

02-19-2002

MH-5091



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10/057179
01/25/02
U.S. PTO

To the Assistant Commissioner for Patents: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):
 Xiaoqiang Ma, Hisashi Kobayashi,
 Stuart C. Schwartz, Daqing Gu,
 Jinyun Zhang

Additional name(s) of conveying party(ies) attached? Yes No

3. Nature of Conveyance:
 Assignment Merger
 Security Agreement Change of Name
 Other

Execution Date(s): 1/22/2002, 1/22/02, 1/22/02, 1/15/02, 1/15/02

2. Name and address of receiving party(ies):
 Name: Mitsubishi Electric Research Laboratories, Inc.
 Street Address: 201 Broadway
 City: Cambridge State: MA Zip: 02139

Additional name(s) and address(es) attached? Yes No

4. Application number(s) or patent number(s): 10/057179
 If this document is being filed together with a new application, the execution date of the application is: **January 22, 2002**

A. Patent Application No.(s) B. Patent No.(s)

Additional numbers attached? Yes No

5. Name and address of party to whom correspondence concerning document should be mailed:
 Name: Mitsubishi Electric Research Laboratories, Inc.
 Street Address: 201 Broadway
 City: Cambridge State: MA Zip: 02139

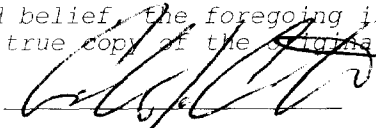
6. Total number of applications and patents involved: [1]

7. Total fee (37CFR 3.41): \$40.00
 Enclosed
 Authorized to be charged to deposit account

8. Deposit account number: 50-0749

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9. Statement and signature.
 To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Andrew J. Curtin  1-24-02

Name of Person Signing Signature Date

Total number of pages comprising cover sheet: [1]

02/15/2002 LMUELLER 00000220 500749 10057179
01 FC:581 40.00 CH

ACCVRLTR.FRM
PLC 1/93

PATENT
REEL: 012574 FRAME: 0565

ASSIGNMENT

WHEREAS, we, have made certain inventions or discoveries (or both) set forth in an Application for Letters Patent of the United States of America entitled **Expectation-Maximization-Based Channel Estimation and Signal Detection for Wireless Communications Systems**, the specification of which:

X was executed by us on the date indicated below;

 was filed on as Application Serial No. ;

 was patented under U.S. Patent No. on ;

WHEREAS, Mitsubishi Electric Research Laboratories, Inc., a corporation of the State of Delaware, whose address is 201 Broadway, Cambridge, Massachusetts 02139, and who, together with its successors and assigns is hereinafter called "Assignee", is desirous of acquiring the entire right, title, and interest together with the benefits and privileges hereinafter recited;

NOW, THEREFORE, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which we hereby acknowledge, we hereby, without reservation;

1. Assign, transfer and convey to Assignee the entire right, title and interest together with the benefits and privileges in and to said inventions and discoveries, said Application for Letters Patent or similar forms of protection of the United States of America, and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation and convention applications based in whole or in part upon said inventions or discoveries, or upon said application, and any and all Letters Patent, reissues and extensions of Letters Patent or similar forms of protection granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent;

2. Authorize Assignee to file patent applications in any or all countries or groups of countries on any or all of said inventions and discoveries in our name or in the name

of Assignee or otherwise as Assignee may deem advisable, under the International Convention or any other relevant convention or treaty or otherwise;

3. Authorize and request the Assistant Commissioner for Patents of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as Assignee of the entire right, title and interest therein or otherwise as Assignee may direct;

4. Warrant that we have not knowingly conveyed to others any rights in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and that we have good right to assign the same to Assignee without encumbrance;

5. Bind our heirs, legal representatives and assigns, as well as ourselves, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to us or them, all acts reasonable serving to assure that said inventions and discoveries, said patent applications and said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by us, our heirs, legal representatives and assigns if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to us relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples and other physical exhibits in our control or in the control of our heirs, legal representatives or assigns which may be useful for establishing any facts of our conceptions, disclosures, and reduction to practice of said inventions or discoveries.

IN WITNESS WHEREOF:

DATE I SIGNED INVENTOR'S DECLARATION: _____

Daqing Gu
Daqing Gu

Date: 11/15/02

Witnessed: HAD-SONG KONG
Printed Name

[Signature]
Signature

11/15/02
Date

Witnessed: George Fang
Printed Name

[Signature]
Signature

JAN 15, 2002
Date

IN WITNESS WHEREOF:

DATE I SIGNED INVENTOR'S DECLARATION: _____

Jinyun Zhang
Jinyun Zhang

Date: Jan. 15, 2001

Witnessed: Huifang Sun
Printed Name

[Signature]
Signature

Jan. 15, 2001
Date

Witnessed: Henry Horng
Printed Name

[Signature]

Jan. 15, 2001

Signature

Date

IN WITNESS WHEREOF:

DATE I SIGNED INVENTOR'S DECLARATION: _____

Xiaoqiang Ma
Xiaoqiang Ma

Date: Jan. 21 2002

Witnessed: Chiang-Lian Ng
Printed Name

Ng Chianglian
Signature

Jan 22, 2002
Date

Witnessed: YONGGUANG CHEN
Printed Name

Yongguang Chen
Signature

1/22/2002
Date

IN WITNESS WHEREOF:

DATE I SIGNED INVENTOR'S DECLARATION: _____

Hisashi Kobayashi
Hisashi Kobayashi

Date: Jan 22 2002

Witnessed: DUANYI WANG
Printed Name

Duanyi Wang
Signature

1/22/2002
Date

Witnessed: Robert A Joyce
Printed Name

Robert A Joyce

1/22/2002

Signature

Date

IN WITNESS WHEREOF:

DATE I SIGNED INVENTOR'S DECLARATION: _____

Stuart C. Schwartz
Stuart C. Schwartz

Date: Jan 22, 2002

Witnessed: Cynthia Menkes
Printed Name

Cynthia Menkes
Signature

Jan. 22, 2002
Date

Witnessed: STEPHANIE EGGERS
Printed Name

Stephanie Eggers
Signature

Jan. 22, 2002
Date