

## TRADEMARK ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

ETAS ID: TM554330

<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>
HARMONIC INC.		12/19/2019	Corporation: DELAWARE
<b>RECEIVING PARTY DATA</b>			
<b>Name:</b>	JPMORGAN CHASE BANK, N.A.		
<b>Street Address:</b>	237 Park Avenue		
<b>Internal Address:</b>	6th Floor		
<b>City:</b>	New York		
<b>State/Country:</b>	NEW YORK		
<b>Postal Code:</b>	10017		
<b>Entity Type:</b>	National Banking Association: UNITED STATES		
<b>PROPERTY NUMBERS Total: 15</b>			
<b>Property Type</b>	<b>Number</b>	<b>Word Mark</b>	
<b>Registration Number:</b>	4080367	ACE	
<b>Registration Number:</b>	5433621	ELECTRA	
<b>Registration Number:</b>	4996204	HARMONIC	
<b>Registration Number:</b>	4063623	HECTOQAM	
<b>Registration Number:</b>	4070977	IRIS	
<b>Registration Number:</b>	2455906	OO	
<b>Registration Number:</b>	4411511	PROMEDIA	
<b>Registration Number:</b>	3678344	PROSTREAM	
<b>Registration Number:</b>	3504027	RHOZET	
<b>Registration Number:</b>	5401846	VOS	
<b>Registration Number:</b>	3717355	VIBE	
<b>Registration Number:</b>	3635994	HARMONIC	
<b>Serial Number:</b>	87335808	CABLEOS	
<b>Serial Number:</b>	87762396	ELECTRA XOS	
<b>Serial Number:</b>	88241782	HARMONIC	
<b>CORRESPONDENCE DATA</b>			
<b>Fax Number:</b>	2147455390		
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent</i>			
<b>TRADEMARK</b>			

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

**Phone:** 2147455612  
**Email:** ngraham@winstead.com  
**Correspondent Name:** Nancy Graham c/o WINSTEAD PC  
**Address Line 1:** 2728 N. Harwood Street  
**Address Line 2:** Suite 500  
**Address Line 4:** Dallas, TEXAS 75201

<b>ATTORNEY DOCKET NUMBER:</b>	13312.673
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<b>NAME OF SUBMITTER:</b>	Nancy Graham
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<b>SIGNATURE:</b>	/Nancy Graham/
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<b>DATE SIGNED:</b>	12/20/2019
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**Total Attachments: 13**

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## INTELLECTUAL PROPERTY SECURITY AGREEMENT

This INTELLECTUAL PROPERTY SECURITY AGREEMENT (as it may be amended, restated, supplemented or otherwise modified from time to time, this “Agreement”) is entered into as of December 19, 2019 by and among HARMONIC INC., a Delaware corporation (the “Company”), each of its undersigned Domestic Subsidiaries party hereto (together with the Company, collectively, the “Grantors”, and each a “Grantor”), and JPMORGAN CHASE BANK, N.A. (the “Lender”), on behalf of the Lender and the other Secured Parties.

### BACKGROUND

The Grantors, the other Loan Parties party thereto, and the Lender are entering into a Credit Agreement dated as of the date hereof (as it may be amended, restated, supplemented or otherwise modified from time to time, the “Credit Agreement”).

In connection with the Credit Agreement, the Grantors executed and delivered that certain Pledge and Security Agreement dated as of the date hereof (as it may be amended, restated, supplemented or otherwise modified from time to time, the “Security Agreement”) in favor of the Lender, on behalf of the Secured Parties, pursuant to which the Grantors are required to execute and deliver this Agreement.

Each Grantor is entering into this Agreement in order to induce the Lender to enter into and extend credit to the Borrower under the Credit Agreement and to secure the Secured Obligations that it has agreed to guarantee pursuant to Article IX of the Credit Agreement.

ACCORDINGLY, the Grantors and the Lender, on behalf of the Secured Parties, hereby agree as follows:

### ARTICLE I DEFINITIONS; OTHER TERMS

1.1 Terms Defined in Credit Agreement. All capitalized terms used herein and not otherwise defined shall have the meanings assigned to such terms in the Credit Agreement.

1.2 Terms Defined in UCC. Capitalized terms used herein which are defined in the UCC and which are not otherwise defined in this Agreement are used herein as defined in the UCC.

1.3 Definitions of Certain Terms Used Herein. As used in this Agreement, in addition to the terms defined elsewhere herein, the following terms shall have the following meanings:

“Collateral” has the meaning assigned to it by Section 2.1 hereof.

“Copyrights” means, with respect to any Grantor, all of such Grantor’s right, title, and interest in and to the following: (a) all copyrights, rights and interests in copyrights, works protectable by copyright, copyright registrations, and copyright applications; (b) all renewals of any of the foregoing; (c) all income, royalties, damages, and payments now or hereafter due and/or payable under any of the foregoing, including, without limitation, damages or payments for past or future infringements for any of the foregoing; (d) the right to sue for past, present, and future infringements of any of the foregoing; and (e) all rights corresponding to any of the foregoing throughout the world.

“Licenses” means, with respect to any Grantor, all of such Grantor’s right, title, and interest in and to the following: (a) any and all licensing agreements or similar arrangements in and to its Patents,

Copyrights, or Trademarks, (b) all income, royalties, damages, claims, and payments now or hereafter due or payable under and with respect thereto, including, without limitation, damages and payments for past and future breaches thereof, and (c) all rights to sue for past, present, and future breaches thereof.

“Patents” means, with respect to any Grantor, all of such Grantor’s right, title, and interest in and to the following: (a) any and all patents and patent applications; (b) all inventions and improvements described and claimed therein; (c) all reissues, divisions, continuations, renewals, extensions, and continuations-in-part thereof; (d) all income, royalties, damages, claims, and payments now or hereafter due or payable under and with respect thereto, including, without limitation, damages and payments for past and future infringements thereof; (e) all rights to sue for past, present, and future infringements thereof; and (f) all rights corresponding to any of the foregoing throughout the world.

“Section” means a numbered section of this Agreement, unless another document is specifically referenced.

“Trademarks” means, with respect to any Grantor, all of such Grantor’s right, title, and interest in and to the following: (a) all trademarks (including service marks), trade names, trade dress, and trade styles and the registrations and applications for registration thereof and the goodwill of the business symbolized by the foregoing; (b) all licenses of the foregoing, whether as licensee or licensor; (c) all renewals of the foregoing; (d) all income, royalties, damages, and payments now or hereafter due or payable with respect thereto, including, without limitation, damages, claims, and payments for past and future infringements thereof; (e) all rights to sue for past, present, and future infringements of the foregoing, including the right to settle suits involving claims and demands for royalties owing; and (f) all rights corresponding to any of the foregoing throughout the world.

“UCC” means the Uniform Commercial Code, as in effect from time to time, of the State of New York or of any other state the laws of which are required as a result thereof to be applied in connection with the attachment, perfection or priority of, or remedies with respect to, Lender’s Lien on any Collateral.

## ARTICLE II GRANT OF SECURITY INTEREST

2.1 Grant of Security Interest. Each Grantor hereby pledges and grants to the Lender, on behalf of and for the benefit of the Secured Parties, a security interest in all of its right, title and interest in, to and under all of its now owned or existing and hereafter acquired or arising property described as follows (collectively, the “Collateral”) to secure the prompt and complete payment and performance of the Secured Obligations:

- (a) all Copyrights, including, without limitation, those listed on Exhibit A hereto;
- (b) all Trademarks, including, without limitation, those listed on Exhibit B hereto;
- (c) all Licenses;
- (d) all Patents, including, without limitation, those listed on Exhibit C hereto; and
- (e) all accessions to, substitutions for and replacements, proceeds, insurance proceeds and products of the foregoing, together with all books and records, customer lists, credit files, computer files, programs, printouts and other computer materials and records related thereto and any general intangibles at any time evidencing or relating to any of the foregoing.

Notwithstanding anything herein to the contrary, in no event shall the Collateral include, and no Grantor shall be deemed to have granted a security interest in the Excluded Assets.

2.2 Security Agreement. The security interest granted pursuant to this Agreement is granted in conjunction with the Lien granted to the Lender, on behalf of the Secured Parties, pursuant to the Security Agreement, and each Grantor hereby acknowledges and affirms that the rights and remedies of the Lender with respect to the Lien on the Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Agreement is deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall control; provided, however, a more expansive or explanatory term or provision shall not be deemed a conflict.

### **ARTICLE III MISCELLANEOUS**

3.1 Benefit of Agreement. The terms and provisions of this Agreement shall be binding upon and inure to the benefit of the Grantors, the Lender, the other Secured Parties and their respective successors and assigns, except that no Grantor shall have the right to assign its rights or delegate its obligations under this Agreement or any interest herein, without the prior written consent of the Lender. No sales of participations, assignments, transfers, or other dispositions of any agreement governing the Secured Obligations or any portion thereof or interest therein shall in any manner impair the Lien granted to the Lender, for the benefit of the Lender and the other Secured Parties, hereunder.

3.2 Survival of Representations. All representations and warranties of the Grantors contained in this Agreement shall survive the execution and delivery of this Agreement.

3.3 Headings. The title of and section headings in this Agreement are for convenience of reference only, and shall not govern the interpretation of any of the terms and provisions of this Agreement.

3.4 Entire Agreement. This Agreement and the other Loan Documents embody the entire agreement and understanding between the Grantors and the Lender relating to the Collateral and supersedes all prior agreements and understandings between the Grantors and the Lender relating to the Collateral.

3.5 Counterparts. This Agreement may be executed in any number of counterparts, all of which taken together shall constitute one agreement, and any of the parties hereto may execute this Agreement by signing any such counterpart. Delivery of an executed counterpart of a signature page of this Agreement by facsimile or other electronic transmission shall be effective as delivery of a manually executed counterpart of this Agreement.

3.6 CHOICE OF LAW. THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE INTERNAL LAWS OF THE STATE OF NEW YORK, BUT GIVING EFFECT TO FEDERAL LAWS APPLICABLE TO NATIONAL BANKS.

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IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed by their respective duly authorized representatives as of the date first set forth above.

GRANTORS:

HARMONIC INC.

By:   
Name: Sanjay Kalra  
Title: Chief Financial Officer

LENDER:

JPMORGAN CHASE BANK, N.A.

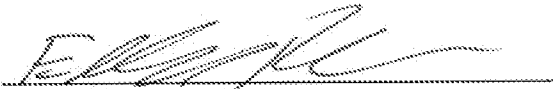
By:   
Name: Eleftherios Karsos  
Title: Authorized Officer

EXHIBIT A  
COPYRIGHTS

None.



EXHIBIT B  
TRADEMARKS

<b>Registered Trademark</b>	<b>Registration Number</b>
ACE	4080367
ELECTRA	5433621
HARMONIC	4996204
HECTOQAM	4063623
IRIS	4070977
OO Design	2455906
PROMEDIA	4411511
PROSTREAM	3678344
RHOZET	3504027
VOS	5401846
VIBE	3717355
XMS	3158867
HARMONIC	3635994

<b>Trademark Application</b>	<b>Application Number</b>
cableOS	87/335808
ELECTRA XOS	87/762396
HARMONIC	88/241782

EXHIBIT C

PATENTS

Title	Patent No.	Issue Date
System and a method for an ultra-low delay MPEG-syntax video	6,784,811	8/31/2004
Transcoder System for Compressed Digital Video Bitstreams	6,961,377	11/1/2005
Partial Bitstream Transcoder System for Compressed Digital	7,079,578	7/18/2006
System and method for re-multiplexing multiple video streams	7,308,003	12/11/2007
Message Synchronization Over a Stochastic Network	7,660,366	2/9/2010
Message Synchronization Over a Stochastic Network	8,396,159 B2	3/12/2013
Method and Apparatus for One Directional Communications in Bidirectional Communications Channel	7,342,884	3/11/2008
Clock Recovery In A Packet-Based Data Network	6,574,225	6/3/2003
Isochronous Queue and Buffer Management	7,006,515	2/28/2006
Method and Apparatus to Eliminate Audible Clicking Transients When Switching Audio Streams	6,696,996	2/24/2004
Method of Distributing Video Reference Signals as Isochronous Network Packets	6,522,649	2/18/2003
Method of Generating Timestamps for Isochronous Data	7,496,098	2/24/2009
Method of Generating Timestamps for Isochronous Data	6,895,009	5/17/2005
Multi-Node Computer System Component Proactive Monitoring and Proactive Repair	7,721,157	5/18/2010
Shared File System Having A Token Ring Style Protocol for Managing Meta-Data	6,665,675	12/16/2003
System and Method for Automatic Media Track Routing	7,581,016	8/25/2009
Tightly Coupled Secondary Storage System and File System	6,571,351	5/27/2003
Traffic Scheduler for A First Tier Switch of a Two-Tier Switch	6,643,702	11/4/2003
Video Retiming Through Dynamic Fifo Sizing	6,545,721	4/8/2003
Idempotent Journal Mechanism for File System	7,809,778	10/5/2010
Video Abnormality Detection	7,876,355	1/25/2011
Notification for a Distributed File System	7,941,455	5/10/2011
Real Time Bit Rate Switching for Internet Protocol Television	7,979,885	7/12/2011

<b>Title</b>	<b>Patent No.</b>	<b>Issue Date</b>
Method for Optimizing the Forward Error Correction Scheme	8,037,392	10/11/2011
Directed Placement of Data in a Redundant Data Storage System	8,103,628	1/24/2012
Methods and System for Efficient Data Transfer over Hybrid Fiber Coax Infrastructure	8,064,479	11/22/2011
AVC to SVC Transcoder	8,121,191	2/21/2012
H.264/AVC Based Approach to Scalable Video Compression	8,170,121	5/1/2012
Transcoding for a Distributed File System	8,266,182	9/11/2012
Method for Optimizing the Forward Error Correction Scheme	8,423,872	4/16/2013
System and Method for Adaptive Video Compression Motion Compensation	8,228,991	7/24/2012
Techniques for Use of a System-Unique Identifier In An Architecture Having A File System Utilizing Distributed Metadata Servers	8,478,873	7/2/2013
Directed Placement of Data in a Redundant Data Storage System	8,504,571	8/6/2013
Message Synchronization Over a Stochastic Network	8,750,409	6/10/2014
Systems and Methods for Segmenting and Communicating Video Data	8,867,608	10/21/2014
H.264/AVC Based Approach to Scalable Video Compression	8,867,624	10/21/2014
Modification and Distribution of Video Content	8,910,202	12/9/2014
Advanced Video Coding to Multiview Video Coding Transcoder	9,288,497	3/15/2016
Digital Up Converter	9,031,142	5/12/2015
System and Method for Routing and Up-Converting Narrowband Channels	9,112,761	8/18/2015
Browsing and Viewing Vide Assets Using TV Set-Top Box	9,185,351	11/10/2015
System and Method for Feedback Based Traffic Management	9,319,326	4/19/2016
System and Method for Video Statistical Multiplexing Adapting to Internet Protocol Networks	9,307,298	4/5/2016
System for Switching Between Power Supply Units	9,391,455	7/12/2016
Multi-slice/tile Encoder with Overlapping Spatial Sections (as amended)	9,554,131	1/24/2017
Logo Detection for Macroblock-based Video Processing	9,542,611	1/10/2017

Title	Patent No.	Issue Date
System, method, computer program product, and apparatus for automatically ensuring consistency between program and system information protocol tables and program specific information tables in a digital television stream	7,971,220	6/28/2011
Procédé Et Dispositif D'analyse D'images/Device and Method for Analyzing Images by Calculating the Variance of Each Pixel of A High Frequency Image	8,437,403	5/7/2013
Appareil Et Methode Pour La Regulation De Debit/Device and Process for Regulating Bit Rate in System for the Statistical Multiplexing of Image Streams Coded According to the Mpeg2 Coding	6,654,416	11/25/2003
Device and process for coding video images by motion compensation	7,379,604	5/27/2008
Procédé de contrôle synchronisé d'une pluralité/Synchronized Control Method of a Plurality of Formatting Equipment and Streamformatting Equipment	8,335,234	12/18/2012
Device and Method for Recoding A Video Data Stream	7,907,666	3/15/2011
Device and Method for Multiplexing Associated With A Coding Device	7,561,568	7/14/2009
Method for Processing a Channel Request in an Iptv System	8,464,308	6/11/2013
Scrambling and Descrambling Method for the Transport of MPEG2 Audio Video Data Streams	8,879,893	11/4/2014
Method for formatting a video stream for mobile terminals/Procédé de formatage d'un flex video pour	9,432,707	8/30/2016
System and method for the transmission of data and streams containing video data D.sub.video in a channel with given bitrate	9,467,719	10/11/2016
Device and Method for Composing Programmes from Different Sources in Baseband/Dispositif et procédé de composition de programmes de sources différentes en bande de base	9,693,095	6/27/2017
System and method for feedback-based traffic management	9,749,248	8/29/2017
Smart Small Form-Factor (SFP) Pluggable Transceiver	9,769,500	9/19/2017
Clock Recovery for Video Encoding/Transcoding Applications	9,769,514	9/19/2017
Adaptive pre-filtering based on video complexity and output bit rate	9,787,987	10/10/2017
A Network Personal Video Recorder Utilizing Personal Digital Storage	9,930,391	3/27/2018
Video encoding using adaptive pre-filtering	9,955,160	4/24/2018

<b>Title</b>	<b>Patent No.</b>	<b>Issue Date</b>
Virtual Converged Cable Access Platform (CCAP) Core	10,020,962	7/10/2018
System and method for feedback-based traffic management	10,063,485	8/28/2018
Controlling Speed of the Display of Sub-Titles	10,063,933	8/28/2018
Obtaining Internet Protocol Subnet Scope	10,063,455	8/28/2018
Dynamic allocation of cpu cycles in video stream processing	10,104,405	10/16/2018
Watermarks in distributed construction of video on demand (vod) files	10,091,561	10/2/2018
Failure recovery for real-time audio and video encoding, decoding, and transcoding	10,097,823	10/9/2018
Method of adaptive broadcasting of multimedia streams using an energy index/procede de diffusion adaptative de flux multimedia en utilisant un indice d'energie	10,097,889	10/9/2018
System and method for distribution of broadcast channels	10,103,927	10/16/2018
Determining a computing capacity of one of a physical or a virtual machine	10,133,605	11/20/2018
High bit rate media FEC recovery	10,211,950	2/19/2019
Scheduler of processes having timed predictions of computing loads	10,216,541	2/26/2019
Bandwidth saving with programmable redistribution	10,291,544	5/14/2019
Controlling Speed of the Display of Sub-Titles	10,299,009	5/21/2019
Video stream splicing	10,313,719	6/4/2019
Method for dynamically adapting the encoding of an audio/or video stream transmitted to a device	10,341,686	7/2/2019
Controlling modes of sub-title presentation	10,341,631	7/2/2019
Multi representation edge server with enhanced open-gop compression	10,356,448	7/16/2019
Ensuring a target average bit rate in a multiplexed environment	10,356,452	7/16/2019
Dynamically Segregating Sources of Ingress at a Node	10,404,585	9/3/2019
Multi-channel variable bit-rate video compression	10,412,424	9/10/2019
Remote Radio Frequency (AGC) Loop	10,419,066	9/17/2019

<b>Patent Application No.</b>	<b>File Date</b>
15/686,541	8/25/17
14/935,791	11/9/15
15/049,066	2/20/16

Patent Application No.	File Date
15/049,051	2/20/16
15/096,614	4/12/16
15/373,235	12/8/16
16/284,881	2/25/19
16/028,195	7/5/18
16/019,390	6/26/18
15/644,789	7/9/17
15/645,741	7/10/17
15/644,823	7/10/17
15/699,544	9/8/17
15/707,411	9/18/17
15/847,099	12/19/17
15/847,029	12/19/17
15/846,989	12/19/17
15/846,926	12/19/17
16/266,621	2/4/19
16/372,952	4/2/19
16/054,979	8/3/18
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16/113,433	8/27/18
16/132,136	9/14/18
62/740,582	10/3/18
16/153,415	10/5/18
16/155,687	10/9/18
16/155,715	10/9/18
16/160,918	10/15/18
62/752,921	10/30/18
16/197,124	11/20/18
16/206,908	11/30/18
16/212,278	12/6/18
62/794,904	1/21/19
62/794,847	1/21/19
62/802,446	2/7/19
62/806,250	2/15/19
62/814,716	3/6/19
62/817,388	3/12/19
62/825,211	3/28/19
16/376,581	4/5/19
16/410,721	5/13/19
62/849,039	5/16/19
62/862,302	6/17/19
62/877,682	7/23/19
16/551,444	8/26/19
62/893,625	8/29/19
62/898,416	9/10/19
62/898,432	9/10/19
16/657,909	10/18/19
16/660,479	10/22/19

<b>Patent Application No.</b>	<b>File Date</b>
16/660,571	10/22/19
16/666,913	10/29/19
62/930,201	11/4/19
62/933,183	11/8/19