504370910 05/17/2017

PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
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| NATURE OF CONVEYANCE: | EXECUTIVE ORDER 9424, CONFIRMATORY LICENSE |

CONVEYING PARTY DATA

| Name | Execution Date |
|-------------------------|----------------|
| UNIVERSITY OF MINNESOTA | 05/11/2017 |

RECEIVING PARTY DATA

| Name: | National Science Foundation |
|-------------------|-----------------------------|
| Street Address: | 4201 Wilson Blvd |
| Internal Address: | Room 1265 |
| City: | Arlington |
| State/Country: | VIRGINIA |
| Postal Code: | 22230 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15492916 |

CORRESPONDENCE DATA

Fax Number: (703)292-9041

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.

Email: nsfpatents@nsf.gov

Correspondent Name: NATIONAL SCIENCE FOUNDATION

Address Line 1: 4201 WILSON BLVD

Address Line 2: ROOM 1265

Address Line 4: ARLINGTON, VIRGINIA 22230

| NAME OF SUBMITTER: | DANA THIBODEAU |
|--------------------|----------------|
| SIGNATURE: | /DMT/ |
| DATE SIGNED: | 05/17/2017 |

Total Attachments: 1 source=3417#page1.tif

PATENT 504370910 REEL: 042483 FRAME: 0239

U/M Case #: 20140302 EIR #: 1450401-14-0070

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|---|
| Invention Title: Channel Tracking and Transmit Beamforming with Frugal Feedback |
| Inventor(s): Omar A Mehanna, Nicholas D Sidiropoulos |
| U.S. Filing/Issue Date: 04/20/2017 |
| Patent or Application Serial No.: 15/492,916 |
| Grant/Contract Number(s): ECCS1231504, AST1247885 |
| Foreign Applications filed/intended in (countries): |
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