

PATENT ASSIGNMENT

Electronic Version v1.1  
Stylesheet Version v1.1

| SUBMISSION TYPE:                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NEW ASSIGNMENT               |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------|------------------------------|---------------------|-----------------------------|---------------|------------|-----------------|------------|--------------|------------|--------------|------------|------------------|------------|-------------|------------|
| NATURE OF CONVEYANCE:                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ASSIGNMENT                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| CONVEYING PARTY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| <table border="1"><thead><tr><th>Name</th><th>Execution Date</th></tr></thead><tbody><tr><td>Robert J.V. Jackson</td><td>06/24/2010</td></tr><tr><td>Tianhua Zhang</td><td>06/23/2010</td></tr><tr><td>Moutaz Elkaissi</td><td>06/23/2010</td></tr><tr><td>Hao Nguyen</td><td>06/23/2010</td></tr><tr><td>Jorge Sotelo</td><td>06/23/2010</td></tr><tr><td>Wendell Blackman</td><td>06/23/2010</td></tr><tr><td>Greg Goldey</td><td>06/24/2010</td></tr></tbody></table> |                              | Name          | Execution Date               | Robert J.V. Jackson | 06/24/2010                  | Tianhua Zhang | 06/23/2010 | Moutaz Elkaissi | 06/23/2010 | Hao Nguyen   | 06/23/2010 | Jorge Sotelo | 06/23/2010 | Wendell Blackman | 06/23/2010 | Greg Goldey | 06/24/2010 |
| Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Execution Date               |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Robert J.V. Jackson                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 06/24/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Tianhua Zhang                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 06/23/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Moutaz Elkaissi                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 06/23/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Hao Nguyen                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 06/23/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Jorge Sotelo                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 06/23/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Wendell Blackman                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 06/23/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Greg Goldey                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 06/24/2010                   |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| RECEIVING PARTY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| <table border="1"><tr><td>Name:</td><td>EchoStar Technologies L.L.C.</td></tr><tr><td>Street Address:</td><td>100 Inverness Terrace Court</td></tr><tr><td>City:</td><td>Englewood</td></tr><tr><td>State/Country:</td><td>COLORADO</td></tr><tr><td>Postal Code:</td><td>80112</td></tr></table>                                                                                                                                                                        |                              | Name:         | EchoStar Technologies L.L.C. | Street Address:     | 100 Inverness Terrace Court | City:         | Englewood  | State/Country:  | COLORADO   | Postal Code: | 80112      |              |            |                  |            |             |            |
| Name:                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | EchoStar Technologies L.L.C. |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Street Address:                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 100 Inverness Terrace Court  |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| City:                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Englewood                    |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| State/Country:                                                                                                                                                                                                                                                                                                                                                                                                                                                           | COLORADO                     |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Postal Code:                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 80112                        |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| PROPERTY NUMBERS Total: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| <table border="1"><thead><tr><th>Property Type</th><th>Number</th></tr></thead><tbody><tr><td>Application Number:</td><td>12823789</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                             |                              | Property Type | Number                       | Application Number: | 12823789                    |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Property Type                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Number                       |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Application Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12823789                     |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| CORRESPONDENCE DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Fax Number: (303)629-3450<br><i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>                                                                                                                                                                                                                                                                                                                                                        |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Phone: 303-629-3435                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Email: brown.valerie@dorsey.com                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Correspondent Name: Valerie H. Brown                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Address Line 1: 370 17th Street                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Address Line 2: Suite 4700                                                                                                                                                                                                                                                                                                                                                                                                                                               |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| Address Line 4: Denver, COLORADO 80202                                                                                                                                                                                                                                                                                                                                                                                                                                   |                              |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |
| ATTORNEY DOCKET NUMBER:                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 216743/US                    |               |                              |                     |                             |               |            |                 |            |              |            |              |            |                  |            |             |            |

CH \$40.00 12823789

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PATENT  
REEL: 024596 FRAME: 0724

NAME OF SUBMITTER:

Valerie H. Brown

Total Attachments: 6

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**ASSIGNMENT AND AGREEMENT IN AN APPLICATION FOR  
LETTERS PATENT OF THE UNITED STATES OF AMERICA**

WHEREAS, we, Robert J.V. Jackson, Tianhua Zhang, Moutaz Elkaissi, Hao Nguyen, Jorge Sotelo, Wendell Blackman and Greg Goldey (hereinafter, singularly and collectively "Assignor") have solely invented and/or discovered a 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 "Signal Degradation Detection," filed in and/or with the United States Patent and Trademark Office on June 25, 2010, and which has been assigned Application Serial Number 12/823,789, and which is further identified by the EchoStar Docket No. set forth above (hereinafter, the "Invention"); and

WHEREAS, EchoStar Technologies L.L.C., a limited liability company organized and existing under the laws of the State of Texas, United States of America and having a principal place of business of 100 Inverness Terrace East, Englewood, Colorado 80112 (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 he owns any right, title and interest in and to the Invention is 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 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 is an original, first and joint inventor of the Invention.

UPON SAID CONSIDERATION, Assignor hereby covenants and agrees with Assignee that he 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 choses in action accruing as a result of such applications or patents, by giving testimony in any proceedings or transactions involving 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 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 consents 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: John T. Kennedy  
DISH Network L.L.C.  
Legal Department  
9601 S. Meridian Blvd.  
Englewood, CO 80112

**JOINT**

Inventor (1): Robert J.V. Jackson  
(Name)

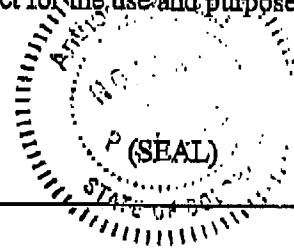
[Signature]  
(Signature in Full)

Citizenship: United States of America  
Post Office Address: 4955 South Inca Drive  
Englewood, Colorado 80110

Residence: Englewood, Colorado

On this 24<sup>th</sup> day of June, 2010, before me a notary public in and for the county of Adams in the State of Colorado, appeared Robert J.V. Jackson, 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.

Anthony Medina  
My Commission Expires: 12/14/2013  
Notary Public



**JOINT**

Inventor (2): Tianhua Zhang  
(Name)

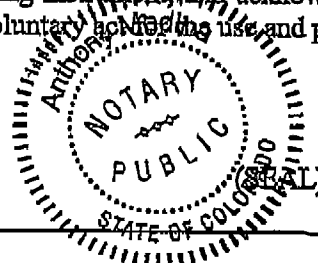
[Signature]  
(Signature in Full)

Citizenship: People's Republic of China  
Post Office Address: 3016 Gardenia Way  
Superior, Colorado 80027

Residence: Superior, Colorado

On this 23<sup>rd</sup> day of June, 2010, before me a notary public in and for the county of Adams in the State of Colorado, appeared Tianhua Zhang, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that she signed, seals and delivered the same instrument as a free and voluntary act for the use and purposes therein set forth.

Anthony Medina  
My Commission Expires: 12/14/2013  
Notary Public



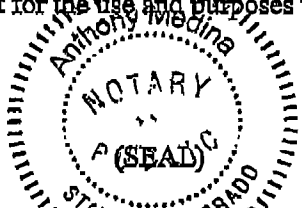
**JOINT**  
 Inventor (3): Moutaz Elkaissi  
 (Name) (Signature in Full) [Signature]

Citizenship: United States of America  
 Post Office Address: 3165 Kedleston Avenue  
 Highlands Ranch, Colorado 80126

Residence: Highlands Ranch, Colorado

On this 23<sup>RD</sup> day of June, 2010, before me a notary public in and for the county of Arapahoe in the State of Colorado, appeared Moutaz Elkaissi, 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.

Anthony Medina  
 My Commission Expires: 12/16/2013  
 Notary Public



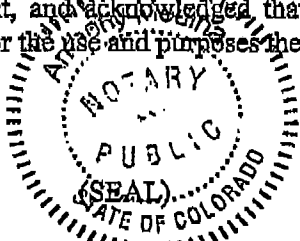
**JOINT**  
 Inventor (4): Hao Nguyen  
 (Name) (Signature in Full) [Signature]

Citizenship: United States of America  
 Post Office Address: 6535 West Brown Place  
 Denver, Colorado 80227

Residence: Denver, Colorado

On this 23<sup>RD</sup> day of June, 2010, before me a notary public in and for the county of Arapahoe in the State of Colorado, appeared Hao Nguyen, 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.

Anthony Medina  
 My Commission Expires: 12/16/2013  
 Notary Public



JOINT

Inventor (5): Jorge Sotelo  
(Name)

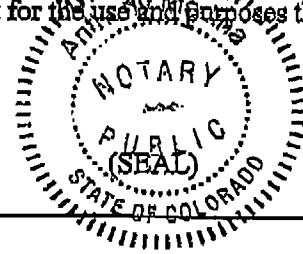
[Signature]  
(Signature in Full)

Citizenship: United States of America  
Post Office Address: 7660 East Harvard Avenue, Apt. #104  
Denver, Colorado 80231

Residence: Denver, Colorado

On this 23<sup>rd</sup> day of June, 2010, before me a notary public in and for the county of Wapahoe in the State of Colorado, appeared Jorge Sotelo, 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.

Anthony Medina  
My Commission Expires: 12/16/2013  
Notary Public



JOINT

Inventor (6): Wendell Blackman  
(Name)

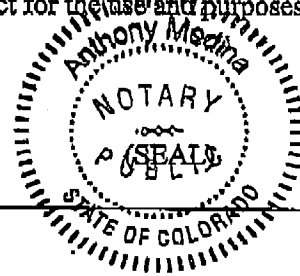
[Signature]  
(Signature in Full)

Citizenship: United States of America  
Post Office Address: 2615 Steele Street  
Denver, Colorado 80205

Residence: Denver, Colorado

On this 23<sup>rd</sup> day of June, 2010, before me a notary public in and for the county of Wapahoe in the State of Colorado, appeared Wendell Blackman, 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.

Anthony Medina  
My Commission Expires: 12/16/2013  
Notary Public



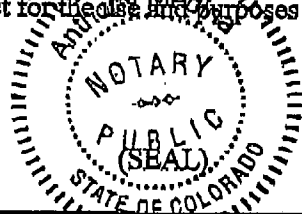
JOINT  
Inventor (7): Greg Goldey [Signature]  
(Name) (Signature in Full)

Citizenship: United States of America  
Post Office Address: 7737 Yorkshire Drive  
Castle Rock, Colorado 80108

Residence: Castle Rock, Colorado

On this 24<sup>th</sup> day of June, 2010, before me a notary public in and for the county of DeWapah in the State of Colorado, appeared Greg Goldey, 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 uses and purposes therein set forth.

Anthony Medina  
My Commission Expires: 12/16/2013  
Notary Public



4832-3070-7206\1