

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3931177

|   |                               |
|---|-------------------------------|
| <b>SUBMISSION TYPE:</b>   | NEW ASSIGNMENT                |
| <b>NATURE OF CONVEYANCE:</b>  | ASSIGNMENT                    |
| <b>CONVEYING PARTY DATA</b>   |                               |
| <b>Name</b>   | <b>Execution Date</b>         |
| QING ZHAO   | 03/18/2014                    |
| YAKUN SUN   | 08/04/2014                    |
| YI-LING CHAO  | 03/17/2014                    |
| LEILEI SONG   | 03/17/2014                    |
| HUI-LING LOU  | 10/28/2014                    |
| <b>RECEIVING PARTY DATA</b>   |                               |
| <b>Name:</b>  | MARVELL SEMICONDUCTOR, INC.   |
| <b>Street Address:</b>  | 5488 MARVELL LANE             |
| <b>City:</b>  | SANTA CLARA                   |
| <b>State/Country:</b>   | CALIFORNIA                    |
| <b>Postal Code:</b>   | 95054                         |
| <b>PROPERTY NUMBERS Total: 1</b>  |                               |
| <b>Property Type</b>  | <b>Number</b>                 |
| <b>Application Number:</b>  | 14218876                      |
| <b>CORRESPONDENCE DATA</b>  |                               |
| <b>Fax Number:</b>  | (408)222-2755                 |
| <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>   | 408-222-2500                  |
| <b>Email:</b>   | sherir@marvell.com            |
| <b>Correspondent Name:</b>  | KELVIN VIVIAN                 |
| <b>Address Line 1:</b>  | 5488 MARVELL LANE             |
| <b>Address Line 4:</b>  | SANTA CLARA, CALIFORNIA 95054 |
| <b>ATTORNEY DOCKET NUMBER:</b>  | MP5093                        |
| <b>NAME OF SUBMITTER:</b>   | KELVIN VIVIAN                 |
| <b>SIGNATURE:</b>   | /Kelvin Vivian/               |
| <b>DATE SIGNED:</b>   | 06/22/2016                    |
| <b>Total Attachments: 8</b>   |                               |
| source=MP5093 Executed Assignment INVS-MSI#page1.tif  |                               |

source=MP5093 Executed Assignment INVS-MSI#page2.tif  
source=MP5093 Executed Assignment INVS-MSI#page3.tif  
source=MP5093 Executed Assignment INVS-MSI#page4.tif  
source=MP5093 Executed Assignment INVS-MSI#page5.tif  
source=MP5093 Executed Assignment INVS-MSI#page6.tif  
source=MP5093 Executed Assignment INVS-MSI#page7.tif  
source=MP5093 Executed Assignment INVS-MSI#page8.tif

## ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned,

**Qing Zhao, Yakun Sun, Yi-Ling Chao, Leilei Song, and Hui-Ling Lou**

who have created a certain invention for which an application for United States Letters Patent was executed by me concurrently herewith and entitled:

**IN-DEVICE COEXISTENCE OF WIRELESS COMMUNICATION TECHNOLOGIES**

Do hereby sell, assign and transfer to Marvell Semiconductor, Inc., a corporation of California, having a place of business at 5488 Marvell Lane, Santa Clara, CA 95054, its successors, assigns, and legal representatives, the full and exclusive right to said invention and said application and to any and all inventions described in said application for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Do hereby further sell, assign and transfer to Marvell Semiconductor, Inc., its successors, assigns, and legal representatives, the full and exclusive right to United States Provisional Patent Application No. 61/802,901, filed March 18, 2013, entitled "Puncture of Interfered DL Subframes to Facilitate IDC," and to any and all inventions described in said provisional patent application(s) for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be entitled to the benefit thereof in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Agree that Marvell Semiconductor, Inc., hereinafter referred to as Assignee, may apply for and receive Letters Patent for said invention and said inventions, hereinafter referred to as said invention, in its own name, in the United States, its territorial possessions, and all foreign countries; and that, when requested to carry out in good faith the intent and purpose of this assignment, at the expense of said Assignee, its successors, assigns and legal representatives, the undersigned will execute all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, execute all rightful oaths, assignments, powers of attorney and other papers, testify in any legal or quasi legal proceedings; communicate to said Assignee, its successors, assigns or legal representatives all facts known to the undersigned relating to said invention and the history thereof; and generally do everything possible which said Assignee, its successors, assigns, or legal representatives shall consider desirable for aiding in securing, maintaining and enforcing proper patent protection for said invention and for vesting title to said invention and all applications for patents on said invention in said Assignee, its successors, assigns, or legal representatives; and

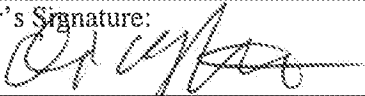
Covenant with said Assignee, its successors, assigns, or legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

IN TESTIMONY WHEREOF I have hereunto set MY signature on the date indicated below.

Full Name of First Inventor:

Qing Zhao

Inventor's Signature:



Date: Month/Day/Year

3-18-2014

Full Name of Second Inventor:

Yakun Sun

Inventor's Signature:

Date: Month/Day/Year

Full Name of Third Inventor:

Yi-Ling Chao

Inventor's Signature:

Date: Month/Day/Year

Full Name of Fourth Inventor:

Leilei Song

Inventor's Signature:

Date: Month/Day/Year

Full Name of Fifth Inventor:

Hui-Ling Lou

Inventor's Signature:

Date: Month/Day/Year

**ASSIGNMENT**

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned,

**Qing Zhao, Yakun Sun, Yi-Ling Chao, Leilei Song, and Hui-Ling Lou**

who have created a certain invention for which an application for United States Letters Patent was executed by me concurrently herewith and entitled:

**IN-DEVICE COEXISTENCE OF WIRELESS COMMUNICATION TECHNOLOGIES**

Do hereby sell, assign and transfer to Marvell Semiconductor, Inc., a corporation of California, having a place of business at 5488 Marvell Lane, Santa Clara, CA 95054, its successors, assigns, and legal representatives, the full and exclusive right to said invention and said application and to any and all inventions described in said application for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

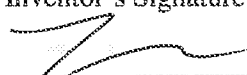
Do hereby further sell, assign and transfer to Marvell Semiconductor, Inc., its successors, assigns, and legal representatives, the full and exclusive right to United States Provisional Patent Application No. 61/802,901, filed March 18, 2013, entitled "Puncture of Interfered DL Subframes to Facilitate IDC," and to any and all inventions described in said provisional patent application(s) for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be entitled to the benefit thereof in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Agree that Marvell Semiconductor, Inc., hereinafter referred to as Assignee, may apply for and receive Letters Patent for said invention and said inventions, hereinafter referred to as said invention, in its own name, in the United States, its territorial possessions, and all foreign countries; and that, when requested to carry out in good faith the intent and purpose of this assignment, at the expense of said Assignee, its successors, assigns and legal representatives, the undersigned will execute all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, execute all rightful oaths, assignments, powers of attorney and other papers, testify in any legal or quasi legal proceedings; communicate to said Assignee, its successors, assigns or legal representatives all facts known to the undersigned relating to said invention and the history thereof; and generally do everything possible which said Assignee, its successors, assigns, or legal representatives shall consider desirable for aiding in securing, maintaining and enforcing proper patent protection for said invention and for vesting title to said invention and all applications for patents on said invention in said Assignee, its successors, assigns, or legal representatives; and

Covenant with said Assignee, its successors, assigns, or legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

IN TESTIMONY WHEREOF I have hereunto set MY signature on the date indicated below.

|   |                      |
|---|----------------------|
| Full Name of First Inventor:<br>Qing Zhao |                      |
| Inventor's Signature:                     | Date: Month/Day/Year |

|  |                                |
|--|--------------------------------|
| Full Name of Second Inventor:<br>Yakun Sun   |                                |
| Inventor's Signature:<br> | Date: Month/Day/Year<br>8/4/14 |

|  |                      |
|--|----------------------|
| Full Name of Third Inventor:<br>Yi-Ling Chao |                      |
| Inventor's Signature:                        | Date: Month/Day/Year |

|  |                      |
|--|----------------------|
| Full Name of Fourth Inventor:<br>Leilei Song |                      |
| Inventor's Signature:                        | Date: Month/Day/Year |

|  |                      |
|--|----------------------|
| Full Name of Fifth Inventor:<br>Hui-Ling Lou |                      |
| Inventor's Signature:                        | Date: Month/Day/Year |

**ASSIGNMENT**

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned,

**Qing Zhao, Yakun Sun, Yi-Ling Chao, Leilei Song, and Hui-Ling Lou**

who have created a certain invention for which an application for United States Letters Patent was executed by me concurrently herewith and entitled:

**IN-DEVICE COEXISTENCE OF WIRELESS COMMUNICATION TECHNOLOGIES**

Do hereby sell, assign and transfer to Marvell Semiconductor, Inc., a corporation of California, having a place of business at 5488 Marvell Lane, Santa Clara, CA 95054, its successors, assigns, and legal representatives, the full and exclusive right to said invention and said application and to any and all inventions described in said application for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Do hereby further sell, assign and transfer to Marvell Semiconductor, Inc., its successors, assigns, and legal representatives, the full and exclusive right to United States Provisional Patent Application No. 61/802,901, filed March 18, 2013, entitled "Puncture of Interfered DL Subframes to Facilitate IDC," and to any and all inventions described in said provisional patent application(s) for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be entitled to the benefit thereof in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

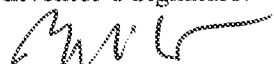
Agree that Marvell Semiconductor, Inc., hereinafter referred to as Assignee, may apply for and receive Letters Patent for said invention and said inventions, hereinafter referred to as said invention, in its own name, in the United States, its territorial possessions, and all foreign countries; and that, when requested to carry out in good faith the intent and purpose of this assignment, at the expense of said Assignee, its successors, assigns and legal representatives, the undersigned will execute all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, execute all rightful oaths, assignments, powers of attorney and other papers, testify in any legal or quasi legal proceedings; communicate to said Assignee, its successors, assigns or legal representatives all facts known to the undersigned relating to said invention and the history thereof; and generally do everything possible which said Assignee, its successors, assigns, or legal representatives shall consider desirable for aiding in securing, maintaining and enforcing proper patent protection for said invention and for vesting title to said invention and all applications for patents on said invention in said Assignee, its successors, assigns, or legal representatives; and


Covenant with said Assignee, its successors, assigns, or legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

IN TESTIMONY WHEREOF I have hereunto set MY signature on the date indicated below.

|                              |                      |
|------------------------------|----------------------|
| Full Name of First Inventor: |                      |
| Qing Zhao                    |                      |
| Inventor's Signature:        | Date: Month/Day/Year |
|                              |                      |

|                               |                      |
|-------------------------------|----------------------|
| Full Name of Second Inventor: |                      |
| Yakun Sun                     |                      |
| Inventor's Signature:         | Date: Month/Day/Year |
|                               |                      |

|   |                      |
|---|----------------------|
| Full Name of Third Inventor:  |                      |
| Yi-Ling Chao  |                      |
| Inventor's Signature:   | Date: Month/Day/Year |
|  | 3/17/2014            |

|   |                      |
|---|----------------------|
| Full Name of Fourth Inventor:   |                      |
| Leilei Song   |                      |
| Inventor's Signature:   | Date: Month/Day/Year |
|  | 3/17/2014            |

|                              |                      |
|------------------------------|----------------------|
| Full Name of Fifth Inventor: |                      |
| Hui-Ling Lou                 |                      |
| Inventor's Signature:        | Date: Month/Day/Year |
|                              |                      |



**ASSIGNMENT**

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned,

**Qing Zhao, Yakun Sun, Yi-Ling Chao, Leilei Song, and Hui-Ling Lou**

who have created a certain invention for which an application for United States Letters Patent was executed by me concurrently herewith and entitled:

**IN-DEVICE COEXISTENCE OF WIRELESS COMMUNICATION TECHNOLOGIES**

Do hereby sell, assign and transfer to Marvell Semiconductor, Inc., a corporation of California, having a place of business at 5488 Marvell Lane, Santa Clara, CA 95054, its successors, assigns, and legal representatives, the full and exclusive right to said invention and said application and to any and all inventions described in said application for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Do hereby further sell, assign and transfer to Marvell Semiconductor, Inc., its successors, assigns, and legal representatives, the full and exclusive right to United States Provisional Patent Application No. 61/802,901, filed March 18, 2013, entitled "Puncture of Interfered DL Subframes to Facilitate IDC," and to any and all inventions described in said provisional patent application(s) for the United States, its territorial possessions and all foreign countries, and the entire right, title and interest in and to any and all Letters Patent which may be entitled to the benefit thereof in the United States, its territorial possessions and all foreign countries; and in and to any and all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, and all other applications for Letters Patent relating thereto which have been or shall be filed in the United States, its territorial possessions and/or any foreign countries, and all rights, together with all priority rights, under any of the international conventions, unions, agreements, acts, and treaties, including all future conventions, unions, agreements, acts, and treaties;

Agree that Marvell Semiconductor, Inc., hereinafter referred to as Assignee, may apply for and receive Letters Patent for said invention and said inventions, hereinafter referred to as said invention, in its own name, in the United States, its territorial possessions, and all foreign countries; and that, when requested to carry out in good faith the intent and purpose of this assignment, at the expense of said Assignee, its successors, assigns and legal representatives, the undersigned will execute all continuations-in-part, continuations, divisions, substitutes, reissues, extensions thereof, execute all rightful oaths, assignments, powers of attorney and other papers, testify in any legal or quasi legal proceedings; communicate to said Assignee, its successors, assigns or legal representatives all facts known to the undersigned relating to said invention and the history thereof; and generally do everything possible which said Assignee, its successors, assigns, or legal representatives shall consider desirable for aiding in securing, maintaining and enforcing proper patent protection for said invention and for vesting title to said invention and all applications for patents on said invention in said Assignee, its successors, assigns, or legal representatives; and

Covenant with said Assignee, its successors, assigns, or legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

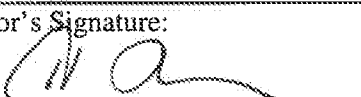
IN TESTIMONY WHEREOF I have hereunto set MY signature on the date indicated below.

|   |                      |
|---|----------------------|
| Full Name of First Inventor:<br>Qing Zhao |                      |
| Inventor's Signature:                     | Date: Month/Day/Year |

|  |                      |
|--|----------------------|
| Full Name of Second Inventor:<br>Yakun Sun |                      |
| Inventor's Signature:                      | Date: Month/Day/Year |

|  |                      |
|--|----------------------|
| Full Name of Third Inventor:<br>Yi-Ling Chao |                      |
| Inventor's Signature:                        | Date: Month/Day/Year |

|  |                      |
|--|----------------------|
| Full Name of Fourth Inventor:<br>Leilei Song |                      |
| Inventor's Signature:                        | Date: Month/Day/Year |

|  |                                  |
|--|----------------------------------|
| Full Name of Fifth Inventor:<br>Hui-Ling Lou   |                                  |
| Inventor's Signature:<br> | Date: Month/Day/Year<br>10/28/14 |