

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5902810

|   |  |                       |
|---|--|-----------------------|
| <b>SUBMISSION TYPE:</b>   | NEW ASSIGNMENT   |                       |
| <b>NATURE OF CONVEYANCE:</b>  | ASSIGNMENT   |                       |
| <b>CONVEYING PARTY DATA</b>   |  |                       |
|   | <b>Name</b>  | <b>Execution Date</b> |
|   | DONNA L. POLEHN  | 01/27/2017            |
|   | FRED WEISBROD  | 01/27/2017            |
| <b>RECEIVING PARTY DATA</b>   |  |                       |
| <b>Name:</b>  | VERIZON PATENT AND LICENSING INC.                          |                       |
| <b>Street Address:</b>  | ONE VERIZON WAY  |                       |
| <b>City:</b>  | BASKING RIDGE  |                       |
| <b>State/Country:</b>   | NEW JERSEY   |                       |
| <b>Postal Code:</b>   | 07920  |                       |
| <b>PROPERTY NUMBERS Total: 1</b>  |  |                       |
|   | <b>Property Type</b>                                       | <b>Number</b>         |
|   | Application Number:  | 16738239              |
| <b>CORRESPONDENCE DATA</b>  |  |                       |
| <b>Fax Number:</b>  | (703)439-2658  |                       |
| <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>   | 5712970007   |                       |
| <b>Email:</b>   | pto@snyderllp.com  |                       |
| <b>Correspondent Name:</b>  | SNYDER, CLARK, LESCH & CHUNG, LLP                          |                       |
| <b>Address Line 1:</b>  | 205 VAN BUREN STREET SUITE 110                             |                       |
| <b>Address Line 4:</b>  | HERNDON, VIRGINIA 20170                                    |                       |
| <b>ATTORNEY DOCKET NUMBER:</b>  | 20160811D1   |                       |
| <b>NAME OF SUBMITTER:</b>   | JI-YONG D. CHUNG   |                       |
| <b>SIGNATURE:</b>   | /Ji-Yong D. Chung, Reg. No. 54,805/                        |                       |
| <b>DATE SIGNED:</b>   | 01/09/2020   |                       |
|   | This document serves as an Oath/Declaration (37 CFR 1.63). |                       |
| <b>Total Attachments: 2</b>   |  |                       |
| source=20160811_s_Dec_Assign_0021_1343#page1.tif  |  |                       |
| source=20160811_s_Dec_Assign_0021_1343#page2.tif  |  |                       |

**DECLARATION AND ASSIGNMENT  
FOR PATENT APPLICATION**

Patent Application Title: OPTICALLY CONTROLLED META-MATERIAL PHASED ARRAY ANTENNA SYSTEM

the patent application for which:

☒ is being filed concurrently herewith, Application Number to be assigned by the USPTO, or  
☐ was filed on \_\_\_\_\_ as United States Application Number \_\_\_\_\_ or PCT International Application  
 Number \_\_\_\_\_.

Declaration of Inventor

As the below named inventor, I hereby declare that:

- the above-identified application was made or authorized to be made by me;
- I believe that I am the original inventor or an original joint inventor of a claimed invention in the above-referenced application; and
- I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both.

Inventor Assignment Acknowledgement

For good and valuable consideration, the receipt of which is hereby acknowledged, I agree as follows:

A. I hereby assign to the Verizon legal entity identified below ("Assignee"), including its successors and assigns, my entire worldwide right, title and interest in and to any and all inventions and other ideas described in the above-identified patent application, as well as in and to said application and all divisional, continuing (in whole or in part), substitute, renewal, reissue, provisional or other applications or registrations for Letters Patent which have been or shall be filed in the United States and all foreign countries based on any of said inventions or ideas, or based on or claiming priority to said application; and in and to all original and reissued Letters Patent which have been or shall be issued in the United States and foreign countries from any of said applications or registrations; and in and to all rights of priority resulting from the filing of any of said applications or registrations (all collectively, the "Patent Rights"). Letters Patent as used herein shall include, without limitation, patents, utility models, industrial designs, and any other form of industrial property recognized under the Paris Convention for the Protection of Industrial Property.

B. I agree (i) that Assignee may apply for and receive Letters Patent based on the Patent Rights in its own name; (ii) that I will execute all rightful oaths, declarations, assignments, powers of attorney and other papers related to the Patent Rights when requested by Assignee (or its successors and/or assigns) without compensation (but at Assignee's expense); (iii) that I appoint Assignee (acting through its representatives) as my attorney-in-fact, such appointment being irrevocable and coupled with the interest in the Patent Rights, with full authority in my place and stead and in my name to take any action and to execute any document which Assignee may deem reasonably necessary or advisable to accomplish the purposes of this assignment, including the execution and filing of the papers identified in part (ii) in my name where permitted by law; (iv) to communicate to Assignee, its successors, assigns, representatives and agents, all facts known to me relating to said Patent Rights and the history thereof; and (v) to generally do everything which Assignee, its successors, assigns, representatives or agents shall consider desirable for aiding in securing and maintaining proper protection for said Patent Rights and for vesting title to said Patent Rights in Assignee, its successors and assigns.

C. I covenant with Assignee, its successors and assigns, that no assignment, grant, mortgage, license, or other agreement affecting the Patent Rights has been made to others by me, and that full right to convey the same as set forth herein is possessed by me.

ASSIGNEE: Verizon Patent and Licensing Inc., a Delaware Corporation with a place of business at One Verizon  
Way, Basking Ridge, NJ 07920 US

IN WITNESS to my agreement to the foregoing Declaration of Inventor and Inventor Assignment Acknowledgement, I have executed as set forth below:

Full legal name of Inventor: Donna L. Polchn

Address: 6224 Lakeview Drive, Kirkland, WA 98033

Signature:  Date: 1/27/2017

**DECLARATION AND ASSIGNMENT  
FOR PATENT APPLICATION**

Patent Application Title: OPTICALLY CONTROLLED META-MATERIAL PHASED ARRAY ANTENNA SYSTEM

the patent application for which:

- ☒ is being filed concurrently herewith, Application Number to be assigned by the USPTO, or  
☐ was filed on \_\_\_\_\_ as United States Application Number \_\_\_\_\_ or PCT International Application  
 Number \_\_\_\_\_.

Declaration of Inventor

As the below named inventor, I hereby declare that:

- the above-identified application was made or authorized to be made by me;
- I believe that I am the original inventor or an original joint inventor of a claimed invention in the above-referenced application; and
- I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both.

Inventor Assignment Acknowledgement

For good and valuable consideration, the receipt of which is hereby acknowledged, I agree as follows:

A. I hereby assign to the Verizon legal entity identified below ("Assignee"), including its successors and assigns, my entire worldwide right, title and interest in and to any and all inventions and other ideas described in the above-identified patent application, as well as in and to said application and all divisional, continuing (in whole or in part), substitute, renewal, reissue, provisional or other applications or registrations for Letters Patent which have been or shall be filed in the United States and all foreign countries based on any of said inventions or ideas, or based on or claiming priority to said application; and in and to all original and reissued Letters Patent which have been or shall be issued in the United States and foreign countries from any of said applications or registrations; and in and to all rights of priority resulting from the filing of any of said applications or registrations (all collectively, the "Patent Rights"). Letters Patent as used herein shall include, without limitation, patents, utility models, industrial designs, and any other form of industrial property recognized under the Paris Convention for the Protection of Industrial Property.

B. I agree (i) that Assignee may apply for and receive Letters Patent based on the Patent Rights in its own name; (ii) that I will execute all rightful oaths, declarations, assignments, powers of attorney and other papers related to the Patent Rights when requested by Assignee (or its successors and/or assigns) without compensation (but at Assignee's expense); (iii) that I appoint Assignee (acting through its representatives) as my attorney-in-fact, such appointment being irrevocable and coupled with the interest in the Patent Rights, with full authority in my place and stead and in my name to take any action and to execute any document which Assignee may deem reasonably necessary or advisable to accomplish the purposes of this assignment, including the execution and filing of the papers identified in part (ii) in my name where permitted by law; (iv) to communicate to Assignee, its successors, assigns, representatives and agents, all facts known to me relating to said Patent Rights and the history thereof; and (v) to generally do everything which Assignee, its successors, assigns, representatives or agents shall consider desirable for aiding in securing and maintaining proper protection for said Patent Rights and for vesting title to said Patent Rights in Assignee, its successors and assigns.

C. I covenant with Assignee, its successors and assigns, that no assignment, grant, mortgage, license, or other agreement affecting the Patent Rights has been made to others by me, and that full right to convey the same as set forth herein is possessed by me.

ASSIGNEE: Verizon Patent and Licensing Inc., a Delaware Corporation with a place of business at One Verizon Way, Basking Ridge, NJ 07920 US

IN WITNESS to my agreement to the foregoing Declaration of Inventor and Inventor Assignment Acknowledgement, I have executed as set forth below:

Full legal name of Inventor: Fred Weisbrod

Address: 301 Pasco Drive NE, Renton, WA 98059

Signature:  Date: 1/27/17