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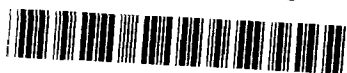
10/532524

FORM PTO-1595

(Rev. 03/01)

09-29-2005

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office



103091714

PD-201033

To the Honorable Commissioner of Patents and Trademarks

original documents or copy thereof.

1. Name of conveying party(ies):

Ernest C. Chen
Jeng-Hong Chen
Kenneth Shum
Joungheon Oh

Additional Name(s) of conveying party(ies) attached?

yes ☐

no ☒

2. Name and address of receiving party(ies):

Name: The DIRECTV Group, Inc.

Internal Address: RE/R11/A109
P. O. Box 956
El Segundo, CA 90245-0956

3. Nature of Conveyance:

- ☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other

Execution Date: December 1, 2003, December 30, 2003,
February 5, 2004 and February 27, 2004.

Street Address: 2250 E. Imperial Highway
El Segundo, California 90245

Additional name(s) & address(es) attached? ☐ yes ☒ no

4. Application number(s) or patent number(s):

This document is being filed together with a new application.

A. Patent Application No.(s)

PCT/US03/031199

B. Patent No.(s)

Additional numbers attached? ☐ yes ☒ no

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: The DIRECTV Group, Inc.
Internal Address: RE/R11/A109
P. O. Box 956
El Segundo, CA 90245-0956

**PLEASE ASSOCIATE THIS APPLICATION WITH
CUSTOMER NO. 020991.**

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

7. Total fee (37 CFR 3.41): \$40.00

- ☐ Enclosed
☒ Authorized to be charged to deposit account

8. Deposit account number:

50-0383

Authorized User Name: Georgann S. Grunebach

DO NOT USE THIS SPACE

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.

Georgann S. Grunebach
Name of Person Signing
Registration No. 33,179

Signature

April 25, 2005
Date

Total number of pages including cover sheet: Four (4)

OMB No. 0651-0027 (exp. 5/31/2002)

04/29/2005 SNAJARRO 00000038 500383 10532524

PATENT
REEL: 017027 FRAME: 0994

ASSIGNMENT

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PD-201033 PCT

WHEREAS, I, as below named sole inventor (if one name is listed below) or joint inventor (if plural names are listed below) of the city and state as stated below next to my name, have invented a(an)

AMPLITUDE AND PHASE MATCHING FOR LAYERED MODULATION RECEPTION

which was disclosed in International Application No. PCT/US03/31199 filed on 03 October 2003; and

WHEREAS, **HUGHES ELECTRONICS CORPORATION**, (hereinafter referred to as **HUGHES**) a Delaware corporation, having its principal place of business in El Segundo, California, is desirous of acquiring the entire and exclusive right, title and interest in, to and under said invention, said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world;

NOW, THEREFORE, in consideration of the obligations voluntarily assumed by me and set forth in an invention agreement between me and my employer, effective the date as stated below next to my name, and other good and valuable consideration, receipt of which is hereby acknowledged, I do hereby sell, assign and transfer to HUGHES, its successors, assigns or other legal representatives, the entire and exclusive right, title and interest in and to said invention invented by me, to said application and any and all applications which are continuations, continuations-in-part, divisions or substitutes of said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world on any of said applications and to any and all reexaminations, reissues, renewals or extensions of said Letters Patent in the United States and throughout the world for the full term or terms for which said Letters Patent may be granted in the United States and throughout the world; authorize and request The Commissioner of Patents and Trademarks of the United States and all foreign countries to issue all such Letters Patent to said HUGHES, its successors, assigns or other legal representatives; covenant that no assignment, sale, agreement, transfer or encumbrance has been, or will be, made or entered into which would conflict with this assignment, sale and transfer; and agree to communicate to HUGHES, its successors, assigns or other legal representatives, upon request and at no cost or expense to me, any facts known by me respecting said invention, do all lawful acts, including the execution and delivery of all papers and proper oaths and giving of testimony that is deemed necessary or desirable by HUGHES, its successors, assigns or other legal representatives with regard to said invention for protecting, obtaining, maintaining and enforcing any and all of said Letters Patent in the United States and throughout the world for said invention and for perfecting, affirming, recording and maintaining the title of HUGHES, its successors, assigns or other legal representatives, and generally cooperate to the fullest extent in all matters pertaining to said invention, and any and all of said Letters Patent and the title thereto in HUGHES, its successors, assigns or other legal representatives.

IN WITNESS WHEREOF, I have executed this instrument.

| | | |
|---|---|--------------------------|
| FULL NAME OF SOLE OF JOINT INVENTOR Ernest C. Chen | INVENTORS' SIGNATURE <i>Ernest C. Chen</i> | DATE Dec 1, 2003 |
| RESIDENCE (CITY AND STATE) San Pedro, California | | INVENTION AGREEMENT DATE |

| | | |
|---|---|--------------------------|
| FULL NAME OF SOLE OF JOINT INVENTOR Jeng-Hong Chen | INVENTORS' SIGNATURE <i>Jeng-Hong Chen</i> | DATE Dec 30, 2003 |
| RESIDENCE (CITY AND STATE) Temple City, California | | INVENTION AGREEMENT DATE |

| | | |
|---|---|--------------------------|
| FULL NAME OF SOLE OF JOINT INVENTOR Kenneth Shum | INVENTORS' SIGNATURE <i>Kenneth Shum</i> | DATE 5th Feb 2004 |
| RESIDENCE (CITY AND STATE) Monterey Park, California Toronto, Ontario | | INVENTION AGREEMENT DATE |

| | | |
|---|--|--------------------------|
| FULL NAME OF SOLE OF JOINT INVENTOR Joungeon Oh | INVENTORS' SIGNATURE <i>Joungeon Oh</i> | DATE 2/27/2004 |
| RESIDENCE (CITY AND STATE) Los Angeles, California | | INVENTION AGREEMENT DATE |

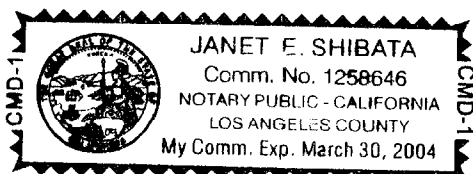
STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)

SS:

On December 1, 2003 before me, JANET E. SHIBATA,
a Notary Public in and for said State, personally appeared
ERNEST C. CHEN

☐ personally known to me or ☒ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

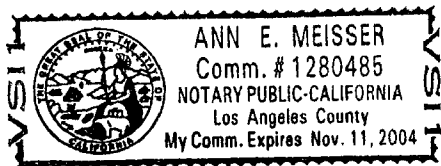


Notary Public

Janet E. Shibata

State of California)
) ss.
County of Los Angeles)

On December 30 2003, before me, Ann E. Meisser, Notary Public, personally appeared Jeng Hong Chen, ☐ personally known to me - or - ☒ proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.



WITNESS my hand and official seal.

[Signature]
Notary Public

Province Ontario

State of California)
) ss.
County of Los Angeles)

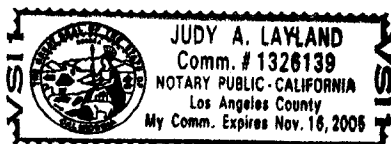
On Feb 05/2004 ^{BIT} 2003, before me, BRAHM TAVEROFF, Notary Public, personally appeared KENNETH SHYAM, ☐ personally known to me - or - ☒ proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

[Signature]
Notary Public

State of California)
) ss.
County of Los Angeles)

On March 02 2003, before me, Judy A. LAYLAND, Notary Public, personally appeared Bunghedn OH, ☐ personally known to me - or - ☒ proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.



WITNESS my hand and official seal.

[Signature]
Notary Public