

## TRADEMARK ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

ETAS ID: TM558038

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT		
<b>NATURE OF CONVEYANCE:</b>	SECURITY INTEREST		
<b>CONVEYING PARTY DATA</b>			
<b>Name</b>	<b>Formerly</b>	<b>Execution Date</b>	<b>Entity Type</b>
PHONONIC, INC.		01/17/2020	Corporation: DELAWARE
<b>RECEIVING PARTY DATA</b>			
<b>Name:</b>	DOUBLE HELIX PTE LTD		
<b>Street Address:</b>	60B Orchard Road		
<b>Internal Address:</b>	#06-18 Tower 2, The Atrium@Orchard		
<b>City:</b>	Singapore		
<b>State/Country:</b>	SINGAPORE		
<b>Postal Code:</b>	238891		
<b>Entity Type:</b>	Company: SINGAPORE		
<b>PROPERTY NUMBERS Total: 4</b>			
<b>Property Type</b>	<b>Number</b>	<b>Word Mark</b>	
<b>Registration Number:</b>	5396643	PHONONIC	
<b>Registration Number:</b>	5396644	PHONONIC	
<b>Registration Number:</b>	5233629	PHONONIC	
<b>Registration Number:</b>	5233630	PHONONIC	
<b>CORRESPONDENCE DATA</b>			
<b>Fax Number:</b>			
<i>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.</i>			
<b>Phone:</b>	(858) 550-6412		
<b>Email:</b>	LORTIZ@COOLEY.COM		
<b>Correspondent Name:</b>	LISA ORTIZ		
<b>Address Line 1:</b>	C/O COOLEY LLP		
<b>Address Line 2:</b>	4401 EASTGATE MALL		
<b>Address Line 4:</b>	SAN DIEGO, CALIFORNIA 92121		
<b>ATTORNEY DOCKET NUMBER:</b>	322830-1003		
<b>NAME OF SUBMITTER:</b>	LISA ORTIZ		
<b>SIGNATURE:</b>	/LISA ORTIZ/		
<b>DATE SIGNED:</b>	01/17/2020		

CH \$115.00 5396643

**Total Attachments: 7**

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## INTELLECTUAL PROPERTY SECURITY AGREEMENT

This Intellectual Property Security Agreement is entered into as of the Effective Date by and between **DOUBLE HELIX PTE LTD**, a company formed under the laws of Singapore, as collateral agent for the Lenders (the “**Lenders**”) described in the Loan Agreement (in such capacity, “**Agent**”) and **PHONONIC, INC.**, a Delaware corporation (“**Grantor**”).

### RECITALS

A. Lenders have agreed to make certain advances of money and to extend certain financial accommodation to Grantor (the “**Loans**”) in the amounts and manner set forth in that certain Loan and Security Agreement by and between Agent, the Lenders and Grantor dated the Effective Date (as the same may be amended, modified or supplemented from time to time, the “**Loan Agreement**”; capitalized terms used herein are used as defined in the Loan Agreement). The Lenders are willing to make the Loans to Grantor, but only upon the condition, among others, that Grantor shall grant to Agent, for the benefit of the Lenders, a security interest in certain Copyrights, Trademarks, Patents, and Mask Works to secure the obligations of Grantor under the Loan Agreement.

B. Pursuant to the terms of the Loan Agreement, Grantor has granted to Agent, for the benefit of the Lenders, a security interest in all of Grantor’s right, title and interest, whether presently existing or hereafter acquired, in, to and under all of the Collateral.

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, and intending to be legally bound, as collateral security for the prompt and complete payment when due of its obligations under the Loan Agreement, Grantor hereby represents, warrants, covenants and agrees as follows:

### AGREEMENT

To secure its obligations under the Loan Agreement, Grantor grants and pledges to Agent, for the benefit of the Lenders, a security interest in all of Grantor’s right, title and interest in, to and under its Intellectual Property Collateral (including without limitation those Copyrights, Patents and Trademarks listed on Exhibits A, B and C hereto), and including without limitation all proceeds thereof (such as, by way of example but not by way of limitation, license royalties and proceeds of infringement suits), the right to sue for past, present and future infringements, all rights corresponding thereto throughout the world and all re-issues, divisions continuations, renewals, extensions and continuations-in-part thereof; provided, that notwithstanding the foregoing, Intellectual Property Collateral shall not include (a) intent-to-use trademarks at all times prior to the first use thereof, whether by the actual use thereof in commerce, the recording of a statement of use with the United States Patent and Trademark office or otherwise, or (b) rights held under a license that are not assignable by their terms without the consent of the licensor thereof (but only to the extent such restriction on assignment is enforceable under applicable law).

This security interest is granted in conjunction with the security interest granted to Agent, for the benefit of the Lenders, under the Loan Agreement. The rights and remedies of Agent with respect to the security interest granted hereby are in addition to those set forth in the Loan Agreement and the other Loan Documents, and those which are now or hereafter available to Agent, for the benefit of the Lenders, as a matter of law or equity. Each right, power and remedy of Agent provided for herein or in the Loan Agreement or any of the Loan Documents, or now or hereafter existing at law or in equity shall be cumulative and concurrent and shall be in addition to every right, power or remedy provided for herein and the exercise by Agent of any one or more of the rights, powers or remedies provided for in this Intellectual Property Security Agreement, the Loan Agreement or any of the other Loan Documents, or now or hereafter existing at law or in equity, shall not preclude the simultaneous or later exercise by any person, including Lender, of any or all other rights, powers or remedies.

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IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the first date written above.

GRANTOR:

Address of Grantor:  
Capitola Drive  
Suite 7  
Durham, North Carolina 27713  
Attn: Tom Werthan, CFO

**PHONONIC, INC.**

By: Anthony Atti

Name: Anthony Atti

Title: President and Chief Executive Officer

AGENT:

Address of Agent:  
60B Orchard Road  
#06-18 Tower 2  
The Atrium@Orchard  
Singapore 238891  
Attn: Ravi Balasubramanian

**DOUBLE HELIX PTE LTD**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the first date written above.

GRANTOR:

Address of Grantor:  
Capitola Drive  
Suite 7  
Durham, North Carolina 27713  
Attn: Tom Werthan, CFO

PHONONIC, INC.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

AGENT:

Address of Agent:  
60B Orchard Road  
#06-18 Tower 2  
The Atrium@Orchard  
Singapore 238891  
Attn: Ravi Balasubramanian

DOUBLE HELIX PTE LTD

By:  \_\_\_\_\_

Name: Rohit Sobti

Title: Authorized Signatory

EXHIBIT A

Copyrights

None.

EXHIBIT B

Patents



Title	Application No. Application Date	(Publication No.) Patent No. Issue Date
Thin-film heterostructure thermoelectrics in a group IIa and IV-VI materials system	13404548 2012-02-24	8901612 2014-12-02
Thin-film heterostructure thermoelectrics in a group IIA and IV-VI materials system	13416246 2012-03-09	8563844 2013-10-22
Low resistivity contact	13565960 2012-08-03	8564129 2013-10-22
Systems and methods to mitigate heat leak back in a thermoelectric refrigeration system	13867519 2013-04-22	9310111 2016-04-12
Parallel thermoelectric heat exchange systems	13867589 2013-04-22	8991194 2015-03-31
Thermoelectric refrigeration system control scheme for high efficiency performance	13888791 2013-05-07	10012417 2018-07-03
Thermoelectric heat exchange system comprising cascaded cold side heat sinks	13888799 2013-05-07	9341394 2016-05-17
Two-phase heat exchanger mounting	13888833 2013-05-07	9234682 2016-01-12
Physically separated hot side and cold side heat sinks in a thermoelectric refrigeration system	13888820 2013-05-07	9103572 2015-08-11
Thermoelectric heat exchanger component including protective heat spreading lid and optimal thermal interface resistance	13888847 2013-05-07	8893513 2014-11-25
Enhanced Heat Transport Systems For Cooling Chambers And Surfaces	14486652 2014-09-15	(20150075184)
Thermoelectric heat pump with a surround and spacer (SAS) structure	14525843 2014-10-28	9144180 2015-09-22
Low resistivity ohmic contact	14599123 2015-01-16	9218979 2015-12-22
Thermoelectric heat pump	29515980 2015-01-28	D816198 2018-04-24
Mechanism for mitigating high heat-flux conditions in a thermosiphon evaporator or condenser	14610554 2015-01-30	9746247 2017-08-29
High-efficiency power conversion architecture for driving a thermoelectric cooler in energy conscious applications	14733270 2015-06-08	9581362 2017-02-28
Integration Of Thermosiphon Tubing Into Accept Heat Exchanger	14817319 2015-08-04	(20160018139)
Systems and methods for mitigating heat rejection limitations of a thermoelectric module	14849232 2015-09-09	10458683 2019-10-29
Systems and methods for operating a thermoelectric module to increase efficiency	14849177 2015-09-09	9593871 2017-03-14
Hybrid Heat Transfer System	14959408 2015-12-04	(20160161155)

Title	Application No. Application Date	(Publication No.) Patent No. Issue Date
Hybrid Vapor Compression/Thermoelectric Heat Transport System	15293622 2016-10-14	(20170108254)
Hybrid fan assembly and active heating pumping system	15298357 2016-10-20	9683752 2017-06-20
Cooled fan for micro-climate control	15628066 2017-06-20	10473345 2019-11-12
Multi Header For Thermoelectric Device	15628218 2017-06-20	(20170365767)
Transistor Outline (To) Can Package With Integrated Thermoelectric Cooler	15710101 2017-09-20	(20190089126)
Thermoelectric heat pump	29621713 2017-10-11	D833588 2018-11-13
Thermoelectric heat pump	29621710 2017-10-11	D825723 2018-08-14
Solid-State Switch Architecture For Multi-Mode Operation Of A Thermoelectric Device	15915638 2018-03-08	(20180259231)
Thermoelectric Heat Pump Cascade Using Multiple Printed Circuit Boards With Thermoelectric Modules	15917282 2018-03-09	(20180261748)



EXHIBIT C

Trademarks

Mark	International Class(es)	Application No. Filing Date	Registration No. Registration Date
PHONONIC	7, 9, 11	86160377 08-JAN-2014	5396643 06-FEB-2018
PHONONIC 	7, 9, 11	86160408 08-JAN-2014	5396644 06-FEB-2018
PHONONIC	7, 9, 11	86981106 08-JAN-2014	5233629 27-JUN-2017
PHONONIC 	7, 9, 11	86981107 08-JAN-2014	5233630 27-JUN-2017