cooling” (fanless, electrostatically driven air cooling, enabling quiet ultra-thin laptop computers).

CMEA Capital, 1997 – 2013: Venture Partner at a venture capital firm that has over \$1 billion under management. Responsible for sourcing and screening deals, performing due diligence, facilitating syndication, and making ongoing strategic and operational contributions to portfolio companies (including participating in Board meetings), for all deals having to do with physical technologies (electronics, optics, materials, energy, etc.). Primarily investing in technologies related to energy and advanced materials since 2008. Currently on Board of Directors of Reel Solar (electroplated CdTe photovoltaic technology).

nCHIP, Inc., 1989-1997: Founder, Sr. VP, and Chief Technical Officer. Developed advanced multi-chip module technologies enabling ultracompact high-performance digital systems. Responsible for all technical development activities prior to transfer to manufacturing. nCHIP was financed by venture capital from three top-tier venture funds: Kleiner Perkins, Mohr Davidow, and Mayfield. nCHIP grew to approximately \$12 million in annualized revenues, and was sold to **Flextronics International Ltd.** in 1995 for \$38 million. Venture investors who held their Flextronics stock received up to 40x their initial investment.

Lawrence Livermore National Laboratory, 1983-1989: Project Leader, Physics Department. Managed advanced R&D programs in laser processing, electronic packaging and interconnect, X-ray optics, and other national-defense related programs.

IBM T. J. Watson Research Center, 1977-1980 (MIT Co-op program): Member of the Josephson junction computer project (superconducting logic circuit design, simulation, and testing). Designed and demonstrated ultrahigh-performance sampling circuitry for on-chip diagnostics of superconducting logic.

EDUCATION:

M.I.T, B.S. Electrical Engineering, 1980.

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PUBLICATIONS:

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PATENTS:

~180 issued U.S. patents, plus various foreign patents and numerous pending applications.

MAJOR HONORS:

Life Fellow of the IEEE

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IEEE Paul Rappaport Award

Fannie and John Hertz Foundation Outstanding Ph.D. Thesis

Consulting Associate Professor of E.E., Stanford University (late 1980's/early 1990's)
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Best Paper Award, VLSI Multilevel Interconnection Conference, 1989

Technical Program Chair, IEEE Multichip Module Conference, 1995

General Chair, IEEE Multichip Module Conference, 1996

Plenary speaker, ASME 9th International Conference on Nanochannels, Microchannels,
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PRIOR EXPERT WITNESS EXPERIENCE:

Asetek Danmark A/S v. Coolit Systems Inc. (Northern District of California, 3:19-cv-00410-EMC)

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- A. Shah, S. Peek, B. Yelamanchili, V. Gupta, D. Tuckerman, C. Cantaloube, J. Sellers, M. Hamilton, “Superconducting Molybdenum Multi-Chip Module Approach for Cryogenic and Quantum Applications”, *IEEE 72nd Electronic Components and Technology Conference (ECTC)*, 276-282, 2022.

Exhibit B

**Exhibit B to Expert Declaration of David B. Tuckerman, Ph.D.
Regarding Claim Construction**

Materials Considered

1	US 10,690,336 B1
2	File History of US 10,690,336 B1
3	Parties' Joint Claim Construction and Prehearing Statement including Extrinsic Evidence Identified Therein and Accompanying Exhibits A to E
4	US 7,332,841 B2
5	US 2004/0115986 A1
6	US 2006/0012973 A1
7	US 2011/0116234 A1
8	US 2017/0331346 A1
9	US 2019/0242688 A1
10	US 2019/0301473 A1