

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5230217

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
FRANCK AUMONT	11/10/2017
DIDIER GUILLEMOT	11/22/2017
CYRIL QUINQUIS	11/10/2017
THOMSON LICENSING	07/30/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THOMSON LICENSING
<b>Street Address:</b>	1-5 RUE JEANNE D'ARC
<b>City:</b>	ISSY-LES-MOULINEAUX
<b>State/Country:</b>	FRANCE
<b>Postal Code:</b>	92130
<b>Name:</b>	INTERDIGITAL CE PATENT HOLDINGS
<b>Street Address:</b>	3 RUE DU COLONEL MOLL
<b>City:</b>	PARIS
<b>State/Country:</b>	FRANCE
<b>Postal Code:</b>	75017
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16098189
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(609)212-2990
<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>	609-436-5847
<b>Email:</b>	kathleen.lyles@interdigital.com
<b>Correspondent Name:</b>	BRIAN J. DORINI
<b>Address Line 1:</b>	4 RESEARCH WAY, 3RD FLOOR
<b>Address Line 4:</b>	PRINCETON, NEW JERSEY 08540
<b>ATTORNEY DOCKET NUMBER:</b>	PF160002
<b>NAME OF SUBMITTER:</b>	JOSEPH J. OPALACH

<b>SIGNATURE:</b>	/Joseph J Opalach/
<b>DATE SIGNED:</b>	11/09/2018
	This document serves as an Oath/Declaration (37 CFR 1.63).
<b>Total Attachments: 7</b> source=PF160002_exe_assignment-AUMONT#page1.tif source=PF160002_exe_assignment-QUINQUIS#page1.tif source=PF160002_exe_assignment-GUILLEMOT#page1.tif source=PU160002_Assignment_TL-IDCE#page1.tif source=PU160002_Assignment_TL-IDCE#page2.tif source=PU160002_Assignment_TL-IDCE#page3.tif source=PU160002_Assignment_TL-IDCE#page4.tif	

As a below named inventor, I hereby declare that:

I believe I am the original inventor or an original joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

**METHOD AND APPARATUS FOR BANDWIDTH OPTIMIZATION USING STAGGERCAST**

the specification of which was filed on May 11, 2017 as Application Serial No. PCT/EP2017/061389 and was amended on \_\_\_\_\_, or, if not identified here by filing date and serial number, is attached hereto.

The above-identified application was made or authorized to be made by me.

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment of not more than five (5) years, or both, under 18 USC 1001.

**ASSIGNMENT AND AGREEMENT IN AN APPLICATION FOR LETTERS PATENT**

For valuable consideration received, I hereby sell, assign and transfer to Thomson Licensing, a corporation duly organized and existing under the laws of the country of France, its successors, and assigns my entire right, title and interest, for all countries in and to said inventions, and all the rights and privileges under any and all Letters Patent that may be granted therefor, and any divisions, continuations, reissues and extensions thereof.

I agree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees.

I agree that I will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testify in any legal proceedings, and generally do everything possible to aid said corporation, its successors, assigns and legal representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries.

I authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in my/our name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from me.

I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aforesaid benefits of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

I covenant with Thomson Licensing, its successors, assigns, legal representatives, and nominees, that to the best of my knowledge the right, title and interest herein conveyed by me are free and clear of any encumbrance, and that I have full right to convey the same as herein expressed.

Signed at

Cesson Sevigne FRANCE

Date

10/11/2017

Inventor  
Name

Franck AUMONT

(Type or Print)

(Signature in Full - No Initials)

Post Office  
Address

c/o Technicolor 975, avenue des Champs Blancs, 35576 Cesson-Sevigne, France

1<sup>st</sup> Witness

Anthony FESIN

(Type or Print)

(Signature in Full - No Initials)

2<sup>nd</sup> Witness

Cyril QUINOUIS

(Type or Print)

(Signature in Full - No Initials)

**PATENT**

**REEL: 047460 FRAME: 0594**

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I agree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees.

I agree that I will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testify in any legal proceedings, and generally do everything possible to aid said corporation, its successors, assigns and legal representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries.

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I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aforesaid benefits of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

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Signed at

Cesson - Sévigné

Date

10.11.2017

Inventor  
Name

Cyril QUINQUIS

(Type or Print)

  
(Signature in Full - No Initials)

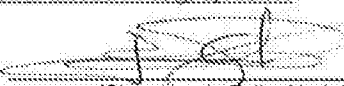
Post Office  
Address

c/o Technicolor 975, avenue des Champs Blancs, 35576 Cesson-Sévigné, France

1<sup>st</sup> Witness

GAUTIER Eric

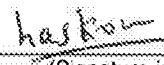
(Type or Print)

  
(Signature in Full - No Initials)

2<sup>nd</sup> Witness

Abdullah Harkou

(Type or Print)

  
(Signature in Full - No Initials)

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Signed at

RENNES

Date

22/11/17

Inventor  
Name

Didier GUILLEMOT

(Type or Print)

(Signature in Full – No Initials)



Post Office  
Address

c/o Technicolor 975, avenue des Champs Blancs, 35576 Cesson-Sevigne, France

1<sup>st</sup> Witness

Cyril QUINQUIS

(Type or Print)

(Signature in Full – No Initials)



2<sup>nd</sup> Witness

Franck AUMONT

(Type or Print)

(Signature in Full – No Initials)



## **EXHIBIT A**

### **Recordable Confirmatory Patent Assignment**

THIS PATENT ASSIGNMENT ("Assignment"), effective as of July 30, 2018, is made by and between THOMSON LICENSING SAS, a *société par actions simplifiée* organized under the laws of the French Republic (hereinafter "**ASSIGNOR**"); and INTERDIGITAL CE PATENT HOLDINGS, SAS, a *société par actions simplifiée* organized under the laws of the French Republic (hereinafter "**ASSIGNEE**").

WHEREAS:

A **ASSIGNOR** is the sole owner of the patents and/or patent applications listed in the attached Appendix A (hereinafter "the **PATENTS**"); and

B **ASSIGNEE** is desirous of acquiring all of **ASSIGNOR**'s right, title and interest in and to the **PATENTS**.

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, **ASSIGNOR** has sold, assigned and transferred, and does hereby confirm the sale, assignment and transfer to **ASSIGNEE** of all of **ASSIGNOR**'s right, title and interest in and to (i) the **PATENTS**; (ii) all patents and patent applications linked to the **PATENTS** through one or more claims of priority pursuant to 35 U.S.C. §§ 120 or 119(e) (the equivalent laws or regulation of any other patent authority) or that are, or are entitled to be, foreign counterparts, reissues, divisionals, renewals, revivals, reissues, reexaminations, extensions, continuations or continuations-in-part with respect to any other patent or patent applications in such set of the **PATENTS**, and (iii) the right to sue for and recover damages for any past, present or future infringement of the **PATENTS**, the same to be held and enjoyed by **ASSIGNEE** for its own use and enjoyment, and for the use and enjoyment of its successors, assigns and other legal representatives, to the end of the term or terms thereof as fully and entirely as the same would have been held and enjoyed by **ASSIGNOR**, if this assignment and sale had not been made.

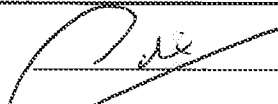
IN WITNESS WHEREOF, **ASSIGNOR** has caused this Recordable Patent Assignment to be signed by its duly appointed officer having full authority in the circumstances; and **ASSIGNEE** has caused this Recordable Patent Assignment to be signed by its duly appointed officer having full authority in the circumstances.

(Signatures on the next page.)

SIGNED for and on behalf of

**THOMSON LICENSING SAS**

By

  
(Signature)

on

07/23/18

(Date)

**Adrien Cadieux, Duly authorized**  
(Print Name and Title)

State of New York

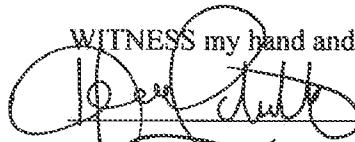
County of New York

On this 23<sup>rd</sup> day of July, 2018 before me,  
Adrien Cadieux, personally appeared

\_\_\_\_\_, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the instrument and acknowledged to me that he/she executed the same in his/her authorized capacity and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of New York that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

  
(Notary Public)

HANNAH SCHULTZ  
Notary Public, State of New York  
No. 01906363663  
Qualified in New York County  
Commission Expires August 21, 2021

*[Signature Page to the NewCo Patent Agreement Recordable Confirmatory Patent Assignment]*

**PATENT**  
**REEL: 047460 FRAME: 0598**

SIGNED for and on behalf of

**INTERDIGITAL CE PATENT HOLDINGS, SAS**

By [Signature] \_\_\_\_\_  
(Signature) (Date)

**Timothy J. Berghuis, President**  
(Print Name and Title)

State of Delaware

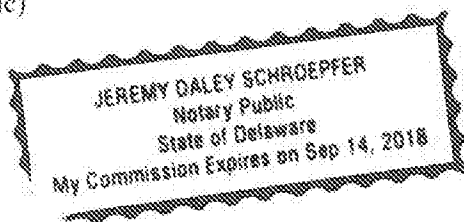
County of New Castle

On this \_\_\_\_\_ day of \_\_\_\_\_, 2018 before me,  
Jeremy Daley Schroepfer, personally appeared  
Timothy J. Berghuis, who proved to me on the basis of satisfactory  
evidence to be the person whose name is subscribed to the instrument and acknowledged to me  
that he/she executed the same in his/her authorized capacity and that by his/her signature on the  
instrument the person, or the entity upon behalf of which the person acted, executed the  
instrument.

I certify under PENALTY OF PERJURY under the laws of the State of Delaware that the  
foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Signature]  
(Notary Public)



*[Signature Page to the NewCo Patent Agreement Recordable Confirmatory Patent  
Assignment]*



## APPENDIX A

PF150292-KR-PCT	KR	12/29/2016	10-2018-7018547
PF150292-US-PCT	US	12/29/2016	16/067260
PF150292-WO-PCT	WO	12/29/2016	PCT/EP16/082853
PF150294-WO-PCT	WO	5/31/2017	PCT/EP17/063211
PF150316-EP-EPT	EP	12/20/2016	16822664.5
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PF150323-CN-NP	CN	7/10/2017	201710555486.9
PF150323-EP-EPA[2]	EP	7/3/2017	17179265.8
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PF150323-KR-NP	KR	7/5/2017	10-2017-0085278
PF150323-US-NP	US	7/8/2017	15/644761
PF150326-CN-NP	CN	2/28/2017	201710248220.X
PF150326-EP-EPA[2]	EP	2/21/2017	17157079.9
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PF150326-US-NP	US	2/22/2017	15/439878
PF150331-CN-NP	CN	12/23/2016	201611204600.5
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