PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5455071

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
ALEXANDER WAYNE HIETALA	03/16/2018
NADIM KHLAT	03/16/2018
MICHAEL F. ZYBURA	03/19/2018

RECEIVING PARTY DATA

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

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16373776

CORRESPONDENCE DATA

Fax Number: (877)812-1249

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent

using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 919-238-2300

Email: wperkins@wt-ip.com

Correspondent Name: WITHROW & TERRANOVA, P.L.L.C. Address Line 1: 106 PINEDALE SPRINGS WAY Address Line 4: CARY, NORTH CAROLINA 27511

ATTORNEY DOCKET NUMBER:	2867-2243D2
NAME OF SUBMITTER:	WARREN PERKINS
SIGNATURE:	/Warren Perkins/
DATE SIGNED:	04/03/2019

Total Attachments: 6

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> **PATENT REEL: 048778 FRAME: 0292**

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PATENT REEL: 048778 FRAME: 0293

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) AND ASSIGNMENT FOR SINGLE ASSIGNEE

Title of Invention	PHASED ARRAY ANTENNA SYSTEM
As the below name	ed inventor, I hereby declare that:
This declaration is	directed to: The attached application; or United States application or PCT international application number, filed on.
The above-identifi	ed application is made or authorized to be made by me.
I believe that I am application.	the original inventor or an original joint inventor of a claimed invention in the
Thereby acknowle	lge that any willful false statement made in this declaration is punishable under 18

WHEREAS, <u>Qorvo US</u>, <u>Inc.</u>, a corporation duly organized and existing under the laws of the state of Delaware and having a principal place of business at 7628 Thorndike Road, Greensboro, North Carolina, 27409 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, title, and interest in and to said invention as described in the specification executed by me concurrently herewith, and any and all Letters Patent which shall be granted therefor.

U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

NOW, THEREFORE, To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have sold, assigned, transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire right, title and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations, continuations-in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and enjoyed by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent above-mentioned and that the same are unencumbered, and that I have good right and lawful authority to sell and convey the same in the manner herein set forth.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, learned in the law, shall advise that an amendment, division, continuation, continuation-in-part, or substitution of, or any other proceeding in connection with said application, including interference proceedings, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or

PATENT REEL: 048778 FRAME: 0294 for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

IN WITNESS WHEREOF, I hereunto set my hand and seal.

LEGAL NAME OF INVENTOR

Inventor: Alexander Wayne Hietala

Signature:

Date: 10/0/01/6, 2018

DECLARATION (37 CFR L63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) AND ASSIGNMENT FOR SINGLE ASSIGNEE

	PHASED ARRAY ANTENNA SYSTEM
As the below na	med myentar, I hereby declare that:
Figis declaration	is directed to: The attached application; or United States application or PCT international application number, filed on
The above ident	ified application is made or authorized to be made by me.
Fedieve that I a application	m the original inventor or an original joint inventor of a claimed invention in the
Thereby acknow U.S.C. 1001 by	ledge that any willful false statement made in this declaration is punishable under 18 fine or imprisonment of not more than five (5) years, or both.

WHEREAS, Quivo US, Inc., a corporation duly organized and existing under the laws of the state of Delaware and having a principal place of business at 7628 Thorndike Road, Greensboro, North Carolina, 27409 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, intle, and interest in and to said invention as described in the specification executed by me concurrently herewith, and any and all Letters Patent which shall be granted therefor.

THEREFORE To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have said assigned transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire left into and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations continuations in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and emoved by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had the assignment and sale not been made.

And for the consideration aforesaid, thereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent show ementioned and that the same are unencumbered, and that I have good right and lawful authority sell and convey the same in the manner berein set forth.

the consideration aforesaid. Thereby covenant and agree to and with the said ASSIGNEE, its and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, and its successors and assigns, the law shall advise that an amendment, division, continuation, continuation-in-part, or succeeding in connection with said application, including interference climps, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all accessors or required to be done for the procurement of valid Letters Patent for said invention, or

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for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

IN WITNESS WHEREOF, I hereunto set my hand and seal.

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Inventor: Nadim Khlat-

Signature:

Date: 16" Horel 2018

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) AND ASSIGNMENT FOR SINGLE ASSIGNEE

DITACED ADDAY ANTENNIA CYCTEM

Title of

Invention	FIIASED ARRAT AINTEINIA STSTEM
As the below named	l inventor, I hereby declare that:
This declaration is d	lirected to: The attached application; or United States application or PCT international application number , filed on .
The above-identified	d application is made or authorized to be made by me.
I believe that I am that application.	he original inventor or an original joint inventor of a claimed invention in the
•	ge that any willful false statement made in this declaration is punishable under 18 or imprisonment of not more than five (5) years, or both.
	US, Inc., a corporation duly organized and existing under the laws of the state of g a principal place of business at 7628 Thorndike Road, Greensboro, North

NOW, THEREFORE, To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have sold, assigned, transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire right, title and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations, continuations-in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and enjoyed by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

Carolina, 27409 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, title, and interest in and to said invention as described in the specification executed by me concurrently

herewith, and any and all Letters Patent which shall be granted therefor.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent above-mentioned and that the same are unencumbered, and that I have good right and lawful authority to sell and convey the same in the manner herein set forth.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, learned in the law, shall advise that an amendment, division, continuation, continuation-in-part, or substitution of, or any other proceeding in connection with said application, including interference proceedings, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or

PATENT REEL: 048778 FRAME: 0298 for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

IN WITNESS WHEREOF, I hereunto set my hand and seal.

LEGAL NAME OF INVENTOR

Inventor: Michael F. Zybura

Date: 14 2018

Signature: