PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT8204087

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
QORVO BIOTECHNOLOGIES, LLC	10/02/2023

RECEIVING PARTY DATA

Name:	QORVO US, INC.
Street Address:	7628 THORNDIKE ROAD
City:	GREENSBORO
State/Country:	NORTH CAROLINA
Postal Code:	27409

PROPERTY NUMBERS Total: 26

Property Type	Number
Application Number:	15334459
Application Number:	17884888
Application Number:	15334528
Application Number:	15334511
Application Number:	15334482
Application Number:	15293082
Application Number:	15357006
Application Number:	16321712
Application Number:	15377378
Application Number:	16408879
Application Number:	15293063
Application Number:	63092820
Application Number:	18245099
Application Number:	15293071
Application Number:	15293108
Application Number:	90014962
Application Number:	15293091
Application Number:	15297508
Application Number:	15380551
Application Number:	15380482

Property Type	Number
Application Number:	16466724
Application Number:	18248128
Application Number:	63045943
Application Number:	18013124
Application Number:	16119360
Application Number:	17407577

CORRESPONDENCE DATA

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Correspondent Name: BENJAMIN C. PELLETIER

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NAME OF SUBMITTER:	BENJAMIN C. PELLETIER
SIGNATURE:	/Benjamin C. Pelletier, Reg. No. 66,734/
DATE SIGNED:	10/04/2023

Total Attachments: 11

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Attachment 1

PATENT ASSIGNMENT

WHEREAS, Qorvo Biotechnologies, LLC, a U.S. company, of 14505 21st Ave. N., Suite 212, Plymouth, Minnesota 55447, U.S.A. ("**ASSIGNOR**"), owns the patents, patent applications and registrations of such patents listed in Exhibit A attached hereto and incorporated herein by this reference ("**PATENTS**"); and

WHEREAS, Qorvo US, Inc., a U.S. company, of 7628 Thorndike Road, Greensboro, North Carolina 27409, U.S.A. ("**ASSIGNEE**"), desires to acquire all of the right, title and interest of **ASSIGNOR** in, to and under the **PATENTS**.

NOW, THEREFORE, in consideration of the mutual covenants and agreements by and between **ASSIGNEE** and **ASSIGNOR**, the receipt and sufficiency of which hereby is acknowledged, **ASSIGNOR** hereby unconditionally and irrevocably assigns, conveys, delivers and transfers unto **ASSIGNEE** all right, title and interest in, to and under (i) the **PATENTS**, together with the goodwill of the business symbolized by the **PATENTS** and all rights to claim priority to any of the **PATENTS** under international conventions, treaties or otherwise, in each case to be held and enjoyed by **ASSIGNEE** for its own use and enjoyment as fully and entirely as the same would have been held and enjoyed by **ASSIGNOR** if this Patent Assignment had not been made, (ii) all royalties, fees, income, payments, and other proceeds now or hereafter due or payable to **ASSIGNOR** with respect to the **PATENTS**, (iii) all rights to causes of action and remedies related thereto (including, without limitation, all rights to sue for past, present or future infringement, misappropriation or violation of rights related to the foregoing), and (iv) any and all other rights and interests arising out of, in connection with or in relation to any of the **PATENTS**.

[Signature Pages Follow]

IN WITNESS WHEREOF, ASSIGNOR has caused this Patent Assignment to be duly executed by an authorized officer effective as of October 2, 2023.

Qorvo Biotechnologies, LLC

By: _____

Full Name: Jason Keane Givens

Capacity: Vice President

Place of Signature: Greensboro, North Carolina, USA

Sworn to and subscribed before me this 2 day of October, 2023.

My Commission expires: 6 JUNE 2028

Notary Public

GALEN M. DRAPER
NOTARY PUBLIC
Guilford County
North Carolina
My Commission Expires June 6th, 2028

[NOTARIAL SEAL]

[Signature Page to Patent Assignment]

IN WITNESS WHEREOF, ASSIGNEE has caused this Patent Assignment to be duly executed by an authorized officer effective as of October 2, 2023.

Qorvo US, Inc.

By: _____

Full Name: Jason Keane Givens

Capacity: Vice President

Place of Signature: Greensboro, North Carolina, USA

Sworn to and subscribed before me this 2 day of October, 2023.

My Commission expires: 6 JUNE 2028

Notary Public

[NOTARIAL SEAL]

GALEN M. DRAPER
NOTARY PUBLIC
Guilford County
North Carolina
My Commission Expires June 6th, 2028

[Signature Page to Patent Assignment]

Exhibit A

PATENTS

Application No.	Filing Date	Jurisdiction	Title	Patent No.
2019-507805	2/12/2019	JP	ACOUSTIC RESONATOR DEVICE WITH CONTROLLED PLACEMENT OF FUNCTIONALIZATION MATERIAL	7007362B2
15/334,459	10/26/2016	US	ACOUSTIC RESONATOR DEVICE WITH CONTROLLED PLACEMENT OF FUNCTIONALIZATION MATERIAL	11,444,595
16794125.10	2/12/2019	EP	ACOUSTIC RESONATOR DEVICE WITH CONTROLLED PLACEMENT OF FUNCTIONALIZATION MATERIAL	
201680088357.70	2/11/2019	CN	ACOUSTIC RESONATOR DEVICE WITH CONTROLLED PLACEMENT OF FUNCTIONALIZATION MATERIAL	
17/884,888	8/10/2022	US	ACOUSTIC RESONATOR DEVICE WITH CONTROLLED PLACEMENT OF FUNCTIONALIZATION MATERIAL	11,695,384
15/334,528	10/26/2016	US	ACOUSTIC RESONATOR DEVICES AND FABRICATION METHODS PROVIDING HERMETICITY AND SURFACE FUNCTIONALIZATION	US10,302,595
2018-522723	10/26/2016	JP	ACOUSTIC RESONATOR DEVICES AND FABRICATION METHODS PROVIDING HERMETICITY AND SURFACE FUNCTIONALIZATION	JP6882280

Application No.	Filing Date	Jurisdiction	Title	Patent No.
201680078230.70	10/26/2016	CN	ACOUSTIC RESONATOR DEVICES AND FABRICATION METHODS PROVIDING HERMETICITY AND SURFACE FUNCTIONALIZATION	ZL201680078230.7
19120084.90	2/27/2019	HK	ACOUSTIC RESONATOR DEVICES AND FABRICATION METHODS PROVIDING HERMETICITY AND SURFACE FUNCTIONALIZATION	1260247B
16794124.40	10/26/2016	EP	ACOUSTIC RESONATOR DEVICES AND FABRICATION METHODS PROVIDING HERMETICITY AND SURFACE FUNCTIONALIZATION	
15/334,511	10/26/2016	US	ACOUSTIC RESONATOR DEVICES AND METHODS PROVIDING PATTERNED FUNCTIONALIZATION AREAS	US10,352,904
15/334,482	10/26/2016	US	ACOUSTIC RESONATOR DEVICES AND METHODS WITH NOBLE METAL LAYER FOR FUNCTIONALIZATION	US10,267,770
15/293,082	10/13/2016	US	ACOUSTIC RESONATOR STRUCTURE WITH INCLINED C-AXIS PIEZOELECTRIC BULK AND CRYSTALLINE SEED LAYERS	US10,574,204
15/357,006	11/21/2016	US	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	US10,326,425

Application No.	Filing Date	Jurisdiction	Title	Patent No.
16810165.70	11/21/2016	NL	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	DE	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	EP	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	BE	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	PL	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	FI	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	ES	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886

Application No.	Filing Date	Jurisdiction	Title	Patent No.
16810165.70	11/21/2016	CH	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	SE	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	DK	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	AT	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	IE	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	FR	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
16810165.70	11/21/2016	IT	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886

Application No.	Filing Date	Jurisdiction	Title	Patent No.
16810165.70	11/21/2016	GB	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	EP3377886
2018-526212	11/21/2016	JP	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	6927971B2
201680079594.70	11/21/2016	CN	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	ZL201680079594.7
19120080.70	2/27/2019	HK	ACOUSTIC RESONATOR WITH REDUCED MECHANICAL CLAMPING OF AN ACTIVE REGION FOR ENHANCED SHEAR MODE RESPONSE	1260243B
16/321,712	1/29/2019	US	BAW BIOSENSOR INCLUDING HEATER AND TEMPERATURE SENSOR AND METHODS FOR USING THE SAME	11,467,126
15/377,378	12/13/2016	US	BAW SENSOR DEVICE WITH PEEL-RESISTANT WALL STRUCTURE	US10,330,642
16/408,879	5/10/2019	US	BAW SENSOR DEVICE WITH PEEL-RESISTANT WALL STRUCTURE	11,353,428
15/293,063	10/13/2016	US	DEPOSITION SYSTEM FOR GROWTH OF INCLINED C-AXIS PIEZOELECTRIC MATERIAL STRUCTURES	US9,922,809
PCT/US2021/039604	6/29/2021	WO	DETECTION OF SENSOR PASSIVATION FAILURE	

Application No.	Filing Date	Jurisdiction	Title	Patent No.
63/092,820	10/16/2020	US	HIGH PRESSURE PRE-SEED LAYER FOR ROUGHNESS CONTROL	
18/245,099	3/13/2023	US	HIGH PRESSURE PRE-SEED LAYER FOR ROUGHNESS CONTROL	
202180066442.40	10/18/2021	CN	HIGH PRESSURE PRE-SEED LAYER FOR ROUGHNESS CONTROL	
PCT/US2021/055368	10/18/2021	WO	HIGH PRESSURE PRE-SEED LAYER FOR ROUGHNESS CONTROL	
15/293,071	10/13/2016	US	METHODS FOR FABRICATING ACOUSTIC STRUCTURE WITH INCLINED C-AXIS PIEZOELECTRIC BULK AND CRYSTALLINE SEED LAYERS	US10,541,662
15/293,108	10/13/2016	US	METHODS FOR PRODUCING PIEZOELECTRIC BULK AND CRYSTALLINE SEED LAYERS OF DIFFERENT C-AXIS ORIENTATION DISTRIBUTIONS	US10,063,210
90/014,962	2/22/2022	US	METHODS FOR PRODUCING PIEZOELECTRIC BULK AND CRYSTALLINE SEED LAYERS OF DIFFERENT C-AXIS ORIENTATION DISTRIBUTIONS	
15/293,091	10/13/2016	US	MULTI-STAGE DEPOSITION SYSTEM FOR GROWTH OF INCLINED C-AXIS PIEZOELECTRIC MATERIAL STRUCTURES	US10,541,663
15/297,508	10/19/2016	US	RESONATOR STRUCTURE WITH ENHANCED REFLECTION OF SHEAR AND LONGITUDINAL MODES OF ACOUSTIC VIBRATIONS	US10,193,524

Application No.	Filing Date	Jurisdiction	Title	Patent No.
2018-520475	10/19/2016	JP	RESONATOR STRUCTURE WITH ENHANCED REFLECTION OF SHEAR AND LONGITUDINAL MODES OF ACOUSTIC VIBRATIONS	691676
19120081.50	2/27/2019	HK	RESONATOR STRUCTURE WITH ENHANCED REFLECTION OF SHEAR AND LONGITUDINAL MODES OF ACOUSTIC VIBRATIONS	120244B
16787698.60	10/19/2016	EP	RESONATOR STRUCTURE WITH ENHANCED REFLECTION OF SHEAR AND LONGITUDINAL MODES OF ACOUSTIC VIBRATIONS	
201680075266.X	10/19/2016	CN	RESONATOR STRUCTURE WITH ENHANCED REFLECTION OF SHEAR AND LONGITUDINAL MODES OF ACOUSTIC VIBRATIONS	Cn108463720b
15/380,551	12/15/2016	US	TEMPERATURE COMPENSATION AND OPERATIONAL CONFIGURATION FOR BULK ACOUSTIC WAVE RESONATOR DEVICES	US10,571,437
15/380,482	12/15/2016	US	TEMPERATURE COMPENSATION AND OPERATIONAL CONFIGURATION FOR BULK ACOUSTIC WAVE RESONATOR DEVICES	10,866,216
16/466,724	6/5/2019	US	BULK ACOUSTIC WAVE SENSOR HAVING AN OVERMODED RESONATING STRUCTURE	11,223,342
18/248,128	10/29/2021	US	ASSEMBLIES INCLUDING AN ACOUSTIC RESONATOR DEVICE AND METHODS FORMING	
PCT/US2021/057240	10/29/2021	WO	ASSEMBLIES INCLUDING AN ACOUSTIC RESONATOR DEVICE AND METHODS FORMING	
63/045,943	6/30/2020	US	SYSTEM FOR DEPOSITING PIEZOELECTRIC MATERIALS, METHODS FOR USING THE SAME, AND MATERIALS DEPOSITED WITH THE SAME	

Application No.	Filing Date	Jurisdiction	Title	Patent No.
18/013,124	12/27/2022	US	SYSTEM FOR DEPOSITING PIEZOELECTRIC MATERIALS, METHODS FOR USING THE SAME, AND MATERIALS DEPOSITED WITH THE SAME	
PCT/US2020/056792	10/22/2020	WO	SYSTEM FOR DEPOSITING PIEZOELECTRIC MATERIALS, METHODS FOR USING THE SAME, AND MATERIALS DEPOSITED WITH THE SAME	
20943116.20	12/9/2022	EP	SYSTEM FOR DEPOSITING PIEZOELECTRIC MATERIALS, METHODS FOR USING THE SAME, AND MATERIALS DEPOSITED WITH THE SAME	
202080101877.30	12/8/2022	CN	SYSTEM FOR DEPOSITING PIEZOELECTRIC MATERIALS, METHODS FOR USING THE SAME, AND MATERIALS DEPOSITED WITH THE SAME	
16/119,360	8/31/2018	US	STRUCTURES FOR DROP DISPENSING ON BAW DEVICES	11,099,157
19830508.80	1/6/2021	EP	STRUCTURES FOR DROP DISPENSING ON BAW DEVICES	
201980045073.30	1/4/2021	CN	STRUCTURES FOR DROP DISPENSING ON BAW DEVICES	
2021-500179	1/5/2021	JP	STRUCTURES FOR DROP DISPENSING ON BAW DEVICES	
17/407,577	8/20/2021	US	SENSOR WITH DROPLET RETAINING STRUCTURE	
62021038268.00	9/6/2021	HK	STRUCTURES FOR DROP DISPENSING ON BAW DEVICES	