

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

AKOUSTIS TECHNOLOGIES, INC. AND
AKOUSTIS, INC.,

Plaintiffs,

v.

QORVO, INC.,

Defendant.

Civil Action No. 2:23-cv-180

JURY TRIAL DEMANDED

**DEFENDANT QORVO, INC.'S PRELIMINARY CLAIM CONSTRUCTIONS
AND EXTRINSIC EVIDENCE**

Pursuant to the Court's August 10, 2023 First Amended Docket Control Order (Dkt. 46) and P.R. 4-1, Defendant Qorvo, Inc. ("Qorvo"), by and through its counsel, hereby provides its Preliminary Claim Constructions and Extrinsic Evidence for the terms and claim elements it and/or Plaintiffs Akoustis Technologies, Inc. and Akoustis, Inc. ("Akoustis"), previously identified as needing constructions.

Qorvo provides this identification of terms and claim elements based on its current knowledge, understanding, and belief as to the relevant facts and circumstances. Qorvo has not yet completed its investigation, collection of information, discovery, and analysis concerning this case. Further discovery and investigation may require Qorvo to supplement or modify the identification of terms and claim elements set forth below. Qorvo expressly reserves the right to amend, modify, and add to this list of claim terms and elements in any

way permitted by the Federal Rules of Civil Procedure, the Local Rules, and the Court’s Docket Control Order, as well as in view of Akoustis’ proposed constructions and extrinsic evidence being served today, including, for example, through meeting and conferring with Akoustis. Qorvo also expressly reserves the right to construe any terms or phrases Akoustis identifies.

Qorvo previously identified a number of terms and claim elements that are invalid under 35 U.S.C. § 112 in its September 14, 2023 Invalidity Contentions, which Qorvo incorporates by reference. *See e.g.*, Qorvo’s September 14, 2023 Invalidity Contentions, pp. 28-34. Qorvo further reserves the right to construe any of the below terms as part of any larger phrase in which they appear:

Claims	Proposed Terms and Elements for Construction	Preliminary Constructions & Extrinsic Evidence
1	Claim 1 in its entirety	<u>Construction:</u> Claim 1 requires that its steps a) – d) must be performed in order. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1	Claim 1 preamble	<u>Construction:</u> Claim 1’s preamble is limiting. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1, 9	“epitaxial layer”	<u>Construction:</u> “a layer having a crystalline structure in a specific orientation relationship relative to the substrate” <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1	“lattice mismatched substrate”	<u>Construction:</u> “a crystalline substrate with a lattice constant that differs from the epitaxial layer” <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.

Claims	Proposed Terms and Elements for Construction	Preliminary Constructions & Extrinsic Evidence
1	“a substrate”	<u>Construction:</u> “the lattice mismatched substrate” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1, 6	“pre-treating”	<u>Construction:</u> “wetting” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1	“a surface of the substrate”	<u>Construction:</u> “an area on the substrate’s surface upon which a layer may be grown.” <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1, 10	“Group II reactant”	<u>Construction:</u> “A reactant including an element from Group II of the periodic table or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction. Periodic Table.
1, 3, 4, 10	“Group III reactant”	<u>Construction:</u> “A reactant including an element from Group III of the periodic table or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction. Periodic Table.
1	“at an elevated growth temperature”	<u>Construction:</u> Indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.

Claims	Proposed Terms and Elements for Construction	Preliminary Constructions & Extrinsic Evidence
1	[b) <i>pre-treating a surface of the substrate with at least one group III reactant or at least one group II reactant at an elevated growth temperature</i>] “prior to introducing a group V reactant or a group VI reactant;”	<u>Construction</u>: “prior to introducing any group V or group VI reactant” -OR- “prior to introducing the group V or group VI reactant recited in step c)” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence</u>: Testimony of Dr. John Bravman supporting this construction.
1, 12, 13	“Group V reactant”	<u>Construction</u>: “A reactant including an element from Group V of the periodic table or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence</u>: Testimony of Dr. John Bravman supporting this construction. Periodic Table.
1, 12	“Group VI reactant”	<u>Construction</u>: “A reactant including an element from Group VI of the periodic table or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence</u>: Testimony of Dr. John Bravman supporting this construction. Periodic Table.
1, 12	“growing” / “grow” / “grown”	<u>Construction</u>: “Creating a layer of material upon a workpiece via chemical reactions between reactants or reactants and the workpiece” / “Create a layer of material upon a workpiece via chemical reactions between reactants or reactants and the workpiece” / “A layer of material is created upon a workpiece via chemical reactions between reactants or reactants and the workpiece” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence</u>: Testimony of Dr. John Bravman supporting this construction.

Claims	Proposed Terms and Elements for Construction	Preliminary Constructions & Extrinsic Evidence
1, 7, 12	“nucleation layer”	<u>Construction:</u> “A layer between the buffer layer and wetted substrate made from the reactants chosen in steps b) and c)” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
1, 12	“buffer layer”	<u>Construction:</u> “A layer between the nucleation and epitaxial layers that transitions at least in part the lattice constant of the lattice mismatched substrate to that of the epitaxial layer.” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
3, 6	“gallium reactant”	<u>Construction:</u> “A reactant including gallium or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
3, 6	“aluminum reactant”	<u>Construction:</u> “A reactant including aluminum or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
3	“boron reactant”	<u>Construction:</u> “A reactant including boron or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.

Claims	Proposed Terms and Elements for Construction	Preliminary Constructions & Extrinsic Evidence
3	“indium reactant”	<u>Construction:</u> “A reactant including indium or a compound thereof” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.
10	“preheating said substrate in hydrogen”	<u>Construction:</u> “After step a), exposing the substrate to hydrogen at the growth temperature to clean the surface of the substrate.” If not construed in this manner, indefinite pursuant to 35 U.S.C. 112, 2nd ¶. <u>Extrinsic Evidence:</u> Testimony of Dr. John Bravman supporting this construction.

In addition to the extrinsic evidence identified above for the identified terms or elements, Qorvo reserves the right to rely on the documents of record in IPR2024-00609 (*IQE PLC v. Cornell Research Foundation, Inc.*), including the party filings and expert declarations, that inform the meaning of the particular term or element.

Dated: April 9, 2024

Respectfully submitted,

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By: */s/ Robert M. Masters*

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CERTIFICATE OF SERVICE

I hereby certify that on April 9, 2024, I served the foregoing via e-mail to all counsel of record.

/s/ Melissa R. Patrick

Melissa R. Patrick

**IN THE UNITED STATES DISTRICT COURT
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**AKOUSTIS TECHNOLOGIES, INC. AND
AKOUSTIS, INC.**

Plaintiff,

vs.

QORVO, INC.

Defendant.

Civil Action No. 2:23-cv-00180-JRG-RSP

JURY TRIAL

**PLAINTIFFS AKOUSTIS TECHNOLOGIES, INC. AND AKOUSTIS, INC.'S
P.R. 4-2 DISCLOSURES**

Pursuant to Patent Rule 4-2 and the Court's Scheduling Order (Dkt. 46), Plaintiffs Akoustis Technologies, Inc. and Akoustis, Inc. (collectively, "Plaintiffs") provide the following preliminary proposed constructions of claim terms and list of extrinsic evidence in support of the preliminary claim constructions for each term, phrase, or clause proposed for construction.

Plaintiffs' disclosure of extrinsic evidence is preliminary and based on Plaintiffs' analysis and investigation to date and the preliminary constructions offered by Plaintiffs. Plaintiffs reserves the right to modify the disclosure of extrinsic evidence supporting Plaintiffs' preliminary constructions, as well as submit additional evidence (including any new extrinsic evidence), in response to: intrinsic and extrinsic evidence identified by Defendant as supporting Defendant's preliminary claim constructions; the parties' meet and confer discussions regarding the preliminary claim constructions; and other positions taken by Plaintiffs regarding the construction or meaning of claim terms; any additional relevant information learned through discovery; any relevant proceedings before the Patent Office; and any order of the Court in this matter. For example, Plaintiffs reserve the right to submit expert testimony in rebuttal to any

expert testimony offered by Defendant. Plaintiffs' disclosure of specific extrinsic evidence does not imply or admit that any technical features referenced in the extrinsic evidence are relevant to or are within the scope of any claim term.

<u>Claim(s)</u>	<u>Term</u>	<u>Proposed Construction</u>	<u>Extrinsic Evidence</u>
1	Claim 1 in its entirety; order of steps a)-d)	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and steps a)-d) must be performed in order.	IQE's IPR2024-00609 and related exhibits Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	Claim 1 preamble	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	epitaxial layer	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Definitions of "epitaxial" and "epitaxial growth of semiconductors" in Chambers Dictionary of Science and Technology (1999) Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of

			the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	lattice mismatched substrate	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	a substrate	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Definition of "substrate" in Chambers Dictionary of Science and Technology (1999) Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1, 6	pre-treating	Plain and ordinary meaning, <i>e.g.</i> ,	IQE's IPR2024-00609 and related exhibits

		not indefinite and no further construction necessary. A POSITA would understand this term in light of the entire patent and claim to involve forming a layer of material or something approximating a layer of material and not merely droplets.	Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	a surface of the substrate	Plain and ordinary meaning, <i>e.g.</i>, not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Definition of "substrate" in Chambers Dictionary of Science and Technology (1999) Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	at an elevated growth temperature	Plain and ordinary meaning, <i>e.g.</i>, not indefinite and no further construction necessary. A POSITA would understand this term in light of the entire patent and claim to involve a temperature sufficient for forming desired compound using chosen reactant(s).	IQE's IPR2024-00609 and related exhibits Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

1	nucleation layer	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	buffer layer	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	group II reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and

			the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1	group III reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1, 12	group V reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1, 12	group VI reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos

			Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
3, 6	gallium reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
3, 6	aluminum reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
3	boron reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor

			Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
3	indium reactant	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
1, 12	growing / grow / grown	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Excerpts from Handbook of Semiconductor Technology (Wiley, 2000), Volumes 1 and 2 Definitions of "epitaxial" and "epitaxial growth of semiconductors" in Chambers Dictionary of Science and Technology (1999) Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in

			light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.
10	preheating said substrate in hydrogen	Plain and ordinary meaning, <i>e.g.</i> , not indefinite and no further construction necessary.	IQE's IPR2024-00609 and related exhibits Declaration and/or testimony of Dr. Konstantinos Giapis regarding the plain and ordinary meaning of the disputed term and if the patent's claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

Dated: April 9, 2024.

McKool Smith, P.C.

/s/ John B. Campbell

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**ATTORNEYS FOR PLAINTIFFS
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AND AKOUSTIS, INC.**

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the above and foregoing document has been served on all counsel of record via email on April 9, 2024.

/s/ John B. Campbell

John B. Campbell