

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4178878

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| BASSEL F. BEIDAS | 12/08/2016 |
| ROHIT IYER SESHADRI | 12/08/2016 |
| LIN-NAN LEE | 12/08/2016 |
| LIPING CHEN | 12/08/2016 |
| RECEIVING PARTY DATA | |
| Name: | HUGHES NETWORK SYSTEMS, LLC |
| Street Address: | 11717 EXPLORATION LANE |
| City: | GERMANTOWN |
| State/Country: | MARYLAND |
| Postal Code: | 20876 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 15374418 |
| CORRESPONDENCE DATA | |
| Fax Number: | |
| <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> | |
| Phone: | 313-528-4882 |
| Email: | docket@b2iplaw.com |
| Correspondent Name: | BEJIN BIENEMAN PLC |
| Address Line 1: | 300 RIVER PLACE |
| Address Line 2: | SUITE 1650 |
| Address Line 4: | DETROIT, MICHIGAN 48207 |
| ATTORNEY DOCKET NUMBER: | 2016-08-03(01146-0021) |
| NAME OF SUBMITTER: | MICHAEL J. MCCANDLISH |
| SIGNATURE: | /Michael J. McCandlish/ |
| DATE SIGNED: | 12/09/2016 |
| Total Attachments: 7 | |
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**ASSIGNMENT AND AGREEMENT IN AN APPLICATION FOR
LETTERS PATENT OF THE UNITED STATES OF AMERICA**

WHEREAS, Bassel F. Beidas residing at 1220 North Pegasus Street, Alexandria, VA 22304, Rohit Iyer Seshadri residing at 821 Summer Walk Dr, Gaithersburg, MD 20878, Lin-Nan Lee residing at 10004 Flower Gate Terrace, Potomac, MD 20854 and Liping Chen residing at 6800 Tammy Ct, Bethesda, MD 20817 (hereinafter, singularly and collectively "Assignor") has solely and/or have jointly (as appropriate) invented and/or discovered certain new and useful invention, process, machine, manufacture, or composition of matter, or any new and useful improvement in an invention as described in an application for Letters Patent entitled "SATELLITE TRANSMISSION INCLUDING NARROWBAND INTERFERENCE ERASURE" filed in and/or with the United States Patent and Trademark Office on _____, and which has been assigned Application Serial Number _____ and which is further identified by the EchoStar Docket No. set forth above (hereinafter, the "Invention"); and

WHEREAS, Hughes Network Systems, LLC a limited liability company organized and existing under the laws of the State of Delaware, United States of America and having a principal place of business of 11717 Exploration Lane, Germantown, Maryland 20876 (hereinafter, the "Assignee") desires to acquire all rights, title and interest in and to the Invention, including, but not limited to, all rights, title and interest in and to past, present and future damages, injunctive relief and to any and all other additional rights, title, interest, relief and/or remedies granted by any legislative, judicial, quasi-judicial, administrative or other body, or otherwise; and

WHEREAS, Assignor, to the extent they own any right, title and interest in and to the Invention are desirous of assigning any and all such rights, title and/or interest to Assignee.

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor hereby sells, assigns, transfers and sets over unto Assignee and its legal representatives, successor and assigns, the entire right, title and interest, including any all rights in and/or to past, present and future damages, injunctive relief and/or any other remedy and relief granted by a legislative, judicial, quasi-judicial or administrative body, in and to said Invention, said application, for any and all non-provisional, national, international, foreign, and regional applications corresponding and/or claiming priority thereto, any divisions, continuations, continuation-in-parts, reissues, reexaminations, renewals, and extensions thereof, and the Letters Patent, both foreign and domestic, that may or shall issue thereon, and does request the Commissioner of Patents to issue said Letters Patent to the Assignee, consistent with the terms of this agreement.

Assignor hereby authorizes Assignee to insert in this instrument the filing date and Application Serial Number in the above fields if not already present at the time of execution of this instrument.

Assignor hereby declares that he/she is the sole inventor (if only one inventor is named herein) or an original, first and joint inventor (if plural inventors are named herein) of the Invention.

UPON SAID CONSIDERATION, Assignor hereby covenants and agrees with Assignee that they will not execute any writing or do any act whatsoever conflicting with these presents, and agrees

that, when requested, he/she will, without charge to Assignee but at its expense, execute such additional assignments, declarations and other writings and do such additional acts as said Assignee may deem necessary or desirable to perfect the Assignee's enjoyment of this grant, and render all necessary assistance in making application for and obtaining original, continuation, continuation-in-part, divisional, renewal, reissued or extended Letters Patent of the United States, or of any and all foreign countries, on said invention, and in enforcing any rights or chooses in action accruing as a result of such applications or patents, by giving testimony in any proceedings or transactions involving such applications or patents, and by executing preliminary statements and other affidavits, it being understood that the foregoing covenant and agreement shall bind, and inure to the benefit of, the assigns and legal representatives of both parties.

Assignor agrees that he/she will communicate to Assignee or its representatives any facts known to Assignor respecting said inventions within a reasonable time of discovering or coming into possession of the same.

Assignor authorizes and empowers Assignee, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in Assignor's name, in any and all countries to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from me.

Assignor hereby consent that a copy of this Assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of Assignee or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aforesaid benefits of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

Assignor covenants with Assignee, its successors, assigns, legal representatives, and nominees, that to the best of Assignor's knowledge the right, title and interest herein conveyed are free and clear of any encumbrance, and that Assignor has the full right to convey the same as herein expressed.

This Agreement and Assignment supersedes all other assignments, agreements and addendums related to the above-identified application.

After this Assignment has been recorded, please return it to:

Attn: Cory Myers
Legal Department
EchoStar Technologies L.L.C.
100 Inverness Terrace East
Englewood, CO 80112

JOINT

Inventor (1): Bassel F. Beidas
(Name)

[Signature]
(Signature in Full)

On this 8th day of December, 2016, before me a notary public in and for the county of Montgomery in the State of Maryland, appeared **BASSEL F. BEIDAS**, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he signed, seals and delivered the same instrument as a free and voluntary act for the use and purposes therein set forth.

[Signature]

My Commission Expires: _____

Notary Public

LINDA L. HARRIS

(Seal)

NOTARY PUBLIC STATE OF MARYLAND
MONTGOMERY COUNTY

My Commission Expires August 30, 2017

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| JOINT | |
| Inventor (2): <u>Rohit Iyer Seshadri</u> | <u>Rohit Iyer Seshadri</u> |
| (Name) | (Signature in Full) |
| <p>On this <u>8th</u> day of <u>December</u>, 2016, before me a notary public in and for the county of <u>Montgomery</u> in the State of <u>Maryland</u>, appeared ROHIT IYER SESHADRI, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he signed, seals and delivered the same instrument as a free and voluntary act for the use and purposes therein set forth.</p> | |
| <p><u>Linda D. Harris</u></p> <p>My Commission Expires: <u>LINDA D. HARRIS</u> (Seal)</p> <p>Notary Public <u>NOTARY PUBLIC STATE OF MARYLAND</u></p> <p><u>MONTGOMERY COUNTY</u></p> <p><u>My Commission Expires August 30, 2017</u></p> | |

JOINT

Inventor (3): Lin-Nan Lee
(Name)

Lin-Nan Lee
(Signature in Full)

On this 8th day of December, 2016, before me a notary public in and for the county of Montgomery in the State of Maryland, appeared LIN-NAN LEE, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he signed, seals and delivered the same instrument as a free and voluntary act for the use and purposes therein set forth.

Gloria Jean Allen
My Commission Expires: March 04, 2017
Notary Public

GLORIA JEAN ALLEN
Notary Public-Maryland
Montgomery County
My Commission Expires
March 04, 2017

JOINT

Inventor (4): Liping Chen
(Name)

Liping Chen
(Signature in Full)

On this 8th day of December, 2016, before me a notary public in and for the county of Montgomery in the State of Maryland, appeared **LIPING CHEN**, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he signed, sealed and delivered the same instrument as a free and voluntary act for the use and purposes therein set forth.

Gloria Jean Allen
My Commission Expires: March 04, 2017
Notary Public

GLORIA JEAN ALLEN
Notary Public-Maryland
Montgomery County
My Commission Expires
March 04, 2017

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| Assignee: | <u>Cory L. Myers</u> | <u>Cory L. Myers</u> |
| | (Name) | (Signature in Full) |
| State of | <u>Maryland</u> | |
| County of | <u>Montgomery</u> | |
| The foregoing instrument was acknowledged before me this <u>8</u> day of <u>December</u> 2016 by Cory L. Myers, Intellectual Property Counsel of Hughes Network Systems, LLC, a Delaware limited liability company, on behalf of the corporation. | | |
| <u>Gloria Jean Allen</u> | | <div style="border: 1px solid black; padding: 5px; text-align: center;">GLORIA JEAN ALLEN Notary Public-Maryland Montgomery County My Commission Expires March 08, 2017</div> |
| My Commission Expires: <u>March 4, 2017</u> | | |
| Notary Public | | |